Appendix F-1 – Biological Assessment

Malloy, Ryan - East Central Georgia Reliability Projects- Walton, Morgan, Oconee, and Putnam Counties, Georgia, Biological Assessment for the tricolored bat (Perimyotis subflavus): Ecological Solutions, Inc., Roswell, GA, January 2025.

Biological Assessment for the tricolored bat (*Perimyotis subflavus*)

East Central Georgia Reliability Projects

Walton, Morgan, Oconee, and Putnam Counties, Georgia

GeorgiaTransmission

Ecological Solutions Inc.

January 2025

Table of Contents

Figures

Appendices

1.0 Project Overview

1.1 Federal Nexus

This Biological Assessment (BA) is prepared in accordance with legal requirements set forth under Section 7 of the Endangered Species Act (ESA) of 1973 [16 U.S. Code {U.S.C.} 1536 (c)], as amended, and ESA guidance contained in the Endangered Species Consultation Handbook (USFWS and NOAA Fisheries 1998). This BA provides the results of an assessment of the potential effects of the proposed action on the proposed federally endangered tricolored bat (TCB; *Perimyotis subflavus*). This BA is based on a review of the proposed action, pertinent literature, and detailed field investigations to evaluate the project site and surrounding area to determine whether suitable habitat exists for the proposed federally endangered TCB within the action area (i.e., the area of potential impacts as defined under Sections 3 and 5). Specific project design elements are identified that avoid or minimize adverse effects of the proposed action on the TCB and its potential habitat.

Plants and animals listed as federally threatened or endangered are protected under the ESA which is administered and enforced by the U.S. Fish and Wildlife Service (USFWS). In accordance with Section 7 of the ESA, it is required to consult (or conference for proposed species) with the USFWS (Region 4) to assure that proposed federal actions do not jeopardize the continued existence of any federally listed or proposed listed species or result in the destruction or adverse modification of designated critical habitat. Consultation (either formal or informal) with the USFWS may be necessary for the advancement of a federal project that is likely to adversely affect a federally listed or proposed listed species and/or habitat for those species. Project proponents can conduct formal coordination with the USFWS for proposed listed species depending on factors such as project schedule and likelihood.

This BA has been prepared to facilitate the federal consultation process by providing the USFWS with the best available information regarding project-related effects to the proposed federally listed TCB.

1.2 Project Description

Georgia Transmission Corporation (GTC) is seeking financial assistance from the United States Department of Agriculture (USDA) Rural Development (RD), Rural Utilities Service (RUS) Electric Infrastructure Loan and Loan Guarantee Program for proposed East Central Georgia Reliability Projects (hereafter: “ECGR”, “Projects”, or “Project”). Though the TCB is not listed at this time, in coordination with the USFWS, GTC has prepared this BA with the understanding the species is likely to be listed prior to full implementation of the ECGR projects. The BA is in support of an overall Environmental Assessment being prepared by GTC for the projects (Appendix A).

GTC, along with other members of Georgia's Integrated Transmission System (ITS), continuously monitors and assesses the performance and capability of Georgia's electric system and makes system upgrades when it is determined there is insufficient capacity to meet electric demand or infrastructure needs to be replaced or upgraded based on age, condition, and new technology.

In 2007, GTC announced several projects to include new substations and transmission lines that were needed to ensure continued electric reliability in the east central Georgia region including Morgan, Oconee, Putnam, and Walton Counties. Locations for the substations and routes for the new transmission lines were selected, public information meetings were held, and most of the property and easements needed were purchased. As the economy slowed and power generation patterns shifted, it was determined the proposed projects should be postponed and activity was paused in 2013.

With changes in power generation, including the addition of new solar facilities and the retirement of coal facilities, and increased demand from residents and businesses, these projects are being reactivated to maintain safe, reliable, and cost-effective power while avoiding the risk for potential wide-area blackouts.

For the purposes of this BA, the individual projects described below are combined into the single term "project" throughout this document but are described in their independent components below. The proposed ECGR Projects consist of the following components (Figure 1.00):

Construction of Eight (8) New/Greenfield Projects:

- **New Substations**
    - **East Walton 500/230 kV Substation** – located in Walton County near the City of Good Hope. Approximately 57.25 acres of the 62-acre tract will be developed for the construction of a new substation. This tract was purchased as an Advance Land Purchase project in 2009. Georgia Transmission will construct and own this facility.
    - **Bostwick 230 kV Switching Station** – located in Morgan County near the city of Bostwick. Approximately 27.54 acres of the 42-acre tract will be developed for the construction of a new substation and modifications to the existing East Social Circle – East Watkinsville 230 kV Transmission Line. The tract was purchased as an Advance Land Purchase project in 2009, while the easement for the transmission line modification was purchased in 2010. Georgia Transmission will construct and own this facility.
    - **Rockville 500 kV Switching Station** – located in Putnam County. This new substation will be constructed on approximately 26.23 acres on land owned by Georgia Power Company. Georgia Power will construct and own the facility.

- **Jacks Creek 230 kV Switching Station** – located in Walton County and within the city of Monroe. This new switching station will be constructed by GTC on approximately 17.8 acres and will be owned by the Municipal Electric Authority of Georgia (MEAG).

- **New Transmission Lines**

  - **East Walton – Rockville 500 kV Transmission Line** – project is approximately 46.51-miles long and located in Walton, Morgan, and Putnam Counties. Approximately 15 miles of the transmission line route in Putnam County is located in a vacant, but maintained, 150-foot wide right-of-way purchased from Georgia Power Company. All easements were purchased as an Advance Land Purchase project in 2011 with a 150-foot-wide easement. Georgia Transmission will construct and own this facility.

  - **Bostwick – East Walton 230 kV Transmission Line** – project is approximately 5.53-miles long and located in Walton and Morgan Counties. All easements were purchased as an Advance Land Purchase project in 2011. Project will be constructed adjacent to a portion of the proposed East Walton – Rockville Transmission Line corridor; the combined corridor for this segment will be 225-feet wide. Georgia Transmission will construct and own this facility.

  - **East Walton – Jack's Creek 230 kV Transmission Line** – project is approximately 7.65-miles long and located in Walton County. All easements were purchased as an Advance Land Purchase project in 2010. This project is mostly located adjacent to existing roadsides with a variable easement of approximately 30-feet; cross-country easements are 100-feet wide. Georgia Transmission will construct and own this facility.

  - **Bethabara – East Walton 230 kV Transmission Line** – project is approximately 10.21-miles long and located in Oconee and Walton Counties. The majority of the easements were purchased as an Advance Land Purchase project in 2013; however, some easements still need to be acquired. Georgia Transmission will construct and own this facility.

- **Access Roads and Laydown Yards**

  - Approximately 22.94 miles of existing access roads require trees to be side trimmed. GTC estimates that 18.24 acres of side trimming will be conducted for the combined East Walton – Rockville 500 kV and Bostwick – East Walton 230 kV Transmission Line corridor.

  - Approximately 4.1 miles of greenfield access roads will be required for the ECGR project, accounting for 5.07 acres of tree clearing.

  - Approximately 21.75 acres of greenfield laydown yards is required for the East Walton - Rockville 500 kV Transmission Line, all of which includes tree clearing.

- Approximately 11.19 acres of temporary construction areas is required for the East Walton - Rockville 500 kV Transmission Line, of which 8.74 acres requires tree clearing.

Proposed Modifications to Existing GTC Facilities

- **Bethabara 230/115 kV Substation** – Modify the existing substation in order to terminate the new Bethabara – East Walton 230 kV Transmission Line. All work will be done within the existing substation fence. Georgia Transmission will conduct these modifications.

- **East Social Circle – East Watkinsville 230 kV Transmission** – Loop 0.15-mile transmission line into the proposed Bostwick 230 kV Switching Station. Georgia Transmission will construct these modifications.

- **East Social Circle 230 kV and East Watkinsville 230 kV Substations** – Modify substation relay communication system within existing substations. Georgia Transmission will conduct these modifications.

Proposed Modifications to Non-GTC Facilities

- **Doyle – Monroe 230 kV Transmission Line** – The existing Georgia Power Company transmission line will be modified to terminate into the proposed Jacks Creek 230 kV Substation. This looped transmission line will be approximately 500 feet in length. Modifications will be made by GTC for MEAG.

- **Scherer – Warthen 500 kV Transmission Line** – The existing Georgia Power Company transmission line will be extended by approximately 0.34 miles to terminate into the proposed Rockville 500 kV substation. Modifications will be made by Georgia Power Company.

Additional information on these projects can be found at: https://www.gatransmission.com/ecrp/

1.3 Project Area and Setting

The proposed ECGR projects described above are hereafter referred to collectively as project area and are located in Morgan, Oconee, Putnam, and Walton Counties, Geogia. The proposed project area is located within the following U.S. Geological Survey (USGS) 7.5-minute quarter quads: Statham SW, Statham SE, Monroe NW, Monroe NE, high shoals NW, High Shoals NE, Monroe SE, High Shoals SW, High Shoals SE, Watkinsville SW, Apalachee NW, Apalachee NE, Apalachee SE, Madison NE, Buckhead NW, Madison SE, Buckhead SW, Rock Eagle Lake NE, Harmony NW, Harmony SW, Harmony SE, Meda NE, Rockville NW, and Rockville NE (Figure 2.00). The approximate midpoint of the proposed project area is 33.6034750°, -83.4016822°. The project lies within the Level IV subdivision Southern Outer Piedmont (45b) of the Level III Piedmont Ecoregion (Griffith *et al*., 2001). Topography in the study area is described as irregular plains

with less relief than neighboring ecoregions. Elevation within the study area ranges from approximately 315 feet to 1,000 feet above mean sea level. Deep saprolite and red clayey soils cover gneiss, schist, and granite rock forms (Griffith *et al*., 2001). Planted loblolly pine (*Pinus taeda*) stands and mixed hardwood pine forests are the predominant land use within the ECGR boundaries. Smaller areas of pasture, cropland, and urban and industrial development are located within and adjacent to the area. Other than developed areas associated with city centers, the majority of the surrounding land use is managed pine, agricultural, and mixed hardwood pine woodlands with pockets of residential and industrial development. Based on speleological survey data, the proposed project is located approximately 20 miles east of Cedar Shoals Cave (Figure 3.00).

Conservation lands in the area include Georgia State Parks and Wildlife Management Areas (WMA), public parks, private land trusts and National Forest lands. Hard Labor Creek State Park is located over seven miles west of the proposed project area, and the Chattahoochee-Oconee National Forest is located approximately 0.75-mile to the east of the proposed project area. B.F Grant WMA is located approximately 1.5 miles to the west, and Oconee WMA is located approximately 0.75-mile to the east of the proposed project area (Figure 3.00).

The proposed substations sites vary from being entirely wooded to pasture areas with interspersed woodlands. For example, the proposed East Walton Substation is entirely wooded, whereas the proposed Jacks Creek Substation Site is predominantly maintained pasture with wooded areas along Jacks Creek. The proposed transmission line corridors include maintained transmission line easement, mixed pine-hardwood forest, forest riparian corridors, open fields, roadside right-of-way (ROW), and residential and commercial properties. The majority of the transmission line corridors are wooded with many of the routes situated immediately parallel to existing roadways; however, portions of the transmission line routes do bisect existing wooded areas. As noted, approximately 15 miles of the East Walton – Rockville Transmission line in Putnam County will be located within a former GPC ROW. While this area has some regrowth, the majority of this area consists of early successional woods, maintained fields, wildlife plots, and other uses. Habitat descriptions can be found below (Section 3) and 2019 USGS National Landcover Database (NLCD) land cover types are shown on Figure 4.00.

The proposed project area lies within the Upper Oconee River Watershed, Hydrologic Unit Code (HUC) 03070101. Named perennial streams within or near the proposed project include the Apalachee Creek, Briar Creek, Bucks Creek, Clarks Fork, Denham Branch, Brubby Creek, Hard Labor Creek, Highlog Branch, Indian Creek, Jacks Creek, Little Sugar Creek, Long Branch, North Sugar Creek. Rocky Branch, Rush Creek, and South Sugar Creek which travel through forested habitats creating riparian corridors that are

important for TCB. A map showing potential bat corridors along the project area can be found in Figure 5.00.

1.4 Consultation History

2/23/2024 – Teleconference held between GTC and USFWS

- USFWS detailed the three hibernation ranges for TCB within Georgia along with relevant tree clearing restriction timing associated with each hibernation range as shown in Table 1. The project is located within Zone 1.

