10 April 2015

U.S. Army Corps of Engineers
Savannah District
Attn: Ms. Kelly Finch
100 West Oglethorpe Ave
Savannah, GA 31402-0889

RE: Bryan County Mega-Site **RLC#: 14-225**
Bryan County, Georgia
USACE Project No. SAS-2015-00235

Dear Ms. Finch:

On behalf of Savannah-Harbor Interstate 16 Corridor Joint Development Authority, please find attached an Individual Section 404 Permit Application requesting authorization to impact 125.13 acres of jurisdictional wetland, 17.56 acres of non-jurisdictional wetland, and 2,631 linear feet of stream to facilitate construction of a mega-site manufacturing facility. The project area totals approximately 1904.45 acres located adjacent to and east of Highway 280 and adjacent to and south of Interstate 16 within Bryan County, Georgia (32.164165°, -81.450411°).

For your review and use, the attached information includes the following information:

- Project Description
- Figures: Site Location Map, USGS Topographic Survey, 2013 Ortho Color Aerial, Habitat Map, NRCS Soils Survey, & Lidar Exhibit
- Request for USACE Jurisdictional Determination
- Site Photographs
- Permit Drawings
- Off-Site Alternatives
- On-Site Configurations
- Threatened & Endangered Species Information & Report of Findings
- Cultural Resources Information and Preliminary Management Summary
- Compensatory Mitigation Calculations
- CESAS Form 19
- Adjacent Land Owner Information

Please note that this application package contains information prepared for U.S. Army Corps of Engineers use only and these sections have been marked CONFIDENTIAL. We greatly appreciate your assistance with this project. If you have any questions or require additional information, please do not hesitate to contact us at (912) 443-5896.

Sincerely,

Alton Brown, Jr.
Principal
Resource & Land Consultants

Enclosures

cc: Mr. Hugh "Trip" Tollison - I16 Savannah Harbor Joint Development Authority Ms. Anna Chafin - I16 Savannah Harbor Joint Development Authority Mr. Walt Farrell – Georgia Department of Economic Development Mr. Ralph Forbes – Thomas & Hutton

BRYAN COUNTY MEGA SITE

SECTION 404 INDIVIDUAL PERMIT APPLICATION

RLC RESOURCE+LAND CONSULTANTS

BRYAN COUNTY MEGA SITE

SECTION 404 INDIVIDUAL PERMIT APPLICATION
APRIL 2015

APPLICANT: SAVANNAH HARBOR INTERSTATE 16 CORRIDOR
JOINT DEVELOPMENT AUTHORITY

ENGINEER: THOMAS & HUTTON ENGINEERING

AGENT: RESOURCE & LAND CONSULTANTS

Savannah Harbor-Interstate 16 Corridor
Joint Development Authority
BRYAN · BULLOCH · CHATHAM · EFFINGHAM

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting

RESOURCE+LAND
CONSULTANTS

Table of Contents

RYAN COUNTY MEGA-SITE
Bryan County, Georgia
Project Description
April 2015

1.0 INTRODUCTION:

Savannah Harbor-Interstate 16 Corridor Joint Development Authority is proposing the development of a mega site manufacturing facility on a 2,304 acre tract located adjacent to and east of Highway 280 and adjacent to and south of Interstate 16 within Bryan County, Georgia (32.164165°, -81.450411°) (Figures 1 & 2,Appendix A). Of the 2,304 acres, 1904.45 acres will be developed and approximately 399.55 acres, primarily along Black Creek, will remain as undisturbed green space.

2.0 BACKGROUND:

In late 2014, the Georgia Department of Economic Development received a request for information regarding potential tracts within Georgia that would qualify for a mega site manufacturing facility. Due to the size and intended use of the facility, the site selection focused on four primary considerations. These considerations included the following:

1. The site must provide a minimum of approximately 2,000 acres of contiguous developable land.
2. The site must be within 50 miles of a major port.
3. The site must be within 50 miles of an airport (Class C minimum).
4. The site must be located at or within the immediate vicinity of a major interstate and interchange (Interstate frontage and visibility was preferred).

The proposed manufacturing plant/facility is planned to include up to a $1 billion private capital investment. It is anticipated that the project will create 2,000 jobs with the potential to create up to 4,000 jobs within ten years after the start of production. Recognizing the regional impact of the project and that the selection criteria required the site be located within 50 miles of the Port of Savannah, the Georgia Department of Economic Development created the Savannah-Harbor Interstate 16 Corridor Joint Development Authority (JDA) including Chatham, Bryan, Effingham, and Bulloch Counties. The purpose of this JDA was to deliver a pad ready site for the manufacturing company by January 2016.

Since September 2014, a team of state leaders and organizations have been working together with the prospective company to produce the appropriate site. The team includes Georgia Governor Deal, Georgia Department of Economic Development, JDA and its participating counties, Georgia Power, Georgia Ports Authority, Georgia Department of Transportation, Tennessee and Wyoming Railroad, Georgia Department of Natural Resources-Environmental Protection Division, as well as variety of engineering, environmental, and real estate consultants. Following an intense review of sites in Georgia which met the selection considerations and could support a project of this size, the JDA identified the 1904.45 acre project area. To date, numerous tasks have been completed including negotiation and contract completion for property acquisition, wetland delineation and survey, Phase I environmental survey, Phase I cultural resources survey, threatened and endangered species survey, geotechnical assessments, topographic surveys, preliminary stormwater plan assessment, preliminary traffic analysis, preliminary water and sewer analysis, preliminary rail access assessment, off-site alternatives analysis, on-site configuration and facility design review, etc. All of these tasks were completed for preparation and submittal of this permit application package.

3.0 BASIC & OVERALL PROJECT PURPOSE:

The basic purpose of the proposed project is to provide a mega site to facilitate the construction and development of a large manufacturing facility. The overall project purpose is to provide a pad ready mega site which could support a +/- 2000 acre manufacturing facility located within 50 miles of the Port of Savannah, located within 50 miles of an airport (Class C minimum), located within the immediate vicinity of a major interstate and interchange and with the potential to create up to 4000 jobs within 10 years after the start of production.

4.0 EXISTING SITE CONDITIONS:

The subject site is uniquely suited for construction of a mega manufacturing facility when considering location, topography, and existing habitat conditions. The proposed mega site is located in the southeast quadrant of the Interstate 16 and Highway 280 intersection and was created by assembling only three parcels. Creating a similar sized

RLC

parcel along any other intersection adjacent to Interstate 16 or Interstate 95 would require assembling many more parcels and in some cases more than 50. The topography ranges from elevation 20 within the preservation area along Black Creek to almost 90 feet within the development area near Interstate 16. Obviously these elevations and topographic changes are not common for properties within the lower Coastal Plain of Georgia. While wetlands and waters of the U.S. typically make up 30 percent or more of any large tract within the Coastal Plain of Georgia, only 16 percent of the proposed project area consists of wetlands and/or waters of the U.S. Lastly, the site has been intensively managed for timber production and while this is not uncommon for the Coast of Georgia, the project could not have been timed any better when considering the age of the timber within the site. Much of the timber within the upland has been harvested within the past five years and portions continue to be harvested today.

A wetland and stream delineation has been completed for the project site and a request for jurisdictional determination has been included in this permit application package (Appendix B). Based on the jurisdictional area delineation and as field verified by the USACE on 17 March 2015 (St. Patrick's Day), the 1904.45 acre project area contains 308.67 acres of jurisdictional wetland, 17.56 acres of isolated non-jurisdictional wetland and 2,631 linear feet of stream. As documented and recorded during the field surveys, dominate habitats includes managed pine plantation (both upland and wetland), forested wetlands, scrub-shrub wetlands, isolated forested wetlands, isolated scrub-shrub wetlands, intermittent streams and man-made ditches. The general location of each habitat is depicted on Figure 2, Appendix A. The following summary provides a brief description of each habitat. Photographs depicting typical conditions of each habitat are provided in Appendix C.

- Managed Pine Plantation Upland: The majority of the property consists of planted pine plantation that has been cut within the last year and replanted. Smaller areas of mature pines are located at the northern and southern portions of the study area. The recently clear cut areas contain only herbaceous and scattered shrub species mixed with the pine seedlings. Areas cut several years ago were sprayed with herbicide to kill remaining hardwoods (water oaks, live oaks) and replanted in pines. The shrub and herbaceous layer within these areas is much more dense than the recently cut areas.

Recently Clear Cut Areas

Overstory:	Understory:
Live oak (*Quercus grandiflora*) (few)	Slash pine seedlings (*Pinus elleottii*) Loblolly pine seedlings (*Pinus taeda*) Blackberry (*Rubus argutus*) Broomsedge (*Andropogon virginicus*)

Previously Clear Cut Areas

Overstory:	Understory:
N/A (sprayed)	Slash pine seedlings Loblolly pine seedlings Blackberry Broomsedge Saw palmetto (*Serenoa repens*) Bracken fern (*Pteridium aquilinum*) Yellow jessamine (*Gelsenium sempervirens*)

Mature Pine Plantation

Overstory:	Understory:
Slash pine Red maple (*Acer rubrum*) Sweetgum (*Liquidambar styraciflua*) Water oak (*Quercus nigra*)	Broomsedge Yellow jessamine Saw palmetto Bracken fern Wax myrtle (*Myrica cerifera*)

- Managed Pine Plantation Wetland: These areas are generally located in the southeastern portion of the property within the proposed rail spur and also along the upper fringe of portions of the forested wetland areas that are subject to more frequent hydrologic saturation and inundation.

Overstory:	Understory:	
Slash pine	Wax Myrtle	Sweetgum
Red Maple	Swamp Titi (*Cyrilla racemiflora*)	Water Oak
Sweetgum	Greenbrier (Smilax laurifolia)	Red Maple
Red bay (Persea borbonia)	Blackberry	Yellow jessamine
	Gaint Cane (*Arundinaria gigantean*)	Black-stem Chainfern (*Woodwardia virginica*)

- Forested Wetlands: Forested wetlands are dispersed across the study area. Those located immediately north of Tar City Road, south of Tar City Road, and at the southeastern study area limits drain into Black Creek. The majority of these wetlands have mature hardwood species in the center portions of the drain and a dense scrub-shrub layer of swamp titi along their perimeter, varying in width between twenty-five feet and fifty feet on average. Intermittent streams are present within the interior of several of these drainages. Species composition and distribution is as follows:

Overstory:	Understory:	
Water Oak	Wax Myrtle	Fetterbush (*Lyonia lucida*)
Red Maple	Swamp titi	Greenbrier
Red bay	Sphagnum moss (*Sphagnum spp.*)	Blackberry
Sweetgum	Poison Ivy (*Toxicodendron radicans*)	Netted chainfern (*Woodwardia areolata*)
Black Gum (*Nyssa biflora*)	Blackstem Chainfern	
Bald Cypress (*Taxodium distichum*)		

- Scrub-Shrub Wetlands: Hardwoods were harvested in some portions of the wetland areas on the study area, primarily along the perimeter of the forested wetland systems. These areas now have a dense understory. Species composition and distribution is as follows:

Overstory:	Understory:	
N/A	Wax Myrtle	Sweetgum
	Swamp titi	Red Maple
	Sphagnum moss	Sweet Bay
	Greenbrier	Slash Pine
	Blackberry	Blackstem Chainfern

- Isolated Forested Wetlands: The study area contains numerous isolated forested wetlands. These areas are depressional wetlands with mature overstory and varying degrees of shrub and herbaceous cover:

Overstory:	Understory:	
Water Oak	Wax Myrtle	Fetterbush
Red Maple	Swamp titi	Greenbrier
Red bay	Sphagnum moss	Blackberry
Sweetgum	Poison Ivy	Netted chainfern
Black Gum	Blackstem Chainfern	
Bald Cypress		

- Isolated Scrub-shrub Wetlands: The study area also contains numerous isolated scrub-shrub wetlands. These areas are depressional wetlands with shrub layers that are dominated by small pines:

Overstory:	Understory:
N/A	Slash pine
	Broomsedge
	Sphagnum moss
	Blackstem Chainfern

| Yellow jessamine

- Intermittent Streams: The project area contains numerous intermittent streams located in the central portions of the forested wetland systems. These streams average approximately three feet in width and twelve inches in depth. The streams lack vegetation and consist of sand and mud bed and banks of varying heights.

- Man-Made Ditches: Approximately 0.62 acre of man-made ditch is present within the property. This habitat is defined by bed and bank of the feature with little to no vegetation present. The ditches were presumably constructed for silvicultural purposes and extend through several of the historically isolated wetlands.

Soil types as mapped by the USDA Natural Resource Conservation Service, soil types found within the study area includes Albany, Lakeland, Leon, Olustee, Chipley, Stilson, Ellabelle, Mascotte, Angelina and Bibb, and Fuquay series. Soils are depicted on the attached NRCS soils survey (Figure 4). Characteristics and acreages of each soil type are described in Table 1.

Table 1. NRCS Soil Series Descriptions

Series Name	Acreage	Percent of Project Area	Label	Drainage Class	Landform	Down-slope shape	Parent Material	Slope (%)	Frequency of Flooding	Frequency of Ponding	Depth to Water Table (in)	Typical Profile
Albany	50	2.6	As	Somewhat poorly drained	Flats	Linear	Marine deposits	0-2	None	None	12-30	H1 - 0 to 48 inches: fine sand H2 - 48 to 56 inches: sandy loam H3 - 56 to 88 inches: sandy clay loam
Angelina and Bibb	156	8.2	AB	Poorly Drained	Flood Plains	Linear	Alluvium	0-2	Frequent	None	0-12	H1 - 0 to 12 inches: loam H2 - 12 to 60 inches: loam
Chipley	470.3	24.6	Cm	Moderately well drained	Flats	Linear	Marine deposits	0-5	None	None	24-36	H1 - 0 to 6 inches: fine sand H2 - 6 to 77 inches: fine sand
Ellabelle	192.6	10.1	El	Very poorly drained	Depressions, drainageways	Concave, Linear	Marine deposits	0-2	Frequent	None	0-6	H1 - 0 to 27 inches: loamy sand H2 - 27 to 64 inches: sandy clay loam H3 - 64 to 72 inches: sandy clay loam
Fuquay	2	0.1	Fs	Well drained	Interfluves	Convex	Marine deposits	0-5	None	None	48-72	H1 - 0 to 34 inches: loamy sand H2 - 34 to 45 inches: sandy clay loam H3 - 45 to 96 inches: sandy clay loam
Lakeland	750.2	39.3	Lp	Excessively drained	Rises	Linear	Marine Deposits	0-5	None	None	>80	H1 - 0 to 43 inches: sand H2 - 43 to 80 inches: sand
Leon	58.5	3.1	Lr	Poorly drained	Flats	Linear	Marine deposits	0-2	None	None	6-18	H1 - 0 to 3 inches: fine sand H2 - 3 to 15 inches: fine sand H3 - 15 to 30 inches: fine sand H4 - 30 to 80 inches: fine sand
Mascotte	5	0.3	Mn	Poorly drained	Flats	Linear	Marine Deposits	0-2	None	None	6-18	H1 - 0 to 3 inches: sand H2 - 3 to 16 inches: sand H3 - 16 to 28 inches: sand H4 - 28 to 34 inches: sand H5 - 34 to 60 inches: sandy clay loam H6 - 60 to 80 inches: sand
Olustee	185	9.7	Ol	Somewhat poorly drained	Flats	Linear	Marine deposits	0-2	None	None	18-30	H1 - 0 to 7 inches: fine sand H2 - 7 to 15 inches: sand H3 - 15 to 38 inches: sand H4 - 38 to 80 inches: sandy clay loam
Stilson	37	1.9	Se	Moderately well drained	Rises	Linear	Marine deposits	0-2	None	None	30-36	H1 - 0 to 24 inches: loamy sand H2 - 24 to 43 inches: sandy clay loam H3 - 43 to 72 inches: sandy clay loam
Water	1.5	0.1	W									

RLC

As noted above, the topography within the site ranges from elevation 20 within the preservation area along Black Creek to almost 90 feet within the development area near Interstate 16. Lidar elevation data is depicted on Figure 5, Appendix A.

5.0 PROPOSED PROJECT & DEVELOPMENT PLAN:

The proposed facility and site plan have been developed to include various components required to support and sustain the overall plant operation. The site will be accessed from Highway 280 through the western portion of the property. This access corridor has been designed to accommodate both employee and truck traffic. Approximately 180 acres located between Highway 280 and manufacturing plant site will encompass the commercial component of the project. This area will be comprised of corporate offices, a visitor's center, a customer experience center, a training center, etc. Immediately south of Interstate 16, west of the commercial component and within approximately 1,100 acres, the manufacturing component will be constructed. A wide variety of operations will occur within this portion of the project site. The manufacturing elements will generally include the press building, fabrication building, paint building, product completion building and special products building. The distribution elements will include the train yard, truck yard, and completed product yard. The employee services component will include a cafeteria, medical center, employee parking, training center, and the central office. The storage component will include the central storage building and liquid storage building. The quality facilities will include a product testing area, testing station and other miscellaneous buildings required for quality assurance support. The final components generally include waste facilities, security facilities such as the guard house and fire house, the utility facilities including gas, electric and water, and supplier facilities.

As depicted in the attached permit drawings, this proposed site plan requires 125.13 acres of jurisdictional wetland impact, 17.56 acres of non-jurisdictional wetland impact and 2,631 linear feet of stream impact. Exhibits depicting the proposed development plan and associated jurisdictional area impacts are provided in Appendix D.

6.0 ALTERNATIVES ANALYSIS:

As part of the overall project, the applicant completed a thorough alternatives analysis. A review of the 404(b)(1) guidelines indicates that "(a) Except as provided under section 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." The guidelines define practicable alternatives as "(q) The term *practicable* means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes."

The guidelines outline further consideration of practicable alternatives: "(1) For the purpose of this requirement, practicable alternatives include, but are not limited to: (i) Activities which do not involve a discharge of dredged or fill material into the waters of the United States or ocean waters; (ii) Discharges of dredged or fill material at other locations in waters of the United States or ocean waters; (2) An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. If it is otherwise a practicable alternative, an area not presently owned by the applicant which could reasonably be obtained, utilized, expanded, or managed in order to fulfill the basic purpose of the proposed activity may be considered."

Considering the guidelines above, the applicant evaluated a No Action Alternative, nine alternative sites including the applicants preferred site, and four on-site configurations including the applicants preferred on-site configuration. As noted above, the permit drawings depicting the proposed site plan are provided in Appendix D. Mapping information for off-site alternatives is provided in Appendix E and on-site configuration alternatives are provided in Appendix F. As part of this alternative evaluation, the following "Practicability/ Reasonability Screening Selection Criteria" were applied to each alternative to confirm whether or not the particular alternative and/or on-site configuration was practicable.

Practicability/ Reasonability Screening Selection Criteria:

- Capable of being done considering cost (Is the cost reasonable considering scope and type of project considering total cost, funding source, profit margin, etc.)
- Capable of being done considering logistics (Must consider existing infrastructure, traffic patterns, topography.)
- Property can be reasonably obtained (Must consider availability, ability to condemn, liens, etc.)
- Property can be reasonably expanded (Must consider ability to acquire adjacent lands for expansion)
- Property can be reasonably managed (Must consider restrictions on management of the site)
- Meets basic project purpose
- Meets overall project purpose

The following provides a summary of the alternative analysis and a description of each alternative evaluated as part of this permit application package.

6.1 No Action Alternative:
Obviously with every project, a "no action" alternative must be considered and complete avoidance of wetlands was the first alternative considered for this project. Due to the location of wetlands and the size of the facility (development area near 2,000 acres with a 1,100 acre footprint for the manufacturing plant alone), it was quickly determined that complete avoidance of wetland impacts was not feasible. Unlike many development activities (i.e. residential, recreational, or light commercial) little flexibility in plant design is afforded. The overall productivity of large manufacturing plants are tied directly to facility layout and design. Everything from general logistics, traffic management, building size, and safety, to how far an employee must travel for a break or to exit the plant must be evaluated and considered in the site design. For these reasons, major modifications to the manufacturing facility footprint are not feasible. The presence of wetlands and/or streams is not unique to the project site and impacts to these resources would be required regardless of site location. Because the "no-action" alternative and complete avoidance of impacts prohibits construction of a mega manufacturing facility, this alternative was determined to be unreasonable and not practicable.

6.2 Off-Site Alternatives: In addition to the seven general Practicability/ Reasonability Screening Selection Criteria evaluated, specific criteria including geographic location, size, zoning, utilities, access, and availability were considered. The following provides a brief summary of each criterion.

- Geographic Location. As with all manufacturing facilities, this project will require import and export of product, supplies, parts, etc. Thus, the primary location consideration for the project was proximity to the Port of Savannah and logistic requirements for the project restricted the geographic location to a maximum of 50 miles from the Port.

- Size. Due to the size of the mega-site manufacturing facility, the minimum tract size needed to support the proposed project was approximately 2,000 acres of contiguous land.

- Zoning. Land use restrictions associated with current zoning are a major consideration in all industrial projects. Truck traffic, equipment operation, adjoining land use, buffers, etc. make the location of the project and the current zoning a critical component. For this site screening criterion, tracts that are currently zoned for the intended use or that could be reasonably re-zoned to accommodate the proposed project were considered.

- Utilities. With any development project, utility services or access to utility services (water, sewer, electrical, gas, phone, cable, etc.) are required. For this reason, location of existing utilities and cost associated with servicing the project site if those utilities were not already available was a consideration in the site screening criteria.

- Access. Access to a manufacturing facility of this size requires continual operation of large trucks and trailers. For this project, three access criteria were established. First, the site must provide suitable access to a major interstate. Suitable access to a major interstate would be defined as direct access to the site from a paved road suitable to support heavy truck traffic (semi-trailer truck) associated with the proposed manufacturing facility. Second, the site must be located adjacent to or within two miles of an Interstate interchange. For this project, alternative sites

were limited to major interchanges along Interstate 95 or Interstate 16. Lastly, rail must be present within the site, adjacent to the site or could be reasonably extended to the site.

- Availability. Sites listed for sale and known to be available for purchase were considered as part of the alternatives analysis. In addition, the number of parcels required to create a 2,000 acre development area was a consideration (acquiring one or two parcels is far more likely than assembling 70 parcels to create the same size development area).

6.2.1 Applicant's Preferred Site: The applicant's preferred alternative totals 2304.10 acres generally located adjacent to and east of Highway 280 and adjacent to and south of Interstate 16 within Bryan County, Georgia (32.164165°, -81.450411°). The following provides a summary of each criterion reviewed for the applicants preferred site:

- This alternative is capable of being done when considering cost and logistics, the property can be reasonably obtained, expanded and managed, and the project site meets the basic and overall project purpose.
- The site is located approximately 20 miles from the Port of Savannah and falls within the 50 mile geographic location.
- The site totals 2304.10 acres which meets the minimum size criteria for the project.
- The site contains interstate frontage/visibility which is not a primary consideration but is preferred.
- The site is not currently zoned for manufacturing but can be rezoned.
- The site is located immediately south of the existing Pembroke/Bryan County Industrial Park and required utilities can be easily extended under Interstate 16 to service the proposed project.
- Suitable access to Interstate 16 is currently afforded. In addition, an existing railroad line is located immediately adjacent to and east of the site and can be easily extended into the property to provide the needed rail service.
- The project site consists of three parcels and these parcels can be purchased to satisfy the project needs.

In summary, the applicants preferred site meets all the site screening criteria and is therefore a practicable alternative.

6.2.2 Off-Site Alternative 1: This tract is known as the Chatham County Economic Development Site. The site is located in the northeast quadrant of Interstate 16 and Interstate 95 near Savannah within Chatham County, Georgia. The following provides a summary of each criterion reviewed for this off-site alternative:

- This alternative is capable of being done when considering cost and logistics, the property can be reasonably obtained, expanded and managed, and the project site meets the basic and overall project purpose.
- The site is located approximately 5 miles from the Port of Savannah and falls within the 50 mile geographic location.
- The site, with acquisition of additional parcels would meet the minimum size criteria for the project.
- The site contains interstate frontage/visibility which is not a primary consideration but is preferred.
- The majority of the tract is currently zoned for industrial/manufacturing use and the additional parcels that would require acquisition could likely be rezoned.
- This site has been developed as a regional mega-site and currently contains all utilities required to service the proposed project.
- Suitable access to Interstate 16 is currently afforded via Dean Forest Road. In addition, an existing railroad line is located immediately adjacent to the site and a rail spur has already been extended into the tract.
- This alternative would require the purchase of an additional +/- 33 parcels. However, it is assumed that the additional parcels (considering overall project cost) could be purchased to create the area/acreage required to facilitate the proposed project.

In summary, Off-Site Alternative 1 meets all the site screening criteria and is therefore a practicable alternative.

6.2.3 Off-Site Alternative 2: This tract totals 4,055 acres and is located west of Interstate 95, southeast of Highway 17 and south of Highway 84 within Liberty County, Georgia. The following provides a summary of each criterion reviewed for this off-site alternative:

- This alternative is capable of being done when considering cost and logistics, the property can be reasonably obtained, expanded and managed, and the project site meets the basic and overall project purpose.
- The site is located approximately 35 miles from the Port of Savannah and falls within the 50 mile geographic location.
- The site totals 4,055 acres which meets the minimum size criteria for the project.
- The site does not contain interstate frontage/visibility which is not a primary consideration but is preferred.
- The majority of the tract is currently zoned for industrial/manufacturing use and the additional parcels that would require acquisition could likely be rezoned
- This site has been developed as a regional mega-site and currently contains all utilities required to service the proposed project.
- Suitable access to Interstate 95 is currently afforded via Highway 84 and construction of a new interchange is not required. In addition, an existing railroad line extends through the property.
- This alternative would require the purchase of an additional +/- 5 parcels. However, it is assumed that the additional parcels (considering overall project cost) could be purchased to create the area/acreage required to facilitate the proposed project.

In summary, Off-Site Alternative 2 meets all the site screening criteria and is therefore a practicable alternative.

6.2.4 Off-Site Alternative 3: This tract totals 2,603 acres and is located east of Hodgeville Road, south of Blandford Road and west of Highway 21 near Rincon, Effingham County, Georgia. The following provides a summary of each criterion reviewed for this off-site alternative:

- This alternative is capable of being done when considering cost and the property can be reasonably obtained, expanded and managed. However, this property does not meet the basic and overall project purpose when considering access and logistics.
- The site is located approximately 15 miles from the Port of Savannah and falls within the 50 mile geographic location.
- The site totals 2,603 acres which meets the minimum size criteria for the project.
- The site does not contain interstate frontage/visibility which is not a primary consideration but is preferred.
- The tract is currently zoned for industrial use and no rezoning is required.
- This site is located within 3 miles of Rincon and existing utilities which could reasonably be extended to the site to service the proposed project.
- Rail is located immediately adjacent to and east of the site and could be easily extended into the tract. However, the site does not contain suitable access to a major interstate and/or interchange. Hodgeville Road to the west and Blandford Road to the east are both rural two lane roads. Miles of major roadway improvements would be required to manage semi-trailer truck traffic servicing the manufacturing facility. In addition, the only reasonable access point to Highway 21 is located east of the project site and within the primary retail commercial area of Rincon. This site access point cannot accommodate the increase in truck traffic associated with the proposed manufacturing facility.
- The project site could be purchased and would not require acquisition of additional parcels.

Off-Site Alternative 3 satisfies many of the site selection criteria. However, accessibility to a major interstate as well as traffic management/public safety issues associated with site access prohibits use of this site. Thus, Off-Site Alternative 3 was not a reasonable or practicable alternative.

6.2.5 Off Site Alternative 4: This tract totals 3,588 acres located approximately 1 mile north of Interstate 16 and adjacent to and west of Arcola Road within Bulloch County, Georgia. The following provides a summary of each criterion reviewed for this off-site alternative:

- This alternative is capable of being done when considering cost and logistics, the property can be reasonably obtained, expanded and managed, and the project site meets the basic and overall project purpose.
- The site is located approximately 32 miles from the Port of Savannah and falls within the 50 mile geographic location.
- The site totals 3,588 acres which meets the minimum size criteria for the project.
- The site does not contain interstate frontage/visibility which is not a primary consideration but is preferred.
- This property is not currently zoned for the intended use but it is likely that the property could be rezoned.
- Utilities necessary to support the proposed project are not present at or within the site. However, extension of required utilities would be both physically and economically feasible.
- Access to Interstate 16/existing interchange is available via Arcola Road. While improvements to approximately 2 miles of road would be required, these improvements would be economically feasible.
- The project site could be purchased and would not require acquisition of additional parcels.

In summary, Off-Site Alternative 4 meets all the site screening criteria and is therefore a practicable alternative.

6.2.6 Off Site Alternative 5: This tract totals approximately 3,200 acres located adjacent to and west of Highway 67, approximately 4 miles south of the Highway 67/Interstate 16 Interchange in Bulloch County, Georgia. The following provides a summary of each criterion reviewed for this off-site alternative:

- This alternative is capable of being done when considering cost and logistics, the property can be reasonably obtained, expanded and managed, and the project site meets the basic and overall project purpose.
- The site is located approximately 40 miles from the Port of Savannah and falls within the 50 mile geographic location.
- The site totals 3,200 acres which meets the minimum size criteria for the project.
- The site does not contain interstate frontage/visibility which is not a primary consideration but is preferred.
- This property is not currently zoned for the intended use but it is likely that the property could be rezoned
- Utilities necessary to support the proposed project are not present at or within the site. However, extension of required utilities would be both physically and economically feasible.
- Access to Interstate 16/existing interchange is available via Highway 67. While improvements to approximately 4 miles of road would be required, these improvements would be economically feasible.
- The project site could be purchased and would not require acquisition of additional parcels.

In summary, Off-Site Alternative 5 meets all the site screening criteria and is therefore a practicable alternative.

6.2.7 Off Site Alternative 6: This tract totals 6,450 acres generally located east of Highway 17, south of Harris Neck Road and northeast of Minton Road in McIntosh County, Georgia. The following provides a summary of each criterion reviewed for this off-site alternative:

- This alternative is capable of being done when considering cost and the property can be reasonably obtained, expanded and managed. However, this property does not meet the basic and overall project purpose when considering access, logistics, and utilities.
- The site is located approximately 39 miles from the Port of Savannah and falls within the 50 mile geographic location.
- The site totals 6,450 acres and while the entire tract would not be purchased, the minimum size requirement for the project and acquisition of 2,000 acres could be achieved.
- The site does not contain interstate frontage/visibility which is not a primary consideration but is preferred.
- This property is not currently zoned for the intended use but it is likely that the property could be rezoned.
- Due to the rural location of the project, major utility infrastructure improvements including water, sewer, electrical, etc. would be required. For this site, wells would need to be installed, a wastewater treatment facility would need to be constructed, and power, gas and data/telecom would need to be extended to the site. In addition, commitments from a municipality for future operation and maintenance of the infrastructure would be required. Practically and economically, these requirements could not be met for this site at this time.
- Access to Interstate 95 and an existing interchange is available via Harris Neck Road. While improvements to approximately 2 miles of road would be required, these improvements would be economically feasible. However, rail is not available at the site and is not available in McIntosh County. McIntosh County is one of the few counties in Georgia that no longer has an active railroad. The most recent active rail line was the Seaboard Coast Line Railroad which ran north to south along the western part of the county. However, the last active tract was removed by CSX in the late 1980s, leaving McIntosh County without any railroad track. Extension of an active line to the site for required rail access would be cost prohibitive.
- The project site could be purchased and would not require acquisition of additional parcels.

While Off-Site Alternative 6 meets many of the site selection criteria, lack of suitable utility services and absence of rail prohibits the use of this site. Thus, this alternative was not reasonable or practicable.

6.2.8 Off Site Alternative 7: This tract totals 3,175 acres located north of Interstate 16 and east of GA Highway 199 in East Dublin, Laurens County, Georgia. The following provides a summary of each criterion for the applicants preferred site:

- This alternative is capable of being done when considering cost and the property can be reasonably obtained, expanded, and managed. However, this property does not meet the basic and overall project purpose when considering geographic location.
- The site is located over 100 miles from the Port of Savannah and falls far outside the 50 mile geographic location requirement.
- The site totals 3,175 acres which meets the minimum size criteria for the project.
- The site contains interstate frontage/visibility which is not a primary consideration but is preferred.
- This property is not currently zoned for the intended use but it is likely that the property could be rezoned
- Utilities necessary to support the proposed project are not present at or within the site. However, the extension of required utilities from the nearby City of Dublin would be both physically and economically feasible.
- Access to Interstate 16/existing interchange is available via Old River Road. Since the site is located immediately adjacent to the interchange, only a minimal amount of improvements would be required and these improvements would be economically feasible.
- The project site could be purchased and would not require acquisition of additional parcels.

While Off-Site Alternative 7 meets the majority of the criteria, the site is not within 50 miles of a major port and does not meet the geographic location requirement. Thus, this alternative is not practicable.

5.2.9 Off Site Alternative 8: This tract totals approximately 887 acres located north of Glynn Street and south of Highway 212 within Baldwin County, Georgia. The following provides a summary of each criterion for the applicants preferred site:

- This alternative is capable of being done when considering cost and the property can be reasonably obtained, expanded and managed. However, this property does not meet the basic and overall project purpose when considering geographic location, size and major interstate access.
- The site is located over 160 miles from the Port of Savannah and falls far outside the 50 mile geographic location requirement.
- The site consists of the Milledgeville Baldwin County Development Authority Tract totaling approximately 887 acres and does not meet the minimal size criteria for the project.
- The site does not contain interstate frontage/visibility which is not a primary consideration but is preferred.
- This property is currently zoned for the intended use.
- Utilities necessary to support the proposed project are located at the site.
- This site does not meet the requirement for major Interstate access as the closest interstate (I16/I75) is over 29 miles from the site.
- The project site could be purchased and would not require acquisition of additional parcels.

Because Off-Site Alternative 8 does not meet the size criteria, does not contain suitable access to a major interstate, and because the site does not meet the geographic location requirements, this alternative is not practicable.

6.3 On-Site Configurations: In addition to considering off-site alternatives, the applicant considered on-site alternatives. The description of various components required to support and sustain the overall plant operation provided in Section 5.0 above are applicable to all on-site configurations. Since each of these components must exist for the facility to operate, omitting the paint building or the fabrication building (as an example) to reduce the overall facility footprint is not feasible. However, the applicant was able to complete a detailed review of the proposed site plan and shift, redesign, and/or downsize certain features of the facility. Specifically, four on-site configurations were drafted and studied in an effort to avoid or minimize impacts to wetlands and waters identified within the property. The following provides a summary of each alternative considered during the design review process.

6.3.1 On-Site Configuration 1 (Applicant's Preferred): The applicant's preferred alternative includes a commercial component footprint totaling approximately 180 acres and a manufacturing component footprint totaling 1,100 acres. This plan includes vehicle access from Highway 280 west of the site and rail access from an existing rail line located on the southeastern boundary of the site. The facility is generally oriented with buildings on the north and south and product handling (i.e. rail yard, truck yard, completed product yard, etc.) within the center of the tract. Because On-Site Configuration 1 contains all the required components of the project, this alternative met the site screening criteria and is therefore a practicable alternative.

6.3.2 On-Site Configuration 2: This alternative includes a commercial component footprint totaling approximately 180 acres and a manufacturing component footprint totaling 1,100 acres. This plan includes vehicle access from Highway 280 west of the site and rail access from an existing rail line located on the southeastern boundary of the site. The facility is generally oriented with buildings on the west and south and product handling (i.e. rail yard, truck yard, completed product yard, etc.) extending from near Interstate 16 south through the site. Because On-Site Configuration 2 contains all the required components of the project, this alternative met the site screening criteria and is therefore a practicable alternative.

6.3.3 Onsite Configuration 3: This alternative includes a commercial component footprint totaling approximately 180 acres and a manufacturing component footprint totaling 1,300 acres. With an additional

200 acres available for facility development, this alternative would be preferred if jurisdictional area impacts were not a consideration. This plan includes vehicle access from Highway 280 west of the site and rail access from an existing rail line located on the southeastern boundary of the site. The facility is generally oriented with buildings on the west and south and product handling (i.e. rail yard, truck yard, completed product yard, etc.) extending from near Interstate 16 south through the site. Because On-Site Configuration 3 contains all the required components of the project, this alternative met the site screening criteria and is therefore a practicable alternative.

6.3.4 Onsite Configuration 4: On-site Configuration 4 was the original design proposed for the project. This plan includes a commercial component footprint totaling approximately 180 acres and a manufacturing component footprint totaling 1,300 acres. This plan incorporates a larger manufacturing component footprint when compared to On-Site Configuration 1 and On-Site Configuration 2 and maximizes use of the property. This plan includes vehicle access from Highway 280 west of the site and rail access from an existing rail line located on the southeastern boundary of the site. The facility is generally oriented with buildings on the north and south and product handling (i.e. rail yard, truck yard, completed product yard, etc.) within the center of the tract. Because On-Site Configuration 1 contains all the required components of the project, this alternative met the site screening criteria and is therefore a practicable alternative.

6.4 Alternatives Not Practicable or Reasonable: Following review of both off site alternatives and onsite configurations, the applicant completed a comparison of alternatives to practicability and reasonability screening criteria. Table 2 below summarizes a comparison of each alternative discussed above to the screening criteria for practicability and reasonableness.

Table 2. Summary Table for Practicability and Reasonableness Screening Selection Criteria

Practicability/ Reasonability Screening Selection Criteria	Applicant's Preferred	Alt 1	Alt2	Alt 3	Alt 4	Alt 5	Alt6	Alt 7	Alt 8	On-Site Configuration Alt 1 (Applicant's Preferred)	On-Site Configuration Alt 2	On-Site Configuration Alt 3	On-Site Configuration Alt 4	No Action
Capable of being done considering cost	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Capable of being done considering logistics	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No
Property can be reasonably obtained	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Property can be reasonably expanded	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Property can be reasonably managed	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Meets basic project purpose	Yes	Yes	Yes	No	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	No
Meets overall project purpose	Yes	Yes	Yes	No	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	No
Practicable Site (Y or N)	Yes	Yes	Yes	No	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	No

RLC

6.5 Review of Practicable Alternatives: Following a determination of practicable alternatives using the "Practicability/Reasonability Screening Selection Criteria", the applicant completed an analysis of practicable alternatives to identify the least environmentally damaging practicable alternative pursuant to 40 CFR 230.7(b)(1). The purpose of the below analysis is to ensure that "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem". The applicant evaluated potential environmental impacts that would result from construction of the proposed facility. This evaluation was completed by considering environmental factors which could impact development of the site. The environmental factors included:

Environmental Factors:

- Stream Impacts (quantitative). The estimated linear footage of potential stream impact was evaluated for each practicable alternative.

- Stream Impacts (qualitative). The functional value of potential stream impact areas were evaluated for each practicable alternative. A low, medium, or high value was assigned based on current structure and hydrologic conditions. Examples of high value would be stable geomorphology and diverse biological community. Examples of low value would be evidence of full impairment such as extensive culverting, piping, or impoundment within the stream.

- Wetland Impacts (quantitative). The estimated acreage of potential wetland impact was evaluated for each practicable alternative.

- Wetland Function (qualitative). The functional value of potential wetland impact areas were evaluated for each practicable alternative. A low, medium, or high value was assigned based on current vegetative structure and hydrologic conditions. Examples of high value would be mature canopy, no evidence of ditching, rare habitats, etc. Examples of low value would be evidence of habitat manipulation through ditching, clear cutting, diking, fragmentation, etc.

- Impacts to Other Waters (quantitative). The acreage of open water impact for each site was considered during review of each practicable alternative.

- Other Waters Functions (qualitative). The functional value of any open water impact areas were evaluated for each practicable alternative. A low, medium, or high value was assigned based on habitat type and condition. Examples of high value would be lakes, impoundments, and/or features occurring naturally. Examples of low value would be man-made features which have not naturalized and provide little to no biological support (i.e. borrow pit).

- Federally Listed Threatened or Endangered Species. A preliminary assessment of each practicable alternative was conducted to determine the potential occurrence of animal and plants species (or their preferred habitats) currently listed as threatened or endangered by state and federal regulations [Federal Endangered Species Act of 1973 (16 USC 1531-1543)]. The U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System (IPaC) database at http://ecos.fws.gov/ipac/ database was reviewed to determine plant and animal species as endangered or threatened for each alternative.

- Cultural Resources. A preliminary assessment of cultural resources was conducted for each site by reviewing available State Historic Preservation Office information at http://www.nr.nps.gov/. Potential impacts to sites listed or eligible for listing on the National Register of Historic Places was noted for each alternative.

- Stream Buffer Impact. The estimated linear footage of potential stream buffer impact was evaluated for each practicable alternative.

- Flood Plain Impacts: The estimated acreage of flood plain impact was evaluated for each practicable alternative.

Considering the assessment criteria above, the applicant evaluated nine alternatives include five alternative sites (including the applicants preferred site) and four alternative on-site configurations (including the applicants preferred on-site configuration). The following provides a summary of each practicable alternative and associated environmental impacts.

6.5.1 Proposed Action or Applicant's Preferred Alternative/On-site Configuration: As discussed above, this proposal includes construction of the facility adjacent to Highway 280 and Interstate 16. The site design includes approximately 180 acres of commercial area footprint and 1,100 acres of manufacturing area footprint. As depicted on the plan, this design shifts the manufacturing facility to the western boundary and substantially reduces jurisdictional area impacts to the large wetland system on the eastern portion of the property. Additional reduction in overall impacts were achieved by downsizing building footprints, proposing vertical design rather than horizontal design on some buildings, reducing and relocating parking areas, reducing the distance between buildings and redesigning the distribution yard. Considering the site plan, a summary of environmental impacts is provided below.

- Stream Impacts (quantitative). The proposed project will require 2,631 linear feet of stream impact.

- Stream Impacts (qualitative). As noted above, the project site has been managed for intensive timber production for many years. While evidence of historic impacts within these tributaries was observed (historic rutting, installation of road crossings, and channelization) these tributaries remain functional with a relatively intact buffer and canopy. Thus a medium to high qualitative value was assigned.

- Wetland Impacts (quantitative). 125.13 acres of jurisdictional wetland impact and 17.56 acres of non-jurisdictional wetland impact would be required for the preferred alternative site and on-site configuration.

- Wetland Function (qualitative). Field review of existing site conditions documented that the historic limits of the wetlands have been impacted by past land management practices including installation of roads, installation of drainage ditches, and timber harvesting. The vast majority of wetland area proposed for impact has been timbered within the past 30 years and portions have been timbered as recent as one year ago. The functional value of the wetland areas proposed for impact was assigned a medium value. It should be noted that Black Creek and adjacent wetlands remain intact with a relatively mature overstory with a high function and value. For this reason, the project area developed for the manufacturing facility was designed specifically to avoid these areas.

- Impacts to Other Waters (quantitative). This alternative requires impacts 0.62 acres of man-made ditch.

- Other Waters Functions (qualitative). The functions and values of the ditches are low.

- Federally Listed Threatened or Endangered Species. An intensive threatened and endangered species survey has been completed within the project site. A completed copy of the report of findings is attached to this permit application package and no impacts to federally listed threatened or endangered species are anticipated (Appendix G).

- Cultural Resources. Brockington & Associates has completed a field survey for cultural resources and archeology and a draft report is currently being prepared for submittal to and review by the USACE and GADNR-HPD. Upon completion, a copy will be provided to the USACE for agency review (Appendix H).

- Stream Buffer Impact. The proposed project will require impacts to state waters and stream buffers. A stream buffer variance will be obtained from the GADNR-EPD prior to initiation of buffer impacts.

- Floodplain Impacts: Approximately 25 acres flood plain impacts will be required for construction of the access roads, commercial component and manufacturing facility and the rail access will require an estimated 28 acres of floodplain impact.

6.5.2 Off-Site Alternative Site 1: This alternative totals 1,594 acres and is known as the Chatham County Economic Development Site. The site is located in the northeast quadrant of Interstate 16 and Interstate 95 near Savannah. Through several permit actions from 2002 to 2014, the USACE issued 404 Permit authorizing impacts to jurisdictional waters necessary for development of this mega industrial site. Due to the size of the proposed manufacturing facility, acquisition of an additional +/- 33 parcels and additional wetland impact would be required to create suitable contiguous development area for the proposed project. The following provides a further review of this alternative.

- Stream Impacts (quantitative). No stream impacts are associated with this alternative.
- Stream Impacts (qualitative). No stream impacts are associated with this alternative.
- Wetland Impacts (quantitative). Previously authorized wetland impacts for this site total 185.54 acres. In addition to the previously authorized impacts to an estimated 229 acres of additional wetland impact (including impacts to preserved wetlands associated with the USACE permit action) would be required to facilitate development of the proposed project. In total, this project would require an estimated 414 acres of wetland impact.
- Wetland Function (qualitative). Because the preserved wetlands are protected with a restrictive covenant and consist of both mature forested wetland habitat and restored wetland associated with the previous permit action compensatory mitigation plan, these areas would have the highest level of functional value. The other non-preserved jurisdictional wetland consists of mature forested hardwood wetland with a relatively high function and value.
- Impacts to Other Waters (quantitative). Previously authorized impacts to other waters included approximately 36 acres of open water pond. Additional impacts associated with this project would include an estimated 1.9 acres of stormwater canal impact, approximately 4.3 acres of the Savannah-Ogeechee Canal (S&O) impact,and approximately 4.6 acres of additional pond impact. Total other waters impact for this project would be 46.8 acres.
- Other Waters Functions (qualitative). The other waters within the site have been created through historical mining of sand and borrow material. Because these waters are man-made borrow pits, the value of these other waters would be low. In addition, both the S&O Canal and the stormwater canal within the property provide minimal open water functions and would therefore be assigned a relatively low value.
- Federally Listed Threatened or Endangered Species. Based on location of the tract and current site conditions, neither listed species nor habitat typically associated with these species are present within Off-Site Alternative Site 1. Thus, no adverse impacts to federally listed threatened and endangered species would be expected.
- Cultural Resources. A cultural resource survey was completed for the project site and would be required for the additional parcels. At a minimum, significant impacts to the S&O Canal, a documented historic site, would be required.
- Stream Buffer Impact. No stream buffer impacts are associated with this alternative.
- Floodplain Impacts: This alternative would require an estimated 682 acres of floodplain impacts (including both permitted and proposed) to facilitate development of the proposed mega industrial site.

6.5.3 Off-Site Alternative 2: This tract consists of approximately 4,055 acres and is located west of Interstate 95, southeast of Highway 17 and south of Highway 84 within Liberty County, Georgia. Based on review of available information the tract consists of forested upland, forested wetland, and tidal wetland/waters. The tract has been historically managed for timber production. The following provides a further review of this alternative.

- Stream Impacts (quantitative). The project area contains several tidal tributaries. The project would require an estimated 2,858 linear feet of tidal tributary impact.

- Stream Impacts (qualitative). Because these tributaries are tidal, a high functional value would be assigned.

- Wetland Impacts (quantitative). This alternative would require an estimated 295 acres of wetland impact including 19 acres of tidal saltwater wetland, 34 acres of tidal brackish/freshwater wetland and 242 acres of non-tidal freshwater wetland.

- Wetland Function (qualitative). The functional value of the tidal wetland areas would be high while historic land management practices and silvicultural activities would result in a medium functional value score for the non-tidal wetlands.

- Impacts to Other Waters (quantitative). Several small borrow pits totaling an estimated 3 acres would be impacted by the proposed project.

- Other Waters Functions (qualitative). Other waters present within the Off-Site Alternative Site 2 are man-made open water ponds/former borrow pits whose functions are low.

- Federally Listed Threatened or Endangered Species. Based on location of the tract and current site conditions, neither listed species nor habitat typically associated with these species are present within this alternative site. Therefore, no adverse impacts to federally listed threatened and endangered species would be expected.

- Cultural Resources. Cultural resources survey information is not available for the site, the landscape position and present of historic roadways through the tract would suggest impacts to cultural and/or archeological sites are a likely possibility.

- Stream Buffer Impact. Since the project would require impacts to a tidal tributary, stream buffer impacts would be associated with this alternative.

- Floodplain Impacts: This alternative would require an estimated 351 acres of floodplain impacts to facilitate development of the proposed mega industrial site.

6.5.4 Off-Site Alternative 4: This tract totals 3,588 acres located approximately 1 mile north of Interstate 16 and adjacent to and west of Arcola Road within Bulloch County, Georgia. Based on review of available information, the tract consists of intensively managed timberland. Within the past 4 years, the timber within majority of the property has harvested with portions of the wetland areas remaining intact. The following provides a further review of this alternative.

- Stream Impacts (quantitative). No stream impacts are associated with this alternative.
- Stream Impacts (qualitative). No stream impacts are associated with this alternative.

- Wetland Impacts (quantitative). Based on available photography, Lidar, NWI etc., this alternative would require an estimated 195 acres of wetland impact.

- Wetland Function (qualitative). Due to the timber management/silvicultural activities associated with this site, it is assumed that ditching, rutting, bedding, etc. has occurred within the wetlands. For these areas and as with the other sites, a medium functional value would be assigned. However, this alternative would also require wetland impacts adjacent to both Upper and Lower Black Creek. In addition, this alternative is located adjacent to and immediately upstream of Black Creek Mitigation Bank. Because the on-site tributaries and adjacent wetlands remain intact with a relatively mature overstory and because the adjoining property consists of restored, enhanced and preserved wetlands associated with a mitigation bank, the function and value of these areas would be relatively high.

- Impacts to Other Waters (quantitative). Based on review of aerial photography, ditches appear to be present within the project, however, the acreage is not known

- Other Waters Functions (qualitative). Because other waters would likely consist of man-made ditches, the functional value of these areas would be low.

- Federally Listed Threatened or Endangered Species. Based on location of the tract and current site conditions, neither listed species nor habitat typically associated with these species are present within this alternative site. Therefore, no adverse impacts to federally listed threatened and endangered species would be expected.

- Cultural Resources. Cultural resources survey information is not available for the site, the landscape position of the project area immediately adjacent to Black Creek through the tract would suggest impacts to cultural and/or archeological sites is a likely possibility.

- Stream Buffer Impact. No stream buffer impacts would be required for this alternative.

- Floodplain Impacts: This alternative would require an estimated 34 acres of floodplain impacts to facilitate development of the proposed mega industrial site.

6.5.5 Off-Site Alternative 5: This tract totals approximately 3,200 acres located adjacent to and west of Highway 67 approximately 4 miles south of the Highway 67/Interstate 16 Interchange in Bulloch County, Georgia. Like Alternative 4, this tract has been intensively managed for timber production and has been clear-cut within the past 2 years. The following provides a further review of this alternative.

- Stream Impacts (quantitative). No stream impacts are associated with this alternative.
- Stream Impacts (qualitative). No stream impacts are associated with this alternative.

- Wetland Impacts (quantitative). Based on available photography, Lidar, NWI etc., this alternative would require an estimated 420 acres of wetland impact.

- Wetland Function (qualitative). Due to the timber management/silvicultural activities associated with this site, it is assumed that ditching, rutting, bedding, etc. has occurred within the wetlands. For these areas and as with the other sites, a medium functional value would be assigned.

- Impacts to Other Waters (quantitative). Based on review of aerial photography, ditches appear to be present within the project area; however, the acreage is not known

- Other Waters Functions (qualitative). Because other waters would likely consist of man-made ditches, the functional value of these areas would be low.

- Federally Listed Threatened or Endangered Species. Based on location of the tract and current site conditions, neither listed species nor habitat typically associated with these species are present within this alternative site. Therefore, no adverse impacts to federally listed threatened and endangered species would be expected.

- Cultural Resources. Cultural resources survey information is not available for the site but due to the size of the tract, impacts to cultural and/or archeological sites would be possible.

- Stream Buffer Impact. It is likely that the silvicultural ditches would be considered state waters and would require a buffer variance prior to initiation of impacts.

Floodplain Impacts: This alternative would require an estimated 583 acres of floodplain impacts to

facilitate development of the proposed mega industrial site.

6.5.6 On-Site Configuration 2: This proposal includes construction of the facility adjacent to Highway 280 and Interstate 16. Like On-Site Configuration 1, this design includes approximately 180 acres of commercial area footprint and 1,100 acres of manufacturing area footprint. The layout for this alternative centers the manufacturing within the tract and avoids approximately 1.25 acres of wetland impact, 1,868 linear feet of stream impact, and 0.18 acre of ditch impact on the western portion of the property. However, this shift results in 36.31 acres additional impacts to the larger wetland area on the eastern boundary. Like On-Site Configuration 1, this configuration consists of a smaller manufacturing footprint by downsizing building footprints, proposing vertical design rather than horizontal design on some buildings, reducing and relocating parking areas, reducing the distance between buildings and redesigning the distribution yard. Considering the site plan, a summary of environmental impacts is provided below.

- Stream Impacts (quantitative). The proposed project will require 580 linear feet of stream impact.

- Stream Impacts (qualitative). The project site has been managed for intensive timber production for many years. While evidence of historic impacts within these tributaries was observed (historic rutting, installation of road crossings, and channelization) these tributaries remain functional with a relatively intact buffer and canopy. Thus a medium to high qualitative value was assigned.

- Wetland Impacts (quantitative). 162 acres of jurisdictional wetland impact and 17.56 acres of non-jurisdictional wetland impact would be required for the preferred alternative site and on-site configuration.

- Wetland Function (qualitative). Field review of existing site conditions documented that the historic limits of the wetlands have been impacted by past land management practices including installation of roads, installation of drainage ditches, and timber harvesting. The vast majority of wetland area proposed for impact has been timbered within the past 20 years and much of the overstory canopy within the wetlands was harvested within the past 1 to 5 years. The functional value of the wetland areas proposed for impact was assigned a medium value. It should be noted that Black Creek and adjacent wetlands remain intact with a relatively mature overstory with a high function and value. For this reason, the project area developed for the manufacturing facility was designed specifically to avoid these areas.

- Impacts to Other Waters (quantitative). This alternative requires impacts 0.44 acres of man-made ditch.

- Other Waters Functions (qualitative). The functions and values of the ditches are low.

- Federally Listed Threatened or Endangered Species. An intensive threatened and endangered species survey has been completed within the project site. A completed copy of the report of findings is attached to this permit application package and no impacts to federally listed threatened or endangered species are anticipated.

- Cultural Resources. Brockington & Associates has completed a field survey for cultural resources and archeology and a draft report is currently being prepared for submittal to and review by the USACE and GADNR-HPD. Upon completion, a copy will be provided to the USACE for agency review.

- Stream Buffer Impact. The proposed project will require impacts to state waters and stream buffers. A stream buffer variance will be obtained from the GADNR-EPD prior to initiation of buffer impacts.

- Floodplain Impacts: Approximately 127 acres of flood plain impacts will be required for construction of the access roads, commercial components, and manufacturing facility and the rail access will require an estimated 22 acres of floodplain impact.

6.5.7 On-Site Configuration 3: This alternative includes construction of the facility adjacent to Highway 280 and Interstate 16. The site design includes approximately 180 acres of commercial area footprint and 1,300 acres of manufacturing area footprint. Unlike previously described alternatives which included

downsizing of buildings and redesigning the distribution yard, this alternative maximizes the footprint of the manufacturing component and provides increased flexibility in overall operations. At approximately 7,000 linear feet wide (east/west) by 8,000 linear feet long (north/south), this alternative would be preferred when considering overall site design alone. However, as documented above and summarized below, this alternative was not able to avoid and minimize environmental impacts to the greatest extent practicable.

- Stream Impacts (quantitative). The proposed project will require 2,646 linear feet of stream impact.

- Stream Impacts (qualitative). As noted above, the project site has been managed for intensive timber production for many years. While evidence of historic impacts within these tributaries was observed (historic rutting, installation of road crossings, and channelization) these tributaries remain functional with a relatively intact buffer and canopy. Thus, a medium to high qualitative value was assigned.

- Wetland Impacts (quantitative). 208.89 acres of jurisdictional wetland impact and 17.56 acres of non-jurisdictional wetland impact would be required for the preferred alternative site and on-site configuration.

- Wetland Function (qualitative). Field review of existing site conditions documented that the historic limits of the wetlands have been impacted by past land management practices including installation of roads, installation of drainage ditches, and timber harvesting. The vast majority of wetland area proposed for impact has been timbered within the past 20 years and much of the overstory canopy within the wetlands was harvested within the past 1 to 5 years. The functional value of the wetland areas proposed for impact was assigned a medium value. It should be noted that Black Creek and adjacent wetlands remain intact with a relatively mature overstory with a high function and value. For this reason, the project area developed for the manufacturing facility was designed specifically to avoid these areas.

- Impacts to Other Waters (quantitative). This alternative requires impacts 0.44 acres of man-made ditch.

- Other Waters Functions (qualitative). The functions and values of the ditches are low.

- Federally Listed Threatened or Endangered Species. An intensive threatened and endangered species survey has been completed within the project site. A completed copy of the report of findings is attached to this permit application package and no impacts to federally listed threatened or endangered species are anticipated.

- Cultural Resources. Brockington & Associates has completed a field survey for cultural resources and archeology and a draft report is currently being prepared for submittal to and review by the USACE and GADNR-HPD. Upon completion, a copy will be provided to the USACE for agency review.

- Stream Buffer Impact. The proposed project will require impacts to state waters and stream buffers. A stream buffer variance will be obtained from the GADNR-EPD prior to initiation of buffer impacts.

- Floodplain Impacts: Approximately 180 acres flood plain impacts will be required for construction of the access roads, commercial component and manufacturing facility and the rail access will require an estimated 22 acres of floodplain impact.

6.5.8 On-Site Configuration 4: This alternative includes construction of the facility adjacent to Highway 280 and Interstate 16. The site design includes approximately 180 acres of commercial area footprint and 1,300 acres of manufacturing area footprint. Like On-Site Configuration 3, this alternative maximizes the footprint of the manufacturing component and provides increased flexibility in overall operations and the only difference is manufacturing footprint orientation. At approximately 8,000 linear feet wide (east/west) by 7,000 linear feet long (north/south), this site plan represents the original design for the project. While this would be the preferred on-site consideration when accounting for overall site design alone, the results of the environmental studies and surveys required evaluation of additional designs. As documented above and summarized below, this alternative was not able to avoid and minimize environmental impacts to the greatest extent practicable.

- Stream Impacts (quantitative). The proposed project will require 763 linear feet of stream impact.

- Stream Impacts (qualitative). As noted above, the project site has been managed for intensive timber production for many years. While evidence of historic impacts within these tributaries was observed (historic rutting, installation of road crossings, and channelization) these tributaries remain functional with a relatively intact buffer and canopy. Thus a medium to high qualitative value was assigned.

- Wetland Impacts (quantitative). 220.07 acres of jurisdictional wetland impact and 17.56 acres of non-jurisdictional wetland impact would be required for the preferred alternative site and on-site configuration.

- Wetland Function (qualitative). Field review of existing site conditions documented that the historic limits of the wetlands have been impacted by past land management practices including installation of roads, installation of drainage ditches, and timber harvesting. The vast majority of wetland area proposed for impact has been timbered within the past 20 years and much of the overstory canopy within the wetlands was harvested within the past 1 to 5 years. The functional value of the wetland areas proposed for impact was assigned a medium value. It should be noted that Black Creek and adjacent wetlands remain intact with a relatively mature overstory with a high function and value. For this reason, the project area developed for the manufacturing facility was designed specifically to avoid these areas.

- Impacts to Other Waters (quantitative). This alternative requires impacts 0.44 acres of man-made ditch.

- Other Waters Functions (qualitative). The functions and values of the ditches are low.

- Federally Listed Threatened or Endangered Species. An intensive threatened and endangered species survey has been completed within the project site. A completed copy of the report of findings is attached to this permit application package and no impacts to federally listed threatened or endangered species are anticipated.

- Cultural Resources. Brockington & Associates has completed a field survey for cultural resources and archeology and a draft report is currently being prepared for submittal to and review by the USACE and GADNR-HPD. Upon completion, a copy will be provided to the USACE for agency review.

- Stream Buffer Impact. The proposed project will require impacts to state waters and stream buffers. A stream buffer variance will be obtained from the GADNR-EPD prior to initiation of buffer impacts.

- Floodplain Impacts: Approximately 147 acres flood plain impacts will be required for construction of the access roads, commercial component and manufacturing facility and the rail access will require an estimated 34 acres of floodplain impact.

6.6 Summary of Alternatives Analysis: When comparing the practicable alternatives, the Applicant's Preferred Alternative requires less wetlands, open water, floodplain impact than alternative sites and when considering environmental impacts, the Applicant's Preferred Alternative represents the least environmentally damaging. Table 3 provides a summary of the practicable alternatives and the values for each factor.

Table 3. Summary of Least Environmentally Damaging Practicable Alternative Assessment

FACTORS Environmental Factors	Preferred Alternative & Configuration	Off-Site Alt 1	Off-Site Alt 2	Off-Site Alt 4	Off-Site Alt 5	On-Site Conf 2	On-Site Conf 3	On-Site Conf 4
Stream Impacts (Linear Feet)	2,631 lf	None	2,858 lf	None	None	580 lf	2,646 lf	763 lf
Functional Value of Impacted Stream	Medium to High	None	High	None	None	Medium to High	Medium to High	Medium to High
Wetland Impacts (Acres)	142.69	414 ac	53 tidal& 242 non-tidal ac	195ac	420 ac	179.56 ac	226.45 ac	237.63 ac
Functional Value of Impacted Wetland	Medium	High	Medium & High	Medium	Medium	Medium	Medium	Medium
Impacts to Other Waters (Acres)	0.62	46.8	3 ac	Yes (Unknown ac.)	Yes (Unknown ac.)	0.44 ac	0.44	0.44
Functional Value of Impacted Other Waters	Low	Low	Low	Low	Low	Low	Low	Low
Federal Endangered Species Impact	No	No	No	No	No	No	No	No
Cultural Resources Impact	No	Yes	Likely	Likely	Potential	No	No	No
Stream Buffer Impact	Yes	No	No	No	No	Yes	Yes	Yes
Floodplain Impact	53 ac	682 ac	351 ac	34 ac	583 ac	181 ac	202 ac	127 ac
LEDPA	**Yes**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

In summary, the applicant and design team considered a variety of alternatives which would avoid and minimize impacts to wetlands to the greatest extent practicable while satisfying the overall project purpose. Through a comprehensive analysis of both off-site alternatives and on-site configurations, the applicant has been able to reduce the overall environmental impacts and demonstrate that the proposed site and design is the least environmentally damaging practicable alternative.

7.0 THREATENED AND ENDANGERED SPECIES:

RLC completed a threatened and endangered species assessment for the project area in February and March 2015. At no time during the survey was a species listed as threatened or endangered by current federal regulations observed. It was determined that marginal habitat was present on the study area that could potentially harbor Flatwoods salamanders, striped newts, indigo snakes, and gopher tortoise. Site-specific studies were conducted for these species and only gopher tortoises are known to inhabit the study area. The applicant intends to undertake voluntary relocation efforts for remaining gopher tortoises in conjunction with state and federal agencies prior to development. Thus, the proposed development within this study area will not adversely affect any species listed as federally threatened, endangered, or as a candidate for listing in Bryan County, Georgia. A complete copy of the report of findings is provided in Appendix G.

8.0 CULTURAL RESOURCES:

Brockington & Associates has completed a field survey for cultural resources and archeology and a draft report is currently being prepared for submittal to and review by the USACE and GADNR-HPD. In the interim, a management summary documenting the status of the project is provided in Appendix H.

9.0 STORM WATER MANAGEMENT

A preliminary stormwater management plan has been designed by Thomas & Hutton (consulting engineer), and although this plan has not yet been finalized, preliminary plan includes construction of stormwater ponds designed to accommodate the stormwater volume associated with development of the site. The final plan will meet any and all stormwater management requirements of the local authorities. It should be noted that construction of stormwater

management facilities will occur within uplands only and impacts to jurisdictional waters of the U.S. and/or wetlands will not be required.

10.0 COMPENSATORY MITIGATION

The proposed project requires impacts to 125.13 acres jurisdictional wetland, 17.56 acres of non-jurisdictional wetland and 2,631 linear feet of stream. As documented in the attached mitigation credit calculations (Appendix I), the project will require 1,069.2 wetland mitigation credits to off-set both jurisdictional and non-jurisdictional wetland impacts, and 12,960.3 stream credits to off-set the proposed stream impact. As compensatory mitigation, the applicant is proposing to purchase available mitigation credits from approved mitigation banks that service the Lower Ogeechee watershed (HUC 03060202). Per the Corps Regulatory In lieu fee Bank Information Tracking System (RIBITS) database on 28 March 2015, the banks in the primary service area with available credits include Black Creek, Margin Bay, Old Thorn Pond, Yam Grandy, Ogeechee River Bank and Wilhelmina Morgan. The following provides a summary of credit availability:

Table 4 Mitigation Bank Summary

Bank	Bank HUC Location	Watershed	Distance From Impact Site	Available Credits	
				Wetland	Stream
Black Creek	3060202	Ogeechee	8 mi	274.93	N/A
Margin Bay	3060202	Ogeechee	3 mi	76.06	N/A
Ogeechee River	3060204	Ogeechee	17 mi	N/A	N/A
Old Thorn Pond	3060202	Ogeechee	12 mi	68.19	N/A
Yam Grandy	3070107	Ohoopee	65 mi	350.94	25743.3
Salt Creek	3060204	Ogeechee	16 mi	N/A	N/A
Wilhelmina Morgan	3060204	Ogeechee	12 mi	0	N/A

The total number of credits currently available within the watershed does not meet the total required for this project. Therefore, depending on the number of wetland and stream credits available at the time of purchase, the applicant is requesting approval to purchase all or any remaining wetland and/or stream credits through the Georgia Land Trust In-Lieu Fee Program.

11.0 CONCLUSION

Savannah Harbor Interstate 16 Corridor Joint Development Authority is proposing the development of a mega site manufacturing facility adjacent to Interstate 16 within Bryan County, Georgia. The proposed manufacturing plant/facility is planned to include up to a $1 billion private capital investment. It is anticipated that the project will create 2,000 jobs with the potential to create up to 4,000 jobs within ten years after the start of production. The proposed project requires 125.13 acres of jurisdictional wetland impact, 17.56 acres of non-jurisdictional wetland impact and 2,631 linear feet of stream impact. However, this project has been determined to be the least environmentally damaging practicable alternative and unavoidable wetland and stream impacts will be off-set through purchase of mitigation credits and/or participation in the Georgia Land Trust In-Lieu Fee Program. All development activities will be conducted using best management practices to prevent unintended or secondary impacts to all remaining wetlands and streams within the project area.

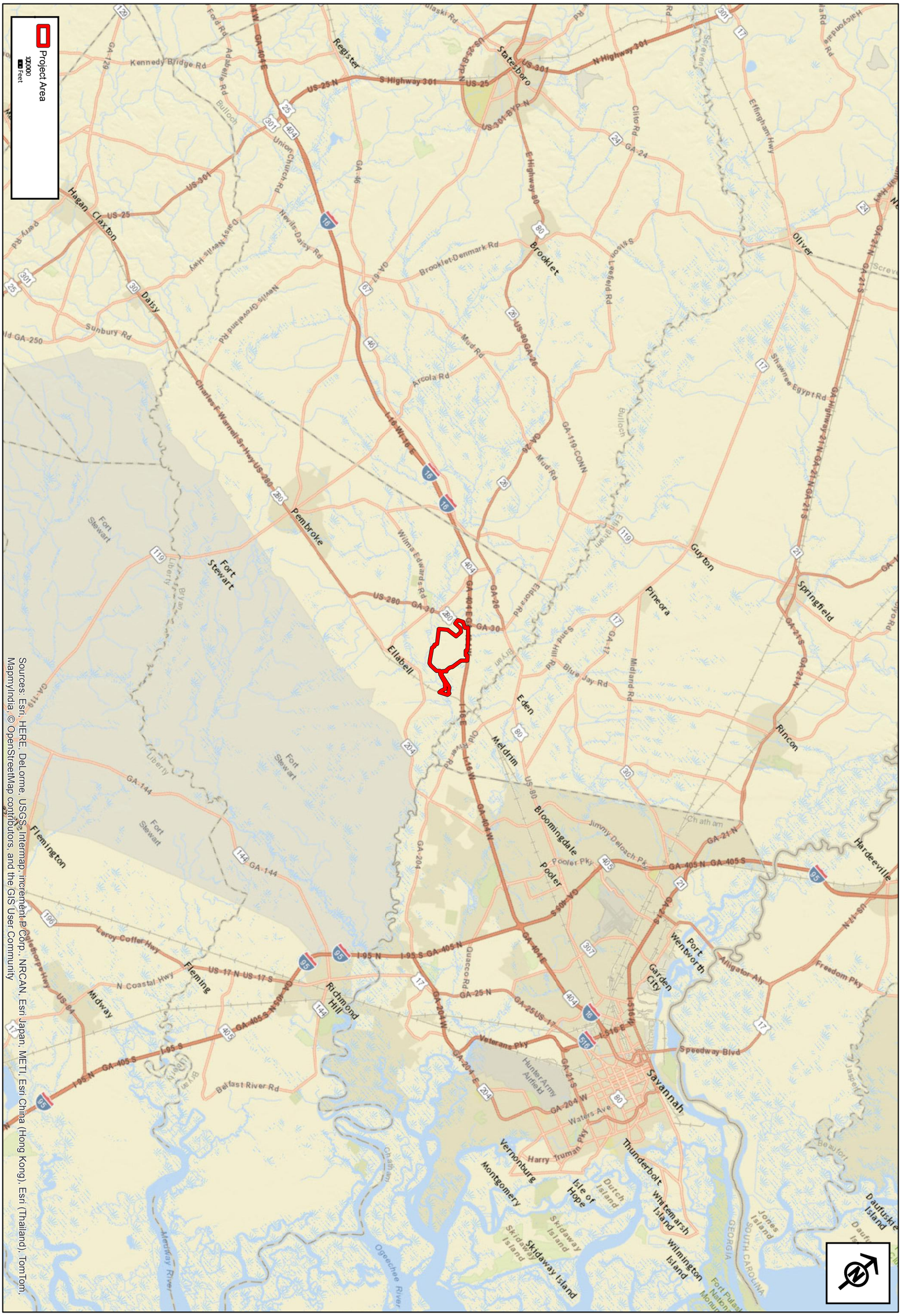
APPENDIX:

A : Figures

1. Location Map
2. USGS Topographic Survey
3. 2010 Ortho Color Aerial
4. Habitat Map
5. NRCS Soils Survey
6. Lidar Elevation Data

B : USACE Jurisdictional Determination
C : Site Photographs
D : Permit Drawings (Applicant's Preferred Alternative)
E : Off-Site Alternatives
F : On-Site Configurations
G : Threatened & Endangered Species Information & Report of Findings
H : Cultural Resources Survey Documentation & Management Summary
I : Compensatory Mitigation Calculations
J : CESAS Form 19
K: Adjacent Land Owner Information

APPENDIX A:
Figures



RLC Project No.:	14-225
Figure No.:	1
Sketch Date:	18 March 2015
Prepared By:	RP
Map Scale :	1 inch = 5 Miles

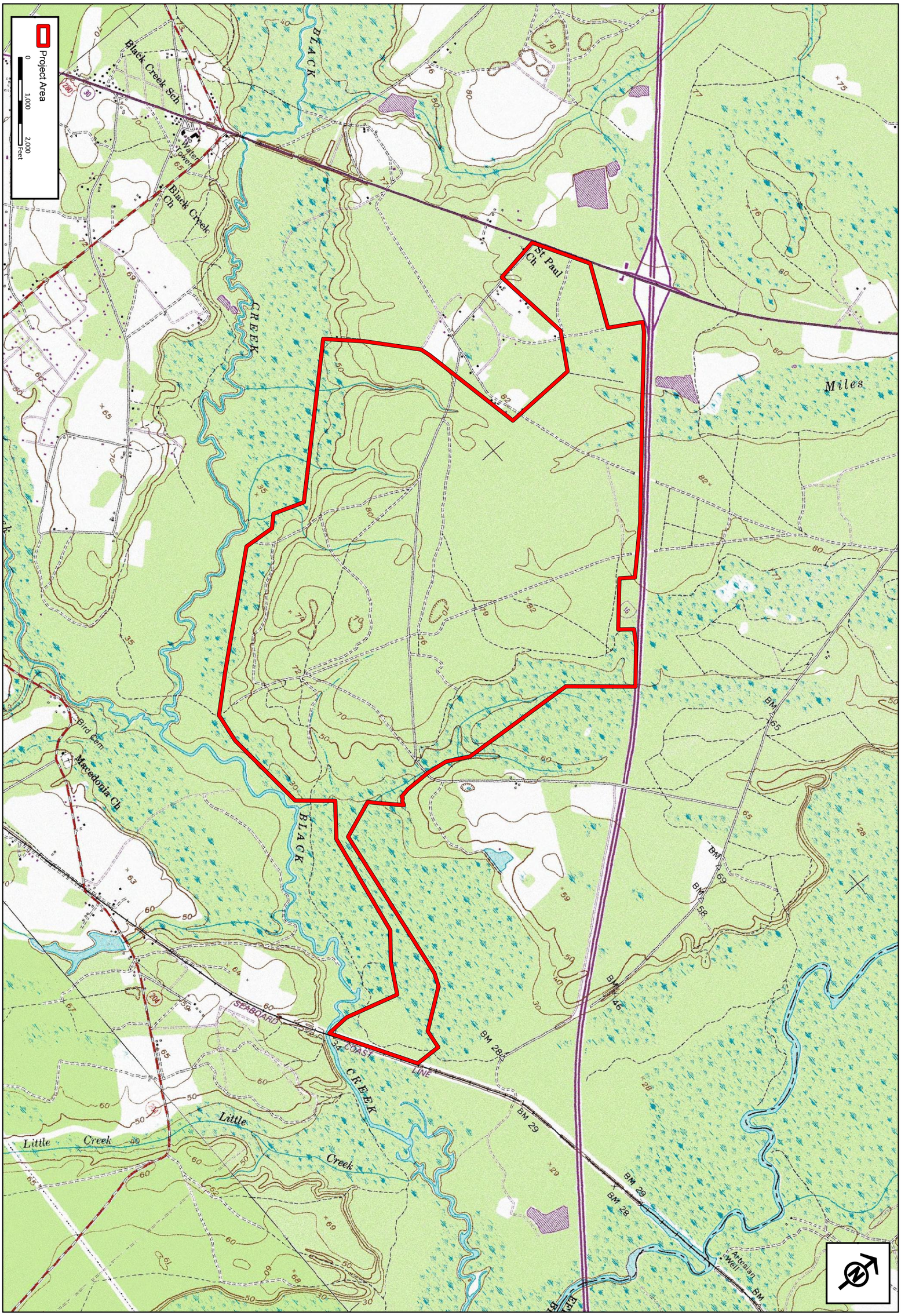
Bryan County Mega-Site

Bryan County, Georgia

ESRI STREET MAP

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com



RLC Project No.:	14-225
Figure No.:	2
Sketch Date:	18 March 2015
Prepared By:	RP
Map Scale :	1 inch = 2,000 feet

Bryan County Mega-Site

Bryan County, Georgia

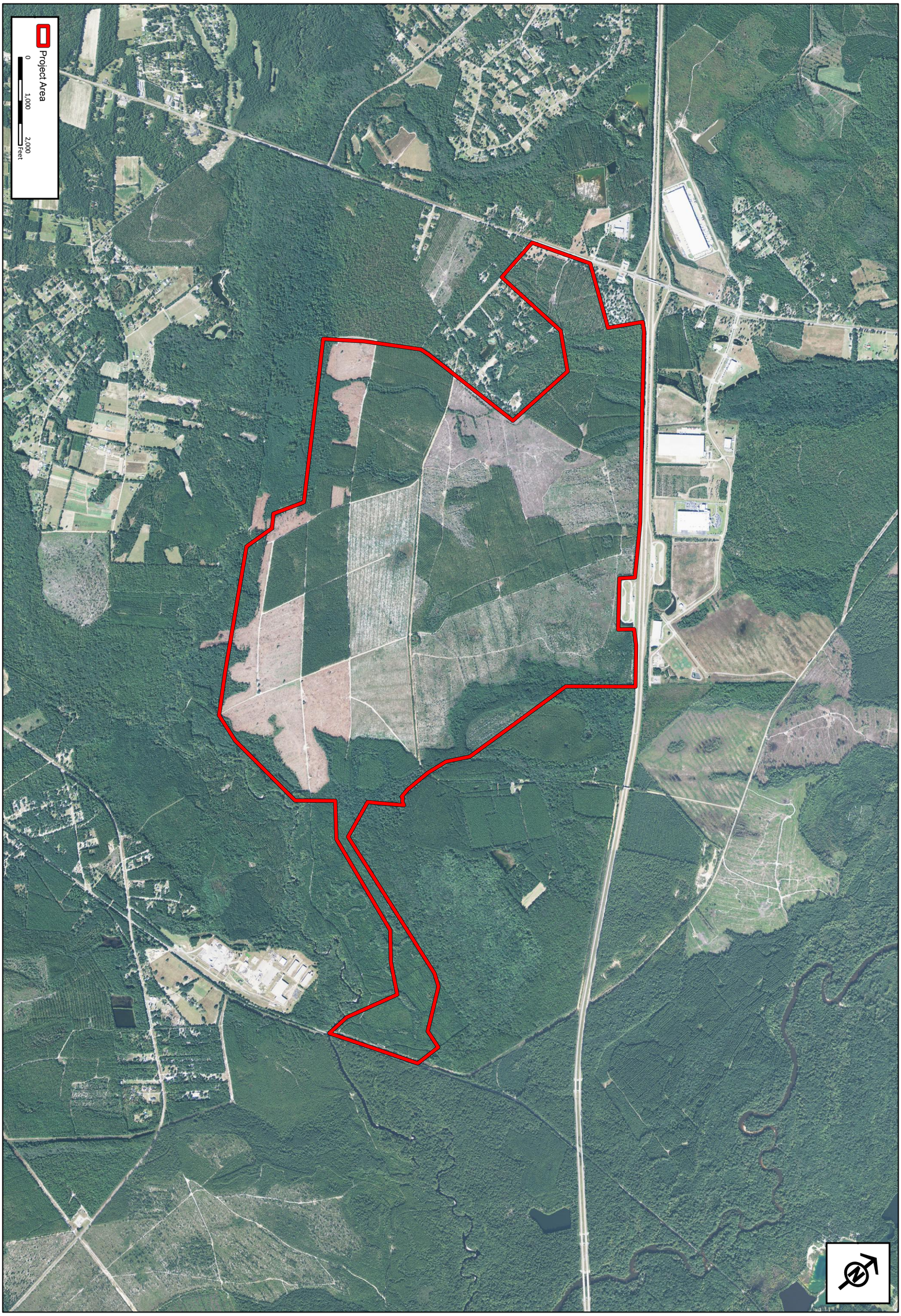
USGS Topographic Survey

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\IP_Figure_2_Topo

Source(s): USGS Topographic Survey



RLC Project No.:	14-225
Figure No.:	3
Sketch Date:	18 March 2015
Prepared By:	RP
Map Scale :	1 inch = 2,000 feet

Bryan County Mega-Site

Bryan County, Georgia

2013 Ortho Aerial Imagery

Prepared For: SHJDA

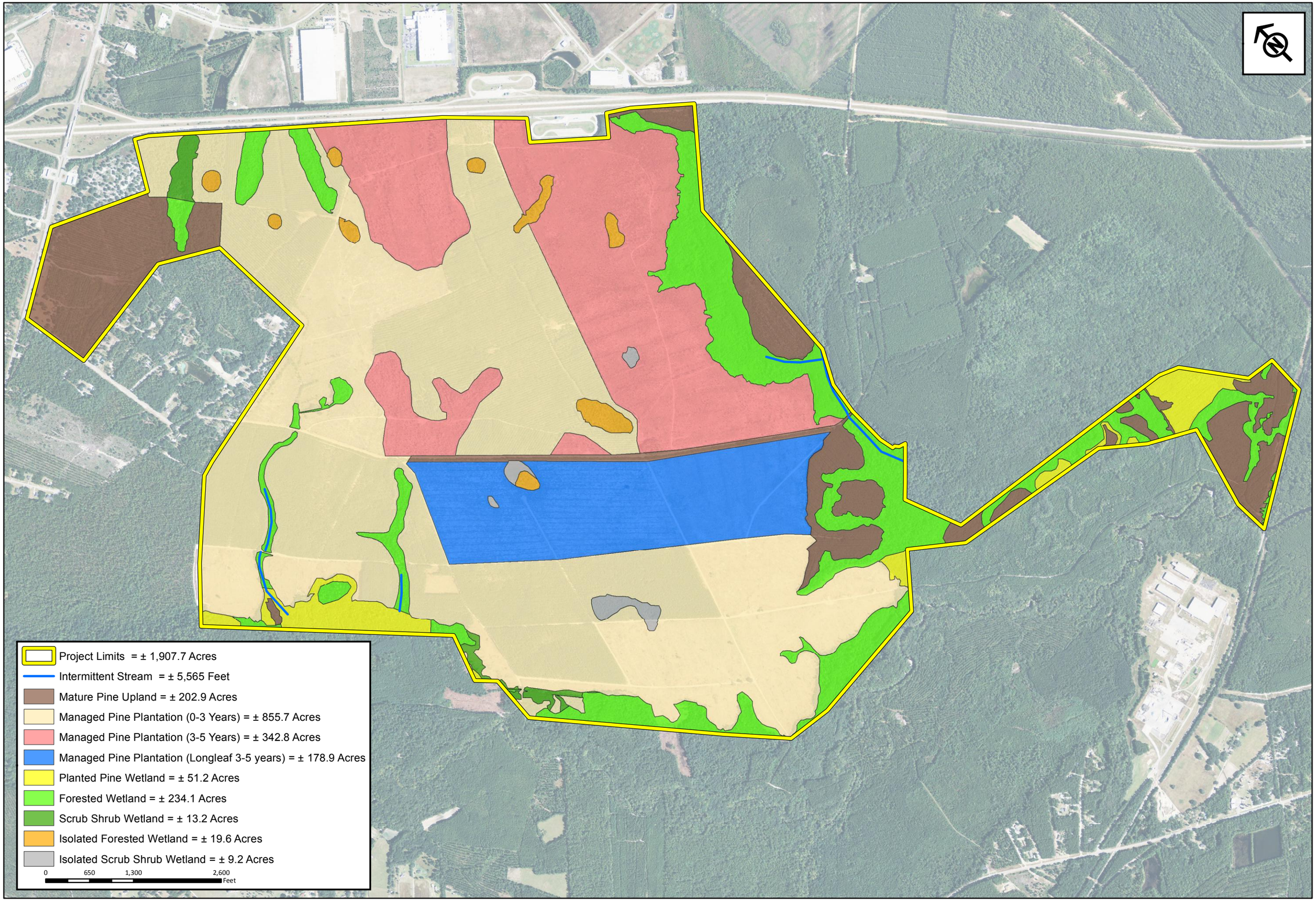
RLC

RESOURCE+LAND CONSULTANTS

41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\IP_Figure_3_Ortho

Source(s): 2013 Bryan County Ortho Imagery



RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

RLC

Habitat Map

Prepared For: SHJDA

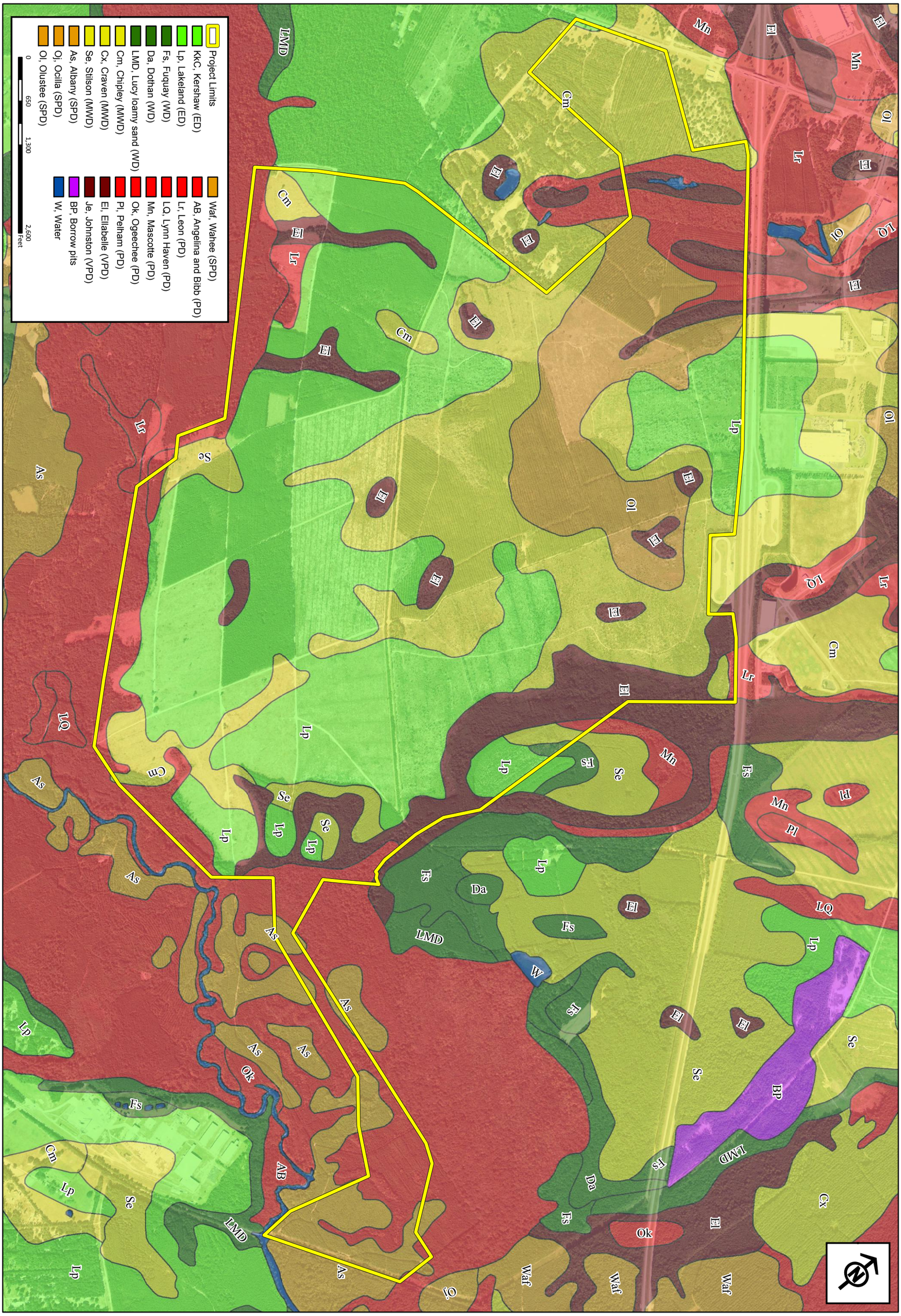
Bryan County Mega-Site

Bryan County, Georgia

RLC Project No.:	14-225
Figure No.:	4
Sketch Date:	26 March 2015
Prepared By:	RP
Map Scale :	1 inch = 1,300 feet

Source(s): T&H DWGs 2013 NAIP Ortho Aerial, Bryan County

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\JP_Figure_4_Habitat_Map



RLC Project No.:	14-225
Figure No.:	5
Sketch Date:	18 March 2015
Prepared By:	ZM
Map Scale :	1 inch = 1,300 feet

Bryan County Mega-Site

Bryan County, Georgia

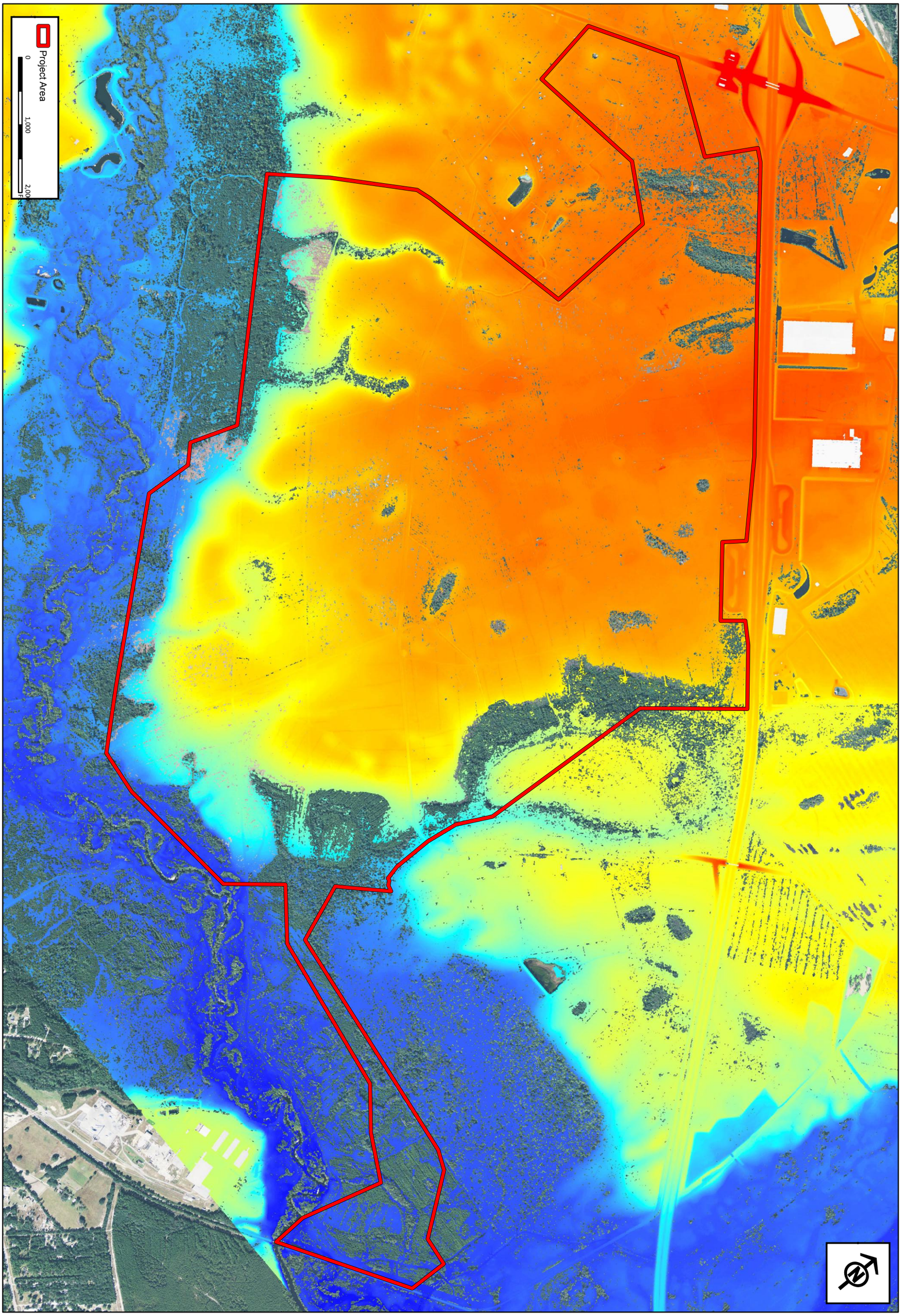
USDA NRCS Soils Survey

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\IP_Figure_5_Soils

Source(s): 2013 NAIP Ortho Aerial, Bryan County;USDA NRCS Soils Survey



RLC Project No.:	14-225
Figure No.:	6
Sketch Date:	28 March 2015
Prepared By:	AB
Map Scale :	1 inch = 1,300 feet

Bryan County Mega-Site

Bryan County, Georgia

Lidar Elevation Data

Prepared For: SHJDA

RLC

RESOURCE+LAND CONSULTANTS

41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\IP_Figure_6_Lidar

Source(s): 2010 Coastal Lidar Elevation Data

APPENDIX B:

USACE Jurisdictional Determination

10 April 2015

US Army Corps of Engineers
Savannah District
Ms. Kim Garvey, Section Chief
100 West Oglethorpe Avenue
Savannah, Georgia 31402

Subject: Request for Jurisdictional Determination **RLC# 14-225**
Savannah Harbor - Interstate 16 Corridor Joint Development Authority
SAS-2015-00235 / Bryan County Mega-Site
Ellabell, Bryan County, Georgia (32.162212°, -81.459937°)

Dear Ms. Garvey:

Resource & Land Consultants (RLC), on behalf of Savannah Harbor - Interstate 16 Corridor Joint Development Authority (SHJDA), is submitting the attached information requesting an expanded preliminary jurisdictional determination for the subject site located in the south quadrant of the intersection of Interstate 16 and Highway 280, near Black Creek, Bryan County, Georgia (32.162212°, -81.459937 °, Figure 1). The delineation was conducted in accordance with the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region Version 2, and 33 CFR Part 329. Based on our site assessment and delineation, it is our opinion that the project area (±1,402.92-acres) contains approximately 0.62 acres of jurisdictional dug conveyances, 309.39 acres of jurisdictional wetlands, 1,060 linear feet of ephemeral stream all of which is located within jurisdictional wetlands), 2,155 linear feet of intermittent stream, and 1,830 linear feet of perennial stream.

