



May 31, 2011

Alliance Consulting Engineers
Post Office Box 8147
Columbia, South Carolina 29202-8147

Attention: Mr. Ross Oakley, P.E.

Reference: **Protected Species Assessment**
Colonel's Pointe Business Park ~ 115 Acres
Richburg, Chester County, South Carolina
S&ME Project No. 1614-11-141

Dear Mr. Oakley:

S&ME, Inc. (S&ME) is pleased to submit our Protected Species Assessment for the above-referenced site located in Chester County, South Carolina. This work was performed in general accordance with S&ME Proposal No. 1614-6546-08, dated December 17, 2008 and the Master Services Agreement between Alliance Consulting Engineers and S&ME dated January 15, 2007.

1.0 PROJECT BACKGROUND

The site consists of a 115-acre parcel located north of the intersection of S.C. Highway 9 and Lancaster Street near Richburg, Chester County, South Carolina (Figure 1 in Appendix A). The site is identified on portions of USGS 7.5-minute topographic quadrangle maps, Fort Lawn and Richburg, SC, both dated 1969 (Figure 2 in Appendix A). This Protected Species Assessment has been conducted to assess the potential for the presence of protected species within or adjacent to the site in preparation for proposed industrial developments.

2.0 SITE/ HABITAT DESCRIPTIONS

The site is located in eastern Chester County within the Southern Outer Piedmont ecoregion of South Carolina. The site consists of cleared and wooded land with paved roads and surface water features. The properties adjacent to the site consist of forestland, educational facilities and light industrial businesses.

The site primarily consists of three habitat types: open fields, pine/ mixed-hardwood forest, and water features (streams, wetlands, and a beaver pond). Refer to the Aerial Map (Figure 3) and site photographs in Appendix A for the locations and depictions of the various habitat types.

Open Fields (Photograph 1)

The southeastern portion of the property consists of maintained grass areas surrounding roads and offsite buildings. This habitat type is dominated by a mix of grasses and weedy herbaceous vegetation with the occasional live oak (*Quercus virginiana*) tree observed. The herbaceous layer consists of bahia grass (*Paspalum notatum*), crabgrass (*Digitaria sanguinalis*), rabbit tobacco (*Gnaphalium obtusifolium*), Queen Anne's lace (*Daucus carota*), dandelion (*Taraxacum officinale*), and broomsedge (*Andropogon* spp.).

Pine – Mixed Hardwood Forest (Photographs 2)

A pine - mixed hardwood community makes up the majority of the cover type on the site. Dominant canopy species include sweet gum (*Liquidambar styraciflua*), loblolly pine (*Pinus taeda*), water oak (*Quercus nigra*), and southern red oak (*Quercus falcata*). A sub-canopy consists of sweet gum, red maple (*Acer rubrum*), and eastern red cedar (*Juniperus virginiana*). and Herbaceous species include blackberry (*Rubus* spp.) ebony spleenwort (*Asplenium platyneuron*), broomsedge, Japanese honeysuckle (*Lonicera japonica*).

Water Features (Wetlands, Streams, and Pond) (Photographs 3-6)

Six streams, three forested wetlands, and a flooded beaver pond were observed on the site. Of the onsite streams, three appeared to have perennial flow and three were drainages with seasonal flow. Stream substrates consisted of sand, silt, and gravel. The perennial stream features create portions of the eastern and western site boundaries and drain in a general northerly direction. These features support the forested wetlands and smaller drainage features and eventually flow into the flooded beaver pond. The open water of these features ranged in depth from six inches to two feet and supported very little aquatic vegetation. Species observed in the wetlands and along the streams include sweet gum, tulip poplar (*Liriodendron tulipifera*), Chinese privet (*Ligustrum sinense*), netted chainfern (*Woodwardia aereolata*), Virginia chainfern (*W. virginica*), soft rush (*Juncus effusus*), primrose (*Ludwigia* spp.), and sedges (*Carex* spp.).

