



Protected Species Assessment
Augusta Corporate Park
Augusta, Richmond Co., Georgia
S&ME Project No. 22610163

PREPARED FOR:

Development Authority of Augusta, GA
1450 Greene Street, Suite 3500
Augusta, GA 30901

PREPARED BY:

S&ME, Inc.
134 Suber Road
Richmond, SC 29210

April 11, 2022



April 11, 2022

Development Authority of Augusta, GA
1450 Greene Street, Suite 3500
Augusta, Georgia 30901

Attention: Michael Norris
mnorris@augustaEDA.org

Reference: **Protected Species Assessment**
Augusta Corporate Park
Augusta, Richmond County, Georgia
S&ME Project No. 22610163

Dear Mr. Norris:

S&ME, Inc. (S&ME) is pleased to submit our Protected Species Assessment for the above-referenced project located in Richmond County, Georgia. This work was performed in general accordance with S&ME Proposal Number 22610163, dated March 30, 2022 and our Agreement for Services Form AS-071.

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

Sincerely,

S&ME, Inc.

A handwritten signature in cursive script that reads "Chris Handley".

Chris Handley
Biologist
chandley@smeinc.com

A handwritten signature in cursive script that reads "Chris Daves".

Chris Daves, P.W.S.
Senior Scientist
cdaves@smeinc.com



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1.0 Project Background

This Protected Species Assessment has been conducted to assess the potential for the presence of protected species on the site in preparation for proposed development. The site is the current location of the Augusta Corporate Park. The approximate 1,597-acre site is located south of Horseshoe Road, east of Mike Padgett Highway (GA 56), and adjacent to Valencia Way south of Augusta, Richmond County, Georgia as shown on the **Exhibits in Appendix I**. The Development Authority of Augusta, GA has applied for state and federal grants to address utility improvements with the park.

Currently, a 12-inch diameter water main extends east from Mike Padgett Highway approximately 1,200 feet along the north side of Valencia Way. A 15-inch diameter gravity sanitary sewer main exists on the south side of Horseshoe Road. The existing gravity sewer main extends to the north and ultimately ties into the Spirit Creek Pump Station.

In 2021, two new industries announced their intent to construct new plant facilities within the Augusta Corporate Park. These projects are identified as Project Diego and Project Caravan. Preliminary water and wastewater demand for these projects were provided to the Augusta Utilities Department for planning purposes. With the remainder of the water main having been previously designed and ready to install, only the sanitary sewer system remains outstanding in terms of designing public utility extensions to serve the new industries.

Cranston Engineering has initiated preliminary engineering services to develop conceptual recommendations for sanitary sewer improvements. Preliminary recommendations include a new gravity sewer main that will extend along the west side of Valencia Way within a designated utility corridor that is beyond the limits of the future roadway expansion. Based on the existing topography and utility limitations, a sanitary sewer lift station is required to access the existing gravity sewer system on Horseshoe Road. The lift station is planned for a site west of the Valencia Way cul-de-sac. Force main(s) will extend north approximately 11,250 feet to the existing 15-inch diameter gravity sewer main along Horseshoe Road. Timing of build out and confirmation of wastewater demands are critical elements that will directly inform the final design of the lift station and supporting infrastructure.

This Protected Species Assessment was performed in response to a March 17, 2022 request by the U.S. Fish and Wildlife Service (USFWS) during a review of the proposed project.

2.0 Previous Assessments

S&ME performed a Protected Species Assessment (*Augusta Corporate Park GRAD Certification*) on the site in 2010. The USFWS provided a concurrence letter under FWS Log No. NG-10-330-Rich (dated August 23, 2010). The USFWS concurred with the assessment and indicated there was potential habitat for the American wood stork in the shallow wetland areas on the site. Please refer to **Appendix III** for a copy of the 2010 Protected Species Assessment and USFWS letter associated with the site.



3.0 Site and Habitat Descriptions

The site is located in southern Richmond County within the Southeastern Plains/Sandhills ecoregion of Georgia. The site contains several habitat types: 1) cutovers/secondary growth woodland; 2) pine-mixed hardwoods; 3) forested wetlands; and 4) open waters, streams and herbaceous wetlands.

The properties adjacent to the site consist of forestland, cutover forestland, rural residential parcels, an electrical substation, and the Starbucks distribution facility. Please refer to **Exhibit 3** and the site photographs in **Appendix I** for depictions of the predominant habitat types located on the site.

3.1 Cutovers/Secondary Growth Woodland

A majority of the site consisted of cutovers/secondary growth woodland (Photographs 1-6) due to recent timber clearing in the previous five years. Dominant species observed included saplings and shrubs of water oak (*Quercus nigra*), post oak (*Q. stellata*), southern red oak (*Q. falcata*), Darlington oak (*Q. hemispherica*), sweetgum (*Liquidambar styraciflua*), loblolly pine (*Pinus taeda*), black cherry (*Prunus serotina*), hawthorn (*Crataegus* spp.), and Chickasaw plum (*P. angustifolia*). Other species observed included blueberry (*Vaccinium* spp.), yellow jessamine (*Gelsemium sempervirens*), catbrier (*Smilax bona-nox*), dogfennel (*Eupatorium capillifolium*), blackberry (*Rubus* spp.), prickly pear (*Opuntia humifusa*), rosette grass (*Dichanthelium* spp.), pineweed (*Hypericum gentianoides*), reindeer lichen (*Cladina* spp.), and bracken fern (*Pteridium aquilinum*).

3.2 Pine-Mixed Hardwood Woodland and Edges

Pine-mixed hardwood woodland and edge areas (Photographs 7-9) were observed in several locations throughout the site primarily along the upland borders of the wetland areas. Canopy species observed included white oak (*Q. alba*), water oak, loblolly pine, hickory (*Carya* spp.), sweetgum, American holly (*Ilex opaca*), American beech (*Fagus grandifolia*), and flowering dogwood (*Cornus florida*). Subcanopy and shrub included those of the canopy dominants. Woody vine and herbaceous species included yellow jessamine, muscadine, greenbrier (*Smilax rotundifolia*), heartleaf (*Hexastylis arifolia*), ebony spleenwort (*Asplenium platyneuron*), rosette grass, and bracken fern.

3.3 Forested Wetlands

Forested wetland areas (Photographs 10-11) were observed along the southern and eastern boundaries of the site. This was a well-developed cover type with several vegetation strata, hydric soils, and areas of standing water or drainage patterns. Canopy species observed included sweetgum, pond cypress (*Taxodium ascendens*), tulip poplar (*Liriodendron tulipifera*), willow oak (*Q. phellos*), water oak, and loblolly pine. The subcanopy and sapling layers was dominated by those of the canopy dominants as well as ironwood (*Carpinus caroliniana*), red maple (*Acer rubrum*), American holly, devil's walking stick (*Aralia spinosa*), red bay (*Persea borbonia*), and dog-hobble (*Leucothoe axillaris*). The woody vine and herbaceous layers consisted of greenbrier, laurel-leaf greenbrier (*Smilax laurifolia*), giant cane (*Arundinaria gigantea*), Christmas fern (*Polystichum acrostichoides*), netted chainfern (*Woodwardia areolata*), and southern lady fern (*Athyrium filix-femina*).



A few of the forested wetland areas have been recently timbered within the last five years. These areas were covered by a thick layer of scrub-shrub vegetation including sweetgum, sweet bay (*Magnolia virginica*), red maple saplings, giant cane, blackberry, and greenbrier.

3.4 Open Waters, Streams, and Herbaceous Wetlands

Open waters, streams and herbaceous wetlands were observed scattered throughout the site (Photographs 12-16). Tributaries of McBean Creek flowed from north to south along the eastern boundary and near the south-central portion of the site. Several areas of these tributaries have been impacted by beaver activity and the result was open water ponds, widened streams, or open, herbaceous wetlands. The open water habitat was between three to five in depth in all but the deepest sections. These portions maintained flowing water and had no rooted vegetation. The periphery of the beaver impounded features were covered with alligator weed (*Alternanthera philoxeroides*), golden club (*Orontium aquaticum*), giant plume grass (*Saccharum giganteum*), cattail (*Typha latifolia*), sedge (*Carex* spp.), bulrush (*Scirpus cyperinus*), primrose-willow (*Ludwigia* spp.), and soft rush (*Juncus effusus*). Herbaceous wetlands were observed within a powerline easement on the southwestern portion of the site.

4.0 Methodology

S&ME personnel reviewed the Georgia Department of Natural Resources (GADNR) Wildlife Resources Division and the USFWS websites to determine those species that are currently listed as federally protected (threatened or endangered) in Richmond County. The results of this search, including identified protected species and preferred habitat, served as the basis of the field review and are presented in **Table 1**.

The GADNR maintains a database of elements of occurrence for protected species in the state of Georgia. A search of this database did not reveal the known presence of federally protected (occurrences) on or immediately adjacent to the site. Supporting information was researched for the purpose of identifying soil types, vegetative communities, and possible drainage features on the site. The supporting information reviewed included aerial photography, topographic quadrangle maps, soil survey sheets, land use information, and data from the National Wetlands Inventory.

S&ME Biologist, Chris Daves, performed the field review on April 5, 2022. The information obtained from supporting documentation was integrated with the field review to identify potential areas of preferred habitat of protected species. Portions of the site that matched descriptions of preferred habitat for protected species listed in **Table 5-1** 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.



5.0 Federally Protected Species

Descriptions of the species and their respective federal status are identified in **Table 5-1** and in **Appendix II**. The GADNR and USFWS websites identified the following federally listed species for Richmond County:

Table 5-1 Federally Protected Flora and Fauna Summary

Species	Listing	Habitat
American Wood Stork <i>Mycteria americana</i>	T	Primarily feeds in fresh and brackish wetlands and nest in cypress or other wooded swamps.
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.
Shortnose Sturgeon <i>Acipenser brevirostrum</i>	E	Brackish water of large rivers and estuaries; spawns in freshwater areas.
Atlantic Sturgeon <i>Acipenser oxyrinchus</i>	E	Shallow coastal waters and estuaries; spawns in freshwater areas.
Relict Trillium <i>Trillium reliquum</i>	E	Calcium-rich soils in hardwood forests of ravines and adjacent bottomlands near the fall line in the Savannah River area.
Atlantic Pigtoe <i>Fusconaia masoni</i>	E	Coarse sand and gravel at the downstream edge of riffles.

E = Endangered

T = Threatened

5.1 American Wood Stork

BIOLOGICAL DETERMINATION: MAY AFFECT, NOT LIKELY TO ADVESLEY AFFECT

The American wood stork is a large wading bird that is approximately 50 inches tall and has a wingspan of approximately five feet. The plumage of the American wood stork is primarily white, with black primary and secondary wing feathers and a short, black tail. The head and neck are dark gray and primarily unfeathered. The American wood stork displays a prominent black bill that is slightly decurved and thick at the base. The wood stork feeds primarily on small fish, including minnows and shellfish. Nests are constructed as high as 100 feet in the tops of trees.

The American wood stork requires shallow wetland areas with a depth of six to 10 inches. The bird’s primary habitat is brackish and freshwater wetland areas with associated shallow water zones. The American wood stork favors depressional areas within larger wetland systems that are subject to falling water levels due to the resultant concentration of fish species. American wood storks are highly colonial and prefer forested wetland areas (swamps) or islands surrounded by open water.

In their previous 2010 letter (**Appendix III**), the USFWS commented that American wood storks forage in a wide variety of shallow wetlands and would expect them to use suitable habitat within the site for feeding and late summer dispersal due to nearby presence in the Phinizy Swamp, Silver Bluff Sanctuary, and the Savannah River area.



The canopies of a majority of the on-site forested wetlands were closed and dense. These areas do not contain suitable habitat for American wood stork. Foraging habitat for wood stork was observed in the beaver impounded open water areas (eastern portion of site), herbaceous wetlands within the powerline easement (southwestern portion of site), and open, shallow edges of the forested wetlands (scattered throughout site).

At this time, impacts to streams and wetlands are not proposed. No active or abandoned nests were observed during the field review. Accordingly, future development of the site *"may affect, but is not likely to adversely affect"* this species.

5.2 Red-Cockaded Woodpecker

BIOLOGICAL DETERMINATION: NO EFFECT

This black and white bird measures approximately seven inches long and has 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 did not contain suitable nesting or foraging habitat for the red-cockaded woodpecker. The pines on the site were too young to support red-cockaded nesting habitat. The pines observed on the site were approximately 20 years in age, which are too young to support red-cockaded woodpecker foraging habitat. A review of aerial photographs and pine stand observations from accessible roads and trails did not identify pine stands of sufficient age for nesting habitat immediately adjacent to the site. GADNR had no occurrence records for this species and field surveys did not identify red-cockaded woodpecker nests. Accordingly, future development of the site is not expected to impact this species.

