Russell R. McMurry, P.E., Commissioner

GEORGIA DEPARTMENT OF TRANSPORTATION

One Georgia Center, 600 West Peachtree Street, NW
Atlanta, Georgia 30308
Telephone: (404) 631-1000

June 6, 2016

Mr. Bill Rutlin, Branch Chief
U.S. Army Corps of Engineers
Regulatory Division – Coastal Branch
100 West Oglethorpe Avenue
Savannah, Georgia 31401-3640
Attention: Brian Moore

Re: Transmittal of Ecology Resource Survey and Assessment of Effects Report
GDOT Project PI No. 0013549, Chatham County
Pedestrian Improvements on State Route 21

Dear Mr. Rutlin:

The proposed GDOT project would use state funds to design and construct a pedestrian bridge in Chatham County over State Route (SR) 21/Augusta Road (Rd) and a sidewalk to the nearest intersection of Rice Mill Rd and SR 21/Augusta Rd approximately 300 feet north of the proposed pedestrian bridge. The total length of the proposed project is 0.13 mile. The attached report contains details on findings related to ecological resources.

Waters of the U.S. are located within the proposed project corridor. The proposed project would require an estimated 0.399 acre of permanent fill and clearing, thus a 404 permit would be required for the project.

The Department respectfully submits this report for your review and consideration for the upcoming discussion regarding the permit area for the proposed project. If you have any questions or need additional information, please contact GDOT Ecologist Jeffrey Garnett at (404) 631-1699 (jgarnett@dot.ga.gov) or GDOT Senior Ecology Team Leader Chris Goodson at (404) 631-1850 (cgoodson@dot.ga.gov).

Sincerely,

Eric Duff /cg

Eric Duff
State Environmental Administrator

ED/CG/jg

cc: Paul Alimia, GDOT GEPA Analyst
Tim Matthews, GDOT Project Manager
Meg Hedeen, GDOT Assistant State Environmental Administrator
Sandy Lawrence, GDOT Cultural Resources Section Manager
Gail D'Avino, GDOT Assistant State Environmental Administrator

Ecology Resource Survey and Assessment of Effects Report
May 2016

Chatham County
P.I. No. 0013549

SR 21/Augusta Rd at CS 705/Parkside Boulevard Pedestrian Bridge

Prepared by:
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3715 Northside Parkway
200 Northcreek, Suite 800
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Prepared for:
Georgia Department of Transportation
Office of Environmental Services
600 W. Peachtree Street NW
Atlanta, GA 30308

Report Author: _____
Katharine Bleau, Ecologist

Consultant Reviewer: _____
Austin Meadows, Sr. Ecologist

GDOT Reviewer: _____
Jeffrey Garnett, GDOT Ecologist

Ecology Resource Survey and Assessment of Effects Overview
P.I. No. 0013549, Chatham County

Impacts to Federally Jurisdictional Resources		
Resource Type	**Length of Impact (feet)**	**Area of Impact (acres)**
Perennial Stream	N/A	N/A
Intermittent Stream	N/A	N/A
Ephemeral Channel	N/A	N/A
TOTAL	0	0.000
	Permanent (acres)	Temporary (acres)
Wetland	0.386	0.013
Open Water	N/A	N/A
TOTAL	0.386	0.013

Present in the Project Area	
Invasive Species	Y
Bald Eagle Nest, Habitat	N
Critical Habitat	N
Essential Fish Habitat	N
Bat Roosting Habitat	Y
Migratory Bird Habitat (Structures)	N

Agency Coordination	
Section 9	Not required
Buffer Variance	Not required
Buffer Mitigation	Not required
404 Permit	Regional Permit 01
404 Permit Mitigation	2.4 Wetland Credits

Ecology Resource Survey and Assessment of Effects Overview
P.I. No. 0013549, Chatham County

Federal and State Protected Species							
Species Name	Common Name	Federal Rank	State Rank	Habitat Present	Species Present	Special Provision	Biological Determination
Acipenser oxyrinchus oxyrinchus	Atlantic sturgeon	E	E	No	ND	No	No take
Acipenser brevirostrum	Shortnose sturgeon	E	E	No	ND	No	No take
Eubalaena glacialis	North Atlantic right whale	E	E	No	ND	No	No take
Trichechus manatus	West Indian manatee	E	E	No	ND	No	No take
Lepidochelys kempii	Atlantic ridley sea turtle	E	E	No	ND	No	No take
Lindera melissifolia	Pondberry	E	E	No	ND	No	No take
Picoides borealis	Red-cockaded woodpecker	E	E	No	ND	No	No take
Dermochelys coriacea	Leatherback sea turtle	E	E	No	ND	No	No take
Mycteria americana	Wood stork	T	E	No	ND	No	No take
Caretta caretta	Loggerhead sea turtle	T	T	No	ND	No	No take
Chelonia mydas	Green sea turtle	T	T	No	ND	No	No take
Ambystoma cingulatum	Frosted flatwoods salamander	T	T	No	ND	No	No take
Charadrius melodus	Piping plover	T	T	No	ND	No	No take
Drymarchon couperi	Eastern indigo snake	T	T	No	ND	No	No take
Calidris canutus rufa	Red knot	T	R	No	ND	No	No take
Notophthalmus peristriatus	Striped newt	C	T	No	ND	No	No take
Gopherus polyphemus	Gopher tortoise	C	T	No	ND	No	No take
Elanoides forficatus	Swallow-tailed kite	NL	R	Yes (foraging)	ND	No	No take

Key: E = Endangered; T = Threatened; R = Rare; C = Candidate; NL = Not Listed; ND = Not Determined (no protected species survey performed)

Executive Summary

The proposed Georgia Department of Transportation (GDOT) Project P.I. No. 0013549 is located in Chatham County, approximately 5.3 miles northwest of Port Wentworth. The proposed project would consist of the design and construction of a pedestrian bridge over State Route (SR) 21/Augusta Road (Rd) and a sidewalk to the nearest intersection of Rice Mill Rd and SR 21/Augusta Rd approximately 300 feet north of the proposed pedestrian bridge. This project would be constructed using a design-build process. The total length of the proposed project is approximately 0.13 mile.

Field surveys were conducted on January 18 and March 16, 2016. The survey area extended 100 feet beyond existing and permanent easement limits along SR 21/Augusta Rd. The survey area is comprised of four vegetative/land use communities: maintained right-of-way (ROW), mixed pine-hardwood forest, ruderal, and commercial/institutional. Two invasive species were found within the survey area: Japanese honeysuckle (*Lonicera japonica*) and Chinese privet (*Ligustrum sinense*).

Federally protected species potentially occurring within the survey area were determined through agency coordination and online database searches. The Georgia Department of Natural Resources (GADNR) Nongame Conservation Section (NCS) reported known occurrences within three miles of the project area for federally protected shortnose sturgeon (*Acipenser brevirostrum*, endangered), frosted flatwoods salamander (*Ambystoma cingulatum*, threatened), and West Indian manatee (*Trichechus manatus*, endangered). According to the GADNR rare elements location data for Chatham County, there are known occurrences of federally protected shortnose sturgeon, Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*, endangered), red knot (*Calidris canutus*, threatened), loggerhead sea turtle (*Caretta caretta*, threatened), piping plover (*Charadrius melodus*, threatened), green sea turtle (*Chelonia mydas*, threatened), leatherback sea turtle (*Dermochelys coriacea*, threatened), eastern indigo snake (*Drymarchon couperi*, threatened), North Atlantic right whale (*Eubalaena glacialis*, endangered), gopher tortoise (*Gopherus polyphemus*, candidate), red-cockaded woodpecker (*Picoides borealis*, endangered), frosted flatwoods salamander, Atlantic ridley (*Lepidochelys kempii*, endangered), wood stork (*Mycteria americana*, threatened), pondberry (*Lindera melissifolia*, endangered), and West Indian manatee within the county. The U.S. Fish and Wildlife Service (USFWS) indicated that the proposed project is within the distributional range of the frosted flatwoods salamander and wetlands and ditches within the survey area may provide foraging habitat for wood stork. According to the USFWS Information for Planning and Conservation (IPaC) website, there are known county occurrences of and/or the predictive range includes Chatham county for piping plover, red knot, striped newt (*Notophthalmus peristriatus*, candidate), wood stork, Atlantic sturgeon, gopher tortoise, shortnose sturgeon, frosted flatwoods salamander, North Atlantic right whale, West Indian manatee, eastern indigo snake, pondberry, green sea turtle, leatherback sea turtle, loggerhead sea turtle, and Atlantic ridley. Due to lack of suitable habitat within the survey area, the biological determination for the aforementioned federally protected and candidate species is "no take" for the proposed project. Therefore, the proposed project would not constitute a "take" under Section 9 of the Endangered Species Act.

No bald eagle habitat is present within the survey area. Therefore, the proposed project would not result in a "take" of the bald eagle. Critical habitat for piping plover and loggerhead sea turtle is present in Chatham County and occurs along the oceanic side of the barrier islands. The proposed project, however, is located on the inland portion of Chatham County, and there is a substantial marsh and river system as well as urban development located between the proposed project and the designated coastal critical

habitat areas. Critical habitat has also been designated for green sea turtle, leatherback sea turtle, loggerhead sea turtle, Atlantic sturgeon, West Indian manatee, and frosted flatwoods salamander; however these designated critical habitat areas are not located within Chatham County. Since no critical habitat is present within the vicinity of the proposed project, there would be no effect to critical habitat.

The proposed project is located in Chatham County, which is one of the coastal counties of Georgia that contains Essential Fish Habitat (EFH). Wetlands within the survey area drain to Black Creek, a tributary of the Savannah River. The Savannah River in the proximity of its confluence with Black Creek contains mapped designated EFH for spiny lobster (*Panulirus argus*), slipper lobster (*Scyllarides nodifer*), and snapper-grouper. Non-tidal, freshwater wetland resources within the limits of the proposed project are separated from a reach of Black Creek approximately 3 miles upstream of mapped EFH by 0.3 mile of a completely forested corridor. Given the implementation of standard erosion and sedimentation control methods and the presence of a natural buffer, indirect impacts to water quality would be negligible and would not result in impacts to EFH. Therefore, the proposed project would have "no effect" on EFH.

No structures containing potential foraging or nesting habitat for migratory bird species are present within the survey area; however potential foraging and nesting habitat for migratory bird species is present within the forested habitats throughout the survey area.

During the field surveys, three wetlands were identified as jurisdictional waters of the U.S. No perennial or intermittent streams, ephemeral channels, or open waters were located within or adjacent to the survey area. The proposed project would require a Section 404 Clean Water Act permit for impacts to 0.399 acre (0.386 acre permanent and 0.013 acre temporary) of wetland. It is anticipated that a Regional Permit 01 would be applicable. A total of 2.4 wetland credits would be required for compensatory mitigation.

State protected species potentially occurring within the survey area were determined through agency coordination and online database searches. The GADNR reported a known occurrence of state protected swallow-tailed kite (*Elanoides forficatus*, rare) within three miles of the project area. However, the proposed project is located approximately 0.3 mile and 1.6 miles from large, high quality riverine wetland corridors that provide higher quality foraging as well as nesting habitat for this migratory bird species. Therefore, although potentially suitable foraging habitat for the swallow-tailed kite is located within the survey area, construction of the proposed project would not be anticipated to impact this species. Thus, the proposed project would result in "no take" to swallow-tailed kite.

Potential foraging and roosting habitat for bat species is present within forested habitats throughout the survey area. During the 2016 field survey, no indication of bat presence was observed.

During the field surveys, no buffered or non-buffered state waters were identified. Therefore, a stream buffer variance would not be required for the proposed project.

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I. PROJECT OVERVIEW

A. Project Location

The purpose of this investigation was to document the site conditions and potential ecological impacts associated with the proposed pedestrian bridge over State Route (SR) 21/Augusta Road (Rd) in Chatham County, Georgia, approximately 5.3 miles northwest of Port Wentworth. The proposed project is located within the Lower Savannah watershed (U.S. Geological Survey [USGS] Hydrologic Unit Code [HUC] 03060109). This watershed has not been designated as a priority watershed by the U.S. Environmental Protection Agency (EPA). The proposed project is located in the Floodplains and Low Terraces (75i) Level IV Ecoregion of Georgia. The approximate latitude and longitude of the midpoint of the proposed project is 32.221134°, -81.198462° respectively (see Figure 1 – Project Vicinity Map and Figure 2 – Survey Area Map).

B. Need and Purpose

The pedestrian crossing would serve the population of a growing subdivision located along Rice Mill Rd and the newly constructed Rice Creek Elementary School. Residents would be able to use the crossing to safely cross SR 21/Augusta Rd to take their children to school and access goods and services provided by a new commercial development northeast of the SR 21/Augusta Rd and Rice Mill Rd intersection.

C. Project Description

The proposed project would consist of the design and construction of a pedestrian bridge over SR 21/Augusta Rd and a sidewalk to the nearest intersection of Rice Mill Rd and SR 21/Augusta Rd approximately 300 feet north of the proposed pedestrian bridge. This project would be constructed using a design-build process. A minor permanent easement would be required. The total length of the proposed project is 0.13 mile.

D. Survey Methodology

Information used in the pre-field investigation of the survey area was derived from a number of sources. These include USGS topographic 7.5′ quadrangle maps (Port Wentworth, GA), National Wetland Inventory (NWI) maps, and U.S. Department of Agriculture (USDA) Soil Surveys for Chatham County. Information concerning the occurrence of federally and state protected species within the project corridor was gathered from the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) website and the Georgia Department of National Resources (GADNR) Non-game Conservation Section (NCS) rare elements database. On December 3, 2015, early coordination was initiated with the GADNR NCS and USFWS requesting information regarding known or potential occurrences of protected species within a three-mile radius of the proposed project. Response letters were received from the GADNR NCS on January 11, 2016 and USFWS on December 7, 2015 (see Appendix B – Agency Coordination). Mapped information, aerial photography, and on-site verification were used to perform determinations for all jurisdictional waters of the U.S. Furthermore, jurisdictional wetland determinations were performed using the three-parameter approach (hydrophytic vegetation, hydric soils, and hydrology) as described in the 1987 U.S. Army Corps of Engineers (USACE) *Wetland Delineation Manual* and utilized the *2010 Atlantic and Gulf Coastal Plain Regional Supplement* as guidance.

HNTB ecologists Katharine Bleau and Alexander Terry conducted a field investigation and general habitat assessment along the proposed corridor on January 18, 2016. The field survey took approximately 8 hours to complete. An additional field survey was conducted on March 16, 2016 by HNTB ecologists Katharine Bleau and Austin Meadows; this field survey took approximately 4 hours to complete. A

qualifications statement for the surveyors is included in Appendix C – Background Information. The field survey was performed to determine natural resource conditions and to confirm available published information concerning the survey area. Plant communities and their associated wildlife were then assessed by pedestrian surveys. The survey area extended 100 feet from either side of the environmental survey boundary developed during the conceptual design phase for this project and encompassed approximately 8.84 acres (see Figure 2 – Survey Area Map).

Precipitation archives were reviewed at the Georgia Automated Environmental Monitoring Network website for Savannah, Georgia located at the Coastal Georgia Botanical Gardens, approximately 16.4 miles southwest of the project site. On January 16, 2016, two days prior to the first field survey, no rain was recorded. Approximately 0.99 inch of rain was recorded on January 17, 2016, the day before the field survey. No rain was recorded on the day of the field survey, January 18, 2016. The 30-year average rainfall for the 30 days prior to the start of the first field survey (from December 18 to January 17) is 3.66 inches. The total rainfall recorded for this 30-day time period in 2015/2016 was 4.71 inches, which is 1.05 inches above the 30-year average for this weather station. The 30-year average annual rainfall is 49.74 inches. This weather station documented 57.43 inches from January 18, 2015 to January 17, 2016, the year preceding the first field survey, which is 7.69 inches above the average. On March 14 and 15, 2016, the two days prior to the second field survey, 0.01 and 0.00 inch of rain were recorded, respectively. No rain was recorded on the day of the survey, March 16, 2016. The 30-year average rainfall for the 30 days prior to the start of the second field survey (from February 15 to March 15) is 2.94 inches. The total rainfall recorded for this 30-day time period in 2016 was 1.05 inches, which is 1.89 inches below the average. The 30-year average annual rainfall is 49.62 inches. This weather station documented 56.27 inches from March 16, 2015 to March 15, 2016, the year preceding the second field survey, which is 6.65 inches above the average. Refer to Appendix C – Background Information for all weather and climatic data documents.

E. Habitats and Land Use Areas

The proposed project is located within a predominantly commercial/residential area of Chatham County. The project is located in the Lower Coastal Plain physiographic province of Georgia and has low, flat topography characterized by broad wetlands and low gradient streams. Four distinct habitat/land use communities were observed in the survey area: commercial/institutional, maintained right-of-way (ROW), mixed pine-hardwood forest, and ruderal (see Figure 3 – Habitat Map). A detailed description of these habitat/land use types is included below. The soils found in the survey area include: Ocilla complex (Oj); Ogeechee loamy fine sand (Oj); and Pooler fine sandy loam (Pn) (see Figure 6 – Soil Map). Hydric soils include all of the aforementioned soils.

Maintained ROW

This community comprises 4.52 acres (51.2 percent) of the survey area. This community is dominated by grasses and ruderal plant species and is frequently maintained. Vegetative species include bluestem broomsedge (*Andropogon virginicus*), bushy bluestem (*Andropogon glomeratus*), fescue (*Festuca arundinacea*), young wax myrtle (*Morella cerifera*), Carolina geranium (*Geranium carolinianum*), purple vetch (*Vicia* sp.), yellow clover (*Melilotus officinalis*), heartwing sorrel (*Rumex hastatulus*), St. Augustine grass (*Stenotaphrum secundatum*), yellow jessamine (*Gelsemium sempervirens*), manyflower marshpennywort (*Hydrocotyle umbellata*), and purple henbit (*Lamium purpureum*). This community does not provide suitable habitat for any protected species potentially occurring in Chatham County.

Mixed Pine-Hardwood Forest

This habitat comprises 2.36 acres (26.7 percent) of the survey area. Mixed pine-hardwood forest occurs both naturally and artificially in areas within the survey area. These areas include upland areas where hydrology has been manipulated by ditching and fill and wetter areas, such as wetlands, throughout the project. The habitat consists of clay loams with higher chroma as well as clay and sandy loam hydric soils. The dominant tree species present include water oak (*Quercus nigra*), red maple (*Acer rubrum*), laurel oak (*Quercus laurifolia*), live oak (*Quercus virginiana*), white oak (*Quercus alba*), sweetgum (*Liquidambar styraciflua*), and loblolly pine (*Pinus taeda*). Within the survey area, the understory is predominantly comprised of grasses and other herbaceous species such as fescue with scattered shrub species, including saw palmetto (*Serenoa repens*), Chinese privet (*Ligustrum sinense*), wax myrtle, saw greenbrier (*Smilax bona-nox*), soft rush (*Juncus effusus*), sawtooth blackberry (*Rubus argutus*), and bull thistle (*Cirsium vulgare*). The mixed pine-hardwood forest habitat provides potentially suitable foraging habitat for the state rare swallow-tailed kite (*Elanoides forficatus*). This habitat does not provide suitable habitat for any other protected species potentially occurring in Chatham County.

Commercial/Institutional

These land use areas comprise 1.33 acres (15.0 percent) of the survey area. The commercial/institutional community consists of manicured and maintained areas found in developed parcels within the survey area. These properties are largely constructed on altered landscapes where fill has been placed and consist of parking lots, bare ground due to recent disturbance, and maintained grass lawns. Vegetative species within the community are dominated by herbaceous species, including St. Augustine grass, Bermuda grass (*Cynodon dactylon*), and manyflower marshpennywort. Scattered trees and ornamental species are also present and consist of loblolly pine, live oak, and southern magnolia (*Magnolia grandiflora*). The commercial/institutional areas do not provide suitable habitat for any protected species potentially occurring in Chatham County.

Ruderal

This habitat comprises 0.63 acre (7.1 percent) of the survey area. This early successional area occurs only within the northwest quadrant where evidence of land disturbance and clearing for development was observed. The ruderal area was comprised primarily of herbaceous species consisting of bushy bluestem, fescue, bull thistle, heartwing sorrel, curly dock (*Rumex crispus*) and soft rush with scattered mature pine and hardwood trees including sweetgum, loblolly pine, laurel oak, and swamp chestnut oak (*Quercus michauxii*). Understory shrub and woody vine species included saw palmetto, wax myrtle, eastern baccharis (*Baccahris halimifolia*), sawtooth blackberry, saw greenbrier, and Japanese honeysuckle (*Lonicera japonica*). This community provides potentially suitable foraging habitat for the swallow-tailed kite. The ruderal habitat does not provide suitable habitat for any other protected species potentially occurring in Chatham County.

II. FEDERALLY PROTECTED RESOURCES

A. Protected Species and Habitats

Lists of threatened and endangered species potentially occurring within Chatham County were obtained from the GADNR NCS and USFWS websites. Information regarding known occurrences of federally protected species within a three-mile radius of the proposed project was obtained from the GADNR NCS and the USFWS via email requests for a database search (see Appendix B – Agency Coordination).

The protected species and habitat descriptions were obtained from the GADNR Wildlife Resources Division website for rare species profiles unless otherwise stated (www.georgiawidlife.com/node/2721).

i. Federally Threatened and Endangered

In compliance with Section 9 of the Endangered Species Act (ESA), the GDOT must identify the presence of threatened and endangered species and their designated critical habitat as well as evaluating project impacts.