3.0 METHODOLOGY

The South Carolina Department of Natural Resources (SCDNR) Rare, Threatened, and Endangered Species Inventory and the U.S. Fish and Wildlife Service (USFWS) websites were reviewed regarding current federal and state listed species known to occur in Chester County. The purpose of the database search was to identify current and historic documented occurrences of federally protected species located within this county. Additionally, S&ME personnel reviewed available supporting information including applicable USGS topographic quadrangle maps and soil survey sheets. The purpose of reviewing this supporting information was to identify drainage features and soil types in the study area. During the field reconnaissance, S&ME personnel integrated the information obtained from this supporting documentation with the field evaluation for the presence of protected species or potential protected species habitat. Portions of the site that matched descriptions of preferred habitat for protected species listed in Table 1 were considered to be potential habitat for the respective protected species. These areas were subsequently field reviewed to confirm the presence/absence of the respective species. The SCDNR database records did not identify the presence of known federally protected species (threatened or endangered) occurrences on or immediately adjacent to the site. A field survey was performed for the protected species in suitable habitats within the site on April 4, 2011. Biologists Chris Daves and Amanda White of S&ME performed the field survey.

4.0 PROTECTED SPECIES

Descriptions of the species and their respective federal status are identified in Table 1 and in Appendix B. The SCDNR and USFWS websites identified the following federally listed species for Chester County:

TABLE 1: PROTECTED FLORA & FAUNA SUMMARY

Species	Federal Status	Habitat Description
Bald Eagle <i>Haliaeetus leucocephalus</i>	BGEPA	Coastlines, rivers, large lakes which provide adequate feeding grounds.
Red-Cockaded Woodpecker <i>Picoides borealis</i>	E	Open pine stands with minimum age of 60 years; Nests in live pines with red-heart disease.
Carolina Heelsplitter <i>Lasmigona decorata</i>	E	Cool, slow-moving, small to medium sized streams & rivers; Usually found in mud, muddy sand, or muddy gravel substrates along stable, well shaded stream banks.

BGEPA = Bald & Golden Eagle Protection Act

E = Endangered

Bald Eagle – Protected Under the Bald & Golden Eagle Protection Act

BIOLOGICAL OPINION: NO EFFECT

This large raptor has characteristic adult plumage consisting of a white head and tail with a dark brown body. Juvenile eagles are completely dark brown and do not fully develop the majestic white head and tail until the fifth or sixth year. Adults average about three feet from head to tail, weigh approximately 10 to 12 pounds and have a wingspread that can reach seven feet. Generally, female bald eagles are larger than the males. The typical nest is constructed of large sticks and is lined with soft materials such as pine needles and grasses. The nests are very large, measuring up to six feet across and weighing hundreds of pounds. Nesting and feeding sites are generally in the vicinity of large bodies of open water (coastlines, rivers, large lakes).

The site does not contain suitable nesting habitat for the bald eagle. There are no coastlines, rivers, or large lakes on or adjacent to the site considered suitable habitat for the bald eagle. The pond and streams on-site are too small to sustain a bald eagle. Accordingly, future development of the site is not expected to impact this species. Please note that the bald eagle was removed from the federally threatened list in 2007. The bald eagle still has protection under Bald and Golden Eagle Protection Act.

Red-Cockaded Woodpecker – Federally Listed Endangered, State Listed Endangered
BIOLOGICAL OPINION: NO EFFECT

The red-cockaded woodpecker is a black and white bird measuring approximately seven inches long. The bird displays black and white horizontal stripes on its back. The cheeks and underparts are white and the sides are streaked in black. The cap and stripe on the throat and neck of the bird are black. Male individuals of the species have a small red spot on each side of the black cap and display a red crown patch after the first post-fledgling molt.

The red-cockaded woodpecker's range is closely linked to the distribution of southern pines. Loblolly and longleaf pines that are 60-plus years old are generally selected for nesting sites. However, other species of southern pines are occasionally used for nesting. The woodpecker usually excavates nest cavities in trees infected with a fungus that produces red-heart disease. Preferred nesting sites generally include relatively open, mature pine stands with an undeveloped or low understory layer. Foraging habitat is frequently limited to pine or pine-hardwood stands that are 30 years or older, with a preference for pine trees with a diameter of 10 inches or larger. The USFWS indicates that the maximum foraging range for the red-cockaded woodpecker is approximately one-half mile.