Table 1. Tree Clearing Restrictive Seasons for TCB in Georgia

Range Name	Location	Tree Clearing Restriction Dates	Additional Information
Zone 1 – Year-round Active	North-Central GA	Pup season: May 1- July 15 Winter: December 15 – February 15	
Zone 2 – Year-round Active	South GA	May 1 – July 15	
Hibernating Range	North GA	May 1 – July 15	Blasting near known hibernacula restricted in winter months

- Putnam County – 15-mile early successional and other disturbances associated with former GPC ROW in proposed action area (defined in Sections 3 and 5) will not have tree clearing restrictions imposed
- Along State Route (SR) 83 – The 25-30 ft TL ROW adjacent to the existing road will not require winter clearing restrictions but would require pup season restrictions
- Known occurrence of TCB roosts in culverts along Interstate 20 (I-20); however, the proposed project area that crosses I-20 does not contain culverts and/or streams at that point
- Formal consultation recommended by USFWS, and Biological Assessment/Biological Opinion/Conservation Opinion needed
- Additional conservation measures (i.e., winter culvert surveys) needed for culverts (other than corrugated metal pipe) that measure 23-25 feet long and 36 inches or greater in diameter and that will be disturbed as a result of project implementation

5/6/2034 – Teleconference held between GTC, Ecological Solutions, and USFWS to discuss mitigation and conservation measures

- GTC reported that the majority of tree clearing would be conducted outside of the tree clearing restriction time frames for Zone 1
- USFWS conveyed that forested habitat of concern was primarily large, contiguous patches of forest and not individual/isolated trees and/or roadside trees
- USFWS stated that at the time of the meeting, there were no mitigation options available for TCB; therefore, avoidance and minimization measures would suffice for the BA/BO (or Conference Opinion [CO], should the TCB not yet be listed under the ESA)
- USFWS stated that the evaluation of take would be based on the acreage of tree clearing conducted within the tree clearing restriction time frame

2.0 Federally Proposed and Listed Bat Species and Designated Critical Habitat

2.1 Tricolored Bat (*Perimyotis subflavus*)

The TCB is a small insectivorous bat which is found in the eastern United States. This species range is throughout Georgia, and it makes use of a wide variety of habitats across its range including open forests, woodland edges, bridges, culverts, abandoned structures, and other habitat types. The TCB can be easily identified by its tricolored fur which is dark at the base, lighter in the middle, and dark at the tip (Barbour and Davis 1969). Males and females are colored alike, but females are typically larger than males (LaVal and LaVal 1980).

Due to a marked decline in the population of TCB in the United States (primarily due to white-nosed-syndrome [WNS]), in September 2022 the USFWS proposed to list the TCB as endangered under the ESA. The final rule for listing is expected in 2024. In Georgia, the TCB is listed as a species of concern by the Georgia Department of Natural Resources (GDNR), with populations in the northern portion of the state experiencing severe declines while coastal plain populations seem more stable by comparison.

2.1.1 Tricolored Bat Life History

<u>Distribution</u>

The TCB can be found throughout the eastern United States from Canada to Florida and west to New Mexico. In Georgia, TCB can be found throughout the entire state in part due to the fact that they make use of a wide variety of habitat types and structures for spring, summer, and fall roosting. Prior to the onset of WNS, TCB were considered abundant across the landscape within their range (Cheng et al. 2021). Numerous studies have documented the range wide decline of TCB, which is primarily driven by WNS (USFWS, 2021).

Non-winter Habitat

During the spring, summer, and fall, TCB primarily roost among live and dead leaf material found in live or recently dead hardwood trees. In the coastal plain areas, TCB have been found roosting in Spanish moss (USFWS, 2021). TCB will make use of a wide variety of habitat types and structures for roosting, including mixed pine-hardwood forests, riparian areas, culverts, bridges, abandoned structures, live and dead leaf clusters, and many other structures. Female TCB exhibit high site fidelity, returning to the same roost sites year after year (USFWS, 2021). Males roost singly and females form maternity colonies (Perry and Thill 2007). Females give birth between May and July typically having two pups (Harvey et al. 2011). TCB maternity colonies typically consist of multiple roosts located near one another, and on average females change roosts between 1.2 and 7 days (Veilleux and Veilleux 2004).

Winter Habitat

During winter, TCB primarily hibernate in caves and mines (Harvey et al. 1999); however, TCB can also be found hibernating in culverts (Lutsch 2019) abandoned water wells (Sasse et al. 2011), and in tree cavities (Newman 2020). In the northern parts of their range, TCB are commonly the first to arrive in caves in the fall and the last to leave in the spring (LaVal and LaVal 1980). Compared to northern populations, southern populations of TCB may exhibit shorter periods of hibernation (Stevens et al. 2020). In fact, some individuals may remain active throughout the winter if conditions are mild enough. For cave hibernating populations, TCB are typically found in the warmest parts of the cave roosting singly or in small groups (Barbour and Davis 1969).

Foraging Activity and Prey

TCB are considered to be opportunistic feeders and consume a wide variety of insects from caddisflies (Trichoptera), moths (Lepidoptera), beetles (Coleoptera), wasps and flying ants (Hymenoptera), true bugs (Homoptera) and flies (Diptera) (USFWS, 2021). TCB will forage anywhere from just above the ground to above the tree canopy throughout the night, depending on where the prey base is most concentrated (USFWS, 2021). In addition, TCB commonly forage over water as well as along forest edges. Foraging ranges vary between males and females, with females averaging approximately 4.3 kilometers (2.7 miles) and males averaging 11.4 kilometers (7.1 miles) (USFWS, 2021).

Threats to TCB

White-Nose Syndrome

Since the outbreak of WNS, USFWS has coordinated with states, federal agencies, tribes, conservation organizations, and scientific institutions on how to manage the disease. Following the goals outlined in the White-nose Syndrome Response Plan, USFWS has provided $20 million in funding through grants for

research and in response to the disease. Bat species affected by WNS include, gray bat (*Myotis grisescens*), Indiana bat (*M. sodalis*), northern long-eared bat (*M. septentrionalis*), eastern small-footed bat (*M. leibii*), big brown bat (*Eptesicus fuscus*), TCB, and little brown bat (*M. lucifugus*). Due to the impacts of this disease on northern long-eared bat populations, attention on reducing other impacts and threats has become more crucial in hopes that bats emerging from WNS infected caves will have what they need to survive.

WNS is named for the visible presence of *Pseudogymnoascus destructans* (Pd) on the muzzles, ears, or wing membranes of bats, and it affects hibernating bats. Damage to the wing membranes caused by the fungus disrupts water control, temperature regulation, gas exchange, blood circulation, and causes dehydration and electrolyte imbalances. It was first documented in the winter of 2006-2007, where hundreds of sick and dying bats were found at a cave in New York. It has spread rapidly through the eastern U.S. and Canada and has been detected as far south as Mississippi. WNS is now documented in 40 states in the U.S., and 8 Provinces in Canada (whitenosesyndrome.org). It is estimated that WNS has killed between six-seven million bats. In Georgia, WNS was first documented in February 2013, in Dade County, and since has been confirmed in several other counties down to Twiggs County, just south of the City of Macon.

Of all the threats to the TCB, none is as severe as WNS (USFWS, 2021). WNS has been confirmed in 40 of the 41 states where the TCB occurs (whitenosesyndrone.org, 2024). Large-scale population analyses have shown severe declines in TCB populations following the arrival of WNS, ranging from 75 – 100 percent in some areas (USFWS, 2021). Southern populations of TCB may use road-related culverts during mild winter, thus reducing exposure to WNS; however, cave-dwelling populations of TCB in the south are showing similar population declines to those in the north (USFWS, 2021).

There are many national and international efforts underway to combat the spread and/or effects of WNS; however, to date, there is no cure for WNS.

Wind Turbines

Wind turbine related mortality is another threat affecting TCB populations. Bats migrating across the landscape at night strike wind turbines which leads to approximately 3,227 TCB fatalities annually (Udell et al. 2022). As wind power generation increases in certain parts of the United States, this threat will continue to affect migrating bats including the TCB.

Climate change

While climate change is commonly recognized as a threat to bat species including TCB, the magnitude, direction, and seasonality of climate change is unknown making it difficult to assess how it will affect TCB throughout its range (USFWS 2021). Whether it is decoupling of predator-prey interactions, abrupt

modifications to hibernation conditions, and/or the introduction to additional viruses, diseases, and/or pathogens, overall, it is believed that the effects of climate change are not positive for TCB making it an additional threat at the population level (Jones and Rebelo 2013).

Habitat Loss and Disturbance

Loss of habitat is also considered a threat to TCB. Loss of non-winter roosting habitat can result in longer flight distances between roosting and foraging areas which could increase the risk to predation as well as overall increase in energy expenditure for TCB. In addition, if tree clearing occurs during the pup rearing season, direct mortality to maternity colonies could occur (USFWS 2021). In addition, in agriculturally dominated landscapes, tree clearing can have a disproportionately higher adverse impact to TCB than a comparable tree loss in a heavily forested area (USFWS 2021). Winter habitat loss could include modification of cave openings/entrances and any influences that affect the microclimate conditions within cave ecosystems.

2.4 Other species

Based on USFWS Information for Planning and Consultation (IPaC) queries, the entirety of the proposed action is located within the range of the monarch butterfly (*Danaus plexippus*). Specific projects are within the range of Harperella (*Ptilimnium nodosum*), little amphianthus (*Amphianthus pusillus*), and mat forming quillwort (*Isoetes tegetiformans*). There will be no loss of monarch butterfly habitat and post-construction transmission line maintenance will result in an increase of potential habitat for this species. Therefore, the proposed project would not affect monarch butterflies or their habitat. No habitat for Harperalla, little amphianthus, or mat forming quillwort is located within the project limits; therefore, the focus of this BA is the TCB.

2.4.1 Other Additional Species

Georgia's Natural, Archaeological, and Historic Resources GIS (GNAHRGIS) online database was queried regarding listed species occurrences within three miles of the project area. The GNAHRGIS review identified little amphianthus, mat-forming quillwort, Harperella, and bald eagle (*Haliaeetus leucocephalus*) as occurring within a three-mile radius of the project. While the bald eagle is not technically protected under the USFWS Endangered Species Act, it is federally protected under the Bald and Golden Eagle Protection Act as well as the Migratory Bird Treaty Act. Per GNARHRGIS, the following federal listed species are known from within three miles of the project area:

- little amphianthus (federal and state) – approximately 1.6 miles north of Rockville Substation; approximately 1.6 miles north of East Walton – Rockville transmission line

- mat-forming quillwort (federal and state) – approximately 1.7 miles north of Rockville Substation; approximately 1.7 miles north of East Walton – Rockville transmission line
- Harperella (federal and state) – approximately 1.7 miles north of Rockville Substation [Extirpated]; approximately 1.7 miles north of East Walton – Rockville transmission line
- bald eagle (federal: Bald and Golden Eagle Protection Act)/Migratory Bird Treaty Act and state) – approximately 1.4 miles southeast of Rockville Substation

Refer to Table 2 below for a list of protected species of potential occurrence within the project survey areas, their state and federal status, and preferred habitat. Protected species documentation for each proposed project review is attached to this report and includes the IPaC database report and the GNAHRGIS database report for each proposed project.

Table 2. Federal Listed Species of Potential Occurrence in the Project Area

Scientific Name	Common Name	Federal Status	State Status	Preferred Habitat
Faunal Species				
Danaus plexippus	monarch butterfly	C	--	open fields and meadows with milkweed
Haliaeetus leucocephalus	bald eagle	BGEPA/MBTA	T	nests and forages along coasts and near large rivers and lakes
Perimyotis subflavus	tricolored bat	PE	--	open forests with large trees and woodland edges; roost in tree foliage; hibernate in caves or mines with high humidity
Floral and Floral-like Species				
Amphianthus pusillus	little amphianthus	T	T	vernal pools on granite outcrops
Isoetes tegetiformans	mat-forming quillwort	E	E	vernal pools on granite outcrops
Ptilimnium nodosum	Harperella	E	E	cypress ponds in the Coastal Plain and seeps at the edge of granite outcrops in the Piedmont

E = Endangered; T = Threatened; C = Candidate; PE = Proposed Endangered; BGEPA = Bald and Golden Eagle Protection Act; MBTA = Migratory Bird Treaty Act

Potential habitat for the monarch butterfly occurs within the following habitats identified within the proposed project area: maintained roadside easement, maintained transmission line easement, early successional, and/or agricultural land (pasture). No milkweed species (*Asclepias* spp.), necessary to monarch butterflies, were observed within the project survey areas. The surveys were conducted within the flowering periods of milkweed species. There will be no loss of these habitats due to project

implementation and the project should have no effect on the monarch butterfly. It is likely that implementation of the transmission line projects will in the long-term increase the availability of monarch butterfly foraging habitat. Monarch butterfly is a federal candidate species not included in GNAHRGIS database; therefore, information on known locations within 3 miles of the project area is not available.

Potential habitat does not exist within any of the project survey areas for Harperella, mat-forming quillwort, little amphianthus, as there are no granite outcrops or cypress ponds within or adjacent to the survey areas.

Table 3 summarizes the federal listed species of potential occurrence by proposed transmission line project and substation project.