5.3 Shortnose Sturgeon

BIOLOGICAL DETERMINATION: NO EFFECT

The shortnose sturgeon is a bony, anadromous fish growing to a length of up to four feet. Shortnose sturgeon exhibit five rows of plates along the body, with olive to black coloring along the back, and yellow to white coloring on the belly. Four barbels are located in front of the mouth and are used to locate food along the river bottom. The shortnose sturgeon migrates from salt water to freshwater to spawn from April to May. The shortnose sturgeon's habitat consists of tidal river systems along the Atlantic coast of North America. This species typically occupies the channels and deeper holes within the river, while feeding in shallow areas at night.



The site does not contain suitable habitat for the shortnose sturgeon. There are no large streams or rivers on or immediately adjacent to the site. Accordingly, future development of the site is not expected to impact this species.

5.4 Atlantic Sturgeon

BIOLOGICAL DETERMINATION: NO EFFECT

The Atlantic sturgeon is a cartilaginous, anadromous fish growing to a length of up to 14 feet. Individuals are bluish-black or olive brown with a white belly and have five rows of plates along the body. Four barbels are located in front of the mouth and are used to locate food along the bottom. The Atlantic sturgeon can be differentiated from the shortnose sturgeon by its larger size, smaller mouth, narrower snout, and their plates. This species migrates from salt water to freshwater to spawn from February to March. The Atlantic sturgeon's habitat consists of nearshore coastal waters along the Atlantic coast of North America.

The site does not contain suitable Atlantic sturgeon habitat. There are no large streams or rivers located on the site. Accordingly, future development of the site is not expected to impact this species.

5.5 Relict Trillium

BIOLOGICAL DETERMINATION: NO EFFECT

Relict trillium is a low, perennial herb growing to a height of two to eight inches. The stems are long and curved. Leaves are stalkless, elliptical, and heavily blue-green mottled with a silvery streak down their middle. The flowers of the relict trillium are brown and have a foul odor. The flowering period is from March through April. The primary habitat of relict trillium is calcium-rich soils in hardwood forests of ravines and adjacent bottomlands near the fall line in the Savannah River area.

The site does not contain suitable habitat for relict trillium. No ravines were located on the site. Per the United States Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS) soil survey, the on-site soils were listed as Bibb and Osier, Fuquay, Lakeland, Lucy, Orangeburg, Troup, and Vacluse-Ailey and are not considered calcium-rich. The site visit was conducted during the flowering period (March through April) and no individuals of relict trillium were observed. Accordingly, future development of the site is not expected to impact this species.

5.6 Atlantic Pigtoe

BIOLOGICAL DETERMINATION: NO EFFECT

The Atlantic pigtoe has a rhombus-shaped outer shell which is yellow to dark brown in color with a parchment-like texture. The inner shell is iridescent blue to salmon, white, or orange. This species rarely exceeds two inches in length. Young individuals have greenish rays across the shell. This species is also known for interlocking hinge-like teeth on the inside of the shell to keep the valves in proper alignment. The Atlantic pigtoe prefers coarse gravel and sand substrate and is rarely found in silt or detritus. Historically, this species was identified in small creeks to larger rivers with excellent water quality with flows sufficient to maintain clean, silt-free substrates. This included



medium-sized streams to large rivers from the Ogeechee River northward. Coarse sand and gravel at downstream edge of riffles has been identified as preferred habitat.

Although listed for Richmond County, no known recent occurrences have been documented for Atlantic pigtoe. According to IPaC and the USFWS Environmental Conservation Online System for Critical Habitat Boundaries, no known critical habitat for Atlantic pigtoe was listed on or immediately downstream of the site. According to GADNR within Richmond County, Atlantic pigtoe is listed being possibly extirpated (destroyed or removed). Impacts to streams are not proposed as part of the utilities or overall park development. Accordingly, future development of the site is not expected to impact this species.

6.0 Qualifications

The field survey was led by Chris Daves of S&ME. Mr. Daves is a Senior Scientist with over 21 years of 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 and Environmental Resources Management from the University of South Carolina.

Mr. Handley holds a B.S. degree in Forest Resource Management and a Master's degree in Forest Resources (GIS Emphasis) from Clemson University. Mr. Handley has over nine years of experience in environmental consulting and GIS mapping and is proficient in conducting wetland delineations and habitat assessments, including protected species surveys.

7.0 Summary and Conclusions

Based on the literature review, habitat assessment, and pedestrian field review of the site, the following conclusions are given regarding federally listed species in Richmond County:

- ◆ The site does not provide suitable habitat for red-cockaded woodpecker, shortnose and Atlantic sturgeons, relict trillium, and Atlantic pigtoe. Our opinion is that proposed development of the site will have *no effect* on these species.
- ◆ Foraging habitat for American wood stork is present in the beaver impounded open water areas, herbaceous wetlands within the powerline easement, and open, shallow edges of the forested wetlands. At this time, impacts to streams and wetlands are not proposed. No active or abandoned nests were observed during the field review. Accordingly, future development of the site "*may affect, but is not likely to adversely affect*" this species.



8.0 References

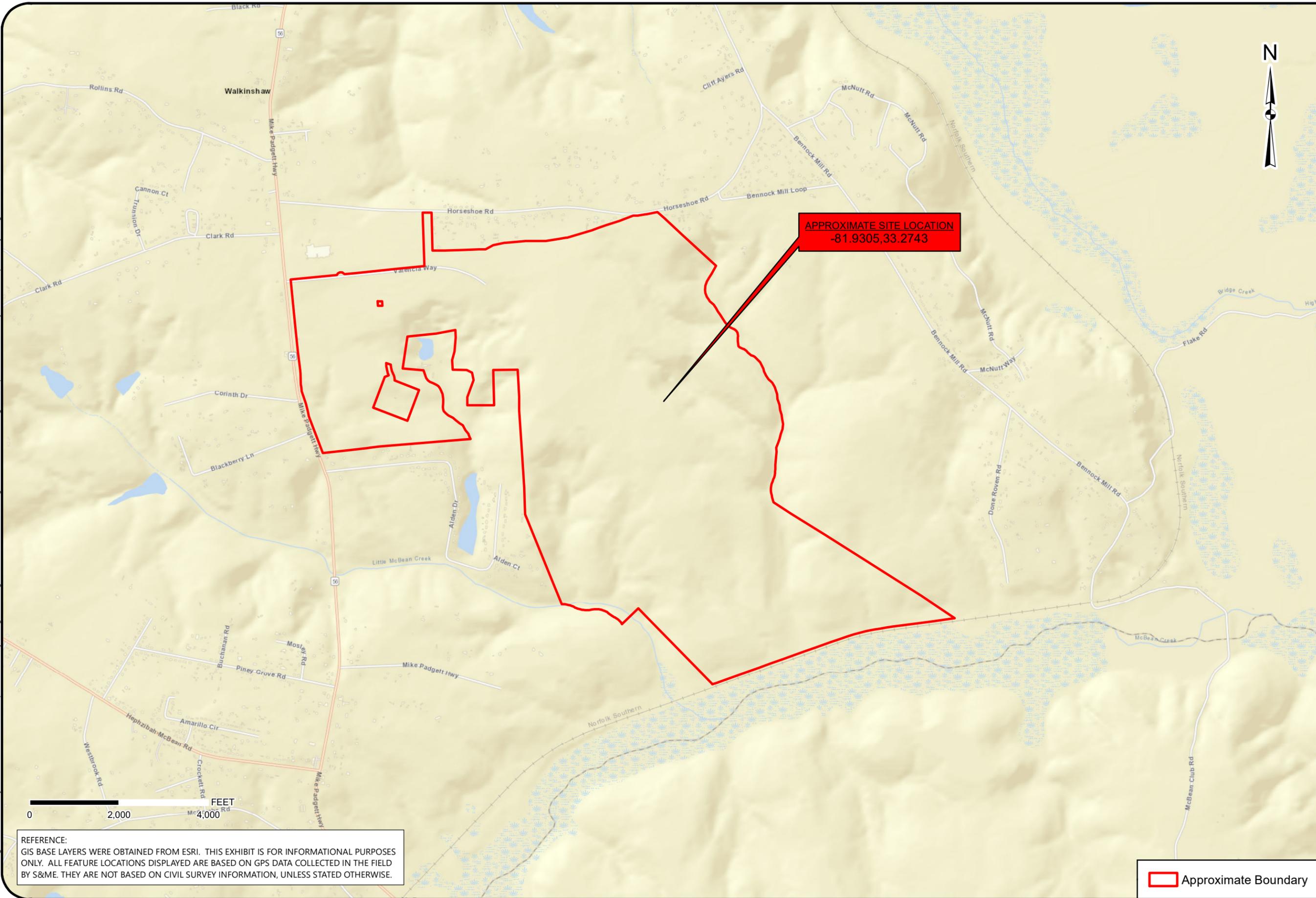
The following sources were referenced during this assessment:

- ◆ GADNR – Wildlife Resources Division. 2022. Georgia Rare Natural Elements Data Portal: <http://gakrakow.github.io/>.
- ◆ USFWS. 2022. Environmental Conservation Online System (Critical Habitat Boundaries): <https://ecos.fws.gov/ecp/services>.
- ◆ USFWS. 2022. Information for Planning and Consultation: <https://ecos.fws.gov/ipac/>.
- ◆ USFWS. 2022. Georgia Ecological Services Field Offices: <https://www.fws.gov/library/collections/georgia-ecological-services-library>.
- ◆ USDA-NRCS Web Soil Survey. 2022: <http://websoilsurvey.nrcs.usda.gov/app/>.
- ◆ USDA-NRCS. 1981. Soil Survey of Richmond, McDuffie, and Warren Counties, Georgia: https://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/georgia/Richmond_mcduffie_warrenGA1981/CMW.pdf.
- ◆ S&ME. 2010. Protected Species Assessment – Augusta Corporate Park GRAD Certification.

Appendices

Appendix I – Exhibits and Site Photographs

Drawing Path: T:\ENV\Projects\2022\22610037_Development\Authority of Augusta Georgia - 1,597 Ac. Tract\PIESA Augusta, GA\1 ENV\GIS\Augusta Corporate Park - Vicinity Exhibit.mxd plotted by TKnight 02-03-2022



Vicinity Exhibit

Augusta Corporate Park - +/- 1,597-Acre Tract
Augusta, Richmond County, Georgia
World Street Map

SCALE:
1" = 2,000'

DATE:
2-3-22

PROJECT NUMBER
22610163

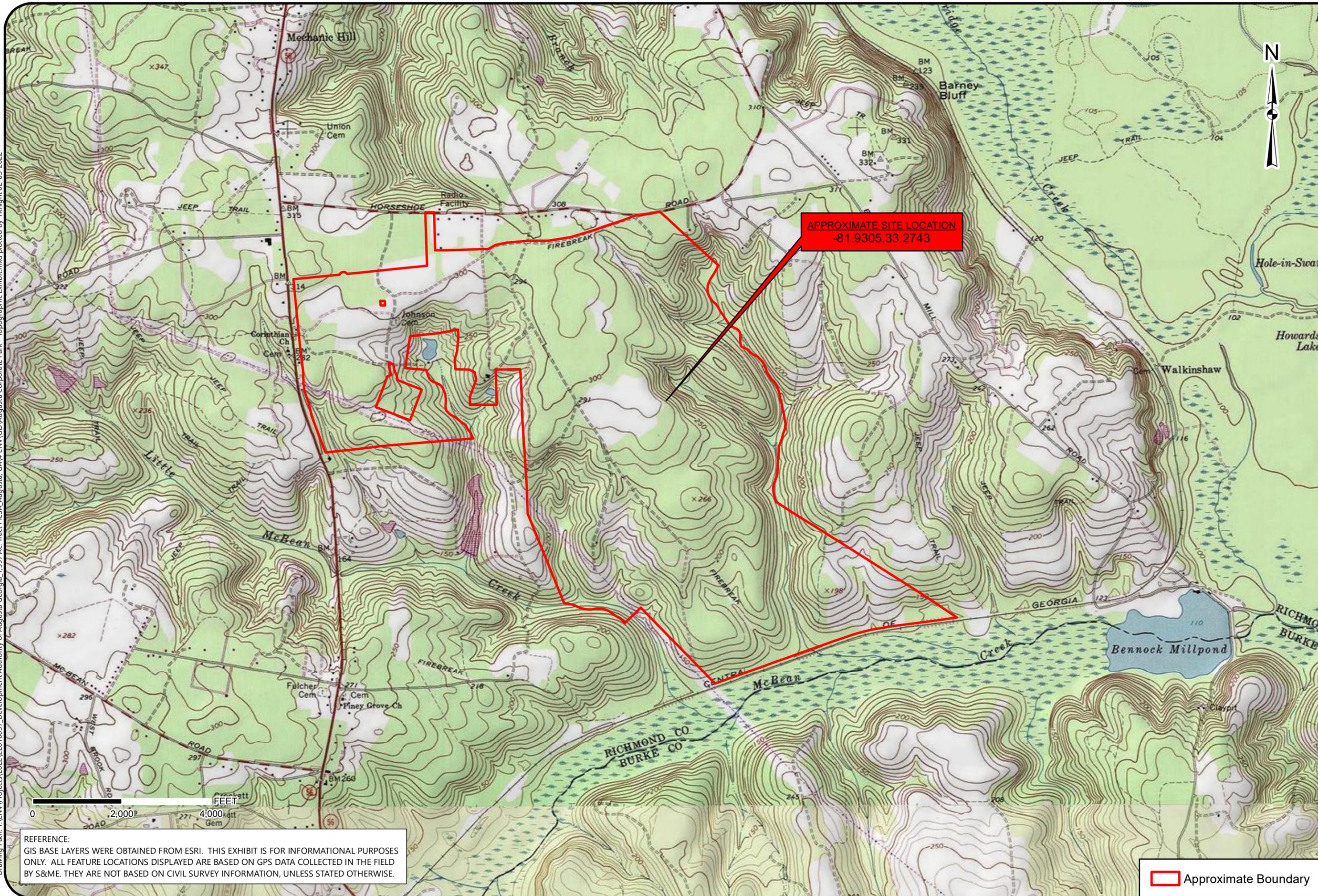
EXHIBIT NO.