The site does not contain suitable nesting habitat for the red-cockaded woodpecker. There are no relatively open pine stands of proper age to be considered suitable habitat for the red-cockaded woodpecker located within the site. Accordingly, potential future development of the site is not expected to impact this species.

Carolina Heelsplitter – Federally Listed Endangered, State Listed Endangered
BIOLOGICAL OPINION: NO EFFECT

The Carolina heelsplitter is a medium-sized freshwater mussel with an ovate, trapezoid-shaped shell. The shell is yellowish, greenish-brown to dark brown in color. The inside of the shell (nacre) is pearly-white to bluish-white. The umbo area is orange or a mottled-orange. The heelsplitter has been documented in Catawba, Pee Dee, and Savannah River basins in South Carolina. The Saluda River basin is listed as a possible location for the heelsplitter. The Carolina heelsplitter has been recorded in a variety of substrates, including mud, clay, sand, gravel, and cobble/boulder/bedrock. Slate belt geology is also associated with the species. A majority of these areas are without significant silt accumulations and are along stable, well-shaded stream banks. Habitat is severely affected by siltation.

The site does not contain suitable habitat for the Carolina heelsplitter. The perennial streams on the site are impounded by beaver activity both within the site boundaries and off-site to the north and west. Water turbidity was high at the time of the site visit and the development on adjacent sites contributes to siltation within the water channel. The beaver impoundments and the former land management practices have degraded the streams creating a major deterrent for this species. Discarded shells or shell fragments were not observed. Accordingly, future development of the site is not expected to impact this species. Please note that an official mussel survey was not conducted as part of this assessment.

5.0 QUALIFICATIONS

The field survey was lead by Chris Daves of S&ME. Mr. Daves is a biologist and natural resources project manager with over ten years experience in environmental consulting. Mr. Daves is proficient in conducting wetland delineations, environmental permitting activities, and habitat assessments, including protected species surveys. He is a Professional Wetland Scientist (PWS) and holds a B.S. degree in Biology from Wofford College and a Master's degree in Earth & Environmental Resources Management from the University of South Carolina.

6.0 REFERENCES CITED

Cummings, Candace J. and G.K. Yarrow. 1996. A Guide to South Carolina's Endangered and Threatened Species – EC 693. Clemson Extension Service.

South Carolina Department of Natural Resources. April 15, 2010. Rare, Threatened, and Endangered Species Inventory, Species Found in Chester County -

http://www.fws.gov/charleston/pdf/etcountylist_04_10_final.pdf

South Carolina Heritage Trust. 2006. Geographic Database of Rare and Endangered Species.

Current On-Line Edition - <https://www.dnr.sc.gov:4443/pls/heritage/species.login>.

USFWS. February 16, 2011. Listed Endangered Species in South Carolina -

<http://www.fws.gov/charleston/countyLists.html#Listed%20Species%20in%20Chester%20County>

USFWS. March 2010. South Carolina List of Endangered, Threatened & Candidate Species.

<http://www.dnr.sc.gov/species/pdf/chester.pdf>

U.S. Department of Agriculture – National Resources Conservation Service Web Soil Survey. 2010. <http://websoilsurvey.nrcs.usda.gov/app/>.

7.0 SUMMARY AND CONCLUSIONS

Based on the literature review, habitat assessment, and pedestrian field review of the site, it is our opinion that the site does not provide suitable habitat for listed federally-protected species with documented populations in Chester County. The pedestrian field reviews did not reveal the presence of listed federally-protected species on the site. In summary, the proposed development of the site will have “no effect” on these species.


No further action is recommended at this time. This Protected Species Assessment will be forwarded to the USFWS for review and comment. The comments will be provided to you as soon as S&ME receives them.

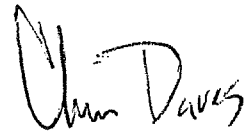
8.0 CLOSING

S&ME appreciates the opportunity to be of service to you by performing this Protected Species Assessment for the site. Please contact us at (803) 561-9024 with questions regarding this report or if you require additional information.

Sincerely,

S&ME, Inc.