Table 3. Summary of Federal Listed Species of Potential Occurrence*

Proposed Project	Species	Species Observed	Habitat Observed	Known within 3-mi radius
Proposed Transmission Lines				
Bostwick – East Walton 230 kV Transmission Line	monarch butterfly, tricolored bat	No	Yes, both species	
East Walton – Rockville 500 kV Transmission Line	monarch butterfly, little amphianthus, mat-forming quillwort, Harperella, tricolored bat	No	Yes, for monarch butterfly and tricolored bat	Yes, all except monarch butterfly
East Walton – Jacks Creek 230 kV Transmission Line	monarch butterfly, tricolored bat	No	Yes, both species	
Bethabara – East Walton 230 kV Transmission Line	monarch butterfly, tricolored bat	No	Yes, both species	
Proposed Substations/Substation Expansion				
East Walton 500/230 kV Substation	monarch butterfly, tricolored bat	No	Yes, both species	
Bostwick 230 kV Switching Station	monarch butterfly, tricolored bat	No	Yes, both species	
Rockville 500 kV Substation	monarch butterfly, Harperella, mat-forming quillwort, little amphianthus, tricolored bat	No	Yes, monarch butterfly and tricolored bat	
Jacks Creek 230 kV Substation	monarch butterfly, tricolored bat	No	Yes, both species	
Bethabara 230/115 kV Substation	monarch butterfly, tricolored bat	No	Yes, both species	

*Includes IPaC and GNAHRGIS 3-mile radius query results

2.4.2 Additional Bat Species

According to the GDNR, Georgia is home to 16 species of bats. Table 4 shows the bat species found in Georgia as well as any state listing status if applicable.

Table 4. Georgia Bat Species and State Listing Status

Common name	Scientific name	State status
Rafinesque's big-eared bat	*Corynorhinus rafinesquii*	GA Rare
Big brown bat	*Eptesicus fuscus*	
Silver-haired bat	*Lasionycteris noctivagans*	
Eastern red bat	*Lasiurus borealis*	
Hoary bat	*Lasiurus cinereus*	
Northern yellow bat	*Lasiurus intermedius*	GA Species of Concern
Seminole bat	*Lasiurus seminolus*	
Southeastern bat	*Myotis austroriparius*	GA Species of Concern
Gray bat	*Myotis grisescens*	US & GA Endangered
Eastern small-footed bat	*Myotis leibii*	GA Species of Concern
Little brown bat	*Myotis lucifugus*	GA Species of Concern
Northern long-eared bat	*Myotis septentrionalis*	US & GA Endangered
Indiana bat	*Myotis sodalis*	US & GA Endangered
Evening bat	*Nycticeius humeralis*	
Tri-colored bat	*Perimyotis subflavus*	GA Species of Concern*
Brazilian free-tailed bat	*Tadarida brasiliensis*	

* Status to likely change once officially listed under the ESA by USFWS

2.5 Critical Habitat

Under Section 7(a) of the ESA, federal agencies must ensure that any action they authorize, fund, or carry out is not likely to result in destruction or adverse modification of formally designated critical habitat. Critical habitat is formally designated by the USFWS in the Code of Federal Regulations (CFR), if prudent

and determinable. "Critical habitat," as defined in the ESA of 1973, is a term for habitat given special protection for the benefit of a listed species.

There is no designated critical habitat within or near the proposed project area.

3.0 Environmental Baseline

In accordance with 50 CFR 402.02, the environmental baseline refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The action area is defined as "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action" (50 CFR 402.02). The analysis of species or designated critical habitat likely to be affected by the proposed action is focused on impacts within the project's action area. Based on review of the current literature, a 1.5-mile buffer was created around the proposed ECGR project footprint to coincide with the typical summer habitat use area for TCB (Figure 6.00).

The environmental baseline includes the past and present impacts of all federal, state, or private actions and other human activities in the action area, the anticipated impacts for all proposed federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of state or private actions which area contemporaneous with the consultation process. The environmental baseline is a "snapshot" of the species' health in the action area at the time of consultation and does not include the effects of the action under review.

Status of the Species Within the Action Area

Given the widespread range and known occurrences across the state, TCB is reasonably certain to be present within the action area. The proposed action occurs within the year-round range for the TCB, though proposed clearing activities will be minimized to the maximum extent practicable during the sensitive summer roosting season. Per communication with USFWS (Laci Pattavina), TCB have been documented using culverts along the I-20 corridor which intersects the proposed action area. At the time of this document, there is no critical habitat designated for the TCB.

Land Cover Analysis Within the Action Area

Within the action area (1.5-mile buffer around proposed project area), analysis of the 2019 USGS NLCD land cover data indicate that the action area is comprised of:

- Barren Land
- Cultivated Crops

- Deciduous Forest
- Developed Low Intensity
- Developed Open Space
- Emergent Herbaceous Wetlands
- Evergreen Forest
- Grassland/Herbaceous
- Mixed Forest
- Open Water
- Pasture/Hay
- Shrub/Scrub
- Woody Wetlands

Figure 6.00 shows the NLCD land cover types within the action area, and the amount (in acres) and proportions of land cover classes within the action area is shown in Table 5.

Table 5. Proportion of NLCD Land Cover Classes within the ECGR Action Area

Land Cover	Acres	Percent
Barren Land	520	0.4
Cultivated Crops	576	0.4
Deciduous Forest	28,091	21.5
Developed High Intensity	152	0.1
Developed Medium Intensity	399	0.4
Developed Low Intensity	2,199	1.7
Developed Open Space	6,004	4.6
Emergent Herbaceous Wetland	141	0.1
Evergreen Forest	29,150	22.3
Grassland/Herbaceous	7,120	5.4
Mixed Forest	13,916	10.6
Open Water	1,504	1.1
Pasture/Hay	34,023	26.0
Scrub/Shrub	1,306	1.0
Woody Wetlands	5,757	4.4

Land cover types within the action area have not changed substantially over time and are not expected to change drastically in the near future. It is unlikely that significant land use changes will occur in the action area during implementation of the project.

Land Cover Analysis Within the Project Area

The project area is defined as the footprint within which all proposed construction activities will occur. Within the project area, analysis of the 2019 USGS NCLD land cover data indicate that the project area is comprised of:

- Barren Land
- Cultivated Crops
- Deciduous Forest
- Developed Low Intensity
- Developed Open Space
- Emergent Herbaceous Wetlands
- Evergreen Forest
- Grassland/Herbaceous
- Mixed Forest
- Open Water
- Pasture/Hay
- Shrub/Scrub
- Woody Wetlands

The amount (in acres) and proportions of land cover classes within the project area is shown in Table 6. The acreages below exclude the previously maintained vacant ROW acquired from Georgia Power Company in Putnam County as well as overlap with public transportation ROW.

Table 6. Proportion of NLCD Land Cover Classes within the ECGR Project Area

Land Cover	Acres	Percent
Barren Land	2.13	0.2
Cultivated Crops	2.14	0.2
Deciduous Forest	210.71	23.4
Developed High Intensity	0.09	0
Developed Medium Intensity	1.03	0.1

Land Cover	Acres	Percent
Developed Low Intensity	6.34	0.7
Developed Open Space	37.07	4.1
Emergent Herbaceous Wetland	0.83	0.1
Evergreen Forest	220.63	24.5
Grassland/Herbaceous	61.37	6.8
Mixed Forest	115.49	12.8
Open Water	2.16	0.2
Pasture/Hay	176.30	19.6
Scrub/Shrub	31.10	3.5
Woody Wetlands	33.55	3.7

It should be noted that NLCD land cover data are produced at 30-meter x 30-meter cell sizes; therefore, their application is best used for general information purposes and not optimal for fine-scale analysis needed for identifying species habitat.

LiDAR Forest Cover Analysis

To better quantify forest cover, GTC conducted a Light Detection and Ranging (LiDAR) assessment of tree canopy cover throughout the proposed project area. This acreage calculation includes early successional tree growth in the vacant Georgia Power Company ROW in Putnam County and within public transportation ROW corridors. Combined forest acres from the NLCD Land Cover analysis within the proposed project area (see above) equates to approximately 582 acres of forested habitats within the proposed project area. Using the LiDAR data, up-to-date aerial imagery from the National Agriculture Imagery Program (NAIP), and field survey ground truth data in a desktop GIS analysis, the tree canopy land cover was further classified into three distinct classes: early successional, corridor adjacent, and large

forest patch. The combined total of the three forest classes proposed for clearing as identified by LiDAR equates to approximately 791.08 acres and is described below.

With Tri-Colored Bat roosting and maternity habitat being very generalized, GTC contracted with Merrick & Company to collect LiDAR Data and extract forested areas from those data. Forested areas were derived from LiDAR data captured by Merrick on April 1, 2021 with a 40 point per square meter (PPSM) LiDAR density and with six inch vertical and horizontal accuracy. To extract a forest layer from the LiDAR, Merrick used a LiDAR filtering process. The LiDAR filtering process encompasses a series of automated and manual steps to classify the point cloud data set. Each project represents unique characteristics in terms of cultural features (urbanized vs. rural areas), terrain type, and vegetation coverage. These characteristics were thoroughly evaluated at the onset of the project to ensure that the appropriate automated filters were applied and that subsequent manual filtering would result in correctly classified data. Data is most often classified by ground and "unclassified", but specific project applications can include a wide variety of classifications including but not limited to buildings, vegetation, power lines, etc. Merrick's MARS® software was used for the auto-filtering, manual filtering, and QC of the classified data. Merrick has developed upwards of a hundred customized automated filters that were applied to the LiDAR data set based on project specifications, terrain, and vegetation characteristics. A filtering macro, which may contain one or more filtering algorithms, was executed to derive LAS files separated into the different classification groups as defined in the GTC classification table (see Appendix A). The macros were tested in several portions of the project area to verify the appropriateness of the filters. Often, there was a combination of several filter macros that optimized the filtering based on the unique characteristics of the project. Automatic filtering generally would yield a ground surface that was 85-90% valid, so additional editing (hand-filtering) was required to produce a more robust ground surface. LiDAR data were next taken into a graphic environment using MARS® to manually re-classify (or hand-filter) "noise" and other features that may remain in the ground classification after auto filter. A cross-section of the post auto-filtered surface was viewed to assist in the reclassification of non-ground data artifacts. Certain features such as berms, hilltops, cliffs, and other features may have been aggressively auto-filtered and points would need to be re-classified into the ground classification.

In areas outside the collection area for the LiDAR, for example some of the longer off right-of-way access paths, interpretation of available aerial photography was used to identify forested areas. The source of the aerial photography was ESRI's World Imagery Basemap Layer.

To better discern the tree cover habitat within the proposed project corridor as it relates to being suitable habitat for TCB, the LiDAR-identified tree canopy was further classified into three distinct classes: early successional, corridor adjacent, and large forest patch. The combined total of the three forest classes

proposed for clearing as identified by LiDAR equates to approximately 791.08 acres and is described below.

Early successional tree cover type is commonly less than 10 years old and demonstrates very dense stem counts leading to very thick understory and mid-canopy forest layers. In many cases, it is too thick for a person to traverse on foot. These areas often don't receive much sunlight and offer very little vegetative diversity. Young planted pine stands make up the vast majority of early successional forest types within the proposed project area. There are approximately 104.4 acres of early successional forest within the proposed project area.

Corridor adjacent forests refer to those areas located next to existing roadway ROW or existing transmission easements. Where possible, GTC has co-located the proposed project within existing or parallel to roadway ROWs or existing transmission easements to avoid opening new disturbance corridors within the interior of large forest patches. There are approximately 177.03 acres of corridor adjacent forested areas within the proposed project.

While the overall action area is set within a rural landscape, there are many large, contiguous tracts of forest located throughout the proposed project area. These forests offer multi-age and multi-species cohorts of vegetation communities and offer a diverse range of habitats for many species. This habitat also typically includes forested riparian areas that offer landscape connectivity from forest patch to forest patch which can be very important for bats such as TCB. Typical tree species include green ash (*Fraxinus pennsylvanica*), river birch (*Betula nigra*), water oak (*Quercus nigra*), white oak (*Q. alba*), red oak (*Q. rubra*), sweetgum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), tulip poplar (*Liriodendron tulipifera*), loblolly pine, and various hickories (*Carya* spp.) This habitat plays an important role in offering summer maternity roost locations as well as providing a prey base of insects. There are approximately 509.65 acres- of large forest habitat within the proposed project area.

3.1 Documentation of Tricolored Bats

The action area includes a wide range of forested habitats from individual, fragmented tree clusters to large forest patches with connectivity to other forested areas. Due to the statewide range of TCB and its proclivity to use a wide variety of habitats for roosting, the entirety of the proposed action area is within the species' range. Field surveys throughout the proposed project area documented the presence of mixed pine-hardwood forests (see below). In addition, per communication with USFWS, TCB are known to occupy culvert roosts along the Interstate 20 (I-20) corridor in Morgan County.

3.2 ECGR Environmental Surveys

ECGR Environmental Field Surveys

Pedestrian bat habitat surveys were conducted by professional biologists within the proposed action area over multiple field visits from July through October 2023 as well as follow up surveys completed in February 2024. Survey methodology included assessing forested areas for potential bat roosting habitat. In addition, GTC has conducted access surveys throughout the proposed action area and encountered three open wells along the proposed centerline of the transmission line easement. At the time of survey, the wells are currently open and are proposed for closing; however, wells will be inspected for the presence of bats prior to closing. The wells are located at 33.789503°, -83.576332°; 33.472859°, -83.376364°; and 33.449565°, -83.36071°. Bat habitat survey methodology generally followed guidelines from USFWS Region 4 which currently focuses on Indiana bat and northern long-eared bat surveys. This methodology was considered suitable for TCB as there is a large degree of overlap in the life history ecology between TCB and Indiana bats and/or northern long-eared bats within the region of the proposed action area. Per USFWS protocol, bat habitat surveys can be conducted year-round, and ECGR bat habitat surveys were conducted during the pedestrian surveys time period listed above.