1

REFERENCE:
GIS BASE LAYERS WERE OBTAINED FROM ESRI. THIS EXHIBIT IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS DISPLAYED ARE BASED ON GPS DATA COLLECTED IN THE FIELD BY S&M.E. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.

 Approximate Boundary

Drawing Path: T:\ENV\Projects\2022\22610037_Development\Authority of Augusta Georgia_1,597 Ac. Tract\PIESA_Augusta_GA\EN\GIS\Augusta Corporate Park_Topographic Exhibit.mxd plotted by TKnight 02-03-2022



REFERENCE:
GIS BASE LAYERS WERE OBTAINED FROM ESRI. THIS EXHIBIT IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS DISPLAYED ARE BASED ON GPS DATA COLLECTED IN THE FIELD BY S&ME. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.

 Approximate Boundary

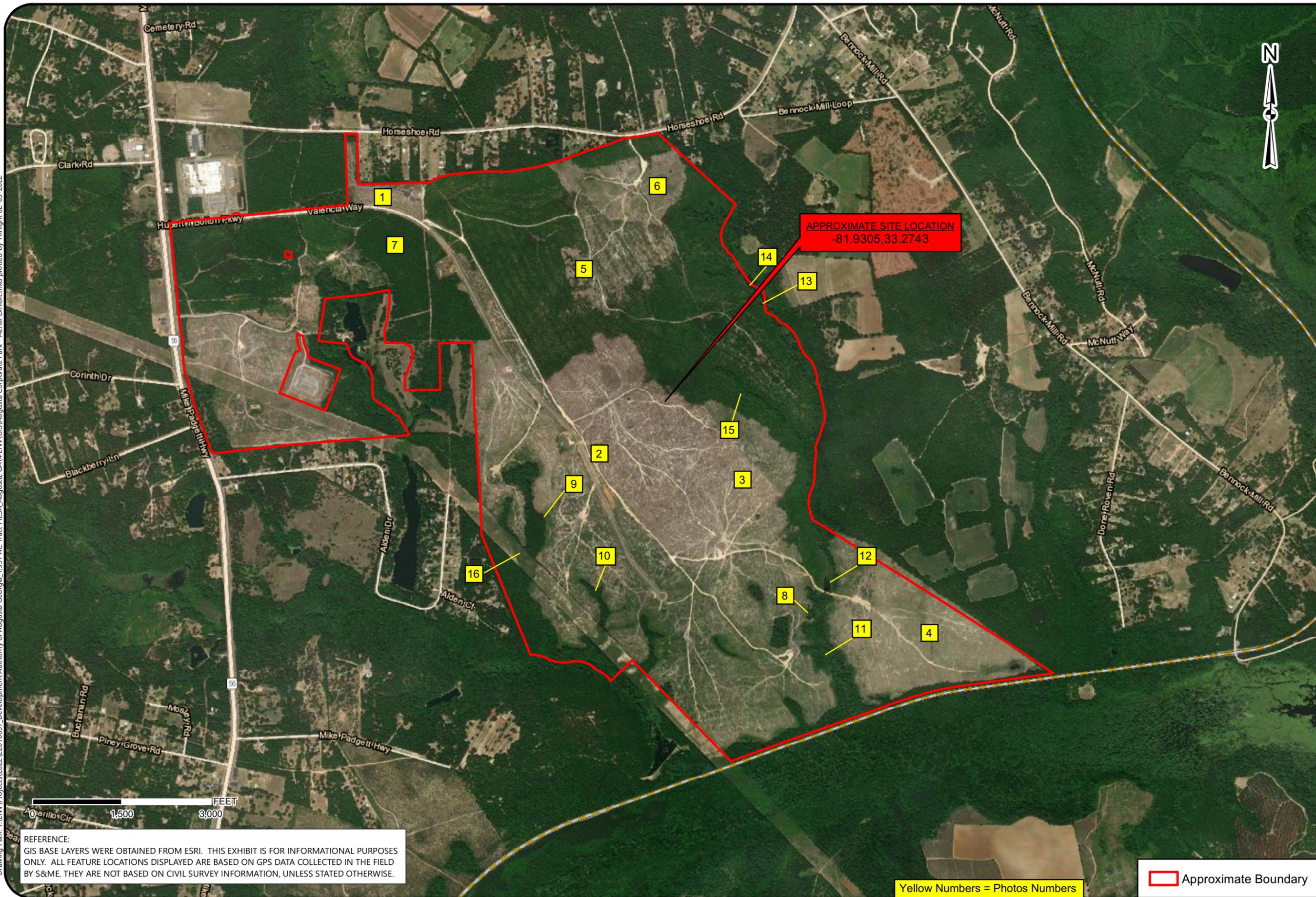


Topographic Exhibit

Augusta Corporate Park - +/- 1,597-Acre Tract
Augusta, Richmond County, Georgia
USA Topo Maps, USGS 7.5-Minute Topo Quad Mechanic Hill, GA 1965

SCALE:
1" = 2,000'
DATE:
2-3-22
PROJECT NUMBER
22610163
EXHIBIT NO.

Drawing Path: T:\ENV\Projects\2022\22610037_Development\Authority of Augusta Georgia - 1,597 Ac. Tract.PIESA Augusta, GA\Aerial Exhibit.mxd plotted by TKnight 02-03-2022



Aerial Exhibit

Augusta Corporate Park - +/- 1,597-Acre Tract
Augusta, Richmond County, Georgia
World Imagery 2018

SCALE:
1" = 1,500'

DATE:
2-3-22

PROJECT NUMBER
22610163

EXHIBIT NO.

3

REFERENCE:
GIS BASE LAYERS WERE OBTAINED FROM ESRI. THIS EXHIBIT IS FOR INFORMATIONAL PURPOSES ONLY. ALL FEATURE LOCATIONS DISPLAYED ARE BASED ON GPS DATA COLLECTED IN THE FIELD BY S&M. THEY ARE NOT BASED ON CIVIL SURVEY INFORMATION, UNLESS STATED OTHERWISE.

Yellow Numbers = Photos Numbers

 Approximate Boundary



LEGEND

- AUGUSTA CORPORATE PARK
- EXISTING WATER
- EXISTING SANITARY
- PROPOSED WATER
- PROPOSED SANITARY SEWER
- PROPOSED SANITARY FORCE MAIN

EXHIBIT 4

CONCEPT PLAN #1
FOR
Augusta Corporate Park -
Utility Extension

RICHMOND COUNTY, GEORGIA
 SCALE: 1" = 500' JANUARY 24, 2022



CRANSTON

G:\AA-ACTIVE_JOB_FILES\2016-0092 - AUGUSTA CORPORATE PARK - UTILITY EXTENSION & GRANT APPLICATION\AC-DRAWINGS\REFS\2016-0092-FORCE MAIN CONCEPT.DWG, 1/25/2022, 11:44 AM

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LEGEND

-  AUGUSTA CORPORATE PARK
-  EXISTING WATER
-  EXISTING SANITARY
-  PROPOSED WATER
-  PROPOSED SANITARY SEWER
-  PROPOSED SANITARY FORCE MAIN

EXHIBIT 5

CONCEPT PLAN #2

FOR
**Augusta Corporate Park -
 Utility Extension**

RICHMOND COUNTY, GEORGIA

SCALE: 1" = 500' JANUARY 24, 2022



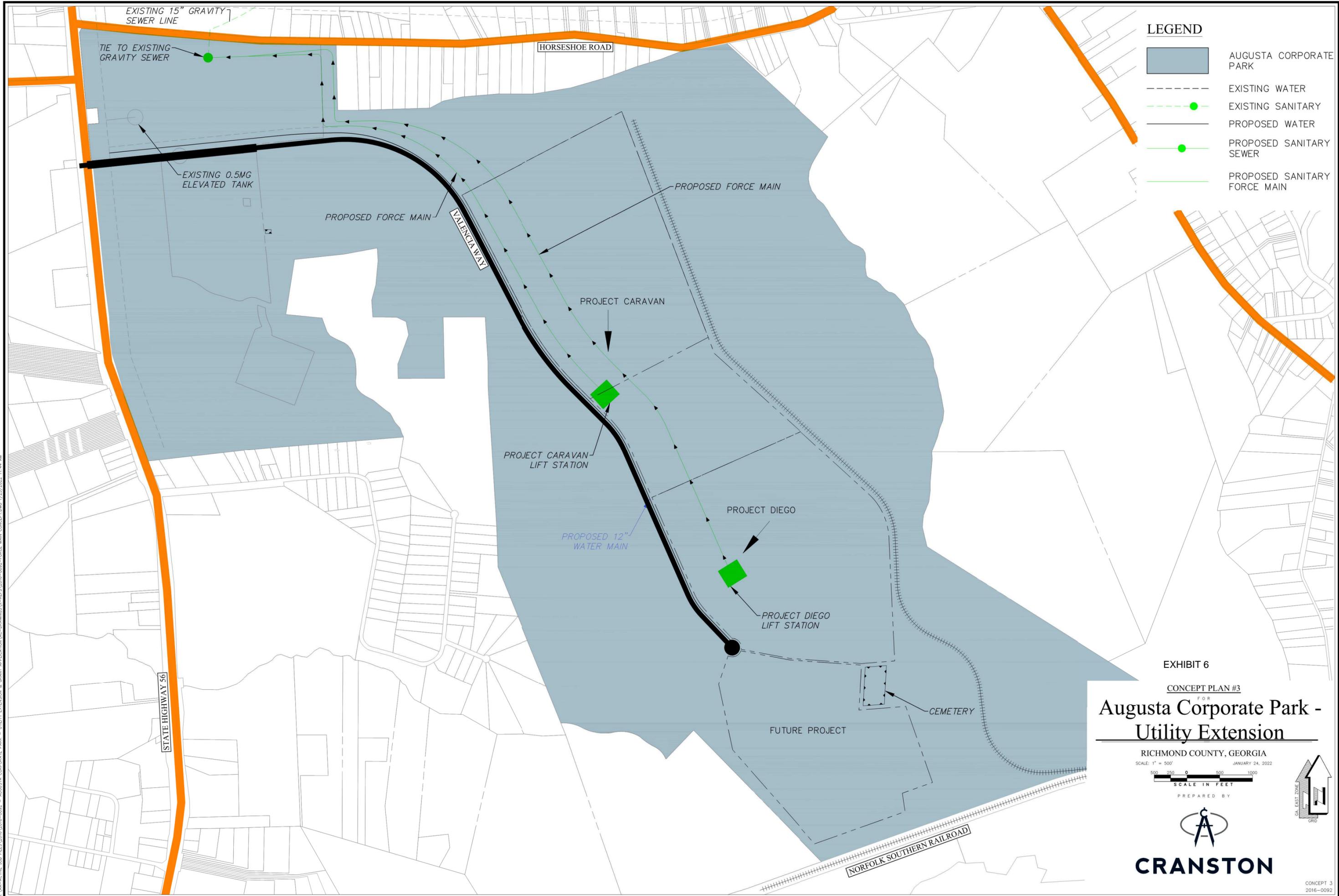
PREPARED BY



CRANSTON



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LEGEND

-  AUGUSTA CORPORATE PARK
-  EXISTING WATER
-  EXISTING SANITARY
-  PROPOSED WATER
-  PROPOSED SANITARY SEWER
-  PROPOSED SANITARY FORCE MAIN

