

# **Appendix 8.5-B1**

## **DEIS Comments, Federal and State Agencies and Federal Elected Officials**

PATRICK E. MURPHY  
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SMALL BUSINESS  
SUBCOMMITTEE:  
RANKING MEMBER, AGRICULTURE,  
ENERGY, AND TRADE

December 3, 2014

John Winkle  
Federal Railroad Administration  
1200 New Jersey Avenue, SE  
Washington, DC 20590

Dear Mr. Winkle,

Residents throughout the Palm Beaches and Treasure Coast have serious concerns about All Aboard Florida's (AAF) detrimental effects to public safety, quality-of-life, and the local economy. Although Floridians were assured that these concerns would be addressed and dealt with in the Federal Railroad Administration's (FRA) draft Environmental Impact Statement (EIS), this 522-page document raised more questions than it answers.

As the FRA evaluates AAF's application for more than \$1.5 billion in risky, taxpayer-funded federal loans, it is vital that these concerns are properly addressed. This request is among the largest of its kind in history, and without knowing AAF's financial viability or ability to pay at least 10% down, the taxpayer risks are too great to rely solely upon AAF's self-reported projections.

On top of the risks to taxpayers, the EIS fails to adequately resolve a number of community concerns. When combined with a projected increase in freight trains, AAF stands to double the amount of time local drawbridges will block marine navigation, costing boaters hundreds of thousands of dollars annually. At certain crossings, it will triple the amount of Grade-F traffic gridlock at peak hours. It will effectively blockade those in need of emergency treatment from hospitals when minutes can mean the difference between life and death.

The EIS clearly lays out these significant problems and many more, but it lacks adequate mitigation solutions. These negative impacts disproportionately affect regions that will reap no benefit from 32 daily passenger trains. Further, upon learning that there is no third-party analysis of the facts in the EIS, I remain concerned that the data and mitigation proposed is not thorough. I believe that there should be an analysis prepared by an independent entity to provide our community with confidence in the process and allow all of our concerns to be heard. For these reasons, I am opposed to this plan that stands to negatively impact the Treasure Coast-Palm Beach district I am so proud to represent.

Sincerely,

Patrick E. Murphy  
MEMBER OF CONGRESS

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**BOARD OF COUNTY COMMISSIONERS**  
**OFFICE OF COUNTY ATTORNEY**

Dylan Reingold, County Attorney  
William K. DeBraul, Deputy County Attorney  
Kate Pingolt Cotner, Assistant County Attorney



*Via Email and Overnight Mail*

December 1, 2014

Mr. John Winkle  
Federal Railroad Administration  
1200 New Jersey Avenue, SE, Room W38-311  
Washington, DC 20590

RE: All Aboard Florida Draft Environmental Impact Statement

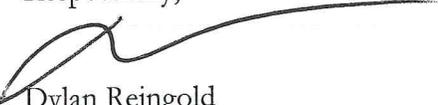
Dear Mr. Winkle:

The Board of County Commissioners of Indian River County, Florida (the "Board") respectfully submits the attached comments to the Federal Railroad Administration ("FRA") with regard to the Draft Environmental Impact Statement ("DEIS"), and Section 4(f) Evaluation prepared for All Aboard Florida's proposed passenger rail service between Orlando and Miami, Florida (the "Proposed Project").

After reviewing the DEIS, it is axiomatic that the DEIS is incomplete. The DEIS does not adequately analyze any of the viable alternatives to the FECR. Moreover, the DEIS does not provide a thorough examination of the negative environmental impacts the Proposed Project will have on the communities along the N-S Corridor of the proposed track. In particular, the Board has identified a number of potentially significant environmental impacts that were not adequately addressed in the DEIS, and others that were not examined at all. Consequently, the DEIS fails to provide the FRA with the information needed to satisfy its obligations under NEPA

As indicated in the attached comments, the current DEIS precludes a meaningful analysis of the Proposed Project. Therefore, the Board requests that no further action be taken by FRA to advance the Proposed Project, unless and until a supplemental DEIS is prepared, and the subsequent requirements of NEPA, Section 4(f), Section 106 and the CZMA are fully satisfied.

Respectfully,



Dylan Reingold  
County Attorney

Enclosure

PATRICK E. MURPHY  
18TH DISTRICT, FLORIDA

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December 3, 2014

John Winkle  
Federal Railroad Administration  
1200 New Jersey Avenue, SE  
Washington, DC 20590

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Sincerely,

Patrick E. Murphy  
MEMBER OF CONGRESS

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# United States Department of the Interior



## FISH AND WILDLIFE SERVICE

Hobe Sound National Wildlife Refuge

P.O. Box 645

13640 SE Federal Hwy

Hobe Sound, FL 33455

(772) 546-6141, (772) 545-7572 (FAX)

November 26, 2014

Mr. John Winkle  
Federal Railroad Administration  
1200 New Jersey Avenue  
SE Room W38-311  
Washington DC 20590

Project: All Aboard Florida Passenger Rail Service from West Palm Beach to Orlando  
Subject: Hobe Sound National Wildlife Refuge Comments on the Draft Environmental Impact Statement for the All Aboard Florida Rail Project  
State: Florida  
County: Martin

Dear Mr. Winkle:

The Hobe Sound National Wildlife Refuge (Refuge) has reviewed your Draft Environmental Impact Statement (DEIS) dated September 19, 2014, and other information submitted by the Federal Railroad Administration (FRA) for the project referenced above. The Refuge's comments on the DEIS are presented below.

### PROJECT DESCRIPTION

All Aboard Florida LLC (AAF) is proposing to construct and operate a privately owned and operated intercity passenger railroad system that will connect Orlando and Miami, with intermediate stops in Fort Lauderdale and West Palm Beach, Florida. To finance the project, AAF has applied for \$1.6 billion in federal funds through the FRA's Railroad Rehabilitation and Improvement Financing (RRIF) program. AAF proposes to implement the Project through a phased approach. Phase I would provide rail service on the West Palm Beach to Miami section while Phase II would extend service to Orlando. Phase I would provide passenger rail service along the 66.5 miles of the Florida East Coast Railroad (FECR) Corridor connecting West Palm Beach, Fort Lauderdale, and Miami.

