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Jeffrey B. Archie
Sr. Vice President &
Chief Nuclear Officer

November 15, 2010
NND-10-0425

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

ATTN: Document Control Desk

Subject: Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3 Combined License Application (COLA) - Docket Numbers 52-027 and 52-028 - Voluntary Submittal for the Environmental Report to Update Transmission Line Information Related to Threatened and Endangered Species Field Surveys

Reference:
1. Letter from Ronald B. Clary to the Document Control Desk, Submittal of Revision 2 to Part 3 (Environmental Report) of the Combined License Application for the V. C. Summer Nuclear Station Units 2 and 3, dated July 2, 2010.
2. Letter from Ronald B. Clary to the Document Control Desk, Voluntary Submittal for the Environmental Report to Update Transmission Line Information, dated October 6, 2010.

By letter dated March 27, 2008, South Carolina Electric & Gas Company (SCE&G) submitted a combined license application (COLA) for V.C. Summer Nuclear Station (VCSNS) Units 2 and 3, to be located at the existing VCSNS site in Fairfield County, South Carolina. Subsequently the Environmental Report (ER), Part 3 of the application, was revised and submitted to the NRC (Reference 1).

SCE&G and Santee Cooper continue the transmission line siting process (Reference 2). The enclosures to this letter provide an update to the ER information related to transmission line field surveys for threatened and endangered species.

Please address any questions to Mr. Alfred M. Paglia, Manager, Nuclear Licensing, New Nuclear Deployment, P. O. Box 88, Jenkinsville, S.C. 29065; by telephone at 803-345-4191; or by email at apaglia@scana.com.

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NRO

I declare under penalty of perjury that the foregoing is true and correct.

Executed on this 15 day of November 2010.

Sincerely,

Jeffrey B. Archie
Senior Vice President &
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SUMMARY OF FEDERALLY PROTECTED SPECIES ASSESSMENTS
V.C. SUMMER NUCLEAR STATION UNITS 2 AND 3 TRANSMISSION LINES
VARIOUS COUNTIES, SOUTH CAROLINA

Palmetto Environmental Consulting, Inc.
955 East Main Street, Suite E #52
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November 11, 2010

Introduction

At the request of South Carolina Electric and Gas (SCE&G), Palmetto Environmental Consulting, Inc. (PEC), Dr. L.L. Gaddy, and Mr. J. Robert Siler conducted surveys for federally-listed threatened and endangered plant and animal species within corridors containing or proposed to contain electric transmission lines associated with the proposed VC Summer Nuclear Station Units 2 and 3 (Figure 1). The purpose of this document is to provide a brief summary of the methodology utilized to complete and the results of the surveys.

Minimal environmental impacts are anticipated from construction of the proposed transmission lines. Of the approximately 152 miles of SCE&G transmission lines that compose this project, approximately 144 miles are located in existing SCE&G transmission line right-of-way (ROW). The remaining approximately eight (8) miles of line will be constructed within new ROW.

Methodology

Prior to beginning field surveys, the United States Fish and Wildlife Service (USFWS) and the South Carolina Department of Natural Resources (SCDNR) were contacted to obtain the most current known federally-protected species occurrence information. USFWS provided a GIS layer containing such information (which also generally reflects occurrences included in the SCDNR database), which was then overlaid with maps depicting the proposed transmission line corridors. The USFWS layer was cross-referenced with SCDNR's "South Carolina Rare, Threatened and Endangered Species Inventory" database to ensure complete coverage of known protected species occurrences. The USFWS's "South Carolina List of Endangered, Threatened and Candidate Species, July 2010" was used to determine for which species surveys would be conducted for each county that the proposed transmission lines are located. According to agency records and at the time field investigations began, none of the federally-listed threatened and endangered species was known to occur within or along the margins of any of the transmission corridors in the study area (Gaddy and Siler, 2010*).

Potential habitats for all of the potentially-occurring federally-listed species were also plotted on study area mapping before fieldwork began. These potential habitats maps were compiled using natural color and infrared imagery of the study area with topographic, soil, and wetland features overlaid on the natural color and infrared imagery. Field investigations were conducted in those areas where apparent appropriate habitat was contained within or along the margins of the transmission line corridors (Gaddy and Siler, 2010). Approximately 75 field sites containing potential habitat were field investigated.

Surveys for the species listed in Table 1 were conducted between October 19 and November 10, 2010. These surveys were conducted at sites where protected species could potentially occur.

Results

Shortnose Sturgeon

As shown in Table 1, the shortnose sturgeon is listed by the USFWS for Calhoun, Dorchester, Lexington, Orangeburg, and Richland counties. This species lives mainly in the slower moving riverine waters or nearshore marine waters, migrating periodically into faster moving fresh water areas to spawn (Office of Protected Resources 2004). Regarding the proposed project, the only waterbodies crossed by the proposed transmission lines that meets the sturgeon's habitat requirement is the Broad River and the Saluda River. However, the USFWS data layer reflects no known occurrences of this species in either river, and therefore, none even close to the proposed transmission line corridors.

* Source is attached to this document as Appendix A.

Frosted Flatwoods Salamander
The frosted flatwoods salamander is listed by the USFWS for Orangeburg County. The species inhabits moist soil of longleaf pine (*Pinus palustris*) and slash pine (*P. elliottii*) flatwoods of the southeastern coastal plain in Florida, Georgia, and South Carolina. However, not all flatwoods are appropriate habitat, as the species only occurs at sites with seasonal ponds and flatwoods which are usually fire-maintained (USFWS 1999). Frosted flatwoods salamander is known only in the study area from a historic record in Orangeburg County (Gaddy and Siler 2010). The only areas investigated for this species in the county for which it is listed as occurring (Orangeburg County) consisted of small portions of two gum ponds within the existing transmission line ROW. These two gum ponds, being within an existing maintained transmission line ROW, did not contain habitat typically associated with the species (i.e., no adjacent pine flatwoods). No other appropriate habitat for this species exists within the study corridors.

Smooth Coneflower
The coneflower is found on clay soils especially rich in magnesium and calcium (with high pH) and is generally associated with Iredell, Mecklenberg, and Brevard Belt soils in the Carolinas and Georgia. The plant does not compete well in densely-shaded forest conditions and prefers open woods, roadsides, and prairie-like environments (Gaddy and Siler 2010).

In all, ten field sites (five Orange sites, three Mecklenberg sites, and two Enon sites) within the transmission corridors were visited. Several species known to be associated with dry, high pH soils and smooth coneflower such as Indian grass (*Sorghastrum nutans*), false indigo (*Baptisia cinerea*), and little blue stem (*Schizachyrium scoparium*) were found at these sites, but no smooth coneflower stems or basal leaves were seen during the fieldwork (Gaddy and Siler 2010).

Bald Eagle
While the bald eagle is no longer listed as federally threatened or endangered, it is still protected under the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act (MBTA). The bald eagle is primarily riparian, associated with rivers, coasts, and lakes, usually nesting near bodies of water where it feeds. Selection of nesting sites varies depending on the species of trees growing in a particular area, but in the Southeast, nests are constructed in dominant or codominant pines or cypress (USFWS 1996a). Transmission line corridors located within two miles of rivers or large bodies of water were surveyed for bald eagles. No bald eagle nests were observed within or along the fringes of the proposed transmission line corridors, and the USFWS data layer reflects no known occurrences within a one-half mile radius of the proposed project corridors.

SCE&G is aware of one recently constructed bald eagle nest located approximately 1,000 feet north of the VC Summer-Killian #1 transmission line corridor, just south of the VC Summer Nuclear Station Unit 1's outfall structure on Monticello Reservoir. A second known bald eagle nest is located approximately one mile downstream of the Dreher Shoals Dam on the north bank of the Saluda River. The proposed VC Summer-St. George #2 transmission line approaches no closer than approximately 1,000 feet north of this known nest.

Carolina Heelsplitter
The Carolina heelsplitter is a mussel usually found in mud, muddy sand, or muddy gravel substrates along stable, well-shaded stream banks. The species has also been found in Mountain Creek (Edgefield County, SC) in a relatively silt-free substrate comprised primarily of a mixture of sand, gravel, and cobble (USFWS 2005). Personal communication with USFWS also revealed that only perennial streams support this species. In South Carolina, the four surviving heelsplitter populations are limited to the Catawba, Pee Dee, and Savannah River systems (USFWS 2005).