EXHIBIT 6

CONCEPT PLAN #3

FOR
**Augusta Corporate Park -
 Utility Extension**

RICHMOND COUNTY, GEORGIA

SCALE: 1" = 500' JANUARY 24, 2022



SCALE IN FEET

PREPARED BY



CRANSTON



1 Cutover area on northwestern portion of the site.



2 Cutover area on central portion of the site.



3 Cutover area on eastern portion of the site.



4 Cutover area on southeastern portion of the site.



Site Photographs
Augusta Corporate Park +/- 1,597-Acre Tract
Augusta, Richmond County, Georgia

S&ME Project 22610163

Taken by: CD

Date: April 6, 2022



5 Secondary growth area on northern portion of the site.



6 Secondary growth area on northeastern portion of the site.



7 Pine-mixed hardwood woodland on northwestern portion of site.



8 Typical edge area of pine-mixed hardwood woodland between forested wetland and cutovers.



Site Photographs
Augusta Corporate Park +/- 1,597-Acre Tract
Augusta, Richmond County, Georgia

S&ME Project 22610163

Taken by: CD

Date: April 6, 2022



9 Typical edge area of pine-mixed hardwood woodland between forested wetland and cutovers.



10 Typical forested wetland on southwestern portion of site.



11 Typical forested wetland on eastern portion of site.



12 Beaver ponded open water area on southeastern portion of site.



Site Photographs
Augusta Corporate Park +/- 1,597-Acre Tract
Augusta, Richmond County, Georgia

S&ME Project 22610163

Taken by: CD

Date: April 6, 2022



13 Beaver ponded open water area on eastern portion of site.



14 Beaver ponded open water area on eastern portion of site.



15 Typical stream within forested wetland areas.



16 Herbaceous wetlands in powerline easement on southwestern portion of site.



Appendix II – County Species Lists from USFWS and GADNR



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Georgia Ecological Services Field Office
355 East Hancock Avenue
Room 320
Athens, GA 30601
Phone: (706) 613-9493 Fax: (706) 613-6059

In Reply Refer To:
Project Code: 2022-0026628
Project Name: Augusta Corporate Park

March 31, 2022

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

Thank you for your request for information on federally listed species and important wildlife habitats that may occur in your project area. The U.S. Fish and Wildlife Service (Service) has responsibility for certain species of wildlife under the Endangered Species Act (ESA) of 1973 as amended (16 USC 1531 et seq.), the Migratory Bird Treaty Act (MBTA) as amended (16 USC 701-715), Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and the Bald and Golden Eagle Protection Act (BGEPA) as amended (16 USC 668-668c). We are providing the following guidance to assist you in determining which federally imperiled species may or may not occur within your project area and to recommend some conservation measures that can be included in your project design if you determine those species or designated critical habitat may be affected by your proposed project.

FEDERALLY-LISTED SPECIES AND DESIGNATED CRITICAL HABITAT

Attached is a list of endangered, threatened, and proposed species that may occur in your project area. Your project area may not necessarily include all or any of these species. Under the ESA, it is the responsibility of the Federal action agency, project proponent, or their designated representative to determine if a proposed action "may affect" endangered, threatened, or proposed species, or designated critical habitat, and if so, to consult with the Service further. Similarly, it is the responsibility of the Federal action agency or project proponent, not the Service, to make "no effect" determinations. If you determine that your proposed action will have "no effect" on threatened or endangered species or their respective critical habitat, you do not need to seek concurrence with the Service. Nevertheless, it is a violation of Federal law to harm or harass any federally listed threatened or endangered fish or wildlife species without the appropriate permit. If you need additional information to assist in your effect determination, please contact the Service.

If you determine that your proposed action may affect federally listed species, please consult with the Service. Through the consultation process, we will analyze information contained in a biological assessment or equivalent document that you provide. If your proposed action is associated with Federal funding or permitting, consultation will occur with the Federal agency under section 7(a)(2) of the ESA. Otherwise, an incidental take permit pursuant to section 10(a)(1)(B) of the ESA (also known as a Habitat Conservation Plan) may be necessary to exempt harm or harass federally listed threatened or endangered fish or wildlife species. For more information regarding formal consultation and HCPs, please see the Service's [Section 7 Consultation Library](#) and [Habitat Conservation Plans Library](#) Collections.

Action Area. The scope of federally listed species compliance not only includes direct effects, but also any indirect effects of project activities (e.g., equipment staging areas, offsite borrow material areas, or utility relocations). The action area is the spatial extent of an action's direct and indirect modifications or impacts to the land, water, or air (50 CFR 402.02). Large projects may have effects to land, water, or air outside the immediate footprint of the project, and these areas should be included as part of the action area. Effects to land, water, or air outside of a project footprint could include things like lighting, dust, smoke, and noise. To obtain a complete list of species, the action area should be uploaded or drawn in IPaC rather than just the project footprint.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. An updated list may be requested through IPaC.

If you determine that your action may affect any federally listed species and would like technical assistance from our office, please send us a complete project review package (refer to Georgia Ecological Services' [Project Planning and Review](#) page for more details), including the following information (reference to these items can be found in 50 CFR§402.13 and 402.14):

1. A description of the proposed action, including any measures intended to avoid, minimize, or offset effects of the action. Consistent with the nature and scope of the proposed action, the description shall provide sufficient detail to assess the effects of the action on listed species and critical habitat, including:
 - The purpose of the action;
 - The duration and timing of the action;
 - The location of the action;
 - The specific components of the action and how they will be carried out;
 - Description of areas to be affected directly or indirectly by the action;
 - Maps, drawings, blueprints, or similar schematics of the action
 2. An updated Official Species List
-

3. Biological Assessments (may include habitat assessments and information on the presence of listed species in the action area);
4. Description of effects of the action on species in the action area and, if relevant, effect determinations for species and critical habitat;
5. Conservation measures and any other available information related to the nature and scope of the proposed action relevant to its effects on listed species or designated critical habitat (examples include: stormwater plans, management plans, erosion and sediment plans). Please see our [Georgia Planning and Consultation Tools](#) page for recommendations.

Please submit all consultation documents via email to gaes_assistance@fws.gov or by using IPaC, uploaded documents, and sharing the project with a specific Georgia Ecological Services staff member. If the project is on-going, documents can also be sent to the Georgia Ecological Services staff member currently working with you on your project. For Georgia Department of Transportation related projects, please work with the Office of Environmental Services ecologist to determine the appropriate USFWS transportation liaison.

WETLANDS AND FLOODPLAINS

Under Executive Orders 11988 and 11990, Federal agencies are required to minimize the destruction, loss, or degradation of wetlands and floodplains, and preserve and enhance their natural and beneficial values. These habitats should be conserved through avoidance, or mitigated to ensure that there would be no net loss of wetlands function and value. We encourage you to use the National Wetland Inventory (NWI) maps in conjunction with ground-truthing to identify wetlands occurring in your project area. The Service's [NWI program website](#) (<https://www.fws.gov/program/national-wetlands-inventory>) integrates digital map data with other resource information. We also recommend you contact the U.S. Army Corps of Engineers for permitting requirements under section 404 of the Clean Water Act if your proposed action could impact floodplains or wetlands.

MIGRATORY BIRDS

The MBTA prohibits the taking of migratory birds, nests, and eggs, except as permitted by the Service's [Migratory Birds Program](#) (<https://fws.gov/program/migratory-birds>). To minimize the likelihood of adverse impacts to migratory birds, we recommend construction activities occur outside the general bird nesting season from March through August, or that areas proposed for construction during the nesting season be surveyed, and when occupied, avoided until the young have fledged.

We recommend review of Birds of Conservation Concern to fully evaluate the effects to the birds at your site. This list identifies birds that are potentially threatened by disturbance and construction. It can be found at the Service's [Migratory Birds Conservation Library Collection](#) (<https://fws.gov/library/collections/migratory-bird-conservation-documents>).

Information related to best practices and migratory birds can be found at the Service's [Avoiding and Minimizing Incidental Take of Migratory Birds Library Collection](#) (<https://fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>).

BALD AND GOLDEN EAGLES

The bald eagle (*Haliaeetus leucocephalus*) was delisted under the ESA on August 9, 2007. Both the bald eagle and golden eagle (*Aquila chrysaetos*) are still protected under the MBTA and BGEPA. The BGEPA affords both eagles protection in addition to that provided by the MBTA, in particular, by making it unlawful to “disturb” eagles. Under the BGEPA, the Service may issue limited permits to incidentally “take” eagles (e.g., injury, interfering with normal breeding, feeding, or sheltering behavior nest abandonment). For information on bald and golden eagle management guidelines, we recommend you review information provided at the Service's [Bald and Golden Eagle Management Library Collection](https://fws.gov/library/collections/bald-and-golden-eagle-management) (<https://fws.gov/library/collections/bald-and-golden-eagle-management>).

NATIVE BATS

If your species list includes Indiana bat (*Myotis sodalis*) or northern long-eared bat (*M. septentrionalis*) and the project is expected to impact forested habitat that is appropriate for maternity colonies of these species, forest clearing should occur outside of the period when bats may be present. Federally listed bats could be actively present in forested landscapes from April 1 to October 15 of any year and have non-volant pups from May 15 to July 31 in any year. Non-volant pups are incapable of flight and are vulnerable to disturbance during that time.

Indiana, northern long-eared, and gray (*M. grisescens*) bats are all known to utilize bridges and culverts in Georgia. If your project includes maintenance, construction, or any other modification or demolition to transportation structures, a qualified individual should complete a survey of these structures for bats and submit your findings via the Georgia Bats in Bridges cell phone application, free on Apple and Android devices. Please include these findings in any biological assessment(s) or other documentation that is submitted to our office for technical assistance or consultation.

Additional information on bat avoidance and minimization can be found at Georgia Ecological Services' [Planning and Consultations Tools](#) and [Bat Conservation in Georgia](#) pages.

MONARCH BUTTERFLY

On December 20, 2020, the Service determined that listing the Monarch butterfly (*Danaus plexippus*) under the Endangered Species Act is warranted but precluded at this time by higher priority listing actions. With this finding, the monarch butterfly becomes a candidate for listing. The Service will review its status each year until we are able to begin developing a proposal to list the monarch.

As it is a candidate for listing, the Service welcomes conservation measures for this species. Recommended, and voluntary, conservation measures for projects in Georgia can be found at our [Monarch Conservation in Georgia](#) page.

STATE AGENCY COORDINATION

Additional information that addresses at-risk or high priority natural resources can be found in the State Wildlife Action Plan (<https://georgiawildlife.com/WildlifeActionPlan>), at Georgia Department of Natural Resources, Wildlife Resources Division Biodiversity Portal (<https://>

georgiawildlife.com/conservation/species-of-concern), Georgia's Natural, Archaeological, and Historic Resources GIS portal (<https://www.gnahrgis.org/gnahrgis/index.do>), and the [Georgia Ecological Services HUC10 Watershed Guidance](#) page.

Thank you for your concern for endangered and threatened species. We appreciate your efforts to identify and avoid impacts to listed and sensitive species in your project area. For further consultation on your proposed activity, please email gaes_assistance@fws.gov and reference the project county and your Service Project Tracking Number.

This letter constitutes Georgia Ecological Services' general comments under the authority of the Endangered Species Act.

Attachment(s):

- Official Species List
 - Migratory Birds
 - Wetlands
-

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Georgia Ecological Services Field Office

355 East Hancock Avenue

Room 320

Athens, GA 30601

(706) 613-9493

Project Summary

Project Code: 2022-0026628

Event Code: None

Project Name: Augusta Corporate Park

Project Type: Distribution Line - New Construction - Below Ground

Project Description: Water and Sewer Grant project

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@33.2721973,-81.93145831736564,14z>



Counties: Richmond County, Georgia

Endangered Species Act Species

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Wood Stork <i>Mycteria americana</i> Population: AL, FL, GA, MS, NC, SC No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8477	Threatened

Reptiles

NAME	STATUS
Gopher Tortoise <i>Gopherus polyphemus</i> Population: eastern No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6994	Candidate

Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Flowering Plants

NAME	STATUS
Relict Trillium <i>Trillium reliquum</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8489	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

-
1. The [Migratory Birds Treaty Act](#) of 1918.
 2. The [Bald and Golden Eagle Protection Act](#) of 1940.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Lesser Yellowlegs <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Prairie Warbler <i>Dendroica discolor</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Prothonotary Warbler <i>Protonotaria citrea</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31

NAME	BREEDING SEASON
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Swallow-tailed Kite <i>Elanoides forficatus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8938	Breeds Mar 10 to Jun 30
Wood Thrush <i>Hylocichla mustelina</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

- The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (-)

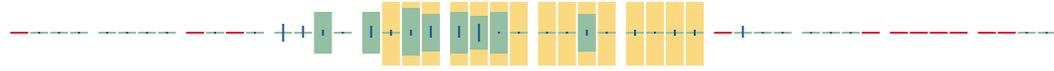
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Wood Thrush
BCC Rangewide
(CON)



Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER FORESTED/SHRUB WETLAND

- [PFO1F](#)
- [PFO1Ch](#)
- [PFO1B](#)
- [PFO1/3B](#)
- [PFO1A](#)
- [PFO1/2Fh](#)
- [PFO1C](#)

FRESHWATER EMERGENT WETLAND

- [PEM1B](#)
- [PEM1A](#)

RIVERINE

- [R4SBC](#)
- [R5UBH](#)

FRESHWATER POND

- [PUBHh](#)
-

IPaC User Contact Information

Agency: Richmond County

Name: Chris Daves

Address: 134 Suber Road

City: Columbia

State: SC

Zip: 29210

Email: cdaves@smeinc.com

Phone: 8035619024

GADNR – Wildlife Resources Division. 2022. Georgia Rare Natural Elements Data Portal: <http://gakrakow.github.io/>.