GIS Analysis

Geographic Information Systems (GIS) desktop analysis was conducted to determine the proportion of habitat types within the proposed project area. The most current publicly available data sources used for the GIS analysis include NAIP imagery, USGS LiDAR elevation data, and Environmental Systems Research Institute (ESRI) Web Mapping products and data sources (e.g., ArcPro, etc.). In addition, field survey GPS data were collected to ground-truth habitats.

The proposed action area contains both fragmented forests and large tracts of intact forested areas connected to riparian forests and adjacent forest parcels. Where possible, GTC plans to locate portions of the proposed action adjacent to maintained road ROW thus not opening new corridors within existing wooded tracts. In areas where co-locating adjacent to existing roadways is not possible, the proposed transmission line will bisect mixed pine-hardwood forested areas, including forested riparian areas.

Evidence of suitable summer bat roost habitat was observed during field surveys within mature forested areas and/or culverts within the proposed actions area. GTC is committed to avoiding and minimizing potential impacts to TCB to the maximum extent practicable; therefore, culverts equal to or greater than 36 inches in diameter and 25 feet or longer, as well as not consisting of corrugated metal pipe (CMP), will be surveyed prior to removal/replacement. At present, GTC plans to replace or extend at least one culvert within that size category, and additional culverts could be added by final design. The final number of culverts to be surveyed will be given to USFWS prior to conducting construction activities in these areas.

3.3 Jurisdictional Waters

Ecological field studies identified 99 perennial streams, 51 intermittent streams, 28 ephemeral streams, 94 wetlands (forested, emergent, and scrub-shrub), and 11 open water features within the proposed project area (Appendix B). Perennial streams, intermittent streams, wetlands, and open water areas are important for TCB because they provide refuge for the vast majority of the prey base for TCB (invertebrate insects).

The proposed project includes the construction and/or modification of approximately 23 access crossings throughout the action area. Many of these access crossings were previously established but may need to be updated. As the majority of the project consists of new transmission line alignment, new access crossings will also be needed. Should impacts to federal and/or state-protected resources occur (i.e., U.S. Army Corps of Engineers Section 404 and/or GDNR State Protected Buffers), appropriate agency coordination will be conducted.

4.0 Project Details

4.1 Construction

As of October 2023, GTC owns and operates approximately 3,966 miles of transmission lines (TL), over 779 substations (SS), and approximately 400 miles of fiber optic telecommunications throughout the state of Georgia. GTC generally builds 10 to 40 miles of new TLs and 5 to 10 SSs per year. GTC carefully inspects and maintains 3,966 miles of power lines, all in an effort to provide safe and reliable power to our customers at reasonable rates.

Right-of-Way (ROW) Acquisition and Clearing

The vast majority of the GTC transmission system is located on property not owned by GTC but is managed under easement agreements. Easement agreements limit activities by landowners that may impede access to TLs/structures for maintenance or repairs. GTC has the right under most easement documents to clear ROWs and keep them clear of trees (including danger trees), brush, buildings, structures and fire hazards. These rights were acquired to allow for construction, operation, maintenance, and rebuilding of TLs. On average, GTC removes one (1) danger tree per mile therefore approximately 3,966 per year.

GTC TL ROWs are approximately 25 ft. on roadside sections and then range from 75- to 150-ft-wide on cross country lines. ROWs for multiple TLs are generally wider. In instances where a GTC TL is located near a property line, a portion of the width of the ROW may be on adjacent property. Existing TL structures are usually, but not always, located at the center of the ROW.

A ROW utilizes an easement that is designated for a TL and associated assets. The easement requires vegetation maintenance to avoid contact with conductors, risk of fires, and other accidents. The ROW provides a safety margin between high-voltage conductors and surrounding structures and vegetation. ROW widths vary based on voltage of the TL to be installed within the ROW corridor.

Because of the need to maintain adequate clearance between tall vegetation and TL conductors as well as to provide access for construction equipment, most trees and shrubs initially are removed from the entire width of new ROW. Equipment used during ROW clearing can include chain saws, skidders, bulldozers, tractors, KG blades, and/or low ground-pressure feller bunchers. Marketable timber is salvaged where feasible. Otherwise, woody debris and other vegetation would be piled and burned, shredded, or taken off site. In some instances, vegetation may be windrowed along the edge of the ROW to serve as sediment barriers. Cut vegetation can also be shredded and spread to stabilize disturbed areas on the ROW. The shredded material is incorporated into the project plan along with other BMPs to achieve immediate stabilization.

Vegetation removal in stream, stream buffers (or streambank managements zones – SMZ), and wetlands is restricted to trees that are or will be tall enough to interfere with conductors. Clearing in these areas is accomplished using hand-held equipment or remote-handling equipment, such as a feller buncher or load distributing mats to avoid/minimize ground disturbance.

Stabilization measures such as seeding and applying shredded material are implemented during the clearing and construction phases. Once clearing and construction is complete the ROW is stabilized. Erosion and sedimentation controls remain in place until final stabilization is achieved.

Access Roads

Both permanent and temporary access roads are needed to allow vehicular access to each structure and other points along the ROW. Typically access roads used for TLs are located on the ROW wherever possible. They are also designed to avoid severe slope conditions and to minimize stream and wetland crossings. Access roads typically are surfaced with dirt or gravel. Culverts and other drainage devices, fences, and gates are installed as necessary. Culverts, above or at-grade rock crossings, or bridges may be installed for permanent access for future maintenance. For the ECGR transmission lines, GTC has identified off ROW access in several areas. Generally, these consist of existing dirt roads that may need minor improvements to provide access during construction and for long-term maintenance. Limited side trimming may be required along these off-ROW access roads; however, large scale tree removal is not anticipated for these areas. The location of proposed off-ROW access roads are shown on the environmental survey figures in Appendix B.

Construction Assembly/Laydown Area Selection

A construction assembly area (or laydown area) typically is required for worker assembly, vehicle parking, and material storage. This area may be on existing SS property or leased by the GTC contractor from a private landowner for the duration of construction period. Selection criteria used for locating potential laydown areas include an area typically five acres in size that is relatively flat, well drained, cleared, graveled and fenced. It should also be located near the transmission facility, adjacent to an existing paved road and have wide access points with appropriate culverts. It must be sufficiently distant from streams, wetlands, or sensitive environmental features.

These areas can also accommodate the placement of trailers used for material storage and/or offices. Following completion of construction activities, all trailers, unused materials, and construction debris are removed from the site. All exposed areas are stabilized prior to demobilization from the site.

Structures and Conductors

Types of TL structures used vary depending on voltage of the line as well as terrain and surrounding land use. GTC utilizes a variety of structures including, but not limited to, single-, double-, and three-pole structures made of steel, concrete and occasionally wood as well as lattice-steel towers. Shield wire, either overhead ground wire (OHGW) or optical ground wire (OPGW), is installed at the top of each TL structure, spanning between each TL structure.

Poles at angles (i.e., angle points) on the TL may require supporting anchored guys. Some angle structures, as well as structures at road crossings requiring additional clearance, may be self-supporting poles or double steel-pole structures. Most poles are directly embedded in holes augured into the ground to a depth equal to 10 percent of the pole's length plus an additional two (2) ft. Holes normally are backfilled with excavated material, but in some cases gravel or a concrete-and-gravel mixture is used. Casings or slurries may be used to stabilize holes while being excavated. Slurries may also be used to keep a concrete foundation hole open.

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

Substations and Telecommunications

Substation construction activities include clearing vegetation on the site, the removal of topsoil, and grading the property in accordance with GTC Clearing and Grading Specifications. Equipment used during clearing is similar to TL construction and includes chain saws, skidders, bulldozers, tractors, and/or low ground-pressure feller bunchers.

Cut vegetation and woody debris may be piled and burned, shredded, or taken off site. Prior to burning, GTC will obtain any necessary permits. In some instances, shredded vegetation may be windrowed along the edge of the project complement other sediment barriers (e.g. silt fence).

The topography of the site will dictate the extent of grading operations, but typically a site is leveled through a cut and fill process to help achieve a design elevation. Areas of the site that are too high (sloped) will be "cut" down and other areas that are too low require "fill". The goal is to "balance" cuts and fills to the maximum extent which minimizes the need to haul material from the site or "borrow" material from another location. Silt fences, site drainage structures, and any necessary detention pond(s) are installed during construction. These detention ponds also serve as secondary containment for Spill Prevention, Control and Countermeasure (SPCC) purposes. The SS yard is then covered with crushed stone and enclosed with chain link fencing. The site will be provided with a permanent access road to facilitate ingress/egress, typically linked to a nearby existing public road.

After clearing and grading are complete, disturbed/bare areas on the property are covered (and therefore stabilized) by permanent materials such as gravel, structures foundations, or pavement. Vegetation is established on all areas not covered by permanent materials to achieve "final stabilization" as defined in Georgia's National Pollutant Discharge Elimination System Permit (NPDES) for Construction Related Storm Water. Erosion and sediment controls remain in place until NPDES final stabilization is achieved.

Vegetation Management

GTC takes an integrated vegetation management approach based on a carefully planned, multidimensional strategy developed in consultation with forestry and habitat experts.

Integrated vegetation management (IVM) aims to improve safety and prevent power outages by creating healthy and self-sustaining ecosystems in ROWs while ensuring compliance with regulatory standards (NERC FAC-003). These ecosystems foster beneficial, attractive, and low-maintenance landscapes where tall trees won't grow and encourage more benign forms of vegetation to thrive. IVM encourages early successional native vegetation. This type of vegetation typically poses less of a threat to power reliability yet offers safe havens for desirable plants and animals. By combining selective use of herbicides with mechanical removal, IVM can more thoroughly eradicate problem vegetation and allow more compatible species to fill in therefore making it harder for tall-growing trees to reestablish.

Herbicides are selectively applied in areas where woody vegetation is occurring on the ROW. Mechanical removal is used where herbicide application is not practical. Non-Restricted Use herbicides are selectively applied from the ground with backpack sprayers or vehicle-mounted sprayers. Any herbicides used are applied in accordance with applicable state and federal laws and regulations. Only herbicides registered

with the USEPA are used. Herbicides currently used by GTC in ROW management include Milestone, Garlon 3A, Vastland, Escort, Rodeo and Powerline. These may change over time as new herbicides are developed or new information on presently approved herbicides becomes available.

When trees or branches get too close to high-voltage TLs, electricity can arc through the air like a lightning bolt, seeking the nearest path to ground. When that path is a tree, it can short out the line, severely damage or destroy nearby property and structures, and present a risk to public safety. Trees or branches don't have to touch the lines for this to happen. At extremely high voltages, electricity can flashover through the air to any branch or tree that is too close. Contact and flashovers can occur when a tree or branch grows too close to or into a line or falls or blows onto a line. Contact and flashovers can also occur due to weather related conductor sag (temperature or weight) or by conductor sway (wind).

Almost all easement documents give GTC the right to remove danger trees for protection of the TL. Danger trees are defined as any dead, dying, diseased or leaning tree that could contact GTC facilities should it fall. Under most easement documents GTC also has the permanent right to remove any portion of a tree that is located outside the ROW, but extends over the ROW, regardless of height of the tree.

Vegetation maintenance within TL ROWs is conducted on seven-year rotation based on data that is acquired by various inspection methods.

Existing access roads are commonly employed for maintenance activities. A small percentage must be improved for appropriate and safe access. It is uncommon for GTC to build, construct or create new vehicular access for vegetation maintenance activities.

Maintenance of Transmission Infrastructure

Periodic inspections of TLs are performed by ground or aerial surveillance. Foot patrols typically use 4X4 pickups, bucket trucks, and utility task vehicles (UTV). Inspections are also conducted by climbing or the use of unmanned aircraft systems (UAS) to locate damaged conductors, insulators, or structures, and to discover any abnormal conditions that might hamper normal operation of the line or adversely affect the surrounding area. During these inspections, the condition of vegetation within and immediately adjoining the ROW is noted. These observations are then used to plan for corrective maintenance and routine vegetation management.

TL structures and other components typically last several decades. In the event a structure needs to be replaced, the structure typically is lifted out of the ground by boom truck or cranes, and the replacement structure is inserted into the same hole or an adjacent hole. Access to the structures would be via existing roads. Depending on the type of equipment needed to conduct maintenance of transmission

infrastructure, improvements to existing access roads may be needed. Access improvement may include the placement of gravel, installation of a culvert, and vegetation removal for equipment clearance.

Replacement of structures may require leveling the area surrounding replaced structures, but additional area disturbance would be minor compared to initial installation of the structure.

TL Retirement and Demolition

The decision to retire and demolish a TL may be based on integrity of the line, integrity of pole structures supporting the line, potential for outages and safety hazards, or that the TL is no longer needed. Retirement and demolition of TLs involve removal of structures and line hardware. Existing access roads typically are utilized to conduct the work. Structures in cultivated fields are removed. Other structures may be cut off above grade.

Post-Project Site Restoration

Upon completion of construction activities, disturbed pervious areas would be re-vegetated with non-invasive species.

Project Timeline and Sequencing

The proposed project is estimated to take a total of 30 months. For the protection of TCB, where and when practicable, tree clearing will be restricted during construction of each project following the schedule in Table 7.