Only a short segment of the VC Summer-Killian #1 transmission line corridor is located within the Catawba River (Wateree River) basin **and** is located in Fairfield County, the only county the study corridors are located in which the heelsplitter is listed by the USFWS. There are only four

perennial stream segments within the Catawba basin which intersect the transmission line corridors. These segments were visually assessed, but no mussels were observed.

Pondberry
Pondberry is generally associated with wetland habitats and the margins of sinks, ponds, and other depressions in the more coastal sites. The plants generally grow in shaded areas but may also be found in full sun (USFWS 1991a). However, it does not appear to tolerate dense shade and is absent where shrubs are dense in wetland margins (Gaddy and Siler 2010).

Pondberry was not seen during field examination of twenty wetland sites on the VCS-St. George #1 and # 2 transmission corridor and environs. Furthermore, no good habitat for the plant appeared to occur within or along the transmission corridor (Gaddy and Siler 2010).

Rough-leaved Loosestrife
This species usually occurs in the ecotones between longleaf pine uplands and pond pine pocosins, on moist to seasonally saturated sands and on shallow organic soils overlaying sand. It has also been found on deep peat in the low shrub community of large Carolina bays. The grass-shrub ecotone, where loosestrife is found, is fire-maintained, as are the adjacent plant communities (USFWS 1992).

Twenty-six sites were assessed for the presence of rough-leaved loosestrife. Because of the lack of fire and the density of the herbaceous vegetation layer at these sites, no habitat for rough-leaved loosestrife was present (Gaddy and Siler 2010).

Wood Stork
Wood storks are generally associated with freshwater and brackish wetlands, mainly nesting in cypress or mangrove swamps. Feeding habitat consists of narrow tidal creeks, flooded tidal pools, or freshwater marshes. Good feeding sites consist of depressions in marshes or swamps where fish may become concentrated during falling water levels (USFWS 1996b).

No wood storks or rookeries were observed during fieldwork in Orangeburg County. However, it is feasible that the species may forage in wetlands located within the proposed transmission line corridors.

Canby's Dropwort
Canby's dropwort grows in coastal plain habitats including wet pineland savannas, wet meadows, sloughs, ditches, and around the edges of cypress-pine ponds. Thriving populations seem to occur in open bays or ponds which are wet most of the year and have little or no canopy cover. Ideal soils for the species have a medium to high organic content and a high water table (USFWS 1991b).

Twenty wetland depressions on the VCS-St. George #1 and #2 Corridor were field-checked in early November of 2010. Most of these wetlands were too dry for Canby's dropwort (they had been previously drained for agricultural purposes) or did not harbor pond cypress. Four of these depressions were wet; three were either too wet or too dense to support Canby's dropwort. The fourth contained potential habitat, and was therefore, surveyed for the species. None were found.

Red-cockaded Woodpecker (RCW)
Nesting habitat for RCWs consists of open stands of pine with a minimum age of 80 to 120 years, depending on the site. Longleaf pines (Pinus palustris) are most commonly used for nesting, but other species of southern pine may also be used. Dense stands which contain primarily hardwoods or have a dense hardwood understory are avoided. RCW foraging habitat is characterized by pine and pine hardwood stands 30 years old or older with foraging preference for pines 10 inches or larger in diameter (USFWS 1993).

A few stands of potential foraging habitat existed adjacent to the proposed transmission line corridors in counties for which the species is listed as occurring. However, there are no known occurrences of RCWs within two miles of the proposed corridors and no birds were observed during field work.

Determination of Effect

The proposed project will consist of SCE&G constructing approximately 152 miles of new transmission lines, approximately 144 miles of which will be within existing ROW. The remaining approximately eight (8) miles of transmission lines will be constructed on new ROW, an area consisting of approximately 78.6 acres. SCE&G will implement appropriate Best Management Practices (BMPs) during construction which will result in minimizing adverse effects from transmission line construction. Table 2 presents those federally-listed threatened and endangered species which were considered for the proposed project, with a determination of effect and justification of each determination.

Summary

Literature and record searches have been conducted to determine if known occurrences of federally-listed threatened and endangered species occur within SCE&G's proposed transmission line corridors. Based on field investigations, it has been determined that the proposed project: 1) will have no effect on the shortnose sturgeon and rough-leaved loosestrife; and 2) may affect, but is not likely to adversely affect, the frosted flatwoods salamander, smooth coneflower, bald eagle, Carolina heelsplitter, pondberry, wood stork, Canby's dropwort, and red-cockaded woodpecker.

Table 1. Federally-Listed Threatened and Endangered Species Considered for the Proposed Project

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	CALHOUN	DORCHESTER	FAIRFIELD	LEXINGTON	NEWBERRY	ORANGEBURG	RICHLAND	HABITAT
Acipenser brevirostrum	Shortnose Sturgeon	E	X	X		X		X	X	Large rivers with shoals
Ambystoma cingulatum	Frosted Flatwoods Salamander	T						X		Wet pine flatwoods, isolated wetlands
Echinacea laevigata	Smooth Coneflower	E				X			X	Calcium- & magnesium rich clays in open woods
Haliaeetus leucocephalus	Bald Eagle	BGEDA-T	X	X	X	X	X	X	X	Large rivers & lakes
Lasmigona decorata	Carolina Heelsplitter	E			X					Small streams
Lindera melissifolia	Pondberry	E		X						Isolated wetlands & their margins
Lysimachia asperulifolia	Rough-leaved Loosestrife	E							X	Fire maintained acidic bogs in the Sandhills
Mycteria americana	Wood Stork	E						X		Cypress-tupelo & other wetlands
Oxypolis canbyi	Canby's dropwort	E		X				X	X	Pond cypress savannahs
Picoides borealis	Red-cockaded Woodpecker	E	X	X		X		X	X	Open, mature, fire-maintained pine woods

Table 2. Determinations of Effect for Federally-Listed Threatened and Endangered Species Considered for the Proposed Project

Species	Determination of Effect	Justification
Shortnose Sturgeon	No effect	No crossings of large river systems
Frosted Flatwoods Salamander	May affect, not likely to adversely affect	Potential habitat found to be unsuitable due to adjacent land use
Smooth Coneflower	May affect, not likely to adversely affect	Potential habitat locations revealed no presence of the species
Bald Eagle	Not likely to disturb	Impacts will be approximately 1,000 feet from known nest locations
Carolina Heelsplitter	May affect, not likely to adversely affect	BMPs will minimize adverse effects to stream systems
Pondberry	May affect, not likely to adversely affect	No good habitat was observed, and no stems were found
Rough-leaved Loosestrife	No effect	No appropriate habitat present
Wood Stork	May affect, not likely to adversely affect	No nesting occurrences observed
Canby's dropwort	May affect, not likely to adversely affect	One appropriate habitat searched, but no stems present
Red-cockaded Woodpecker	May affect, not likely to adversely affect	No suitable nesting habitat to be impacted and none adjacent; fragmented foraging habitat not located near nesting habitat

