DRAFT ENVIRONMENTAL ASSESSMENT FOR WILDLIFE HAZARD REMOVAL

Jacksonville International Airport (JAX)
Jacksonville, Florida

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This Environmental Assessment becomes a Federal document when evaluated, signed and dated by the responsible FAA official.

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1.0 INTRODUCTION

The Jacksonville Aviation Authority (JAA) has undertaken an Environmental Assessment (EA) for the removal and mitigation of jurisdictional wetlands that are deemed to be Hazardous Wildlife Habitat on Jacksonville International Airport (JAX). This EA has been prepared pursuant to the National Environmental Policy Act of 1969 (NEPA) and in accordance with FAA Order 1050.1F, Environmental Impacts: Policies and Procedures, and FAA Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions. After review of the EA, and consideration of comments from the public and federal, state and local agencies, the Federal Aviation Administration will process a Final EA and make an environmental determination on the project.

JAX is a commercial aviation airport located at 2400 Yankee Clipper Drive, Jacksonville, Florida 32218, approximately 13 miles north of downtown Jacksonville. The airport property lies in Section 39, Township 1 North, Range 26 East in Duval County. See Exhibits 1A and 1B for additional location detail. This airport is owned and operated by JAA and experiences approximately 95,000 aircraft operations per year. The majority of aircraft operations (61%) include multi-engine commercial aviation aircraft, with a small portion coming from general aviation operations (14%). The Florida Air National Guard (FLANG) is also based at JAX. This unit flies F-15s and approximately 9% of all operations at JAX are military[1]. JAX maintains two runways, Runway 8/26 and Runway 14/32. Runway 8/26 is the larger runway and is 10,000 feet long by 150 feet wide, while Runway 14/32 is 7,701 feet long by 150 feet wide

The proposed Project Site is 166.59 acres and lies entirely within the Air Operations Area (AOA) of JAX, directly northeast of Runway 8/26. The majority of the Project Site is mowed and maintained uplands and wetlands, with an approximately 6.21-acre forested wetland along the southern project boundary. The focus of this EA is to document potential environmental impacts associated with the filling of approximately 58.82 acres of wetlands within the Project Site. The jurisdictional wetlands are regulated by both the U.S. Army Corps of Engineers (USACE) and St. Johns River Water Management District (SJRWMD). No other wetland impacts and no developments are proposed as a part of this project.

1.1 Permitting History

Approximately 14.70 acres of the 52.82 acres of jurisdictional wetlands in the proposed Project Site were created as part of past permitting efforts to mitigate impacts associated with Runway 7/25 improvements (now named Runway 8/26). SJRWMD permit 17834-4 was issued in 1993 and required the creation of 9.84 acres of herbaceous wetlands which are routinely mowed and maintained. This SJRWMD permit also required creation of 11.33 acres of forested wetlands, of which 4.86 acres remain in the project site and will be removed as part of the proposed project.

In 1999, JAA initiated a Conceptual Environmental Resource Permit (CERP) with SJRWMD and an Individual Permit with USACE. These permits sought to lay the framework for stormwater management and future wetland impact associated with the JAX Master Plan, and encompass the Project Site that is the subject of this EA. The Master Plan included various new roadways, airport infrastructural improvements, and aviation-related development. Although the CERP would not fully authorize construction of stormwater facilities or

1 Source: https://www.airnav.com/airport/KJAX last updated on 30 May 2018

development, this permit would constitute conceptual approval of jurisdictional wetland impacts, mitigation to offset these impacts, and stormwater management design criteria. While the CERP would lay the groundwork for expedited future construction permitting with SJRWMD, the USACE Individual permit would authorize the federally regulated activities identified in the application without further permitting requirements. The JAX CERP (No. 4-031-17756-3) was approved by the SJRWMD Governing Board on 10 April 2001. The permit conceptually authorized stormwater treatment methods proposed within the Master Plan. In addition, this permit authorized 147.24 acres of wetland impacts, and allowed for the establishment of an approximate 1,320-acre JAX Mitigation Management Area (MMA) in the northwest portion of JAX airport property. As conceptually authorized, the MMA would comprise 62.04 acres of forested wetland creation; widespread managed wetland and upland restoration, preservation, and enhancement; and placed under conservation easement for preservation in perpetuity. See the attached JAX Overall Boundary and Mitigation Area Map (Exhibit 2) for an illustration of the CERP, MMA, and Project Site boundaries. The SJRWMD CERP permit remains valid until 10 April 2021.

The USACE Individual Permit No. 200005079 (IP-BAL), was issued in November 2003, and fully authorized 87.40 acres of fill into Waters of the United States at JAX, with mitigation to include wetland creation, restoration, enhancement, and preservation within the on-site MMA. This permit expired in 2013.

2.0 PROPOSED ACTION

JAA is proposing to fill approximately 52.82 acres of wetlands at the eastern end of Runway 8/26 within the AOA. Most of these wetlands (42.91 acres) are routinely mowed and maintained by JAX to comply with safety standards outlined in 14 CFR Part 77 *Safe, Efficient Use, and Preservation of the Navigable Airspace*. Since 2006, these jurisdictional wetlands have been documented as being hazardous wildlife attractants in various wildlife surveys and, eventually, in the JAX Wildlife Hazard Management Plan that was approved by the FAA in 2011. The forested and deeper wetland systems on-site provide significant nesting and foraging habitat for numerous bird species, while the frequently mowed and maintained wetlands provide ample foraging and loafing habitat. Wildlife attracted to these wetland areas are documented hazards to aviation. Wildlife species of concern include large flocks of blackbirds and large wading birds (e.g. great blue herons and great egrets). Because the wetlands are located both north and east of the Runway 26 end, potentially hazardous wildlife routinely cross the aircraft approach/departure paths when travelling back and forth between the wetlands.

The wetland boundaries and corresponding acreages within this EA are approximate and will be verified by each agency during the permitting process prior to wetland fill. Wetlands will be filled utilizing Florida Department of Transportation (FDOT) *Erosion and Sediment Control Manual* (2013) Best Management Practices (BMP) for reducing impacts from mechanized fill. These include, but are not limited to, utilizing low pressure equipment, not disturbing areas directly adjacent to construction activities and utilizing a vegetated buffer strip. The wetlands will be filled utilizing clean fill material and graded to match the existing upland topography. Prior to filling, muck soils may be removed to ensure final fill and contours are stable. Silt fencing will be utilized during fill activities to prevent impact (erosion and sedimentation) to nearby waters and wetland areas. Following fill activities, bare areas will be seeded in order to maintain the areas as mowed airport turf. Stormwater conveyance ditches located within the Project Site will not be altered as a part of this project and the function and capacity of the airfield stormwater management system will not be affected.

Based on current regulatory requirements, all permanent impacts to wetlands are expected to require mitigation. It is also assumed that due to proposed soil disturbance that additional cultural resource

consultation and potentially field survey and/or mitigation may be required. All agency consultations and any additional field survey or mitigation requirements will be completed during the design and permitting processes, prior to any ground disturbance.

3.0 PURPOSE AND NEED

JAX is of significant regional economic importance to north Florida. JAX has approximately 60 on-site aviation-related tenants. The annual economic impact of JAX is realized in not only the direct impact of tenants and businesses on airport, but indirectly through spending by visitors who come to north Florida on commercial or general aviation flights. In order to promote safe travel to and from JAX, on-site natural and man-made wetland systems must be managed.

The purpose of the Proposed Action is to eliminate man-made and natural jurisdictional wetlands that are documented hazardous wildlife attractants at the approach end of Runway 26, which would enhance safety of aircraft and people that use the airport. These wetlands have long hydroperiods, are dense with vegetation, and provide ample loafing, feeding and nesting habitats, as well as cover for birds that are hazardous to aircraft. JAA plans to fill these wetlands to reduce the risk of a wildlife strike.

Since 1990, 981 bird strikes at JAX have been reported to the FAA Wildlife Strike Database (wildlife.faa.gov). Approximately 26% of all strikes occurred during approaches and landings for Runway 26. The number of strikes may be underestimated for two reasons: (1) reporting wildlife strikes to the FAA is voluntary and not all strikes are reported; and (2) even when strikes are reported, the runway on which the strike occurred and/or the phase of flight may not be recorded. Of the 981 reported strikes at JAX, 48% did not report a species (species "unknown"). Wading birds, waterfowl, and blackbirds (species that are most attracted to these herbaceous wetlands) comprise 10% of all remaining known species strikes. See Table 3-1 below for a list of strikes with substantial damages that occurred in this area of the airfield.

Table 3-1. Strikes Reported with Substantial Damages that have Occurred at the Runway 26 Approach

Date	Species Struck	Aircraft	Phase of Flight	Details
8/17/1998	Unknown Bird – Medium	Delta 757	Approach RWY 25	Bird was ingested in #1 Engine; several bent fan blades were noted; plane landed safely
9/17/2000	Cattle Egret	Delta CRJ 100/200	Take-off RWY 7	Bird was ingested in #2 Engine; 38 fan blades lost; aborted take-off; was reported as cattle egret, but pilots said "stork or crane"; wood storks, sandhill cranes, and white ibis are also possibilities for this strike; no snarge (i.e. blood or feathers) collected or sent to Smithsonian for analysis by the Feather ID lab
4/25/2015	Canada Goose	American Airlines A-319	Climb RWY 8	One bird ingested in #2 Engine, one struck landing gear; aircraft made precautionary landing; declared emergency Alert 2; ATC reported flames from engine; RWY remained closed for debris clean up; reported $1.5 million in damages

In 2002, a Wildlife Hazard Assessment (WHA) was completed by the U.S. Department of Agriculture Wildlife Services (USDA/WS). This WHA was supplemented by continual monitoring surveys and was eventually updated in 2018 by the USDA/WS. These surveys, and subsequent Wildlife Hazard Management Plans (WHMPs), have consistently identified the wetlands located within the Project Site as hazardous wildlife attractants. The original WHMP (completed in 2011) and each annual update have consistently recommended eliminating low areas of standing water on the airfield, and specifically cited the wetlands at the approach end of Runway 26. In an effort to reduce aircraft/wildlife encounters, JAX secured the services of a full-time wildlife biologist from USDA/WS in February 2016.

The Proposed Action will implement measures identified in the WHMP to reduce the hazardous wildlife attractants at JAX. The removal of the wetlands that attract wildlife into the AOA and impact the runway's approach, departure, and transitional surfaces is vital for the maintenance of runway safety for pilots and airport operations, as well as people that fly into and out of JAX. In addition to the safety objectives discussed above, the JIA is obligated to address the wildlife hazard conditions that are the subject of this EA. These obligations are discussed below.

3.1 Airport Sponsor Obligations

3.1.1 Airport Operating Certificate Requirements

Title 14 *Code of Federal Regulations* (CFR) Part 139, Certification of Airports, provides certification requirements for airports with scheduled or unscheduled commercial passenger service that is conducted with aircraft with more than 30 seats. Airport Operating Certificates serve to ensure safety in air transportation. JAX currently holds a Part 139 Airport Operating Certificate and is required to comply with the operational and safety standards prescribed by certification program. Eliminating the wetlands at the approach end of Runway 26 would meet the specific operating requirements of 14 CFR Part 139.337, which states "…the certificate holder must formulate and implement a [wildlife hazard management] plan…The plan must provide measures to alleviate or eliminate wildlife hazards to air carrier operations."

JAX is subject to regular FAA Part 139 certification inspections. Noncompliance subjects the airport to monetary fines or revocation of the Airport Operating Certificate. Revocation of JAX's certificate would result in the loss of passenger service at JAX. Finally, 14 CFR Part 139.337(g) states, "FAA Advisory Circulars contain methods and procedures for wildlife hazard management at airports that are acceptable to the Administrator."

Advisory Circular (AC) 150/5200-33, *Hazardous Wildlife Attractants on or near Airports*, provides guidance on certain land uses that have the potential to attract hazardous wildlife to airports. This guidance is applicable to all airports that hold Airport Operating Certificates and receive funding under Federal grant assistance programs (see Section 3.1.2 below for further details). The AC recommends a separation distance of 10,000 feet between the AOA and the hazardous wildlife attractant at airports serving turbine-powered aircraft or a separation distance of 5-miles for all airports, specifically if the attractant could cause hazardous wildlife movement into or across the approach and departure airspace. Wetlands are listed in the AC as one of the land-use practices that potentially attract wildlife. Section 2.4.1 Existing Wetlands on or near Airport Property states, "At public-use airports, the FAA recommends immediately correcting, in cooperation with local, state, and Federal regulatory agencies, any wildlife hazards arising from existing wetlands located on or near airports within 5 miles of the aircraft operations area."

3.1.2 Applicable Grant Assurances

Through the acceptance of federal financial assistance for airport projects (e.g., Airport Improvement Program grants) JAA is obligated to maintain and operate JAX in a safe and efficient manner. Specifically, Grant Assurance No. 19 states that "The airport and all facilities which are necessary to serve the aeronautical users of the airport, other than facilities owned or controlled by the United States, shall be operated at all times in a safe and serviceable condition and in accordance with the minimum standards as may be required or prescribed by applicable Federal, state and local agencies for maintenance and operation." In addition to Grant Assurance No. 19, Grant Assurance No. 34 also states, the airport "will carry out the project in accordance with policies, standards, and specifications approved by the Secretary including but not limited to the advisory circulars listed in the Current FAA Advisory Circulars for AIP projects."

4.0 ALTERNATIVES

Two alternatives to the Proposed Action were considered: Active Wildlife Hazard Management Control Alternative and the No Action Alternative.

4.1 Active Wildlife Hazard Management Control

Under the Active Wildlife Hazard Management Control Alternative, the 52.82 acres of jurisdictional wetlands would not be filled but would be subject to increased wildlife management techniques. Current active control methods implemented at JAX include the use of pyrotechnics, vehicle harassment, bioacoustics, lethal take when necessary, trapping, and egg oiling and nest destruction. This alternative would increase the frequency of direct wildlife management control efforts (e.g. active wildlife management) and implement additional methods, as necessary. For example, JAA or USDA/WS staff would actively disperse or take wildlife at the Runway 26 approach before and after every take-off or landing, which would require staff to be present at this location whenever the runway is in use. In addition, JIA would increase active management by placing a remote-controlled propane cannon(s) at the approach that can be deployed from the operations vehicle and/or air traffic control tower when hazardous wildlife is observed.

This alternative would not meet the purpose and need of the project. JAX presently implements extensive active management techniques to discourage hazardous wildlife from using these wetlands. However, as long as the wetlands persist, they will continue to attract hazardous wildlife. Further, active management techniques are reactive and do not provide the same level of safety enhancement as permanent habitat alteration. In addition, this alternative is not practical long-term solution from a logistics or cost perspective. Because this alternative would only enhance safety incrementally, this alternative will not be carried forward for more detailed analysis in the EA.

4.2 No Action Alternative

Under the No Action Alternative, the 52.82 acres of wetlands would not be cleared, and current Active Wildlife Hazard Management Control techniques would continue to be implemented at the airport. The No Action Alternative would not meet the purpose and need of the Proposed Action, which is to enhance safety at JAX by eliminating the subject hazardous wildlife attractants.

Although the No-Action Alternative does not meet the purpose and need, it was retained for further environmental analysis because it provides a baseline for comparative purposes to fulfill FAA's responsibility under NEPA and the CEQ regulations.

The Proposed Action and No Action alternatives are carried forward throughout this analysis.

5.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The 166.59-acre Project Site is comprised of frequently mowed and maintained undeveloped land at the northeastern end of Runway 8/26, within the boundary of the AOA. Approximately 52.82 acres of wetlands within this area are jurisdictional wetlands regulated by SJRWMD and USACE. Of the total wetlands within the Project Site, approximately 9.84 acres were created as part of a mitigation plan for improvements to Runway 7/25 (now Runway 8/26) that were undertaken in the early 1990s. The remaining 42.98 acres are predominately comprised of frequently mowed and maintained herbaceous depressions with two forested wetland habitats that total approximately 6.21 acres in size. All wetlands within the Project Site are proposed to be filled. The majority of the uplands within the Project Site are mowed and maintained and are dominated by ruderal grasses, with one small forested upland area located in the southwest portion of the project area.

5.1 Impact Categories That Are Not Present or Will Not Be Affected

Potential effects to all impact categories outlined in 1050.1F, Chapter 4 were considered. It was determined that a number of resource areas were not present or would not be impacted by the Proposed Action. These resources are listed and/or briefly summarized below.

5.1.1 DOT Act Section 4(f) Resources

There will be no direct or indirect impacts to Section 4(f) resources associated with the Proposed Action, as regulated under Section 4(f) of the Department of Transportation Act [49 USC 303(c)]. There are no parks, recreation areas, or wildlife/waterfowl refuges, or historic sites of national, state, or local significance in the vicinity of the project site.

5.1.2 Land Use

The Proposed Action is compatible with safe and continued airport operations and will not result in a change of land use or zoning. The airport is zoned as Public Buildings and Facilities (PBF) and the surrounding areas are zoned as Light Industrial (LI), Community/General Commercial (CGC), Agriculture (AGR), and Low Density Residential (LDR) according to the City of Jacksonville Title XVII Land Use Development Code of Ordinances. The area immediately surrounding the project site is within the PBF Zone and the boundary of the airport. On-site areas designated for wetland fill lie entirely within the JAX property boundary and are not slated for future development. Therefore, the Proposed Action will be fully compliant with local zoning ordinances. The Proposed Action and No Action Alternative will not affect land use.

5.1.3 Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks

The Project Site lies entirely within the airport property, with the surrounding areas remaining mostly undeveloped and forested. The Proposed Action will not affect the capacity of the airport, increase flights, or alter aircraft arrival and departure paths. No change in aircraft noise or air emissions would occur. The Grace Baptist Church, located 2.3 miles southeast of the Project Site, is the closest community-based facility and will not be impacted by the Proposed Action.

The table below describe demographic and economic characteristics of Duval county and the state of Florida. Table 5-1 race and ethnicity information for Duval County below, shows that most of the county and the state of Florida is white, at 62.80% and 74.65% respectively. The second largest racial group is Black or African American in the county and the state, 31.20% and 16.01% respectively. Most employment in Duval County occurs in the education services, health care and social assistance at 21.20% of civilian population employed over 16 years of age.

Table 5-1. Race and Ethnic Groups in the Project Area (2013-2018 5-year Estimates)

Race/Ethnic Group	Duval County		Florida	
	Estimate	*Percent*	*Estimate*	*Percent*
Total population	950,181	100.00%	21,299,325	100.00%
White	596,474	62.80%	15,899,574	74.65%
Black or African American	296,426	31.20%	3,410,741	16.01%
American Indian and Alaska Native	8,176	0.90%	59,870	0.28%
Asian	59,747	6.30%	593,634	2.79%
Native Hawaiian and Other Pacific Islander	3,665	0.40%	12,841	0.06%
Some other race	24,576	2.60%	708,740	3.33%

Source: United States Census Bureau, 2018 American Community Service Survey for Race/Ethnic Groups in Duval County, Florida and the state of Florida.

Table 5-2. Employment by Industry for Dual County, Florida (2018 - 1 Year Estimates)	
INDUSTRY	*Percent of Total Population*
Civilian employed population 16 years and over (Total)	462,060
Agriculture, forestry, fishing and hunting, and mining	0.20%
Construction	6.80%
Manufacturing	5.20%
Wholesale trade	2.50%
Retail trade	12.10%
Transportation and warehousing, and utilities	6.70%
Information	1.30%
Finance and insurance, and real estate and rental and leasing	10%
Professional, scientific, and management, and administrative and waste management services	13.50%
Educational services, and health care and social assistance	21.20%
Arts, entertainment, and recreation, and accommodation and food services	10.10%
Other services (except public administration)	6%
Public administration	4.50%

Source: United States Census Bureau, 2018 American Community Service Survey for Employment industry type for populations over the age of 16 in Duval County, Florida

Table 5-3. Poverty Status in the past 12 Months (2013-2018 5-year Estimates)			
	Population for Whom Poverty Status is Determined	*Population Below poverty level*	*Percent below poverty level*
Duval County, FL	903,209	139,758	15.50%
Florida	20,178,544	2,983,851	14.80%
United States	314,943,184	44,257,979	14.10%

Source: United States Census Bureau, 2018 American Community Service Survey for Poverty Status for populations for whom poverty status is determined

Because the Proposed Action would not generate any significant direct or indirect impacts, the Proposed Action, will have no socioeconomic impacts; will not affect any minority or low-income populations; and will not increase risks to children's health or safety.

5.1.4 Wild and Scenic Rivers

There are no Wild and Scenic Rivers, Study Rivers, or any segments of rivers adjacent to such resources within or adjacent to the Project Site. The closest Wild and Scenic River is the Wekiva River located over 130 miles south of JAX. Therefore, neither the Proposed Action nor the No Action alternative will affect Wild and Scenic Rivers.

5.2 Impact Categories That Are Present or May Be Affected

The following impact categories are comprised of resources that warranted further evaluation to determine the potential effect of the Proposed Action (wetland filling) and the No Action alternative.

5.2.1 Air Quality

Duval County is in an "attainment" area for all criteria pollutants having a National Ambient Air Quality Standard (NAAQS)[2]. The last year that Jacksonville was not in attainment was 1994. The Proposed Action will not increase air traffic nor will it increase vehicular traffic at JAX. Temporary effects to air quality would include construction equipment emissions and increased particulate dust emissions during the time the wetlands are filled. Dust emissions will be localized and will not affect any adjoining properties. Dust will be limited during construction through the use of BMPs. Emissions may occur due to land disturbing activities, motor vehicles accessing the Project Site during construction, and as direct emissions from construction equipment. Following completion of all construction activities, natural areas will be replanted with bahia grass (*Paspalum notatum*) to control erosion and allow regular mowing and maintenance activities on the airfield. Regular on-going mowing and maintenance will resume immediately following completion of the project.

Potentially significant air quality impacts associated with the Proposed Action would be demonstrated by the project or action exceeding one or more of the National Ambient Air Quality Standards for any of the time periods analyzed or increasing the frequency or severity of any such existing violations. The project will not generate enough project-related emissions to cause or contribute to an exceedance of any NAAQS. Therefore, neither the Proposed Action nor the No-Action alternative will have a significant air quality impact.

5.2.2 Climate

The Proposed Action will not increase long-term greenhouse gas emissions (GHG), as no additional aircraft operations or vehicular traffic will result from the project. Short-term and very localized increases in emissions may result during construction from the use of equipment; however, pre-construction levels should be restored immediately following construction.

There are no significance thresholds for aviation GHG emissions, nor has the FAA identified specific factors to consider in making a significance determination for GHG emissions. Based on the minor and temporary nature of emissions associated with the Proposed Action, it is not anticipated to exceed any threshold indicating a significant impact. Therefore, neither the Proposed Action nor the No-Action alternative will adversely affect climate.

5.2.3 Coastal Resources

The entire State of Florida is located within a coastal zone; however, the Proposed Action is approximately 14 miles inland of the nearest coastal waters. The project will not directly or indirectly affect coastal resources. The Proposed Action is anticipated to be consistent with the Florida Coastal Management Program (FCMP). Final consistency will be determined by the State of Florida during the environmental permitting process. The project site is not located within a designated coastal barrier resource zone.

2 Source: https://www3.epa.gov/airquality/greenbook/anayo_fl.html - Last updated December 2019

Therefore, neither the Proposed Action nor the No-Action Alternative will not have a significant impact on coastal resources.

5.2.4 Hazardous Materials, Pollution Prevention, and Solid Waste

No hazardous materials or contaminants are known to occur within or immediately adjacent to the project site. The United States Environmental Protection Agency's (EPA) online database shows no active or archived Superfund National Priorities List (NPL) sites at JAX. The Florida Department of Environmental Protection (FDEP) Contaminator Locator Map shows no hazardous waste sites within the Project Site. Several FDEP cleanup sites do occur within the boundary of the airport, the closest being Signature Flight Support (Facility ID 8626007) located off Yonge Drive (approximately 0.80 miles southwest of the Project Site). The Proposed Action will involve the placement of clean fill material into approximately 52.82 acres of jurisdictional wetlands and grading the filled areas. JAX implements a Storm Water Pollution Prevention Plan (SWPPP) for the entire airport, which includes measures to minimize pollutant runoff into receiving water bodies. Minimal solid waste, in the form of woody vegetative debris, will be generated as a result of tree clearing in the southern portion of the Project Site. Prior to construction, JAX will obtain the necessary Environmental Resource Permits to ensure the proposed action will not adversely affect water quality on and off site. No other solid waste (beyond existing levels) will be generated as a part of this Proposed Action.

The wetlands within the Project Site will be filled and graded by mechanical means. The use of mechanical equipment will result in the use of petroleum products that may have the potential to spill or leak in the Project Site. Adherence to the JAX SWPPP will help ensure that any leaked contaminants will be properly managed.

No significant impacts related to hazardous materials, pollution, or solid waste are anticipated.

5.2.5 Farmlands

The Project Site contains the following mapped soil types: Mascotte fine sand (38), Pelham fine sand (51), Sapelo fine sand (63), Surrency loamy fine sand, depressional (66), Pelham fine sand, ponded (82), and water (99) (Exhibit 3). The Project Site does not contain land classified as Prime Farmland or Farmland of Statewide Importance per the USDA Natural Resources Conservation Service (NRCS) Farmland Classification Report (Appendix A). The Proposed Action involves filling and grading jurisdictional wetlands that are neither designated nor used as farmlands. Neither the Proposed Action nor the No Action Alternative will affect farmlands.

5.2.6 Natural Resources and Energy Supply

Neither the Proposed Action, nor the No-Action alternative, will have measurable effects on local supplies of fuel, energy, or natural resources. The filling of 52.82 acres of wetlands will not result in changes to aircraft or vehicle traffic patterns at JAX that would alter fuel usage or the consumption of natural resources. The Proposed Action would not interfere with local energy providers' abilities to meet the existing and future demands. While a threshold has not been specifically identified by the FAA for these criteria, the Proposed Action will have no effect on natural resources and local energy supplies.

5.2.7 Noise and Noise-Compatible Land Use

The Proposed Action will not increase the number of flights at JAX or affect runway use, flight tracks, flight track utilization, flight profiles, fleet mix, distribution of operations throughout an average day, or approach/departure procedures. No operational noise impact would occur. A temporary increase in noise is expected during construction; however, construction noise would be negligible given the distance from the project site to the nearest noise-sensitive receptors. Construction noise will be temporary and will occur during daytime hours. Construction activities will be subject to the City of Jacksonville Environmental Protection Board, Rule 4, Noise Pollution Control. The Proposed Action and No-Action Alternative will not have any noise impacts.

5.2.8 Visual Effects

Neither the Proposed Action nor the No-Action Alternative, will increase or alter airfield light sources. All construction activity will take place during daylight hours and the use of night lighting is not required. The project will remove 6.21 acres of vegetation (trees and shrubs) in the forested wetlands and 0.33 acre of forested uplands. Given the location of the project site and the lack of nearby residential areas or other receptors, no light impacts or substantial visual impacts would occur. While thresholds to determine the significance of visual effects have not been established by the FAA due to their subjective nature, the Proposed Action will not exceed any threshold indicating a significant impact.

5.2.9 Historical, Architectural, Archaeological and Cultural Resources

A *Cultural Resource Desktop Survey for the Jacksonville International Airport Wetland Removal Project, Duval County, Florida was prepared for the Proposed Action* (Appendix B). The Desktop Survey evaluated previous archaeological research on and in the vicinity of the project site. The survey also examined historic maps, aerial photographs, and environmental data (e.g., soil, topography, hydrology), as they relate to the potential for the Proposed Action to encounter archaeological and cultural resources.

A review of the Florida Master Site File indicates that 10 cultural resource surveys were previously conducted in the immediate surrounding area. None intersected with the Project Action's Area of Potential Effect (APE). One survey area adjoins the eastern boundary of the APE and several survey areas are in proximity to the APE. The surveys located one archaeological site and five architectural resources within one mile of the APE. These resources were determined to be ineligible for inclusion in the National Register of Historic Places.

There are no standing structures within the APE. Based on historic aerial photos, a small farm was located on the southeast edge of the APE. However, the building(s) that were associated with the farm were removed at some point after 1943. Although archaeological testing in this area would likely result in the recovery of artifacts, the presence of intact or significant archaeological deposits was considered to not be likely. Much of the remaining APE has been disturbed through historic development of the airport and previous wetland mitigation projects. Overall, the Cultural Resource Desktop Survey indicates the proposed project has a low probability of encountering significant historic, archaeological, or cultural resources.

In addition to coordination with the Florida State Clearinghouse (Appendix C), on November 26, 2019, the FAA sent letters to the Florida State Historic Preservation Officer (SHPO) to initiate consultation under the *National Historic Preservation Act* (Section 106) and its implementing regulations at 36 CFR Part 800. The

letter provided a description of the Proposed Action, a description of the APE, a summary of the research conducted for the Proposed Action, a copy of the Desktop Survey report, and the FAA's opinion that the Proposed Action would not affect historic properties. Letters containing the same information was also sent to the Miccosukee Tribe of Indians of Florida, Muscogee (Creek) Nation, Poarch Band of Creek Indians, Seminole Nation of Oklahoma, and the Seminole Tribe of Florida. As of the date of this Draft EA, the SHPO and the Native American Indian tribes have not responded to FAA's consultation letters. Based on available information, the FAA has determined that the Proposed Action would not affect historic resources and no further consultation is required. However, to address the possibility of unexpected finds during wetland filling activities, JIA and the project's contractors will be required to comply with the following special condition:

> If prehistoric or historic artifacts, such as pottery or ceramics, projectile points, dugout canoes, metal implements, historic building materials, or any other physical remains that could be associated with Native American, early European, or American settlement are encountered at any time within the project site area, the permitted project shall cease all activities involving subsurface disturbance in the vicinity of the discovery. The applicant shall contact the Florida Department of Historic Resource and Native American Indian tribes. Project activities shall not resume without verbal and/or written authorization. In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately, and the proper authorities notified in accordance with Section 872.05, F.S.

