



United States Department of the Interior

FISH AND WILDLIFE SERVICE

176 Croghan Spur Road, Suite 200
Charleston, South Carolina 29407



May 23, 2011

Mr. Chris Daves
S&ME, Inc.
134 Suber Road
Columbia, SC 29210

Re: Protected Species Assessment
Chester Research and Development Park ~ 313 Acres
Great Falls, Chester County, South Carolina
FWS Log No. 2011-TA-0271

Dear Mr. Daves:

The U.S. Fish and Wildlife Service (Service) has reviewed the protected species assessment for the above referenced project. The following comments are provided in accordance with the Fish and Wildlife Coordination Act and the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*). If impacts to wetlands or streams are anticipated, the Service recommends contacting the U.S. Army Corps of Engineers for further guidance.

According to the protected species assessment submitted to this office, the site contains potential habitat for the Carolina heelsplitter (*Lasmigona decorata*); however, an official mussel survey was not conducted as part of the assessment. Two unnamed perennial tributaries of Fishing Creek cross the property, and the site is located directly adjacent to Beaverdam Creek. Both Beaverdam and Fishing Creek are occupied by the Carolina heelsplitter. For these reasons, the Service is requesting an official freshwater mussel survey be completed for the site by a federally permitted individual(s), during the appropriate survey window for this species (March-September). The Service retains the right to review the results of this survey upon its completion. At this time, we cannot concur with your determination that activities on this tract will have no effect on the Carolina heelsplitter. Additionally, in order to properly evaluate the effect of future project activities on threatened and endangered species, the Service needs to be provided with plans and/or detailed descriptions of work to take place on site.

Your interest in ensuring the protection of endangered species is appreciated. If you have further questions or require additional information, please contact Morgan Wolf of this

office at (843) 727-4707 ext. 219. In future correspondence concerning this project, please reference FWS Log No. 2011-TA-0271.

Sincerely,

A handwritten signature in cursive script that reads "Joe Cochell". The signature is written in dark ink and is positioned above the typed name.

ACTING FOR Jay B. Herrington
Field Supervisor

JBH/MKW



May 3, 2011

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

Attention: Mr. Kyle Clampitt, P.E.

Reference: Protected Species Assessment
Chester Research and Development Park ~ 313 Acres
Great Falls, Chester County, South Carolina
S&ME Project No. 1614-11-161

Dear Mr. Clampitt:

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. 1614-8082-11, dated April 5, 2011 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 313-acre parcel located east of S.C. Highway 99 (Richburg Road) approximately 3.5 miles northwest of Great Falls, Chester County, South Carolina (Figure 1 in Appendix A). The site is identified on a portion of the USGS 7.5-minute topographic quadrangle map, Fort Lawn, SC, and 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 maintained easements, dirt roads, and surface water features. The properties adjacent to the site consist of forestland, farmland, and scattered single-family residences.

The site primarily consists of three habitat types: open fields, pine/ mixed-hardwood forest, and water features (two perennial streams and a 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 majority of the western portion of the site consists of open fields. This habitat type is dominated by a mix of grasses and weedy herbaceous vegetation with the occasional post oak (*Quercus stellata*), eastern red cedar (*Juniperus virginiana*), or eastern hop-hornbeam (*Ostrya virginiana*) tree observed. The herbaceous layer consists of Queen Anne's lace (*Daucus carota*), St. John's wort (*Hypericum drummondii*), grass-leaved blazing star (*Liatris graminifolia*), broomsedge (*Andropogon* spp.), red fescue (*Festuca rubra*) and panic grasses (*Panicum* spp.).

Pine/ Mixed-Hardwood Forest (Photographs 2-3)

A pine/ mixed-hardwoods community is located on a majority of the eastern half of the site. Other small areas of this habitat type are present on the northern, central, and southern portions of the site. Dominant canopy species include loblolly pine (*Pinus taeda*), shortleaf pine (*P. echinata*), scrubby post oak (*Quercus margaretta*), post oak, southern red oak (*Q. falcata*), and blackjack oak (*Q. marilandica*). Individuals of the canopy dominants as well as eastern red cedar, mockernut hickory (*Carya tomentosa*), eastern hop-hornbeam, and flowering dogwood (*Cornus florida*) populate the subcanopy.