Phase I of the Project includes the construction of three new stations (West Palm Beach, Fort Lauderdale and Miami), acquisition of five train sets, construction of a second track along most of the 66.5-mile corridor and 16 new round-trip intercity passenger train trips (32 one-way trips) on the West Palm Beach to Miami section of the FECR Corridor. FRA and AAF conducted an environmental review of Phase I in 2012 and 2013 and made a finding of "No Significant



Impact.” FRA concluded that Phase I has independent utility, and could be advanced and serve a transportation need even if Phase II were not constructed. As a result of the environmental review process conducted by FRA, AAF was authorized to construct the Phase I component of the Project. However, to date, FRA has not determined if a RRIF loan would be provided for Phase I.

Phase II of the Project includes: constructing a new railroad line parallel to State Road (SR) 528 from the Orlando International Airport to Cocoa; constructing a new Vehicle Maintenance Facility on property owned by the Greater Orlando Airport Authority; adding a second track, straightening curves, and reconstructing 18 bridges within 128.5 miles of the Florida East Coast Railroad Corridor between West Palm Beach and Cocoa; and additional bridge work along the corridor from Miami to West Palm Beach. Phase II would add 16 new round-trip intercity passenger train trips (32 one-way trips) on the new railroad segment and on the FECR Corridor between Cocoa and West Palm Beach. Maximum operating speeds along the entire corridor would range from 79 to 125 miles per hour (mph), depending upon the location. Operating speeds will be greatest along the SR 528 corridor where there would be no highway-rail grade crossings.

Because Phase II of the Project and RRIF loan approval are separate federal actions, the FRA has conducted a National Environmental Policy Act review of the proposed extension. Construction and operation of AAF passenger train service will include the entire corridor from Orlando to Miami. Therefore, the FRA has produced a DEIS that analyzes the cumulative effects of completing both phases of the Project. However, because the impacts of Phase I have already been addressed in the FRA’s 2012 Environmental Assessment and Finding of No Significant Impact, they are not reanalyzed in the DEIS. The DEIS compares the effects of three action alternatives (Alternatives A, C, and E) and the “no-build” alternative. Alternatives A, C, and E differ as to the location of the 17.5 miles of new railroad tracks along State Road (SR) 528 from Orlando to Cocoa (Alternative A - within the existing SR 528 right-of-way south of the paved travel lanes; Alternative C – along the boundary of the SR 528 right-of-way south of the paved travel lanes; Alternative E – 100 feet south of SR 528 right-of-way boundary south of the paved travel lanes).

## **SUMMARY OF EXISTING CONDITIONS HOBE SOUND NATIONAL WILDLIFE REFUGE**

### **Habitats and Species**

Approximately 0.8 miles of FECR right of way (ROW) frontage lies adjacent to the Hobe Sound National Wildlife Refuge near train Mile Post 275. Refuge resources in this area include sand pine scrub, maritime hammock/coastal strand, mangrove tidal swamp and freshwater wetlands. The Refuge provides protection for approximately 40 plant and animal species listed as either threatened or endangered by Federal and State agencies (HSNWR 2007) (Appendix A).

Refuge scrub lands occur along approximately 0.4 miles of existing FECR ROW rail corridor north of the Federal Highway overpass (Figure 1). Florida sand pine scrub is frequently cited as



Figure 1. Hobe Sound National Wildlife Refuge interest lands proximal to Florida East Coast Railroad corridor

Florida's most distinct ecosystem; physiognomy and composition are quite distinct from surrounding habitats and between 40-60 percent of scrub species are considered to be endemic (HSNWR 2007). There are more endangered or potentially endangered wildlife species located here than in any other habitat in Florida (HSNWR 2007) including gopher tortoise (*Gopherus polyphemus*), Florida scrub-jay (*Aphelocoma coerulescens*), and Lakela's mint (*Dicerandra immaculata*). Florida scrub-jays are known to utilize Refuge lands adjacent to FECR ROW (Martin County 2012a). Lakela's mint occurs on scrub land adjacent to FECR ROW and active gopher tortoise burrows have been identified on Refuge lands both adjacent to and in close proximity to the rail corridor.

Coastal strand/maritime hammock and coastal wetlands including freshwater and red mangrove systems occur along approximately 0.4 miles east of FECR ROW north of the Federal Highway overpass and together with scrub lands form a connected landscape with the Indian River Lagoon and Refuge mainland tract resources (Figure 1).

Mangroves line the shoreline of the Indian River Lagoon where red mangroves (*Rhizophora mangle*) colonize lagoon fringes with aerial prop roots providing shelter for numerous marine animals. Mangrove prop roots decrease shoreline erosion by dampening the impact of high energy boat wakes. The resulting water clarity facilitates seagrass growth and establishment (HSNWR 2007). A great diversity of state listed fish species occupy red mangrove ecosystems including but not limited to common snook (*Centropomus undecimalis*), mangrove rivulus (*Rivulus marmoratus*), sea trout (*Cynoscion nebulosus*), and gray snapper (*Lutjanus griseus*).

Hammocks and coastal strand are excellent refugia for neotropical migratory birds, land crabs, tree frogs, and other animal species which need high humidity and/or dense cover (HSNWR 2007). Although hammocks occupy a small percentage of the Refuge's acreage, they comprise about 20 percent of the plant diversity of the Refuge (Bergh 1998). Coastal strand habitats are located landward of tidally influenced mangrove wetlands and along with scrub land constitute a co-dominant habitat type on the Refuge mainland tract. Plants such as sea grape (*Coccoloba uvifera*) and sable palm (*Sabal palmetto*) provide food and cover to resident wildlife including raccoon (*Procyon lotor*) and gopher tortoise in addition to providing critical food resource and refugia for neotropical migratory birds.

Coastal freshwater wetlands or mesic flatwoods provide consequential freshwater resources for wildlife. These resources occur downslope of scrub lands, and in places form a transition between scrub, coastal strand and/or mangrove ecosystems along the Indian River Lagoon. Dense understories of saw palmetto (*Serenoa repens*), gumbo limbo (*Bursera simaruba*), wild lime (*Zanthoxylum fagra*), cocoplum (*Chrysobalanus icaco*) and many forbs occur in these lower elevation scrub land seeps providing food resources and cover, and provide a mostly permanent source of freshwater for Refuge wildlife.