Amanda White
Biologist


Chris Daves, P.W.S.
Biologist

Senior Reviewed by Tom Behnke, P.G. – Environmental Department Manager

Appendix A

Figures
Site Photographs

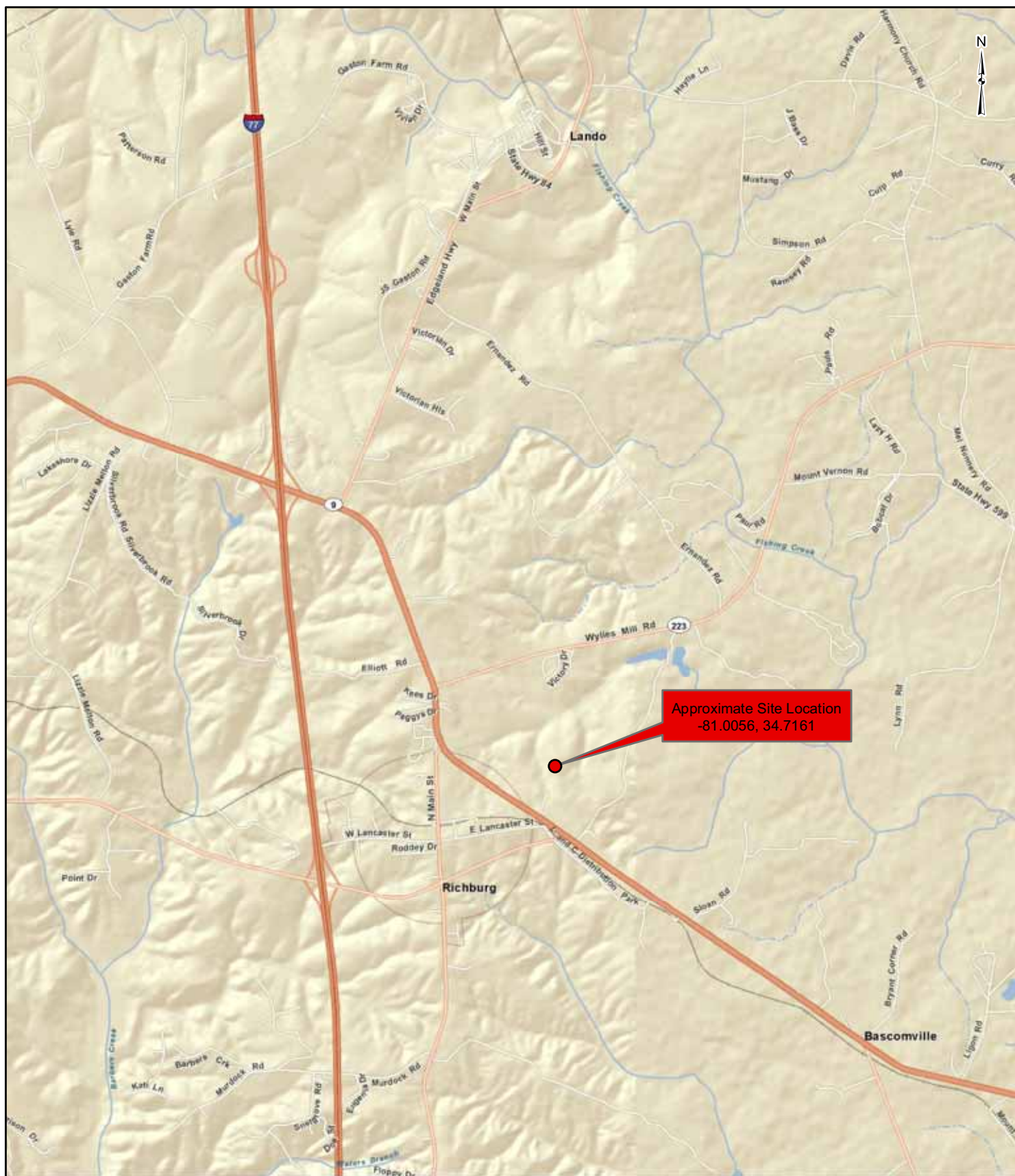
Appendix B

County Species Lists from USFWS and SCDNR

APPENDIX A

Figures

Site Photographs