Table 7. Proposed Tree Clearing Schedule for ECGR

ECGR Project	Proposed Tree Clearing	Project Area	Tree Clearing Area
Bethabara – East Walton	7/28-2025-4/24/2026	73.01 ac	40.56 ac
East Walton – Jacks Creek	7/28/2025-11/28/2025	41.29 ac	29.18 ac
East Walton – Rockville (Vacant transmission line ROW in Putnam County)	5/15/2025-7/15/2025	263.92 ac	104.40 ac
Bostwick – East Walton East Walton - Rockville	7/16/2025-4/30/2026	695.44 ac	510.03 ac
Bostwick SS	3/30/2026-4/30/2026	27.54 ac	13.49 ac
Jacks Creek SS	3/30/2026-4/30/2026	17.80 ac	9.24 ac
East Walton SS	7/16/2025-9/30/2025	57.25 ac	57.25 ac
Rockville SS (GPC Sponsored Projects)	TBD	29.41 ac	26.93 ac

As currently planned, no clearing would take place within habitats of concern during the May 1 to July 15 pupping season and December 15 to February 15 winter hibernation period. For a project of this size and complexity, there is the potential for schedule changes due to factors beyond GTC's control. Should unexpected changes require clearing of habitats of concern during the recommended non-clearing periods, GTC would coordinate with the USFWS as needed for those select areas.

4.2 Operations

Where the proposed project is adjacent to active traffic corridors, traffic would be maintained within the project area during construction. No traffic reroutes proposed.

4.3 Maintenance

The transmission line easements would be maintained by mowing and/or herbicide treatment once post-project site restoration has been completed. Infrastructure (i.e., overhead powerlines, poles, facilities, access roads, etc.) would be maintained as necessary.

5.0 Project Action Area

The action area is defined as "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action" (50 CFR 402.02). The analysis of species or designated critical habitat likely to be affected by the proposed action is focused on impacts within the project's action area.

5.1 Limits of Action Area

The action area includes all areas within a 1.5-mile radius of the required ROW as this is considered the foraging range for TCB (Carter et al. 2003) (Figure 6.00). The action area considered in this analysis encompasses approximately 132,269 acres (207 square miles).

The 2023 and 2024 pedestrian field surveys included a bat habitat assessment throughout the proposed project area. The limits of the action area include mixed pine-hardwood forests, active agricultural land, maintained open fields, residential communities, transportation ROWs, and commercial/industrial lots. The forested areas within the action area are considered suitable habitat for TCB. The previously abandoned Georgia Power ROW that will be utilized in Putnam County is not considered TCB habitat based on coordination with the USFWS (Figure 7.00).

6.0 Effects Analysis of Proposed Action

6.1 Direct Effects

Potential roosting, foraging, and travel corridor habitat is present within the action area. No swarming areas or hibernacula have been identified within the action area or within any of the counties within which the proposed project is located. The proposed action will result in the direct loss of approximately 791.08 acres of mixed pine/hardwood forest that is suitable roosting habitat for TCB. As shown in Table 8 below, approximately 177.03 acres or 22.4-percent of this clearing, will occur adjacent to existing corridors, which avoids bisecting intact forest areas. Given the fact that the forested areas will be converted to maintained open linear corridors adjacent to many other forested areas, it is not anticipated that the proposed action will permanently affect foraging habitat. As currently proposed, no tree clearing will occur within identified TCB USFWS recommended restricted periods with the exception of the vacant transmission line ROW in Putnam County. No nighttime construction activities are included in the proposed action; however, temporary and permanent lighting would be installed in and around equipment staging areas (temporary lighting) as well as within and around substation facilities (permanent lighting). Lighting would be positioned such that the focus of the light beams would be downward to avoid impacting bat behavior during flight.

Summer Habitat

The proposed project area travels through a mosaic of habitats. The mixed pine-hardwood forest habitat represents potential roosting habitat for the TCB. The loss of trees removes potential roosting habitat as well as protective cover that bats use as foraging and travel corridors to roosting areas. TCB also use forest edges to travel and migrate between fall swarming and spring staging areas, hibernacula, and summer habitat. The proposed project will remove vegetation along a linear footprint ranging approximately 47 miles and widen the gap between potential roosting areas located in large forest areas surrounding the project area. The gap created could change commuting routes, potentially causing the bats to lose roosts and fly longer distances between winter and summer habitats. Table 8 shows the categories of forested habitats proposed for clearing within the ECGRP footprint.

Table 8. Proposed Tree Clearing for ECGRP by Forest Type

Type	Total Acres	Percent
Corridor Adjacent	177.03	22.4
Early Successional	104.4	13.2

Large Forest Patch	509.65	64.4

Winter Habitat

The proposed project is approximately 20 miles east of Cedar Shoals Cave, the closest documented cave. There are no known caves located within the proposed project area. Per communication with USFWS (L. Pattavina), there are known TCB culvert roosts along the I-20 corridor that intersect with the proposed project. No proposed construction would occur to those culverts, and any culverts meeting or exceeding 36 inches in diameter and longer than 25 feet located within the proposed project area would require a winter survey to be conducted if they are proposed for replacement.

General Disturbance

Potential impacts from construction activities associated with the proposed action could directly or indirectly affect any roosting bats within or in close proximity of the project area. Such disturbance may cause dispersion of roosting individuals and abandonment of non-volant pups. These impacts would include stress, metabolic change, behavioral changes, displacement and potential abandonment of pups, and possible death. USFWS protocols are in place to prohibit construction activities within 2 miles of a known roost if documented. While no roosts were documented during the 2023 and 2024 field habitat surveys, USFWS reported known occurrences of TCB utilizing culverts for winter roosts along the I-20 corridor in Morgan County. No disturbance is proposed for these culverts; therefore, no negative effects from general disturbance are expected for the TCB for existing known winter roosts.

With the replacement, installation, and/or modification of access roads with stream crossings, there is potential for negative impacts, directly or indirectly, for macroinvertebrates (bat prey base) within foraging corridors. These impacts may include: increased sediment loads that lower water quality thus displacing or killing aquatic insect populations, falling debris or rubble, vegetation removal increasing predator opportunities on bats, widening openings to forest edges and decreasing bat travel. While some clearing of stream vegetation can be good for bats because it provides an easier commuting corridor, clearing too much can create an open space where the bats will not forage, ultimately reducing foraging habitat. It can reduce the amount of available organic matter in addition to decreasing the strength of the buffer that helps to filter out sediment, pollutants, and harmful nutrients from agriculture (Jones *et al*. 1999). Aquatic insect species feed off of this organic matter as well as the fungus off of rocks.

Fall Swarming, Spring Staging, and Migration Impacts

There are no known roost caves located within or near the proposed project area. According to the Georgia Speleological GIS database, there is one documented cave located approximately 20 miles west of the project area; however, this cave is not recognized by the GDNR or USFWS as a bat roost site.

Although this cave may not be used for hibernating, it may be used for fall swarming and spring staging or temporarily for roosting during migration. Bats will make several stops at multiple hibernacula during fall swarming period (USFWS 2007). During fall swarming, male bats will roost in trees in close proximity of a cave entrance. In addition, forested areas around caves are important for bats during these transition periods.

GDNR reported that there are no known hibernacula within five miles of the proposed project area; however, per communication with USFWS (L. Pattavina), TCB culvert roosts have been identified along the I-20 corridor. Construction activities are far enough away that no negative effects are expected. No additional restrictions for construction activities are proposed during swarming/staging periods.

Noise-Related Impacts to Biological Resources

GTC conducts blasting in areas where bedrock prevents any other type of construction activity. This activity results in intense vibrations and increased decibel ratings compared to baseline conditions (no blasting). Blasting in or around TCB roosting areas could have negative effects on health and/or survival of individuals and potentially entire maternity roosting colonies.

A study, *Effects of Noise on Wildlife and Other Animals*, conducted by the U.S. Environmental Protection Agency (USEPA) in 1971 indicated that there were no discernible effects to mammals and other animal species from noise sources less than 70 decibels (dBA) (USEPA 1971). There are no applicable county, state, or federal regulations or ordinances concerning noise generation that apply directly to the proposed action. Potential impacts from noise, as generated by construction of the proposed action, could directly or indirectly affect any bat species roosting within or in close proximity of the project action.

Noise disturbance for roosting bats may cause dispersion or relocation of individuals or populations of species using the project site or adjacent lands. Direct impacts from noise would include stress, metabolic change, and behavioral changes. Secondary impacts from noise would include change in predator-prey relationships, migration/dispersion, and loss of habitat. TCB are nocturnal foragers using echolocation to locate and secure prey items. Construction activities at night may impair bats' ability to find and catch prey, causing them to vacate foraging areas within their home range that are along the project area. As currently proposed, no nighttime construction would occur.

6.2 Indirect Effects

Indirect effects are those that would affect individuals or habitat for the TCB later in time. The overall purpose of the project is to upgrade the ITS to support existing loads including stresses placed on the system by a substantial increase in solar generation. Generally, the project is in a rural area of Georgia and is not expected to substantially promote new development; however, there is the potential that improvements in the system may support future industrial, commercial, and residential growth in the area. Increased growth in the area could lead to increased loss of roosting and foraging habitat as well as increased risk of collisions with motor vehicles by foraging bats.

Should additional development occur in the area, this could reduce and fragment tracts of forest and create gaps between riparian corridors used for foraging and potential roosting habitat. Over time, reduction and fragmentation of potential roosting habitat, increased gaps between roosting and foraging habitat, along with increased traffic, light, noise, and human disturbances may cause bats to avoid areas that were previously suitable for foraging and/or roosting or disperse from areas all together.

Altered Predator – Prey Relationships

There is the potential of additional forest clearing due to secondary development. The removal of vegetative cover within the proposed project area could take out potential roost trees and reduce vegetative cover that bats use as protection from predators while foraging. Removing vegetation creates a larger void for bats to cross in the open and may increase their vulnerability to predators. In addition, an increase in vegetation removal may eliminate natural sinks and barriers that help to filter and lessen storm water flows into waterways. Without the vegetative barriers and with an increase in non-porous structures like roadways, sidewalks, and driveways, storm runoff and the accompanied silt could negatively affect aquatic insect populations.

Bats are nocturnal insectivores that depend on riparian (streams, lakes, water impoundments, etc.) habitats that support and produce their insect prey. Bats spend a considerable amount of time foraging over and through riparian corridors, and foraging and commuting activity is typically higher in these areas. Aquatic habitats play a key role in bat habitat ecology as a source of water as well as insect prey (Lacki and Hayes, 2007). Insect orders consisting of Lepidoptera, Trichoptera, Coleoptera, and Diptera contribute to most of the diet for the TCB. Many species from these orders are associated at some time in their life cycle with water when they later disperse as adults at different times in a season. Riparian areas provide a steady prey base for predators like bats. The TCB feed on aquatic insects like caddisflies and mayflies (NatureServe 2014). During periodic insect blooms, bats will fill riparian corridors and riparian forest edges in a feeding frenzy. One of the highest sediment load areas for streams is where roads border or cross streams (Wiitala 2013). Macroinvertebrates like the Trichopterans, prefer clean, sediment free, cobbled

streams. Increased sediment loads can alter water temperatures and pH balances in streams creating an imbalance that may become inhospitable habitat for these macroinvertebrates (Wiitala 2013). The majority of the stream within the project area are silt/sand substrate dominated systems.

A large number of bat species and individuals move along stream corridors each night. With the open fields and mature forest that border the riparian corridors within and around the proposed project area, these areas are considered suitable foraging and commuting habitat for the TCB. In addition, wetlands along the proposed project area are considered breeding grounds for prey and in some instances provide high quality foraging areas for all bats. USFWS stresses that it is imperative for BMPs for water quality control to be in place for all streams, creeks, and riparian corridors associated with the action area.

Alterations or removal of vegetation along the stream and forest edges associated with the access roads and culvert placement or replacement can create open areas that bats will avoid due to increased predation risk. Within the proposed project area there are 99 perennial streams and 51 intermittent streams, many of which flow through forested patches with suitable roosting potential. These riparian corridors create a network of foraging and travel corridors that bats will use to travel to annual roosting sites and as migration routes in the spring and fall to winter hibernacula. Removing large sections of vegetation along such travel corridors may change the foraging corridor enough to lessen the availability of the prey and the success rate of prey capture for bats. Bats will avoid large open areas due to increased bat predator opportunities.

Long-term Habitat Alteration

Impacts to forested areas that may support roosting and foraging habitat for the TCB total approximately 791.08 acres of tree clearing (including corridor adjacent forests, early successional forests, and trees associated with large forest patches) throughout the proposed project area. Although bats are a mobile species and would likely shift to other nearby foraging areas, especially during construction activities, the removal of suitable roosting habitat has a long-term effect. The widened gap created by the removal of forested areas could create openings that TCB typically refrain from crossing, thus reducing foraging and commuting opportunities.

Due to the potential for increased sediment loads from storm water runoff into streams, creeks, and rivers within the proposed action area, the disruption of prey items for bats, and the potential alteration or removal of vegetation along the stream banks, the proposed action may decrease suitable foraging habitat and foraging success (Lacki *et al*. 2007). Bats could need to travel greater distances between roosting sites and quality foraging areas. This can cause a greater risk for young to be left alone at the roost tree for longer periods and may create a need for the bat to vacate the area altogether. In addition,

the reduction and fragmentation of forest will increase the amount of edge habitats where disturbance and predation predators may increase bat mortality.