## **Cultural Resources**

Two State Historic Preservation Office (SHPO) recognized cultural resource sites occur within the FECR ROW and Refuge. Hobe Sound National Wildlife Refuge #3 (8MT1287) is a thin scatter of shell and a few aboriginal ceramic potsherd fragments situated on a dune bluff that was

bisected during the construction of the railroad in the early part of the century (Florida Department of State 2013). The initial site file recorder suggests that while the site was likely disturbed by this construction, it is still potentially National Register - eligible (Florida Department of State 2013). Located at Mile Post 275.30, this is an area where the rail line curves to the west (Florida Department of State 2013). Olympia South 8MT1619 occurs north of 8MT1287. This site is believed to represent a campsite or limited habitation area without an associated midden component. It therefore was assessed as not eligible for the National Register of Historic Places (Florida Department of State 2012).

## **DEIS COMMENTS**

Chapter 4-87. Description of Hobe Sound National Wildlife Refuge is not correct. The DEIS reads “The Project Study Area is adjacent to the west boundary of the mainland tract.” The rail corridor is adjacent to both east and west boundaries of the Refuge. Species can migrate across the corridor from one unit of the Refuge to another. It is reasonable to assume that wildlife/train impacts would increase due to increased train trips and trains operating at higher rates of speed.

### **Proposed Project Impacts - FECR Corridor Adjacent to Refuge Interest Lands**

Refuge interest lands are adjacent to FECR ROW along approximately 0.8 miles including where the existing track curves to the west in and around Mile Post 275. Proposed rail alignment plans indicate construction of a two rail system plus additional support infrastructure to replace the present one rail system. Proposed plans provided during an April 6, 2014 Land Managers Meeting (LMM) indicate smoothing the radius, thus allowing increased speeds well above present - in essence doubling the approach rates of speed from between 50-60 mph to 110 mph and increasing the radius rates of speed to 60-80 mph.

To accommodate proposed track improvements, construction and infrastructure development activity would be necessary within FECR ROW but outside of the present developed rail corridor. The proposal would therefore require site alteration through bank cutting/soil removal and/or fill placement for: 1) proposed Main Track 1 at stations 14519 through approximately 14525 and; 2) for proposed Main Track 2 from approximately stations 14537 through 14544.

In addition, proposed plans call for above and below ground utility improvements within and outside of double rail section with 100 foot ROW, including:

- A proposed underground, 24” jet fuel pipeline
- A proposed underground 24” natural gas pipeline
- Development of a drainage ditch system – one on either side of the proposed tracts
- Proposed duct bank at edge of ROW
- 6 foot fence (where required)
- 15.5 foot access path along the rail tracts
- Installation of an overhead utility line with 43 foot minimum vertical clearance from top of rail.
- Installation of communication towers specifically located outside of the existing ROW line

The proposed plans as described above have more consequential impacts on adjacent Refuge lands than is described in the DEIS.

## **Cultural Resources**

Draft Environmental Impact Statement (DEIS) Environmental Consequences Section 5.4.5.2 identifies potential beneficial and adverse effects to cultural resources from the project. Specifically, Archeological Resources section (page 5-140) states:

The Project would return the existing FECR Corridor to a dual-track system. Infrastructure improvements are planned to be completed within the existing right-of-way (no additional right-of-way acquisition is anticipated). Five previously identified archaeological sites have been recorded within the N-S Corridor APE. Four of the archaeological sites were not previously evaluated for NRHP eligibility by SHPO. The Pineapple Site (Site 8SL1136) was determined not NRHP-eligible by SHPO. All of these archaeological sites have experienced some level of previous disturbances.

Two of the archaeological sites – Hobe Sound National Wildlife Refuge #3 Site (8MT1287) and the Fort Capron Site (8SL41) – initially appeared to have the potential to be affected by the Project.

The Hobe Sound National Wildlife Refuge #3 Site consists of a thin scatter of shell and a few aboriginal ceramic potsherd fragments situated on a dune bluff that was bisected during the construction of the railroad in the early part of the last century. Located at Mile Post 275.30, this is in an area where the rail line curves to the west. Preliminary engineering specified a curve modification at this location and this action would have caused disturbance of potentially intact portions of the archaeological site. As an avoidance and protection measure, this curve modification was eliminated and instead construction in this area will consist of installing rail tracks in their historic locations. No subsurface excavation will be required. Preliminary discussions with SHPO indicated that this design change would avoid the Hobe Sound National Wildlife Refuge #3 Site.

Per the DEIS, design changes would avoid the site, however proposed site plans provided during the LMM identified construction/installation activities are proposed within approximately fifty feet of Refuge interest lands in and around west rail Stations 14537 through 14543 in the area where site 8MT1287 is located. In order to accommodate a dual track system and radius flattening with this configuration, earth moving operations to include cutting the west bank appear to be necessary. This activity would have consequentially negative impacts on cultural resource site 8MT1287. It is unknown how much of 8MT1287 site occurs on Refuge interest lands, however, bank cut operations to accommodate installation of the proposed western line would: a) disturb the FECR portion of the site; and b) may affect the integrity of any portion of the site occurring on Refuge lands. Avoiding site 8MT1287 is articulated in the DEIS and supported by the Refuge, however, site plans contradict this approach showing slope and bank excavation which would lead to site disturbance.

In addition, if soil and slope disturbance is necessary to accommodate a dual track system, destruction of sand pine habitat on FECR lands would occur. This activity may affect listed species, Refuge hydrologic regimes and landscape slope stability adjacent to Refuge lands. No

measures have been identified to protect Refuge hydrologic capacity or to minimize potential affects to Refuge wildlife. In addition, no measures are identified to protect Refuge interest lands from the effects of fill or soil removal necessary to improve FECR lands adjacent to the Refuge.

There is no reference of archeological site 8MT1619 - Olympia South but for a site map in Appendix 4.4.5-B3: Cultural Resources Proximate to the Project Corridor. This site was discovered during a 2012 Martin County Dixie Highway bike lane development project (Martin County 2012b). The Olympia South site is believed to represent a campsite or limited habitation area based on the presence of meager artifact assemblage and absence of associated midden material. The site is not considered to be regionally significant and therefore is not eligible for the National Register of Historic Places according to the Florida Master Site File survey, however, it is not mentioned in the DEIS as a site potentially impacted by development of a dual track system. The DEIS should articulate site impacts given development of new rail and utility systems.

### **Proposed Below Ground Utility Lines**

It is unclear which of the above and below ground utilities associated with the project are proposed adjacent to Refuge interest lands. Assurances and/or measures to protect the Refuge from impacts of installation, potential spills and/or leaks of the contents of the proposed underground aviation fuel and natural gas pipelines have not been articulated. In addition, environmental evaluations identifying affects to Refuge hydrologic systems including potential impacts to ground and surface waters specifically through installation, maintenance, and long term presence of jet fuel and natural gas have not been addressed. These systems should be analyzed on their own in terms of their specific impact on the environment as a whole and Refuge resources specifically.