Based on the research conducted and the nature of the proposed project (filling wetlands), the Proposed Action is not anticipated to have a significant impact in historic, historic architectural, and cultural resources.

5.2.10 Biological Resources – Wildlife and Plants

Both the Proposed Action and No-Action Alternative were evaluated for impacts to wildlife and habitat resources, including federal and state protected species, in accordance with Section 7 of the Endangered Species Act (ESA, 1973) and Title 14 of the Code of Federal Regulations (CFR), Part 402, as amended. A list of federally protected species that may occur in Duval County was obtained from the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC, Appendix D). A list of state protected species that may occur in Duval County was obtained from the Florida Natural Areas Inventory (FNAI, Appendix E). Literature reviews, agency database searches, and agency coordination were conducted to identify listed species potentially occurring within the Project Site or "Action Area" under ESA. The *Soil Survey of City of Jacksonville, Duval County, Florida* (Exhibit 3), recent aerial photographs, Geographic Information System (GIS) Land Cover and Land Use data published by SJRWMD (2009), and field reconnaissance were utilized to determine habitat types occurring within and adjacent to the Action Area.

Both upland and wetland habitats were evaluated. Water resources and wetland habitats are discussed in Section 5.2.10. The vast majority of the habitat within the Project Site consists of maintained bahia grass. This habitat is highly impacted by routine maintenance activities.

One small forested upland (0.33-acre) is located in the southwest corner of Wetland 1 directly adjacent to Wetland 3. This habitat is classified as Pine Flatwoods and is common throughout northeast Florida. Dominant species include slash pine, gallberry (*Ilex glabra*), water oak (*Quercus nigra*), bracken fern (*Pteridium aquilinum*), and yellow jessamine (*Gelsemium sempervirens*). Neither the Proposed Action nor the No Action alternative will adversely affect uplands.

Surveys for suitable habitat and listed species were conducted by a Certified Wildlife Biologist using visual and aural methods. Pedestrian transects were established to ensure all habitats were appropriately surveyed. Listed wildlife species were identified by burrows, scat, shed skins, tracks, sightings, and/or their distinctive calls. The field survey was completed within the constraints of the project schedule and may not have coincided with the optimal conditions for each species (seasonal movements, nesting times, flowering periods, etc.). Trapping, netting, drift fence surveys, night surveys, and multi-day surveys were not conducted. The probability of occurrence of each species is discussed below.

The probability of occurrence of protected species in the Action Area was determined based on the presence of suitable habitat and/or observations of each species. Each species was assigned a probability of occurrence (none, low, moderate, or high), defined as follows:

- None – Species that are known to occur in the county, but for which habitat is non-existent in the Action Area.
- Low – Species that are known to occur in the county, but for which preferred habitat is limited in the Action Area.
- Moderate – Species that are known to occur in the county, and whose suitable habitat is well represented within or adjacent to the Action Area, but no observations or positive indicators exist to verify their presence.
- High – Species that are known to occur in the county and are suspected to occur based on known ranges and existence of sufficient preferred habitat within or immediately adjacent to the Action Area, or species which have been previously observed or documented within the Action Area.

Wildlife within the Project Site is actively managed through the WHMP. Activities include maintaining grass, shrubs, and trees; removing potential wildlife attractants; and actively harassing wildlife including lethal control. Such activities reduce the potential for listed species to rely on the Project Site.

Federal Protected Species Occurrence

Information from USFWS and FNAI records were searched in March 2020 for known occurrences of federally listed species within Duval County. Results are shown in Table 5-4 below. No determination is made at this time regarding candidate species for federal listing. Effects determinations will be made for candidate species if they become listed before the project is constructed.

Table 5-4. Federally-listed and candidate species – Duval County.					
Scientific Name	Common Name	Federal/ State Status	Preferred Habitat	Habitat Present In Action Area	Probability of Occurrence
Plants and Lichens					
Schwalbea americana	Chaff-seed	E/SE	Longleaf pine savannas, sandhills, flatwoods, and ecotones between sandhills and ponds. Semi-parasitic on roots of *Ilex glabra*, *Gaylussacia*, *Hypericum*, etc.	No.	None.
Fish					
Acipenser oxyrinchus oxyrinchus	Atlantic Sturgeon	E/FE	Atlantic Ocean and portions of large river systems.	No.	None.
Amphibians					
Ambystoma cingulatum	Frosted Flatwoods Salamander	T/FT	Flatwoods with wiregrass and interspersed wetlands; breeds in small ponds and seasonally flooded wetlands.	No.	None.
Reptiles					
Caretta caretta	Loggerhead Sea Turtle	T/FT	Open sea, bays, lagoons, creeks; beaches for nesting.	No.	None.
Chelonia mydas	Green Sea Turtle	T/FT	Open sea, inshore bays, tidal creeks; beaches for nesting.	No.	None.
Dermochelys coriacea	Leatherback Sea Turtle	E/FE	Open sea; beaches for nesting.	No.	None.
Drymarchon corais couperi	Eastern Indigo Snake	T/FT	Linked to xeric habitats and gopher tortoise burrows, but also uses other natural habitats. such as swamps and freshwater marshes as foraging habitat.	Yes.	Low.

Table 5-4. Federally-listed and candidate species – Duval County.					
Scientific Name	Common Name	Federal/ State Status	Preferred Habitat	Habitat Present In Action Area	Probability of Occurrence
Eretmochelys imbricata	Hawksbill Sea Turtle	E/FE	Open sea, coastal lagoons and waterways, mangroves; beaches for nesting.	No.	None.
Gopherus polyphemus	Gopher Tortoise	C/ST	Sandhills, scrub, dry flatwoods, dry ruderal areas.	No.	Low.
Birds					
Calidris canutus	Red Knot	T/FT	Winter along sandy beaches, saltmarshes, lagoons, mudflats, and mangrove swamps.	No.	None.
Charadrius melodus	Piping Plover	T/CH	Beaches, sandflats, and mudflats.	No.	None.
Mycteria americana	Wood Stork	T/FT	Forages in a wide variety of freshwater and brackish wetlands and waterways, including ponds and ditches. Prefers waterbodies that have shallow or variable water levels to concentrate fish prey. Nests in colonies in flooded trees or on islands.	Yes.	Moderate.
Picoides borealis	Red-cockaded Woodpecker	E/FE	High quality fire-maintained upland pine forest with mature pines with heart rot for nesting.	No.	None.
Mammals					
Eubalaena glacialis	North Atlantic Right Whale	E/FE	Open ocean. Gives birth near the Atlantic shoreline between December and March.	No.	None.
Trichechus manatus	West Indian Manatee	T/CH/FT	Estuaries, tidal rivers, springs, and spring runs.	No.	None.

Table 5-4. Federally-listed and candidate species – Duval County.

Scientific Name	Common Name	Federal/ State Status	Preferred Habitat	Habitat Present In Action Area	Probability of Occurrence

Legal Status and Notes
Federally-listed Species (FWS)
C = Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as endangered or threatened.
CH = Critical Habitat has been designated in the county in which the project is located.
E = Endangered: species in danger of extinction throughout all or a significant portion of its range.
T = Threatened: species likely to become endangered within the foreseeable future throughout all or a significant portion of its range.
N = Not federally-listed.
State-listed Species
SAT = Listed as threatened for similarity of appearance.
SSC = Species of Special Concern.
ST = State threatened: species listed by the state that are likely to become endangered within the foreseeable future throughout all or a significant portion of its range.
FE = Federally endangered: species federally listed as being in danger of extinction throughout all or a significant portion of its range.
FT = Federally threatened: species federally listed as likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Of the above federal-listed species, the wood stork is the only species with a moderate likelihood of occurrence within the Action Area and is discussed below. Only federally listed species are afforded protection under the ESA at this time. Species that are given a "none" or "low" probability of occurrence are not likely to occur within the Action Area and are therefore not carried forward with this analysis.

BIRDS

The wood stork (*Mycteria americana*), listed as threatened, is a wetland-dependent wading bird. It lives in areas containing woody vegetation over standing water, preferably in cypress trees or mangroves[3]. The wood stork ranges across the state except for the western half of the panhandle[2]. It routinely travels 6-25 miles to feeding sites and is known to fly between 60-80 miles to find food[3]. It feeds in areas of calm and clear water that is between 2-16 inches deep[3]. The wood stork requires areas that have long hydroperiods that allow for its prey to reproduce, and droughts that concentrate its prey into small pools making it easier to catch.

Major threats to these species include habitat fragmentation from development and water quality degradation. FNAI data indicates no known occurrences of these species within a five-mile radius of the Project Site (Exhibit 4). The closest documented wading bird rookery is approximately 7.4 miles northeast of the Project Site and was last documented by the Florida Fish and Wildlife Commission (FWC) as active in the 1980s (Exhibit 5).

2 Source: Rodgers, J. A., Jr., A. S. Wenner, and S. T. Schwikert. 1988. The use and function of green nest material by wood storks. Wilson Bull. 100:411-423 (cited in Rogers et al., 1996).

3 Source: Ogden, J.C. 1996. Wood Stork, *Mycteria americana*. 31-41 pp. In: Rare and Endangered Biota of Florida-Birds, Vol. V. Rodgers, J. A., Jr., Kale, H. W., and Smith, H. T., eds. University Press of Florida, Gainesville, Florida.

FWS data indicates no documented observations within the Project Site. Per the JAX Wildlife Management Log that has been maintained by Airport Operations staff consistently since 2009, wood storks were observed at the approach to Runway 26 on three (3) separate occasions in June 2016. There have been no wood stork sightings in this specific location since that time. On-site habitats contain suitable foraging habitat for the wood stork. The closest documented wood stork colony is located approximately 6.9 miles south of the Project Site at the Jacksonville Zoo (Exhibit 5). FWS designates Core Foraging Areas (CFAs) for each documented wood stork colony by region. Duval County is within the North Florida region, which defines each CFA as a 13-mile radius surrounding the colony location. All wetlands within the 13-mile radius are considered Suitable Foraging Habitat (SFH) for wood storks.

All wetlands within the Project Site were surveyed for wood storks using visual and aural means. No wood storks were observed within the Project Site during field investigations. However, wetlands within the Project Site qualify as SFH. Therefore, this species has a moderate probability of occurrence.

At this time, the jurisdictional wetland impacts associated with the project are estimated. However, based on preliminary determinations, it is expected that total permanent loss of wetlands and surface waters will be approximately 52.82 acres within the Project Site, although these impacts may be offset by mitigation outside the Project Site. Final wetland impacts and mitigation will be determined during the environmental permitting process. A determination of "may affect, but is not likely to adversely affect" for the wood stork was reached using the Effect Determination Key developed by the US Army Corps of Engineers and the US Fish and Wildlife Service (USFWS). Guidance issued by the USFWS states that if use of the key results in a determination of "may affect, but is not likely to adversely affect", the USFWS concurs with the determination and no further consultation is necessary. The effect determination for the wood stork was completed as follows:

- A – Project more than 2500 feet from a colony site……..…….(go to B)
  Yes. Project is approximately 6.9 miles (36,432 feet) from the nearest colony.
- B – Project impacts SFH……..……..(go to C)
  Yes. All wetlands within a 13-mile radius of a colony are considered SFH (in Duval County).
- C – Project impacts to SFH are greater than or equal to 0.5 acre……..….(go to D)
  Yes. Wetland impacts for this project are estimated to be 52.82 acres.
- D – Project impacts to SFH are within the CFA of a colony site, or wood storks have been documented foraging on a project site outside the CFA……..…….(go to E)
  Yes. Project impacts to SFH are within the CFA of a colony site.
  E – Project provides SFH compensation within the Service Area of a Service-approved wetland mitigation bank or wood stork conservation bank preferably within the CFA, or consists of SFH compensation within the CFA consisting of enhancement, restoration or creation in a project phased approach that provides an amount of habitat and foraging function equivalent to that of impacted SFH (see Wood Stork Foraging Habitat Assessment Procedure for guidance), is not contrary to the Service's Habitat Management Guidelines For The Wood Stork In The Southeast Region and in accordance with the CWA section 404(b)(1) guidelines……*NLAA*
  Yes. See mitigation section below for further details.

Based on the above information, the FAA determined that the wetland Proposed Action "may affect, but is not likely to adversely affect" the wood stork and no further consultation is required on this species. Appendix F contains the complete *Wood Stork Effects Determination Key.*

REPTILES

The eastern indigo snake (*Drymarchon corais couperi*) is listed as threatened by FWS. It occurs throughout Florida, inhabiting mangrove swamps, wet prairies, xeric pinelands, and scrub. In the winter, the indigo snake will use gopher tortoise burrows for shelter. During the warmer months, the indigo snake will be closer to aquatic environments. Its range is usually less than 25 acres in the winter and can range from 150-250 acres during the warmer months. The indigo snake is often found hunting in wetlands because of the large amount of available prey. No Critical Habitat has been designated for this species.

GIS resources, including data from FWC and FNAI, were used to screen for potential documented indigo snake sightings within or adjacent to the Action Area. This data shows no documented occurrences of the eastern indigo snake within a five-mile radius of the Action Area (Exhibit 4). Eastern indigo snakes are dependent on xeric habitat, and habitat suitability for indigo snakes is most easily determined by the presence of gopher tortoise burrows. No xeric habitat is present on-site or in the immediate vicinity of the airport; therefore, gopher tortoise (*Gopherus polyphemus*) burrows are unlikely to occur. No tortoise burrows were observed during the field surveys. However, indigo snakes utilize wetlands as foraging habitat, and other refugia such as stump holes and cavities excavated by species other than the gopher tortoise.

No individuals or signs of the eastern indigo snake were observed during the site visit. Although there is a low probability of occurrence on the Project Site, this species is federally listed as threatened and foraging habitat is present. Therefore, the FWS *Eastern Indigo Snake Programmatic Effect Determination Key* (Appendix G) was used to assess the potential impacts to the eastern indigo snake. A determination of "may affect, but is not likely to adversely affect" for the eastern indigo snake was reached using the Effect Determination Key as follows:

- A – Project is not located in open water or salt marsh……...(go to B)
  Yes. The closest open water habitat is Thomas Creek, approximately 3 miles north of the Action Area.
- B – Permit will be conditioned for use of the Service's Standard Protection Measures for the Eastern Indigo Snake during site preparation and project construction……(go to C)
  Yes. The *Standard Protection Measures for the Eastern Indigo Snake* will be addressed during the permitting process.
- C – There are burrows, holes, cavities, or other refugia where a snake could be buried or trapped and injured during project activities……..(go to D)
  Yes. There are several cavities that could offer potential refuge.
- D – The project will impact less than 25 acres of xeric habitat (scrub, sandhill, or scrubby flatwoods) or less than 25 active and inactive gopher tortoise burrows……(go to E)
  Yes. The project does not involve the impact of the above listed habitats but may impact refugia.
- E – Any permit will be conditioned such that all gopher tortoise burrows, active or inactive, will be evacuated prior to site manipulation in the vicinity of the burrow. If an indigo snake is encountered, the snake must be allowed to vacate the area prior to additional site manipulation in the vicinity. Any permit will also be conditioned such that holes, cavities, and snake refugia other than gopher tortoise burrows will be inspected each morning before planned site manipulation of a particular area, and, if occupied by an indigo snake, no work will commence until the snake has vacated the vicinity of the proposed work……..……NLAA
  Yes. See mitigation section below for more details.

Based on the above information, the FAA determined that the Proposed Action "may affect, but is not likely to adversely affect" the Eastern indigo snake and no further consultation is required on this species. Appendix G for the complete *Eastern Indigo Snake Effects Determination Key.*

MITIGATION RELATED TO FEDERALLY-LISTED SPECIES

During the field survey conducted on 24 April 2019, there were no visual observations of the wood stork or eastern indigo snake. These species are highly mobile and can easily forage outside of the project area if they are discovered. Therefore, no effect is anticipated. The Proposed Action will be undertaken with strict adherence to all applicable BMPs. These include, but are not limited to, the use of silt fencing, the placement of catch basins near drains, and revegetating exposed soil immediately after grading. These practices will ensure that wetlands outside the Project Site will not be adversely impacted. Soil disturbance is limited to filling existing wetland areas and grading the Project Site to appropriately drain. Due to the highly disturbed nature of the on-site habitats, neither the Proposed Action nor the No Action alternative will adversely impact these species.

A formal wetland mitigation plan will be established through the wetland permitting process with the appropriate agencies; however, wetland mitigation will conform to USFWS requirements for the wood stork and the *Standard Protection Measures for the Eastern Indigo Snake* will be implemented during construction. It is anticipated that wetland mitigation will be satisfied using a combination of mitigation options, including purchasing mitigation bank credits within the appropriate basin, on-site preservation of wetlands, and possibly wetland creation within the JAX MMA. Any mitigation within the JAX MMA will be a significant distance from the aircraft movement areas. No species-specific mitigation is expected to be required for the wood stork, eastern indigo snake, or any other federally listed species.

State Listed Species Occurrences

Information from USFWS and FNAI records were searched in March 2020 for known occurrences of state listed species within Duval County. Table 5-5 shows the results of this search for state-listed species only. Species that have both a state and federal listing are included in Table 5-4, above. No determination is made at this time regarding candidate species for state listing. Effects determinations will be made for candidate species if they become listed before the project is constructed.

Table 5-5. State-listed Species – Duval County.

Scientific Name	Common Name	State Status	Preferred Habitat	Habitat Present In Action Area	Probability of Occurrence
Plants and Lichens					
Agrimonia incisa	Incised Groove-bur	ST	Sandhills.	No.	None.
Asclepias viridula	Southern Milkweed	ST	Wet flatwoods and prairies, seepage slopes, pitcherplant bogs.	Yes.	Low.
Balduina atropurpurea	Purple Honeycomb-head	SE	Wet pine flatwoods and savannahs, seepage slopes, bogs, and wet ditches.	Yes.	Low.

Table 5-5. State-listed Species – Duval County.

Scientific Name	Common Name	State Status	Preferred Habitat	Habitat Present In Action Area	Probability of Occurrence
Calydorea caelestina	Bartram's Ixia	SE	Wet to mesic flatwoods.	No.	None.
Coelorachis tuberculosa	Piedmont Jointgrass	ST	Margins or shallows of lakes and ponds.	Yes.	Low.
Ctenium floridanum	Florida Toothache Grass	SE	Sandhills and other dry pinelands.	No.	None.
Forestiera godfreyi	Godfrey's Swampprivet	SE	Upland hardwood forests with limestone near surface, often on slopes above lakes and rivers.	No.	None.
Hartwrightia floridana	hartwrightia	ST	Seepage slopes, edges of baygalls and springheads, wet prairies.	Yes.	Low.
Lantana depressa var. *floridana*	Atlantic Coast Florida Lantana	SE	Stabilized dunes of Atlantic coast barrier islands.	No.	None.
Litsea aestivalis	Pondspice	SE	Pond margins, cypress dome and swamp edges.	Yes.	Low.
Matelea floridana	Florida Spiny-pod	SE	Hammocks.	No.	None.
Mesadenus lucayanus	Florida Keys ladies'-tresses	SE	Maritime hammock.	No.	None.
Myriopteris microphylla	Southern Lip Fern	SE	Rock outcrops and shell mounds.	No.	None.
Orbexilum virgatum	Pineland Scurfpea	SE	Pine flatwoods and savannahs, usually in moist soils.	No.	None.
Pecluma plumula	Plume Polypody	SE	Epiphytic on tree branches or on limestone in hammocks and swamps.	No.	None.
Pecluma ptilota var. *bourgeauana*	Comb Polypody	SE	Rockland hammocks and wet woods, often on tree bases and fallen logs.	No.	None.

Table 5-5. State-listed Species – Duval County.					
Scientific Name	Common Name	State Status	Preferred Habitat	Habitat Present In Action Area	Probability of Occurrence
Peperomia humilis	Terrestrial Peperomia	SE	Shell mounds and outcrops in mesic hammocks, coastal berms, and cypress swamps.	Yes.	Low.
Pteroglossaspis ecristata	Giant Orchid	ST	Sandhill, scrub, pine flatwoods.	No.	None.
Pycnanthemum floridanum	Florida Mountainmint	ST	Sandhills, mesic forest and disturbed areas.	No.	None.
Ruellia noctiflora	Nightflowering Wild Petunia	SE	Wet flatwoods, seepage slopes, hydric hammock.	No.	None.
Schoenolirion croceum	Yellow Sunnybell	SE	Wet pine flatwoods and bogs.	No.	None.
Verbesina heterophylla	Variable-leaf Crownbeard	SE	Mesic flatwoods and dry woods.	No.	None.
Crustaceans					
Procambarus pictus	Black Creek Crayfish	ST	Small high-quality tannic streams.	No.	None.
Reptiles					
Gopherus polyphemus	Gopher Tortoise	ST	Sandhills, scrub, dry flatwoods, dry ruderal areas.	No.	Low.
Pituophis melanoleucus	Pine Snake	ST	Sandhill, sand pine scrub and scrubby flatwoods.	No.	None.
Birds					
Athene cunicularia floridana	Florida Burrowing Owl	ST	Open prairies with little vegetation.	No.	Low.
Cistothorus palustris griseus	Worthington's Marsh Wren	ST	Tidal marshes dominated by cordgrass.	No.	None.
Egretta caerulea	Little Blue Heron	ST	Forages in a wide variety of freshwater, brackish, and saline wetlands and waterways, including ponds and ditches.	Yes.	Moderate.

Table 5-5. State-listed Species – Duval County.

Scientific Name	Common Name	State Status	Preferred Habitat	Habitat Present In Action Area	Probability of Occurrence
			Prefers freshwater habitats. Nests in mixed colonies in flooded trees or shrubs or on islands.		
Egretta tricolor	Tricolored Heron	ST	Forages in a wide variety of freshwater, brackish, and saline wetlands and waterways, including ponds and ditches. Prefers coastal habitats. Nests in mixed colonies in flooded trees or shrubs or on islands.	Yes.	Moderate.
Falco sparverius paulus	Southeastern American Kestrel	ST	Upland pinelands (flatwoods, sandhills, pastures, and old fields). Requires open areas for foraging, and nest cavities (dead trees, nest boxes, etc.) for breeding.	No.	Low.
Haematopus palliatus	American Oystercatcher	ST	Intertidal areas adjacent to beaches, especially barrier islands with few or no predators.	No.	None.
Platalea ajaja	Roseate Spoonbill	ST	Forages in a wide variety of freshwater, brackish, and saline wetlands and waterways, including ponds and ditches. Prefers coastal habitats. Nests in mixed colonies in mangroves, willow heads, or spoil islands.	No.	None.
Rynchops niger	Black Skimmer	ST	Estuaries, beaches, and sandbars.	No.	None.
Sternula antillarum	Least Tern	ST	Coastal areas, including estuaries and bays.	No.	None.

Table 5-5. State-listed Species – Duval County.

Scientific Name	Common Name	State Status	Preferred Habitat	Habitat Present In Action Area	Probability of Occurrence

Legal Status and Notes
State-listed Species
SAT = Listed as threatened for similarity of appearance.
SSC = Species of Special Concern.
ST = State threatened: species listed by the state that are likely to become endangered within the foreseeable future throughout all or a significant portion of its range.
FE = Federally endangered: species federally listed as being in danger of extinction throughout all or a significant portion of its range.
FT = Federally threatened: species federally listed as likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Of the above state-listed species, six (6) plants (southern milkweed, purple honeycomb-head, Piedmont jointgrass, hartwrightia, pondspice, and terrestrial peperomia) have a low probability of occurrence. While suitable habitat may be present, routine maintenance and the isolated nature of the habitat make the occurrence of these species unlikely. Both natural and created wetland areas are subject to regular maintenance (when site conditions allow) in order to attempt to minimize the attractiveness to hazardous wildlife species. Three (3) state listed wading bird species (little blue heron, tricolored heron, and wood stork) have a moderate likelihood of occurrence within the Action Area and are discussed below.

BIRDS

The Florida burrowing owl (*Athene cunicularia*) is a small, state-listed owl that lives and forages in dry, open areas devoid of canopy cover and nests in small burrows in the ground. Its diet consists of mostly insects, but they are known to eat frogs, small lizards, snakes, and rodents. On-site uplands within the project area consist of open fields with little canopy cover, however, these areas are consistently mowed by the airport and surrounded by wetlands that stage a significant amount of water. Therefore, this species is given a low probability of occurrence due to the lack of suitable upland habitat. FNAI data indicated no documented observations within the Action Area.

There are two wading bird species that have a moderate probability of occurrence based on their range occurring within the Action Area and availability of suitable habitat. The little blue heron (*Egretta caerulea*) and the tricolored heron (*Egretta tricolor*) are both state-listed as threatened. Major threats to these species include habitat fragmentation from development and water quality degradation. FNAI data indicates no known occurrences of these species within a five-mile radius of the Action Area (Exhibit 4). The closest documented wading bird rookery is approximately 7.4 miles northeast of the Action Area and was last documented by the Florida Fish and Wildlife Commission (FWC) as active in the 1980s (Exhibit 5).

The little blue heron (*Egretta caerulea*) is a small bluish-gray wading bird that frequently forages in swamps, ponds, herbaceous wetlands, and ditches. On-site wetlands are suitable foraging habitat for the little blue heron. No individuals or signs of the little blue heron were observed during field surveys. FNAI data indicates no documented observations within the Action Area.

The tricolored heron (*Egretta tricolor*) is a wading bird that forages in swamps, ponds, herbaceous wetlands,

and ditches. On-site wetlands are suitable foraging habitat for the tricolored heron. No individuals or signs of the tricolored heron were observed during field surveys. FNAI data indicates no documented observations within the Action Area.

The tricolored heron and the little blue heron are both listed as threatened by FWC and are addressed in *A Species Action Plan for Six Imperiled Wading Birds* (2013) that determines the appropriate steps needed to improve the status of the little blue heron (*Egretta caerulea*), reddish egret (*Egretta rufescens*), roseate spoonbill (*Platalea ajaja*), snowy egret (*Egretta thula*), tricolored heron (*Egretta tricolor*), and white ibis (*Eudocimus albus*). The Imperiled Species Management Plan (ISMP) for these wading birds outlines necessary conservation efforts and actions needed to improve the status of these species. These actions include, but are not limited to, restoration of nesting sites, participation in the Comprehensive Everglades Restoration Plan (CERP), participation in saltmarsh restoration planning, and coordination with state and local agencies to promote increased water quality. This ISMP created a set of voluntary guidelines for conservation that can benefit listed species and their habitat to improve their listing status.

REPTILES

No state-listed reptile species were observed during the field investigation. A specific survey for the gopher tortoise (*Gopherus polyphemus*, a Candidate species for federal listing) was also conducted. No gopher tortoises, their burrows, or their signs were observed.

MITIGATION RELATED TO STATE-LISTED SPECIES

Of the state-listed species that have a probability of occurring within the Action Area, two state-listed wading bird species have been given a moderate likelihood of occurrence due to presence of suitable habitat. During the field survey conducted on 24 April 2019, there were no visual observations of these species. These species are highly mobile and can easily forage outside of the project area if they are discovered within the Action Area. Therefore, no effect is anticipated. The Proposed Action (wetland fill) will be conducted with strict adherence to all applicable BMPs. These include, but are not limited to, the use of silt fencing, the placement of catch basins near drains, and revegetating exposed soil immediately after grading. These practices will ensure that wetlands outside the Project Site will not be adversely impacted. Soil disturbance is limited to filling existing wetland areas and grading the Project Site to appropriately drain. Due to the highly disturbed nature of the on-site habitats, neither the Proposed Action nor the No-Action Alternative will adversely impact these species.

Non-listed Species Occurrence

Several non-listed species, or their signs, were observed during the site visit. These species are listed in Table 5-6. The bird species listed in Table 5-6 were observed either visually or aurally throughout the property. Signs of mammal activity (e.g., tracks, rubs, scat, rooting) were observed in the study area during the field survey.

Table 5-6. General Species Observations During April 2019 Site Visit	
Common Name	Scientific Name
Birds	
Eastern meadowlark	*Sturnella magna*
Red winged blackbird	*Agelaius phoeniceus*
Killdeer	*Charadrius vociferus*
Mammals	
Armadillo	*Dasypus novemcinctus*
Reptiles/Amphibians	
Rat snake	*Elaphe obsoleta*
Southern leopard frog	*Lithobates sphenocephalus*
Cricket frog	*Acris* spp.

In general, all wildlife is highly discouraged from utilizing the Project Site. Persistent wildlife management activities by Airport staff and a full-time USDA wildlife biologist are required to minimize risk of aircraft/wildlife interaction. However, continued use of wetlands by hazardous wildlife (birds) within the Project Site is well-documented. Long-term viability of bird and general wildlife populations will not be adversely affected by the Proposed Action. In fact, the purpose and goal of this project is to ***discourage*** the use of the airfield by wildlife.

EAGLES

The bald eagle (*Haliaeetus leucocephalus*) has been delisted by FWS and FWC, although restrictions regarding work around their nests are still in place. These restrictions vary based on the time of year and distance a proposed activity is from the nest. While no longer considered a listed species under the ESA, the bald eagle is afforded protection under the Bald and Golden Eagle Protection Act (BGEPA) of 1940, as amended. Generally, if work is proposed within 660 feet of the nest, restrictions may be applicable. The closest FWC-documented bald eagle nest is approximately 3.4 miles southeast of the Action Area, at the intersection of Interstate 295 and Interstate 95. This nest is identified by FWC as Nest ID #DU016 and was last documented as active in 2013 (Exhibit 4). On-site field surveys coincided with bald eagle nesting season (October – May). No bald eagle nests are documented near the site and none were observed during the field surveys. Since no nests lie within or near the Project Site, the Proposed Action is not likely to adversely affect bald eagles.