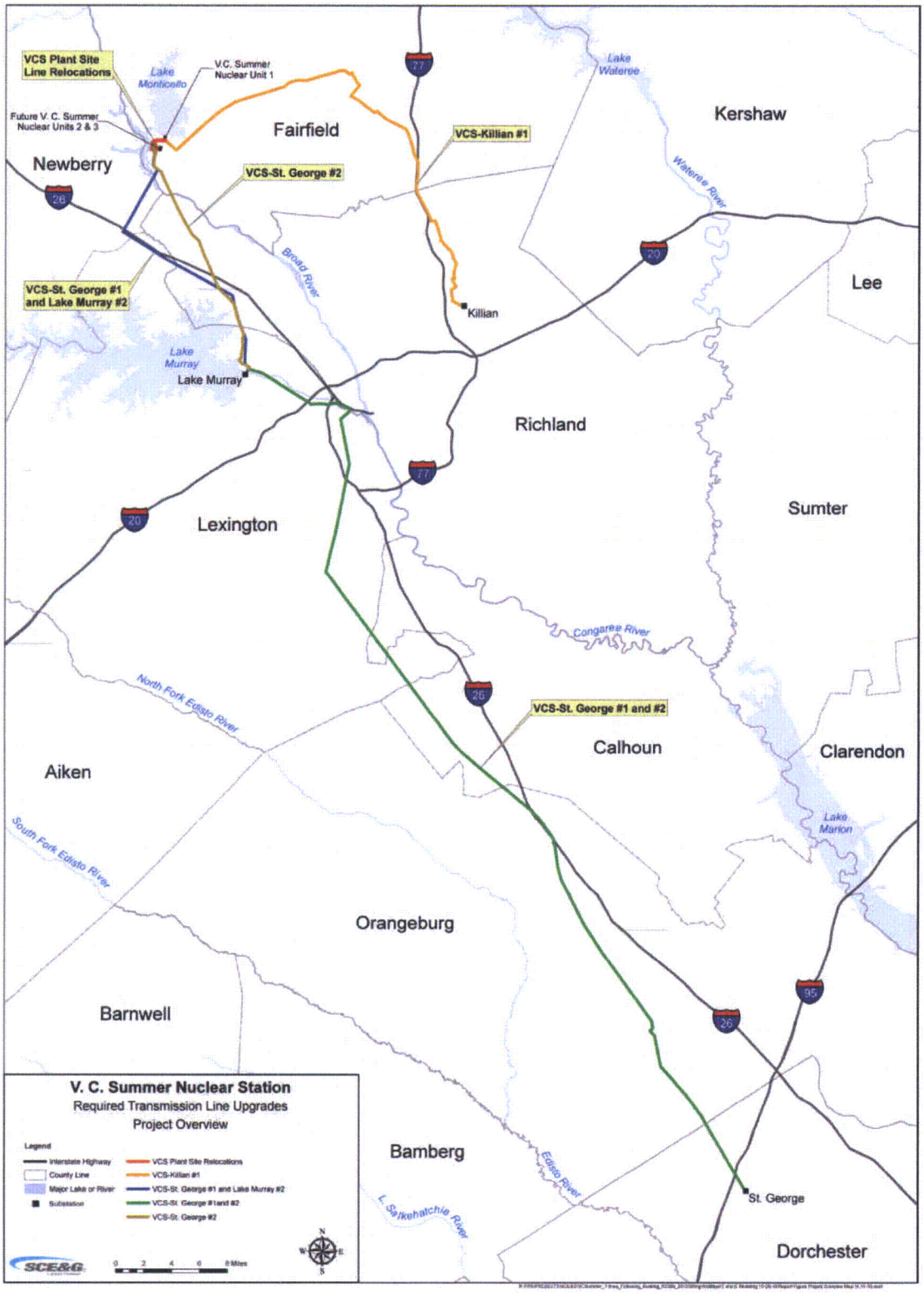

Figure 1. SCE&G's VC Summer Nuclear Station Units 2 and 3 Proposed Transmission Lines

References

Gaddy and Siler 2010. Inventory of Federally-Listed Endangered and Threatened Species on Transmission Corridors Associated with the V.C. Summer Project. Unpublished report for SCE&G, Columbia, SC. 11 pgs.

Office of Protected Resources 2004. Shortnose Sturgeon (*Acipenser brevirostrum*). National Marine Fisheries Service, Office of Protected Resources, downloaded March 8, 2004 from http://www.nmfs.noaa.gov/prot_res/species/fish/Shortnose_sturgeon.html.

USFWS 1991a. Species Accounts. US Fish and Wildlife Service, downloaded March 25, 2004 from http:// endangered.fws.gov/i/q/saq3o.html. Source of publication is Endangered and Threatened Species of the Southeastern United States (The Red Book), USFWS Region 4, February 1991.

USFWS 1991b. Species Accounts. US Fish and Wildlife Service, downloaded August 4, 2004 from http:// endangered.fws.gov/i/q/saq3a.html. Source of publication is Endangered and Threatened Species of the Southeastern United States (The Red Book), USFWS Region 4, February 1991.

USFWS 1992. Species Accounts. US Fish and Wildlife Service, downloaded April 4, 2004 from http:// endangered.fws.gov/i/q/saq4b.html. Source of publication is Endangered and Threatened Species of the Southeastern United States (The Red Book), USFWS Region 4, February 1992.

USFWS 1993. Species Accounts. US Fish and Wildlife Service, downloaded March 15, 2004 from http:// endangered.fws.gov/i/b/sab4a.html. Source of publication is Endangered and Threatened Species of the Southeastern United States (The Red Book), USFWS Region 4, August 1993.

USFWS 1996a. Species Accounts. US Fish and Wildlife Service, downloaded March 15, 2004 from http:// endangered.fws.gov/i/b/sab0h.html. Source of publication is Endangered and Threatened Species of the Southeastern United States (The Red Book), USFWS Region 4, January 1996.

USFWS 1996b. Species Accounts. US Fish and Wildlife Service, downloaded March 25, 2004 from http:// endangered.fws.gov/i/b/sab5z.html. Source of publication is Endangered and Threatened Species of the Southeastern United States (The Red Book), USFWS Region 4, January 1996.

USFWS 1999. The Flatwoods Salamander: General Background. US Fish and Wildlife Service, Panama City Field Office, dated September 2, 1999.

USFWS 2005. Carolina Heelsplitter in North Carolina. US Fish and Wildlife Service, downloaded February 2, 2005 from http://nc-es.fws.gov/mussel/carolheel.html.

Appendix A. Inventory of Federally-Listed Endangered and Threatened Species on Transmission Corridors Associated with the V.C. Summer Project, prepared by L. L. Gaddy, terra incognita, and J. Robert Siler, Environmental Resources of the Carolinas, November 2010

INVENTORY OF FEDERALLY-LISTED ENDANGERED AND THREATENED SPECIES ON TRANSMISSION CORRIDORS ASSOCIATED WITH THE V. C. SUMMER PROJECT

Savannah with old-growth pond cypress, habitat for Canby's dropwort.

by
L. L. Gaddy, terra incognita and J. Robert Siler, Environmental Resources of the Carolinas

for
Pike Electric Corporation
Charlotte, North Carolina

November 2010

INTRODUCTION

This report presents the findings of an inventory of federally-listed endangered, threatened, and candidate species on transmission corridors associated with South Carolina Electric and Gas's V. C. Summer Project. The transmission corridors or "study area" for this investigation included the VCS-Killian #1 (existing and new), the VCS-St. George #1, the VCS-St. George #1 and Lake Murray #2, and the VCS-St. George #1 and #2 (see Map 1).

METHODOLOGY

A literature and internet review of the federally-listed species potentially-occurring in the study areas for electric power transmission lines associated with the V. C. Summer Project was conducted in October of 2010. Ten federally-listed species are known from the counties through which the transmission lines pass. Table 1 summarizes the status, geography, and ecology of these species. The potentially-occurring species include the Shortnose Sturgeon (*Acipenser brevirostrum*)(endangered), the Bald Eagle (*Haliaeetus leucocephalus*)(threatened), the Red-cockaded Woodpecker (*Picoides borealis*)(endangered), the Wood Stork (*Mycteria americana*)(endangered), the Frosted Flatwoods Salamander (*Ambystoma cingulatum*)(threatened), the Carolina Heelsplitter (*Lasmigona decorata*)(endangered), the smooth coneflower (*Echinacea laevigata*)(endangered), Canby's dropwort (*Oxypolis canbyi*)(endangered), rough-leaved loosestrife (*Lysimachia asperulifolia*)(endangered), and pondberry or southern spicebush (*Lindera melissifolia*)(endangered).