Source: ESRI Streetmap

0 2,000 4,000 8,000 Feet

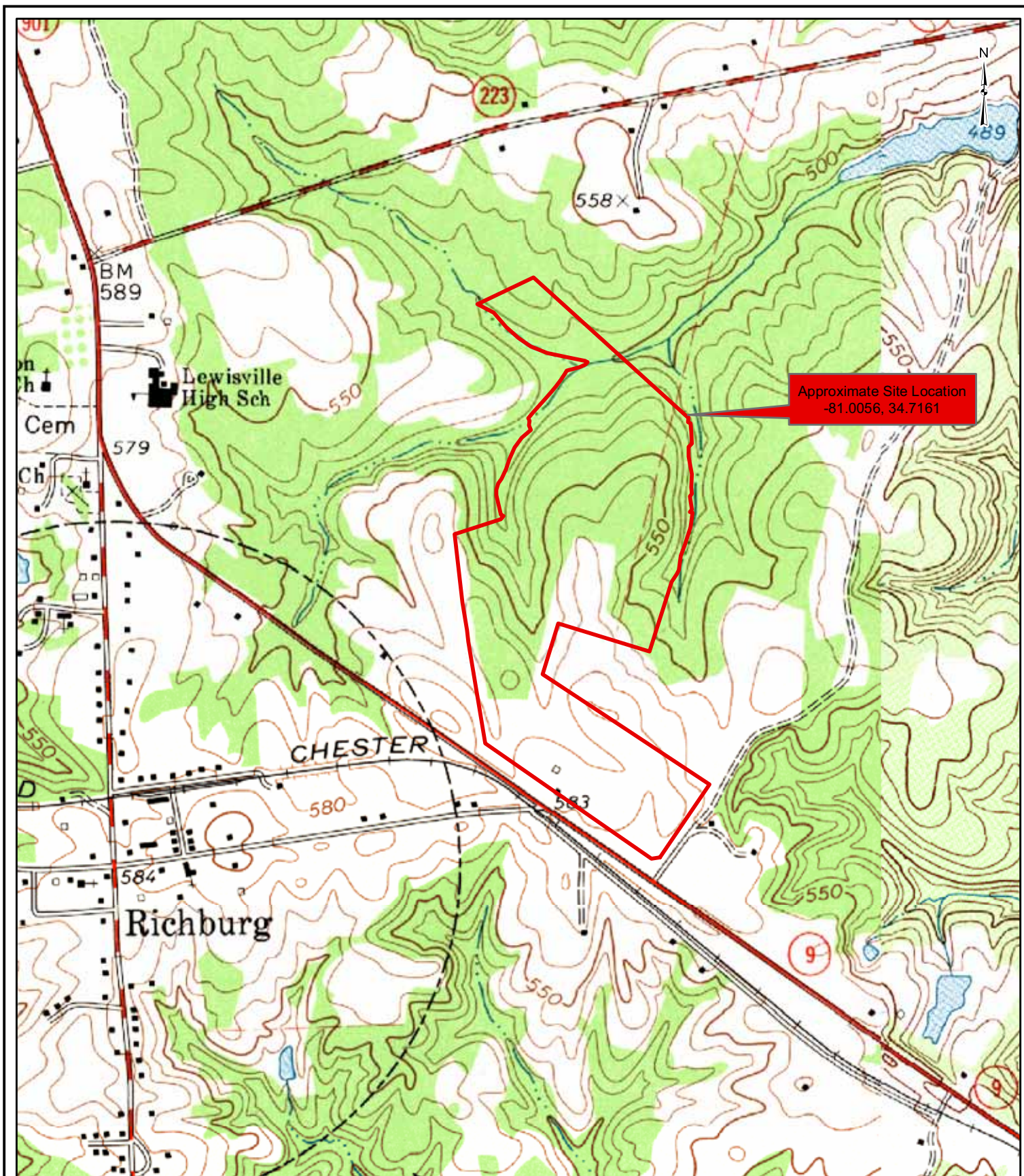
SCALE:	1 in = 4,000 ft
CHECKED BY:	WCD
DRAWN BY:	ADW
DATE:	4/8/2011



Vicinity Map Colonel's Pointe Business Park Richburg, Chester County, South Carolina	
S&ME PROJECT NO.	1614-11-141

FIGURE NO.