Fish and Wildlife Coordination Act

Neither the Proposed Action nor the No Action alternative involves water resource development projects evaluated under the Fish and Wildlife Coordination Act.

Comparison to Significant Impact Thresholds

A significant impact to biological resources would occur when the USFWS determines that the Proposed Action would be likely to jeopardize the continued existence of federally-listed threatened or endangered species, or the destruction or adverse modification of federally designated critical habitat. Based on the field surveys and analyses conducted for this EA, the Proposed Action will not have a significant impact on listed species or their critical habitat.

5.2.11 Water Resources (wetlands, surface waters, groundwater, Floodplains, and Wild and Scenic Rivers)

The Project Site contains 17 discrete jurisdictional wetland areas that will be affected by the project (Exhibit 6). Wetlands and surface waters were defined and evaluated by senior wetland scientists during a site visit on 24 April 2019. The approximate boundaries of jurisdictional wetlands and surface waters within or near the Project Site were delineated in accordance with the *Corps of Engineers Wetlands Delineation Manual (1987)* and its subsequent addendums and the Florida Wetland Delineation Manual. Wetland boundaries have not been verified by USACE or SJRWMD. The wetland and surface waters were classified using both Florida Department of Transportation (FDOT) *Florida Land Use, Cover and Forms Classification System* handbook (FLUCFCS, 1999) and the *Wetlands and Deepwater Habitats Classification System (the "Cowardin System,"* Cowardin et al, 1979). See Appendix H for the Cowardin Classification flowchart. Each wetland habitat is labeled with a specific FLUCFCS or Cowardin Code that indicates the vegetative and hydrologic structure of that habitat. Wetlands within the Project Site can be classified into five (5) different habitat types (Exhibit 7) A photo essay that includes representative wetland photos is provided in Appendix I and all photo station locations are shown in Exhibit 8. Each unique wetland system is described below.

Wetlands

Wetlands within the Project Site were identified using aerial interpretation and ground truthing and classified using the FLUCFCS and Cowardin. The USACE Wetland Delineation Manual (1987) and its regional supplements and the Florida Wetlands Delineation Manual (Gilbert, et al., 1995), were utilized to approximate the extent of jurisdictional wetlands. The attributes of the three parameters of vegetative composition, hydrologic regime, and soil classification determine the presence and type of wetland system (Exhibit 9).

Five (5) separate wetland habitat types are found in the Project Site. Jurisdictional wetlands comprise approximately 52.82 acres and all are being considered for filling as part of this EA. No dredging is anticipated as part of the Proposed Action. See Table 5-7 below for the wetland ID, FLUCFCS/Cowardin classification, and total acreage for each wetland.

Wetland Forested Mixed – FLUCFCS Code 630/Cowardin Classification: Palustrine, Forested, Broad-leafed Deciduous, Seasonally Flooded (PFO1C).

This wetland habitat is classified as seasonally flooded forested habitat. Water is present for extended duration during the growing season, but it eventually retreats and remains mostly absent during the non-growing season. When surface water is absent, the substrate typically remains saturated at or near the surface. This wetland type is found in Area 1 (4.86 acres). This wetland is one of two forested wetlands within the Project Site. Dominant vegetation includes slash pine (*Pinus elliottii*), pond cypress (*Taxodium ascendens*), swamp tupelo (*Nyssa biflora*), red maple (*Acer rubrum*), sawgrass (*Cladium jamaicense*), buttonbush (*Cephalanthus* spp.), and Virginia chain fern (*Woodwardia virginica*).

Cypress – FLUCFCS Code 621/Cowardin Classification: Palustrine, Forested, Needle-leafed Deciduous, Seasonally Flooded (PFO2C).

This wetland habitat is forested and, like the wetland forested mixed habitat, experiences long periods of seasonal inundation. Water is present for long durations during the growing season but retreats and remains mostly absent during the non-growing season. When surface water is absent, the substrate typically remains

saturated at or near the surface. This vegetative community is also found in Area 1 (1.35 acres). This is the second forested wetland type associated with the Project Site and is closely associated with a portion of the herbaceous wetland creation areas. Based on historical aerial photographs, the herbaceous wetlands (except for the created wetlands) were likely historically classified as Cypress wetlands. The canopy in this area is dominated by pond cypress, with an understory of sawgrass, buttonbush, swamp tupelo, and lizard's tail (*Saururus cernuus*) on the wetland edges.

Freshwater Marshes – FLUCFCS Code 641/Cowardin Classification: Palustrine, Emergent, Persistent (PEM1).

This moderate quality wetland habitat is classified as semi-permanently flooded wetlands, dominated by herbaceous plants that are present for the majority of the growing season and non-growing season in most years. The stems and leaves of plants in these systems are present virtually year-round above the surface of the water or above the soil surface when water is absent. This wetland type is present in Areas 1, 7, and 10 and totals approximately 9.91 acres. This wetland classification describes the created wetland areas that were constructed as mitigation for impacts associated with the extension of Runway 25 (now Runway 26). Evidence of monitoring quadrats are still present within these mitigation areas. Dominant vegetation in these wetlands includes jointed spikesedge (*Eleocharis equisetoides*), waterlily (*Nymphaea odorata*), pickerelweed (*Pontederia cordata*), grassy arrowhead (*Sagittaria graminea*), stunted Chinese tallow (*Triadica sebifera*) in the shallower portions, St. John's wort (*Hypericum fasciculatum*), yelloweyed grass (*Xyris* spp.), sawgrass, blue-maindencane (*Amphicarpum muhlenbergianum*), rosy camphorweed (*Pluchea rosea*), maindencane (*Panicum hemitomon*), panicgrass (*Dichanthelium* spp.), broadleaf cattail (*Typha latifolia*), and California bulrush (*Schoenoplectis californicus*). Coastal plain willow (*Salix caroliniana*) and black elderberry (*Sambucus nigra*) dominate the banks of these created freshwater marsh habitats.

Vegetated Non-Forested – FLUCFCS Code 640/Cowardin Classification: Palustrine, Emergent, Persistent, Managed (PEM1m).

This low-quality wetland habitat is seasonally flooded and dominated by herbaceous species. When surface water is absent, the substrate typically remains saturated at or near the surface. This wetland type comprises Areas 1-6, 8-9, 11-17, totaling approximately 36.47 acres, and is the dominant wetland type in the Project Site. These wetlands are regularly mowed and maintained by airport staff whenever possible, or when water levels are low as part of wildlife management within the AOA. Dominant vegetation in these wetlands includes blue-maindencane, torpedograss (*Panicum repens*), Virginia chain fern, marsh mermaidweed (*Proserpinaca palustris*), starrush whitetop (*Rhynchospora colorata*), manyflower marsh-pennywort (*Hydrocotyle umbellata*), panicgrass, lovegrass (*Eragrostis* spp.), Carolina redroot (*Lachnanthes caroliniana*), lemon bacopa (*Bacopa caroliniana*), yellow colicroot (*Aletris lutea*), hooded pitcherplant (*Sarracenia minor*), small butterwort (*Pinguicula pumila*), smallfruit beggarticks (*Bidens mitis*), rosy camphorweed, grass-leaved ladies' tresses (*Spiranthes vernalis*), and crow poison (*Stenathium densum*). The deeper portions of these wetland types contain the above listed species as well as pickerelweed, bulltongue arrowhead (*Sagittaria lancifolia*), maidencane, and common buttonbush (*Cephalanthus occidentalis*).

Wetland-Cut Ditch – FLUCFCS Code 512/Cowardin Classification: Palustrine, Unconsolidated Bottom, Organic, Seasonally Flooded (PUB4C).

wetland-cut drainage ditch was identified in the northeast corner of the Project Site within Wetland 12. This ditch conveys stormwater from the AOA, off airport property under Pecan Park Road. While sparse due to flowing water, vegetative composition is similar to Wetland 12 (described in Vegetated Non-Forested above).

Table 5-7. Wetland IDs with Associated FLUCFCS and Cowardin Classifications

Wetland Area	Cowardin Classifications	FLUCFCS Code	Acres
1	PEM1	641 – Freshwater Marshes	5.70
	PFO2C	621 - Cypress	1.35
	PFO1C	630 – Wetland Forested Mixed	4.86
	PEM1	640 – Vegetated Non-forested Wetlands	1.13
2	PEM1m	640 – Vegetated Non-forested Wetlands	3.59
3	PEM1m	640 – Vegetated Non-forested Wetlands	1.09
4	PEM1m	640 – Vegetated Non-forested Wetlands	1.44
5	PEM1m	640 – Vegetated Non-forested Wetlands	4.07
6	PEM1m	640 – Vegetated Non-forested Wetlands	0.18
7	PEM1	641 – Freshwater Marshes	2.50
8	PEM1m	640 – Vegetated Non-forested Wetlands	4.00
9	PEM1m	640 – Vegetated Non-forested Wetlands	3.85
10	PEM1	641 – Freshwater Marshes	1.71
11	PEM1m	640 – Vegetated Non-forested Wetlands	3.07
12	PEM1m	640 – Vegetated Non-forested Wetlands	1.67
	PUB4C	512 – Wetland-cut Ditch	0.23
13	PEM1m	640 – Vegetated Non-forested Wetlands	10.45
14	PEM1m	640 – Vegetated Non-forested Wetlands	0.70
15	PEM1m	640 – Vegetated Non-forested Wetlands	0.82
16	PEM1m	640 – Vegetated Non-forested Wetlands	0.20
17	PEM1m	640 – Vegetated Non-forested Wetlands	0.21
Total:			52.82

WETLAND MITIGATION

To ensure no net loss of wetland functions and meet federal and state regulatory program requirements, a mitigation plan will be developed to offset the proposed wetland impacts. Mitigation proposed at this time consists of wetland creation and/or preservation within the JAX MMA, purchase of mitigation bank credits from another approved Mitigation Bank, or a combination of those options. The Uniform Mitigation Assessment Method (UMAM) was used to estimate the amount of mitigation required to offset permanent impacts to wetlands. The estimated UMAM scores and mitigation requirements are shown in Table 5-8.

An assessment of each wetland community type to be impacted within the Project Site was performed. All of the matrix assessment scores were assigned in accordance with the guidelines outlined in Chapter 62- 345, Florida Administrative Code (F.A.C.) (February 2, 2004). These representative UMAM scores will be re-evaluated during the permitting process and the final UMAM scores will be determined at that time.

Table 5-8. Wetland Community Types, acreages, and Associated UMAM Scores

Wetland Community Type	UMAM Score	Acreage	Functional Loss
641/PEM1	0.5	9.91	4.95
640/PEM1m	0.5	36.47	18.23
630/PFO1C	0.5	4.86	2.43
621/PFO2C	0.5	1.35	0.68
512/PUB4C	0.5	0.23	0.12
Total		52.82	26.41

The JAX CERP was issued before the implementation of UMAM and established mitigation ratios for impact areas. Per a meeting with SJRWMD on 10 May 2019, it was determined that the proposed project is consistent with the existing CERP and that either mitigation bank credit purchase or use of the JAX Mitigation Area would be acceptable as mitigation. SJRWMD also confirmed that additional mitigation will not be required for impacts to the created wetlands (see attached meeting minutes and UMAM Calculations in Appendix J). Individual construction permits will be required by both USACE and SJRWMD for impacts to all on-site jurisdictional wetlands and surface waters. Once wetland boundaries have been verified by USACE and SJRWMD, individual permit applications will be submitted to both agencies. Both USACE and SJRWMD will require the completion of a functional assessment utilizing either UMAM or the ratio method, depending on whether mitigation is provided though a mitigation bank or within the MMA. By providing mitigation within the same drainage basin as the impact (Basin 3 – Nassau River), there will be no net loss of wetland function nor will there be cumulative impacts to wetland and surface water resources.

The Proposed Action is defined as filling wetlands and will adversely affect wetlands within the Project Site. However, based on the already-disturbed quality of wetlands within the Project Site and the proposed offset of impacts through mitigation, the Proposed Action is expected to significantly impact wetlands.

Surface Waters

On-site surface waters are limited to one wetland-cut ditch and several upland-cut ditches that serve to capture and convey stormwater away from the AOA and all aircraft movement areas. Final design of the project will ensure continued proper drainage within the Project Site. No natural surface waters are present within the Project Site.

Wetland-Cut Ditch – FLUCFCS Code 512/Cowardin Classification: Palustrine, Unconsolidated Bottom, Organic, Seasonally Flooded (PUB4C).

A wetland-cut drainage ditch was identified in the northeast corner of the Project Site within Wetland 12. This ditch conveys stormwater from the AOA, off airport property under Pecan Park Road. While sparse due to flowing water, vegetative composition is similar to Wetland 12 (described in Vegetated Non-Forested above).

Upland-Cut Ditch – FLUCFCS Code 511

Several upland-cut stormwater conveyance ditches are located within the Project Site. These ditches do not have a Cowardin Classification. They serve to drain stormwater from the AOA and provide a hydrologic

connection for several of the jurisdictional wetlands. These ditches, which are excavated entirely within uplands, contain water during periods of excessive rainfall and may periodically contain wetland vegetation. These ditches are considered to be jurisdictional other surface waters. They may be piped and/or relocated as part of this project; however, adequate stormwater drainage will be maintained during and after construction.

The wetland boundary and corresponding acreage within this EA are approximate and will be verified by each agency during the permitting process prior to wetland fill. Wetlands will be filled utilizing FDOT *Erosion and Sediment Control Manual* (2013) Best Management Practices (BMP) for reducing impacts from mechanized fill. These include, but are not limited to, utilizing low pressure equipment, not disturbing areas directly adjacent to construction activities and utilizing a vegetated buffer strip. The wetlands will be filled utilizing clean fill material and graded to match the existing upland topography. Prior to filling, muck soils may be removed to ensure final fill and contours are stable. Silt fencing will be utilized during fill activities to prevent impact (erosion and sedimentation) to nearby waters and wetland areas. Following fill activities, bare areas will be seeded in order to maintain the areas as mowed airport turf and prevent sediment runoff into nearby wetlands. Stormwater conveyance ditches located within the Project Site will may be altered as a part of this project, however the function and capacity of the airfield stormwater management system will not be affected. A detailed engineering stormwater analysis will be completed as part of the final project design.

Neither the Proposed Action nor the No Action alternative will significantly affect surface waters.

Floodplains

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) No. 12031C0045J, the proposed project is located in Zone X (outside the 0.2% annual chance floodplain). There are no hazardous flood areas located within the Project Site (Exhibit 10). Neither the Proposed Action nor the No-Action Alternative will affect regulatory floodplains.

Groundwater

Per FAA 1050.1F Desk Reference, groundwater is defined as subsurface water that occupies the space between sand, clay, and rock formations. The Proposed Action involves limited soil disturbance associated with filling and grading activities. No dredging will occur as part of the Proposed Action and no impervious surface will be added. Design engineers will ensure that adequate drainage and stormwater management is maintained during construction and post-project. There are no sole source aquifers in the vicinity of the project. Neither the Proposed Action nor the No Action alternative will affect groundwater.

6.0 CUMULATIVE IMPACTS

Cumulative impacts are the environmental effects resulting from the incremental effects of the Proposed Action when added to the effects of past, other present, and reasonably foreseeable future actions, regardless of entity or person that would carry out those actions. The Proposed Action directly affects wetlands, and although impacts to wetlands will be mitigated and not exceed a significant impact threshold, it is important to consider cumulative impacts to wetlands related to other JAA projects and off-airport development projects. This section discusses the cumulative impacts of the Proposed Action, with a focus on wetland impacts. The Proposed Action neither directly impacts, nor contributes to cumulative impacts of other resource categories; therefore other resources are not addressed in this section.

6.1 Airport Capital Improvement Projects (Past, Present, and Future)

Numerous projects have been constructed by JAA and other entities in recent years. Past dates reflect SJRWMD permit authorization. The future potential projects, based on the latest JAX Master Plan (unpublished), are anticipated to occur within the next five years. These projects are still in draft form and environmental impacts have not been assessed for each individual project. Wetland impacts that may be associated with these projects are indicated as "to be determined" (TBD) in the wetland impacts column.

Table 6.1. Past, Present, and Future Projects Based on the Latest Draft JAX Master Plan

Date	Project Name	Project Description	Wetland Impacts
2001	Woodwings Road Extension	6100 LF roadway extending from existing Woodwings Road at the termination cul-de-sac and extending to Vantage Way.	6.99 acres
2001	General Aviation Ramp Rehabilitation	Construction of a fifty-foot extension on an existing culvert for safety improvements to an existing General Aviation Access Ramp.	0.16 acres
2002	JAA Administration Building	Construction of a surface water management system to serve a +/- 7.8-acre project containing an Administration building, parking areas, and utilities for the Jacksonville Airport Authority.	2.21 acres
2003	JAX General Aviation [Terminal Building]	Reconstruction of a general aviation terminal building and the reconstruction of the adjacent parking lot on existing infrastructure.	No
2003	JAX General Aviation Master Plan	Construction of additional taxiways, hangars, buildings, access roads, and aircraft parking pavement at the General Aviation area at JAX.	4.53 acres
2003	CSX Corporate Hangar	Construction of corporate Hanger W / attached offices. Project to be served by dry retention areas around perimeter of site.	2.16 acres
2003	Fidelity National Corporate Hangar	Construction of corporate hangar w/ attached office. Project to be served by dry detention areas adjacent to project site.	No
2003	JAX Rental Car Facility	Construction of car rental facility as part of commercial development at JAX.	No
2003	JAX Fuel Farm	Construction of stormwater treatment facility for fuel farm.	No

2004	JAX Barnstormer Rd Culvert Replacement	Entails the removal of an existing 15" Reinforced Concrete culvert Pipe (RCP) underneath Barnstormer Road and replacing it with a new 36" RCP	No
2006	JAX Terminal Expansion	Construction of two concrete taxilane extensions to provide improved traffic flow for aircraft on the apron surrounding the terminal and concourses.	No
2007	JAX Lodging	The construction of a typical drainage system for a commercial motel.	No
2007	JAX Central Refueling Area	Extension of the existing runway 13-31, construct a new parallel runway 7R-25L, develop infrastructure to support increases in air traffic and construct accessory developments to supplement this infrastructure.	No
2007	JAX Lodging Letter Mod.	The construction of a typical drainage system for a commercial motel permit modification to resolve stormwater issues.	No
2008	JAX RON Pavement Area Letter Mod.	Construction of a Remain-Over-Night (RON) Parking Apron permit modification to resolve stormwater issues.	No
2013	Replacement/relocation of existing wildlife/ security fence	Replacement/relocation of the existing wildlife/security fence to include a concrete footer.	0.86 acres
2014	Airport Perimeter Road Improvements	Milling and Resurfacing of a portion of the loop road at JAX.	No
2019	JAX Wildlife Fence Replacement	Replacement/relocation of the existing wildlife/security fence to include a concrete footer.	0.44 acres
2021	Employee Lot Modification	Modification of parking lot for the JAX employees	TBD
2021	CBP General Aviation Facility	5,000 sq ft building to process General Aviation International passengers	TBD
2022	Cargo Ramp Expansion	Expansion of an existing ramp.	TBD
2022	Taxiway V Relocation	Relocating Taxiway V to accommodate line of sight for ATC Tower.	TBD
2020	Concourse B Replacement (six additional gates)	Construction of six (6) gate replacement concourse.	TBD
2021	Concourse B Ramp	Construction of ramp associated with Concourse B Replacement	TBD
2023	Terminal Canopy and Steel Support Rehab	Curb front canopy rehabilitation	No
2022	Surface Lot Rehabilitation Phase I	Rehabilitation of a parking surface lot located at JAX.	No

2023	TWY H & R Rehabilitation	Taxiway H and R rehabilitation.	TBD
2020	Air Cargo 4 Access Road Rehab	Rehabilitation of the Air Cargo 4 access road.	TBD
2024	Taxiway F Mill and Overlay	Taxiway F rehabilitation.	TBD
20XX	Air Cargo 1 & 2 Building Rehab	General building rehabilitation for Air Cargo 1 and 2.	TBD
20XX	Old Facilities Maintenance Yard	Improvements to old maintenance yard	TBD
20XX	Various Roofing Projects	Flex Warehouse Roof Refurbishment, ARFF Roof Replacement, Terminal Roof Rehab, FedEx Roof Rehabilitation / Replacement	No
20XX	Various Interior Projects	Bag Claim Ceiling Rehabilitation, Elevator Replacement, Escalator Replacement	No

Compensatory wetland mitigation for the above-listed projects was (or, for future projects, will be) accomplished through multiple methods including wetland creation, wetland preservation, or mitigation bank credit purchase. These mitigation methods are approved by the SJRWMD and the USACE and consider the functional loss of the wetlands made by the initial project nullified when mitigation is completed. The overall functionality of the surrounding watersheds and wetland systems are not lost through agency-approved permitting processes. Future projects anticipated to occur will be subjected to the permitting process for wetland impacts. Therefore, the Proposed Action would not result in significant cumulative impacts.

6.2 JIA MMA Implementation

The JAX MMA, comprising approximately 1,320 acres of the western portion of the JAX property, was established in compliance with the SJRWMD CERP (2001) and USACE Individual Permit (2003). Although the mitigation area was established as a preservation corridor, specific implementation of the required active components of the Management Plan are driven through the mitigation requirements within the subsequent ERP permits authorizing specific construction activities such as the Airport Capital Improvement Projects noted above. To date, 5.14 acres of forested wetland creation and an additional 187.43 acres of upland/wetland preservation have been established within the MMA for previous JAA projects.

6.3 WHMP Implementation

The WHMP includes several ongoing activities to control wildlife within the AOA. Activities related to habitat modification include maintaining grass, brush, trees, drainage, and exclusion fencing; installing exclusion devices; and removing abandoned structures. Activities related to wildlife population management include removing nests and carrion, employing vulture effigies, using pesticides to reduce insect populations, and employing harassment and lethal control. The WHMP also includes several planning and outreach activities to “reduce attractiveness to wildlife”, including discouraging projects that would add significant wildlife attractants within 5 miles of the AOA. The WHMP includes the Proposed Action but does not propose any similar projects (wetland fill) for the future.

The WHMP, including the Proposed Action, is in place to comply with safety standards outlined in *14 CFR Part 139.337 Wildlife hazard management*. Because no new wetland fill projects or wildlife habitat modification projects are planned within the WHMP, cumulative impacts associated with ongoing implementation of the WHMP are anticipated to be minimal.

6.4 Off-Airport Development Projects

The area surrounding JAX is mostly rural and industrial. The most current completed or ongoing projects surrounding the airport include the airport entrance roadway improvements, the Amazon warehouse on Pecan Park Road, and Pecan Park general road improvements. Near-future projects include the development of the National Cemetery Access Road approximately 3 miles north of the airport and the development of a hotel at the intersection of Yankee Clipper and Pecan Park Road.

Table 6.2. Off Airport Development Projects Surrounding JAX

Date	Project Name	Project Description	Wetland Impacts
2014	SR 243 Mainline International Airport Boulevard	Construction of four wet detention stormwater management facilities to accommodate the installation of a new four-lane, rural section, divided roadway between Airport Road and Pecan Park Road.	Yes
2016	Broward Tract [Amazon Warehouse]	89 +/- acres developed as an Amazon industrial warehouse space and associated infrastructure.	Yes
2016	Pecan Park Roadway Improvements	Construction of approximately a mile of road improvements within Pecan Park Road	Yes
2016	Thomas Creek	Permit extension duration to complete the construction of a surface water management system to serve a 1,099-acre development	No
2019	Love's Duval Road	Construction of a surface water management system to serve a 15-acre convenience store/gas station	Yes

Compensatory wetland mitigation for the above-listed projects would have been accomplished through multiple methods including wetland creation, wetland preservation, or mitigation bank credit purchase. These mitigation methods are approved by the SJRWMD and the USACE and consider the functional loss of the wetlands made by the initial project nullified when mitigation is completed. The overall functionality of the surrounding watersheds and wetland systems are not lost through agency-approved permitting processes.

6.5 Cumulative Impact Analysis

The Proposed Action is located entirely within routinely cleared and maintained land owned by JAA. There will be no disruption to existing residences or businesses as a result of the Proposed Action. Construction and post-construction maintenance will not adversely affect either public service demands or population movement and growth. The filling of jurisdictional wetlands to eliminate hazardous wildlife attractants within the AOA will not facilitate future development of any kind.

Cumulative impacts are defined by the Council on Environmental Quality as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." This can include any action taken by federal agencies, state, tribal, and local governments or private entities.

The Proposed Project's potential impacts, combined with the impacts for past, current, and potential future on- and off-Airport projects are not anticipated to exceed any of the identified significant impact thresholds listed in FAA Order 1050.1F. The Proposed Action will eliminate approximately 52.82 acres of wetlands that are well-documented hazardous wildlife attractants. No future actions will result from filling the wetlands, as the property within the Action Area is not developable. Providing mitigation within the same drainage basin as the impacted wetlands will ensure no long-term cumulative impacts to wetlands and water resources. While other projects both on and off airport property will impact wetlands, each project is subject to SJRWMD and USACE permitting to ensure functional loss of wetlands are nullified through mitigation and the overall functionality of the surrounding watersheds and wetland systems are not lost.

Therefore, neither the Proposed Action, nor the No Action alternative, will cause unacceptable cumulative impacts.

7.0 PUBLIC PARTICIPATION

A Notice of Availability of the Draft EA will be published in the ____ newspaper on [date]. The Notice is also available on the JAX website for download: X [website address].

Copies of the Draft EA are available for review during regular business hours at the locations listed below. The Draft EA is also available electronically (in PDF format) for review on the airport's website at the link provided above.

- JAX Administrative Office – 14201 Pecan Park Rd, Jacksonville, FL 32218

The comment period for the Draft EA starts on X [date] and ends on Y [date]. Anyone wishing to comment on the information and conclusions in this Draft EA is welcome to do so at any time during the review and comment period. All comments should be mailed to the address provided below and postmarked by Y [Date]. JAX management and the FAA will review and consider all comments received during the public comment period.

Send all comments to:

Jacksonville Aviation Authority
ATTN: Jaime Eaton
14201 Pecan Park Road
Jacksonville, FL 32218

8.0 LIST OF PREPARERS

Amy Reed, CWB, Environmental Resource Solutions – Project Manager and Qualified Airport Wildlife Biologist

Although Ms. Reed is familiar with many aspects of environmental consulting, she specializes in aviation-related consulting services. With a background predominantly focused on wildlife biology, Ms. Reed regularly conducts airport wildlife and protected species surveys, NEPA documentation, and wetland permitting. She completed Embry-Riddle Aeronautical University's (ERAU) Airport Wildlife Hazard Management Workshop in May 2009 and is a Qualified Airport Wildlife Biologist per FAA Advisory Circular (AC) 150/5200-36. As a Qualified Airport Wildlife Biologist, she has extensive experience conducting and developing WHAs, WHMPs, and training at both 14 CFR Part 139 airports and general aviation airports. She has worked as a biologist at numerous airports across eight states and in Mexico City, Mexico. As an integral part of her wildlife hazard work, she directly coordinates with airport personnel, environmental agency personnel, and FAA staff to address project needs. Amy brings over 10 years' experience in wildlife and habitat assessments, protected species relocations, and environmental resource permitting for both small- and large-scale aviation projects. She has worked with numerous airports in the southeast to help reduce the risk of wildlife strikes, relocate and survey for protected species, produce NEPA documents including Categorical Exclusions and Environmental Assessments, and mitigate impacts to wetlands and streams. She has a close working relationship with the FAA and the natural resource agencies including the Florida Water Management Districts, U.S. Army Corps of Engineers, Georgia Department of Natural Resources, and the Florida Fish and Wildlife Conservation Commission.

Jennifer Tyson, PMP, Environmental Resource Solutions – NEPA Specialist

Ms. Tyson specializes in project planning, permitting, environmental analysis, stakeholder engagement, and compliance with NEPA and other federal, state, and local regulations. She has experience providing environmental services in 24 states nationwide, including wetlands delineation, stormwater planning, permitting, and mitigation support for several airports. Ms. Tyson works closely with regulatory agencies and has successfully facilitated many public outreach efforts related to project planning, environmental permitting, and environmental justice, including working directly with Native American Tribes. Ms. Tyson also has agency experience serving as a regulator at the municipal and regional (soil and water conservation district) levels, responsible for field verification of wetlands, project review, permitting, and enforcement. Jennifer's notable clients include USACE, National Oceanographic and Atmospheric Administration, U.S. Environmental Protection Agency, U.S. Air Force, US Army, U.S. Naval Facilities Engineering Command, Virginia Army National Guard, U.S. Department of Agriculture-Forest Service, U.S. General Services Administration, Bureau of Indian Affairs, Tribal Governments, Class I freight railroads, and interstate oil and natural gas pipelines.

Ken Ceglady, Environmental Resource Solutions – Senior Environmental Scientist and Botanist

Mr. Ceglady performs a diverse array of environmental permitting and evaluation tasks for Environmental Resource Solutions (ERS). He is responsible for plant identification to the species level for all aspects of project development and resource protection. Mr. Ceglady interacts regularly with both client and regulatory agencies concerning environmental assessments, permitting, and associated tasks relevant to natural resource management. Mr. Ceglady specializes in and routinely prepares Natural Resource Evaluations (NREs), Environmental Resource Permit (ERPs), and Individual Permit (IP) applications. He regularly performs preliminary environmental assessments, wetland delineations with respect to State and Federal jurisdictional methodologies, wetland impact assessments [including the implementation of the Wetland

Rapid Assessment Procedure (WRAP) and Uniform Mitigation Assessment Method (UMAM)], and site-specific threatened/endangered species evaluations. Mr. Ceglady has used his extensive experience in environmental permitting to work on many transportation projects. He is routinely involved in all aspects of roadway development, including corridor alignment selection, alternatives analysis, pond site location, public opinion and education, wetlands avoidance and minimization, wildlife surveys, and impact evaluation. Mr. Ceglady has over 20 years of experience, 11 of those at ERS.