Federally Protected Plants and Animals within Richmond County

CSV Excel Less Columns Rows filtered / total: 5/5 – Records updated April 1, 2022

Scientific Name	Common Name	GA Prot	US Prot	GRank	Rnd GRank	SRank	Rnd SR...	S...	ES...	Element Code	Gr...	Georgia Habitat Summary	EO Count	Export Date
Fusconia masoni	Atlantic Pigtoe	E	T	G1	G1	S1	S1	Yes	18858	IMBIV40050	Animal	Medium sized streams to large rivers from the Ogeechee Ri...	7	April 1, 2022
Acipenser brevirostrum	Shortnose Sturgeon	E	LE	G3	G3	S2	S2	Yes	20255	AFCAA01010	Animal	Estuaries; lower end of large rivers in deep pools with soft s...	9	April 1, 2022
Acipenser oxyrinchus oxyrinchus	Atlantic Sturgeon	E	LE	G3T3	T3	S3	S3	Yes	16563	AFCAA01042	Animal	Estuaries; lower end of large rivers in deep pools with soft s...	7	April 1, 2022
Picoides borealis	Red-cockaded Woodpecker	E	LE	G3	G3	S2	S2	Yes	18726	ABNYF07060	Animal	Open pine woods; pine savannas	76	April 1, 2022
Gopherus polyphemus	Gopher Tortoise	T	C	G3	G3	S3	S3	Yes	20476	ARAAF01030	Animal	Sandhills; dry hammocks; longleaf pine-turkey oak woods; o...	328	April 1, 2022

Federally Protected Plants and Animals within Mechanic Hill, GA-SC, SE Quarter Quad

CSV Excel Less Columns Rows filtered / total: 2/2 – Records updated April 1, 2022

Scientific Name	Common Name	GA Prot	US Prot	GRank	Rnd GRank	SRank	Rnd SR...	S...	ES...	Element Code	Gr...	Georgia Habitat Summary
Acipenser brevirostrum	Shortnose Sturgeon	E	LE	G3	G3	S2	S2	Yes	20255	AFCAA01010	A...	Estuaries; lower end of large rivers in deep pools with soft substrates
Acipenser oxyrinchus oxyrinchus	Atlantic Sturgeon	E	LE	G3T3	T3	S3	S3	Yes	16563	AFCAA01042	A...	Estuaries; lower end of large rivers in deep pools with soft substrates; spawn as far inland as Mac...

For Page Titled "Federally Protected Plants and Animals within Mechanic Hill, GA-SC, SW Quarter Quad"

No location records recorded for this unit area

Legend

Final Critical Habitat

Critical Habitat - Polygon Features - Final



Critical Habitat - Line Features - Final

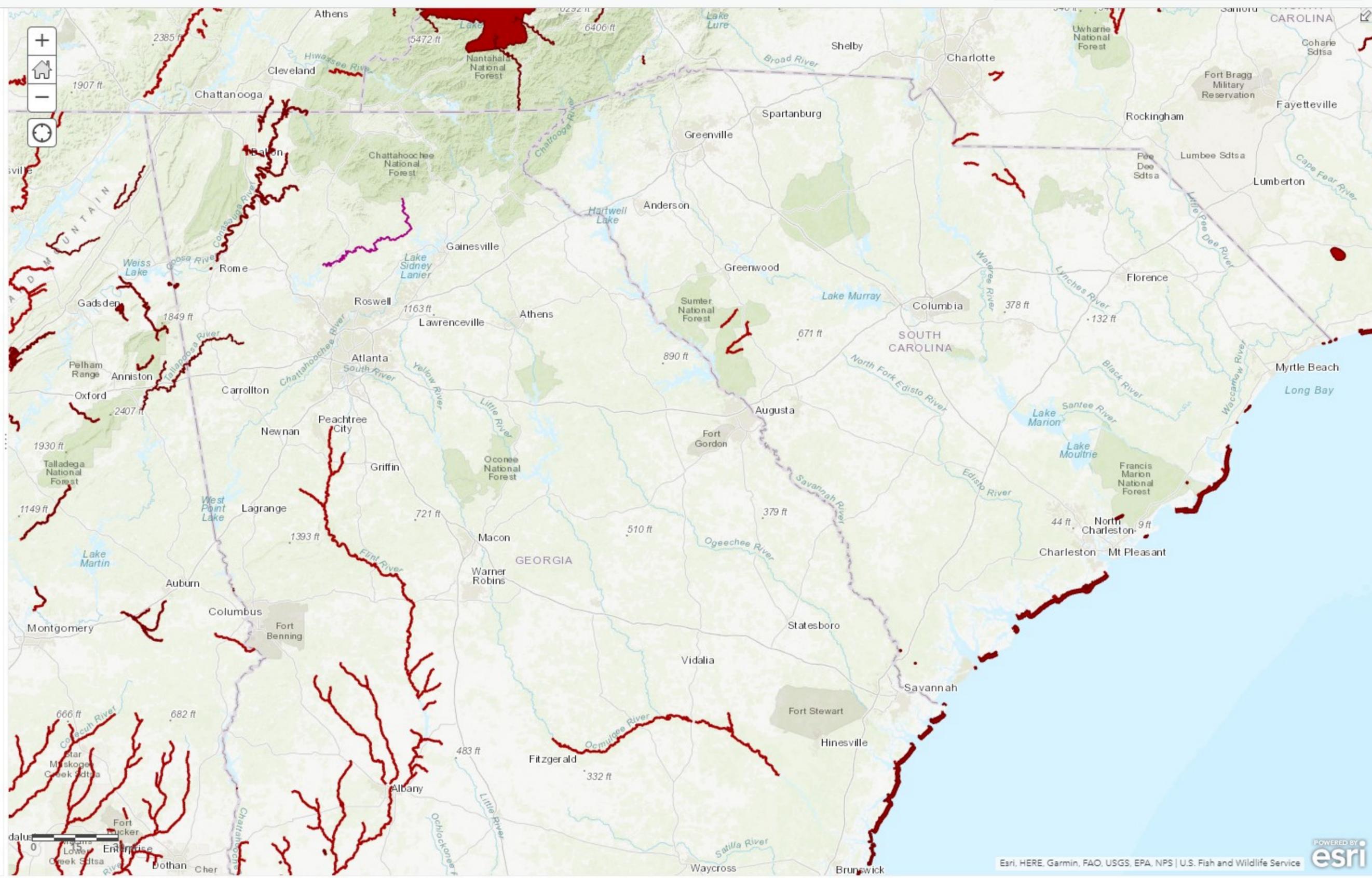


Proposed Critical Habitat

Critical Habitat - Linear Features - Proposed



Critical Habitat - Polygon Features - Proposed



Fusconaia masoni (Atlantic Pigtoe)

- Open Street Map
- Google Satellite Hybrid
- Esri Topo World
- Stamen Toner

- Species Ranges
- Counties
 - Quarter Quads
 - HUC10 Watersheds
 - HUC8 Watersheds
 - Level 3 Ecoregions
 - Level 4 Ecoregions
 - 24 km Hexagon Grid
 - Remove Range Map

AREA NAME
Richmond
AGE OF RECORD
Known or possibly
extirpated

Age Of Record

- 5 Years or Less
- Between 6 And 10 Years
- Between 11 And 20 Years
- Over 20 Years Or Imprecise Record
- Known Or Possibly Extirpated
- Known Or Possibly Introduced
- Last Observation Date Unknown



Appendix III – Previous Assessment and USFWS Letter



United States Department of the Interior

Fish and Wildlife Service

105 West Park Drive, Suite D
Athens, Georgia 30606
Phone: (706) 613-9493
Fax: (706) 613-6059

West Georgia Sub-Office
Post Office Box 52560
Fort Benning, Georgia 31995-2560
Phone: (706) 544-6428
Fax: (706) 544-6419

August 23, 2010

Coastal Sub-Office
4980 Wildlife Drive
Townsend, Georgia 31331
Phone: (912) 832-8739
Fax: (912) 832-8744

Mr. Chris Daves
S&ME, Inc.
134 Suber Road
Columbia, South Carolina

Re: FWS Log Number: NG-10-330-Rich

Dear Mr. Daves:

Thank you for the opportunity to review and provide comments on the Protected Species Assessment for the 1,800-acre Augusta Corporate Park in Augusta, Georgia. We are familiar with the general area, particularly the Savannah River wetlands and McBean Creek. We have taken this opportunity to provide planning assistance on the overall site as well as review the project area for the likelihood of federally endangered or threatened species.

As stated in your letter, the site does appear to provide suitable habitat for wood storks. Wood storks are known to occur all around your site, and we expect they would use suitable habitat within the project site for feeding and late summer dispersal. Wood storks are found in Phinizy Swamp (5-6 miles north), across the Savannah River at Silver Bluff Sanctuary (5-6 miles east-average about 200 wood storks at a time), Savannah River Site (5-6 miles east), and at the rookery near Millen, Georgia (30-40 miles south). They are also seen occasionally in other areas of Augusta and North Augusta. Wood storks are known to travel up to 60 miles in a day for foraging and much further during late summer dispersal (University of Georgia 2001. Wood Stork Conservation and Management for Landowners. In cooperation with U.S. Fish and Wildlife Service. Savannah River Ecology Laboratory, Aiken, SC. 9pp).

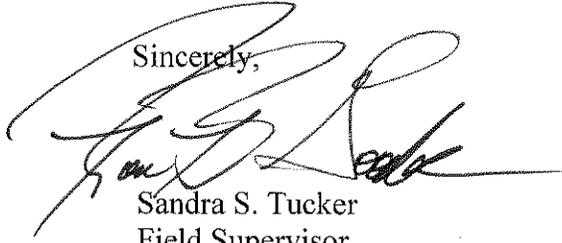
Wood storks forage in a wide variety of shallow wetlands, wherever prey concentrations reach high enough densities, in water that is shallow and open enough for the birds to be successful in their hunting efforts (U.S. Fish and Wildlife Service. 1997. Revised Recovery Plan for the U.S. Breeding population of the Wood Stork. Atlanta, GA. 40 pp.). On the Augusta Corporate Site, wood storks are likely to use shallow areas in the forested wetlands (Photos #9-12), the emergent wetland, (Photo # 14), possibly the shallower edges of the open-water beaver pond (Photo #13) and the open herbaceous wetland (Photo # 15). These wetlands provide habitat for a variety of

wildlife, in addition to the wood storks, such as wading birds, woodland and marsh birds, ducks, reptiles and amphibians, and several species of mammals. A Corps of Engineers wetlands permit will most likely be required for any impacts to these areas, and we recommend that the project be designed to avoid these highly important wetlands.

In addition, Figure 2 in your letter shows that the project boundary abuts the McBean Creek wetlands. McBean Creek has been identified as a High Priority Aquatic Community Stream by Georgia Department of Natural Resources for its diversity of fish and rare mussels. We recommend a minimum 100-foot set-back buffer from the edge of Mc Bean Creek wetlands. We also recommend strict adherence to erosion and sedimentation controls, as well as avoidance of point and nonpoint discharges into the wetlands and stream.

Thank you for the opportunity to comment. We appreciate your concern for protected species and wetlands. If you have any questions about our comments, please contact staff biologist Deborah Harris (706) 613-9493 ext. 224.

Sincerely,

A handwritten signature in black ink, appearing to read 'Sandra S. Tucker', is written over the word 'Sincerely,'. The signature is fluid and cursive, with a long horizontal stroke at the end.

Sandra S. Tucker
Field Supervisor

cc:

Katrina Morris, GA DNR Nongame Conservation Section, Social Circle, GA
Stan Knight, Corps of Engineers, Savannah, GA
Keith Parsons, GAEPD
Bob Lord, EPA



July 6, 2010

Development Authority of Richmond County
1450 Greene Street, Suite 560
Augusta, Georgia 30901

Attention: Mr. Robbie Bennett, MPA

Reference: **Protected Species Assessment**
Augusta Corporate Park GRAD Site Certification ~ 1,800 Acres
Augusta, Richmond County, Georgia
S&ME Project No. 1614-10-218

Dear Mr. Bennett:

S&ME, Inc. (S&ME) is pleased to submit our Protected Species Assessment for the above-referenced site located in Richmond County, Georgia. This work was performed in general accordance with S&ME Proposal No. 1611-7480-10, dated May 3, 2010 and the signed Agreement for Services (Form AS-071).