As may be seen in Table 1, habitats of occurrence vary significantly from species to species. The Shortnose Sturgeon is an anadromous species of fish that breeds in the rocky shoals of large rivers. The Bald Eagle nests along or near major rivers and lakes. The Red-cockaded Woodpecker prefers open, mature burned pine woods in the Coastal Plain (Russo and Sweeney, 2000). The Wood Stork nests in cypress-tupelo swamp forests in the Coastal Plain (Murphy, 1995). The Frosted Flatwoods Salamander occurs in wet pine flatwoods and in isolated wetlands bordered by pine flatwoods (U.S. Fish and Wildlife Service, 2010c). The Carolina Heelsplitter is a mollusk found in small rivers and their tributaries (Russo and Sweeney, 2000) Smooth coneflower

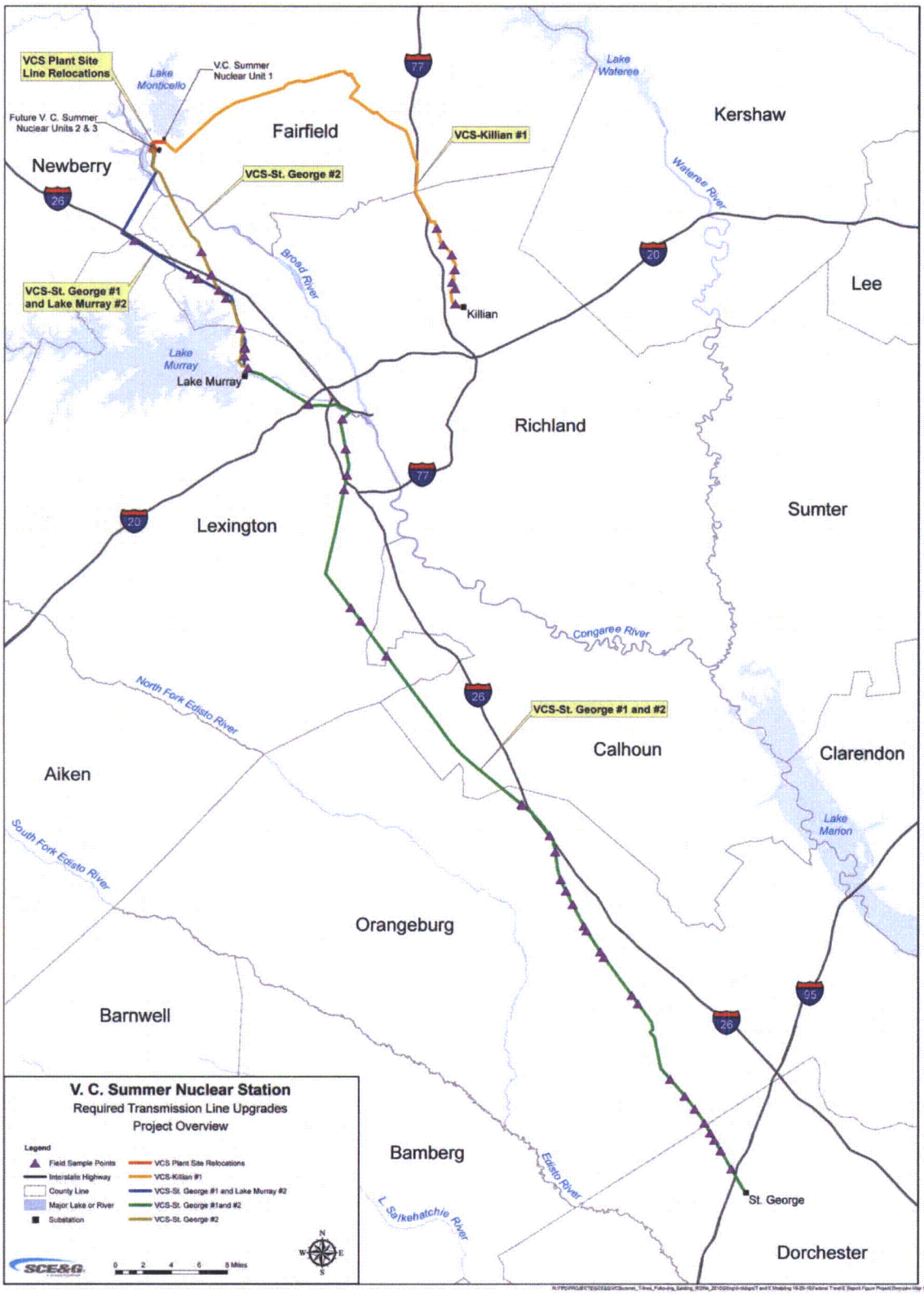
VCS Plant Site Line Relocations
Lake Monticello
V.C. Summer Nuclear Unit 1
Future V. C. Summer Nuclear Units 2 & 3
Fairfield
Newberry
VCS-St. George #2
VCS-Killian #1
Lake Wateree
Kershaw
Wateree River
Broad River
VCS-St. George #1 and Lake Murray #2
Killian
Lee
Lake Murray
Lake Murray
Richland
Lexington
Sumter
Congaree River
North Fork Edisto River
VCS-St. George #1 and #2
Calhoun
Clarendon
Aiken
Lake Marion
South Fork Edisto River
Orangeburg
Barnwell
Bamberg
Edisto River
St. George
Dorchester
L Salkehatchie River
V. C. Summer Nuclear Station
Required Transmission Line Upgrades
Project Overview
Legend
Field Sample Points
Interstate Highway
County Line
Major Lake or River
Substation
VCS Plant Site Relocations
VCS-Killian #1
VCS-St. George #1 and Lake Murray #2
VCS-St. George #1and #2
VCS-St. George #2
SCE&G
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Table 1. Federally-listed endangered and threatened species potentially-occurring on transmission corridors associated with the V. C. Summer Project.

SCIENTIFIC NAME	COMMON NAME	STATUS	CAL	DOR	FAI	LEX	NEW	OBU	RIC	HABITAT
Acipenser brevirostrum	Shortnose Sturgeon	E	X	X		X		X	X	Large rivers with shoals
Ambystoma cingulatum	Frosted Flatwoods Salamander	T						X		Wet pine flatwoods and isolated wetlands
Echinacea laevigata	Smooth Coneflower	E				X			X	Calcium- and magnesium rich clays in open woods
Haliaeetus leucocephalus	Bald Eagle	BGEDA-T	X	X	X	X	X	X	X	Large rivers and lakes
Lasmigona decora	Carolina Heelsplitter	E			X					Small streams
Lindera melissifolia	Pondberry	E		X						Isolated wetlands and their margins
Lysimachia asperulifolia	Rough-leaved Loosestrife	E							X	Fire maintained acidic bogs in the Sandhills
Mycteria americana	Wood Stork	E							X	Cypress-tupelo and other wetlands
Oxypolis canbyi	Canby's dropwort	E		X				X	X	Pond cypress savannahs
Picoides borealis	Red-cockaded Wood-pecker	E	X	X		X		X	X	Open, mature, fire-maintained pine woods

Counties: CAL-Calhoun; DOR-Dorchester; FAI-Fairfield; LEX-Lexington; NEW-Newberry; OBU-Orangeburg; RIC-Richland.

Status: E-endangered; T-threatened; BGEDA-protected under the special Bald and Golden Eagle Act.

grows in open woods in clayey, high magnesium and high calcium soils (Murdock, 1995; U. S. Fish and Wildlife Service, 2010d; Schafale and Weakley, 1990; Gaddy 1991). Canby's dropwort is a wetland species that is found primarily in isolated pond cypress (*Taxodium ascendens*) savannah-like wetlands (Gaddy 2006; U. S. Fish and Wildlife Service, 2010b). The rough-leaved loosestrife is found in low pH Sandhill wetlands where frequent fire is present (Russo and Sweeney, 2000). The pondberry occurs in and along the margins of isolated wetlands (Russo and Sweeney, 2000; Schafale and Weakley, 1990)—in South Carolina, particularly those associated with limesinks.

The potentially-occurring endangered and threatened species, with the possible exception of the Bald Eagle, are not evenly distributed throughout the counties of the study area. The Shortnose Sturgeon is known only from the Broad River portion of the study area. The Red-cockaded Woodpecker is found primarily in the Coastal Plain, and the Wood Stork only nests in a few coastal counties. Canby's dropwort, a Coastal Plain species, is known from Richland, Orangeburg, and Dorchester Counties, but has never been seen in Lexington and Calhoun Counties. Pondberry has been reported from only Dorchester County. The Frosted Flatwoods Salamander is known only in the study area from an historic record in Orangeburg County, and the bog asphodel is known only from an historic record in Dorchester County. Rough-leaved loosestrife is known only from Richland County, and the smooth coneflower is known only from Richland and Lexington Counties.

Before fieldwork for this inventory began, all Fish and Wildlife and South Carolina Department of Natural Resources Department records—historical and current— for the above species (S. C. Department of Natural Resources, 2010; U. S. Fish and Wildlife Service, 2010a) were plotted on maps of the transmission corridors in the study area. According to these records, at the time this field inventory began, none of these species was known to occur within or along the margins of any of the transmission corridors in the study area.