In the early coordination response, GADNR NCS reported known occurrences within three miles of the project area for federally protected shortnose sturgeon (*Acipenser brevirostrum*), frosted flatwoods salamander (*Ambystoma cingulatum*), and West Indian manatee (*Trichechus manatus*). A copy of the GADNR NCS letter (received January 11, 2016) is included in Appendix B – Agency Coordination. According to the GADNR rare elements location data for Chatham County (updated September 23, 2015), there are known occurrences of federally protected piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*), wood stork (*Mycteria americana*), red-cockaded woodpecker (*Picoides borealis*), shortnose sturgeon, Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), frosted flatwoods salamander, eastern indigo snake (*Drymarchon couperi*), North Atlantic right whale (*Eubalaena glacialis*), pondberry (*Lindera melissifolia*), West Indian manatee, green sea turtle (*Chelonia mydas*), loggerhead sea turtle (*Caretta caretta*), leatherback sea turtle (*Dermochelys coriacea*,), and Atlantic ridley (*Lepidochelys kempii*) within the county.

In the early coordination response, USFWS indicated that the proposed project is within the distributional range of the frosted flatwoods salamander and wetlands and ditches within the survey area may provide foraging habitat for wood stork. A copy of the USFWS response email (received December 7, 2015) is included in Appendix B – Agency Coordination. According to the USFWS IPaC, there are known county occurrences of and/or the predictive range includes Chatham county for piping plover, red knot, wood stork, Atlantic sturgeon, shortnose sturgeon, frosted flatwoods salamander, North Atlantic right whale, West Indian manatee, eastern indigo snake, pondberry, green sea turtle, leatherback sea turtle, loggerhead sea turtle, and Atlantic ridley.

A summary of these federally threatened and endangered species, their federal status, and suitable habitat requirements are included in Table 2 and the paragraphs below.

Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) – Federal Endangered, State Endangered

Habitat: The Atlantic sturgeon inhabits large rivers and estuaries on the Atlantic Coast. This species is a subtropical diadromous fish species, meaning it migrates between freshwater and saltwater. During spawning, this fish inhabits large freshwater rivers but primarily occupies marine waters when not breeding. It prefers to remain close to shore when inhabiting marine waters and is typically found in areas of gravel or sand substrate. This species has also been found in bays, river mouths, and estuaries. Historically, the Atlantic sturgeon was present in approximately 38 rivers in the U.S. from the St. Croix River, Maine south to St. Johns River, Florida. Recent records indicate that this species is present in 32 rivers, and spawning occurs in at least 23 of those identified rivers (National Marine Fisheries Service [NMFS], unpublished). In Georgia, its range is confined to large rivers within watersheds of the southeastern portion of the state that flow into the Atlantic Ocean.

Determination: Potentially suitable habitat for the Atlantic sturgeon was not identified within the survey area. No perennial streams are present within the survey area. Due to lack of suitable habitat to support this species, the proposed project would result in "no take" to the Atlantic sturgeon.

Shortnose sturgeon (*Acipenser brevirostrum*) – Federal Endangered, State Endangered

Habitat: This fish inhabits large coastal rivers, though it does occasionally enter the Atlantic Ocean. Spawning typically occurs in freshwater, mid-channel areas of river bends over coarse substrates, such as rock and gravel, with current velocities of 52-104 cm/sec. The historic range of the shortnose sturgeon extends from the St. John's River in Florida to the Saint John River in New Brunswick, Canada. The Savannah, Ogeechee, Altamaha, Satilla, and St. Mary's Rivers have known populations of shortnose sturgeon; the Altamaha River contains the largest known population south of the Delaware River. The GADNR NCS reported two known occurrences of the shortnose sturgeon east of the project site in the Savannah River (see Appendix C – Agency Coordination).

Determination: Potentially suitable habitat for the shortnose sturgeon was not identified in the survey area. No perennial streams are present within the survey area. Due to lack of suitable habitat to support this species, the proposed project would result in "no take" to the shortnose sturgeon.

North Atlantic right whale (*Eubalaena glacialis*) – Federal Endangered, State Endangered

Habitat: Each summer, right whales aggregate at foraging grounds off New England and the Atlantic side of Canada. Arrival of right whales at foraging locations is strongly correlated to the abundance of *Calanus* copepods. Such areas tend to be 330-660 feet deep with relatively flat bottom topography adjacent to areas of steeply sloping topography. Each winter, calving females and some non-breeding whales migrate to the calving grounds located off Georgia and northeast Florida. Right whales are usually sighted 5-25 miles off the Georgia coast from December through March. However, they are occasionally seen from the shore in Florida where deeper water comes closer to the coastline. Waters in the calving grounds are relatively shallow (30-50 feet deep) and the temperature is stable and cool (52-63°F), which has been determined to be critical habitat characteristics for calving and nursing. At any given time, the whereabouts of one quarter to half of the right whale population is unknown; thus, alternate foraging and calving grounds may exist. North Atlantic right whales formerly inhabited temperate, coastal shelf waters along the coasts of Europe and North America, but the European subpopulation was extirpated by commercial whaling in the 19th century. The current range is centered along the Canadian and U.S. Atlantic coasts from Nova Scotia to Florida, although rare sightings in the Gulf of Mexico and off Greenland and Scandinavia are reported.

Determination: The proposed project is located greater than 20 miles inland from the Atlantic Ocean. Therefore, although suitable wintering habitat for the North Atlantic right whale is located off the coast of the barrier islands in this region of Georgia, the proposed project is not located within close proximity to such habitat. Due to lack of suitable habitat to support this species, the proposed project would result in "no take" to the North Atlantic right whale.

West Indian manatee (*Trichechus manatus*) – Federal Endangered, State Endangered

Habitat: West Indian manatees are found in tropical and subtropical coastal and river waters along the southeast U.S. coast, the Caribbean coast of Central and South America, and locally throughout the West Indies. This Florida manatee subspecies is a year-round resident in Florida. However, during the warm months, an unknown portion of the Florida manatee population migrates northward into Georgia and the Carolinas and westward along the Gulf Coast into Alabama, Mississippi, and Louisiana. In Georgia, manatees can be found in any tidal waters from March through October. Preferred habitats in Georgia include nearshore ocean waters, tidal creeks, estuaries, and the lower reaches of the St. Mary's, Satilla, Altamaha, Ogeechee, and Savannah Rivers. Manatees have been sighted as far north as Massachusetts. During the winter months, manatees remain in warm water refuges of Florida. The GADNR NCS reported one known occurrence approximately 2.2 miles east of the project site within tidal waters (see Appendix B – Agency Coordination).

Determination: No identified water resources within the survey area provide suitable habitat for the West Indian manatee, such as tidal rivers or estuaries with plentiful vegetation for foraging. However, expansive coastal marsh, estuarine rivers, and coastal ocean that provides suitable habitat for this mammal are located within close proximity to the proposed project (approximately 1.65 and 10 miles east-southeast, respectively). Due to lack of suitable habitat to support this species, the proposed project would result in "no take" to the West Indian manatee.

Atlantic ridley sea turtle (*Lepidochelys kempii*) – Federal Endangered, State Endangered

Habitat: Atlantic ridley sea turtles prefer shallow coastal waters where food is abundant. In Georgia, juvenile Atlantic ridley turtles are common in estuaries during the months of April through October. They are the second most abundant species after loggerheads. Post-hatchlings and small juveniles are found in pelagic habitats until the length of their carapace reaches approximately 8 inches; after that time, they move into coastal habitat. Adult Atlantic ridleys are found primarily in the Gulf of Mexico, but juveniles have been observed foraging along the U.S. Atlantic coast. A few records exist of this species found in the mid-Atlantic and Mediterranean Sea.

Determination: The proposed project is located greater than 20 miles inland from the Atlantic Ocean. Therefore, although suitable habitat for the Atlantic ridley sea turtle is located within close proximity to the proposed project, the water resources and habitats within the survey area do not provide suitable habitat for this species. Due to lack of suitable habitat to support this species, the proposed project would result in "no take" to the Atlantic ridley sea turtle.

Pondberry (*Lindera melissifolia*) – Federal Endangered, State Endangered

Habitat: This flowering plant species grows on the edges of sandhill ponds and limesinks. It is often associated with pondspice (*Litsea aestivalis*). The range of pondberry includes the Coastal Plain regions of Georgia, Alabama, North Carolina, South Carolina, Mississippi, Missouri, and Arkansas. It has not been observed in Louisiana or Florida in more than a century.

Determination: No suitable habitat, such as sandhill ponds or limesinks, is present for pondberry in the survey area. No open waters were observed within the survey area. Although wetlands with isolated inundated areas are present, these inundated areas were no greater than 5 to 10

feet in diameter and are not part of sandhill or limesink communities. Due to lack of suitable habitat to support this species, the proposed project would result in "no take" to pondberry.

Red-cockaded woodpecker (*Picoides borealis*) – Federal Endangered, State Endangered

Habitat: The red-cockaded woodpecker requires large expanses of mature, open pine forest, particularly longleaf, shortleaf (*Pinus echinata*), or loblolly. Nests and roost cavities of this small bird are excavated only in old living pines, and the process may take several years to complete. Trees selected for cavities are usually infected with red heart fungus, which softens the heartwood, making excavation easier. The habitat that likely supported the largest populations of the red-cockaded woodpecker historically was the fire-maintained longleaf pine forest of the Coastal Plain region. This bird was formally common in mature pine forest throughout the southeastern U.S. from eastern Texas and Oklahoma to the Atlantic Coast and north to Missouri, Kentucky, and Maryland. Currently, its range is much reduced and fragmented due to habitat loss. In the northern and western edges of the range of the woodpecker, the largest populations are found mostly on large expanses of public lands where management objectives have not included maximum timber production. This species likely occurred throughout Georgia were suitable habitat conditions were present, except in the Blue Ridge Mountains, but now only give remaining population centers that comprise the vast majority of the state's red-cockaded woodpecker population remain: Fort Benning, Fort Stewart, Okefenokee National Wildlife Refuge, Piedmont National Wildlife Refuge/Brender Experimental Forest/Oconee National Forest, and plantations in the Red Hills region of Thomas and Grady counties where habitat maintenance for the red-cockaded woodpecker was incidental to land management for quail hunting and aesthetics. A few scattered groups may remain elsewhere on private land.

Determination: Vegetative land use and natural habitat areas within the survey area do not provide suitable habitat for the red-cockaded woodpecker, such as mature, open pine forest. Forested communities within the survey area are predominantly forested wetlands or dense mixed-pine hardwood habitats. Due to lack of suitable habitat to support this species, the proposed project would result in "no take" to the red-cockaded woodpecker.

Leatherback sea turtle (*Dermochelys coriacea*) – Federal Endangered, State Endangered

Habitat: Leatherback sea turtles are highly pelagic but may also forage in coastal waters. Leatherbacks make long-distance migrations from nesting sites in the tropics to foraging sites in the sub-Arctic. Leatherbacks are found along the Georgia coast during annual migrations in the fall and spring. They are also commonly seen in the winter months foraging on sea jellies. Currently, little is known about habitat used by post-hatchlings and small juveniles. These reptiles have a global distribution. Found throughout the Atlantic, Pacific, and Indian Oceans, leatherbacks can tolerate cool northern ocean temperatures, allowing them to regularly move farther north than other sea turtles.

Determination: The proposed project is located greater 20 miles miles inland from the Atlantic Ocean. Therefore, although suitable habitat for the leatherback sea turtle is located off the coast of the barrier islands in this region of Georgia, the proposed project is not located within close proximity to such habitat. Due to lack of suitable habitat to support this species, the proposed project would result in "no take" to the leatherback sea turtle.

Wood stork (*Mycteria americana*) – Federal Threatened, State Endangered

Habitat: The wood stork inhabits a variety of freshwater and estuarine wetlands for breeding, feeding, and roosting. Wood storks are colonial nesters, and several nests are often located in the same tree. Nests may be located in large or small trees with the height of the nest above the water ranging from one to two meters in small trees to over 20 meters in cypress trees. Trees must be located in standing water or on islands surrounded by water. Colonies of wood storks are typically short lived and may disperse after one year; few last longer than 20 years. This bird typically forages in freshwater marshes, narrow tidal creeks, or flooded tidal pools. The suitability of wetlands for wood stork foraging is partially dependent on vegetation density. Generally, wood storks prefer to forage in ponds and marshes with little to no canopy. Although wood storks have been observed foraging in forested wetlands, they prefer open areas within these habitats. Wetlands with open canopies that provide easier landing access than closed canopy sites are more likely to support wood stork foraging. Wetlands with sparse canopies also allow wood storks to take flight more quickly to avoid predators (USFWS, 2012.) The breeding range of the wood stork includes the southeastern U.S., both coasts of Mexico and Central America, Cuba, Hispaniola, and South America from Colombia to Argentina. In the U.S., it breeds in Florida, Georgia, South Carolina, and North Carolina. Within Georgia, the wood stork has been recorded at least once in 56 locations in 18 counties along the coast and across the eastern and central portion of southern Georgia. After the breeding season, wood storks disperse northward to North Carolina, Tennessee, and Arkansas, though some have been found in the Georgia Piedmont. However, the most heavily used habitat is the coastal marshes following the breeding season. Birds that have nested in Georgia have been recorded in McIntosh, Glynn, and Camden counties as well as Blackbeard Island. The GADNR NCS did not report any known wood stork rookery sites within three miles of the project site (see Appendix B – Agency Coordination).

Determination: No vegetative land use areas or habitats within the survey area provide suitable foraging habitat for the wood stork, such as open waters, marsh, or wetlands where prey species such as fish are present. Although the forested wetland exhibited areas of open canopy, this resource did not exhibit inundation suitable for prey species to be present. The emergent wetland ditch within the survey area exhibited inundation primarily limited to very shallow scour pools that would not support a food source for wood stork and therefore would not serve as foraging habitat for the wood stork. Nesting habitat, such as cypress domes or large palustrine forested wetland systems with proper inundation to reduce nest predators, was not present. In addition, no individuals or nests were observed. Due to the lack of suitable roosting or foraging habitat, the proposed project would result in "no take" to the wood stork.

Loggerhead sea turtle (*Caretta caretta*) – Federal Threatened, State Threatened

Habitat: In the early life stages of the loggerhead sea turtle, from hatchlings to 10-12 years of age, this reptile is believed to maintain a pelagic existence, living in association with rafts of sargassum seaweed and drifting with the main oceanic currents. Habitat use by loggerheads on the Georgia coast is poorly understood. Loggerheads are found throughout the marine and estuarine waters of Georgia during the warm months of spring, summer, and fall. They have been observed swimming or basking on the surface as far as the Gulf Stream (62.4 miles offshore) and are seen regularly as close as the creeks and tidal rivers of Georgia's extensive saltmarshes. Loggerheads are Georgia's primary nesting sea turtle, laying eggs on the beaches of every barrier island during the summer nesting season. These turtles are found in the Atlantic, Pacific, and Indian Oceans, as well as the Mediterranean Sea.

Determination: The proposed project is located greater than 20 miles inland from the Atlantic Ocean and approximately 1.65 miles west of expansive coastal marsh associated with the Savannah River. However, no perennial streams occur within or adjacent to the survey area. Therefore, although potentially suitable habitat for the loggerhead sea turtle is located within relatively close proximity to the proposed project, the water resources and habitats within the survey area do not provide suitable habitat for this species. Due to lack of suitable habitat to support this species, the proposed project would result in "no take" to the loggerhead sea turtle.

Green sea turtle (*Chelonia mydas*) – Federal Threatened, State Threatened

Habitat: This reptile is found in oceanic habitat as post-hatchlings and juveniles. They are generally associated with concentrations of sargassum seaweed (*Sargassum muticum*) found in oceanic convergence zones. When green sea turtles reach a carapace length of approximately 8-10 inches, they leave the oceanic habitat and migrate to shallow coastal waters where they feed on sea grasses and algae. In Georgia, juveniles have been documented foraging on macroalgae found on docks and jetties. During the nesting season, adults may be found in close proximity to nesting beaches.

Determination: The proposed project is located greater than 20 miles inland from the Atlantic Ocean. Therefore, although suitable habitat for the green sea turtle is located off the coast of the barrier islands in this region of Georgia, the proposed project is not located within close proximity to such habitat. Due to lack of suitable habitat to support this species, the proposed project would result in "no take" to the green sea turtle.

Frosted flatwoods salamander (Ambystoma cingulatum) – Federal Threatened, State Threatened

Habitat: This salamander is endemic to mesic flatwoods habitats located within the disappearing longleaf pine-wiregrass community. Breeding sites are typically shallow, ephemeral cypress and/or swamp tupelo ponds or "domes," although flooded borrow pits, roadside ditches, and deep firebreaks are occasionally used. These habitats are dependent on seasonal fires that support an open canopy with a luxuriant growth of emergent and submerged grasses, sedges, and forbs that serve as shelter for the aquatic larvae. This species is restricted to the Coastal Plain of South Carolina, Georgia, Florida, and Alabama. In Georgia, documented occurrences since 1980 are known from Baker, Bryan, Evans, Liberty, McIntosh, and Miller counties.

Determination: No vegetative land use areas or habitats within the survey area provide suitable habitat for the frosted flatwoods salamander, such as mesic pine flatwoods, shallow, ephemeral cypress and/or swamp tupelo ponds, or flooded borrow pits. Forested habitats within the survey area were comprised of mixed pine-hardwood communities that did not exhibit the vegetative or soil characteristics of a pine-dominated flatwoods community preferred by this species. Although wetlands with isolated inundated areas are present, these inundated areas were no greater than 5 to 10 feet in diameter and are not part of flatwoods or longleaf pine-wiregrass communities. Additionally, roadside ditches within the survey area do not occur within the preferred community of the frosted flatwoods salamander and therefore would not provide suitable habitat. Due to lack of suitable habitat to support this species, the proposed project would result in "no take" to the frosted flatwoods salamander.

Piping plover (*Charadrius melodus*) – Federal Threatened, State Threatened

Habitat: The piping plover breeds in the northern Great Plains of the U.S. and Canada. The breeding habitats of this bird include sparsely vegetated sand and gravel beaches adjacent to large alkali lakes, washed-out hillside beaches near smaller semi-permanent alkali wetlands, pastures and rangeland near these areas consisting of mid- to short-grass prairie (specifically the less vegetated and more graveled microhabitats within these grasslands), and sparsely vegetated beaches, sandflats, dredged islands, and drained river floodplains of some of the larger rivers in this region. Breeding birds nesting along the Great Lakes, larger inland lakes in the northern Great Plains, and along the Atlantic Coast prefer sparsely vegetated sand beaches, gravel, or cobble and frequently occur near sand dunes. Wintering areas include beaches, mudflats, and tidal ponds that are periodically inundated by water from high tide. The breeding range of this species extends from the northern Great Plains of the U.S. and Canada, on the beaches of Lake Superior, Lake Michigan, and Lake Huron, to the northeast Atlantic coast from very southern Newfoundland south to northern North Carolina. Wintering areas include the southeast Atlantic coast from North Carolina to central Florida, the Gulf Coast from Florida to south Texas, and portions of the Gulf Coast from south Texas to the Yucatan Peninsula, several Caribbean islands, and areas along the northern Gulf of California on the Pacific coast of Mexico. Barrier islands along the Georgia and South Carolina coasts are a major wintering location for this species and a few of Georgia's barrier islands, particularly Little Egg Island Bar and Little St. Simons Island, harbor a substantial number of wintering individuals from the Great Lakes breeding population.

Determination: No vegetative land use areas or habitats within the survey area provide suitable breeding or wintering habitat for the piping plover, such as beaches, mudflats, or tidal ponds periodically inundated by high tide. Water resources within the survey area are freshwater and are not tidally influenced. Expansive coastal marsh and sand beaches with adjacent sand dunes that may provide suitable wintering habitat are located greater than 10 miles east-southeast of the proposed project. Due to lack of suitable habitat to support this species, the proposed project would result in "no take" to the piping plover

Eastern indigo snake (*Drymarchon couperi*) – Federal Threatened, State Threatened

Habitat: Though present in a wide variety of habitat types in peninsular Florida, in the Coastal Plain physiographic province of Georgia, the eastern indigo snake is closely associated with longleaf pine (*Pinus palustris*) habitats, such as sandhills and turkey oak (*Quercus laevis*) scrub. Eastern indigo snakes favor extensive (5 miles/8 kilometers) xeric ridges comprised of wind-blown deposits of sand approximately 10-40 feet (3-9 meters) deep, which are typically located along the northeastern sides of major blackwater streams. These sandy habitats support barren environments with stunted turkey oaks and patchy ground cover of saw palmetto, rosemary (*Rosmarinus officinalis*), mints (*Verbena* spp.), and reindeer lichen (*Cladonia rangiferina*) (Orianne Society, 2015). Stump holes, hollow logs, and gopher tortoise burrows provide winter retreats from extreme temperatures. Some snakes may use the same burrows throughout their lives (Coppola, 2004). Within the Altamaha Grit areas of Georgia, fissures within sandstone outcroppings often provide suitable habitat for shelters. Floodplains or the periphery of cypress ponds either adjacent to or interspersed within the sandy uplands and bottomland hardwood forests are used during the warmer months as foraging habitat. These snakes have also been observed along the edges of freshwater marshes, riparian corridors, wet fields, agricultural fields, and human-altered habitats. Historically, this species ranged from southeastern Georgia south to Florida and west to southeastern Mississippi. Currently, populations are known from only Georgia

and Florida. In Georgia, populations are highly fragmented and primarily occur in the southeastern portion of the state.

Determination: Suitable winter upland refugia habitat for the eastern indigo snake was not identified within any of the vegetative/land use communities. The survey area occurs along a low lying coastal, hydric corridor where much of the upland habitat within the survey area is associated with fill placed for commercial, residential, and institutional developments. Limited natural habitats, such as forested areas, within the survey area are either maintained/landscaped or part of mesic systems. Although one forested wetland is present within the survey area, this resource is a low quality, low topographic area that has been hydrologically altered, contained evidence of past silviculture use (bedded rows observed), and is not characteristic of floodplain bottomland or cypress swamp habitat utilized by the eastern indigo snake for summer foraging. However, adjacent expansive wetland systems associated with Black Creek south of the survey area could provide suitable summer foraging habitat for this species, but these areas are located outside of the survey area. Therefore, the proposed project would result in "no take" to the eastern indigo snake.