The overall Bryan County Mega-Site Project Area includes two Approved Jurisdictional Determinations Request submitted to the US Army Corps of Engineers on 26 March 2015. These two areas Samwilka Inc. (SAS-2005-01384, 224.8 acres) and Butler Tract, LLC (SAS-2015-00235, 276.8 acres) are not included in this expanded preliminary jurisdictional determination request.

The attached information includes the following:

- Request for Jurisdictional Determination
- Appendix D Expanded Preliminary JD Form
- RLC Prepared Figures 1-13
- Six Atlantic and Gulf Coastal Plain Region, Wetland Determination Data Form
- Seven NC DWQ Stream Identification Forms
- Wetland survey produced by Thomas & Hutton, titled ***WETLANDS SURVEY, BRYAN COUNTY MEGA SITE, 1380TH G.M. D., BRYAN COUNTY, GEORGIA***

RLC, on behalf of SHJDA, is requesting written verification of the limits of jurisdiction. We greatly appreciate your assistance with this project. If you have any questions or require any additional information prior to scheduling a site visit, please do not hesitate to contact us at (912) 443-5896.

Sincerely,

Troy N. Smith
Project Manager
Resource & Land Consultants

cc: Mr. Hugh "Trip" Tollison, SEDA
Mr. Ralph Forbes - Thomas & Hutton

Enclosure 1

Request for Jurisdictional Determination

REQUEST FOR JURISDICTIONAL DETERMINATION FOR PROPERTY LOCATED WITHIN THE STATE OF GEORGIA

APPLICANT:

Name (First Last) Savannah Harbor - Interstate 16 Corridor Joint Development Authority c/o Mr. Trip Tollison

Address 131 Hutchinson Island Road, 4th Floor

City Savannah State GA Zip Code 31421

Phone (912) 447 - 8450 Fax (912) 447 - 8455 Email ttollison@seda.org

PROPERTY OWNER: **Same as Applicant** ☑

Name (First Last) _____

Address _____

City _____ State GA Zip Code _____

Phone (___) ___ - ____ Fax (___) ___ - ____ Email _____

AGENT/CONSULTANT: (if applicable)

Name (First Last) Resource & Land Consultants c/o Troy N. Smith

Address 41 Park of Commerce Way, Suite 303

City Savannah State GA Zip Code 31405

Phone (912) 443 - 5896 Fax (912) 443 - 5898 Email tsmith@rlandc.com

PROPERTY LOCATION:

Location/Address/Subdivision Bryan County Mega-Site

City (in/near) Black Creek County Bryan

Directions from nearest interstate (use additional sheet(s) if needed)

From I-16 take Exit 143. Turn onto US-280 west / GA-30 west towards Ellabell, continue 0.6 miles. Turn left onto Groover Hill Road, continue for 0.5 miles. Turn right onto Tar City Road, the project is approximately 0.6 miles on either side of Tar City Road.

Latitude 32 . 162212 Longitude -81 . 459937

(In decimal degrees at center of the site. Linear projects should also include decimal degrees location of the start, end, and any turn points of the review/project area. Use additional sheet(s) if needed.)

Property Size (acres and/or dimensions) 1,402.92 acres, excluding 501.6 covered under Approved JDs

Nearest named waterbody (Stream/River/Lake) Black Creek

TYPE OF JURISDICTIONAL DETERMINATION:

Please indicate the type of jurisdictional determination (JD) you are requesting by marking the appropriate type below. The Corps encourages the regulated public to utilize the preliminary JDs and expanded preliminary JDs where appropriate.

☐ **Preliminary Jurisdictional Determination** - Preliminary JDs are non-binding "written indications that there may be waters of the United States, including wetlands, on a parcel or indications of the approximate location(s) of waters of the United States or wetlands on a parcel. Preliminary JDs are advisory in nature and may not be appealed." (See 33 C.F.R. 331.2.)

☑ **Expanded Preliminary Jurisdictional Determination** - The intent of using the expanded preliminary JD is to allow a landowner or other "affected party" to move ahead expeditiously to obtain a Corps permit authorization where the party determines that it is in his or her best interest. In most cases, expanded preliminary JDs are also non-binding "written indications that there may be waters of the United States, including wetlands, on a parcel or indications of the approximate location(s) of waters of the United States or wetlands on a parcel." However, Corps verification of a delineation, which is submitted in conjunction with an expanded preliminary JD request, would provide the landowner or affected party with defensible documentation concerning the limits of Corps jurisdiction.

☐ **Approved Jurisdictional Determination** - As defined in Regulatory Guidance Letter 08-02, an approved JD is an official Corps determination that jurisdictional "waters of the United States," or "navigable waters of the United States," or both, are either present or absent on a particular site. An approved JD precisely identifies the limits of those waters on the project site determined to be jurisdictional under the CWA/RHA. (See 33 C.F.R. 331.2.)

I, Hugh "Trip" Tollison, request a jurisdictional
Print Name
determination the above property, grant the US Army Corps of Engineers permission to conduct an on-site inspection, and certify that I am authorized to grant permission for entry into the property.

SIGNED _____ **DATE** 10 april 2015

****TO COMPLETE THIS REQUEST ALL OF THE REQUIRED INFORMATION IN THE APPLICABLE CHECKLIST MUST BE PROVIDED ****

Enclosure 2

Appendix D:
Expanded Preliminary Jurisdictional Determination Form

Appendix D
(Revised January 4, 2013)

EXPANDED PRELIMINARY JURISDICTIONAL DETERMINATION (JD) FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR EXPANDED PRELIMINARY JD:

B. NAME AND ADDRESS OF PERSON REQUESTING EXPANDED PRELIMINARY JD:

Resource & Land Consultants, 41 Park of Commerce Way Suite 303, Savannah GA 31405

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:

Savannah District; SHJDA / Bryan County Mega-Site; SAS-2015-00235

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State: GA County/parish/borough: Bryan City: near Black Creek
Center coordinates of site (lat/long in degree decimal format): Lat. 32.1622 , Long. -81.4599
Universal Transverse Mercator: 17S 456634 3558497
Name of nearest waterbody: Black Creek

Identify (estimate) amount of waters in the review area:
Non-wetland waters: 3,985.0(linear feet: 3.5000 width (ft) and/or acres.
Cowardin Class: Riverine
Stream Flow: Perennial
Wetlands: 310.010(acres.
Cowardin Class: Forested

Name of any water bodies on the site that have been identified as Section 10 waters:
Tidal: n/a
Non-Tidal: n/a

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☐ Office (Desk) Determination. Date:
☐ Field Determination. Date(s):

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this expanded preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this expanded preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a expanded preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the expanded preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a expanded preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a expanded preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional

issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This expanded preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for expanded preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

- [x] Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: Thomas and Hutton Wetland Survey
  - [x] Survey Signed by Registered Land Surveyor
  - [ ] GPS Survey with GPS Datasheet
- [x] Data sheets prepared/submitted by or on behalf of the applicant/consultant. 6 AGCP Wetland Data forms, 7 NC DWQ Stream ID
- [ ] Office concurs with data sheets/delineation report.
- [ ] Office does not concur with data sheets/delineation report.
- [ ] Data sheets prepared by the Corps: . Corps navigable waters' study:
- [x] Geological Survey Hydrologic Atlas: Fig 4, 1-in=2,200-ft, Bryan County NHD
  - [x] USGS NHD data.
  - [ ] USGS 8 and 12 digit HUC maps.
- [x] Geological Survey map(s). Cite scale & quad name: Figure 2, 1-in = 3,000-ft, Eden Quad
- [x] USDA Natural Resources Conservation Service Soil Survey. Citation: Figure 3, 1-in = 2,200-ft, Bryan County Soil Survey
- [x] National wetlands inventory map(s). Cite name: Figure 4, 1-in = 2,200-ft, Eden Quad
- [ ] State/Local wetland inventory map(s):
- [x] FEMA/FIRM maps: Figure 5, 1-in = 2,200-ft, FIRM) Panel 13029C0095D & 13029C0090D, effective on 05/05/2014
- [ ] 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
- [x] Photographs: [x] Aerial (Name & Date): 2013 Color Aerial Photograph and 1999 CIR Aerial Photograph
  [x] Other (Name & Date): Figure 9-13, Digital Color Photographs
- [x] Previous determination(s). File no. and date of response letter: SAS-2005-0138, SAS-2015-00235
- [ ] Other information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

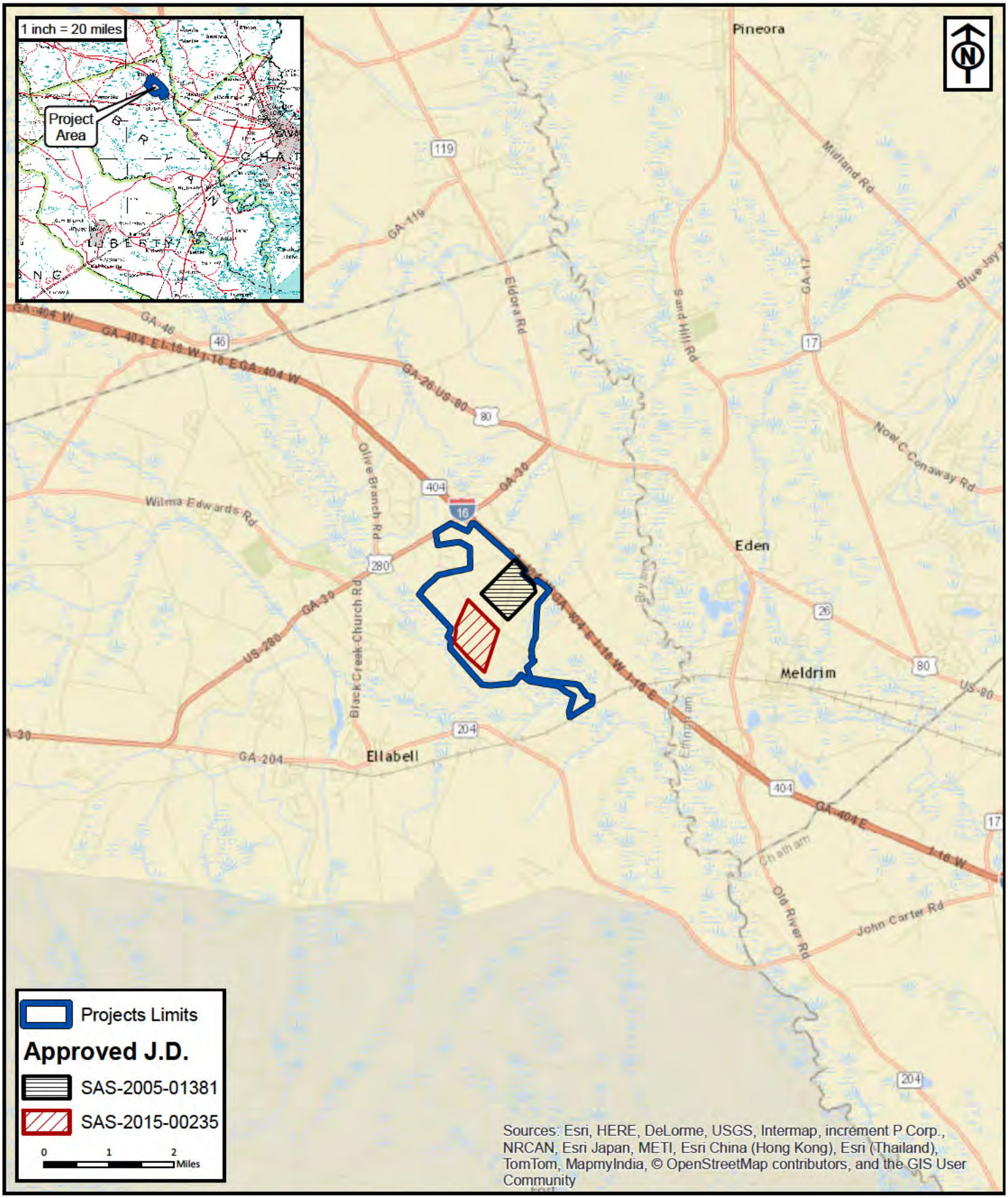
Signature and date of
Regulatory Project Manager
(REQUIRED)

Signature and date of
person requesting expanded preliminary JD
(REQUIRED, unless obtaining the signature is impracticable)

Waters_Name	Cowardin_Code	HGM_Code	Measurement_Type	Amount	Units	Waters_Type	Latitude	Longitude	Local_Waterway
Jurisdictional Wetland A	PFO1	SLOPE	Area	11.07	acres	NRPWW	32.176301	-81.458628	Miles Branch
Jurisdictional Wetland B	PFO1	DEPRESS	Area	1.65	acres	NRPWW	32.175736	-81.457172	Miles Branch
Jurisdictional Wetland C	PFO1	SLOPE	Area	7.90	acres	NRPWW	32.17504	-81.455313	Miles Branch
Jurisdictional Wetland D	PFO1	DEPRESS	Area	0.82	acres	NRPWW	32.172732	-81.456389	Miles Branch
Jurisdictional Wetland E	PFO1	SLOPE	Area	7.73	acres	NRPWW	32.173314	-81.453261	Miles Branch
Jurisdictional Wetland F	PFO1	DEPRESS	Area	1.07	acres	NRPWW	32.172923	-81.452206	Miles Branch
Jurisdictional Wetland G	PFO1	DEPRESS	Area	1.72	acres	NRPWW	32.17032	-81.454191	Miles Branch
Jurisdictional Wetland H	PFO4	SLOPE	Area	69.37	acres	RPWWD	32.158208	-81.443336	Black Creek
Jurisdictional Wetland I	PFO1	DEPRESS	Area	5.91	acres	NRPWW	32.157623	-81.451771	Black Creek
Jurisdictional Wetland J	PFO1	DEPRESS	Area	2.09	acres	NRPWW	32.165896	-81.459817	Black Creek
Jurisdictional Wetland K	PFO1	DEPRESS	Area	0.32	acres	NRPWW	32.166115	-81.460772	Black Creek
Jurisdictional Wetland L	PFO1	SLOPE	Area	0.82	acres	NRPWW	32.172693	-81.456365	Black Creek
Jurisdictional Wetland M	PFO1	SLOPE	Area	4.26	acres	RPWWD	32.165307	-81.46574	Black Creek
Jurisdictional Wetland N	PFO1	SLOPE	Area	41.15	acres	RPWWD	32.158175	-81.466122	Black Creek
Jurisdictional Wetland O	PFO1	SLOPE	Area	6.40	acres	NRPWW	32.160511	-81.462377	Black Creek
Jurisdictional Wetland P	PEM2	SLOPE	Area	0.37	acres	RPWWD	32.152851	-81.464193	Black Creek
Jurisdictional Wetland Q	PEM2	SLOPE	Area	0.44	acres	RPWWD	32.152169	-81.464199	Black Creek
Jurisdictional Wetland R	PFO1	SLOPE	Area	26.51	acres	RPWWD	32.148679	-81.461221	Black Creek
Jurisdictional Wetland S	PFO1	SLOPE	Area	21.59	acres	RPWWD	32.143599	-81.451312	Black Creek
Jurisdictional Wetland T	PFO1	SLOPE	Area	45.76	acres	RPWWD	32.146122	-81.445119	Black Creek
Jurisdictional Wetland U	PFO4	SLOPE	Area	22.03	acres	RPWWD	32.143249	-81.437306	Black Creek
Jurisdictional Wetland V	PFO1	SLOPE	Area	26.31	acres	RPWWD	32.141058	-81.430991	Black Creek
Jurisdictional Wetland W	PFO1	SLOPE	Area	0.47	acres	NRPWW	32.140028	-81.427596	Black Creek
Jurisdictional Wetland X	PFO1	SLOPE	Area	1.88	acres	NRPWW	32.137883	-81.429275	Black Creek
Jurisdictional Wetland Y	PFO1	SLOPE	Area	1.16	acres	RPWWD	32.13635	-81.432058	Black Creek
Jurisdictional Wetland Z	PFO1	SLOPE	Area	0.59	acres	RPWWD	32.17275	-81.486476	Black Creek
			Sum Jurisdictional Wetland	309.39					
Dug Conveyance 1	PUB2	SLOPE	Area	0.44	acres	NRPWW	32.156796	-81.448292	Black Creek
Dug Conveyance 2	PUB2	SLOPE	Area	0.10	acres	NRPWW	32.166159	-81.461208	Black Creek
Dug Conveyance 3	PUB2	SLOPE	Area	0.62	acres	NRPWW	32.167502	-81.460715	Black Creek
			Sum Dug Conveyance	1.16					
STA Reach 1	R4SB4	RIVERINE	Linear	832	foot	RPW	32.16393	-81.466887	Black Creek
STA Reach 2	R4SB4	RIVERINE	Linear	467	foot	RPW	32.163281	-81.468238	Black Creek
STA Reach 3	PUB2	RIVERINE	Linear	567	foot	NRPW	32.161187	-81.469278	Black Creek
STC Reach 1	R4SB4	RIVERINE	Linear	399	foot	RPW	32.158753	-81.46389	Black Creek
STC Reach 2	PUB2	RIVERINE	Linear	149	foot	NRPW	32.15809	-81.464856	Black Creek
STD Reach 1	R4SB4	RIVERINE	Linear	457	foot	RPW	32.153039	-81.442196	Black Creek
STD Reach 2	R2UB2	RIVERINE	Linear	1830	foot	RPW	32.150237	-81.442975	Black Creek
STE	PUB2	RIVERINE	Linear	344	foot	NRPW	32.152971	-81.442751	Black Creek

Enclosure 3

RLC Prepared Figures



RLC Project No.:	14-225
Figure No.:	1
Sketch Date:	30 March 2015
Prepared By:	ZM
Map Scale :	1 inch = 2 miles

Bryan County Mega-Siite

Bryan County, Georgia

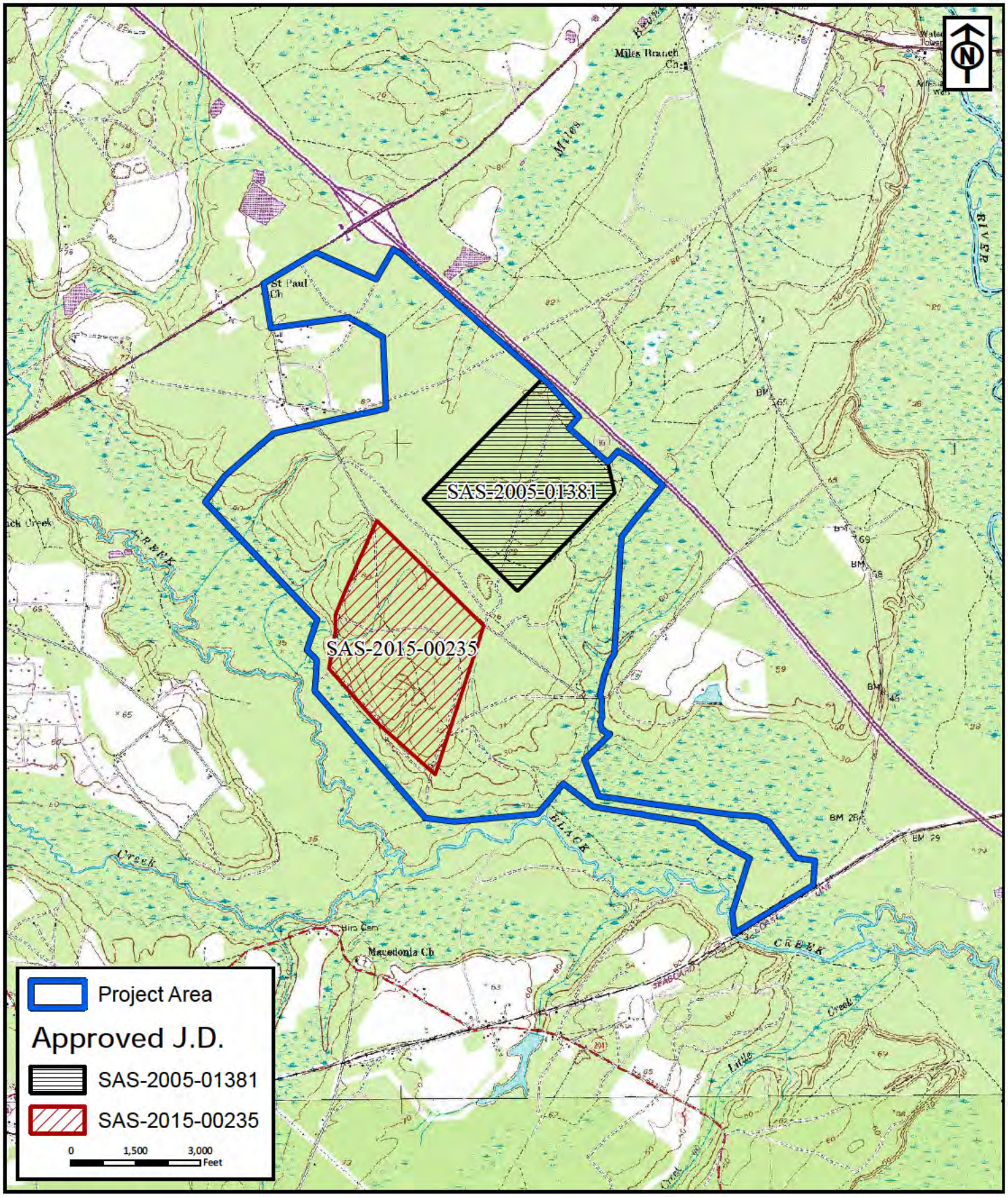
Project Location Map

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\JDR1_Location

Source(s) ESRI Basemap, World_Street_Map



RLC Project No.:	14-225
Figure No.:	2
Sketch Date:	30 March 2015
Prepared By:	ZM
Map Scale :	1 inch = 3,000 feet

Bryan County Mega-Site

Bryan County, Georgia

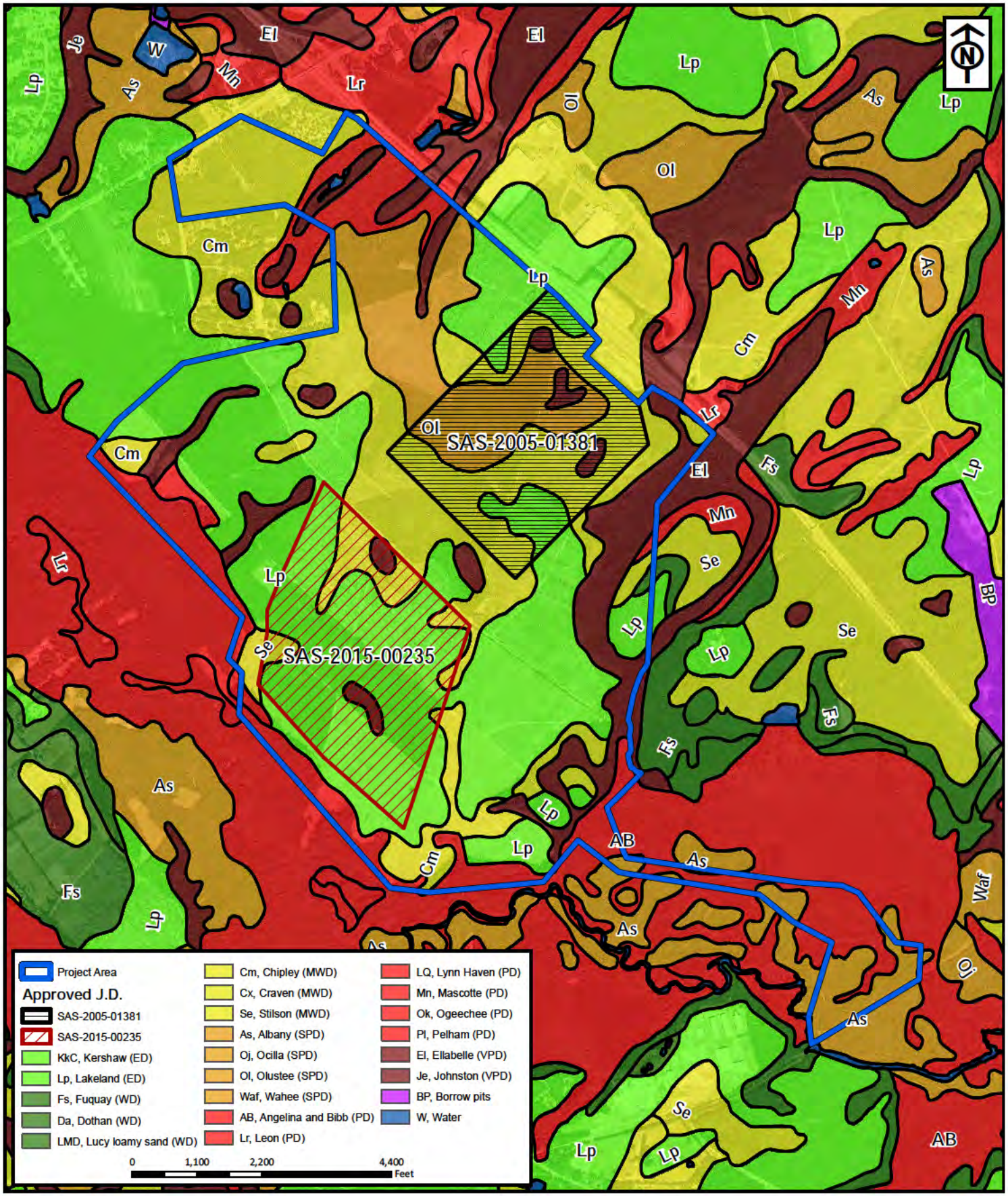
USGS Topographic Map

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\JDR2_Topo

Source(s) USGS Topographic Survey Eden GA Quadrangle



RLC Project No.:	14-225
Figure No.:	3
Sketch Date:	30 March 2015
Prepared By:	ZM
Map Scale :	1 inch = 2,200 feet

Bryan County Mega-Site

Bryan County, Georgia

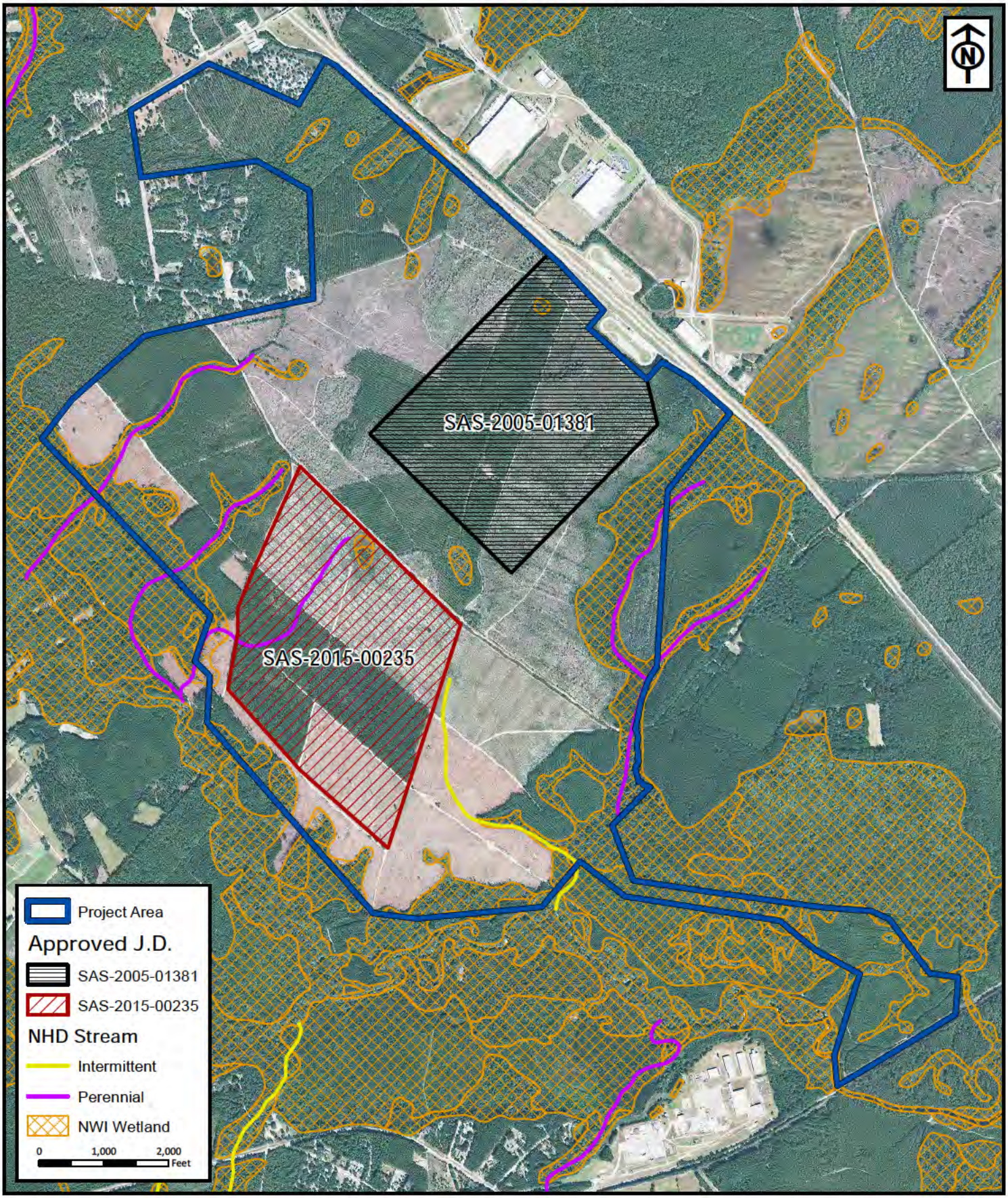
NRCS Soil Map

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\JDR3_Soil

Source(s) USDA Soil Survey of Bryan County GA; 2013 NAIP Ortho Aerial



RLC Project No.:	14-225
Figure No.:	4
Sketch Date:	30 March 2015
Prepared By:	ZM
Map Scale :	1 inch = 2,000 feet

Bryan County Mega-Site

Bryan County, Georgia

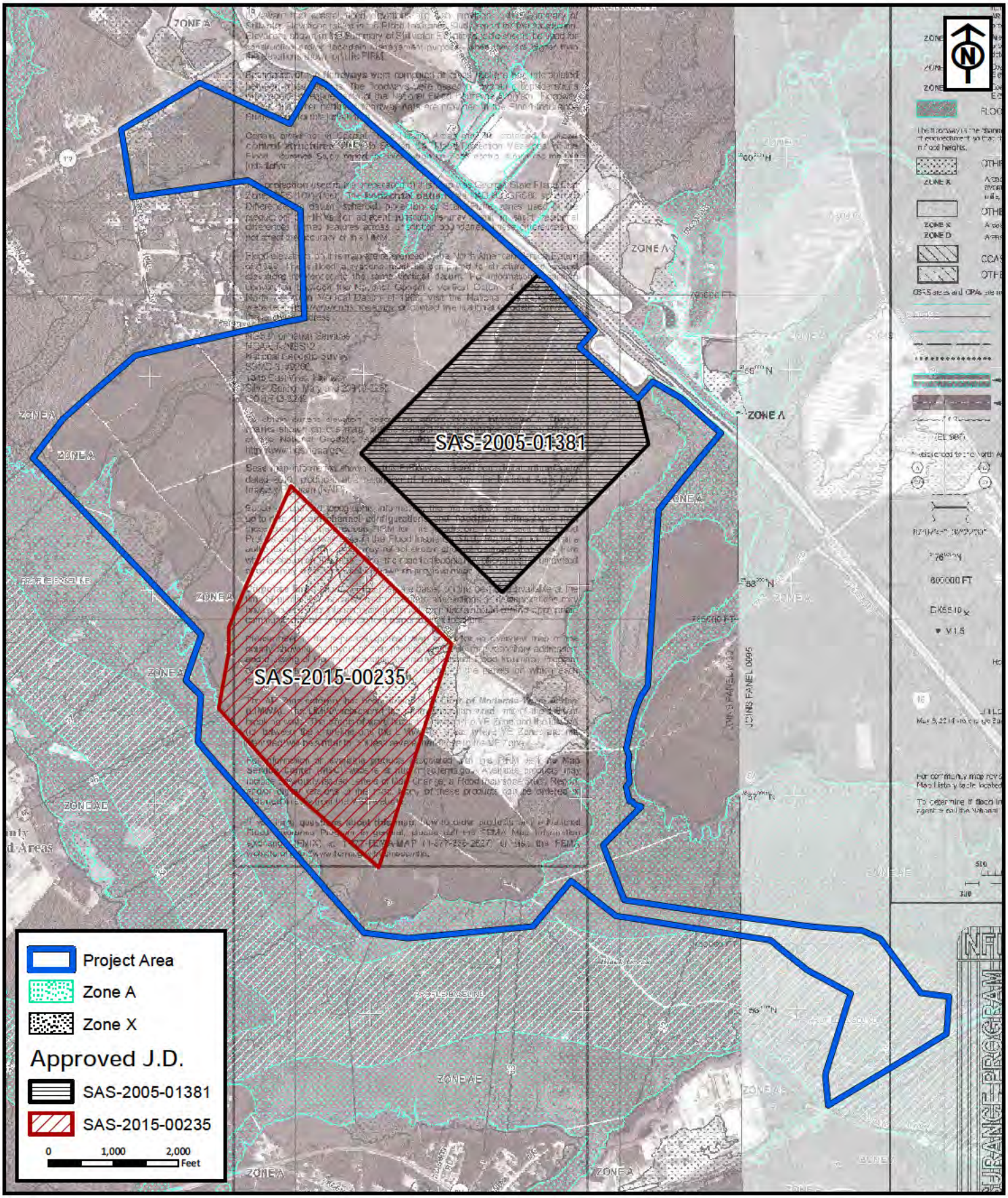
National Wetlands Inventory

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste 303
Savannah, Georgia 31405
912.443.5896 www.rlarvc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\JDR4_NWI

Source(s) USFWS NWI, Eden GA; National Hydro. Dataset, Line; 2013 NAIP Aerial



RLC Project No.:	14-225
Figure No.:	5
Sketch Date:	30 March 2015
Prepared By:	ZM
Map Scale :	1 inch = 2,000 feet

Bryan County Mega-Site

Bryan County, Georgia

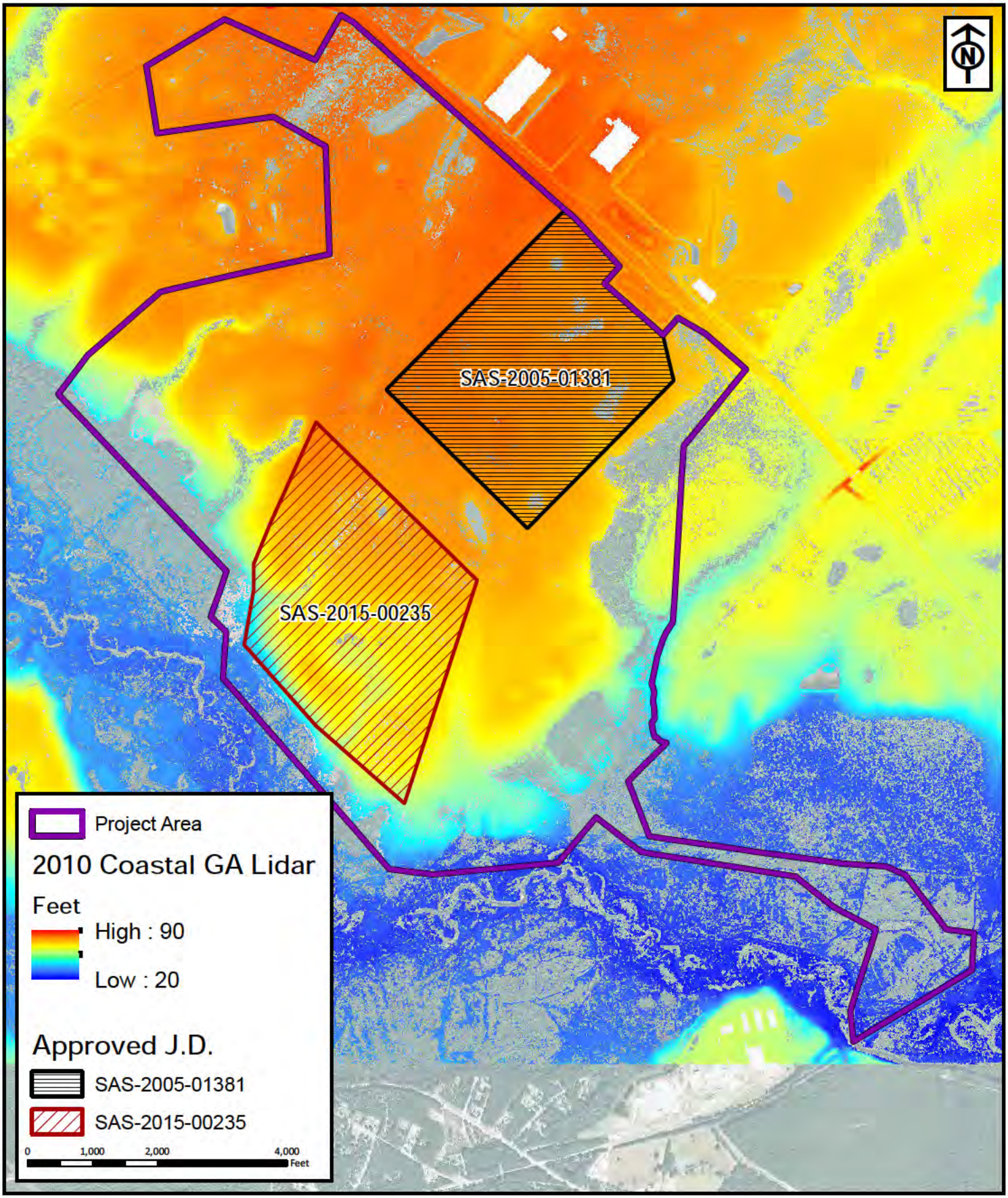
FEMA Flood Map

Prepared For: SHJDA

RLC
RESOURCE + LAND CONSULTANTS
41 Park of Commerce Way, Ste 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\JDR4_NWI

Source(s) FEMA Flood Insurance Rate Map (FIRM) Panels13029C0095D & 13029C0090D , effective on 05/05/2014



RLC Project No.:	14-225
Figure No.:	4
Sketch Date:	30 March 2015
Prepared By:	ZM
Map Scale :	1 inch = 2,000 feet

Bryan County Mega-Site

Bryan County, Georgia

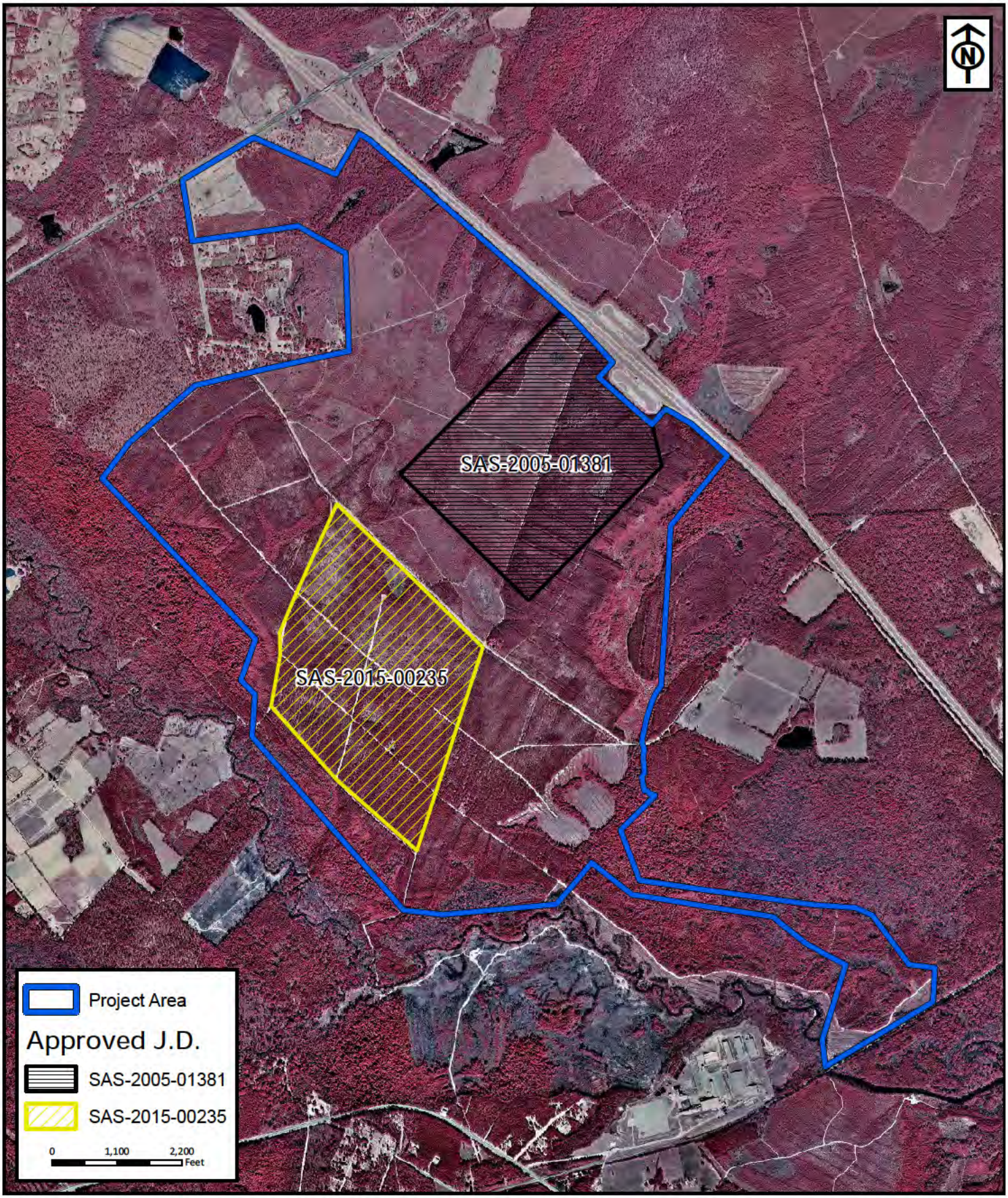
National Wetlands Inventory

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\JDR4_NWI

Source(s) USFWS NWI, Eden GA; National Hydro. Dataset, Line; 2013 NAIP Aerial



RLC Project No.:	14-225
Figure No.:	8
Sketch Date:	30 March 2015
Prepared By:	ZM
Map Scale :	1 inch = 2,200 feet

Bryan County Mega-Site

Bryan County, Georgia

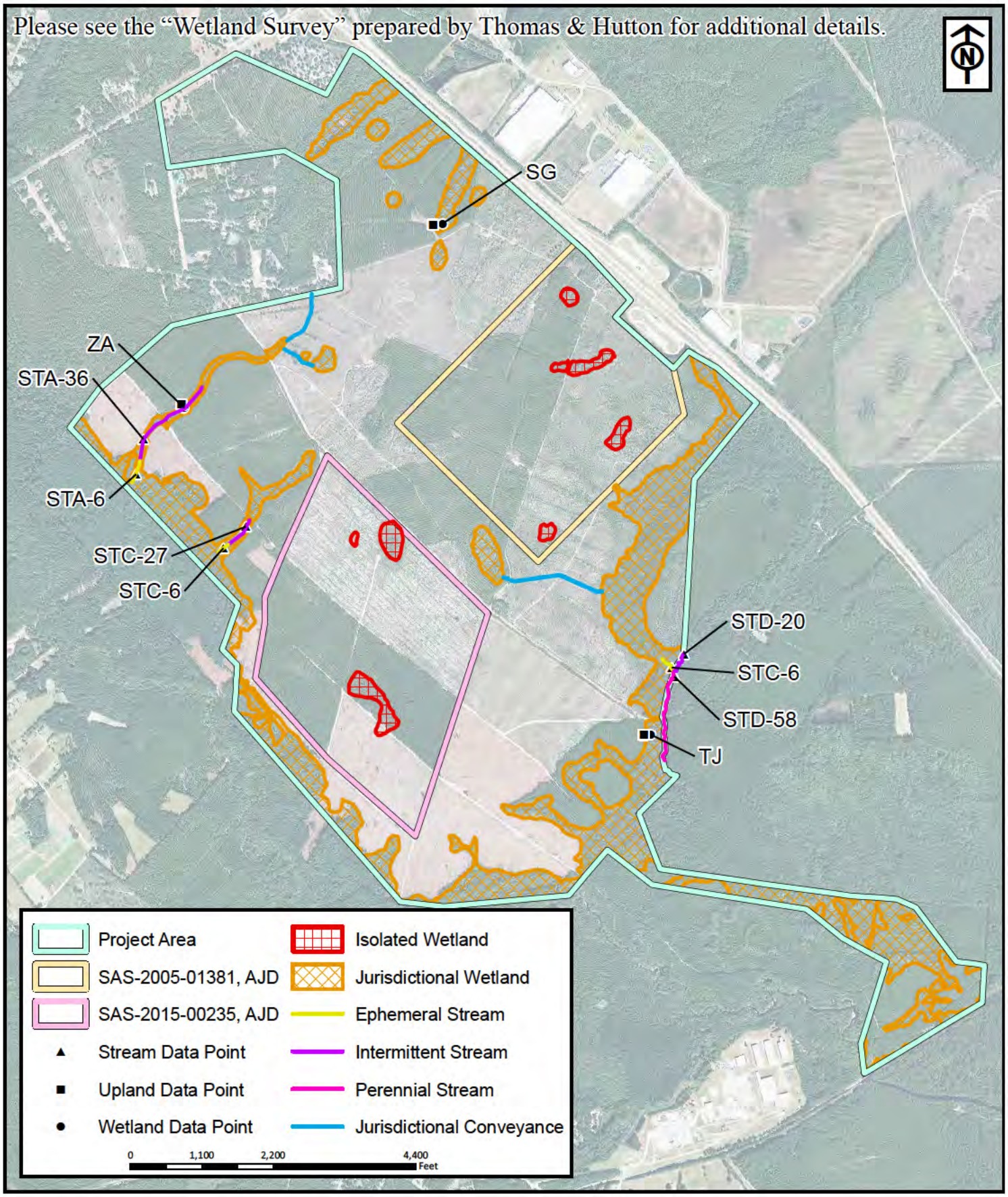
1999 Color-Infrared Imagery

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\JDR7_1999_IR

Source(s) 1999 Color-Infrared Imagery of Bryan County GA



RLC Project No.:	14-225
Figure No.:	8
Sketch Date:	30 March 2015
Prepared By:	TS
Map Scale :	1 inch = 2,000 feet

Bryan County Mega-Site

Bryan County, Georgia

Approximate Wetland Sketch

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\JDR8_Wetland_Sketch

Source(s) T&H Wetland Survey; 2013 NAIP Aerial

Photo 1: Typical wetland vegetation near ZA-23

Photo 2: Typical wetland vegetation near ZA-23

Photo 3: Typical upland vegetation near ZA-23

Photo 4: Typical upland vegetation near ZA-23

RLC Project No.:	14-225
Figure No.:	9
Exhibit Date:	30 March 2015
Prepared By:	ZM
Photo Date:	05 March 2015

Bryan County Mega-Site

Bryan County, Georgia

Site Photographs, A

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Photo 5: Typical wetland vegetation near TJ-13

Photo 6: Wetland Soils near TJ-13

Photo 7: Typical upland vegetation near TJ-13

Photo 8: Upland Soils near TJ-13

RLC Project No.:	14-225
Figure No.:	10
Exhibit Date:	30 March 2015
Prepared By:	ZM
Photo Date:	09 March 2015

Bryan County Mega-Site

Bryan County, Georgia

Site Photographs, B

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Photo 9: Typical wetland vegetation near SG-9

Photo 10: Wetland Soils near SG-9

Photo 11: Typical upland vegetation near SG-9

Photo 12: Upland Soils near SG-9

RLC Project No.:	14-225
Figure No.:	11
Exhibit Date:	30 March 2015
Prepared By:	ZM
Photo Date:	09 March 2015

Bryan County Mega-Site

Bryan County, Georgia

Site Photographs, C

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Photo 13: Ephemeral Stream near STA-6

Photo 14: Intermittent Stream near STA-36

Photo 15: Ephemeral Stream near STC-6

Photo 16: Intermittent Stream near STC-27

RLC Project No.:	14-225
Figure No.:	12
Exhibit Date:	30 March 2015
Prepared By:	ZM
Photo Date:	09 March 2015

Bryan County Mega-Site

Bryan County, Georgia

Site Photographs, D

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Photo 17: Intermittent Stream near STD-20

Photo 18: Perennial Stream near STD-58

Photo 19: Ephemeral Stream near STE-6

RLC Project No.:	14-225
Figure No.:	13
Exhibit Date:	30 March 2015
Prepared By:	ZM
Photo Date:	05 March 2015

Bryan County Mega-Site

Bryan County, Georgia

Site Photographs, E

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Enclosure 4

RLC Prepared AGCP Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Bryan County Mega-Site City/County: Bryan Sampling Date: 3/9/15

Applicant/Owner: SHJDA State: GA Sampling Point: ZA-23 UP

Investigator(s): RLC (Troy Smith) Section, Township, Range: n/a

Landform (hillslope, terrace, etc.): Shoulder Local relief (concave, convex, none): convex Slope (%): 0-2

Subregion (LRR or MLRA): Atlantic Coast Flatwoods (T) Lat: 32.164234 Long: -81.467043 Datum: WGS-84

Soil Map Unit Name: Lakeland NWI classification: Upland

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:

Site has recently been logged and replanted in pine seedlings.

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): n/a
Water Table Present?	Yes _____	No ✓	Depth (inches): <-18
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): <-18

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: ZA-23 UP

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

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

Sapling Stratum (Plot size: 30 foot radius)			
1. Quercus phellos (Water Oak)	5	Yes	FAC
2. Liquidambar styraciflua (Sweet Gum)	5	Yes	FAC
3. Cyrilla racemiflora (Little-Leaf Titi)	5	Yes	FACW
4.			
5.			
6.			
	15 = Total Cover		

50% of total cover: 7.5 20% of total cover: 3

Shrub Stratum (Plot size: 30 foot radius)			
1. Magnolia virginiana (Sweet Bay)	2	Yes	FACW
2. Liquidambar styraciflua (Sweet Gum)	2	Yes	FAC
3. Serenoa repens (Saw Palmetto)	5	Yes	FACU
4.			
5.			
6.			
	9 = Total Cover		

50% of total cover: 4.5 20% of total cover: 1.8

Herb Stratum (Plot size: 30 foot radius)			
1. Pinus taeda (Loblolly Pine)	2	No	FAC
2. Ilex glabra (Gallberry)	20	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	22 = Total Cover		

50% of total cover: 11 20% of total cover: 4.4

Woody Vine Stratum (Plot size: 30 foot radius)	
1. N/A	
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: 6 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 86 (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: ZA-23 UP

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/2	50					Loamy Sand	50% uncoated sand grains
2-16	10YR 5/3	100					Loamy Sand	
16-18+	10YR 5/4	100					Loamy Sand	

[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: Bryan County Mega-Site City/County: Bryan Sampling Date: 3/9/15

Applicant/Owner: SHJDA State: GA Sampling Point: ZA-23 WET

Investigator(s): RLC (Troy Smith) Section, Township, Range: n/a

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 2-3

Subregion (LRR or MLRA): Atlantic Coast Flatwoods (T) Lat: 32.164071 Long: -81.466929 Datum: WGS-84

Soil Map Unit Name: Ellabelle NWI classification: PFO3/4B

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 Vis ble 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): n/a
Water Table Present?	Yes ✓	No _____	Depth (inches): -10
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:

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

Sampling Point: ZA-23 WET

Tree Stratum (Plot size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus elliottii (Slash Pine)	15	No	FACW
2. Vitis rotundifolia (Water Oak)	20	Yes	FAC
3. Nyssa biflora (Swamp Tupelo)	30	Yes	OBL
4. Magnolia virginiana (Sweet Bay)	25	Yes	FACW
5.			
6.			
	90	= Total Cover	

50% of total cover: 45 20% of total cover: 18

Sapling Stratum (Plot size: 30 foot radius)			
1. Magnolia virginiana (Sweet Bay)	20	Yes	FACW
2. Quercus phellos (Water Oak)	20	Yes	FAC
3. Liquidambar styraciflua (Sweet Gum)	5	No	FAC
4.			
5.			
6.			
	45	= Total Cover	

50% of total cover: 22.5 20% of total cover: 9

Shrub Stratum (Plot size: 30 foot radius)			
1. Quercus phellos (Water Oak)	15	Yes	FAC
2. Ilex glabra (Galberry)	10	Yes	FACW
3. Lyonia lucida (Fetterbush)	20	Yes	FACW
4.			
5.			
6.			
	45	= Total Cover	

50% of total cover: 22.5 20% of total cover: 9

Herb Stratum (Plot size: 30 foot radius)			
1. Sphagnum spp.	2	No	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	2	= Total Cover	

50% of total cover: n/a 20% of total cover: n/a

Woody Vine Stratum (Plot size: 30 foot radius)			
1. Vitis rotundifolia (Muscadine)	25	Yes	FAC
2. Smilax rotundifolia (Horsebrier)	15	Yes	FAC
3. Smilax bona-nox (Greenbrier)	5	No	FAC
4.			
5.			
	45	= Total Cover	

50% of total cover: 22.5 20% of total cover: 9

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 10 (A)

Total Number of Dominant Species Across All Strata: 10 (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: ZA-23 WET

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	100					Mucky Sandy Loam	
6-18+	10YR 3/2	95					Sandy Loam	5% uncoated sand grains

[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: Bryan County Mega-Site City/County: Bryan Sampling Date: 3/9/15

Applicant/Owner: SHJDA State: GA Sampling Point: TJ-13 UP

Investigator(s): RLC (Troy Smith) Section, Township, Range: n/a

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

Subregion (LRR or MLRA): Atlantic Coast Flatwoods (T) Lat: 32.150025 Long: -81.444062 Datum: WGS-84

Soil Map Unit Name: Lakeland NWI classification: Upland

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): n/a
Water Table Present?	Yes _____	No ✓	Depth (inches): <-18
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): <-18

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: TJ-13 UP

Tree Stratum (Plot size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus elliottii (Slash Pine)	85	Yes	FACW
2.			
3.			
4.			
5.			
6.			
	85 = Total Cover		

50% of total cover: 42.5 20% of total cover: 17

Sapling Stratum (Plot size: 30 foot radius)			
1. Magnolia grandiflora (Southern Magnolia)	10	Yes	FAC
2. Acer rubrum (Red Maple)	5	Yes	FAC
3.			
4.			
5.			
6.			
	15 = Total Cover		

50% of total cover: 7.5 20% of total cover: 3

Shrub Stratum (Plot size: 30 foot radius)			
1. Ilex myrtifolia (Myrtle Holly)	20	Yes	FACW
2. Persea borbonia (Red Bay)	10	Yes	FACW
3. Magnolia grandiflora (Southern Magnolia)	5	No	FAC
4.			
5.			
6.			
	35 = Total Cover		

50% of total cover: 17.5 20% of total cover: 7

Herb Stratum (Plot size: 30 foot radius)			
1. Lyonia lucida (Fetterbush)	10	Yes	FACW
2. Persea borbonia (Red Bay)	5	Yes	FACW
3. Ilex opaca (American Holly)	2	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	17 = Total Cover		

50% of total cover: 8.5 20% of total cover: 3.4

Woody Vine Stratum (Plot size: 30 foot radius)			
1. Gelsemium Sempervirens (Yellow Jasmine)	10	Yes	FAC
2.			
3.			
4.			
5.			
	10 = Total Cover		

50% of total cover: 5 20% of total cover: 2

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 8 (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: TJ-13 UP

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 2/2	50					Loamy Sand	50% uncoated sand grains
7-18	10YR 6/4	60	10YR 4/2	40	D	M	Loamy Sand	

[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: Bryan County Mega-Site City/County: Bryan Sampling Date: 3/9/15

Applicant/Owner: SHJDA State: GA Sampling Point: TJ-13 WET

Investigator(s): RLC (Troy Smith) Section, Township, Range: n/a

Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): Concave Slope (%): 1-2

Subregion (LRR or MLRA): Atlantic Coast Flatwoods (T) Lat: 32.150012 Long: -81.443719 Datum: WGS-84

Soil Map Unit Name: Ellabelle NWI classification: PFO3/4B

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): n/a
Water Table Present?	Yes _____	No ✓	Depth (inches): <-18
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): <-18

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: TJ-13 WET

Tree Stratum (Plot size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus elliottii (Slash Pine)	15	Yes	FACW
2. Magnolia virginiana (Sweet Bay)	10	No	FACW
3. Magnolia grandiflora (Southern Magnolia)	15	No	FAC
4. Quercus laurifolia (Laurel Oak)	20	Yes	FACW
5. Quercus nigra (Water Oak)	20	Yes	FAC
6.			
	80	= Total Cover	

50% of total cover: 40 20% of total cover: 16

Sapling Stratum (Plot size: 30 foot radius)			
1. Magnolia virginiana (Sweet Bay)	10	Yes	FACW
2. Persea borbonia (Red Bay)	10	Yes	FACW
3.			
4.			
5.			
6.			
	20	= Total Cover	

50% of total cover: 10 20% of total cover: 4

Shrub Stratum (Plot size: 30 foot radius)			
1. Lyonia lucida (Fetterbush)	15	Yes	FACW
2. Persea borbonia (Red Bay)	10	Yes	FACW
3. Magnolia grandiflora (Southern Magnolia)	5	No	FAC
4. Magnolia virginiana (Sweet Bay)	10	Yes	FACW
5.			
6.			
	40	= Total Cover	

50% of total cover: 20 20% of total cover: 8

Herb Stratum (Plot size: 30 foot radius)			
1. Woodwardia areolata (Netted-Chain Fern)	10	Yes	FACW
2. Quercus laurifolia (Laurel Oak)	5	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	15	= Total Cover	

50% of total cover: 7.5 20% of total cover: 3

Woody Vine Stratum (Plot size: 30 foot radius)			
1. Vitis rotundifolia (Muscadine)	15	Yes	FAC
2.			
3.			
4.			
5.			
	15	= Total Cover	

50% of total cover: 7.5 20% of total cover: 3

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 11 (A)

Total Number of Dominant Species Across All Strata: 11 (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: TJ-13 WET

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	95					Loamy Sand	5% uncoated sand grains
6-18+	10YR 3/2	80	10YR 7/1	15	D	M	Loamy Sand	
			10YR 4/3	5	C	M		

[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: Bryan County Mega-Site City/County: Bryan Sampling Date: 3/9/15

Applicant/Owner: SHJDA State: GA Sampling Point: SG-9 UP

Investigator(s): RLC (Troy Smith) Section, Township, Range: n/a

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

Subregion (LRR or MLRA): Atlantic Coast Flatwoods (T) Lat: 32.171705 Long: -81.454398 Datum: WGS-84

Soil Map Unit Name: Olustee NWI classification: Upland

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): n/a
Water Table Present?	Yes _____	No ✓	Depth (inches): <-18
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): <-18

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: SG-9 UP

Tree Stratum (Plot size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus elliottii (Slash Pine)	20	Yes	FACW
2.			
3.			
4.			
5.			
6.			
	20 = Total Cover		
50% of total cover: 10	20% of total cover: 4		
Sapling Stratum (Plot size: 30 foot radius)			
1. Liquidambar styraciflua (Sweet Gum)	5	Yes	FAC
2. Persea borbonia (Red Bay)	5	Yes	FACW
3. Quercus nigra (Water Oak)	5	Yes	FAC
4.			
5.			
6.			
	15 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3		
Shrub Stratum (Plot size: 30 foot radius)			
1. Lyonia lucida (Fetter Bush)	45	Yes	FACW
2. Ilex glabra (Galberry)	30	Yes	FACW
3. Serenoa repens (Saw Palmetto)	5	No	FACU
4.			
5.			
6.			
	80 = Total Cover		
50% of total cover: 40	20% of total cover: 16		
Herb Stratum (Plot size: 30 foot radius)			
1. Lyonia lucida (Fetter Bush)	25	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	25 = Total Cover		
50% of total cover: 12.5	20% of total cover: 5		
Woody Vine Stratum (Plot size: 30 foot radius)			
1. Smilax bona-nox (Greenbrier)	15	Yes	FAC
2.			
3.			
4.			
5.			
	15 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3		

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 8 (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: SG-9 UP

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/2	70					Loamy Sand	30% uncoated sand grains
3-18+	10YR 4/3	85					Loamy Sand	15%uncoated sand grains

[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: Bryan County Mega-Site City/County: Bryan Sampling Date: 3/9/15

Applicant/Owner: SHJDA State: GA Sampling Point: SG-9 WET

Investigator(s): RLC (Troy Smith) Section, Township, Range: n/a

Landform (hillslope, terrace, etc.): Drainage Way Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR or MLRA): Atlantic Coast Flatwoods (T) Lat: 32.171734 Long: -81.453911 Datum: WGS-84

Soil Map Unit Name: Ellabelle NWI classification: PFO3/1B

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 Vis ble 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): +2
Water Table Present?	Yes ✓	No _____	Depth (inches): +2
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:

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

Sampling Point: SG-9 WET

Tree Stratum (Plot size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Taxodium distichum (Bald Cypress)	20	Yes	OBL
2. Pinus taeda (Loblolly Pine)	35	Yes	FAC
3. Persea borbonia (Red Bay)	5	No	FACW
4. Liquidambar styraciflua (Sweet Gum)	2	No	FAC
5. Quercus laurifolia (Laurel Oak)	15	No	FACW
6.			
	77	= Total Cover	

50% of total cover: 38.5 20% of total cover: 15.4

Sapling Stratum (Plot size: 30 foot radius)			
1. Liquidambar styraciflua (Sweet Gum)	5	Yes	FAC
2. Persea borbonia (Red Bay)	5	Yes	FACW
3. Magnolia virginiana (Sweet Bay)	5	Yes	FAC
4. Quercus nigra (Water Oak)	5	Yes	FAC
5.			
6.			
	20	= Total Cover	

50% of total cover: 10 20% of total cover: 4

Shrub Stratum (Plot size: 30 foot radius)			
1. Quercus nigra (Water Oak)	45	Yes	FAC
2. Lyonia lucida (Fetter Bush)	5	No	FACW
3.			
4.			
5.			
6.			
	50	= Total Cover	

50% of total cover: 25 20% of total cover: 10

Herb Stratum (Plot size: 30 foot radius)			
1. Lyonia lucida (Fetter Bush)	30	Yes	FACW
2. Sphagnum spp.	5	No	NI
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	35	= Total Cover	

50% of total cover: 17.5 20% of total cover: 7

Woody Vine Stratum (Plot size: 30 foot radius)	
1. N/A	
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: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (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: SG-9 WET

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 2/1	100					Loamy Sand	
12-20	10YR 3/1	100					Loamy Sand	
20-22+	10YR 4/1	95	10YR 5/6	5	C	M	Loamy Sand	

[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:

Enclosure 5

RLC Prepared NC DWQ Stream Identification Forms

NC DWQ Stream Identification Form Version 4.11					Sample Location:	STA-6
Date:	3/5/2015	Project/Site:	Bryan County Mega-Site		Latitude:	32.162245
Evaluator:	RLC, Troy Smith & Zach Marsh	County:	Bryan		Longitude:	-81.469075
Total Points:	**16.5**	Stream Determination			Other e.g. Quad Name:	Eden
Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*		**Ephemeral**				
A. Geomorphology					**Subtotal =**	**7.5**
1[a]	Continuity of channel bed and bank		Weak		1	
2	Sinuosity of channel along thalweg		Weak		1	
3	In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence		Weak		1	
4	Particle size of stream substrate		Weak		1	
5	Active/relict floodplain		Weak		1	
6	Depositional bars or benches		Absent		0	
7	Recent alluvial deposits		Weak		1	
8	Headcuts		Absent		0	
9	Grade control		Weak		0.5	
10	Natural valley		Moderate		1	
11	Second or greater order channel		No		0	
a) artificial ditches are not rated; see discussions in manual						
B. Hydrology					**Subtotal =**	**5.5**
12	Presence of Baseflow		Weak		1	
13	Iron oxidizing bacteria		Absent		0	
14	Leaf litter		Moderate		0.5	
15	Sediment on plants or debris		Absent		0	
16	Organic debris lines or piles		Moderate		1	
17	Soil-based evidence of high water table?		Yes		3	
C. Biology					**Subtotal =**	**3.5**
18	Fibrous roots in streambed		Moderate		1	
19	Rooted upland plants in streambed		Moderate		1	
20	Macrobenthos (note diversity and abundance)		Weak		1	
21	Aquatic Mollusks		Absent		0	
22	Fish		Absent		0	
23	Crayfish		Absent		0	
24	Amphibians		Weak		0.5	
25	Algae		Absent		0	
26	Wetland plants in streambed		Other		0	
*perennial streams may also be identified using other methods. See p. 35 of manual.						
Notes: Stream flattens out after STA-1, several small channels throughout the floodplain.						

NC DWQ Stream Identification Form Version 4.11					Sample Location:	STA-36
Date:	3/5/2015	Project/Site:	Bryan County Mega-Site		Latitude:	32.163266
Evaluator:	RLC, Troy Smith & Zach Marsh	County:	Bryan		Longitude:	-81.468469
Total Points:	**24.75**	Stream Determination			Other e.g. Quad Name:	Eden
Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*		**Intermittent**				
A. Geomorphology					**Subtotal =**	**13.5**
1[a]	Continuity of channel bed and bank	Moderate			2	
2	Sinuosity of channel along thalweg	Moderate			2	
3	In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	Weak			1	
4	Particle size of stream substrate	Weak			1	
5	Active/relict floodplain	Weak			1	
6	Depositional bars or benches	Moderate			2	
7	Recent alluvial deposits	Moderate			2	
8	Headcuts	Weak			1	
9	Grade control	Weak			0.5	
10	Natural valley	Moderate			1	
11	Second or greater order channel	No			0	
a) artificial ditches are not rated; see discussions in manual						
B. Hydrology					**Subtotal =**	**6**
12	Presence of Baseflow	Weak			1	
13	Iron oxidizing bacteria	Absent			0	
14	Leaf litter	Moderate			0.5	
15	Sediment on plants or debris	Weak			0.5	
16	Organic debris lines or piles	Moderate			1	
17	Soil-based evidence of high water table?	Yes			3	
C. Biology					**Subtotal =**	**5.25**
18	Fibrous roots in streambed	Moderate			1	
19	Rooted upland plants in streambed	Moderate			1	
20	Macrobenthos (note diversity and abundance)	Weak			1	
21	Aquatic Mollusks	Absent			0	
22	Fish	Absent			0	
23	Crayfish	Absent			0	
24	Amphibians	Moderate			1	
25	Algae	Weak			0.5	
26	Wetland plants in streambed	FACW			0.75	
*perennial streams may also be identified using other methods. See p. 35 of manual.						
Notes: Stream changes from Intermittent to Ephemeral @ STA 23.						

NC DWQ Stream Identification Form Version 4.11					Sample Location:	STC-6
Date:	3/5/2015	Project/Site:	Bryan County Mega-Site		Latitude:	32.158231
Evaluator:	RLC, Troy Smith & Zach Marsh	County:	Bryan		Longitude:	81.464869
Total Points:	**17.75**	Stream Determination			Other e.g. Quad Name:	Eden
Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*		**Ephemeral**				
A. Geomorphology					**Subtotal =**	**8**
1[a]	Continuity of channel bed and bank	Weak			1	
2	Sinuosity of channel along thalweg	Weak			1	
3	In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	Weak			1	
4	Particle size of stream substrate	Weak			1	
5	Active/relict floodplain	Moderate			2	
6	Depositional bars or benches	Absent			0	
7	Recent alluvial deposits	Weak			1	
8	Headcuts	Absent			0	
9	Grade control	Weak			0.5	
10	Natural valley	Weak			0.5	
11	Second or greater order channel	No			0	
a) artificial ditches are not rated; see discussions in manual						
B. Hydrology					**Subtotal =**	**5.5**
12	Presence of Baseflow	Weak			1	
13	Iron oxidizing bacteria	Absent			0	
14	Leaf litter	Moderate			0.5	
15	Sediment on plants or debris	Absent			0	
16	Organic debris lines or piles	Moderate			1	
17	Soil-based evidence of high water table?	Yes			3	
C. Biology					**Subtotal =**	**4.25**
18	Fibrous roots in streambed	Moderate			1	
19	Rooted upland plants in streambed	Moderate			1	
20	Macrobenthos (note diversity and abundance)	Weak			1	
21	Aquatic Mollusks	Absent			0	
22	Fish	Absent			0	
23	Crayfish	Absent			0	
24	Amphibians	Weak			0.5	
25	Algae	Absent			0	
26	Wetland plants in streambed	FACW			0.75	
*perennial streams may also be identified using other methods. See p. 35 of manual.						
Notes: Stream flattens out after STC-1, several small channels throughout the floodplain.						

NC DWQ Stream Identification Form Version 4.11					Sample Location:	STC-27
Date:	3/5/2015	Project/Site:	Bryan County Mega-Site		Latitude:	32.158895
Evaluator:	RLC, Troy Smith & Zach Marsh	County:	Bryan		Longitude:	-81.464013
Total Points:	**23.25**	Stream Determination			Other e.g. Quad Name:	Eden
Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*		**Intermittent**				
A. Geomorphology					**Subtotal =**	**10.5**
1[a]	Continuity of channel bed and bank	Moderate			2	
2	Sinuosity of channel along thalweg	Moderate			2	
3	In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	Weak			1	
4	Particle size of stream substrate	Weak			1	
5	Active/relict floodplain	Weak			1	
6	Depositional bars or benches	Absent			0	
7	Recent alluvial deposits	Weak			1	
8	Headcuts	Weak			1	
9	Grade control	Weak			0.5	
10	Natural valley	Moderate			1	
11	Second or greater order channel	No			0	
a) artificial ditches are not rated; see discussions in manual						
B. Hydrology					**Subtotal =**	**6.5**
12	Presence of Baseflow	Weak			1	
13	Iron oxidizing bacteria	Absent			0	
14	Leaf litter	Moderate			0.5	
15	Sediment on plants or debris	Moderate			1	
16	Organic debris lines or piles	Moderate			1	
17	Soil-based evidence of high water table?	Yes			3	
C. Biology					**Subtotal =**	**6.25**
18	Fibrous roots in streambed	Weak			2	
19	Rooted upland plants in streambed	Moderate			1	
20	Macrobenthos (note diversity and abundance)	Weak			1	
21	Aquatic Mollusks	Absent			0	
22	Fish	Absent			0	
23	Crayfish	Absent			0	
24	Amphibians	Moderate			1	
25	Algae	Weak			0.5	
26	Wetland plants in streambed	FACW			0.75	
*perennial streams may also be identified using other methods. See p. 35 of manual.						
Notes: Stream changes from Intermittent to Ephemeral @ STC-10.						

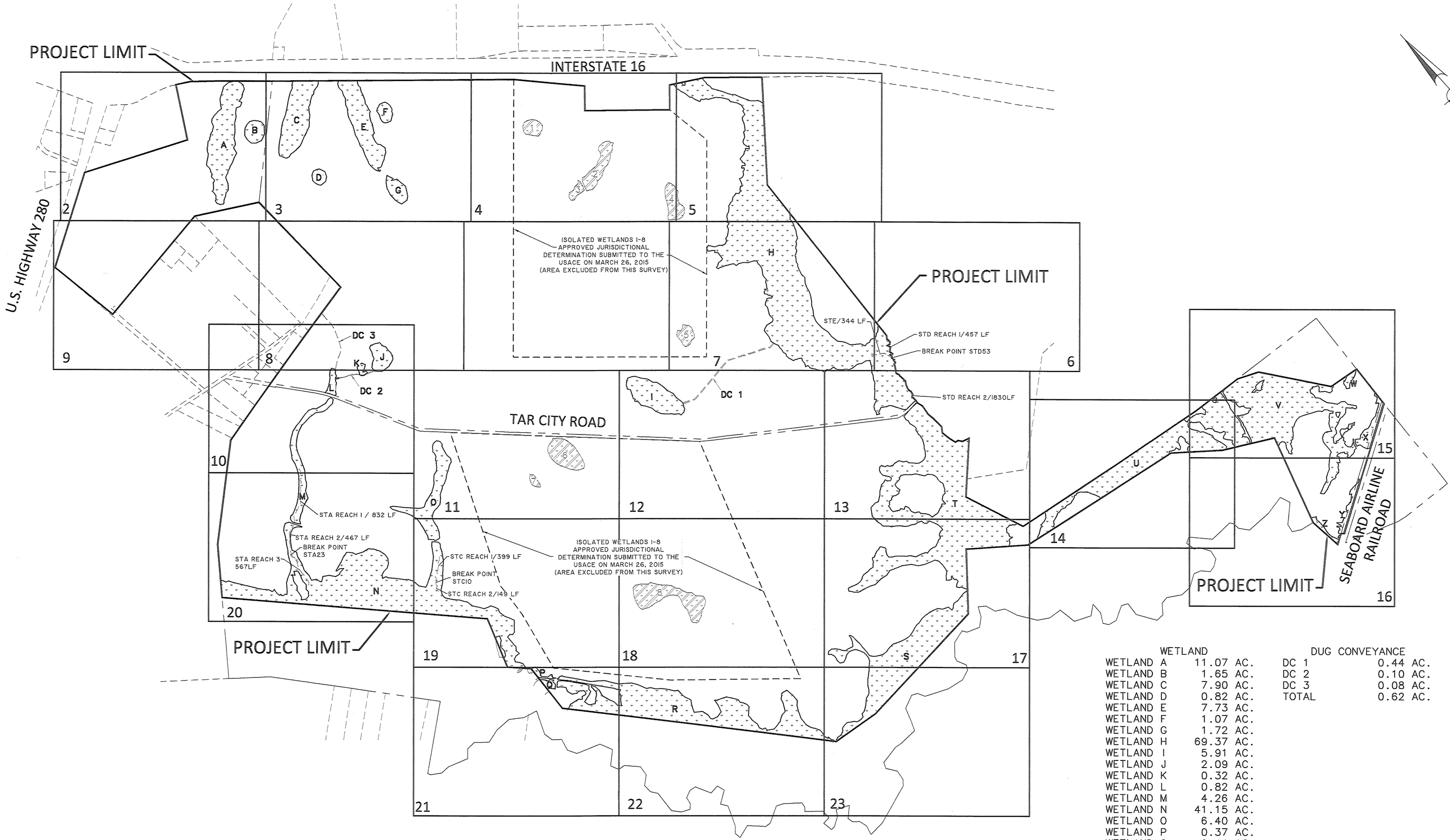
NC DWQ Stream Identification Form Version 4.11					Sample Location:	STD-20
Date:	3/6/2015	Project/Site:	Bryan County Mega-Site		Latitude:	32.155666
Evaluator:	RLC, Troy Smith & Zach Marsh	County:	Bryan		Longitude:	-81.439377
Total Points:	**27.5**	Stream Determination			Other e.g. Quad Name:	Eden
Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*		**Intermittent**				
A. Geomorphology					**Subtotal =**	**13**
1[a]	Continuity of channel bed and bank		Weak		1	
2	Sinuosity of channel along thalweg		Moderate		2	
3	In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence		Moderate		2	
4	Particle size of stream substrate		Weak		1	
5	Active/relict floodplain		Moderate		2	
6	Depositional bars or benches		Weak		1	
7	Recent alluvial deposits		Weak		1	
8	Headcuts		Weak		1	
9	Grade control		Moderate		1	
10	Natural valley		Moderate		1	
11	Second or greater order channel		No		0	
a) artificial ditches are not rated; see discussions in manual						
B. Hydrology					**Subtotal =**	**7**
12	Presence of Baseflow		Moderate		2	
13	Iron oxidizing bacteria		Absent		0	
14	Leaf litter		Moderate		0.5	
15	Sediment on plants or debris		Weak		0.5	
16	Organic debris lines or piles		Moderate		1	
17	Soil-based evidence of high water table?		Yes		3	
C. Biology					**Subtotal =**	**7.5**
18	Fibrous roots in streambed		Weak		2	
19	Rooted upland plants in streambed		Moderate		1	
20	Macrobenthos (note diversity and abundance)		Weak		1	
21	Aquatic Mollusks		Absent		0	
22	Fish		Absent		0	
23	Crayfish		Weak		0.5	
24	Amphibians		Moderate		1	
25	Algae		Weak		0.5	
26	Wetland plants in streambed		OBL		1.5	
*perennial streams may also be identified using other methods. See p. 35 of manual.						
Notes:						

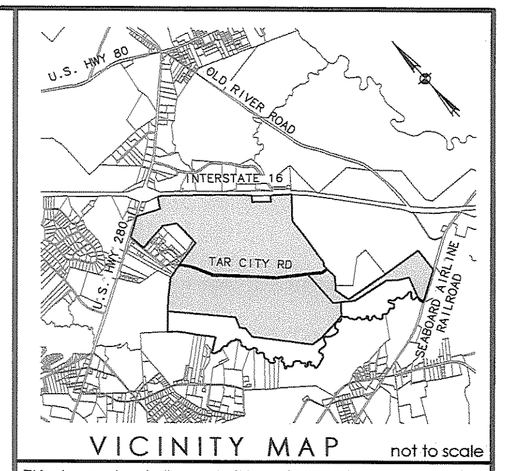
NC DWQ Stream Identification Form Version 4.11					Sample Location:	STD- 58
Date:	3/6/2015	Project/Site:	Bryan County Mega-Site		Latitude:	32.152587
Evaluator:	RLC, Troy Smith & Zach Marsh	County:	Bryan		Longitude:	-81.4428
Total Points:	**35.5**	Stream Determination			Other e.g. Quad Name:	Eden
Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*		**Perennial**				
A. Geomorphology					**Subtotal =**	**17**
1[a]	Continuity of channel bed and bank	Moderate		2		
2	Sinuosity of channel along thalweg	Strong		3		
3	In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	Weak		1		
4	Particle size of stream substrate	Weak		1		
5	Active/relict floodplain	Moderate		2		
6	Depositional bars or benches	Weak		1		
7	Recent alluvial deposits	Weak		1		
8	Headcuts	Weak		1		
9	Grade control	Weak		0.5		
10	Natural valley	Strong		1.5		
11	Second or greater order channel	Yes		3		
a) artificial ditches are not rated; see discussions in manual						
B. Hydrology					**Subtotal =**	**8**
12	Presence of Baseflow	Moderate		2		
13	Iron oxidizing bacteria	Absent		0		
14	Leaf litter	Weak		1		
15	Sediment on plants or debris	Moderate		0.5		
16	Organic debris lines or piles	Strong		1.5		
17	Soil-based evidence of high water table?	Yes		3		
C. Biology					**Subtotal =**	**10.5**
18	Fibrous roots in streambed	Weak		2		
19	Rooted upland plants in streambed	Weak		2		
20	Macrobenthos (note diversity and abundance)	Moderate		2		
21	Aquatic Mollusks	Absent		0		
22	Fish	Absent		0		
23	Crayfish	Moderate		1		
24	Amphibians	Moderate		1		
25	Algae	Weak		1		
26	Wetland plants in streambed	OBL		1.5		
*perennial streams may also be identified using other methods. See p. 35 of manual.						
Notes:						

NC DWQ Stream Identification Form Version 4.11					Sample Location:	STE-6
Date:	3/6/2015	Project/Site:	Bryan County Mega-Site		Latitude:	32.153643
Evaluator:	RLC, Troy Smith & Zach Marsh	County:	Bryan		Longitude:	-81.443263
Total Points:	**17.25**	Stream Determination			Other e.g. Quad Name:	Eden
Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*		**Ephemeral**				
A. Geomorphology					**Subtotal =**	**7**
1[a]	Continuity of channel bed and bank	Weak			1	
2	Sinuosity of channel along thalweg	Weak			1	
3	In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	Weak			1	
4	Particle size of stream substrate	Absent			0	
5	Active/relict floodplain	Weak			1	
6	Depositional bars or benches	Absent			0	
7	Recent alluvial deposits	Weak			1	
8	Headcuts	Weak			1	
9	Grade control	Weak			0.5	
10	Natural valley	Weak			0.5	
11	Second or greater order channel	No			0	
a) artificial ditches are not rated; see discussions in manual						
B. Hydrology					**Subtotal =**	**6**
12	Presence of Baseflow	Weak			1	
13	Iron oxidizing bacteria	Absent			0	
14	Leaf litter	Moderate			0.5	
15	Sediment on plants or debris	Weak			0.5	
16	Organic debris lines or piles	Moderate			1	
17	Soil-based evidence of high water table?	Yes			3	
C. Biology					**Subtotal =**	**4.25**
18	Fibrous roots in streambed	Moderate			1	
19	Rooted upland plants in streambed	Moderate			1	
20	Macrobenthos (note diversity and abundance)	Weak			1	
21	Aquatic Mollusks	Absent			0	
22	Fish	Absent			0	
23	Crayfish	Absent			0	
24	Amphibians	Weak			0.5	
25	Algae	Absent			0	
26	Wetland plants in streambed	FACW			0.75	
*perennial streams may also be identified using other methods. See p. 35 of manual.						
Notes:						

Enclosure 6

Wetland Survey Produced by Thomas & Hutton





VICINITY MAP not to scale

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN, III

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET630R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

NOTES

1. FIELD EQUIPMENT USED FOR THIS SURVEY: 5" TOTAL STATION AND GPS TECHNOLOGY.
2. COORDINATES AND DIRECTIONS ARE BASED ON GEORGIA STATE PLANE COORDINATE SYSTEM (NAD83), EAST ZONE.
3. ACCORDING TO F.I.R.M. MAP NO. 13029C0090C & 13029C0095C, REVISED MARCH 2, 2009, THE PROPERTY SHOWN ON THIS PLAT LIES IN FLOOD HAZARD ZONE X ZONE X(SHADED), ZONE A AND ZONE AE(EL: 31,32,33,34,35,36,37 & 38).
4. WETLANDS THAT MAY EXIST ARE UNDER THE JURISDICTION OF THE CORPS OF ENGINEERS AND/OR THE DEPARTMENT OF NATURAL RESOURCES. LOT OWNERS AND THE DEVELOPER ARE SUBJECT TO PENALTY BY LAW FOR DISTURBANCE TO THESE PROTECTED AREAS WITHOUT PROPER PERMIT AND APPROVAL.
5. TAX MAP NUMBERS: 030-00-025-00, 030-00-026-00 & 030-00-007-00.
6. TITLE THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE SEARCH AND IS SUBJECT TO ANY EASEMENTS AND RESTRICTIONS OF RECORD.
7. WETLANDS SHOWN DELINEATED BY RESOURCE+LAND CONSULTANTS, MARCH, 2015.
8. ISOLATED WETLANDS I-8 PREVIOUSLY SUBMITTED TO THE USACE ON MARCH 26, 2015.
9. SEE SHEETS 24 & 25 FOR LINE AND CURVE DATUM.

WETLANDS

THE WETLANDS SHOWN HEREON WERE LOCATED USING CONVENTIONAL SURVEY AND GPS TECHNOLOGY. THIS IS AN ACCURATE REPRESENTATION OF THE DELINEATED AND FLAGGED LINES AND MEETS OR EXCEEDS THE ALLOWABLE POSITIONAL TOLERANCE BY THE NATIONAL MAP ACCURACY STANDARDS. THESE WETLANDS ARE UNDER THE JURISDICTION AND PERMITTING AUTHORITY OF THE U.S. ARMY CORPS OF ENGINEERS.

WETLAND

ISOLATED WETLAND

DC= DUG CONVEYANCE

STREAM

EARTH ROAD

WETLAND		DUG CONVEYANCE	
WETLAND A	11.07 AC.	DC 1	0.44 AC.
WETLAND B	1.65 AC.	DC 2	0.10 AC.
WETLAND C	7.90 AC.	DC 3	0.08 AC.
WETLAND D	0.82 AC.	TOTAL	0.62 AC.
WETLAND E	7.73 AC.		
WETLAND F	1.07 AC.		
WETLAND G	1.72 AC.		
WETLAND H	69.37 AC.		
WETLAND I	5.91 AC.		
WETLAND J	2.09 AC.		
WETLAND K	0.32 AC.		
WETLAND L	0.82 AC.		
WETLAND M	4.26 AC.		
WETLAND N	41.15 AC.		
WETLAND O	6.40 AC.		
WETLAND P	0.37 AC.		
WETLAND Q	0.44 AC.		
WETLAND R	26.51 AC.		
WETLAND S	21.59 AC.		
WETLAND T	45.76 AC.		
WETLAND U	22.03 AC.		
WETLAND V	26.31 AC.		
WETLAND W	0.47 AC.		
WETLAND X	1.88 AC.		
WETLAND Y	1.16 AC.		
WETLAND Z	0.59 AC.		
TOTAL	309.39 AC.		