Potential habitats for all of the potentially-occurring federally-listed species were also plotted on study area maps before fieldwork began. These potential habitats maps were compiled using natural color imagery of the study area with topographic, soil, and wetland features overlaid on the natural color imagery. Forty-six field sites harboring potential habitat for the species in Table 1 were field-checked in late October and early November of 2010.

FINDINGS

Field sampling was begun in late October of 2010. In Richland and Lexington Counties, ten sites were field-checked for the possible presence of the federally-listed (endangered) smooth coneflower (*Echinacea laevigata*), and sixteen sites that had potential habitat for the endangered rough-leaved loosestrife (*Lysimachia asperulifolia*) were visited in Richland, Lexington, and Calhoun Counties. In early November of 2010, twenty Orangeburg and Dorchester County sites were sampled for the possible presence of Canby's dropwort (*Oxypolis canbyi*) and pondberry (*Lindera melissifolia*). Findings are discussed below under species headings.

Smooth Coneflower (*Echinacea laevigata*) (federally-listed as endangered). Smooth coneflower is a rare species in the Aster Family (Asteraceae) and is found from Virginia south to Georgia (Gaddy, 1991). The South Carolina Plant Atlas (S. C. Plant Atlas, 2010) reports smooth coneflower from seven South Carolina counties. The South Carolina Department of Natural Resources (SCDNR, 2010) lists smooth coneflower from Richland County, while the Fish and Wildlife Service's (2010a) list of federal endangered species in S. C. reports the plant from both Richland and Lexington Counties.

The coneflower is found on clay soils especially rich in magnesium and calcium (with high pH) and is generally associated with Iredell, Mecklenberg, and Brevard Belt soils in the Carolinas and Georgia. The plant does not compete well in densely-shaded forest conditions and prefers open woods, roadsides, and prairie-like environments.

An earlier review of soil maps had indicated that some Mecklenberg, Orange, and Enon soils (all soil types with high pH) occurred in Newberry, Richland, and Lexington Counties (Holsonback and Brewington, 2008; Lawrence, 1976 and 1978) along the VCS-St. George #2 and the VCS-St. George #1 and Lake Murray #2 transmission lines, between Jenkinsville and Lake Murray. Because these soils types are potential habitats for the coneflower, the sites where they occurred were field-checked in late October of 2010. In all, ten field sites (five Orange sites, three Mecklenberg sites, and two Enon sites) within the transmission corridors were checked. Several species known to be associated with dry, high pH soils and smooth coneflower (Gaddy, 1991) such as Indian grass (*Sorghastrum nutans*), false indigo (*Baptisia cinerea*), and little blue stem (*Schizachyrium scoparium*) were found at these sites, but no smooth coneflower stems or basal leaves were seen during the fieldwork.

Rough-leaved Loosestrife (*Lysimachia asperulifolia*) (federally-listed as endangered).

Rough-leaved loosestrife is a North Carolina-South Carolina Sandhill endemic found in bogs and on bog margins in fire-maintained wetlands. It is only known from two counties in South Carolina—Richland and Darlington (S. C. Plant Atlas, 2010). In South Carolina, the plant is closely associated with Johnston soils. The VCS-Killian #1 transmission corridor (present line and proposed line) crosses seven areas of Johnston wetlands in Richland County (DeFrancesco, 1982; Lawrence, 1978) between the Killian Substation and Blythewood. The VCS St. George #1 and #2 transmission corridor crosses four major wetlands dominated by Johnston and related soils (Lawrence, 1976) in Lexington County and one Johnston wetland in Calhoun County. These twelve sites were field-checked for rough-leaved loosestrife in late October of 2010.

Just north and west of the Killian Substation, the proposed new Killian corridor will cross a large wetland complex on Johnston soils. Most of this area was forested and dominated by swamp tupelo (*Nyssa biflora*), tulip poplar (*Liriodendron tulipifera*), red maple (*Acer rubrum*), American holly (*Ilex opaca*), sweet gallberry (*Ilex coriacea*), cyrilla or ti-ti (*Cyrilla racemiflora*), bays (*Persea palustris* and *Magnolia virginiana*), fetterbush (*Lyonia lucida*), and ferns (*Osmunda cinnamomea, Osmunda spectabilis var. regalis, and Onoclea sensibilis*). A few small openings were found in these woods, but no rough-leaved loosestrife habitat was present. There were a few openings along the margins of the existing Killian transmission corridor. Here, open peat (*Sphagnum* sp.) bogs were present, but the vegetation here was too thick for the loosestrife and there is no history of fire in the area. The remaining six Johnston sites north to Blythewood were dominated by tulip poplar with one exception, a site with standing water that had been recently broadcast-sprayed with herbicides. None of these site supported habitat for rough-leaved loosestrife.

The VCS-St. George #1 and #2 corridor crossing of the Johnston wetland bordering Six Mile Creek in Lexington County was very weedy with tearthumb (*Polygonum sagittaum*), spotted knotweed (*Polygonum punctatum*), false nettle (*Boehmeria cylindrica*), and giant plume grass (*Erianthus giganteus*) dominating the right-of-way. The Congaree Creek crossing just to the south was less weedy with giant plumegrass, soft rush (*Juncus effusus*), Virginia meadowbeauty (*Rhexia virginica*), rough-leaved goldenrod (*Solidago rugosa*), other rushes (*Juncus cyperinus* included), beak rushes (*Rhynchospora corniculata* and *Rhynchospora caduca*), and sedges (*Carex* spp.). Two additional pond backwater sites in Lexington County and one pond backwater in Calhoun County, all on Johnston or related muck soils, were found to be dominated by giant plume grass, meadowbeauty species (*Rhexia* spp.), and disturbed-site beakrushes and sedges. Because of the lack of fire and the density of the herbaceous vegetation layer at these sites, no habitat for rough-leaved loosestrife was present.

Canby's Dropwort (or Cowbane) (*Oxypolis canbyi*) (federally-listed as endangered).

Canby's dropwort historically ranged from Delaware to Georgia. In South Carolina, it is known from eleven counties, according to the South Carolina Plant Atlas (S. C. Plant Atlas, 2010). In the study area, it has been reported from Richland, Orangeburg, and Dorchester Counties. Although it has been found in open, grassy swamp tupelo gum (*Nyssa biflora*) swamps and in open, disturbed Carolina bays, its most common habitat type is the pond cypress (*Taxodium ascendens*) savannah (Gaddy, 2006). Pond cypress savannahs are found in shallow, isolated wetlands in the Atlantic and Gulf Coastal Plains. Maintained by natural water level fluctuations and periodic fire, these wetlands generally have standing water in the winter and are dry, grassy environments in late summer and fall (Gaddy, 2006).

Twenty wetland depressions on the VCS-St. George #1 and #2 Corridor were field-checked in early November of 2010. Most of these wetlands were too dry for Canby's dropwort (they had been previously drained for agricultural purposes) or did not harbor pond cypress. The corridor, however, does pass through four pond cypress wetlands near the Orangeburg-Dorchester County line. One of the wetlands was a pond cypress savannah with potential habitat for Canby's dropwort. The corridor adjacent to this wetland was searched. Some of the companion plants for Canby's dropwort—*Hypericum fasciculatum, Aristida affinis, Carex striata, Ilex myrtifolia*, etc.—were present in the transmission corridor; however, no Canby's dropwort plants were found in the corridor or in the adjacent wetland. The three other pond cypress wetlands examined were either too wet (two were deep depressions) or too thick (one had a dense canopy of pond cypress and swamp tupelo) to harbor Canby's dropwort. Nevertheless, the corridor adjacent to these three sites was searched for Canby's dropwort, but no plants were found.

The fruit of Canby's dropwort in late autumn.

Pondberry or Southern Spicebush (*Lindera melissifolia*) (federally-listed as endangered).

Pondberry is found from North Carolina south through the Atlantic and Gulf Coastal Plain of South Carolina, Georgia, Florida, Mississippi, Alabama, and Louisiana north to Arkansas and Missouri. The small shrub is known from three counties in South Carolina—Berkeley, Colleton, and Beaufort, according to the South Carolina Plant Atlas (S. C. Plant Atlas, 2010). The Fish and Wildlife Service (U. S. Fish and Wildlife Service, 2010a) also list it from Dorchester County. Weakley (2010) gives its habitat as "wet flats and depressions." In South Carolina, however, it is strongly associated with isolated depressions and their margins, especially the Honey Hill "limesinks" in Berkeley County. The small shrub is usually found along the margin of the depression in partially open sunlight. It does not appear to tolerate dense shade and is absent where shrubs are dense in wetland margins.