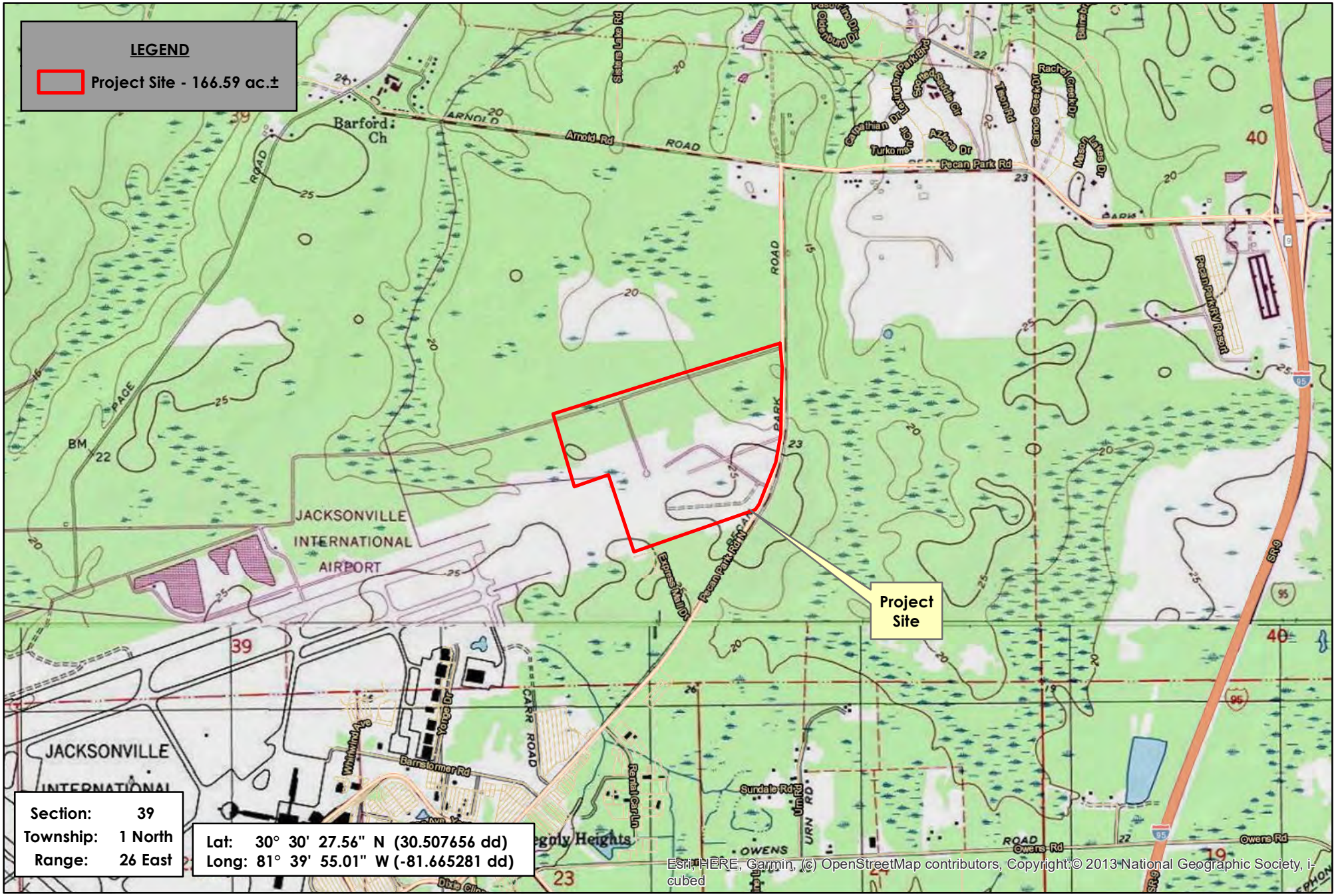
Danielle Floyd, Environmental Resource Solutions – Environmental Scientist and GIS Specialist
Ms. Floyd is an environmental scientist with 19 years of experience in the environmental field, both in the private and public sectors. Her project tasks have included stream identification; Georgia State Water determinations and agency review of consultant work; Erosion, Sedimentation, and Pollution Control (ES&PC) plan reviews for infrastructure/transportation projects seeking National Pollutant Discharge Elimination System (NPDES) coverage; Georgia stream buffer variance application review; Section 401/404 application review and mitigation bank inter-agency review; EPA National Wetland Condition Assessment (NWCA) and Southeast Regional Wetland Condition Assessment (RWCA) as a field botanist for Georgia. Additionally, Ms. Floyd has experience with wetland delineation, environmental resource permitting, mitigation monitoring, coordination with various government agencies and client meetings, endangered and threatened species surveys, invasive plant species surveys, graphics, Environmental Phase I Site Assessments, archaeological field work, and artifact processing. Ms. Floyd maintains expertise in the areas of AutoCAD/ArcGIS exhibit preparation and remote aerial assessment. She has been formally trained in wetland delineation, North Carolina Wetland Assessment Method (NCWAM), and Piedmont and Coastal Plain stream classifications as well.

Gabby Allerton, Environmental Resource Solutions – Environmental Scientist
Gabby is an Environmental Scientist that performs a variety of field work tasks including plant identification, wetland assessments and delineations, threatened and endangered species surveys, and historical/seasonal water level analyses in both Florida and Georgia. She conducts water quality monitoring and analysis using Eureka water probes and assists in writing water quality reports. With her degree in Sustainable Development and concentration on Environmental Studies, Ms. Allerton specializes in writing Sustainable Development plans that reduce waste and environmental impacts while promoting community involvement. In addition, she conducts monitoring of mitigation sites throughout northeast Florida and reports on the general health of those areas. She is an Authorized Gopher Tortoise Agent who routinely completes surveys, tortoise markings, and relocations. Gabby supports senior scientists by preparing SJRWMD and USACE permitting applications as requested. She has also assisted in the writing of various NEPA documents for several airports in Georgia and Florida.

9.0 LIST OF AGENCIES AND PERSONS CONSULTED

ERS consulted with the Florida State Clearinghouse for agency coordination as part of this Environmental Assessment. The Florida Department of Environmental Protection was the only agency to respond. See Appendix C for coordination letters and responses.

Exhibit 1A – USGS Topographic Quadrangle Map



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JIA EA Wetland Removal and Mitigation
USGS Topographic Quadrangle Map

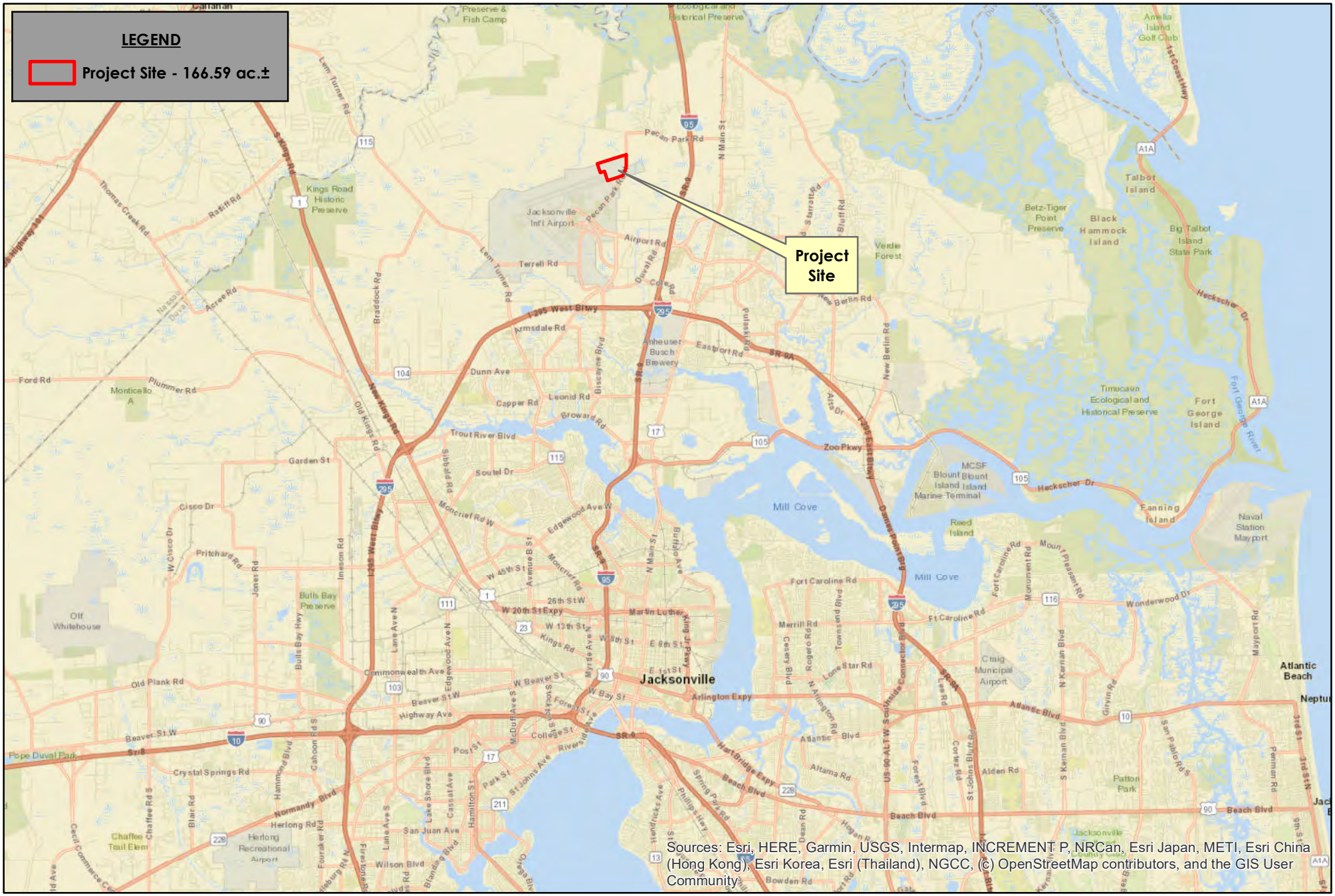
Duval County, Florida | By: GLA

Project No.:	19039
Exhibit No.:	1A
Date:	2-19-20
Rev. Date:	

Source: 7.5' USGS Italia & Trout River, FL Topographic Quadrangles; ArcGIS Online (USA Topo Maps)

X:\2019\19039\GRAPHICS\mxd\19039_location_2-19-20.mxd

Exhibit 1B – Vicinity Map



0 3 Miles

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Source: ArcGIS Online (World Street Maps)

JIA EA Wetland Removal and Mitigation
Vicinity Map

Duval County, Florida

By: GLA

Project No.:	19039
Exhibit No.:	1B
Date:	2-19-20
Rev. Date:	

N W E S

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Exhibit 2 – JIA Overall Boundary and Mitigation Area Map

0 1 Mile

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JIA EA Wetland Removal and Mitigation
JIA Overall Boundary and Mitigation
Area Map

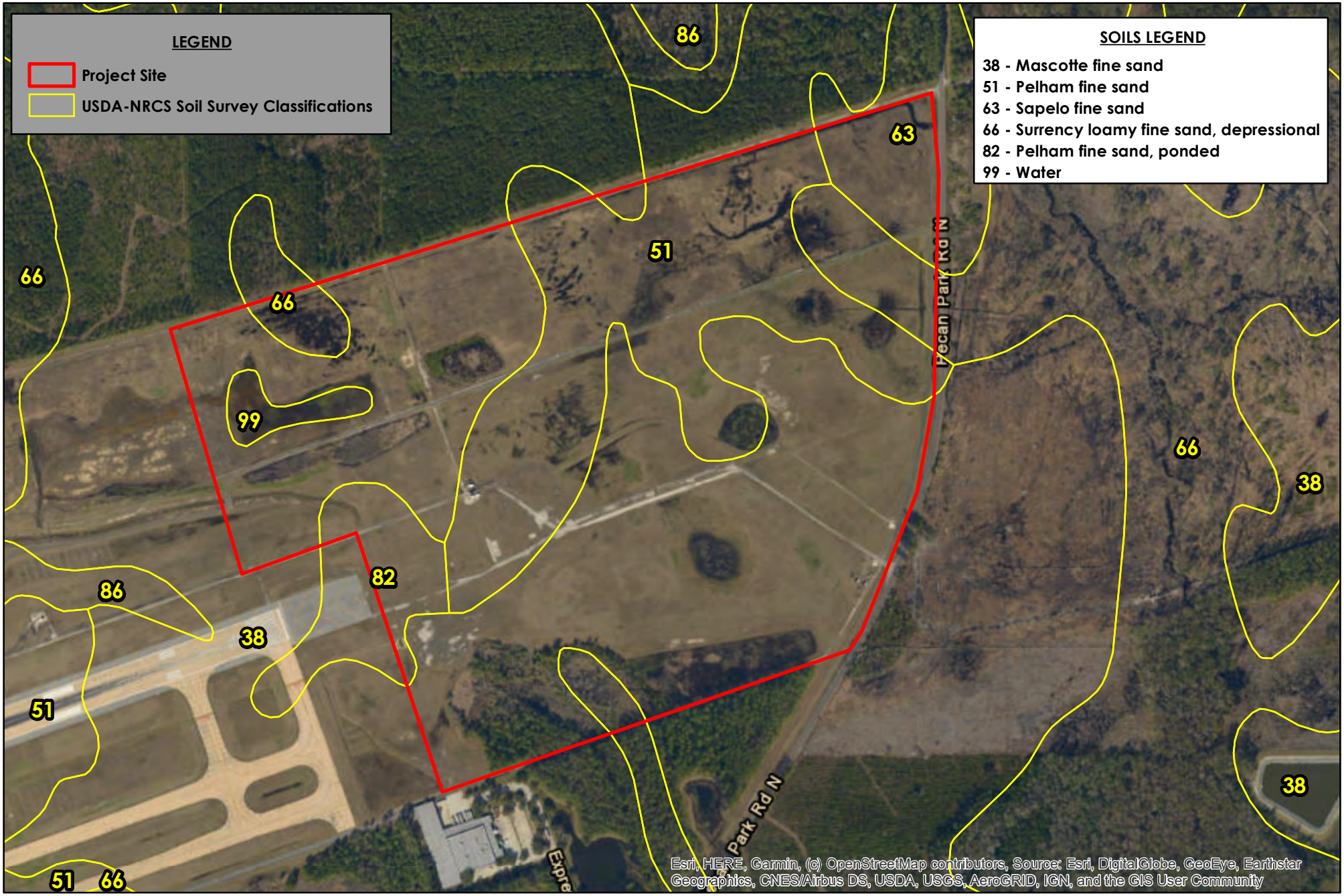
Project No.:	19039
Exhibit No.:	2
Date:	2-19-20
By: GLA	Rev. Date:

N W E S

Aerial Source: ArcGIS Online (Imagery, Transportation)

X:\2019\19039\GRAPHICS\mxd\19039_JIA_Overall_2-19-20.mxd

Exhibit 3 – USDA-NRCS Soil Survey



0 600 '

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JIA EA Wetland Removal and Mitigation
USDA-NRCS Soils Map

Duval County, Florida

By:GLA

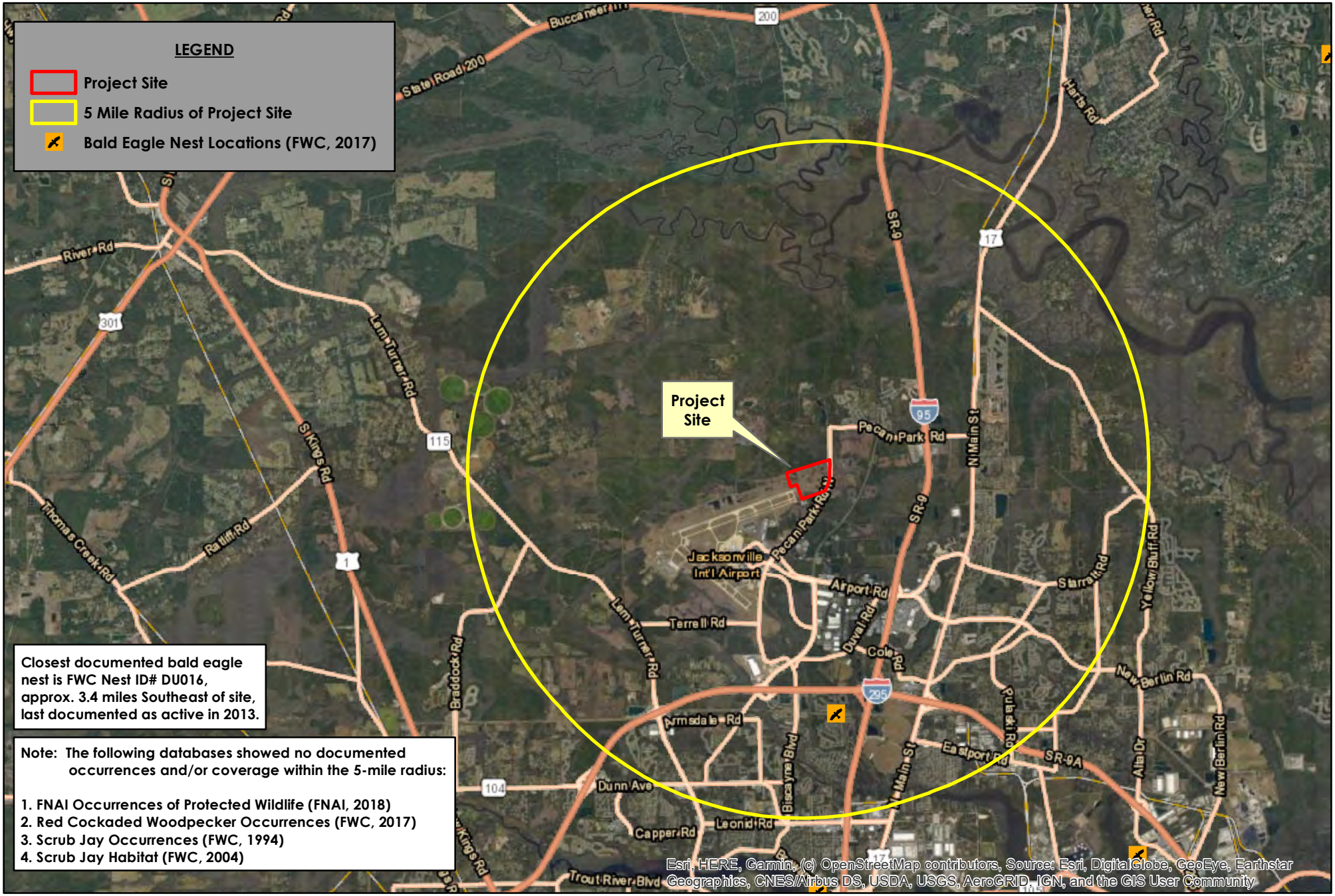
Project No.:	19039
Exhibit No.:	3
Date:	2-19-20
Rev. Date:	

N W E S

Source: ArcGIS Online Imagery, USDA-NRCS soil survey classifications (data obtained from NRCS)

X:\2019\19039\GRAPHICS\mxd\19039_Soils_2-19-20.mxd

Exhibit 4 – Documented occurrences of Protected Wildlife Within 5 Miles



0 2 Miles

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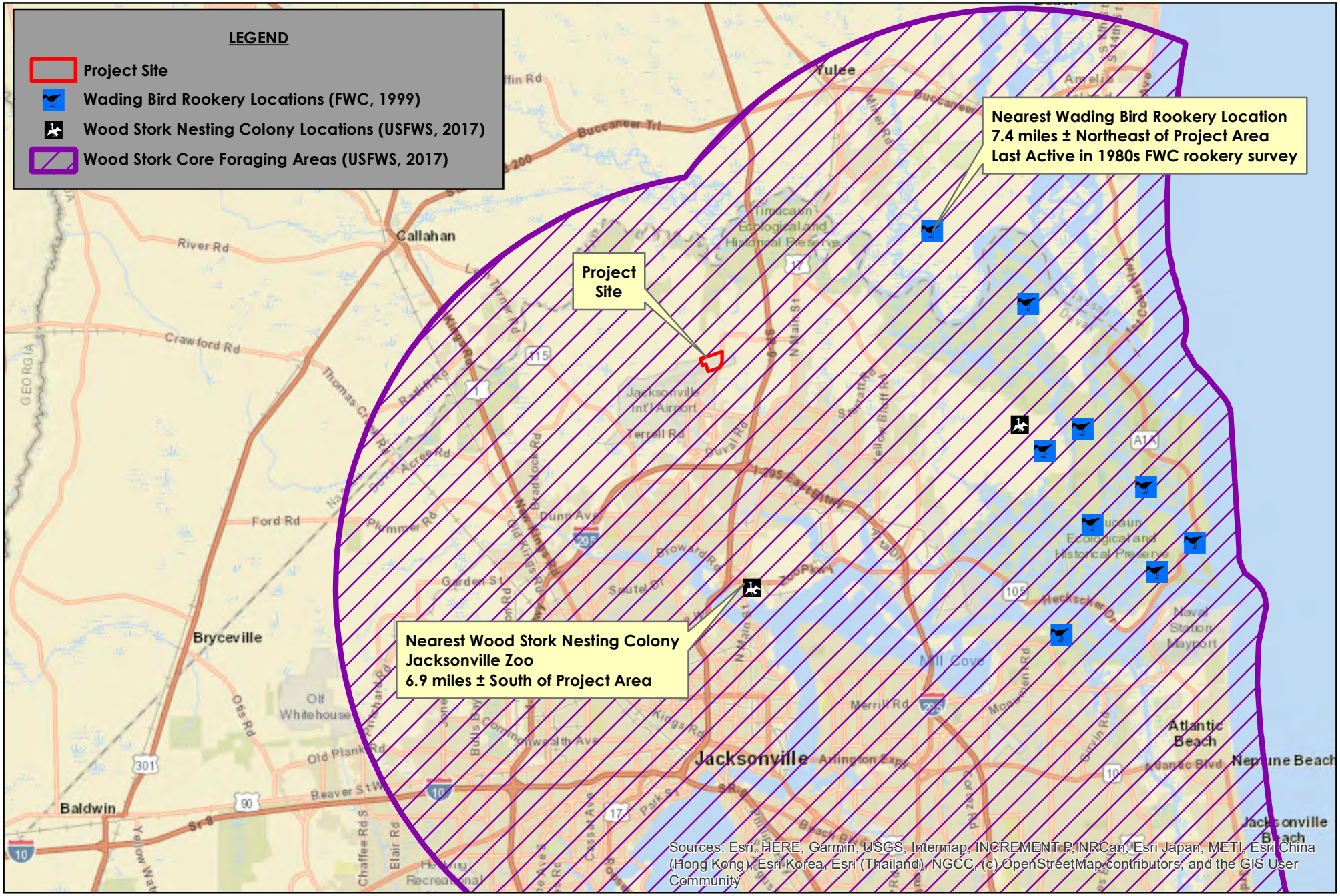
JIA EA Wetland Removal and Mitigation
Documented Occurrences of
Protected Wildlife within 5 Miles

Project No.:	19039
Exhibit No.:	4
Date:	2-19-20
By: GLA	Rev. Date:

Source: USFWS, FDEP, FWC, FNAI, USGS, ArcGIS Online (Imagery, Transportation)

X:\2019\19039\GRAPHICS\mxd\19039_5mile_wildlife_2-19-20.mxd

Exhibit 5 **–** Documented Occurrences of Wading Bird Rookeries and Wood Stork **Nesting Colonies/CFA's**



0 4 Miles

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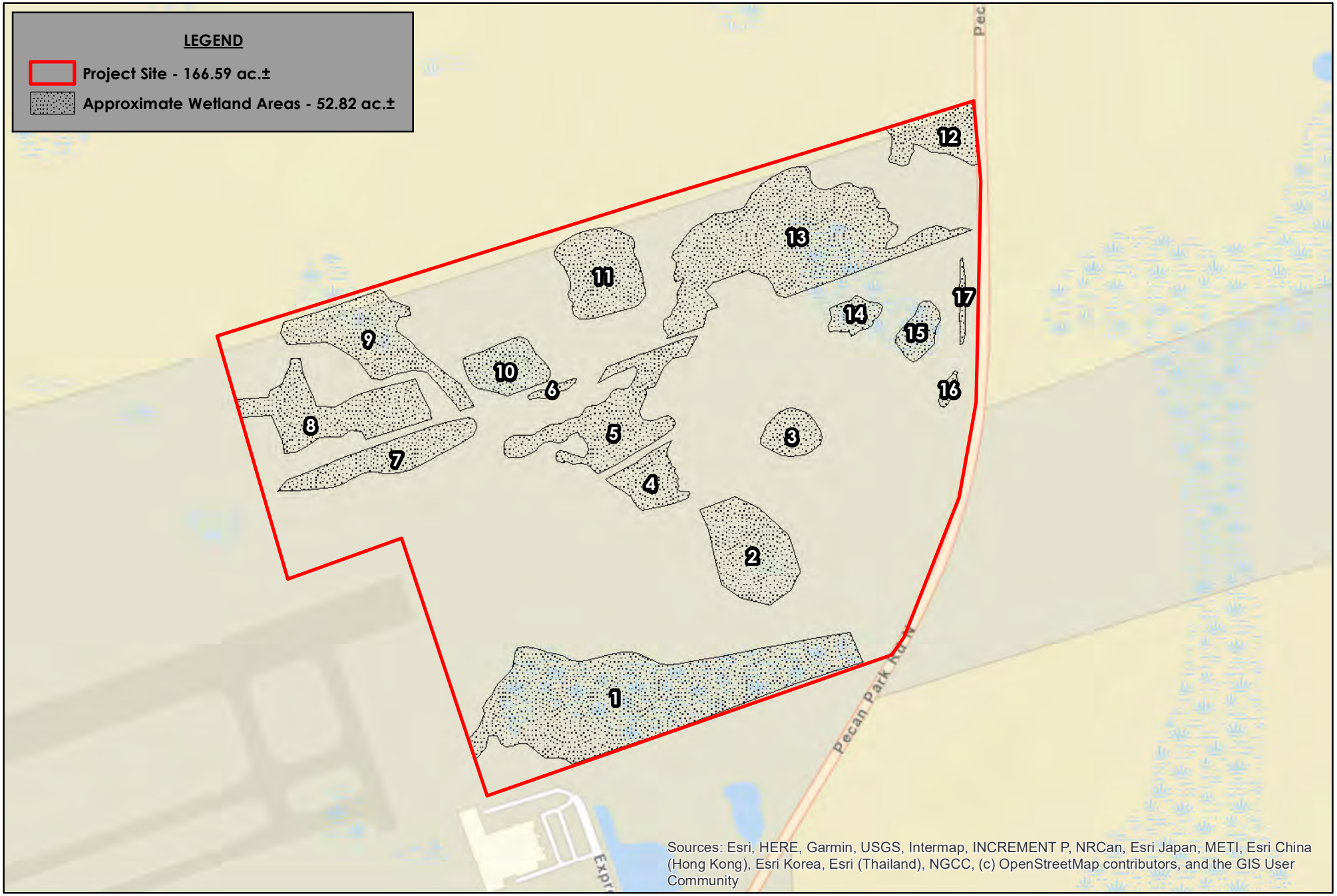
JIA EA Wetland Removal and Mitigation
Documented Occurrences
of Wading Bird Rookeries and
Wood Stork Nesting Colonies/CFA's

Project No.:	19039
Exhibit No.:	5
Date:	2-19-20
By:GLA	
Rev. Date:	

Source: USFWS, FDEP, FWC, FNAI, USGS, ArcGIS Online Data (World Street Map)

X:\2019\19039\GRAPHICS\mxd\19039_13mile_wildlife_2-19-20.mxd

Exhibit 6 – Wetland Areas Map



0 600 '

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Source: ArcGIS Online (World Street Map, World Transportation)