Red knot (*Calidris canutus rufa*) – Federal Threatened, State Rare

Habitat: In the western hemisphere, this bird inhabits the mid to high arctic tundra of Alaska, Canada, and Greenland. Most breeding habitats are near coastal areas, often on islands. Nest sites are generally on dry, sunny, and slightly elevated areas of tundra, frequently on open gravel ridges or slopes. During migration, red knot's habitat preference switches to coastal beaches usually at or near the mouth of bays, estuaries, or tidal inlets. Staging sites are associated with high wave-energy coastal areas. Wintering sites are generally intertidal habitats such as beaches with significant wave action or currents. The red knot breeds in central and eastern Russia, Alaska, Canada, and Greenland. Wintering areas vary by subspecies or breeding population and include both the eastern and western hemispheres. In the western hemisphere, this includes the U.S. Atlantic, Gulf, and Pacific coasts, both coasts of Mexico, part of the east coast of Central America, the entire west coast of Central America, and most of both coasts of South America.

Determination: Vegetative land use and natural habitat areas within the survey area do not provide suitable habitat for the red knot, including high wave-energy coastal areas such as beaches. However, sand beaches adjacent to ocean and estuarine areas with high wave-energy that may provide suitable wintering habitat are located within close proximity to the proposed project (greater than 20 miles southeast). Due to lack of suitable habitat to support this species, the proposed project would result in "no take" to the red knot.

ii. Federal Candidate Species

Although candidate species are not protected by federal law, they are included in the evaluation. The responses from the GADNR NCS and USFWS did not report any known occurrences of federal candidate species within three miles. Copies of the USFWS letter (received December 7, 2015) and the GADNR NCS letter (received January 11, 2016) are included in Appendix B – Agency Coordination. However, the USFWS IPaC listing for Chatham County includes the federal candidates striped newt (*Notophthalmus peristriatus*) and gopher tortoise (*Gopherus polyphemus*). Additionally, the GADNR rare elements location data for Chatham County (updated on September 23, 2015) reported known occurrences of gopher tortoise and striped newt within the county.

A summary of these federal candidate species, their federal and state status, and suitable habitat requirements are included in Table 2 and the paragraphs below.

Striped newt (*Notophthalmus peristriatus*) – Federal Candidate, State Threatened

Habitat: Striped newts are associated with fire-maintained longleaf pine-wiregrass communities. Adults typically favor sandhills and well-drained pine flatwoods habitats. Breeding and larval development occur in isolated, usually ephemeral, wetlands such as pond cypress domes, sinkhole ponds (lime sinks), and occasionally borrow pits. Ponds are usually vegetated with an abundance of emergent grasses, sedges, and forbs. Maidencane (*Panicum hemitomon*) may also be common at breeding ponds. The striped newt ranges from the Georgia side of the Savannah River into northern and peninsular Florida. In Georgia, it occurs in the Lower and Middle Coastal Plain and at one site in the Upper Coastal Plain but is apparently absent from the Red Hills of southwestern Georgia.

Determination: The habitat and land use types within the survey area do not exhibit appropriate habitat, such as well-drained pine flatwoods and ephemeral wetlands with pond cypress domes, sinkhole ponds, borrow pits, or sandhills. Although wetlands with isolated inundated areas are present, these inundated areas were no greater than 5 to 10 feet in diameter and are not part of sandhill, flatwoods, or longleaf pine-wiregrass communities. Furthermore, forested habitats within the survey area were comprised of mixed pine-hardwood communities that did not exhibit the vegetative or soil characteristics of a pine-dominated flatwoods community preferred by striped newt. Due to lack of suitable habitat to support this species, the proposed project would result in "no take" to the striped newt.

Gopher tortoise (*Gopherus polyphemus*) – Federal Candidate, State Threatened

Habitat: The gopher tortoise is found in the rapidly disappearing longleaf pine and wiregrass community, which includes sandhills, dry flatwoods, dry prairie, coastal grasslands and dunes, and turkey oak scrub. Due to the threatened status of this community, many gopher tortoise individuals have been forced into artificial habitats, such as roadsides, fence-rows, and old fields. In Georgia, the preferred habitat for gopher tortoise is sandhills characterized by well-drained soils. This habitat was formerly dominated by longleaf pine, wire grass, and turkey oak. Due to the development of silviculture in many areas, longleaf pine has been replaced by slash pine, sand pine (*Pinus clausa*), or loblolly pine. Longleaf pine has also been removed from many habitats, which are now dominated by oak tree species. Gopher tortoises may still inhabit these converted habitats as long as the canopy and understory are open enough to allow for the growth of grasses and forbs (Coppola, 2004). Key habitat requirements for the species include: sandy soils for burrowing, sunlight availability, and abundant herbaceous vegetation. Gopher tortoises occur in the Coastal Plain from southern South Carolina south to Florida and westward to eastern Louisiana. In Georgia, this species is historically known below the Fall Line throughout the southern half of the state. However, they are not found in the Okefenokee Swamp or on most barrier islands.

Determination: Suitable habitat for the gopher tortoise is not present within any of the vegetative land use/habitat areas within the survey area. Mapped soils throughout the entire survey area have been classified as hydric and did not exhibit suitable burrowing conditions. Much of the upland habitat, including existing maintained ROW, within the survey area is associated with fill placed for commercial, residential, and institutional developments and consisted of compacted

clays intermixed with native soils. Limited natural habitats, such as forested areas, within the survey area are either maintained/landscaped or part of mesic systems. Due to lack of suitable habitat to support this species, the proposed project would result in "no take" to gopher tortoise individuals.

iii. Critical Habitat

"Critical habitat," as defined in the ESA, is a term for habitat given special protection for the benefit of a listed species. Critical habitat for piping plover and loggerhead sea turtle is present in Chatham County and occurs along the oceanic side of the barrier islands greater than 20 miles southeast of the proposed project. In addition, critical habitat for frosted flatwoods salamander has been designated in two locations of Jasper County, South Carolina, approximately 7 and 10 miles east of the survey area. Critical habitat has also been designated for the green sea turtle, North Atlantic right whale, leatherback sea turtle, loggerhead sea turtle, Atlantic sturgeon, and West Indian manatee; however, these designated critical habitat areas are not located within Chatham County. Although designated critical habitat for the piping plover and loggerhead sea turtle is located within relatively close proximity to the proposed project, the designated habitat is separated from the project corridor by urban development and expansive coastal marsh. Additionally, water resources within the survey area are freshwater and drain to a tributary of an estuarine waterway. Therefore, potential impacts to the water quality of water resources identified within the survey area are not anticipated to impact oceanic waters associated with the loggerhead sea turtle. Sand beaches with adjacent sand dunes are located greater than 20 miles southeast of the project on the oceanic side of a barrier island and would not be impacted. In addition, designated critical habitat for frosted flatwoods salamander is separated from the proposed project by urban development and expansive marsh associated with the Savannah River; thus, there would be no impacts to this habitat. Due to the lack of designated critical habitat within close proximity to the project site, the proposed project would have "no effect" on critical habitat.

iv. Bald and Golden Eagles

The Bald and Golden Eagle Protection Act of 1940 (BGEPA) provides for the protection of the bald eagle (*Haliaeetus leucocephalus*) and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession and commerce of such birds.

The USFWS removed the bald eagle as threatened under the ESA on August 8, 2007, and in May 2007 published the National Bald Eagle Management Guidelines (Eagle Guidelines) to assist the public in understanding protections afforded to and prohibitions related to the bald eagle under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d) (Eagle Act), the Migratory Bird Treaty Act (16 U.S.C. 703-712), and the Lacey Act (16 U.S.C. 3371-3378). The Eagle Guidelines define "disturb" as: " 'To agitate or bother a bald or golden eagle to the degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, causing injury, death, or nest abandonment.' In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death, or nest abandonment." The "1989 Recovery Plan Management Guidelines for the Southeastern Region" define the area within one mile of a bald eagle nest as the "secondary management zone."

Bald eagles may be found in mature riparian forests near lakes and large rivers/streams in the southern and central parts of Georgia. The species is also found in Georgia's estuarine areas. Bald eagles prefer

isolated sites for nesting and usually nest in a large, open-topped pine (occasionally cypress) near open water, often on high ground if available. The GADNR NCS early coordination response letter received January 11, 2016, did not report any bald eagle nests within three miles of the project site.

Neither individual bald eagles nor their nests were observed within the survey area during the field survey on January 18 and March 16, 2016. The survey area contains areas of mixed pine-hardwood forest in the forms of upland and wetland; however, these areas are not located adjacent to any large waterways, such as rivers, expansive impoundments, or open coastal marsh. Additionally, the forested habitats present within the survey area contain relatively dense canopies and do not include superdominant trees for nesting. Expansive coastal marsh with suitable foraging and potential nesting habitat is located within close proximity to the proposed project (approximately 1.65 miles east). Due to the lack of occurrences for this species along the survey corridor and the absence of potential foraging and/or nesting habitat, the proposed project would have "no effect" to the bald eagle and would not result in a "take," as defined under the BGEPA.

v. Migratory Birds

The Migratory Bird Treaty Act (MBTA) and the Executive Order on the Responsibility of Federal Agencies to Protect Migratory Birds (EO 13186), requires the protection of migratory birds and their habitats. The survey area was assessed for migratory bird nesting habitat on January 18 and March 16, 2016. Bridges and large culverts provide potentially suitable nesting and/or roosting habitat for migratory birds. The survey area does not contain any bridges or large box culverts. However, potentially suitable nesting and foraging habitat for migratory birds is present in forested habitats throughout the survey area. Portions of these forested habitats adjacent to the roadway would be cleared and converted to an open, maintained state.

vi. Essential Fish Habitat

In compliance with the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), GDOT must identify unavoidable adverse impacts to Essential Fish Habitat (EFH). Section 303(a)(7) of the MSFCMA (16 USC § 1801 et seq. as amended by the Sustainable Fisheries Act in 1996) defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." This regulation was passed to help mandate the identification and protection of important marine and anadromous fish habitat. According to the Habitat Fishery Management Plan from the South Atlantic Fishery Management Council, there are numerous habitat types that support EFH, including estuarine emergent (saltmarsh and brackish marsh), estuarine shrub/scrub (mangroves), seagrass meadows, oyster reefs/shell banks, tidal flats, palustrine emergent (tidal freshwater marshes) and forested wetlands (tidal freshwater swamps), submerged rooted vascular (aquatic beds), estuarine water columns, and a number of marine offshore habitats. The proposed project is located in Chatham County, which is one of the coastal counties of Georgia that contains EFH. Wetlands within the survey area drain to Black Creek, a tributary of the Savannah River. The Savannah River in the proximity of its confluence with Black Creek contains mapped designated EFH for spiny lobster (*Panulirus argus*), slipper lobster (*Scyllarides nodifer*), and snapper-grouper. Non-tidal, freshwater wetland resources within the limits of the proposed project are separated from a reach of Black Creek approximately 3 miles upstream of mapped EFH by 0.3 mile of a completely forested corridor. Given the implementation of standard erosion and sedimentation control methods and the presence of a natural buffer, indirect impacts to water quality would be negligible and would not result in impacts to EFH. Therefore, the proposed project would have "no effect" on EFH.

B. Invasive Species

In compliance with Executive Order 13112, a survey was conducted for invasive species that could spread during construction. The survey was conducted for invasive plant species identified as Category One by the Georgia Exotic Pest Plant Council. Category One species are exotic plants that pose a serious problem in Georgia natural areas by extensively invading native plant communities and displacing native species. Two invasive plant species were found within the mixed pine-hardwood and ruderal habitats within the survey area of the proposed project: Chinese privet and Japanese honeysuckle. These invasive species were not found in a mass greater than or equal to 1,000 square feet. These species have been recorded in the Early Detection and Distribution Mapping System (EDDMapS) (see Appendix A – Field Data).

During the construction process, GDOT will take measures to prevent or minimize the spread of these species as appropriate for the time of the year. These measures will include removal and disposal of vegetative parts in the soil that may reproduce by root taking prior to moving the soil, burning on-site any such parts and above-ground parts that bear fruit, controlling or eradicating infestations prior to construction, and cleaning of vehicles and other equipment prior to leaving the infested site. The measures used will be those which are appropriate for the particular species and the specific site conditions that exist within the project as described in the Georgia Standard Specifications Section 201, Cleaning and Grubbing of ROW.

C. Waters of the U.S.

Jurisdictional water(s) of the U.S. are defined by 33 CFR Part 328.3 (b) and are protected by Section 404 of the Clean Water Act (33 USC § 1344), which is administered and enforced by the USACE. During the field surveys conducted on January 18 and March 16, 2016, three wetland resources were identified within the survey area (see Figure 4 – State and Federal Waters Map: Topographic; Figure 5 – State and Federal Waters Map: Aerial; and Figure 6 – Soil Map). Furthermore, Table 1 – Stream, Wetland, and Open Water Summary and Section VI – Photographic Log provide detailed characteristics of the waters of the U.S. identified within the proposed project corridor. No jurisdictional streams or open waters were identified in the survey area during the field survey. An analysis of rainfall data during the survey period is discussed in Section I.D. Survey Methodology. Although the field survey conducted on January 18, 2016 for jurisdictional waters of the U.S. occurred within 48 hours of a significant rainfall event, hydrology and hydric soils indicators unrelated to precipitation events were observed.

Wetland 1 (WL 1)

WL 1 is a palustrine, forested wetland located west of SR 21/Augusta Rd, southwest of the intersection with Rice Mill Rd. The approximate size of this wetland is greater than 5 acres with 1.20 acres within the survey area. WL 1 is a moderate quality (Class 3), primarily forested system with the age of canopy trees ranging from 15 to 30 years old and evidence of grading, fill, bedding, and clearing. Primary hydrology indicators observed during the January 2016 field survey include surface water, a high water table, saturation, water-stained leaves, and oxidized rhizospheres along living roots. Dominant vegetation observed at the sampling point includes laurel oak, white oak, water oak, sweetgum, saw palmetto, Chinese privet, fescue, and saw greenbrier. From 0-3 inches, soils sampled had a clay loam texture and an observed matrix color of 7.5YR 3/1. From 3-16+ inches, soils sampled had a clay loam texture and an observed matrix color of 10YR 5/1 with 25 percent 5YR 6/8 redox concentrations along pore linings. The hydric soil indicator observed is Depleted Matrix (F3). This wetland displayed isolated areas with inundated pools approximately 1-2 inches in depth and saturation at 1 inch and a water table 4 inches from the surface in other areas.

WL 1 is not located within one linear mile of any stream on the Final 2012 GADNR Environmental Protection Division (EPD) 305(b)/303(d) list as not supporting its designated use. This resource is not one linear mile upstream of, or within the same watershed as, a resource that has been classified by GADNR EPD as a "non-supporting" biota impaired stream. WL 1 provides potentially suitable foraging habitat for swallow-tailed kite along the forest edge. This resource does not provide suitable habitat for any other protected species potentially occurring within the survey area. The proposed project would impact approximately 0.030 acre due to fill and 0.307 acre due to clearing conversion of WL 1, for a total of 0.337 acre of impact.

Wetland 2 (WL 2)

WL 2 is a linear, man-made, excavated roadside ditch that drains south along the west side of SR 21/Augusta Rd adjacent to WL 3 and WL 1. The approximate size of WL 2 is 0.26 acre with 0.11 acre within the survey area. On the north side of Rice Mill Rd, WL 2 originates outside of the survey area and travels beneath Rice Mill Rd via a reinforced concrete pipe (RCP). South of Rice Mill Rd, WL 2 drains from the outlet of the RCP beneath Rice Mill Rd south and outside of the survey area. This resource displays sections of channelization but did not demonstrate a continuous channel within the survey area. During the January 2016 field survey, the low gradient ditch comprising WL 2 was observed to be full of palustrine emergent vegetation, contained hydric soils, and had ponded areas of stagnant water. This wetland appeared to have been cleared prior to the March 2016 field surveys, but still exhibited wetland vegetation, hydric soils, and surface water. This wetland is considered low quality (Class 5) due to its likely excavation for drainage of the surrounding areas and receipt of stormwater runoff from the adjacent roadway and surrounding developed land. Primary hydrology indicators observed during the field survey include surface water, a high water table, saturation, and oxidized rhizospheres along living roots. Dominant vegetation observed at the sampling point includes soft rush and bushy bluestem. From 0-16+ inches, soils sampled had a loamy clay texture and an observed matrix color of 2.5Y 4/1 with 15 percent 5YR 6/8 redox concentrations along pore linings. The hydric soil indicator observed is Depleted Matrix (F3). This wetland displayed areas with inundated pools approximately 1-2 inches in depth and saturation at 2 inches and a water table 8 inches from the surface in other areas.

WL 2 is not located within one linear mile of any stream on the Final 2012 GADNR EPD 305(b)/303(d) list as not supporting its designated use. This resource is not one linear mile upstream of, or within the same watershed as, a resource that has been classified by GADNR EPD as a "non-supporting" biota impaired stream. WL 2 does not provide suitable habitat for any protected species potentially occurring within the survey area. The proposed project would result in approximately 0.049 acre of permanent fill and 0.013 acre of clearing impacts to WL 2, for a total of 0.062 acre of impact.

Wetland 3 (WL 3)

WL 3 is a broad, palustrine, emergent wetland located within a ruderal community west of SR 21/Augusta Rd and north of Rice Mill Rd. The approximate size of this wetland is greater than 3 acres with 0.25 acre within the survey area. This resource is a moderate quality (Class 3) wetland due to evidence of grading, hydrologic alteration, and clearing; this area was likely a forested wetland system previously and has since lost aquatic function due to human alteration. The northern portion of WL 3 adjacent to the survey area limits transitions from emergent to natural forested vegetation. Primary hydrology indicators observed during the January 2016 field survey include surface water, a high water table, saturation, water-stained leaves, and oxidized rhizospheres along living roots. Dominant vegetation observed at the sampling point includes sweetgum, loblolly pine, laurel oak, saw palmetto, wax myrtle, bushy bluestem,

saw greenbrier, and Japanese honeysuckle. From 0-4 inches, soils sampled had a clay loam texture and an observed matrix color of 10YR 3/3. From 4-16+ inches, soils sampled had a clay texture and an observed matrix color of 7.5YR 5/1 with 40 percent 7.5YR 5/8 redox concentrations along pore linings. The hydric soil indicator observed is Depleted Matrix (F3). This wetland displayed areas with inundated pools approximately 1-3 inches in depth and saturation at 4 inches and a water table 8 inches from the surface in other areas.

WL 3 is not located within one linear mile of any stream on the Final 2012 GADNR EPD 305(b)/303(d) list as not supporting its designated use. This resource is not one linear mile upstream of, or within the same watershed as, a resource that has been classified by GADNR EPD as a "non-supporting" biota impaired stream. WL 3 provides potentially suitable foraging habitat for swallow-tailed kite. This resource does not provide suitable habitat for any other protected species potentially occurring within the survey area. The proposed project would not impact WL 3.

D. Avoidance and Minimization of Federal Resource Impacts

In accordance with Section 404(b)(1) guidelines, alternatives were considered in order to avoid and minimize impacts to streams, wetlands, and open waters; however, the National Environmental Policy Act (NEPA) and other acts and regulations require that a number of additional environmental factors be taken into account, which can create additional constraints on avoidance and minimization of ecological impacts. In the case of unavoidable impacts to jurisdictional water(s) of the U.S., all practicable measures would be taken to minimize harm. A description of measures taken to avoid or minimize harm to environmental resources is provided below.

Avoidance and minimization efforts have been implemented along the proposed project corridor where practical based on costing plans. As a result of the efforts, the project footprint has been reduced to the minimum needed for construction of the pedestrian bridge and associated sidewalk. Additionally, orange barrier fencing would be employed where feasible between construction activity and waters outlined as Environmentally Sensitive Areas (ESAs) on the construction plans to minimize temporary and/or permanent impacts to waters by restricting access. This project will be let as a design-build and the design-build team will make all final efforts to avoid and minimize impacts to federal resources (e.g., reduced cut/fill slopes, retaining walls, etc.) and calculate final impacts based on final construction plans.

WL 1

WL 1 is a moderate quality, forested wetland system located west of SR 21/Augusta Rd and south of Rice Mill Rd. The construction of a pedestrian bridge and associated ramp and sidewalk would impact 0.337 acre of WL 1. Due to the location of the elementary school east of this resource, the location of the pedestrian bridge and access could not avoid impacts to WL 1. The proposed project footprint was reduced by approximately 150 feet to avoid further impacts to WL 1 south of the construction area. A shift of the proposed pedestrian bridge and access area to the north or south would not avoid impacts to WL 1 as this resource is located parallel to the roadway. Orange barrier fencing would be employed to minimize impacts to WL 1 during construction.

WL 2

WL 2 is a low quality, emergent wetland located in a roadside ditch parallel to and within the maintained ROW of SR 21/Augusta Rd. Since this roadside drainage ditch parallels the roadway for the entire extent of the proposed project, impacts to WL 2 could not be avoided or minimized due to the proposed location of pedestrian access to the pedestrian bridge. Due to the location of the elementary school east of this

resource, the location of the pedestrian bridge and access is necessary in order to meet the need and purpose of the proposed project. The proposed project footprint was reduced by approximately 150 feet to avoid further impacts to WL 2 south of the construction area. Additionally, impacts to WL 2 north of Rice Mill Rd were successfully avoided based on the footprint reduction. The proposed impacts to WL 2 were deemed unavoidable and include 0.062 acre of impact. Orange barrier fencing would be employed to minimize impacts to WL 2 during construction.

WL 3

No impacts would occur to this resource. Orange barrier fencing would be placed along the construction limits within existing ROW to prevent unauthorized impacts to this resource.

E. Permit and Mitigation

Any discharge of dredge or fill material into a water of the U.S. must comply with Section 404 of the Clean Water Act. The proposed project would impact waters of the U.S. Consequently, a Section 404 permit and compensatory mitigation would be required. It is anticipated that a Regional Permit 01 would be applicable for a total of 0.399 acre of wetland impacts. The compensatory mitigation totaling 2.4 wetland credits for impacts to 0.399 acre of wetland would be purchased from a primary service area mitigation bank servicing HUC 03060109. Refer to Table 3 for the calculation of required compensatory mitigation credits.