TOTAL ACREAGE

UPLAND	1092.91 ACRES
WETLAND	309.39 ACRES
DUG CONVEYANCES	0.62 ACRES
TOTALS	1402.92 ACRES

STREAM DESIGNATION

EPHEMERAL		INTERMITTENT		PERENNIAL	
STA REACH 3	567 LF	STA REACH 1	832 LF	STD REACH 2	1830 LF
STC REACH 2	149 LF	STA REACH 2	467 LF		
STE	344 LF	STC REACH 1	399 LF		
		STD REACH 1	457 LF		

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

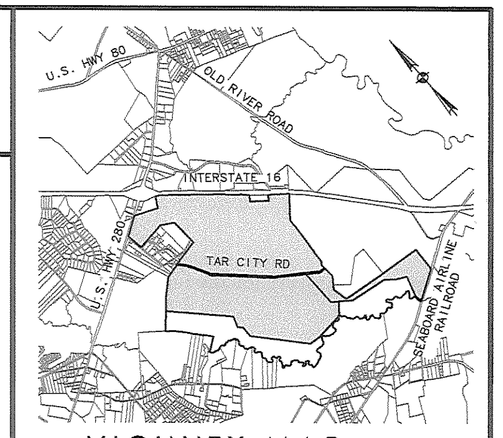
No.	Revision	By	Date

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

800 0 800 1600
1 INCH = 800 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000



VICINITY MAP not to scale

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN, III

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

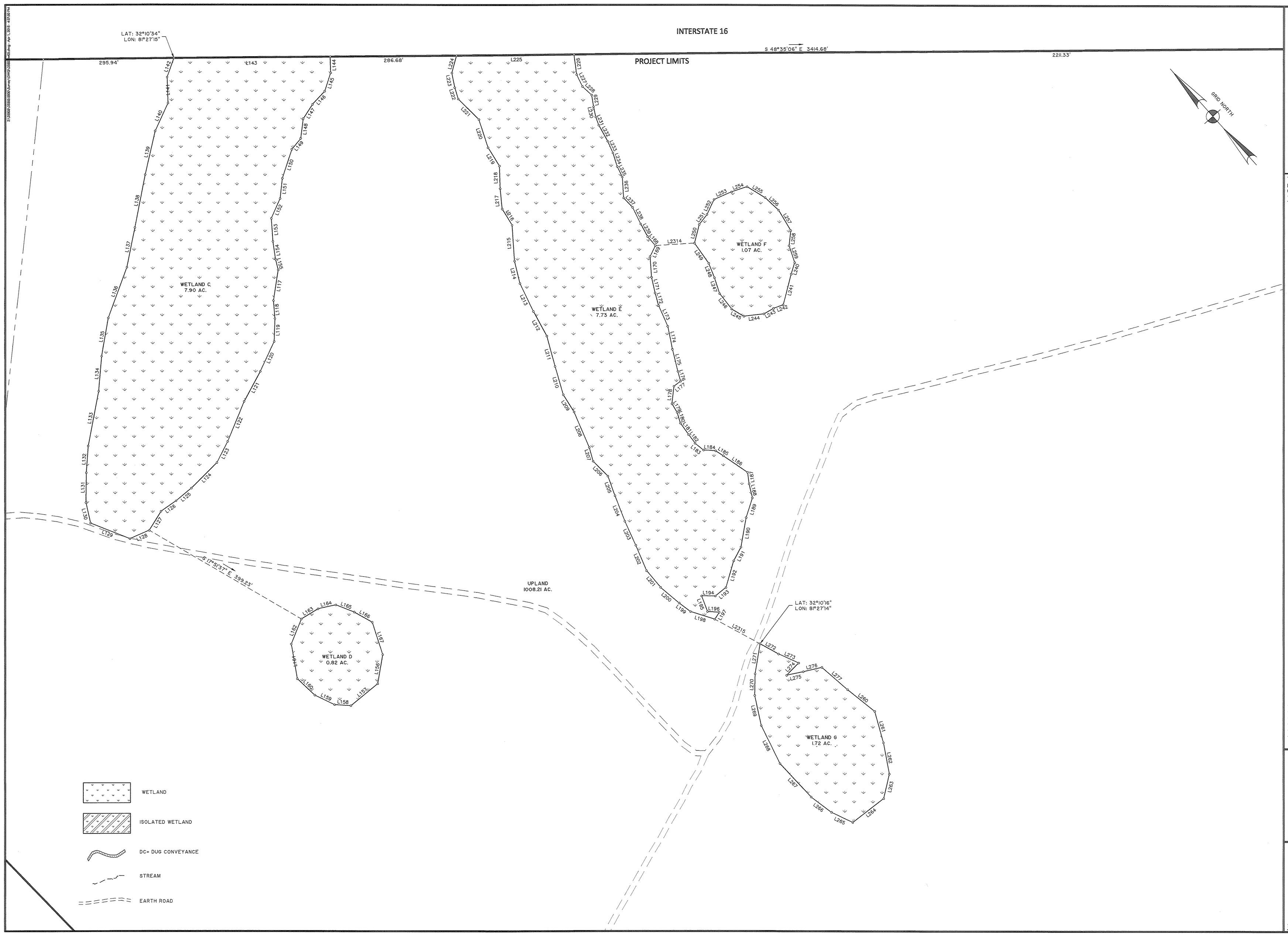
No.	Revision	By	Date

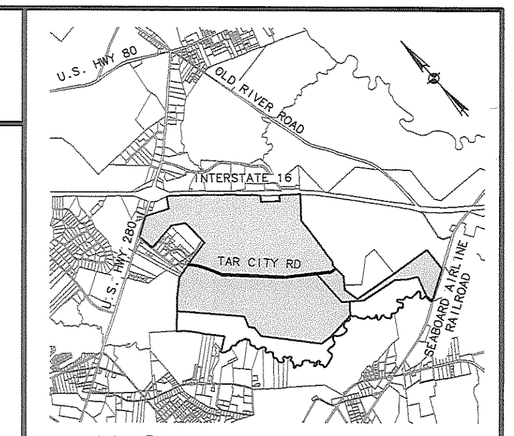
THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000





VICINITY MAP not to scale

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN, III

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

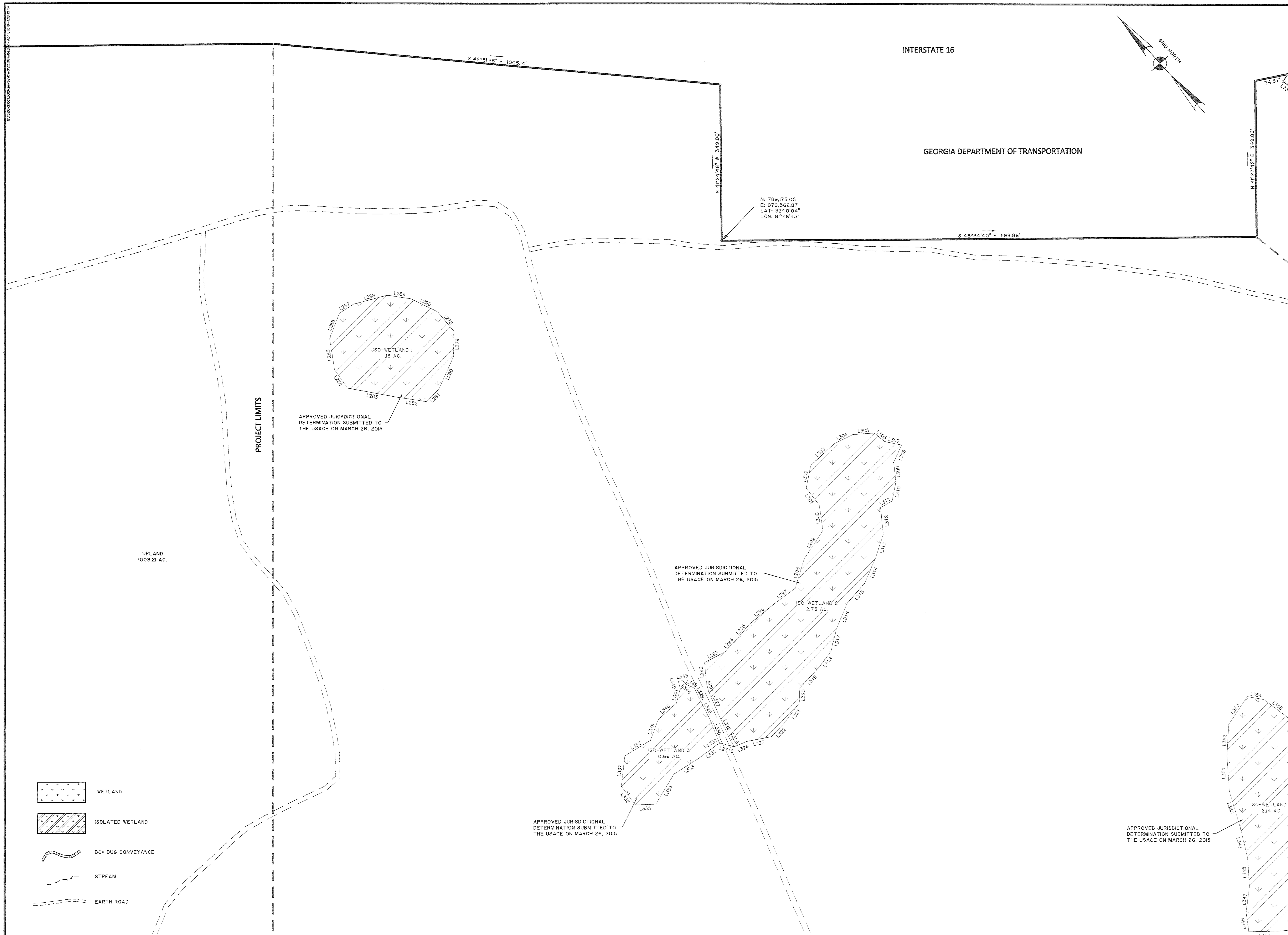
No.	Revision	By	Date

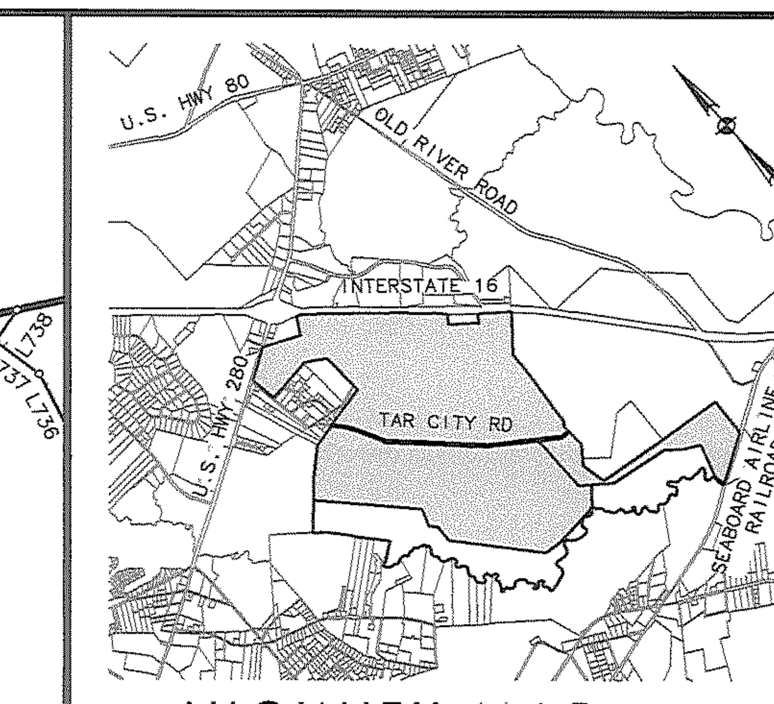
THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000





VICINITY MAP not to scale

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

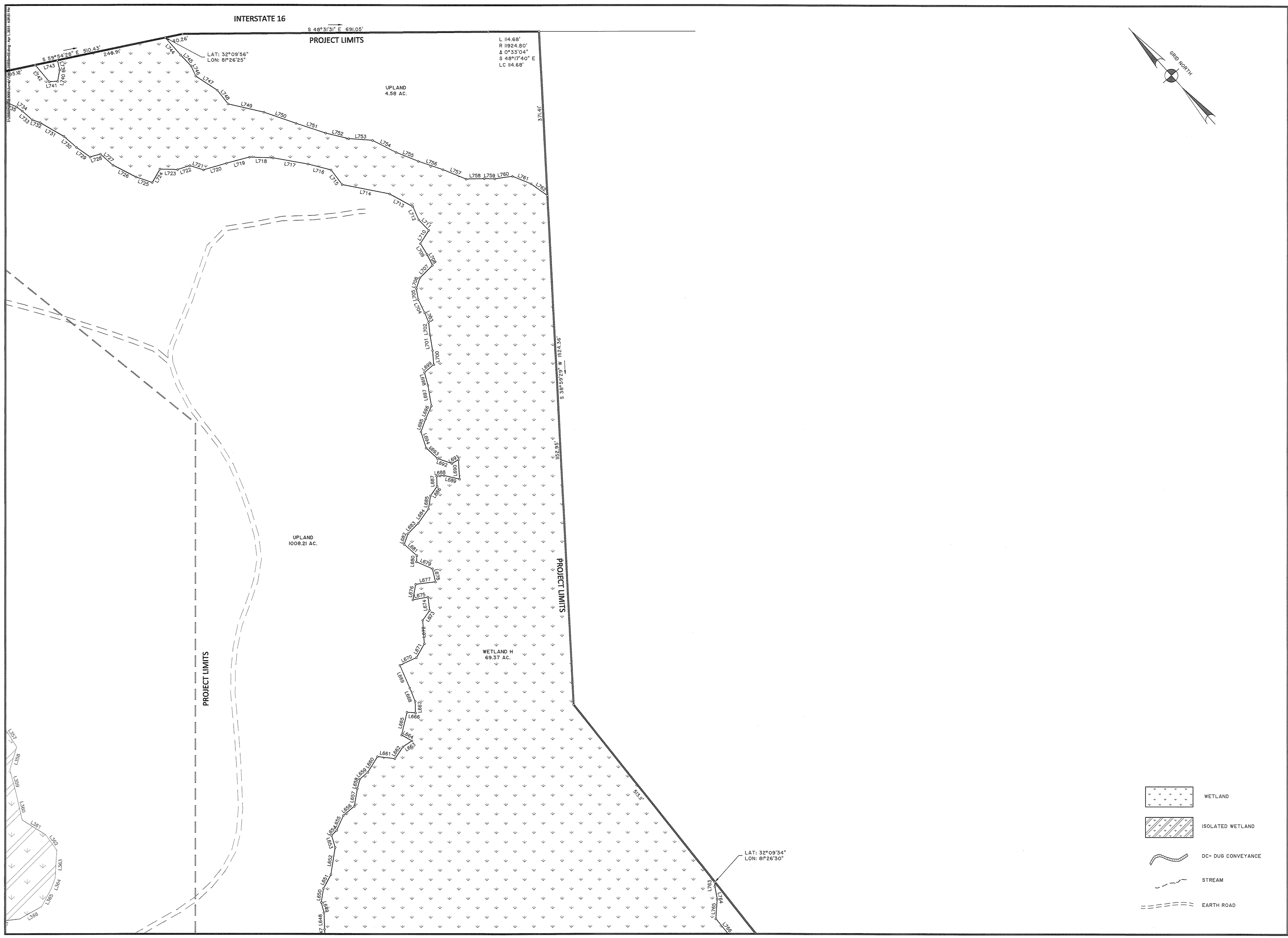
No.	Revision	By	Date

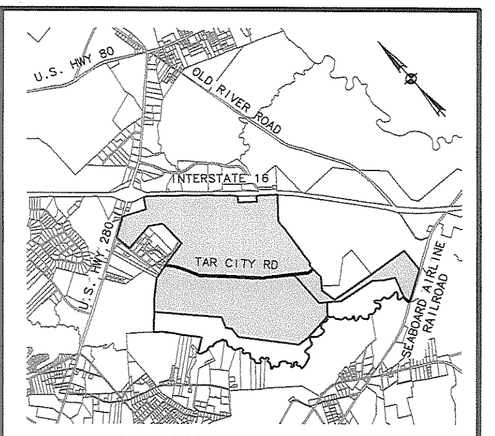
THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000





VICINITY MAP not to scale

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN, III

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

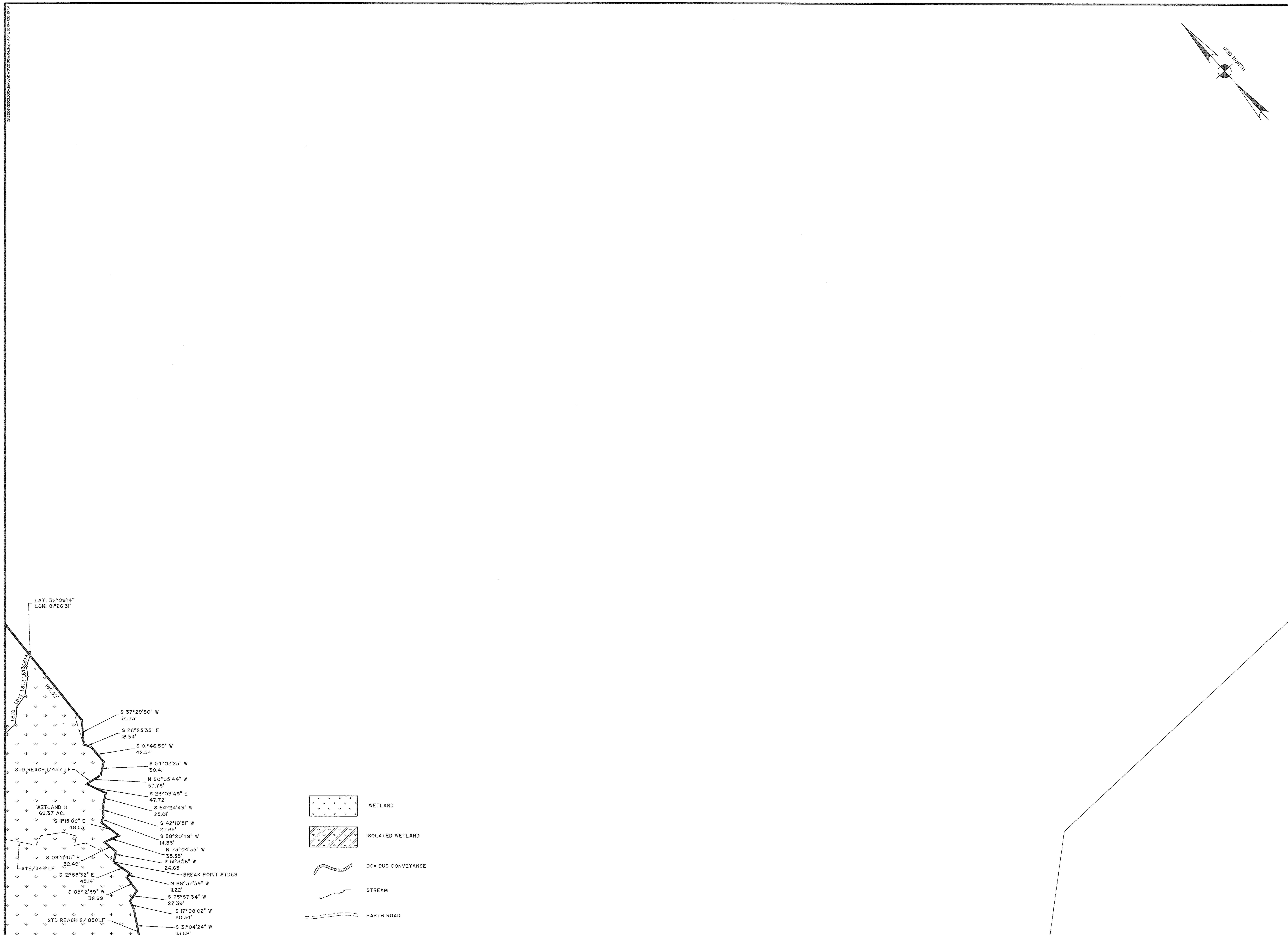
No.	Revision	By	Date

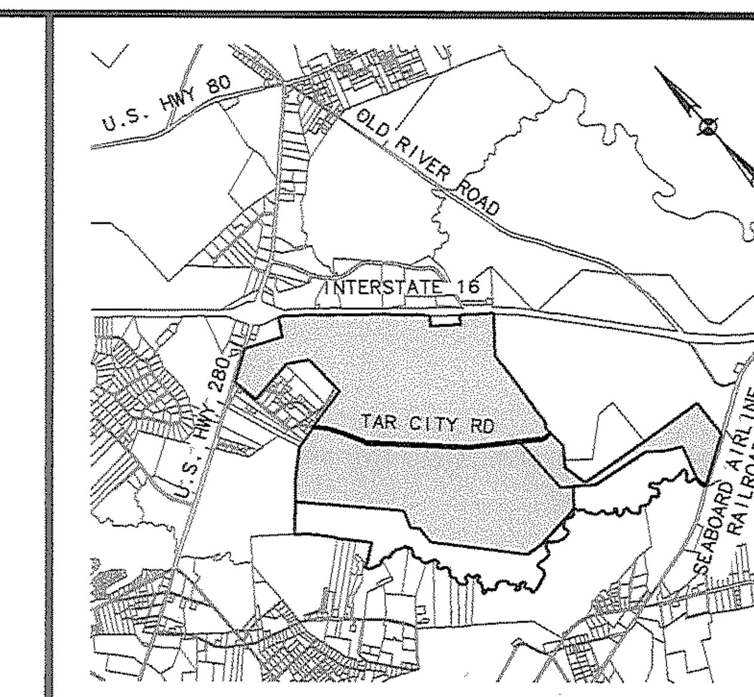
THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000





VICINITY MAP not to scale

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN, III

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

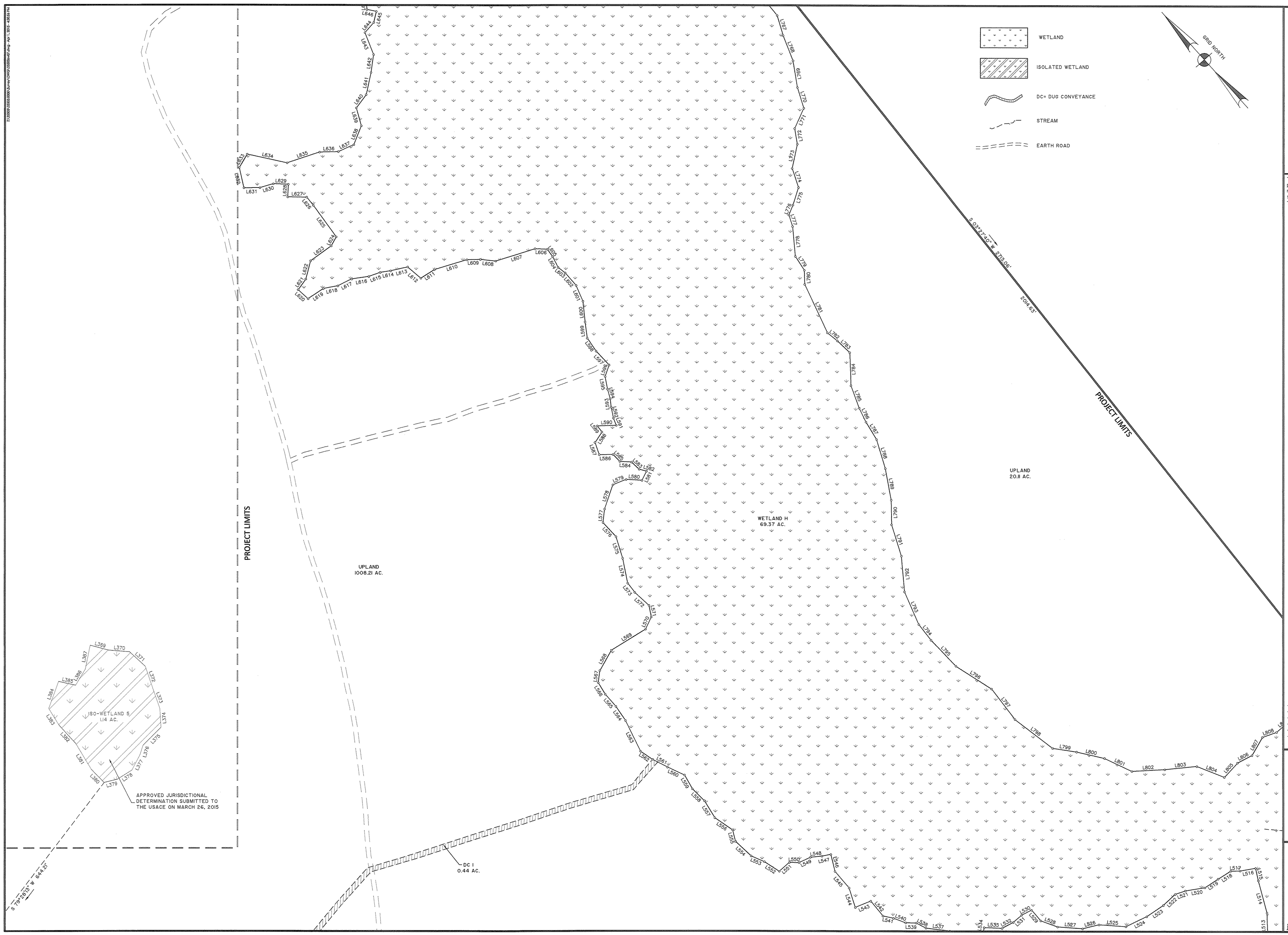
No.	Revision	By	Date

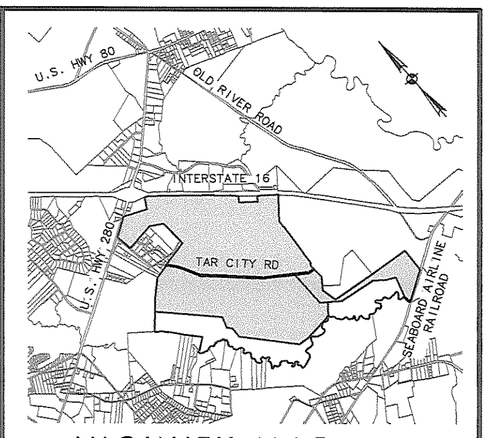
THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000





VICINITY MAP not to scale

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN, III

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

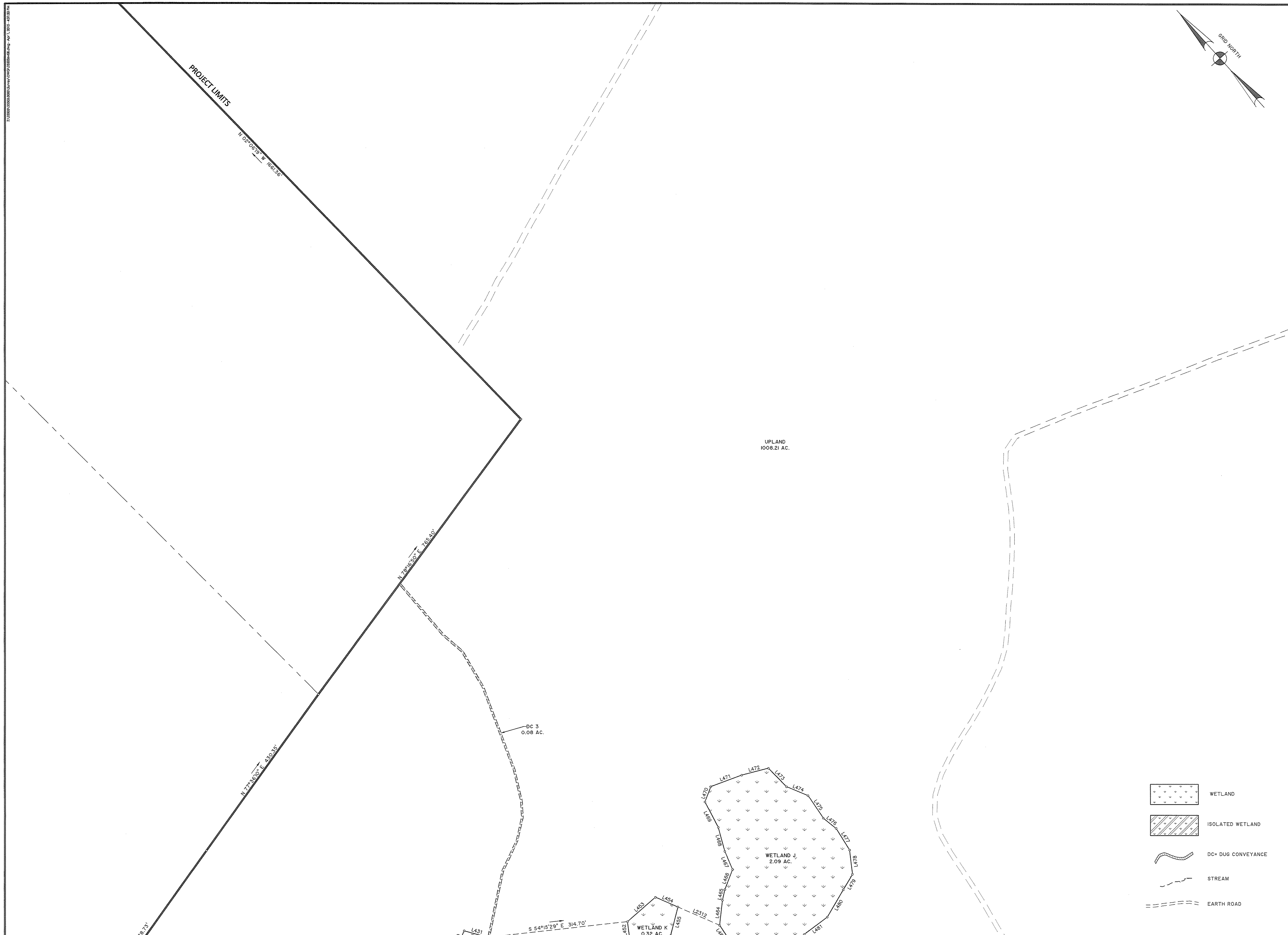
No.	Revision	By	Date

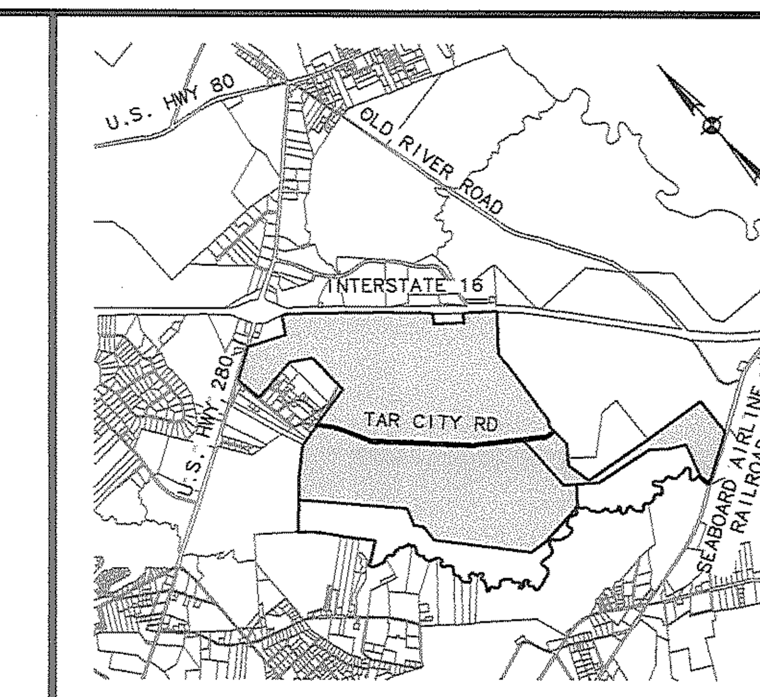
THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000





VICINITY MAP not to scale

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN, III

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

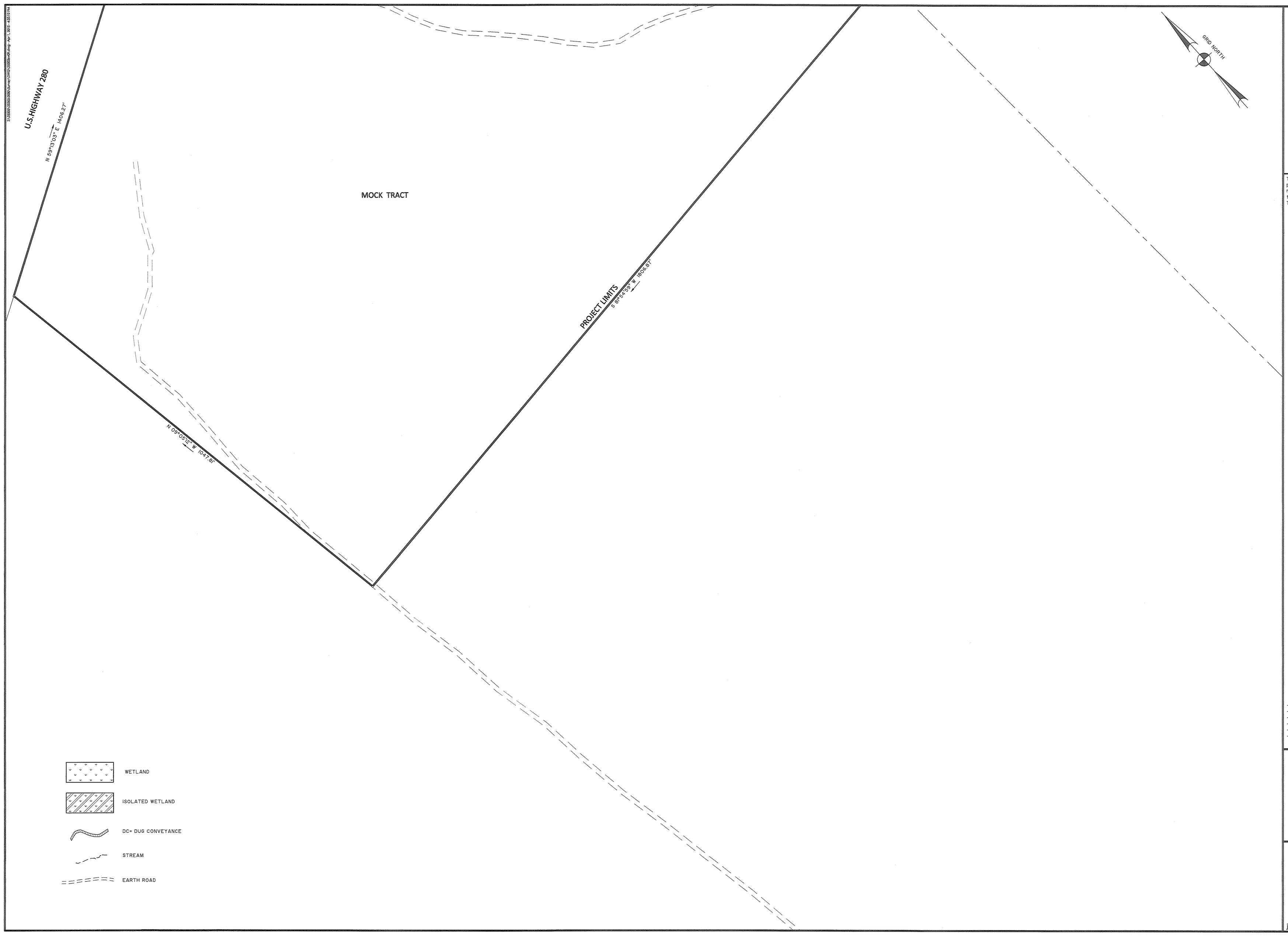
No.	Revision	By	Date

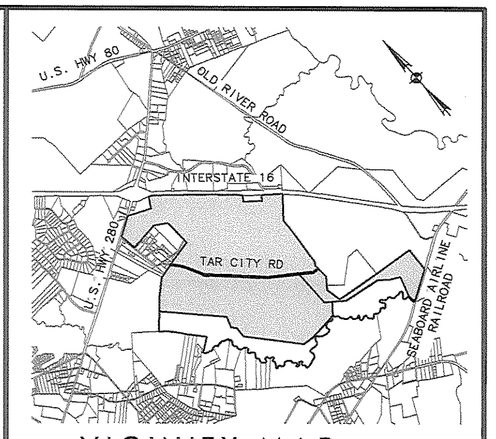
THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000





VICINITY MAP not to scale

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN, III

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

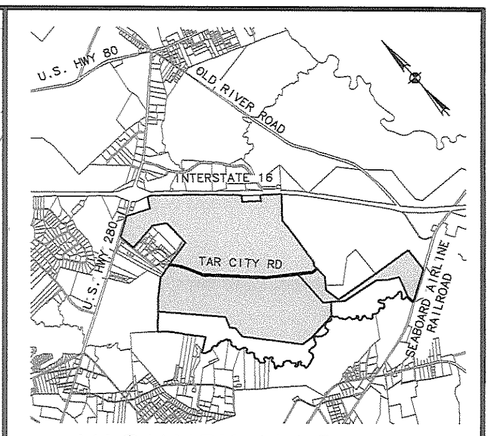
No.	Revision	By	Date

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000 SHEET 9 OF 25



VICINITY MAP not to scale

GEORGIA REGISTERED LAND SURVEYOR No. 3087 ROBERT K. MORGAN, III

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for

SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

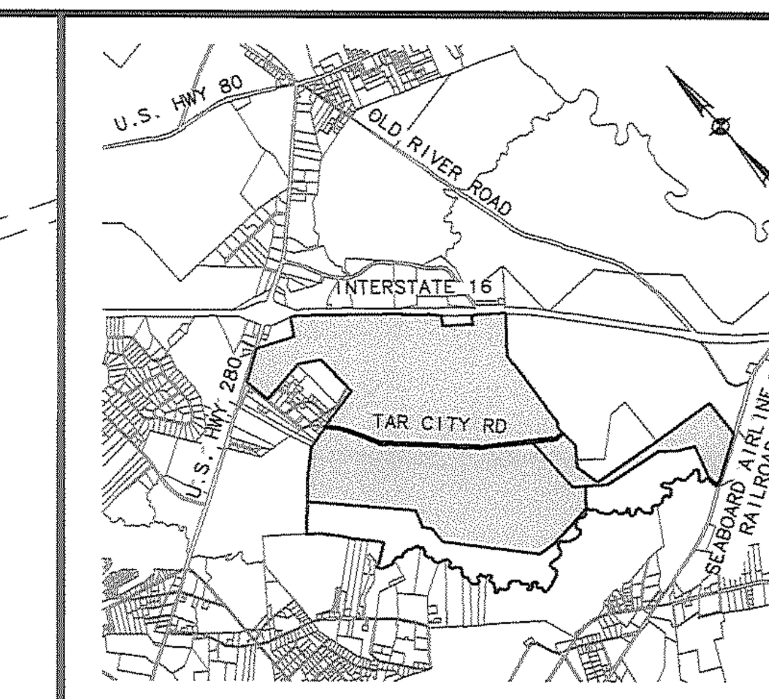
No.	Revision	By	Date

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000 SHEET 10 OF 25



VICINITY MAP not to scale

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN III

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

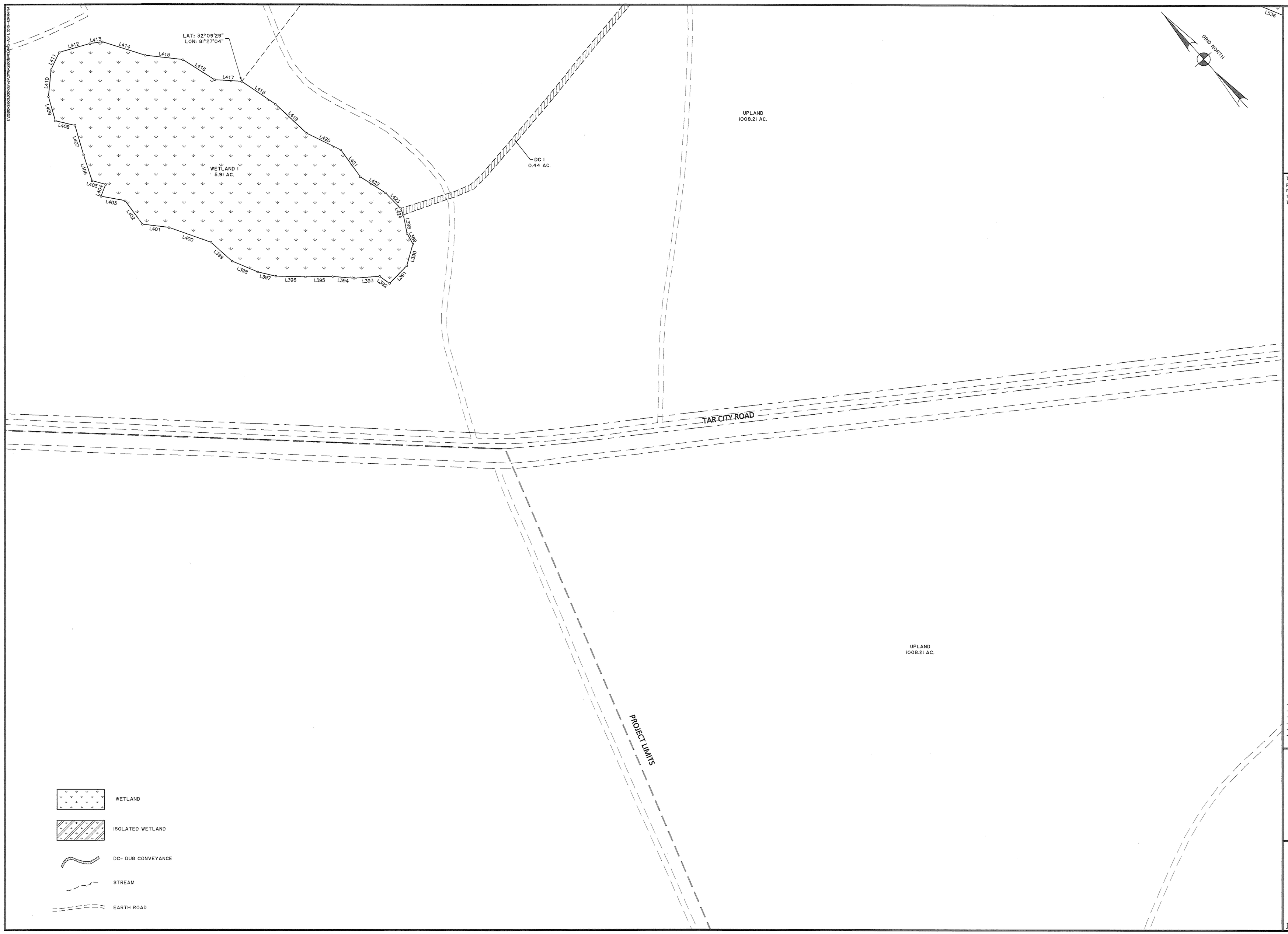
No.	Revision	By	Date

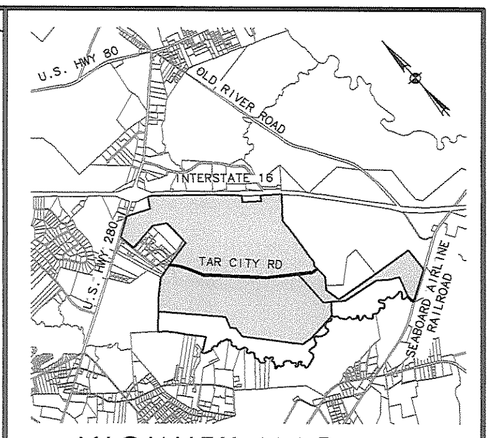
THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000 SHEET 11 OF 25





VICINITY MAP not to scale

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN, III

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

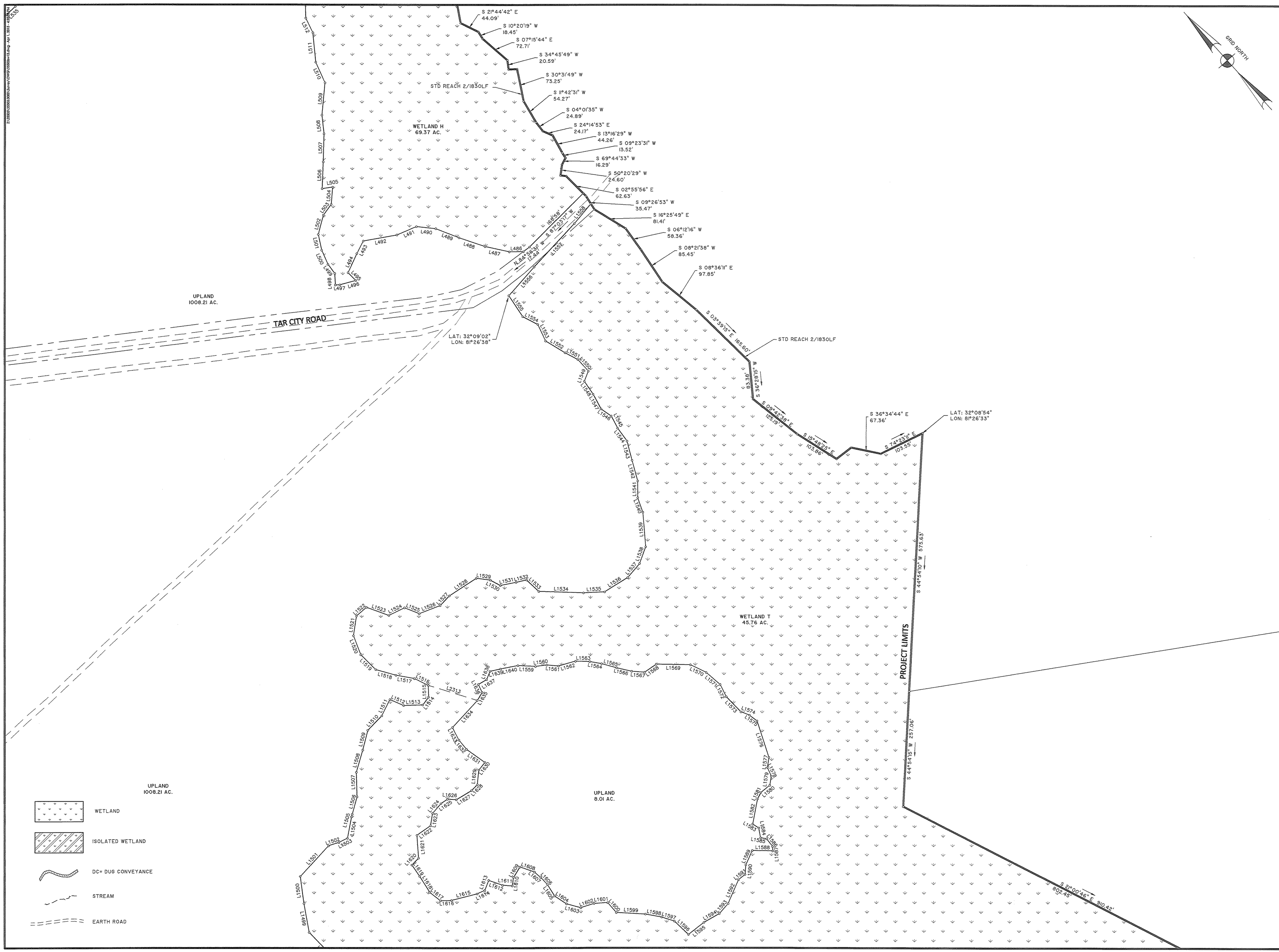
No.	Revision	By	Date

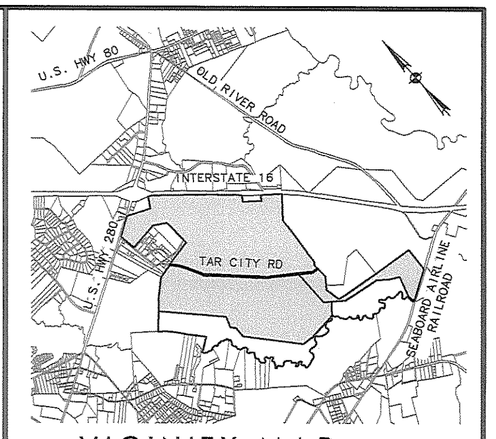
THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000 SHEET 12 OF 25





VICINITY MAP not to scale

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN, III

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

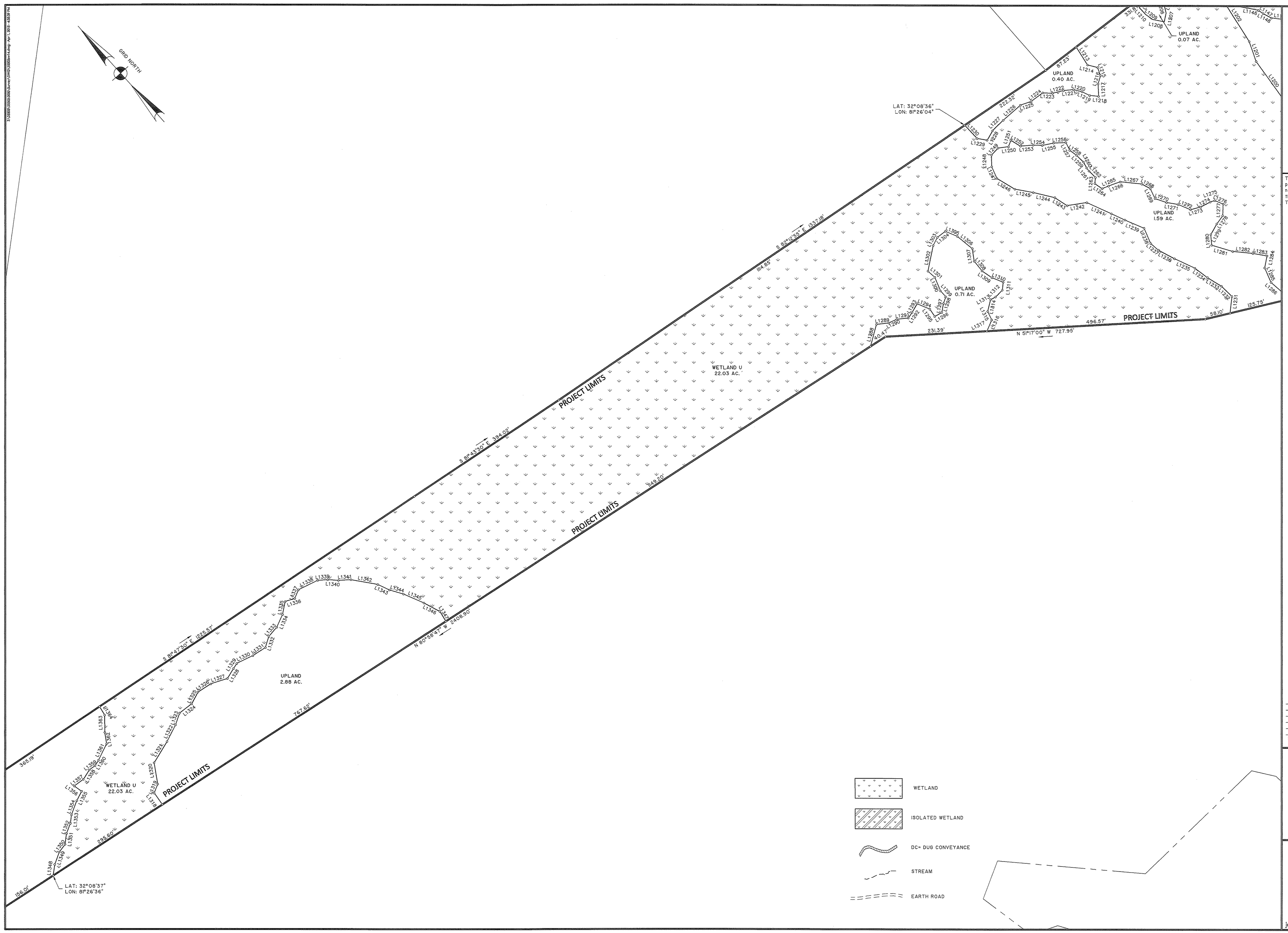
No.	Revision	By	Date

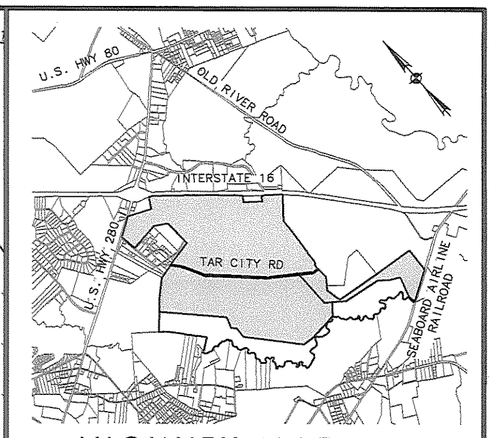
THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000





VICINITY MAP not to scale

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN, III

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

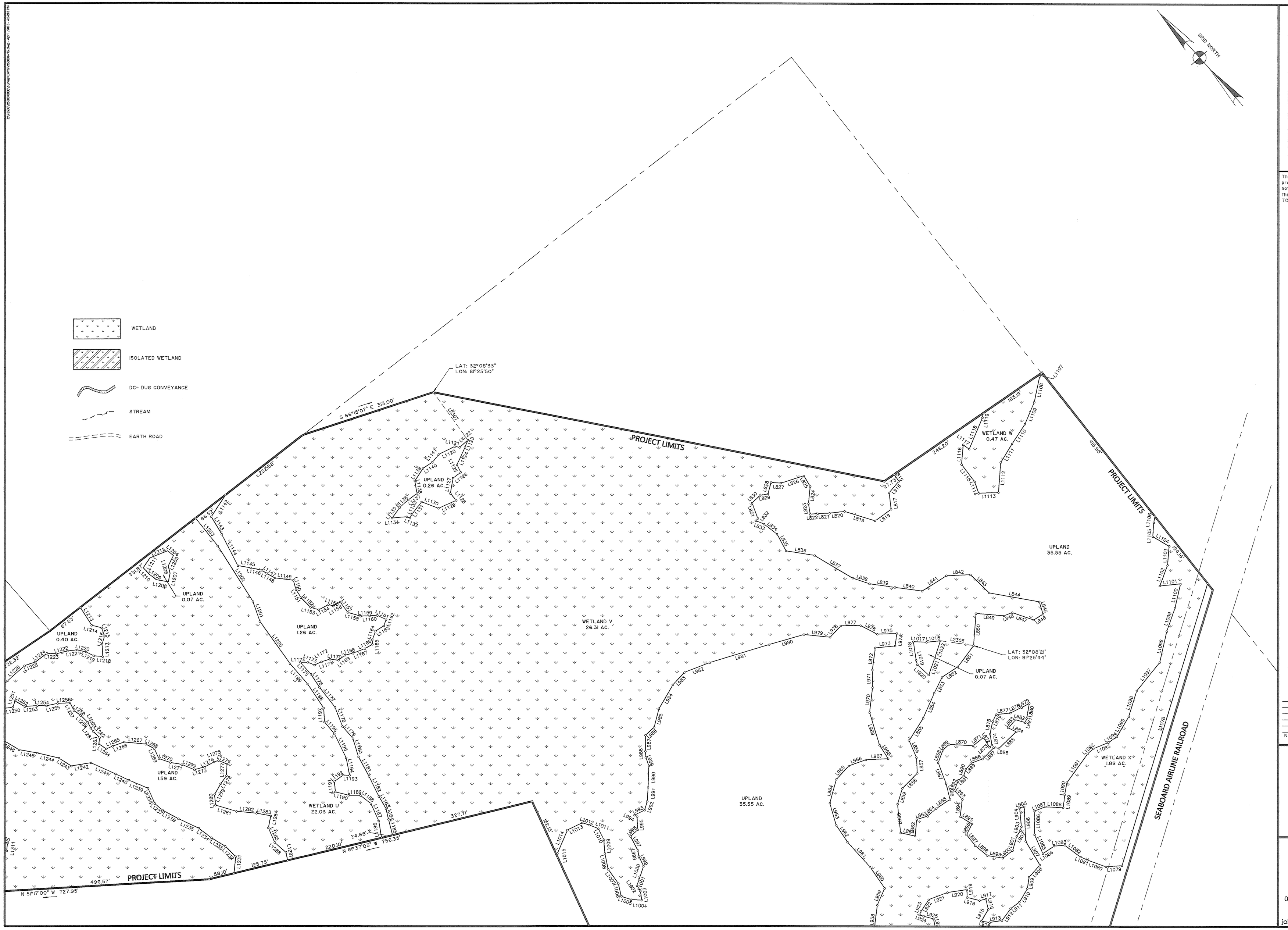
No.	Revision	By	Date

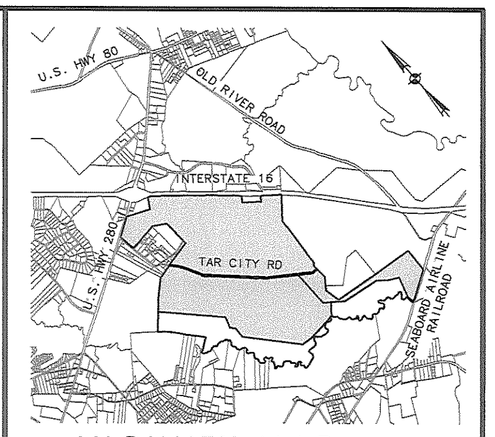
THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000





VICINITY MAP not to scale

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN, III

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

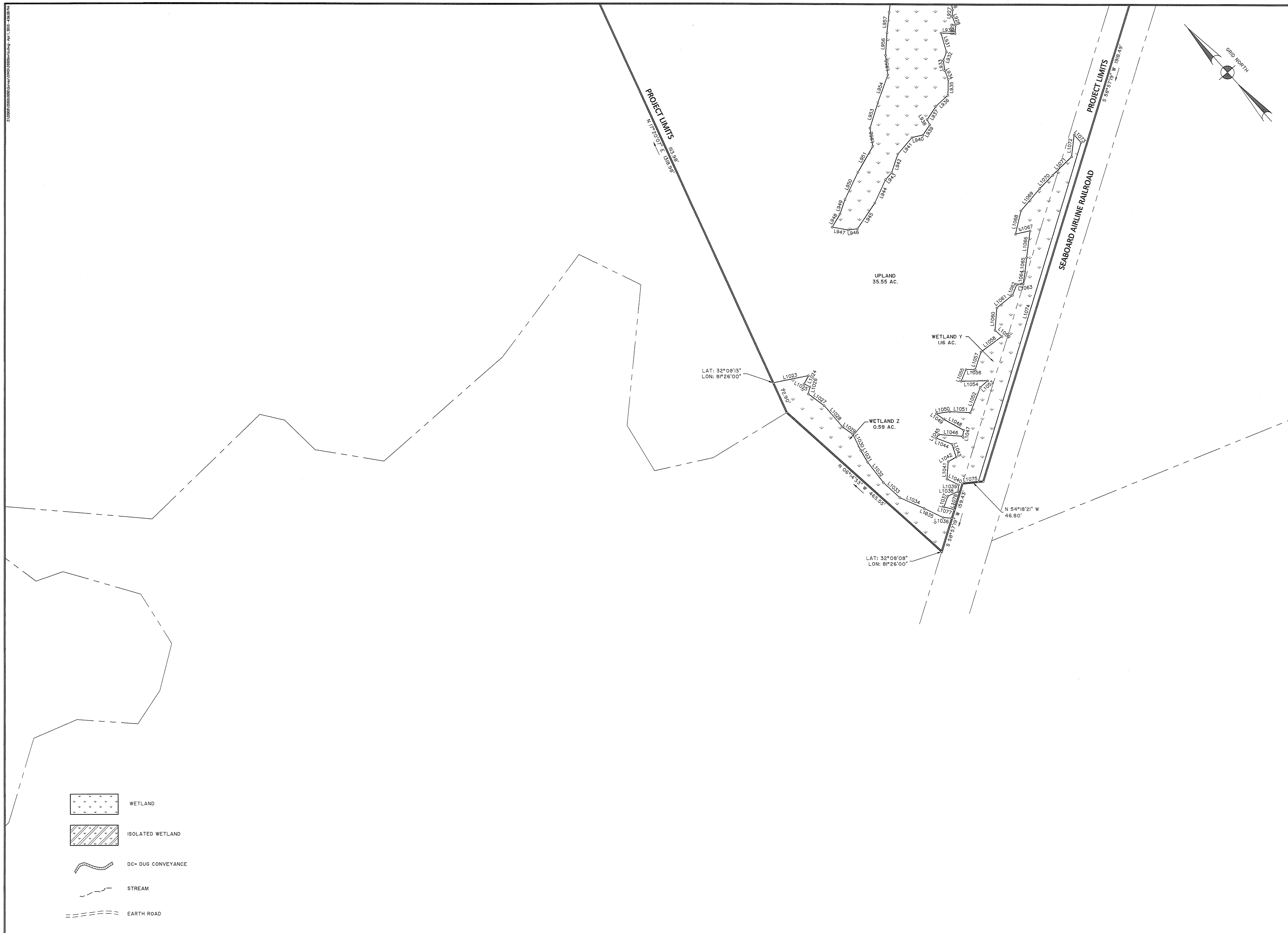
prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

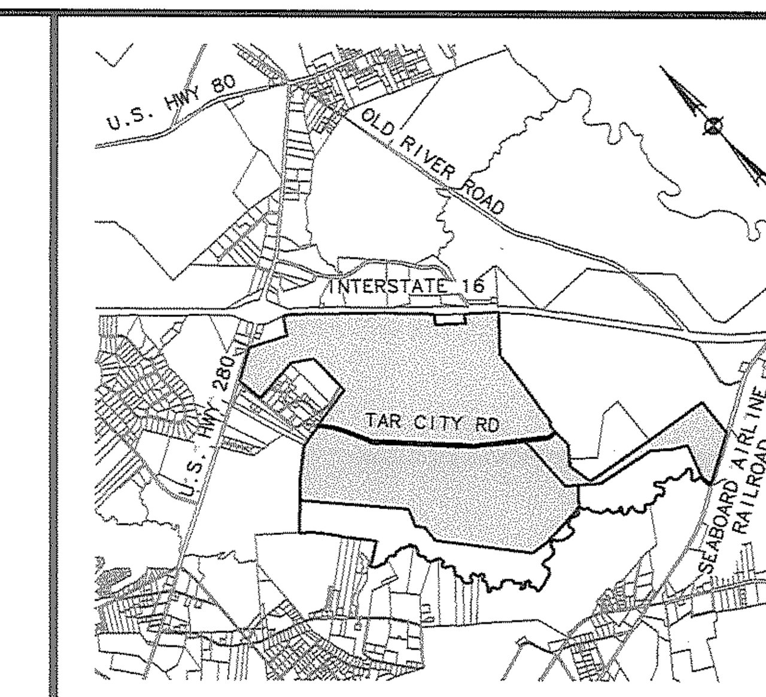
No.	Revision	By	Date

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H





VICINITY MAP not to scale

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN, III

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

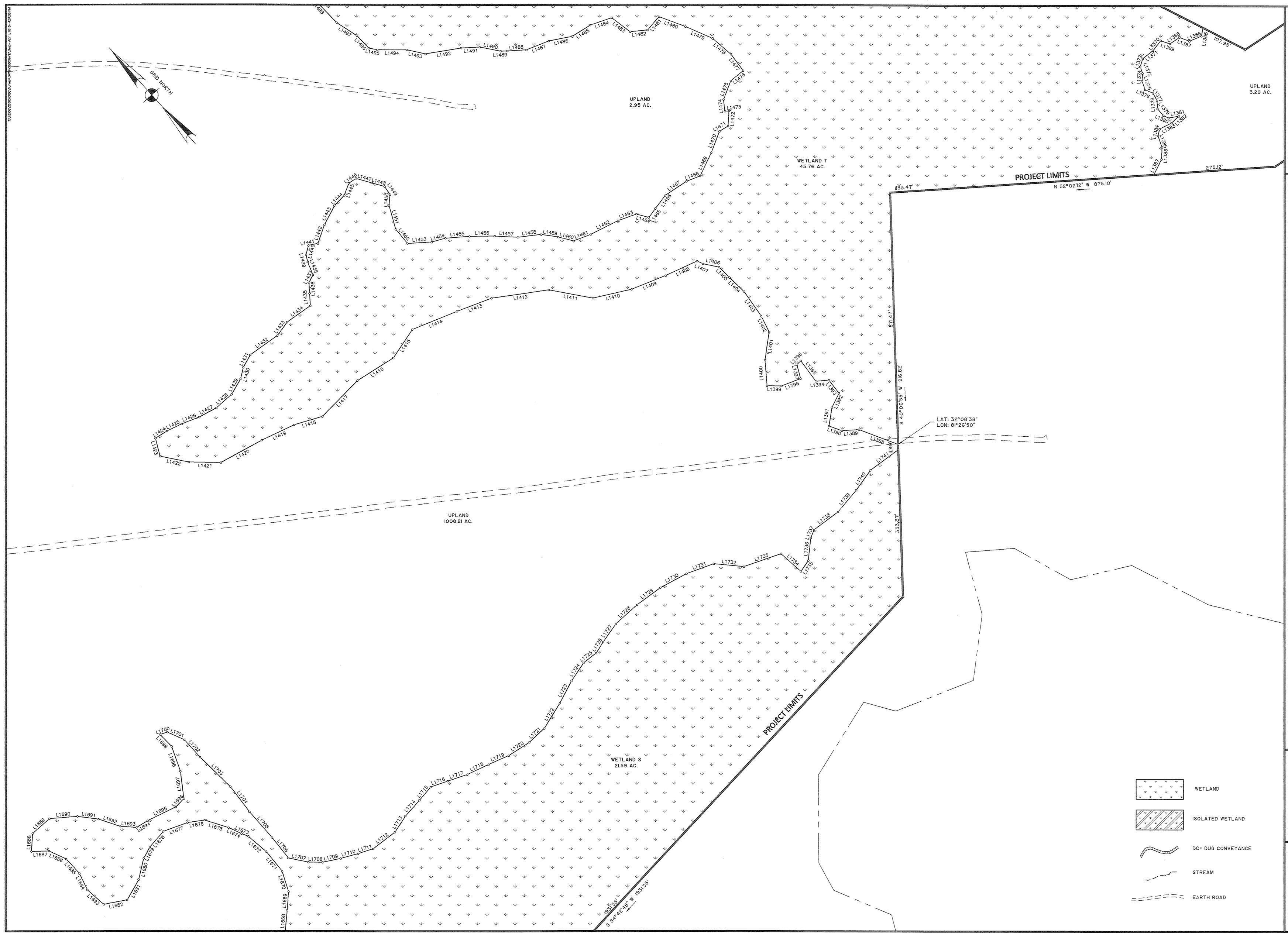
No.	Revision	By	Date

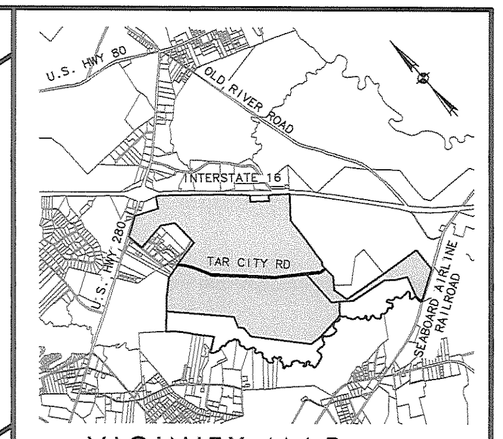
THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000 SHEET 16 OF 25





VICINITY MAP not to scale

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN III

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

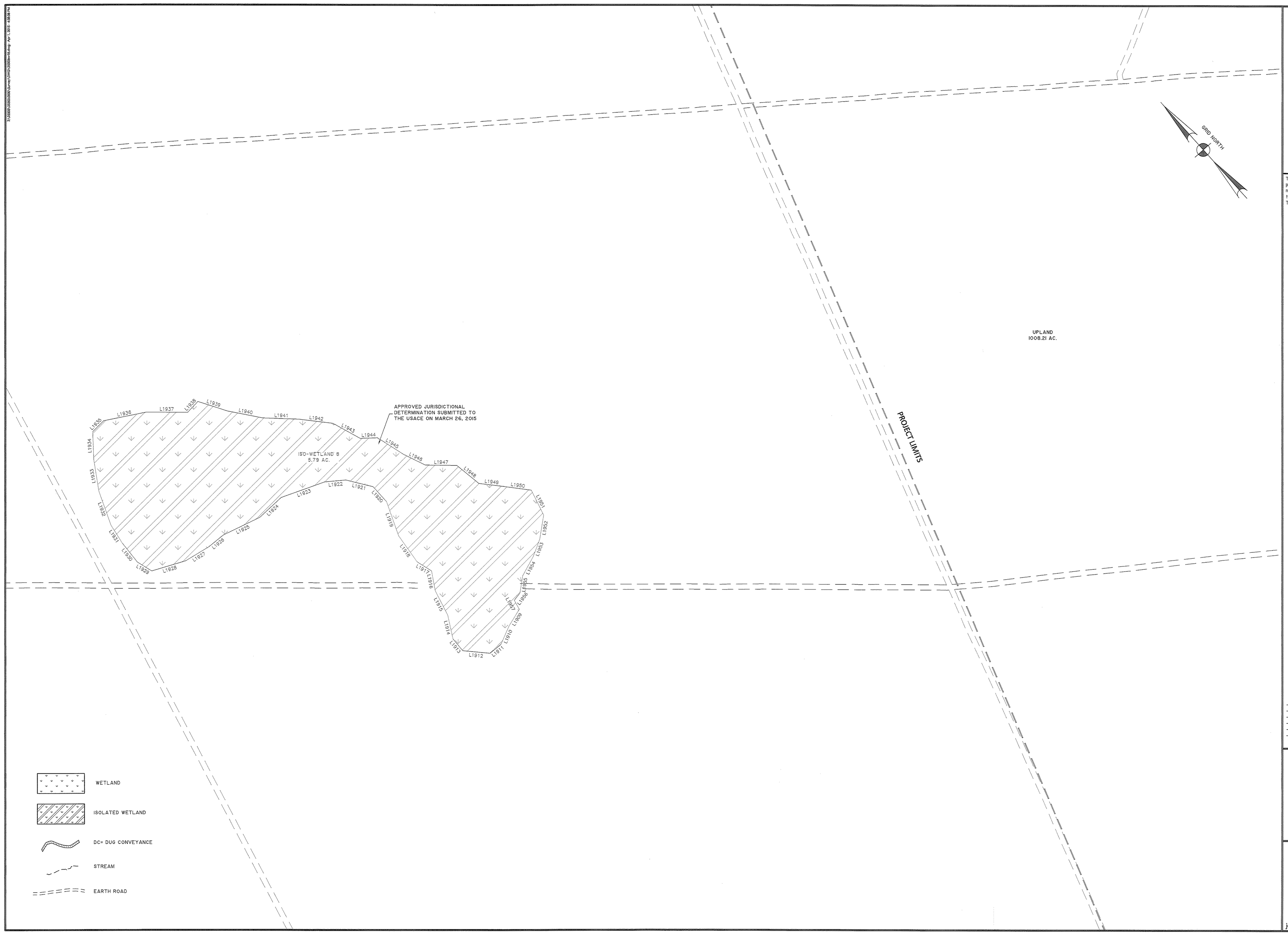
No.	Revision	By	Date

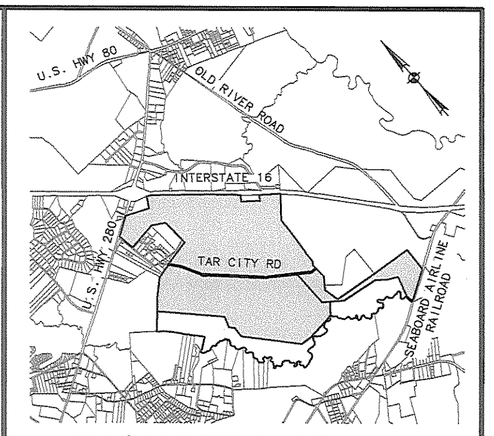
THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000





VICINITY MAP not to scale

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN III

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

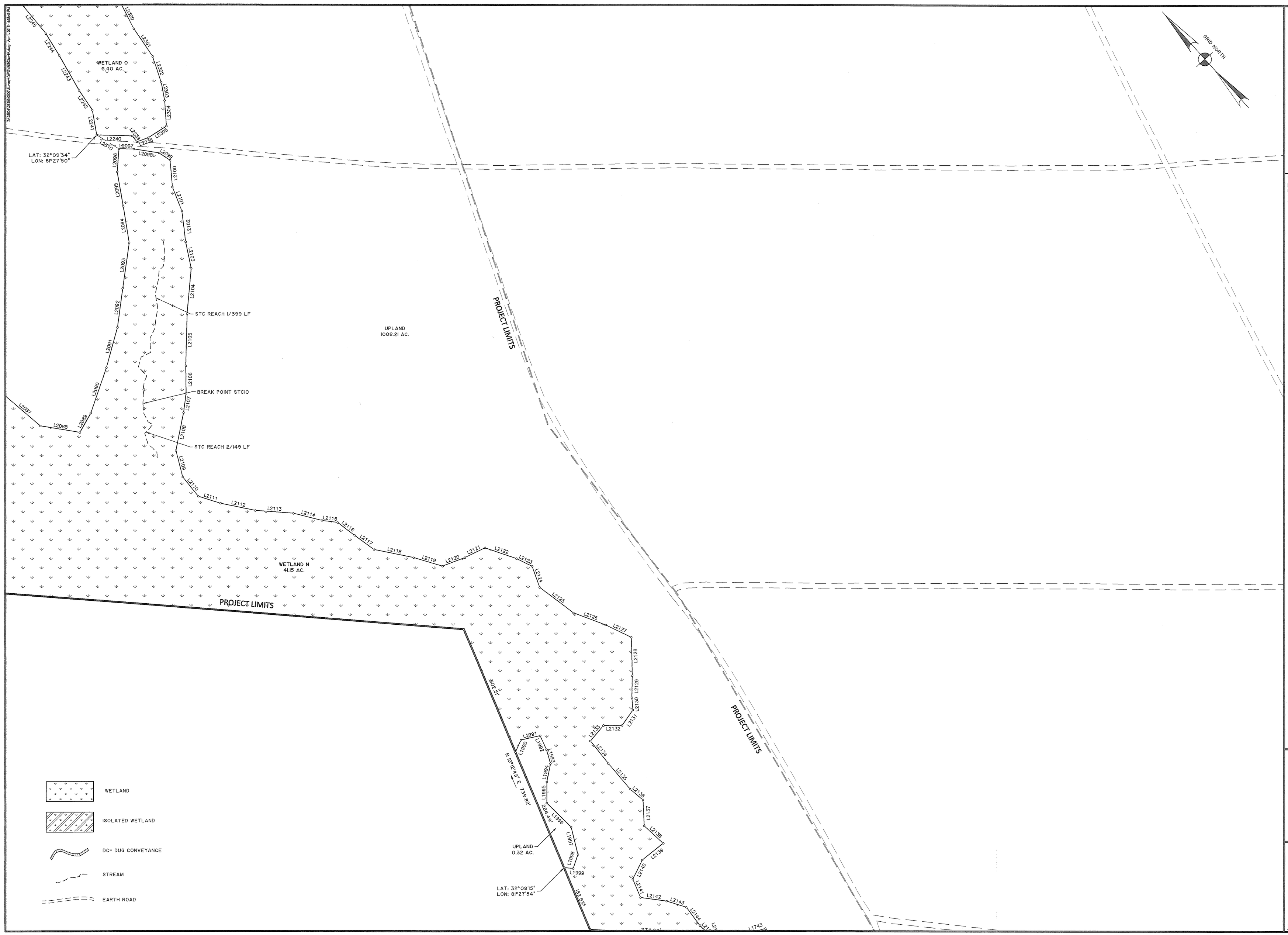
No.	Revision	By	Date

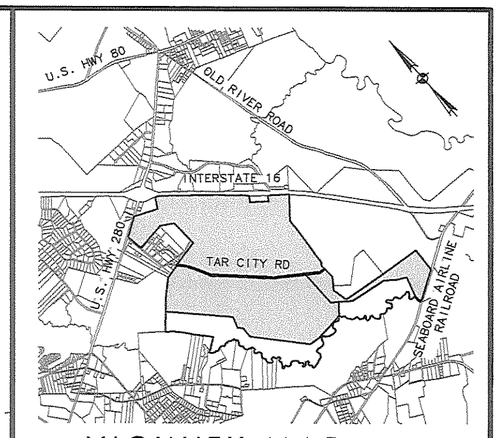
THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000





VICINITY MAP not to scale

GEORGI REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN, III

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

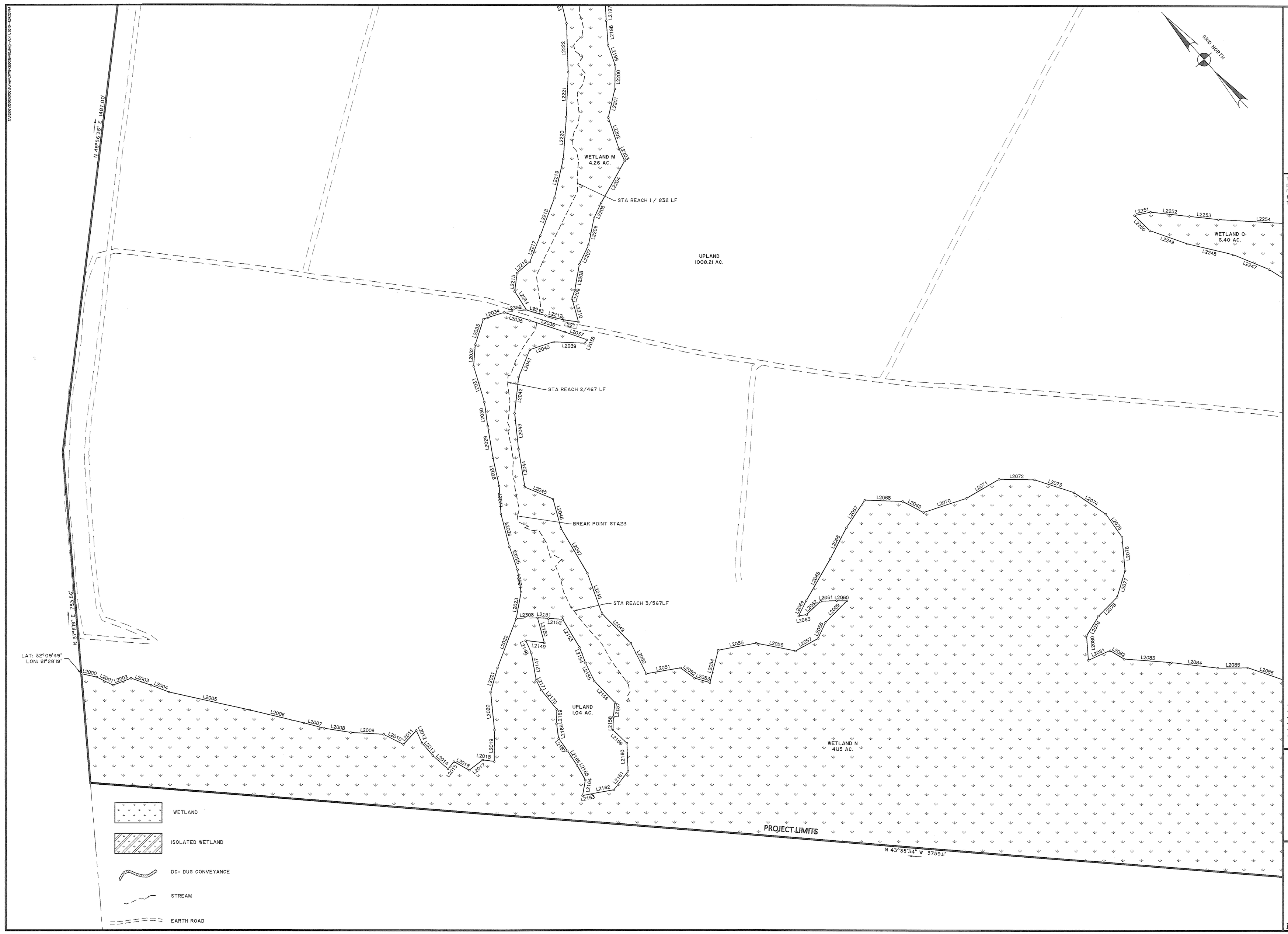
No.	Revision	By	Date

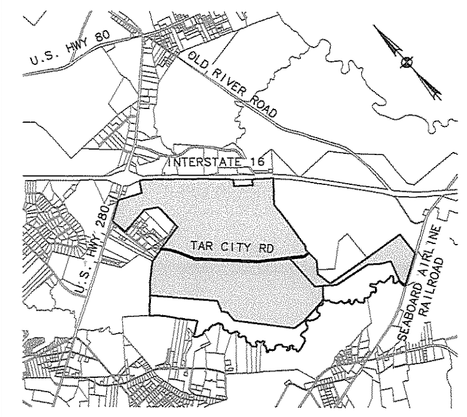
THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000 SHEET 19 OF 25





VICINITY MAP not to scale

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN III

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

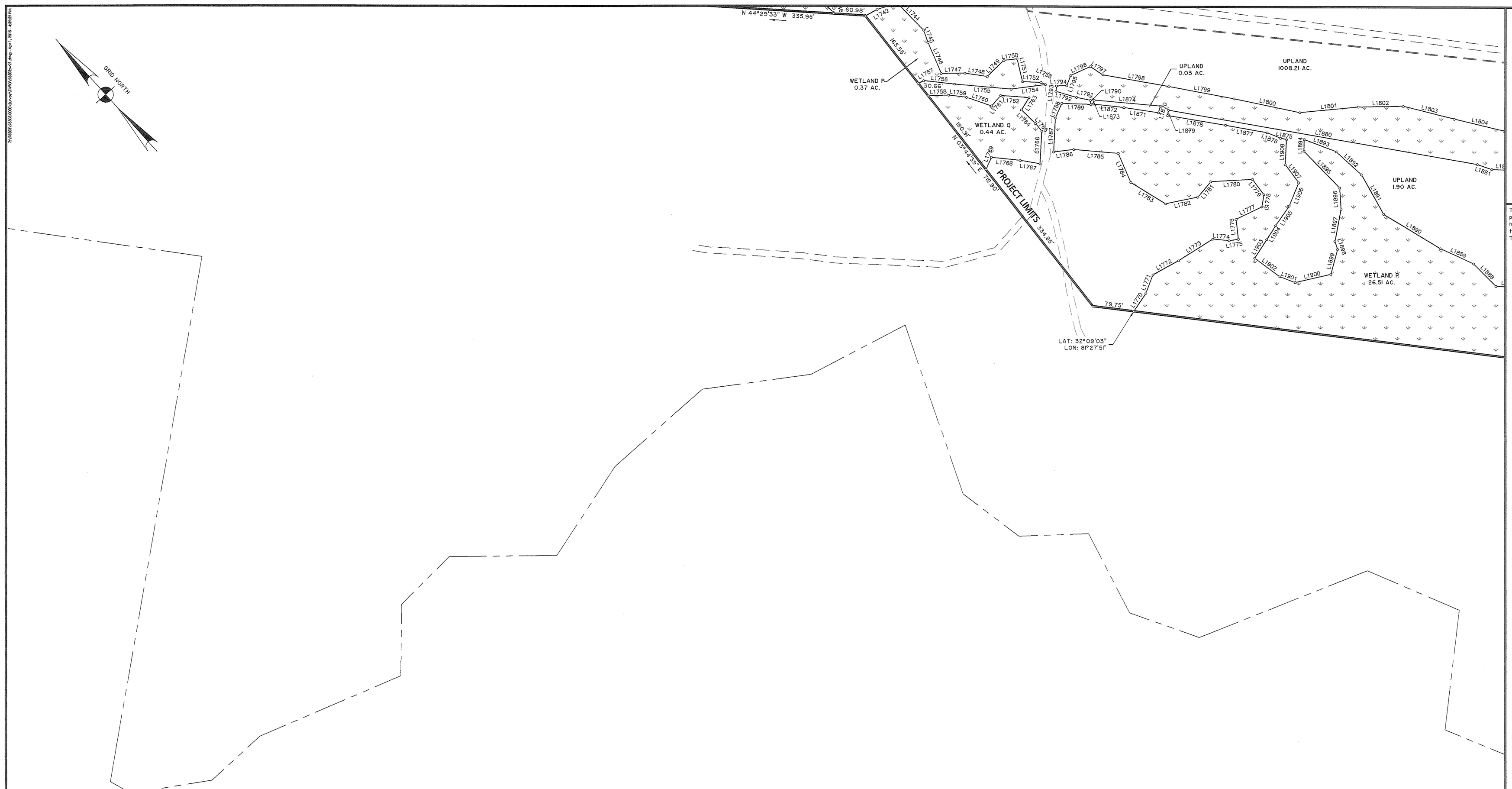
No.	Revision	By	Date

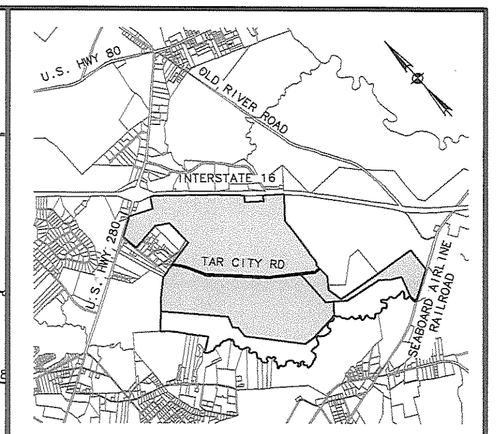
THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000 SHEET 20 OF 25





VICINITY MAP not to scale

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN III

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

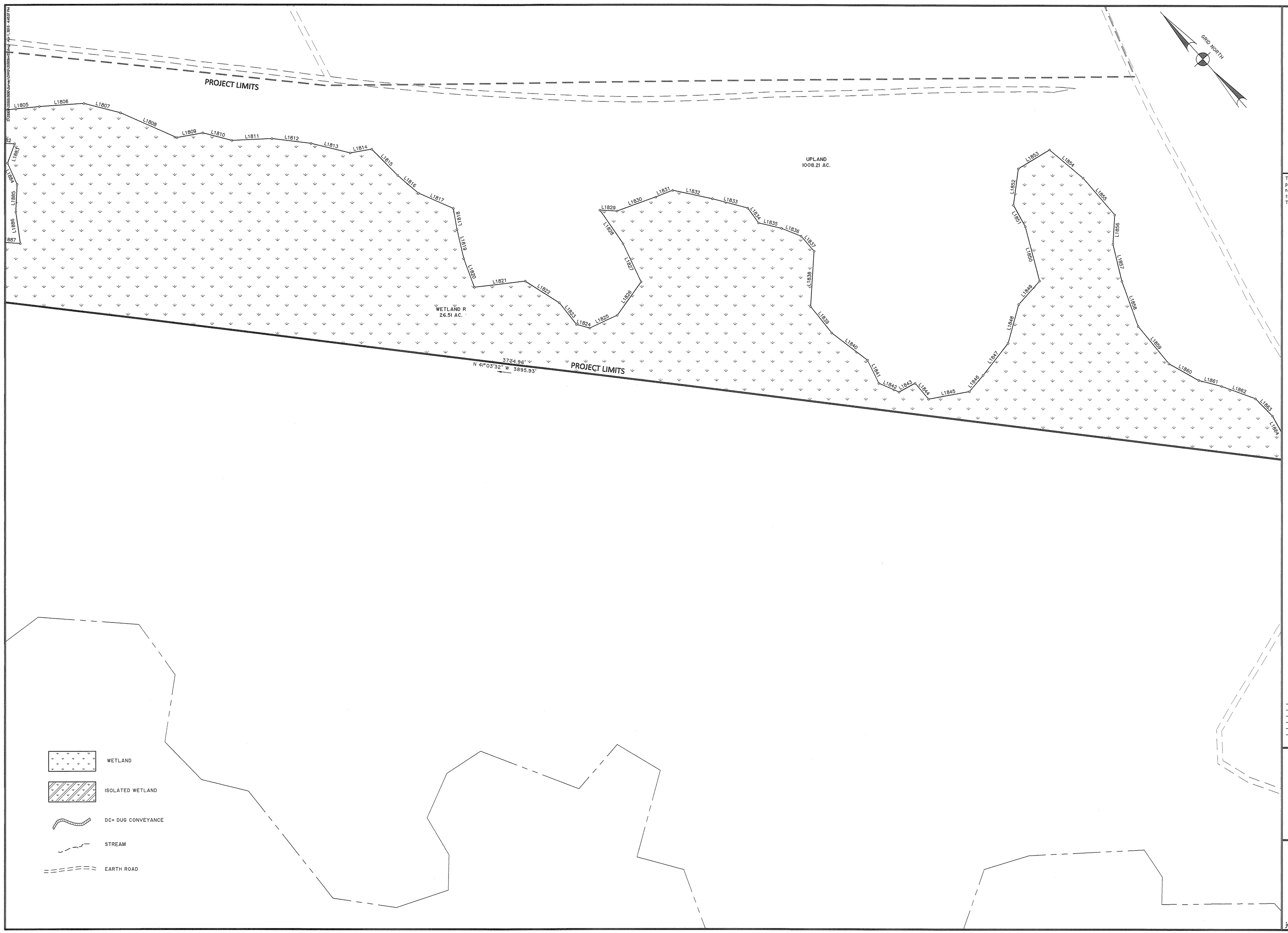
No.	Revision	By	Date

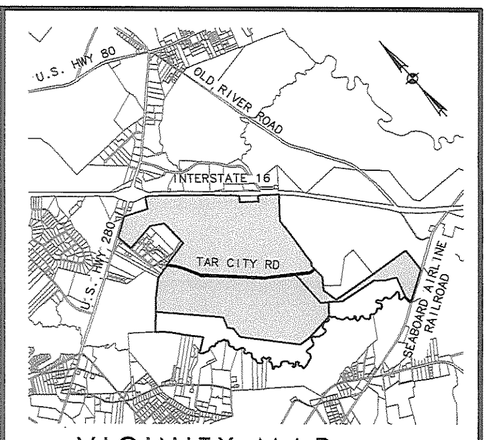
THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000