Dominant shrub and woody vine species include saplings of the canopy and subcanopy dominants, American holly (*Ilex opaca*), Virginia creeper (*Parthenocissus quinquefolia*), and muscadine (*Vitis rotundifolia*). Herbaceous species include ebony spleenwort (*Asplenium platyneuron*) and small patches of panic grass.

Water Features (Pond and Streams) (Photographs 4-6)

A small cattle pond (approximately 0.2 acres) is present on the southwestern portion of the site. The area surrounding the pond has been degraded due the movement of cattle to and from the pond. Species observed on the rim of the pond included black willow (*Salix nigra*), soft rush (*Juncus effusus*), primrose (*Ludwigia* spp.), and panic grasses. Two streams with perennial flow and several minor drainages with seasonal flow were observed on the site. Stream substrates consisted of sand, silt, and gravel.

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 the USGS Fort Lawn, SC topographic quadrangle map and applicable 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 T = Threatened 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 somewhat 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. Although the site is relatively close to Fishing Creek, there were no bald eagle nests observed. 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.

Based on flow regime, the onsite perennial streams may have potential habitat for the Carolina heelsplitter. However, these features have been previously impacted, are deeply incised, and water turbidity was high at the time of the site visit. Eroding banks and past site use contribute to siltation within the water channel, 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 Jim Palmer, P.E. – Engineering Manager