III. STATE PROTECTED RESOURCES

A. State Threatened, Endangered, Rare and Unusual Species

The Georgia Endangered Wildlife Act prohibits the capture, killing, or selling of protected species and protects the habitat of these species on public lands. Georgia's Wildflower Preservation Act of 1973 provides for designation of and protection of plant species that are rare, unusual, or in danger of extinction.

Information regarding known occurrences of state protected species within a three-mile radius of the proposed project was obtained from the GADNR NCS and the USFWS. The GADNR NCS reported known occurrences of state protected swallow-tailed kite approximately 2.5 miles northwest of the project site. A copy of the GADNR NCS letter (received January 11, 2016) is included in Appendix B – Agency Coordination.

In their early coordination response, the USFWS did not report any known occurrences of state protected species within three miles of the project site. A copy of the USFWS correspondence (received December 7, 2015) is included in Appendix B – Agency Coordination.

A summary of the state protected species, their state status, and suitable habitat requirements are included in Table 2 and the paragraphs below.

Swallow-tailed kite (*Elanoides forficatus*) – State Rare

Habitat: The nesting activity of the swallow-tailed kite is associated with wetland habitats throughout Florida and with major river systems and large wetlands of the Lower Coastal Plain physiographic province from South Carolina to Texas. This bird typically nests in trees that emerge above the surrounding forest, which in Georgia are typically very large pines found in small "pine islands" within floodplain or riparian forest, or in older stands of pine forest adjacent

to floodplains of large rivers or tributary creeks. Foraging habitats include bottomland forests, cypress and mixed cypress-hardwood swamps, hardwood hammocks, pine flatwoods, pine forests bordering riparian areas, freshwater and brackish marshes, wet prairies, sloughs, and pastures. In the United States, the breeding range of the swallow-tailed kite is contained in seven states and is restricted to riparian habitats throughout peninsular Florida and associated with major river systems of the lower coastal plains of South Carolina, Georgia, Alabama, Mississippi, Louisiana, and Texas. A few nests have been recently documented in Arkansas and costal North Carolina. In Georgia, data indicates this species occurs most commonly along the larger Atlantic drainage rivers, particularly the Altamaha, Savannah, Ogeechee, and Satilla Rivers, and also in the Okefenokee Swamp and various sites along the southern border of the state. In 2006, nests were discovered in the Withlacoochee, Alapaha, Ocmulgee, and Oconee River systems, which represent the furthest western and northern limits where this species has been documented. Swallow-tailed kite breeding populations also occur in southern Mexico and Central America; resident populations occur in South America. Georgia birds have been tracked traveling to Brazil and Paraguay in winter.

Determination: Potentially suitable foraging habitat for the swallow-tailed kite was identified within areas of WL 1 and WL 3. No suitable nesting habitat, such as major river systems and large wetlands with mature, superdominant trees, is present. However, the proposed project is located approximately 0.3 mile and 1.6 miles from large, high quality riverine wetland corridors that provide higher quality foraging as well as nesting habitat for this migratory bird species. Therefore, although potentially suitable foraging habitat for the swallow-tailed kite is located within the survey area, construction of the proposed project would not be anticipated to impact this species. Thus, the proposed project would result in "no take" to the swallow-tailed kite.

B. Bats

All bats are protected under Georgia state law (Official Code of Georgia § 27-1-28), it is illegal to capture, kill, or harm any of the sixteen bat species found in the state. There are no federally or state protected bat species listed within Chatham County. A survey for potential roosting and foraging habitat for arboreal bat species was conducted. Bridges and culverts are often potential bat roosting locations. Signs of bat roosts include visual and audible identification, presence of guano, or staining from guano or body oils. A survey for potential bat roosting habitat was conducted on January 18, and March 16, 2016. No bridges or large box culverts are located within the survey area. However, potential foraging and/or nesting habitat for tree dwelling bat species is present in the surrounding forested habitats, including the mixed pine-hardwood forest habitat. Portions of these forested habitats adjacent to the roadway would be cleared and converted to an open, maintained state.

C. State Waters

State waters are defined by the Official Code of Georgia § 12-7-1 and protected by the Georgia Erosion and Sedimentation Control Act of 1975. All federally jurisdictional resources are also classified as state waters. This section only includes state waters that are identified as non-federally jurisdictional resources. During the field surveys conducted on January 18 and March 16, 2016, no non-buffered or buffered resources were identified within the survey area.

D. State Mandated Buffers

In compliance with the National Pollutant Discharge Elimination System (NPDES) permit under Section 402 of the Clean Water Act, any encroachment within the designated 25-foot or 50-foot buffer of a state

water will be described, and the need for a variance will be indicated. The description will include the location of the occurrence with respect to labeled, cited waters of the U.S. or state waters and the extent to which the proposed project encroaches on the buffer. The proposed project is not located within a designated trout watershed. Warm-water intermittent and perennial streams are given a 25-foot state mandated buffer on either side of the channel from the point of wrested vegetation. Open waters that have inflow or outflow also receive a 25-foot state mandated vegetative buffer from the point of wrested vegetation. Ephemeral streams are state waters; however, they do not have a mandated vegetative buffer requirement in non-trout stream watersheds. In addition, GADNR Coastal Resources Division (CRD) under the authority of the Coastal Marshlands Protection Act of 1970 requires a state mandated 25-foot buffer from the delineated jurisdictional marsh line of coastal resources. Any impacts to the state mandated buffer may be regulated by the GAEPD under the NPDES permit and may require a state buffer variance.

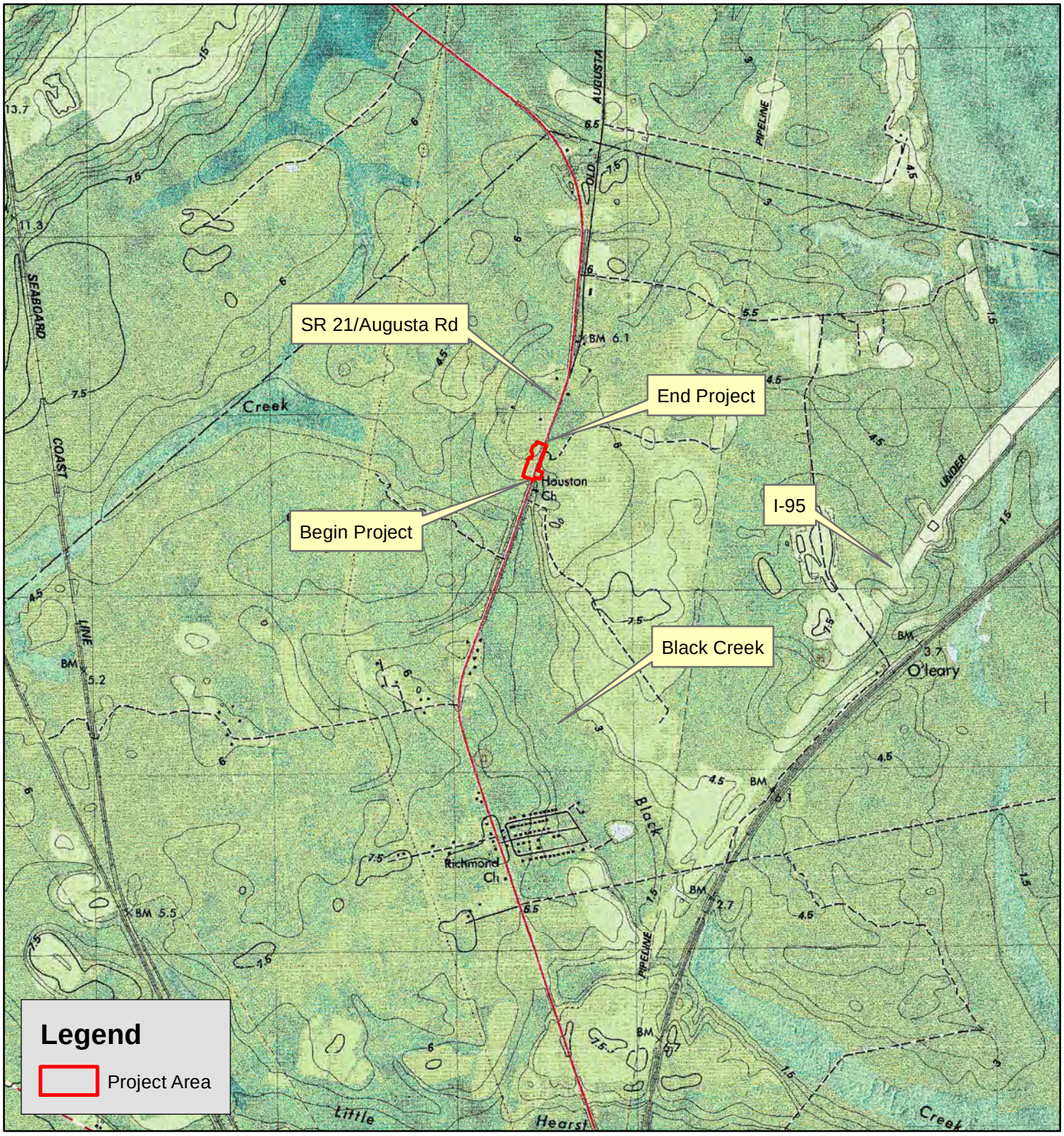
Based on the field surveys conducted on January 18 and March 16, 2016, no buffered resources were identified within the survey area.

E. Avoidance and Minimization of State Resource Impacts

There are no state waters or buffered resources within the survey area; therefore, no impacts would occur to vegetative buffers or state waters.

IV. FIGURES

Figure 1	Project Vicinity Map
Figure 2	Survey Area Map
Figure 3	Habitat Map
Figure 4	State and Federal Waters Map: Aerial
Figure 5	State and Federal Waters Map: Topographic
Figure 6	Soil Survey Map



Source: USGS 7.5' Topographic Quadrangle (Port Wentworth)

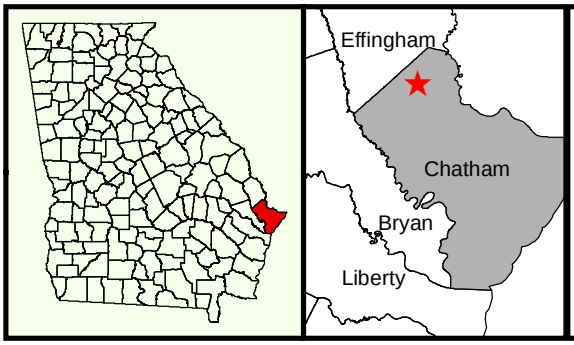
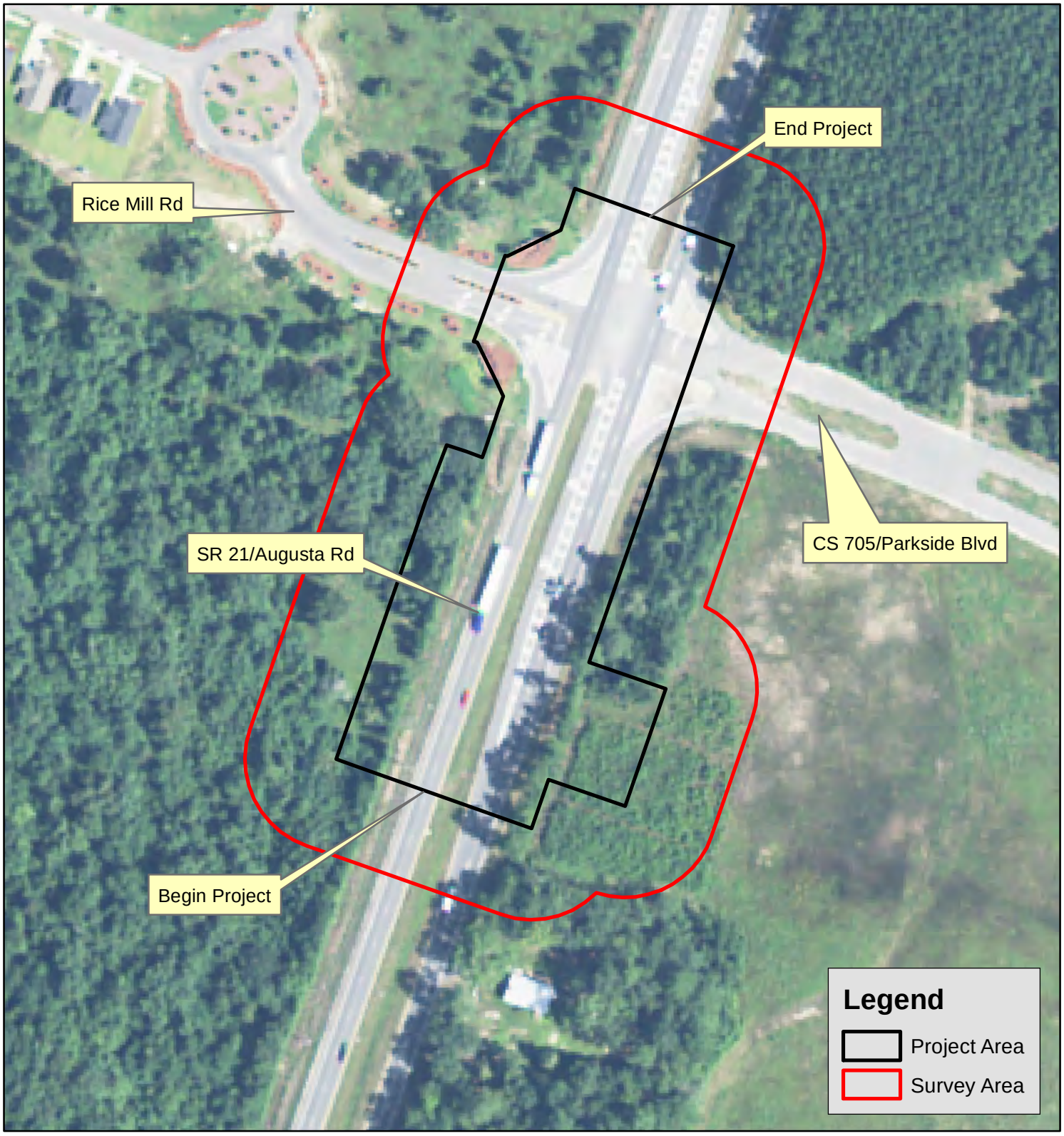


Figure 1 - Project Vicinity Map
SR 21 Pedestrian Bridge
P.I. No. 0013549, Chatham County, GA

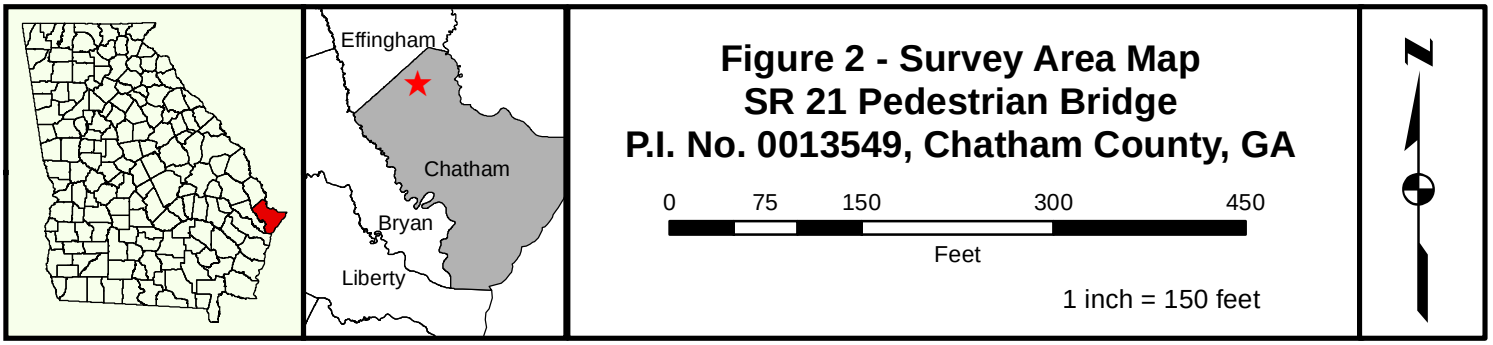
0 1,200 2,400 4,800 7,200
Feet

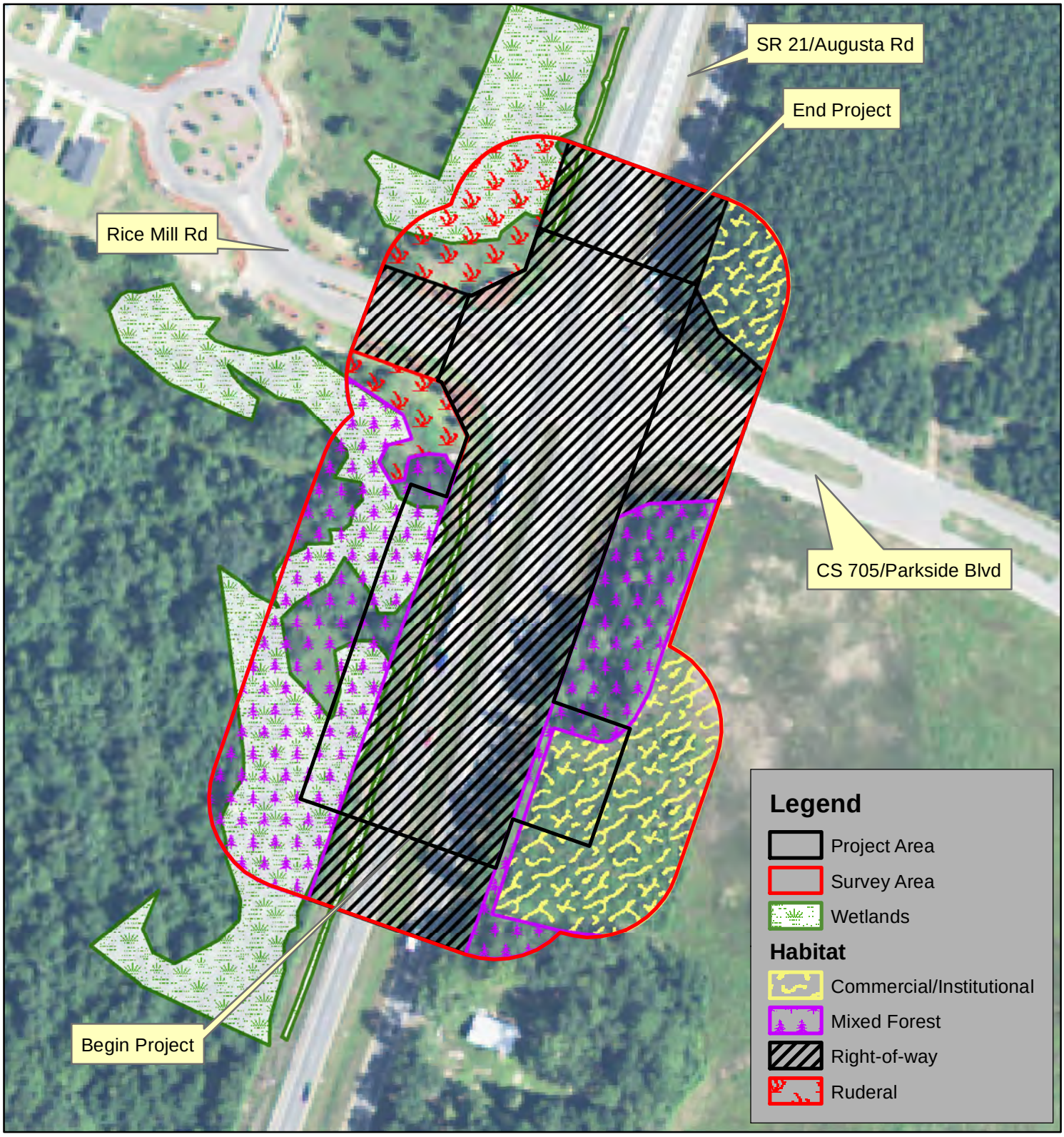
1 inch = 2,500 feet

N



Source: USDA National Agriculturual Imagery Program (2013)





Source: USDA National Agriculturual Imagery Program (2013)