Pondberry was not seen during our field examination of twenty wetland sites on the VCS-St. George #1 and # 2 transmission corridor and environs. Furthermore, no good habitat for the plant appeared to occur within or along the transmission corridor.

Sweet grass (*Muhlenbergia capillaris*) in the VCS-St. George #1 and #2 Corridor.

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Summary of Federally Protected Species Survey

V.C. Summer Nuclear Station Units 2 and 3

New Santee Cooper Transmissions Lines

MACTEC Engineering and Consulting, Inc.

Columbia, SC

November 4, 2010

Introduction

This report summarizes the results of the survey for federally endangered and threatened species and the bald eagle for the proposed Santee Cooper transmission lines associated with two new nuclear units at the existing V.C. Summer Nuclear Station (VCSNS) located in Jenkinsville, Fairfield County, South Carolina (Figure 1-1).

Minimal environmental impacts are expected as a result of this project as Santee Cooper has routed a majority (approximately 83.5%) of the proposed VCSNS-Flat Creek and VSCNS-Varnville 230kV transmission lines within existing maintained Right-of Way (ROW). A total of 239 miles of ROW (39.5 miles new ROW and 199.5 miles within existing ROW) are proposed to be constructed . Santee Cooper will minimize impacts during the installation and replacement of new poles/structures through the use of best management practices (BMPs). Impacts associated with required clearing along existing forested areas of the 39.5 miles (375 acres) of proposed new ROW will also be minimized through the use of BMPs.

Large raptors, such as bald eagles, are protected by the Migratory Bird Treaty Act (MBTA). Raptors are at risk for electrocution, collision, etc. from certain transmission line designs. The Avian Power Line Interaction Committee (APLIC) and the USFWS have published the Avian Protection Plan Guidelines to assist utility companies to reduce avian electrocution and collision mortality (APLIC and USFWS 2005). The structures that will be used on the Flat Creek and Varnville corridors will be "raptor safe" and meet the guidelines outlined in *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006* (APLIC 2006) and *Mitigating Bird Collisions with Power Lines: The State of the Art in 1994* (APLIC 1994). These efforts will minimize potential adverse impacts to raptors, including the bald eagle.

Species to be Considered

Plants and animals listed as federally threatened and endangered are protected under the Endangered Species Act (ESA), and the bald eagle is protected under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). The U.S fish and Wildlife Service (USFWS)and the National Oceanic and Atmospheric Administration (NOAA)Fisheries administers and enforces the ESA. The USFWS administers and enforces the MBTA and BGEPA.

A complete list of federally protected species occurring in the counties transected by the transmission line corridors was obtained from the USFWS (USFWS 2010). The list was reviewed by qualified biologists in order to eliminate protected species that would only be found on beaches or in the ocean, both of these habitats do not overlap the project corridors. The list was then segregated by the counties where the species are known to occur. The results of this review are provided in Table 1. The following protected species are known to occur in one or more counties transected by the segments of new and existing ROW along the VCSNS-Flat Creek and VCSNS-Varnville transmission corridors: bald eagle, red-cockaded woodpecker, wood stork, shortnose sturgeon, frosted flatwoods salamander, Carolina heelsplitter, pondberry, Canby's dropwort, smooth coneflower, Schweinitz's sunflower, rough-leaved loosestrife, black spored quillwort, little amphianthus, and American chaffseed.

Table 1: Federally protected species potentially in the new and existing ROW areas

Common Name	Scientific Name	Status	General Habitat Type	County Occurrence
Bald eagle	*Haliaeetus leucocephalus*	BGEPA	coastlines, rivers, large lakes or streams	Chester, Colleton, Dorchester, Fairfield, Hampton, Newberry, Lexington, Orangeburg, Richland
Red-cockaded woodpecker	*Picoides borealis*	E	Mature pine forests	Chester, Richland, Dorchester
Wood stork	*Mycteria americana*	E	forage in fresh and brackish wetlands; nest in cypress or other wooded swamps	Colleton, Dorchester, Hampton, Newberry, Orangeburg, Richland
Shortnose sturgeon	*Acipenser brevirostrum*	E	most major river systems along the eastern seaboard	Colleton, Dorchester, Hampton, Lexington, Orangeburg, Richland
Frosted flatwoods salamander	*Ambystoma cingulatum*	T, CH	breeding habitat - isolated depressional wetlands within pine forests.	Colleton, Orangeburg
Carolina heelsplitter	*Lasmigona decorata*	E, CH	cool, slow-moving, small to medium sized streams and rivers; mud, muddy sand, or muddy gravel substrates along stable, well shaded stream banks	Chester, Lancaster, Richland, Newberry
Pondberry	*Lindera melissifolia*	E	swamp and pond margins, sandy sinks, swampy depressions, wet flats	Colleton, Dorchester
Canby's dropwort	*Oxypolis canbyi*	E	pond-cypress savannahs dominated by grasses, sedges or ditches next to bays; borders and shallows of cypress-pond pine ponds and sloughs	Colleton, Dorchester, Hampton, Orangeburg, Richland
Smooth coneflower	*Echinacea laevigata*	E	prairie remnants, open woods, cedar barrens, roadsides, clearcuts, dry limestone bluffs, power line ROW's, usually on magnesium and calcium rich soils	Lancaster, Lexington, Richland
Schweinitz's sunflower	*Helianthus schweinitzii*	E	prairie and glade remnants, clearings and edges of upland woods on clayey soils with high gravel content	Lancaster
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	E	sandhills in ecotones or edges between longleaf pine uplands and pond pine pocosins; moist to seasonally saturated sands; on shallow organic soils overlaying sand	Richland
Black spored quillwort	*Isoetes melanospora*	E	rock-rimmed shallow pools on granite outcrops	Lancaster
Little amphianthus	*Amphianthus pusillus*	T	vernal pools on large isolated granite domes or gently rolling granite outcrops	Lancaster

Common Name	Scientific Name	Status	General Habitat Type	County Occurrence
American chaffseed	*Schwalbea americana*	E	fire-maintained wet savannahs and edge of fire-maintained woodlands	Colleton

Sources: USFWS 2010 and SCDNR 2010

E – Federally endangered T – Federally threatened

CH – Critical Habitat

BGEPA – Federally protected under the Migratory Bird Treaty and the Bald and Golden Eagle Protection Act

Methodology

The South Carolina Heritage Trust Program Rare and Endangered Species Inventory (Inventory) digital database (SCDNR 2010) was compared to the study area for the segments of ROW along the VCSNS-Flat Creek and VCSNS-Varnville lines and there are no documented occurrences of federally protected species within the new ROW. There is one record from 1979 for Shortnose sturgeon in the existing ROW just south of Orangeburg. The USFWS and SCDNR were contacted on September 1, 2010 to determine if any additional information regarding protected species was available for the transmission line corridors. Mr. Mark Caldwell, USFWS, provided Geographic Information System (GIS) information via email on September 1, 2010 for the transmission line corridors. This information was added as a GIS layer to the corridor maps and the results were the same as stated above. Ms. Julie Holling, Data Manager, SCDNR responded on September 1, 2010 via email that "no additional information has been reported" for these areas.

Existing habitat types along the Flat Creek and Varnville transmission corridors were identified using GAP Analysis project (SCDNR 2008), USGS topographic maps, NRCS soil survey maps, and aerial photography (color-infrared and natural-color). The soil series from the county soil survey maps were downloaded as a GIS data layer. The review of existing habitat along the corridors was compared to suitable habitat for the protected species known to occur in the subject county. Using this in-house methodology, areas of highest potential for protected species along the corridors were identified for ground surveys.