### **Proposed Above Ground Communication/Power Poles**

A Positive Train Control (PTC) System is proposed outside of the existing ROW (Section 3.3.3.6 pg. 3-41). Again, it is not clear if the communication poles are being proposed on Refuge lands or if these are existing poles along the FECR corridor. The DEIS states: "Along the N-S Corridor and WPB-Miami Segment, AAF will use the existing Florida East Coast Railroad (FECR) radio base stations and Parallel Infrastructure LCC (a subsidiary of FECR) who currently own six radio towers on the FECR corridor with an additional 11 towers in the planning process. The existing and future Parallel Infrastructure towers will be considered for use as part of the PTC system, with additional towers placed along the E-W Corridor and N-S Corridor where required." Site plans provided during the LMM indicate existing communication/power poles in typical locations outside of FECR ROW with overhead utility lines at 43' minimum vertical clearance from top of rail of existing communication towers across the rail corridor.

According to Chapter 5 - Environmental Consequences Section 5.4.6.2 (pg. 5-147): North-South Corridor, thirty Section 4(f) recreation resources are along the N-S Corridor. The existing FECR Corridor bisects two of these resources: the Hobe Sound National Wildlife Refuge and Jonathan

Dickinson State Park. All construction would take place within the existing FECR-owned right of way, and would not require acquisition of new right-of-way within these Section 4(f) resource property limits.

Site plans are unclear as to the final location of the communication towers, however, according to site plans provided during the LMM communication/power pole towers are planned outside of FECR ROW. This contradicts the DEIS which proposes all construction would take place within existing FECR owned ROW. Installation of communication and power pole infrastructure would not be permitted on Refuge lands. Additionally, the DEIS does not address impacts new communication tower/power pole/utility wire infrastructure developed within FECR ROW may have on Refuge resources including effects on avifauna and cumulative impacts that further reduce landscape connections.

### **Florida scrub-jay**

The project occurs within the geographic range of the threatened Florida scrub-jay. Surveys conducted by the consultants for AAF indicate that active territories of Florida scrub-jay occur at several localities immediately adjacent to the AAF rail corridor (Helen and Allen Cruickshank Sanctuary, between Malabar Road and Valkaria Road, and south of Micco Road in Brevard County; North Sebastian Conservation Area in Indian River County; Savannas Preserve State Park and a Florida Inland Navigation District site in St. Lucie County; and Hobe Sound National Wildlife Refuge and Jonathan Dickinson State Park (JDSP) in Martin County). Scrub-jays have been observed near and flying across the track corridor.

Scrub-jays have been observed on Refuge interest lands adjacent to the FECR corridor south of Mile Post 275 (Martin County 2012a). Two scrub-jays were observed over a five day survey period from September 03 through 07, 2012. An adult male scrub-jay was observed perched in vegetation with an acorn in his mouth, and another was observed perched in a dead tree preening itself. Neither bird stayed for very long and seemed to be more transient than territorial (Martin County 2012).

A five day scrub-jay survey was conducted (March 18 through 22, 2013) at four Refuge stations as part of the DEIS (AMEC Environment and Infrastructure, Inc. 2013). Scrub-jays were not observed at these stations but were throughout Jonathan Dickinson State Park. The southern end of Martin County is the only area within the County where scrub-jays were observed according to the survey. Refuge interest lands occur in the northern end of railroad ROW of this survey area and along with recently managed lands of JDSP are considered excellent scrub habitat. One scrub-jay family was observed in this area within JDSP, but it can be expected that this entire area is or will be inhabited by scrub-jays (AMEC Environment and Infrastructure, Inc. 2013). To enhance conditions for scrub-jays, present and future Refuge management actions in scrub lands adjacent to FECR ROW would include prescribed fire and exotic species control.

The Service believes that it is likely that scrub-jay may occasionally occur within the rail corridor, either foraging or flying across the tracks. The AAF project will result in passenger trains travelling by these territories at 79 to 125 miles per hour (mph), 32 times a day and moving at significantly faster speeds than freight trains currently using the corridor. The increase in rail traffic and the speed of trains travelling in these areas greatly increases the

likelihood that scrub-jays will be struck by a train and either injured or killed. Although scrub-jays may eventually learn to avoid the trains, the Service finds it likely that injuries or deaths of scrub-jays could occur due to train collisions.

The DEIS does not identify appropriate measures to limit likely scrub-jay train strikes. The Refuge is increasing suitability of scrub lands for scrub-jays specifically utilizing prescribed fire and exotic species control. Scrub-jays have recently been observed utilizing Refuge scrub lands and scrub-jay families are present throughout scrub managed lands of JDSP. With more suitable habitat planned through active prescribed fire programs, scrub-jays are expected to expand territories increasing the likelihood of scrub-jays crossing the rail corridor.

Chapter 7.2.11 (pg. 7-10) Threatened and Endangered Species and Other Protected Species section identifies consultation with U.S. Fish and Wildlife Service and the National Marine Fisheries Service (NMFS) has helped develop mitigation methods for minimizing effects to threatened and endangered species. The DEIS states: “Specific measures will be implemented by AAF to mitigate for potential temporary and permanent impacts to the habitat of certain federally listed species.” The DEIS does list the need to survey for scrub-jays pre-construction, however, increasing train trips and speeds through scrub habitat may have an adverse impact on scrub-jays. The DEIS does not discuss specific measures to implement beyond pre-construction surveys. Mitigation measures to address train/scrub-jay impacts should be identified and managed for, however, fencing is not an acceptable impact avoidance measure.

### **Gopher Tortoise and Commensal Species**

Gopher tortoises occur throughout Refuge scrub lands in varying densities. Additional information is needed on impacts where curvature of rail will be needed, specifically impacts to gopher tortoise and commensal species associated with gopher tortoise including eastern indigo snake (*Drymarchon couperi*), gopher frog (*Lithobates capito*), and Florida mice (*Podomys floridanus*). In addition, information relative to how vibration may impact gopher tortoise and commensal species is lacking, specifically damage to burrows. Given the reasonable assumption that higher rates of speed and more rail trips increase the likelihood of wildlife injury and/or death from train strikes, methods to provide for movement of gopher tortoise and commensal species through the rail corridor is lacking. Incorporating wildlife crossings along the N-S Corridor would help support wildlife migration across the rail corridor and would help decrease potential wildlife/train collisions.