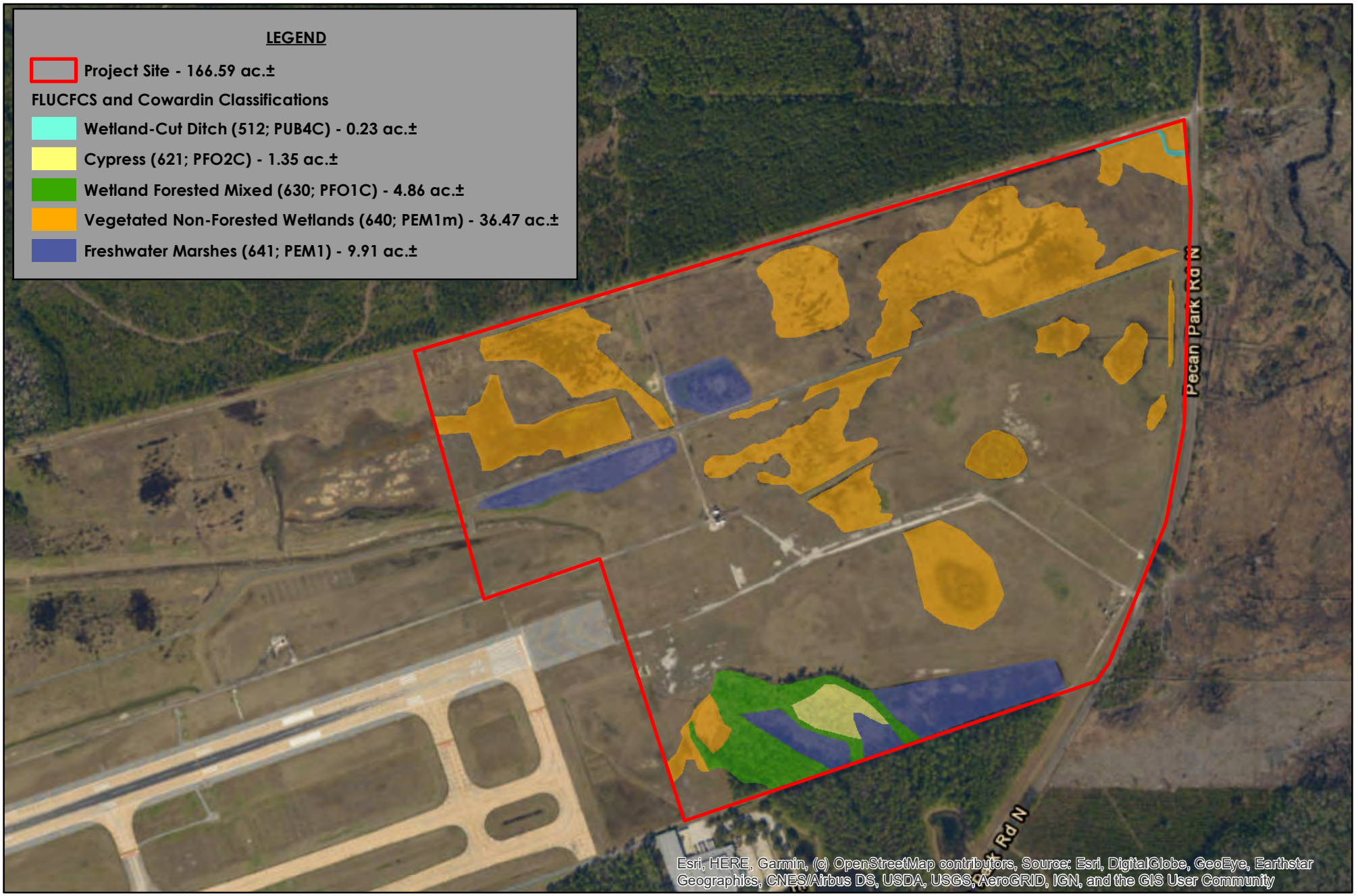
JIA EA Wetland Removal and Mitigation
Wetland Areas Map

Project No.:	19039
Exhibit No.:	6
Date:	2-19-20
By: GLA	Rev. Date:

N W E S

X:\2019\19039\GRAPHICS\mxd\19039_Wetland_Areas_2-19-20.mxd

Exhibit 7 – FLUCFCS and Cowardin Code Map



0 600 '

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Aerial Source: ArcGIS Online (Imagery, Transportation)

JIA EA Wetland Removal and Mitigation
FLUCFCS and Cowardin Code Map

Project No.:	19039
Exhibit No.:	7
Date:	2-19-20
By: GLA	Rev. Date:

N W E S

X:\2019\19039\GRAPHICS\mxd\19039_FLUCFCS_2-19-20.mxd

Exhibit 8 – Mitigation Photo Station Locations Map

0 600 '

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Aerial Source: ArcGIS Online (Imagery, Transportation)

JIA EA Wetland Removal and Mitigation Photo Station Locations

Project No.:	19039
Exhibit No.:	8
Date:	2-19-20
By: GLA	Rev. Date:

N W E S

X:\2019\19039\GRAPHICS\mxd\19039_Photo_Stations_2-19-20.mxd

Exhibit 9 – Current Aerial

0 600 '

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JIA EA Wetland Removal and Mitigation
Current Aerial

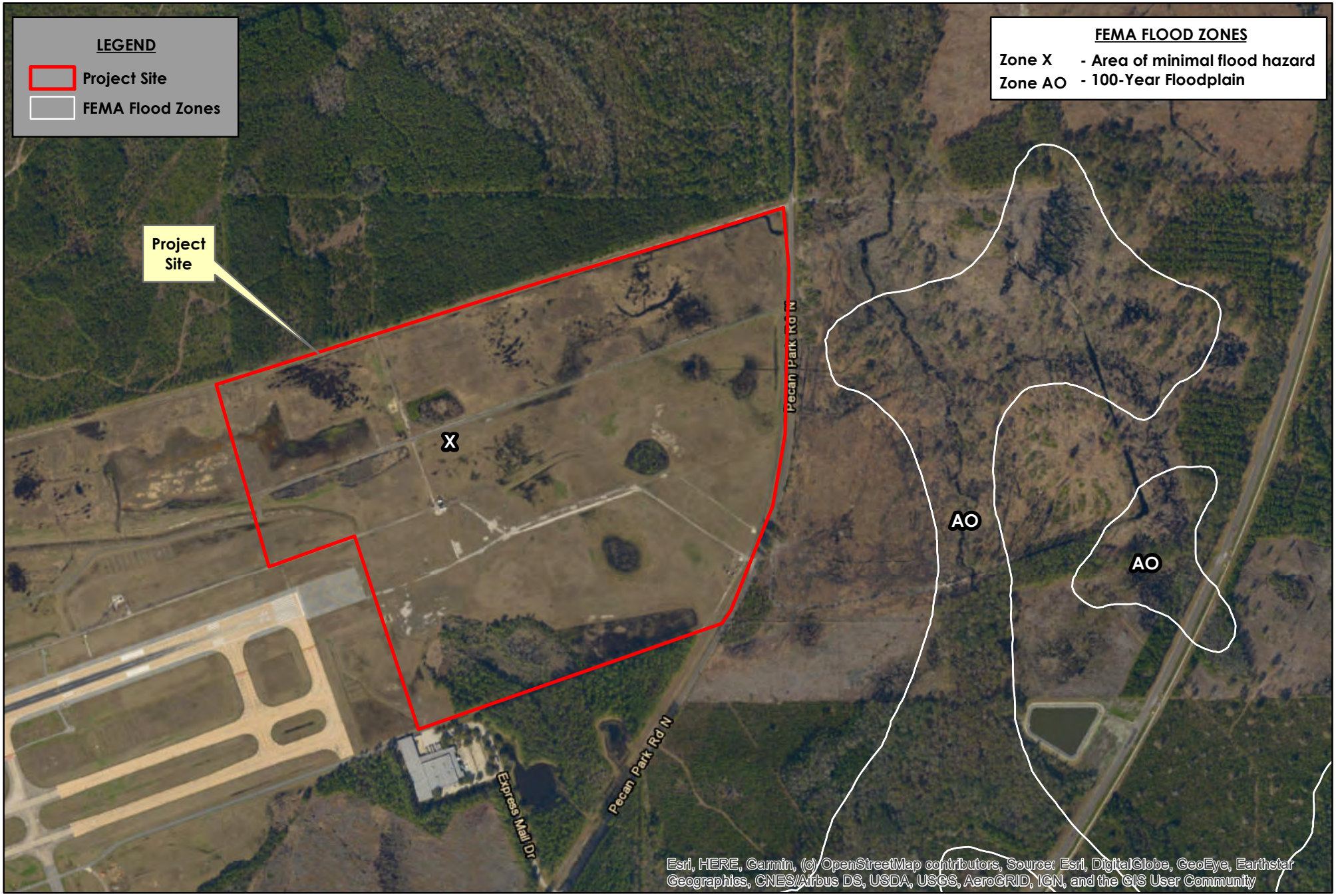
Project No.:	19039
Exhibit No.:	9
Date:	2-19-20
By: GLA	Rev. Date:

N W E S

Aerial Source: ArcGIS Online (Imagery, Transportation)

X:\2019\19039\GRAPHICS\mxd\19039_Current_Aerial_2-19-20.mxd

Exhibit 10 - FEMA Flood Zone Map



0 800 '

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JIA EA Wetland Removal and Mitigation
FEMA Flood Zone Map

Project No.:	19039
Exhibit No.:	10
Date:	2-19-20
By: GLA	Rev. Date:

N W E S

Source: ArcGIS Online (Imagery, World Transportation); FIRM GIS data

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APPENDIX A – USDA Natural Resources Conservation Service (NRCS) Farmland Classification Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Duval County, Florida

April 8, 2019

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

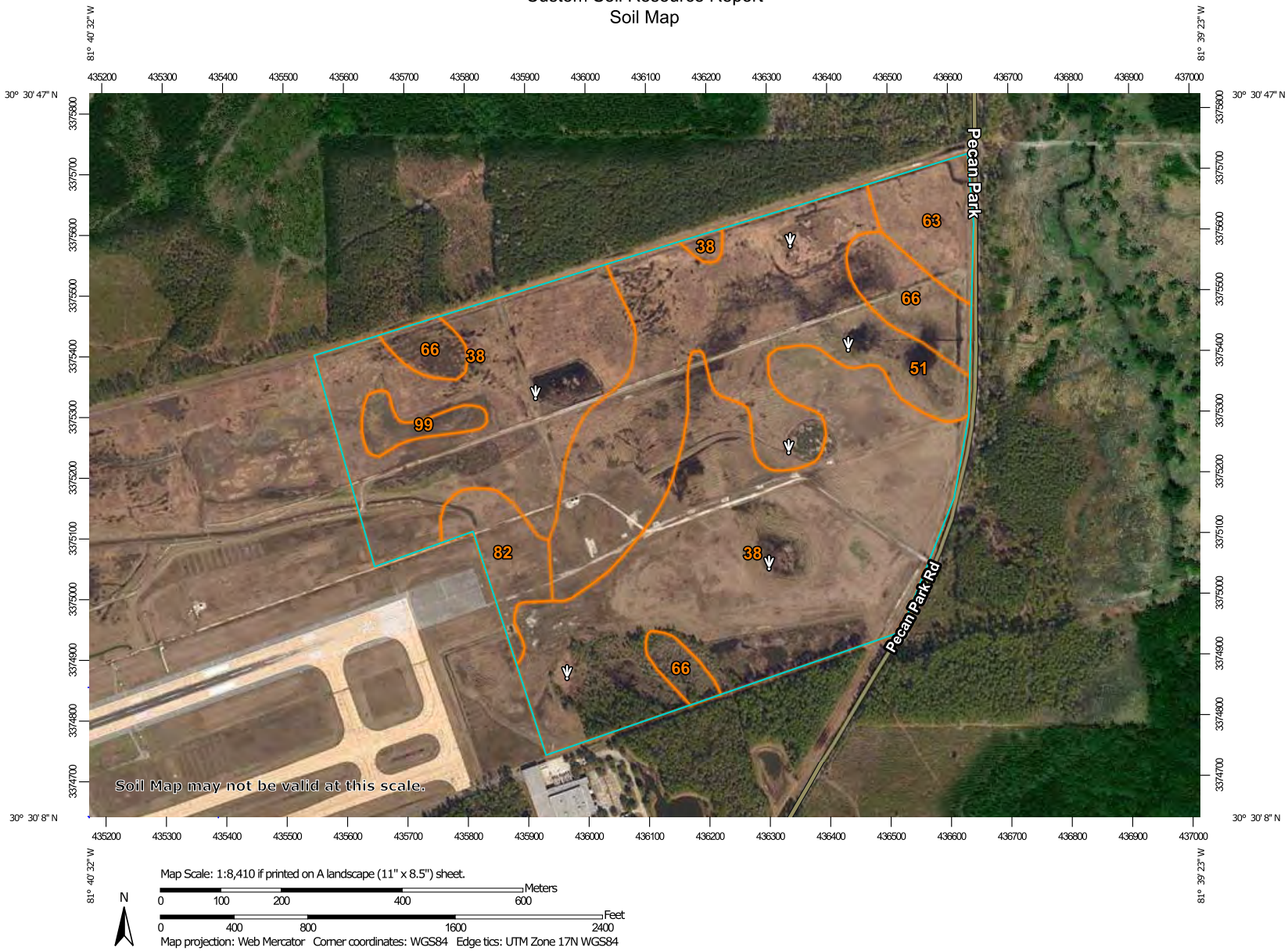
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:8,410 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 100 200 400 600

Feet
0 400 800 1600 2400

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Duval County, Florida
Survey Area Data: Version 13, Sep 10, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 13, 2011—Feb 6, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
38	Mascotte fine sand, 0 to 2 percent slopes	97.1	58.3%
51	Pelham fine sand, 0 to 2 percent slopes	44.1	26.5%
63	Sapelo fine sand, 0 to 2 percent slopes	6.6	4.0%
66	Surrency loamy fine sand, depressional, 0 to 2 percent slopes	10.4	6.2%
82	Pelham fine sand, ponded, 0 to 2 percent slopes	5.8	3.5%
99	Water	2.6	1.5%
Totals for Area of Interest		**166.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Duval County, Florida

38—Mascotte fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2vt0w
Elevation: 0 to 180 feet
Mean annual precipitation: 40 to 62 inches
Mean annual air temperature: 55 to 79 degrees F
Frost-free period: 233 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Mascotte, non-hydric, and similar soils: 94 percent
Minor components: 6 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mascotte, Non-hydric

Setting

Landform: Flatwoods
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 9 inches: fine sand
Eg - 9 to 16 inches: fine sand
Bh - 16 to 29 inches: fine sand
E'g - 29 to 36 inches: fine sand
Btg - 36 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G153AA241FL)
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 5 percent
Landform: Flatwoods
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Surrency

Percent of map unit: 1 percent
Landform: Depressions, drainageways
Landform position (three-dimensional): Dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, convex
Ecological site: Wetland Hardwood Hammock (R153AY012FL)
Hydric soil rating: Yes

51—Pelham fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tg56
Elevation: 0 to 190 feet
Mean annual precipitation: 48 to 63 inches
Mean annual air temperature: 57 to 79 degrees F
Frost-free period: 251 to 293 days
Farmland classification: Not prime farmland

Map Unit Composition

Pelham and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pelham

Setting

Landform: Flatwoods
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: fine sand
Eg - 6 to 26 inches: fine sand
Btg1 - 26 to 42 inches: sandy clay loam
Btg2 - 42 to 83 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 5.95 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: North Florida Flatwoods (R153AY004FL)
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G153AA241FL)
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 13 percent
Landform: Flatwoods
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: North Florida Flatwoods (R153AY004FL)
Hydric soil rating: Yes

Albany

Percent of map unit: 6 percent
Landform: Flatwoods
Landform position (three-dimensional): Talf
Microfeatures of landform position: Rises
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: North Florida Flatwoods (R153AY004FL)
Hydric soil rating: No

Meggett

Percent of map unit: 3 percent
Landform: Flatwoods
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: North Florida Flatwoods (R153AY004FL)
Hydric soil rating: Yes

Surrency

Percent of map unit: 3 percent

Landform: Depressions, drainageways
Landform position (three-dimensional): Dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, convex
Ecological site: Wetland Hardwood Hammock (R153AY012FL)
Hydric soil rating: Yes

63—Sapelo fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: ssvp
Elevation: 0 to 190 feet
Mean annual precipitation: 48 to 56 inches
Mean annual air temperature: 64 to 72 degrees F
Frost-free period: 263 to 293 days
Farmland classification: Not prime farmland

Map Unit Composition

Sapelo and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sapelo

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: fine sand
E - 6 to 23 inches: fine sand
Bh - 23 to 32 inches: fine sand
E' - 32 to 56 inches: fine sand
Btg - 56 to 80 inches: fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G153AA141FL)
Hydric soil rating: No

Minor Components

Surrency

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Yonges

Percent of map unit: 2 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Albany

Percent of map unit: 2 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Pelham, hydric

Percent of map unit: 2 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: Yes

Pelham, non-hydric

Percent of map unit: 2 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

66—Surrency loamy fine sand, depressional, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: ssvs
Elevation: 0 to 190 feet
Mean annual precipitation: 48 to 56 inches
Mean annual air temperature: 64 to 72 degrees F
Frost-free period: 263 to 293 days
Farmland classification: Not prime farmland

Map Unit Composition

Surrency and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Surrency

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 14 inches: loamy fine sand
E - 14 to 26 inches: fine sand
Btg - 26 to 70 inches: fine sandy loam
Cg - 70 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: B/D

Forage suitability group: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G153AA245FL)
Hydric soil rating: Yes

Minor Components

Lynn haven
Percent of map unit: 2 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Pelham, hydric
Percent of map unit: 2 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: Yes

Pamlico
Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Yonges
Percent of map unit: 1 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Stockade
Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: Yes

82—Pelham fine sand, ponded, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 2t1p2
Elevation: 0 to 280 feet

Mean annual precipitation: 38 to 56 inches
Mean annual air temperature: 51 to 81 degrees F
Frost-free period: 239 to 347 days
Farmland classification: Not prime farmland

Map Unit Composition

Pelham, ponded, and similar soils: 96 percent
Minor components: 4 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pelham, Ponded

Setting

Landform: Drainageways, depressions
Landform position (three-dimensional): Dip
Down-slope shape: Linear, concave
Across-slope shape: Concave
Parent material: Sandy and/or loamy marine deposits

Typical profile

A - 0 to 6 inches: fine sand
E - 6 to 30 inches: fine sand
Btg - 30 to 82 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Occasional
Available water storage in profile: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G153AA245FL)
Other vegetative classification: North Florida Flatwoods (R153AY004FL)
Hydric soil rating: Yes

Minor Components

Unnamed

Percent of map unit: 2 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: North Florida Flatwoods (R153AY004FL)
Hydric soil rating: No

Yonges

Percent of map unit: 1 percent

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Ecological site: North Florida Flatwoods (R153AY004FL)
Hydric soil rating: Yes

Bayboro, ponded
Percent of map unit: 1 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

99—Water

Map Unit Composition
Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Land Classifications

This folder contains a collection of tabular reports that present a variety of soil groupings. The reports (tables) include all selected map units and components for each map unit. Land classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Prime and other Important Farmlands

This table lists the map units in the survey area that are considered important farmlands. Important farmlands consist of prime farmland, unique farmland, and farmland of statewide or local importance. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation's food supply.

Prime farmland is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

For some of the soils identified in the table as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables. It has the special combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these crops when properly managed. The water supply is dependable and of adequate quality. Nearness to markets is an additional consideration. Unique farmland is not based on national criteria. It commonly is in areas where there is a special microclimate, such as the wine country in California.

In some areas, land that does not meet the criteria for prime or unique farmland is considered to be *farmland of statewide importance* for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate State agencies. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

In some areas that are not identified as having national or statewide importance, land is considered to be *farmland of local importance* for the production of food, feed, fiber, forage, and oilseed crops. This farmland is identified by the appropriate local agencies. Farmland of local importance may include tracts of land that have been designated for agriculture by local ordinance.

Report—Prime and other Important Farmlands

Prime and other Important Farmlands–Duval County, Florida		
Map Symbol	**Map Unit Name**	**Farmland Classification**
38	Mascotte fine sand, 0 to 2 percent slopes	Not prime farmland
51	Pelham fine sand, 0 to 2 percent slopes	Not prime farmland
63	Sapelo fine sand, 0 to 2 percent slopes	Not prime farmland
66	Surrency loamy fine sand, depressional, 0 to 2 percent slopes	Not prime farmland
82	Pelham fine sand, ponded, 0 to 2 percent slopes	Not prime farmland
99	Water	Not prime farmland

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

APPENDIX B – Cultural Resource Desktop Survey and Background Research Report

CULTURAL RESOURCE DESKTOP SURVEY FOR THE JACKSONVILLE INTERNATIONAL AIRPORT WETLAND REMOVAL PROJECT, DUVAL COUNTY, FLORIDA

CONSULTANT:	SEARCH 8298 Bayberry Road, Suite 1, Jacksonville, Florida 32256
PROJECT MANAGER:	Greg Hendryx, MA, RPA
PROJECT ARCHAEOLOGIST:	Geoff DuChemin, PhD, RPA
CLIENT:	SES Energy Services LLC
DATE:	May 2019
JAA RFQ #:	19-18-42001
SEARCH PROJECT #:	T19066

This cultural resource desktop survey was conducted in support of the Jacksonville International Airport (JIA) Wetland Removal Project. The purpose of this project is to make recommendations on the likelihood for this property to contain cultural resources, particularly those that are eligible for inclusion in the National Register of Historic Places (NRHP). This study includes an overview of previous archaeological research and an examination of historic maps, aerial photographs, and environmental data (e.g., soil, topography, hydrology) as it relates to archaeological potential.

The Jacksonville Aviation Authority is planning to eliminate low areas of standing water and wetland environments equaling 52.80 acres at the end of Runway 26 at the JIA. The area of potential effects (APE) for this cultural study is the 166.59-acre Project Area, as defined in the Environmental Assessment prepared by Environmental Resource Solutions, that surrounds the wetlands slated for removal. These wetlands are located within the Runway Protection Zone (RPZ) and/or are known and well-documented wildlife attractants. The action is part of JIA's Wildlife Management Plan that, in part, seeks to minimize the presence of birds that may be attracted to the wetland areas. The removed wetlands will be mitigated through the creation of wetlands within a 1,320-acre Mitigation Management Area away from the runway in the northwest quadrant of the JIA property.

ENVIRONMENT AND MODERN CONDITIONS

The JIA is located on a low, flat plain in northern Duval County, in an area characterized by wetlands and tributaries associated with the Nassau River, which lies approximately 4 miles to the northeast. The APE is comprised of a cleared grassy area with low wet areas with patchy vegetation (**Figure 2**). The 2018 US Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS) soil data show that the APE contains poorly drained and very poorly drained soils (**Figure 3**).

The JIA and its associated buildings and structures are approximately one mile to the southwest of the APE. Pecan Park Road runs southwest to northeast, then north, along the southeast and eastern boundary of the APE. A US Postal Service facility is located south of the APE and is accessible from Pecan Park Road. Interstate 95 (I-95) is 1.8 miles east of the APE.

Figure 1. Location of the APE.

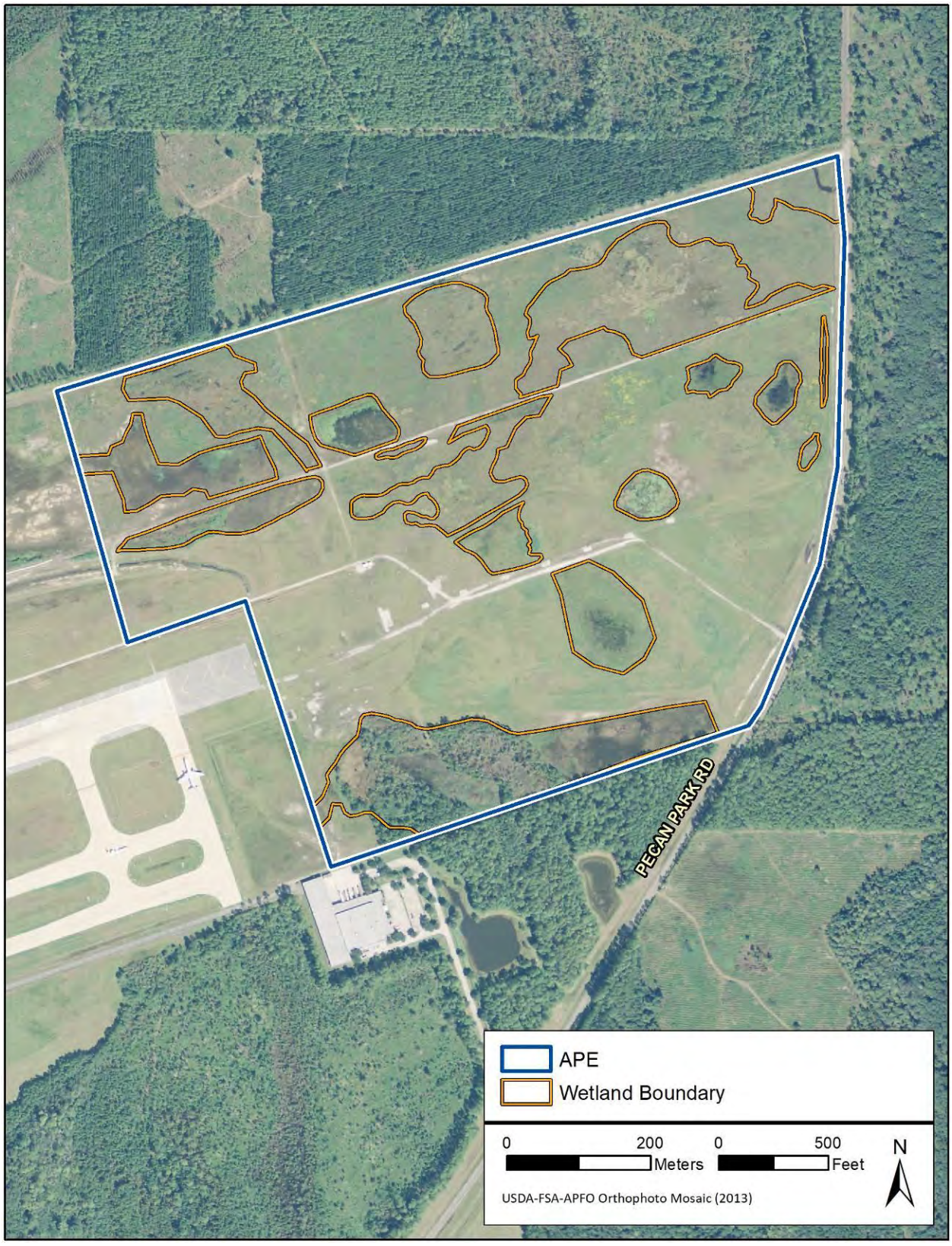


Figure 2. Aerial photograph of the APE.

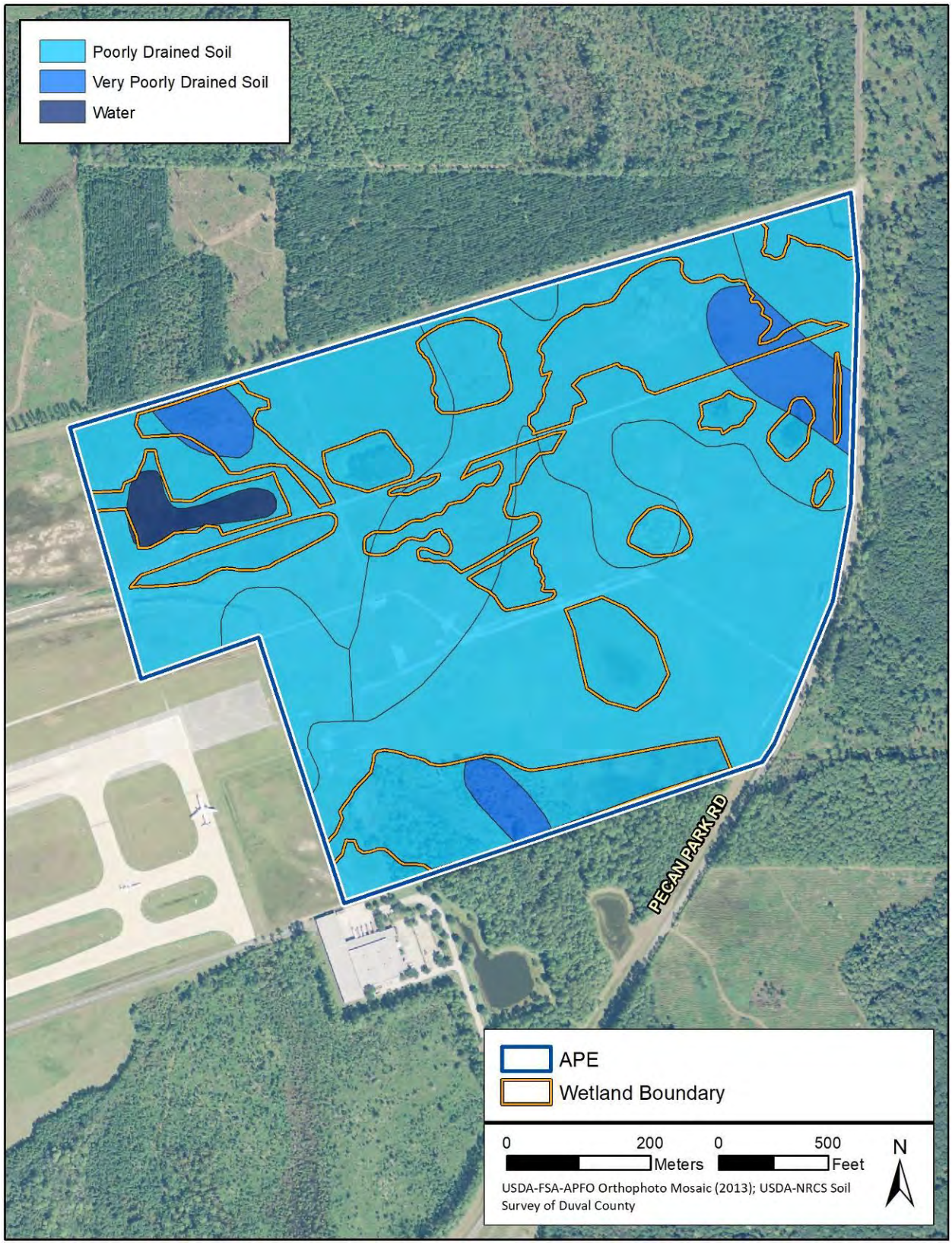


Figure 3. Soil types within the APE.

HISTORIC CONTEXT

Air travel in the Jacksonville area dates back to the earliest days of flying, when small planes would use area beaches as their runways. However, in the early twentieth century, most travelers opted for the local railroads or the increasingly popular automobile. As flying became a more normalized mode of transportation, the first commercial airport in Jacksonville was created—Imeson Field, also known as the Jacksonville Municipal Airport. It was constructed in the 1920s and opened in 1928, ushered in by a landing by famed pilot Charles Lindbergh (Jacksonville Aviation Authority 2017). During World War II, the growth of military facilities in the Jacksonville area expanded the popularity of flying, largely by the training of pilots at several new bases. This also included the leasing of the municipal airport to the military, first as Jacksonville Army Airfield, and then Naval Auxiliary Air Station Jacksonville in the 1940s (Metro Jacksonville 2012).