1.0 PROJECT BACKGROUND

The site consists of an approximately 1,800-acre tract located south of Horseshoe Road and east of Mike Padgett Highway (GA Highway 56) several miles south of Augusta, Richmond County, Georgia (Figure 1 in Appendix A). The site is identified on a portion of the Mechanic Hill, GA USGS 7.5-minute topographic quadrangle map dated 1981 (Figure 2 in Appendix A). This Protected Species Assessment has been conducted to assess the potential for the presence of federally protected species within the site in preparation for development of a Guaranteed Ready for Accelerated Development (GRAD) Certified Industrial Park.

2.0 SITE/HABITAT DESCRIPTIONS

The site is located in southern Richmond County within the Southeastern Plains/Sandhills ecoregion of Georgia. The site is primarily used for silvicultural purposes. The properties adjacent to the site consist of forestland, farmland, single-family residences, and forested wetlands.

The site was made up of several cover types. The majority of the site consisted of planted pines, cut-over/ secondary-growth forestland, and pine-mixed hardwood forest. Smaller areas of the site were covered by forested wetlands, herbaceous wetlands/ open water, and open roads and easements. Refer to the Aerial Map (Figure 3) and site photographs in Appendix A for the locations and depictions of the various habitats.

Cut-over/ Secondary-growth Forestland (Photographs 1-2)

Cut-over/ secondary-growth forestland was the dominant cover type on the site. Species observed included saplings of sweetgum (*Liquidambar styraciflua*), water oak (*Quercus nigra*), post oak (*Q. stellata*), black cherry (*Prunus serotina*), southern red oak (*Q. falcata*), Chickasaw plum (*P. angustifolia*), and Darlington oak (*Q. hemispherica*). Other species observed included blueberry (*Vaccinium* spp.), blackberry (*Rubus* spp.), prickly pear (*Opuntia humifusa*), and bracken fern (*Pteridium aquilinum*).

Planted Pines (Photographs 3-6)

Planted loblolly pine (*Pinus taeda*) stands were observed on the northeast, northwest, and central portions of the site. The trees appeared to be less than 50 feet in height and less than 12 inches diameter at breast height (DBH). Stands in the northwest were recently thinned and a limited understory of tree seedlings and greenbrier (*Smilax rotundifolia*) was observed. Pine stands in the northeast portion of the site consisted of immature loblolly pine and a sparse understory of sweetgum, water oak, and Darlington oak saplings as well as greenbrier and bracken fern. The central portion of the site was dominated by immature loblolly pine stands with a tall and dense understory composed of the aforementioned species.

Pine Mixed-Hardwood Forestland (Photographs 7-8)

Pine mixed-hardwood forestland was observed on multiple locations throughout the site. This cover type consisted of upland species in mature stands of over 100 feet in height. Canopy and subcanopy species observed included white oak (*Q. alba*), water oak, loblolly pine, hickory (*Carya* spp.), sweetgum, American beech (*Fagus grandifolia*), and flowering dogwood (*Cornus florida*). Shrub, woody vine and herbaceous species included American holly (*Ilex opaca*), blueberry, lovegrass (*Panicum* spp.), yellow jessamine (*Gelsemium sempervirens*), muscadine (*Vitis rotundifolia*), greenbrier, and bracken fern.

Forested Wetlands (Photographs 9-12)

Forested wetland areas were observed along the southern and eastern boundaries of the site. This was a well-developed cover type with several vegetation strata, hydric soils, and areas of standing water or drainage features. Canopy species observed included pond cypress (*Taxodium ascendens*), willow oak (*Q. phellos*), water oak, and loblolly pine. A sapling mid-story was dominated by sweetgum, red maple (*Acer rubrum*), and red bay (*Persia borbonia*). Finally, the shrub and herbaceous layer consisted of giant cane (*Arundinaria gigantea*), dog-hobble (*Leucothoe axillaris*), Christmas fern (*Polystichum acrostichoides*), netted chainfern (*Woodwardia areolata*), and greenbrier.

A few of the forested wetland areas have been timbered within the last five years. These areas were covered by a thick layer of scrub-shrub vegetation including sweetgum, sweet bay (*Magnolia virginica*), red maple saplings, giant cane, blackberry, and greenbrier.

Streams, Ponds, and Herbaceous Wetlands (Photographs 13-16)

Tributaries of McBean Creek flowed from north to south along the eastern boundary and near the south-central portion of the site. Several areas of these tributaries have been impacted by beaver activity and the result was open water ponds, widened streams, or open, herbaceous wetlands. The open water habitat was between 3 and 4 feet in depth in all but the deepest sections. These portions maintained flowing water and had no rooted vegetation. The periphery of the beaver impounded features were covered with alligator weed (*Alternanthera philoxeroides*), golden club (*Orontium aquaticum*), cattails (*Typha latifolia*), sedges (*Carex* spp.), bulrush (*Scirpus cyperinus*), and soft rush (*Juncus effusus*). Several taxa of aquatic and amphibious wildlife were observed in the open water/ stream habitat type including great white egret (*Casmerodius albus*), great blue heron (*Ardea herodias*), American beaver (*Castor canadensis*), and several types of small fish and frogs.

Open Roads and Easements (Photographs 17-18)

Portions of the property are cleared periodically for unpaved roads, utility lines, and hunting. These maintained areas were composed of exposed soil, gravel, and low grasses. Margins surrounding these areas were covered in blackberry, goldenrod (*Solidago* spp.), dog fennel (*Eupatorium capilifolium*), English plantain (*Plantago lanceolata*), and bracken fern.

3.0 METHODOLOGY

The Georgia Department of Natural Resources (GADNR) –Wildlife Resources Division and the U.S. Fish and Wildlife Service (USFWS) websites were reviewed regarding current federally listed species known to occur in Richmond 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 7.5-minute topographic quadrangle map, Mechanic Hill, GA, 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 in order to determine 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 GADNR 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 June 17, 2010. S&ME Biologists Amanda White and Chris Daves performed the field survey.

4.0 PROTECTED SPECIES

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

TABLE 1: PROTECTED FLORA & FAUNA SUMMARY AUGUSTA CORPORATE PARK GRAD SITE CERTIFICATION RICHMOND COUNTY, GEORGIA				
Species	Federal Status	State Status	Habitat Description	Habitat Impacted
Red-Cockaded Woodpecker <i>Picoides borealis</i>	E	E	Open pine stands with minimum age of 60 years; Nests in live pines with red-heart disease.	No
Wood Stork <i>Mycteria americana</i>	E	E	Primarily feeds in fresh & brackish wetlands & nest in cypress or other wooded swamps.	No
Shortnose Sturgeon <i>Acipenser brevirostrum</i>	E	E	Brackish water of large rivers & estuaries; Spawns in freshwater areas.	No

T = Threatened E = Endangered

Red-Cockaded Woodpecker – Federally 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 contains marginally suitable nesting habitat for the red-cockaded woodpecker. The majority of the planted pine stands are either not of adequate age and size, or the understory is too thick and tall. According to historic maps and site observations the pine stands in the northern portion of the site are no older than 40 years and not of adequate diameter for a red-cockaded woodpecker nest cavity.

Based on the presence of open pine stands that are over 30 years-old, S&ME surveyed the site for nest cavities. Potential habitat was investigated along approximately 50-foot transects. The distinct nest cavity of the red-cockaded woodpecker was not observed. In the absence of suitable nesting habitat, documented elements of occurrence, observations of individuals, or observation of nesting activity, future development of the site is not expected to impact this species.

Wood Stork – Federally Listed Endangered

BIOLOGICAL OPINION: NO EFFECT

The wood stork is a large wading bird that is approximately 50 inches tall and has a wingspan of approximately five feet. The plumage of the wood stork is primarily white, with black primary and secondary wing feathers and a short, black tail. The head and neck are dark gray and primarily unfeathered. The wood stork displays a prominent black bill that is slightly decurved and thick at the base. The wood stork feeds primarily on small fish, including minnows and shellfish. Nests are constructed as high as 100 feet in the tops of trees.

The wood stork requires shallow wetland areas with a depth of six to 10 inches. The bird's primary habitat is brackish and freshwater wetland areas with associated shallow water zones. The wood stork favors depressional areas within larger wetland systems that are subject to falling water levels due to the resultant concentration of fish species. Wood storks are highly colonial and prefer forested wetland areas (swamps) or islands surrounded by open water.

The site contains suitable habitat for the wood stork on the southern and eastern portions. Based on the presence of the forested wetlands and open water ponds, S&ME surveyed these areas for nesting activity. Potential habitat was investigated from adequate vantage points using binoculars. No active or abandoned wood stork nest sites were observed during the pedestrian field review. In the absence of documented elements of occurrence, observations of individuals, or observation of nesting activity, future development of the site is not expected to impact this species.

Shortnose Sturgeon – Federally Listed Endangered

BIOLOGICAL OPINION: NO EFFECT

The shortnose sturgeon is a bony, anadromous fish growing to a length of up to four feet. Shortnose sturgeons exhibit five rows of plates along the body, with olive to black coloring along the back, and yellow to white coloring on the belly. Four barbels are located in front of the mouth and are used to locate food along the river bottom. The shortnose sturgeon migrates from salt water to freshwater to spawn from April to May. The shortnose sturgeon's habitat consists of tidal river systems along the Atlantic coast of North America. This species typically occupies the channels and deeper holes within the river, while feeding in shallow areas at night.

The site does not contain suitable habitat for the shortnose sturgeon. There are no river systems located within the site. Accordingly, future development of the site is not expected to impact this species.

5.0 QUALIFICATIONS

The field survey was overseen by Chris Daves of S&ME. Mr. Daves is a biologist and natural resources project manager with over nine 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.

Georgia Department of Natural Resources. 2010. Locations of Special Concern Animals, Plants and Natural Communities. Current On-Line Edition - <http://georgiawildlife.dnr.state.ga.us/content/specieslocationbycounty.asp?lstCounty=Richmond>

Georgia Natural Heritage Program. 2010. Geographic Database of Rare and Endangered Species. ESRI Shapefiles - <http://www.georgiawildlife.com/node/1370>

U.S. Fish and Wildlife Service. 2009. Listed Endangered Species in Georgia - http://www.fws.gov/athens/endangered/counties/richmond_county.html

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 red-cockaded woodpecker and shortnose sturgeon. Potential habitat for wood stork was observed in the various wetland areas, but no wood stork nests were observed. Based on these findings, the proposed project will have “no effect” on the listed protected species with documented populations in Richmond County.

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

8.0 CLOSING

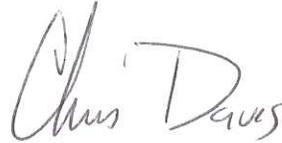
S&ME appreciates the opportunity to be of service to you by performing this Protected Species Assessment for the site. Please contact us at (803) 561-9024 with questions regarding this report or if you require additional information.

Sincerely,

S&ME, Inc.