### **Fencing**

Chapter 3.3.3.3 (pg. 3-37) identifies fencing the rail corridor where Federal Railroad Administration (FRA) hazard analysis review determines that fencing is required for safety. Proposed plans provided during the LMM identify six foot fence (where required). Meeting minutes referenced in Appendix 5.3.6-A identified one of the “solutions” for Florida scrub-jay impacts is fencing.

DEIS Acronyms and Abbreviations Glossary (pg. xxxvi), describes Wildlife Corridors as “a belt of habitat that is essentially free of physical barriers such as fences, walls, and development, and

connects two or more larger areas of habitat, allowing wildlife to move between physically separate areas.” Efforts to further wildlife connections should be made along the N-S Corridor, including but not limited to a reduction in fenced FECR ROW specifically where the ROW bisects adjacent lands managed for wildlife resources.

Fencing should be discouraged in areas where landscapes are managed for wildlife, as fences disrupt landscape connections and can limit wildlife migration. Fencing would only exacerbate other wildlife impacts, especially in areas where prescribed fire is used as a habitat management tool. Animals would be trapped from crossing where they need to for numerous purposes with fencing in place. Fencing the FECR corridor adjacent to the Refuge would further decrease Refuge landscape connections. Adding fences to this corridor segment would incorporate a physical barrier for terrestrial species movement and would act to cut off these belts of habitats from each other.

### **Wildlife Crossings**

Fences in concert with strategically placed wildlife crossings may help direct species to safe harbor across the corridor - either under the rail corridor via constructed underpasses or over via smoothed, at grade track and grade systems. In addition, slowing speeds through natural areas would decrease risk of train/wildlife collisions.

Providing wildlife crossings in strategic locations would decrease wildlife/train impacts where wildlife is prevalent. While wildlife passages are proposed for the E-W Corridor, none are proposed for the N-S Corridor which will be experiencing the same cumulative increase in impacts as the E-W corridor during the operational phase. Appendix 5.3.6-A1 acknowledges that potential actions are to consider installing fences along the corridor to prevent scrub-jay collisions, but that fencing may impede other species. However, this impediment could be mitigated by the provision of wildlife crossing structures. Based upon the consequential increase in number of train passages/events and increased speeds, the project is likely to result in impact to wildlife above and beyond exiting rail operations, The DEIS has not provided information to demonstrate no increase in impacts or to quantify potential impacts.

The Refuge is considered high quality habitat per September 2013 Biological Assessment conducted by AMEC Environment and Infrastructure. The DEIS proposes to reduce landscape connections through the advent of fencing and increased rail trips and speeds. Landscape connections could be provided for rather than reduced if reasonable measures including strategically located wildlife crossings, limited fencing, and reduced rail speeds are employed specifically where natural areas occur on either side of the rail corridor. Wildlife crossings would aid species migration and reduce potential train/wildlife strikes for many species migrating through the landscape including gopher tortoise and mammals such as raccoon as examples.

### **Plants**

Page 3-6 of the DEIS identifies that listed species assessments did not include an evaluation of plants. Plant assessments should be included as proposed changes to the existing rail line may

adversely affect listed plant species. A known population of federally listed (endangered) Lakela's mint occurs on Refuge interest lands adjacent to FECR ROW. The population is one of five small, reproductively isolated colonies remaining in Florida, each of which continues to decline in plant number due to overgrowth of competitive plant species and continued development pressure (Island Press Field Notes, 2014). Lakela's mint flowers in the fall and are pollinated by bees (Island Press Field Notes, 2014). More train trips and higher rates of speed are expected to increase wildlife strikes including to pollinating insects and this may have a direct impact on the ability of plant colonies to distribute and expand including the Refuge population of Lakela's mint. Adverse impacts of the project on pollinators including bees and other insects are not addressed in the DEIS nor are adverse effects to listed plant species as a whole.

### **Invasive Species**

Section 5.3.5.2 Natural Upland Habitats (Environmental Consequences 5-101) discusses the potential spread and distribution of invasive species as a result of project development. Specifically, "Construction along any active or inactive rail corridor, or constructing a new rail line, may increase the width of canopy gap over the railbed and would likely require removing existing vegetation on the elevated railbed. This linear gap, extending through natural communities, may allow invasive exotic plant species to colonize the railbed or adjacent areas."

Throughout the Refuge/FECR corridor many invasive plants exist in varying densities including Brazilian pepper (*Schinus terebinthifolius*), Australian pine (*Casuarina equisetifolia*), Carrotwood (*Cupaniopsis anacardioides*) as examples. Invasive plants occurring on FECR ROW are considered a seed source and increase the threat of exotic species invading Refuge lands. The Refuge has a very active invasive species control program to control the continued spread of existing invasive species and to stop new invasions.

The DEIS fails to identify actions that would limit the spread of existing invasive species and fails to identify actions to rapidly respond to new invasive species that may occur throughout the rail corridor. Management actions to control dispersal of non-native species to natural areas would augment adjacent natural land management efforts where costly invasive exotic control campaigns are ongoing.

Invasive species control to maintenance levels should be provided on FECR lands throughout the rail corridor in a combined natural lands management effort to limit spread of invasive species to new areas, and to best control existing invasive species populations from continued spread throughout the rail corridor and to adjacent lands.

### **Continued Access for Law Enforcement, Resource Management, Emergency Response and Fire**

The present one-rail configuration of FECR ROW adjacent to the Refuge provides access to lands on either side of the corridor. A drivable, unimproved path on the western boundary provides access to Refuge interest and JDSP lands south of Mile Post 275. Refuge Law Enforcement officers utilize this access path to patrol Refuge lands and as a secondary benefit,

has accessed this path for over two decades to conduct routine and special operations in wooded areas not readily accessible any other way. In addition Refuge Fire and Management personnel utilize the access path to conduct routine or special operations as needed. This access path provides the Refuge an ability to quickly and effectively secure Refuge lands from illicit activities.