After the war, the airport returned to Jacksonville and continued serving as a commercial facility, though air travel was still not the most popular option. Changes in airplane technology would soon change that, as new and more powerful jets were introduced. This also made the facilities at Jacksonville Imeson Airport outdated, and the decision was made in the 1960s to open a new airport in Jacksonville. In 1965, a bond measure was approved that would allocate $9 million to the construction of a new facility, hoping to make Jacksonville a competitor as one of the southeast's major hubs (Jacksonville Aviation Authority 2017; Mormino 2005:271). JIA opened in 1968, though it did not attain the large-scale status it had hoped, overshadowed by the facilities in Atlanta and Orlando (Mormino 2005:271). Within 14 years, by 1982, JIA saw 2 million passengers pass through its gates. Though growth was slow, the airport expanded in 1990, adding a new $100 million terminal and additional parking facilities, bolstering its position within the Florida airport scene (Jacksonville Aviation Authority 2017).

HISTORIC MAP AND AERIAL PHOTOGRAPHY REVIEW

Historic maps and aerial photographs provide information on the historical landscape of the APE. **Figure 4** is a 1943 aerial photograph that shows a farm and associated buildings on both sides of Pecan Park Road, at the eastern end of the APE. There was also an unimproved road that ran through the center of the southernmost wetland, which appears to have provided access to the farm from the south and west. These areas were cleared with the construction of the airport, and current images contain no evidence of farming activities. The wetlands that are to be mitigated at the end of Runway 26 do not correspond to any naturally occurring wetlands visible in the historic aerial photograph.

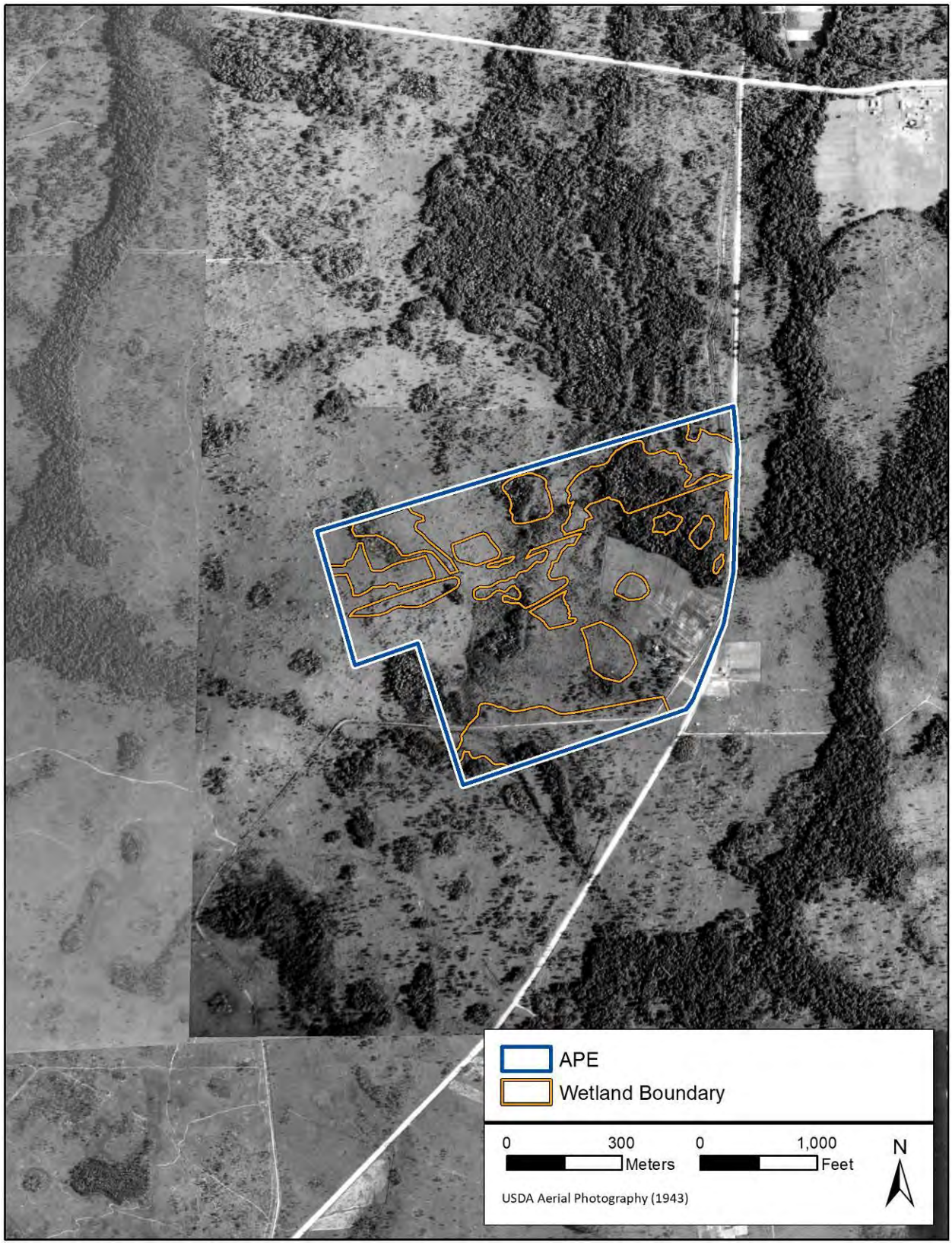


Figure 4. 1943 USDA aerial photograph showing the location of the APE.

After Florida became a US territory in 1821, federal land surveyors for the General Land Office (GLO) began the gradual process of formally surveying land within the territory. **Figure 5** is an 1850 GLO plat map showing the current vicinity of the JIA and the locations of the APE. The map provides no indications of cultural activity within or near the APE.

FLORIDA MASTER SITE FILE REVIEW

A review of the Florida Master Site File (FMSF) database, updated in January 2019, indicates that there have been 10 previously conducted cultural surveys within one mile of the APE (**Table 1**). None of these intersect the wetland removal areas or their immediate vicinity. **Figure 6** shows the locations of these surveys in relation to the APE. One archaeological site, 8DU21637 (the Barford Baptist Church Ruins), lies 0.9 miles northwest of the APE. The site consists of the concrete foundation of a twentieth-century rural church building, originally built in 1943. It was found to be ineligible for inclusion in the NRHP by the Florida State Historic Preservation Officer (SHPO).

Table 1. Previous Cultural Resource Surveys within One Mile of the APE.

FMSF No.	Title	Date	Author
10450	An Archaeological and Historical Survey of the Proposed Pecan Park Estates Development Tract, Duval County, Florida	2004	Johnson, Robert E.
11595	An Intensive Cultural Resource Assessment Survey of the Thomas Creek Preserve Property, Duval County, Florida	2005	Chance, Marsha A. and Ferrell, Stephen A.
11627	Cultural Resource Assessment of the North International Airport Boulevard, Duval County, Florida	2005	Stokes, Anne V.
16698	A Cultural Resources Assessment Survey of the Benderson Development Still Tract, Duval County, Florida	2009	Johnson, Robert E.
19067	A Cultural Resource Reconnaissance Survey of the TECO Peoples Gas Main Extension Project, Duval and Nassau Counties, Florida	2012	Johnson, Robert E.
19186	A Cultural Resource Reconnaissance Survey of the Owens Road Alternate Route of the TECO Peoples Gas Main Extension Project, Duval and Nassau Counties, Florida	2012	Johnson, Robert E.
20734	Cultural Resource Assessment Survey for the Proposed Jacksonville International Airport North Access Road from Airport Road to Pecan Park Road in Duval County, FL	2014	Chambless, Elizabeth et al.
21722	Technical Memorandum Cultural Resource Assessment Survey of Seven Ponds along the Jacksonville National Cemetery Access Road, Duval County, Florida	2015	Chambless, Elizabeth et al.
22307	An Intensive CRAS of the Montgomery Solar Farm, Duval County, Florida	2015	Bland, Myles
23122	Phase I Cultural Resources Survey Conducted for the Florida Portion of the Once-Proposed Kinder Morgan Palmetto Pipe Line Project, Nassau and Duval Counties, Florida	2016	Goodwin and Associates, Inc.

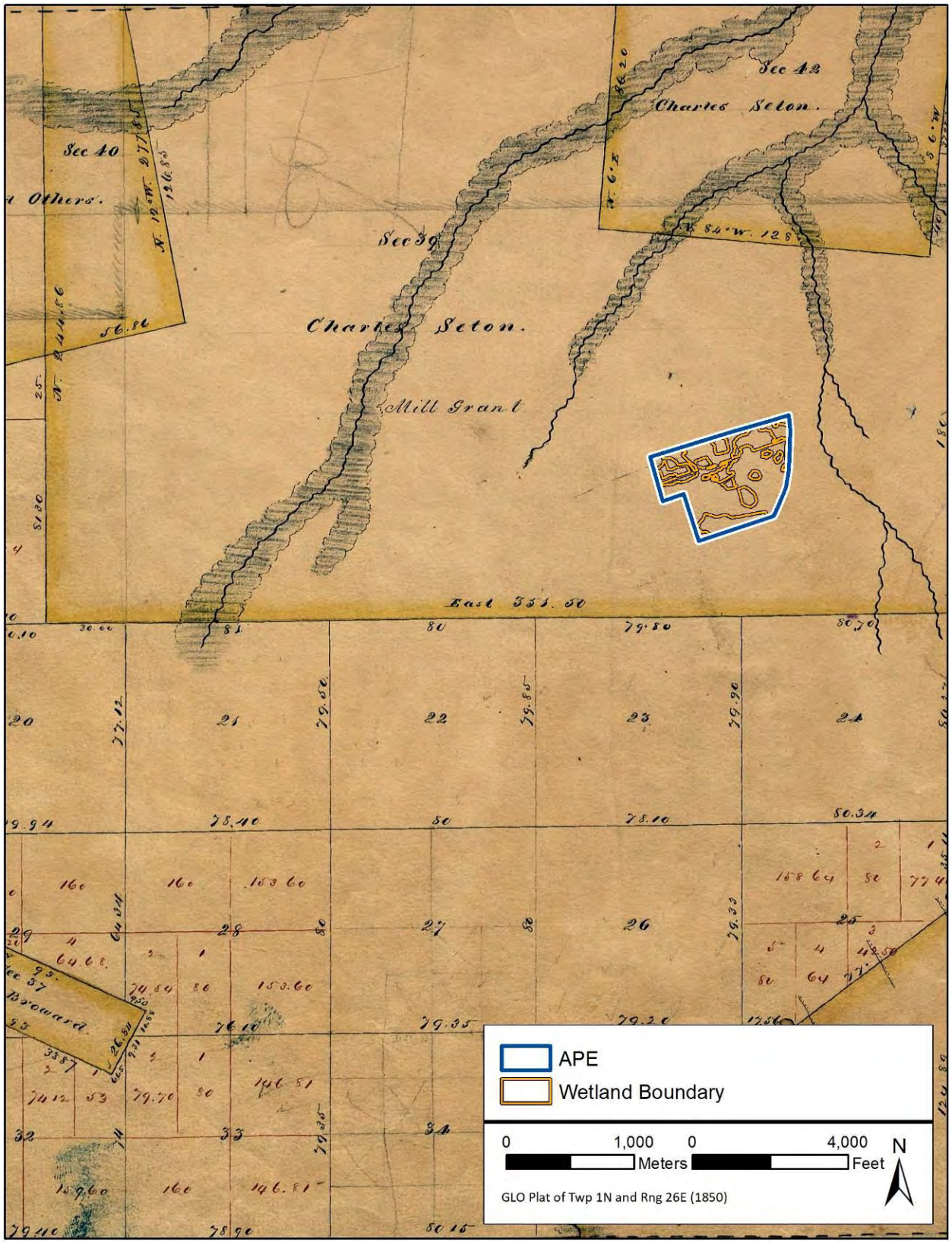


Figure 5. 1850 GLO map showing the location of the APE.

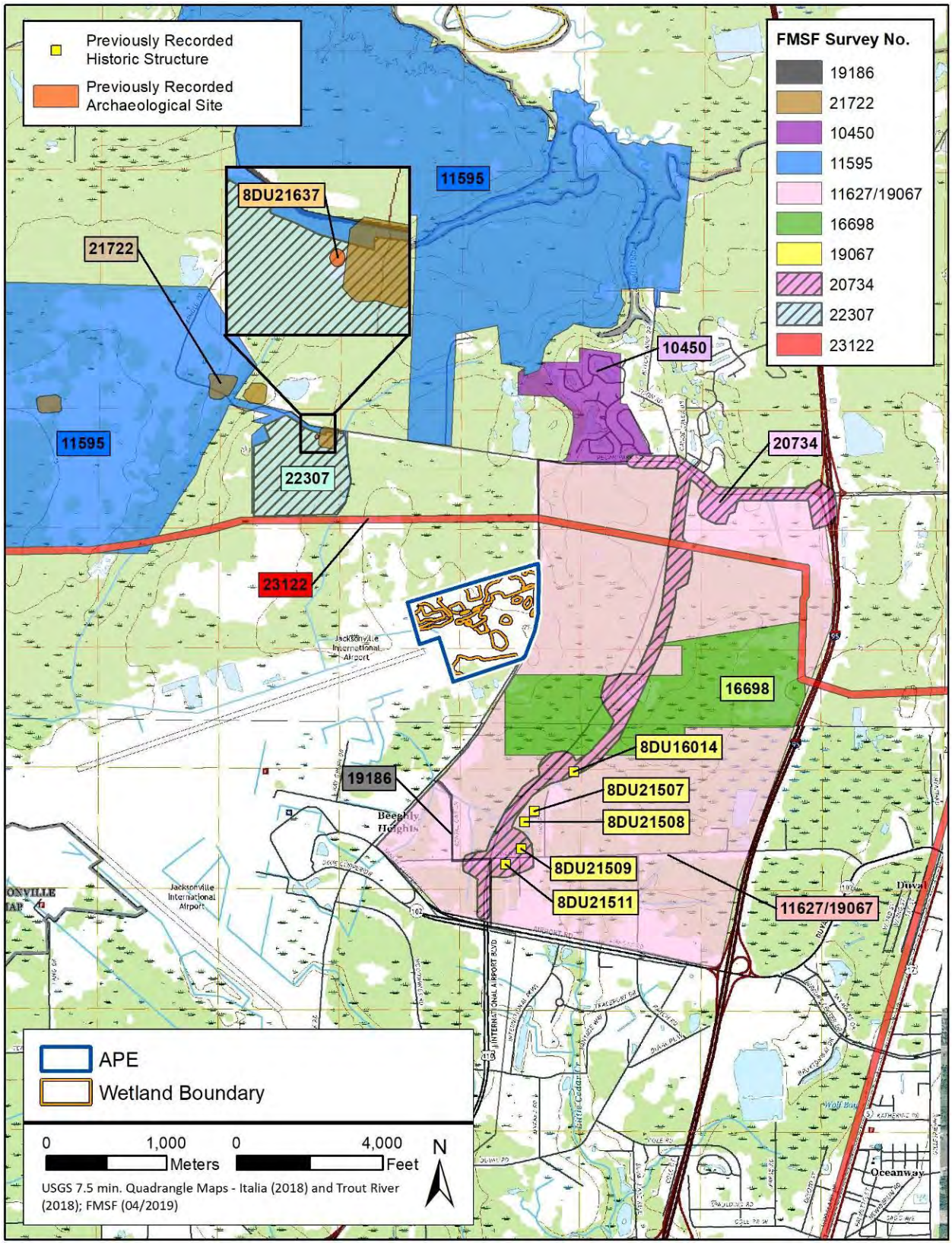


Figure 6. Previous cultural surveys and previously recorded cultural resources within one mile of the APE.

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The FMSF database also indicated that there are five previously recorded architectural resources within one mile of the APE (**Table 2**; see **Figure 6**). These are mid-twentieth-century residential structures, each of which were determined to be ineligible for inclusion in the NRHP by the Florida SHPO.

Table 2. Previously Recorded Resources within One Mile of the APE.

FMSF No.	Name	Style	Year Built	NRHP Evaluation	Year Recorded/ Updated
8DU21507	1671 Sundale Road	Ranch	1962	Ineligible	2014
8DU21508	1718 Sundale Road	Ranch	1965	Ineligible	2014
8DU21509	1755 Owens Road	Frame Vernacular	1960	Ineligible	2014
8DU21511	1820 Owens Road	Masonry Vernacular	1959	Ineligible	2014
8DU16014	14281 Urn Road	Frame Vernacular	1943	Ineligible	2014

POTENTIAL FOR CULTURAL RESOURCES WITHIN THE APE

Archaeological Probability Zones

The probability of encountering archaeological sites within an APE is typically based on environmental factors, such as relative elevation, soil drainage, and proximity to sources of fresh water. As discussed above, the APE contains numerous wetlands and standing water. The areas surrounding the wetland removal zones are low and contain poorly and very poorly drained soils. While the APE is near creeks and tributaries associated with the Nassau River, topographic maps do not indicate any rises or prominent landforms. The small farm visible on historic photographs has been cleared, although subsurface remnants of the structure that once stood at the end of Runway 26 may be detectible with archaeological testing. Based on these factors, archaeological testing of the APE would likely result in recovery of artifacts associated with the farm; however, the presence of intact or significant archaeological deposits is not likely.

Architectural Resources

There are no standing structures within or near the wetland APE. The JIA was established in 1968, and it is assumed there are buildings and/or structures dating to the same time period. An architectural history assessment of the Jacksonville Air National Guard Base, which was built at the same time and is located west of the JIA runways, was conducted in 2011. During that survey, 28 historic structures were recorded (Nowick et al. 2011). A similar building survey of JIA structures would likely result in documentation of numerous historic structures. However, the JIA buildings are more than 0.5 miles from the APE and are not likely to be affected by the project.

REFERENCES CITED

General Land Office (GLO)
1850 Township 1 North, Range 26 East. Electronic document, https://glorecords.blm.gov/details/survey/, accessed April 30, 2019.

Jacksonville Aviation Authority
2017 History of Aviation. Electronic document, http://www.flyjacksonville.com/content2015.aspx?id=84, accessed April 30, 2019.

Metro Jacksonville
2012 Jacksonville Municipal Airport Imeson Field. Electronic document, https://www.metrojacksonville.com/article/2012-feb-jacksonville-municipal-airport-imeson-field, accessed April 30, 2019.

Mormino, Gary R.
2005 *Land of Sunshine, State of Dreams: A Social History of Modern Florida*. University Press of Florida, Gainesville.

Nowick, Marjoie, Alvin Banguilan, and Dan Hart
2011 *Cultural Resources Survey and Evaluation Report of the Air National Guard Base, Florida Air National Guard, Jacksonville, Florida*. Report submitted to Florida Division of Historic Resources.

US Department of Agriculture, Farm Service Agency, Aerial Photography Field Office
2013 Orthophoto Mosaic. Electronic document, https://www.fsa.usda.gov/programs-and-services/aerial-photography/, accessed April 30, 2019.
1943 Aerial Photography. Electronic document, https://www.fsa.usda.gov/programs-and-services/aerial-photography/, accessed April 30, 2019.

US Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS)
2018 Web Soil Survey, Duval County. Electronic document, https://websoilsurvey.sc.egov.gov, accessed April 30, 2019.

US Geological Survey (USGS)
2018 Topographic Map of Italia (FL). Online document https://www.usgs.gov/products/maps/topo-maps/, accessed April 30 2019.
2018 Topographic Map of Trout River, FL. Online document, https://www.usgs.gov/products/maps/topo-maps, accessed April 30, 2019.

APPENDIX C – Florida State Clearinghouse Coordination Letter and Response

6 May 2019

Office of Intergovernmental Programs
Department of Environmental Protection
3900 Commonwealth Boulevard, Mail Station 47
Tallahassee, Florida 32399

RE: Request for Early Coordination
Jacksonville International Airport (JIA)
Environmental Assessment for JIA Airfield Wetland Mitigation Project

To Whom it may Concern:

Pursuant to the *National Environmental Policy Act of 1969* (NEPA), the Jacksonville Aviation Authority (JAA) is preparing an Environmental Assessment (EA) for the JIA Airfield Wetland Mitigation Project. The EA will be prepared in accordance with FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions.* The project lies directly west of Pecan Park Boulevard North, at the end of Runway 26 at JIA (Exhibit 1). Once completed, the EA will be submitted to the Federal Aviation Administration (FAA). After review of the EA, and consideration of comments from the public and federal, state and local agencies, the FAA will make an environmental determination on the proposed project.

PROJECT DESCRIPTION

The project involves eliminating approximately 52.80 acres of jurisdictional wetlands from the end of Runway 26 and providing appropriate wetland mitigation within the JIA Mitigation Area or an approved wetland mitigation bank. The wetlands are comprised of both man-made (created) wetlands and natural areas. Since 2006, these areas have been documented as being attractive to wildlife hazardous to aviation (birds). JIA's current Wildlife Hazard Management Plan (WHMP) recommends the elimination of standing water (including manmade and natural wetlands) from the Air Operations Area (AOA) (Exhibit 2). Removal of this habitat will enhance safety at JIA.

These areas shall be cleared, filled, and graded in order to maintain proper drainage to prevent standing water. Appropriate elimination of these areas will reduce the available habitat for hazardous wildlife at JIA and reduce the risk of hazardous wildlife incidents. Permits through the St. Johns River Water Management District (SJRWMD) and the U.S. Army Corps of Engineers (USACE) will be obtained for the impacts associated with this project and appropriate mitigation will be provided.

On behalf of the JAA, Environmental Resource Solutions is sending this early notification to

1. Advise Agencies of the preparation of the EA;
2. Request any relevant information that an Agency may have regarding the project; and
3. To solicit early comments regarding potential issues or concerns.

Environmental Resource Solutions
A Division of SES Energy Services LLC
8711 Perimeter Park Blvd., Suite 1, Jacksonville, Florida 32216
T: (904)-285-1397, F: (904) 285-1929
Email: mail@ersenvironmental.com

Please send any information or comments to my attention (areed@ersenvironmental.com) or at our business address (in footer). A response within 30 days would be appreciated. If comments are not received, we will assume that your agency does not have concerns about the proposed project.

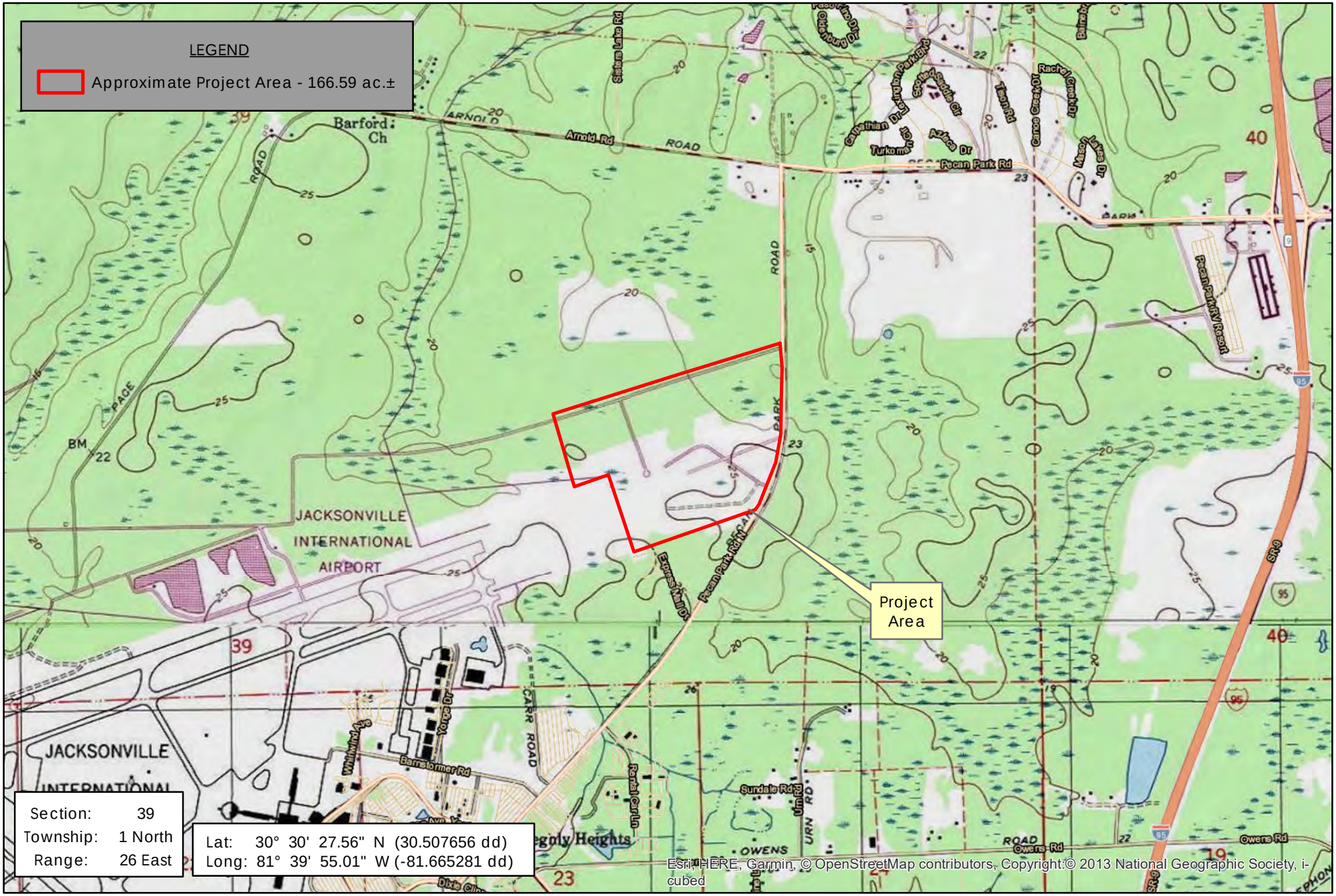
Sincerely,

ENVIRONMENTAL RESOURCE SOLUTIONS
A Division of SES Energy Services LLC

Amy Reed
Senior Project Manager / Environmental Scientist

Enclosures: Exhibit 1 - Location Map
Exhibit 2 – Project Area

(AMR/19039/Early Coordination Request_5-6-19)



Environmental Resource Solutions
Our Science. Your Success.
8711 Perimeter Park Blvd., Suite 1
Jacksonville, FL 32216
(904) 285-1397
mail@ersenvironmental.com

JIA Wetland Mitigation EA
USGS Topographic Quadrangle Map

Duval County, Florida | By: GLA

Project No.:	19039
Exhibit No.:	1
Date:	3-22-19
Rev. Date:	

Source: 7.5' USGS Italia & Trout River, FL Topographic Quadrangles; ArcGIS Online (USA Topo Maps)

X:\2019\19039\GRAPHICS\mxd\19039_location_3-22-19.mxd

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(904) 285-1397
mail@ersenvironmental.com

JIA Wetland Mitigation EA
Current Aerial

Project No.:	19039
Exhibit No.:	2
Date:	3-22-19
By: GLA	Rev. Date:

N W E S

Aerial Source: ArcGIS Online (Imagery, Transportation)

X:\2019\19039\GRAPHICS\mxd\19039_Current_Aerial_3-22-19.mxd

FLORIDA DEPARTMENT OF Environmental Protection

Northeast District
8800 Baymeadows Way West, Suite 100
Jacksonville, Florida 32256

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Noah Valenstein
Secretary

June 3, 2019

Ms. Amy Reed, Sr. Project Manager
Environmental Resource Solutions
8711 Perimeter Park Boulevard, Suite 1
Jacksonville, FL 32216

RE: Request for Early Coordination
Jacksonville International Airport (JIA)
Environmental Assessment for JIA Airfield Wetland Mitigation Project

Dear Ms. Reed:

The Northeast District office of the Florida Department of Environmental Protection (DEP) has reviewed the environmental assessment for the JIA Airfield Wetland Mitigation Project in Duval County. Based on the information provided, permits will need to be obtained from the St. Johns River Water Management District and the U.S. Army Corps of Engineers for the impacts associated with this project. Therefore, our office does not have any significant comments for this project.

However, please note that if there will be any land clearing from this project, the debris may be removed to a registered yard trash processing facility, composting facility, or an appropriate yard trash disposal facility.

If you have any questions, or if you need further assistance from our office, please contact Victoria Ford at Victoria.Ford@FloridaDEP.gov, or at (904) 256-1505.

Thank you for the opportunity to review this project.

Sincerely,

Gregory J. Strong
District Director

APPENDIX D – Information for Planning and Consultation (IPaC) Resource List

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Duval County, Florida

Local office

North Florida Ecological Services Field Office

(904) 731-3336
(904) 731-3045

7915 Baymeadows Way, Suite 200
Jacksonville, FL 32256-7517

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

West Indian Manatee Trichechus manatus There is **final** critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/4469	Threatened Marine mammal

Birds

NAME	STATUS
Eastern Black Rail Laterallus jamaicensis ssp. jamaicensis No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10477	Proposed Threatened
Red Knot Calidris canutus rufa No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1864	Threatened
Red-cockaded Woodpecker Picoides borealis No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7614	Endangered
Wood Stork Mycteria americana No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8477	Threatened

Reptiles

NAME	STATUS
Eastern Indigo Snake Drymarchon corais couperi No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/646	Threatened
Gopher Tortoise Gopherus polyphemus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6994	Candidate
Green Sea Turtle Chelonia mydas There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/6199	Threatened
Hawksbill Sea Turtle Eretmochelys imbricata There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/3656	Endangered

Leatherback Sea Turtle Dermochelys coriacea There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/1493	Endangered
Loggerhead Sea Turtle Caretta caretta There is **final** critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/1110	Threatened

Amphibians

NAME	STATUS
Frosted Flatwoods Salamander Ambystoma cingulatum There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/4981	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
Loggerhead Sea Turtle Caretta caretta https://ecos.fws.gov/ecp/species/1110#crithab	Final
Piping Plover Charadrius melodus For information on why this critical habitat appears for your project, even though Piping Plover is not on the list of potentially affected species at this location, contact the local field office. https://ecos.fws.gov/ecp/species/6039#crithab	Final
West Indian Manatee Trichechus manatus https://ecos.fws.gov/ecp/species/4469#crithab	Final

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

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

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

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

MIGRATORY BIRD INFORMATION IS NOT AVAILABLE AT THIS TIME

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

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

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

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

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

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

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

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

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

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

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

What are the levels of concern for migratory birds?