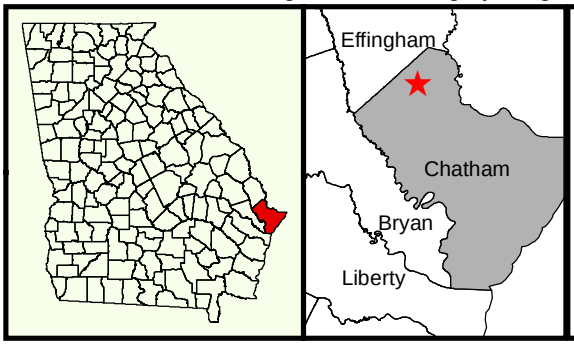
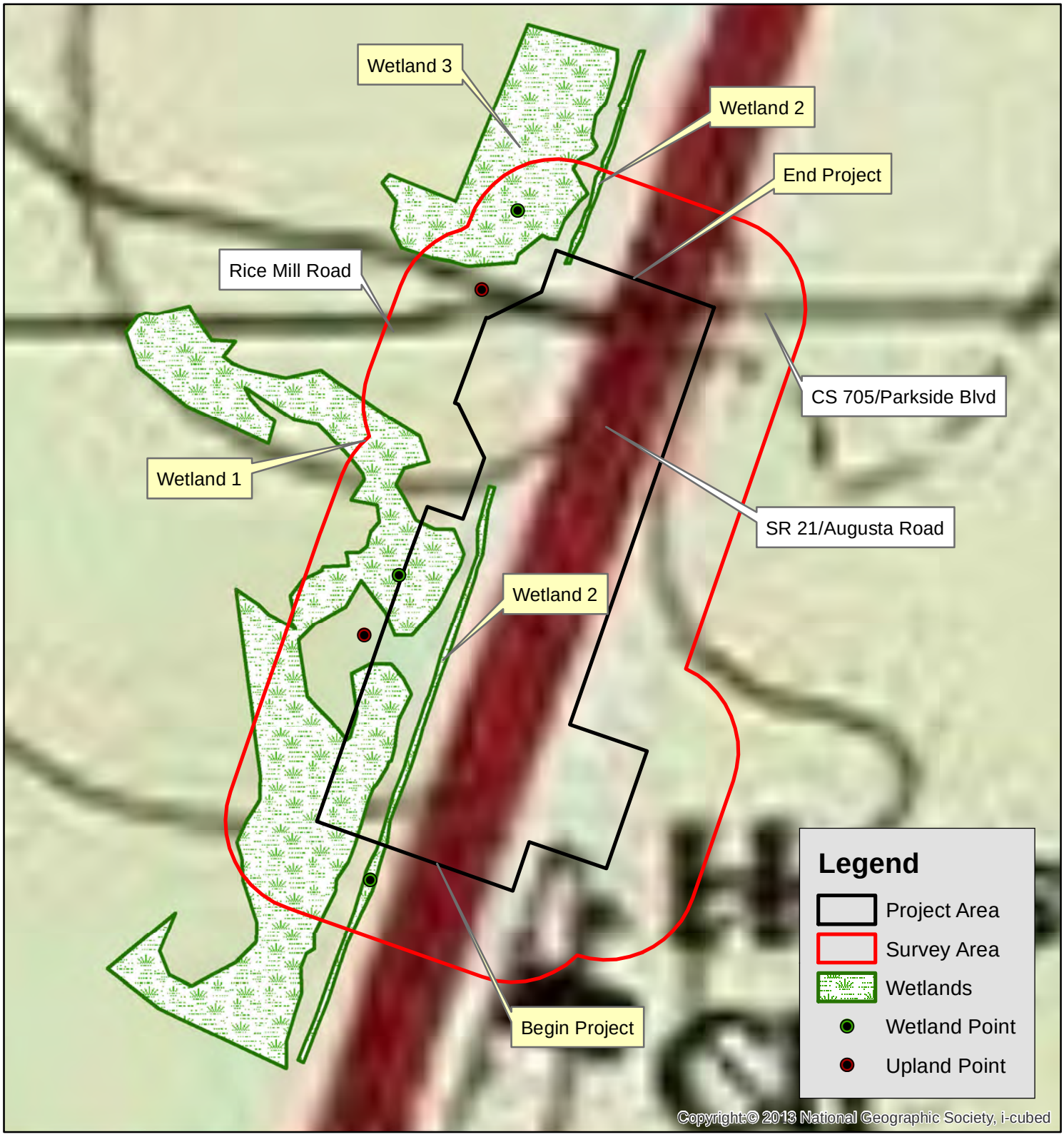


Figure 3 - Habitat Map
SR 21 Pedestrian Bridge
P.I. No. 0013549, Chatham County, GA

0 75 150 300 450
Feet

1 inch = 150 feet

N



Source: National Geographic Society USA Topographic Map

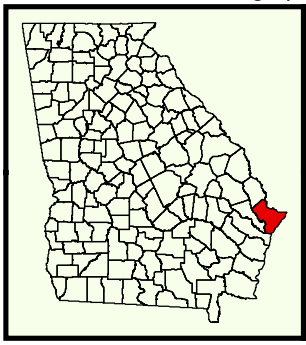
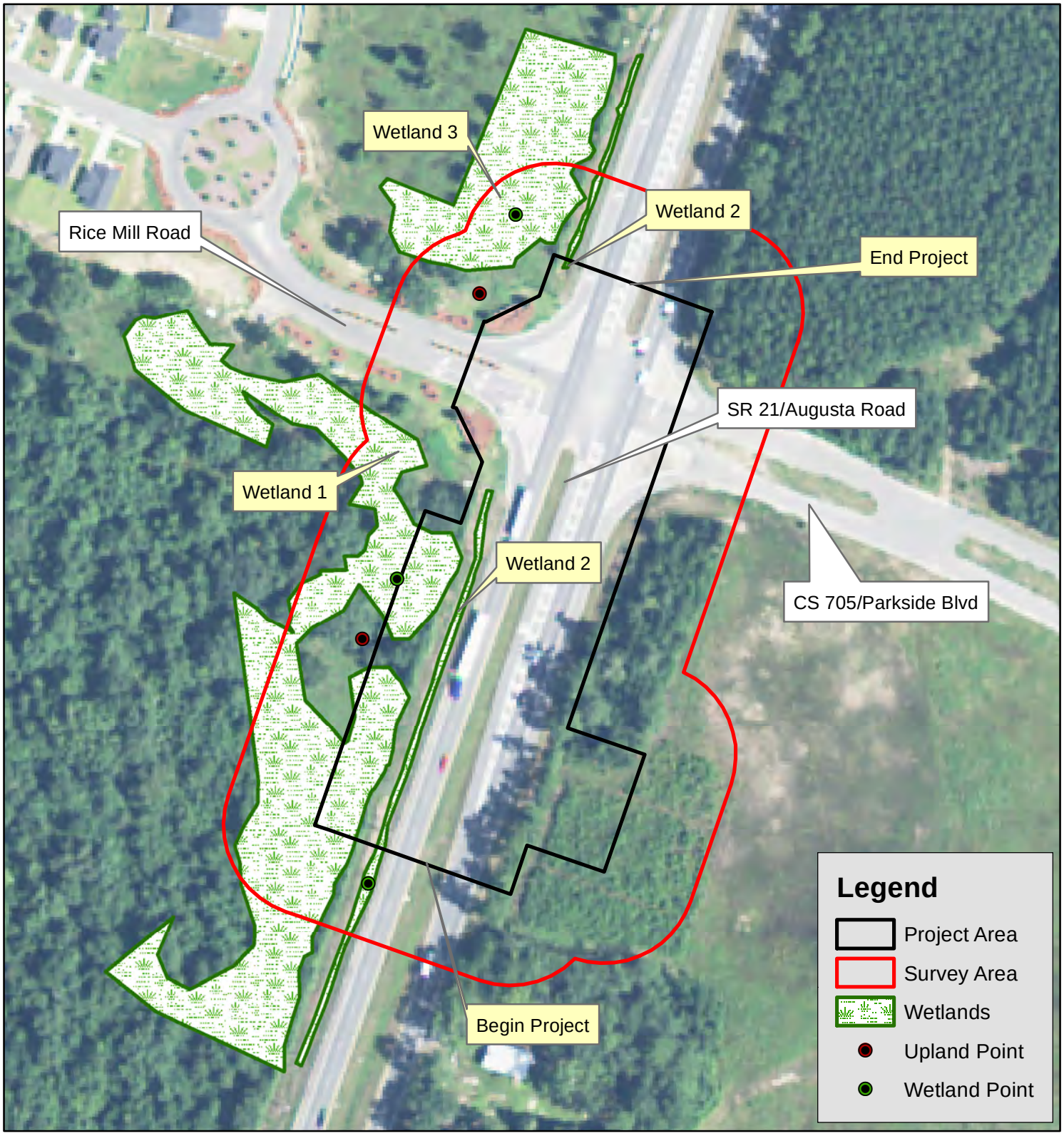


Figure 4
Federal and State Waters Map (topographic)
SR 21 Pedestrian Bridge
P.I. No. 0013549, Chatham County, GA

0 85 170 340 510
Feet
1 inch = 150 feet

N



Source: USDA National Agriculturual Imagery Program (2013)

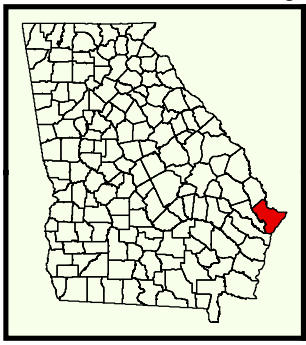
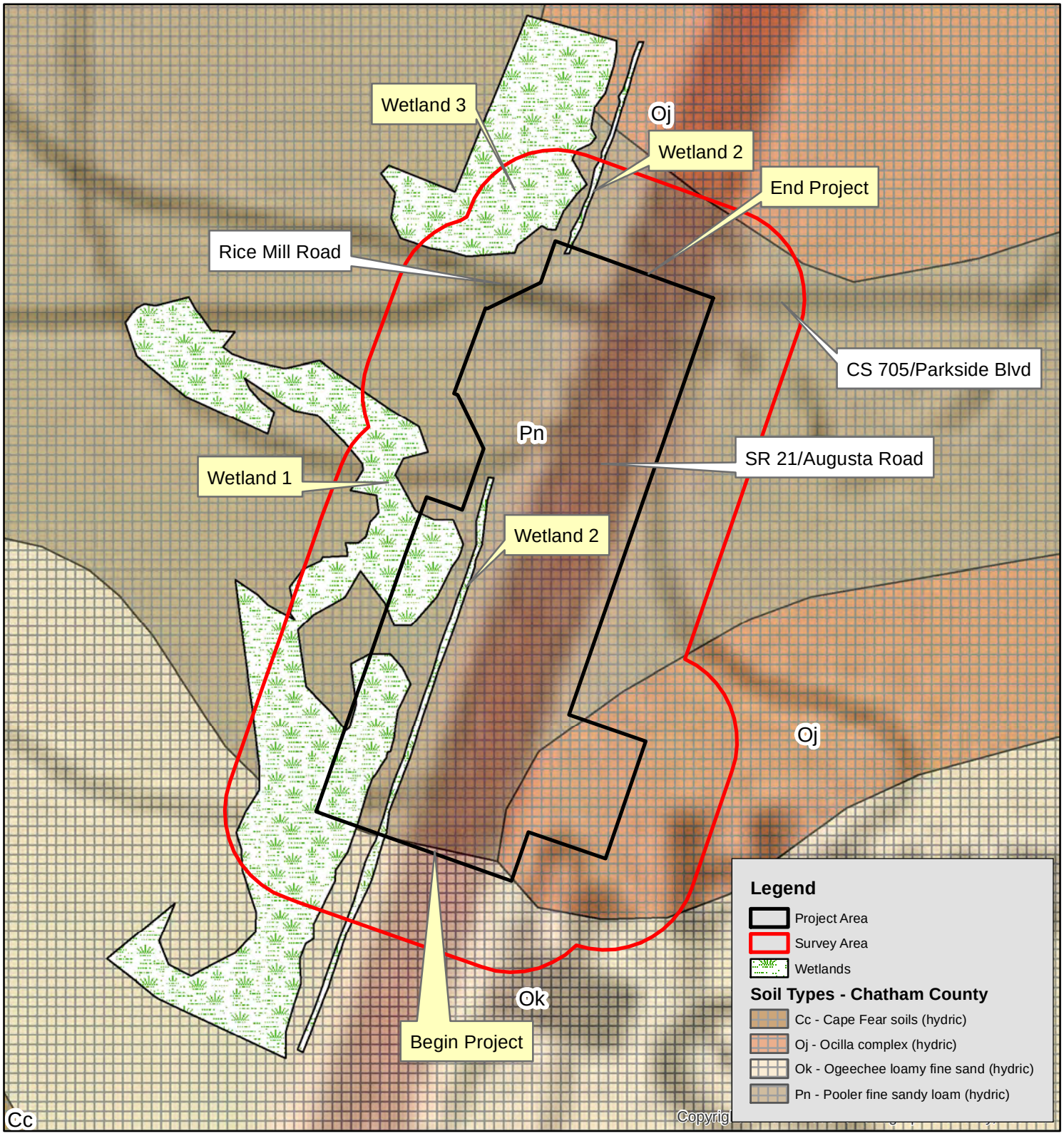


Figure 5 - Federal and State Waters (aerial)
SR 21 Pedestrian Bridge
P.I. No. 0013549, Chatham County, GA

0 75 150 300 450
Feet
1 inch = 150 feet

N



Source: USGS 7.5" Topographic Quadrangle (Port Wentworth) & USDA Soil Survey (Bryan and Chatham Counties)

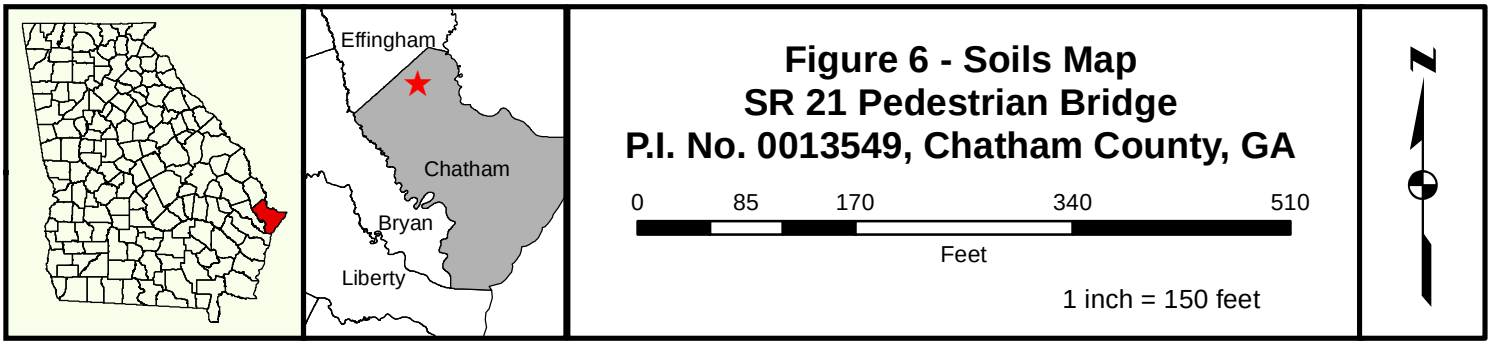


Figure 6 - Soils Map
SR 21 Pedestrian Bridge
P.I. No. 0013549, Chatham County, GA

0 85 170 340 510
Feet

1 inch = 150 feet

N

V. TABLES

Table 1 Federal Stream, Wetland and Open Water Summary
Table 2 Protected Species Summary
Table 3 Wetlands and Open Waters Mitigation Worksheet

Table 1

Federal Stream, Wetland, and Open Water Summary
P.I. No. 0013549, Chatham County

Resource Label	Cowardin class	Existing Condition	Location - Station		Coordinates		Total WL/OW Area (ac)	Existing Structure		Proposed Impact			FWCA
			Begin	End	Lat (°N)	Long (°W)		Type	Length (lf)	Type	Length (lf)	Area (ac)	
WL1	PFO	Class 3	Outside project limits	109+65 LT	32.220846	-81.196901	>5	-	-	Fill	N/A	0.030	N/A
										Clearing conversion	N/A	0.307	
WL2	PEM	Class 5	103+50 LT	114+50 LT	32.219923	-81.197021	0.26	RCP	260	Fill	N/A	0.049	N/A
										Clear	N/A	0.013	
WL3	PEM	Class 3	111+50 LT	Outside project limits	32.221937	-81.196469	>3	-	-	Fill	N/A	0.000	N/A

Overall Wetland Impacts **0.399**

Table 2 Protected Species Summary

P.I No. 0013549, Chatham County

Species	Common Name	Federal Status	State Status	Habitat Present	Habitat Impacted	Survey Season	Survey Date	Individuals Found	Biological Determination	Special Provision 107.23H
Acipenser oxyrinchus oxyrinchus[3,4]	Atlantic sturgeon	E	E	No	No	April 30 – Nov 30	N/A	ND	No Take	No
Acipenser brevirostrum[1,3,4]	Shortnose sturgeon	E	E	No	No	April 30 – Nov 30	N/A	ND	No Take	No
Eubalaena glacialis[3,4]	North Atlantic right whale	E	E	No	No	Dec – March	N/A	ND	No Take	No
Trichechus manatus[1,3,4]	West Indian manatee	E	E	No	No	March – October	N/A	ND	No Take	No
Lepidochelys kempii[3,4]	Atlantic ridley sea turtle	E	E	No	No	April – October	N/A	ND	No Take	No
Lindera melissifolia[3,4]	Pondberry	E	E	No	No	Late February – mid-March	N/A	ND	No Take	No
Picoides borealis[3,4]	Red-cockaded woodpecker	E	E	No	No	April – May	N/A	ND	No Take	No
Dermochelys coriacea[3,4]	Leatherback sea turtle	E	E	No	No	Fall; early spring	N/A	ND	No Take	No
Mycteria americana[2,3,4]	Wood stork	T	E	No	No	Early May	N/A	ND	No Take	No
Caretta caretta[3,4]	Loggerhead sea turtle	T	T	No	No	Late spring – early fall	N/A	ND	No Take	No
Chelonia mydas[3,4]	Green sea turtle	T	T	No	No	May – Aug	N/A	ND	No Take	No
Ambystoma cingulatum[1,2,3,4]	Frosted flatwoods salamander	T	T	No	No	Late fall – winter	N/A	ND	No Take	No

E = Endangered; T = Threatened; C = Candidate; R = Rare; NL = Not Listed; N/A = Not Applicable; ND = Not Determined (no protected species survey performed)

1 GADNR coordination letter (dated January 11, 2016)
2 USFWS coordination letter (dated December 7, 2015)
3 IPAC (Chatham Co.) (downloaded January 16, 2016)
4 GADNR Rare Elements Location Data (Chatham Co.) (updated September 23, 2015)

Table 2 Protected Species Summary

P.I No. 0013549, Chatham County

Species	Common Name	Federal Status	State Status	Habitat Present	Habitat Impacted	Survey Season	Survey Date	Individuals Found	Biological Determination	Special Provision 107.23H
Charadrius melodus[3,4]	Piping plover	T	T	No	No	Dec – mid-Feb	N/A	ND	No Take	No
Drymarchon couperi[3]	Eastern indigo snake	T	T	No	No	Late fall – early spring	N/A	ND	No Take	No
Calidris canutus rufa[3,4]	Red knot	T	R	No	No	Late Jan – early Feb	N/A	ND	No Take	No
Notopthalmus peristriatus[3]	Striped newt	C	T	No	No	Late winter – spring	N/A	ND	No Take	No
Gopherus polyphemus[3,4]	Gopher tortoise	C	T	No	No	Year-round	N/A	ND	No Take	No
Elanoides forficatus[1]	Swallow-tailed kite	NL	R	Yes	No	April – early May	N/A	ND	No Take	No

E = Endangered; T = Threatened; C = Candidate; R = Rare; NL = Not Listed; N/A = Not Applicable; ND = Not Determined (no protected species survey performed)

1 GADNR coordination letter (dated January 11, 2016)
2 USFWS coordination letter (dated December 7, 2015)
3 IPAC (Chatham Co.) (downloaded January 16, 2016)
4 GADNR Rare Elements Location Data (Chatham Co.) (updated September 23, 2015)

Table 3. WETLANDS AND OPEN WATERS MITIGATION WORKSHEETS

ADVERSE IMPACT FACTORS

Factor	Options						
Dominant Effect	Fill 2.0	Dredge 1.8	Impound 1.6	Drain 1.4	Flood 1.2	Clear 1.0	Shade 0.5
Duration of Effects	7+ years 2.0	5-7 years 1.5	3-5 years 1.0	1-3 years 0.5	< 1 year 0.1		
Existing Condition	Class 1 2.0	Class 2 1.5	Class 3 1.0	Class 4 0.5	Class 5 0.1		
Lost Kind	Kind A 2.0	Kind B 1.5	Kind C 1.0	Kind D 0.5	Kind E 0.1		
Preventability	High 2.0	Moderate 1.0	Low 0.5	None 0			
Rarity Ranking	Rare 2.0	Uncommon 0.5	Common 0.1				

† These factors are determined on a case-by-case basis.

REQUIRED MITIGATION CREDITS WORKSHEET

Factor	Wetland 1 (Fill)	Wetland 1 (Clear)	Wetland 2 (Fill)	Wetland 2 (Clear)		
Dominant Effect	2.0	1.0	2.0	1.0		
Duration of Effect	2.0	2.0	2.0	0.1		
Existing Condition	1.0	1.0	0.1	0.1		
Lost Kind	1.5	1.5	0.1	0.1		
Preventability	0.5	0.5	0.5	0.5		
Rarity Ranking	0.1	0.1	0.1	0.1		
Sum of r Factors	R_1 = 7.1	R_2 = 6.1	R_3 = 4.8	R_4 = 1.9	R_5 =	R_6 =
Impacted Area	AA_1 = 0.03	AA_2 = 0.307	AA_3 = 0.049	AA_4 = 0.013	AA_5 =	AA_6 =
R × AA =	0.213	1.873	0.235	0.025		

Total Required Credits for HUC 03060109 = ∑ (R × AA) = **2.346**

VI. PHOTOGRAPHS

PHOTOGRAPHIC LOG

Photograph 1. Wetland 1, facing north, west of SR 21/Augusta Rd.

Photograph 2. Wetland 2, facing north, southwest of intersection of SR 21/Augusta Rd and Rice Mill Rd.

Photograph 3. Wetland 2, facing north, northwest of intersection of SR 21/Augusta Rd and Rice Mill Rd.

Photograph 4. Wetland 3, facing northwest, west of SR 21/ Augusta Rd.

PHOTOGRAPHIC LOG

Photograph 5. Mixed pine-hardwood forest habitat.

Photograph 6. Institutional land use area.

Photograph 7. Commercial land use area.

Photograph 8. Mixed pine-hardwood forest.

PHOTOGRAPHIC LOG

Photograph 9. Maintained ROW.

Photograph 10. Rice Mill Rd subdivision

Photograph 11. Intersection of SR 21/Augusta Rd with Rice Mill Rd and CS 705/Parkside Boulevard.

Appendix A
Field Data

Project: I-85 Managed Lanes, Gwinnett Co.