1



Source: USGS 7.5-minute quadrangle
Richburg and Fort Lawn, SC - 1969

0 500 1,000 2,000 Feet

SCALE: 1 in = 1,000 ft
CHECKED BY: WCD
DRAWN BY: ADW
DATE: 4/27/2011



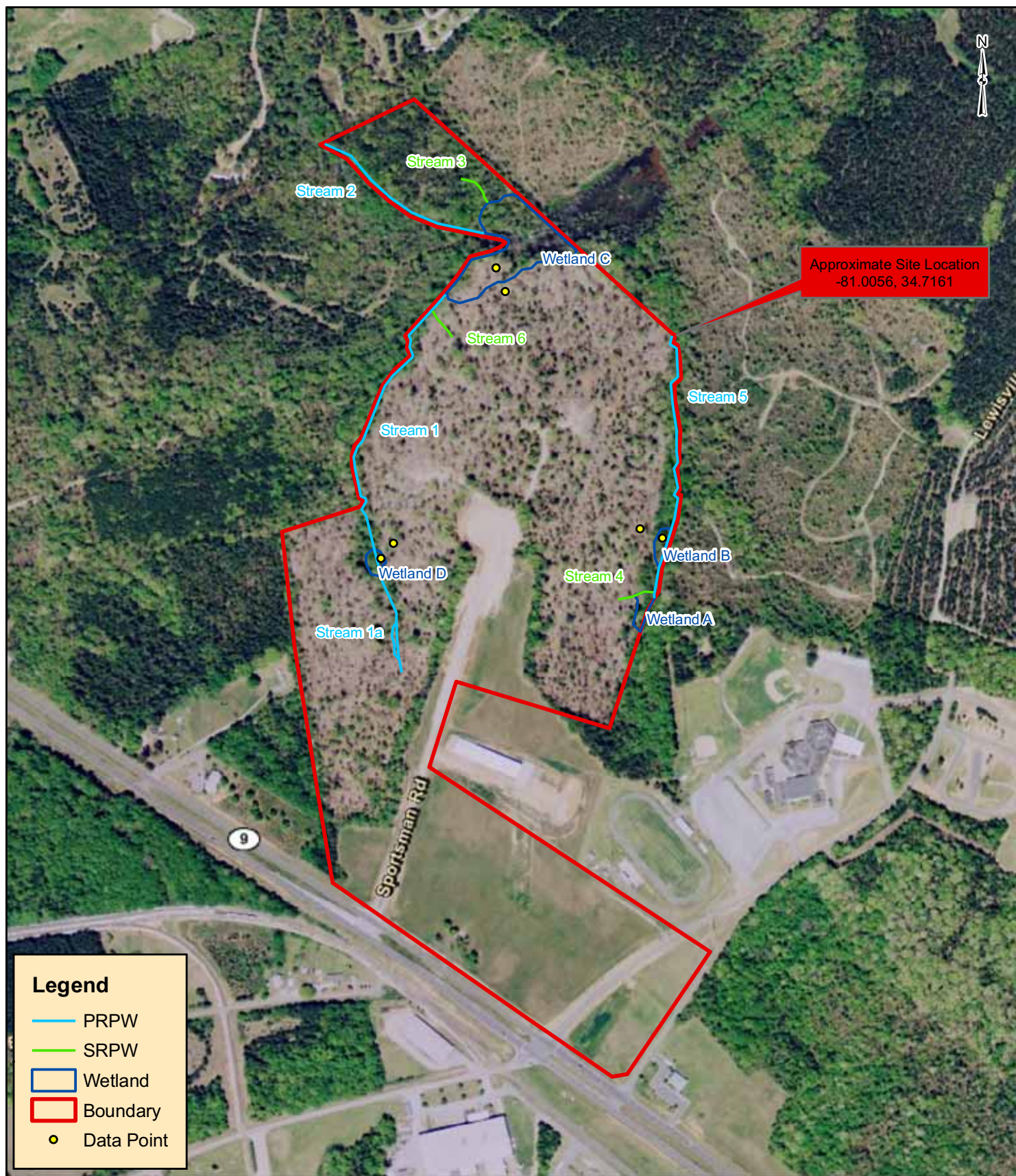
Topographic Map

Colonel's Pointe Business Park
Richburg, Chester County, South Carolina

S&ME PROJECT NO. 1614-11-141


FIGURE NO.