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

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

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

Details about birds that are potentially affected by offshore projects

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

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

What if I have eagles on my list?

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

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC use to generate the migratory birds potentially occurring in my specified location”. Please be aware this report provides the “probability of presence” of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look

carefully at the survey effort (indicated by the black vertical bar) and for the existence of the “no data” indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ “Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds” at the bottom of your migratory bird trust resources page.

Marine mammals

Marine mammals are protected under the Marine Mammal Protection Act. Some are also protected under the Endangered Species Act[1] and the Convention on International Trade in Endangered Species of Wild Fauna and Flora[2].

The responsibilities for the protection, conservation, and management of marine mammals are shared by the U.S. Fish and Wildlife Service [responsible for otters, walruses, polar bears, manatees, and dugongs] and NOAA Fisheries[3] [responsible for seals, sea lions, whales, dolphins, and porpoises]. Marine mammals under the responsibility of NOAA Fisheries are **not** shown on this list; for additional information on those species please visit the Marine Mammals page of the NOAA Fisheries website.

The Marine Mammal Protection Act prohibits the take (to harass, hunt, capture, kill, or attempt to harass, hunt, capture or kill) of marine mammals and further coordination may be necessary for project evaluation. Please contact the U.S. Fish and Wildlife Service Field Office shown.

1. The Endangered Species Act (ESA) of 1973.
2. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is a treaty to ensure that international trade in plants and animals does not threaten their survival in the wild.
3. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following marine mammals under the responsibility of the U.S. Fish and Wildlife Service are potentially affected by activities in this location:

NAME

West Indian Manatee *Trichechus manatus*
https://ecos.fws.gov/ecp/species/4469

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

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

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

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 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.

Data 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.

Data 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.

APPENDIX E – Florida Natural Areas Inventory (FNAI) Tracking List for Duval County, Florida

FNAI Tracking List

DUVAL COUNTY
100 Total Elements Found
Last Updated: April 2019

Key
Scientific Name is linked to the FNAI Online Field Guides when available. - links to **NatureServe Explorer**, an online encyclopedia of more than 55,000 plants, animals, and natural communities in North America, compiled by the **NatureServe** network of natural heritage programs, of which the Florida Natural Areas Inventory is a member. - links to a species distribution map (**Adobe SVG viewer** required). If your browser does not support Adobe SVG, try this **link**

New Search

SEARCH RESULTS

NOTE: This is not a comprehensive list of all species and natural communities occurring in the location searched. Only elements documented in the FNAI database are included and occurrences of natural communities are excluded. Please see FNAI Land Cover information or Reference Natural Community map for more information on communities.

Plants and Lichens			**EXPLANATION**			
Scientific Name		Common Name	Global Rank	State Rank	Federal Status	State Status
Agrimonia incisa		incised groove-bur	G3	S2		T
Asclepias viridula		southern milkweed	G2	S2		T
Balduina atropurpurea		purple honeycomb-head	G2	S1		E
Calydorea coelestina		Bartram's ixia	G2G3	S2S3		E
Coelorachis tuberculosa		Piedmont jointgrass	G3	S3		T
Ctenium floridanum		Florida toothache grass	G2	S2		E
Forestiera godfreyi		Godfrey's swampprivet	G2	S2		E
Gymnopogon chapmanianus		Chapman's skeletongrass	G3	S3		N
Hartwrightia floridana		hartwrightia	G2	S2		T
Lantana depressa var. floridana		Atlantic Coast Florida lantana	G2T1	S1		E
Litsea aestivalis		pondspice	G3?	S2		E
Matelea floridana		Florida spiny-pod	G2	S2		E
Mesadenus lucayanus		Florida Keys ladies'-tresses	GNR	S1S2		E
Myriopteris microphylla		southern lip fern	G5	S3		E
Orbexilum virgatum		pineland scurfpea	G1	S1		E
Pavonia spinifex		yellow hibiscus	G4G5	S2		N
Pecluma plumula		plume polypody	G5	S2		E

Pecluma ptilota var. bourgeauana	comb polypody	G5? TNR	S2		E
Peperomia humilis	terrestrial peperomia	G5	S2		E
Pteroglossaspis ecristata	giant orchid	G2G3	S2		T
Pycnanthemum floridanum	Florida mountain-mint	G3	S3		T
Ruellia noctiflora	nightflowering wild petunia	G3?	S2		E
Schoenolirion croceum	yellow sunnybell	G4	S2		E
Schwalbea americana	chaffseed	G2	S1	E	E
Verbesina heterophylla	variable-leaf crownbeard	G2	S2		E

Clams and Mussels				**EXPLANATION**	
Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Panopea bitruncata	Atlantic Geoduck	G3G4	S2S3		N
Villosa amygdala	Florida Rainbow	G3	S3		N

Snails and Allies				**EXPLANATION**	
Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Amnicola rhombostoma	Squaremouth Amnicola Snail	GH	SH		N
Dryachloa dauca	Carrot Glass Snail	G2	S1?		N

Spiders				**EXPLANATION**	
Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Sphodros rufipes	Red-legged Purse-web Spider	G4	S3		N

Crabs, Crayfishes, and Shrimps				**EXPLANATION**	
Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Procambarus pictus	Black Creek Crayfish	G2	S2		ST

Mayflies				**EXPLANATION**	
Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Stenacron floridense	A Mayfly	G3G4	S3S4		N

Dragonflies and Damselflies				**EXPLANATION**	
Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Dromogomphus armatus	Southeastern Spinyleg	G4	S3		N
Neurocordulia obsoleta	Umber Shadowfly	G5	S2		N
Progomphus alachuensis	Tawny Sanddragon	G3	S3		N

Beetles	EXPLANATION				
Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Aphodius aegrotus	Small Pocket Gopher Aphodius Beetle	G3G4	S3?		N
Aphodius laevigatus	Large Pocket Gopher Aphodius Beetle	G3G4	S3?		N
Ataenius wenzelii	An Ataenius Beetle	G3G5	S2S3		N
Bolbocerosoma hamatum	Bicolored Burrowing Scarab Beetle	G3G4	S3		N
Triplax alachuae	Alachua Pleasing Fungus Beetle	G2G4	S2S4		N

Caddisflies	EXPLANATION				
Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Oecetis daytona	Daytona Long-horned Caddisfly	G3	S2S3		N

Butterflies and Moths	EXPLANATION				
Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Callophrys gryneus sweadneri	Florida Olive Hairstreak	G5T2	S2		N
Callophrys niphon	Eastern Pine Elfin	G5	S2		N
Cupido comyntas	Eastern Tailed Blue	G5	S2		N
Euphyes berryi	Berry's Skipper	G2	S2		N
Euphyes dion	Dion Skipper	G4	S2S3		N
Euphyes dukesi calhouni	Calhoun's Skipper	G3T1	S1		N
Hesperia attalus slossonae	Seminole Skipper	G3G4T3	S3		N
Hesperia meskei straton	Eastern Meske's Skipper	G3G4T3	S2S3		N
Nymphalis antiopa	Mourning Cloak	G5	S2		N
Poanes viator zizaniae	Broad-winged Skipper	G5T5	S2		N
Poanes yehl	Yehl Skipper	G4	S2S3		N
Polites origenes	Crossline Skipper	G4G5	S3		N

Ants, Bees, and Wasps	EXPLANATION				
Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Bombus fraternus	Southern Plains Bumble Bee	G2G4	S1S2		N

Fishes	EXPLANATION				
Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Acipenser oxyrinchus oxyrinchus	Atlantic Sturgeon	G3T3	S1	E	FE
Microphis brachyurus	Opossum Pipefish	G4G5	S2	SC	N

Amphibians		EXPLANATION			
Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Ambystoma cingulatum	Frosted Flatwoods Salamander	G2	S1S2	T	FT
Lithobates capito	Gopher Frog	G3	S3		N
Notophthalmus perstriatus	Striped Newt	G2G3	S2		N

Reptiles		EXPLANATION			
Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Alligator mississippiensis	American Alligator	G5	S4	SAT	FT(S/A)
Caretta caretta	Loggerhead Sea Turtle	G3	S3	T	FT
Chelonia mydas	Green Sea Turtle	G3	S2S3	T	FT
Clemmys guttata	Spotted Turtle	G5	S2S3		N
Crotalus adamanteus	Eastern Diamondback Rattlesnake	G4	S3		N
Dermochelys coriacea	Leatherback Sea Turtle	G2	S2	E	FE
Drymarchon couperi	Eastern Indigo Snake	G3	S3	T	FT
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
Lampropeltis getula	Common Kingsnake	G5	S2S3		N
Pituophis melanoleucus	Pine Snake	G4	S3		ST

Birds		EXPLANATION			
Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Ammospiza maritima macgillivraii	Macgillivray's Seaside Sparrow	G4T3	S2		N
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3		ST
Charadrius melodus	Piping Plover	G3	S2	T	FT
Charadrius wilsonia	Wilson's Plover	G5	S2		N
Cistothorus palustris griseus	Worthington's Marsh Wren	G5T3	S2		ST
Egretta caerulea	Little Blue Heron	G5	S4		ST
Egretta thula	Snowy Egret	G5	S3		N
Egretta tricolor	Tricolored Heron	G5	S4		ST
Eudocimus albus	White Ibis	G5	S4		N
Falco peregrinus	Peregrine Falcon	G4	S2	N	N
Haematopus palliatus	American Oystercatcher	G5	S2		ST
Haliaeetus leucocephalus	Bald Eagle	G5	S3		N
Mycteria americana	Wood Stork	G4	S2	T	FT
Nyctanassa violacea	Yellow-crowned Night-heron	G5	S3		N
Nycticorax nycticorax	Black-crowned Night-heron	G5	S3		N
Pandion haliaetus	Osprey	G5	S3S4		N
Passerina ciris pop. 1	Painted Bunting, eastern population	G5T3	S1S2		N
Peucaea aestivalis	Bachman's Sparrow	G3	S3		N

Platalea ajaja		Roseate Spoonbill	G5	S2		ST
Rynchops niger		Black Skimmer	G5	S3		ST
Sternula antillarum		Least Tern	G4	S3	N	ST
Thalasseus maximus		Royal Tern	G5	S3		N
Thalasseus sandvicensis		Sandwich Tern	G5	S2		N

Mammals						**EXPLANATION**
Scientific Name		Common Name	Global Rank	State Rank	Federal Status	State Status
Eubalaena glacialis		North Atlantic Right Whale	G1	S1	E	FE
Mustela frenata olivacea		Southeastern Weasel	G5T4	S3?		N
Neovison vison lutensis		Atlantic Salt Marsh Mink	G5T3	S3		N
Sciurus niger niger		Southeastern Fox Squirrel	G5T5	S3		N
Trichechus manatus		West Indian Manatee	G2	S2	T	FT
Ursus americanus floridanus		Florida Black Bear	G5T4	S4		N

Other Elements						**EXPLANATION**
Scientific Name		Common Name	Global Rank	State Rank	Federal Status	State Status
Bird Rookery			G5	SNR		N
Manatee Aggregation Site			GNR	SNR		N

APPENDIX F – Effect Determination Key for the Wood Stork in Central and North Peninsular Florida (September 2008)

THE CORPS OF ENGINEERS, JACKSONVILLE DISTRICT, U. S. FISH AND WILDLIFE SERVICE, JACKSONVILLE ECOLOGICAL SERVICES FIELD OFFICE AND STATE OF FLORIDA EFFECT DETERMINATION KEY FOR THE WOOD STORK IN CENTRAL AND NORTH PENINSULAR FLORIDA
September 2008

Purpose and Background

The purpose of this document is to provide a tool to improve the timing and consistency of review of Federal and State permit applications and Federal civil works projects, for potential effects of these projects on the endangered wood stork (*Mycteria americana*) within the Jacksonville Ecological Services Field Office (JAFL) geographic area of responsibility (GAR see below). The key is designed primarily for Corps Project Managers in the Regulatory and Planning Divisions and the Florida Department of Environmental Protection or its authorized designee, or Water Management Districts. The tool consists of the following dichotomous key and reference material. The key is intended to be used to evaluate permit applications and Corps' civil works projects for impacts potentially affecting wood storks or their wetland habitats. At certain steps in the key, the user is referred to graphics depicting known wood stork nesting colonies and their core foraging areas (CFA), footnotes, and other support documents. The graphics and supporting documents may be downloaded from the Corps' web page at http://www.saj.usace.army.mil/permit or at the JAFL web site at http://www.fws.gov/northflorida/WoodStorks. We intend to utilize the most recent information for both the graphics and supporting information; so should this information be updated, we will modify it accordingly. **Note: This information is provided as an aid to project review and analysis, and is not intended to substitute for a comprehensive biological assessment of potential project impacts. Such assessments are site-specific and usually generated by the project applicant or, in the case of civil works projects, by the Corps or project co-sponsor.**

Explanatory footnotes provided in the key must be closely followed whenever encountered.

Scope of the key

This key should only be used in the review of permit applications for effects determinations on wood storks within the JAFL GAR, and not for other listed species. Counties within the JAFL GAR include Alachua, Baker, Bradford, Brevard, Citrus, Clay, Columbia, Dixie, Duval, Flagler, Gilchrist, Hamilton, Hernando, Hillsborough, Lafayette, Lake, Levy, Madison, Manatee, Marion, Nassau, Orange, Pasco, Pinellas, Putnam, St. Johns, Seminole, Sumter, Suwannee, Taylor, Union, and Volusia.

The final effect determination will be based on project location and description, the potential effects to wood storks, and any measures (for example project components, special permit conditions) that avoid or minimize direct, indirect, and/or cumulative

impacts to wood storks and/or suitable wood stork foraging habitat. Projects that key to a "no effect" determination do not require additional consultation or coordination with the JAFL. Projects that key to "NLAA" also do not need further consultation; however, the JAFL staff will assist the Corps if requested, to answer questions regarding the appropriateness of mitigation options. Projects that key to a "may affect" determination equate to "likely to adversely affect" situations, and those projects should not be processed under the SPGP or any other programmatic general permit. For all "may affect" determinations, Corps Project Managers should request the JAFL to initiate formal consultation on the Wood stork.

Summary of General Wood Stork Nesting and Foraging Habitat Information

The wood stork is primarily associated with freshwater and estuarine habitats that are used for nesting, roosting, and foraging. Wood storks typically nest colonially in medium to tall trees that occur in stands located either in swamps or on islands surrounded by relatively broad expanses of open water (Ogden 1991; Rodgers et al. 1996). Successful breeding sites are those that have limited human disturbance and low exposure to land based predators. Nesting sites protected from land-based predators are characterized as those surrounded by large expanses of open water or where the nest trees are inundated at the onset of nesting and remain inundated throughout most of the breeding cycle. These colonies have water depths between 0.9 and 1.5 meters (3 and 5 feet) during the breeding season.

In addition to limited human disturbance and land-based predation, successful nesting depends on the availability of suitable foraging habitat. Such habitat generally results from a combination of average or above-average rainfall during the summer rainy season, and an absence of unusually rainy or cold weather during the winter-spring breeding season (Kahl 1964; Rodgers et al. 1987). This pattern produces widespread and prolonged flooding of summer marshes that tends to maximize production of freshwater fishes, followed by steady drying that concentrate fish during the season when storks nest (Kahl 1964). Successful nesting colonies are those that have a large number of foraging sites. To maintain a wide range of foraging opportunities, a variety of wetland habitats exhibiting short and long hydroperiods should be present. In terms of wood stork foraging, the Service (1999) describes a short hydroperiod as one where a wetland fluctuates between wet and dry in 1 to 5-month cycles, and a long hydroperiod where the wet period is greater than five consecutive months. Wood storks during the wet season generally feed in the shallow water of short-hydroperiod wetlands and in coastal habitats during low tide. During the dry season, foraging shifts to longer hydroperiod interior wetlands as they progressively dry down (though usually retaining some surface water throughout the dry season).

Because of their specialized feeding behavior, wood storks forage most effectively in shallow-water areas with highly concentrated prey. Typical foraging sites for the wood stork include freshwater marshes, depressions in cypress heads, swamp sloughs, managed impoundments, stock ponds, shallow-seasonally flooded roadside or agricultural ditches, and narrow tidal creeks or shallow tidal pools. Good foraging conditions are characterized by water that is relatively calm, open, and having water depths between 5 and 15 inches (5 and 38 cm). Preferred foraging habitat includes wetlands exhibiting a mosaic of submerged and/or emergent aquatic vegetation, and shallow, open-water areas subject to hydrologic

regimes ranging from dry to wet. The vegetative component provides nursery habitat for small fish, frogs, and other aquatic prey, and the shallow, open-water areas provide sites for concentration of the prey during daily or seasonal low water periods.

WOOD STORK KEY

Although designed primarily for use by Corps Project Managers in the Regulatory and Planning Divisions, and State Regulatory agencies or their designees, project permit applicants and co-sponsors of civil works projects may find this key and its supporting documents useful in identifying potential project impacts to wood storks, and planning how best to avoid, minimize, or compensate for any identified adverse effects.

A. Project within 2,500 feet of an active colony site[1]……*May affect*

Project more than 2,500 feet from a colony site……go to B

B. Project does not affect suitable foraging habitat[2] (SFH)…….*no effect*

Project impacts SFH[2]……go to C

C. Project impacts to SFH are less than or equal to 0.5 acre[3]…….....*NLAA*[4]

Project impacts to SFH are greater than or equal to 0.5 acre..……..go to D

D. Project impacts to SFH not within a Core Foraging Area[5] (see attached map) of a colony site, and no wood storks have been documented foraging on site…….....NLAA[4]

Project impacts to SFH are within the CFA of a colony site, or wood storks have been documented foraging on a project site outside the CFA ……..….go to E

E. Project provides SFH compensation within the Service Area of a Service-approved wetland mitigation bank or wood stork conservation bank preferably within the CFA, or consists of SFH compensation within the CFA consisting of enhancement, restoration or creation in a project phased approach that provides an amount of habitat and foraging function equivalent to that of impacted SFH (see *Wood Stork Foraging Habitat Assessment Procedure*[6] for guidance), is not contrary to the Service's *Habitat Management Guidelines For The Wood Stork In The Southeast Region* and in accordance with the CWA section 404(b)(1) guidelines……*NLAA*[4]

Project does not satisfy these elements.…….....……...*May affect*

[1] An active nesting site is defined as a site currently supporting breeding pairs of wood storks, or has supported breeding wood storks at least once during the preceding 10-year period.

[2] Suitable foraging habitat (SFH) is described as any area containing patches of relatively open (< 25% aquatic vegetation), calm water, and having a permanent or seasonal water depth between 2 and 15 inches (5 to 38 cm). SFH supports and concentrates, or is capable of supporting and concentrating small fish, frogs, and other aquatic prey. Examples of SFH include, but are not limited to, freshwater marshes and stock ponds, shallow, seasonally flooded roadside or agricultural ditches, narrow tidal creeks or shallow tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs. See above *Summary of General Wood Stork Nesting and Foraging Habitat Information*.

[3] On an individual basis, projects that impact less than 0.5 acre of SFH generally will not have a measurable effect on wood storks, although we request the Corps to require mitigation for these losses when appropriate. Wood Storks are a wide ranging species, and individually, habitat change from impacts to less than 0.5 acre of SFH is not likely to adversely affect wood storks. However, collectively they may have an effect and therefore regular monitoring and reporting of these effects are important.

[4] Upon Corps receipt of a general concurrence issued by the JAFL through the Programmatic Concurrence on this key, "NLAA" determinations for projects made pursuant to this key require no further consultation with the JAFL.

[5] The U.S. Fish and Wildlife Service (Service) has identified core foraging area (CFA) around all known wood stork nesting colonies that is important for reproductive success. In Central Florida, CFAs include suitable foraging habitat (SFH) within a 15-mile radius of the nest colony; CFAs in North Florida include SFH within a 13-mile radius of a colony. The referenced map provides locations of known colonies and their CFAs throughout Florida documented as active within the last 10 years. The Service believes loss of suitable foraging wetlands within these CFAs may reduce foraging opportunities for the wood stork.

[6]This draft document, *Wood Stork Foraging Habitat Assessment Procedure*, by Passarella and Associates, Incorporated, may serve as further guidance in ascertaining wetland foraging value to wood storks and compensating for impacts to wood stork foraging habitat.

Monitoring and Reporting Effects

For the Service to monitor cumulative effects, it is important for the Corps to monitor the number of permits and provide information to the Service regarding the number of permits issued that were determined "may affect, not likely to adversely affect." It is requested that information on date, Corps identification number, project acreage, project wetland acreage, and latitude and longitude in decimal degrees be sent to the Service quarterly.

Literature Cited

Kahl, M.P., Jr. 1964. Food ecology of the wood stork (*Mycteria americana*) in Florida. Ecological Monographs 34:97-117.

Ogden, J.C. 1991. Nesting by wood storks in natural, altered, and artificial wetlands in central and northern Florida. Colonial Waterbirds 14:39-45.

Rodgers, J.A. Jr., A.S. Wenner, and S.T. Schwikert. 1987. Population dynamics of wood storks in northern and central Florida, USA. Colonial Waterbirds 10:151-156.

Rodgers, J.A., Jr., S.T. Schwikert, and A. Shapiro-Wenner. 1996. Nesting habitat of wood storks in north and central Florida, USA. Colonial Waterbirds 19:1-21.

U.S. Fish and Wildlife Service. 1999. South Florida multi-species recovery plan. Fish and Wildlife Service; Atlanta, Georgia. Available from: http://verobeach.fws.gov/Programs/Recovery/vbms5.html.

APPENDIX G – Eastern Indigo Snake Programmatic Effect Determination Key, Revised (July 2017)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960

August 1, 2017

Donnie Kinard
U.S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Subject: Consultation Key for the Eastern Indigo Snake – Revised

Dear Mr. Kinard:

This letter revises and replaces the January 25, 2010, and August 13, 2013, letters to the U.S. Army Corps of Engineers (Corps) regarding the use of the eastern indigo snake programmatic effect determination key (Key) for projects occurring within the South Florida Ecological Service's Office (SFESO) jurisdiction. This revision supersedes all prior versions of the Key in the SFESO area. The purpose of this revision is to clarify portions of the previous keys based on questions we have been asked, specifically related to habitat and refugia used by eastern indigo snakes (*Drymarchon corais couperi*), in the southern portion of their range and within the jurisdiction of the SFESO. This Key is provided pursuant to the Service's authorities under the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C.1531 *et seq.*). This Key revision has been assigned Service Consultation Code: 41420-2009-I-0467-R001.

The purpose of this Key is to assist the Corps (or other Federal action agency) in making appropriate effects determinations for the eastern indigo snake under section 7 of the Act, and streamline informal consultation with the SFESO for the eastern indigo snake when the proposed action can be walked through the Key. The Key is a tool available to the Corps (or other Federal action agency) for the purposes of expediting section 7 consultations. There is no requirement to use the Key. There will be cases when the use of the Key is not appropriate. These include, but are not limited to: where project specific information is outside of the scope of the Key or instances where there is new biological information about the species. In these cases, we recommend the Corps (or other Federal action agency) initiates traditional consultation pursuant to section 7 of the Act, and identify that consultation is being requested outside of the Key.

This Key uses project size and home ranges of eastern indigo snakes as the basis for making determinations of "may affect, but is not likely to adversely affect" (NLAA) and "may affect. and is likely to adversely affect" (may affect). Suitable habitat for the eastern indigo snake consists of a mosaic of habitats types, most of which occur throughout South Florida. Information on home ranges for individuals is not available in specific habitats in South Florida. Therefore, the SFESO uses the information from a 26-year study conducted by Layne and Steiner (1996) at Archbold Biological Station, Lake Placid, Florida, as the best available

information. Layne and Steiner (1996) determined the average home range size for a female eastern indigo snake was 46 acres and 184 acres for a male.

Projects that would remove/destroy less than 25 acres of eastern indigo snake habitat are expected to result in the loss of a portion of an eastern indigo snakes home range that would not impair the ability of the individual to feed, breed, and shelter. Therefore, the Service finds that take would not be reasonably certain to occur due to habitat loss. However, these projects have the potential to injure or kill an eastern indigo snake if the individual is crushed by equipment during site preparation or other project aspects. The Service's *Standard Protection Measures for the Eastern Indigo Snake* (Service 2013 or most current version) and the excavation of underground refugia (where a snake could be buried, trapped and/or injured), when implemented, are designed to avoid these forms of take. Consequently, projects less than 25 acres that include the Service's *Standard Protection Measures for the Eastern Indigo Snake* (Service 2013 or most current version) and a commitment to excavate underground refugia as part of the proposed action would be expected to avoid take and thus, may affect, but are not likely to adversely affect the species.

If a proposed project would impact less than 25 acres of vegetated eastern indigo snake habitat (not urban/ human-altered) completely surrounded by urban development, and an eastern indigo snake has been observed on site, the Key should not be used. The Service recommends formal consultation for this situation because of the expected increased value of the vegetated habitat within the individual's home range.

Projects that would remove 25 acres or more of eastern indigo snake habitat could remove more than half of a female eastern indigo snakes home range. This loss of habitat within a home range would be expected to significantly impair the ability of that individual to feed, breed, and shelter. Therefore, the Service finds take through habitat loss would be reasonably certain to occur and formal consultation is appropriate. Furthermore, these projects have the potential to injure or kill an eastern indigo snake if the individual is crushed by equipment during site preparation or other project aspects. The Service's *Standard Protection Measures* for the *Eastern Indigo Snake* (Service 2013 or most current version) and the excavation of underground refugia (where a snake could be buried, trapped and/or injured), when implemented, are designed to avoid these forms of take.

Eastern indigo snakes use a variety of habitat and are difficult to detect. Therefore, site specific information on the land use, observations of eastern indigo snakes within the vicinity, as well as other factors, as appropriate, will all be considered by the Service when making a final recommendation on the appropriate effects determination and whether it is appropriate to conclude consultation with the Corps (or other Federal action agency) formally or informally for projects that will impact 25 acres or more of habitat. Accordingly, when the use of the Key results in a determination of "may affect," the Corps (or other Federal action agency) is advised that consultation may be concluded informally or formally, depending on the project specific effects to eastern indigo snakes. Technical assistance from the Service can assist you in making a determination prior to submitting a request for consultation. In circumstances where the Corps (or other Federal action agency) desires to proceed with a consultation request prior to receiving

additional technical assistance from the Service, we recommend the agency documents the biological rationale for their determination and proceed with a request accordingly.

If the use of the Key results in a determination of "no effect," no further consultation is necessary with the SFESO. If the use of the Key results in a determination of "NLAA," the SFESO concurs with this determination based on the rationale provide above, and no further consultation is necessary for the effects of the proposed action on the eastern indigo snake. For "no effect" or "NLAA" determinations, the Service recommends that the Corps (or other Federal action agency) documents the pathway used to reach your no effect or NLAA determination in the project record and proceed with other species analysis as warranted.

Eastern Indigo Snake Programmatic Effect Determination Key
Revised July 2017
South Florida Ecological Service Office

Scope of the Key

This Key should be used only in the review of permit applications for effects determinations for the eastern indigo snake (*Drymarchon corais couperi*) within the South Florida Ecological Service's Office (SFESO) area (Broward, Charlotte, Collier, De Soto, Glades, Hardee, Hendry, Highlands, Lee, Indian River, Martin, Miami-Dade, Monroe, Okeechobee, Osceola, Palm Beach, Polk, Sarasota, and St. Lucie Counties). There is no designated critical habitat for the eastern indigo snake.

This Key is subject to revision as the Corps (or other Federal action agency) and Service deem necessary and in particular whenever there is new information on eastern indigo snake biology and effects of proposed projects.

The Key is a tool available to the Corps (or other Federal action agency) for the purposes of expediting section 7 consultations. There is no requirement to use the Key. There will be cases when the use of the Key is not appropriate. These include, but are not limited to: where project specific information is outside of the scope of the Key or instances where there is new biological information about the species. In these cases, we recommend the Corps (or other Federal action agency) initiates traditional consultation pursuant to section 7 of the Act, and identify that consultation is being requested outside of the Key.

Habitat

Habitat use varies seasonally between upland and wetland areas, especially in the more northern parts of the species' range. In southern parts of their range eastern indigo snakes are habitat generalists which use most available habitat types. Movements between habitat types in northern areas of their range may relate to the need for thermal refugia (protection from cold and/or heat).

In northern areas of their range eastern indigo snakes prefer an interspersion of tortoise-inhabited sandhills and wetlands (Landers and Speake 1980). In these northern regions eastern indigo

snakes most often use forested areas rich with gopher tortoise burrows, hollowed root channels, hollow logs, or the burrows of rodents, armadillos, or land crabs as thermal refugia during cooler seasons (Lawler 1977; Moler 1985a; Layne and Steiner 1996). The eastern indigo snake in the northern region is typically classified as a longleaf pine savanna specialist because here, in the northern four-fifths of its range, the eastern indigo snake is typically only found in vicinity of xeric longleaf pine–turkey oak sandhills inhabited by the gopher tortoise (Means 2006).