Date: 11/17/2015

Surveyors: KB, AM, AT

Purpose: Verify & redelineate waters resources

Birds

Hermit thrush → cream-colored eye ring, brown spots on breast, rufous tail

"Georgia's winter thrush"

Trees

American sycamore → flakey thin peeling bark, dentate (Platanus occidentalis) large leaves, 3 overall lobes

Project SR 21 Pedestrian Bridge

Date: 1/18/2016 Weather: Sunny, 35 °F

Surveyors: KB & AT

Purpose: General Eco assessment

Wetland 1 - Large PFO wetland associated w/ PFO wetland system of Black Creek. Located in SW quadrant of survey area. Portions adjacent to road and residential dvpt have been disrupted by machinery. Dense forest in SW/W areas, more open canopy w/ emergent veg. areas E & near roadway. Class 3 due to evidence of hydrologic alteration from dvpt/placement of fill in the past. Appears to have been reduced by residential community const.

Wetland 2 - Small, PEM, roadside drainage ditch WL located along the W side of the road adjacent to WLs 1 & . Class 5 due to manipulation by ditching for the roadway, receipt of stormwater from roadway and resi/comm dvpts. Jurisdictional b/c shows sig. nexus to Black Creek and associated floodplain/ WL system. Connected hydrologically via a system of culverts to other side of SR 21 where another WL ditch drains to Black Creek system.

Note: Potential PEM WL observed w/in SW corner of school property; located just outside survey area limits.

Wetland 3 - Large wetland area extending beyond the survey area. W/in survey area, WL is considered PEM w/ scattered mature trees/saplings; landform appears to be a meadow. System is forested N outside of survey area. WL likely previously altered/cleared due to residential dvpt Class 3

Habitats/Land Use Areas

Residential ⇒ small suburban neighborhood w/ single family homes located on Rice Mill Rd at roundabout, W of SR 21. Characterized by maintained lawn & ornamentals (magnolia, S.)

Commercial/Institutional ⇒ NE & SE quadrants have been developed; grocery store & elementary school. These land use areas consist of parking lots, bare ground from recent disturbance, and maintained grass lawns.

Ruderal ⇒ NW quadrant, vegetative species of WL 3

Mixed pine-hardwood forest ⇒ Upland MPH observed in certain non-wetland areas. Mostly characterized by silviculture rows and higher chroma soil w/ some redox. Vegetative species included loblolly pine, sweetgum, water oak, baccharis (?), palmetto

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Date: 3/16/16 Surveyors: KB & AM

Weather: Sunny, ~ 83°F

Purpose: Verify & amend waters delineations based on project limit extension

WL 1 → Amended to include PEM pocket adjacent to SR 21. Added delineation S & W due to project extension. Amended portion of western boundary based on hydric soils. Confirmed WL boundary outside of rain events. Only some areas of inundation observed.

WL 2 → Verified previous delineation & added to S end.

No suitable habitat for protected species

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: SR 21 at CS 705/Parkside Boulevard Pedestrian Bridge City/County: Chatham Sampling Date: 01-18-2016

Applicant/Owner: GDOT State: GA Sampling Point: WL 1

Investigator(s): Katharine Bleau and Alex Terry Section, Township, Range:

Landform (hillslope, terrace, etc.): broad topographic depression Local relief (concave, convex, none): concave Slope (%): <1

Subregion (LRR or MLRA): LRR T Lat: 32.220836 Long: -81.196900 Datum: NAD 83

Soil Map Unit Name: Pn - Pooler fine sandy loam (hydric) NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 1-2
Water Table Present?	Yes ✓	No _____	Depth (inches): 4
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 1

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Surface water present in localized ponded areas throughout the wetland. Data point located outside of these ponded areas.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: WL 1

Tree Stratum (Plot size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus laurifolia	35	Yes	FACW
2. Quercus alba	30	Yes	FACU
3. Quercus nigra	10	No	FAC
4.			
5.			
6.			
	75 = Total Cover		
50% of total cover: 37.5	20% of total cover: 15		
Sapling Stratum (Plot size: 30 foot radius)			
1. Liquidambar styraciflua	20	Yes	FAC
2. Quercus nigra	5	Yes	FAC
3.			
4.			
5.			
6.			
	25 = Total Cover		
50% of total cover: 12.5	20% of total cover: 5		
Shrub Stratum (Plot size: 30 foot radius)			
1. Serenoa repens	10	Yes	FACU
2. Ligustrum sinense	3	Yes	FAC
3.			
4.			
5.			
6.			
	13 = Total Cover		
50% of total cover: 6.5	20% of total cover: 2.6		
Herb Stratum (Plot size: 30 foot radius)			
1. Tillandsia usneoides	5	No	FAC
2. Acer rubrum (seedlings)	5	No	FAC
3. Rubus argutus	3	No	FAC
4. Rumex hastatulus	7	No	FACU
5. Liquidambar styraciflua (seedlings)	3	No	FAC
6. Juncus effusus	15	No	OBL
7. Festuca arundinacia	80	Yes	NI
8.			
9.			
10.			
11.			
	118 = Total Cover		
50% of total cover: 59	20% of total cover: 23.6		
Woody Vine Stratum (Plot size: 30 foot radius)			
1. Smilax bona-nox	5	Yes	FAC
2.			
3.			
4.			
5.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 71.4 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: 0 (A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WL 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	7.5YR 3/1	100					clay loam	
3-16+	10YR 5/1	75	5YR 6/8	25	C	PL	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: SR 21 at CS 705/Parkside Boulevard Pedestrian Bridge City/County: Chatham Sampling Date: 01-18-2016

Applicant/Owner: GDOT State: GA Sampling Point: WL 1 UPL

Investigator(s): Katharine Bleau and Alex Terry Section, Township, Range: _____

Landform (hillslope, terrace, etc.): broad hilltop Local relief (concave, convex, none): flat Slope (%): <1

Subregion (LRR or MLRA): LRR T Lat: 32.220659 Long: -81.197043 Datum: NAD 83

Soil Map Unit Name: Pn - Pooler fine sandy loam (hydric) NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____ No ✓	
Wetland Hydrology Present?	Yes _____ No ✓	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: WL 1 UPL

Tree Stratum (Plot size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus laurifolia	10	Yes	FACW
2. Quercus nigra	25	Yes	FAC
3.			
4.			
5.			
6.			
	35 = Total Cover		
50% of total cover: 17.5	20% of total cover: 7		
Sapling Stratum (Plot size: 30 foot radius)			
1. Quercus laurifolia	40	Yes	FACW
2. Quercus nigra	5	No	FAC
3. Quercus rubra	10	No	FACU
4.			
5.			
6.			
	55 = Total Cover		
50% of total cover: 27.5	20% of total cover: 11		
Shrub Stratum (Plot size: 30 foot radius)			
1. Serenoa repens	12	Yes	FACU
2. Ligustrum sinense	15	Yes	FAC
3. Liquidambar styraciflua	8	No	FAC
4. Pinus taeda	10	Yes	FAC
5.			
6.			
	45 = Total Cover		
50% of total cover: 22.5	20% of total cover: 9		
Herb Stratum (Plot size: 30 foot radius)			
1. Liquidambar styraciflua (seedlings)	10	Yes	FAC
2. Rubus argutus	3	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	13 = Total Cover		
50% of total cover: 6.5	20% of total cover: 2.6		
Woody Vine Stratum (Plot size: 30 foot radius)			
1. Smilax bona-nox	3	Yes	FAC
2. Lonicera japonica	3	Yes	FACU
3.			
4.			
5.			
	6 = Total Cover		
50% of total cover: 3	20% of total cover: 0.6		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: 0 (A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WL 1 UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	7.5YR 3/3	100					loam	
3-16+	10YR 4/3	90	10YR 6/6	10	C	M	loamy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: SR 21 at CS 705/Parkside Boulevard Pedestrian Bridge City/County: Chatham Sampling Date: 01-18-2016

Applicant/Owner: GDOT State: GA Sampling Point: WL 2

Investigator(s): Katharine Bleau and Alex Terry Section, Township, Range:

Landform (hillslope, terrace, etc.): roadside ditch Local relief (concave, convex, none): concave Slope (%): 1-2

Subregion (LRR or MLRA): LRR T Lat: 32.219923 Long: -81.197021 Datum: NAD 83

Soil Map Unit Name: Ok - Ogeechee loamy fine sand (hydric) NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 1-2
Water Table Present?	Yes ✓	No _____	Depth (inches): 8
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 2

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Roadside ditch with ponding in scour areas.

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: WL 2

Tree Stratum (Plot size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Sapling Stratum (Plot size: 30 foot radius)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Shrub Stratum (Plot size: 30 foot radius)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: 30 foot radius)			
1. Festuca arundinacia	10	No	NI
2. Juncus effusus	15	Yes	OBL
3. Rubus argutus	5	No	FAC
4. Andropogon glomeratus	45	Yes	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	75 = Total Cover		

50% of total cover: 37.5 20% of total cover: 15

Woody Vine Stratum (Plot size: 30 foot radius)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	0 (A)		0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WL 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16+	2.5Y 4/1	85	5YR 6/8	15	C	PL	loamy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: SR 21 at CS 705/Parkside Boulevard Pedestrian Bridge City/County: Chatham Sampling Date: 01-18-2016

Applicant/Owner: GDOT State: GA Sampling Point: WL 2 UPL

Investigator(s): Katharine Bleau and Alex Terry Section, Township, Range: _____

Landform (hillslope, terrace, etc.): broad hilltop Local relief (concave, convex, none): flat Slope (%): <1

Subregion (LRR or MLRA): LRR T Lat: 32.220659 Long: -81.197043 Datum: NAD 83

Soil Map Unit Name: Pn - Pooler fine sandy loam (hydric) NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____ No ✓	
Wetland Hydrology Present?	Yes _____ No ✓	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: WL 2 UPL

Tree Stratum (Plot size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus laurifolia	10	Yes	FACW
2. Quercus nigra	25	Yes	FAC
3.			
4.			
5.			
6.			
	35 = Total Cover		
50% of total cover: 17.5	20% of total cover: 7		
Sapling Stratum (Plot size: 30 foot radius)			
1. Quercus laurifolia	40	Yes	FACW
2. Quercus nigra	5	No	FAC
3. Quercus rubra	10	No	FACU
4.			
5.			
6.			
	55 = Total Cover		
50% of total cover: 27.5	20% of total cover: 11		
Shrub Stratum (Plot size: 30 foot radius)			
1. Serenoa repens	12	Yes	FACU
2. Ligustrum sinense	15	Yes	FAC
3. Liquidambar styraciflua	8	No	FAC
4. Pinus taeda	10	Yes	FAC
5.			
6.			
	45 = Total Cover		
50% of total cover: 22.5	20% of total cover: 9		
Herb Stratum (Plot size: 30 foot radius)			
1. Liquidambar styraciflua (seedlings)	10	Yes	FAC
2. Rubus argutus	3	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	13 = Total Cover		
50% of total cover: 6.5	20% of total cover: 2.6		
Woody Vine Stratum (Plot size: 30 foot radius)			
1. Smilax bona-nox	3	Yes	FAC
2. Lonicera japonica	3	Yes	FACU
3.			
4.			
5.			
	6 = Total Cover		
50% of total cover: 3	20% of total cover: 0.6		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	0 (A)		0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WL 2 UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	7.5YR 3/3	100					loam	
3-16+	10YR 4/3	90	10YR 6/6	10	C	M	loamy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ☐ **No** ☑

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: SR 21 at CS 705/Parkside Boulevard Pedestrian Bridge City/County: Chatham Sampling Date: 01-18-2016

Applicant/Owner: GDOT State: GA Sampling Point: WL 3

Investigator(s): Katharine Bleau and Alex Terry Section, Township, Range:

Landform (hillslope, terrace, etc.): broad topographic draw Local relief (concave, convex, none): concave Slope (%): 2-3

Subregion (LRR or MLRA): LRR T Lat: 32.221937 Long: -81.196469 Datum: NAD 83

Soil Map Unit Name: Pn - Pooler fine sandy loam (hydric) NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 1-3	
Water Table Present?	Yes ✓	No _____	Depth (inches): 8	
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 4	**Wetland Hydrology Present?** Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Surface water present in localized ponded areas throughout the wetland. Data point located outside of these ponded areas.

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: WL 3

Tree Stratum (Plot size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Liquidambar styraciflua	10	Yes	FAC
2.			
3.			
4.			
5.			
6.			
	10 = Total Cover		
50% of total cover: 5	20% of total cover: 2		
Sapling Stratum (Plot size: 30 foot radius)			
1. Pinus taeda	10	Yes	FAC
2. Quercus laurifolia	25	Yes	FACW
3.			
4.			
5.			
6.			
	35 = Total Cover		
50% of total cover: 17.5	20% of total cover: 7		
Shrub Stratum (Plot size: 30 foot radius)			
1. Serenoa repens	10	Yes	FACU
2. Morella cerifera	10	Yes	FAC
3. Rubus argutus	3	No	FAC
4.			
5.			
6.			
	23 = Total Cover		
50% of total cover: 11.5	20% of total cover: 4.6		
Herb Stratum (Plot size: 30 foot radius)			
1. Festuca arundinacia	15	No	NI
2. Andropogon glomeratus	80	Yes	FACW
3. Rubus argutus	3	No	FAC
4. Rumex hastatulus	15	No	FACU
5. Juncus effusus	15	No	OBL
6.			
7.			
8.			
9.			
10.			
11.			
	128 = Total Cover		
50% of total cover: 64	20% of total cover: 25.6		
Woody Vine Stratum (Plot size: 30 foot radius)			
1. Smilax bona-nox	3	Yes	FAC
2. Lonicera japonica	2	Yes	FACU
3.			
4.			
5.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: 0 (A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WL 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/3	100					clay loam	
4-16+	7.5YR 5/1	60	7.5YR 5/8	40	C	PL	clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

Area appears to have been clear cut and graded in the past for construction of adjacent residential development. Soils in areas consisted of fill.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: SR 21 at CS 705/Parkside Boulevard Pedestrian Bridge City/County: Chatham Sampling Date: 01-18-2016

Applicant/Owner: GDOT State: GA Sampling Point: WL 3 UPL

Investigator(s): Katharine Bleau and Alex Terry Section, Township, Range:

Landform (hillslope, terrace, etc.): roadside fill area Local relief (concave, convex, none): flat Slope (%): <1

Subregion (LRR or MLRA): LRR T Lat: 32.221704 Long: -81.196608 Datum: NAD 83

Soil Map Unit Name: Pn - Pooler fine sandy loam (hydric) NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil ✓, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____ No ✓	
Wetland Hydrology Present?	Yes _____ No ✓	

Remarks:

Soils impacted due to fill/grading for adjacent roadway and residential development.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: WL 3 UPL

Tree Stratum (Plot size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus laurifolia	10	Yes	FACW
2. Quercus michauxii	5	Yes	FACW
3.			
4.			
5.			
6.			
	15 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3		
Sapling Stratum (Plot size: 30 foot radius)			
1. Magnolia grandiflora	5	Yes	FAC
2.			
3.			
4.			
5.			
6.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		
Shrub Stratum (Plot size: 30 foot radius)			
1. Serenoa repens	10	Yes	FACU
2.			
3.			
4.			
5.			
6.			
	10 = Total Cover		
50% of total cover: 5	20% of total cover: 2		
Herb Stratum (Plot size: 30 foot radius)			
1. Festuca arundinacia	10	No	NI
2. Rubus argutus	3	No	FAC
3. Andropogon glomeratus	40	Yes	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	53 = Total Cover		
50% of total cover: 26.5	20% of total cover: 10.6		
Woody Vine Stratum (Plot size: 30 foot radius)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	0 (A)		0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WL 3 UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 6/4	100					sandy clay loam	
5+	10YR 4/3	60	10YR 6/6	40	C	M	loamy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ☐ **No** ☑

Remarks:

Chinese privet

***Ligustrum sinense* Lour.**

Record ID	4494325

Reporter Information

Reporter	Katharine Bleau , HNTB
Observation Date	January 18, 2016
Date Entered	April 04, 2016
Source Type	Web Report

Species Information

Common Name	Chinese privet
Scientific Name	*Ligustrum sinense*
Phenology	Mature,Sapling/Immature
Voucher	0

Verification and Review

Reviewed	Not Verified

Infestation Information

Gross Area	10 sq feet
Infested Area	2 sq feet
Percent Cover	Trace
Infestation Status	Positive

Location Information

Habitat	Edge: Upland/wetland
Locality	Southwest of intersection of SR 21/Augusta Rd and Rice Mill Rd.
Location	Chatham County, Georgia, United States
Coordinates	32.2206,-81.1969
National Ownership	OTH

EDDMapS. 2016. Early Detection & Distribution Mapping System. The University of Georgia - Center for Invasive Species and Ecosystem Health. Available online at http://www.eddmaps.org/distribution/point.cfm?id=4494325; last accessed April 4, 2016.

Survey Information

Datum WGS84

Other

Japanese honeysuckle

***Lonicera japonica* Thunb.**

Record ID	4494326

Reporter Information

Reporter	Katharine Bleau , HNTB
Observation Date	March 16, 2016
Date Entered	April 04, 2016
Source Type	Web Report

Species Information

Common Name	Japanese honeysuckle
Scientific Name	*Lonicera japonica*
Phenology	Mature,Sapling/Immature
Voucher	0

Verification and Review

Reviewed	Not Verified

Infestation Information

Gross Area	8 sq feet
Infested Area	2 sq feet
Percent Cover	Trace
Infestation Status	Positive

Location Information

Habitat	Edge: Upland/wetland
Locality	Located northwest of intersection of SR 21/Augusta Rd and Rice Mill Rd.
Location	Chatham County, Georgia, United States
Coordinates	32.222,-81.1965
National Ownership	OTH

EDDMapS. 2016. Early Detection & Distribution Mapping System. The University of Georgia - Center for Invasive Species and Ecosystem Health. Available online at http://www.eddmaps.org/distribution/point.cfm?id=4494326; last accessed April 4, 2016.

Survey Information

Datum WGS84

Other

Appendix B
Agency Coordination

Katharine Bleau

From: Katharine Bleau
Sent: Monday, December 07, 2015 3:36 PM
To: Austin Meadows; Katherine Zornig
Subject: FW: PI 0013549 - Chatham County - T&E Early Coordination Request

FYI

From: Coppola, Christopher [mailto:christopher_coppola@fws.gov]
Sent: Monday, December 07, 2015 3:29 PM
To: Katharine Bleau
Cc: Chamblin , Doug
Subject: Re: PI 0013549 - Chatham County - T&E Early Coordination Request

Katharine,

Thank you for the opportunity to provide early comments on the proposed project. The lists of species that may occur that in the project area of effect can be generated from the Service's Information, Planning and Conservation System (IPAC) website at http://ecos.fws.gov/ipac/. Suitable habitats for the species listed in the IPaC query should be evaluated as per GDOT's procedures manual. If the project is expected to require the relocation of utility lines or any other service lines, please include the impacts (direct and indirect) on the above species from these additional activities.

The project is located within the distributional range of the frosted flatwoods salamander (*Ambystoma cingulatum*). I do not have any records of recent observations or records of this species, or other listed species, occurring in or near the project area. Depending on their condition and character, wetlands and ditches may be used by foraging wood storks (*Mycteria americana*).

If I can provide further assistance please let me know.

Chris

On Thu, Dec 3, 2015 at 10:46 AM, Katharine Bleau <kbleau@hntb.com> wrote:

Good morning Chris and Anna,

On behalf of GDOT, I am requesting a database search for known occurrences of federally and state protected species within a 3-mile radius of the above referenced project. The proposed project would involve the construction of a new pedestrian bridge over State Route 21 (Augusta Road) and a new pedestrian path from Augusta Road to Rice Mill Road, allowing pedestrian access to Market Boulevard. The total project length is approximately 0.22 mile. The proposed project is located approximately 5.2 miles north west of Port Wentworth in Chatham County near the Effingham/Chatham county line. The latitude and longitude of the center point of the proposed project are 32.220380°, -81.196614°. Additionally, attached please find a Google Earth image of the location of the center point of the proposed bridge.

I appreciate your help.

Thank you,

Katie

Katharine Bleau

Ecologist

HNTB Corporation

3715 Northside Parkway

200 Northcreek, Suite 800

Atlanta, GA 30327

Tel (404) 946-5761

Fax (404) 841-2820

www.hntb.com

--
Christopher Coppola
Fish and Wildlife Biologist

Georgia Ecological Services
Townsend, Georgia 31331

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
WILDLIFE RESOURCES DIVISION

MARK WILLIAMS
COMMISSIONER

DAN FORSTER
DIRECTOR

January 11, 2016

Katherine Bleau
Ecologist
HNTB Corporation
3715 Northside Parkway
200 Northcreek, Suite 800
Atlanta, GA 30327

Subject: Known occurrences of natural communities, plants and animals of highest priority conservation status on or near PI 0013549 Pedestrian Path and Bridge, Chatham County, Georgia

Dear Ms. Bleau:

This is in response to your request of December 3, 2015. According to our records, within a three-mile radius of the project site, there are the following Natural Heritage Database occurrences:

(Site Center: -81.195796, 32.221354, WGS84)

US *Acipenser brevirostrum* (Shortnose Sturgeon) approx. 2.3 mi E of site in the Lower Savannah River
US *Acipenser brevirostrum* (Shortnose Sturgeon) approx. 2.3 mi E of site in the Savannah River Migration Corridor
US *Ambystoma cingulatum* (Frosted Flatwoods Salamander) [HISTORIC] approx. 0.6 mi W of site
Coreopsis rosea (Rose Coreopsis) [HISTORIC] approx. 1.1 mi N of site
GA *Elanoides forficatus* (Swallow-tailed Kite) approx. 2.1 mi NW of site
Elliptio congaraea (Carolina Slabshell) approx. 2.5 mi NE of site in the Savannah River
Hypericum erythreae (Georgia St. Johnswort) [HISTORIC] approx. 2.6 mi S of site
Listera australis (Southern Twayblade) approx. 1.7 mi N of site
Pseudacris brimleyi (Brimley's Chorus Frog) [HISTORIC] in an uncertain location near the project site
US *Trichechus manatus* (Manatee) approx. 2.2 mi E of site in tidal waters
Vaccinium crassifolium (Evergreen Lowbush Blueberry) approx. 0.1 mi NW of site
Nyssa biflora - (Nyssa aquatica, Taxodium distichum) Tidal Forest (Tidal Hardwood Swamp Forest) approx. 1.4 mi S of site
Quercus laurifolia / Carpinus caroliniana / Justicia ovata Forest (Diamondleaf Oak Bottomland Forest) approx. 0.8 mi SW of site

Quercus phellos - Quercus (pagoda, similis) - Pinus taeda / Chasmanthium laxum Forest (South Atlantic Willow Oak Flatwoods Forest) approx. 1.2 mi SE of site
Savannah River Lower 1 (0306010906) [SWAP High Priority Watershed], on site

Recommendations:

We have no records of high priority species or habitats within the project area. However, two federally listed species, *Acipenser brevirostrum* (Shortnose Sturgeon) and *Ambystoma cingulatum* (Frosted Flatwoods Salamander) have been documented within three miles of the proposed project. To minimize potential impacts to this or other federally listed species, we recommend consultation with the United States Fish and Wildlife Service. For southeast Georgia, please contact Strant Colwell (912) 832-8739 ext 1 or Strant_Colwell@fws.gov). Surveys for species of conservation concern should be conducted prior to commencement of construction.