2



Source: ESRI Resource Center Imagery
NAIP - 2009 Aerial Photography

0 300 600 1,200 1,800 Feet

SCALE: 1 in = 600 ft		Aerial Map Colonel's Pointe Business Park Richburg, Chester County, South Carolina	FIGURE NO. 3
CHECKED BY: WCD			
DRAWN BY: ADW		S&ME PROJECT NO. 1614-11-141	
DATE: 4/27/2011			

Colonel's Pointe Business Park

Project #: 1614-11-141

134 Suber Road
Columbia, SC 29210**Photo 1**

Date: 4-4-11

Photographer: CD

Location / Orientation

The eastern portion of the subject site

Remarks

A cutover area between open field habitat type and woodland habitat type.

Photo 2

Date: 4-4-11

Photographer: CD

Location / Orientation

Southeastern portion of the subject site

Remarks

The pine – mixed hardwood habitat type consists of variety of upland tree species.


Photo 3		
	Date: 4-4-11	
	Photographer: CD	
Location / Orientation	Along the eastern site boundary	
Remarks	The perennial streams on the site are small and impacted by siltation.	

Photo 4		
	Date: 4-4-11	
	Photographer: CD	
Location / Orientation	Northwestern portion of the site	
Remarks	Three seasonal linear features were observed on the site. Stream 3 has been flooded by beaver activity.	

Colonel's Pointe Business Park

Project #: 1614-11-141

134 Suber Road
Columbia, SC 29210**Photo 5**

Date: 4-4-11

Photographer: CD

Location / Orientation

Northern portion of the subject site

Remarks

Several of the onsite features drain into a flooded beaver pond.

Photo 6

Date: 4-4-11

Photographer: CD

Location / Orientation

Southwestern portion of the subject site

Remarks

Wetland D is adjacent to Stream 1.

APPENDIX B

County Species Lists from USFWS and SCDNR For Chester County

South Carolina List of Endangered, Threatened and Candidate Species April 2010

E	Federally endangered
T	Federally threatened
P	Proposed in the Federal Register
CH	Critical Habitat
C	The U.S. Fish and Wildlife Service or the National Marine Fisheries Service has on file sufficient information on biological vulnerability and threat(s) to support proposals to list these species
S/A	Federally protected due to similarity of appearance to a listed species
*	Contact the National Marine Fisheries Service for more information on this species
**	The U.S. Fish and Wildlife Service and the National Marine Fisheries Service share jurisdiction of this species
BGEPA	Federally protected under the Bald and Golden Eagle Protection Act

These lists should be used only as a guideline, not as the final authority. The lists include known occurrences and areas where the species has a high possibility of occurring. Records are updated continually and may be different from the following. For a list of state endangered, threatened, and species of concern go to <http://www.dnr.sc.gov/species/index.html>.

<u>COUNTY</u>	<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>	<u>STATUS</u>
Abbeville	Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA
	Carolina heelsplitter	<i>Lasmigona decorata</i>	E
	Georgia aster	<i>Aster georgianus</i>	C
Aiken	Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA
	Piedmont bishop-weed	<i>Ptilimnium nodosum</i>	E
	Red-cockaded woodpecker	<i>Picoides borealis</i>	E
	Relict trillium	<i>Trillium reliquum</i>	E
	Shortnose sturgeon	<i>Acipenser brevirostrum</i> *	E
	Smooth coneflower	<i>Echinacea laevigata</i>	E
Allendale	Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA
	Canby's dropwort	<i>Oxypolis canbyi</i>	E
	Red-cockaded woodpecker	<i>Picoides borealis</i>	E
	Shortnose sturgeon	<i>Acipenser brevirostrum</i> *	E
	Smooth coneflower	<i>Echinacea laevigata</i>	E
Anderson	Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA
	Smooth coneflower	<i>Echinacea laevigata</i>	E