In the milder climates of central and southern Florida, comprising the remaining one fifth of its range, thermal refugia such as those provided by gopher tortoise burrows may not be as critical to survival of indigo snakes. Consequently, eastern indigo snakes in these regions use a more diverse assemblage of habitats such as pine flatwoods, scrubby flatwoods, floodplain edges, sand ridges, dry glades, tropical hammocks, edges of freshwater marshes, muckland fields, coastal dunes, and xeric sandhill communities; with highest population concentrations of eastern indigo snakes occurring in the sandhill and pineland regions of northern and central Florida (Service 1999). Eastern indigo snakes have also been found on agricultural lands with close proximity to wetlands (Zeigler 2006).

In south Florida, agricultural sites (*e.g.*, sugar cane fields and citrus groves) are occupied by eastern indigo snakes. The use of sugarcane fields by eastern indigo snakes was first documented by Layne and Steiner in 1996. In these areas there is typically an abundance of wetland and upland ecotones (due to the presence of many ditches and canals), which support a diverse prey base for foraging. In fact, some speculate agricultural areas may actually have a higher density of eastern indigo snakes than natural communities due to the increased availability of prey. Gopher tortoise burrows are absent at these locations but there is an abundance of both natural and artificial refugia. Enge and Endries (2009) reporting on the status of the eastern indigo snake included sugarcane fields and citrus groves in a Global Information Systems (GIS)-base map of potential eastern indigo snake habitat. Numerous sightings of eastern indigo snakes within sugarcane fields have been reported within south Florida (Florida Fish and Wildlife Conservation Commission Indigo Snake Database [Enge 2017]). A recent study associated with the Comprehensive Everglades Restoration Plan (CERP) (A-1 FEB Project formerly A-1 Reservoir; Service code: 41420-2006-F-0477) documented eastern indigo snakes within sugarcane fields. The snakes used artificial habitats such as piles of limerock, construction debris, and pump stations. Recent studies also associated with the CERP at the C-44 Project (Service code: 41420-2009-FA-0314), and C-43 Project (Service code: 41420-2007-F-0589) documented eastern indigo snakes within citrus groves. The snakes used artificial habitats such as boards, sheets of tin, construction debris, pipes, drain pipes in abandoned buildings and septic tanks.

In extreme south Florida (*i.e.*, the Everglades and Florida Keys), eastern indigo snakes also utilize tropical hardwood hammocks, pine rocklands, freshwater marshes, abandoned agricultural land, coastal prairie, mangrove swamps, and human-altered habitats. Though eastern indigo snakes have been found in all available habitats of south Florida it is thought they prefer hammocks and pine forests since most observations occur there and use of these areas is disproportionate compared to the relatively small total area of these habitats (Steiner *et al.* 1983).

Even though thermal stress may not be a limiting factor throughout the year in south Florida, eastern indigo snakes still seek and use underground refugia. On the sandy central ridge of central Florida, eastern indigo snakes use gopher tortoise burrows more (62 percent) than other underground refugia (Layne and Steiner 1996). Other underground refugia used include armadillo (*Dasypus novemcinctus*) burrows near citrus groves, cotton rat (*Sigmodon hispidus*) burrows, and land crab (*Cardisoma guanhumi*) burrows in coastal areas (Layne and Steiner 1996; Wilson and Porras 1983). Natural ground holes, hollows at the base of trees or shrubs, ground litter, trash piles, and crevices of rock-lined ditch walls are also used (Layne and Steiner 1996). These refugia are used most frequently where tortoise burrows are not available, principally in low-lying areas off the central and coastal ridges.

Minimization Measures

The Service developed protection measures for the eastern indigo snake "Standard Protection Measures for the Eastern Indigo Snake" (Service 2013) located at: https://www.fws.gov/verobeach/ReptilesPDFs/20130812_EIS%20Standard%20Protection%20Measures_final.pdf. These protections measures (or the most updated version) are considered a minimization measure for projects proposed within eastern indigo snake habitat.

Determinations

If the use of this Key results in a determination of "**no effect**," no further consultation is necessary with the SFESO.

If the use of this Key results in a determination of "**NLAA**," the SFESO concurs with this determination and no further consultation is necessary for the effects of the proposed action on the eastern indigo snake.

For no effect or NLAA determinations, the Corps (or other Federal action agency) should make a note in the project file indicating the pathway used to reach your no effect or NLAA determination.

If a proposed project would impact less than 25 acres of vegetated eastern indigo snake habitat (not urban/ human-altered) completely surrounded by urban development, and an eastern indigo snake has been observed on site, the subsequent Key should not be used. The Service recommends formal consultation for this situation because of the expected increased value of the vegetated habitat within the individual's home range.

If the use of this Key results in a determination of "**may affect**," consultation may be concluded informally or formally depending on project effects to eastern indigo snakes. Technical assistance from the Service can assist you in making a determination prior to submitting a request for consultation. In circumstances where the Corps desires to proceed with a consultation request prior to receiving additional technical assistance from the Service, we recommend the Corps document the biological rationale for their determination and proceed with a request accordingly.

A. Project is not located in open water or salt marsh.....go to B

Project is located solely in open water or salt marsh.....**no effect**

B. Permit will be conditioned for use of the Service's most current guidance for Standard Protection Measures For The Eastern Indigo Snake (currently 2013) during site preparation and project construction.....go to C

Permit will not be conditioned as above for the eastern indigo snake, or it is not known whether an applicant intends to use these measures and consultation with the Service is requested.....**may affect**

C. The project will impact less than 25 acres of eastern indigo snake habitat (*e.g.*, sandhill, scrub, pine flatwoods, pine rocklands, scrubby flatwoods, high pine, dry prairie, coastal prairie, mangrove swamps, tropical hardwood hammocks, hydric hammocks, edges of freshwater marshes, agricultural fields [including sugar cane fields and active, inactive, or abandoned citrus groves], and coastal dunes).....go to D

The project will impact 25 acres or more of eastern indigo snake habitat (*e.g.*, sandhill, scrub, pine flatwoods, pine rocklands, scrubby flatwoods, high pine, dry prairie, coastal prairie, mangrove swamps, tropical hardwood hammocks, hydric hammocks, edges of freshwater marshes, agricultural fields [including sugar cane fields and active, inactive, or abandoned citrus groves], and coastal dunes).....**may affect**

D. The project has no known holes, cavities, active or inactive gopher tortoise burrows, or other underground refugia where a snake could be buried, trapped and/or injured during project activities.....**NLAA**

The project has known holes, cavities, active or inactive gopher tortoise burrows, or other underground refugia where a snake could be buried, trapped and /or injured.....go to E

E. Any permit will be conditioned such that all gopher tortoise burrows, active or inactive, will be excavated prior to site manipulation in the vicinity of the burrow[1]. If an eastern indigo snake is encountered, the snake must be allowed to vacate the area prior to additional site manipulation in the vicinity. Any permit will also be conditioned such that holes, cavities, and snake refugia other than gopher tortoise burrows will be inspected each morning before planned site manipulation of a particular area, and, if occupied by an eastern indigo snake, no work will commence until the snake has vacated the vicinity of proposed work.....**NLAA**[2]

Permit will not be conditioned as outlined above.....**may affect**

End Key

---

[1] If excavating potentially occupied burrows, active or inactive, individuals must first obtain state authorization via a Florida Fish and Wildlife Conservation Commission Authorized Gopher Tortoise Agent permit. The excavation method selected should also minimize the potential for injury of an indigo snake. Applicants should follow the excavation guidance provided within the most current Gopher Tortoise Permitting Guidelines found at http://myfwc.com/gophertortoise.

[2] Please note, if the proposed project will impact less than 25 acres of vegetated eastern indigo snake habitat (not urban/ human-altered) completely surrounded by urban development, and an eastern indigo snake has been observed on site, NLAA is not the appropriate conclusion. The Service recommends formal consultation for this situation because of the expected increased value of the vegetated habitat within the individual's home range

Working with the Fish and Wildlife Foundation of Florida, the Service has established a fund to support conservation and recovery for the eastern indigo snake. Any project that has the potential to affect the eastern indigo snake and/or its habitat is encouraged to make a voluntary contribution to this fund. If you would like additional information about how to make a contribution and how these monies are used to support eastern indigo snake recovery please contact Ashleigh Blackford, Connie Cassler, or José Rivera at 772-562-3559.

This revised Key is effective immediately upon receipt by the Corps. Should circumstances change or new information become available regarding the eastern indigo snake and/or implementation of the Key, the determinations herein may be reconsidered and this Key further revised or amended.

Thank you for your continued cooperation in the effort to conserve fish and wildlife resources. If you have any questions or comments regarding this Key, please contact the SFESO at 772-562-3909.

Sincerely,

Roxanna Hinzman
Field Supervisor
South Florida Ecological Services

Cc:
Corps, Jacksonville, Florida (Dale Beter, Muriel Blaisdell, Ingrid Gilbert, Angela Ryan, Irene Sadowski, Victoria White, Alisa Zarbo)
Service, Athens, Georgia (Michelle Elmore)
Service, Jacksonville, Florida (Annie Dziergowski)
Service, Panama City, Florida (Sean Blomquist)

LITERATURE CITED

Enge K. M. 2017. Personal communication. Email from Kevin Enge, Florida Fish and Wildlife Conservation Commission, Gainesville, Florida to Steve Mortellaro, U.S. Fish and Wildlife Service, Vero Beach, Florida, July 5, 2017. Locations of Eastern Indigo Snake (*Drymarchon couperi*).

Enge K. M. and M. J. Endries. 2009. Status of the Eastern Indigo Snake (*Drymarchon couperi*) in Florida. Southeast Partners in Amphibian and Reptile Conservation Meeting.

Landers, J. L. and D.W. Speake. 1980. Management Needs of Sandhill Reptiles in Southern Georgia. Proceedings Annual Conference of Southeastern Association of Fish and Wildlife Agencies. 34: 515-529.

Layne, J.N., and T.M. Steiner. 1996. Eastern indigo snake (Drymarchon corais couperi): summary of research conducted on Archbold Biological Station. Report prepared under Order 43910-6-0134 to the U.S. Fish and Wildlife Service; Jackson, Mississippi.

Lawler, H.E. 1977. The status of *Drymarchon corais couperi* (Holbrook), the eastern indigo snake, in the southeastern U.S.A. *Herpetological Review* 8(3):76-79.

Means, D. B. 2006. Vertebrate faunal diversity of longleaf pine ecosystems. In *The Longleaf Pine Ecosystem* pp. 157-213. Springer New York.

Molar, P.E. 1985a. Distribution of the eastern indigo snake, *Drymarchon corais couperi*, in Florida. *Herpetological Review* 16(2):37-38.

Moler, P.E. 1985b. Home range and seasonal activity of the eastern indigo snake, Drymarchon corais couperi, in northern Florida. Final performance report, Study E-1-06, III-A-5. Florida Game and Fresh Water Fish Commission; Tallahassee, Florida.

Steiner, T.M., O.L. Bass, Jr., and J.A. Kushlan. 1983. Status of the eastern indigo snake in Southern Florida National Parks and vicinity. South Florida Research Center Report SFRC-83-01, Everglades National Park; Homestead, Florida.

U.S. Fish and Wildlife Service (Service). 1999. South Florida multi-species recovery plan. 23 pp.

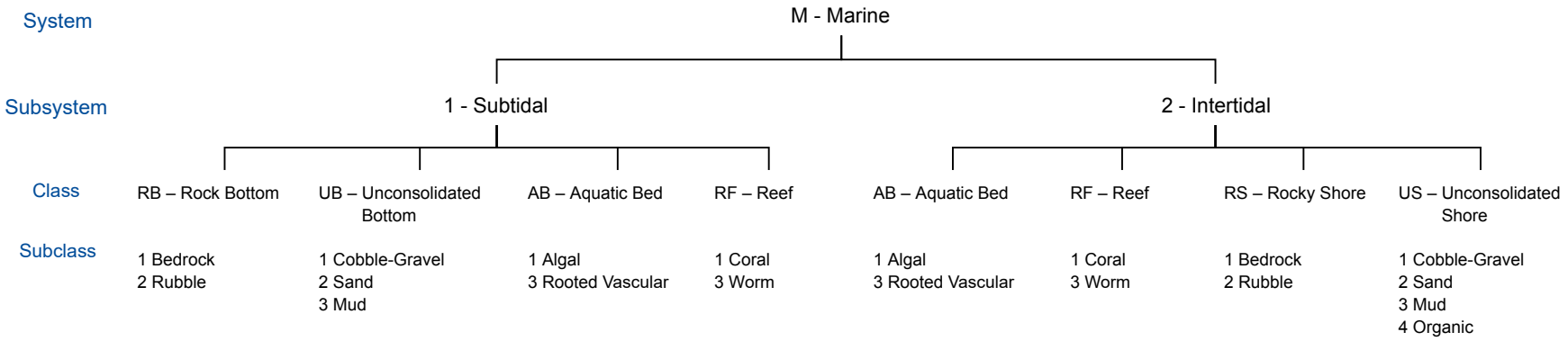
U.S. Fish and Wildlife Service (Service). 2013. Standard Protection Measures for the Eastern Indigo Snake. August 12, 2013. U.S. Fish and Wildlife Service, South Florida Ecological Services Office; Vero Beach, Florida.

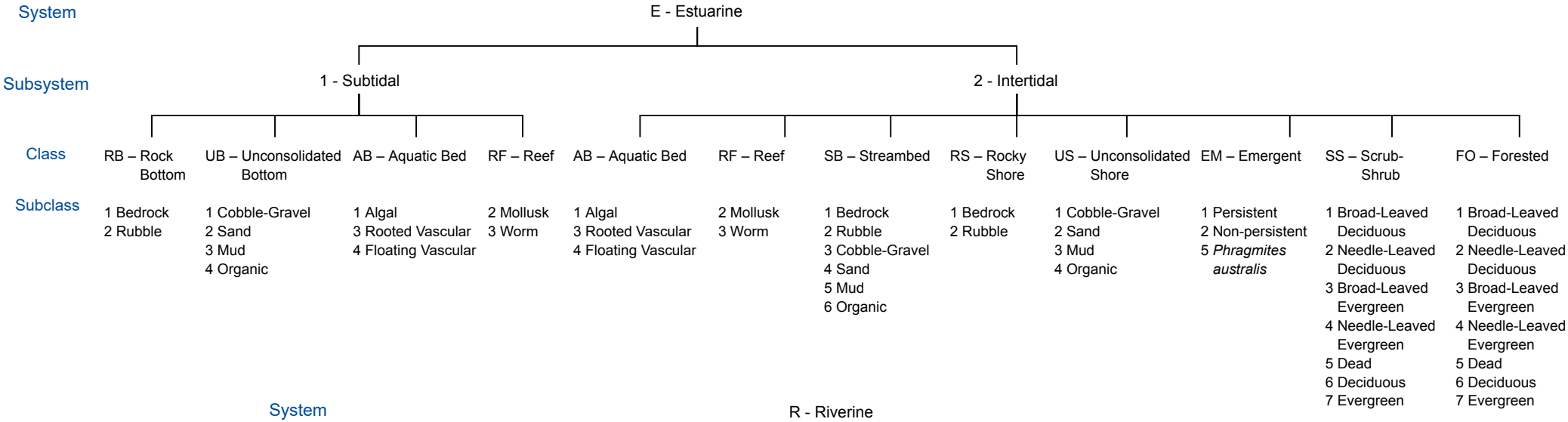
Wilson, L.D. and L. Porras. 1983. The ecological impact of man on the south Florida herpetofauna. *University of Kansas Museum of Natural History Special Publication* 9:1–89.

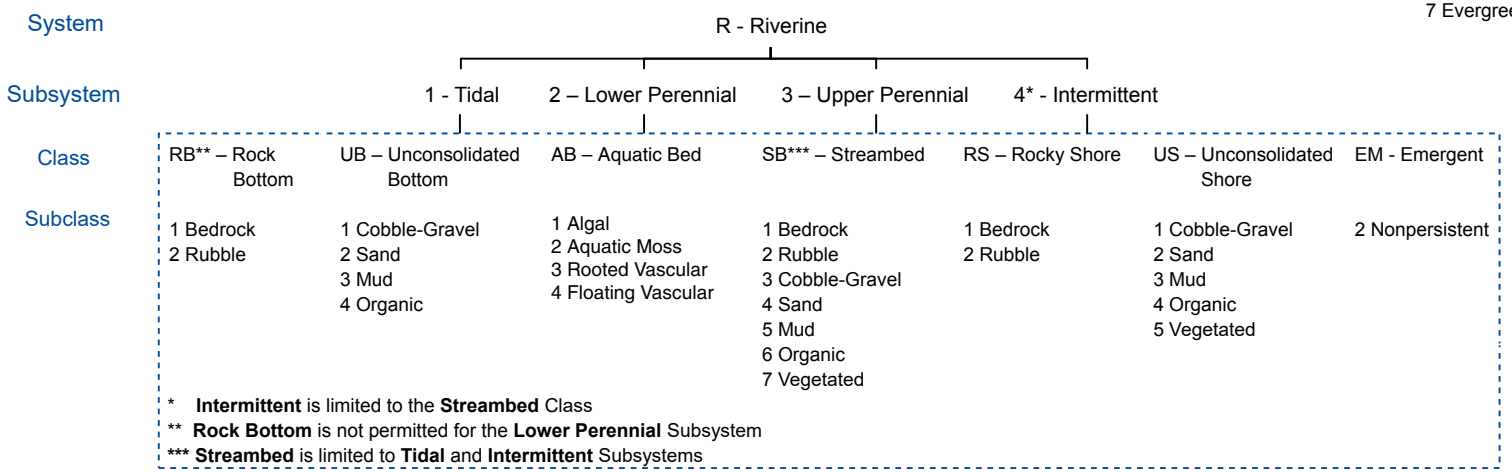
Zeigler, M. 2006. Personal communication. Citrus grove operations manager. Meeting with the U.S. Fish and Wildlife Service on August 1, 2006. Agricultural Resource Management; Vero Beach, Florida.

APPENDIX H – Wetland and Deepwater Habitat Cowardin Classifications Flowchart

WETLANDS AND DEEPWATER HABITATS CLASSIFICATION

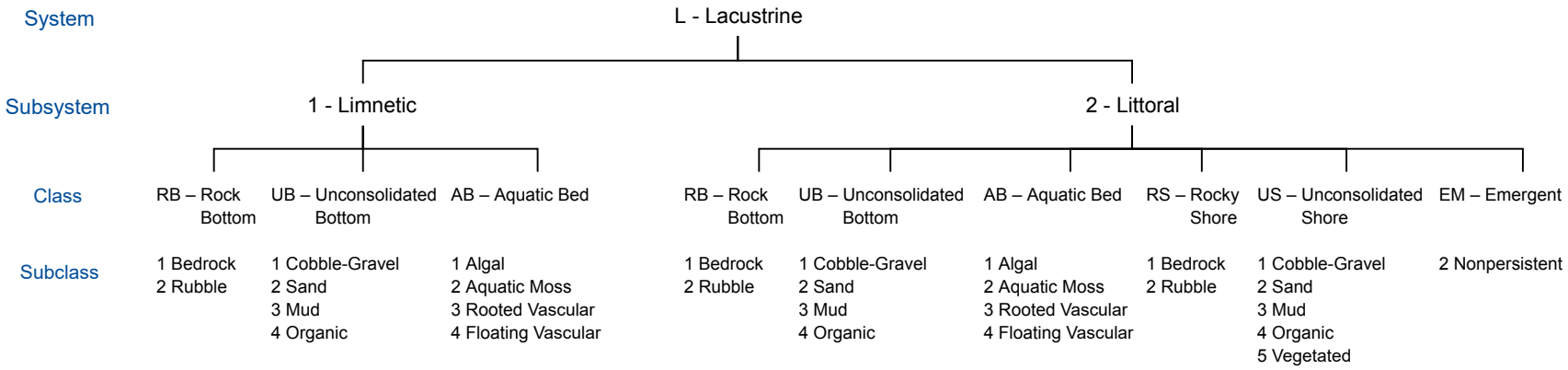


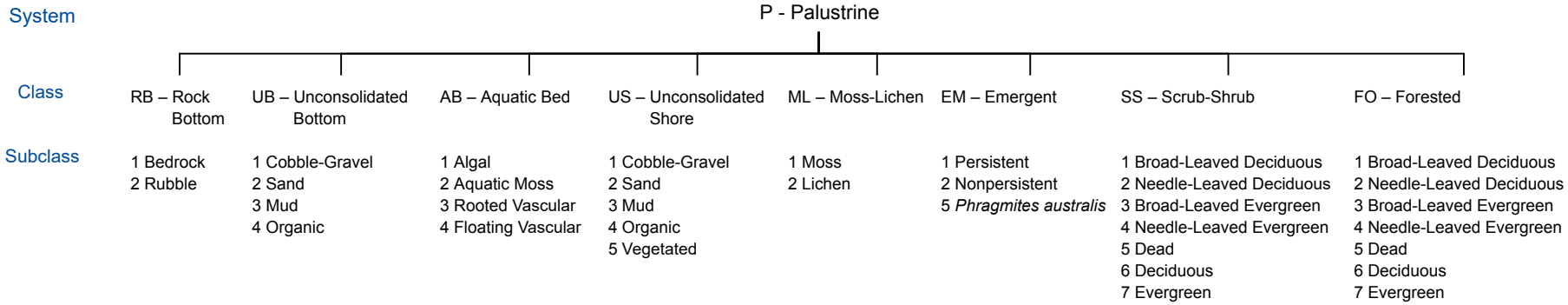




Federal Geographic Data Committee, 2013. Classification of Wetlands and Deepwater Habitats of the United States.

WETLANDS AND DEEPWATER HABITATS CLASSIFICATION





MODIFIERS

In order to more adequately describe the wetland and deepwater habitats, one each of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy.

Water Regime			Special Modifiers	Water Chemistry		Soil
Nontidal	**Saltwater Tidal**	**Freshwater Tidal**		**Halinity/Salinity**	**pH Modifiers for Fresh Water**	
A Temporarily Flooded	L Subtidal	Q Regularly Flooded-Fresh Tidal	b Beaver	1 Hyperhaline / Hypersaline	a Acid	g Organic
B Seasonally Saturated	M Irregularly Exposed	R Seasonally Flooded-Fresh Tidal	d Partly Drained/Ditched	2 Euhaline / Eusaline	t Circumneutral	n Mineral
C Seasonally Flooded	N Regularly Flooded	S Temporarily Flooded- Fresh Tidal	f Farmed	3 Mixohaline / M ixosaline (Brackish)	i Alkaline	
D Continuously Saturated	P Irregularly Flooded	T Semipermanently Flooded-Fresh Tidal	m Managed	4 Polyhaline		
E Seasonally Flooded / Saturated		V Permanently Flooded-Fresh Tidal	h Diked/Impounded	5 Mesohaline		
F Semipermanently Flooded			r Artificial Substrate	6 Oligohaline		
G Intermittently Exposed			s Spoil	0 Fresh		
H Permanently Flooded			x Excavated			
J Intermittently Flooded						
K Artificially Flooded						

Federal Geographic Data Committee, 2013. Classification of Wetlands and Deepwater Habitats of the United States.

APPENDIX I – Mitigation Photo Essay

Photo 1. Facing Southwest

Photo 2. Facing Southeast

Photo 3. Facing North

Photo 4. Facing Southwest

Photo 5. Facing Northwest

Photo 6. Facing Southeast

Photo 7. Facing Southwest

Photo 8. Facing South

Photo 9. Facing North

Photo 10. Facing North

Photo 11. Facing North

Photo 12. Facing North

APPENDIX J - SJRWMD Meeting Minutes and UMAM Table

JACKSONVILLE AVIATION AUTHORITY
JACKSONVILLE INTERNATIONAL AIRPORT
JIA AIRFIELD WETLAND MITIGATION

SJRWMD PRE-APP MEETING

May 10, 2019 – 1:00 PM
SJRWMD Jacksonville Office

MEETING MINUTES

1. **Attendees – See attached Sign-in sheet**
   SJRWMD – Wally Esser, Everett Frye
   RS&H - Lindsey Maron
   ERS – Kim Allerton, Amy Reed

2. **Project Description**

Ms. Maron explained that the purpose of the project was to remove wetlands off the end of Runway 26 that are documented wildlife attractants. The project will include wetland removal, fill, grading, and drainage infrastructure, as necessary. Wetland mitigation could be through on-site preservation, on-site creation, and/or off-site mitigation credits.

3. **Engineering/Stormwater**

Ms. Maron explained that part of the site drains northwest toward Seaton Creek, tributary to the Nassau River. The remaining part of the site drains east under Pecan Park Road to a low lying area. The low wetlands on the site will be filled, and the site will be regraded to promote drainage. No new impervious area is anticipated.

Mr. Frye stated that a pre- vs. post-development discharge analysis using a hydrograph method will be required because the removal of wetlands reduces storage potential and re-grading likely will cause increased discharge. Offsite detention could be considered to show no adverse impact to the downstream receiving waters. Also the existing dry pond adjacent to the site could be expanded to replace the removed storage. The analysis requires review of the 25-year, 24-hour storm event only. No treatment will be required.

4. **Wetland Impact and Mitigation**

Ms. Reed stated the some of the wetlands in the project area were created in the mid-1990s as mitigation for runway improvements that impacted jurisdictional wetlands. Mr. Esser stated that these wetlands will be treated as successful wetlands, and no extra mitigation will be required. The created wetlands are not under any easements.

The conceptual permit and on-site mitigation area have wetland and upland preservation and wetland creation available as mitigation. Creation has been completed for previous projects, and additional area (approximately 5.86 acres) was previously excavated to use as fill elsewhere but not planted. To finish this creation area, Mr. Esser stated that it must be in compliance with the conceptual permit.

Ms. Allerton stated most of the wetlands are mowed freshwater marsh; one of the wetlands is forested. Ms. Allerton stated that historically, all wetlands (except for the created wetlands) were

forested. Mr. Esser stated that Basin 4 mitigation bank credits can be used, even if the existing wetlands are currently dominated by marsh vegetation. USACE will require active mitigation in the form of wetland creation or offsite mitigation credits. It is anticipated that offsite mitigation credits will be used, and the mitigation plan for USACE will drive the minimum credits used.

Ms. Allerton stated that the existing wetlands are regularly mowed and maintained to reduce wildlife attraction. Anticipated UMAM scoring is Location and Landscape Support = 5, Water Environment = 6, and Community Structure = 4. Mr. Esser agreed with these scores for initial planning purposes.

Ms. Allerton suggested the wetlands be delineated by aerial interpretation because the lines vary depending on recent rainfall and mowing activities and access to the site is challenging. Mr. Esser agreed that aerial interpretation could be used and asked that the team also look at elevations and historical aerials to delineate the wetlands. Then the group could conduct a site visit with Mr. Esser to verify any questionable areas and agree on UMAM scoring. A mitigation analysis would follow.

5. **Permit Requirements**

Based on the approximately 50 acres of wetland impacts and 170 acres of total area, Mr. Frye stated the permit fee will be $9,120. The permit would be an individual permit with the same root number as all JIA projects.

Mr. Esser stated that all previously-required conservation easements must be recorded to bring previous permits into compliance. An additional permit for wetland fill will not be issued until this happens.

RS&H

JAA Jacksonville Aviation Authority

10748 Deerwood Park Blvd South
Jacksonville, FL 32256

O 904-256-2500
F 904-256-2503
rsandh.com

MEETING ATTENDANCE

Project: JIA Airfield Wetland Mitigation

Subject: Pre-App Meeting

Date and Time: May 10, 2019 – 1:00 PM (SJRWMD - 7775 Baymeadows Way)

Initials	Name	Company	Phone	E-mail
WCEII	Wally Esser	SJRWMD	(904) 448-7912	Wesser@sjwmd.com
EF	Everett Frye	SJRWMD	904-448-7913	efrye@sjrwmd.com
KMA	Kim Allerton	ERS	904.285.1397	Kallerton@ersenvironmental.com
AMR	Amy Reed	ERS	9042851397	areed@ersenvironmental.com
LM	Lindsey Maron	RS+H	9042502149	lindsey.maron@rsandh.com

site: **JIA EA Wetland Removal and Mitigation** date: **7.8.2019**

Impacts	Habitat Type	Location and Landscape Support before	Location and Landscape Support after	Water Environment before	Water Environment after	Community Structure before	Community Structure after	Acres	Functional Loss
1	641	5	0	6	0	4	0	9.91	4.9550
2	640	5	0	6	0	4	0	36.47	18.2350
3	630	5	0	6	0	4	0	4.86	2.4300
4	621	5	0	6	0	4	0	1.35	0.6750
5	514	5	0	6	0	4	0	0.23	0.1150
6									0.0000
7									0.0000
8									0.0000
9									0.0000
10									0.0000

Total Impact Acres	Total Creation Acres	Total Enhancement Provided	Upland Acres Provided
52.82	**0**	**0**	**0**

Total Functional Loss	Total Functional Gain Units
26.410	**0.000**

Mitigation Preservation	Habitat Type	Location and Landscape Support before	Location and Landscape Support after	Water Environment before	Water Environment after	Community Structure before	Community Structure after	Time Lag	Risk Factor	Preservation Adjustment Factor	Relative Functional Gain	Acres Provided	Functional Gain Units
1								1	1.00		0.0000		0.0000
2								1	1.00		0.0000		0.0000
3								1	1.00		0.0000		0.0000
4								1	1.00		0.0000		0.0000
5								1	1.00		0.0000		0.0000
6								1	1.00		0.0000		0.0000
7								1	1.00		0.0000		0.0000
creation													
1								1	1.00		0.0000		0.0000
2								1	1.00		0.0000		0.0000
uplands													
11				x	x x			1	1.00		0.0000		0.0000
12				x	x x			1	1.00		0.0000		0.0000
13				x	x x			1	1.00		0.0000		0.0000
14				x	x x			1	1.00		0.0000		0.0000
15				x	x x			1	1.00		0.0000		0.0000