We have the following recommendations for the applicant to consider. Please minimize disturbance to stream banks, wetlands, and riparian zones during bridge construction. Conduct activities from a stable stream bank or reinforced platform that does not cause degradation or destabilization of stream banks. Prohibit operation of equipment in the channel or use of the channel as a ford. We recommend that stringent erosion control practices be used during construction activities and that vegetation is re-established on disturbed areas as quickly as possible. Silt fences and other erosion control devices should be inspected and maintained until soil is stabilized by vegetation. Please use natural vegetation and grading techniques (e.g., vegetated swales, turn-offs, vegetated buffer strips) that will ensure that the road or ROW does not serve as a conduit for storm water or pollutants into the stream during or after construction. No uncured concrete or water used to facilitate curing should be discharged directly into the stream; curing water should be pumped into filter bags (i.e., "dirt bags") or detention basins before coffer dams or other diversion structures are dismantled. These measures will help protect water quality in the vicinity of the bridge crossings as well as downstream.

Please be aware that the type of erosion control material that is used may have an impact on wildlife, particularly snakes. We recommend natural, biodegradable materials such as ‘jute’ or ‘coir’ be used. Mesh strands should be movable, as opposed to fixed. We do not recommend plastic fencing, as it frequently leads to snake entrapment and death.

We are glad to see sidewalk construction, which will facilitate pedestrian use and reduce overall traffic. Please use best management practices during construction and there should be minimal impact on the surrounding environment.

Disclaimer:

Please keep in mind the limitations of our database. The data collected by the Nongame Conservation Section comes from a variety of sources, including museum and herbarium records, literature, and reports from individuals and organizations, as well as field surveys by our staff biologists. In most cases the information is not the result of a recent on-site survey by our

staff. Many areas of Georgia have never been surveyed thoroughly. Therefore, the Nongame Conservation Section can only occasionally provide definitive information on the presence or absence of rare species on a given site. Our files are updated constantly as new information is received. **Thus, information provided by our program represents the existing data in our files at the time of the request and should not be considered a final statement on the species or area under consideration.**

If you know of populations of highest priority species that are not in our database, please fill out the appropriate data collection form and send it to our office. Forms can be obtained through our web site (http://www.georgiawildlife.com/node/1376) or by contacting our office. If I can be of further assistance, please let me know.

Sincerely,

Anna Yellin
Environmental Review Coordinator

Data Available on the Nongame Conservation Section Website

- Georgia protected plant and animal profiles are available on our website. These accounts cover basics like descriptions and life history, as well as threats, management recommendations and conservation status. Visit http://www.georgiawildlife.com/node/2721.

- Rare species and natural community information can be viewed by Quarter Quad, County and HUC8 Watershed. To access this information, please visit our GA Rare Species and Natural Community Information page at: http://www.georgiawildlife.com/conservation/species-of-concern?cat=conservation.

- Downloadable files of rare species and natural community data by quarter quad and county are also available. They can be downloaded from: http://www.georgiawildlife.com/node/1370.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Georgia Ecological Services Field Office
105 WESTPARK DRIVE, WESTPARK CENTER SUITE D
ATHENS, GA 30606
PHONE: (706)613-9493 FAX: (706)613-6059

Consultation Code: 04EG1000-2016-SLI-0520 January 16, 2016
Event Code: 04EG1000-2016-E-00412
Project Name: SR 21 Pedestrian Bridge

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

To Whom It May Concern:

This list identifies threatened, endangered, proposed and candidate species, as well as critical habitat, that may be affected by your proposed project. This list my change before your project is completd. Under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this list should be verified after 90 days. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation.

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*). Projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html).

Wind energy projects should follow the wind energy guidelines http://www.fws.gov/windenergy/ for minimizing impacts to migratory birds and bats.

Guidance for minimizing impactsof communcation towers on migratory birds can be found under the "Bird Hazards" tab at: www.fws.gov/migratorybirds.

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: SR 21 Pedestrian Bridge

Official Species List

Provided by:

Georgia Ecological Services Field Office
105 WESTPARK DRIVE
WESTPARK CENTER SUITE D
ATHENS, GA 30606
(706) 613-9493

Consultation Code: 04EG1000-2016-SLI-0520
Event Code: 04EG1000-2016-E-00412

Project Type: TRANSPORTATION

Project Name: SR 21 Pedestrian Bridge
Project Description: The proposed project would involve the construction of a new pedestrian bridge over State Route 21 (Augusta Road) and a new pedestrian path from Augusta Road to Rice Mill Road, allowing pedestrian access to Market Boulevard. The total project length is approximately 0.22 mile.

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:

Project Coordinates: The coordinates are too numerous to display here.

Project Counties: Chatham, GA

Endangered Species Act Species List

There are a total of 18 threatened, endangered, or candidate species on your 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. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Amphibians	**Status**	**Has Critical Habitat**	**Condition(s)**
frosted flatwoods salamander *(Ambystoma cingulatum)* Population: Entire	Threatened	Final designated	
Striped newt *(Notophthalmus perstriatus)*	Candidate		
Birds			
Piping Plover *(Charadrius melodus)* Population: except Great Lakes watershed	Threatened	Final designated	
Piping Plover *(Charadrius melodus)* Population: Great Lakes watershed	Endangered		
Red Knot *(Calidris canutus rufa)*	Threatened		
Red-Cockaded woodpecker *(Picoides borealis)* Population: Entire	Endangered		
Wood stork *(Mycteria americana)* Population: AL, FL, GA, MS, NC, SC	Threatened		
Fishes			

Atlantic sturgeon *(Acipenser oxyrinchus oxyrinchus)* Population: South Atlantic DPS	Endangered		
Shortnose sturgeon *(Acipenser brevirostrum)* Population: Entire	Endangered		
Flowering Plants			
pondberry *(Lindera melissifolia)*	Endangered		
Mammals			
North Atlantic right Whale *(Eubalaena glacialis)* Population: Entire	Endangered	Final designated	
West Indian Manatee *(Trichechus manatus)* Population: Entire	Endangered	Final designated	
Reptiles			
Eastern Indigo snake *(Drymarchon corais couperi)* Population: Entire	Threatened		
Gopher tortoise *(Gopherus polyphemus)* Population: eastern	Candidate		
Green sea turtle *(Chelonia mydas)* Population: Except where endangered	Threatened	Final designated	
Kemp's Ridley sea turtle *(Lepidochelys kempii)* Population: Entire	Endangered		
Leatherback sea turtle *(Dermochelys*	Endangered	Final designated	

coriacea) Population: Entire			
Loggerhead sea turtle *(Caretta caretta)* Population: Northwest Atlantic Ocean DPS	Threatened	Proposed, Final designated	

Critical habitats that lie within your project area

The following critical habitats lie fully or partially within your project area.

Birds	**Critical Habitat Type**
Piping Plover *(Charadrius melodus)* Population: except Great Lakes watershed	Final designated
Reptiles	
Loggerhead sea turtle *(Caretta caretta)* Population: Northwest Atlantic Ocean DPS	Final designated, Proposed

GADNR NCS Rare Species Location Data
Chatham County, Georgia

COUNTY	TYPE	SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	HABITAT REQUIREMENTS
Chatham	Animal	Acipenser brevirostrum	Shortnose Sturgeon	LE	E	Estuaries; lower end of large rivers in deep pools with soft substrates
Chatham	Animal	Acipenser oxyrinchus oxyrinchus	Atlantic Sturgeon	LE	E	Large rivers and estuaries on Atlantic Coast
Chatham	Animal	Ambystoma cingulatum	Frosted Flatwoods Salamander	LT	T	Pine flatwoods; moist savannas; isolated cypress/gum ponds
Chatham	Plant	Amorpha georgiana	Georgia Indigo Bush		E	Longleaf pine flatwoods; stream terraces
Chatham	Animal	Calidris canutus	Red Knot	C	R	Beaches and exposed mudflats
Chatham	Animal	Caretta caretta	Loggerhead Sea Turtle	LT	E	Open ocean; sounds; coastal rivers; beaches
Chatham	Community	Carya glabra - (Quercus hemisphaerica) / Serenoa repens / Chasmanthium sessiliflorum Forest	Dry Hickory Maritime Forest			Georgia habitat information not available
Chatham	Animal	Charadrius melodus	Piping Plover	LT	T	Sandy beaches; tidal flats
Chatham	Animal	Charadrius wilsonia	Wilson's Plover		T	Sandy beaches; tidal flats
Chatham	Animal	Chelonia mydas	Green Sea Turtle	LT	T	Open ocean; sounds; coastal rivers; beaches
Chatham	Animal	Clemmys guttata	Spotted Turtle		U	Heavily vegetated swamps, marshes, bogs, and small ponds; nest and possibly hibernate in surrounding uplands
Chatham	Animal	Crotalus adamanteus	Eastern Diamond-backed Rattlesnake			Early successional habitats on barrier islands and mainland; pine flatwoods; sandhills
Chatham	Animal	Dermochelys coriacea	Leatherback Sea Turtle	LE	E	Open ocean; sounds; coastal beaches
Chatham	Animal	Elanoides forficatus	Swallow-tailed Kite		R	River swamps; marshes
Chatham	Animal	Elassoma okatie	Bluebarred Pygmy Sunfish		E	Temporary ponds and stream backwaters with dense aquatic vegetation
Chatham	Animal	Elliptio congaraea	Carolina Slabshell			Large to medium rivers
Chatham	Animal	Eubalaena glacialis	Northern Atlantic Right Whale	LE	E	Open ocean
Chatham	Plant	Forestiera segregata	Florida Wild Privet		R	Shell mounds on barrier islands in scrub or maritime forests
Chatham	Animal	Gopherus polyphemus	Gopher Tortoise	C	T	Sandhills; dry hammocks; longleaf pine-turkey oak woods; old fields
Chatham	Animal	Haematopus palliatus	American Oystercatcher		R	Sandy beaches; tidal flats; salt marshes
Chatham	Animal	Haliaeetus leucocephalus	Bald Eagle		T	Edges of lakes & large rivers; seacoasts
Chatham	Animal	Heterodon simus	Southern Hognose Snake		T	Sandhills; fallow fields; longleaf pine-turkey oak
Chatham	Animal	Lepidochelys kempii	Kemp's or Atlantic Ridley	LE	E	Open ocean; sounds; coastal rivers; beaches
Chatham	Plant	Lindera melissifolia	Pond Spicebush	LE	E	Pond margins and wet savannas
Chatham	Animal	Lithobates capito	Gopher Frog		R	Sandhills; dry pine flatwoods; breed in isolated wetlands
Chatham	Animal	Malaclemys terrapin	Diamondback Terrapin		U	Entire coast, estuarine and marine edge; All saltmarsh, beaches
Chatham	Animal	Moxostoma robustum	Robust Redhorse		E	Medium to large rivers, shallow riffles to deep flowing water; moderately swift current
Chatham	Animal	Mycteria americana	Wood Stork	LE	E	Cypress/gum ponds; marshes; river swamps; bays
Chatham	Animal	Picoides borealis	Red-cockaded Woodpecker	LE	E	Open pine woods; pine savannas
Chatham	Animal	Rynchops niger	Black Skimmer		R	Tidal ponds; sandy beaches

GADNR NCS Rare Species Location Data
Chatham County, Georgia

Chatham	Plant	Sageretia minutiflora	Climbing Buckthorn		T	Calcareous bluff forests; maritime forests over shell mounds
Chatham	Plant	Sapindus marginatus	Soapberry		R	Shell mound forests
Chatham	Plant	Sarracenia minor var. minor	Hooded Pitcherplant		U	Wet savannas, pitcherplant bogs
Chatham	Animal	Sternula antillarum	Least Tern		R	Sandy beaches; sandbars
Chatham	Animal	Trichechus manatus	Manatee	LE	E	Open ocean; estuaries; tidal rivers

Source: http://www.georgiawildlife.com/rare_species_locations
Last updated: September 23, 2015

Appendix C
Background Information

Qualifications Statement

Surveyors:

Katharine Bleau
Ecologist
Ecology, B.S.; Biology, B.S.
3 years of ecology field experience with GDOT projects

Austin Meadows
Ecologist
B.S.F.R. Fisheries and Aquaculture
11 years of ecology field experience with GDOT projects

Alexander Terry
Ecologist
Ecology, B.S.
10 months of ecology field experience with GDOT project

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Enter a GA ZIP Code
GO

Weather Stations
Select a Station

K-12 Weather School
AEMN Home
Expand All Collapse All
Drought
Fruits
Cotton
Peanut
Current Maps
Daily Maps
Daily Summaries
Climate Maps
Calculators
Background Info
Others
News

Supporters

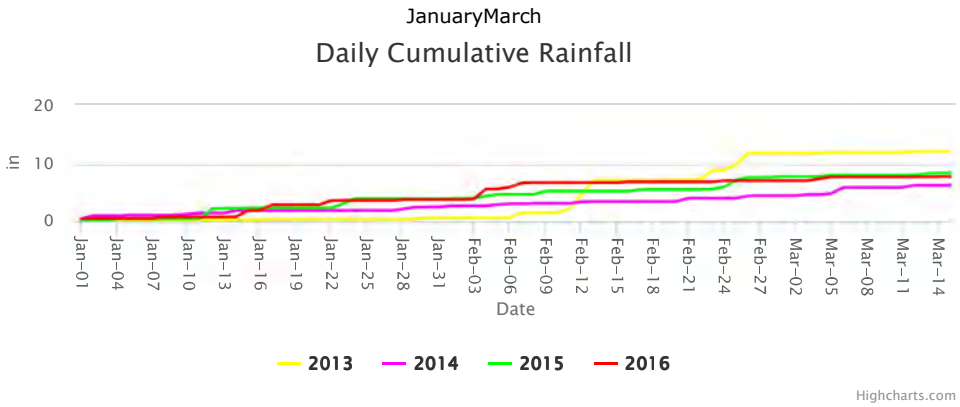
Coastal Georgia Botanical Gardens
Savannah, Chatham County, Georgia

Rainfall Calculator

From: January 1 2016

To: March 15 2016

Calculate



From January-1	To March-15	Precipitation[in]	Number of Rainy Days
2016	2016	7.75	19
2015	2015	8.37	24
2014	2014	6.24	27
2013	2013	11.99	23
1971	2000	8.41	N/A
1961	1990	8.84	N/A

Georgia Weather

Enter a GA ZIP Code
GO

Weather Stations
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K-12 Weather School
AEMN Home

Expand All Collapse All

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Others
News

Supporters

Coastal Georgia Botanical Gardens
Savannah, Chatham County, Georgia

Rainfall Calculator

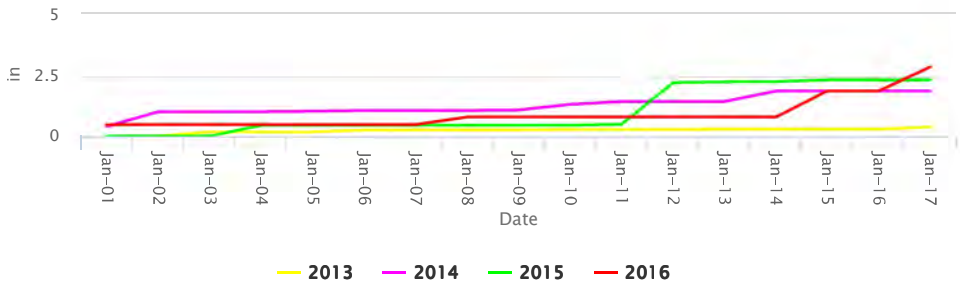
From: January 1 2016

To: January 17 2016

Calculate

JanuaryJanuary

Daily Cumulative Rainfall



From January-1	To January-17	Precipitation[in]	Number of Rainy Days
2016	2016	2.86	5
2015	2015	2.32	6
2014	2014	1.86	8
2013	2013	0.38	6
1971	2000	2.18	N/A
1961	1990	2	N/A

1785
Georgia Weather

Enter a GA ZIP Code
GO

Weather Stations
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Supporters

Coastal Georgia Botanical Gardens
Savannah, Chatham County, Georgia

Historical Data

From: January 16 2016

To: January 18 2016

Submit

(Tmin,Tmax and Precipitation amount)

Date	Max Temperature [°F]	Min Temperature [°F]	Rain (in)
Jan 16	67.9	46	0
Jan 17	56.5	38.7	0.99
Jan 18	54.2	35.7	0

Georgia Weather

Enter a GA ZIP Code
GO

Weather Stations
Select a Station

K-12 Weather School
AEMN Home

Expand All Collapse All

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Supporters

Coastal Georgia Botanical Gardens
Savannah, Chatham County, Georgia

Rainfall Calculator

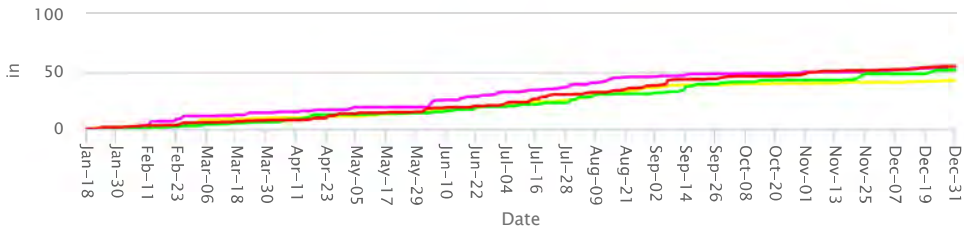
From: January 18 2015

To: December 31 2015

Calculate

JanuaryDecember

Daily Cumulative Rainfall



From January-18	To December-31	Precipitation[in]	Number of Rainy Days
2015	2015	54.57	144
2014	2014	51.67	117
2013	2013	54.58	130
2012	2012	42.68	122
1971	2000	47.56	N/A
1961	1990	46.72	N/A

Georgia Weather

Enter a GA ZIP Code
GO

Weather Stations
Select a Station

K-12 Weather School
AEMN Home

Expand All Collapse All

Drought
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Peanut
Current Maps
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Daily Summaries
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Supporters

Coastal Georgia Botanical Gardens
Savannah, Chatham County, Georgia

Rainfall Calculator

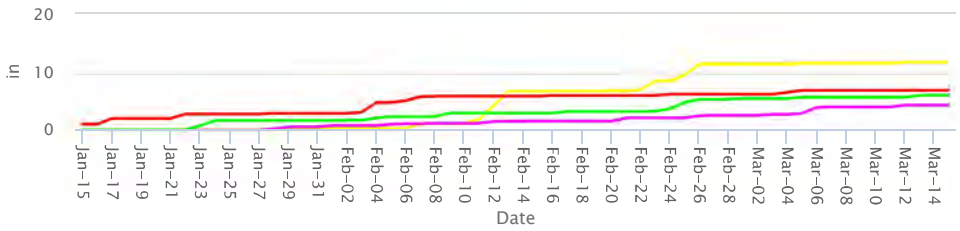
From: February 15 2016

To: March 15 2016

Calculate

FebruaryMarch

Daily Cumulative Rainfall



From February-15	To March-15	Precipitation[in]	Number of Rainy Days
2016	2016	1.05	6
2015	2015	3.13	12
2014	2014	2.8	9
2013	2013	4.92	10
1971	2000	2.94	N/A
1961	1990	3.65	N/A

1785
Georgia Weather

Enter a GA ZIP Code
GO

Weather Stations
Select a Station

K-12 Weather School
AEMN Home
Expand All Collapse All
Drought
Fruits
Cotton
Peanut
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Daily Summaries
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News

Supporters

Georgia Automated Environmental Monitoring Network
www.GeorgiaWeather.net

Coastal Georgia Botanical Gardens
Savannah, Chatham County, Georgia

Historical Data

From: March 14 2016

To: March 16 2016

Submit

(Tmin,Tmax and Precipitation amount)

Date	Max Temperature [°F]	Min Temperature [°F]	Rain (in)
Mar 14	84.8	64.8	0.01
Mar 15	87.7	60.1	0
Mar 16	87	62.1	0

Georgia Weather

Enter a GA ZIP Code
GO

Weather Stations
Select a Station

K-12 Weather School
AEMN Home

Expand All Collapse All

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Fruits
Cotton
Peanut
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Supporters