6.3 Interrelated and Interdependent Actions and Activities

Interdependent or interrelated actions within the proposed area would include the increase in density of access roads to allow construction and/or future maintenance of the transmission line and substation sites. Access roads would not otherwise be warranted in this area but for the proposed action. Access roads have the potential to increase sedimentation in nearby waterways and increase tree clearing in forested areas. Where practicable, GTC will utilize existing access roads and make minor improvements if/when necessary, which will significantly reduce the need for off-ROW clearing and overall ground disturbance.

6.4 Cumulative Effects

Cumulative effects are effects of future activities, whether publicly or privately funded, that are reasonably certain to occur within the action area. Cumulative effects in the action area conducted by GTC include the construction and/or maintenance of any existing or future transmission line and/or substation facilities. Additional tree clearing for maintenance of existing infrastructure and/or development of future projects could impact roosting and foraging habitat for TCB. In addition, the future commercial, industrial, and/or residential development of the proposed project area could increase the demand for power and thus require the addition of future power generation and/or distribution infrastructure; therefore, additional habitat alterations could occur. There are no known large construction or planned development activities located within or near the proposed project area that are directly or indirectly associated with the overall project purpose and need; however, there has been an increase in development along transportation corridors within this region of Georgia. Additional construction projects located near the proposed project could result in increased stress imposed upon TCB in the area.

Future growth (secondary growth) as well as increased traffic could be possible as a result of the proposed project, which could spur future rezoning and land use changes; however, it should be noted that the primary objective of the proposed project is to upgrade the electrical system to replacing aging infrastructure and to better meet the current power demands in the project area and not to increase capacity for future growth and development. Cumulative effects of the proposed project on TCB are expected to be minimal.

7.0 Conservation Measures

GTC is committed to environmental stewardship including identifying opportunities to avoid and minimize environmental impacts while meeting project purpose and need. Conservation measures proposed by GTC are designed to avoid and minimize impacts of the proposed action on the TCB. While the conservation measures listed in the subsections below contribute to the avoidance and minimization of adverse effects to the TCB, these measures do not necessarily eliminate all adverse effects that may result from the proposed action.

It should be noted that an extensive alternatives analysis has been conducted for each transmission line route and substation site (Appendix A). This effort included a multi-scale evaluation incorporating a wide variety of datasets which were combined in a GIS environment to create spatially explicit suitability outcomes representing the preferred locations to site transmission lines and/or substation sites. Data inputs used for the analysis include: NLCD Landcover, USFWS National Wetlands Inventory (NWI), Airports, Terrain, Hydrology, Floodplains, Sensitive Resources, Recreational Resources, and National Register of Historical Places (NHRP) Archaeological and Historical structures/sites. In addition, multiple public hearings were also held in order to allow local and neighboring communities to share input and feedback regarding the proposed project. The outcome of the alternative analysis resulted in a preferred project footprint that achieved:

- Majority of route crossing rural portion of the counties in areas with a lower density of residences
- Avoidance of conservation lands
- Route would not require relocation of any families
- Minimal adverse effects to cultural resources
- Overall least environmental and community impacts

7.1 Minimization of Impacts to Forest Habitats

Forest Impacts in the action area will be minimized to the maximum extent practicable. Prior to any tree removal, the limits of proposed clearing will be clearly demarcated to prevent over-clearing. Efforts will be made by the contractor to prevent collateral damage to other trees outside the proposed area for clearing.

The width of the proposed transmission lines and associated clearing is dictated by North American Electric Reliability Corporation (NERC) design standards based on the rating for each transmission line. Relying on NERC standards, proposed clearing will not exceed minimum established requirements.

It should be noted that where possible, GTC has designed the proposed project to align with existing transmission line easements and/or adjacent to existing roadways in an effort to minimize tree clearing and to limit opening new disturbance corridors. GTC conducted a thorough alternatives analysis prior to selecting the proposed project area. The alternatives analysis resulted in the least environmentally damaging practicable alternative with respect to TCB. Primarily this is done by reducing the proposed impacts to only the areas that require clearing as well as reducing the size of each tree clearing event to as small as practicable. Co-locating transmission lines adjacent to roadways and utilizing vacant transmission lines (e.g., approximately 15-mile transmission line section in Putnam County associated with the East Walton – Rockville 500 kV) are other methods GTC has employed for avoiding and minimizing impacts to forests. Together these measures would reduce the loss of forest habitat compared to alternate project footprints.

Tree Clearing Restrictions

Tree clearing restrictions would be implemented to include sensitive times such as summer roosting, raising young, migration periods for the TCB. For the protection of potential commuting, foraging, and roosting habitat for both species, tree clearing would be restricted from during the summer pup season (May 1 – July 15) and/or the winter hibernation season (December 15 – February 15) depending on the location of the proposed tree clearing (Table 9) (Figure 7.00).

Table 9. Tree Clearing Restrictions by ECGR Project

ECGR Project	Proposed Clearing Schedule	Survey Area (acres)	Proposed Clearing (acres)	Tree Clearing Restriction
Bethabara – East Walton TL	7/28/2025-4/24/2026	133	40.56	Pup Season Winter Hibernation
East Walton – Jacks Creek TL	7/28/2025-11/28/2025	196	29.18	Pup Season Winter Hibernation
East Walton – Rockville (Vacant transmission line ROW in Putnam County)	5/15/2025-7/15/2025	263.92	104.40	None

ECGR Project	Proposed Clearing Schedule	Survey Area (acres)	Proposed Clearing (acres)	Tree Clearing Restriction
Bostwick – East Walton TL East Walton – Rockville TL**	7/16/2025-4/30/2026	695.44	510.03	Pup Season Winter Hibernation
Jacks Creek SS	3/30/2025-4/30/2025	17.80	9.24	Pup Season Winter Hibernation
Bostwick SS*	3/30/2026-4/30/2026	40	13.49	Pup Season Winter Hibernation
East Walton SS	7/16/2025-9/30/2025	77	57.25	Pup Season Winter Hibernation
Rockville SS** (GPC Sponsored Projects)	TBD	29.41	26.93	Pup Season Winter Hibernation

*TL – Transmission line; SS – Substation

**Per USFWS, 15-mile section (~103 acres) of East Walton – Rockville TL in Putnam County does not require tree clearing restrictions

As currently planned all tree clearing associated with the proposed action would be conducted outside of the tree clearing restriction timeframe with the exception of early successional tree growth within the vacant transmission line ROW in Putnam County. However, factors such as weather, material availability, and other factors could alter project schedules and require limited clearing during restricted periods. As a worst-case scenario contingency, GTC estimates that less than 10 percent of the proposed tree clearing could occur outside of their planned tree clearing schedule and inside of the tree clearing restriction timeframe. This means that at worst, approximately 90 percent (~712 acres) of all tree clearing would still completely avoid impacting roosting TCB within the proposed project area.

Minimize Land Disturbance Measures within Stream Buffers

For work proposed within stream buffers, GTC would utilize techniques entitled No Land Disturbance (NLD). The intent of this clearing method is to perform the required clearing activity without disturbing the root system or causing land disturbance. All underbrush and all trees shall be cut to a height of two inches above ground level. A variety of methods and equipment can be utilized by the contractor. These can include hand clearing equipment, normal clearing machinery, load distributing mats, and/or equipment with low ground pressure tracks and/or high flotation tires with less than 10 PSI distributed load under full operating load and hand equipment.

Access, outside of perpendicular stream and wetland crossings, must be consistent with methods that result in no land disturbance and include access with normal clearing machinery, access of the ROW by foot, access by normal clearing machinery on a cross laid road located along the centerline of the ROW. The location of this road is subject to field revision based on specific site conditions. This includes the construction of a temporary cut and cross laid road for the purpose of building a foundation for clearing activities. Material not suitable for cut and cross lay shall be removed as required. After the completion of clearing activities, the contractor shall remove the cross lay road and dispose of the timbers.

Access by normal clearing machinery is also allowed using mat platforms located anywhere within the ROW. This allows for clearing operations to be performed from prefabricated load distributing mats. The mats may be walked in or may be installed the full length required. After the completion of clearing activities, the contractor shall remove the mats.

GTC enforces no land disturbance associated with this clearing unit type through the establishment of performance criteria focused on avoiding soil disturbance. There is no allowable depth of soil disturbance within the limits of this clearing unit. If any clearing, disposal/removal, or construction operation results in a soil disturbance the activity shall be halted.

In areas where steep slopes are present within riparian zones, trees above two inches diameter at ground level shall be cut to zero inches at ground level. All underbrush and small trees shall be cut or mowed to a height of two inches above ground level. There are no restrictions placed on the type of equipment utilized. Cut material will be hauled off or removed to uplands.

7.2 Minimization of Impacts to Foraging Habitat and Travel Corridors

Habitat connectivity is an important landscape variable to the TCB; therefore, tree removals that could impact the connectivity of roost and/or foraging habitat on the landscape (e.g., forested riparian areas or forested hedgerows between two or more forested areas) will be limited to the maximum extent

practicable. While access road crossings are included in the proposed project, crossings are designed to be constructed as perpendicularly as possible. In addition, construction in riparian forested areas will include BMP measures to reduce siltation of nearby waterways (see below).

Storm Water Runoff

To ameliorate the effects of storm water runoff to receiving waters that support the prey base for the TCB, storm water infiltration should be a goal of 80 percent TSS for storm water filtration for all new impervious surfaces throughout the proposed project area. Permanent storm water management ponds will be constructed for the new substations and switching stations. These features will be appropriately sized and maintained to protect water resources.

A variety of water quality BMPs will be utilized in upland, riparian, and wetland areas to protect water quality resources. Project specific Erosion Sedimentation Pollution Control Plans will be prepared, implemented, monitored, and maintained in accordance with NPDES requirements.

Limiting Construction Noise and Use of Artificial Lights

Typically, night construction activities are rare. Areas of concern are the foraging corridors in and around perennial and intermittent streams as well as wetlands along the proposed project area. In addition, night construction activities near culverts along the I-20 corridor (known TCB roost locations) may disrupt roosting activity. Currently, no night construction is proposed for the project. Temporary lighting would be installed at laydown yards and permanent lighting will be installed at substations and switching stations.

Temporary and permanent lights will be directed away from forested areas and quality foraging areas and downward-facing, full cut-off lens lights will be utilized (Federal Highway Administration, *et. al* 2015). If construction activities are scheduled after sunset, such activities will be limited in and around high-quality foraging areas such as perennial and intermittent streams as it may be disruptive for foraging bats.

Though noise from operations would be perceptible to wildlife surrounding the project site, minimal direct effect for the TCB is expected. While there are no direct effects for the TCB, minor indirect effects, such as dispersion from the action area, may occur. Noise levels from construction equipment are not expected to exceed 85 dBA. Best available technology will be used during construction to maintain noise levels of operating equipment at or below 85 dBA measured at a distance of 3 feet from the source.

7.3 Avoidance of Impacts to Occupied Roosts

Culvert Surveys

There are no known roost trees located within the proposed project area; however, USFWS has identified culvert roosts used by TCB along the I-20 corridor. Because this area intersects the proposed project area, GTC will survey culverts equal to or greater than 36 inches in diameter and greater than 23 feet in length, as well as consisting of material other than CMP, for presence of roosting bats if they are proposed for replacement during the winter restricted clearing period. If bats are observed using culverts during these surveys, GTC will coordinate with USFWS and/or GDNR prior to conducting work in and around the area.

If required due to work during the winter restricted clearing period, culvert surveys would be conducted using the GDNR Bat Bridge Survey Data Sheet. Results of the survey, if required, will be submitted to USFWS and GDNR. Should bats be found in culverts proposed for replacement, further coordination would be conducted with the USFWS to determine the best course of action.

Blasting

Loud machinery would be used, but blasting operations would be kept to a minimum as a construction method choice within the proposed project area and only employed when absolutely necessary.

8.0 Effect Determinations

Based on the overall assessment of TCB and its habitat within the proposed project area, GTC is confident that they have offered all practicable avoidance and minimization measures such that the number of TCB to be taken as a result of the proposed action would be minimal. GTC acknowledges that even with the proposed avoidance and minimization measures in place, there is still risk for potential take of TCB within the proposed project area.

8.1 Effect Determinations for TCB

TCB have been documented using culvert roosts along the I-20 corridor and are assumed present during the summer pup season throughout the proposed project area. Mixed pine-hardwood forests along with forested riparian corridors are present throughout the proposed project area which is considered suitable roosting and foraging habitat for TCB. Efforts will be made to conduct tree clearing outside of the current TCB tree removal restrictive periods with the exception of the vacant transmission line ROW in Putnam County; however, some clearing may be required due to unforeseen circumstances. Due to the presence of suitable habitat for this species, the recommended biological determination would be *may affect, not likely to adversely affect*. Avoidance and minimization measures would be implemented to minimize harm or take for this species during construction.