VICINITY MAP not to scale

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN, III

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

No.	Revision	By	Date

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000 SHEET 22 OF 25

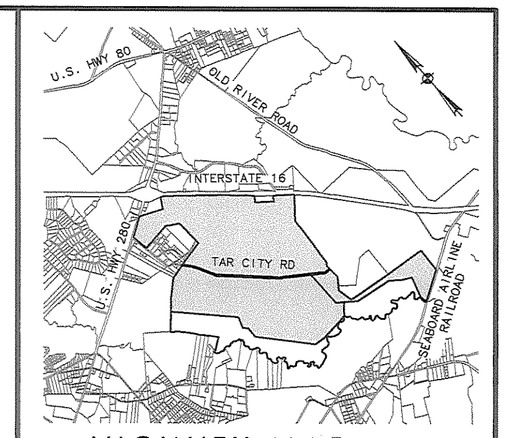
WETLAND

ISOLATED WETLAND

DC= DUG CONVEYANCE

STREAM

EARTH ROAD



VICINITY MAP not to scale

GEORGIA REGISTERED LAND SURVEYOR ROBERT K. MORGAN III

RLS No. 3087

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

No.	Revision	By	Date

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000

Z:\25503\25503.0000\Survey\DWG\25503sw24.dwg - Apr 1, 2015 - 4:41:48 PM

LINE TABLE

LINE	BEARING	LENGTH
L1	S 17°36'20" E	46.91'
L2	S 11°29'29" E	34.21'
L3	S 26°17'37" W	68.59'
L4	S 63°33'15" W	60.41'
L5	S 51°45'55" W	52.05'
L6	S 76°58'24" W	77.01'
L7	S 25°49'16" E	43.52'
L8	S 62°55'52" W	58.47'
L9	N 68°14'16" W	59.44'
L10	S 49°55'04" W	73.75'
L11	S 33°05'12" W	54.30'
L12	S 55°48'11" W	97.08'
L13	S 38°35'39" W	95.24'
L14	S 43°29'00" W	46.93'
L15	S 52°01'58" W	67.53'
L16	S 26°10'45" W	58.14'
L17	S 38°23'47" W	37.64'
L18	S 74°32'35" W	27.48'
L19	S 60°56'06" W	26.30'
L20	S 09°24'41" W	79.04'
L21	S 66°33'11" W	32.24'
L22	S 70°07'37" W	38.56'
L23	S 63°54'28" W	29.30'
L24	S 62°01'57" W	46.42'
L25	S 67°02'26" W	23.59'
L26	S 73°20'07" W	38.80'
L27	S 61°55'28" W	37.23'
L28	S 70°06'24" W	35.40'
L29	S 51°18'54" W	32.63'
L30	S 75°50'05" W	36.65'
L31	S 57°09'16" W	34.97'
L32	S 20°35'41" W	52.68'
L33	S 21°30'03" W	39.60'
L34	S 34°46'29" W	37.72'
L35	S 43°01'06" W	51.26'
L36	S 80°34'42" W	57.82'
L37	S 42°52'48" W	36.82'
L38	S 64°23'12" W	43.04'
L39	S 54°16'53" W	35.13'
L40	S 40°52'57" W	20.91'
L41	S 62°35'35" W	21.29'
L42	N 57°15'57" W	24.59'
L43	N 59°10'08" W	24.54'
L44	N 13°38'18" W	12.92'
L45	N 35°49'55" W	19.58'
L46	N 25°42'25" W	15.58'
L47	N 08°34'46" E	39.45'
L48	N 58°22'29" E	26.53'
L49	N 43°09'07" E	28.41'
L50	N 39°25'56" E	30.36'
L51	N 03°02'41" W	15.93'
L52	N 07°33'36" E	22.74'
L53	N 03°39'43" W	39.27'
L54	S 82°56'24" E	22.49'
L55	N 43°23'13" E	54.71'
L56	N 38°20'13" E	55.87'
L57	N 85°10'46" E	17.82'
L58	N 42°56'46" E	23.22'
L59	N 02°48'31" E	22.00'
L60	N 12°21'58" W	17.35'
L61	N 02°03'24" E	17.33'
L62	N 52°34'32" E	45.06'
L63	N 05°17'03" E	22.80'
L64	N 02°46'37" E	13.85'
L65	N 84°37'45" E	10.28'
L66	N 18°25'30" E	23.43'
L67	N 11°04'54" E	22.48'
L68	N 03°13'12" W	49.09'
L69	N 27°28'22" E	23.91'
L70	N 50°45'51" E	54.98'
L71	N 54°10'46" E	58.59'
L72	N 44°46'09" E	36.83'
L73	N 24°45'13" E	29.09'
L74	N 33°01'14" E	35.71'
L75	N 39°48'45" E	21.44'
L76	N 63°34'46" E	20.67'
L77	N 39°59'24" E	29.25'
L78	N 49°49'27" E	43.60'
L79	S 88°00'25" E	32.47'
L80	N 35°39'33" E	31.08'
L81	N 77°02'12" E	25.49'
L82	N 35°27'18" E	23.02'
L83	N 71°36'40" E	53.54'
L84	N 56°01'19" E	66.46'
L85	N 19°29'25" E	64.44'
L86	N 44°00'49" E	45.80'
L87	N 75°22'24" E	55.88'
L88	N 83°42'08" E	84.31'
L89	S 85°26'53" E	60.44'
L90	N 28°25'44" E	53.81'
L91	N 35°51'25" E	85.87'
L92	N 58°23'02" E	125.80'
L93	N 58°31'21" E	52.79'
L94	N 88°16'20" E	68.85'
L95	S 83°49'49" E	31.56'
L96	S 59°26'45" E	52.17'
L97	S 49°39'29" E	79.37'
L98	S 02°22'10" E	36.39'
L99	S 09°42'38" W	40.20'
L100	S 40°40'53" W	54.83'
L101	S 36°07'02" W	54.18'
L102	S 64°08'36" W	44.65'
L103	S 69°09'16" W	61.44'
L104	N 76°35'45" W	41.74'
L105	N 72°02'41" W	42.44'
L106	N 47°32'33" W	66.41'
L107	N 12°25'13" W	40.85'
L108	N 03°38'02" W	40.30'
L109	N 10°15'34" E	62.46'
L110	N 41°45'50" E	61.98'
L111	N 50°36'17" E	46.06'
L112	N 69°51'35" E	55.87'
L113	N 85°10'56" E	49.80'
L114	S 64°16'53" E	64.63'
L115	S 45°42'34" E	52.75'
L116	S 32°30'06" E	48.02'
L117	S 50°45'33" W	70.34'
L118	S 37°19'21" W	40.94'
L119	S 43°43'37" W	51.96'
L120	S 66°50'55" W	75.07'
L121	S 70°14'39" W	77.11'
L122	S 64°17'07" W	98.00'
L123	S 69°02'23" W	53.70'
L124	S 86°56'28" W	81.68'
L125	N 87°38'54" W	45.23'
L126	N 82°59'48" W	41.83'
L127	S 73°37'24" W	50.67'
L128	N 71°25'53" W	47.68'
L129	N 26°23'04" W	96.00'
L130	N 29°04'44" E	47.67'
L131	N 42°39'44" E	68.08'
L132	N 45°58'28" E	60.53'
L133	N 52°49'37" E	125.97'
L134	N 46°43'54" E	79.85'
L135	N 51°51'30" E	88.12'
L136	N 62°08'09" E	122.35'
L137	N 53°17'39" E	91.68'
L138	N 52°54'36" E	122.45'
L139	N 54°48'49" E	101.60'
L140	N 66°39'15" E	69.57'
L141	N 40°05'58" E	59.42'
L142	N 61°30'09" E	45.81'
L143	S 48°35'06" E	354.42'
L144	S 40°11'53" W	36.78'
L145	S 60°01'29" W	43.79'
L146	S 84°35'49" W	40.64'
L147	S 74°41'34" W	39.03'
L148	S 49°18'07" W	45.05'
L149	S 81°05'20" W	31.69'
L150	S 59°57'10" W	69.34'
L151	S 48°23'39" W	46.26'
L152	S 65°45'34" W	49.18'
L153	S 38°00'20" W	52.56'
L154	S 33°34'06" W	40.64'
L155	S 27°48'56" W	25.03'
L156	S 51°40'38" W	66.94'
L157	N 87°20'14" W	78.67'
L158	N 44°38'03" W	37.12'
L159	N 22°20'24" W	49.57'
L160	N 05°08'50" W	54.38'
L161	N 32°01'06" E	79.92'
L162	N 63°59'23" E	61.48'
L163	S 79°27'52" E	44.24'
L164	S 60°35'41" E	41.44'
L165	S 26°57'01" E	44.89'
L166	S 18°38'29" E	46.55'
L167	S 24°01'50" W	77.45'
L168	S 01°53'37" W	26.97'
L169	S 67°31'17" W	27.56'
L170	S 37°41'53" W	46.77'
L171	S 29°31'11" W	36.52'
L172	S 26°03'30" W	29.83'
L173	S 18°08'02" W	51.33'
L174	S 30°27'09" W	53.35'
L175	S 28°16'05" W	51.52'
L176	S 26°15'32" W	23.09'
L177	N 85°30'58" W	18.82'
L178	S 48°34'00" W	40.02'
L179	S 11°06'36" W	22.65'
L180	S 24°45'16" W	25.42'
L181	S 06°43'49" W	31.28'
L182	S 04°51'55" W	24.93'
L183	S 09°25'48" E	24.84'
L184	S 44°33'36" E	27.38'
L185	S 15°25'57" E	20.67'
L186	S 13°55'07" E	66.60'
L187	S 34°20'46" W	26.58'
L188	S 28°47'20" W	32.62'
L189	S 59°41'17" W	47.00'
L190	S 51°46'46" W	67.64'
L191	S 70°01'39" W	35.20'
L192	S 58°02'35" W	63.12'
L193	N 87°05'10" W	30.95'
L194	N 47°30'09" W	31.20'
L195	S 21°09'52" W	38.03'
L196	S 44°28'49" E	26.37'
L197	S 74°28'21" W	18.72'
L198	N 30°38'39" W	57.49'
L199	N 10°33'35" W	32.28'
L200	N 07°51'58" W	55.31'
L201	N 01°34'58" E	49.17'
L202	N 19°01'31" E	62.84'
L203	N 17°19'23" E	59.79'
L204	N 21°04'47" E	62.03'
L205	N 22°06'07" E	47.42'
L206	N 03°00'29" W	47.55'
L207	N 26°24'35" E	32.24'
L208	N 18°43'48" E	87.79'
L209	N 09°47'48" E	45.76'
L210	N 25°41'30" E	67.12'
L211	N 26°58'43" E	71.46'
L212	N 13°13'43" E	63.74'
L213	N 16°18'12" E	70.36'
L214	N 28°27'13" E	52.28'
L215	N 37°54'54" E	81.64'
L216	N 10°43'13" E	42.99'
L217	N 36°14'52" E	46.54'
L218	N 40°06'15" E	51.26'
L219	N 09°57'56" E	48.93'
L220	N 23°58'46" E	67.21'
L221	N 03°13'53" W	65.96'
L222	N 24°29'21" E	27.11'
L223	N 31°07'34" E	34.02'
L224	N 56°56'36" E	40.67'
L225	S 48°35'06" E	266.31'
L226	S 34°19'46" W	46.26'
L227	S 16°19'18" W	29.78'
L228	S 05°05'53" E	28.76'
L229	S 32°37'17" W	26.84'
L230	S 29°40'26" W	23.62'
L231	S 22°11'34" W	19.90'
L232	S 13°02'24" W	41.76'
L233	S 17°46'17" W	29.30'
L234	S 24°19'51" W	32.44'
L235	S 16°21'11" W	26.30'
L236	S 38°04'29" W	47.36'
L237	S 01°26'21" E	29.31'
L238	S 16°07'10" W	42.40'
L239	S 12°56'43" W	32.62'
L240	S 58°58'37" W	27.18'
L241	S 56°33'09" W	72.31'
L242	N 67°58'11" W	23.42'
L243	N 78°05'37" W	25.02'
L244	N 54°52'45" W	45.78'
L245	N 17°38'44" W	32.19'
L246	N 03°49'36" E	44.16'
L247	N 24°09'04" E	38.05'
L248	N 20°15'04" E	35.06'
L249	N 06°40'44" E	55.95'
L250	N 56°00'14" E	43.94'
L251	N 79°38'42" E	28.62'
L252	N 67°11'37" E	37.58'
L253	S 71°32'18" E	42.92'
L254	S 66°48'08" E	37.62'
L255	S 17°05'15" E	47.53'
L256	S 05°03'41" E	41.85'
L257	S 11°17'43" W	54.12'
L258	S 48°03'18" W	34.70'
L259	S 23°21'28" W	40.12'
L260	S 09°31'20" E	78.76'
L261	S 26°18'34" W	74.10'
L262	S 31°17'46" W	72.06'
L263	S 55°06'44" W	57.27'
L264	N 85°48'04" W	88.61'
L265	N 22°33'05" W	53.76'
L266	N 11°12'32" W	57.14'
L267	N 01°06'07" W	103.58'
L268	N 15°38'48" E	96.29'
L269	N 29°40'22" E	69.78'
L270	N 42°55'53" E	48.98'
L271	N 51°16'12" E	69.12'
L272	S 19°09'59" E	48.03'
L273	S 24°03'39" E	49.87'
L274	S 86°10'05" W	39.15'
L275	S 60°22'56" E	38.55'
L276	S 61°19'24" E	43.62'
L277	S 07°14'46" E	76.89'
L278	S 02°14'37" W	57.47'
L279	S 42°43'16" W	56.35'
L280	S 66°25'58" W	80.03'
L281	S 86°44'20" W	39.42'
L282	N 39°35'34" W	63.58'
L283	N 37°49'33" W	116.13'
L284	N 07°12'04" E	50.33'
L285	N 32°50'17" E	69.50'
L286	N 62°22'49" E	60.92'
L287	S 80°27'47" E	38.31'
L288	S 63°09'59" E	77.95'
L289	S 39°47'38" E	54.49'
L290	S 22°08'32" E	65.66'
L291	N 28°45'37" E	20.81'
L292	N 36°57'41" E	43.78'
L293	S 75°45'55" E	50.16'
L294	N 85°04'05" E	42.80'
L295	N 81°57'37" E	40.66'
L296	S 87°25'34" E	69.92'
L297	S 84°53'55" E	61.01'
L298	N 59°14'03" E	70.25'
L299	N 75°16'17" E	75.71'
L300	N 33°38'11" E	57.10'
L301	N 04°13'56" E	47.91'
L302	N 53°26'37" E	52.08'
L303	N 88°55'06" E	71.83'
L304	S 74°04'18" E	46.64'
L305	S 51°59'33" E	48.12'
L306	S 09°50'24" E	30.32'
L307	S 35°58'30" E	37.90'
L308	S 66°19'32" W	42.74'
L309	S 35°24'51" W	44.04'
L310	S 53°12'36" W	43.59'
L311	N 78°29'40" W	29.99'
L312	S 36°26'55" W	59.47'
L313	S 59°50'21" W	56.28'
L314	S 65°16'14" W	60.68'
L315	S 82°43'19" W	60.53'
L316	S 64°15'13" W	63.40'
L317	S 55°51'37" W	50.89'
L318	S 79°05'42" W	46.00'
L319	S 85°08'42" W	61.15'
L320	S 43°27'31" W	33.46'
L321	S 78°37'45" W	57.65'
L322	S 85°34'26" W	42.40'
L323	N 58°51'03" W	55.49'
L324	N 70°56'27" W	29.91'
L325	N 11°12'42" E	21.00'
L326	N 17°35'31" E	61.21'
L327	N 18°21'37" E	55.03'
L328	S 16°28'54" W	31.40'
L329	S 14°47'47" W	44.67'
L330	S 19°58'16" W	59.54'
L331	N 81°11'03" W	6.04'
L332	N 84°41'10" W	53.21'
L333	N 80°26'21" W	64.55'
L334	S 73°10'35" W	78.06'
L335	N 50°39'02" W	45.69'
L336	N 05°23'30" E	52.93'
L337	N 48°34'31" E	68.09'
L338	S 78°47'21" E	66.75'
L339	N 62°18'15" E	49.98'
L340	N 89°58'19" E	55.37'
L341	N 56°22'01" E	33.48'
L342	N 27°58'25" E	17.02'
L343	S 57°08'08" E	9.03'
L344	S 04°30'22" E	12.91'
L345	S 23°47'30" E	19.15'
L346	N 33°44'32" E	43.93'
L347	N 49°22'12" E	58.21'
L348	N 38°36'52" E	63.61'
L349	N 28°14'21" E	73.11'
L350	N 25°00'18" E	82.76'
L351	N 38°04'00" E	78.50'
L352	N 45°09'28" E	70.52'
L353	N 75°19'46" E	75.39'
L354	S 37°54'34" E	38.14'
L355	S 11°17'08" E	64.66'
L356	S 07°53'25" W	38.30'
L357	S 09°44'38" W	59.21'
L358	S 58°42'20" W	53.09'
L359	S 27°04'21" W	60.24'
L360	S 29°18'18" W	57.17'
L361	S 15°43'08" E	62.36'
L362	S 05°50'06" W	43.37'
L363	S 45°24'47" W	63.92'
L364	S 63°09'58" W	25.46'
L365	S 69°58'42" W	45.38'
L366	N 77°25'52" W	56.92'
L367	N 54°52'17" W	71.07'
L368	N 49°41'46" W	74.94'
L369	S 33°24'14" E	43.99'
L370	S 43°30'40" E	47.32'
L371	S 05°20'36" E	48.14'
L372	S 23°20'19" W	54.87'
L373	S 22°22'02" W	46.24'
L374	S 38°16'19" W	42.46'
L375	S 87°07'26" W	57.58'
L376	S 59°06'52" W	23.27'
L377	S 69°52'25" W	39.52'
L378	N 80°38'14" W	38.04'
L379	N 61°44'07" W	31.68'
L380	N 02°13'31" W	41.84'
L381	N 11°07'35" E	67.99'
L382	N 00°23'29" W	56.48'
L383	N 10°00'27" E	45.00'
L384	N 62°05'53" E	65.00'
L385	S 35°20'54" E	39.57'
L386	N 73°06'45" E	42.77'
L387	N 53°23'17" E	55.04'
L388	S 30°51'27" W	43.02'
L389	S 12°46'36" W	27.41'
L390	S 57°31'26" W	50.87'
L391	S 86°20'14" W	56.33'
L392	N 12°14'39" W	27.66'
L393	N 52°41'31" W	58.43'
L394	N 43°21'38" W	48.42'
L395	N 48°54'58" W	61.93'
L396	N 46°48'58" W	66.94'
L397	N 35°08'52" W	42.65'
L398	N 25°13'06" W	62.86'
L399	N 06°20'06" W	64.08'
L400	N 28°42'59" W	101.22'
L401	N 41°04'41" W	60.88'
L402	N 05°54'02" E	66.39'
L403	N 37°39'34" W	55.65'
L404	N 63°05'34" E	28.96'
L405	N 33°01'12" W	31.84'
L406	N 23°46'10" E	61.90'
L407	N 25°43'15" E	69.57'
L408	N 34°50'38" W	45.70'
L409	N 25°54'16" E	57.19'
L410	N 47°37'27" E	62.12'
L411	N 67°23'18" E	42.79'
L412	S 64°02'12" E	72.55'
L413	S 55°55'42" E	28.45'
L414	S 30°36'01" E	102.07'
L415	S 41°34'55" E	85.96'
L416	S 15°39'19" E	85.57'
L417	S 44°26'21" E	61.20'
L418	S 14°06'44" E	92.07'
L419	S 05°17'31" E	97.03'
L420	S 21°58'38" E	85.92'
L421	S 05°48'57" W	75.24'
L422	S 15°42'56" E	67.64'
L423	S 02°34'37" E	49.86'
L424	S 20°29'03" W	15.89'
L425	N 62°47'29" E	65.28'
L426	N 52°53'48" E	63.97'
L427	N 50°24'46" E	58.61'
L428	N 32°00'20" E	33.22'
L429	N 47°27'07" E	56.80'
L430	N 66°33'01" E	48.69'
L431	S 32°43'28" E	54.48'
L432	S 28°04'12" E	16.49'
L433	S 44°20'54" W	43.21'
L434	S 17°59'18" W	38.98'
L435	S 69°57'16" W	31.08'
L436	S 49°17'01" E	47.80'
L437	S 43°00'47" W	10.29'
L438	N 55°40'49" W	28.39'
L439	N 44°53'14" W	21.13'
L440	S 36°28'55" W	29.01'
L441	S 22°02'24" W	38.39'
L442	S 57°18'06" W	37.06'
L443	S 44°59'43" W	43.59'
L444	S 43°36'37" W	40.08'
L445	S 24°30'02" W	37.53'
L446	S 89°13'04" W	29.51'
L447	N 27°45'50" W	87.72'
L448	N 35°45'12" W	55.53'
L449	N 82°00'59" E	40.62'
L450	N 30°11'29" E	48.28'
L451	N 06°24'36" E	37.57'
L452	N 34°44'19" E	34.95'
L453	S 89°06'10" E	82.83'
L454	S 24°38'10" E	54.84'
L455	S 56°15'53" E	65.28'
L456	S 67°35'21" W	44.97'
L457	S 53°56'32" E	21.45'
L458	S 77°25'40" E	26.60'
L459	S 00°56'52" E	36.97'
L460	N 78°44'23" W	66.49'
L461	N 46°55'25" W	42.41'
L462	N 30°10'29" W	11.79'
L463	N 08°25'49" E	43.76'
L464	N 48°20'30" E	56.35'
L465	N 55°01'03" E	24.50'
L466	N 62°59'24" E	48.22'
L467	N 18°45'09" E	44.37'
L468	N 26°42'04" E	55.50'
L469	N 14°06'41" E	63.95'
L470	N 62°45'32" E	36.70'
L471	S 68°27'31" E	73.89'
L472	S 62°31'28" E	62.04'
L473	S 02°30'29" E	57.53'
L474	S 25°39'34" E	52.06'
L475	S 07°44'57" W	60.62'
L476	S 09°41'41" E	36.72'
L477	S 09°51'41" W	57.10'
L478	S 35°12'09" W	54.59'
L479	S 72°37'11" W	40.72'
L480	S 72°15'12" W	70.77'
L481	N 84°56'49" W	64.60'
L482	N 84°17'25" W	54.80'
L483	N 47°33'07" W	58.90'
L484	N 42°21'39" W	51.51'
L485	N 04°45'49" W	15.00'
L486	N 48°50'43" W	31.42'
L487	N 35°46'01" W	55.17'
L488	N 29°26'20" W	60.98'
L489	N 26°45'26" W	55.50'
L490	N 41°58'48" W	43.21'
L491	N 71°06'25" W	47.53'
L492	N 58°23'24" W	76.15'
L493	S 68°51'02" W	31.11'
L494	S 66°46'22" W	46.86'
L495	S 03°04'51" E	24.59'
L496	N 63°17'58" W	36.84'
L497	N 49°39'33" W	9.89'
L498	N 38°48'52" E	25.49'
L499	N 05°07'11" E	25.52'
L500	N 17°46'51" E	34.18'
L501	N 29°39'09" E	35.94'
L502	N 57°01'42" E	44.56'
L503	N 78°09'02" E	29.67'
L504	N 46°38'05" E	38.59'
L505	N 56°43'33" W	23.78'
L506	N 44°21'01" W	59.84'
L507	N 43°20'20" W	62.36'
L508	N 35°29'14" E	41.80'
L509	N 47°27'22" E	72.48'
L510	N 17°52'28" E	50.25'
L511	N 36°16'31" E	66.13'
L512	N 16°01'54" E	35.85'
L513	N 40°08'52" E	72.80'
L514	N 27°00'11" E	75.27'
L515	N 29°01'01" E	28.89'
L516	N 58°12'06" W	35.58'
L517	N 48°48'33" W	21.22'
L518	N 80°02'11" W	33.74'
L519	N 81°27'48" W	35.98'
L520	N 57°17'50" W	45.01'
L521	N 67°01'00" W	24.17'
L522	S 88°59'48" W	36.71'
L523	N 81°55'46" W	45.42'
L524	N 73°55'17" W	52.42'
L525	N 44°06'13" W	61.33'
L526	N 61°27'25" W	38.19'
L527	N 44°01'55" W	56.85'
L528	N 28°16'56" W	40.58'
L529	N 01°03'00" E	32.15'
L530	N 75°21'51" W	25.42'
L531	N 89°00'37" W	24.64'
L532	N 76°01'58" W	28.98'
L533	N 45°28'05" W	40.58'
L534	S 53°16'40" W	12.83'
L535	S 87°58'50" W	27.08'
L536	N 25°29'30" W	60.80'
L537	N 41°03'48" W	54.82'
L538	N 20°53'25" W	24.86'
L539	N 46°52'47" W	23.76'
L540	N 27°53'17" W	29.30'
L541	N 36°11'59" W	24.65'
L542	N 02°33'29" E	43.44'
L543	N 70°13'10" W	37.93'
L544	N 24°18'10" E	46.21'
L545	N 01°14'56" E	49.36'
L546	N 28°24'28" E	39.74'
L547	N 59°17'32" W	20.67'
L548	N 53°43'33" W	26.29'
L549	N 73°17'28" W	28.50'
L550	N 47°47'16" W	22.01'
L551	N 89°23'41" W	30.11'
L552	N 15°34'49" W	40.21'
L553	N 24°31'01" W	32.71'
L554	N 05°04'11" W	48.48'
L555	N 27°24'07" E	26.67'
L556	N 13°59'28" W	48.80'
L557	N 10°36'48" E	45.17'
L558	N 03°21'14" W	38.27'
L559	N 12°40'13" E	36.12'
L560	N 23°09'19" W	42.98'
L561	N 20°32'27" W	37.85'
L562	N 13°51'48" W	32.99'
L563	N 15°53'47" E	77.47'
L564	N 07°33'57" E	38.91'
L565	N 00°51'08" E	36.58'
L566	N 10°45'42" E	30.74'
L567	N 49°20'46" E	27.49'
L568	N 71°26'10" E	52.87'
L569	S 79°41'42" E	91.37'
L570	N 67°11'34" E	30.53'
L571	N 30°24'01" E	27.31'
L572	N 05°36'05" W	43.40'
L573	N 04°18'57" E	26.36'
L574	N 30°26'30" E	57.79'
L575	N 24°49'27" E	50.98'
L576	N 00°49'18" W	43.53'
L577	N 48°56'11" E	31.24'
L578	N 60°43'04" E	57.93'
L579	S 70°08'27" E	32.54'
L580	S 44°44'19" E	35.94'
L581	N 68°19'50" E	23.31'
L582	N 33°35'52" W	17.37'
L583	N 05°03'53" W	23.75'
L584	N 44°59'47" W	26.66'
L585	N 01°58'00" W	21.79'
L586	N 48°28'10" W	31.35'
L587	N 22°26'14" E	29.03'
L588	N 75°17'46" E	28.55'
L589	N 04°32'31" E	17.34'
L590	S 49°39'20" E	43.08'
L591	N 20°23'37" E	17.75'
L592	N 30°33'36" E	25.06'
L593	N 34°48'37" E	19.35'
L594	N 26°32'26" E	22.57'
L595	N 31°16'29" E	29.07'
L596	N 61°27'08" E	27.56'
L597	N 00°57'04" W	43.61'
L598	N 07°35'48" E	35.62'
L599	N 34°21'13" E	36.89'
L600	N 36°00'54" E	47.31'
L601	N 18°28'41" E	39.19'
L602	N 00°46'33" E	37.67'
L603	N 09°30'37" W	20.43'
L604	N 14°35'59" E	27.05'
L605	N 06°02'18" E	21.07'
L606	N 45°40'20" W	27.61'
L607	N 65°22'01" W	93.22'
L608	N 42°10'11" W	35.07'
L609	N 49°24'59" W	30.27'
L610	N 65°00'04" W	77.37'
L611	N 80°26'30" W	36.13'
L612	N 07°33'16" W	39.35'
L613	N 60°55'58" W	40.03'
L614	N 57°00'26" W	23.77'
L615	N 67°50'14" W	27.40'
L616	N 56°25'48" W	39.30'
L617	N 74°26'54" W	35.13'
L618	N 58°56'41" W	33.45'
L619	N 81°48'34" W	41.45'
L620	N 05°40'45" W	30.57'
L621	N 77°37'22" E	29.74'
L622	N 56°31'45" E	42.65'
L623	S 83°57'06" E	57.86'
L624	N 70°36'11" E	23.40'
L625	N 06°06'57" E	88.66'
L626	N 02°36'25" E	23.54'
L627	N 47°22'39" W	43.09'
L628	N 44°49'58" E	28.71'
L629	N 46°22'11" W	34.21'
L630	N 64°31'22" W	31.61'
L631	N 48°20'21" W	36.33'
L632	N 29°08'27" E	47.06'
L633	N 72°30'15" E	35.13'
L634	S 35°54'17" E	92.76'
L635	S 66°29'06" E	77.46'
L636	S 49°38'32" E	42.61'
L637	S 72°15'22" E	38.59'
L638	N 63°28'58" E	46.29'
L639	N 26°17'44" E	42.22'
L640	N 78°28'39" E	37.44'
L641	N 54°20'57" E	51.81'
L642	N 49°57'07" E	40.89'
L643	N 20°21'33" E	53.50'
L644	N 82°46'24" E	30.63'
L645	N 55°16'56" E	25.56'
L646	N 36°50'27" W	21.94'
L647	N 40°31'16" E	20.69'
L648	N 39°51'59" E	37.69'
L649	N 27°14'56" E	23.86'
L650	N 50°26'37" E	31.91'
L651	N 70°35'00" E	35.42'
L652	N 50°43'58" E	62.48'
L653	N 25°24'30" E	28.31'
L654	N 86°52'27" E	16.51'
L655	N 66°05'16" E	36.55'
L656	S 88°23'07" E	32.33'
L657	N 51°54'51" E	40.70'
L658	N 57°04'10" E	22.08'
L659	S 89°14'58" E	23.62'
L660	N 73°50'17" E	41.78'
L661	S 41°22'32" E	39.46'
L662	N 76°25'13" E	32.08'
L663	S 81°23'32" E	24.98'
L664	N 18°55'36" W	27.19'
L665	N 55°30'24" E	52.78'
L666	S 44°13'36" E	19.18'
L667	N 40°05'51" E	26.16'
L668	N 20°08'50" E	32.00'
L669	N 18°09'13" E	56.32'
L670	S 72°50'41" E	41.04'
L671	N 71°53'01" E	36.64'
L672	N 37°50'41" E	52.88'
L673	N 76°46'43" E	27.33'
L674	N 35°08'51" E	30.10'
L675	N 58°30'45" W	34.78'
L676	N 51°59'10" E	35.69'
L677	S 55°02'39" E	45.15'
L678	N 29°05'01" E	30.61'
L679	N 24°41'00" W	39.39'
L680	N 45°32'22" E	14.21'
L681	N 06°26'58" W	38.15'
L682	N 61°15'37" E	25.62'
L683	N 86°05'05" E	33.00'
L684	N 77°35'34" E	39.86'
L685	N 51°12'05" E	30.13'
L686	N 76°42'12" E	25.89'
L687	N 39°32'57" E	22.99'
L688	S 52°58'40" E	16.51'
L689	S 35°07'43" E	36.44'
L690	N 38°17'40" E	43.83'
L691	N 77°46'18" W	17.10'
L692	N 28°49'01" W	34.50'
L693	N 05°03'51" W	34.96'
L694	N 24°09'55" E	38.34'
L695	N 61°33'52" E	31.47'
L696	N 66°05'25" E	31.88'
L697	N 32°24'14" E	47.21'
L698	N 26°09'29" E	30.22'
L699	S 88°04'35" E	27.78'
L700	N 37°35'31" E	31.92'
L701	N 32°25'55" E	36.23'
L702	N 35°32'37" E	28.10'
L703	N 19°59'47" E	23.41'
L704	N 15°33'31" E	33.42'
L705	N 32°29'50" E	25.16'
L706	N 59°48'50" E	25.41'
L707	N 86°52'01" E	40.55'
L708	N 14°49'48" E	27.26'
L709	N 10°17'26" E	28.82'
L710	N 74°18'44" E	35.35'
L711	N 01°34'22" W	32.56'
L712	N 18°11'42" E	32.80'
L713	N 19°41'54" W	60.05'
L714	N 37°03'14" W	109.41'
L715	N 04°44'00" E	41.43'
L716	N 33°42'33" W	53.86'
L717	N 38°08'57" W	80.01'
L718	N 46°28'28" W	53.63'
L719	N 63°04'02" W	53.86'
L720	N 64°09'45" W	53.85'
L721	N 30°31'12" W	32.36'
L722	N 66°09'45" W	29.27'
L723	N 46°27'18" W	39.84'
L724	S 71°47'56" W	35.00'
L725	N 29°09'08" W	38.72'
L726	N 20°47'10" W	58.88'
L727	N 06°47'56" W	37.49'
L728	N 63°09'20" W	24.14'
L729	N 12°45'55" W	37.61'
L730	N 06°45'18" W	37.93'
L731	N 18°12'32" W	61.96'
L732	N 27°50'15" W	19.13'
L733	N 06°40'14" W	30.09'
L734	N 11°45'46" W	15.87'
L735	N 24°42'08" W	25.10'
L736	N 14°25'31" E	36.06'
L737	N 11°19'59" W	28.25'
L738	N 75°58'30" E	19.89'
L739	S 28°48'28" W	22.48'
L740	S 52°19'42" W	26.24'
L741	N 51°10'03" W	18.92'
L742	N 01°59'10" E	49.76'
L743	S 59°54'28" E	51.57'
L744	S 00°25'31" W	52.92'
L745	S 02°00'56" E	33.98'
L746	S 17°45'12" W	25.42'
L747	S 14°44'35" E	57.99'
L748	S 03°31'05" W	39.84'
L749	S 35°08'30" E	82.71'
L750	S 29°05'50" E	76.94'
L751	S 29°57'00" E	70.61'
L752	S 34°23'26" E	53.27'
L753	S 44°10'16" E	54.47'
L754	S 21°02'42" E	59.48'
L755	S 26°21'58" E	54.67'
L756	S 29°29'49" E	58.65'
L757	S 25°46'09" E	56.53'
L758	S 49°36'57" E	41.00'
L759	S 47°08'44" E	24.07'
L760	S 56°05'14" E	40.26'
L761	S 25°58'50" E	45.03'
L762	S 12°21'20" E	45.56'
L763	S 42°43'56" W	9.89'
L764	S 31°28'03" W	28.54'
L765	S 45°48'01" W	44.78'
L766	S 02°58'40" W	73.78'
L767	S 25°16'44" W	47.55'
L768	S 20°21'16" W	61.11'
L769	S 32°48'47" W	61.63'
L770	S 24°37'44" W	49.38'
L771	S 66°07'58" W	50.72'
L772	S 32°16'04" W	35.97'
L773	S 53°58'09" W	56.35'
L774	S 23°23'42" W	45.52'
L775	S 59°20'44" W	41.52'
L776	S 64°21'03" W	24.78'
L777	S 24°13'48" W	27.45'
L778	S 36°34'19" W	68.03'
L779	S 08°56'30" W	37.54'
L780	S 40°30'59" W	32.03'
L781	S 16°42'41" W	121.14'
L782	S 09°02'20" E	29.20'
L783	S 04°40'08" E	38.45'
L784	S 39°54'59" W	75.31'
L785	S 21°32'41" W	54.05'
L786	S 15°59'41" W	35.18'
L787	S 10°42'40" W	46.12'
L788	S 24°58'25" W	68.63'
L789	S 31°25'51" W	72.74'
L790	S 41°05'10" W	55.84'
L791	S 24°39'28" W	74.55'
L792	S 36°51'24" W	81.34'
L793	S 18°19'56" W	81.03'
L794	S 03°55'26" W	44.93'
L795	S 01°51'03" E	81.87'
L796	S 15°33'39" E	95.72'
L797	S 04°14'36" W	87.53'
L798	S 10°35'19" E	107.68'
L799	S 39°26'38" E	55.01'
L800	S 35°15'41" E	64.75'
L801	S 22°36'55" E	68.74'
L802	S 51°05'25" E	74.64'
L803	S 53°45'35" E	73.08'
L804	S 26°36'53" E	67.08'
L805	N 84°37'14" E	44.34'
L806	S 75°41'26" E	37.02'
L807	N 71°33'31" E	47.11'
L808	S 67°51'43" E	34.29'
L809	S 89°06'26" E	51.01'
L810	N 46°59'07" E	39.59'
L811	N 77°15'53" E	30.94'
L812	N 50°23'43" E	43.23'
L813	N 34°55'07" E	22.83'
L814	N 60°58'40" E	25.57'
L815	S 07°30'19" W	18.72'
L816	S 82°08'32" W	34.13'
L817	S 35°04'11" W	38.10'
L818	N 84°18'51" W	45.05'
L819	N 31°00'10" W	72.78'
L820	N 55°12'12" W	34.44'
L821	N 50°02'51" W	27.21'
L822	N 53°25'32" W	16.93'
L823	N 32°47'40" E	24.95'
L824	N 47°43'11" E	39.16'
L825	N 10°48'52" E	28.20'
L826	N 66°01'08" W	54.92'
L827	N 44°19'55" W	22.27'
L828	S 57°46'00" W	27.14'
L829	N 59°08'48" W	18.18'
L830	S 87°44'21" W	25.33'
L831	S 21°16'10" W	37.14'
L832	S 80°38'04" W	7.16'
L833	S 26°15'44" W	20.40'
L834	S 10°41'01" E	36.73'
L835	S 13°49'13" W	43.60'
L836	S 39°16'24" E	65.67'
L837	S 17°27'38" E	101.22'
L838	S 29°45'40" E	40.34'
L839	S 40°02'58" E	58.24'
L840	S 40°29'49" E	62.46'
L841	S 80°25'51" E	65.94'
L842	S 50°19'57" E	54.77'
L843	S 03°57'26" E	59.33'
L844	S 38°04'51" E	115.93'
L845	S 24°56'15" W	29.45'
L846	N 79°49'58" W	25.16'
L847	N 29°05'09" W	51.52'
L848	N 69°34'16" W	20.31'
L849	N 43°17'26" W	64.03'
L850	S 46°12'15" W	73.31'
L851	S 78°23'38" W	60.39'
L852	N 81°32'36" W	43.45'
L853	S 68°13'20" W	39.91'
L854	S 65°46'00" W	62.49'
L855	S 74°24'47" W	60.17'
L856	S 18°19'18" W	42.54'
L857	S 39°05'57" W	35.92'
L858	S 86°31'39" W	48.42'
L859	S 58°58'51" W	37.47'
L860	S 35°48'06" W	65.79'
L861	S 35°40'17" E	33.62'
L862	N 47°34'44" E	37.70'
L863	S 65°17'42" E	25.97'
L864	S 89°28'25" E	26.39'
L865	S 81°59'42" E	37.82'
L866	N 28°25'34" E	36.56'
L867	N 20°56'06" E	51.35'
L868	N 63°12'25" E	30.73'
L869	N 88°46'24" E	18.97'
L870	S 45°02'04" E	54.73'
L871	S 86°08'33" E	30.24'
L872	S 09°49'55" W	25.84'
L873	N 88°48'54" E	7.44'
L874	N 32°11'01" E	24.95'
L875	N 53°20'23" E	29.24'
L876	N 68°31'34" E	17.83'
L877	S 53°53'26" E	32.51'
L878	S 74°17'29" E	28.79'
L879	S 76°33'47" E	19.91'
L880	S 52°10'19" E	34.82'
L881	S 59°47'40" W	10.02'
L882	N 32°23'15" W	23.35'
L883	S 83°00'26" W	24.38'
L884	S 22°21'17" E	20.03'
L885	S 87°55'16" W	54.31'
L886	N 41°25'52" W	12.48'
L887	S 86°35'38" W	36.01'
L888	N 69°34'55" W	29.04'
L889	S 83°55'40" W	16.60'
L890	S 59°17'57" W	16.71'
L891	N 87°30'54" W	15.83'
L892	S 63°50'44" W	24.44'
L893	S 00°29'50" W	27.51'
L894	S 48°40'13" W	39.45'
L895	S 16°26'36" E	31.52'
L896	S 69°01'36" W	28.02'
L897	S 02°39'50" W	31.34'
L898	S 08°59'03" E	35.87'
L899	S 38°13'00" E	35.54'
L900	S 86°05'52" E	28.70'
L901	N 57°39'11" E	33.72'
L902	N 74°37'51" E	15.20'
L903	N 57°45'38" E	9.10'
L904	N 36°30'38" E	43.06'
L905	S 59°49'39" E	10.79'
L906	S 39°36'20" W	78.17'
L907	S 11°09'28" W	63.01'
L908	S 83°31'54" W	36.61'
L909	S 50°51'51" W	26.32'
L910	S 72°21'15" W	35.62'
L911	N 84°38'59" W	24.94'
L912	S 78°00'37" W	33.61'
L913	N 57°04'45" W	28.19'
L914	N 39°37'01" W	19.36'
L915	N 72°16'15" E	31.61'
L916	N 28°51'38" E	23.47'
L917	N 60°16'24" W	15.06'
L918	N 33°50'22" W	28.90'
L919	N 39°02'30" W	17.39'
L920	N 56°27'19" W	44.81'
L921	N 68°38'41" W	45.81'
L922	S 75°29'04" W	31.49'
L923	S 63°26'02" W	8.65'
L924	S 27°21'50" E	10.07'
L925	S 34°07'02" E	22.91'
L926	S 30°43'58" W	30.04'
L927	S 46°11'29" W	14.45'
L928	S 20°24'00" W	21.04'
L929	S 44°35'20" W	19.44'
L930	N 45°47'19" W	31.75'
L931	S 25°47'57" W	44.08'
L932	S 61°25'16" W	20.58'
L933	S 34°01'20" W	22.76'
L934	S 20°34'44" W	21.15'
L935	S 42°53'00" W	35.67'
L936	S 89°30'30" W	36.33'
L937	S 75°16'25" W	36.15'
L938	S 14°19'06" W	13.12'
L939	S 75°33'41" W	27.95'
L940	N 60°46'56" W	25.14'
L941	S 82°39'09" W	48.41'
L942	S 60°02'13" W	43.91'
L943	S 83°07'01" W	20.70'
L944	S 66°35'47" W	57.53'
L945	S 75°48'06" W	70.47'
L946	N 55°32'09" W	20.67'
L947	N 38°06'59" W	36.51'
L948	N 72°23'03" E	34.80'
L949	N 61°04'05" E	34.04'
L950	N 67°07'41" E	67.77'
L951	N 71°38'19" E	66.93'
L952	N 33°24'10" E	41.15'
L953	N 59°11'07" E	59.90'
L954	N 61°32'25" E	66.24'
L955	N 35°28'39" E	44.06'
L956	N 45°12'42" E	50.91'
L957	N 47°58'27" E	46.19'
L958	N 49°00'01" E	66.21'
L959	N 65°19'23" E	41.63'
L960	N 07°28'08" E	58.31'
L961	N 00°19'04" W	76.65'
L962	N 08°03'29" E	45.76'
L963	N 25°36'52" E	52.57'
L964	N 57°23'38" E	56.34'
L965	N 84°41'04" E	41.78'
L966	S 67°35'02" E	41.26'
L967	S 51°05'23" E	50.99'
L968	N 09°31'17" E	36.63'
L969	N 24°50'14" E	77.53'
L970	N 48°43'57" E	57.32'
L971	N 41°29'04" E	40.10'
L972	N 49°32'09" E	50.64'
L973	S 53°26'20" E	45.29'
L974	N 49°35'18" E	29.00'
L975	N 50°24'13" W	44.37'
L976	N 20°33'07" W	42.75'
L977	N 49°01'30" W	45.22'
L978	S 85°02'54" W	35.92'
L979	N 42°13'39" W	59.78'
L980	N 64°27'28" W	82.82'
L981	N 65°03'39" W	141.18'
L982	N 69°13'51" W	61.95'
L983	S 85°29'53" W	38.53'
L984	S 72°02'07" W	62.93'
L985	S 56°20'34" W	43.56'
L986	S 89°05'46" W	26.89'
L987	S 42°12'29" W	36.27'
L988	S 38°03'32" W	13.79'
L989	S 22°49'39" W	20.52'
L990	S 43°50'27" W	49.26'
L991	S 45°39'48" W	31.61'
L992	S 57°48'09" W	21.26'
L993	N 73°47'55" W	25.50'
L994	S 19°08'53" E	6.75'
L995	S 39°55'07" W	30.09'
L996	S 89°14'38" W	22.08'
L997	S 14°08'39" W	35.86'
L998	S 31°39'05" W	14.11'
L999	S 16°33'57" W	24.22'
L1000	S 60°16'52" W	31.70'
L1001	S 61°07'05" W	15.10'
L1002	S 08°54'29" W	14.53'
L1003	S 33°17'34" W	21.04'
L1004	N 45°00'55" W	24.41'
L1005	N 29°23'00" W	23.53'
L1006	N 28°48'08" E	29.59'
L1007	N 06°29'33" E	40.12'
L1008	N 30°20'23" E	36.94'
L1009	N 37°57'50" E	31.34'
L1010	N 14°53'35" E	28.00'
L1011	N 26°23'46" W	21.29'
L1012	N 30°32'16" W	17.52'
L1013	N 73°42'27" W	37.41'
L1014	S 65°19'08" W	58.16'
L1015	S 35°05'23" W	9.36'
L1016	N 54°13'06" W	31.79'
L1017	N 45°28'44" W	30.12'
L1018	S 33°27'26" W	42.91'
L1019	S 26°22'15" W	10.28'
L1020	S 05°49'19" E	34.91'
L1021	N 61°26'02" E	40.98'
L1022	N 60°22'47" E	41.36'
L1023	S 59°56'03" E	80.41'
L1024	S 69°27'34" W	20.86'
L1025	S 20°11'13" E	14.58'
L1026	S 54°27'54" W	16.04'
L1027	S 11°51'47" E	43.84'
L1028	S 01°13'42" W	62.97'
L1029	S 13°12'05" E	28.06'
L1030	S 15°41'18" W	40.32'
L1031	S 11°58'37" W	30.48'
L1032	S 04°01'55" W	57.29'
L1033	S 05°28'12" E	50.77'
L1034	S 24°09'23" E	59.42'
L1035	S 22°33'15" E	46.70'
L1036	S 42°16'00" E	20.11'
L1037	N 61°24'53" E	25.79'
L1038	S 71°39'15" E	24.99'
L1039	N 46°25'40" E	15.30'
L1040	N 21°03'41" W	28.91'
L1041	N 45°48'32" E	39.27'
L1042	S 77°48'29" E	20.58'
L1043	N 23°36'15" E	30.40'
L1044	N 27°28'24" W	37.93'
L1045	N 77°07'35" E	9.88'
L1046	S 43°58'59" E	54.24'
L1047	N 51°06'39" E	14.13'
L1048	N 19°35'52" W	50.94'
L1049	N 11°30'27" W	20.90'
L1050	S 56°26'45" E	30.77'
L1051	S 45°14'05" E	45.96'
L1052	N 63°17'17" E	60.96'
L1053	S 89°57'53" E	22.27'
L1054	N 49°11'58" W	59.32'
L1055	N 64°40'13" E	28.44'
L1056	S 48°27'28" E	20.44'
L1057	N 60°26'22" E	41.61'
L1058	S 84°38'48" E	58.53'
L1059	N 07°05'05" W	20.84'
L1060	N 46°39'47" E	50.16'
L1061	S 87°03'59" E	44.93'
L1062	N 64°12'23" E	25.94'
L1063	S 56°24'48" E	14.51'
L1064	N 50°22'56" E	25.80'
L1065	N 48°11'08" E	32.93'
L1066	N 49°30'35" E	60.43'
L1067	N 60°57'56" W	33.58'
L1068	N 54°56'32" E	53.96'
L1069	N 81°55'17" E	65.05'
L1070	N 86°36'06" E	41.98'
L1071	N 87°32'09" E	58.81'
L1072	N 48°42'31" E	49.65'
L1073	S 00°22'02" W	23.06'
L1074	S 58°45'28" W	794.34'
L1075	N 54°18'21" W	35.61'
L1076	S 58°57'19" W	61.67'
L1077	N 32°56'35" W	24.59'
L1078	S 58°49'37" W	671.63'
L1079	N 52°01'09" W	36.62'
L1080	N 28°26'16" W	44.10'
L1081	N 24°07'31" W	17.28'
L1082	N 11°13'31" W	45.18'
L1083	N 52°34'59" W	24.57'
L1084	N 81°29'45" W	30.87'
L1085	N 18°07'37" E	46.61'
L1086	N 42°06'21" E	54.14'
L1087	S 68°35'01" E	26.42'
L1088	S 45°06'21" E	40.41'
L1089	N 48°10'29" E	29.90'
L1090	N 52°07'18" E	28.17'
L1091	N 77°40'44" E	81.29'
L1092	S 88°43'06" E	17.01'
L1093	S 70°29'42" E	37.12'
L1094	S 82°35'58" E	23.18'
L1095	N 72°39'26" E	53.17'
L1096	N 59°11'45" E	61.73'
L1097	N 80°56'19" E	83.12'
L1098	N 54°48'01" E	72.58'
L1099	N 61°03'48" E	56.59'
L1100	N 55°01'26" E	56.22'
L1101	N 53°55'53" W	47.51'
L1102	N 62°25'22" E	50.69'
L1103	N 46°51'46" E	43.45'
L1104	N 17°50'29" W	43.30'
L1105	N 46°06'55" E	31.85'
L1106	N 52°10'19" E	14.56'
L1107	S 76°46'22" W	9.95'
L1108	S 53°56'46" W	59.93'
L1109	S 64°55'18" W	54.02'
L1110	S 75°15'05" W	53.53'
L1111	S 73°14'25" W	49.81'
L1112	S 46°10'56" W	68.86'
L1113	N 49°58'07" W	45.16'
L1114	N 22°41'20" E	27.65'
L1115	N 04°39'50" E	49.37'
L1116	N 46°48'39" E	45.01'
L1117	S 12°13'07" E	16.88'
L1118	N 64°56'01" E	77.27'
L1119	N 48°39'27" E	10.56'
L1120	S 74°13'50" E	40.89'
L1121	S 38°21'18" E	11.10'
L1122	S 89°05'41" E	24.78'
L1123	S 63°55'54" W	17.84'
L1124	S 66°47'47" W	43.22'
L1125	S 15°44'18" W	19.33'
L1126	N 85°02'09" W	21.72'
L1127	S 52°05'37" W	35.27'
L1128	S 02°42'36" W	20.74'
L1129	N 72°24'53" W	44.11'
L1130	N 27°09'58" W	41.25'
L1131	S 79°58'10" W	35.66'
L1132	S 69°04'06" W	10.16'
L1133	N 23°36'20" W	7.63'
L1134	N 53°10'00" W	34.11'
L1135	N 78°10'56" E	29.74'
L1136	S 89°35'41" E	26.28'
L1137	S 84°54'17" E	24.97'
L1138	N 31°44'22" E	28.96'
L1139	N 75°16'41" E	34.10'
L1140	S 81°13'16" E	25.35'
L1141	N 81°21'26" E	23.00'
L1142	S 75°02'58" W	59.63'
L1143	S 10°52'53" W	46.77'
L1144	S 14°50'02" W	80.26'
L1145	S 38°41'12" E	29.34'
L1146	S 35°54'01" E	26.58'
L1147	S 14°15'50" E	12.88'
L1148	S 19°51'48" E	21.63'
L1149	S 40°50'51" E	41.95'
L1150	S 26°04'58" W	21.84'
L1151	S 10°48'58" W	21.39'
L1152	S 03°03'10" E	31.51'
L1153	S 32°27'33" E	19.38'
L1154	S 75°50'24" E	25.49'
L1155	S 28°34'39" E	10.86'
L1156	S 78°26'38" E	18.59'
L1157	S 05°50'46" W	29.30'
L1158	S 32°04'27" E	30.44'
L1159	S 49°44'03" E	20.29'
L1160	S 52°02'51" E	17.60'
L1161	S 22°27'25" E	22.19'
L1162	S 61°22'58" W	15.23'
L1163	N 80°02'57" W	22.25'
L1164	S 62°00'56" W	21.34'
L1165	S 42°19'10" W	10.39'
L1166	N 78°23'39" W	19.28'
L1167	N 69°23'05" W	29.44'
L1168	N 61°38'55" W	19.12'
L1169	N 85°59'21" W	18.40'
L1170	N 41°54'46" W	19.50'
L1171	N 64°40'07" W	20.08'
L1172	N 74°41'18" W	17.42'
L1173	N 25°13'33" W	16.97'
L1174	N 47°49'19" W	17.20'
L1175	S 00°18'52" W	36.45'
L1176	S 08°49'02" W	35.24'
L1177	S 03°53'00" W	57.63'
L1178	S 20°24'12" W	46.64'
L1179	S 01°01'58" W	36.48'
L1180	S 24°57'42" W	43.34'
L1181	S 13°39'24" W	51.22'
L1182	S 16°02'56" W	50.26'
L1183	S 11°39'48" W	32.21'
L1184	S 28°26'59" W	24.71'
L1185	S 27°18'05" W	37.19'
L1186	N 32°27'19" E	38.57'
L1187	N 17°17'05" E	43.37'
L1188	N 09°39'25" W	30.29'
L1189	N 47°48'35" W	26.51'
L1190	N 34°17'32" W	31.23'
L1191	N 35°25'45" E	24.02'
L1192	S 83°09'46" E	25.16'
L1193	S 46°58'43" E	14.39'
L1194	N 31°01'38" E	40.55'
L1195	N 15°40'20" E	60.84'
L1196	N 01°42'39" E	34.84'
L1197	N 38°14'35" E	32.13'
L1198	N 08°04'38" E	65.75'
L1199	N 00°55'05" E	60.93'
L1200	N 06°30'14" E	117.94'
L1201	N 22°43'13" E	47.93'
L1202	N 09°30'29" E	149.53'
L1203	N 03°29'49" E	81.57'
L1204	S 07°52'25" E	16.82'
L1205	S 68°48'46" W	26.55'
L1206	S 27°12'39" W	16.82'
L1207	S 53°22'14" W	20.38'
L1208	N 37°24'18" W	26.32'
L1209	N 11°58'02" W	20.86'
L1210	N 01°40'09" W	20.92'
L1211	N 76°50'31" E	26.99'
L1212	S 69°58'04" E	43.79'
L1213	S 09°22'28" W	48.58'
L1214	S 34°00'33" E	23.29'
L1215	S 21°52'49" W	19.85'
L1216	S 58°23'25" W	19.27'
L1217	S 39°37'35" W	28.66'
L1218	N 42°45'21" W	20.48'
L1219	N 21°36'14" W	19.36'
L1220	N 34°30'01" W	20.33'
L1221	N 53°57'00" W	22.67'
L1222	N 61°49'51" W	25.68'
L1223	N 45°26'15" W	22.17'
L1224	N 84°50'42" W	32.87'
L1225	N 67°16'30" W	25.74'
L1226	N 89°11'51" W	51.89'
L1227	S 87°29'29" W	33.91'
L1228	S 71°49'05" W	24.90'
L1229	N 38°32'39" W	22.95'
L1230	N 01°05'50" W	41.25'
L1231	N 48°19'38" E	38.25'
L1232	N 03°34'23" W	33.49'
L1233	N 16°23'03" W	37.29'
L1234	N 11°22'26" W	35.50'
L1235	N 23°06'51" W	51.16'
L1236	N 19°48'40" W	41.29'
L1237	N 07°36'03" W	23.23'
L1238	N 18°17'21" E	37.78'
L1239	N 24°46'02" W	47.37'
L1240	N 23°10'31" W	33.89'
L1241	N 23°44'43" W	61.16'
L1242	N 56°58'04" W	45.18'
L1243	N 15°04'15" W	33.45'
L1244	N 34°57'21" W	50.55'
L1245	N 37°29'11" W	42.42'
L1246	N 17°07'06" W	47.39'
L1247	N 17°48'15" E	29.09'
L1248	N 40°57'07" E	26.58'
L1249	N 85°08'39" E	21.50'
L1250	S 55°28'22" E	24.00'
L1251	N 62°04'05" E	15.58'
L1252	S 17°25'16" E	25.60'
L1253	S 52°23'28" E	28.63'
L1254	S 46°03'04" E	20.88'
L1255	S 60°17'03" E	25.95'
L1256	S 50°40'48" E	28.29'
L1257	S 15°34'29" W	19.57'
L1258	S 12°09'17" E	18.78'
L1259	S 03°49'50" E	22.65'
L1260	S 13°54'33" W	15.10'
L1261	S 04°44'57" W	8.93'
L1262	S 03°16'33" E	20.64'
L1263	S 48°11'48" W	13.73'
L1264	S 13°13'39" E	20.39'
L1265	S 69°38'38" E	15.56'
L1266	S 68°02'40" E	28.17'
L1267	S 42°17'54" E	49.44'
L1268	S 20°27'11" E	21.70'
L1269	S 16°52'24" W	25.09'
L1270	S 28°54'05" E	27.66'
L1271	S 38°23'16" E	26.66'
L1272	S 25°16'22" E	30.88'
L1273	S 62°54'21" E	23.19'
L1274	S 75°54'10" E	25.02'
L1275	S 65°42'06" E	10.84'
L1276	S 25°53'25" E	20.67'
L1277	S 44°21'23" W	26.32'
L1278	S 77°32'24" W	23.09'
L1279	S 71°29'40" W	28.00'
L1280	S 36°47'43" W	24.46'
L1281	S 31°34'57" E	49.83'
L1282	S 42°42'51" E	45.93'
L1283	S 38°14'37" E	32.83'
L1284	S 53°24'41" W	27.91'
L1285	S 18°00'44" W	35.91'
L1286	S 06°50'27" E	33.99'
L1287	S 30°43'23" W	18.86'
L1288	N 57°01'10" E	51.54'
L1289	S 54°48'35" E	28.46'
L1290	S 73°14'29" E	19.57'
L1291	S 54°42'55" E	26.49'
L1292	N 76°11'18" E	15.50'
L1293	N 71°25'18" E	22.75'
L1294	S 25°15'25" E	31.57'
L1295	S 08°28'59" W	20.11'
L1296	S 77°44'07" E	18.56'
L1297	N 52°41'19" E	20.77'
L1298	N 60°30'40" E	16.12'
L1299	N 00°23'22" E	17.89'
L1300	N 19°29'32" E	33.79'
L1301	N 06°28'56" W	20.79'
L1302	N 53°25'10" E	59.69'
L1303	N 68°58'34" E	20.57'
L1304	S 85°33'53" E	22.84'
L1305	S 25°35'55" E	29.70'
L1306	S 09°07'17" E	43.98'
L1307	S 33°51'13" W	29.08'
L1308	S 03°05'15" W	28.37'
L1309	S 13°55'17" E	27.61'
L1310	S 25°45'58" E	27.49'
L1311	S 48°18'26" W	18.04'
L1312	S 86°37'17" W	21.95'
L1313	N 76°07'29" W	12.82'
L1314	S 55°30'32" W	27.80'
L1315	S 16°39'05" W	21.24'
L1316	S 65°22'55" W	26.81'
L1317	N 72°30'46" W	2.56'
L1318	N 06°46'25" E	32.11'
L1319	N 63°23'54" E	21.94'
L1320	N 32°14'01" E	49.19'
L1321	N 73°21'39" E	56.27'
L1322	N 68°51'48" E	42.59'
L1323	N 61°05'29" E	28.58'
L1324	S 85°07'03" E	34.44'
L1325	N 70°02'43" E	30.33'
L1326	S 80°37'23" E	34.59'
L1327	S 65°49'48" E	39.57'
L1328	N 73°18'08" E	26.69'
L1329	N 74°45'29" E	13.91'
L1330	S 74°03'02" E	40.50'

VICINITY MAP not to scale

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16
CORRIDOR JOINT
DEVELOPMENT AUTHORITY

No.	Revision	By	Date

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000

SHEET 24 OF 25

Z:\25503\25503.0000\Survey\DWG\25503sw25.dwg - Apr 1, 2015 - 4:42:31 PM

LINE TABLE		
LINE	BEARING	LENGTH
L1331	S 80°59'22" E	33.98'
L1332	N 59°17'35" E	26.60'
L1333	N 82°33'14" E	27.64'
L1334	N 66°24'57" E	31.58'
L1335	N 53°13'47" E	29.95'
L1336	S 65°27'37" E	22.89'
L1337	N 64°45'12" E	21.63'
L1338	S 73°56'46" E	48.78'
L1339	S 51°59'45" E	22.62'
L1340	S 44°11'24" E	24.41'
L1341	S 51°29'11" E	28.55'
L1342	S 38°02'31" E	62.10'
L1343	S 23°12'36" E	29.07'
L1344	S 31°46'30" E	33.25'
L1345	S 24°32'01" E	50.58'
L1346	S 20°27'24" E	40.59'
L1347	S 10°20'29" W	26.67'
L1348	N 49°53'44" E	25.47'
L1349	N 62°08'10" E	30.40'
L1350	N 78°51'56" E	21.67'
L1351	N 49°51'01" E	24.55'
L1352	N 63°04'41" E	24.91'
L1353	N 48°51'04" E	19.29'
L1354	N 62°32'51" E	34.43'
L1355	N 69°03'08" E	23.94'
L1356	N 12°18'20" W	20.44'
L1357	S 84°26'42" E	25.54'
L1358	N 73°47'39" E	25.01'
L1359	S 83°47'56" E	16.47'
L1360	N 73°50'50" E	14.79'
L1361	N 68°04'27" E	41.48'
L1362	N 33°06'09" E	25.98'
L1363	N 41°26'06" E	39.48'
L1364	N 10°52'50" E	24.29'
L1365	S 52°28'54" W	19.90'
L1366	N 70°56'58" W	29.38'
L1367	N 27°37'28" W	24.37'
L1368	N 82°07'02" W	26.01'
L1369	N 28°38'44" W	22.14'
L1370	S 79°12'34" W	28.87'
L1371	N 86°22'04" W	29.48'
L1372	S 59°24'59" W	19.23'
L1373	S 22°10'17" W	15.88'
L1374	S 45°44'57" W	17.86'
L1375	S 22°36'13" W	20.68'
L1376	S 23°38'43" E	19.41'
L1377	S 12°08'16" W	18.89'
L1378	S 38°24'28" W	18.97'
L1379	S 01°08'42" W	20.19'
L1380	S 23°16'27" E	13.10'
L1381	S 57°51'34" E	23.74'
L1382	S 89°20'29" W	22.37'
L1383	N 75°14'37" W	30.85'
L1384	S 55°19'03" W	15.55'
L1385	S 22°19'20" W	27.68'
L1386	S 44°25'31" W	27.06'
L1387	S 68°04'15" W	39.17'
L1388	N 27°17'16" W	94.79'
L1389	N 52°07'49" W	38.85'
L1390	N 28°08'41" W	31.31'
L1391	N 50°52'22" E	42.50'
L1392	N 67°55'58" E	36.04'
L1393	N 04°13'30" E	37.19'
L1394	N 53°22'30" W	29.47'
L1395	N 05°24'07" E	58.00'
L1396	S 86°05'43" W	12.19'
L1397	S 27°42'41" W	32.86'
L1398	N 69°19'26" W	46.33'
L1399	N 47°36'31" W	32.78'
L1400	N 37°38'18" E	58.61'
L1401	N 50°13'46" E	64.70'
L1402	N 15°17'31" E	39.62'
L1403	N 07°01'43" E	68.57'
L1404	N 04°22'09" W	45.94'
L1405	N 02°57'29" W	32.94'
L1406	N 36°22'50" W	37.46'
L1407	N 23°35'44" W	14.59'
L1408	N 72°41'32" W	78.45'
L1409	N 69°58'03" W	83.37'
L1410	N 61°01'23" W	89.48'
L1411	N 37°22'04" W	102.22'
L1412	N 56°10'17" W	130.77'
L1413	N 68°59'36" W	83.94'
L1414	N 70°19'27" W	109.65'
L1415	S 75°38'16" W	77.61'
L1416	N 80°17'14" W	96.32'
L1417	S 86°13'27" W	113.89'
L1418	N 64°32'28" W	66.72'
L1419	N 73°29'46" W	81.17'
L1420	N 76°49'23" W	105.59'
L1421	N 47°10'15" W	72.80'
L1422	N 36°43'34" W	66.50'
L1423	N 27°33'50" E	42.37'
L1424	S 79°45'55" E	30.81'
L1425	S 73°39'14" E	36.85'
L1426	S 69°33'41" E	42.69'
L1427	S 76°16'38" E	44.11'
L1428	S 89°42'50" E	46.23'
L1429	N 71°57'18" E	40.47'
L1430	N 55°43'43" E	27.21'
L1431	N 70°53'05" E	31.98'
L1432	S 83°35'14" E	75.49'
L1433	N 77°46'13" E	38.14'
L1434	S 83°10'27" E	64.50'
L1435	N 38°08'42" E	28.31'
L1436	N 38°48'54" E	24.51'
L1437	N 68°53'21" E	19.61'
L1438	N 19°47'05" E	31.37'
L1439	N 29°13'53" E	17.10'
L1440	N 56°31'41" E	21.40'
L1441	S 59°20'36" E	21.96'
L1442	N 60°57'18" E	45.14'
L1443	N 69°31'32" E	48.76'
L1444	N 85°37'38" E	32.29'
L1445	N 62°42'33" E	29.57'
L1446	S 82°22'18" E	19.52'
L1447	S 32°06'03" E	37.15'
L1448	S 33°08'50" E	30.29'
L1449	S 08°15'30" W	22.27'
L1450	S 46°55'58" W	24.79'
L1451	S 26°23'16" W	56.36'
L1452	S 01°54'21" W	41.68'
L1453	S 51°24'14" E	54.81'
L1454	S 63°46'58" E	32.60'
L1455	S 52°31'16" E	54.88'
L1456	S 48°42'17" E	56.69'
L1457	S 45°08'04" E	52.80'
L1458	S 54°41'41" E	53.09'
L1459	S 39°21'24" E	38.99'
L1460	S 33°29'46" E	36.23'
L1461	S 68°46'30" E	41.60'
L1462	S 74°41'31" E	69.09'
L1463	S 68°06'04" E	44.39'

LINE TABLE		
LINE	BEARING	LENGTH
L1464	S 32°27'55" E	28.86'
L1465	N 78°35'55" E	25.52'
L1466	N 78°35'55" E	36.75'
L1467	S 81°34'11" E	58.04'
L1468	S 69°24'00" E	33.01'
L1469	N 67°41'53" E	58.80'
L1470	N 62°48'14" E	51.60'
L1471	S 80°15'17" E	23.21'
L1472	N 45°32'21" E	34.20'
L1473	N 53°13'51" W	9.43'
L1474	N 35°30'58" E	26.62'
L1475	N 62°46'38" E	45.65'
L1476	S 87°18'52" E	36.40'
L1477	N 05°37'35" E	46.74'
L1478	N 07°23'28" W	54.83'
L1479	N 24°45'37" W	66.77'
L1480	N 27°31'11" W	64.63'
L1481	S 82°37'06" W	39.70'
L1482	N 53°51'45" W	39.40'
L1483	N 10°42'55" W	52.31'
L1484	N 66°55'52" W	51.86'
L1485	N 80°05'46" W	47.87'
L1486	N 59°07'19" W	54.00'
L1487	N 69°28'04" W	54.63'
L1488	N 50°55'34" W	43.12'
L1489	N 50°55'34" W	15.00'
L1490	N 37°02'26" W	48.83'
L1491	N 50°56'09" W	42.12'
L1492	N 57°37'11" W	81.55'
L1493	N 35°46'09" W	44.06'
L1494	N 48°02'20" W	66.47'
L1495	N 37°56'47" W	19.71'
L1496	N 01°24'58" W	39.49'
L1497	N 15°36'07" W	54.50'
L1498	N 01°55'03" W	104.34'
L1499	N 31°50'38" E	64.90'
L1500	N 34°12'53" E	61.06'
L1501	N 84°39'24" E	92.79'
L1502	S 65°52'15" E	24.26'
L1503	S 74°35'36" E	21.37'
L1504	N 52°28'18" E	48.64'
L1505	N 57°35'53" E	6.02'
L1506	N 57°35'53" E	40.20'
L1507	N 40°17'31" E	54.61'
L1508	N 58°09'21" E	51.45'
L1509	N 56°05'05" E	45.57'
L1510	N 86°01'14" E	44.92'
L1511	N 68°12'14" E	40.71'
L1512	S 24°18'59" E	33.54'
L1513	S 49°49'40" E	42.38'
L1514	N 78°45'12" E	21.94'
L1515	N 40°32'04" E	25.93'
L1516	N 22°16'01" W	34.59'
L1517	N 37°52'06" W	41.84'
L1518	N 32°35'30" W	46.56'
L1519	N 03°16'52" W	46.84'
L1520	N 20°46'13" E	45.28'
L1521	N 50°52'02" E	44.33'
L1522	S 88°47'33" E	29.58'
L1523	S 28°08'29" E	52.78'
L1524	S 74°15'58" E	38.78'
L1525	S 26°14'50" E	35.51'
L1526	S 69°16'13" E	50.06'
L1527	N 85°00'03" E	29.75'
L1528	S 81°18'23" E	71.49'
L1529	S 40°51'29" E	31.58'
L1530	S 19°37'45" E	25.45'
L1531	S 59°35'36" E	35.48'
L1532	S 60°48'33" E	23.93'
L1533	S 04°45'16" E	37.57'
L1534	S 46°04'12" E	99.45'
L1535	S 50°35'48" E	47.11'
L1536	S 79°57'15" E	60.40'
L1537	N 82°00'19" E	41.10'
L1538	N 61°44'46" E	39.68'
L1539	N 37°16'23" E	77.04'
L1540	N 22°37'45" E	34.24'
L1541	N 41°57'40" E	37.34'
L1542	N 26°33'23" E	47.47'
L1543	N 27°15'45" E	44.41'
L1544	N 05°55'14" E	35.63'
L1545	N 14°30'35" E	30.70'
L1546	N 13°27'34" W	27.69'
L1547	N 13°45'29" E	37.15'
L1548	N 07°25'02" E	34.66'
L1549	N 63°34'39" E	24.61'
L1550	N 00°00'29" W	34.81'
L1551	N 19°48'48" W	32.06'
L1552	N 16°53'10" W	51.04'
L1553	N 16°52'01" E	40.70'
L1554	N 20°29'38" W	37.93'
L1555	N 08°31'05" E	56.18'
L1556	N 83°21'28" E	84.96'
L1557	N 84°54'57" E	131.41'
L1558	N 81°52'41" E	57.55'
L1559	S 44°58'53" E	39.16'
L1560	S 55°19'19" E	25.45'
L1561	S 42°37'19" E	26.12'
L1562	S 63°49'26" E	39.06'
L1563	S 46°31'50" E	31.91'
L1564	S 37°56'45" E	26.64'
L1565	S 32°34'25" E	34.94'
L1566	S 35°10'01" E	34.15'
L1567	S 43°29'53" E	28.82'
L1568	S 82°44'30" E	31.51'
L1569	S 47°07'09" E	75.86'
L1570	S 22°17'06" E	39.12'
L1571	S 07°23'26" E	40.99'
L1572	S 15°13'24" W	30.54'
L1573	S 01°53'48" E	46.82'
L1574	S 27°25'48" E	20.59'
L1575	S 11°11'18" E	20.99'
L1576	S 23°57'31" W	85.61'
L1577	S 50°25'36" W	22.87'
L1578	S 17°38'21" W	20.79'
L1579	S 51°16'53" W	20.75'
L1580	N 87°12'51" W	25.64'
L1581	S 69°31'21" W	15.86'
L1582	S 52°44'15" W	57.25'
L1583	S 15°56'34" E	15.89'
L1584	S 31°48'59" W	22.36'
L1585	S 37°31'33" E	13.66'
L1586	S 04°04'19" W	21.86'
L1587	S 39°39'40" W	9.59'
L1588	N 47°04'24" W	45.47'
L1589	S 66°22'07" W	35.02'
L1590	S 46°51'45" W	21.57'
L1591	N 87°42'32" W	18.75'
L1592	S 65°31'45" W	57.60'
L1593	S 83°18'53" W	29.99'
L1594	N 77°59'47" W	39.40'
L1595	N 86°10'59" W	43.80'
L1596	N 04°11'47" W	43.49'

LINE TABLE		
LINE	BEARING	LENGTH
L1597	N 30°33'10" W	29.67'
L1598	N 37°29'01" W	36.92'
L1599	N 45°02'35" W	64.67'
L1600	N 00°45'25" E	29.42'
L1601	N 51°32'29" W	30.19'
L1602	N 65°55'16" W	31.03'
L1603	N 32°38'28" W	32.99'
L1604	N 14°31'04" W	31.79'
L1605	N 09°34'02" E	29.91'
L1606	N 00°45'54" W	21.80'
L1607	N 06°24'53" W	18.55'
L1608	N 28°38'18" W	34.30'
L1609	S 73°42'30" W	27.53'
L1610	S 49°18'51" W	19.25'
L1611	N 43°57'11" W	21.63'
L1612	N 28°40'53" W	32.78'
L1613	S 63°20'51" W	23.82'
L1614	N 73°00'49" W	18.73'
L1615	N 62°23'02" W	59.15'
L1616	N 49°24'51" W	24.12'
L1617	N 10°10'32" W	30.79'
L1618	N 09°48'20" E	41.74'
L1619	N 07°45'26" E	30.54'
L1620	N 85°22'39" E	21.46'
L1621	N 37°54'11" E	50.84'
L1622	S 83°12'21" E	36.95'
L1623	N 51°06'15" E	28.07'
L1624	N 82°49'05" E	28.71'
L1625	S 82°14'53" E	17.59'
L1626	S 44°38'25" E	19.63'
L1627	S 78°45'12" E	39.78'
L1628	N 85°40'45" E	18.27'
L1629	N 47°46'15" E	32.60'
L1630	N 79°45'57" E	21.88'
L1631	N 12°46'05" W	50.12'
L1632	N 02°39'47" E	26.53'
L1633	N 14°52'36" E	31.45'
L1634	N 84°21'04" E	81.72'
L1635	N 73°14'03" E	20.88'
L1636	N 16°20'40" E	19.48'
L1637	S 78°38'25" E	21.18'
L1638	N 64°30'36" E	19.88'
L1639	S 60°42'56" E	24.04'
L1640	S 59°14'49" E	39.35'
L1641	N 01°34'32" E	18.83'
L1642	N 71°16'23" E	43.95'
L1643	S 80°55'55" E	42.22'
L1644	N 83°34'12" E	29.57'
L1645	N 61°58'18" E	45.90'
L1646	N 34°43'51" E	41.37'
L1647	N 77°11'24" E	43.61'
L1648	N 85°55'57" E	57.80'
L1649	S 54°14'37" E	42.78'
L1650	S 60°43'22" E	51.35'
L1651	S 45°06'06" E	55.79'
L1652	S 81°30'14" E	52.08'
L1653	N 83°25'10" E	49.36'
L1654	N 28°03'12" E	50.42'
L1655	N 82°31'26" E	40.31'
L1656	N 59°51'31" E	46.05'
L1657	N 55°06'55" E	56.69'
L1658	N 42°22'02" E	43.20'
L1659	N 50°45'17" E	48.56'
L1660	N 74°29'29" E	37.91'
L1661	N 65°34'42" E	34.59'
L1662	N 40°52'26" E	50.14'
L1663	N 28°40'39" E	70.99'
L1664	N 43°00'27" E	73.01'
L1665	N 50°00'38" E	74.64'
L1666	N 49°13'26" E	66.15'
L1667	N 40°34'51" E	36.34'
L1668	N 46°51'37" E	49.45'
L1669	N 46°16'38" E	42.51'
L1670	N 24°29'46" E	48.07'
L1671	N 03°03'59" E	57.76'
L1672	N 07°26'32" W	53.12'
L1673	N 26°32'03" W	16.54'
L1674	N 23°20'17" W	32.34'
L1675	N 30°40'00" W	56.90'
L1676	N 56°29'29" W	39.40'
L1677	N 67°51'52" W	58.60'
L1678	S 82°46'20" W	46.34'
L1679	S 70°12'17" W	29.44'
L1680	S 55°13'23" W	49.56'
L1681	S 71°30'25" W	53.00'
L1682	N 58°37'32" W	53.82'
L1683	N 06°42'06" W	49.70'
L1684	N 16°04'18" E	41.18'
L1685	N 00°09'57" W	44.94'
L1686	N 23°03'35" W	42.79'
L1687	N 49°31'24" W	39.90'
L1688	N 46°00'59" E	41.05'
L1689	S 89°25'44" E	50.63'
L1690	S 52°37'07" E	63.67'
L1691	S 40°18'28" E	48.25'
L1692	S 29°30'53" E	51.35'
L1693	S 43°58'17" E	37.49'
L1694	S 79°12'33" E	29.37'
L1695	S 73°59'54" E	71.07'
L1696	N 85°50'59" E	26.49'
L1697	N 34°46'24" E	62.82'
L1698	N 22°21'59" E	59.48'
L1699	N 01°47'05" W	37.44'
L1700	S 65°59'26" E	17.02'
L1701	S 24°10'25" E	42.02'
L1702	S 00°04'58" E	53.24'
L1703	S 03°47'41" E	96.01'
L1704	S 04°44'24" W	71.50'
L1705	S 00°34'23" W	77.67'
L1706	S 03°30'09" W	59.27'
L1707	S 36°09'14" E	46.40'
L1708	S 47°24'26" E	31.93'
L1709	S 60°16'17" E	42.30'
L1710	S 63°31'15" E	41.26'
L1711	S 65°46'35" E	35.73'
L1712	S 85°40'47" E	62.05'
L1713	N 74°59'44" E	44.05'
L1714	N 83°37'44" E	47.80'
L1715	N 82°18'31" E	39.22'
L1716	S 66°59'31" E	41.16'
L1717	S 66°42'08" E	46.73'
L1718	S 73°21'12" E	53.97'
L1719	S 71°47'54" E	49.31'
L1720	S 80°47'00" E	55.58'
L1721	N 89°11'38" E	45.76'
L1722	N 73°24'48" E	67.74'
L1723	N 69°34'44" E	56.92'
L1724	N 75°53'07" E	49.02'
L1725	S 85°19'52" E	35.94'
L1726	N 73°49'11" E	29.88'
L1727	N 77°19'53" E	49.97'
L1728	S 89°47'28" E	64.81'
L1729	S 84°33'24" E	65.15'

LINE TABLE		
LINE	BEARING	LENGTH
L1730	S 76°10'52" E	67.39'
L1731	S 68°06'53" E	65.98'
L1732	S 42°47'18" E	68.60'
L1733	S 67°23'23" E	89.28'
L1734	S 06°26'51" E	60.01'
L1735	N 76°02'29" E	29.86'
L1736	N 48°15'45" E	51.43'
L1737	N 64°06'05" E	19.56'
L1738	S 85°03'10" E	67.66'
L1739	N 81°52'44" E	64.59'
L1740	N 77°20'46" E	55.28'
L1741	S 84°30'53" E	79.04'
L1742	S 77°19'05" E	25.59'
L1743	S 65°38'36" E	41.07'
L1744	S 02°29'07" E	72.38'
L1745	S 21°33'16" W	25.38'
L1746	S 18°46'29" W	65.35'
L1747	S 49°03'32" E	45.64'
L1748	S 39°29'20" E	43.91'
L1749	N 87°30'02" E	44.68'
L1750	S 55°15'53" E	25.95'
L1751	S 28°31'23" W	45.36'
L1752	S 45°36'09" E	35.83'
L1753	S 22°47'14" E	9.65'
L1754	N 55°51'25" W	67.29'
L1755	N 43°04'13" W	109.73'
L1756	N 41°51'49" W	60.44'
L1757	N 76°26'12" W	11.37'
L1758	S 50°16'43" E	39.82'
L1759	S 41°14'12" E	34.34'
L1760	S 29°20'24" E	51.35'
L1761	N 83°06'13" E	26.88'
L1762	S 43°51'57" E	55.01'
L1763	S 73°39'35" W	27.95'
L1764	S 03°50'05" E	37.59'
L1765	S 01°28'35" W	19.39'
L1766	S 45°07'31" W	63.20'
L1767	N 38°26'16" W	38.58'
L1768	N 42°04'32" W	56.29'
L1769	S 65°42'51" W	26.06'
L1770	N 75°58'26" E	42.41'
L1771	N 62°50'06" E	37.83'
L1772	S 76°41'19" E	56.54'
L1773	S 80°23'54" E	78.53'
L1774	S 42°34'46" E	31.64'
L1775	S 56°58'27" E	18.07'
L1776	N 35°38'33" E	38.70'
L1777	S 73°45'31" E	55.34'
L1778	N 50°42'36" E	24.05'
L1779	N 04°55'55" E	36.94'
L1780	N 51°22'23" W	80.76'
L1781	S 81°57'45" W	38.71'
L1782	N 59°54'24" W	63.56'
L1783	N 16°43'52" W	79.15'
L1784	N 18°32'14" E	60.89'
L1785	N 43°13'50" W	86.89'
L1786	N 55°15'25" W	39.06'
L1787	N 44°57'52" E	65.64'
L1788	N 65°20'51" E	31.01'
L1789	S 46°08'04" E	56.11'
L1790	N 38°16'53" E	8.01'
L1791	N 36°25'20" W	27.51'
L1792	N 31°57'03" W	41.56'
L1793	N 48°27'07" E	10.59'
L1794	S 50°22'18" E	19.67'
L1795	N 63°10'46" E	20.95'
L1796	S 72°28'55" E	41.95'
L1797	S 15°26'23" E	29.15'
L1798	S 38°02'04" E	129.59'
L1799	S 37°26'17" E	128.30'
L1800	S 36°12'25" E	130.05'
L1801	S 53°38'57" E	113.26'
L1802	S 49°00'06" E	87.49'
L1803	S 33°59'41" E	101.71'
L1804	S 34°37'28" E	99.05'
L1805	S 53°39'06" E	80.14'
L1806	S 51°57'06" E	101.28'
L1807	S 33°39'16" E	85.87'
L1808	S 24°21'47" E	140.08'
L1809	S 58°20'52" E	60.06'
L1810	S 33°25'52" E	67.93'
L1811	S 50°43'42" E	91.06'
L1812	S 41°10'22" E	89.48'
L1813	S 34°28'33" E	91.68'
L1814	S 58°05'19" E	49.69'
L1815	S 02°51'59" E	83.55'
L1816	S 07°25'51" E	62.40'
L1817	S 24°25'50" E	86.32'
L1818	S 32°26'24" W	48.69'
L1819	S 28°41'04" W	68.30'
L1820	S 21°26'35" W	69.10'
L1821	S 54°56'37" E	116.14'
L1822	S 15°21'33" E	91.80'
L1823	S 03°43'21" W	63.01'
L1824	S 33°01'20" E	31.54'
L1825	S 72°54'47" E	68.50'
L1826	N 77°17'04" E	93.48'
L1827	N 16°42'06" E	95.97'
L1828	N 07°21'10" E	92.51'
L1829	S 45°02'29" E	38.93'
L1830	S 67°57'38" E	93.43'
L1831	S 69°34'00" E	41.78'
L1832	S 35°59'16" E	91.76'
L1833	S 33°18'18" E	83.18'
L1834	S 06°05'18" W	41.43'
L1835	S 34°48'00" E	53.89'
L1836	S 26°26'00" E	47.82'
L1837	S 01°02'47" W	45.00'
L1838	S 45°30'36" W	126.23'
L1839	S 03°16'20" W	76.71'
L1840	S 11°02'29" E	101.70'
L1841	S 16°00'33" W	58.72'
L1842	S 24°52'33" E	50.03'
L1843	S 76°40'19" E	41.60'
L1844	S 01°26'48" W	47.02'
L1845	S 58°29'31" E	94.48'
L1846	N 81°49'44" E	48.51'
L1847	N 79°54'00" E	92.65'
L1848	N 57°20'56" E	91.33'
L1849	N 83°29'35" E	71.23'
L1850	N 27°10'57" E	127.90'
L1851	N 13°05'22" E	55.61'
L1852	N 49°44'02" E	83.79'
L1853	S 79°20'49" E	83.10'
L1854	S 07°54'00" E	99.37'
L1855	S 01°20'32" W	110.51'
L1856	S 45°30'09" W	66.92'
L1857	S 28°16'51" W	86.50'
L1858	S 22°08'43" W	109.02'
L1859	S 02°36'39" W	109.83'
L1860	S 18°54'28" E	77.56'
L1861	S 33°29'05" E	53.73'
L1862	S 28°09'47" E	81.78'

LINE TABLE		
LINE	BEARING	LENGTH
L1863	S 02°40'50" E	54.67'
L1864	S 12°53'50" W	54.62'
L1865	S 18°39'22" E	58.13'
L1866	N 49°02'43" E	19.30'
L1867	S 09°24'07" E	58.58'
L1868	S 36°58'57" E	31.43'
L1869	S 64°01'31" W	16.93'
L1870	S 56°34'07" W	13.44'
L1871	N 39°29'25" W	67.44'
L1872	N 41°41'52" W	60.76'
L1873	N 58°24'17" E	7.76'
L1874	S 43°03'34" E	128.76'
L1875	N 35°54'15" W	11.92'
L1876	N 25°53'25" W	28.02'
L1877	N 37°55'08" W	81.70'
L1878	N 38°34'11" W	113.58'
L1879	N 50°12'36" E	10.40'
L1880	S 38°10'20" E	606.68'
L1881	S 28°59'03" E	29.58'
L1882	S 45°18'40" E	47.54'
L1883	S 62°04'51" W	46.60'
L1884	S 17°39'36" W	53.00'
L1885	S 44°46'07" W	63.07'
L1886	S 33°46'42" W	72.37'
L1887	N 44°27'08" W	52.62'
L1888	N 03°03'05" W	61.15'
L1889	N 23°16'27" W	70.77'
L1890	N 16°57'43" W	128.05'
L1891	N 12°25'10" E	87.44'
L1892	N 05°36'42" W	65.89'
L1893	N 27°14'26" W	66.25'
L1894	S 43°29'17" W	22.37'
L1895	S 02°20'54" E	99.19'
L1896	S 38°17'43" W	41.56'
L1897	S 52°43'35" W	63.26'
L1898	S 23°58'42" W	16.12'
L1899	S 56°50'04" W	49.87'
L1900	N 61°01'35" W	70.83'
L1901	N 27°21'06" W	31.92'
L1902	N 11°33'40" W	60.25'
L1903	N 74°40'56" E	42.97'
L1904	N 74°25'57" E	32.01'
L1905	N 76°44'21" E	45.97'
L1906	N 64°02'49" E	48.39'
L1907	N 05°17'46" E	43.53'
L1908	N 45°00'29" E	48.55'
L1909	S 73°45'32" W	43.59'
L1910	S 65°49'21" W	46.34'
L1911	N 87°04'15" W	31.68'
L1912	N 43°02'40" W	62.47'
L1913	N 02°56'27" E	34.58'
L1914	N 29°19'57" E	55.29'
L1915	N 14°41'09" E	62.15'
L1916	N 31°36'23" E	45.92'
L1917	N 16°16'49" W	38.53'
L1918	N 06°28'15" E	72.61'
L1919	N 22°31'53" E	81.96'
L1920	N 00°21'08" W	45.73'
L1921	N 34°19'53" W	63.53'
L1922	N 53°11'42" W	48.13'
L1923	N 67°45'32" W	105.51'
L1924	S 88°53'07" W	66.24'
L1925	N 73°52'19" W	92.31'
L1926	N 87°10'51" W	41.75'
L1927	N 79°19'18" W	61.32'
L1928	N 64°45'49" W	80.53'
L1929	N 16°35'34" W	38.88'
L1930	N 03°37'38" E	54.44'
L1931	N 09°44'57" E	48.46'
L1932	N 22°21'01" E	81.80'
L1933	N 32°33'58" E	73.15'
L1934	N 40°00'31" E	63.23'
L1935	N 86°59'34" E	34.39'
L1936	S 59°25'35" E	99.28'
L1937	S 47°57'12" E	93.52'
L1938	N 85°52'49" E	34.03'
L1939	S 30°12'49" E	70.44'
L1940	S 36°57'16" E	82.10'
L1941	S 46°17'40" E	82.10'
L1942	S 41°03'10" E	77.78'
L1943	S 19°09'12" E	70.43'
L1944	S 50°15'17" E	39.55'
L1945	S 15°32'54" E	69.86'
L1946	S 21°58'40" E	55.22'
L1947	S 47°11'12" E	71.96'
L1948	S 08°58'17" E	64.44'
L1949	S 41°19'13" E	56.10'
L1950	S 40°10'20" E	63.61'
L1951	S 15°36'24" W	63.04'
L1952	S 51°23'26" W	55.93'
L1953	S 62°22'45" W	41.47'
L1954	S 71°06'03" W	49.75'
L1955	S 50°42'15" W	39.10'
L1956	S 79°18'57" W	21.26'
L1957	S 13°05'30" W	23.64'
L1958	S 00°03'13" E	32.93'
L1959	S 11°19'20" W	40.13'
L1960	S 09°13'24" W	42.23'
L1961	S 06°43'08" W	50.39'
L1962	S 32°11'57" W	36.91'
L1963	N 46°50'04" W	47.40'
L1964	N 36°16'34" W	34.22'
L1965	N 19°31'11" W	49.58'
L1966	N 18°34'15" E	52.26'
L1967	N 28°26'31" E	46.79'
L1968	N 48°52'23" E	52.47'
L1969	S 42°02'13" E	49.45'
L1970	S 05°51'54" E	38.44'
L1971	S 11°49'41" E	63.28'
L1972	S 00°20'42" W	46.04'
L1973	S 08°49'25" W	91.77'
L1974	S 10°30'31" W	98.37'
L1975	S 19°35'58" W	92.21'
L1976	S 57°50'09" W	51.31'
L1977	N 63°52'47" W	95.88'
L1978	N 41°12'28" W	80.02'
L1979	N 27°56'59" W	165.39'
L1980	N 17°03'40" W	65.60'
L1981	N 07°48'03" W	76.67'
L1982	N 07°39'36" E	64.55'
L1983	N 17°03'53" E	74.04'
L1984	N 45°49'40" E	64.94'
L1985	N 72°47'17" E	60.92'
L1986	N 78°47'41" E	47.39'
L1987	N 60°17'03" E	27.43'
L1988	S 44°45'17" E	156.83'
L1989	S 22°09'32" E	52.75'
L1990	N 65°56'03" E	29.87'
L1991	S 60°43'57" E	44.93'
L1992	S 17°26'34" W	34.58'
L1993	S 25°48'38" W	32.87'
L1994	S 52°56'55" W	42.49'
L1995	S 42°17'58" W	48.19'

LINE TABLE		
LINE	BEARING	LENGTH
L1996	S 03°26'15" E	77.51'
L1997	S 28°03'32" W	63.94'
L1998	S 60°38'33" W	33.46'
L1999	N 43°39'27" W	20.97'
L2000	S 35°35'53" E	36.20'
L2001	S 21°56'26" E	41.54'
L2002	S 69°00'52" E	43.31'
L2003	S 28°54'50" E	47.88'
L2004	S 27°19'22" E	43.83'
L2005	S 35°30'33" E	187.69'
L2006	S 34°50'09" E	126.83'
L2007	S 33°08'15" E	47.23'
L2008	S 39°16'08" E	61.12'
L2009	S 45°05'52" E	74.76'
L2010	S 21°00'42" E	50.35'
L2011	N 84°52'48" E	43.18'
L2012	S 17°48'56" W	31.39'
L2013	S 01°00'14" W	37.19'
L2014	S 06°49'24" E	46.01'
L2015	N 80°56'49" E	21.30'
L2016	S 18°59'46" E	40.23'
L2017	S 85°30'08" E	38.23'
L2018	S 40°46'02" E	26.49'
L2019	N 42°15'35" E	71.53'
L2020	N 36°03'49" E	86.42'
L2021	N 57°58'47" E	57.13'
L2022	N 62°47'40" E	119.54'
L2023	N 52°03'13" E	61.11'
L2024	N 32°55'55" E	51.56'
L2025	N 22°20'24" E	55.33'
L2026	N 27°32'23" E	77.01'
L2027	N 38°33'51" E	63.22'
L2028	N 29°22'12" E	66.08'
L2029	N 32°40'20" E	72.68'
L2030	N 34°06'14" E	55.01'
L2031	N 25°05'40" E	84.86'
L2032	N 46°29'45" E	49.85'
L2033	N 59°51'25" E	60.18'
L2034	S 66°03'50" E	49.28'
L2035	S 30°27'56" E	61.00'
L2036	S 29°45'58" E	84.01'
L2037	S 28°29'31" E	52.78'
L2038	S 66°18'51" W	8.85'
L2039	N 45°16'12" W	71.52'
L2040	N 66°05'57" W	56.96'
L2041	S 64°22'55" W	66.76'
L2042	S 48°12'07" W	83.18'
L2043	S 35°42'05" W	81.54'
L2044	S 32°28'47" W	87.87'
L2045	S 25°15'09" E	69.26'
L2046	S 27°03'20" W	69.55'
L2047	S 11°20'41" W	118.14'
L2048	S 22°02'37" W	97.27'
L2049	S 02°13'53" E	94.03'
L2050	S 15°13'21" W	78.24'
L2051	S 57°47'32" E	78.98'
L2052	S 11°45'35" E	39.36'
L2053	S 32°06'03" E	36.09'
L2054	N 56°22'04" E	75.72'
L2055	S 58°46'21" E	87.80'
L2056	S 37°02'26" E	90.91'
L2057	S 77°10'30" E	59.03'
L2058	N 66°12'42" E	40.19'
L2059	N 86°46'44" E	69.42'
L2060	N 48°06'59" W	23.65'
L2061	N 50°33'09" W	36.14'
L2062	S 88°25'36" W	44.25'
L2063	N 57°41'09" W	18.19'
L2064	N 68°02'03" E	39.05'
L2065	N 71°40'26" E	109.63'
L2066	N 69°32'30" E	79.41'
L2067	N 75°30'00" E	75.35'
L2068	S 46°21'31" E	86.22'
L2069	S 20°16'57" E	53.86'
L2070	S 66°28'57" E	102.41'
L2071	S 78°28'31" E	86.18'
L2072	S 47°19'23" E	80.33'
L2073	S 30°11'13" E	94.94'
L2074	S 13°52'25" E	86.55'
L2075	S 06°42'12" W	64.29'
L2076	S 36°45'51" W	76.38'
L2077	S 58°35'08" W	62.66'
L2078	S 86°38'23" W	60.04'
L2079	S 73°02'51" W	52.65'
L2080	S 37°55'09" W	56.05'
L2081	S 72°09'39" E	54.04'
L2082	S 16°52'48" E	37.35'
L2083	S 43°50'36" E	107.81'
L2084	S 41°18'49" E	106.08'
L2085	S 48°34'55" E	69.16'
L2086	S 29°16'10" E	83.48'
L2087	S 07°28'54" E	103.72'
L2088	S 38°29'56" E	90.73'
L2089	N 71°08'10" E	50.76'
L2090	N 61°04'14" E	108.61'
L2091	N 57°18'55" E	94.44'
L2092	N 49°33'15" E	89.37'
L2093	N 50°04'17" E	104.07'
L2094	N 32°33'57" E	83.88'
L2095	N 32°11'56" E	79.27'
L2096	N 46°16'05" E	52.08'
L2097	S 47°22'28" E	33.83'
L2098	S 39°24'12" E	57.91'
L2099	S 14°34'33" E	30.07'
L2100	S 37°12'40" W	61.07'
L2101	S 20°14'50" W	58.12'
L2102	S 34°51'11" W	70.47'
L2103	S 30°15'16" W	61.31'
L2104	S 47°00'41" W	103.32'
L2105	S 43°24'04" W	118.10'
L2106	S 41°29'00" W	62.41'
L2107	S 49°25'31" W	44.06'
L2108	S 53°16'36" W	87.51'
L2109	S 27°42'39" W	61.88'
L2110	S 02°53'50" W	56.08'
L2111	S 30°32'15" E	53.17'
L2112	S 36°21'40" E	80.04'
L2113	S 43°52'54" E	86.81'
L2114	S 33°59'33" E	66.66'
L2115	S 40°58'07" E	35.97'
L2116	S 10°55'48" E	48.50'
L2117	S 11°58'09" E	54.37'
L2118	S 36°26'11" E	91.86'
L2119	S 31°38'08" E	68.28'
L2120	S 69°10'47" E	54.20'
L2121	S 74°07'17" E	50.74'
L2122	S 29°05'11" E	75.22'
L2123	S 21°47'45" E	39.87'
L2124	S 22°34'25" W	50.75'
L2125	S 10°57'33" E	96.55'
L2126	S 27°19'35" E	77.98'
L2127	S 22°19'26" E	64.36'
L2128	S 40°36'03" W	87.20'

LINE TABLE		
LINE	BEARING	LENGTH
L2129	S 43°04'41" W	49.85'
L2130	S 37°15'04" W	27.95'
L2131	S 76°38'29" W	42.63'
L2132	N 48°02'20" W	42.29'
L2133	S 82°21'18" W	46.03'
L2134	S 03°24'25" W	65.38'
L2135	S 01°41'16" W	76.39'
L2136	S 07°52'50" E	38.13'
L2137	S 39°21'26" W	58.82'
L2138	S 05°40'42" E	58.58'
L2139	N 86°21'05" W	60.64'
L2140	S 68°11'21" W	48.47'
L2141	S 19°08'16" W	45.03'
L2142	S 40°08'08" E	59.89'
L2143	S 30°45'55" E	46.59'
L2144	S 05°08'38" W	51.83'
L2145	S 02°40'06" E	34.80'
L2146	S 22°50'57" W	2.20'
L2147	N 32°02'00" E	63.11'
L2148	N 17°15'59" E	30.66'
L2149	S 40°52'30" E	42.73'
L2150	N 26°46'26" E	59.10'
L2151	S 43°48'58" E	24.82'
L2152	S 44°46'37" E	32.12'
L2153	S 10°57'03" W	74.31'
L2154	S 20°58'33" W	38.14'
L2155	S 15°49'00" W	45.74'
L2156	S 01°43'14" E	67.48'
L2157	S 47°41'55" W	32.49'
L2158	S 44°06'30" W	29.92'
L2159	S 04°41'42" E	43.48'
L2160	S 39°33'59" W	63.86'
L2161	S 79°30'01" W	53.44'
L2162	N 58°05'49" W	50.23'
L2163	N 59°33'58" W	21.61'
L2164	N 51°36'20" E	36.58'
L2165	N 12°08'47" E	37.96'
L2166	N 08°37'09" E	39.42'
L2167	N 06°50'17" E	34.59'
L2168	N 33°39'56" E	33.73'
L2169	N 42°41'42" E	32.44'
L2170	N 03°19'24" E	56.37'
L2171	N 14°41'51" E	25.14'
L2172	S 80°13'32" E	45.45'
L2173	S 08°14'50" E	44.33'
L2174	S 58°13'45" W	16.37'
L2175	S 51°10'05" W	39.57'
L2176	S 87°51'57" W	59.59'
L2177	S 84°49'44" W	37.89'
L2178	S 88°42'21" W	40.13'
L2179	N 71°37'15" W	58.78'
L2180	N 57°44'15" W	91.24'
L2181	N 84°47'40" W	46.78'
L2182	N 83°43'18" W	57.34'
L2183	S 84°22'08" W	105.93'
L2184	S 86°37'03" W	48.35'
L2185	S 71°13'41" W	73.51'
L2186	S 60°56'02" W	60.35'
L2187	S 57°11'48" W	57.64'
L2188	S 47°13'35" W	53.88'
L2189	S 45°36'50" W	56.15'
L2190	S 33°09'27" W	45.18'
L2191	S 26°46'25" W	76.28'
L2192	S 15°58'49" W	62.85'
L2193	S 22°03'02" W	58.35'
L2194	S 22°39'07" W	59.99'
L2195	S 16°20'24" W	47.80'
L2196	S 29°02'53" W	35.08'
L2197	S 38°47'41" W	59.74'
L2198	S 37°24'11" W	56.21'
L2199	S 22°35'12" W	47.80'
L2200	S 42°38'31" W	54.07'
L2201	S 54°39'44" W	66.71'
L2202	S 23°20'43" W	75.09'
L2203	S 15°59'28" W	30.23'
L2204	S 71°17'04" W	108.95'
L2205	S 66°46'12" W	38.99'
L2206	S 53°34'12" W	62.24'
L2207	S 67°15'36" W	47.93'
L2208	S 52°14'29" W	59.30'
L2209	S 59°29'41" W	20.40'
L2210	S 26°26'56" W	54.89'
L2211	N 40°10'07" W	32.40'
L2212	N 34°39'10" W	44.22'
L2213	N 31°40'54" W	44.83'
L2214	N 09°26'50" E	50.18'
L2215	N 50°17'27" E	42.42'
L2216	S 89°21'09" E	37.82'
L2217	N 63°42'54" E	63.80'
L2218	N 62°34'36" E	91.50'
L2219	N 54°41'11" E	90.84'
L2220	N 46°04'18" E	95.59'
L2221	N 44°16'14" E	101.57'
L2222	N 40°00'13" E	110.85'
L2223	N 28°31'27" E	98.27'
L2224	N 20°06'00" E	73.17'
L2225	N 10°54'05" E	80.88'
L2226	N 32°54'40" E	96.94'
L2227	N 30°49'52" E	91.77'
L2228	N 48°49'51" E	108.74'
L2229	N 56°57'48" E	112.83'
L2230	N 74°29'19" E	87.39'
L2231	N 83°50'04" E	54.21'
L2232	N 76°56'45" E	139.89'
L2233	N 83°42'23" E	80.14'
L2234	S 69°38'05" E	75.54'
L2235	S 49°15'25" E	49.04'
L2236	S 78°19'23" E	143.35'
L2237	N 72°49'08" E	69.38'
L2238	N 67°31'17" W	27.78'
L2239	N 04°04'21" E	16.93'
L2240	N 46°28'21" W	80.44'
L2241	N 31°43'53" E	57.59'
L2242	N 07°51'12" E	53.97'
L2243	N 12°27'58" E	91.32'
L2244	N 10°40'26" E	57.98'
L2245	N 02°45'35" E	87.15'
L2246	N 16°02'19" W	80.00'
L2247	N 25°53'15" W	88.37'
L2248	N 34°52'30" W	106.96'
L2249	N 28°35'58" W	90.46'
L2250	N 03°26'05" W	48.76'
L2251	S 60°06'12" E	37.38'
L2252	S 41°46'03" E	88.36'
L2253	S 41°52'37" E	66.37'
L2254	S 44°46'05" E	205.42'
L2255	S 54°37'25" E	56.71'
L2256	S 71°10'54" E	38.06'
L2257	N 59°27'41" E	79.63'
L2258	N 73°26'10" E	67.70'
L2259	N 72°39'15" E	89.60'
L2260	N 58°20'27" E	68.01'
L2261	N 54°13'59" E	50.71'

LINE TABLE		
LINE	BEARING	LENGTH
L2262	N 39°20'20" E	65.65'
L2263	N 43°45'57" E	62.17'
L2264	N 72°38'12" E	68.06'
L2265	N 46°25'21" E	50.59'
L2266	N 36°40'38" E	76.17'
L2267	N 24°57'07" E	37.30'
L2268	N 52°19'32" E	37.67'
L2269	N 20°09'02" E	22.55'
L2270	N 14°41'28" E	32.97'
L2271	N 05°12'21" W	27.42'
L2272	N 38°26'23" E	79.91'
L2273	N 59°02'43" E	37.34'
L2274	N 85°07'40" E	25.59'
L2275	S 86°18'55" E	33.89'
L2276	S 42°48'15" E	28.12'
L2277	S 28°11'34" E	26.80'
L2278	S 01°50'47" W	46.36'
L2279	S 43°52'16" W	42.01'
L2280	S 12°20'02" W	99.64'
L2281	S 05°41'38" W	43.50'
L2282	S 07°50'34" E	55.70'
L2283	S 29°39'10" W	49.22'
L2284	S 69°35'17" W	51.31'
L2285	S 56°09'51" W	89.17'
L2286	S 67°02'34" W	27.03'
L2287	S 54°47'25" W	59.00'
L2288	S 45°56'30" W	27.80'
L2289	S 62°12'23" W	69.91'
L2290	S 74°58'38" W	43.62'
L2291	S 51°35'38" W	42.84'
L2292	S 61°07'40" W	85.04'
L2293	S 36°39'13" W	53.02'
L2294	S 47°33'44" W	83.84'
L2295	S 78°27'57" W	68.59'
L2296	N 86°59'31" W	33.04'
L2297	S 78°44'01" W	39.13'
L2298	S 58°42'17" W	56.39'
L2299	S 46°25'43" W	36.33'
L2300	S 14°57'52" W	69.18'
L2301	S 07°51'50" W	76.27'
L2302	S 23°44'24" W	61.71'
L2303	S 31°15'16" W	41.90'
L2304	S 38°01'08" W	58.34'
L2305	N 81°03'19" W	48.67'
L2306	S 40°03'28" E	76.50'
L2307	S 06°02'48" W	134.35'
L2308	S 49°53'04" E	48.37'
L2309	S 53°53'49" E	50.93'
L2310	S 15°49'46" E	59.39'
L2311	S 15°33'07" E	68.38'
L2312	S 24°26'16" E	101.95'
L2313	S 31°00'24" E	113.88'
L2314	S 51°40'45" E	89.15'
L2315	S 19°35'39" E	116.77'
L2316	N 34°37'02" W	34.25'

VICINITY MAP not to scale

JURISDICTIONAL WETLANDS AND MONUMENTS SHOWN ON THIS SURVEY WERE LOCATED USING A SOKKIA SET530R TOTAL STATION AND GPS TECHNOLOGY. THE PURPOSE OF THIS SURVEY IS FOR THE DEPICTION OF JURISDICTIONAL WETLAND AREAS ONLY AND IT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PROPERTY AND IS NOT SUITABLE FOR CONVEYANCE OF PROPERTY.