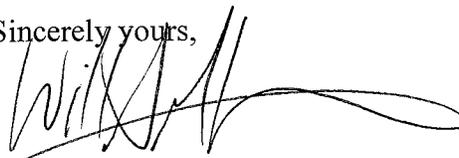
The DEIS does not recognize existing access of the FECR ROW for emergency response, law enforcement, fire or management purposes and it is unclear if access would continue to be provided for these crucial services. According to the site plans provided during the LMM, a 15.5 foot wide area that appears to be an access path is proposed adjacent to the western railbed. A drainage ditch is proposed west of the 15.5 foot wide area. Fencing is also proposed "where required" that would effectively make inaccessible the entire rail system including the 15.5 foot wide path and drainage system.

Maintaining access is a critical component to best protect natural resources of the Refuge and FECR Corridor. Continuing to provide efficient, ready access contributes to effective emergency response of law enforcement and unplanned fire as examples, and aids Refuge management efforts including conducting safe and effective prescribed fire events and controlling invasive species. In addition, continuing to provide access would benefit and help secure lands managed by multiple parties including FECR, Refuge, JDSP, and Martin County.

Finally, it should be recognized that the Refuge will continue to manage scrub utilizing prescribed fire as a preferred management tool. Prescribed fire in Refuge units proximal to the FECR ROW would produce smoke across the FECR corridor that may last many days post fire given fuel loads and weather.

Thank you for the opportunity to comment and your cooperation in the effort to protect fish and wildlife resources. If you have any questions regarding this project, please contact me at 772-546-6141x204

Sincerely yours,

A handwritten signature in black ink, appearing to read 'William Miller', with a long, sweeping horizontal flourish extending to the right.

William Miller, Refuge Manager  
Hobe Sound National Wildlife Refuge

cc: electronic only

Sylvia Pelizza, Refuge Area Supervisor, Florida

Rolf Olson, Project Leader, Arthur R. Marshall Loxahatchee National Wildlife Refuge



**United States Department of the Interior  
OFFICE OF THE SECRETARY**

**Office of Environmental Policy and Compliance**

**Richard B. Russell Federal Building  
75 Spring Street, S.W., Suite 1144  
Atlanta, Georgia 30303**



ER 14/0618  
9043.1

December 10, 2014

Mr. John Winkle  
Federal Railroad Administration  
1200 New Jersey Avenue  
SE Room W38-311  
Washington, DC 20590

Re: Comments and Recommendations on the Draft Environmental Impact Statement and Section 4(f) Evaluation for the Proposed All Aboard Florida – Orlando to Miami, Phase II Florida Intercity Passenger Rail Project in Miami Dade, Broward, Palm Beach, Marin, St. Lucie, Indian River, Brevard and Orange Counties, Florida

Dear Mr. Winkle:

The United States Department of the Interior (Department) has reviewed the Draft Environmental Impact Statement (DEIS) and Section 4(f) Evaluation for the Proposed All Aboard Florida – Orlando to Miami, Phase II Florida Intercity Passenger Rail Project in Miami Dade, Broward, Palm Beach, Marin, St. Lucie, Indian River, Brevard and Orange Counties, Florida. The Department offers the following comments for your consideration.

The purpose of the Project is to provide reliable and convenient intercity passenger rail transportation between Orlando and Miami, Florida, by extending (in Phase II) the previously reviewed Phase I All Aboard Florida LLC (AAF) passenger rail service between West Palm Beach and Miami and by maximizing the use of existing transportation corridors. This transportation service would offer an alternative to automobile travel on congested highway corridors, add transportation capacity within those corridors (particularly Interstate 95), and encourage connectivity with other modes of transportation such as light rail, commuter rail, and air transportation.

The DEIS evaluates Phase II of the project which includes adding a second track within 128 miles of the existing Florida East Coast Railroad right-of-way between West Palm Beach and Cocoa, constructing a new 40 mile long railroad line parallel to State Road 528 between Cocoa and Orlando International Airport, and constructing a new vehicle maintenance facility south of the airport. The DEIS evaluates a range of alternatives and evaluates in detail three alignment

alternatives.

The DEIS describes three alternatives and describes the affected Section 4(f) resources in the area of potential effect. The AAF and the Federal Railroad Administration (FRA) have not identified a preferred alternative at this time.

### **Section 4(f) Comments**

The DEIS states that the project would have an adverse effect on two bridges determined to be eligible for the National Register of Historic Places, the Eau Gallie River Bridge and the St. Sebastian River Bridge. Both bridges would be demolished in order to construct new bridges capable of carrying the proposed passenger trains. During the construction, two roads within Section 4(f) properties: the Tosohatchee Wildlife Management Area and Jonathan Dickinson State Park would be temporarily affected by construction activities. Also the FRA proposes to excavate material from and adjacent to three man-made ponds within the Tosohatchee Wildlife Management Area, and then to rehabilitate the ponds by creating more natural shoreline, reshaping the ponds and adding littoral shelves.

The FRA has proposed mitigation in the DEIS for Section 4(f) resources to conduct historic research and prepare Historic American Buildings Survey and Historic American Engineering Record documentation for each bridge prior to its demolition. However, the FRA has not completed the Section 106 consultation process with the Florida State Historic Preservation Office (SHPO) regarding the determination of adverse effect or avoidance, minimization or mitigation measures.

The Department recommends that the FRA continue working with the SHPO to develop a Memorandum of Agreement (MOA) which documents the measures agreed upon by the Section 4(f) resource managers, the SHPO, and the FRA to avoid, minimize and mitigate impacts to Section 4(f) resources. Because the MOA has yet to be developed, the Department cannot concur at this time that all possible planning to avoid, minimize or mitigate potential harm to these resources is complete.

The Department has a continuing interest in working with the FRA to ensure that impacts to resources of concern to the Department are adequately addressed. If you have questions, please contact Anita Barnett at [Anita\\_Barnett@nps.gov](mailto:Anita_Barnett@nps.gov). I can be reached at (404) 331-4524 or via email at [joyce\\_stanley@ios.doi.gov](mailto:joyce_stanley@ios.doi.gov).

Sincerely,



Joyce Stanley  
Regional Environmental Protection Specialist

All Aboard Florida Miami – Orlando Passenger Rail Project – ER 14/0618

cc:

Christine Willis – FWS

Anita Barnett – NPS

Gary Lecain – USGS

Chester McGhee – BIA

OEPC - WASH

U.S. Department of  
Homeland Security

United States  
Coast Guard



Commander  
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DEC 3 2014

Mr. John Winkle  
Federal Railroad Administration  
1200 New Jersey Ave SE, Room W38-311  
Washington, DC 20590

Dear Mr. Winkle,

The Coast Guard Seventh District Bridge Branch completed its review of the September 2014 All Aboard Florida Draft Environmental Impact Statement (AAF DEIS).