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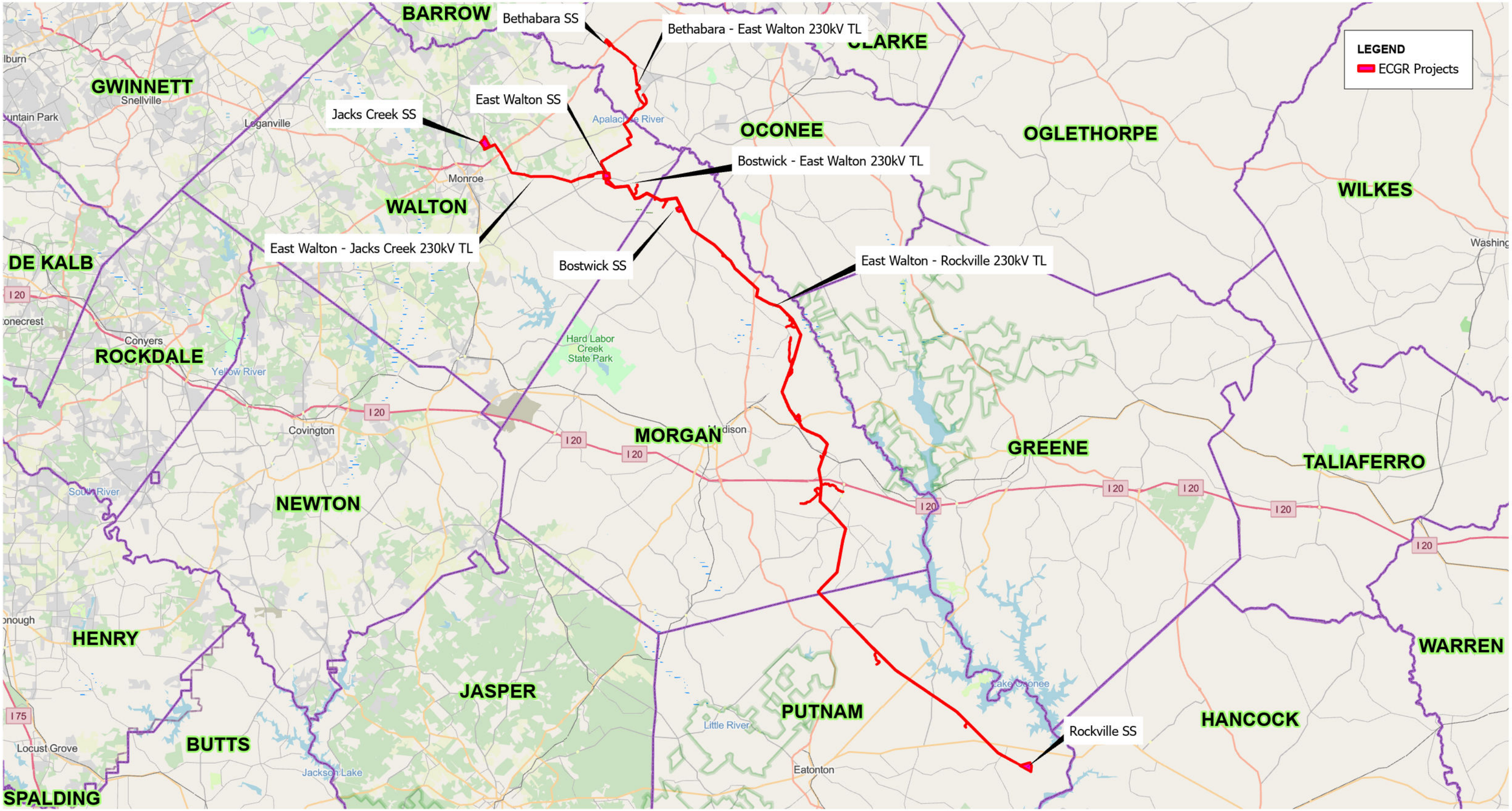


Ecological Solutions Inc.

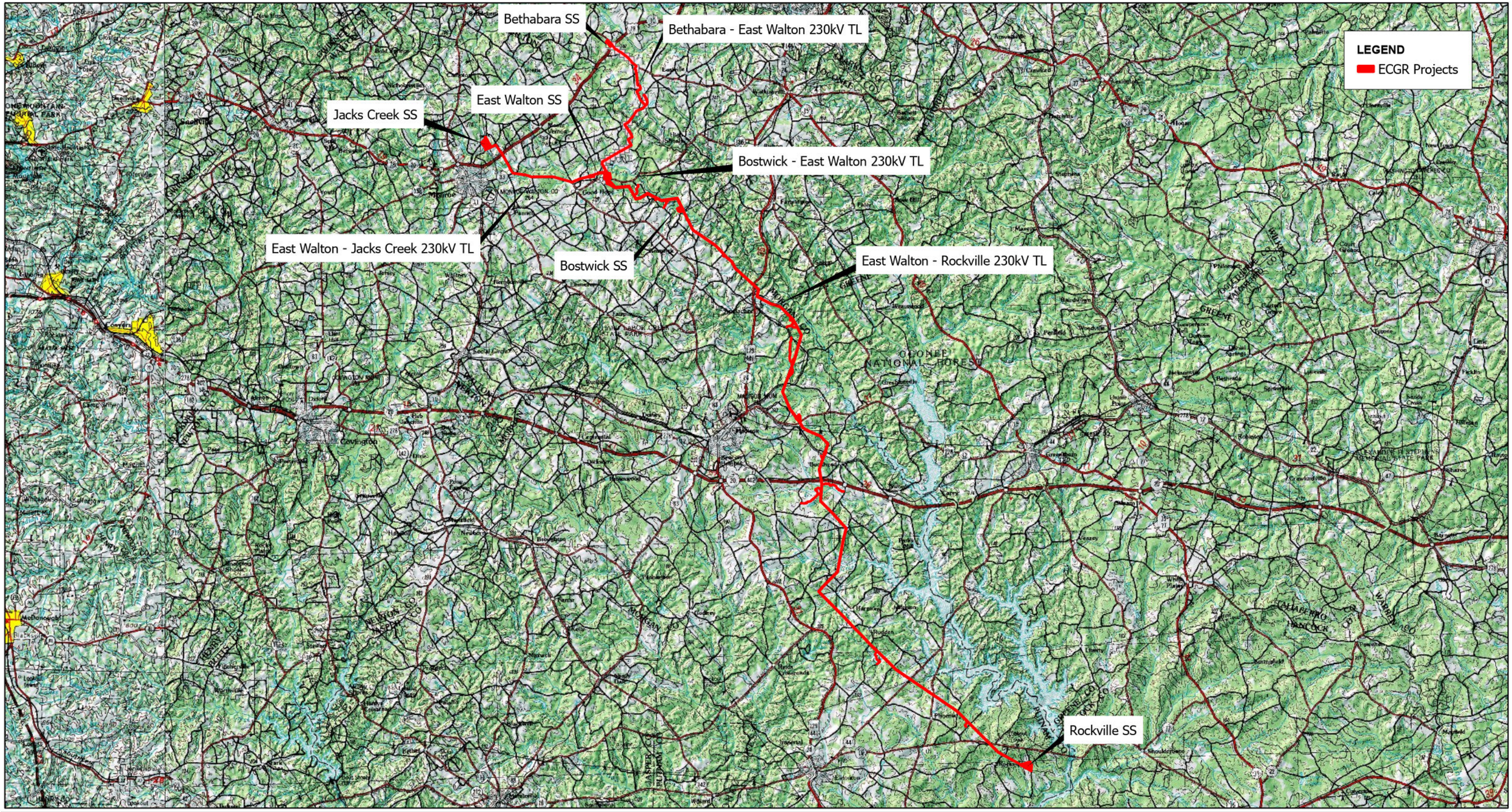
Georgia Transmission Corporation
East Central Georgia Reliability Project
Morgan, Oconee, Putnam, and Walton Counties, Georgia

Project Location Map

August 2024
20245-167

0 10 20 Miles

Figure 1.00



Ecological Solutions Inc.

N W E S

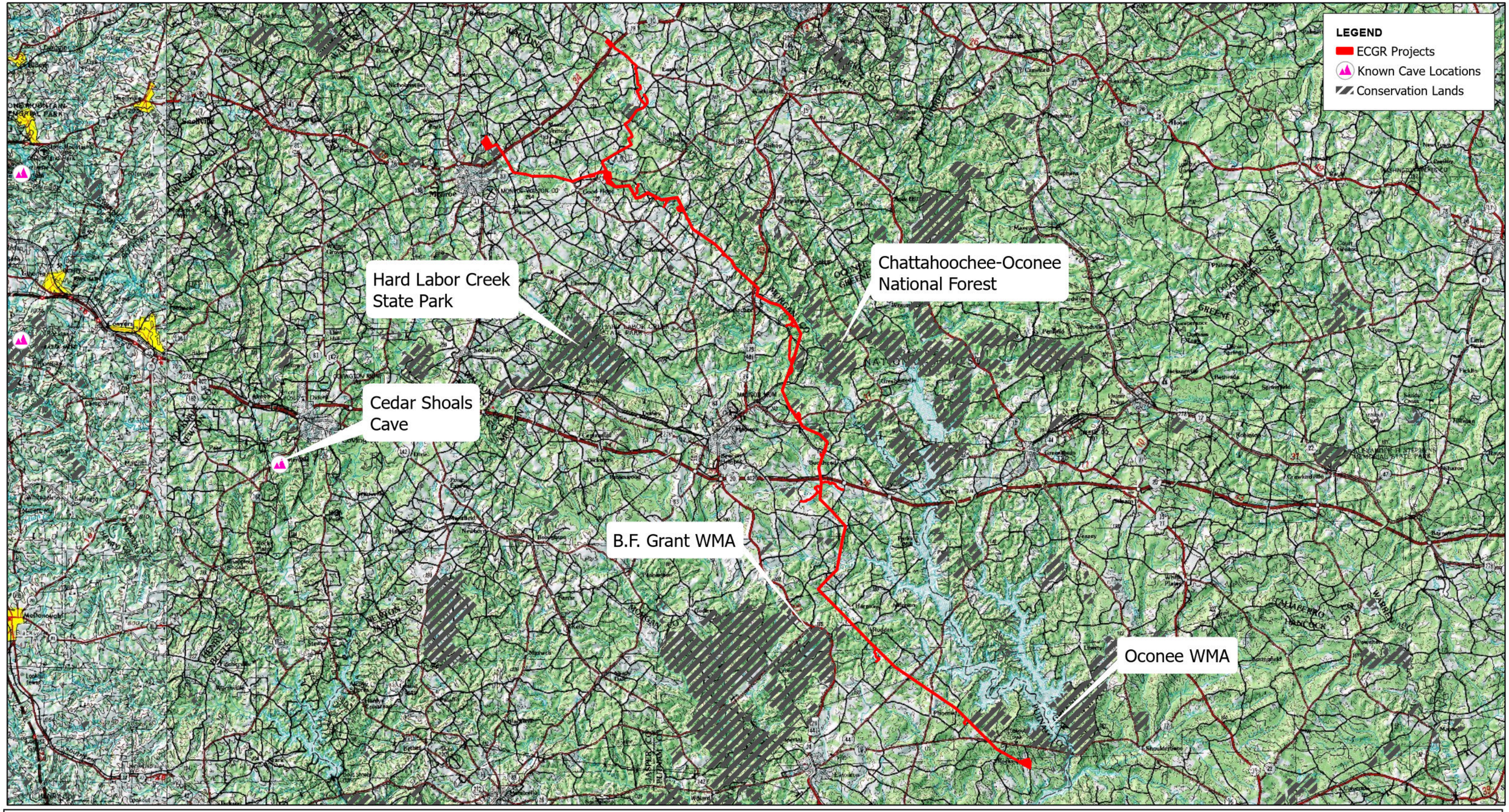
Georgia Transmission Corporation
East Central Georgia Reliability Project
Morgan, Oconee, Putnam, and Walton Counties, Georgia