Ground surveys were conducted at sites with high potential for protected species along the transmission corridors from September 7 – 19; September 28 – 29; October 21; October 26 – 27, 2010. Ground surveys for protected plants (smooth coneflower, Schweinitz's sunflower, pondberry, Canby's dropwort, rough-leaved loosestrife) consisted of walking the potential habitat using 10-foot overlapping transects. Ten-foot wide transects should be sufficient for these plants because they are conspicuous during the fruiting/flowering season. Ground surveys for Red-cockaded woodpeckers (RCWs) consisted of inspecting each tree over 10 inches diameter at breast height within the new ROW for nesting cavities.

The location of ground surveys and areas for habitat verification were recorded using a Trimble GEO XT GPS unit. The habitat was described and photo-documented. Specific ground surveys were conducted at 27 distinct locations (12 Flat Creek and 15 Varnville). An additional 35 distinct locations (12 Flat Creek and 23 Varnville) were entirely traversed by foot, truck, or Utility Type Vehicle (UTV) to verify and/or identify suitable habitat for federally protected species.

Specific Methodology for Each Species

A review of the Inventory and personal observations during field work completed during a portion of the bald eagle courtship, mating and nesting season (i.e., September – October) formed our approach to determining presence or absence of nesting bald eagles.

Aerial photography (color-infrared and natural-color) was used to identify areas of mature pine or pine/hardwood that have been thinned and managed as open stands. These areas would be potential habitat for RCW's and American chaffseed (open pine woodland maintained by fire).

A review of the Inventory and personal observations during field work formed our approach to determining the presence or absence of nesting wood storks.

The shortnose sturgeon is known from two counties with proposed new ROW (Richland and Dorchester). A review of the Inventory and existing literature formed our approach to determining the presence or absence of this species. There are two new ROW crossings of tributaries to the Broad River (Little River and Cedar Creek) in Richland County.

The frosted flatwoods salamander and the wetland plant species (pondberry, Canby's dropwort) in our study area are typically associated with depressional forested wetlands and ponds within pine forests. These areas were identified using aerial photography (color-infrared and natural-color). No ground surveys were conducted for the salamander because there is no proposed new ROW in the counties where it is likely to occur. Ground surveys for pondberry and Canby's dropwort were conducted at six and nine locations, respectively.

The Carolina heelsplitter is known to occur upstream of the new ROW segment of the VCSNS-Flat Creek line in the Waxhaw Creek and Gills Creek drainages (SCDNR 2010) and in Flat Creek, a tributary of the Lynches River in Lancaster County (SCDNR 2010, USFWS 2002). These water bodies contain designated critical habitat for the Carolina heelsplitter (USFWS 2002). However, the Waxhaw Creek and Gills Creek populations are located approximately 15 miles north and 12 miles northeast, respectively, of the proposed new ROW segment located in Lancaster County. The known population and critical habitat associated with Flat Creek in Lancaster and Kershaw counties is not in an area where new ROW will be constructed.

Smooth coneflower is a species that is associated with basic or alkaline soils typical of prairie-like habitats. Using the soil survey map GIS layer, each individual soil series that was within or adjacent to the transmission corridor was reviewed in the "Classification of the Soils" section of the county soil survey to determine if it was a basic soil. In areas where basic soils occurred within or adjacent to the transmission corridor (in counties where smooth coneflower is known to occur), ground surveys were conducted for smooth coneflower. A total of three specific locations were ground surveyed for smooth coneflower.

Schweinitz's sunflower is a species closely associated with the Iredell soil series (e.g., Enon, Lloyd, Cecil, Zion) (USFWS 1994) and prairie-like habitats. These soil types are "relatively circumneutral"(i.e., with pH values around 7) (Nelson 2007). Within Lancaster County (the only county the transmission corridor crosses where Schweinitz's sunflower is known to occur), the soil survey map GIS layer was reviewed to

determine if these soils were present. In areas where these soils occurred within or adjacent to the transmission corridor in Lancaster County, ground surveys were conducted for Schweinitz's sunflower at five locations.

Rough-leaved loosestrife generally occurs on the edges between longleaf pine uplands and pond pine pocosins (USFWS 1992). This habitat was identified using aerial photography in Richland County (the only county this species is known to occur). No suitable habitat was identified, however a few areas were ground surveyed to verify the habitat type.

Granite outcrops were identified in Lancaster County (the only county that the transmission corridor crosses where granite outcrop species would occur) using aerial photography. The habitat was then verified on the ground to determine if the outcrop was large enough to support black spored quillwort and little amphianthus.

Results

Bald Eagle - There is a bald eagle nest located near the entrance road to the VC Summer Nuclear Site approximately 0.44 mile (~2,290 feet) from the Flat Creek transmission corridor. The closest bald eagle nest is approximately one mile from the Varnville transmission corridor in the Broad River drainage in Newberry County (SCDNR 2010).

Red-Cockaded Woodpecker : The closest known RCW group to the existing transmission corridor is about one mile away in Orangeburg County. The two closest known RCW group to the proposed new segments of ROW occur approximately two miles from the existing line in Orangeburg County and about eight miles from the new line segment in Dorchester County. No other known RCW groups were identified near the segments of new ROW.

Fifteen specific locations were identified as potential areas for RCWs. These locations were ground surveyed and/or habitat verified for potential occurrence of RCWs. Only one area (Flat Creek Sheet 44 POI 46) with proposed new ROW had a small amount of suitable foraging habitat for the RCW. The area had recently been treated with herbicide to control midstory. However, based on interpretation of aerial photography and verifying the signature on the ground, there was no suitable nesting habitat adjacent to the foraging habitat. There are commercially managed pine and mixed pine-hardwood forests within the areas of new ROW. These are typically isolated tracts of land under intensive commercial timber management.

Wood Stork: There are no known occurrences of nesting wood stork colonies along or near the new ROW segments in Richland and Dorchester counties. Wood storks were not observed during the field work for this study. Wood Storks could be expected to use wetlands in the project area for foraging.

Shortnose Sturgeon: The proposed new ROW in Dorchester County will not cross any river systems that support shortnose sturgeon. However, there is one record from 1979 of a shortnose sturgeon caught using a gillnet in the Edisto River. The record is located within the existing ROW just south of Orangeburg (SCDNR 2010).

Frosted flatwoods salamander: A few isolated, depressional ponds occur within the ROW of the proposed project. Four specific locations were examined to verify the type of habitat present. In addition, the field teams conducted limited visual reconnaissance in extensive areas with moderate

potential along existing and new ROW. All of the ponds or areas that appeared as ponded on the aerial photo have characteristics making them unsuitable for flatwoods salamanders (e.g., closed pine or hardwood midstory/canopy, no adjacent pine flatwoods, or not wetland).

Carolina Heelsplitter: The Carolina heelsplitter is known to occur upstream of the new ROW segment of the Flat Creek line in the Waxhaw Creek and Gills Creek drainages (SCDNR 2010) and in Flat Creek, a tributary of the Lynches River in Lancaster County (SCDNR 2010, USFWS 2002). These water bodies (part of the Catawba River system) contain designated critical habitat for the Carolina heelsplitter (USFWS 2002). However, the Waxhaw Creek and Gills Creek populations are located approximately 15 miles north and 12 miles northeast, respectively, of the proposed new ROW segment located in Lancaster County. The designated critical habitat is also located above the proposed new ROW. The known population and critical habitat associated with Flat Creek in Lancaster and Kershaw counties is in an area where no new ROW will be constructed.

Pondberry: Six specific locations identified as high potential for pondberry were ground surveyed for the species presence or habitat verified as not suitable. In addition, the field teams conducted limited visual reconnaissance in extensive areas with moderate potential along existing and new ROW. The segment of proposed new ROW located in Dorchester County (Sheets 97-99) does not contain suitable habitat for this species. The three specific areas in Colleton County identified as high potential for this species were either unsuitable habitat or the species was not present.

Canby's dropwort: The closest known population of Canby's dropwort to the existing corridor is about 1.5 miles away in Orangeburg County. Nine specific locations identified as high potential for Canby's dropwort were ground surveyed for the species presence or habitat verified as not suitable. In addition, the field teams conducted limited visual reconnaissance in extensive areas with moderate potential along existing and new ROW. All areas were found to either have unsuitable habitat or the species was not present.

Smooth coneflower: Three specific locations identified as high potential for smooth coneflower were ground surveyed for the species presence or habitat verified as not suitable. In addition, the field teams conducted limited visual reconnaissance in extensive areas with moderate potential along existing and new ROW. All areas were found to either have unsuitable habitat (e.g., maintained as crops or pasture) or the species was not present.