Amanda White
Biologist



Chris Daves, P.W.S.
Biologist

Senior Review by Tom Behnke, P.G. - Environmental Department Manager

Appendix A

Figures
Site Photographs

Appendix B

County Species Lists from USFWS and GADNR

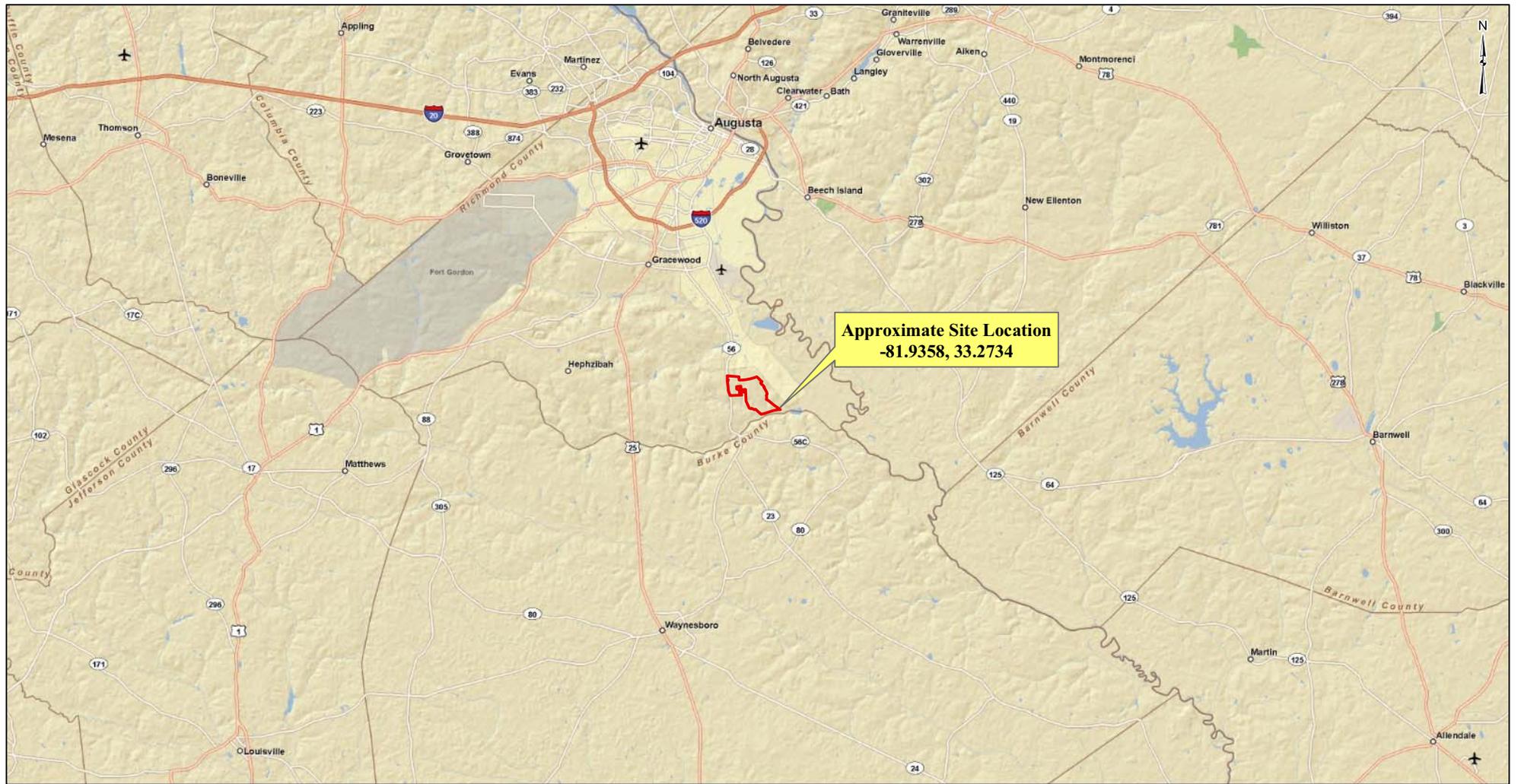
APPENDIX A

Figure 1 – Vicinity Map

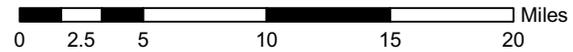
Figure 2 – USGS Topographic Map

Figure 3 – Aerial Map

Site Photographs



Source: ArcGIS Online StreetMap - 2010

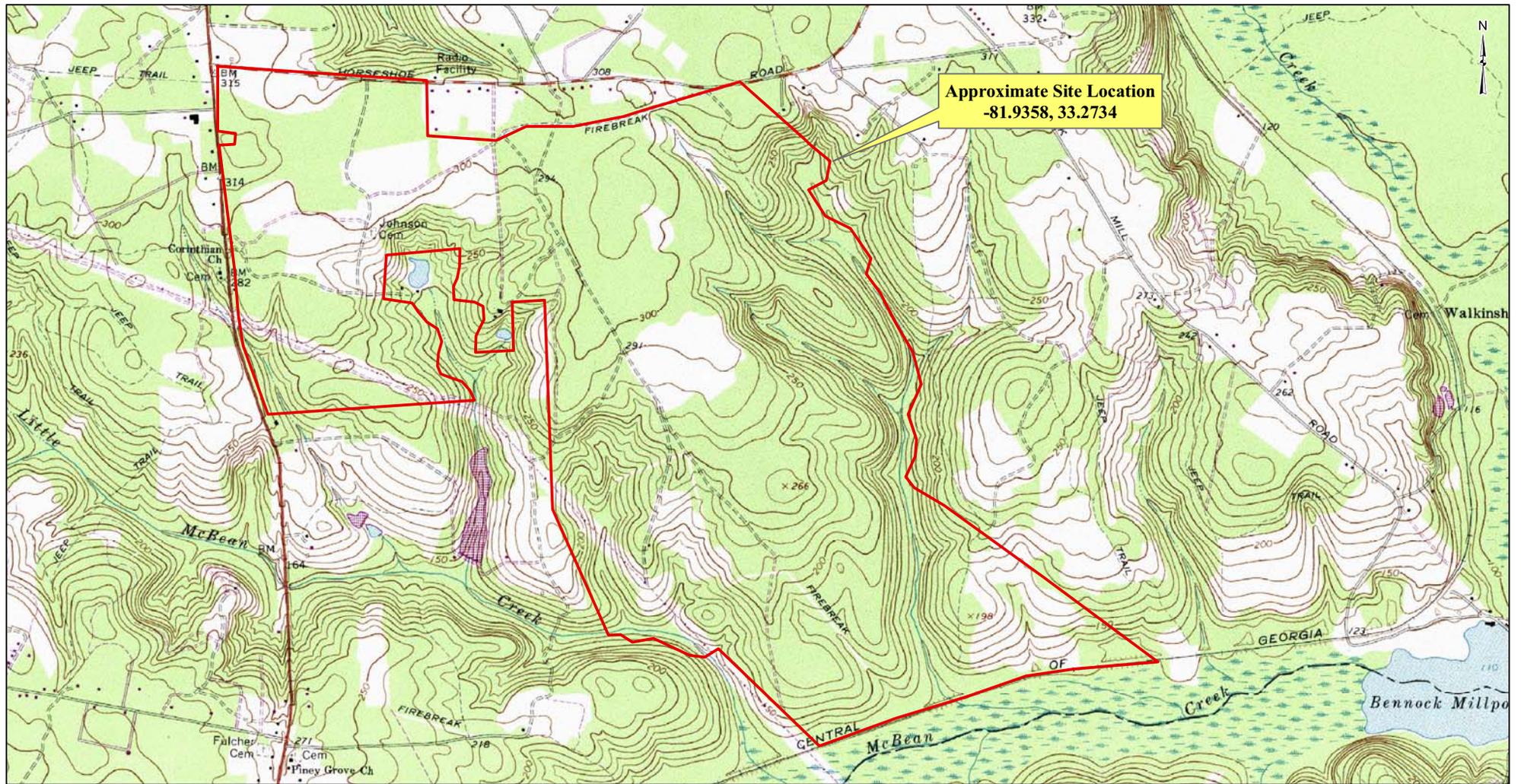


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DRAWN BY:	ADW
DATE:	7/2/2010

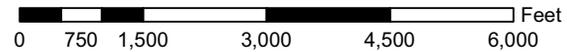


VICINITY MAP
Augusta Corporate Park GRAD Site Certification ~ 1,800 Acres Augusta, Richmond County, Georgia
S&ME PROJECT NO. 1614-10-218

FIGURE NO.
1



Source: USGS 7.5-Minute Quadrangle Map
Mechanic Hill, GA - 1981

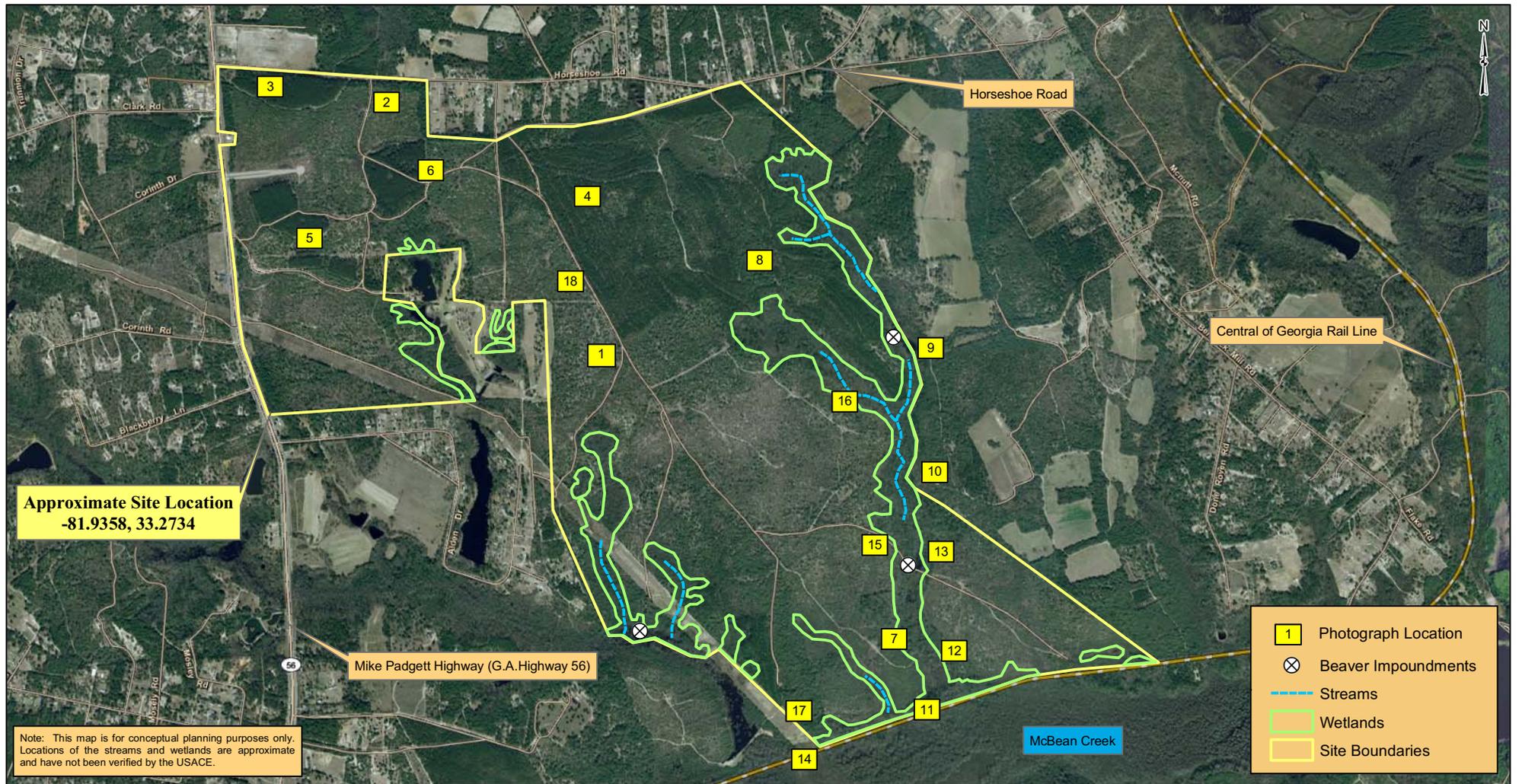


SCALE:	1 inch = 1,500 feet
CHECKED BY:	WCD
DRAWN BY:	ADW
DATE:	7/2/2010

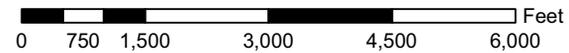


TOPOGRAPHIC MAP	
Augusta Corporate Park GRAD Site Certification ~ 1,800 Acres Augusta, Richmond County, Georgia	
S&ME PROJECT NO.	1614-10-223

FIGURE NO.	2
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Source: ArcGIS Online Imagery - 2009



SCALE:	1 inch = 1,500 feet
CHECKED BY:	WCD
DRAWN BY:	ADW
DATE:	7/2/2010



AERIAL MAP	
Augusta Corporate Park GRAD Site Certification ~ 1,800 Acres Augusta, Richmond County, Georgia	
S&ME PROJECT NO.	1614-10-223

FIGURE NO.	3
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Photo #1 The majority of the site is cut-over/ secondary-growth forestland.



Photo #2 Cut-over/ secondary-growth forestland along a maintained area in the northern portion of the site.



Photo #3 Pine stand with thinned understory.



Photo #4 Pine stand with shrub understory.

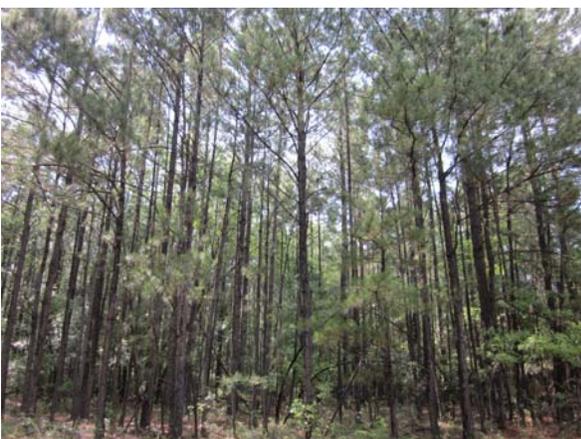


Photo #5 Pine stand with sapling mid-story.