Project Location Map
Topographic

August 2024
20245-167

0 10 20 Miles

Figure 2.00



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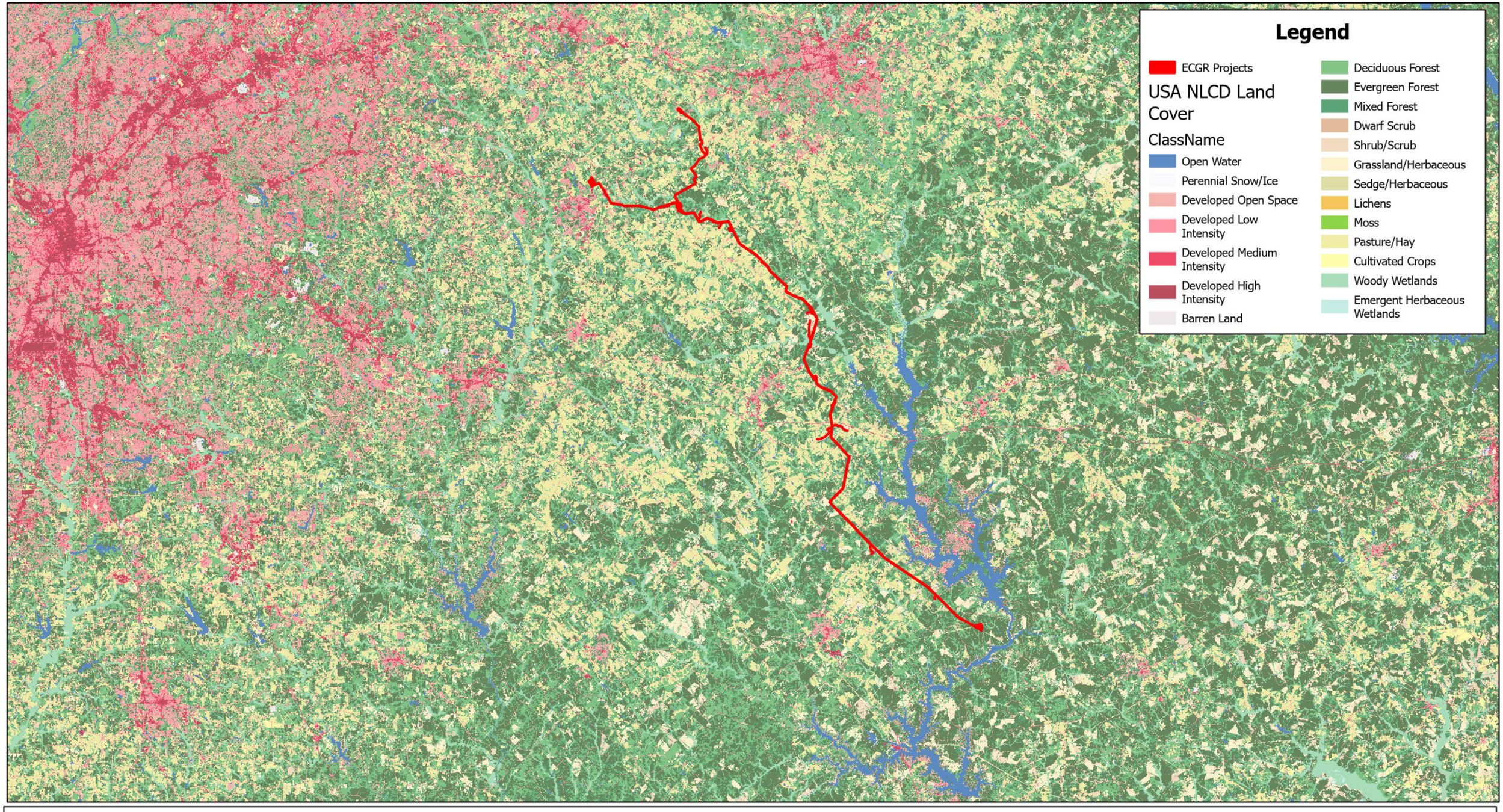
Georgia Transmission Corporation
East Central Georgia Reliability Project
Morgan, Oconee, Putnam, and Walton Counties, Georgia

August 2024
20245-167

0 10 20 Miles

Caves and Conservation Areas

Figure 3.00



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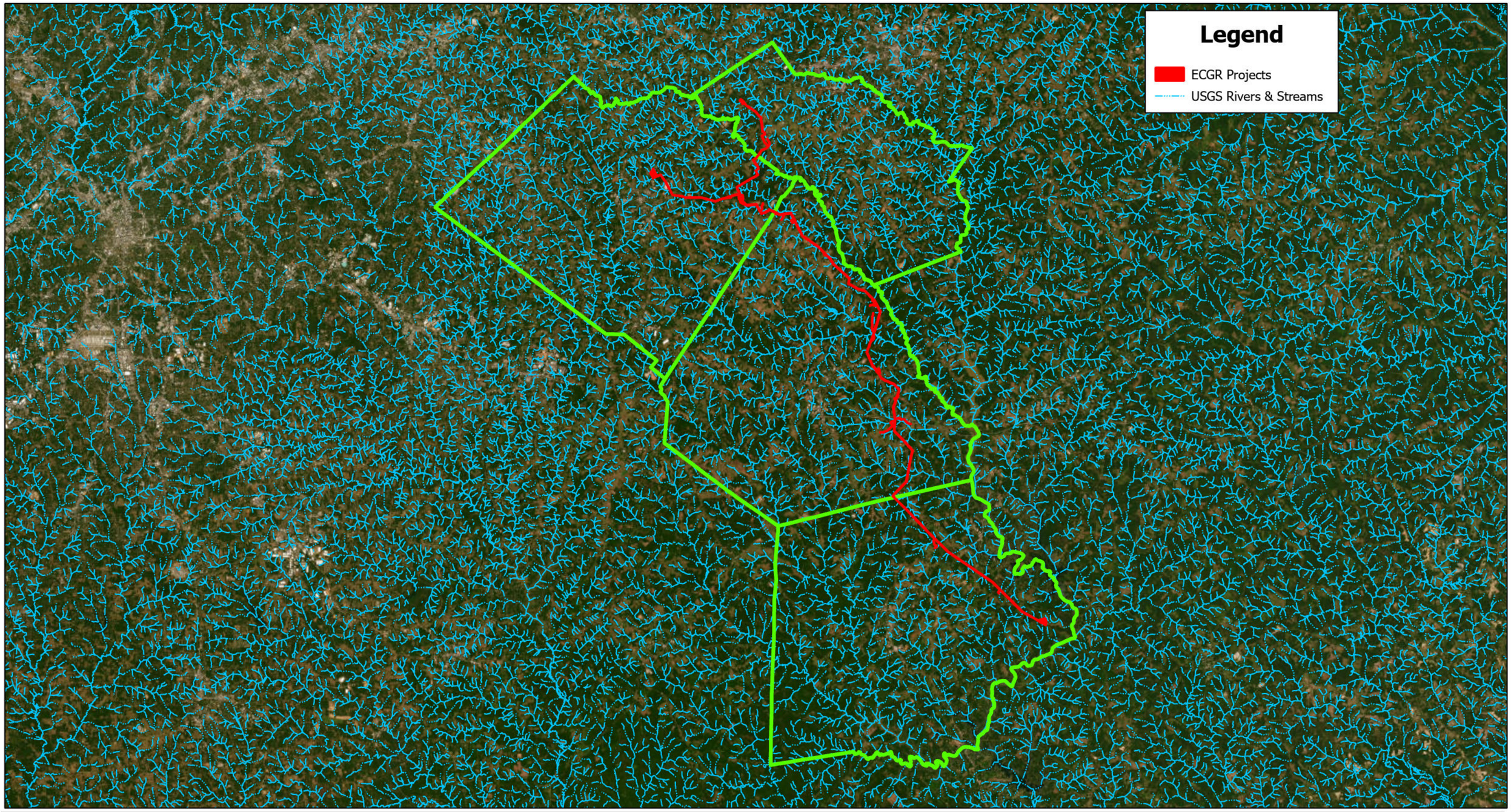
East Central Georgia Reliability Project
Morgan, Oconee, Putnam, and Walton Counties, Georgia

0 10 20 Miles

August 2024
20245-167

NLCD Landcover

Figure 4.00



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Georgia Transmission Corporation
East Central Georgia Reliability Project
Morgan, Oconee, Putnam, and Walton Counties, Georgia

0 10 20 Miles

August 2024
20245-167

Bat Flyway Corridors

Figure 5.00

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Georgia Transmission Corporation
East Central Georgia Reliability Project
Morgan, Oconee, Putnam, and Walton Counties, Georgia

August 2024
20245-167

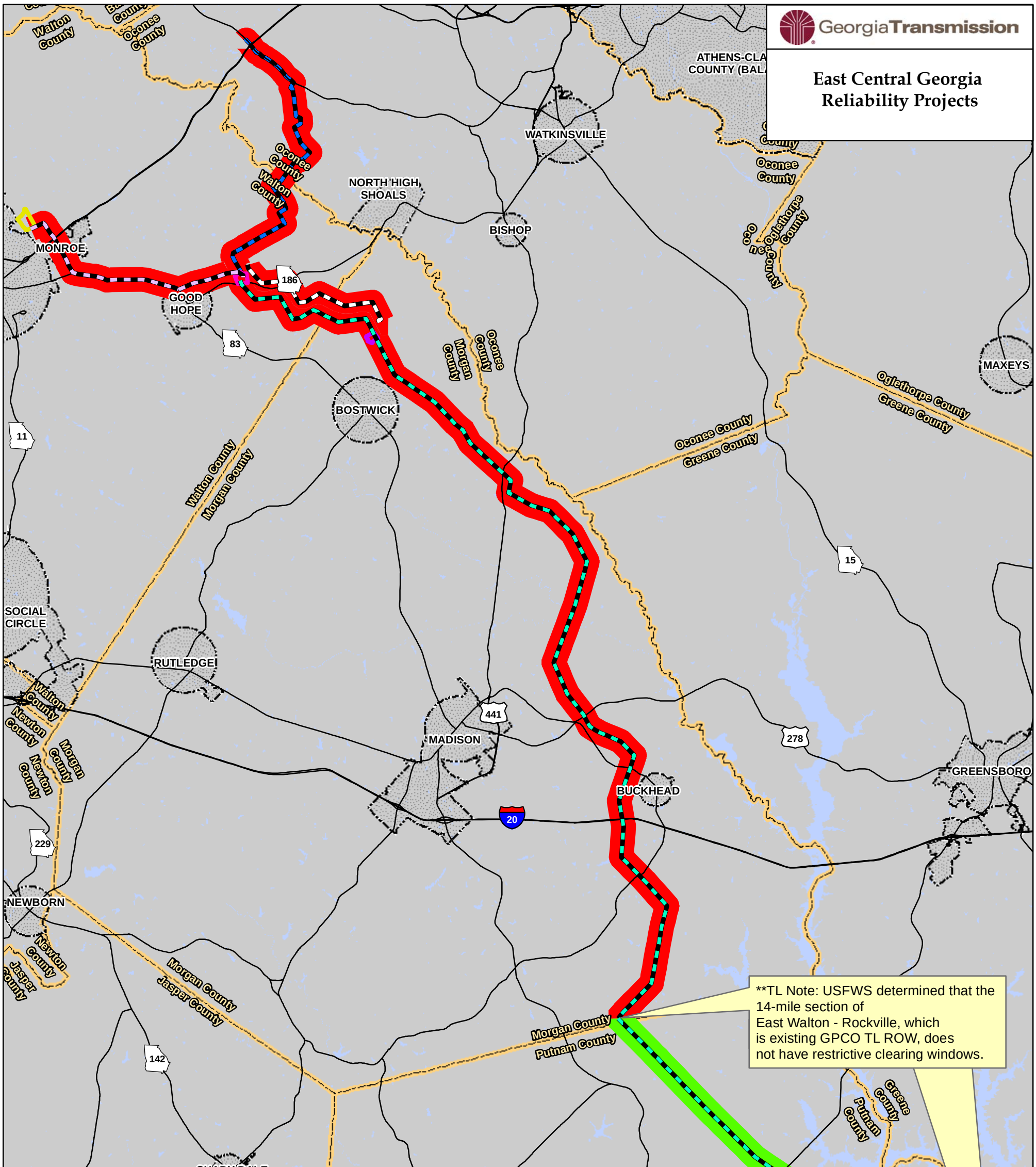
0 10 20 Miles

Action Area

Figure 6.00

GeorgiaTransmission

East Central Georgia Reliability Projects



**TL Note: USFWS determined that the 14-mile section of East Walton - Rockville, which is existing GPCO TL ROW, does not have restrictive clearing windows.

**Clearing Note: Although some of the proposed clearing schedule timeframes overlap with the tricolored bat clearing restriction dates, GTC will adhere to USFWS' approved clearing restrictions for the ECGR Project.

ECGRP
- Bethabara - East Walton 230kV TL
- Bostwick - East Walton 230kV TL
- East Walton - Jacks Creek 230kV TL
- East Walton - Rockville 230kV TL
- East Walton SS
- Bostwick SS
- Jacks Creek SS

Clearing Restrictions
- No Restrictions
- Winter Hibernation/Pup Season Restrictions

Clearing Restrictions Note:
Pup Season Restrictions: (May 1st - July 15th)
Winter Season Restrictions:
(December 15th - February 15th)

Other
- Major Highways
- City Boundaries
- County Boundary
- USGS Water Bodies

N W E S

1 inch = 16,000 feet

0 8,000 16,000 Feet

Plot: K. McCullough Date: 8/19/2024

ECGRP	GTC's Proposed Clearing Schedule *See Clearing Note**	Project Area	Tree Area To Be Cleared
Bethabara - East Walton	7/28/2025 - 4/24/2026	73.01 ac	40.56 ac
East Walton - Jacks Creek	7/28/2025 - 11/28/2025	41.29 ac	29.18 ac
Jacks Creek SS	3/30/2025 - 4/30/2025	17.80 ac	9.24 ac
Bostwick SS	3/30/2026 - 4/30/2026	27.54 ac	13.49 ac
Bostwick - East Walton East Walton - Rockville * See TL Note**	12/30/2024 - 4/30/2026	959.36 ac	614.43 ac
East Walton SS	2/16/2025 - 4/30/2025	57.25 ac	57.25 ac
Rockville SS (Georgia Power Company Sponsored Projects)	TBD	29.41 ac	26.93 ac

Figure 7.00