The navigational conditions at the New, Loxahatchee, and St Lucie River bridge sites consist of strong currents, constrained channels, and a heavy volume of boats. Given the proposed AAF operating schedule, it is very likely that future regulatory action will be required for these bridges. Details of navigational impact are borne out of studies associated with that rulemaking. Because we have not entered into that rulemaking process for the AAF proposal, the Coast Guard has not made a reasonable needs of navigation determination.

With regard to navigation, the Coast Guard does not typically consider navigational impacts to be environmental impacts that must be studied under the National Environmental Policy Act. The Coast Guard does not adopt the conclusions and assertions encompassed in the Navigation Discipline Report (NDR) included with the AAF DEIS for the purposes of rulemaking that will likely occur in order to alter existing bridge schedules. In a general sense, we consider the NDR inconclusive but will consider it as supporting information for taking future Coast Guard actions. In the enclosed document we have included comments regarding the NDR and other navigational related statements in the AAF DEIS.

If you have any questions about this matter please contact Mr. Barry Dragon at 305-415-6743.

Sincerely,

A handwritten signature in blue ink, appearing to read "W. R. REAMS".

W. R. REAMS  
Captain, U. S. Coast Guard  
Chief, Prevention Division

Enclosure: Coast Guard Comment Matrix to Sep 2014 AAF DEIS

## USCG Comments on September 2014 AAF Draft Environmental Impact Statement

Location	Statement	CG Comment
4-18	The videos contain approximately two to three weeks of data from the peak vessel traffic season, and in some instances a holiday, and were used to quantify the number and types of recognizable vessels that pass under the bridges under existing conditions.	Coast Guard studies evaluate vessel traffic data that encompasses all seasonal variations. This can be, and is often inclusive of 12 months of data.
4-19	Concerning the New River: This effort was conducted for five days during the peak season for vessel traffic, including weekdays and one full weekend.	The New River is the busiest waterway potentially impacted. See comment in 4-18.
4-21	St. Lucie: The vessel traffic data show an average of 102 vessel crossings per day (Min=28; Max=263) from Monday to Friday, compared to about 315 vessels (Min=157; Max=413) per day on a weekend. Sundays had the most vessel activity, with a range of 296 to 395 vessel counts (AMEC 2014a).	Notwithstanding the above comments on traffic data. The Coast Guard would avoid drawing conclusions based on average vessel crossings when data indicates a wide range of traffic, as indicated here.
4-23	Loxahatchee: The vessel traffic data show an average of 108 vessels per day (Min=5; Max=335) from Monday to Friday, compared to about 271 vessels (Min=119; Max=502) per day on a weekend.	
4-24	New River: Based on the January 2014 FECR video, an average of 157 vessel crossings occurred at the New River Bridge (Min=99; Max=289) on a daily basis (6:00 AM to 6:30 PM) from Monday through Friday compared to an average of 356 vessels (Min=262; Max=508) per day on a weekend day.	
Table 7.2-2, pg 7-3	Develop a set schedule for the down times of each bridge location. This schedule will include both freight and passenger rail service. Provide that schedule of bridge closures in an internet-accessible format to offer the public with access to that information, including the boating community and marinas. This will be posted on the AAF website and/or the US Coast Guard website.	Changing the operating schedule of a movable bridge requires a Coast Guard rule making process. Bridge operating schedules are not posted to a Coast Guard website, they are codified in 33 CFR 117.
7-4	Local mariners should be able to predict approximate crossing times once they are familiar with the passenger rail schedule, which will be consistent and unchanging from week to week. Mariners will be able to plan travel times and avoid unnecessary wait times according to the posted schedule.	All three moveable bridges are currently open on demand and any change to that will require a change to the current CG regulations through the rulemaking process.
7-4	Schedules for each bridge will be posted on the AAF website and/or the United States Coast Guard (USCG) website.	Schedules are posted within regulations located within 33 CFR 117.

7-4/5	<p>Develop a coordination plan between AAF and the USCG to communicate bridge operating schedules to the commercial and recreational boating communities. Such a plan will allow updates to the bridge operating schedule to be disseminated throughout these communities.</p> <p>Communication will be through the USCG, local marinas, and on the official scheduling website.</p>	<p>Placing the bridges on a schedule will require a change to existing CG regulation through the rulemaking process. See previous comments related to bridge operating schedules.</p>
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### Comments concerning Navigation Discipline Report

Location	Statement	CG Comment
Table ES-4	Summarized impacts to navigation after mitigation.	Coast Guard has not made the determination that the proposed increases in waterway closures would meet the reasonable needs of navigation. Any such determination will happen through a separate rulemaking process and not as part of the NEPA process.
2-7	Concerning the New River traffic survey: This effort was conducted for five days during the peak season for vessel traffic (as characterized by previous studies, see Table 3.3-1), including weekdays and one full weekend.	The New River is the busiest waterway potentially impacted. Coast Guard studies evaluate vessel traffic data that encompasses all seasonal variations. This can be, and is often inclusive of 12 months of data.
3-20	However, it is worth mentioning that the number of vessels observed in this study only reflect traffic east of the New River Bridge and not the number of vessels directly crossing New River Bridge.	
3-22	This study also conducted aerial flight surveys to assess vessel traffic trends for all of Broward County. <sup>12</sup> Aerial surveys were conducted from May 2004 to January 2005 to estimate weekday and weekend vessel trends as well as trends throughout the week separated by morning and afternoon	
3-23	Video recordings from a camera placed by the New River Bridge were provided by FECR. These videos consist of two full consecutive weeks of the peak season for vessel traffic, from January 14th to the 27th, 2014 and were assessed to extract data of vessel traffic traversing the New River Bridge during daylight hours (from 6:00 am through 6:30 pm each day).	
3-28	Even the largest vessels (e.g., Jungle Queen) will not take more than 5 to 6 seconds to cross the bridge, thus shorter periods of bridge opening (e.g., 5 minutes) should be enough to clear queue vessels at both sides of the bridge.	