Appendix A

Figures
Site Photographs

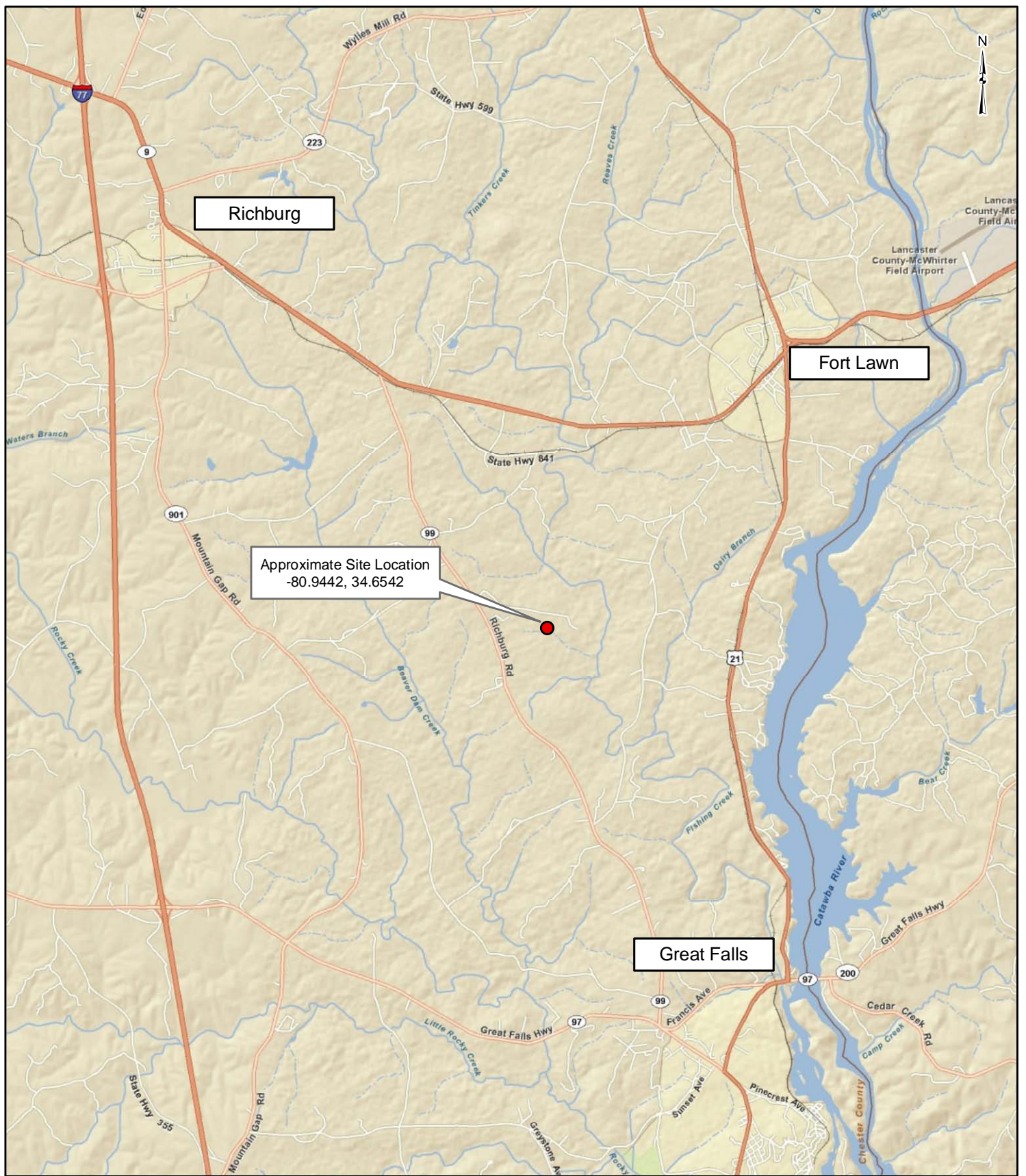
Appendix B

County Species Lists from USFWS and SCDNR

APPENDIX A

Figures

Site Photographs



Source: ESRI Streetmap - 2010

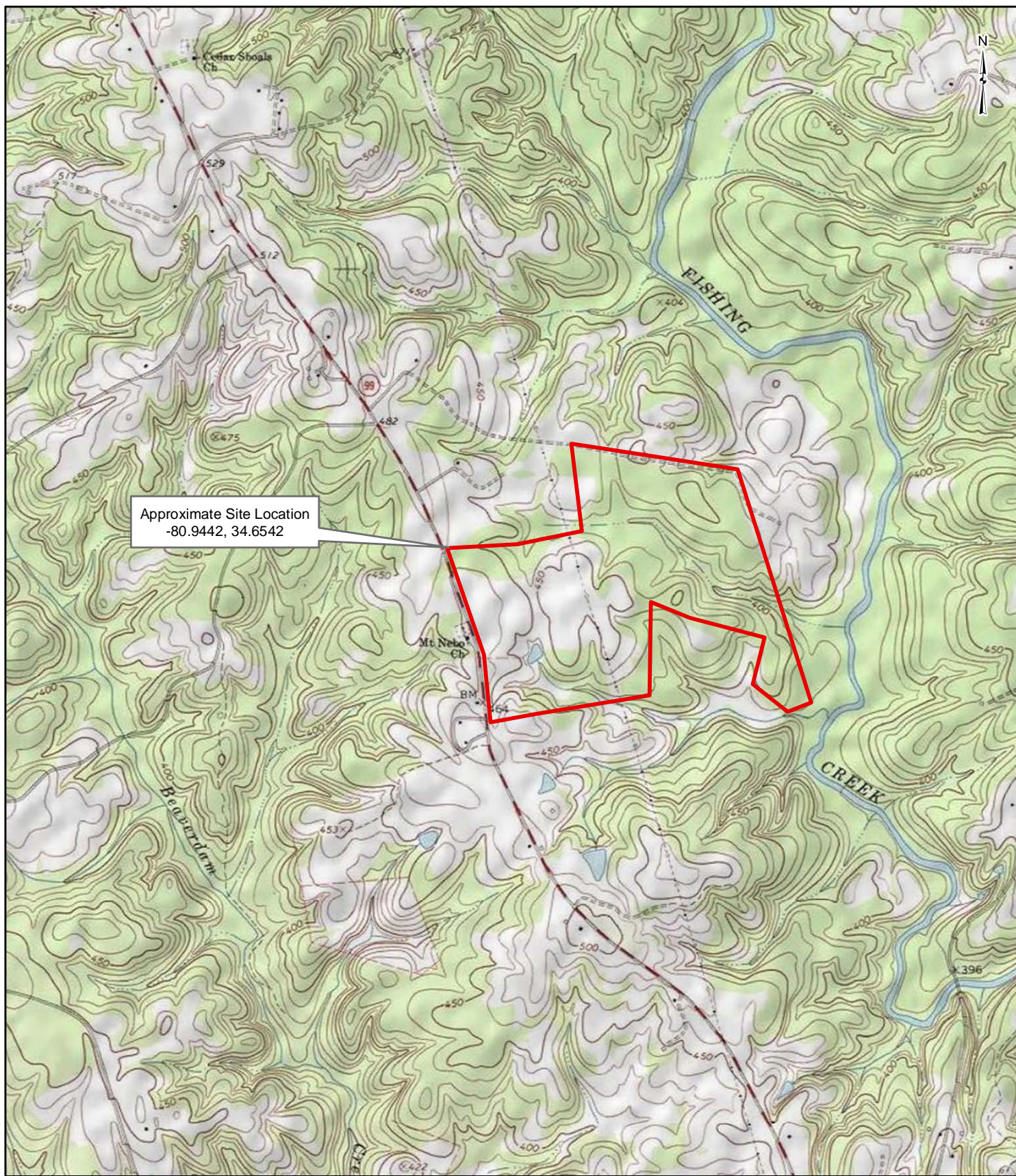
0 0.5 1 2 3 Miles

SCALE: 1 in = 1.5 mi
 CHECKED BY: WCD
 DRAWN BY: ADW
 DATE: 4/22/2011



Vicinity Map
 Chester Research and Development Park
 Great Falls, Chester County, South Carolina
 S&ME PROJECT NO. 1614-11-161