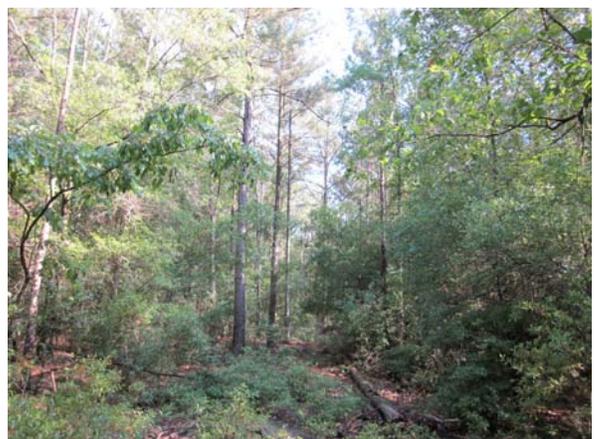


Photo #6 Mature pines with thick understory.



Photo #7 Mixed hardwood/ pine forest in the southern portion of the site.



Photo #8 Mixed hardwood/ pine forest in the northern portion of the site.



Photo #9 Forested wetland near the eastern boundary.



Photo #10 Forested wetland near the eastern boundary.



Photo #11 Margin of forested wetland near the southern boundary.



Photo #12 Established canopy of forested wetland in the southern portion of the site.



Photo #13 Open water beaver pond in the southeastern portion of the site.



Photo #14 Wading bird in an emergent wetland along the southern boundary.



Photo #15 Open herbaceous wetland located in the southern portion of the site.



Photo #16 Perennial stream habitat located near the central portion of the site.



Photo #17 Maintained easement in the western portion of the site.



Photo #18 Maintained roads and easements were observed in several locations throughout the property.

APPENDIX B

**County Species Lists from USFWS and GADNR
For Richmond County**

USFWS LIST

Listed Species in Richmond County (updated May 2004)				
Species	Federal Status	State Status	Habitat	Threats
Bird				
Red-cockaded woodpecker <i>Picoides borealis</i>	E	E	Nest in mature pine with low understory vegetation (<1.5m); forage in pine and pine hardwood stands > 30 years of age, preferably > 10" dbh	Reduction of older age pine stands and encroachment of hardwood midstory in older age pine stands due to fire suppression
Wood stork <i>Mycteria americana</i>	E	E	Primarily feed in fresh and brackish wetlands and nest in cypress or other wooded swamps	Decline due primarily to loss of suitable feeding habitat, particularly in south Florida. Other factors include loss of nesting habitat, prolonged drought/flooding, raccoon predation on nests, and human disturbance of rookeries.
Reptile				
Gopher tortoise <i>Gopherus polyphemus</i>	No Federal Status	T	Well-drained, sandy soils in forest and grassy areas; associated with pine overstory, open understory with grass and forb groundcover, and sunny areas for nesting	Habitat loss and conversion to closed canopy forests. Other threats include mortality on highways and the collection of tortoises for pets.
Invertebrate				
Atlantic pigtoe mussel <i>Fusconaia masoni</i>	No Federal Status	E		
Plant				
Georgia Aster <i>Aster georgianus</i>	Candidate Species	T	Post oak savannah/prairie communities. Most remaining populations survive adjacent to roads, utility rights of way, and other openings.	
Dwarf witch-alder <i>Fothergilla gardenii</i>	No Federal Status	T	Low, flat, swampy areas, especially shrub-dominated margins of upland swamps (pocosins), Carolina bays, pitcherplant bogs, wet savannahs, and Atlantic white-	

			cedar swamps	
Georgia plume <i>Elliottia racemosa</i>	No Federal Status	T	Sand ridges, dry oak ridges, evergreen hammocks, and sandstone outcrops in a variety of sandy soil conditions ranging from moist to very dry	
Indian olive <i>Nestronia umbellula</i>	No Federal Status	T	Dry open upland forests of mixed hardwood and pine	
Ocmulgee skullcap <i>Scutellaria ocmulgee</i>	No Federal Status	T	Forested terraces, hardwood slopes and riverbanks of tributaries to the Ocmulgee, Oconee, and Savannah Rivers	
Parrot pitcher-plant <i>Sarracenia psittacina</i>	No Federal Status	T	Acid soils of open bogs, wet savannahs, and low areas in pine flatwoods; a reported population in Richmond County may have been misidentified	
Pickering's morning-glory <i>Stylisma pickeringii</i>	No Federal Status	T	Coarse white sands on sandhills near the Fall Line and on a few ancient dunes along the Flint and Ochoopee Rivers	
Rosemary <i>Ceratiola ericoides</i>	No Federal Status	T	Driest, openly vegetated, scrub oak sandhills and river dunes with deep white sands of the Kershaw soil series	
Shoals spider-lily <i>Hymenocallis coronaria</i>	No Federal Status	E	Major streams and rivers in rocky shoals and in cracks of exposed bedrock; plants can be completely submerged during flooding	
Sweet pitcher-plant <i>Sarracenia rubra</i>	No Federal Status	E	Acid soils of open bogs, sandhill seeps, Atlantic white-cedar swamps, wet savannahs, low areas in pine flatwoods, and along sloughs and ditches	

¹This species is the responsibility of the National Marine Fisheries Service.

http://www.fws.gov/athens/endangered/counties/richmond_county.html

Locations of Special Concern Animals, Plants and Natural Communities in Richmond County, Georgia

"US" indicates species with federal status (Protected, Candidate or Partial Status). Species that are federally protected in Georgia are also state protected.

"GA" indicates Georgia protected species.

Find details for the species below on our special concern lists for [animals](#) and [plants](#).

Date of information -
5/27/2008

Animals

- *Ambystoma tigrinum tigrinum* Eastern Tiger Salamander
- GA · *Elassoma okatie* Bluebarred Pygmy Sunfish
- GA · *Fusconaia masoni* Atlantic Pigtoe
- GA · *Heterodon simus* Southern Hognose Snake
- *Necturus punctatus* Dwarf Waterdog
- GA · *Rana capito* Gopher Frog

Plants

- GA · *Astragalus michauxii* Sandhill Milk-vetch
- GA · *Chamaecyparis thyoides* Atlantic White-cedar
- GA · *Cypripedium acaule* Pink Ladyslipper
- GA · *Hymenocallis coronaria* Shoals Spiderlily
- *Lindera subcoriacea* Bog Spicebush
- GA · *Nestronia umbellula* Indian Olive
- GA · *Sarracenia rubra* Sweet Pitcherplant
- GA · *Scutellaria ocmulgee* Ocmulgee Skullcap
- GA · *Stewartia malacodendron* Silky Camellia
- GA · *Stylisma pickeringii* var. *pickeringii* Pickering's Morning-glory
- US · *Symphotrichum georgianum* Georgia Aster

Natural Communities

No natural communities listed in Richmond county.

Source

<http://georgiawildlife.dnr.state.ga.us/content/specieslocationbycounty.asp?lstCounty=Richmond>

<u>COUNTY</u>	<u>EL_GROUP</u>	<u>AN_PL</u>	<u>SNAME</u>	<u>SCOMNAME</u>	<u>GRANK</u>	<u>SRANK</u>	<u>USES</u>	<u>SPROT</u>	<u>SSHABITAT</u>
Richmond	Amphibians	Animal	Ambystoma tigrinum tigrinum	Eastern Tiger Salamander	G5T5	S3S4			isolated wetlands; pine dominated uplands; open fields
Richmond	Amphibians	Animal	Necturus punctatus	Dwarf Waterdog	G4	S2			Sluggish streams with substrate of leaf litter or woody debris
Richmond	Amphibians	Animal	Rana capito	Gopher Frog	G3	S3		R	Sandhills; dry pine flatwoods; breed in isolated wetlands
Richmond	Birds	Animal	Nyctanassa violacea	Yellow-crowned Night-heron	G5	S3S4			River swamps; marshes; cypress/gum ponds
Richmond	Fish	Animal	Acipenser brevirostrum	Shortnose Sturgeon	G3	S2	LE	E	Estuaries; lower end of large rivers in deep pools with soft substrates
Richmond	Fish	Animal	Elassoma okatie	Bluebarred Pygmy Sunfish	G2G3	S1S2		E	Temporary ponds and stream backwaters with dense aquatic vegetation
Richmond	Fish	Animal	Etheostoma fricksium	Savannah Darter	G4	S2			Shallow creeks with moderate current over sand or gravel substrate; sometimes associated with aquatic vegetation
Richmond	Fish	Animal	Etheostoma serrerifer	Sawcheek Darter	G5	S2			Sluggish streams and swamps over substrate of sand, mud, or detritus
Richmond	Fish	Animal	Moxostoma robustum	Robust Redhorse	G1	S1		E	Medium to large rivers, shallow riffles to deep flowing water; moderately swift current
Richmond	Fish	Animal	Notropis chalybaeus	Ironcolor Shiner	G4	S2S3			Coastal Plain streams and floodplain swamps
Richmond	Fish	Animal	Umbra pygmaea	Eastern Mudminnow	G5	S2S3			Sluggish streams, ponds, and sloughs with mud bottoms and heavy vegetation
Richmond	Invertebrates	Animal	Fusconaia masoni	Atlantic Pigtoe	G2	S1		E	Large rivers to medium sized streams in Atlantic Slope basins
Richmond	Mammals	Animal	Corynorhinus rafinesquii	Rafinesque's Big-eared Bat	G3G4	S3?		R	Pine forests; hardwood forests; caves; abandoned buildings
Richmond	Mammals	Animal	Myotis austroriparius	Southeastern Myotis	G3G4	S3			Caves & buildings near water
Richmond	Reptiles	Animal	Clemmys guttata	Spotted Turtle	G5	S3		U	Heavily vegetated swamps, marshes, bogs, and small ponds; nest and possibly hibernate in surrounding uplands
Richmond	Reptiles	Animal	Gopherus polyphemus	Gopher Tortoise	G3	S2		T	Sandhills; dry hammocks; longleaf pine-turkey oak woods; old fields
Richmond	Reptiles	Animal	Heterodon simus	Southern Hognose Snake	G2	S2		T	Sandhills; fallow fields; longleaf pine-turkey oak
Richmond	Vascular Plants	Plant	Astragalus michauxii	Sandhill Milk-vetch	G3	S2		T	Longleaf pine-wiregrass savannas; turkey oak scrub
Richmond	Vascular Plants	Plant	Ceratiola ericoides	Sandhill Rosemary	G4	S2		T	Ochoopee Dunes; deep sandridges
Richmond	Vascular Plants	Plant	Chamaecyparis thyoides	Atlantic White-cedar	G4	S2		R	Clearwater stream swamps in fall line sandhills
Richmond	Vascular Plants	Plant	Cypripedium acaule	Pink Ladyslipper	G5	S4		U	Upland oak-hickory-pine forests; piney woods
Richmond	Vascular Plants	Plant	Hymenocallis coronaria	Shoals Spiderlily	G2Q	S2		T	Rocky shoals of broad, open rivers
Richmond	Vascular Plants	Plant	Lindera subcoriacea	Bog Spicebush	G2G3	S1?			Bayheads; seepy forested slopes
Richmond	Vascular Plants	Plant	Macbridea caroliniana	Carolina Bogmint	G2G3	S1		R	Bogs; marshes; alluvial woods
Richmond	Vascular Plants	Plant	Melanthium latifolium	Broadleaf Bunchflower	G5	S2?			Mesic deciduous hardwood forests
Richmond	Vascular Plants	Plant	Nestronia umbellula	Indian Olive	G4	S3		R	Mixed with dwarf shrubby heaths in oak-hickory-pine woods; often in transition areas between flatwoods and uplands
Richmond	Vascular Plants	Plant	Portulaca umbraticola ssp. coronata	Wingpod Purslane	G5T2	S2			Granite outcrops; Altamaha Grit outcrops
Richmond	Vascular Plants	Plant	Sarracenia rubra	Sweet Pitcherplant	G4	S2		T	Atlantic white cedar swamps; wet meadows
Richmond	Vascular Plants	Plant	Scutellaria altamaha	Altamaha Skullcap	G2G3	S2?			Sandy, deciduous woods
Richmond	Vascular Plants	Plant	Scutellaria ocmulgee	Ocmulgee Skullcap	G2	S2		T	Mesic hardwood forests; bluff forests
Richmond	Vascular Plants	Plant	Stewartia malacodendron	Silky Camellia	G4	S2		R	Along streams on lower slopes of beech-magnolia or beech-basswood-Florida maple forests
Richmond	Vascular Plants	Plant	Stylisma pickeringii var. pickeringii	Pickering's Morning-glory	G4T3	S2		T	Open, dry, oak scrub of sandhills
Richmond	Vascular Plants	Plant	Symphotrichum georgianum	Georgia Aster	G2G3	S2	C	T	Upland oak-hickory-pine forests and openings; sometimes with Echinacea laevigata or over amphibolite

Source: <http://www.georgiawildlife.com/node/1370>