Schweinitz's sunflower: Five specific locations identified as high potential for Schweinitz's sunflower were ground surveyed for the species presence or habitat verified as not suitable. In addition, the field teams conducted limited visual reconnaissance in extensive areas with moderate potential along existing and new ROW. All areas were found to either have unsuitable habitat (e.g., maintained as crops or pasture) or the species was not present.

Rough-leaved loosestrife: Three specific locations identified as potential for rough-leaved loosestrife were ground surveyed for the species presence or habitat verified as not suitable. In addition, the field teams conducted limited visual reconnaissance in extensive areas with moderate potential along existing and new ROW. All areas were found to have unsuitable habitat for this species (e.g., no fire management).

Black spored quillwort and Little amphianthus: Black spored quillwort and little amphianthus occur on large isolated granite domes or gently rolling granite flatrocks (USFWS 1992). Although a few granite

outcrops were observed during the field investigations, no large granite outcrops suitable for supporting these species were identified along the proposed new ROW located in Lancaster County.

American chaffseed: Four specific locations identified as potential for American chaffseed were ground surveyed for the species presence or habitat verified as not suitable. In addition, the field teams conducted limited visual reconnaissance in extensive areas with moderate potential along existing and new ROW. All areas were found to have unsuitable habitat (e.g., no fire management, no wiregrass present).

Determination of Effect

A total of 239 miles of ROW (39.5 miles new ROW and 199.5 miles within existing ROW) are proposed to be constructed. The 39.5 miles of proposed new ROW is the equivalent of 375 acres with 142 acres of existing forested areas proposed to be converted to maintained ROW for utility use. BMPs will be implemented to minimize adverse effects from forest fragmentation and decreased water quality. These BMPs will, therefore, minimize adverse impacts to federally protected species. Maintenance activities on the proposed new ROW and the existing ROW with additional lines will be the same as on the existing ROW.

Based on the literature review, habitat comparison, and on-site survey results we have made the following effect determinations (Table 2).

Table 2. Determination of effect and justification for each species potentially occurring along the Flat Creek and Varnville transmission corridors.

Species	Determination of Effect	Justification
Bald eagle	Not likely to disturb	All impacts will be >660 feet from an active bald eagle nest; raptor safe transmission line designs
Red-cockaded woodpecker	May affect, not likely to adversely affect	No suitable nesting habitat will be impacted; small area of suitable foraging habitat with no nesting habitat adjacent
Wood stork	May affect, not likely to adversely affect	No nesting colony present; BMPs will minimize adverse effects to potential foraging habitat
Shortnose sturgeon	May affect, not likely to adversely affect	BMPs will minimize adverse effects to species by minimizing impacts to large river systems
Frosted flatwoods salamander	May affect, not likely to adversely affect	Potential suitable habitat was assessed was found to be unsuitable in ROW for breeding ponds
Carolina heelsplitter	May affect, not likely to adversely affect	BMPs will minimize adverse effects to species by protecting river and creek systems

Pondberry	May affect, not likely to adversely affect	Unsuitable habitat or the species was not present; BMPs will minimize adverse effects to potential habitat
Canby's dropwort	May affect, not likely to adversely affect	Unsuitable habitat or the species was not present; BMPs will minimize adverse effects to potential habitat
Smooth coneflower	May affect, not likely to adversely affect	Unsuitable habitat or the species was not present; BMPs will minimize adverse effects to potential habitat
Schweinitz's sunflower	May affect, not likely to adversely affect	Unsuitable habitat or the species was not present; BMPs will minimize adverse effects to potential habitat
Rough-leaved loosestrife	No effect	Suitable habitat not present
Black-spored quillwort	No effect	Suitable habitat not present
Little amphianthus	No effect	Suitable habitat not present
American chaffseed	No effect	Suitable habitat not present

Summary

We have (1) reviewed the existing literature and databases for known occurrences, (2) conducted field surveys from September to October, 2010 in suitable habitat, and (3) determined the proposed transmission lines may affect, but will not likely adversely affect the bald eagle, red-cockaded woodpecker, wood stork, shortnose sturgeon, frosted flatwoods salamander, Carolina heelsplitter, pondberry, Canby's dropwort, smooth coneflower, Schweinitz's sunflower and will have no effect on rough-leaved loosestrife, black-spored quillwort, little amphianthus, and American chaffseed.

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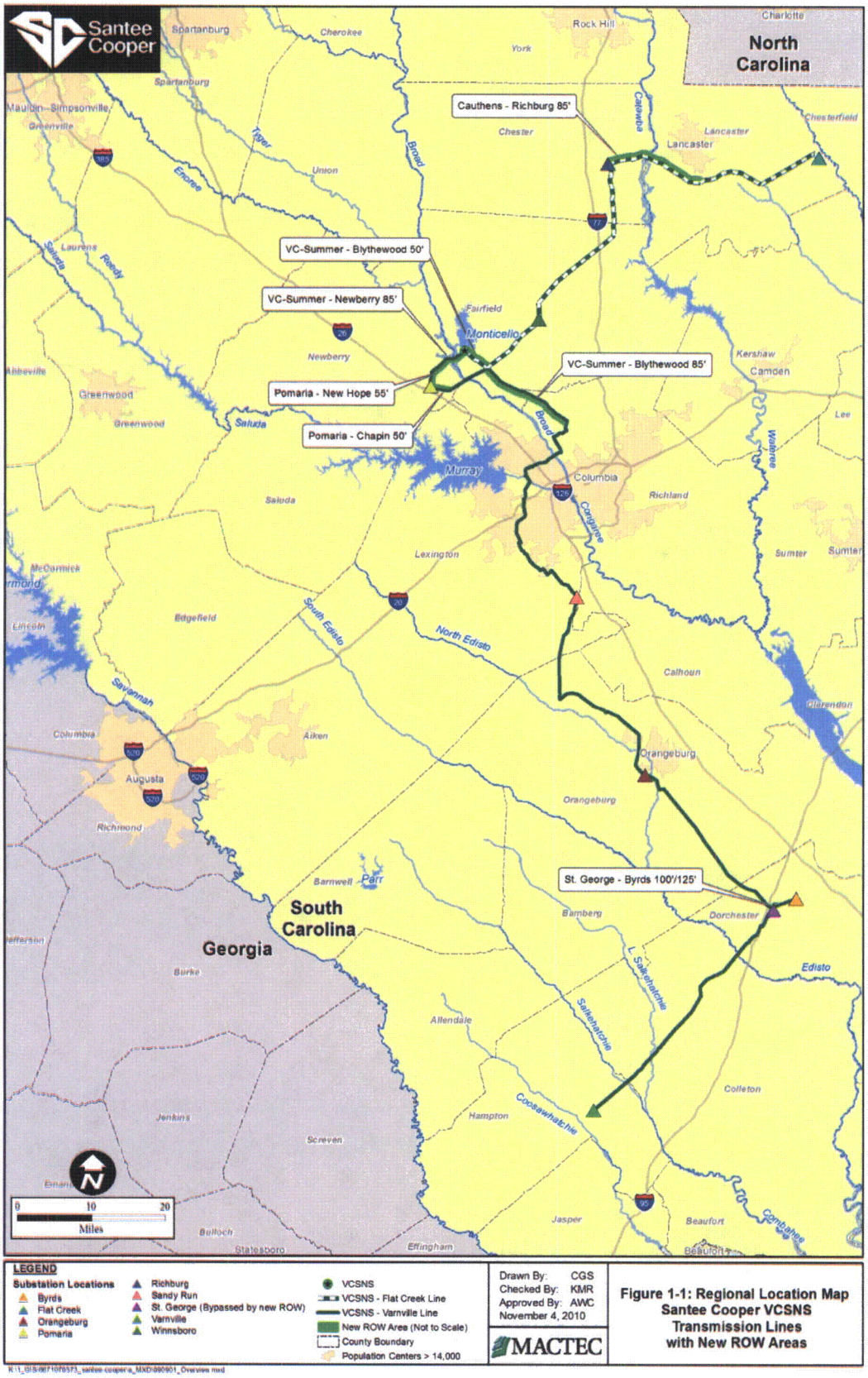

Figure 1-1: Regional Location Map Santee Cooper VCSNS Transmission Lines with New ROW Areas