FIGURE NO.
1



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

0 1,200 2,400 4,800 Feet

SCALE: 1 in = 2,000 ft
CHECKED BY: WCD
DRAWN BY: ADW
DATE: 4/22/2011



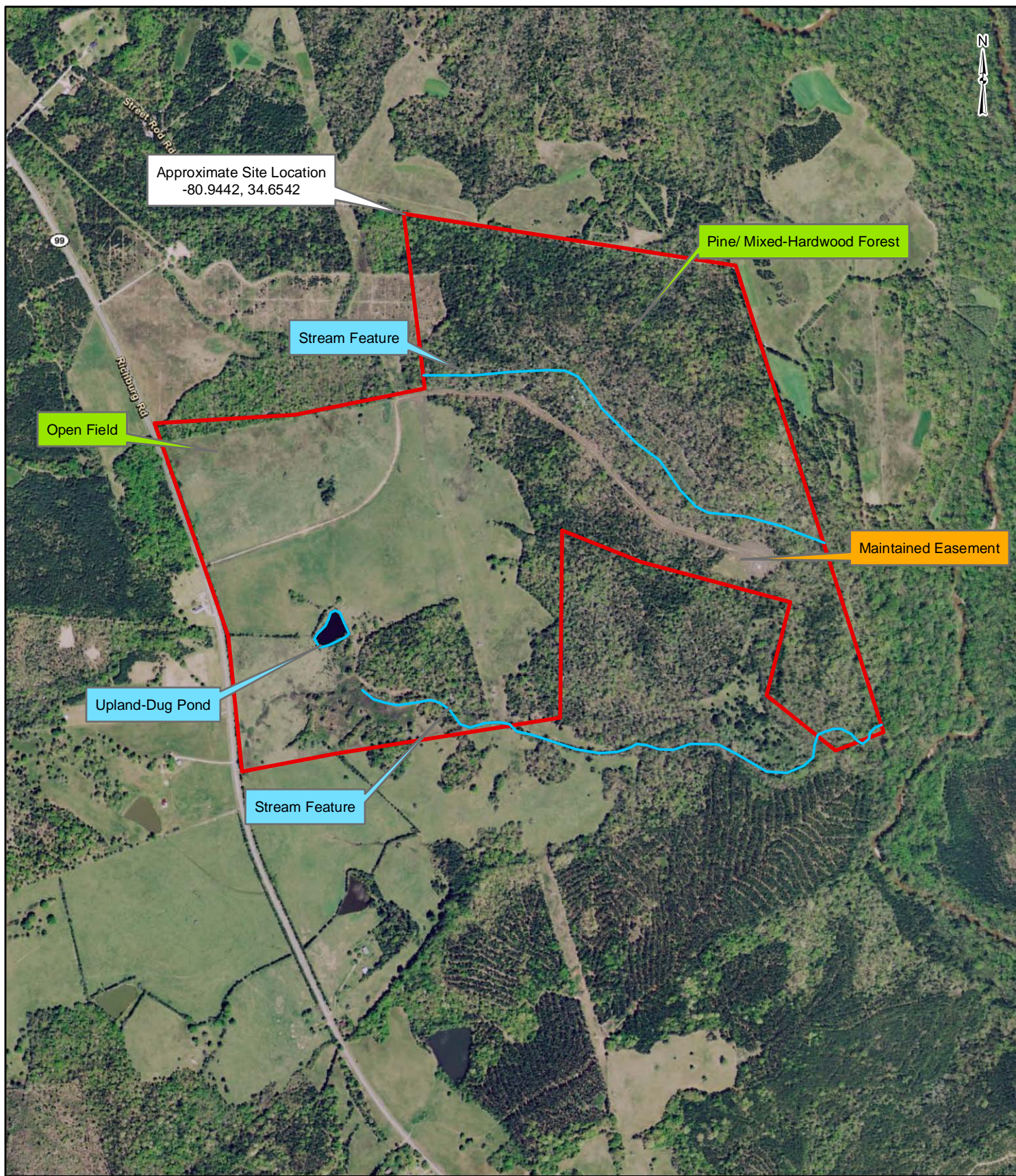
Topographic Map

Chester Research and Development Park
Great Falls, Chester County, South Carolina

S&ME PROJECT NO. 1614-11-161

FIGURE NO.

2



Source: NAPP Aerial Photograph - 2006

0 600 1,200 2,400 Feet

SCALE: 1 in = 1,000 ft
 CHECKED BY: WCD
 DRAWN BY: ADW
 DATE: 4/22/2011



Aerial Map

Chester Research and Development Park
 Great Falls, Chester County, South Carolina

S&ME PROJECT NO. 1614-11-161

FIGURE NO.

3


Photo 1	
	Date: 4-4-11
	Photographer: CD
Location / Orientation	The western portion of the subject site
Remarks	The open field habitat type consists of grasses and weedy vegetation.


Photo 2	
	Date: 4-4-11
	Photographer: CD
Location / Orientation	Northeastern 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	Southeastern portion of the subject site
Remarks	The pine/ mixed-hardwood habitat type consists of variety of upland tree species.

Photo 4	
	Date: 4-4-11
	Photographer: CD
Location / Orientation	Southwestern portion of the site
Remarks	An upland-dug cattle pond was observed on the subject site.

Photo 5	
	
<div> <div>Date: 4-4-11</div> <div>Photographer: CD</div> </div>	
Location / Orientation	Central portion of the subject site
Remarks	A perennial stream feature was observed on the site. The banks of the stream are eroded and the water is clouded by siltation.

Photo 6	
	
<div> <div>Date: 4-4-11</div> <div>Photographer: CD</div> </div>	
Location / Orientation	Southeastern portion of the subject site
Remarks	A perennial stream feature was observed on the site. The banks of the stream are eroded and the water is clouded by siltation.

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>