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

BRYAN COUNTY MEGA SITE

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16
CORRIDOR JOINT
DEVELOPMENT AUTHORITY

No.	Revision	By	Date

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-31-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000

SHEET 25 OF 25

26 March 2015

U.S. Army Corps of Engineers
Savannah District
Attn: Mr. Shaun Blocker
100 West Oglethorpe Avenue
Savannah, Georgia 31402-0889

Subject: Approved Jurisdictional Determination Request **RLC# 14-225**
SAS-2005-01381 Samwilka Tract Isolated Wetlands
Bryan County, Georgia

Dear Mr. Blocker:

Resource & Land Consultants (RLC), on behalf of Samwilka, Inc., is submitting the attached information requesting an approved jurisdictional determination for the subject site located in the south quadrant of the intersection of Interstate 16 and Highway 280 and north of Tar City Road in Bryan County, Georgia (32.163134°, -81.448657°). The delineation was conducted in accordance with the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region Version 2, and 33 CFR Part 329. Based on the site assessment and delineation, the 224.8 acre project area contains approximately 216.95 acres of upland and 7.85 acres of isolated non-jurisdictional wetland.

The attached information includes the following:

- Request for Approved Jurisdictional Determination
- Approved Jurisdictional Determination Form
- RLC Prepared Figures
- Associated Data Sheets
- Wetland Exhibit prepared by Thomas & Hutton Engineering

We greatly appreciate your assistance with this project. If you have any questions or require a site inspection, please contact us at (912) 443-5896.

Sincerely,

Russell Parr
Project Manager
Resource & Land Consultants

cc: Mr. G.P. Morgan, III – Samwilka, Inc.

REQUEST FOR JURISDICTIONAL DETERMINATION FOR PROPERTY LOCATED WITHIN THE STATE OF GEORGIA

APPLICANT:

Name (First Last) Samwilka, Inc. Attn: Mr. G.P. Morgan III, CPA

Address 1 Oglethorpe Professional Blvd, Ste 105

City Savannah State GA Zip Code 31406

Phone (912) 352 - 7819 Fax (912) 355 - 0094 Email

PROPERTY OWNER: **Same as Applicant** ☑

Name (First Last)

Address

City State GA Zip Code

Phone ( ) - Fax ( ) - Email

AGENT/CONSULTANT: (if applicable)

Name (First Last) Resource & Land Consultants, c/o Russell Parr

Address 41 Park of Commerce Way, Suite 303

City Savannah State GA Zip Code 31405

Phone (912) 443 - 5896 Fax (912) 443 - 5898 Email rparr@rlandc.com

PROPERTY LOCATION:

Location/Address/Subdivision Located in the south quadrant or the intersection of I-16 and Highway 280

City (in/near) Black Creek County Bryan

Directions from nearest interstate (use additional sheet(s) if needed)

See attached google maps.

Latitude 32 . 163134 Longitude -81 . 448657

(In decimal degrees at center of the site. Linear projects should also include decimal degrees location of the start, end, and any turn points of the review/project area. Use additional sheet(s) if needed.)

Property Size (acres and/or dimensions) 224.8

Nearest named waterbody (Stream/River/Lake) Black Creek

TYPE OF JURISDICTIONAL DETERMINATION:

Please indicate the type of jurisdictional determination (JD) you are requesting by marking the appropriate type below. The Corps encourages the regulated public to utilize the preliminary JDs and expanded preliminary JDs where appropriate.

☐ **Preliminary Jurisdictional Determination** - Preliminary JDs are non-binding "written indications that there may be waters of the United States, including wetlands, on a parcel or indications of the approximate location(s) of waters of the United States or wetlands on a parcel. Preliminary JDs are advisory in nature and may not be appealed." (See 33 C.F.R. 331.2.)

☐ **Expanded Preliminary Jurisdictional Determination** - The intent of using the expanded preliminary JD is to allow a landowner or other "affected party" to move ahead expeditiously to obtain a Corps permit authorization where the party determines that it is in his or her best interest. In most cases, expanded preliminary JDs are also non-binding "written indications that there may be waters of the United States, including wetlands, on a parcel or indications of the approximate location(s) of waters of the United States or wetlands on a parcel." However, Corps verification of a delineation, which is submitted in conjunction with an expanded preliminary JD request, would provide the landowner or affected party with defensible documentation concerning the limits of Corps jurisdiction.

☑ **Approved Jurisdictional Determination** - As defined in Regulatory Guidance Letter 08-02, an approved JD is an official Corps determination that jurisdictional "waters of the United States," or "navigable waters of the United States," or both, are either present or absent on a particular site. An approved JD precisely identifies the limits of those waters on the project site determined to be jurisdictional under the CWA/RHA. (See 33 C.F.R. 331.2.)

I, G.P. Morgan, III (Samwilka, Inc.), request a jurisdictional
Print Name

determination the above property, grant the US Army Corps of Engineers permission to conduct an on-site inspection, and certify that I am authorized to grant permission for entry into the property.

SIGNED G P Morgan III DATE 3/26/15

President

****TO COMPLETE THIS REQUEST ALL OF THE REQUIRED INFORMATION IN THE APPLICABLE CHECKLIST MUST BE PROVIDED ****

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Savannah District; SAS-2005-01381 Samwilka Tract Isolated Wetlands

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State: Georgia County/parish/borough: Bryan City: Black Creek
Center coordinates of site (lat/long in degree decimal format): Lat. 32.163134° **N**, Long. -81.448657° **W**.
Universal Transverse Mercator:
Name of nearest waterbody: Black Creek

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Black Creek
Name of watershed or Hydrologic Unit Code (HUC): Lower Ogeechee 03060202
☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☐ Office (Desk) Determination. Date:
☒ Field Determination. Date(s): March 17, 2015

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** *"navigable waters of the U.S."* within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]
☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: N/A linear feet: N/A width (ft) and/or N/A acres.
      Wetlands: acres.

   c. **Limits (boundaries) of jurisdiction** based on: **1987 Delineation Manual**
      Elevation of established OHWM (if known): unknown.

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
   Explain: **Isolated wetlands 1-5 within the Samwilka Tract are surrounded completely by uplands and do not contain surface or subsurface connections with jurisdictional waters or wetlands and are therefore isolated non-jurisdictional**.

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: **n/a**.

Summarize rationale supporting determination: n/a.

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": n/a.

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **acres**
Drainage area: **acres**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Project waters are **Pick List** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: no.

Identify flow route to TNW[5]: .
Tributary stream order, if known: .

(b) General Tributary Characteristics (check all that apply):
Tributary is: ☐ Natural

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):

☐ Silts	☐ Sands	☐ Concrete
☐ Cobbles	☐ Gravel	☐ Muck
☐ Bedrock	☐ Vegetation. Type/% cover:	
☐ Other. Explain: .		

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Relatively stable, little bank failure / erosion was noted during the site visit.
Presence of run/riffle/pool complexes. Explain: Weak riffle pool complexes were noted during the site visits.
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: seasonal & stormwater flow.
Other information on duration and volume: The stream has csign of bank scouring, and weak riffle pool sequences.

Surface flow is: **Pick List.** Characteristics: continues bed and bank.

Subsurface flow: **Pick List**. Explain findings: .
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):

☐ clear, natural line impressed on the bank	☐ the presence of litter and debris
☐ changes in the character of soil	☐ destruction of terrestrial vegetation
☐ shelving	☐ the presence of wrack line
☐ vegetation matted down, bent, or absent	☐ sediment sorting
☐ leaf litter disturbed or washed away	☐ scour
☐ sediment deposition	☐ multiple observed or predicted flow events
☐ water staining	☐ abrupt change in plant community
☐ other (list):	

☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by:	☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects	☐ survey to available datum;
☐ fine shell or debris deposits (foreshore)	☐ physical markings;
☐ physical markings/characteristics	☐ vegetation lines/changes in vegetation types.
☐ tidal gauges	
☐ other (list):	

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

- ☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: culverted road crossings separate some features.

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List.**

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: water is clear.

Identify specific pollutants, if known: unknown.

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: n/a.

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: N/A.

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: N/A.

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. Non-RPWs[8] that flow directly or indirectly into TNWs.
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: **n/a** acres.

7. Impoundments of jurisdictional waters.[9]
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: n/a.

---

[8] See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☒ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☒ Wetlands: 7.85acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: Plat by: Thomas& Hutton Engineering dated 03-26-2015.
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☒ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☒ U.S. Geological Survey Hydrologic Atlas: Lower Ogeechee 03060202.
☐ USGS NHD data.
☐ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name:1"=3000'; Eden GA Quadrangle.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: 1"=2200' Bryan County, GA.
☒ National wetlands inventory map(s). Cite name:1"=2200' Eden GA Quadrangle.
☐ State/Local wetland inventory map(s): .
☒ FEMA/FIRM maps:FEMA FIRM Map 13031C0500D.
☒ 100-year Floodplain Elevation is:Shaded Zone X(National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date):2013 Color Aerial Photograph and 1999 CIR Aerial Photograph.
or ☒ Other (Name & Date):Digital Color Photographs .
☒ Previous determination(s). File no. and date of response letter:SAS-2005-01381 dated June 13, 2008.
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD:
Wetland 1 (1.18 acres): Lat: 32.168596 Long:- 81.447619. There are no surface or subsurface hydrologic connections between the 1.18 acre non-jurisdictional isolated Wetland 1 and other jurisdictional waters. Wetland 1 is not located within the 100-year floodplain, is located

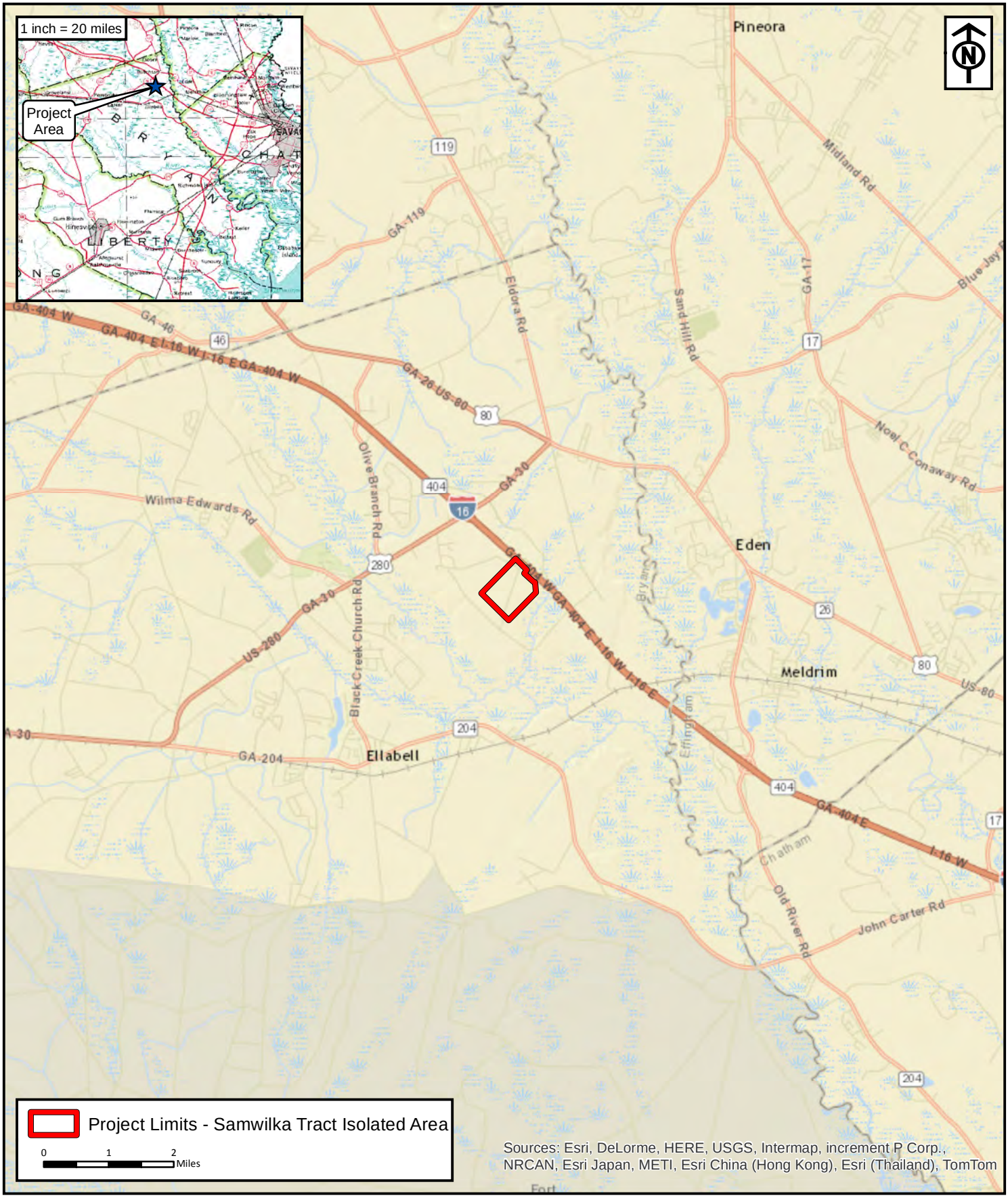
approximately 1,883 linear feet from the nearest jurisdictional water and is approximately 1.6 miles from the nearest TNW, Black Creek. The uplands surrounding Wetland 1 are greater than 1 foot higher in elevation than the average surface elevation within Wetland 1. Soils within the wetland are mapped as Ellabelle loamy sand and are characterized as being poorly drained. The soils in the uplands surrounding Wetland 1 are mapped as Chipley fine sand and Olustee fine sand. These soil types are described as being somewhat poorly drained and moderately well drained respectively. The soils within the wetland contain substantially greater organic matter and loam content than the surrounding upland comprised of sandy textured soils. Soils transition from a loam within the wetland to a loamy sand to sand within the upland. Upland soils lack any evidence of hydric soil indicators outside the perimeter of Wetland 1. As a result of the upland soil composition and texture, the upland soils drain more quickly than those contained within the wetland and are not likely to hold surface water or remain saturated for extended periods of time. Wetland 1 was reviewed in the field on 17 March 2015 with USACE project managers. The perimeter of Wetland 1 was walked to investigate for the presence of ditches, swales, or other type of hydrologic connection to jurisdictional wetlands. No such hydrologic connections were observed. A distinct and obvious transition to upland vegetative species was observed along the entire perimeter of Wetland 1. Based on the surrounding soils, lack of hydrologic connection, and the proximity of Wetland 1 to other jurisdictional waters of the U.S., it is our opinion that Wetland 1 is an isolated depression within an area managed for silviculture.

Wetland 2 (2.73 acres): Lat: 32.165756 Long:- 81.446589 and Wetland 3 (0.66 acres): Lat: 32.165630 Long:- 81.448093. Wetlands 2 and 3 are part of the same isolated system which has been fragmented by a silviculture road. There are no surface or subsurface hydrologic connections between the 3.39 acre non-jurisdictional isolated Wetlands 2 and 3 and other jurisdictional waters. Wetlands 2 and 3 are not located within the 100-year floodplain, are located 1,259 linear feet from the nearest jurisdictional water and are approximately 1.4 miles from the nearest TNW, Black Creek. The uplands surrounding Wetlands 2 and 3 are greater than 1 foot higher in elevation than the average surface elevation of Wetlands 2 and 3. Soils within the wetlands are mapped as Ellabelle loamy sand and are characterized as being poorly drained. The soils in the uplands surrounding Wetlands 2 and 3 are mapped as Olustee fine sand. These soil types are described as being moderately poorly drained. The soils within the wetland contain substantially greater organic matter and loam content than the surrounding upland soils comprised of sandy textured soils. Soils transition from a loam within the wetland to a loamy sand to sand within the upland. Upland soils lack any evidence of hydric soil indicators outside the perimeter of Wetlands 2 and 3. As a result of the upland soil composition and texture, the upland soils drain more quickly than those contained within the wetland and are not likely to hold surface water or remain saturated for extended periods of time. Wetlands 2 and 3 were reviewed in the field on 17 March 2015 with USACE project managers. The perimeters of the wetlands were walked to investigate for the presence of ditches, swales, or other type of hydrologic connection to jurisdictional wetlands. No such hydrologic connections were observed. A distinct and obvious transition to upland vegetative species was observed along the entire perimeters of Wetlands 2 and 3. Based on the surrounding soils, lack of hydrologic connection, and the proximity of Wetlands 2 and 3 to other jurisdictional waters of the U.S., it is our opinion that Wetlands 2 and 3 are isolated depressions within an area managed for silviculture.

Wetland 4 (2.14 acres): Lat: 32.162743 Long:- 81.445183. There are no surface or subsurface hydrologic connections between the 2.14 acre non-jurisdictional isolated Wetland 4 and other jurisdictional waters. Wetland 4 is not located within the 100-year floodplain, is located approximately 669 linear feet from the nearest jurisdictional water and is approximately 1.3 miles from the nearest TNW, Black Creek. The uplands surrounding Wetland 4 are greater than 1 foot higher in elevation than the average surface elevation within Wetland 4. Soils within the wetland are mapped as Ellabelle loamy sand and are characterized as being poorly drained. The soils in the uplands surrounding Wetland 4 are mapped as Chipley fine sand which is described as being moderately well drained. The soils within the wetland contain substantially greater organic matter and loam content than the surrounding upland comprised of sandy textured soils. Soils transition from a loam within the wetland to a loamy sand to sand within the upland. Upland soils lack any evidence of hydric soil indicators outside the perimeter of Wetland 4. As a result of the upland soil composition and texture, the upland soils drain more quickly than those contained within the wetland and are not likely to hold surface water or remain saturated for extended periods of time. Wetland 4 was reviewed in the field on 17 March 2015 with USACE project managers. The perimeter of Wetland 4 was walked to investigate for the presence of ditches, swales, or other type of hydrologic connection to jurisdictional wetlands. No such hydrologic connections were observed. A distinct and obvious transition to upland vegetative species was observed along the entire perimeter of Wetland 4. Based on the surrounding soils, lack of hydrologic connection, and the proximity of Wetland 4 to other jurisdictional waters of the U.S., it is our opinion that Wetland 4 is an isolated depression within an area managed for silviculture.

Wetland 5 (1.14 acres): Lat: 32.158621 Long:- 81.448818. There are no surface or subsurface hydrologic connections between the 1.14 acre non-jurisdictional isolated Wetland 5 and other jurisdictional waters. Wetland 5 is not located within the 100-year floodplain and is located approximately 634 linear feet from the nearest jurisdictional water and is approximately 1.0 miles from the nearest TNW, Black Creek. The uplands surrounding Wetland 5 are greater than 1 foot higher in elevation than the average surface elevation within Wetland 5. Soils within the wetland are mapped as Ellabelle loamy sand and are characterized as being poorly drained. The soils in the uplands surrounding Wetland 5 are mapped as Chipley fine sand and Lakeland sand. These soil types are described as being somewhat poorly drained and excessively well drained respectively. The soils within the wetland contain substantially greater organic matter and loam content than the surrounding upland comprised of sandy textured soils. Soils transition from a loam within the wetland to a loamy sand to sand within the upland. Upland soils lack any evidence of hydric soil indicators outside the perimeter of Wetland 5. As a result of the upland soil composition and texture, the upland soils drain more quickly than those contained within the wetland and are not likely to hold surface water or remain saturated for extended periods of time. Wetland 5 was reviewed in the field on 17 March 2015 with USACE project managers. The perimeter of Wetland 5 was walked to investigate for the presence of ditches, swales, or other type of hydrologic connection to jurisdictional wetlands. No such hydrologic connections were observed. A distinct and obvious transition to upland vegetative species was observed along the entire perimeter of Wetland 1. Based on the surrounding soils, lack of hydrologic connection, and the proximity of Wetland 5 to other jurisdictional waters of the U.S., it is our opinion that Wetland 5 is an isolated depression within an area managed for silviculture.

Waters Name	Linear Feet	Acreage	Jurisdictional Status	Cowadin Code	Latitude	Longitude	Local Waters	HGM Code	Waters Type
Wetland 1	N/A	1.18	Isolated Wetland	PFO1	32.168596	-81.447619	Black Creek	Depressional	ISOLATE
Wetland 2	N/A	2.73	Isolated Wetland	PFO1	32.165756	-81.446589	Black Creek	Depressional	ISOLATE
Wetland 3	N/A	0.66	Isolated Wetland	PFO1	32.165630	-81.448093	Black Creek	Depressional	ISOLATE
Wetland 4	N/A	2.14	Isolated Wetland	PFO1	32.162743	-81.445183	Black Creek	Depressional	ISOLATE
Wetland 5	N/A	1.14	Isolated Wetland	PFO1	32.158621	-81.448818	Black Creek	Depressional	ISOLATE



RLC Project No.:	14-225
Figure No.:	1
Sketch Date:	19 March 2015
Prepared By:	RP
Map Scale :	1 inch = 2 miles

Samwilka Tract - Isolated Wetlands

Bryan County, Georgia

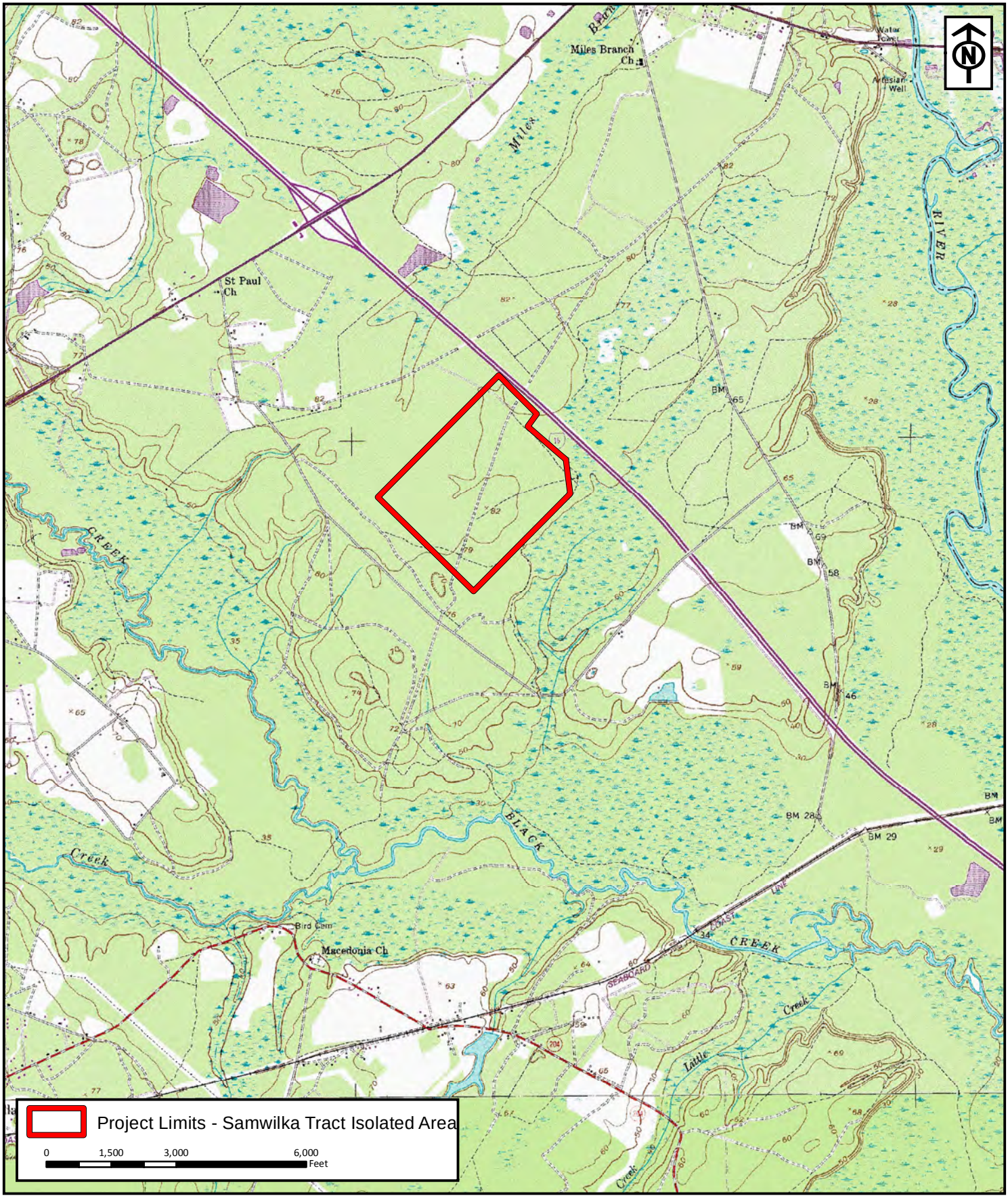
Project Location Map

Prepared For: Samwilka, Inc.

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\Samwilka_Iso_JDR1_Location

Source(s): ESRI Basemap, World_Street_Map



RLC Project No.:	14-225
Figure No.:	2
Sketch Date:	10 March 2015
Prepared By:	RP
Map Scale :	1 inch = 3,000 feet

Samwilka Tract - Isolated Wetlands

Bryan County, Georgia

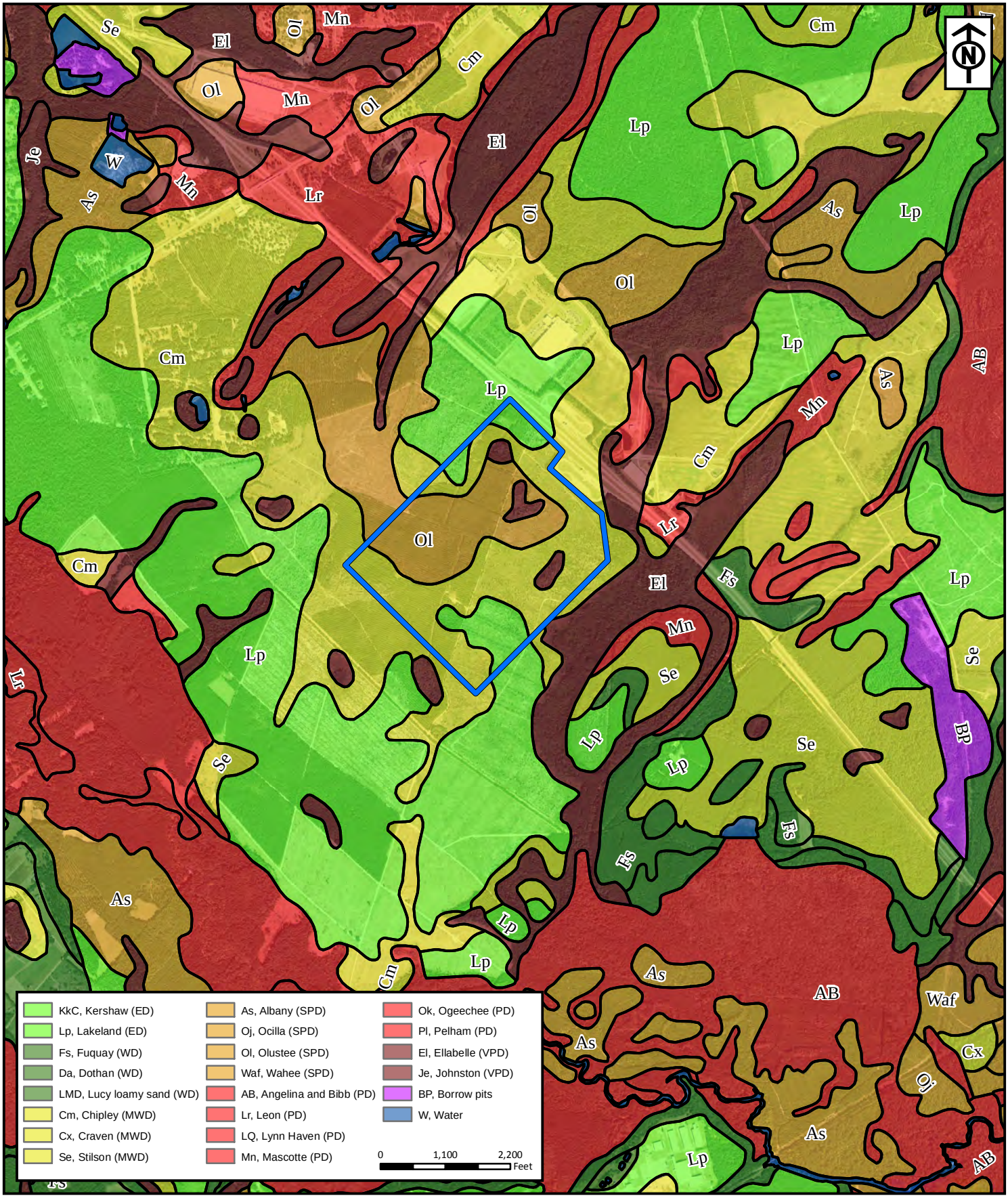
USGS Topographic Map

Prepared For: Samwilka, Inc.

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\Samwilka_Iso_JDR2_Topo

Source(s): USGS Topographic Survey Eden GA Quadrangle



RLC Project No.:	14-225
Figure No.:	3
Sketch Date:	19 March 2015
Prepared By:	RP
Map Scale :	1 inch = 2,200 feet

Samwilka Tract - Isolated Wetlands

Bryan County, Georgia

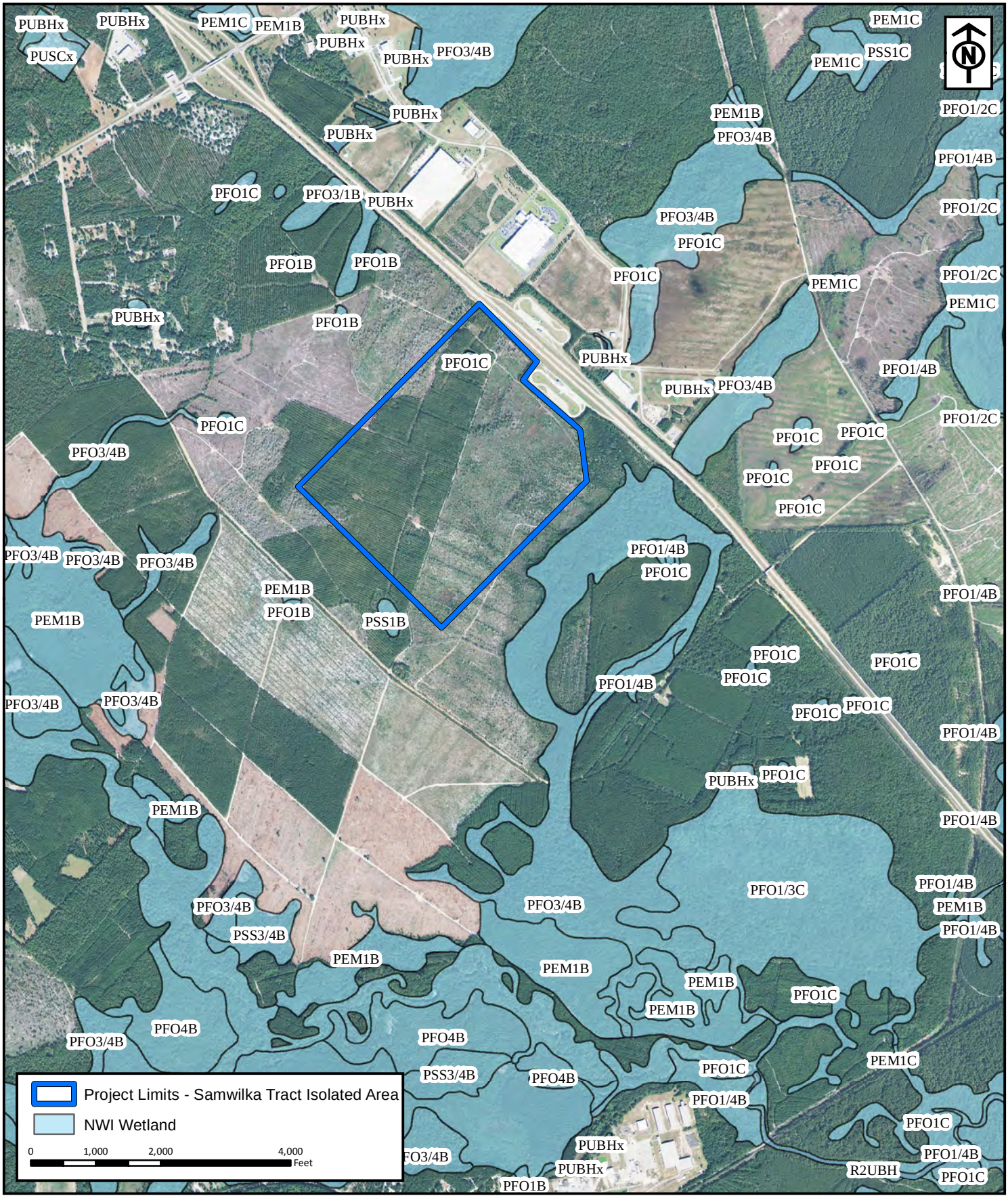
NRCS Soil Map

Prepared For: Samwilka, Inc.

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\Samwilka_Iso_JDR3_Soil

Source(s): USDA Soil Survey of Bryan County GA; 2013 NAIP Ortho Aerial



RLC Project No.:	14-225
Figure No.:	4
Sketch Date:	19 March 2015
Prepared By:	RP
Map Scale :	1 inch = 2,000 feet

Samwilka Tract - Isolated Wetlands

Bryan County, Georgia

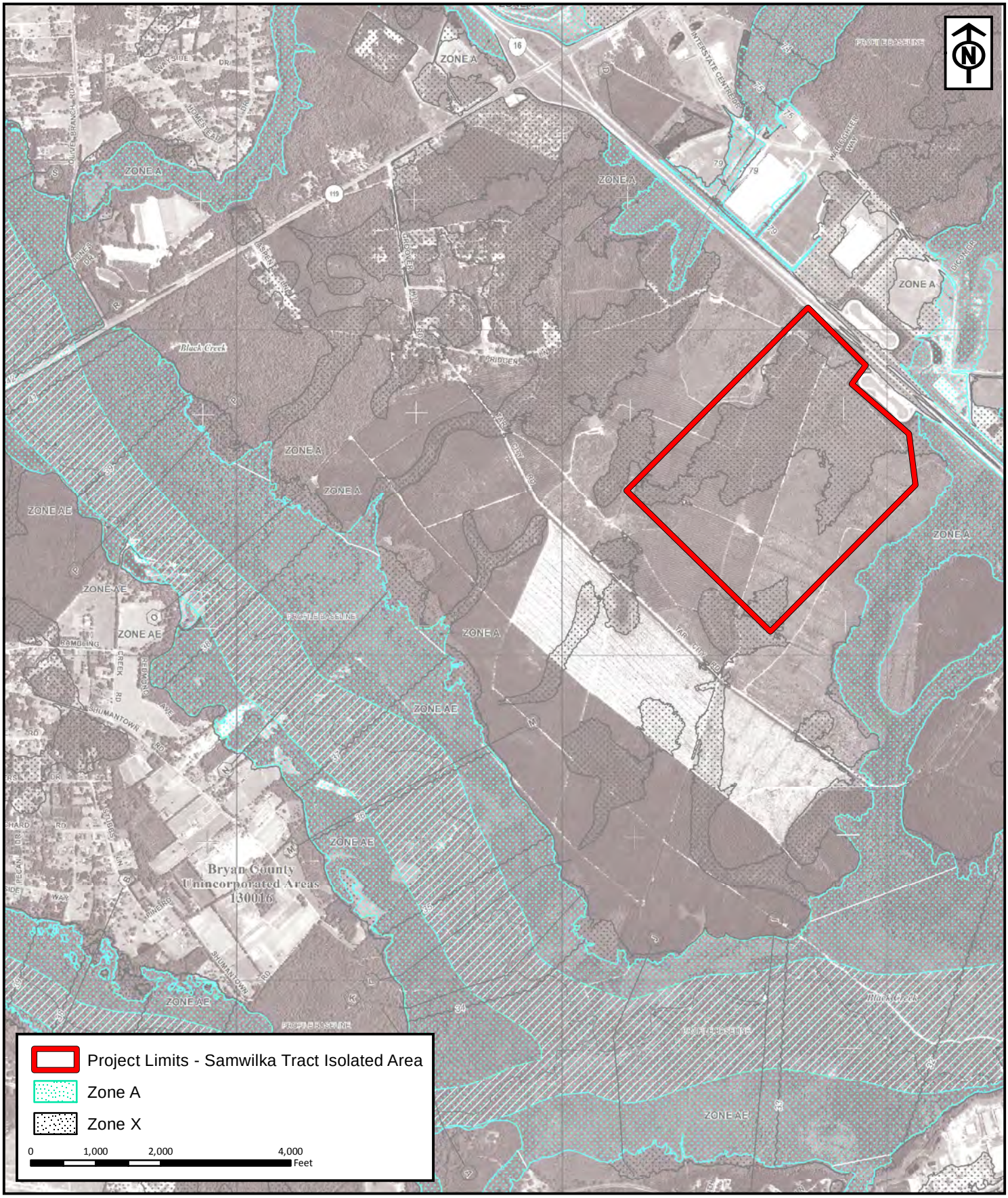
National Wetlands Inventory

Prepared For: Samwilka, Inc.

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\Samwilka_Iso_JDR4_NWI

Source(s): USFWS NWI, Eden GA; National Hydro. Dataset, Line; 2013 NAIP Aerial



RLC Project No.:	14-225
Figure No.:	5
Sketch Date:	19 March 2015
Prepared By:	RP
Map Scale :	1 inch = 2,000 feet

Samwilka Tract - Isolated Wetlands

Bryan County, Georgia

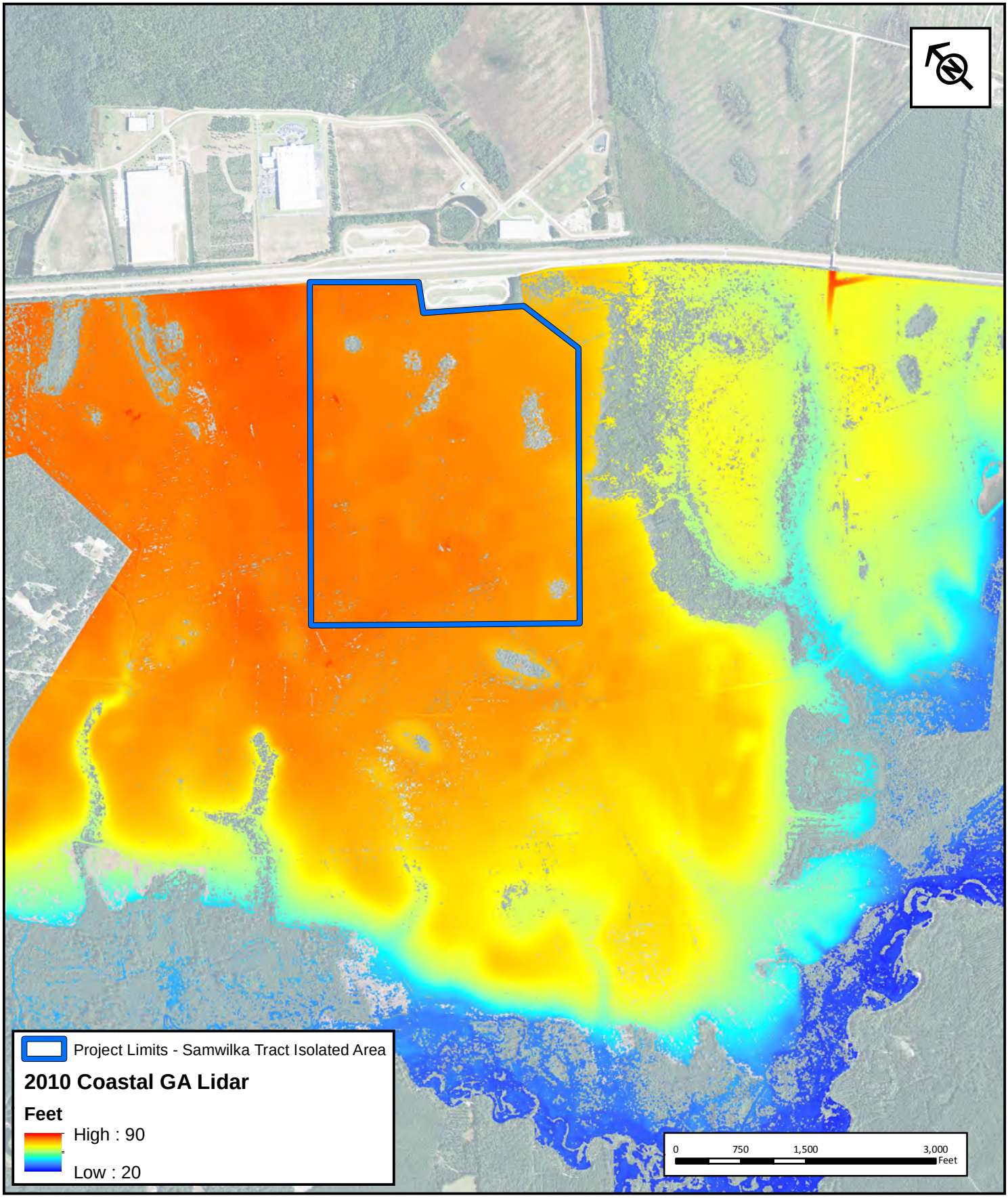
FEMA Flood Map

Prepared For: Samwilka, Inc.

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\Samwilka_Iso_JDR5_FEMA

Source(s): FEMA Flood Insurance Rate Map (FIRM) Panels13029C0095D & 13029C0090D , effective on 05/05/2014



RLC Project No.:	14-225
Figure No.:	6
Sketch Date:	19 March 2015
Prepared By:	RP
Map Scale :	1 inch = 1,500 feet

Samwilka Tract - Isolated Wetlands

Bryan County, Georgia

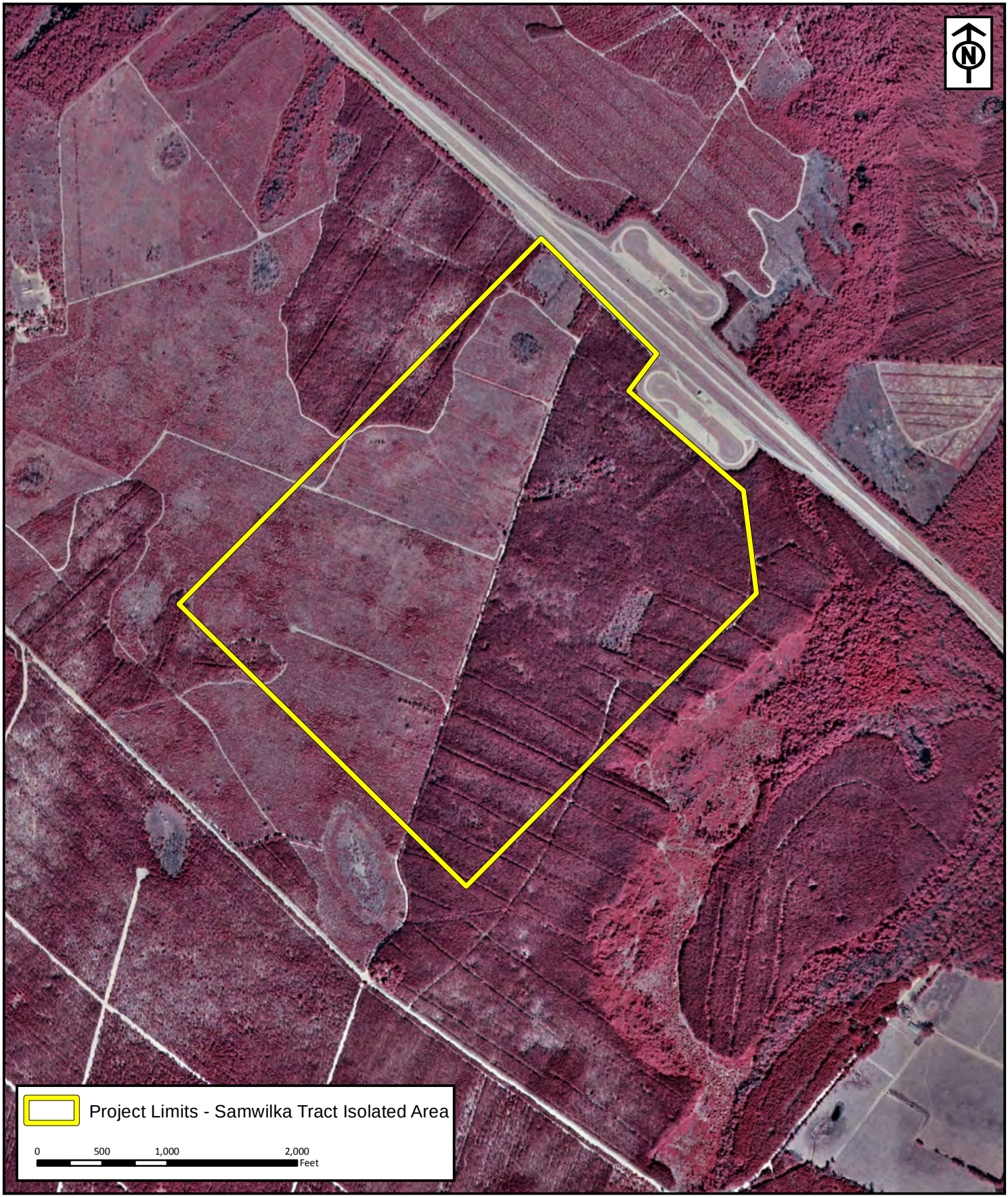
National Wetlands Inventory

Prepared For: Samwilka, Inc.

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\Samwilka_Iso_JDR6_Lidar

Source(s): USFWS NWI, Eden GA; National Hydro. Dataset, Line; 2013 NAIP Aerial



RLC Project No.:	14-225
Figure No.:	7
Sketch Date:	19 March 2015
Prepared By:	RP
Map Scale :	1 inch = 1,000 feet

Samwilka Tract - Isolated Wetlands

Bryan County, Georgia

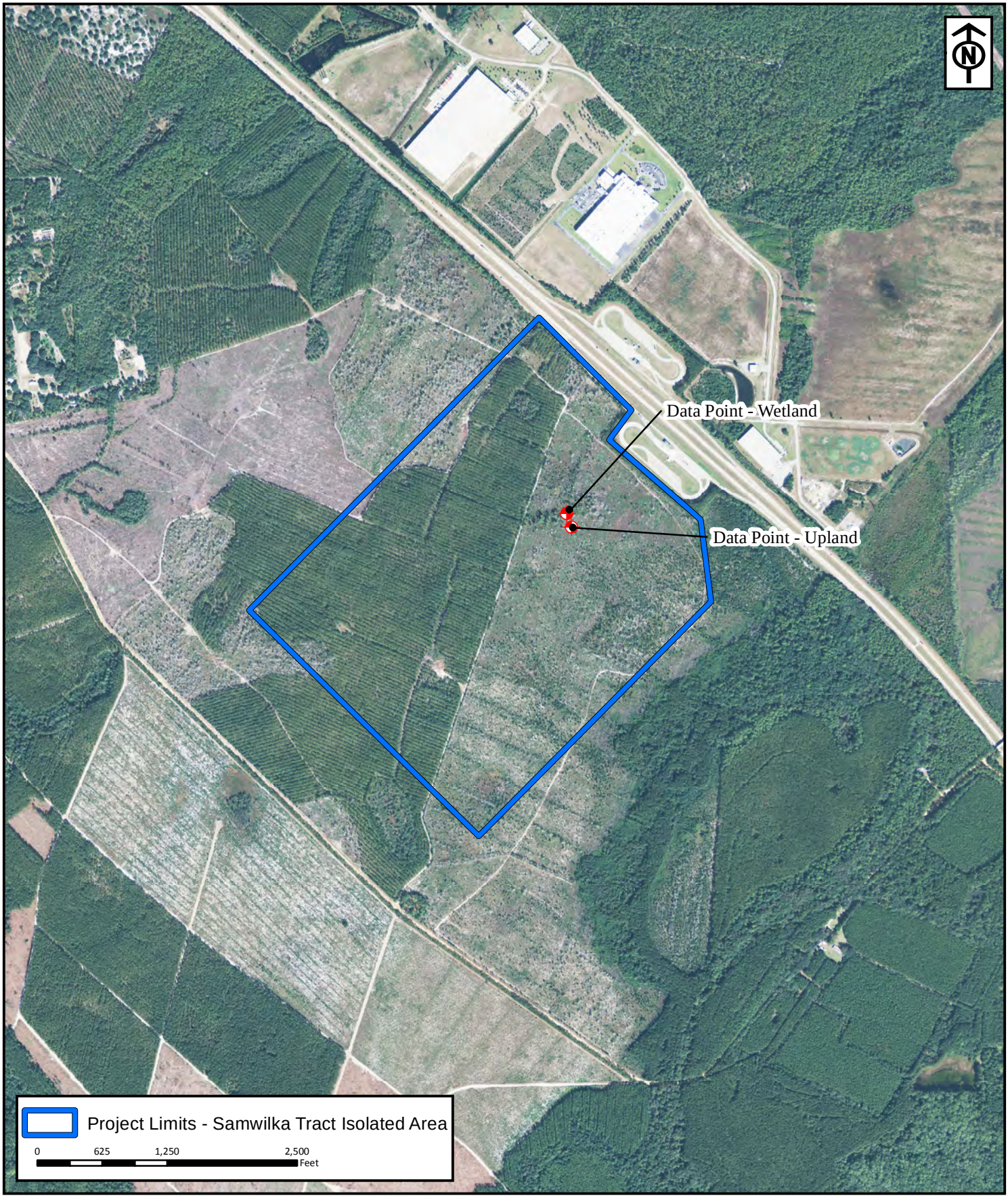
1999 Color-Infrared Imagery

Prepared For: Samwilka, Inc.

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\Samwilka_Iso_JDR7_1999_IR

Source(s): 1999 Color-Infrared Imagery of Bryan County GA



RLC Project No.:	14-225
Figure No.:	8
Sketch Date:	19 March 2015
Prepared By:	RP
Map Scale :	1 inch = 1,250 feet

Samwilka Tract - Isolated Wetlands

Bryan County, Georgia

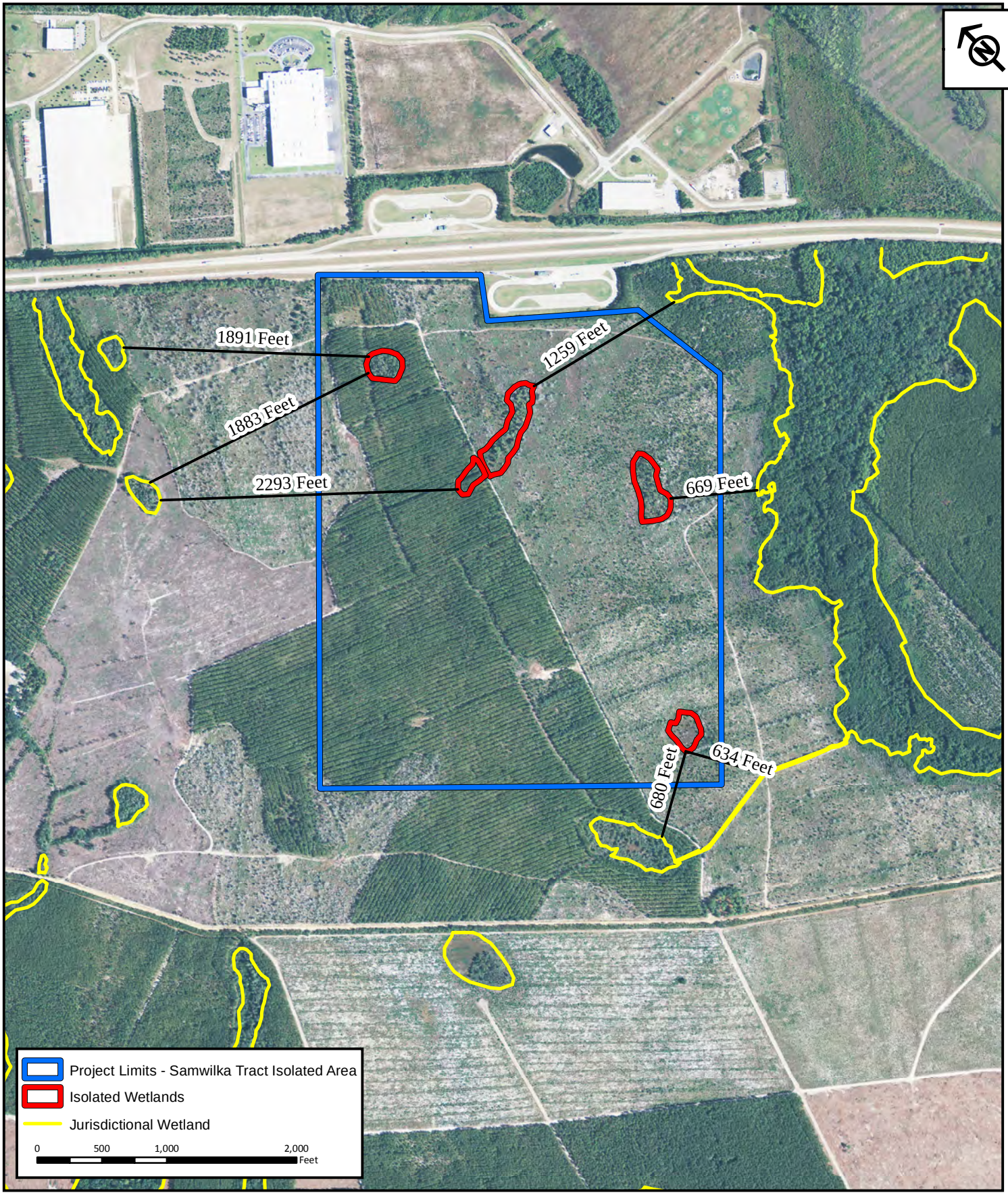
2013 True Color Imagery

Prepared For: Samwilka, Inc.

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\Samwilka_Iso_JDR8_2013_TC

Source(s): 2013 NAIP Aerial



RLC Project No.:	14-225
Figure No.:	8
Sketch Date:	19 March 2015
Prepared By:	RP
Map Scale :	1 inch = 1,000 feet

Samwilka Tract - Isolated Wetlands

Bryan County, Georgia

Landscape Position Exhibit

Prepared For: Samwilka, Inc.

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\Samwilka_Iso_JDR8_2013_TC

Source(s): 2013 NAIP Aerial

Photo 1: Upland adjacent to Iso-Wetland 4

Photo 2: Upland adjacent to Iso-Wetland 4

Photo 3: Typical wetland within Samwilka Tract (Iso-Wetland 4)

Photo 4: Typical wetland within Samwilka Tract (Iso-Wetland 4)

RLC Project No.:	14-225
Figure No.:	10
Exhibit Date:	26 March 2015
Prepared By:	RP
Photo Date:	26 March 2015

Samwilka Tract - Isolated Wetlands

Bryan County, Georgia

Site Photographs

Prepared For: Samwilka, Inc.

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\Samwilka_Iso_JDR10_Photos

Source(s): RLC Site Photographs

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Samwilka Tract Isolated Wetlands City/County: Bryan Sampling Date: 3/9/15

Applicant/Owner: Samwilka, Inc. Attn: G.P. Morgan, III State: GA Sampling Point: Data Point 1 -Wetland

Investigator(s): RLC (Troy Smith) Section, Township, Range:

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR or MLRA): Atlantic Coast Flatwoods (T) Lat: 32.165787 Long: -81.446356 Datum: WGS-84

Soil Map Unit Name: Ellabelle NWI classification: Upland

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:

Data Point was taken within isolated wetland 2.

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): +2
Water Table Present?	Yes ✓	No ____	Depth (inches): Surface
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): Surface

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: Data Point 1 -Wetland

Tree Stratum (Plot size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Taxodium distichum (Bald Cypress)	10	Yes	OBL
2. Pinus taeda (Loblolly Pine)	2	No	FAC
3. Acer rubrum (Red Maple)	5	Yes	FAC
4.			
5.			
6.			
	17	= Total Cover	

50% of total cover: 8.5 20% of total cover: 3.4

Sapling Stratum (Plot size: 30 foot radius)			
1. Pinus taeda (Loblolly Pine)	5	Yes	FAC
2. Persea borbonia (Red Bay)	5	Yes	FACW
3. Acer rubrum (Red Maple)	5	Yes	FAC
4.			
5.			
6.			
	15	= Total Cover	

50% of total cover: 7.5 20% of total cover: 3

Shrub Stratum (Plot size: 30 foot radius)			
1. Pinus taeda (Loblolly Pine)	10	Yes	FAC
2. Ilex glabra (Galberry)	30	Yes	FACW
3. Taxodium distichum (Bald Cypress)	5	No	OBL
4. Acer rubrum (Red Maple)	5	No	FAC
5.			
6.			
	50	= Total Cover	

50% of total cover: 25 20% of total cover: 10

Herb Stratum (Plot size: 30 foot radius)			
1. Ilex glabra (Galberry)	30	Yes	FACW
2. Andropogon virginicus (Broomsedge)	10	No	FAC
3. Woodwardia areolata (Netted Chain Fern)	20	Yes	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	60	= Total Cover	

50% of total cover: 30 20% of total cover: 12

Woody Vine Stratum (Plot size: 30 foot radius)			
1. N/A			
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: 9 (A)

Total Number of Dominant Species Across All Strata: 9 (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: Data Point 1 -Wetland

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 2/1	95	10YR5/1	5			Loamy Sand	>70% coated sand grains
4-18+	10YR 4/1	95	10YR 4/5	5	C	M	Loamy Sand	

[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: Samwilka Tract Isolated Wetlands City/County: Bryan Sampling Date: 3/9/15

Applicant/Owner: Samwilka, Attn: G.P. Morgan, III State: GA Sampling Point: Data Point 2 Upland

Investigator(s): RLC (Troy Smith) Section, Township, Range:

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

Subregion (LRR or MLRA): Atlantic Coast Flatwoods (T) Lat: 32.165425 Long: -81.446213 Datum: WGS-84

Soil Map Unit Name: Olustee NWI classification: Upland

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): N/A
Water Table Present?	Yes ____	No ✓	Depth (inches): N/A
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): N/A

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: Data Point 2 Upland

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

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

Sapling Stratum (Plot size: 30 foot radius)			
1. Pinus taeda (Loblolly Pine)	3	Yes	FAC
2. Persea borbonia (Red Bay)	2	Yes	FACW
3.			
4.			
5.			
6.			
	5 = Total Cover		

50% of total cover: 2.5 20% of total cover: 1

Shrub Stratum (Plot size: 30 foot radius)			
1. Pinus taeda (Loblolly Pine)	40	Yes	FAC
2. Ilex glabra (Galberry)	40	Yes	FACW
3. Quercus falcata (Southern Red Oak)	5	No	FACU
4. Serenoa repens (Saw Palmetto)	5	No	FACU
5. Eupatorium capillifolium (Dog-Fennel)	10	No	FACU
6.			
	100 = Total Cover		

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

Herb Stratum (Plot size: 30 foot radius)			
1. Eupatorium capillifolium (Dog-Fennel)	10	Yes	FACU
2. Rubus allegheniensis (Blackberry)	5	No	UPL
3. Pteridium aquilinum (Bracken Fern)	10	Yes	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	25 = Total Cover		

50% of total cover: 12.5 20% of total cover: 5

Woody Vine Stratum (Plot size: 30 foot radius)			
1. N/A			
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: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66 (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: Data Point 2 Upland

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 3/1	60	10YR6/1	40			Loamy Sand	40% uncoated sand grains
5-18+	10YR 4/1	65	10YR6/1	35			Loamy Sand	35% uncoated sand grains

[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.

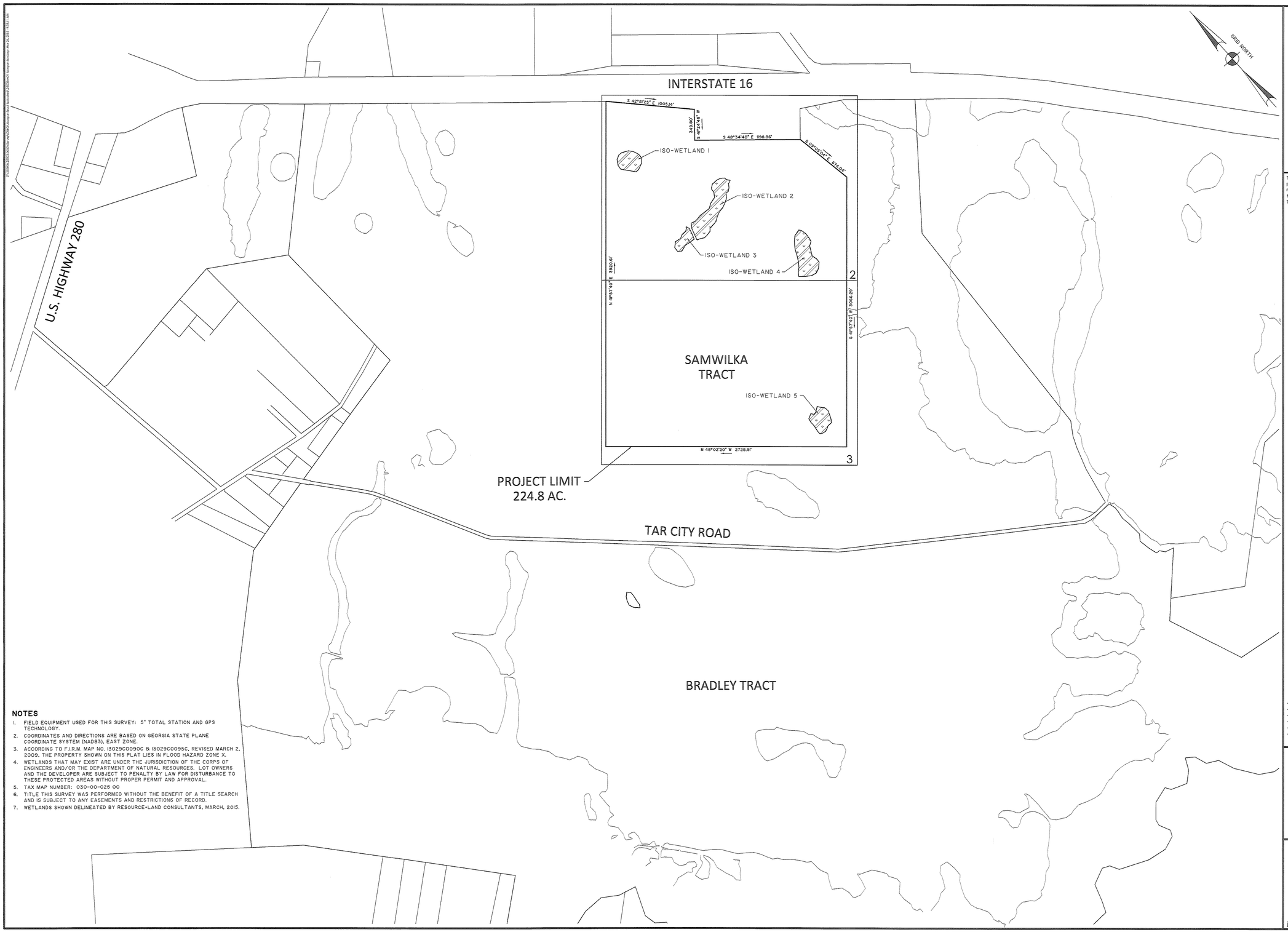
Restrictive Layer (if observed):

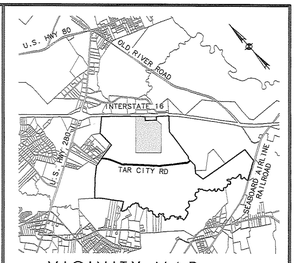
Type: _____

Depth (inches): _____

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

Remarks:





VICINITY MAP not to scale

ACREAGE SCHEDULE

ISOLATED WETLAND 1	1.18 AC.
ISOLATED WETLAND 2	2.73 AC.
ISOLATED WETLAND 3	0.66 AC.
ISOLATED WETLAND 4	2.14 AC.
ISOLATED WETLAND 5	1.14 AC.
TOTAL WETLANDS	7.85 AC.

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN, III

THIS SURVEY WAS PREPARED IN CONFORMITY WITH THE TECHNICAL STANDARDS FOR PROPERTY SURVEYS IN GEORGIA AS SET FORTH IN CHAPTER 180-7 OF THE RULES OF THE GEORGIA BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS AND AS SET FORTH IN THE GEORGIA PLAT ACT (O.C.G.A. 15-6-67).

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

A PORTION OF SAMWILKA TRACT ISOLATED WETLANDS

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for

SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

No.	Revision	By	Date

NOTES

1. FIELD EQUIPMENT USED FOR THIS SURVEY: 5" TOTAL STATION AND GPS TECHNOLOGY.
2. COORDINATES AND DIRECTIONS ARE BASED ON GEORGIA STATE PLANE COORDINATE SYSTEM (NAD83), EAST ZONE.
3. ACCORDING TO F.I.R.M. MAP NO. 13029C0090C & 13029C0095C, REVISED MARCH 2, 2009, THE PROPERTY SHOWN ON THIS PLAT LIES IN FLOOD HAZARD ZONE X.
4. WETLANDS THAT MAY EXIST ARE UNDER THE JURISDICTION OF THE CORPS OF ENGINEERS AND/OR THE DEPARTMENT OF NATURAL RESOURCES. LOT OWNERS AND THE DEVELOPER ARE SUBJECT TO PENALTY BY LAW FOR DISTURBANCE TO THESE PROTECTED AREAS WITHOUT PROPER PERMIT AND APPROVAL.
5. TAX MAP NUMBER: 050-00-025 00
6. TITLE THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE SEARCH AND IS SUBJECT TO ANY EASEMENTS AND RESTRICTIONS OF RECORD.
7. WETLANDS SHOWN DELINEATED BY RESOURCE+LAND CONSULTANTS, MARCH, 2015.

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting

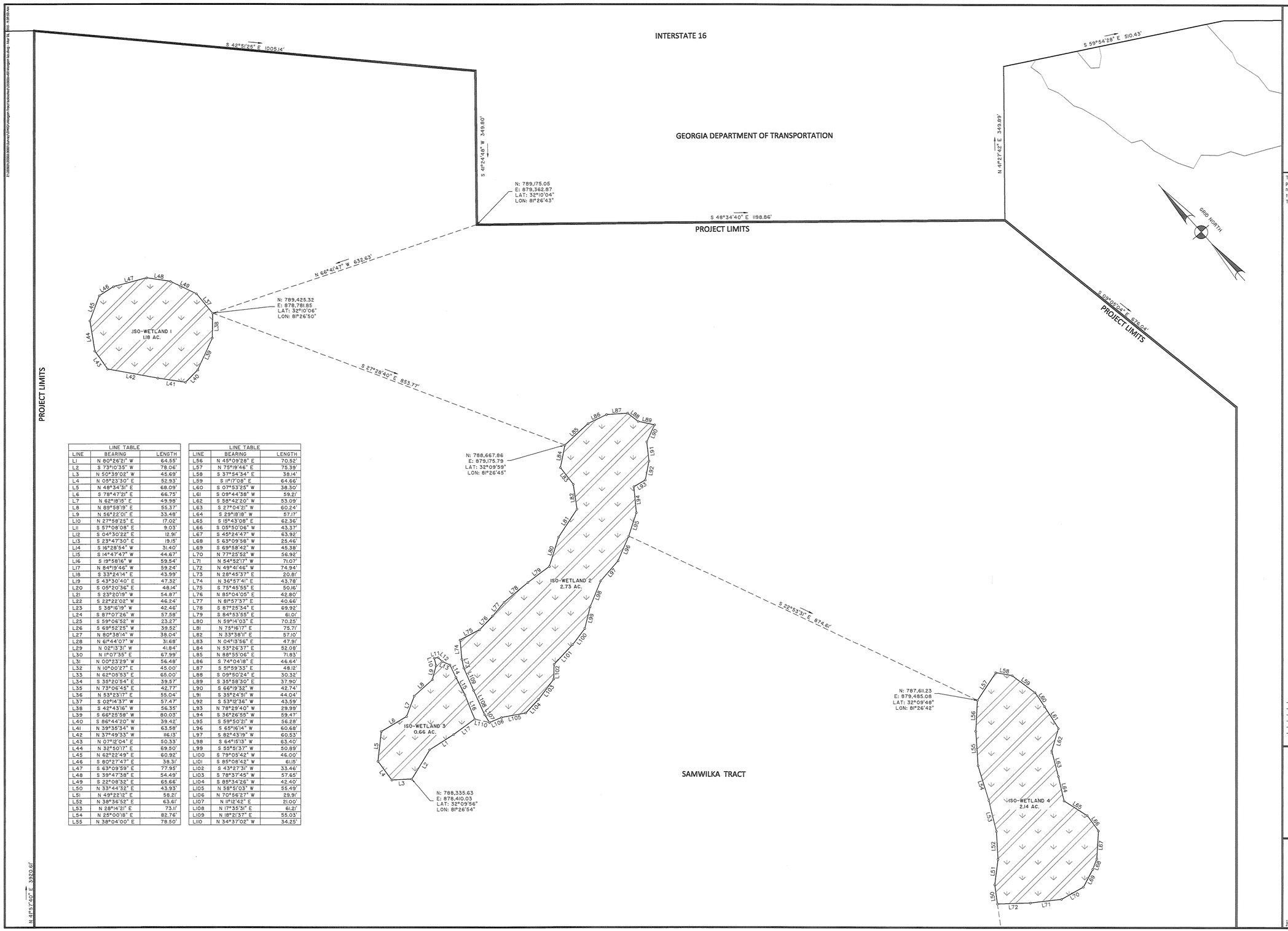
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950

www.thomasandhutton.com

500 0 500 1000
1 INCH = 500 FEET

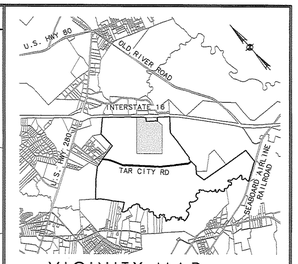
plat	drawn	reviewed	field	crew
03-26-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000



LINE TABLE		
LINE	BEARING	LENGTH
L1	N 80°26'21" W	64.55'
L2	S 73°10'35" W	78.06'
L3	N 50°39'02" W	45.69'
L4	N 06°23'30" E	52.93'
L5	N 48°34'31" E	68.09'
L6	S 78°47'21" E	66.75'
L7	N 62°18'15" E	49.98'
L8	N 89°58'19" E	55.37'
L9	N 56°22'01" E	33.48'
L10	N 27°58'25" E	17.02'
L11	S 57°08'08" E	9.03'
L12	S 04°30'22" E	12.91'
L13	S 23°47'30" E	19.15'
L14	S 16°28'54" W	31.40'
L15	S 14°47'47" W	44.67'
L16	S 19°58'16" W	59.54'
L17	N 84°19'46" W	59.24'
L18	S 33°24'14" E	43.99'
L19	S 43°30'40" E	47.32'
L20	S 05°20'36" E	48.14'
L21	S 23°30'19" W	54.87'
L22	S 23°22'02" W	46.24'
L23	S 38°16'19" W	42.46'
L24	S 87°07'26" W	57.58'
L25	S 59°08'52" W	23.27'
L26	S 69°52'25" W	39.52'
L27	N 80°38'14" W	38.04'
L28	N 61°44'07" W	31.68'
L29	N 02°13'31" W	41.84'
L30	N 11°07'35" E	67.99'
L31	N 00°23'29" W	56.48'
L32	N 10°00'27" E	45.00'
L33	N 62°05'53" E	65.00'
L34	S 35°20'54" E	39.57'
L35	N 73°06'45" E	42.77'
L36	N 53°23'17" E	55.04'
L37	S 02°14'37" W	57.47'
L38	S 42°43'16" W	56.35'
L39	S 66°25'58" W	80.03'
L40	S 86°44'20" W	39.42'
L41	N 39°35'34" W	63.58'
L42	N 37°49'33" W	116.13'
L43	N 07°12'04" E	50.33'
L44	N 32°50'17" E	69.50'
L45	N 62°22'49" E	60.92'
L46	S 80°27'47" E	38.31'
L47	S 63°09'59" E	77.95'
L48	S 39°47'38" E	54.49'
L49	S 22°08'32" E	65.66'
L50	N 33°44'32" E	43.93'
L51	N 49°22'12" E	58.21'
L52	N 38°36'52" E	63.61'
L53	N 28°14'21" E	73.11'
L54	N 25°00'18" E	82.76'
L55	N 38°04'00" E	78.50'

LINE TABLE		
LINE	BEARING	LENGTH
L56	N 45°09'28" E	70.52'
L57	N 75°19'46" E	75.39'
L58	S 37°54'34" E	38.14'
L59	S 1°17'08" E	64.66'
L60	S 07°53'25" W	38.30'
L61	S 09°44'38" W	59.21'
L62	S 58°42'20" W	53.09'
L63	S 27°04'21" W	60.24'
L64	S 29°18'18" W	57.17'
L65	S 15°43'08" E	62.36'
L66	S 05°50'06" W	43.37'
L67	S 45°24'47" W	63.92'
L68	S 63°09'58" W	25.46'
L69	S 69°58'42" W	45.38'
L70	N 77°25'52" W	56.92'
L71	N 54°52'17" W	71.07'
L72	N 49°41'46" W	74.94'
L73	N 28°45'37" E	20.81'
L74	N 36°57'41" E	43.78'
L75	S 75°45'55" E	50.16'
L76	N 85°04'05" E	42.80'
L77	N 81°57'37" E	40.66'
L78	S 87°25'34" E	69.92'
L79	S 84°53'55" E	61.01'
L80	N 59°14'03" E	70.25'
L81	N 75°16'17" E	75.71'
L82	N 33°38'11" E	57.10'
L83	N 04°13'56" E	47.91'
L84	N 53°26'37" E	52.08'
L85	N 88°55'06" E	71.83'
L86	S 74°04'18" E	46.64'
L87	S 51°59'33" E	48.12'
L88	S 09°50'24" E	30.32'
L89	S 35°58'30" E	37.90'
L90	S 66°19'32" W	42.74'
L91	S 35°24'51" W	44.04'
L92	S 53°12'36" W	43.59'
L93	N 78°29'40" W	29.99'
L94	S 36°26'55" W	59.47'
L95	S 59°50'21" W	56.28'
L96	S 65°16'14" W	60.68'
L97	S 82°43'19" W	60.53'
L98	S 64°15'13" W	63.40'
L99	S 55°51'37" W	50.89'
L100	S 79°05'42" W	46.00'
L101	S 85°08'42" W	61.15'
L102	S 43°27'31" W	33.46'
L103	S 78°37'45" W	57.65'
L104	S 85°34'26" W	42.40'
L105	N 58°51'03" W	55.49'
L106	N 70°56'27" W	29.91'
L107	N 11°12'42" E	21.00'
L108	N 17°35'31" E	61.21'
L109	N 18°21'37" E	55.03'
L110	N 34°37'02" W	34.25'



VICINITY MAP not to scale

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN, III

THIS SURVEY WAS PREPARED IN CONFORMITY WITH THE TECHNICAL STANDARDS FOR PROPERTY SURVEYS IN GEORGIA AS SET FORTH IN CHAPTER 180-7 OF THE RULES OF THE GEORGIA BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS AND AS SET FORTH IN THE GEORGIA PLAT ACT (O.C.G.A. 15-6-67).

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

A PORTION OF SAMWILKA TRACT ISOLATED WETLANDS

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for

SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

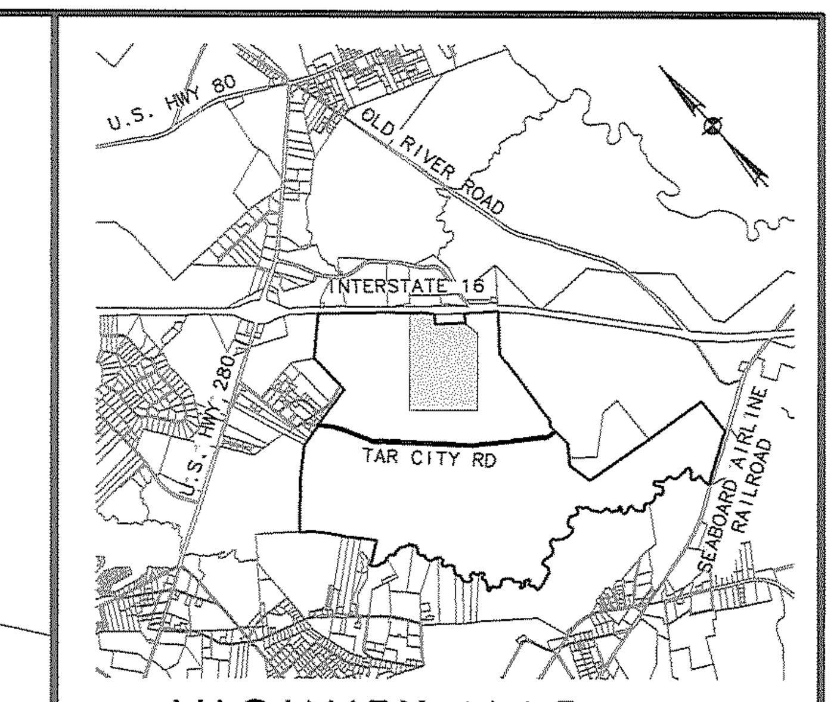
No.	Revision	By	Date

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

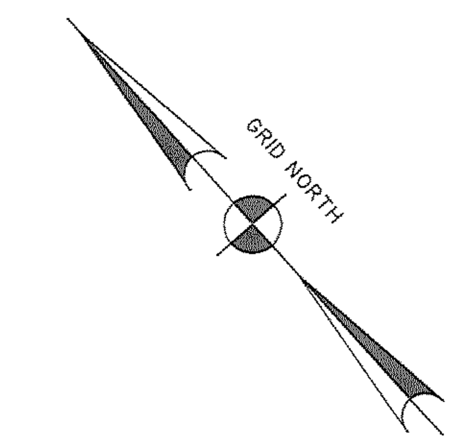
100 0 100 200
1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-26-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000



VICINITY MAP not to scale



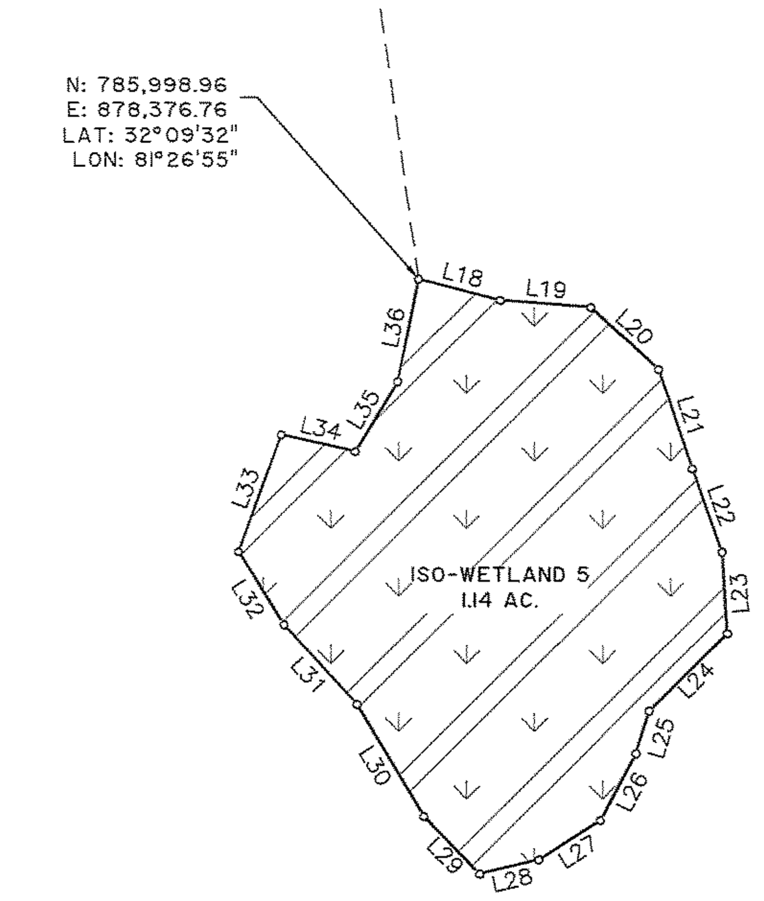
S 33°55'22" W 1490.96'

S 41°57'40" W 3066.29'

LINE TABLE		
LINE	BEARING	LENGTH
L1	N 80°26'21" W	64.55'
L2	S 73°10'35" W	78.06'
L3	N 50°39'02" W	45.69'
L4	N 05°23'30" E	52.93'
L5	N 48°34'31" E	68.09'
L6	S 78°47'21" E	66.75'
L7	N 62°18'15" E	49.98'
L8	N 89°58'19" E	55.37'
L9	N 56°22'01" E	33.48'
L10	N 27°58'25" E	17.02'
L11	S 57°08'08" E	9.03'
L12	S 04°30'22" E	12.91'
L13	S 23°47'30" E	19.15'
L14	S 16°28'54" W	31.40'
L15	S 14°47'47" W	44.67'
L16	S 19°58'16" W	59.54'
L17	N 84°19'46" W	59.24'
L18	S 33°24'14" E	43.99'
L19	S 43°30'40" E	47.32'
L20	S 05°20'36" E	48.14'
L21	S 23°20'19" W	54.87'
L22	S 22°22'02" W	46.24'
L23	S 38°16'19" W	42.46'
L24	S 87°07'26" W	57.58'
L25	S 59°06'52" W	23.27'
L26	S 69°52'25" W	39.52'
L27	N 80°38'14" W	38.04'
L28	N 61°44'07" W	31.68'
L29	N 02°13'31" W	41.84'
L30	N 11°07'35" E	67.99'
L31	N 00°23'29" W	56.48'
L32	N 10°00'27" E	45.00'
L33	N 62°05'53" E	65.00'
L34	S 35°20'54" E	39.57'
L35	N 73°06'45" E	42.77'
L36	N 53°23'17" E	55.04'
L37	S 02°14'37" W	57.47'
L38	S 42°43'16" W	56.35'
L39	S 66°25'58" W	80.03'
L40	S 86°44'20" W	39.42'
L41	N 39°35'34" W	63.58'
L42	N 37°49'33" W	116.13'
L43	N 07°12'04" E	50.33'
L44	N 32°50'17" E	69.50'
L45	N 62°22'49" E	60.92'
L46	S 80°27'47" E	38.31'
L47	S 63°09'59" E	77.95'
L48	S 39°47'38" E	54.49'
L49	S 22°08'32" E	65.66'
L50	N 33°44'32" E	43.93'
L51	N 49°22'12" E	58.21'
L52	N 38°36'52" E	63.61'
L53	N 28°14'21" E	73.11'
L54	N 25°00'18" E	82.76'
L55	N 38°04'00" E	78.50'

LINE TABLE		
LINE	BEARING	LENGTH
L56	N 45°09'28" E	70.52'
L57	N 75°19'46" E	75.39'
L58	S 37°54'34" E	38.14'
L59	S 11°17'08" E	64.66'
L60	S 07°53'25" W	38.30'
L61	S 09°44'38" W	59.21'
L62	S 58°42'20" W	53.09'
L63	S 27°04'21" W	60.24'
L64	S 29°18'18" W	57.17'
L65	S 15°43'08" E	62.36'
L66	S 05°50'06" W	43.37'
L67	S 45°24'47" W	63.92'
L68	S 63°09'58" W	25.46'
L69	S 69°58'42" W	45.38'
L70	N 77°25'52" W	56.92'
L71	N 54°52'17" W	71.07'
L72	N 49°41'46" W	74.94'
L73	N 28°45'37" E	20.81'
L74	N 36°57'41" E	43.78'
L75	S 75°45'55" E	50.16'
L76	N 85°04'05" E	42.80'
L77	N 81°57'37" E	40.66'
L78	S 87°25'34" E	69.92'
L79	S 84°53'55" E	61.01'
L80	N 59°14'03" E	70.25'
L81	N 75°16'17" E	75.71'
L82	N 33°38'11" E	57.10'
L83	N 04°13'56" E	47.91'
L84	N 53°26'37" E	52.08'
L85	N 88°55'06" E	71.83'
L86	S 74°04'18" E	46.64'
L87	S 51°59'33" E	48.12'
L88	S 09°50'24" E	30.32'
L89	S 35°58'30" E	37.90'
L90	S 66°19'32" W	42.74'
L91	S 35°24'51" W	44.04'
L92	S 53°12'36" W	43.59'
L93	N 78°29'40" W	29.99'
L94	S 36°26'55" W	59.47'
L95	S 59°50'21" W	56.28'
L96	S 65°16'14" W	60.68'
L97	S 82°43'19" W	60.53'
L98	S 64°15'13" W	63.40'
L99	S 55°51'37" W	50.89'
L100	S 79°05'42" W	46.00'
L101	S 85°08'42" W	61.15'
L102	S 43°27'31" W	33.46'
L103	S 78°37'45" W	57.65'
L104	S 85°34'26" W	42.40'
L105	N 58°51'03" W	55.49'
L106	N 70°56'27" W	29.91'
L107	N 11°12'42" E	21.00'
L108	N 17°35'31" E	61.21'
L109	N 18°21'37" E	55.03'
L110	N 34°37'02" W	34.25'

SAMWILKA TRACT



PROJECT LIMITS

PROJECT LIMITS

N 48°02'20" W 2728.91'

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN, III

THIS SURVEY WAS PREPARED IN CONFORMITY WITH THE TECHNICAL STANDARDS FOR PROPERTY SURVEYS IN GEORGIA AS SET FORTH IN CHAPTER 180-7 OF THE RULES OF THE GEORGIA BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS AND AS SET FORTH IN THE GEORGIA PLAT ACT (O.C.G.A. 15-6-67).