Coastal Georgia Botanical Gardens
Savannah, Chatham County, Georgia

Rainfall Calculator

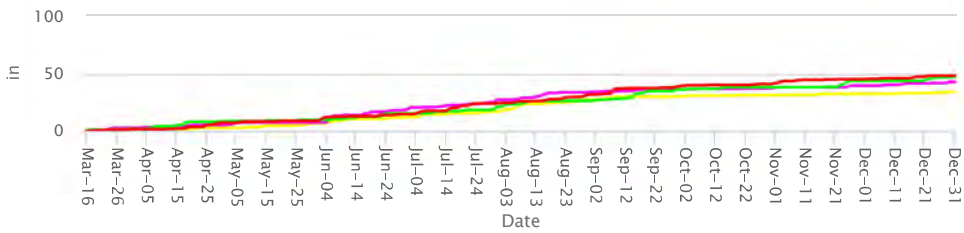
From: March 16 2015

To: December 31 2015

Calculate

MarchDecember

Daily Cumulative Rainfall



From March-16	To December-31	Precipitation[in]	Number of Rainy Days
2015	2015	48.52	126
2014	2014	47.285	98
2013	2013	42.97	113
2012	2012	34.22	108
1971	2000	41.21	N/A
1961	1990	39.67	N/A

Georgia Weather

Enter a GA ZIP Code
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Weather Stations
Select a Station

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Coastal Georgia Botanical Gardens
Savannah, Chatham County, Georgia

Rainfall Calculator

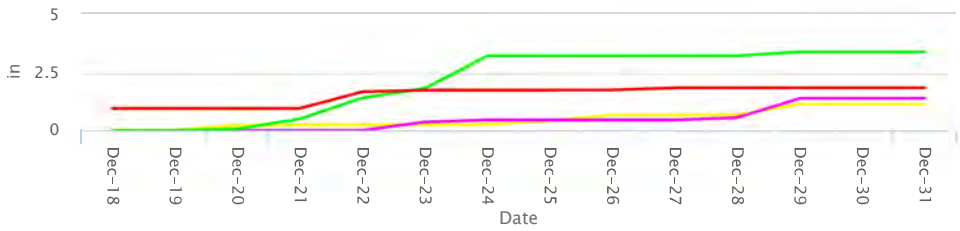
From: December 18 2015

To: December 31 2015

Calculate

DecemberDecember

Daily Cumulative Rainfall



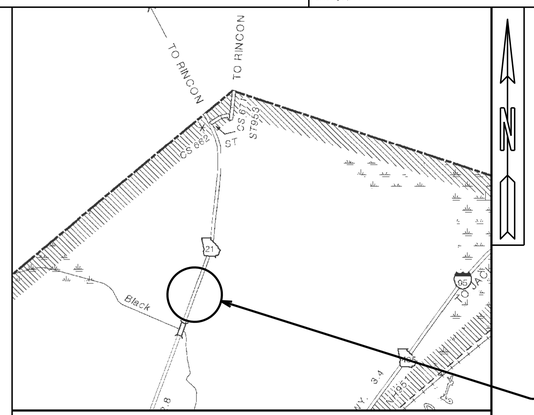
From December-18	To December-31	Precipitation[in]	Number of Rainy Days
2015	2015	1.85	6
2014	2014	3.37	6
2013	2013	1.39	4
2012	2012	1.14	7
1971	2000	1.48	N/A
1961	1990	1.2	N/A

3/25/2016 bwebb	$PRF8$ ameng.plt	G:\TRA\64060_GEC\TO_8_Prog\WO_1_Ped_Bridge\SHEET\0013549_01-001.dgn GRWCOV	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
			GA		1	18

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

PLAN AND PROFILE OF PROPOSED
SR 21 @ CS 705/PARKSIDE BLVD
PEDESTRIAN BRIDGE

FEDERAL ROUTE * N/A
STATE ROUTE *21
P.I.NO.0013549



PROJECT LOCATION

LOCATION SKETCH

DESIGN DATA:
TRAFFIC A.D.T.: N/A
TRAFFIC A.D.T.: N/A
TRAFFIC D.H.V.: N/A
DIRECTIONAL DIST: N/A
% TRUCKS: N/A
24 HR. TRUCKS %: N/A
SPEED DESIGN: 55 mph

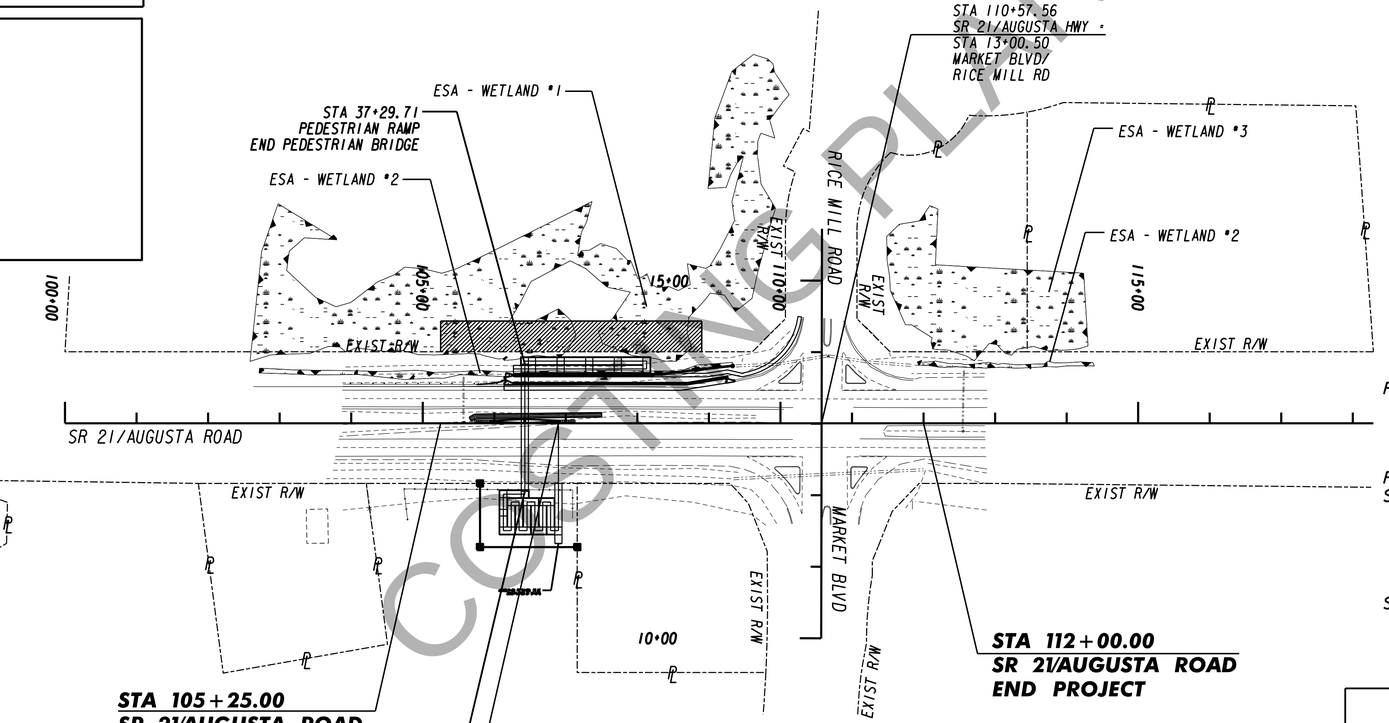
LOCATION & DESIGN APPROVAL DATE:

FUNCTIONAL CLASS:

THIS PROJECT IS 100% IN CHATHAM COUNTY AND IS 100% IN CONG. DIST. NO. 5 .

PROJECT DESIGNATION:
DESIGNED IN ENGLISH UNITS.

THIS PROJECT HAS BEEN PREPARED USING THE HORIZONTAL GEORGIA COORDINATE SYSTEM OF 1984 (NAD 1983)/94 WEST ZONE. AND THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.



SCALE IN FEET
0 100 200 400

LENGTH OF PROJECT	COUNTY No. 51 Project No. 0013549
	MILES
NET LENGTH OF ROADWAY	0.089
NET LENGTH OF BRIDGES	0.000
NET LENGTH OF PROJECT	0.127
NET LENGTH OF EXCEPTIONS	0.000
GROSS LENGTH OF PROJECT	0.127

THE DATA, TOGETHER WITH ALL OTHER INFORMATION SHOWN ON THESE PLANS OR IN ANYWAY INDICATED THEREBY, WHETHER BY DRAWINGS OR NOTES, OR IN ANY OTHER MANNER, ARE BASED UPON FIELD INVESTIGATIONS AND ARE BELIEVED TO BE INDICATIVE OF ACTUAL CONDITIONS. HOWEVER, THE SAME ARE SHOWN AS INFORMATION ONLY, ARE NOT GUARANTEED, AND DO NOT BIND THE DEPARTMENT OF TRANSPORTATION IN ANY WAY. THE ATTENTION OF BIDDER IS SPECIFICALLY DIRECTED TO SUBSECTIONS 102.04, 102.05, AND 104.03 OF THE SPECIFICATIONS.

NOTE :
ALL REFERENCES IN THIS DOCUMENT, WHICH INCLUDES ALL PAPERS, WRITINGS, DOCUMENTS, DRAWINGS, OR PHOTOGRAPHS USED, OR TO BE USED IN CONNECTION WITH THIS DOCUMENT, TO "STATE HIGHWAY DEPARTMENT OF GEORGIA", "STATE HIGHWAY DEPARTMENT", GEORGIA STATE HIGHWAY DEPARTMENT", "HIGHWAY DEPARTMENT", OR "DEPARTMENT" WHEN THE CONTEXT THEREOF MEANS THE STATE HIGHWAY DEPARTMENT OF GEORGIA, AND SHALL BE DEEMED TO MEAN THE DEPARTMENT OF TRANSPORTATION.

ARCADIS Design & Consultancy for natural and built assets
2410 Paces Ferry Road, Suite 400
Atlanta, Georgia 30339
Tel: 770/431-8666
Fax: 770/435-2666

PREPARED BY: _____ DESIGN

RECOMMENDED FOR SUBMISSION BY: _____ DESIGN

SUBMITTED BY: _____ STATE DESIGN ENGINEER

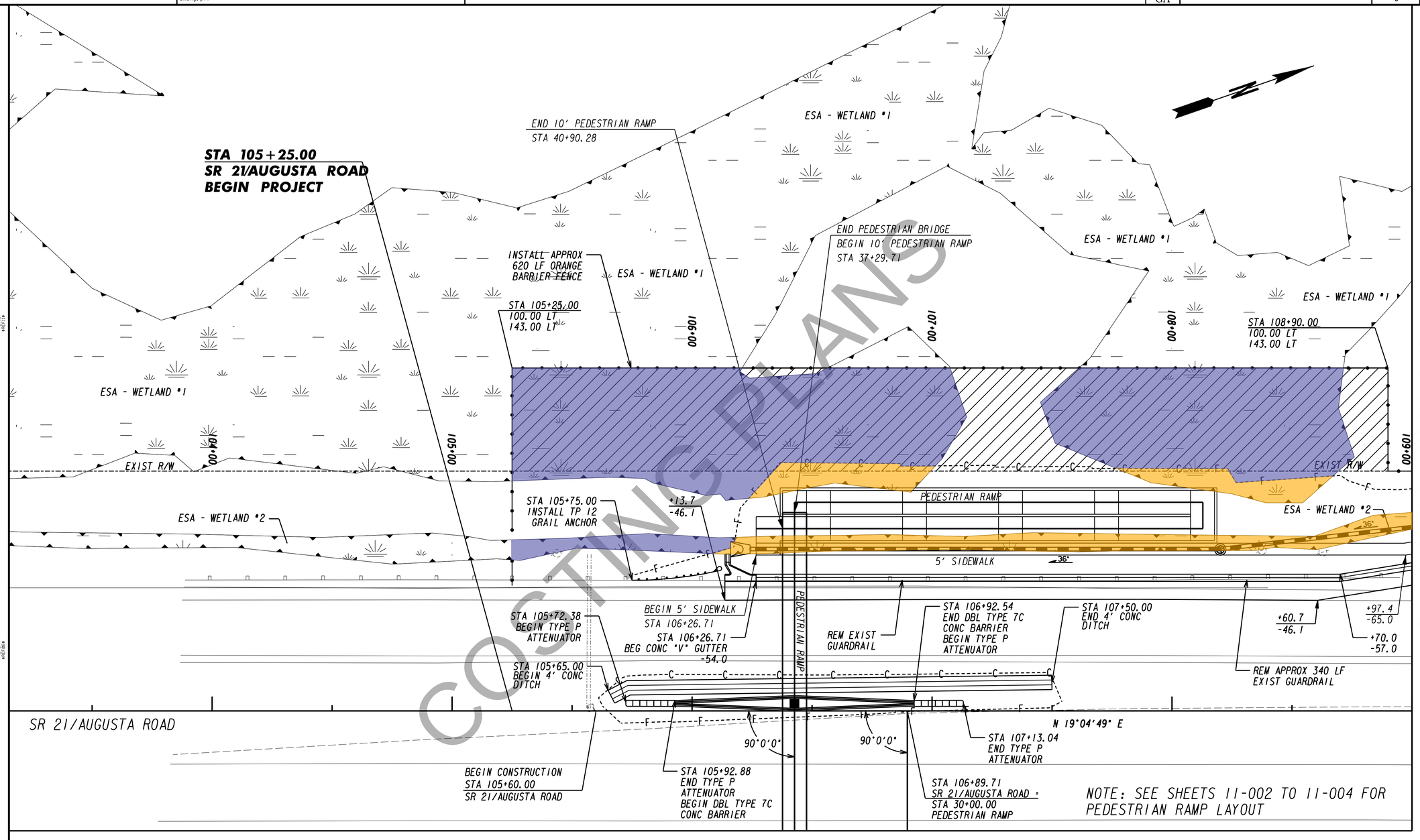
DATE _____ CHIEF ENGINEER

PLANS COMPLETED - -	
REVISIONS	

DRAWING No. 01-001

5/20/2011

3/25/2016	4:14:08 PM	$PRF8$	G:\TRA\64060_GEC\T0_8_Prog\W0_1_Ped_Bridge\SHEET\0013549_13-001.dgn	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
bwebb		ameng.plt		GA		8	18



PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES

BEGIN LIMIT OF ACCESS.....BLA
END LIMIT OF ACCESS.....ELA
LIMIT OF ACCESS
REQ'D R/W & LIMIT OF ACCESS

ARCADIS

SCALE IN FEET
0 20 40 80

REVISION DATES		

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE:

MAINLINE PLAN

SR 21 @ CS 705/PARKSIDE BLVD
PEDESTRIAN BRIDGE

DRAWING No.
13-001

12/14/2012 GPLN

3/25/2016	4:14:27 PM	$PRF8$	G:\TRA\64060_GEC\T0_8_Prog\W0_1_Ped_Bridge\SHEET\0013549_13-002.dgn	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
bwebb		ameng.plt		GA		9	18

MATCH LINE STA 109+00 - SEE DWG 13-001

EXIST R/W

EXIST R/W

BEGIN 10' CONC SIDEWALK
STA 30+84.00

10' SIDEWALK

PEDESTRIAN RAMP

STA 105+80.00
84.00 RT
173.00 RT

END 10' PEDESTRIAN RAMP
BEGIN PEDESTRIAN BRIDGE
STA 35+52.00

END 10' CONC SIDEWALK
BEGIN 10' PEDESTRIAN RAMP
STA 31+55.00

CONNECTION TO SCHOOL TO BE
CONSTRUCTED BY OTHERS

STA 107+15.93
173.00 RT

MATCH LINE STA 109+00 - SEE DWG 13-003

NOTE: SEE SHEETS 11-002 TO 11-004 FOR
PEDESTRIAN RAMP LAYOUT

PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES

BEGIN LIMIT OF ACCESS.....BLA
END LIMIT OF ACCESS.....ELA
LIMIT OF ACCESS
REQ'D R/W & LIMIT OF ACCESS

ARCADIS

SCALE IN FEET
0 20 40 80

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE:

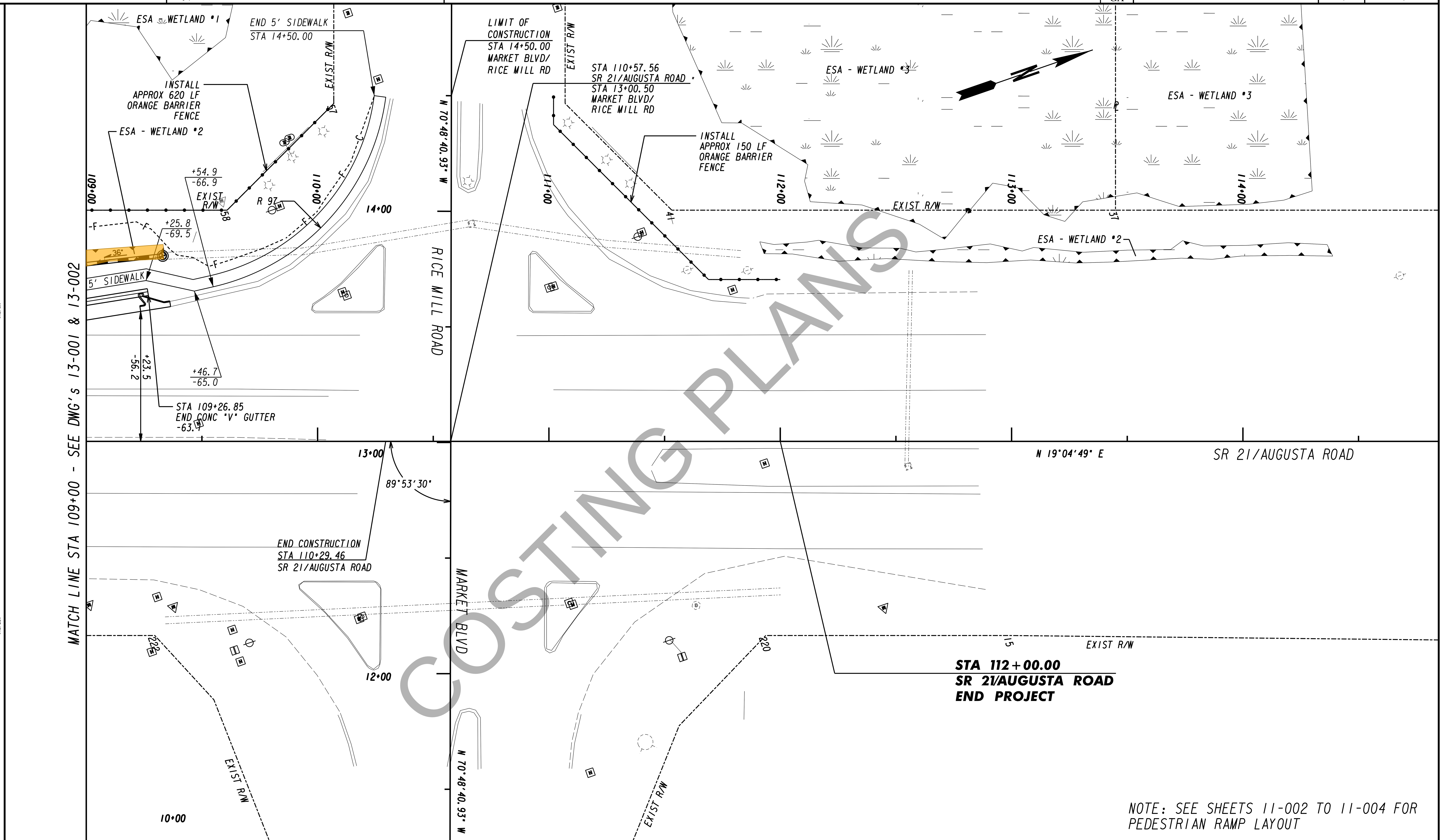
MAINLINE PLAN

SR 21 @ CS 705/PARKSIDE BLVD
PEDESTRIAN BRIDGE

DRAWING No. 13-002

12/14/2012 GPLN

3/25/2016	4:14:43 PM	$PRF8$	G:\TRA\64060_GEC\TO_8_Prog\WO_1_Ped_Bridge\SHEET\0013549_13-003.dgn	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
bwebb		omeng.plt		GA		10	18



ESA - WETLAND #1
END 5' SIDEWALK
STA 14+50.00
EXIST R/W
INSTALL
APPROX 620 LF
ORANGE BARRIER
FENCE
ESA - WETLAND #2
+54.9
-66.9
EXIST
R/W
R 97
109+00
110+00
14+00
+25.8
-69.5
36"
5' SIDEWALK
+23.5
-56.2
+46.7
-65.0
STA 109+26.85
END CONC 'V' GUTTER
-63.9
RICE MILL ROAD
N 70°48'40.93" W
LIMIT OF
CONSTRUCTION
STA 14+50.00
MARKET BLVD/
RICE MILL RD
STA 110+57.56
SR 21/AUGUSTA ROAD
STA 13+00.50
MARKET BLVD/
RICE MILL RD
INSTALL
APPROX 150 LF
ORANGE BARRIER
FENCE
111+00
112+00
113+00
114+00
ESA - WETLAND #3
ESA - WETLAND #3
EXIST R/W
ESA - WETLAND #2
MATCH LINE STA 109+00 - SEE DWG's 13-001 & 13-002
13+00
89°53'30"
END CONSTRUCTION
STA 110+29.46
SR 21/AUGUSTA ROAD
N 19°04'49" E
SR 21/AUGUSTA ROAD
MARKET BLVD
12+00
EXIST R/W
STA 112+00.00
SR 21/AUGUSTA ROAD
END PROJECT
EXIST R/W
EXIST R/W
10+00
N 70°48'40.93" W
NOTE: SEE SHEETS 11-002 TO 11-004 FOR
PEDESTRIAN RAMP LAYOUT
COSTING PLANS

PROPERTY AND EXISTING R/W LINE	---P---
REQUIRED R/W LINE	
CONSTRUCTION LIMITS	--C--F--
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES	
EASEMENT FOR CONSTR OF SLOPES	
EASEMENT FOR CONSTR OF DRIVES	

BEGIN LIMIT OF ACCESS............BLA
END LIMIT OF ACCESS.............ELA
LIMIT OF ACCESS
REQ'D R/W & LIMIT OF ACCESS

ARCADIS

SCALE IN FEET
0 20 40 80

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE:

MAINLINE PLAN

SR 21 @ CS 705/PARKSIDE BLVD
PEDESTRIAN BRIDGE

DRAWING No.
13-003

12/14/2012 GPLN