<u>COUNTY</u>	<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>	<u>STATUS</u>
Berkeley	West Indian manatee	<i>Trichechus manatus</i>	E
Continued	Wood stork	<i>Mycteria americana</i>	E
Calhoun	Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA
	Red-cockaded woodpecker	<i>Picoides borealis</i>	E
	Shortnose sturgeon	<i>Acipenser brevirostrum</i> *	E
Charleston	American chaffseed	<i>Schwalbea americana</i>	E
	Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA
	Canby's dropwort	<i>Oxypolis canbyi</i>	E
	Finback whale	<i>Balaenoptera physalus</i> *	E
	Frosted flatwoods salamander	<i>Ambystoma cingulatum</i>	T, CH
	Green sea turtle	<i>Chelonia mydas</i> **	E
	Humpback whale	<i>Megaptera novaengliae</i> *	E
	Kemp's ridley sea turtle	<i>Lepidochelys kempii</i> **	E
	Leatherback sea turtle	<i>Dermochelys coriacea</i> **	E
	Loggerhead sea turtle	<i>Caretta caretta</i> **	T
	Piping plover	<i>Charadrius melodus</i>	T, CH
	Pondberry	<i>Lindera melissifolia</i>	E
	Red-cockaded woodpecker	<i>Picoides borealis</i>	E
	Red knot	<i>Calidris canutus rufa</i>	C
	Right whale	<i>Balaena glacialis</i> *	E
	Seabeach amaranth	<i>Amaranthus pumilus</i>	T
	Shortnose sturgeon	<i>Acipenser brevirostrum</i> *	E
	West Indian manatee	<i>Trichechus manatus</i>	E
	Wood stork	<i>Mycteria americana</i>	E
Cherokee	Dwarf-flowered heartleaf	<i>Hexastylis naniflora</i>	T
	Georgia aster	<i>Aster georgianus</i>	C
Chester	Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA
	Carolina heelsplitter	<i>Lasmigona decorata</i>	E
	Georgia aster	<i>Aster georgianus</i>	C
	Red-cockaded woodpecker	<i>Picoides borealis</i>	E

Rare, Threatened, and Endangered Species and Communities Known to Occur in Chester County, South Carolina
April 15, 2010

Scientific Name	Common Name	USESA Designation	State Protection	Global Rank	State Rank
<u>Vertebrate Animals</u>					
<i>Haliaeetus leucocephalus</i>	Bald Eagle		SE-Endangered	G5	S2
<i>Pseudacris feriarum</i>	Upland Chorus Frog			G5	S5
<u>Invertebrate Animals</u>					
<i>Lasmigona decorata</i>	Carolina Heelsplitter	LE: Listed endangered	SE-Endangered	G1	S1
<i>Villosa delumbis</i>	Eastern Creekshell			G4	S4
<u>Vascular Plants</u>					
<i>Agrimonia pubescens</i>	Soft Groovebur			G5	S1
<i>Aster georgianus</i>	Georgia Aster	C: Candidate		G2G3	SNR
<i>Camassia scilloides</i>	Wild Hyacinth			G4G5	S2
<i>Dirca palustris</i>	Eastern Leatherwood			G4	S2
<i>Hymenocallis coronaria</i>	Shoals Spider-lily			G2Q	S2
<i>Menispermum canadense</i>	Canada Moonseed			G5	S2S3
<i>Ophioglossum vulgatum</i>	Adder's-tongue			G5	S2
<i>Ranunculus fascicularis</i>	Early Buttercup			G5	S1
<i>Ratibida pinnata</i>	Gray-head Prairie Coneflower			G5	S1
<i>Scutellaria parvula</i>	Small Skullcap			G4	S2S3
<u>Communities</u>					
Shoal and stream bar				GNR	SNR
Oak - hickory forest				G5	S5

<http://www.dnr.sc.gov/species/index.html>