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

A PORTION OF SAMWILKA TRACT ISOLATED WETLANDS

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for

SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

No.	Revision	By	Date

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200

1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-26-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000

26 March 2015

U.S. Army Corps of Engineers
Savannah District
Attn: Mr. Shaun Blocker
100 West Oglethorpe Avenue
Savannah, Georgia 31402-0889

Subject: Approved Jurisdictional Determination Request **RLC# 14-225**
Bradley Tract Isolated Wetlands
Bryan County, Georgia

Dear Mr. Blocker:

Resource & Land Consultants (RLC), on behalf of Butler Tract, LLC, is submitting the attached information requesting an approved jurisdictional determination for the subject site located in the south quadrant of the intersection of Interstate 16 and Highway 280 and south of Tar City Road in Bryan County, Georgia (32.154345°, -81.458134°). The delineation was conducted in accordance with the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region Version 2, and 33 CFR Part 329. Based on the site assessment and delineation, the 276.8 acre project area contains approximately 267.09 acres of upland and 9.71 acres of isolated non-jurisdictional wetland.

The attached information includes the following:

- Request for Approved Jurisdictional Determination
- Appendix B Approved Jurisdictional Determination Form
- RLC Prepared Figures
- Associated Data Sheets
- Wetland Exhibit prepared by Thomas & Hutton Engineering

We greatly appreciate your assistance with this project. If you have any questions or require a site inspection, please contact us at (912) 443-5896.

Sincerely,

Russell Parr
Project Manager
Resource & Land Consultants

cc: Mr. Waldo Bradley – Butler Tract, LLC
Mr. Dan Bradley – Butler Tract, LLC

REQUEST FOR JURISDICTIONAL DETERMINATION FOR PROPERTY LOCATED WITHIN THE STATE OF GEORGIA

APPLICANT:

Name (First Last) Butler Tract LLC Attn: W. Waldo Bradley and Dan H. Bradley

Address 204 Old W Lathrop Avenue

City Savannah State GA Zip Code 31415

Phone (912) 447 - 7000 Fax ( ) - Email

PROPERTY OWNER: **Same as Applicant** ☑

Name (First Last)

Address

City State GA Zip Code

Phone ( ) - Fax ( ) - Email

AGENT/CONSULTANT: (if applicable)

Name (First Last) Resource & Land Consultants, c/o Russell Parr

Address 41 Park of Commerce Way, Suite 303

City Savannah State GA Zip Code 31405

Phone (912) 443 - 5896 Fax (912) 443 - 5898 Email rparr@rlandc.com

PROPERTY LOCATION:

Location/Address/Subdivision Located in the south quadrant or the intersection of I-16 and Highway 280

City (in/near) Black Creek County Bryan

Directions from nearest interstate (use additional sheet(s) if needed)
See attached google maps.

Latitude 32 . 154345 Longitude -81 . 458134
(In decimal degrees at center of the site. Linear projects should also include decimal degrees location of the start, end, and any turn points of the review/project area. Use additional sheet(s) if needed.)

Property Size (acres and/or dimensions) 276.8

Nearest named waterbody (Stream/River/Lake) Black Creek

TYPE OF JURISDICTIONAL DETERMINATION:

Please indicate the type of jurisdictional determination (JD) you are requesting by marking the appropriate type below. The Corps encourages the regulated public to utilize the preliminary JDs and expanded preliminary JDs where appropriate.

☐ **Preliminary Jurisdictional Determination** - Preliminary JDs are non-binding "written indications that there may be waters of the United States, including wetlands, on a parcel or indications of the approximate location(s) of waters of the United States or wetlands on a parcel. Preliminary JDs are advisory in nature and may not be appealed." (See 33 C.F.R. 331.2.)

☐ **Expanded Preliminary Jurisdictional Determination** - The intent of using the expanded preliminary JD is to allow a landowner or other "affected party" to move ahead expeditiously to obtain a Corps permit authorization where the party determines that it is in his or her best interest. In most cases, expanded preliminary JDs are also non-binding "written indications that there may be waters of the United States, including wetlands, on a parcel or indications of the approximate location(s) of waters of the United States or wetlands on a parcel." However, Corps verification of a delineation, which is submitted in conjunction with an expanded preliminary JD request, would provide the landowner or affected party with defensible documentation concerning the limits of Corps jurisdiction.

☑ **Approved Jurisdictional Determination** - As defined in Regulatory Guidance Letter 08-02, an approved JD is an official Corps determination that jurisdictional "waters of the United States," or "navigable waters of the United States," or both, are either present or absent on a particular site. An approved JD precisely identifies the limits of those waters on the project site determined to be jurisdictional under the CWA/RHA. (See 33 C.F.R. 331.2.)

I, W. Waldo Bradley and Dan H. Bradley, request a jurisdictional
Print Name
determination the above property, grant the US Army Corps of Engineers permission to conduct an on-site inspection, and certify that I am authorized to grant permission for entry into the property.

W. Waldo Bradley 3/25/15

SIGNED Daniel H Bradley DATE 3/25/15

****TO COMPLETE THIS REQUEST ALL OF THE REQUIRED INFORMATION IN THE APPLICABLE CHECKLIST MUST BE PROVIDED ****

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Savannah District; Bradley Tract Isolated Wetlands

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State: Georgia County/parish/borough: Bryan City: Black Creek
Center coordinates of site (lat/long in degree decimal format): Lat. 32.154345° **N**, Long. -81.458134° **W**.
Universal Transverse Mercator:
Name of nearest waterbody: Black Creek

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Black Creek
Name of watershed or Hydrologic Unit Code (HUC): Lower Ogeechee 03060202
☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☐ Office (Desk) Determination. Date:
☒ Field Determination. Date(s): March 17,2015

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** *"navigable waters of the U.S."* within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]
☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: N/A linear feet: N/A width (ft) and/or N/A acres.
      Wetlands: acres.

   c. **Limits (boundaries) of jurisdiction** based on: **1987 Delineation Manual**
      Elevation of established OHWM (if known): unknown.

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
   Explain: **Isolated (Iso) wetlands 6-8 within the Bradley Tract are surrounded completely by uplands and do not contain surface or subsurface connections with jurisdictional waters or wetlands and are therefore isolated non-jurisdictional**.

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: **n/a**.

Summarize rationale supporting determination: n/a.

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": n/a.

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **acres**
Drainage area: **acres**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Project waters are **Pick List** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: no.

Identify flow route to TNW[5]: .
Tributary stream order, if known: .

(b) General Tributary Characteristics (check all that apply):
Tributary is: ☐ Natural

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):

☐ Silts	☐ Sands	☐ Concrete
☐ Cobbles	☐ Gravel	☐ Muck
☐ Bedrock	☐ Vegetation. Type/% cover:	
☐ Other. Explain: .		

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: Relatively stable, little bank failure / erosion was noted during the site visit.
Presence of run/riffle/pool complexes. Explain: Weak riffle pool complexes were noted during the site visits.
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: seasonal & stormwater flow.
Other information on duration and volume: The stream has csign of bank scouring, and weak riffle pool sequences.

Surface flow is: **Pick List.** Characteristics: continues bed and bank.

Subsurface flow: **Pick List**. Explain findings: .
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):

☐ clear, natural line impressed on the bank	☐ the presence of litter and debris
☐ changes in the character of soil	☐ destruction of terrestrial vegetation
☐ shelving	☐ the presence of wrack line
☐ vegetation matted down, bent, or absent	☐ sediment sorting
☐ leaf litter disturbed or washed away	☐ scour
☐ sediment deposition	☐ multiple observed or predicted flow events
☐ water staining	☐ abrupt change in plant community
☐ other (list):	

☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by:	☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects	☐ survey to available datum;
☐ fine shell or debris deposits (foreshore)	☐ physical markings;
☐ physical markings/characteristics	☐ vegetation lines/changes in vegetation types.
☐ tidal gauges	
☐ other (list):	

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

- ☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: culverted road crossings separate some features.

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List.**

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: water is clear.

Identify specific pollutants, if known: unknown.

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: n/a.

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: N/A.

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: N/A.

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. Non-RPWs[8] that flow directly or indirectly into TNWs.
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: **n/a** acres.

7. Impoundments of jurisdictional waters.[9]
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: n/a.

---

[8] See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☒ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☒ Wetlands: 9.71 acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: Plat by: Thomas& Hutton Engineering dated 03-26-2015.
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☒ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☒ U.S. Geological Survey Hydrologic Atlas: Lower Ogeechee 03060202.
☐ USGS NHD data.
☐ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name:1"=3000'; Eden GA Quadrangle.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: 1"=2000' Bryan County, GA.
☒ National wetlands inventory map(s). Cite name:1"=2000' Eden GA Quadrangle.
☐ State/Local wetland inventory map(s): .
☒ FEMA/FIRM maps:FEMA FIRM Map 13031C0500D.
☒ 100-year Floodplain Elevation is:Shaded Zone X(National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date):2013 Color Aerial Photograph and 1999 CIR Aerial Photograph.
or ☒ Other (Name & Date):Digital Color Photographs .
☐ Previous determination(s). File no. and date of response letter: .
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .
☐ Other information (please specify): .

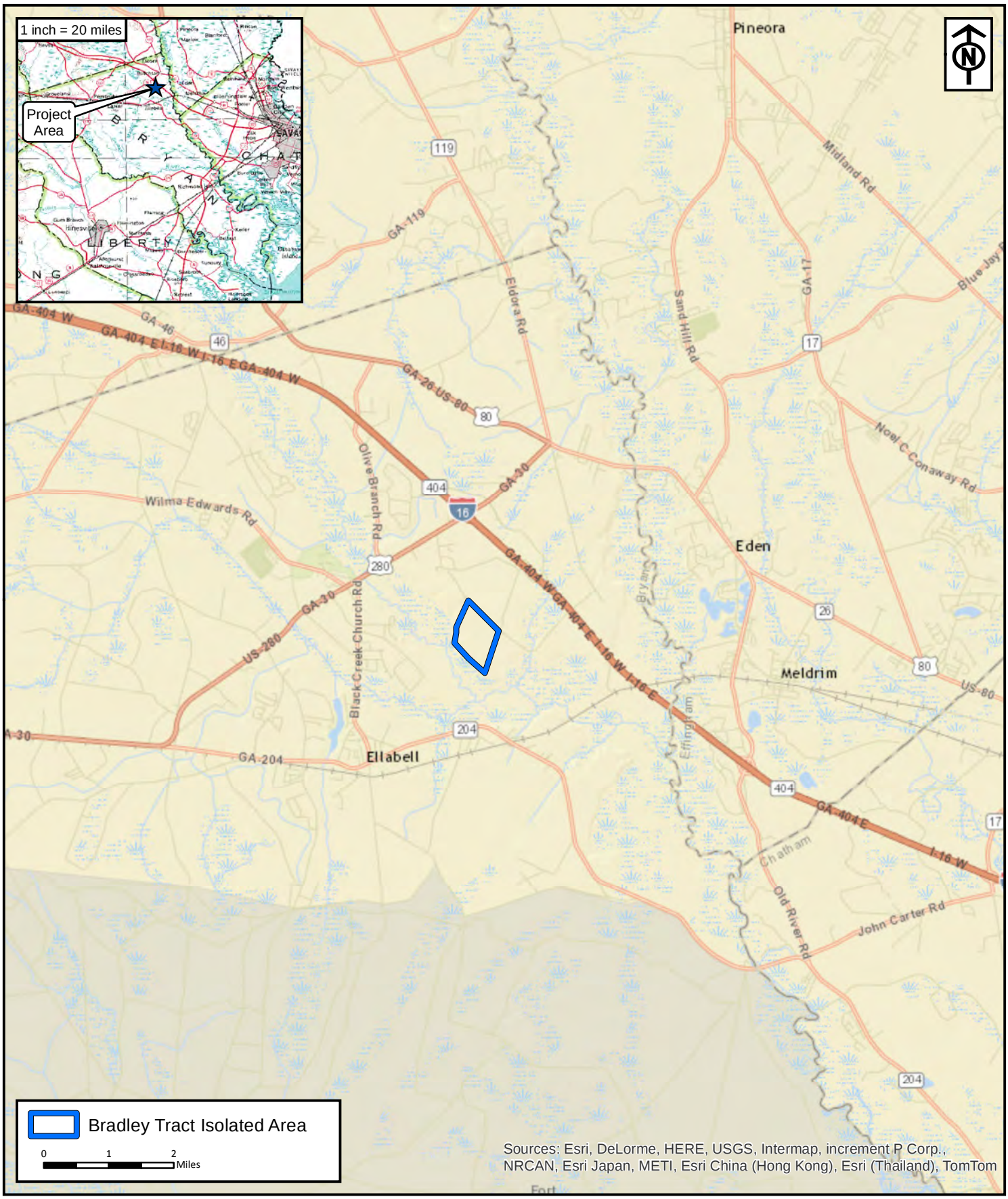
B. ADDITIONAL COMMENTS TO SUPPORT JD:
Wetland 6 (3.54 acres): Lat: 32.158339 Long:- 81.456551. There are no surface or subsurface hydrologic connections between the 3.54 acre non-jurisdictional isolated Wetland 6 and other jurisdictional waters. Wetland 6 is not located within the 100-year floodplain, is located

approximately 1,126 linear feet from the nearest jurisdictional water (1,370 from the nearest downhill jurisdictional wetland) and is approximately 0.7 miles from the nearest TNW, Black Creek. The uplands surrounding Wetland 6 are greater than 2 feet higher in elevation than the average surface elevation within Wetland 6. Soils within the wetland are mapped as Ellabelle loamy sand and are characterized as being poorly drained. The soils in the uplands surrounding Wetland 6 are mapped as Chipley fine sand. This soil type is described as being moderately well drained. The soils within the wetland contain substantially greater organic matter and loam content than the surrounding upland comprised of sandy textured soils. Soils transition from a loam within the wetland to a loamy sand to sand within the upland. Upland soils lack any evidence of hydric soil indicators outside the perimeter of Wetland 6. As a result of the upland soil composition and texture, the upland soils drain more quickly than those contained within the wetland and are not likely to hold surface water or remain saturated for extended periods of time. Wetland 6 was reviewed in the field on 17 March 2015 with USACE project managers. The perimeter of Wetland 6 was walked to investigate for the presence of ditches, swales, or other type of hydrologic connection to jurisdictional wetlands. No such hydrologic connections were observed. A distinct and obvious transition to upland vegetative species was observed along the entire perimeter of Wetland 6. Based on the surrounding soils, lack of hydrologic connection, and the proximity of Wetland 6 to other jurisdictional waters of the U.S., it is our opinion that Wetland 6 is an isolated depression within an area managed for silviculture.

Wetland 7 (0.38 acres): Lat: 32.158390 Long:- 81.458412. There are no surface or subsurface hydrologic connections between the 0.38 acre non-jurisdictional isolated Wetland 7 and other jurisdictional waters. Wetland 7 is not located within the 100-year floodplain, is located approximately 1,127 linear feet from the nearest jurisdictional water and is approximately 0.6 miles from the nearest TNW, Black Creek. The uplands surrounding Wetland 7 are greater than 1 foot higher in elevation than the average surface elevation within Wetland 7. Soils within the wetland are mapped as Chipley fine sand; however, the soils more closely resemble Ellabelle loamy sand and which are characterized as being poorly drained. The soils in the uplands surrounding Wetland 7 are mapped as Chipley fine sand. This soil type is described as being moderately well drained. The soils within the wetland contain substantially greater organic matter and loam content than the surrounding upland comprised of sandy textured soils. Soils transition from a loam within the wetland to a loamy sand to sand within the upland. Upland soils lack any evidence of hydric soil indicators outside the perimeter of Wetland 7. As a result of the upland soil composition and texture, the upland soils drain more quickly than those contained within the wetland and are not likely to hold surface water or remain saturated for extended periods of time. Wetland 7 was reviewed in the field on 19 March 2015. The perimeter of Wetland 7 was walked to investigate for the presence of ditches, swales, or other type of hydrologic connection to jurisdictional wetlands. No such hydrologic connections were observed. A distinct and obvious transition to upland vegetative species was observed along the entire perimeter of Wetland 7. Based on the surrounding soils, lack of hydrologic connection, and the proximity of Wetland 7 to other jurisdictional waters of the U.S., it is our opinion that Wetland 7 is an isolated depression within an area managed for silviculture.

Wetland 8 (5.79 acres): Lat: 32.151500 Long:- 81.457494. There are no surface or subsurface hydrologic connections between the 5.79 acre non-jurisdictional isolated Wetland 8 and other jurisdictional waters. Wetland 8 is not located within the 100-year floodplain, is located approximately 1,137 linear feet from the nearest jurisdictional water and is approximately 0.4 miles from the nearest TNW, Black Creek. The uplands surrounding Wetland 8 are greater than 3 feet higher in elevation than the average surface elevation within Wetland 8. Soils within the wetland are mapped as Ellabelle loamy sand and are characterized as being poorly drained. The soils in the uplands surrounding Wetland 8 are mapped as Lakeland sand. This soil type is described as being excessively drained. The soils within the wetland contain substantially greater organic matter and loam content than the surrounding upland comprised of sandy textured soils. Soils transition from a loam within the wetland to a loamy sand to sand within the upland. Upland soils lack any evidence of hydric soil indicators outside the perimeter of Wetland 8. As a result of the upland soil composition and texture, the upland soils drain more quickly than those contained within the wetland and are not likely to hold surface water or remain saturated for extended periods of time. Wetland 8 was reviewed in the field on 17 March 2015 with USACE project managers. The perimeter of Wetland 8 was walked to investigate for the presence of ditches, swales, or other type of hydrologic connection to jurisdictional wetlands. No such hydrologic connections were observed. It should be noted that the LiDAR data suggests a connection between Iso-Wetland 8 and the wetlands associated with Black Creek; however, no such connection exists and a substantial elevation increase and distance between features is present. Photo 1 contained within this package depicts the topographic differences. A distinct and obvious transition to upland vegetative species was observed along the entire perimeter of Wetland 8. Based on the surrounding soils, lack of hydrologic connection, and the proximity of Wetland 8 to other jurisdictional waters of the U.S., it is our opinion that Wetland 8 is an isolated depression within an area managed for silviculture.

Waters Name	Linear Feet	Acreage	Jurisdictional Status	Cowadin Code	Latitude	Longitude	Local Waters	HGM Code	Waters Type
Wetland 6	N/A	3.54	Isolated Wetland	PFO1	32.158339	-81.456551	Black Creek	Depressional	ISOLATE
Wetland 7	N/A	0.38	Isolated Wetland	PSS	32.158390	-81.458412	Black Creek	Depressional	ISOLATE
Wetland 8	N/A	5.79	Isolated Wetland	PEM	32.151500	-81.457494	Black Creek	Depressional	ISOLATE



RLC Project No.:	14-225
Figure No.:	1
Sketch Date:	19 March 2015
Prepared By:	RP
Map Scale :	1 inch = 2 miles

Bradley Tract - Isolated Wetlands

Bryan County, Georgia

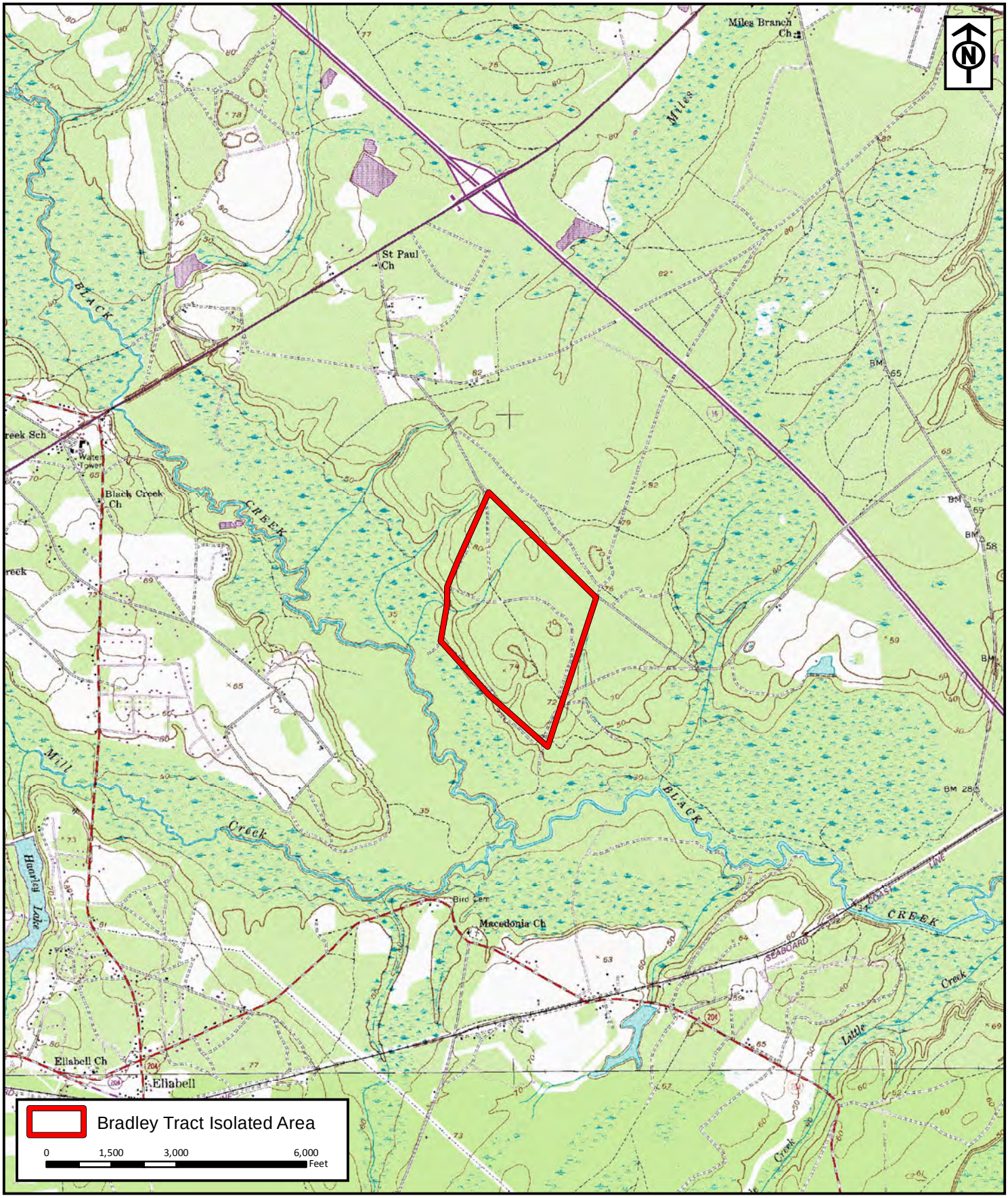
Project Location Map

Prepared For: The Bradley Family

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\Bradley_Iso_JDR1_Location

Source(s): ESRI Basemap, World_Street_Map



RLC Project No.:	14-225
Figure No.:	2
Sketch Date:	10 March 2015
Prepared By:	RP
Map Scale :	1 inch = 3,000 feet

Bradley Tract - Isolated Wetlands

Bryan County, Georgia

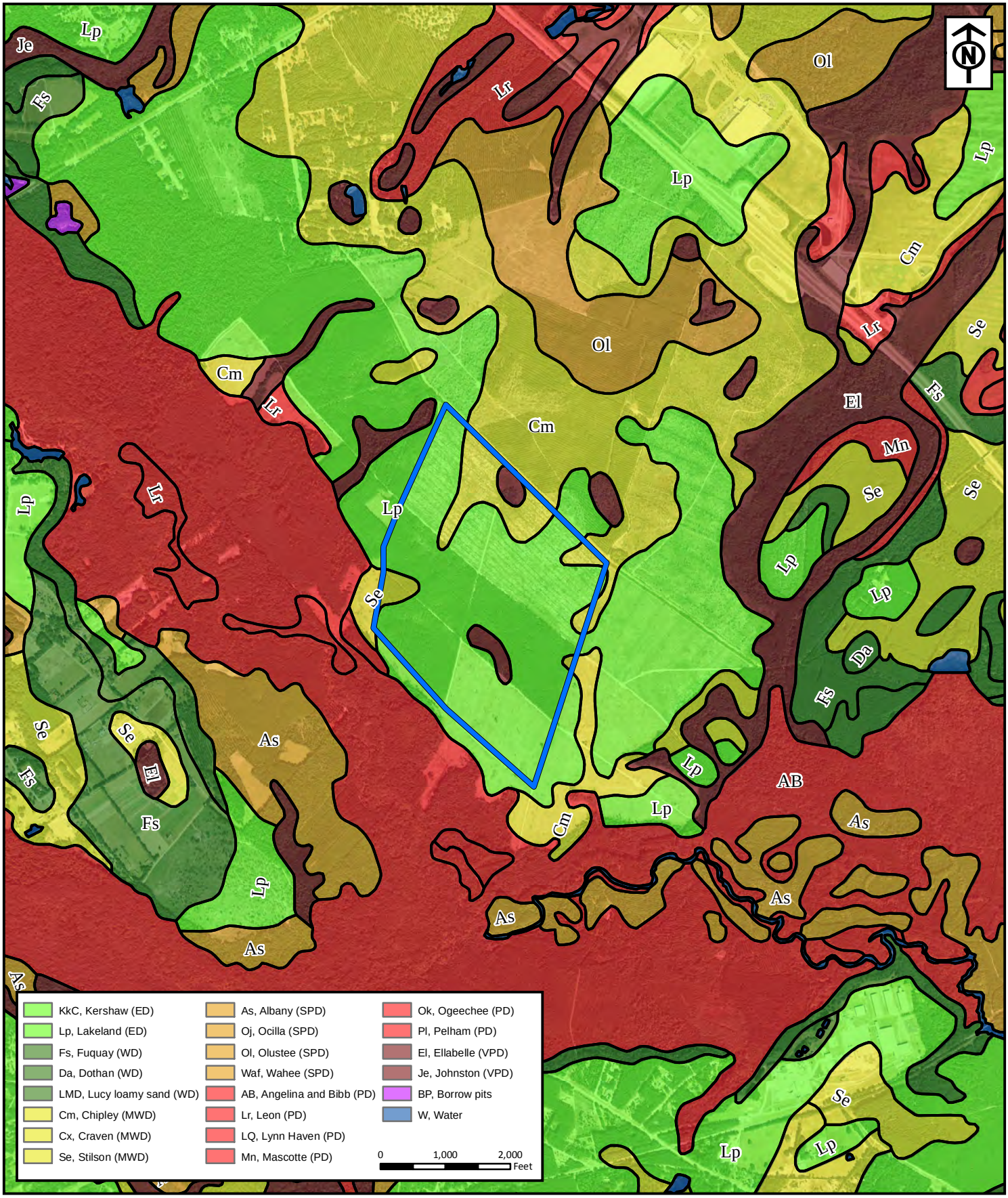
USGS Topographic Map

Prepared For: The Bradley Family

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\Bradley_Iso_JDR2_Topo

Source(s): USGS Topographic Survey Eden GA Quadrangle



RLC Project No.:	14-225
Figure No.:	3
Sketch Date:	19 March 2015
Prepared By:	RP
Map Scale :	1 inch = 2,000 feet

Bradley Tract - Isolated Wetlands

Bryan County, Georgia

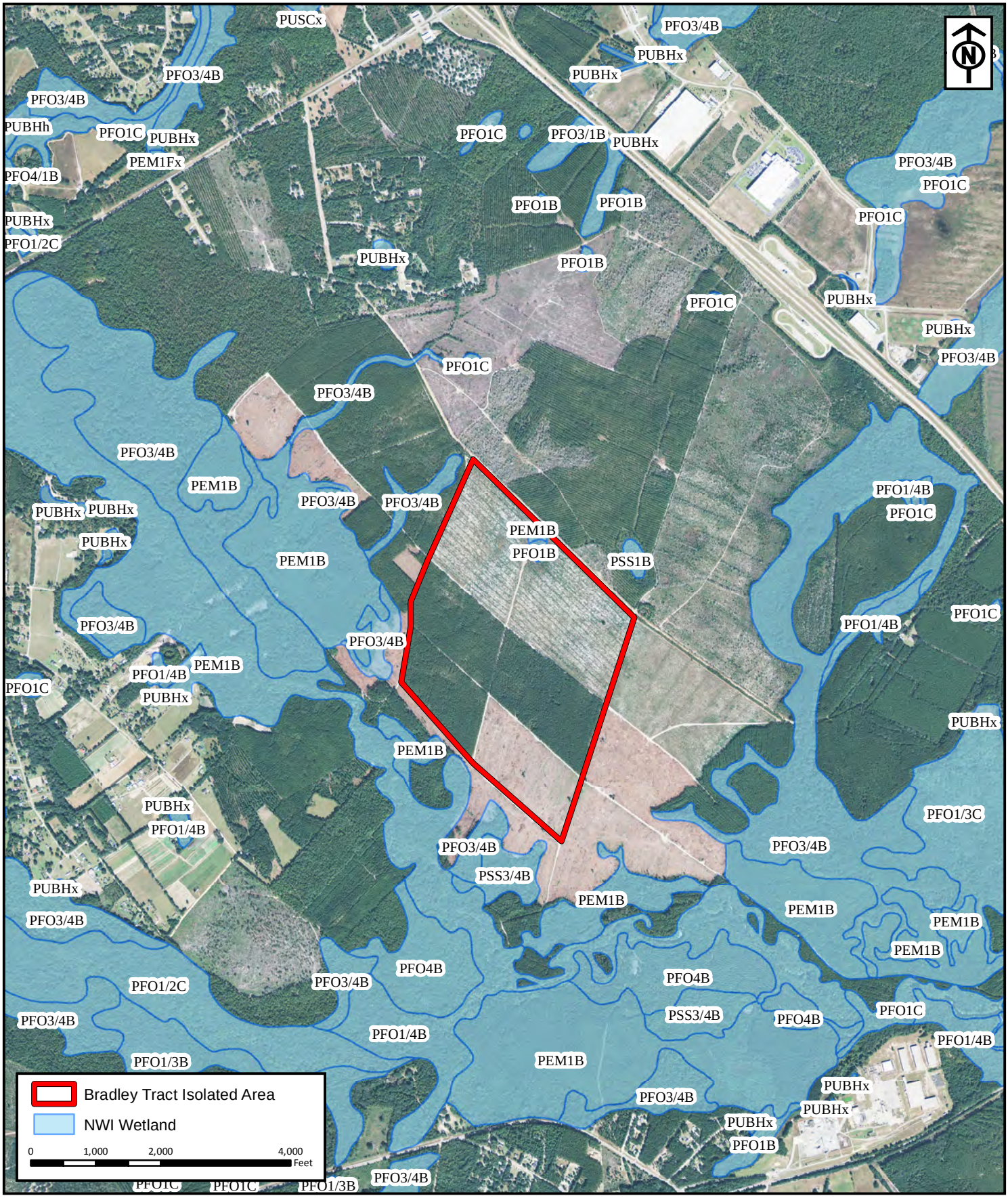
NRCS Soil Map

Prepared For: The Bradley Family

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\Bradley_Iso_JDR3_Soil

Source(s): USDA Soil Survey of Bryan County GA; 2013 NAIP Ortho Aerial



RLC Project No.:	14-225
Figure No.:	4
Sketch Date:	19 March 2015
Prepared By:	RP
Map Scale :	1 inch = 2,000 feet

Bradley Tract - Isolated Wetlands

Bryan County, Georgia

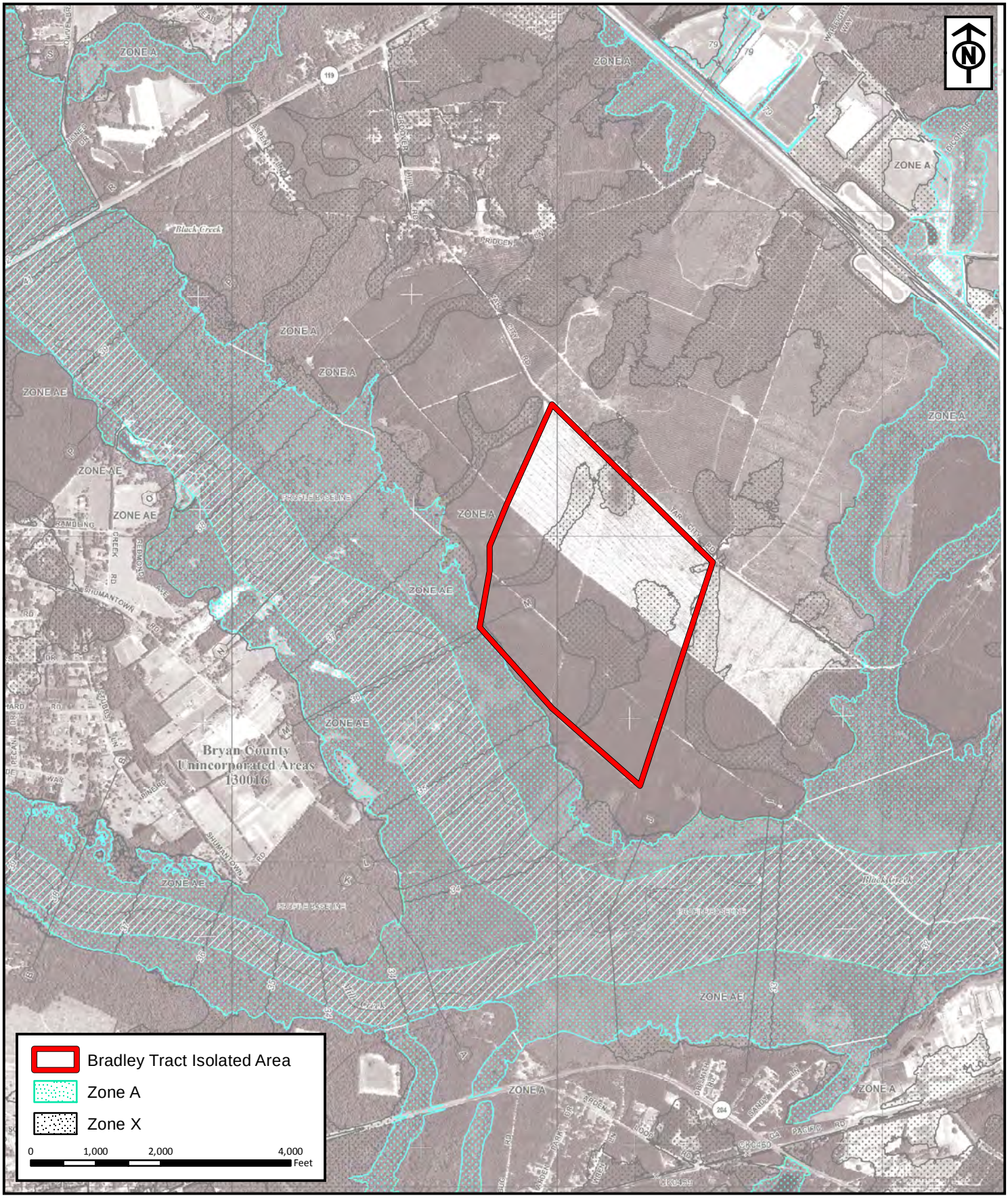
National Wetlands Inventory

Prepared For: The Bradley Family

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\Bradley_Iso_JDR4_NWI

Source(s): USFWS NWI, Eden GA; National Hydro. Dataset, Line; 2013 NAIP Aerial



RLC Project No.:	14-225
Figure No.:	5
Sketch Date:	19 March 2015
Prepared By:	RP
Map Scale :	1 inch = 2,000 feet

Bradley Tract - Isolated Wetlands

Bryan County, Georgia

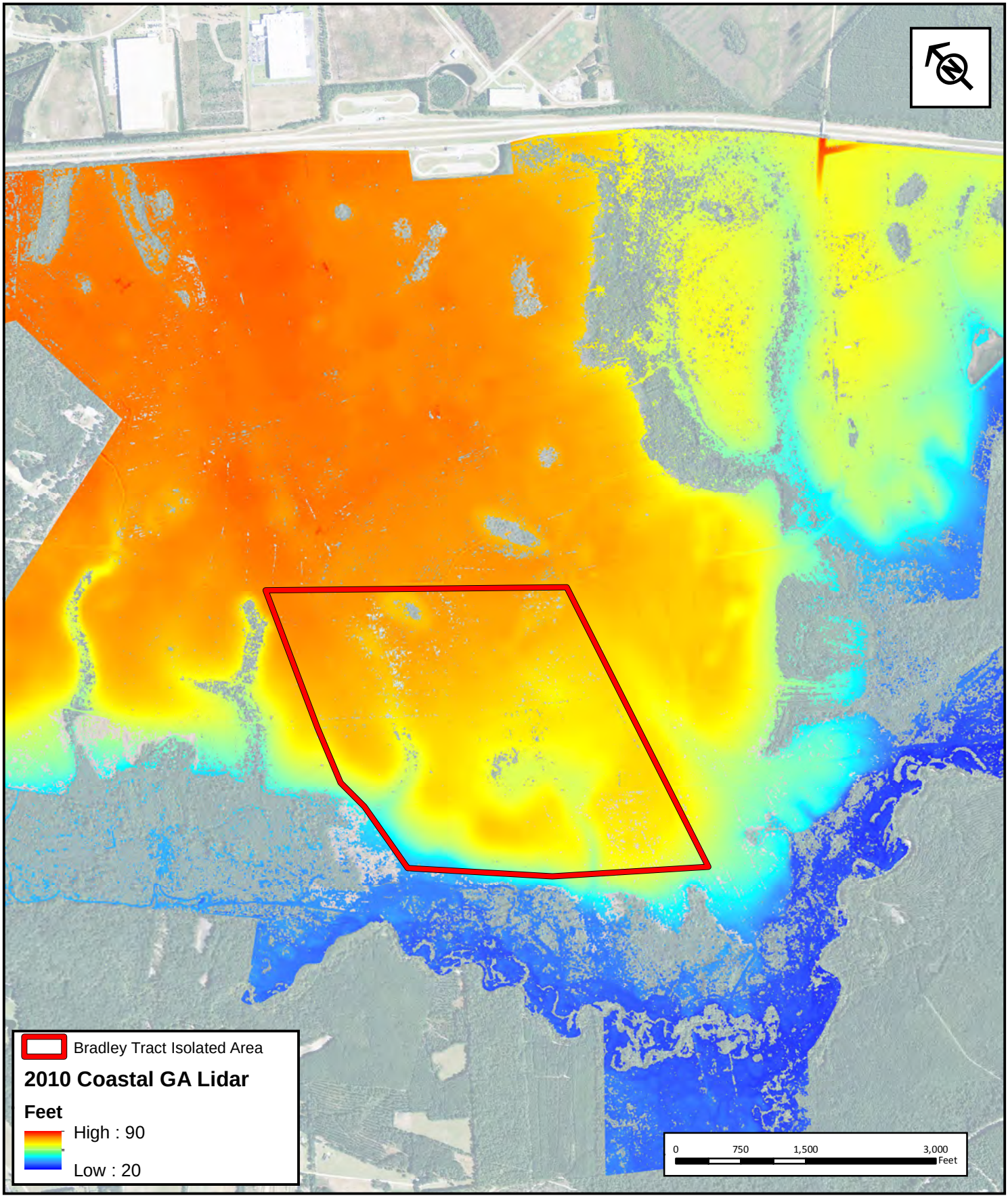
FEMA Flood Map

Prepared For: The Bradley Family

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\Bradley_Iso_JDR5_FEMA

Source(s): FEMA Flood Insurance Rate Map (FIRM) Panels13029C0095D & 13029C0090D , effective on 05/05/2014



RLC Project No.:	14-225
Figure No.:	6
Sketch Date:	19 March 2015
Prepared By:	RP
Map Scale :	1 inch = 1,500 feet

Bradley Tract - Isolated Wetlands

Bryan County, Georgia

National Wetlands Inventory

Prepared For: The Bradley Family

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\Bradley_Iso_JDR6_Lidar

Source(s): USFWS NWI, Eden GA; National Hydro. Dataset, Line; 2013 NAIP Aerial

RLC Project No.:	14-225
Figure No.:	7
Sketch Date:	19 March 2015
Prepared By:	RP
Map Scale :	1 inch = 1,000 feet

Bradley Tract - Isolated Wetlands

Bryan County, Georgia

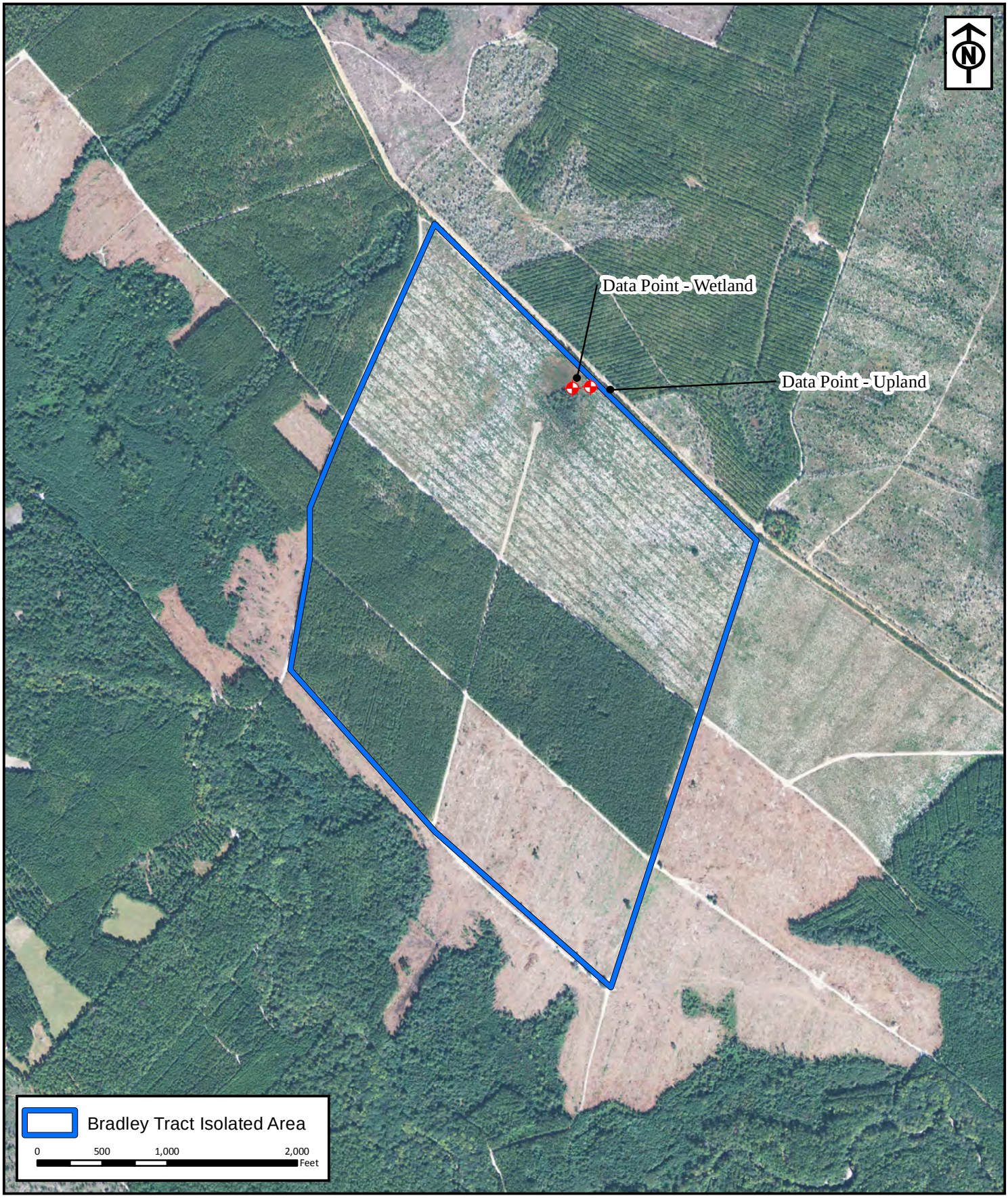
1999 Color-Infrared Imagery

Prepared For: The Bradley Family

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\Bradley_Iso_JDR7_1999_IR

Source(s): 1999 Color-Infrared Imagery of Bryan County GA



RLC Project No.:	14-225
Figure No.:	8
Sketch Date:	19 March 2015
Prepared By:	RP
Map Scale :	1 inch = 1,000 feet

Bradley Tract - Isolated Wetlands

Bryan County, Georgia

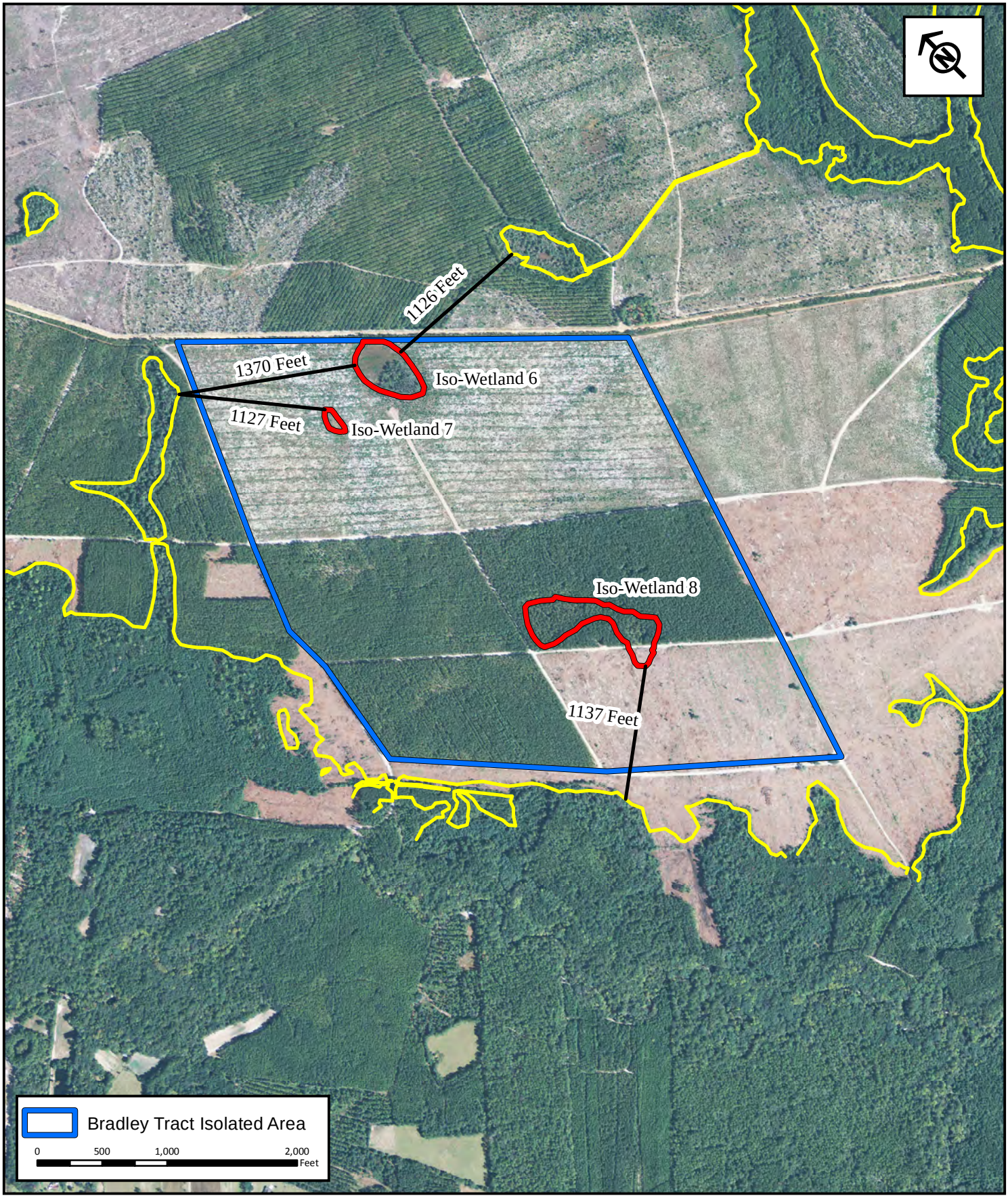
2013 True Color Imagery

Prepared For: The Bradley Family

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\Bradley_Iso_JDR8_2013_TC

Source(s): 2013 NAIP Aerial



RLC Project No.:	14-225
Figure No.:	8
Sketch Date:	19 March 2015
Prepared By:	RP
Map Scale :	1 inch = 1,000 feet

Bradley Tract - Isolated Wetlands

Bryan County, Georgia

Landscape Position Exhibit

Prepared For: The Bradley Family

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\Bradley_Iso_JDR8_2013_TC

Source(s): 2013 NAIP Aerial

Photo 1: Iso-Wetland 8 looking toward Black

Photo 2: Upland adjacent to Iso-Wetland 6

Photo 3: Iso-Wetland 6 wetland area

Photo 4: Iso-Wetland 6 wetland area

RLC Project No.:	14-225
Figure No.:	10
Exhibit Date:	26 March 2015
Prepared By:	RP
Photo Date:	26 March 2015

Bradley Tract - Isolated Wetlands

Bryan County, Georgia

Site Photographs

Prepared For: The Bradley Family

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Bradley Tract Isolated Wetlands City/County: Bryan Sampling Date: 3/9/15

Applicant/Owner: Butler Tract, LLC State: GA Sampling Point: Iso-6 Upland

Investigator(s): RLC (Troy Smith) Section, Township, Range:

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

Subregion (LRR or MLRA): Atlantic Coast Flatwoods (T) Lat: 32.158472 Long: -81.455892 Datum: WGS-84

Soil Map Unit Name: Chipley NWI classification: Upland

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): N/A
Water Table Present?	Yes _____	No ✓	Depth (inches): N/A
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 16

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: Iso-6 Upland

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

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

Sapling Stratum (Plot size: 30 foot radius)			
1. Liquidambar styraciflua (Sweet Gum)	40	Yes	FAC
2. Pinus taeda (Loblolly Pine)	5	No	FAC
3.			
4.			
5.			
6.			
	45 = Total Cover		

50% of total cover: 22.5 20% of total cover: 9

Shrub Stratum (Plot size: 30 foot radius)			
1. Pinus taeda (Loblolly Pine)	5	No	FAC
2. Ilex glabra (Galberry)	30	Yes	FACW
3. Eupatorium capillifolium (Dog-fennel)	15	Yes	FACU
4.			
5.			
6.			
	50 = Total Cover		

50% of total cover: 25 20% of total cover: 10

Herb Stratum (Plot size: 30 foot radius)			
1. Andropogon virginicus (Broomsedge)	30	Yes	FAC
2. Ilex glabra (Galberry)	10	Yes	FACW
3. Rubus argutus (Blackberry)	10	Yes	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	50 = Total Cover		

50% of total cover: 25 20% of total cover: 10

Woody Vine Stratum (Plot size: 30 foot radius)			
1. N/A			
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: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.83 (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: Iso-6 Upland

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	60	10YR6/1 (SG)	40			Loamy Sand	20% uncoated sand grains
8-18+	10YR 4/1	80	10YR6/1 (SG)	20			Loamy Sand	20% uncoated sand grains

[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: Bradley Tract Isolated Wetlands City/County: Bryan Sampling Date: 3/9/15

Applicant/Owner: Butler Tract, LLC State: GA Sampling Point: Iso-6 Wetland

Investigator(s): RLC (Troy Smith) Section, Township, Range:

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): 0-1

Subregion (LRR or MLRA): Atlantic Coast Flatwoods (T) Lat: 32.158452 Long: -81.456344 Datum: WGS-84

Soil Map Unit Name: Ellabelle NWI classification: PEM1B

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): +8	
Water Table Present?	Yes ✓	No _____	Depth (inches): +8	
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): +8	**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: Iso-6 Wetland

Tree Stratum (Plot size: 30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus taeda (Loblolly Pine)	5	No	FAC
2. Liquidambar styraciflua (Sweet Gum)	20	Yes	FAC
3. Nyssa biflora (Black Gum)	20	Yes	FAC
4.			
5.			
6.			
	45	= Total Cover	

50% of total cover: 22.5 20% of total cover: 9

Sapling Stratum (Plot size: 30 foot radius)			
1. Liquidambar styraciflua (Sweet Gum)	5	Yes	FAC
2. Pinus taeda (Loblolly Pine)	5	Yes	FAC
3. Nyssa biflora (Black Gum)	15	Yes	FAC
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. Magnolia virginiana (Sweet Bay)	5	Yes	FACW
2. Ilex glabra (Galberry)	10	Yes	FACW
3.			
4.			
5.			
6.			
	15	= Total Cover	

50% of total cover: 7.5 20% of total cover: 3

Herb Stratum (Plot size: 30 foot radius)			
1. Eupatorium capillifolium (Dog-fennel)	40	Yes	FACU
2. Ilex opaca (American Holly)	5	No	FACW
3. Alternanthera philoxeroides (Alligator Weed)	5	No	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	50	= Total Cover	

50% of total cover: 25 20% of total cover: 10

Woody Vine Stratum (Plot size: 30 foot radius)			
1. Lonicera (Honeysuckle)	5	Yes	FACU
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: 7 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.78 (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: Iso-6 Wetland

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
0-12	10YR 3/2	100					Loamy Sand	>70% Coated Sand Grains
12-18+	10YR 4/2	90	10YR 5/6	10	C	M	Loamy Sand	

[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.

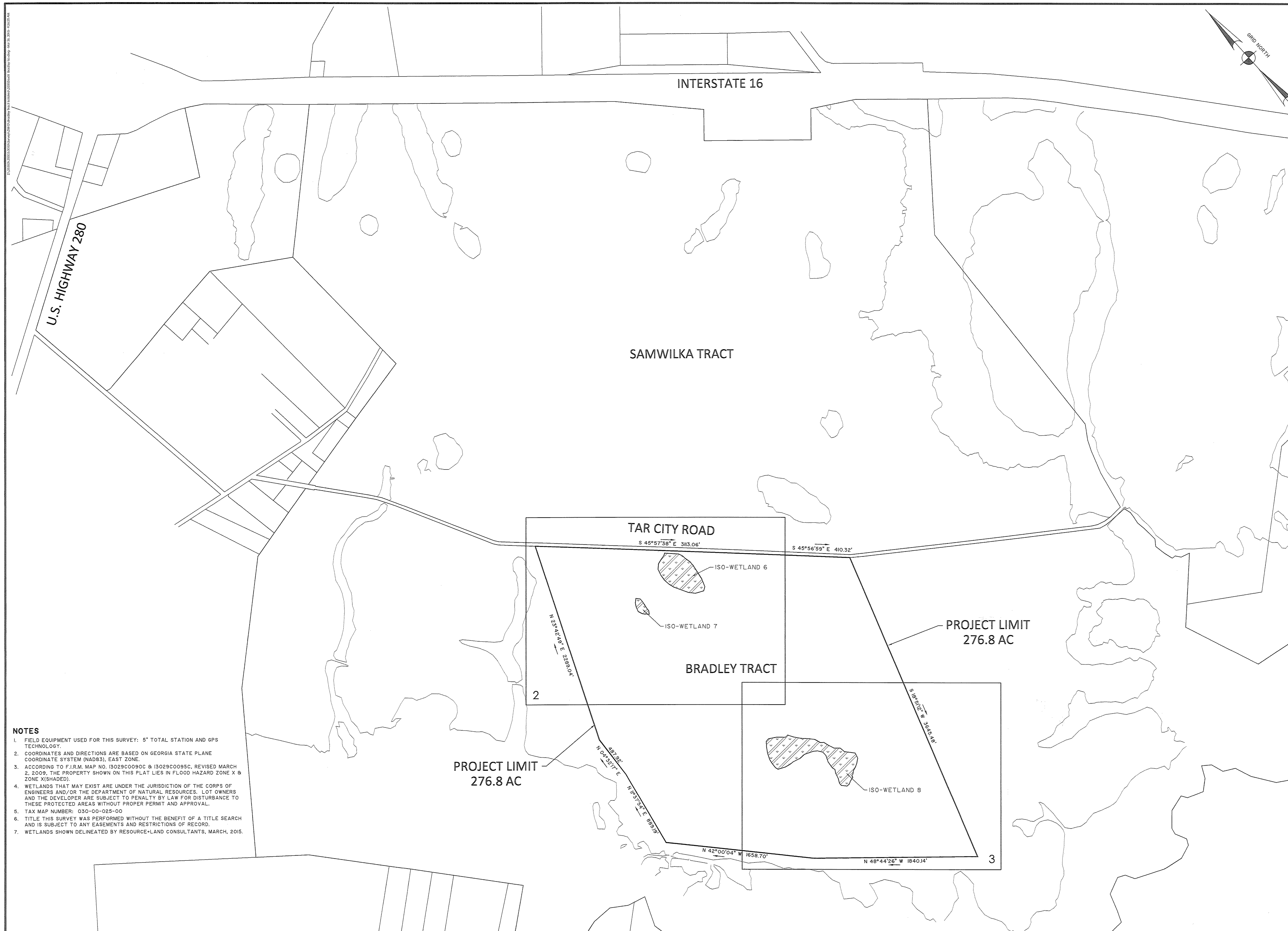
Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

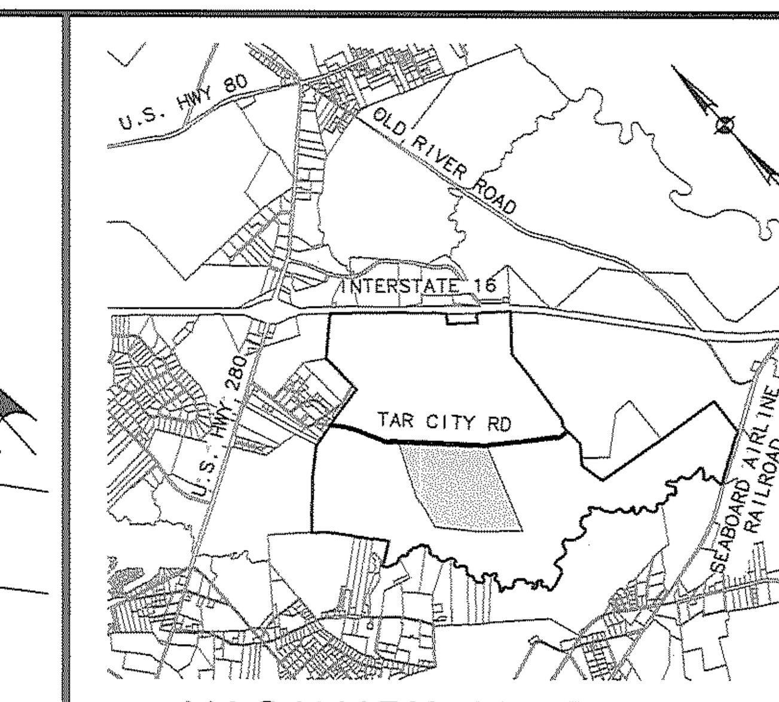
Hydric Soil Present? **Yes** ☑ **No** ☐

Remarks:



NOTES

1. FIELD EQUIPMENT USED FOR THIS SURVEY: 5" TOTAL STATION AND GPS TECHNOLOGY.
2. COORDINATES AND DIRECTIONS ARE BASED ON GEORGIA STATE PLANE COORDINATE SYSTEM (NAD83), EAST ZONE.
3. ACCORDING TO F.I.R.M. MAP NO. 13029C0090C & 13029C0095C, REVISED MARCH 2, 2009, THE PROPERTY SHOWN ON THIS PLAT LIES IN FLOOD HAZARD ZONE X & ZONE X(SHADED).
4. WETLANDS THAT MAY EXIST ARE UNDER THE JURISDICTION OF THE CORPS OF ENGINEERS AND/OR THE DEPARTMENT OF NATURAL RESOURCES. LOT OWNERS AND THE DEVELOPER ARE SUBJECT TO PENALTY BY LAW FOR DISTURBANCE TO THESE PROTECTED AREAS WITHOUT PROPER PERMIT AND APPROVAL.
5. TAX MAP NUMBER: 030-00-025-00
6. TITLE THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE SEARCH AND IS SUBJECT TO ANY EASEMENTS AND RESTRICTIONS OF RECORD.
7. WETLANDS SHOWN DELINEATED BY RESOURCE+LAND CONSULTANTS, MARCH, 2015.



VICINITY MAP not to scale

ACREAGE SCHEDULE

ISOLATED WETLAND 6	3.54 AC.
ISOLATED WETLAND 7	0.38 AC.
ISOLATED WETLAND 8	5.79 AC.
TOTAL WETLANDS	9.71 AC.

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN, III

THIS SURVEY WAS PREPARED IN CONFORMITY WITH THE TECHNICAL STANDARDS FOR PROPERTY SURVEYS IN GEORGIA AS SET FORTH IN CHAPTER 180-7 OF THE RULES OF THE GEORGIA BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS AND AS SET FORTH IN THE GEORGIA PLAT ACT (O.C.G.A. 15-6-67).

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

A PORTION OF BRADLEY TRACT ISOLATED WETLANDS

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for

SAVANNAH HARBOR-INTERSTATE 16
CORRIDOR JOINT
DEVELOPMENT AUTHORITY

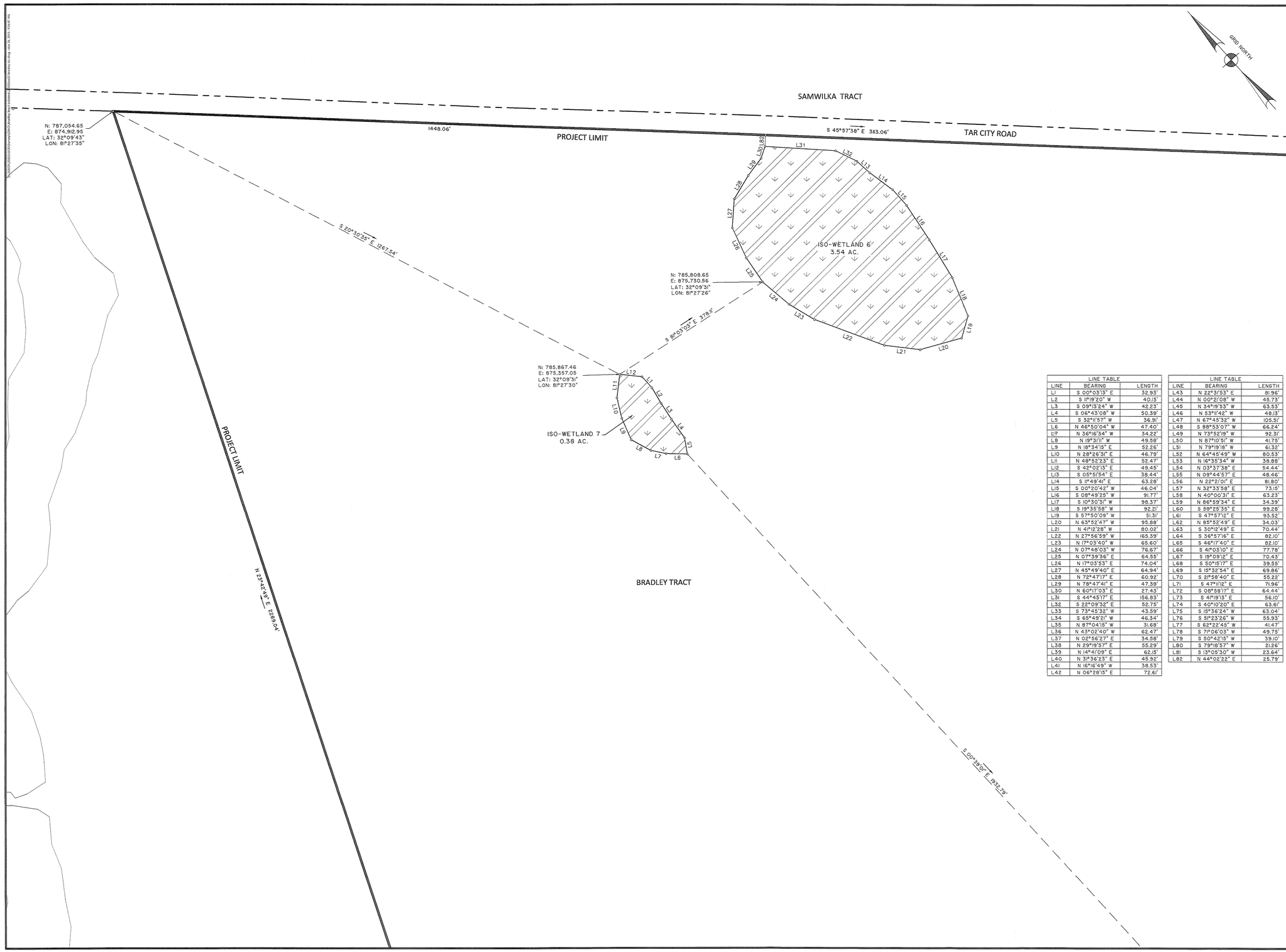
No.	Revision	By	Date

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

500 0 500 1000
1 INCH = 500 FEET

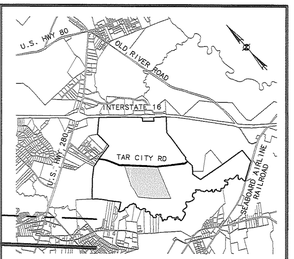
plat	drawn	reviewed	field	crew
03-26-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000



LINE TABLE		
LINE	BEARING	LENGTH
L1	S 00°03'13" E	32.93'
L2	S 11°19'20" W	40.13'
L3	S 09°13'24" W	42.23'
L4	S 06°43'08" W	50.39'
L5	S 32°17'57" W	36.91'
L6	N 46°50'04" W	47.40'
L7	N 36°16'34" W	34.22'
L8	N 19°31'11" W	49.58'
L9	N 18°34'15" E	52.26'
L10	N 28°26'31" E	46.79'
L11	N 48°52'23" E	52.47'
L12	S 42°02'13" E	49.45'
L13	S 05°51'54" E	38.44'
L14	S 11°49'41" E	63.28'
L15	S 00°20'42" W	46.04'
L16	S 08°49'25" W	91.77'
L17	S 10°30'31" W	98.37'
L18	S 19°35'58" W	92.21'
L19	S 57°50'09" W	51.31'
L20	N 63°52'47" W	95.88'
L21	N 41°12'28" W	80.02'
L22	N 27°56'59" W	165.39'
L23	N 17°03'40" W	65.60'
L24	N 07°48'03" W	76.67'
L25	N 07°39'36" E	64.55'
L26	N 17°03'53" E	74.04'
L27	N 45°49'40" E	64.94'
L28	N 72°47'17" E	60.92'
L29	N 78°47'41" E	47.39'
L30	N 60°17'03" E	27.43'
L31	S 44°45'17" E	156.83'
L32	S 22°09'32" E	52.75'
L33	S 73°45'32" W	43.59'
L34	S 65°49'21" W	46.34'
L35	N 87°04'15" W	31.68'
L36	N 43°02'40" W	62.47'
L37	N 02°56'27" E	34.58'
L38	N 29°19'57" E	55.29'
L39	N 14°41'09" E	62.15'
L40	N 31°36'23" E	45.92'
L41	N 16°16'49" W	38.53'
L42	N 06°28'15" E	72.61'

LINE TABLE		
LINE	BEARING	LENGTH
L43	N 22°31'53" E	81.96'
L44	N 00°21'08" W	45.73'
L45	N 34°19'53" W	63.53'
L46	N 53°11'42" W	48.13'
L47	N 67°45'32" W	105.51'
L48	S 88°53'07" W	66.24'
L49	N 73°52'19" W	92.31'
L50	N 87°10'51" W	41.75'
L51	N 79°19'18" W	61.32'
L52	N 64°45'49" W	80.53'
L53	N 16°35'34" W	38.88'
L54	N 03°37'38" E	54.44'
L55	N 09°44'57" E	48.46'
L56	N 22°21'01" E	81.80'
L57	N 32°33'58" E	73.15'
L58	N 40°00'31" E	63.23'
L59	N 86°59'34" E	34.39'
L60	S 59°25'35" E	99.28'
L61	S 47°57'12" E	93.52'
L62	N 85°52'49" E	34.03'
L63	S 30°12'49" E	70.44'
L64	S 36°57'16" E	82.10'
L65	S 46°17'40" E	82.10'
L66	S 41°03'10" E	77.78'
L67	S 19°09'12" E	70.43'
L68	S 50°15'17" E	39.55'
L69	S 15°32'54" E	69.86'
L70	S 21°58'40" E	55.22'
L71	S 47°11'12" E	71.96'
L72	S 08°58'17" E	64.44'
L73	S 41°18'13" E	56.10'
L74	S 40°10'20" E	63.61'
L75	S 15°36'24" W	63.04'
L76	S 51°23'26" W	55.93'
L77	S 62°22'45" W	41.47'
L78	S 71°06'03" W	49.75'
L79	S 50°42'15" W	39.10'
L80	S 79°18'57" W	21.26'
L81	S 13°05'30" W	23.64'
L82	N 44°02'22" E	25.79'



VICINITY MAP not to scale

GEORGIA REGISTERED No. 3087 LAND SURVEYOR ROBERT K. MORGAN, III

THIS SURVEY WAS PREPARED IN CONFORMITY WITH THE TECHNICAL STANDARDS FOR PROPERTY SURVEYS IN GEORGIA AS SET FORTH IN CHAPTER 180-7 OF THE RULES OF THE GEORGIA BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS AND AS SET FORTH IN THE GEORGIA PLAT ACT (O.C.G.A. 15-6-67).

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

A PORTION OF BRADLEY TRACT ISOLATED WETLANDS

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

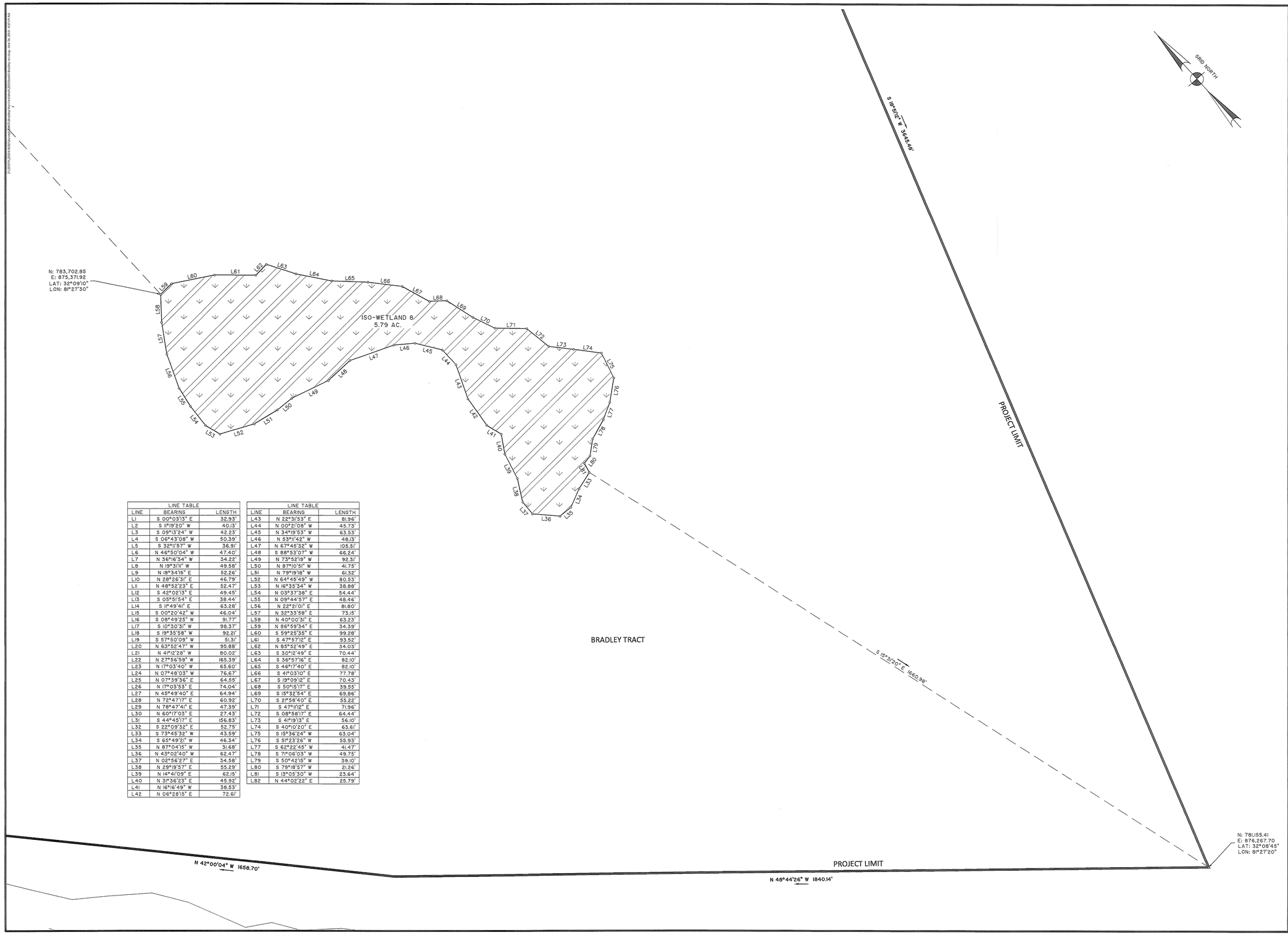
No.	Revision	By	Date

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950
www.thomasandhutton.com

100 0 100 200
1 INCH = 100 FEET

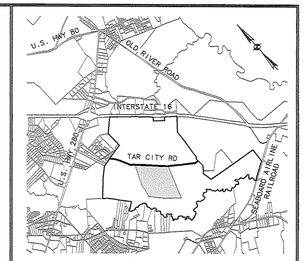
plat	drawn	reviewed	field	crew
03-26-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000



LINE TABLE		
LINE	BEARING	LENGTH
L1	S 00°03'13" E	32.93'
L2	S 11°19'20" W	40.13'
L3	S 09°13'24" W	42.23'
L4	S 06°43'08" W	50.39'
L5	S 32°11'57" W	36.91'
L6	N 46°50'04" W	47.40'
L7	N 36°16'34" W	34.22'
L8	N 19°31'11" W	49.58'
L9	N 18°34'15" E	52.26'
L10	N 28°26'31" E	46.79'
L11	N 46°52'23" E	52.47'
L12	S 42°02'13" E	49.45'
L13	S 05°51'54" E	38.44'
L14	S 11°49'41" E	63.28'
L15	S 00°20'42" W	46.04'
L16	S 08°49'25" W	91.77'
L17	S 10°30'31" W	98.37'
L18	S 19°35'58" W	92.21'
L19	S 57°50'09" W	51.31'
L20	N 63°52'47" W	95.88'
L21	N 41°12'28" W	80.02'
L22	N 27°56'59" W	165.39'
L23	N 17°03'40" W	65.60'
L24	N 07°48'03" W	76.67'
L25	N 07°33'36" E	64.55'
L26	N 17°03'53" E	74.04'
L27	N 45°49'40" E	64.94'
L28	N 72°47'17" E	60.92'
L29	N 76°47'41" E	47.39'
L30	N 60°17'03" E	27.43'
L31	S 44°45'17" E	156.83'
L32	S 22°09'32" E	52.75'
L33	S 73°45'32" W	43.59'
L34	S 65°49'21" W	46.34'
L35	N 87°04'15" W	31.68'
L36	N 43°02'40" W	62.47'
L37	N 02°56'27" E	34.58'
L38	N 29°19'57" E	55.29'
L39	N 14°41'09" E	62.15'
L40	N 31°36'23" E	45.92'
L41	N 16°16'49" W	38.53'
L42	N 06°28'15" E	72.61'

LINE TABLE		
LINE	BEARING	LENGTH
L43	N 22°31'53" E	81.96'
L44	N 00°21'08" W	45.73'
L45	N 34°19'53" W	63.53'
L46	N 53°11'42" W	48.13'
L47	N 67°45'32" W	105.51'
L48	S 88°53'07" W	66.24'
L49	N 73°52'18" W	92.31'
L50	N 87°10'51" W	41.75'
L51	N 79°19'18" W	61.32'
L52	N 64°45'49" W	80.53'
L53	N 16°35'34" W	38.88'
L54	N 03°37'38" E	54.44'
L55	N 09°44'57" E	48.46'
L56	N 22°21'01" E	81.80'
L57	N 32°33'58" E	73.15'
L58	N 40°00'31" E	63.23'
L59	N 86°59'34" E	34.39'
L60	S 59°25'35" E	99.28'
L61	S 47°57'12" E	93.52'
L62	N 85°52'49" E	34.03'
L63	S 30°12'49" E	70.44'
L64	S 36°57'16" E	82.10'
L65	S 46°17'40" E	82.10'
L66	S 41°03'10" E	77.78'
L67	S 19°09'12" E	70.43'
L68	S 50°15'17" E	39.55'
L69	S 15°32'54" E	69.86'
L70	S 21°58'40" E	55.22'
L71	S 47°41'12" E	71.96'
L72	S 08°58'17" E	64.44'
L73	S 41°19'13" E	56.10'
L74	S 40°10'20" E	63.61'
L75	S 15°36'24" W	63.04'
L76	S 51°23'26" W	55.93'
L77	S 62°22'45" W	41.47'
L78	S 71°06'03" W	49.75'
L79	S 50°42'15" W	39.10'
L80	S 79°18'57" W	21.26'
L81	S 13°05'30" W	23.64'
L82	N 44°02'22" E	25.79'



VICINITY MAP not to scale

GEORGIA REGISTERED LAND SURVEYOR ROBERT K. MORGAN, III No. 3087

THIS SURVEY WAS PREPARED IN CONFORMITY WITH THE TECHNICAL STANDARDS FOR PROPERTY SURVEYS IN GEORGIA AS SET FORTH IN CHAPTER 180-7 OF THE RULES OF THE GEORGIA BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS AND AS SET FORTH IN THE GEORGIA PLAT ACT (O.C.G.A. 15-6-67).

ROBERT K. MORGAN, III
GEORGIA REGISTERED LAND SURVEYOR
RLS #3087 / LSF #145

WETLAND SURVEY

A PORTION OF BRADLEY TRACT ISOLATED WETLANDS

1380TH G.M.D.
BRYAN COUNTY, GEORGIA

prepared for

SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

No.	Revision	By	Date

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting

50 Park of Commerce Way
PO Box 2727
Savannah, GA 31402-2727
p 912.234.5300 f 912.234.2950

www.thomasandhutton.com

100 0 100 200

1 INCH = 100 FEET

plat	drawn	reviewed	field	crew
03-26-15	LPO	RKM	MARCH, 2015	T&H

job 25503.0000

APPENDIX C:

Site Photographs

Photo 1: Mature pine upland facing north.

Photo 2: Managed pine plantation (0-3 years) facing northeast.

Photo 3: Forested wetland facing northeast.

Photo 4: Managed pine plantation facing northeast.

RLC Project No.:	14-225
Figure No.:	N/A
Exhibit Date:	27 March 2015
Prepared By:	RP
Photo Date:	24 March 2015

Bryan County Mega-Site

Bryan County, Georgia

Site Photographs

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Source(s): RLC Site Photographs

Photo 5: Managed pine plantation facing northeast.

Photo 6: Managed pine plantation (0-3 years) facing northeast.

Photo 7: Scrub shrub isolated wetland facing south.

Photo 8: Intermittent stream within the forested wetland facing south.

RLC Project No.:	14-225
Figure No.:	N/A
Exhibit Date:	27 March 2015
Prepared By:	RP
Photo Date:	24 March 2015

Bryan County Mega-Site

Bryan County, Georgia

Site Photographs

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\IP_Page2_Site Photographs

Source(s): RLC Site Photographs

Photo 9: Managed pine plantation (Longleaf 3-5 years)

Photo 10: Managed pine plantation (0-3 years) facing south.

Photo 11: Isolated scrub shrub wetland facing north northeast.

Photo 12: Isolated forested wetland facing east.

RLC Project No.:	14-225
Figure No.:	N/A
Exhibit Date:	27 March 2015
Prepared By:	RP
Photo Date:	24 March 2015

Bryan County Mega-Site

Bryan County, Georgia

Site Photographs

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Source(s): RLC Site Photographs

APPENDIX D:

Permit Drawings (Applicant's Preferred Alternative)


EXIT 143
HWY 280
INTERSTATE 16
WEIGH STATION
TAR CITY RD.
EXISTING RAILROAD
JURISDICTIONAL SITE IMPACT "A" - 11.07 ACRES
JURISDICTIONAL SITE IMPACT "B" - 1.65 ACRES
JURISDICTIONAL SITE IMPACT "C" - 7.90 ACRES
JURISDICTIONAL SITE IMPACT "D" - 0.82 ACRES
JURISDICTIONAL SITE IMPACT "E" - 7.73 ACRES
JURISDICTIONAL SITE IMPACT "F" - 1.07 ACRES
JURISDICTIONAL SITE IMPACT "G" - 1.72 ACRES
JURISDICTIONAL SITE IMPACT "H" - 19.34 ACRES
JURISDICTIONAL SITE IMPACT "I" - 5.91 ACRES
JURISDICTIONAL SITE IMPACT "J" - 2.09 ACRES
JURISDICTIONAL SITE IMPACT "K" - 0.32 ACRES
JURISDICTIONAL SITE IMPACT "L" - 0.83 ACRES
JURISDICTIONAL SITE IMPACT "M" - 4.26 ACRES
JURISDICTIONAL SITE IMPACT "N" - 19.32 ACRES
JURISDICTIONAL SITE IMPACT "O" - 6.40 ACRES
NON-JURISDICTIONAL SITE IMPACT "1" - 1.18 ACRES
NON-JURISDICTIONAL SITE IMPACT "2" - 2.73 ACRES
NON-JURISDICTIONAL SITE IMPACT "3" - 0.66 ACRES
NON-JURISDICTIONAL SITE IMPACT "4" - 2.14 ACRES
NON-JURISDICTIONAL SITE IMPACT "5" - 1.14 ACRES
NON-JURISDICTIONAL SITE IMPACT "6" - 3.54 ACRES
NON-JURISDICTIONAL SITE IMPACT "7" - 0.38 ACRES
NON-JURISDICTIONAL SITE IMPACT "8" - 5.79 ACRES
DUG CONVEYANCE IMPACT "1" - 0.08 ACRES
DUG CONVEYANCE IMPACT "2" - 0.10 ACRES
DUG CONVEYANCE IMPACT "3" - 0.44 ACRES
STREAM IMPACT #1 833 LF
STREAM IMPACT #2 1035 LF
STREAM IMPACT #3 763 LF
JURISDICTIONAL RAIL IMPACT "H" - 6.54 ACRES
JURISDICTIONAL RAIL IMPACT "H" - 0.12 ACRES
JURISDICTIONAL RAIL IMPACT "H" - 0.14 ACRES
JURISDICTIONAL RAIL IMPACT "T" - 8.45 ACRES
JURISDICTIONAL RAIL IMPACT "U" - 11.61 ACRES
JURISDICTIONAL RAIL IMPACT "V" - 0.29 ACRES
JURISDICTIONAL RAIL IMPACT "V" - 0.52 ACRES
JURISDICTIONAL RAIL IMPACT "V" - 5.31 ACRES
JURISDICTIONAL RAIL IMPACT "V" - 0.22 ACRES
JURISDICTIONAL RAIL IMPACT "X" - 0.69 ACRES
JURISDICTIONAL RAIL IMPACT "X" - 0.19 ACRES
N
E
S
W
0
300'
600'
1200'
1" = 600'

LEGEND

ACREAGE SUMMARY TABLE

TOTAL PROJECT ACREAGE	1,904.45 AC
TOTAL JURISDICTIONAL WETLAND AREA	308.67 AC.
TOTAL NON-JURISDICTIONAL WETLAND AREA	17.56 AC.
TOTAL UPLAND AREA	1,578.22 AC.

WETLAND IMPACTS

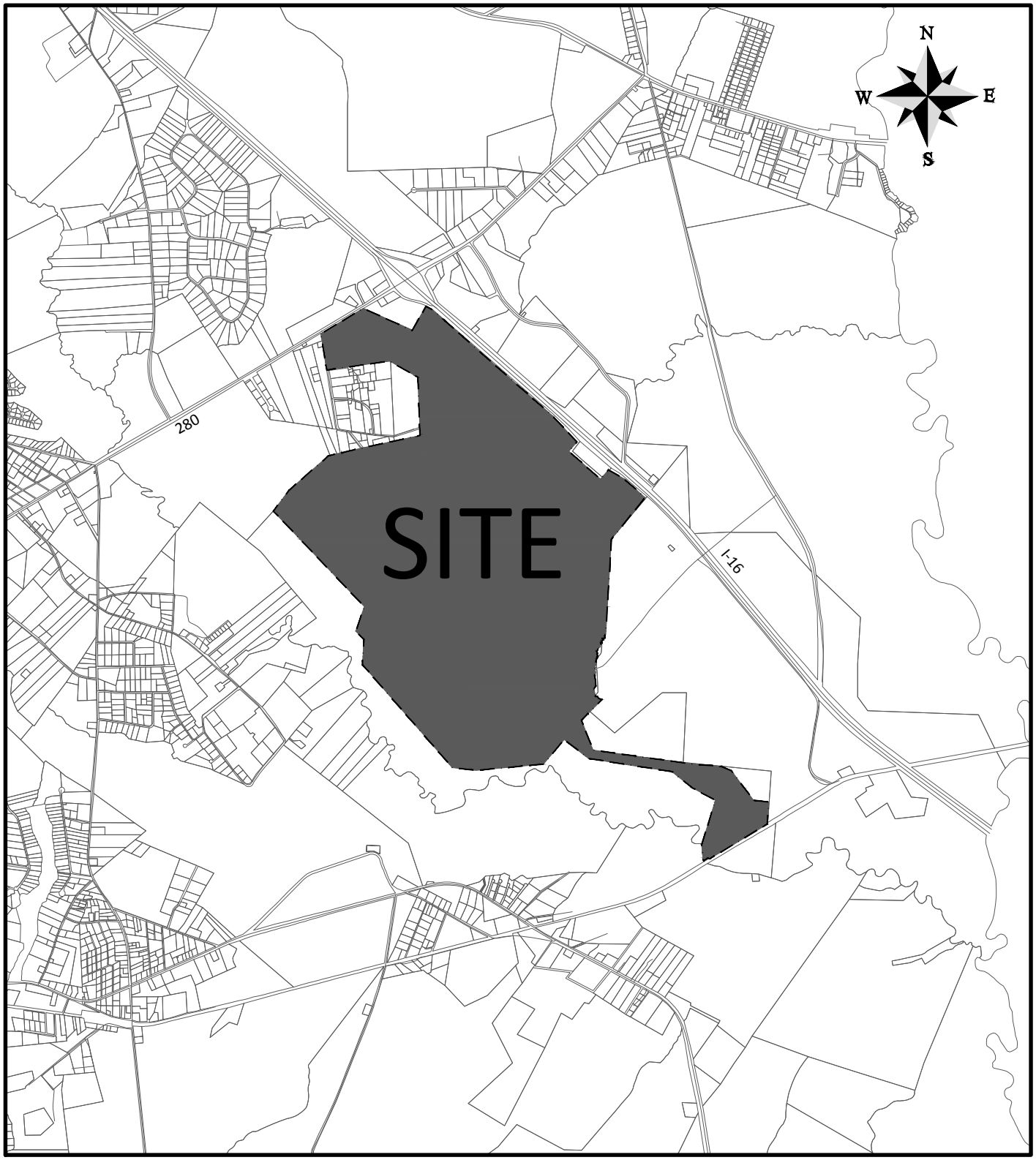
JURISDICTIONAL WETLANDS IMPACTS	
RAILROAD IMPACT	34.08 AC.
SITE IMPACT	90.43 AC.
DUG CONVEYANCE IMPACT	0.62 AC.
TOTAL JURISDICTIONAL WETLAND IMPACTS	125.13 AC.
STREAM IMPACT	2,631 LF.
NON-JURISDICTIONAL WETLANDS IMPACTS	
SITE IMPACT	17.56 AC.
TOTAL NON-JURISDICTIONAL WETLAND IMPACTS	17.56 AC.

THOMAS & HUTTON
50 PARK OF COMMERCE WAY • PO BOX 2727
SAVANNAH, GA 31402-2727 • 912.234.5300
www.thomasandhutton.com
Brunswick, GA | Charleston, SC | Myrtle Beach, SC | Wilmington, NC

APPLICANTS PREFERRED SITE / ON-SITE CONFIGURATION #1
BRYAN COUNTY, GEORGIA

MARCH 31, 2015

Savannah Harbor-Interstate 16 Corridor Joint Development Authority
BRYAN • BULLOCH • CHATHAM • EFFINGHAM



BRYAN COUNTY MEGA SITE

PROPOSED ACTIVITY:

LOCATION MAP

CLIENT:

SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

LOCATION: BRYAN COUNTY, GEORGIA

DATE: MARCH 31, 2015

JOB NUMBER: J - 25503

SHEET: 1 OF 14

SCALE: 1" = 4000'

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting

50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300

www.thomasandhutton.com

LEGEND

ACREAGE SUMMARY TABLE

TOTAL PROJECT ACREAGE		1,904.45 AC
	TOTAL JURISDICTIONAL WETLAND AREA	308.67 AC.
	TOTAL NON-JURISDICTIONAL WETLAND AREA	17.56 AC.
	TOTAL UPLAND AREA	1,578.22 AC.

WETLAND IMPACTS

JURISDICTIONAL WETLANDS IMPACTS

	RAIL ROAD IMPACT	34.08 AC.
	SITE IMPACT	90.43 AC.
	DUG CONVEYANCE IMPACT	0.62 AC.
	TOTAL JURISDICTIONAL WETLAND IMPACTS	125.13 AC.
	STREAM IMPACT	2,631 LF

NON-JURISDICTIONAL WETLANDS IMPACTS

	SITE IMPACT	17.56 AC.
	TOTAL NON-JURISDICTIONAL WETLAND IMPACTS	17.56 AC.

BRYAN COUNTY MEGA SITE

PROPOSED ACTIVITY:
LEGEND

CLIENT:
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

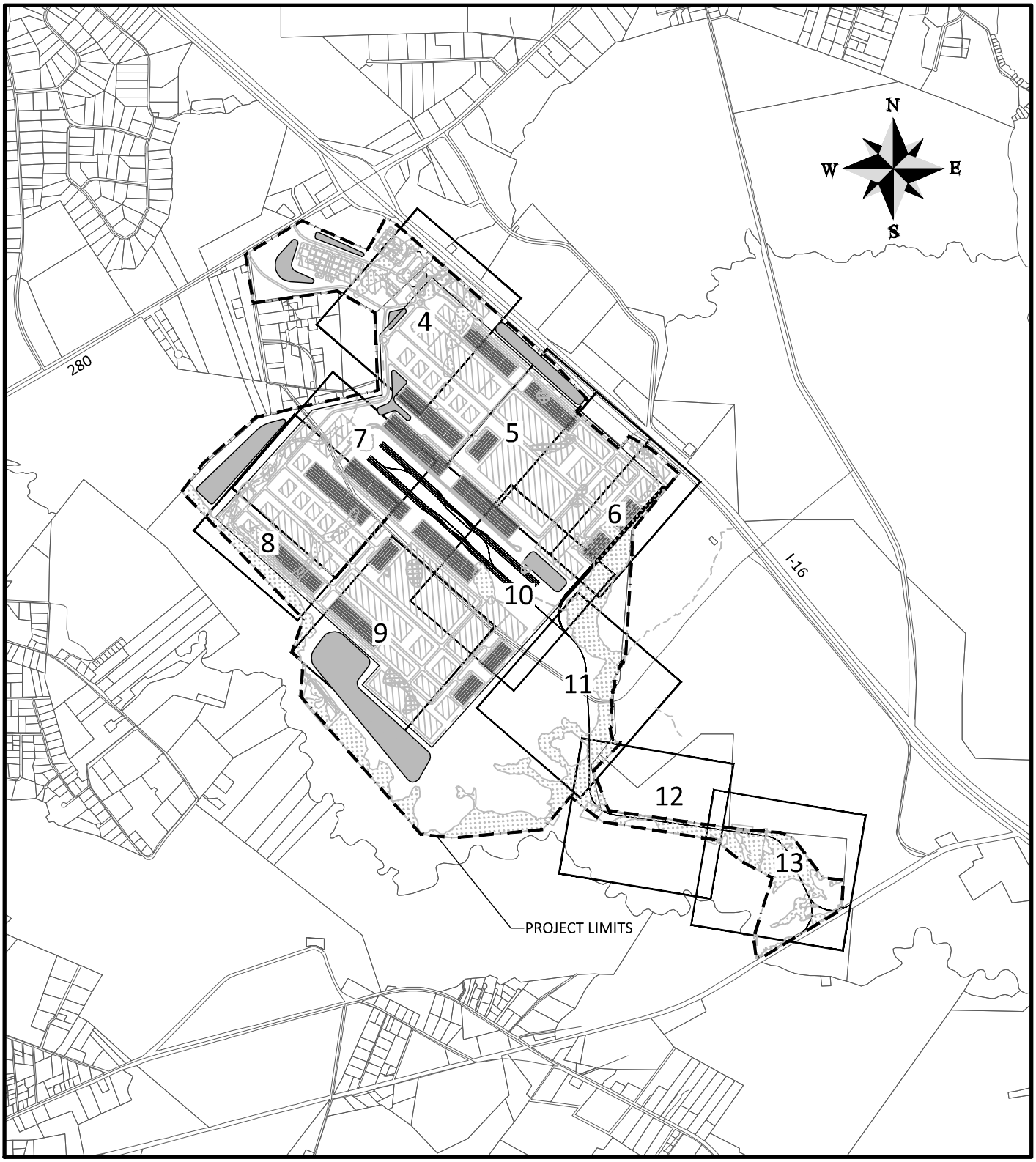
LOCATION: BRYAN COUNTY, GEORGIA
DATE: MARCH 31, 2015
JOB NUMBER: J - 25503
SHEET: 2 OF 14
SCALE: N.T.S.

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting

50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300

www.thomasandhutton.com

Z:\25503\25503.0000\Engineering\Drawings\Wetland Permit\Weland Permit Drawings\25503 - Wetland Impacts Cover and Map.dwg - Mar 31, 2015 - 12:33:15 PM



BRYAN COUNTY MEGA SITE

PROPOSED ACTIVITY:
SHEET INDEX

CLIENT:
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

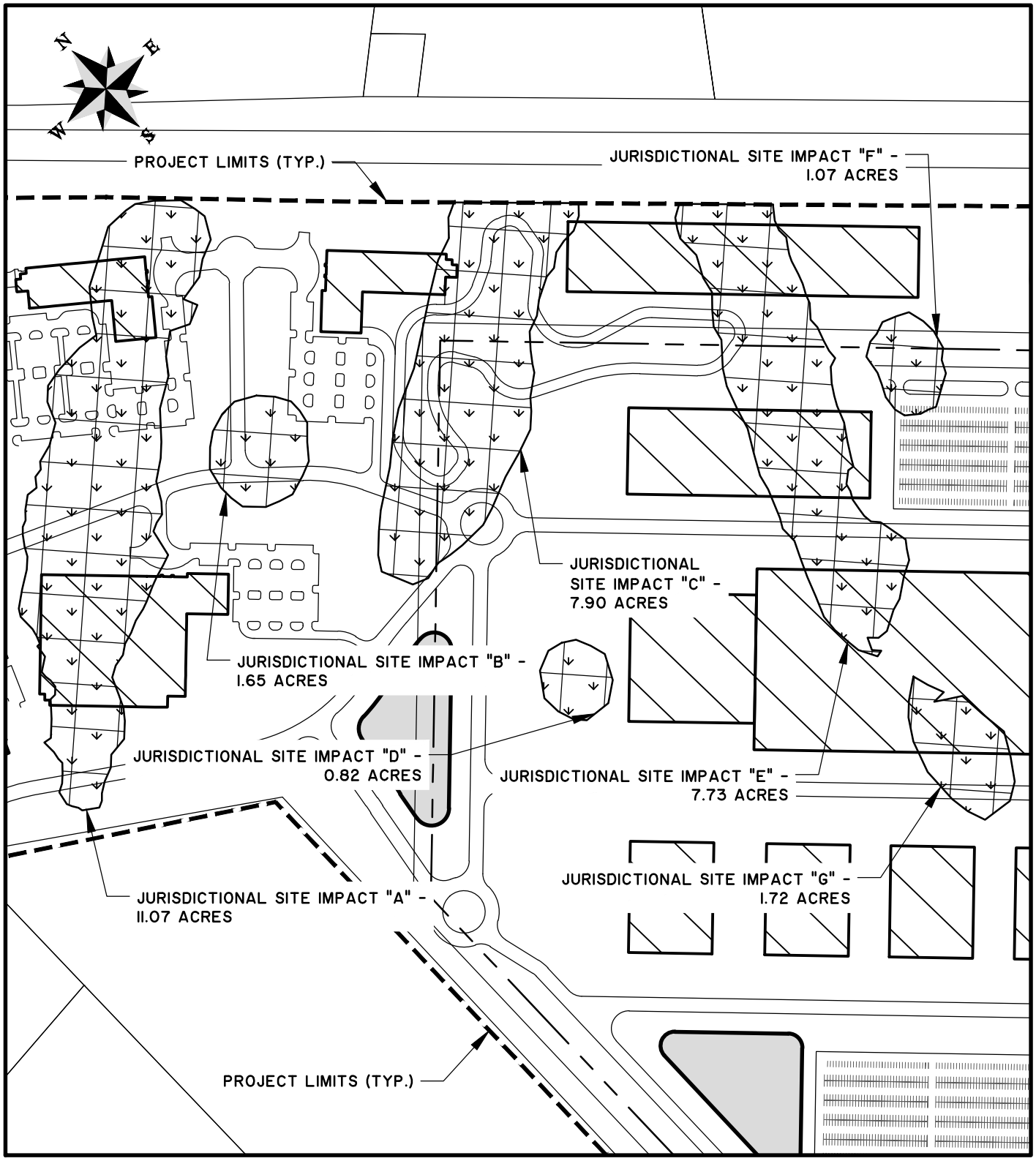
LOCATION: BRYAN COUNTY, GEORGIA
DATE: MARCH 31, 2015
JOB NUMBER: J - 25503

SHEET: 3 OF 14
SCALE: 1" = 3000'

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting

50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300

www.thomasandhutton.com



BRYAN COUNTY MEGA SITE

PROPOSED ACTIVITY:
WETLAND PERMIT

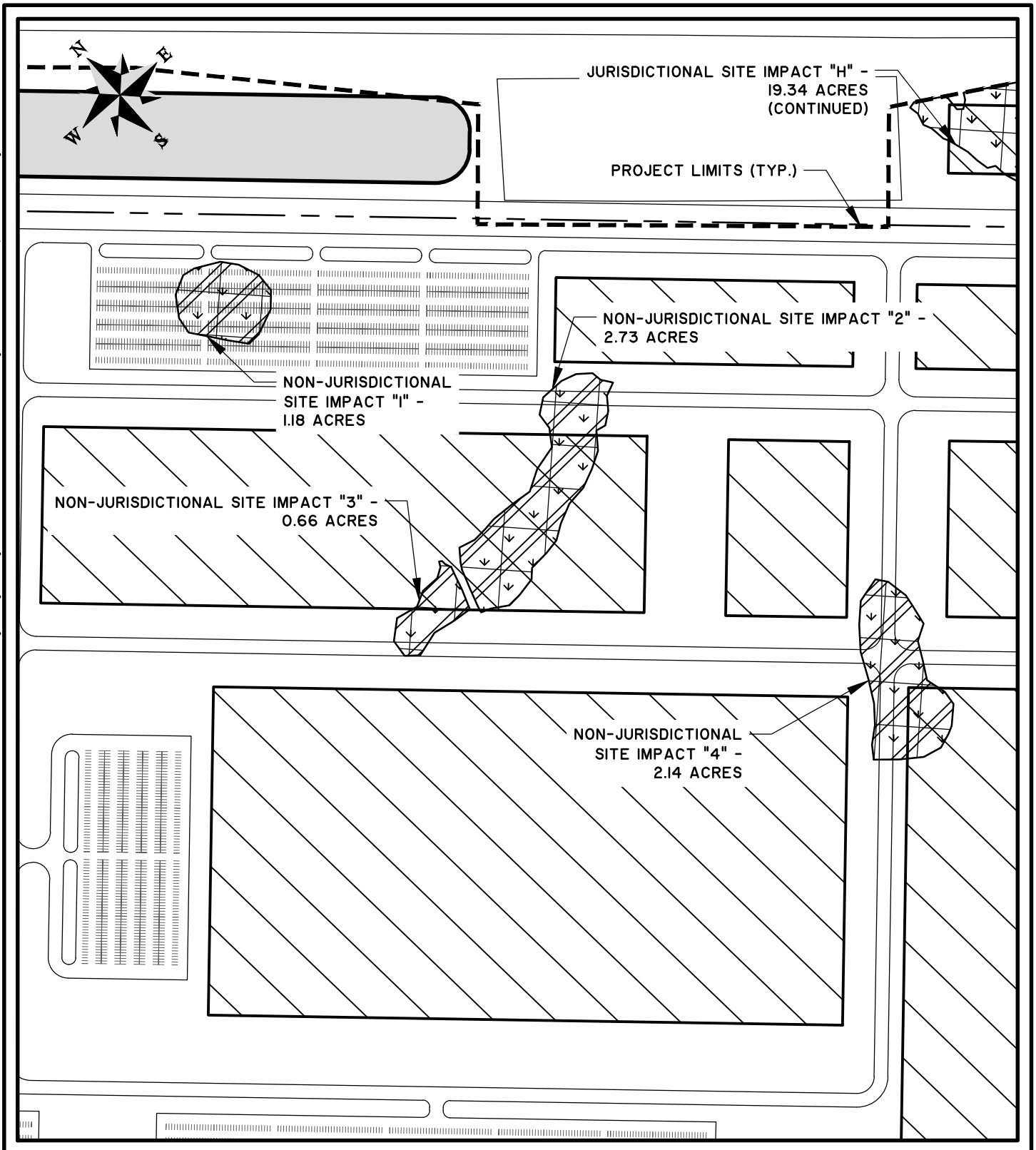
CLIENT:
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

LOCATION: BRYAN COUNTY, GEORGIA
DATE: MARCH 31, 2015
JOB NUMBER: J - 25503
SHEET: 4 OF 14
SCALE: 1" = 400'

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting

50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300

www.thomasandhutton.com



BRYAN COUNTY MEGA SITE

PROPOSED ACTIVITY:
WETLAND PERMIT

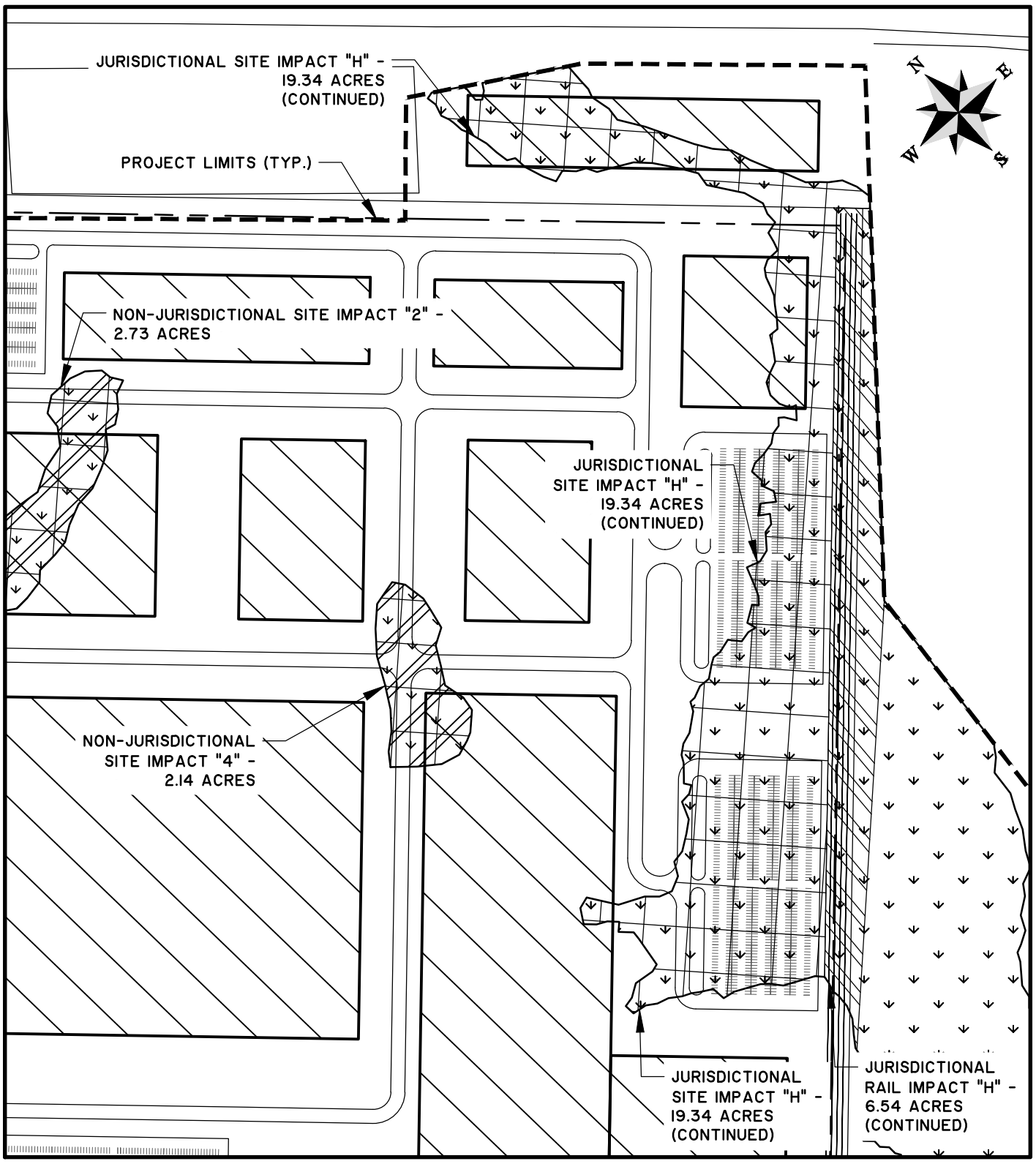
CLIENT:
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

LOCATION: BRYAN COUNTY, GEORGIA
DATE: MARCH 31, 2015
JOB NUMBER: J - 25503
SHEET: 5 OF 14
SCALE: 1" = 400'

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting

50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300

www.thomasandhutton.com



BRYAN COUNTY MEGA SITE

PROPOSED ACTIVITY:
WETLAND PERMIT

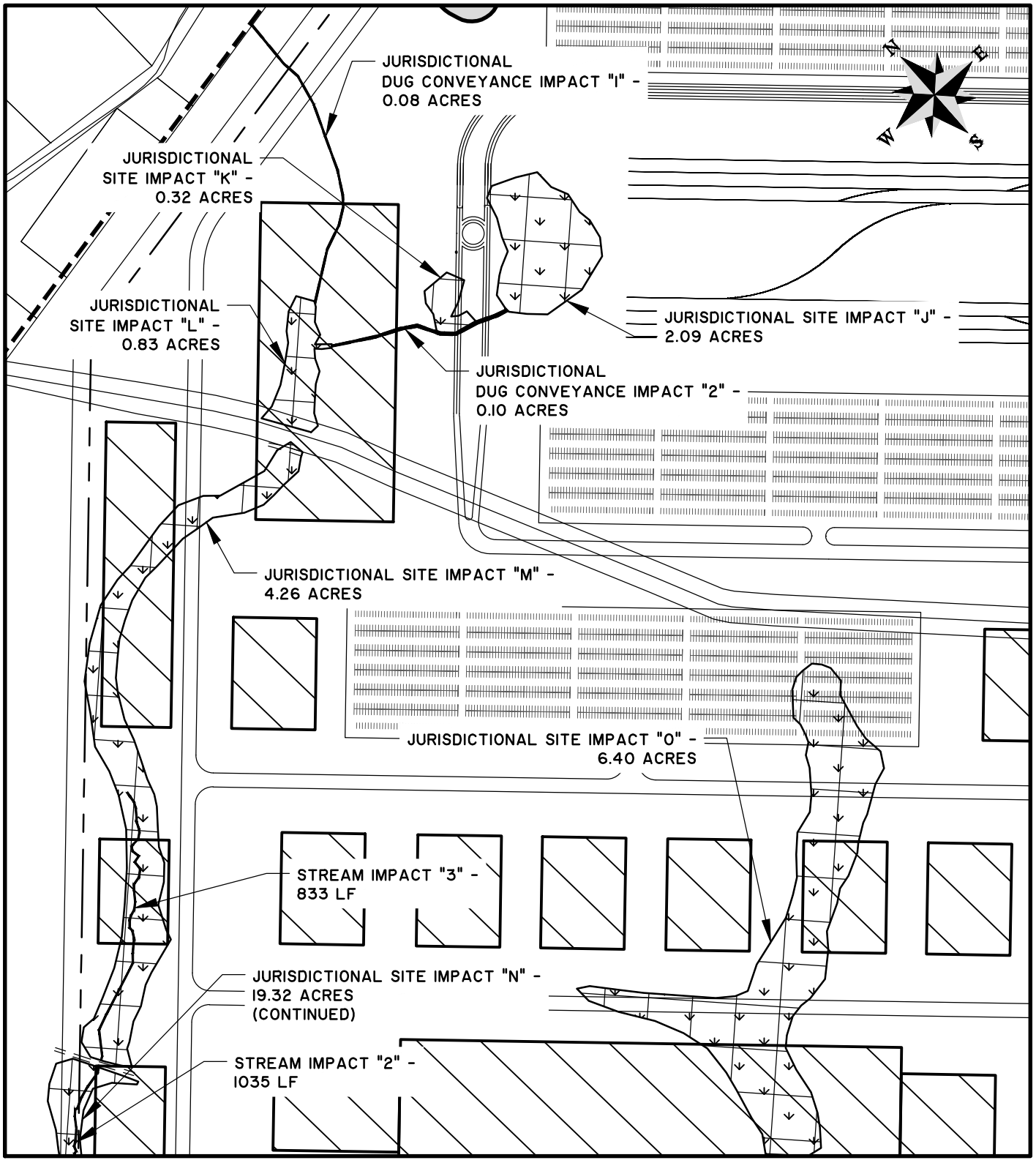
CLIENT:
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

LOCATION: BRYAN COUNTY, GEORGIA
DATE: MARCH 31, 2015
JOB NUMBER: J - 25503
SHEET: 6 OF 14
SCALE: 1" = 400'

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting

50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300

www.thomasandhutton.com



BRYAN COUNTY MEGA SITE

PROPOSED ACTIVITY:
WETLAND PERMIT

CLIENT:
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

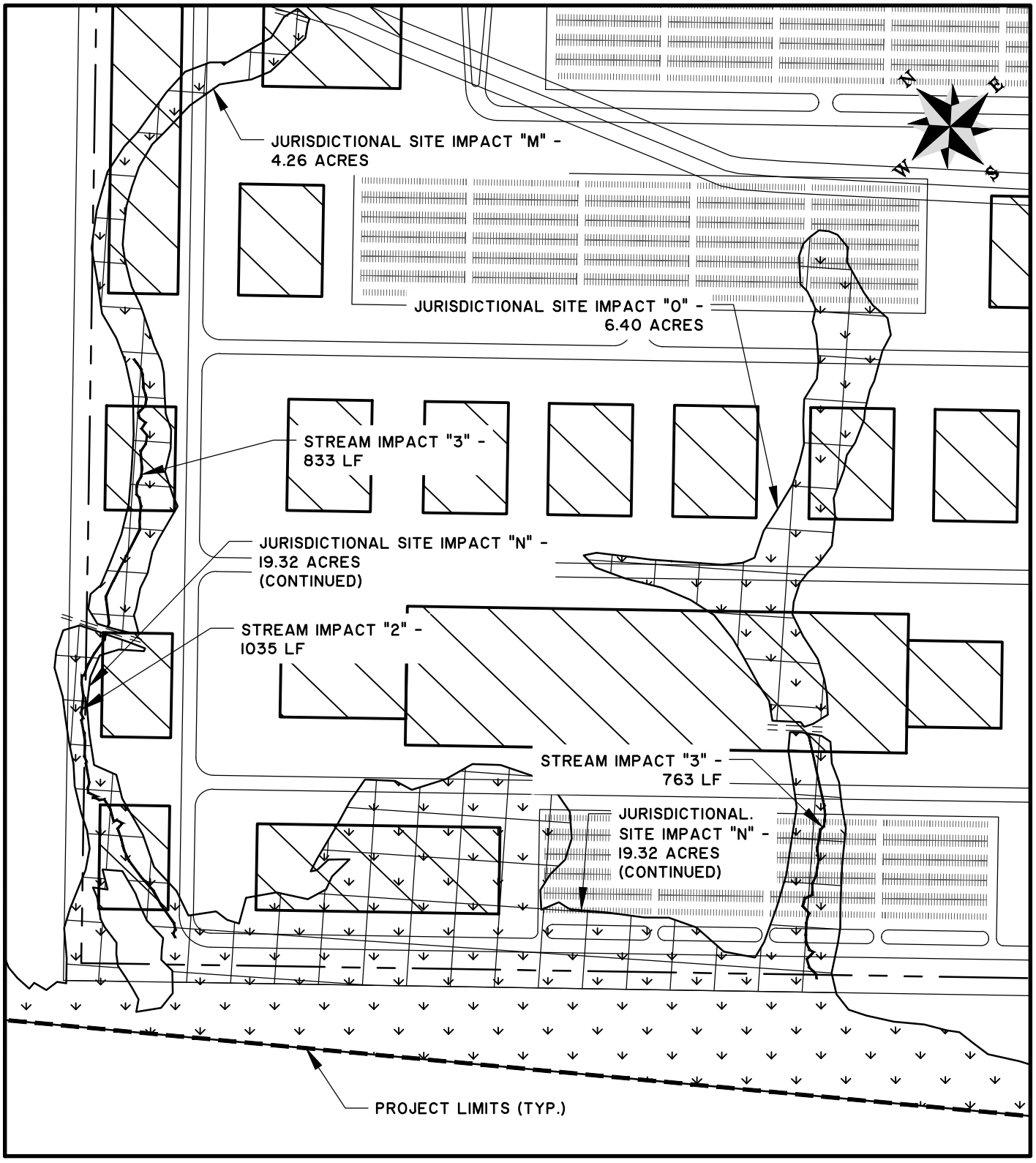
LOCATION: BRYAN COUNTY, GEORGIA
DATE: MARCH 31, 2015
JOB NUMBER: J - 25503

SHEET: 7 OF 14
SCALE: 1" = 400'

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting

50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300

www.thomasandhutton.com



BRYAN COUNTY MEGA SITE

PROPOSED ACTIVITY:
WETLAND PERMIT

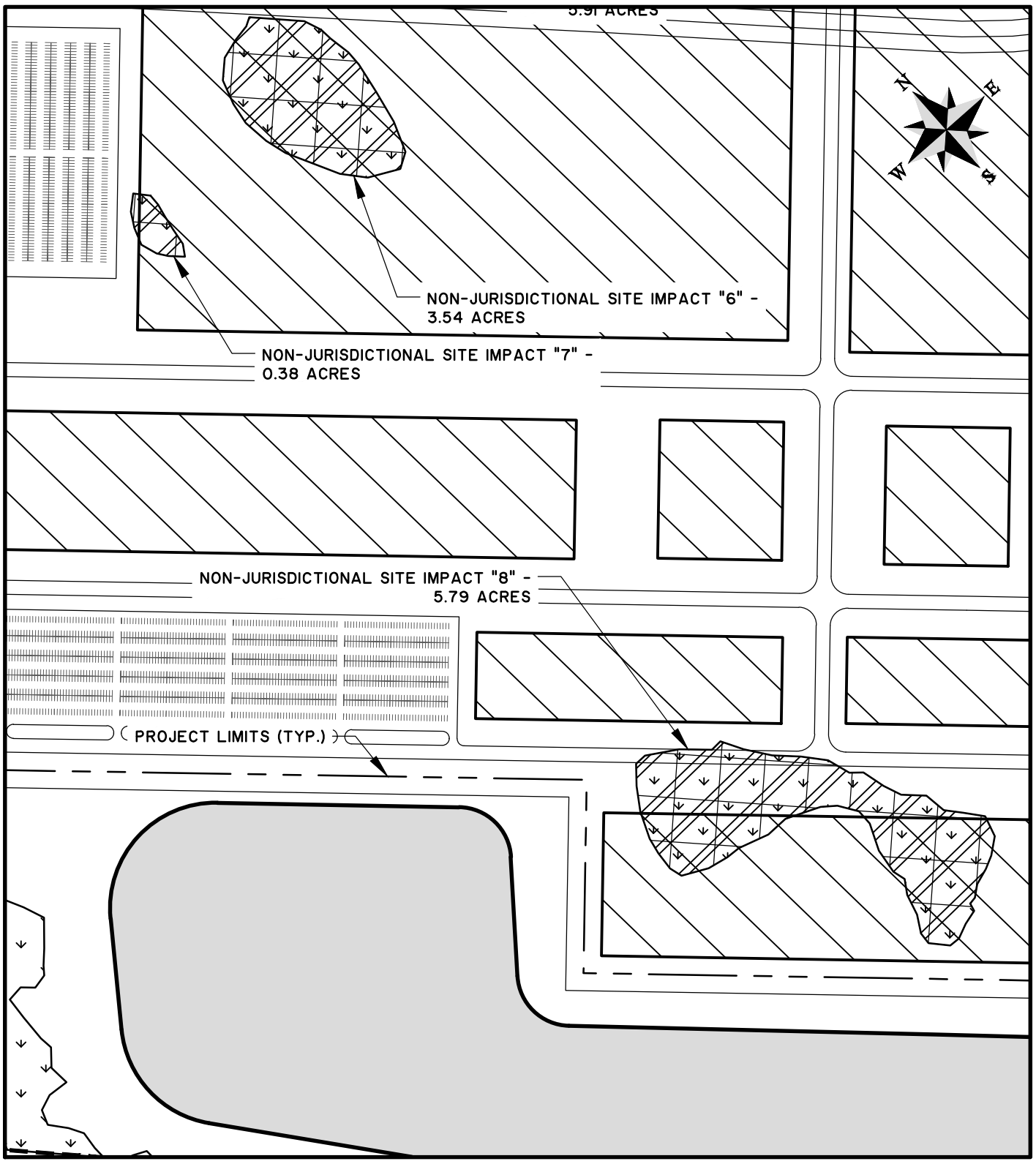
CLIENT:
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

LOCATION: BRAN COUNTY, GEORGIA
DATE: MARCH 31, 2015
JOB NUMBER: J - 25503
SHEET: 8 OF 14
SCALE: 1" = 400'

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting

50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300

www.thomasandhutton.com



BRYAN COUNTY MEGA SITE

PROPOSED ACTIVITY:
WETLAND PERMIT

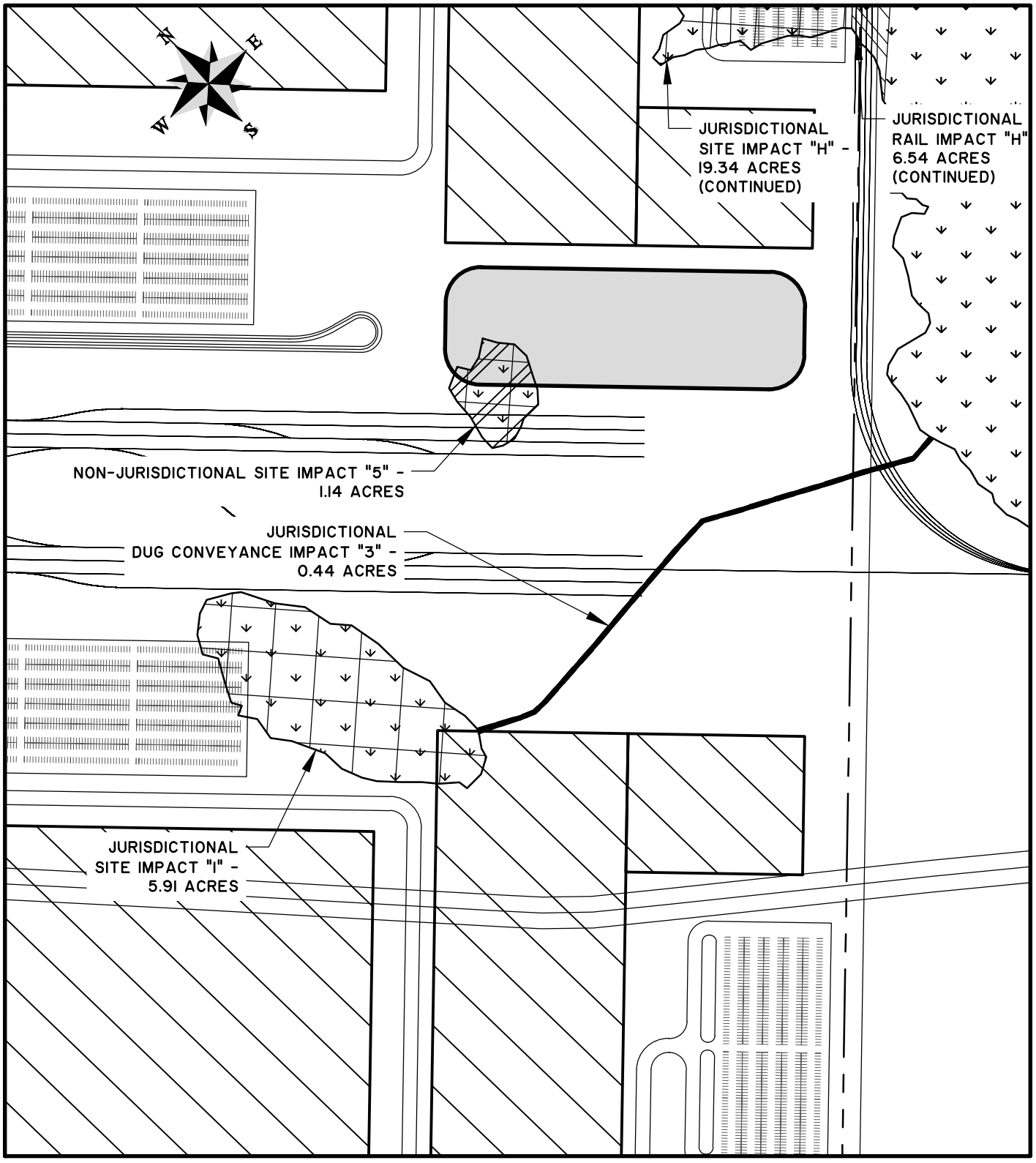
CLIENT:
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

LOCATION: BRYAN COUNTY, GEORGIA
DATE: MARCH 31, 2015
JOB NUMBER: J - 25503
SHEET: 9 OF 14
SCALE: 1" = 400'

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting

50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300

www.thomasandhutton.com



BRYAN COUNTY MEGA SITE

PROPOSED ACTIVITY:
WETLAND PERMIT

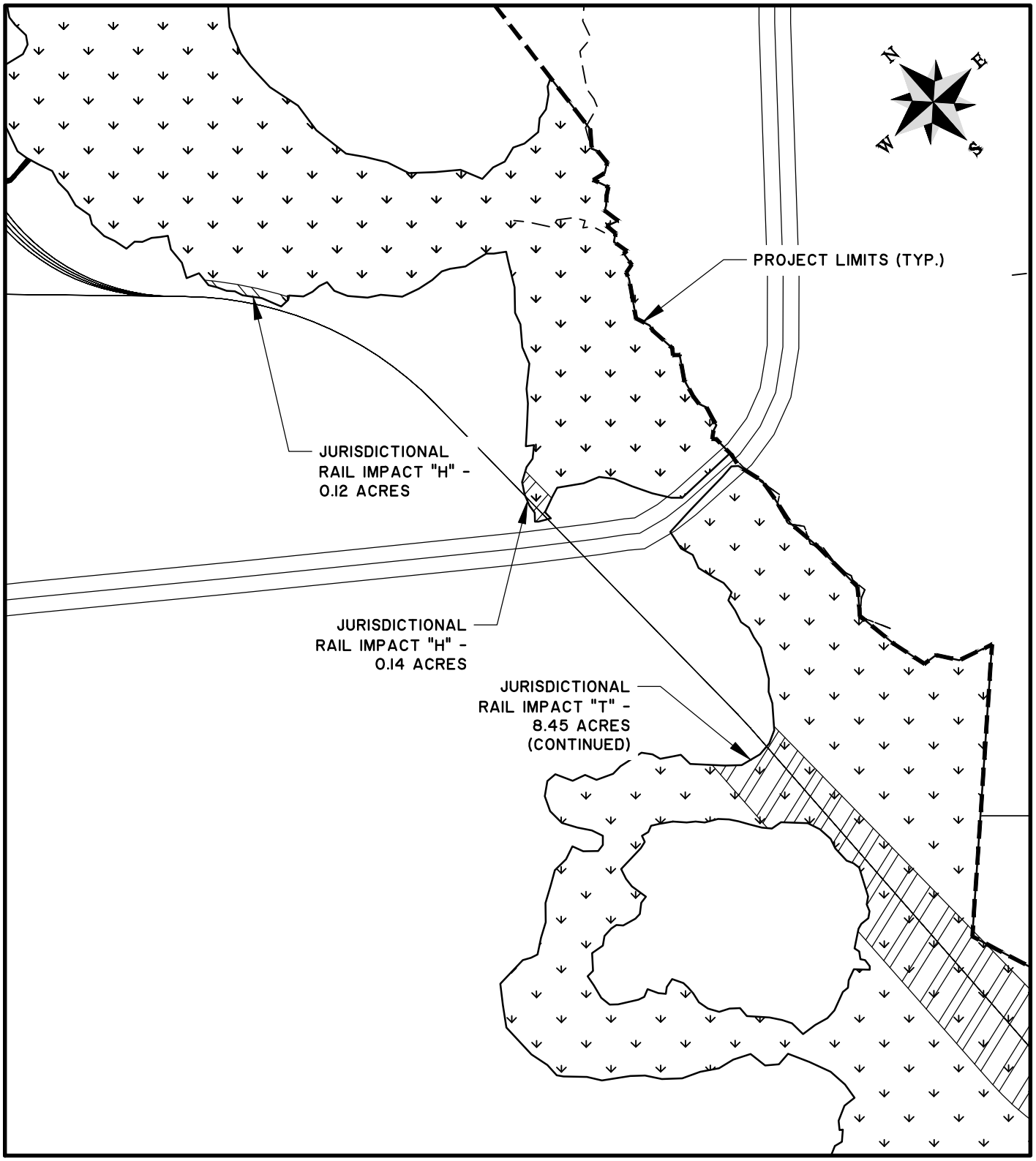
CLIENT:
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

LOCATION: BRYAN COUNTY, GEORGIA
DATE: MARCH 31, 2015
JOB NUMBER: J - 25503
SHEET: 10 OF 14
SCALE: 1" = 400'

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting

50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300

www.thomasandhutton.com



BRYAN COUNTY MEGA SITE

PROPOSED ACTIVITY:
WETLAND PERMIT

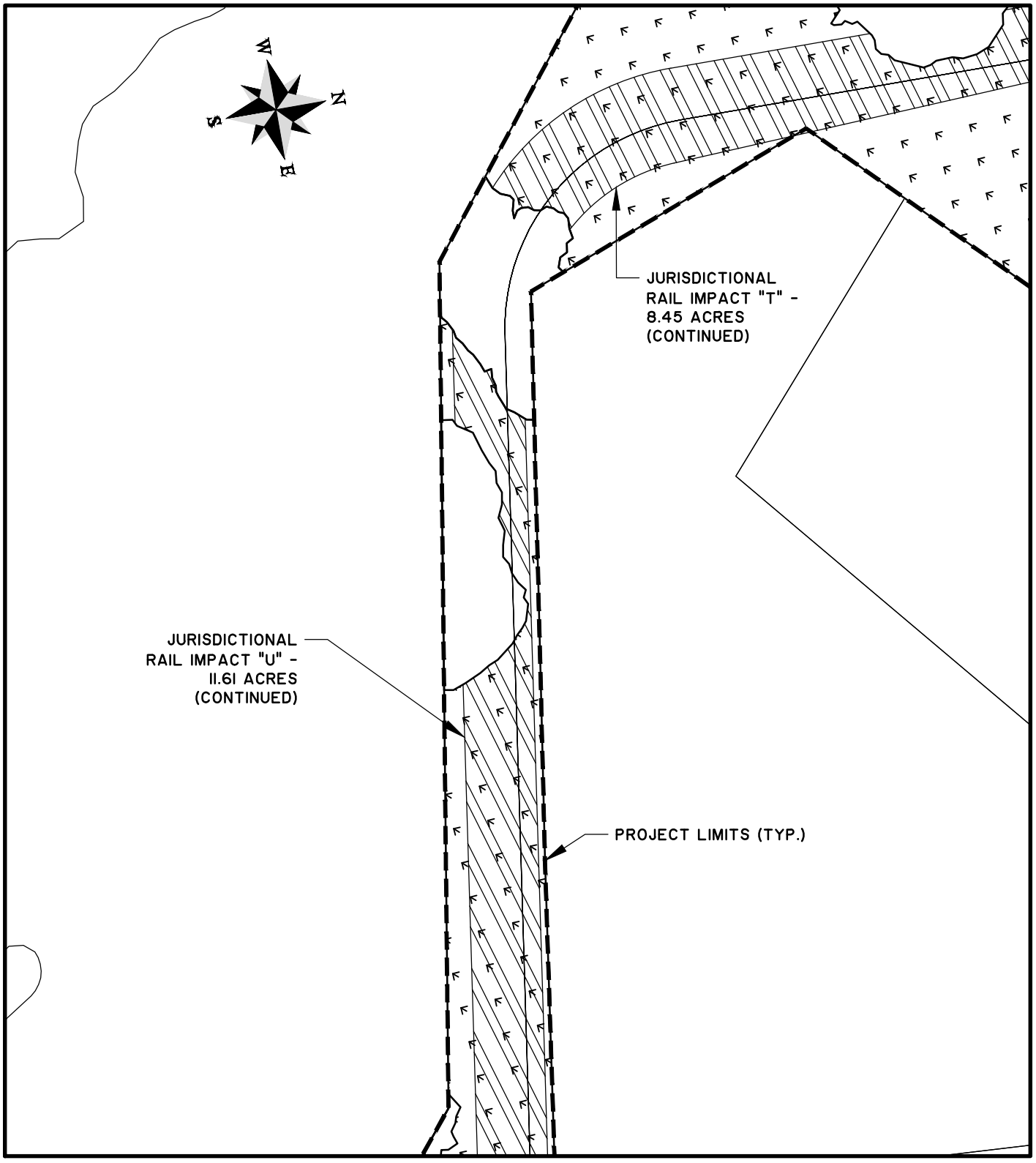
CLIENT:
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

LOCATION: BRYAN COUNTY, GEORGIA
DATE: MARCH 31, 2015
JOB NUMBER: J - 25503
SHEET: 11 OF 14
SCALE: 1" = 400'

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting

50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300

www.thomasandhutton.com



BRYAN COUNTY MEGA SITE

PROPOSED ACTIVITY:
WETLAND PERMIT

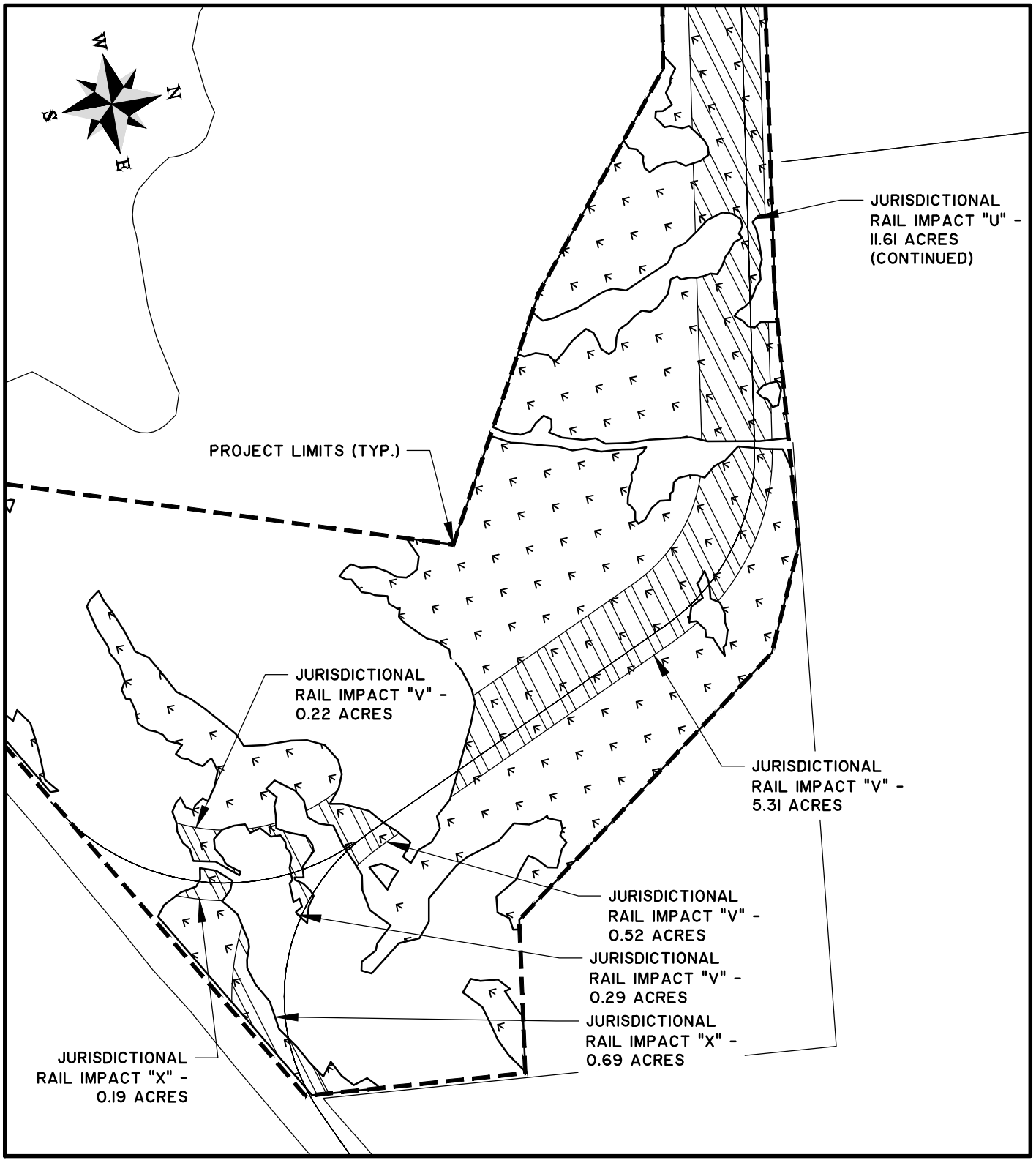
CLIENT:
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

LOCATION: BRYAN COUNTY, GEORGIA
DATE: MARCH 31, 2015
JOB NUMBER: J - 25503
SHEET: 12 OF 14
SCALE: 1" = 400'

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting

50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300

www.thomasandhutton.com



BRYAN COUNTY MEGA SITE

PROPOSED ACTIVITY:
WETLAND PERMIT

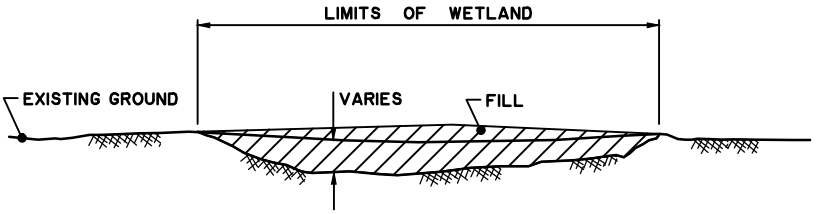
CLIENT:
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

LOCATION: BRYAN COUNTY, GEORGIA
DATE: MARCH 31, 2015
JOB NUMBER: J - 25503
SHEET: 13 OF 14
SCALE: 1" = 400'

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting

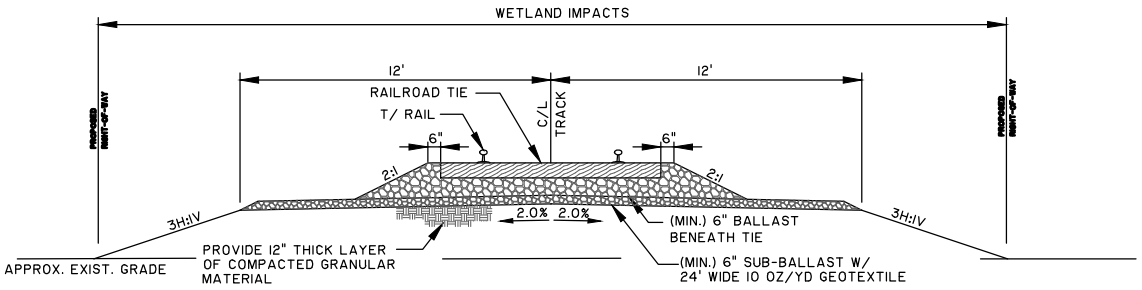
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300

www.thomasandhutton.com



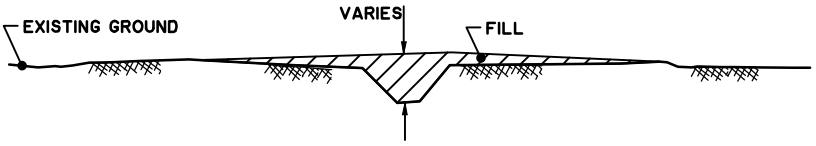
WETLAND FILL SECTION

NOT TO SCALE



TYPICAL SECTION THRU RAIL SPUR

SCALE: NTS



STREAM/DUG CONVEYANCE FILL SECTION

NOT TO SCALE

BRYAN COUNTY MEGA SITE

PROPOSED ACTIVITY:
WETLAND PERMIT

CLIENT:
SAVANNAH HARBOR-INTERSTATE 16 CORRIDOR JOINT DEVELOPMENT AUTHORITY

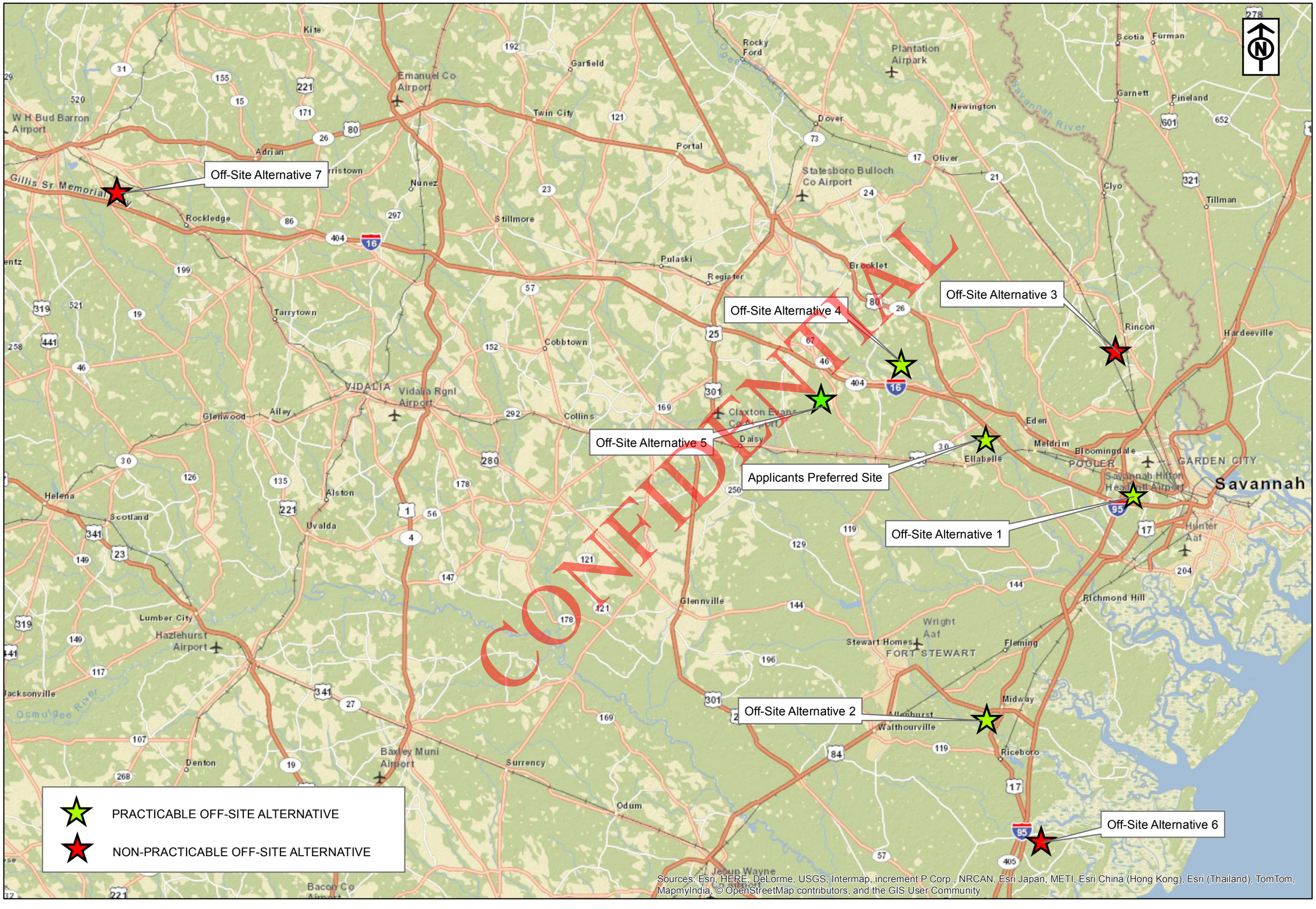
LOCATION: BRYAN COUNTY, GEORGIA
DATE: MARCH 31, 2015
JOB NUMBER: J - 25503
SHEET: 14 OF 14
SCALE: N.T.S.

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting

50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300

www.thomasandhutton.com

APPENDIX E:
Off-Site Alternatives



RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com
RLC

OFF-SITE ALTERNATIVE LOCATION MAP

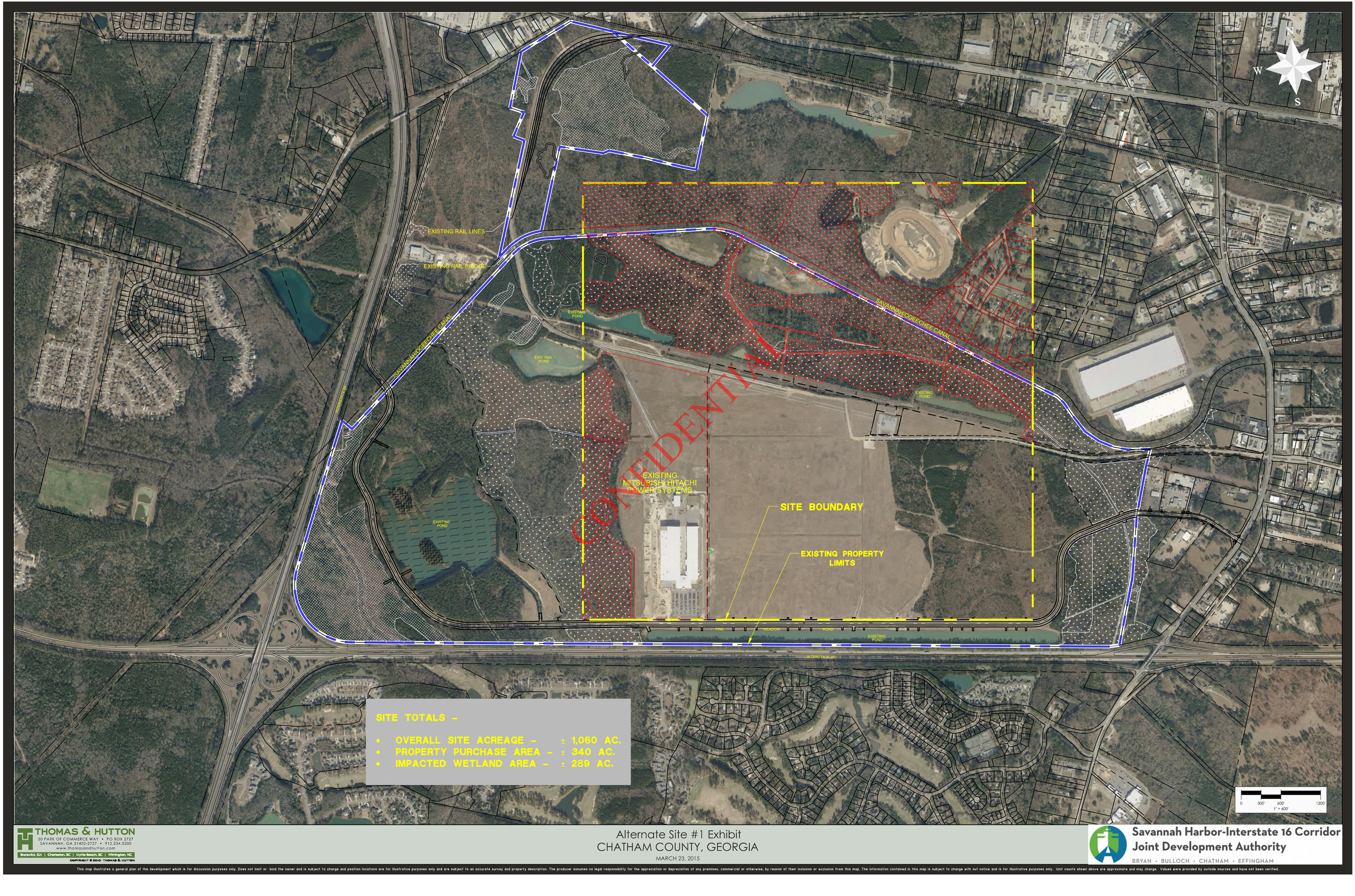
Prepared For: SHJDA

Bryan County Mega-Site

Bryan County, Georgia

RLC Project No.:	14-225
Figure No.:	N/A
Sketch Date:	28 March 2015
Prepared By:	RP
Map Scale :	1 inch = 8 Miles

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\VP_ Off Site Location



THOMAS & HUTTON
50 PARK OF COMMERCE WAY • PO BOX 2727
SAVANNAH, GA 31402-2727 • 912.234.5300
www.thomasandhutton.com
Brunswick, GA | Charleston, SC | Myrtle Beach, SC | Wilmington, NC

Alternate Site #1 Exhibit
CHATHAM COUNTY, GEORGIA

MARCH 23, 2015

Savannah Harbor-Interstate 16 Corridor
Joint Development Authority
BRYAN • BULLOCH • CHATHAM • EFFINGHAM

HWY 17

PEACOCK CREEK

POWERLINE EASEMENT

EXISTING PROPERTY LIMITS

E OGLETHORPE HWY

HWY 17

RAILROAD RIGHT-OF-WAY

CAY CREEK

PEACOCK CREEK

SITE BOUNDARY

CAY CREEK ROAD

SITE TOTALS -

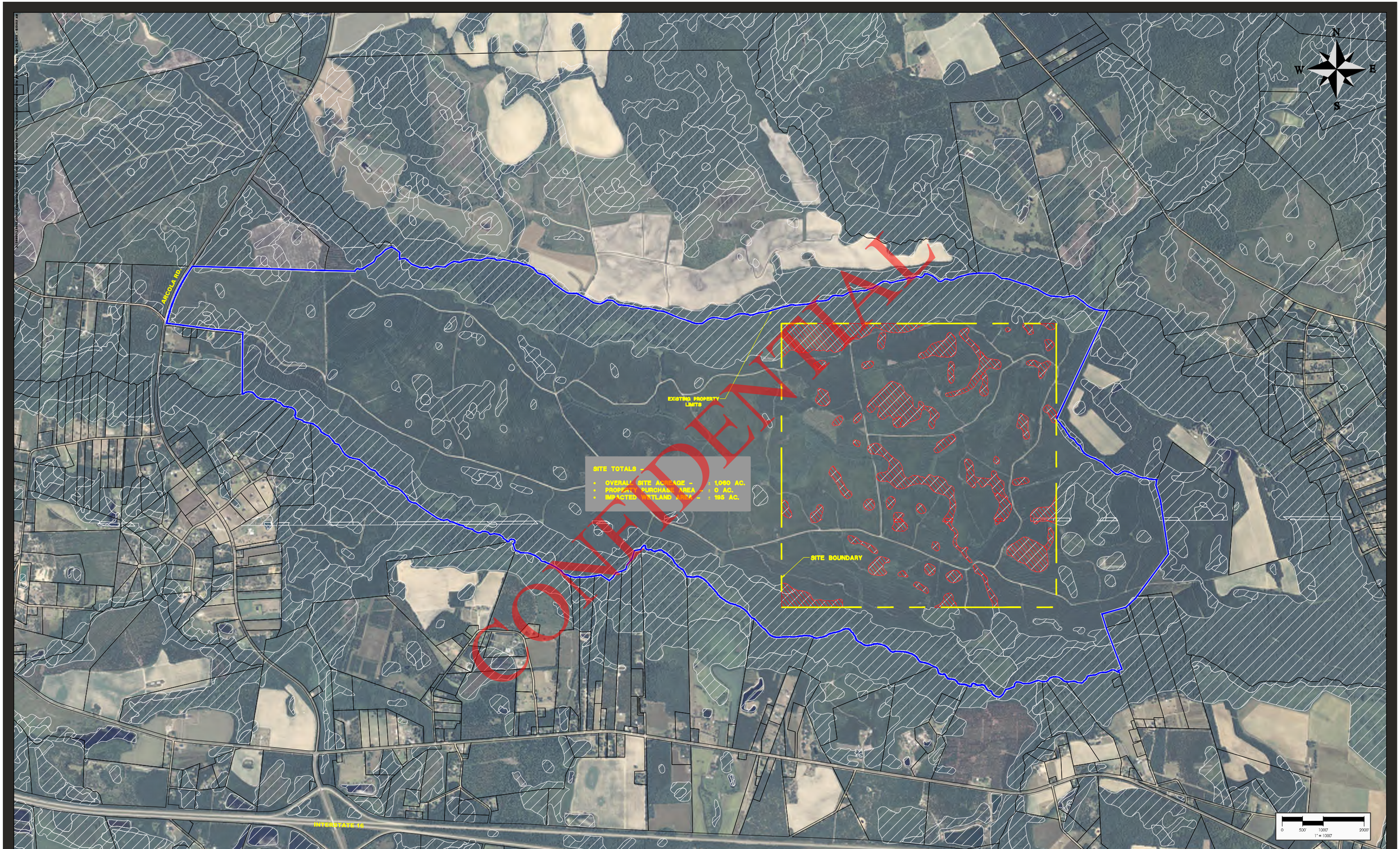
- OVERALL SITE ACREAGE - ± 1,060 AC.
- PROPERTY PURCHASE AREA - ± 53 AC.
- IMPACTED WETLAND AREA - ± 295 AC.

0 300' 600' 1200'
1" = 600'

THOMAS & HUTTON
50 PARK OF COMMERCE WAY • PO BOX 2727
SAVANNAH, GA 31402-2727 • 912.234.5300
www.thomasandhutton.com
Bluffton, SC | Charleston, SC | Myrtle Beach, SC | Wilmington, NC

Alternate Site #2 Exhibit
LIBERTY COUNTY, GEORGIA
FEBRUARY 27, 2015

Savannah Harbor-Interstate 16 Corridor
Joint Development Authority
BRYAN • BULLOCH • CHATHAM • EFFINGHAM



THOMAS & HUTTON
50 PARK OF COMMERCE WAY • PO BOX 2727
SAVANNAH, GA 31402-2727 • 912.234.5300
www.thomasandhutton.com
Savannah, GA | Charleston, SC | Myrtle Beach, SC | Wilmington, NC

Alternate Site #4
BULLOCH COUNTY, GEORGIA
MARCH 23, 2015

Savannah Harbor-Interstate 16 Corridor
Joint Development Authority
BRYAN • BULLOCH • CHATHAM • EFFINGHAM

OLD DONALDSON SCHOOL RD

BACKWOOD RD

EXISTING PROPERTY LIMITS

SITE BOUNDARY

67

N

W

E

S

SITE TOTALS -

- **OVERALL SITE ACREAGE - ± 1,060 AC.**
- **PROPERTY PURCHASE AREA - ± 0 AC.**
- **IMPACTED WETLAND AREA - ± 420 AC.**

0 300' 600' 1200'
1" = 600'

THOMAS & HUTTON
50 PARK OF COMMERCE WAY • PO BOX 2727
SAVANNAH, GA 31402-2727 • 912.234.5300
www.thomasandhutton.com
Brunswick, GA | Charleston, SC | Myrtle Beach, SC | Wilmington, NC

Alternate Site #5 Exhibit
BULLOCH COUNTY, GEORGIA
March 23, 2015

Savannah Harbor-Interstate 16 Corridor
Joint Development Authority
BRYAN • BULLOCH • CHATHAM • EFFINGHAM

APPENDIX F:

On-Site Configurations


EXIT 143
HWY 280
WEIGH STATION
INTERSTATE 16
TAR CITY RD.
EXISTING RAILROAD
N
E
S
W
JURISDICTIONAL SITE IMPACT "A" - 11.07 ACRES
JURISDICTIONAL SITE IMPACT "B" - 1.65 ACRES
JURISDICTIONAL SITE IMPACT "C" - 7.90 ACRES
JURISDICTIONAL SITE IMPACT "D" - 0.82 ACRES
JURISDICTIONAL SITE IMPACT "E" - 7.73 ACRES
JURISDICTIONAL SITE IMPACT "F" - 1.07 ACRES
JURISDICTIONAL SITE IMPACT "G" - 1.72 ACRES
JURISDICTIONAL SITE IMPACT "H" - 19.34 ACRES
JURISDICTIONAL SITE IMPACT "I" - 5.91 ACRES
JURISDICTIONAL SITE IMPACT "J" - 2.09 ACRES
JURISDICTIONAL SITE IMPACT "K" - 0.32 ACRES
JURISDICTIONAL SITE IMPACT "L" - 0.83 ACRES
JURISDICTIONAL SITE IMPACT "M" - 4.26 ACRES
JURISDICTIONAL SITE IMPACT "N" - 19.32 ACRES
JURISDICTIONAL SITE IMPACT "O" - 6.40 ACRES
NON-JURISDICTIONAL SITE IMPACT "1" - 1.18 ACRES
NON-JURISDICTIONAL SITE IMPACT "2" - 2.73 ACRES
NON-JURISDICTIONAL SITE IMPACT "3" - 0.66 ACRES
NON-JURISDICTIONAL SITE IMPACT "4" - 2.14 ACRES
NON-JURISDICTIONAL SITE IMPACT "5" - 1.14 ACRES
NON-JURISDICTIONAL SITE IMPACT "6" - 3.54 ACRES
NON-JURISDICTIONAL SITE IMPACT "7" - 0.38 ACRES
NON-JURISDICTIONAL SITE IMPACT "8" - 5.79 ACRES
DUG CONVEYANCE IMPACT "1" - 0.08 ACRES
DUG CONVEYANCE IMPACT "2" - 0.10 ACRES
DUG CONVEYANCE IMPACT "3" - 0.44 ACRES
STREAM IMPACT #1 833 LF
STREAM IMPACT #2 1035 LF
STREAM IMPACT #3 763 LF
JURISDICTIONAL RAIL IMPACT "H" - 6.54 ACRES
JURISDICTIONAL RAIL IMPACT "H" - 0.12 ACRES
JURISDICTIONAL RAIL IMPACT "H" - 0.14 ACRES
JURISDICTIONAL RAIL IMPACT "T" - 8.45 ACRES
JURISDICTIONAL RAIL IMPACT "U" - 11.61 ACRES
JURISDICTIONAL RAIL IMPACT "V" - 0.29 ACRES
JURISDICTIONAL RAIL IMPACT "V" - 0.52 ACRES
JURISDICTIONAL RAIL IMPACT "V" - 5.31 ACRES
JURISDICTIONAL RAIL IMPACT "V" - 0.22 ACRES
JURISDICTIONAL RAIL IMPACT "X" - 0.69 ACRES
JURISDICTIONAL RAIL IMPACT "X" - 0.19 ACRES
0 300' 600' 1200'
1" = 600'

LEGEND

ACREAGE SUMMARY TABLE

TOTAL PROJECT ACREAGE	1,904.45 AC
TOTAL JURISDICTIONAL WETLAND AREA	308.67 AC.
TOTAL NON-JURISDICTIONAL WETLAND AREA	17.56 AC.
TOTAL UPLAND AREA	1,578.22 AC.

WETLAND IMPACTS

JURISDICTIONAL WETLANDS IMPACTS	
RAILROAD IMPACT	34.08 AC.
SITE IMPACT	90.43 AC.
DUG CONVEYANCE IMPACT	0.62 AC.
TOTAL JURISDICTIONAL WETLAND IMPACTS	125.13 AC.
STREAM IMPACT	2,631 LF.
NON-JURISDICTIONAL WETLANDS IMPACTS	
SITE IMPACT	17.56 AC.
TOTAL NON-JURISDICTIONAL WETLAND IMPACTS	17.56 AC.

THOMAS & HUTTON
50 PARK OF COMMERCE WAY • PO BOX 2727
SAVANNAH, GA 31402-2727 • 912.234.5300
www.thomasandhutton.com
Brunswick, GA | Charleston, SC | Myrtle Beach, SC | Wilmington, NC

APPLICANTS PREFERRED SITE / ON-SITE CONFIGURATION #1
BRYAN COUNTY, GEORGIA

MARCH 31, 2015

Savannah Harbor-Interstate 16 Corridor Joint Development Authority
BRYAN • BULLOCH • CHATHAM • EFFINGHAM

EXIT 143

WEIGH STATION

INTERSTATE 16

HWY 280

TAR CITY RD.

EXISTING RAILROAD

N

E

W

S

ON SITE CONFIGURATION #2

- ISOLATED WETLAND IMPACT – ± 17.56 AC.
- JURISDICTION WETLAND IMPACTS – ± 162.00 AC.
- TOTAL WETLAND IMPACTS – ± 179.56
- STREAM IMPACTS – ± 580 LF.

0 300' 600' 1200'

1" = 600'

THOMAS & HUTTON
50 PARK OF COMMERCE WAY • PO BOX 2727
SAVANNAH, GA 31402-2727 • 912.234.5300
www.thomasandhutton.com
Brunswick, GA | Charleston, SC | Myrtle Beach, SC | Wilmington, NC

ONSITE CONFIGURATION #2
BRYAN COUNTY, GEORGIA

MARCH 31, 2015

Savannah Harbor-Interstate 16 Corridor Joint Development Authority

BRYAN • BULLOCH • CHATHAM • EFFINGHAM

THOMAS & HUTTON
50 PARK OF COMMERCE WAY • PO BOX 2727
SAVANNAH, GA 31402-2727 • 912.234.5300
www.thomasandhutton.com
Brunswick, GA | Charleston, SC | Myrtle Beach, SC | Wilmington, NC

ONSITE CONFIGURATION #3
BRYAN COUNTY, GEORGIA
MARCH 31, 2015

Savannah Harbor-Interstate 16 Corridor
Joint Development Authority
BRYAN • BULLOCH • CHATHAM • EFFINGHAM

EXIT 143

WEIGH STATION

INTERSTATE 16

HWY 280

TAR CITY RD.

EXISTING RAILROAD

ON SITE CONFIGURATION #4

- NON-JURISDICTIONAL WETLAND IMPACT – ± 17.56 AC.
- JURISDICTION WETLAND IMPACTS – ± 220.07 AC.
- TOTAL WETLAND IMPACTS – ± 237.63 AC.

- STREAM IMPACTS – ± 763 LF.

0 300' 600' 1200'
1" = 600'

THOMAS & HUTTON
50 PARK OF COMMERCE WAY • PO BOX 2727
SAVANNAH, GA 31402-2727 • 912.234.5300
www.thomasandhutton.com
Brunswick, GA | Charleston, SC | Myrtle Beach, SC | Wilmington, NC

ONSITE CONFIGURATION #4
BRYAN COUNTY, GEORGIA
MARCH 31, 2015

Savannah Harbor-Interstate 16 Corridor Joint Development Authority
BRYAN • BULLOCH • CHATHAM • EFFINGHAM

APPENDIX G:

Threatened & Endangered Species Information & Report of Findings

BRYAN COUNTY MEGA SITE
Protected Species Survey Report

41 Park of Commerce Way, Suite 303 Savannah GA 31405 912.443.5896

BRYAN COUNTY MEGA SITE

PROTECTED SPECIES SURVEY REPORT

MARCH 2015

SAVANNAH HARBOR INTERSTATE 16 CORRIDOR
JOINT DEVELOPMENT AUTHORITY

Savannah Harbor-Interstate 16 Corridor
Joint Development Authority
BRYAN • BULLOCH • CHATHAM • EFFINGHAM

RESOURCE+LAND
CONSULTANTS

TABLE OF CONTENTS

Appendices

Figures

I. PROJECT OVERVIEW

A. Introduction

A protected species assessment for the ±1,904 acre Bryan County Mega Site was completed by Resource & Land Consultants (RLC) between February and March of 2015. The project site is located south of Interstate 16, east of GA Highway 280, near Black Creek, in Bryan County, Georgia (32.159357°, -81.456570); (Figure 1). RLC conducted the assessment to determine the potential for the occurrence of animal and plant species currently listed as threatened or endangered in Bryan County by federal regulations.

B. Need and Purpose

The Savannah Harbor / Interstate 16 Corridor Joint Development Authority (SHJDA) identified the subject property as a potential site for construction of a large-scale manufacturing facility. The size of the proposed facility would necessitate impacts to waters of the U.S., thus requiring Department of the Army authorization to fill and/or dredge waters of the U.S. regulated under Section 404 of the Clean Water Act. Subsequently, coordination with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act will be required.

C. Project Description

The study area is currently managed for timber production by various private landowners. As of the date of this report no areas within the project boundary have been developed. The threatened and endangered species assessment was done in conjunction with and in addition to a formal wetland delineation in order to provide SHJDA with the ecological information necessary to make informed decisions about future development of the property.

D. Survey Methodology

Prior to conducting the field survey, RLC reviewed available state and federal records to determine if any listed species were known to occur within and/or in the general vicinity of the project area. Available resources such as aerial photographs, U.S. Geological Survey topographic maps, National Wetlands Inventory Maps, and Natural Resource Conservation Service Soil Survey were examined in an effort to complete a preliminary determination of existing habitats prior to the field visit. Once this information was assessed, RLC conducted a pedestrian review of the project site to determine the available habitats on site and the potential for listed species to inhabit them. The age and species composition of existing habitats were recorded, photographs were taken to document the current condition of the site and vegetative community and habitat types were identified.

A review of the U.S. Fish and Wildlife Service's (US-FWS) Information, Planning, and Conservation System (IPaC, Appendix A) and Georgia Department of Natural Resources, Wildlife Resource Division's (GA-DNR) Known Rare Species and Natural Community Element Occurrences within Bryan County (Appendix B) was conducted to identify species that are known to occur in Bryan County. A formal request for species known to occur within the project area was submitted to GA-DNR, and verbal and email coordination was initiated with USFWS. Copies of correspondence with these agencies are located in Appendices C and D respectively. In addition, interviews with current landowners were also conducted to determine if they possess any knowledge of the presence of listed species within the study area.

During preliminary review of available data and pedestrian surveys within the project area, the site the study area contains habitats suitable for the eastern indigo snake (*Drymarchon corais couperi)*, frosted flatwoods salamander (*Ambystoma cingulatum*), striped newt (*Notophthalmus perstriatus*), and gopher tortoise (*Gopherus polyphemus*). Following this determination, the SHJDA contracted consulting herpetologist Mr. John Palis to conduct species specific surveys for the above referenced amphibians and reptiles.

E. Habitats and Land Use Areas

The subject property has been intensively managed for timber production. It contains wetland and upland habitats typical for Bryan County and the coastal plain of Georgia. Based on our field observations, the project area contains the following habitat types:

- managed pine plantation uplands (various age class)
- managed pine plantation wetlands (various age class)
- forested wetlands

- scrub-shrub wetlands
- isolated forested wetlands
- isolated scrub-shrub wetlands
- intermittent streams

The dominant habitat types are depicted in Figure 2. The following summary provides a brief description of each habitat, photographs depicting typical conditions of each habitat are displayed at Figures 8 & 9.

- **Managed Pine Plantation Upland:** The majority of the property consists of planted pine plantation that has been cut and replanted within the last year. Smaller areas of mature pines are located at the northern and southern portions of the study area. The recently clear cut areas contain only herbaceous and scattered shrub species mixed with the pine seedlings. Areas cut several years ago were sprayed with herbicide to kill remaining hardwoods (water oaks, live oaks) and replanted in pines. The shrub and herbaceous layer within these areas is much more dense than the recently cut areas.

Recently Clear Cut Areas

Overstory:	Understory:
Live oak (*Quercus grandiflora*) (few/scattered)	Slash pine seedlings (*Pinus elliottii*) Loblolly pine seedlings (*Pinus taeda*) Blackberry (*Rubus argutus*) Broomsedge (*Andropogon virginicus*)

Previously Clear Cut Areas

Overstory:	Understory:
N/A (sprayed)	Slash pine seedlings Loblolly pine seedlings Longleaf pine seedlings (*Pinus palustrus*) Blackberry Broomsedge Saw palmetto (*Serenoa repens*) Bracken fern (*Pteridium aquilinum*) Yellow jessamine (*Gelsenium sempervirens*)

Mature Pine Plantation

Overstory:	Understory:
Loblolly pine Slash pine Red maple (*Acer rubrum*) Sweetgum (*Liquidambar styraciflua*) Water oak (*Quercus nigra*)	Broomsedge Yellow jessamine Saw palmetto Bracken fern Wax myrtle (*Myrica cerifera*)

- **Managed Pine Plantation Wetland:** These areas are generally located in the southeastern portion of the property within the proposed rail spur, and also along the upper fringes of portions of the forested wetland areas that are subject to more frequent hydrologic saturation and inundation.

Overstory:	Understory:	
Slash pine Red Maple Sweetgum Red bay (Persea borbonia)	Wax Myrtle Swamp Titi (*Cyrilla racemiflora*) Greenbrier (*Smilax laurifolia*) Blackberry Gaint Cane (*Arundinaria gigantean*)	Sweetgum Water Oak Red Maple Yellow jessamine Black-stem Chainfern (*Woodwardia virginica*)

- **Forested Wetlands:** Forested wetlands are dispersed across the study area. Those located immediately north of Tar City Road, south of Tar City Road, and at the southeastern study area limits drain into Black Creek. The majority of these wetlands have mature hardwood species in the center portions of the drain, and a dense scrub-shrub layer of swamp titi along their perimeter, varying in width between twenty-five feet and fifty feet on average. Intermittent streams are present within the interior of several of these drainages. Species composition and distribution is as follows:

Overstory:	Understory:	
Water Oak	Wax Myrtle	Fetterbush (*Lyonia lucida*)
Red Maple	Swamp titi	Greenbrier
Red bay	Sphagnum moss (*Sphagnum spp.*)	Blackberry
Sweetgum	Poison Ivy (*Toxicodendron radicans*)	Netted chainfern (*Woodwardia areolata*)
Black Gum (*Nyssa biflora*)	Blackstem Chainfern	
Bald Cypress (*Taxodium distichum*)		

- **Scrub-Shrub Wetlands:** Hardwoods were harvested in some portions of the wetland areas on the study area, mainly along the perimeter of the forested wetland systems. These areas now have a dense understory. Species composition and distribution is as follows:

Overstory:	Understory:	
N/A	Wax Myrtle	Sweetgum
	Swamp titi	Red Maple
	Sphagnum moss	Sweet Bay
	Greenbrier	Slash Pine
	Blackberry	Blackstem Chainfern

- **Isolated Forested Wetlands:** The study area contains numerous isolated forested wetlands. These areas are depressional wetlands with mature overstory and varying degrees of shrub and herbaceous cover:

Overstory:	Understory:	
Water Oak	Wax Myrtle	Fetterbush
Red Maple	Swamp titi	Greenbrier
Red bay	Sphagnum moss	Blackberry
Sweetgum	Poison Ivy	Netted chainfern
Black Gum	Blackstem Chainfern	
Bald Cypress		

- **Isolated Scrub-shrub Wetlands:** The study area also contains numerous isolated scrub-shrub wetlands. These areas are depressional wetlands with shrub layers that are dominated by small pines:

Overstory:	Understory:
N/A	Slash pine
	broomsedge
	Sphagnum moss
	Blackstem Chainfern
	Yellow jessamine

- **Intermittent Streams:** The study contains numerous intermittent streams located in the central portions of the forested wetland systems. These streams average approximately three-feet in width and twelve inches in depth. The streams lack vegetation and consist of sand and mud bed and banks of varying heights.

- **Man-Made Ditches:** Approximately 0.62 acre of man-made ditch is present within the property. This habitat is defined by bed and bank of the feature with little to no vegetation present. The ditches were presumably constructed for silvicultural purposes and extend through several of the historically isolated wetlands.

Soil types as mapped by the USDA Natural Resource Conservation Service, soil types found within the study area includes Albany, Lakeland, Leon, Olustee, Chipley, Stilson, Ellabelle, Mascotte, Angelina and Bibb, and Fuquay series. Soils are depicted on the attached NRCS soils survey (Figure 3). Characteristics and acreages of each soil type are described in Table 1.

Table 1- NRCS Soil Series Descriptions

Series Name	Acreage	Percent of Project Area	Label	Drainage Class	Landform	Down-slope shape	Parent Material	Slope (%)	Frequency of Flooding	Frequency of Ponding	Depth to Water Table (in)	Typical Profile
Albany	50	2.6	As	Somewhat poorly drained	Flats	Linear	Marine deposits	0-2	None	None	12-30	H1 - 0 to 48 inches: fine sand H2 - 48 to 56 inches: sandy loam H3 - 56 to 88 inches: sandy clay loam
Angelina and Bibb	156	8.2	AB	Poorly Drained	Flood Plains	Linear	Alluvium	0-2	Frequent	None	0-12	H1 - 0 to 12 inches: loam H2 - 12 to 60 inches: loam
Chipley	470.3	24.6	Cm	Moderately well drained	Flats	Linear	Marine deposits	0-5	None	None	24-36	H1 - 0 to 6 inches: fine sand H2 - 6 to 77 inches: fine sand
Ellabelle	192.6	10.1	El	Very poorly drained	Depressions, drainageways	Concave, Linear	Marine deposits	0-2	Frequent	None	0-6	H1 - 0 to 27 inches: loamy sand H2 - 27 to 64 inches: sandy clay loam H3 - 64 to 72 inches: sandy clay loam
Fuquay	2	0.1	Fs	Well drained	Interfluves	Convex	Marine deposits	0-5	None	None	48-72	H1 - 0 to 34 inches: loamy sand H2 - 34 to 45 inches: sandy clay loam H3 - 45 to 96 inches: sandy clay loam
Lakeland	750.2	39.3	Lp	Excessively drained	Rises	Linear	Marine Deposits	0-5	None	None	>80	H1 - 0 to 43 inches: sand H2 - 43 to 80 inches: sand
Leon	58.5	3.1	Lr	Poorly drained	Flats	Linear	Marine deposits	0-2	None	None	6-18	H1 - 0 to 3 inches: fine sand H2 - 3 to 15 inches: fine sand H3 - 15 to 30 inches: fine sand H4 - 30 to 80 inches: fine sand
Mascotte	5	0.3	Mn	Poorly drained	Flats	Linear	Marine Deposits	0-2	None	None	6-18	H1 - 0 to 3 inches: sand H2 - 3 to 16 inches: sand H3 - 16 to 28 inches: sand H4 - 28 to 34 inches: sand H5 - 34 to 60 inches: sandy clay loam H6 - 60 to 80 inches: sand
Olustee	185	9.7	Ol	Somewhat poorly drained	Flats	Linear	Marine deposits	0-2	None	None	18-30	H1 - 0 to 7 inches: fine sand H2 - 7 to 15 inches: sand H3 - 15 to 38 inches: sand H4 - 38 to 80 inches: sandy clay loam
Stilson	37	1.9	Se	Moderately well drained	Rises	Linear	Marine deposits	0-2	None	None	30-36	H1 - 0 to 24 inches: loamy sand H2 - 24 to 43 inches: sandy clay loam H3 - 43 to 72 inches: sandy clay loam
Water	1.5	0.1	W									

II. FEDERALLY PROTECTED RESOURCES

The project area was assessed in consideration of the Endangered Species Act of 1973. Pedestrian surveys were conducted to identify protected individuals and/or potential habitat for protected individuals within the study area on numerous occasions during February and March 2015. Species-specific surveys were conducted for those species that prefer habitats similar to those found in the study area. Table 2 depicts federally protected species listed in the study area that have potential ranges within Bryan County, Georgia. This table also provides a general habitat description for each species and a biological determination as to the effects that a potential industrial development would have on each of these species. Section II A provides a detailed description of those listed species that have habitat preferences that are found in the study area.

Table 2- Known Occurrences and Biological Determination for Protected Species Listed in Bryan County

Class	Scientific Name	Common Name	IPaC Trust Resources List	Legal Status*		Habitat Present	Species Present	Biological Determination
				Federal	State			
Amphibians	Ambystoma cingulatum	Frosted flatwoods salamander	Yes	T	T	Yes	No	No Impact
	Striped Newt	Notophthalmus perstriatus	Yes	C	T	Yes	No	No Impact
Birds	Picoides borealis	Red-cockaded Woodpecker	Yes	E	E	None	No	No impact
	Calidris canutus rufa	Red Knot	Yes	T	T	None	No	No impact
	Mycteria americana	Wood Stock	Yes	T	T	Non-preferred	No	No impact
Fishes	Acipenser oxyrinchus oxyrinchus	Atlantic Sturgeon	Yes	E	E	None	No	No impact
	Moxostoma robustum	Shortnose Sturgeon	No	E	E	None	No	No impact
Mammals	Eubalaena glacialis	North Atlantic Right Whale	Yes	E	E	None	No	No impact
	Tricheclus manatus	West Indian Manatee	Yes	E	E	None	No	No impact
Reptiles	Drymarchon couperi	Eastern Indigo Snake	Yes	T	T	Preferred	None observed	Little to no impact
	Gopherus polyphemus	Gopher Tortoise	Yes	C	T	Preferred	Yes	Little to no impact
	Chelonia mydas	Green Sea Turtle	Yes	T	T	None	No	No impact
	Dermochelys coriacea	Leatherback Sea Turtle	Yes	E	T	None	No	No impact
	Caretta caretta	Loggerhead Sea Turtle	Yes	T	T	None	No	No impact

A. Federally Threatened and Endangered Species

The following provides detailed information for federally listed species within Bryan County, Georgia that have potential habitat within the study area:

Red-Cockaded Woodpecker (RCW) (*Piciodes borealis*):

The red-cockaded woodpecker has a black back with broken white horizontal stripes ("ladder-back" pattern). The head is black except for a large white cheek patch on each side. The chest is dull white with small black spots, and the total length is about 8 in. Adult males have a tiny patch of red feathers (cockade) behind the eye, but the cockade is not displayed unless the bird is excited. The juvenile male has a red spot on top of his head.

This small woodpecker needs large expanses of mature, open pine forest, particularly longleaf, slash, or loblolly pine. Nest and roost cavities 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 probably supported the largest populations historically was the fire-maintained longleaf pine forest of the Coastal Plain.

The property does contain scattered mature pines located primarily along Black Creek and the wetland fringes. However, the vegetation in these areas contain a dense understory and are not preferred by the RCW. No individuals or colonies of the RCW were observed during the field survey and no nesting or foresting habitat was noted. Due to the lack of suitable habitat within the project area, the proposed project will have no effect on this species.

Eastern indigo snake *(Drymarchon corais couperi*):

Average adult size is 60-74 in; the record is 103.5 in. Adults are large and thick bodied. The body is glossy black and in sunlight has iridescent blue highlights. The chin and throat is reddish or white, and the color may extend down the body. The belly is cloudy orange and blue-gray. The scales on its back are smooth, but some individuals may possess some scales that are partially keeled. There are 17 dorsal scale rows at midbody. The pupil is round. Juveniles are black-bodied with narrow whitish blue bands.

Eastern indigo snakes primarily occur in sandhill habitats in northern Florida and southern Georgia. Preferred habitat includes pine and scrubby flatwoods, pine rocklands, dry prairie, tropical hardwood hammocks, edges of freshwater marshes, agricultural fields, coastal dunes, and human-altered habitats. They need a mosaic of habitats to complete their annual life cycle. In the northern range of their territory they require sheltered retreats from winter cold and desiccating conditions and often coexist with gopher tortoises inside their burrows. In wetter habitats that lack gopher tortoises, they may take shelter in hollowed root channels, hollow logs, or the burrows of rodents, armadillo, or land crabs.

The project area does contain sandhill habitat typically associated with the indigo snake and active and abandoned gopher tortoise burrows were observed. During this study, 21 active, 62 inactive, and 31 non-gopher tortoise burrows were located. An exhibit depicting the location and status of burrows located on the study area are depicted

on Exhibit 4. Personal interviews with landowners revealed that there were no known sightings during the period of their ownership. According to USFWS, the nearest documented occurrence of this species was approximately 1 mile to the northeast (+/-25 years ago), and approximately 5 miles to the southeast, presumably on Fort Stewart. Surveys for indigo snakes were conducted on February 23, 2015, and March 12th, 13th, 18th, 19th, 20th, and 26th. Temperatures were ideal for the initial survey in February, with preceding nighttime temperatures in the 20's followed by daytime temperatures in the mid to upper 60's and mid 70's. The pedestrian surveys were conducted to look for individual specimens, tracks within burrows and aprons, and shed skins near gopher tortoise burrows. No evidence of the presence of indigo snakes was observed during this study.

Additionally, indigo snakes surveys and USFWS concurrence was completed in the late 1990's/early 2000's during 404 Permit development of the Pembroke Bryan County Industrial Park and in the mid 2000's for the northern portion of this study area (north of Tar City Road) also known as the Samwilka Tract. The Pembroke Bryan County Industrial Park study noted the presence of over 50 burrows but neither evidence of nor any sightings of the indigo snake were documented. USFWS provided a "no effect" concurrence for that project and development of the site proceeded. During the study for the Samwilka Tract, it was reported that 1506 observations of 142 gopher tortoise burrows in various states of activity failed to yield any evidence of the presence of indigo snakes. Subsequently, via letter of May 20, 2008 (USFWS #08-FA-0973), it was determined that the presence of indigo snakes on the subject property was unlikely, and acknowledged the relocation of the existing gopher tortoises north of Tar City Road to Fort Stewart Army Base.

Considering the past survey efforts which have occurred immediately adjacent to and within the vicinity of the project area, impacts and because no evidence or sightings of the indigo snake were recorded during these survey, impacts to this protected species are not anticipated. While the wetlands on the study area have the potential to be used by the indigo snake during warmer portions of the year, and the presence of a remnant population of gopher tortoise could provide winter refuge, the past and present use of the property for industrial timber production and the lack of previous occurrences likely precludes their existence on the study area. Thus, the proposed project will have little to no effect on the eastern indigo snake.

Frosted Flatwoods Salamander *(Ambystoma cingulatum)*
The frosted flatwoods salamander is a small (up to 76mm snout-vent length, 135 total length; Palis unpublished data), black salamander with gray to grayish dorsal markings that forms a netted pattern. Flatwoods salamanders prefer mesic longleaf pine flatwoods/wiregrass terrestrial habitats with open understory. Breeding ponds consist of isolated ephemeral wetlands that range in size from 0.2 to 9.5 ha and 0.5 m deep or less (Palis, unpublished data). Adult flatwoods move to breeding ponds in between October and January and deposit eggs in leaf litter along the margins of the wetlands. Water levels typically rise during the winter months, thus inundating the eggs. As larvae hatch, they hide among the vegetation within the wetland margins during the day and may suspend in open water during the night (J. Palis, pers. Obs.)

The subject property contains numerous isolated ephemeral wetlands that could be suitable for breeding purposes. However, the study area has been subject to intensive industrial forestry activities for many decades, and the terrestrial habitat is not conducive to the species. Nevertheless, the SHJDA employed John Palis to conduct an intensive survey of the study area between March 23 and March 28, 2015. Mr. Palis employed trapping and dip-netting techniques in suitable breeding ponds during this time, and did not encounter any individuals. A detailed report documenting the study will be provided by Mr. Palis in the near future. Based upon the results of this study, the presence of the flatwoods salamander within he project site is not likely and therefore the proposed development will not affect this species.

B. Federal Candidate Species

Gopher tortoise (*Gopherus polyphemus*):
The official state reptile of Georgia, the gopher tortoise, is a relatively large terrestrial turtle, obtaining a maximum carapace length of 15 inches, though averaging 9-11 inches. Its oblong carapace is unkeeled and domed, somewhat flattened, and brown or gray in color. Distinctive growth annuli are evident in juveniles and young adults, usually becoming obscured later in life. The yellowish plastron is hingeless and has conspicuous elongated gular scutes (especially long on males). With the exception of the yellowish limb sockets, the scaly skin of adults is typically dark gray. Perhaps the most characteristic features of gopher tortoises are the elephantine hind limbs and the flattened, shovel-like forelimbs. The head is wide and rounded, with a pair of seasonally swollen mental glands on

the chin. Hatchlings have yellowish skin, as well as yellow-centered scutes, both of which gradually darken with age. Males have slightly concave plastrons.

Along with sandy soil for burrowing, sunlight availability, and abundant herbaceous vegetation are the key habitat requirements for this reptile. Gopher tortoises are a characteristic species of the rapidly disappearing longleaf pine and wiregrass community, which includes sandhills, dry flatwoods, and turkey oak scrub. Historically, this community was represented by an open-canopied forest that allowed abundant sunlight penetration and conditions favorable for a rich growth of herbaceous vegetation. Unfortunately, very little of this naturally occurring habitat still exists; therefore, many tortoises have been forced into artificial habitats, such as roadsides and old fields, that retain the three key requirements.

The study area has been managed for industrial pine production for many decades, and as a result the existing vegetation has been manipulated for row pines. Within the last year, pines from a large portion of the study area have been harvested, and as a result these areas are open and generally devoid of vegetation except for pine seedlings. Older age classes of pines remaining on site exhibit a dense understory devoid of significant sunlight and associated herbaceous vegetation.

In 2008, the portion of the study area north of Tar City Road was the subject of a tortoise relocation effort that was coordinated with the USFWS. Prior to the relocation, a survey was conducted for indigo snakes, the results of which yielded no evidence of their existence on site. The tortoises were subsequently relocated to Fort Stewart. During the February / March 2015 study, nine (9) active burrows, seventeen (17) non-active burrows, and six (6) non-gopher tortoise burrows were found north of Tar City Road in the area where the tortoises were previously relocated. South of Tar City Road, twelve (12) active burrows, forty-five (45) inactive burrows, and twenty-five (25) non-gopher tortoise burrows were located (Figure 4). The burrows were surveyed for the presence of indigo snakes as stated in Section II (A). No evidence of the presence of indigo snakes was found. It is the applicant's intention to voluntarily relocate the remaining tortoises in the study area to a suitable alternate site to be determined through consultation with the Georgia Department of Natural Resources.

Striped Newt (*Notophthalmus perstriatus*)
The striped newt is another small salamander with a typical length of 5.1 to 10.5 cm. The striped newt is generally olive green to dark brown with yellow venter, and red dorsolateral stripes (Conant and Collins, 1991). Striped newts prefer habitats that include sandhills, scrub flatwoods, mesic flatwoods, and isolated ephemeral wetlands located within these habitats. Breeding occurs during late winter to spring (November through March) as adults migrate to ponds during heavy rainfall.

A site-specific survey for this species was conducted by Mr. Palis, who employed trapping and dip-netting techniques in suitable breeding ponds during the period of March 23 through March 28. No individuals were encountered. A detailed report documenting the study will be provided by Mr. Palis in the near future. Based upon the results of this study, it is unlikely that Striped newt exist on site and therefore the proposed development will not affect this species.

C. Critical Habitat

No Critical Habitats exist within the study area.

D. Bald and Golden Eagles

The Bald and Golden Eagle Protection Act of 1940 provides protection for the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession and commerce of such birds. Adult bald eagles are easily recognized by their familiar dark brown body and contrasting white head and tail. The bill, eyes, legs, and feet are yellow. Immature birds vary slightly in appearance depending on their age. They are generally dark brown with varying light patches, and the eyes and bill are dark. Full adult plumage is not attained until sexual maturity at about 5 years of age. The total length ranges from 30-43 in, the wingspread from 72-98 in, and weigh from 8-12 lbs. Females are noticeably larger than males and the average size of both sexes increases with latitude such that birds nesting in the northern states and Canada are significantly larger than birds nesting in southern states. Although there appears to be a continuous size gradient and no real genetic differences nor distinct breeding ranges, southern eagles are considered to be of the subspecies H. l. leucocephalus.

Juvenile bald eagles and non-nesting adults can be seen throughout Georgia, but known nesting activity is concentrated mostly along the coast and near major rivers, wetlands, and reservoirs in the southern and central parts of the state. Bald eagles almost always nest near open water. The coastal area, including the barrier islands, marsh islands, and nearby mainland, has always provided good eagle nesting habitat historically and still supports the greatest population density. However, construction of reservoirs such as Seminole, Walter F. George, Oconee, Allatoona, Carters, Clarks Hill, Nottley and West Point, has increased suitable inland nesting habitat. Bald eagles prefer isolated sites for nesting but are adapting to the presence of human disturbance in some areas. The nest is usually in a large, open-topped pine near open water, often on high ground if available. Occasionally cypress trees are used.

USFWS removed the bald eagle as threatened under the Endangered Species Act on August 8, 2007 and in May 2007 published the National Bald Eagle Management Guidelines to assist the public in understanding protections afforded to and prohibitions related to the bald eagle under the act, the Migratory Bird Treaty Act, and the Lacey Act. The Eagle Guidelines prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The Eagle Guidelines defines “take” as pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb. 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.

Based on annual nest survey data collected by the GADNR-WRD, the study area does not contain an eagle nests, and no individuals or nests were observed within the survey area during the field investigation. The proposed project would not result in a “take,” as defined under the Bald and Golden Eagle Protection Act.

E. Migratory Birds

The Migratory Bird Treaty Act and the Executive Order 13186 on the Responsibility of Federal Agencies to Protect Migratory Birds require the protection of migratory birds and their habitats. As directed under Executive Order 13186, in furtherance of the Migratory Bird Treaty Act, actions must be taken to avoid or minimize impacts to migratory bird resources and to prevent or abate the detrimental alteration of the environment for the benefit of migratory birds, as practicable. The Migratory Bird Treaty Act protects over 1,500 migratory bird species in the U.S and its territories. Notable exclusions include house sparrow, starling, feral pigeon, and resident game birds such as pheasant, grouse, quail, dove, and wild turkey. The Migratory Bird Treaty Act decrees that all migratory birds and their parts (including eggs, nests, and feathers) are fully protected.

No unique habitat or extraordinary resources will be affected by any proposed development within the project area. Therefore, the project will have little to no impact on migratory birds or their habitats.

F. Essential Fish Habitat

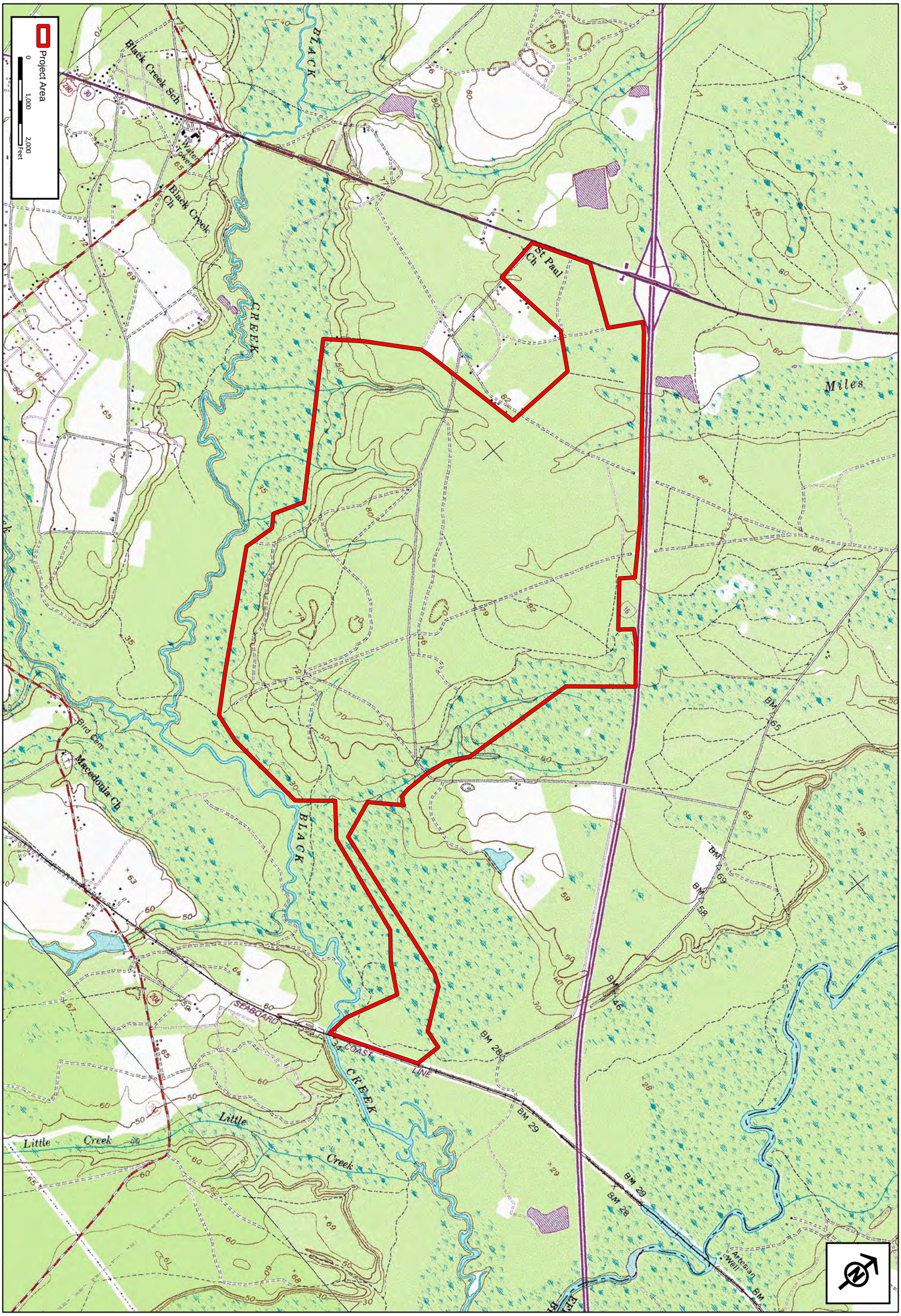
The Magnuson-Stevens Fishery Conservation and Management Act of 1996 mandates the identification of Essential Fish Habitat for managed species, as well as measures to conserve and enhance fish habitat. The Magnuson-Stevens Act requires cooperation among the National Marine Fisheries, fishing participants, and federal and state agencies. Essential fish habitat for federally managed fish species are defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. The Magnuson-Stevens Act established Regional Fishery Management Councils to identify essential fish habitat. Federal agencies must consult with the appropriate council on any action that may adversely impact a designated essential fish habitat. In Georgia, essential fish habitat can be found in the following counties: Camden, Glynn, McIntosh, Liberty, Bryan, and Chatham.

No habitat areas of particular concern and no essential fish habitat areas protected under the Magnuson-Stevens Act were identified within the study area.

III. Conclusion

In February and March 2015, RLC completed a Threatened and Endangered Species Assessment for the ±1,904.45 acre mega site study area located in Bryan County, Georgia. At no time during the survey was a species listed as

threatened or endangered by current federal regulations observed. It was determined that marginal habitat was present on the study area that could potential harbor Flatwoods salamanders, striped newts, indigo snakes, and gopher tortoise. Site-specific studies were conducted for these species, and only gopher tortoises are known to inhabit the study area. The applicant intends to undertake voluntary relocation efforts for remaining gopher tortoises in conjunction with state and federal agencies prior to development. Thus, the proposed development within this study area will not adversely affect any species listed as federally threatened, endangered, or as a candidate for listing in Bryan County, Georgia.



RLC Project No.:	14-225
Figure No.:	1
Sketch Date:	18 March 2015
Prepared By:	RP
Map Scale :	1 inch = 2,000 feet

Bryan County Mega-Site

Bryan County, Georgia

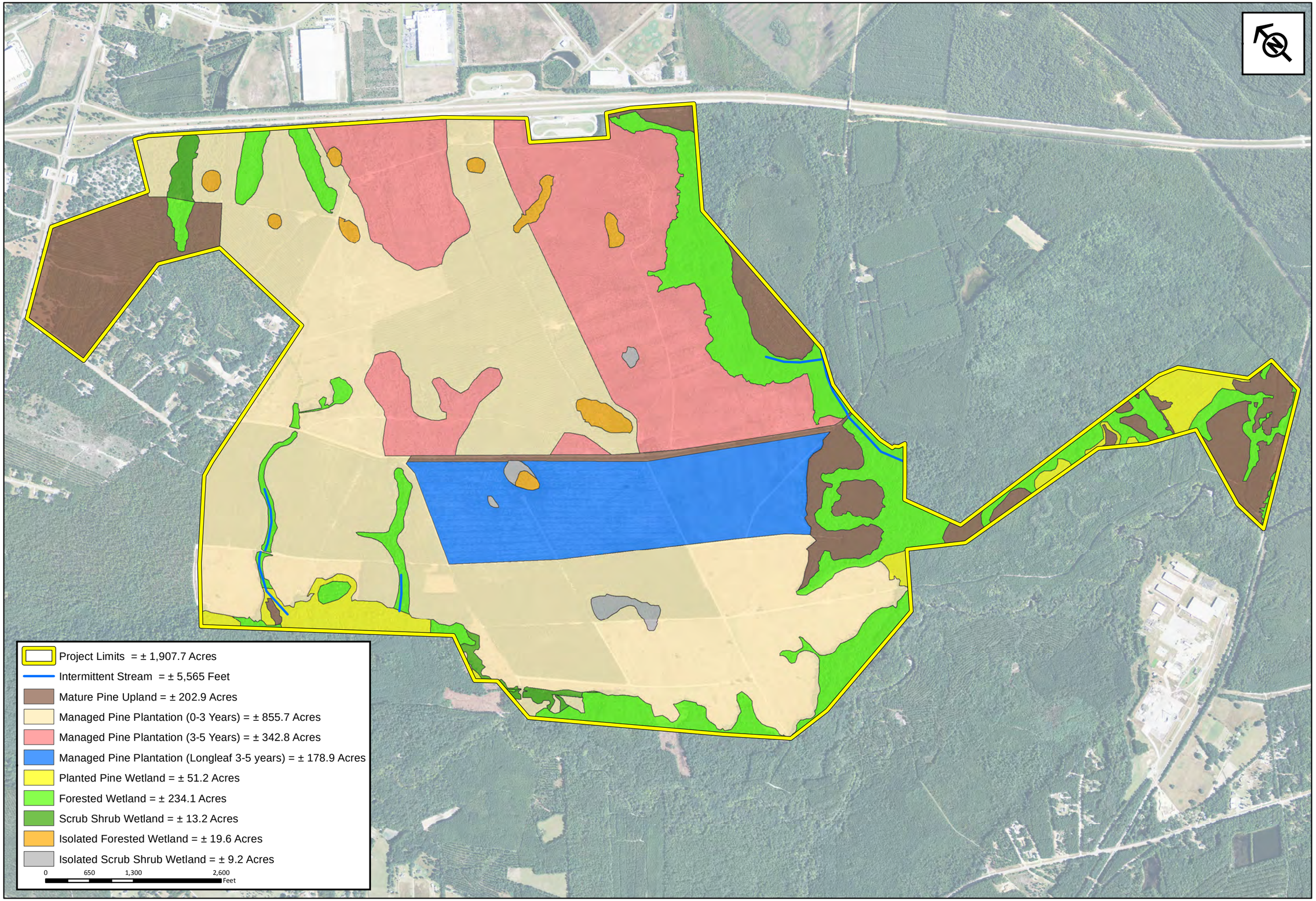
USGS Topographic Survey

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\T&E_Figure_1_Topo

Source(s): USGS Topographic Survey



Threatened & Endangered Species Habitat Map

Prepared For: SHJDA

Bryan County Mega-Site

Bryan County, Georgia

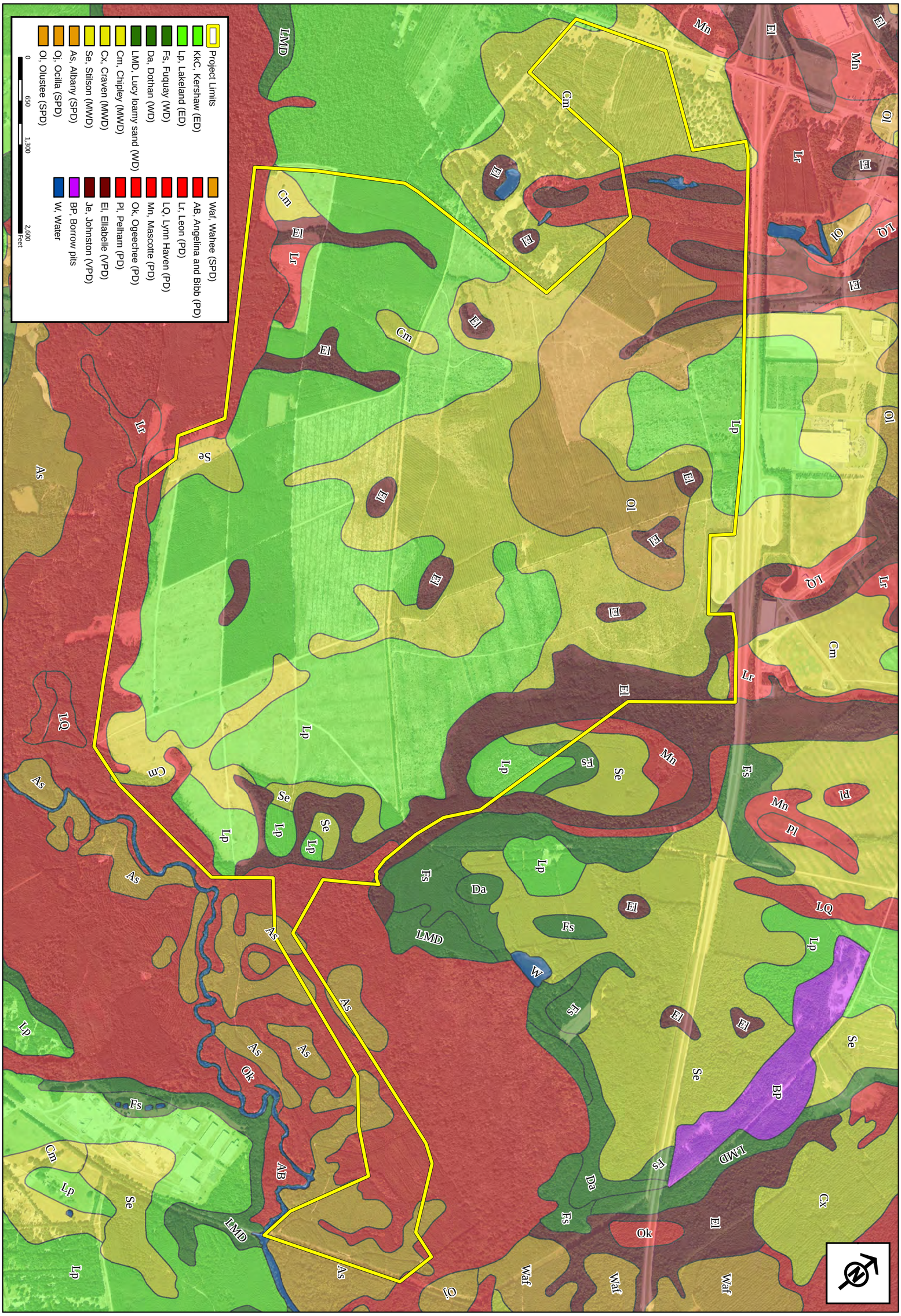
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

RLC

RLC Project No.:	14-225
Figure No.:	2
Sketch Date:	26 March 2015
Prepared By:	RP
Map Scale :	1 inch = 1,300 feet

Source(s): T&H DWGs 2013 NAIP Ortho Aerial, Bryan County

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\Graphics\Figures\T&E_Figure_2_Habitat_Map



RLC Project No.:	14-225
Figure No.:	3
Sketch Date:	18 March 2015
Prepared By:	ZM
Map Scale :	1 inch = 1,300 feet

Bryan County Mega-Site

Bryan County, Georgia

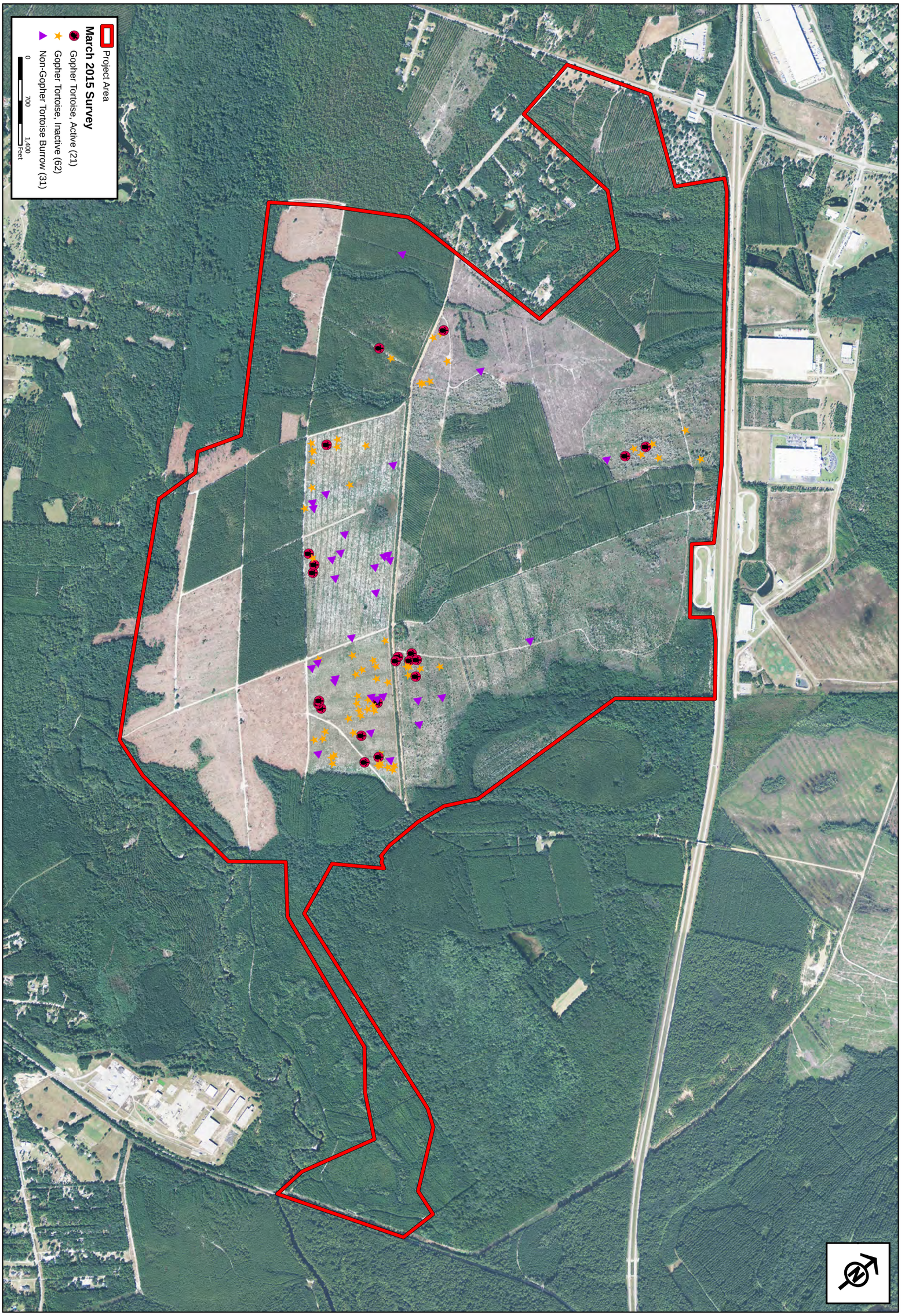
USDA NRCS Soils Survey

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\T&E_Figure_3_Soils

Source(s): 2013 NAIP Ortho Aerial, Bryan County;USDA NRCS Soils Survey



RLC Project No.:	14-225
Figure No.:	4
Sketch Date:	18 March 2015
Prepared By:	TS
Map Scale :	1 inch = 1,400 feet

Bryan County Mega-Site

Bryan County, Georgia

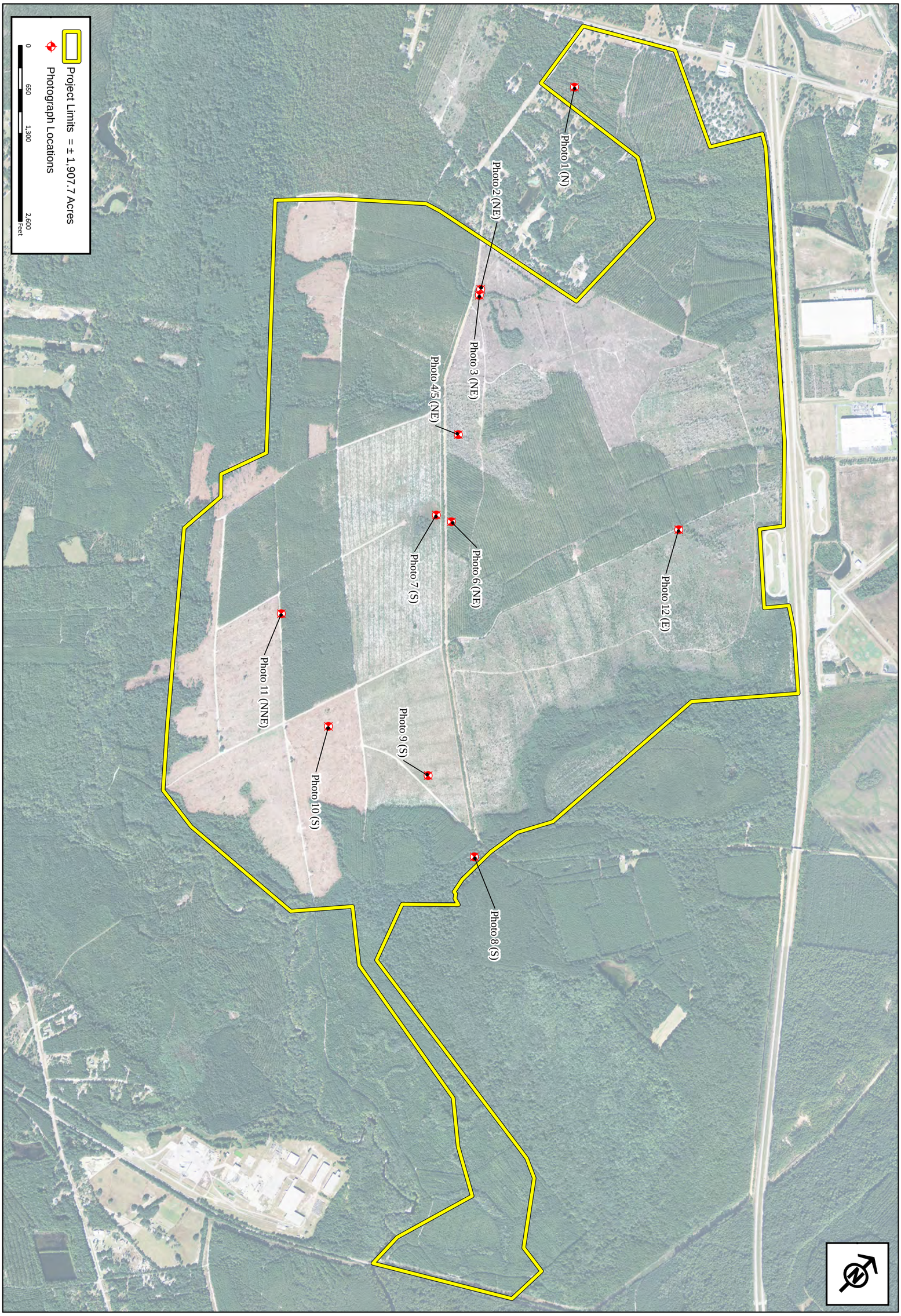
March 2015 Gopher Tortoise / Indigo Snake Survey

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\T&E_Figure_4 GT_Burrow_Map

Source(s): T&H DWGs 2013 NAIP Ortho Aerial, Bryan County



RLC Project No.:	14-225
Figure No.:	5
Sketch Date:	26 March 2015
Prepared By:	RP
Map Scale :	1 inch = 1,300 feet

Bryan County Mega-Site

Bryan County, Georgia

Photograph Location Map

Prepared For: SHJDA

RLC

RESOURCE+LAND CONSULTANTS

41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\T&E_Figure_5_Photograph_Map

Source(s): T&H DWGs 2013 NAIP Ortho Aerial, Bryan County

Photo 1: Mature pine upland facing north.

Photo 2: Managed pine plantation (0-3 years) facing northeast.

Photo 3: Forested wetland facing northeast.

Photo 4: Managed pine plantation facing northeast.

RLC Project No.:	14-225
Figure No.:	6
Exhibit Date:	27 March 2015
Prepared By:	RP
Photo Date:	24 March 2015

Bryan County Mega-Site

Bryan County, Georgia

Site Photographs

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\T&E_Figure_6_Site Photographs

Source(s): RLC Site Photographs

Photo 5: Managed pine plantation facing northeast.

Photo 6: Managed pine plantation (0-3 years) facing northeast.

Photo 7: Scrub shrub isolated wetland facing south.

Photo 8: Intermittent stream within the forested wetland facing south.

RLC Project No.:	14-225
Figure No.:	7
Exhibit Date:	27 March 2015
Prepared By:	RP
Photo Date:	24 March 2015

Bryan County Mega-Site

Bryan County, Georgia

Site Photographs

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Y:\2014 Projects\14-225 Ralph Forbes Bryan County Mega Site\graphics\figures\T&E_Figure_7_Site Photographs

Source(s): RLC Site Photographs

Photo 9: Managed pine plantation (Longleaf 3-5 years)

Photo 10: Managed pine plantation (0-3 years) facing south.

Photo 11: Isolated scrub shrub wetland facing north northeast.

Photo 12: Isolated forested wetland facing east.

RLC Project No.:	14-225
Figure No.:	8
Exhibit Date:	27 March 2015
Prepared By:	RP
Photo Date:	24 March 2015

Bryan County Mega-Site

Bryan County, Georgia

Site Photographs

Prepared For: SHJDA

RLC
RESOURCE+LAND CONSULTANTS
41 Park of Commerce Way, Ste. 303
Savannah, Georgia 31405
912.443.5896 www.rlandc.com

Source(s): RLC Site Photographs

APPENDIX A:

IPaC Trust Resources List &
GADNR County/Quadrangle Species Information

U.S. Fish and Wildlife Service

Trust Resources List

This resource list is to be used for planning purposes only — it is not an official species list.

Endangered Species Act species list information for your project is available online and listed below for the following FWS Field Offices:

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

Project Name:

Peach

U.S. Fish and Wildlife Service

Trust Resources List

Project Location Map:

Project Counties:

Bryan, GA

U.S. Fish and Wildlife Service

Trust Resources List

Geographic coordinates (Open Geospatial Consortium Well-Known Text, NAD83):

MULTIPOLYGON (((-81.4676435 32.1771365, -81.4641116 32.1788837, -81.4594767 32.1771402, -81.4582751 32.1791053, -81.4569877 32.178377, -81.451752 32.174385, -81.4467738 32.1704618, -81.444628 32.1683548, -81.4452288 32.1677009, -81.4424396 32.1655893, -81.4418195 32.1662559, -81.4404223 32.1655939, -81.4381536 32.164053, -81.4412806 32.1609438, -81.441973 32.1532391, -81.4428256 32.149826, -81.4427398 32.1492447, -81.4423964 32.1481546, -81.441624 32.1473552, -81.4441855 32.1460439, -81.4430831 32.1441576, -81.4307143 32.1428626, -81.4285777 32.1403058, -81.4271481 32.1402117, -81.4271459 32.1389126, -81.4328692 32.1357998, -81.4330409 32.1367446, -81.4321826 32.1406674, -81.433109 32.14138, -81.4338407 32.1418397, -81.4436839 32.1429204, -81.4462588 32.1445919, -81.4474213 32.1433895, -81.4540453 32.1429679, -81.4560322 32.1429534, -81.4649114 32.1505385, -81.4643496 32.1532432, -81.4650834 32.1538972, -81.4642423 32.1555595, -81.4727376 32.1629003, -81.4699824 32.1657122, -81.4672859 32.1673395, -81.4589646 32.1689342, -81.4590504 32.1736566, -81.4623978 32.1748917, -81.4672859 32.1743868, -81.4676435 32.1771365)))

Project Type:

Development

Endangered Species Act Species List (USFWS Endangered Species Program).

There are a total of **14** 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 fishes may appear on the species list because a project could cause downstream effects on the 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 below for critical habitat that lies within your project area. Please contact the designated FWS office if you have questions.

Species that should be considered in an effects analysis for your project:

Amphibians	Status		Has Critical Habitat	Contact
frosted flatwoods salamander (*Ambystoma cingulatum*) Population: Entire	Threatened	species info	Final designated critical habitat	Georgia Ecological Services Field Office
Striped newt (*Notophthalmus perstriatus*) Population:	Candidate	species info		Georgia Ecological Services Field Office
Birds				

Trust Resources List

Red Knot (*Calidris canutus rufa*) Population:	Threatened	species info		Georgia Ecological Services Field Office
Red-Cockaded woodpecker (*Picoides borealis*) Population: Entire	Endangered	species info		Georgia Ecological Services Field Office
Wood stork (*Mycteria americana*) Population: AL, FL, GA, MS, NC, SC	Threatened	species info		Georgia Ecological Services Field Office
Fishes				
Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) Population: South Atlantic DPS	Endangered	species info		Georgia Ecological Services Field Office
Shortnose sturgeon (*Acipenser brevirostrum*) Population: Entire	Endangered	species info		Georgia Ecological Services Field Office
Mammals				
North Atlantic right Whale (*Eubalaena glacialis*) Population: Entire	Endangered	species info	Final designated critical habitat Final designated critical habitat	Georgia Ecological Services Field Office
West Indian Manatee (*Trichechus manatus*) Population: Entire	Endangered	species info	Final designated critical habitat	Georgia Ecological Services Field Office
Reptiles				
Eastern Indigo snake (*Drymarchon corais couperi*) Population: Entire	Threatened	species info		Georgia Ecological Services Field Office
Gopher tortoise (*Gopherus polyphemus*) Population: eastern	Candidate	species info		Georgia Ecological Services Field Office
Green sea turtle (*Chelonia mydas*) Population: Except where endangered	Threatened	species info	Final designated critical habitat	Georgia Ecological Services Field Office

Trust Resources List

Leatherback sea turtle (*Dermochelys coriacea*) Population: Entire	Endangered	species info	Final designated critical habitat	Georgia Ecological Services Field Office
Loggerhead sea turtle (*Caretta caretta*) Population: Northwest Atlantic Ocean DPS	Threatened	species info	Final designated critical habitat	Georgia Ecological Services Field Office

Critical habitats within your project area:

There are no critical habitats within your project area.

FWS National Wildlife Refuges (USFWS National Wildlife Refuges Program).

There are no refuges found within the vicinity of your project.

FWS Migratory Birds (USFWS Migratory Bird Program).

The protection of birds is regulated by the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. For more information regarding these Acts see: http://www.fws.gov/migratorybirds/RegulationsandPolicies.html.

All project proponents are responsible for complying with the appropriate regulations protecting birds when planning and developing a project. To meet these conservation obligations, proponents should identify potential or existing project-related impacts to migratory birds and their habitat and develop and implement conservation measures that avoid, minimize, or compensate for these impacts. The Service's Birds of Conservation Concern (2008) report identifies species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become listed under the Endangered Species Act as amended (16 U.S.C 1531 et seq.).

For information about Birds of Conservation Concern, go to:
http://www.fws.gov/migratorybirds/CurrentBirdIssues/Management/BCC.html.

U.S. Fish and Wildlife Service

Trust Resources List

To search and view summaries of year-round bird occurrence data within your project area, go to the Avian Knowledge Network Histogram Tool links in the Bird Conservation Tools section at: http://www.fws.gov/migratorybirds/CCMB2.htm.

For information about conservation measures that help avoid or minimize impacts to birds, please visit: http://www.fws.gov/migratorybirds/CCMB2.htm.

Migratory birds of concern that may be affected by your project:
There are **34** birds on your Migratory birds of concern list. The underlying data layers used to generate the migratory bird list of concern will continue to be updated regularly as new and better information is obtained. User feedback is one method of identifying any needed improvements. Therefore, users are encouraged to submit comments about any questions regarding species ranges (e.g., a bird on the USFWS BCC list you know does not occur in the specified location appears on the list, or a BCC species that you know does occur there is not appearing on the list). Comments should be sent to the ECOS Help Desk.

Species Name	Bird of Conservation Concern (BCC)	Species Profile	Seasonal Occurrence in Project Area
American Kestrel (*Falco sparverius ssp. paulus*)	Yes	species info	Year-round
American Oystercatcher (*Haematopus palliatus*)	Yes	species info	Year-round
American bittern (*Botaurus lentiginosus*)	Yes	species info	Wintering
Bachman's sparrow (*Aimophila aestivalis*)	Yes	species info	Year-round
Bald eagle (*Haliaeetus leucocephalus*)	Yes	species info	Year-round
Black rail (*Laterallus jamaicensis*)	Yes	species info	Breeding
Brown-headed Nuthatch (*Sitta pusilla*)	Yes	species info	Year-round
Chuck-will's-widow (*Caprimulgus carolinensis*)	Yes	species info	Breeding
Common Ground-Dove (*Columbina passerina ssp. exigua*)	Yes	species info	Year-round
Fox Sparrow (*Passerella liaca*)	Yes	species info	Wintering
Henslow's sparrow (*Ammodramus henslowii*)	Yes	species info	Wintering

Trust Resources List

Le Conte's Sparrow (*Ammodramus leconteii*)	Yes	species info	Wintering
Least Bittern (*Ixobrychus exilis*)	Yes	species info	Breeding
Lesser Yellowlegs (*Tringa flavipes*)	Yes	species info	Wintering
Loggerhead Shrike (*Lanius ludovicianus*)	Yes	species info	Year-round
Marbled Godwit (*Limosa fedoa*)	Yes	species info	Wintering
Mississippi Kite (*Ictinia mississippiensis*)	Yes	species info	Breeding
Painted Bunting (*Passerina ciris*)	Yes	species info	Breeding
Peregrine Falcon (*Falco peregrinus*)	Yes	species info	Wintering
Prairie Warbler (*Dendroica discolor*)	Yes	species info	Breeding
Prothonotary Warbler (*Protonotaria citrea*)	Yes	species info	Breeding
Red Knot (*Calidris canutus rufa*)	Yes	species info	Wintering
Red-headed Woodpecker (*Melanerpes erythrocephalus*)	Yes	species info	Year-round
Rusty Blackbird (*Euphagus carolinus*)	Yes	species info	Wintering
Saltmarsh Sparrow (*Ammodramus caudacutus*)	Yes	species info	Wintering
Seaside Sparrow (*Ammodramus maritimus*)	Yes	species info	Year-round
Sedge Wren (*Cistothorus platensis*)	Yes	species info	Wintering
Short-billed Dowitcher (*Limnodromus griseus*)	Yes	species info	Wintering
Swainson's Warbler (*Limnothlypis swainsonii*)	Yes	species info	Breeding
Swallow-Tailed Kite (*Elanoides forficatus*)	Yes	species info	Breeding
Whimbrel (*Numenius phaeopus*)	Yes	species info	Wintering

Wood Thrush (*Hylocichla mustelina*)	Yes	species info	Breeding
Worm eating Warbler (*Helmitheros vermivorum*)	Yes	species info	Migrating
Yellow Rail (*Coturnicops noveboracensis*)	Yes	species info	Wintering

NWI Wetlands (USFWS National Wetlands Inventory).

The U.S. Fish and Wildlife Service is the principal Federal agency that provides information on the extent and status of wetlands in the U.S., via the National Wetlands Inventory Program (NWI). In addition to impacts to wetlands within your immediate project area, wetlands outside of your project area may need to be considered in any evaluation of project impacts, due to the hydrologic nature of wetlands (for example, project activities may affect local hydrology within, and outside of, your immediate project area). It may be helpful to refer to the USFWS National Wetland Inventory website. The designated FWS office can also assist you. Impacts to wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes. Project Proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate U.S. Army Corps of Engineers District.

Data Limitations, Exclusions and Precautions
The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery and/or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Exclusions - Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include

seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Precautions - Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

The following wetland types intersect your project area in one or more locations:

Wetland Types	NWI Classification Code	Total Acres
Freshwater Emergent Wetland	PEM1B	244.7218
Freshwater Forested/Shrub Wetland	PFO3/1B	17.0808
Freshwater Forested/Shrub Wetland	PFO1B	5.0297
Freshwater Forested/Shrub Wetland	PSS1B	3.2062
Freshwater Forested/Shrub Wetland	PFO1/3C	221.2848
Freshwater Forested/Shrub Wetland	PFO1C	41.535
Freshwater Forested/Shrub Wetland	PFO3/4B	430.7142
Freshwater Forested/Shrub Wetland	PFO1/4B	415.4337
Freshwater Forested/Shrub Wetland	PSS3/4B	18.4905

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
WILDLIFE RESOURCES DIVISION

Known occurrences of special concern plants, animals and natural communities
Bryan County — Fips Code: 13029

Find details for these species at Georgia Rare Species and Natural Community Data and NatureServe Explorer.

[US] indicates species with federal status (Protected or Candidate).
Species that are federally protected in Georgia are also state protected.
[GA] indicates Georgia protected species.
link to species profile on our site (not available for all species).
link to report for element on NatureServe Explorer (only available for animals and plants).

Animal Occurrences

- *Acipenser brevirostrum* (Shortnose Sturgeon) **[US]** - fish
- *Acipenser oxyrinchus oxyrinchus* (Atlantic Sturgeon) **[US]** - fish
- *Ambystoma cingulatum* (Frosted Flatwoods Salamander) **[US]** - amphibian
- *Ammodramus maritimus macgillivraii* (MacGillivraii's Seaside Sparrow) - bird
- *Chologaster cornuta* (Swampfish) - fish
- *Cicindela nigrior* (Autumn Tiger Beetle) - insect
- *Clemmys guttata* (Spotted Turtle) **[GA]** - reptile
- *Crotalus adamanteus* (Eastern Diamond-backed Rattlesnake) - reptile
- *Desmognathus auriculatus* (Southern Dusky Salamander) - amphibian
- *Drymarchon couperi* (Eastern Indigo Snake) **[US]** - reptile
- *Elanoides forficatus* (Swallow-tailed Kite) **[GA]** - bird
- *Elliptio congaraea* (Carolina Slabshell) - mollusk
- *Eumeces egregius similis* (Northern Mole Skink) - reptile
- *Farancia erytrogramma erytrogramma* (Common Rainbow Snake) - reptile
- *Gopherus polyphemus* (Gopher Tortoise) **[US]** - reptile
- *Haematopus palliatus* (American Oystercatcher) **[GA]** - bird
- *Haliaeetus leucocephalus* (Bald Eagle) **[GA]** - bird
- *Heterodon simus* (Southern Hognose Snake) **[GA]** - reptile
- *Lampsilis cariosa* (Yellow Lampmussel) - mollusk
- *Lithobates capito* (Gopher Frog) **[GA]** - amphibian
- *Lithobates virgatipes* (Carpenter Frog) - amphibian
- *Malaclemys terrapin* (Diamondback Terrapin) **[GA]** - reptile
- *Micrurus fulvius fulvius* (Eastern Coral Snake) - reptile
- *Moxostoma robustum* (Robust Redhorse) **[GA]** - fish
- *Necturus punctatus* (Dwarf Waterdog) - amphibian
- *Notophthalmus perstriatus* (Striped Newt) **[US]** - amphibian
- *Nyctanassa violacea* (Yellow-crowned Night-heron) - bird
- *Nycticorax nycticorax* (Black-crowned Night-heron) - bird
- *Ophisaurus attenuatus attenuatus* (Slender Glass Lizard) - reptile
- *Ophisaurus mimicus* (Mimic Glass Lizard) **[GA]** - reptile
- *Passerina ciris* (Painted Bunting) - bird

Peucaea aestivalis (Bachman's Sparrow) **[GA]** - bird
- *Picoides borealis* (Red-cockaded Woodpecker) **[US]** - bird
- *Pituophis melanoleucus mugitus* (Florida Pine Snake) - reptile
- *Pseudacris brimleyi* (Brimley's Chorus Frog) - amphibian
- *Pseudobranchus striatus striatus* (Broad-striped Dwarf Siren) - amphibian
- *Seminatrix pygaea pygaea* (Northern Florida Swamp Snake) - reptile
- *Stereochilus marginatus* (Many-lined Salamander) - amphibian
- *Toxolasma pullus* (Savannah Lilliput) **[GA]** - mollusk
- *Trichechus manatus* (Manatee) **[US]** - mammal
- *Umbra pygmaea* (Eastern Mudminnow) - fish

Community Occurrences

- *Betula nigra - Quercus laurifolia - Taxodium (distichum, ascendens) / Crataegus aestivalis Forest* (Atlantic Coastal Plain Blackwater Levee/Bar Forest)
- *Fagus grandifolia - Magnolia grandiflora / Ilex opaca - (Persea borbonia) / Mitchella repens Forest* (Atlantic Coastal Plain Acidic Loam Beech - Magnolia Forest)
- *Gordonia lasianthus - Magnolia virginiana - Persea palustris / Sphagnum spp. Forest* (Loblolly-bay Forest)
- *Juniperus virginiana var. silicicola - (Quercus virginiana, Sabal palmetto) Forest* (Cedar - Live Oak - Cabbage Palmetto Marsh Hammock)
- *Liquidambar styraciflua - Acer rubrum - (Nyssa biflora) / Woodwardia virginica Forest* (South Atlantic Coastal Nonriverine Swamp Forest)
- *Nyssa biflora - Acer rubrum var. rubrum / Lyonia lucida Forest* (Sandhills Swamp Blackgum Floodplain Forest)
- *Nyssa biflora - Acer rubrum var. trilobum - Liriodendron tulipifera / Ilex coriacea - Lyonia lucida Forest* (Sandhills Swamp Blackgum Hillside Seepage Forest)
- *Nyssa biflora - Magnolia virginiana - (Pinus elliottii var. elliottii) / Morella (caroliniensis, inodora) Forest* (Swamp Blackgum Bayhead Forest)
- *Pinus elliottii var. elliottii / Serenoa repens - Ilex glabra Woodland* (Slash Pine Flatwoods)
- *Pinus palustris / Quercus incana - Quercus stellata / Aristida beyrichiana - Sporobolus junceus - Nolina georgiana Woodland* ()
- *Pinus palustris / Quercus laevis - Quercus incana - Quercus margarettiae / Licania michauxii / Aristida beyrichiana Woodland* ()
- *Pinus palustris / Quercus laevis / Aristida purpurascens - Stipulicida setacea - (Rhynchospora megalocarpa, Selaginella acanthonota) Woodland* (Atlantic Coastal Plain Xeric Sandhill Scrub)
- *Pinus serotina - Pinus elliottii var. elliottii / Cliftonia monophylla - Cyrilla racemiflora Woodland* (Pond Pine - Titi Swamp)
- *Pinus serotina / Lyonia lucida - Ilex glabra - (Cyrilla racemiflora) Shrubland* (Evergreen High Pocosin)
- *Pinus taeda - Quercus laurifolia / Vaccinium elliottii - Arundinaria gigantea Forest* (Blackwater Bottomland Hardwood - Pine Forest (High Type))
- *Quercus falcata - Quercus stellata - Carya alba / Vaccinium spp. Coastal Plain Forest* (Dry Acid Eastern Coastal Plain Oak - Hickory Forest)
- *Quercus hemisphaerica - Magnolia grandiflora - Carya (glabra, pallida) / Vaccinium arboreum / Chasmanthium sessiliflorum Forest* (Sand Laurel Oak - Mixed Hardwood Upland Forest)
- *Quercus laurifolia - Quercus lyrata / Carpinus caroliniana - Persea palustris / Vaccinium elliottii Forest* (Atlantic Coastal Plain Blackwater River Terrace and Ridge Forest)
- *Quercus laurifolia / Carpinus caroliniana / Justicia ovata Forest* (Diamondleaf Oak Bottomland Forest)
- *Quercus pagoda - Quercus michauxii - Quercus alba / Arundinaria gigantea ssp. tecta - Sabal minor / Chasmanthium laxum Forest* ((Cherrybark Oak - Swamp Chestnut Oak - White Oak / Switch Cane - Dwarf Palmetto / Slender Woodoats Forest))
- *Quercus phellos - Quercus (pagoda, similis) - Pinus taeda / Chasmanthium laxum Forest* (South Atlantic Willow Oak Flatwoods Forest)
- *Quercus virginiana - (Pinus elliottii var. elliottii, Sabal palmetto) / Persea borbonia - Callicarpa americana Forest* (Maritime Live Oak Hammock)
- *Quercus virginiana - Quercus hemisphaerica - Pinus taeda - Quercus falcata / Ilex vomitoria Forest* (Atlantic Coastal Fringe Evergreen Forest)
- *Quercus virginiana - Quercus pagoda - Magnolia grandiflora - Carya glabra / Ilex opaca Forest* ()
- *Quercus virginiana / Serenoa repens Forest* (Florida Xeric Live Oak Hammock)
- *Salix caroliniana Temporarily Flooded Shrubland* (Carolina Willow Shrubland)
- *Spartina cynosuroides Herbaceous Vegetation* (Atlantic Giant Cordgrass Marsh)
- *Taxodium distichum - Nyssa aquatica - Nyssa biflora / Fraxinus caroliniana / Itea virginica Forest* (Atlantic Coastal Plain Bald-cypress - Water Tupelo Blackwater Small Stream Swamp Forest)

Other Occurrences

- *Wading Bird Colony* (Wading Bird Colony)

Plant Occurrences

- *Amorpha georgiana* (Georgia Indigo Bush) **[GA]**
- *Andropogon brachystachyus* (Shortspike Bluestem)
- *Ceratiola ericoides* (Sandhill Rosemary) **[GA]**
- *Elliottia racemosa* (Georgia Plume) **[GA]**
- *Epidendrum magnoliae* (Greenfly Orchid) **[GA]**
- *Illicium parviflorum* (Yellow Anise-tree)
- *Leitneria floridana* (Corkwood) **[GA]**
- *Liatris pauciflora* (Few-flower Gay-feather)
- *Lindera melissifolia* (Pond Spicebush) **[US]**
- *Litsea aestivalis* (Pond Spice) **[GA]**
- *Malaxis spicata* (Florida Adders-mouth)
- *Mikania cordifolia* (Heartleaf Climbing Hempweed)
- *Physostegia leptophylla* (Narrowleaf Obedient Plant)
- *Platanthera nivea* (Snowy Orchid)
- *Ponthieva racemosa* (Shadow-witch Orchid)
- *Rhynchospora punctata* (Pineland Beaksedge)
- *Rhynchospora torreyana* (Torrey Beakrush)
- *Sageretia minutiflora* (Climbing Buckthorn) **[GA]**
- *Sapindus marginatus* (Soapberry) **[GA]**
- *Sarracenia minor var. minor* (Hooded Pitcherplant) **[GA]**
- *Sideroxylon alachuense* (Silver Buckthorn)
- *Sideroxylon thornei* (Swamp Buckthorn) **[GA]**
- *Sporobolus pinetorum* (Pineland Dropseed)
- *Sporobolus teretifolius* (Wire-leaf Dropseed)
- *Stewartia malacodendron* (Silky Camellia) **[GA]**
- *Tradescantia roseolens* (Rosy Spiderwort)
- *Zenobia pulverulenta* (Honey-cups)

Generated from Georgia DNR's NatureServe Biotics conservation database on December 28, 2014

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
WILDLIFE RESOURCES DIVISION

Known occurrences of special concern plants, animals and natural communities
Eden, GA, SW Quarter Quad — Quarter Quad Code: 3208124SW

Find details for these species at Georgia Rare Species and Natural Community Data and NatureServe Explorer.

[US] indicates species with federal status (Protected or Candidate).
Species that are federally protected in Georgia are also state protected.
[GA] indicates Georgia protected species.
link to species profile on our site (not available for all species).
link to report for element on NatureServe Explorer (only available for animals and plants).

Animal Occurrences

- *Crotalus adamanteus* (Eastern Diamond-backed Rattlesnake) - reptile
- *Drymarchon couperi* (Eastern Indigo Snake) **[US]** - reptile
- *Elanoides forficatus* (Swallow-tailed Kite) **[GA]** - bird
- *Heterodon simus* (Southern Hognose Snake) **[GA]** - reptile
- *Notophthalmus perstriatus* (Striped Newt) **[US]** - amphibian
- *Pseudobranchus striatus striatus* (Broad-striped Dwarf Siren) - amphibian
- *Stereochilus marginatus* (Many-lined Salamander) - amphibian

Community Occurrences

- *Betula nigra - Quercus laurifolia - Taxodium (distichum, ascendens) / Crataegus aestivalis Forest* (Atlantic Coastal Plain Blackwater Levee/Bar Forest)
- *Gordonia lasianthus - Magnolia virginiana - Persea palustris / Sphagnum spp. Forest* (Loblolly-bay Forest)
- *Nyssa biflora - Acer rubrum var. trilobum - Liriodendron tulipifera / Ilex coriacea - Lyonia lucida Forest* (Sandhills Swamp Blackgum Hillside Seepage Forest)
- *Pinus palustris / Quercus incana - Quercus stellata / Aristida beyrichiana - Sporobolus junceus - Nolina georgiana Woodland* ()
- *Pinus palustris / Quercus laevis - Quercus incana - Quercus margarettiae / Licania michauxii / Aristida beyrichiana Woodland* ()
- *Pinus serotina - Pinus elliottii var. elliottii / Cliftonia monophylla - Cyrilla racemiflora Woodland* (Pond Pine - Titi Swamp)
- *Quercus falcata - Quercus stellata - Carya alba / Vaccinium spp. Coastal Plain Forest* (Dry Acid Eastern Coastal Plain Oak - Hickory Forest)
- *Quercus virginiana / Serenoa repens Forest* (Florida Xeric Live Oak Hammock)

Plant Occurrences

- *Stewartia malacodendron* (Silky Camellia) **[GA]**

Generated from Georgia DNR's NatureServe Biotics conservation database on December 28, 2014

APPENDIX H:

Cultural Resources Information & Preliminary Management Summary

March 31, 2015

Hugh Tollison
President
Savannah Economic Development Authority
131 Hutchinson Island Road,
Fourth Floor,
Savannah, Georgia 31421

Re: Bryan County Industrial Park Megasite (Phase 1 Tract) Archaeological Survey (Bryan County, Georgia)

Mr. Tollison:

Between March 9 and March 27, 2015, Brockington and Associates, Inc. (Brockington) completed a Phase I Archaeological survey for the Phase 1 tract of the Bryan County Industrial Park Megasite located in Bryan County, Georgia (Figure 1). A Cultural Resources Overview for the proposed undertaking, including a site reconnaissance visit and background literature review, was completed March 6, 2015 and submitted to Savannah Economic Development Authority prior to survey. This investigation is for due diligence informational purposes only but anticipates future permitting requirements, as current development plans for this parcel are expected fall under the purview of Section 106 of the NHPA, via application for US Army Corps of Engineers (USACE)-issued wetlands permit (Section 404 of the Clean Water Act). As part of the initial March 6 overview, Brockington recommended that a Phase I Cultural Resources survey be carried out within a defined Area of Potential Effects (APE) for the property. The Archaeological survey completed a portion of that recommendation. Additional survey of historic architectural resources within or near the parcel that may be affected by its development will be conducted the week of March 30, 2015. This letter serves as a Management Summary for the Archaeological Survey of the Phase 1 tract.

To date these surveys are limited to the 1,120-acre Phase 1 development parcel, which notably has changed configuration since my letter of March 6, 2015 and the initiation of fieldwork on March 9, 2015. The proposed railroad access corridor on the southern end of the Phase 1 tract was shifted, overall reducing the original 1,340-acre survey area. The Phase 1 tract is a subset of a larger 3020-acre parcel bounded to the northeast by Interstate-16 and to the southwest by Black Creek. It is bounded to the southeast and northwest by the Central of Georgia Railroad/Cuyler Road, and US 280 and the Black Creek neighborhood, respectively. Tar City Road passes through the site and outside of the railroad access, the Phase 1 tract lies to the north of this road. The area is characterized by the large sand flats and interior, non-linear wet land representing former sea levels within the Barrier Island sequence of the Coastal Plain Physiographic province.

The initial literature review via records that are currently maintained by the Georgia Archaeological Site files (GASF) at the University of Georgia did not identify any previously recorded cultural resources within the Subject Property. Only two archaeological sites are listed within a one-mile search radius of the Subject Property:

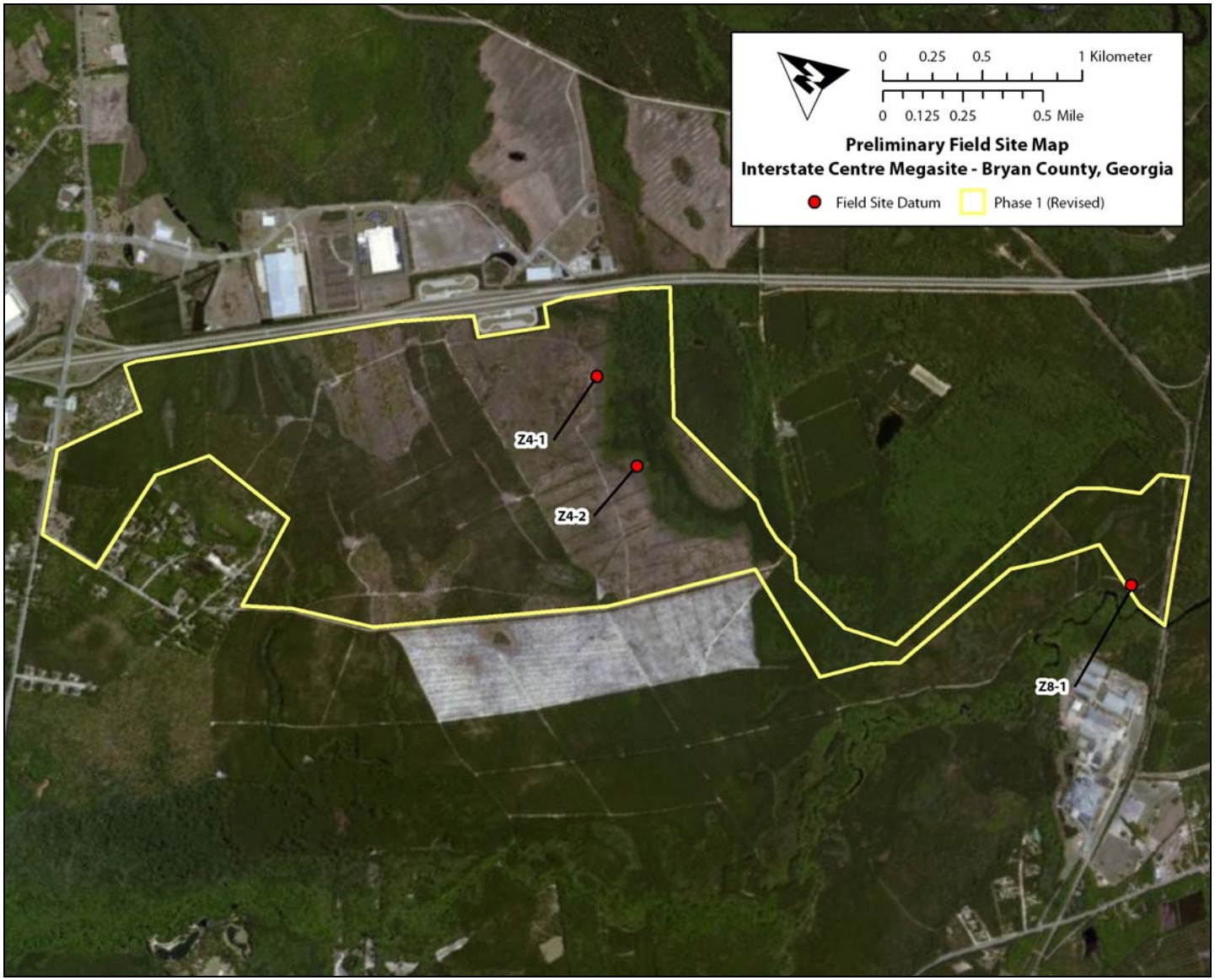


Figure 1. Aerial imagery of the Bryan County Industrial Park Megasite, Phase 1 tract.

- Site 9BN266 is a small Prehistoric artifact scatter identified by Georgia Department of Transportation (GDOT) on a knoll 75 m west of the Ogeechee River. In addition to six chert flakes indicating stone tool making debris, the presence of both fiber- and grit-tempered pottery sherds suggests deposits date from the Late Archaic through Mississippian periods. This site was not evaluated for NRHP eligibility.

- Site 9BN501 represents a razed structure dating to the late nineteenth or early twentieth century. This site was identified by Brockington during a survey of the Ivanhoe transmission line for the Georgia Transmission Corridor. In addition to a rubble pile representing a former structure, the scatter of artifacts included tin turpentine pots indicating former industry in the region. Turpentine production in the project area is also suggested in the name of "Tar City" Road. In the vicinity of the Subject Property, Brockington's previous survey (refer to March 6 letter) follows Cuyler Road south to the Central of Georgia Railroad, flowing it southwest across Black Creek.

In addition, an examination of early maps, in particular US Geological Survey (USGS) topographical quadrangles, identified no former structures within the Phase 1 tract as currently configured. Although it is crisscrossed by unimproved roads from the earliest maps surveyed, it was hypothesized that these reflected the use of the land for turpentine collection and later, silviculture. In addition, the Phase 1 tract has less extensive wetlands depicted on later maps. This was believed to be in part due to the increased level of map detail; however, as can be seen on aerial photos of the area, portions of the Phase 1 tract have been drained by a series of ditches running parallel to Tar City Road.

An on-site assessment was made based on topography, setting, previous regional surveys, and nearby resources as to the potential for the project tract to produce as yet unidentified archaeological resources. Much of the Phase 1 tract, particularly the southern third, is comprised of wetlands and floodplains along Black Creek and its tributaries. In addition to the floodplains, other poorly drained areas include the drainages themselves, as well as numerous small depressions scattered throughout the tract. Because these areas are poorly drained and frequently flooded, they are considered to be low probability for evidence of previous human settlements. Human activities in these areas would have been transitory, related to occasional resource procurement, for example, and not long-term encampments.

Sandy flats, which make up the bulk of the Phase 1 tract between Interstate 16 and Tar City Road, can be considered low to moderate probability for containing archaeological sites based on drainage; most are classified as poorly drained but range up to moderately well-drained, being dry enough for at least temporary settlement.

These flats typically exist between the drainages or floodplains and the upland rises or prominent interfluval terraces. The well-drained and generally flat uplands are considered amenable to human habitation and therefore to have a high probability for historic or prehistoric settlement, as these would be most likely to have been used in the past for settlement, while forests and seasonal wetlands may have been used as resource procurement locales. A few areas surrounding

and within the wetlands in the Phase 1 tract fall into this category, as most of these rises lie along a slight bluff above Black Creek, south of Tar City Road.

During the field investigations, archaeologists investigated the Phase 1 tract through a combination of shovel testing and pedestrian survey (surface inspection). The methods were consistent with the State of Georgia professional standards (Georgia Council of Professional Archaeologists 2001), complied with the guidelines set forth in 36 CFR Part 800, and were carried out by personnel qualified under 36 CFR Part 61. Field methods consisted of the hand excavation of .3-m (one-ft) wide shovel tests (STs) placed at 30-m (100-ft) intervals along survey transects. All soil from shovel tests was screened with one-quarter-inch mesh hardware cloth for the recovery of archaeological materials.

Survey transects were traversed northeast (50°), approximately perpendicular to Tar City Road. Survey consisted of STs placed at 30-m intervals. Transects and STs were defined alphanumerically north to south and west to east. To reduce confusion, a higher order classification (Zone [Z]) was added breaking the survey area generally into 26 transect sections. Thus, Zone 1, Transect A, ST 1 is in the northwest corner of the survey area. GPS waypoint (WP) designations generated for each ST by the GIS software have also been maintained for ease of report figure generation.

Following initial survey STs at 30-m intervals, additional delineation STs were excavated at reduced 10- (32 ft) and 20-m (65 ft) increments surrounding positive (i.e., containing cultural material) STs in four cardinal directions to identify additional cultural materials and/or delineate boundaries of a potential archaeological site. This was conducted until at least two sterile (i.e., devoid of cultural material) STs were reached in all directions, creating a minimal 10-m buffer defining the site area, but without additionally disturbing interior site deposits. This information can be used to protect the sites during construction. If the sites cannot be avoided, additional NRHP evaluation and assessment of the project's effects may be required. Boundaries of all culturally sensitive areas were recorded with GPS (≤ 3-m accuracy).

In this manner, a total of 5,027 possible ST locations were examined throughout the Phase 1 tract by a crew of six to ten archaeologists. Per GCPA guidelines (2001), where surface visibility was adequate (>75 percent) or soils were obviously disturbed, ST locations were subjected to close surface inspection only. In particular, surface inspection occurred within recently cleared areas. The Phase 1 tract appears to have been extensively planned and logged over time, and planted pines in the tract were actively being cut and cleared at the time of the survey. As a result, much of the tract is clear of vegetation, outside of logging decks, and also visibly disturbed, with deeply cut bedding rows. In addition, as mentioned, much of the tract is defined as wetland. Although survey transects were continued throughout the wetlands, STs could not be excavated in areas of standing water.

In addition to modern, recently dumped, debris, which was common along the periphery of the tract nearest roads and houses, a few archaeological resources were noted during the survey, though of particular note, expected evidence of the turpentine industry was lacking. Three archaeological finds were designated in the field by Zone as Z4-1, Z4-2, and Z8-1 (see Figure 1).

Field sites (FS) Z4-1 and Z4-2 are both isolated finds. At these loci, additional STs failed to produce additional cultural material. FS Z4-1 (ST R39; WP 3538) is a historic ceramic rim found on the surface alongside a logging road. FS Z4-2 (ST V22; WP 3758) is a quartz flake, evidence of prehistoric stone tool production. It was identified within the top soil (Ap horizon) of a ST within an upland terrace on the wetland margins north of Tar City Road.

FS Z8-1 (Figures 2 -3) is a multi-component artifact scatter identified in the southern end of the project area. The site was first identified as a surface scatter of historic artifacts at a ST location (R2; WP 658) along the unimproved road that runs along the uplands parallel to Black Creek. A second ST (R1; WP 659) contained prehistoric material. Forty-eight additional STs at 10-m intervals were excavated surrounding these two find spots, of which nine contained addition historic and prehistoric material, and extend outside the Phase 1 tract.

Figure 2. General view of FS Z8-1, looking south from road.

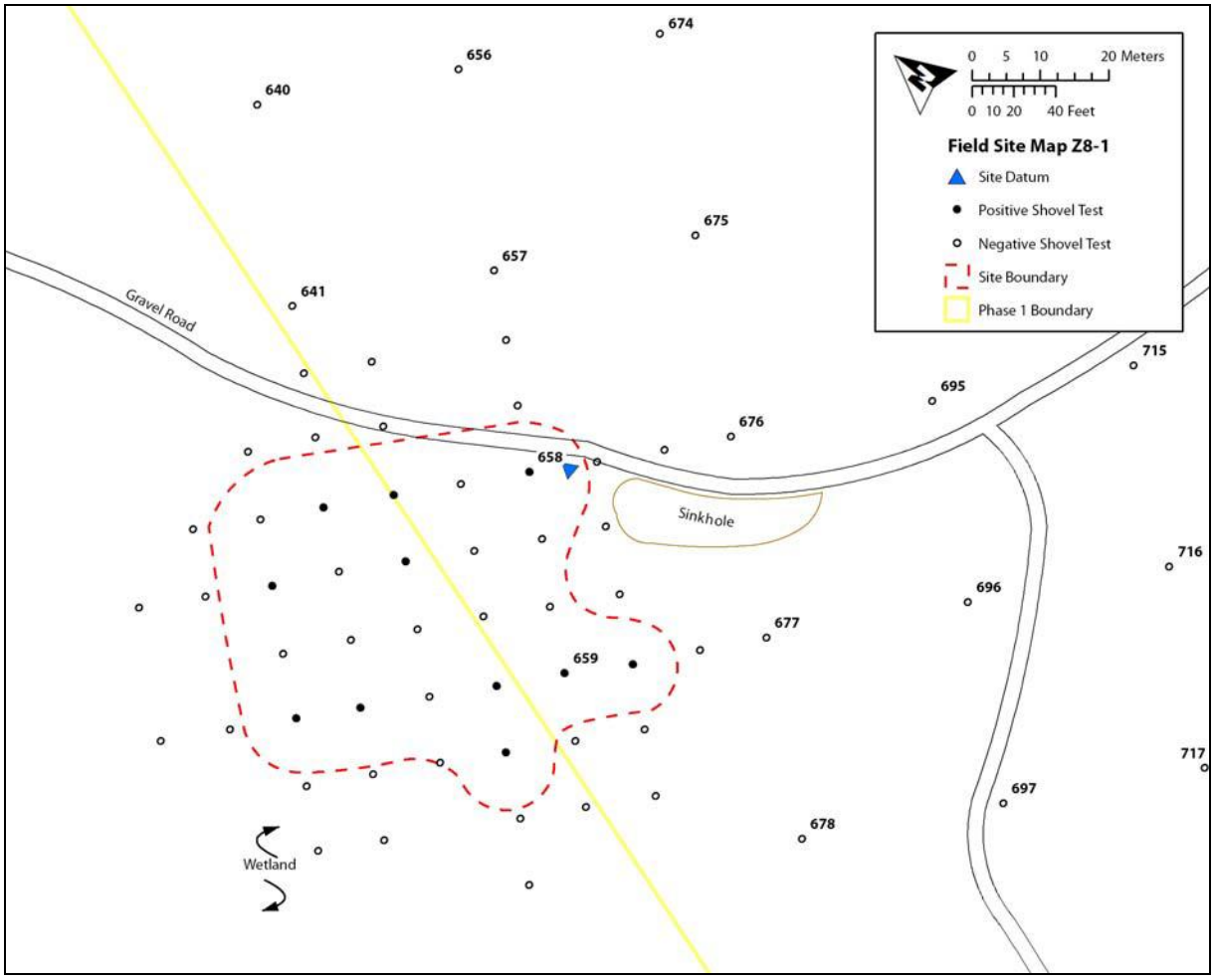


Figure 3. Site map detailing shovel testing and delineation of FS Z8-1.

FS Z8-1 lies primarily in an area of planted pines, between the road and the Black Creek floodplain. The typical soil profile consists of mixed and unconsolidated soils remnant of the planting and logging process overlying truncated subsoils. Overall, the soil profile is consistent with the expected Albany fine sand profile, the soil pedon classified at this locale by the US Department of Agriculture:

I: 0-18 cm, mixed grayish brown (10YR 5/2) and yellow (10YR 7/6) loamy sand (Ap/E horizon)
II: 18-22 cm, yellow (10YR 7/6) loamy sand (E1 horizon)
III: 22-33 cm, light yellowish brown (2.5Y 6/4) loamy sand (E2 horizon)
IV: 33+ cm, gray (10YR 6/1) sandy loam (B horizon)

The disturbed, mixed topsoil decreases in depth approaching the wetland to the south, and is greatest within the pine rows. STs closest the wetlands have an intact Ap horizon. Artifacts

appear to be well-distributed through the upper three soil strata (A and E horizons). In total, four historic ceramic sherds, six prehistoric sherds, five pieces of glass and 11 pieces of stone debitage from prehistoric tool making were identified, and are currently in the process of being cataloged and classified by Brockington's laboratory staff. In addition, this site will be registered with GASF and receive a standard trinomial designation.

Based on this preliminary shovel testing, it is unclear how well-preserved the cultural deposits are under recent silvicultural disturbances, and the relative percentage of the site that is undisturbed. However, given that a significant portion of the artifact assemblage emanates from undisturbed subsoil horizons, we recommend that the prehistoric component of FS Z8-1 be minimally considered potentially eligible for the National Register of Historic Places (NRHP) under Criterion D (have yielded, or may be likely to yield, information important in prehistory or history), pending additional testing an evaluation.

Such evaluative Phase II testing would take the form of ≥ 1-m excavation units from representative portions of the site to sample both the densest artifact deposits and compare artifact components horizontally across the site and vertically across soil strata to determine how well-stratified or preserved the site is. To accomplish this, units would be excavated in discrete ≤ 0.1-m levels to a point below which artifacts are no longer expected. In addition smaller, ≤ 0.5-m units or STs at smaller intervals may be conducted across the site to provide additional spatial data, if warranted.

It is notable that, in addition to the relative intactness of the site, Z8-1 may also be representative of finds along the wetland margins above Black Creek. While only a small portion of this high-probability landform was included in the Phase 1 tract, it also produced the most significant archaeological finds of the investigation. In my previous March 6 Overview, I suggested that if intact archaeological sites were located in the Bryan County Industrial Park Megasite, they would likely be found in upland areas adjacent to long-established wetlands on the southwestern boundary of the Phase 2 tract, that they might consist of small, isolated activity areas and zones of resource procurement; and that they would not likely contain extensive habitation remains. Prehistoric camps would be in the well-drained, upland areas, within a fairly close proximity to water. Although preliminary, the finds at Z8-1 may represent a short-term camp for the procurement of wetland resources that would have provided a variety of natural resources.

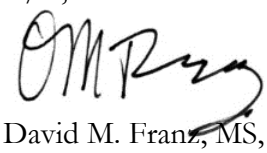
Conversely, the historic component of Z8-1 likely represents early twentieth-century off-site trash dumping away from dwellings and onto the surface of lower elevations such as hillsides or gullies. Historic map research has documented a farmstead further to the northwest along this same road, and may be the source of the refuse disposal. This component is confined largely to a surface scatter along the road and appears to be either out-of-context, and/or of limited research potential to further understanding of the historic period. We recommend that the historic component of Z8-1 is ineligible for the NRHP, and merits no further investigation.

In summary, Brockington has identified one multicomponent archaeological site, FS Z8-1, within the Phase 1 tract of the Bryan County Industrial Park Megasite. We recommend the prehistoric component of FS Z8-1 be considered potentially eligible for the NRHP pending additional

testing. With the concurrence of the interested parties, Brockington recommends this testing begin as part of the due diligence effort under the existing contract with the Savannah Economic Development Authority. Following notification of USACE and the Georgia State Historic Preservation Office, we anticipate beginning this testing the week of April 6, 2015.

Please review this information and if you have any questions, or need additional information, please feel free to contact me at (770)662-5807, or online at DavidFranz@brockington.org.

V/R,



David M. Franz, MS, RPA
Senior Archaeologist

APPENDIX I:

Compensatory Mitigation Credit Calculations

WETLANDS AND OPEN WATERS
MITIGATION WORKSHEETS

Bryan County Mega Site
April 2015

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	Jurisdictional Wetlands	Non-Jurisdictional Wetlands	*Impaired Wetlands	Ditch	Area 5	Area 6
Dominant Effect	2.0	2.0	2.0	2.0		
Duration of Effect	2.0	2.0	2.0	2.0		
Existing Condition	1.5	1.0	1.0	0.1		
Lost Kind	1.5	1.5	1.5	0.1		
Preventability	0.5	0.5	0.5	0.1		
Rarity Ranking	0.1	0.1	0.1	0.1		
Sum of r Factors	R_1 = 7.6	R_2 =7.1	R_3 = 7.1	R_4 = 4.4	R_5 =	R_6 =
Impacted Area	AA_1 = 115.98	AA_2 = 16.9	AA_3 =9.15	AA_4 =0.62	AA_5 =	AA_6 =
R × AA =	881.5	120.0	65.0	2.7		

Total Required Credits = ∑ (R × AA) = **1069.2**

*Impaired Wetlands include Impact I, J, K, L, and 3 which have been altered by historic ditching and/or road construction.

WORKSHEET 1: ADVERSE IMPACT FACTORS FOR RIVERINE SYSTEMS WORKSHEET

Stream Type Impacted	Intermittent 0.1			Perennial Stream > 15' in width 0.4			Perennial Stream ≤ 15' in width 0.8		
Priority Area	Tertiary 0.5			Secondary 0.8			Primary 1.5		
Existing Condition	Fully Impaired 0.25			Somewhat Impaired 0.5			Fully Functional 1.0		
Duration	Temporary 0.05			Recurrent 0.1			Permanent 0.2		
Dominant Impact	Shade/ Clear 0.05	Utility X-ing 0.4	Bank Armor 0.7	Deten-tion 1.5	Stream Crossing (≤ 100') 1.7	Impound 2.7	Morpho-logic Change 2.7	Pipe >100' 3.0	Fill 3.0
Scaling Factor (Based on # linear feet impacted)	< 100' impact 0	100-200' impact 0.05	201-500' impact 0.1	501-1000' impact 0.2	> 1000' impact 0.4 for each 1000' feet of impact (round impacts to the nearest 1000') (example: 2,200' of impact – scaling factor = 0.8; 2,800' of impact – scaling factor – 1.2)				

Reaches to Be Impacted	Reach 1	Reach 2	Reach 3	Reach 4
	Complete the Following for Each Reach to Be Impacted			
Simon Channel Evolution Stage				
Rosgen Stream Type/D50				
Criteria for Selecting Existing Condition for Each Reach				
Bankfull Width and Depth	Width: Depth:	Width: Depth:	Width: Depth:	Width: Depth:
Bankfull Indicators (attach photograph showing bankfull for each reach)				

Factors	Proposed Impacts	Previously Authorized Impacts	Reach 3	Reach 4
Stream Type Impacted	0.1	0.1		
Priority Area	0.5	0.5		
Existing Condition	0.5	0.5		
Duration	0.2	0.2		
Dominant Impact	3.0	3.0		
Scaling Factor	0.8	0.2		
Sum of Factors M =	5.1	4.5		
Feet Stream in Reach Impacted LF =	1868	763		
M X LF =	9526.8	3433.5		

Total Mitigation Credits Required = (M X LF) = 12,960.3

APPENDIX J:
CESAS Form 19

JOINT APPLICATION
FOR
A DEPARTMENT OF THE ARMY, CORPS OF ENGINEERS PERMIT,
STATE OF GEORGIA MARSHLAND PROTECTION PERMIT,
REVOCABLE LICENSE AGREEMENT
AND REQUEST FOR
WATER QUALITY CERTIFICATION
AS APPLICABLE

INSTRUCTIONS FOR SUBMITTING APPLICATION:

Every Applicant is Responsible to Complete The Permit Application and Submit as Follows: One copy each of application, location map, drawings, copy of deed and any other supporting information to addresses 1, 2, and 3 below. If water quality certification is required, send only application, location map and drawing to address No. 4.

1. For Department of the Army Permit, mail to: Commander, U.S. Army Engineer District, Savannah ATTN: CESAS-OP-F, P.O. Box 889, Savannah, Georgia 31402-0889. Phone (912)652-5347 and/or toll free, Nationwide 1-800-448-2402.

2. For State Permit - State of Georgia (six coastal counties only) mail to: Habitat Management Program, Coastal Resources Division, Georgia Department of Natural Resources, 1 Conservation Way, Brunswick, Georgia 31523. Phone (912) 264-7218.

3. For Revocable License - State of Georgia (six coastal counties plus Effingham, Long, Wayne, Brantley and Charlton counties only) - Request must have State of Georgia's assent or a waiver authorizing the use of State owned lands. All applications for dock permits in the coastal counties, or for docks located in tidally influenced waters in the counties listed above need to be submitted to Real Estate Unit. In addition to instructions above, you must send two signed form letters regarding revocable license agreement to: Ecological Services Coastal Resources Division, Georgia Department of Natural Resources, 1 Conservation Way, Brunswick, Georgia 31523. Phone (912) 264-7218.

4. For Water Quality Certification State of Georgia, mail to: Water Protection Branch, Environmental Protection Division, Georgia Department of Natural Resources, 4220 International Parkway, Suite 101, Atlanta, Georgia 30354 (404) 675-1631.

The application must be signed by the person authorized to undertake the proposed activity. The applicant must be the owner of the property or be the lessee or have the authority to perform the activity requested. Evidence of the above may be furnished by copy of the deed or other instrument as may be appropriate. The application may be signed by a duly authorized agent if accompanied by a statement from the applicant designating the agent. See item 6, page 2.

1. Application No. _____

2. Date

3. For Official Use Only_____

4. Name and address of applicant.
Savannah Harbor Interstate 16 Corridor Joint Development
Authority Attn: Mr. Hugh "Trip" Tollison
131 Hutchinson Island Road, 4th Floor
Savannah, Georgia 31412
912.447.8450

5. Location where the proposed activity exists or will occur.

Lat.32.164165° Long.-81.450411°

Bryan		
County	**Military District**	**In City or Town**
Black Creek		
Near City or Town	**Subdivision**	**Lot No.**
		Georgia
Lot Size	**Approximate Elevation of Lot**	**State**
	Black Creek	
Name of Waterway	**Name of Nearest Creek, River, Sound, Bay or Hammock**	

CESAS Form 19

6. Name, address, and title of applicant's authorized agent for permit application coordination.

Resource & Land Consultants
41 Park of Commerce Drive, Suite 303
Savannah, Georgia 31405

Attn: Alton Brown, Jr.
(912) 443-5896

Statement of Authorization: I Hereby designate and authorize the above named person to act in my behalf as my agent in the processing of this permit application and to furnish, upon request, supplemental information in support of this application.

Signature of Applicant

10 April 2015
Date

7. Describe the proposed activity, its purpose and intended use, including a description of the type of structures, if any to be erected on fills, piles, of float-supported platforms, and the type, composition and quantity of materials to be discharged or dumped and means of conveyance. If more space is needed, use remarks section on page 4 or add a supplemental sheet. (See Part III of the Guide for additional information required for certain activities.)

See Attached Project Description

8. Proposed use: Private _____ Public_____ Commercial X___ Other ___

9. Names and addresses of adjoining property owners whose property also adjoins the waterway.
See attached

10. Date activity is proposed to commence. Upon receipt of authorization to proceed.

Date activity is expected to be completed. Within 15 years of authorization to proceed.

11. Is any portion of the activity for which authorization is sought now complete __Y __X__N

A. If answer is "Yes", give reasons in the remarks in the remarks section.
Indicate the existing work on the drawings.

B. If the fill or work is existing, indicate date of commencement and completion.

C. If not completed, indicate percentage completed.

12. List of approvals or certifications required by other Federal, State or local agencies for any structures, construction discharges, deposits or other activities described in this application. Please show zoning approval or status of zoning for this project.

Issuing Agency	Type Approval	Identification No.	Date/Application	Date/Approval
GADNR-EPD	401 Certification		Concurrent	Under Review

13. Has any agency denied approval for the activity described herein or for any activity directly related to the activity described herein? ___Yes _X__NO (If "yes", explain).

Note: Items 14 and 15 are to be completed if you want to bulkhead, dredge or fill.

14. Description of operation: (If feasible, this information should be shown on the drawing).

A. Purpose of excavation or fill To facilitate construction of a manufacturing facility

1. Access channel : length_____ depth_____ width_____

2. Boat basin : length_____ depth_____ width_____

3. Fill area : see attached length_____ depth_____ width_____

4. Other:Excavation Area: length_____ depth_____ width_____

B. 1.If bulkhead, give dimensions N/A

2.Type of bulkhead construction (material) N/A

Backfill required: Yes _____ **No** _____ **Cubic yards** _____

Where obtained _____

C. Excavated material :

1.Cubic yards _____

2.Type of material _____

15.Type of construction equipment to be used Mechanized earth-moving/construction equipment

A. Does the area to be excavated include any wetland? Yes _____ **No** X

B. Does the disposal area contain any wetland? Yes _____ **No** X

C. Location of disposal area N/A

C. Maintenance dredging, estimated amounts, frequency, and disposal sites to be utilized: N/A

E. Will dredged material be entrapped or encased? N/A

F. Will wetlands be crossed in transporting equipment to project site? N/A

G. Present rate of shoreline erosion (if known) N/A

16. WATER QUALITY CERTIFICATION: In some cases, Federal law requires that a Water Quality Certification from the State of Georgia be obtained prior to issuance of a Federal license or permit. Applicability of this requirement to any specific project is determined by the permitting Federal agency. The information requested below is generally sufficient for the Georgia Environmental Protection Division to issue such a certification if required. Any item which is not applicable to a specific project should be so marked. Additional information will be requested if needed.

A. Please submit the following:

1. A plan showing the location and size of any facility, existing or proposed, for handling any sanitary or industrial waste waters generally on your property.

2. A plan of the existing or proposed project and your adjacent property for which permits are being requested.

3. A plan showing the location of all points where petro-chemical products (gasoline, oils,cleaners) used and stored. Any above-ground storage areas must be diked, and there should be no storm drain catch basins within the diked areas. All valving arrangements on any petro-chemical transfer lines should be shown.

4. A contingency plan delineating action to be taken by you in the event of spillage of petro-chemical products or other materials from your operation.

5. Plan and profile drawings showing limits of areas to be dredged, areas to be used for placement of spoil, locations of any dikes to be constructed showing locations of any weir(s), and typical cross sections of the dikes.

B. Please provide the following statements:

1. A statement that all activities will be performed in a manner to minimize turbidity in the stream.

2. A statement that there will be no oils or other pollutants released from the proposed activities which will reach the stream.

3. A statement that all work performed during construction will be done in a manner to prevent interference with any legitimate water uses.

17. Application is hereby made for a permit or permits to authorize the activities described herein, Water Quality Certification from the Georgia Environmental Protection Division is also requested if needed. I certify that I am familiar with the information contained in this application, and that to the best of my knowledge and belief such information is true, complete and accurate. I further certify that I posses the authority to under take the proposed activities.

Signature of Applicant

18. U.S.C. Section 1001 provides that: Whoever, in any matter within the jurisdiction of any department or agency of the United States, knowingly and willfully falsifies, conceals, or covers up by any trick, scheme, or device a material fact or makes any false, fictitious, or fraudulent statements or representations, or makes or uses false writing or document knowing same to contain any false, fictitious or fraudulent statement or entry, shall be fined no more than $10,000 or imprisoned not more than 5 years or both.

PRIVACY ACT NOTICE

The Department of the Army permit program is authorized by Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act and Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972. These laws require permits authorizing structures and work in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Information provided will be used in evaluating the application for a permit. Information in the application is made a matter of public record through issuance of a public notice. Disclosure of the information requested is voluntary, however, the data requested are necessary in order to communicate with the applicant and to evaluate the permit application. If necessary information is not provided, the permit application cannot be processed nor can a permit be issued.

SUPPORTING REMARKS:

See Attached.

APPENDIX K: Adjacent Land Owner Information

Adjacent Property Owners

SMITH MANNIE B SR
PO BOX 779
ELLABELL, GA 31308

PRIDGEN JOHN HENRY JR
15 PRIDGEN LANE
ELLABELL, GA 31308

DUKES KARLA MILLS
38 PRIDGEN LANE
ELLABELL, GA 31308

PRIDGEN JOSEPH
10 PRIDGEN LANE
ELLABELL, GA 31308

WILLIAMS MAE FRANCES
P O BOX 151
ELLABELL, GA 31308

JERNIGAN COLUMBUS JR
P O BOX 213
ELLABELL, GA 31308

BRADSHAW YVONNE
630 WEST 40TH STREET
SAVANNAH, GA 31415

DAVIS RUBY J
35 CAMPFIELD STREET
ELLABELL, GA 31308

BURGESS REBECCA
P O BOX 158
ELLABELL, GA 31308

DRAWDY MARTHA ANN JONES
PO BOX 810
ELLABELL, GA 31308

SHURLING ANGEL R & WILLIAM GARRETT JR
204 RAMBLING CREEK ROAD
ELLABELL, GA 31308

SIMS ROBERT BARRY
665 SHUMANTOWN RD

ELLABELL, GA 31308

SIMS DALE LAMAR
626 SHUMANTOWN RD
ELLABELL, GA 31308

CONLEY GWENDOLYN & ROBERT
745 SHUMANTOWN ROAD
ELLABELL, GA 31308

POWELL LISA B
823 SHUMANTOWN RD
ELLABELL, GA 31308

SHUMAN ROBERT EDWIN
560 SHUMANTOWN ROAD
ELLABELL, GA 31308

DUBOSE BARBARA
65 COLLINS STREET
PEMBROKE, GA 31321

MILLER DORIS
297 LAKE ROAD
ELLABELL, GA 31308

THOMSON DUSTY S
1285 SHUMANTOWN RD
ELLABELL, GA 31308

DOROTHY J JACKSON & DANNY BRYANT
PO BOX 154
EDEN, GA 31307

BRYANT DANNY
1153 HOOD LOOP
PEMBROKE, GA 31321

THOMSON MARY DIANE
1095 SHUMANTOWN ROAD
ELLABELL, GA 31308

MILLER DORIS S
297 LAKE ROAD
ELLABELL, GA 31308

ASPHALT OPERATIONS, LLC
2365 AIMWELL ROAD

VIDALIA, GA 30474

EVERETT EDWARD SHIVES
P O BOX 54052
570 PIEDMONT AVE NE
ATLANTA, GA 303082437

CUYLER LLLP
PO BOX 207
ELLABELL, GA 31308

WARNELL W D & FRANK W DUB
10253 N 226 HWY
BAKERSVILLE, NC 28705

GRIFFIN ANNIE A
251 HOMESTEAD DR
ELLABELL, GA 31308

ATKINSON JAMES T
1659 TONI BRANCH ROAD
ELLABELL, GA 31308

BAKER MARY M
Mailing Address 245 GROOVER HILL ROAD
ELLABELL, GA 313080000

GREENE IDA M
Mailing Address 409 W MAIN STREET
BLOOMINGDALE, GA 313020000

CHURCH ST PAULS AME
910 GROOVER HILL ROAD
ELLABELL, GA 31308

DAVIS RUBY J
35 CAMPFIELD STREET
ELLABELL, GA 31308