		create a choke point on the waterway due to the fact that the opening is very narrow, and will often only allow for one vessel to pass through the opening at a time. Time must also be afforded for bridge cycle time.
Table 3.4-5	Summary of Operation at New River Bridge.	The proposed schedule indicates bridge closures increasing by roughly 3.4 hours per weekday and 2.78 hours per weekend day from the current state due to project. The Coast Guard is concerned that this is a significant increase in closure time which will result in increased time that queued vessels spend maintaining position while waiting for bridges to open. Coast Guard has not made the determination that the proposed increases in waterway closures would meet the reasonable needs of navigation. Any such determination will happen through a separate rulemaking process and not as part of the NEPA process
3-31	For commercial vessels that wait, the average wait time is expected to decrease from 7.3 minutes under the No-Build Alternative to 6.3 minutes under the Combined Effect. For recreational vessels that wait, the average wait time is expected to decrease from 8.1 minutes under the No-Build Alternative to 6.3 minutes under the Combined Effect.	The total number of vessels that experience a delay increased from 23% to 36%. The Coast Guard is concerned that this is a significant increase in closure time which will result in increased time that queued vessels spend maintaining position while waiting for bridges to open. Coast Guard has not made the determination that the proposed increases in waterway closures would meet the reasonable needs of navigation. Any such determination will happen through a separate rulemaking process and not as part of the NEPA process
4-19	There were more vessels observed during the summer as compared to all other seasons, with an average of 113 vessels during weekdays and an average of 851 vessels observed during weekends.	This statement appears to contradict an earlier statement that peak boating traffic occurs during winter months. Coast Guard studies evaluate vessel traffic data that encompasses all seasonal variations. This can be, and is often inclusive of 12 months of data.
4-20	Data gathered through a three week video assessment of the Loxahatchee Bridge during winter, shows an average of 108 vessel crossings per day occurred (Min=5; Max=335) from Monday to Friday, compared to about 271 vessels (Min=119; Max=502) per day on a weekend (Table 4.3-6).	The Coast Guard is concerned about the sample size being too small and the range of data is too large to draw accurate conclusions from this data. Also, it is noted that summer months are peak traffic times for this waterway according to the aerial study mentioned previously.
4-24	Although the Proposed Action (2016 Passenger and upgraded infrastructure) will add to the total daily bridge closure time (about 5.53 hours during the weekdays and 5.41 hours during weekends), improvements to the rail infrastructure are expected to increase the speed of rail traffic, reducing the Proposed Action average time of single closures (11 minutes) by approximately 8 minutes when compared to Existing Conditions (19 minutes) or about 9 minutes when compared to the No-Build Alternative respectively (20 minutes).	The proposed action more than doubles the total current closure times. Even if the average wait is decreased, the number of vessels experiencing a wait increases significantly. The Coast Guard is concerned that this is a significant increase in closure time which will result in increased time that queued vessels spend maintaining position while waiting for bridges to open. Coast Guard has not made the determination that the proposed increases in waterway closures would meet the reasonable needs of navigation. Any such determination will happen through a separate rulemaking process and not as part of the NEPA process.
4-26	When comparing Case 2a (2016 No-Build	A 17% increase in vessels experiencing a wait is a

	Alternative) to Case 3 (2016 Freight and Passenger, Combined Effect) an increase in the percentage of vessels experiencing a wait from 25% under the No-Build Alternative to 42% under the Combined Effect is observed.	significant increase. The Coast Guard is concerned that this is a significant increase in closure time which will result in increased time that queued vessels spend maintaining position while waiting for bridges to open. Coast Guard has not made the determination that the proposed increases in waterway closures would meet the reasonable needs of navigation. Any such determination will happen through a separate rulemaking process and not as part of the NEPA process.
Table 4.5-1	Simulation results	Currently, 7% of vessels experience a wait. The report predicts that 25% will experience a wait in 2016 without the project. The proposed action will cause 42% of vessels to experience a wait. The Coast Guard is concerned that this is a significant increase in closure time which will result in increased time that queued vessels spend maintaining position while waiting for bridges to open. Coast Guard has not made the determination that the proposed increases in waterway closures would meet the reasonable needs of navigation. Any such determination will happen through a separate rulemaking process and not as part of the NEPA process.
5-11	No commercial barge traffic occurs in the St. Lucie River. Inland commercial vessel activities are primarily associated with water taxi/bus, restaurant, and touring operations.	The St. Lucie River connects to the Okeechobee waterway. Barges and other commercial traffic do continue to utilize the waterway.
5-17	Data gathered through a two-week video assessment of the St. Lucie River Bridge during winter shows an average of 102 vessel crossings per day occurred (Min=28; Max=263) from Monday to Friday, compared to about 315 vessels (Min=157; Max=413) per day on a weekend (Table 5.3-1). Sundays had the most vessel activity, with a range of 296 to 395 vessel counts.	Coast Guard studies evaluate vessel traffic data that encompasses all seasonal variations. This can be, and is often inclusive of 12 months of data. Notwithstanding this, the Coast Guard would avoid drawing conclusions based on average vessel crossings when data indicates a wide range of traffic, as indicated here.
Table 5.4-2	Summary of existing and project operation for St. Lucie River Bridge	The proposed action significantly increases closure time. Currently the bridge is closed for 4.01 hours during weekdays and 2.74 hours during weekends. The proposed action increases closure times to 9.79 and 7.63 hours, with the majority of the waterway closure time occurring during peak vessel transit periods. The Coast Guard is concerned that this is a significant increase in closure time which will result in increased time that queued vessels spend maintaining position while waiting for bridges to open. Coast Guard has not made the determination that the proposed increases in waterway closures would meet the reasonable needs of navigation. Any such determination will happen through a separate rulemaking process and not as part of the NEPA process.
Table 6.0-5	Intervals of peak traffic with closure periods over 30 mins.	The St. Lucie River will experience 5 closures of over 30 mins during peak traffic periods per week. The Coast Guard is concerned that this is a significant

		<p>increase in closure time which will result in increased time that queued vessels spend maintaining position while waiting for bridges to open. Coast Guard has not made the determination that the proposed increases in waterway closures would meet the reasonable needs of navigation. Any such determination will happen through a separate rulemaking process and not as part of the NEPA process.</p>
6-13	<p>Develop a set schedule for the down times of the bridge for passenger rail service.</p>	<p>The Coast Guard is responsible for setting bridge closure schedules as part of the rulemaking process.</p>
Table 6.7-1	<p>Summary of impacts</p>	<p>Coast Guard has not made the determination that the proposed increases in waterway closures would meet the reasonable needs of navigation. Any such determination will happen through a separate rulemaking process and not as part of the NEPA process.</p>



**United States Department of the Interior  
OFFICE OF THE SECRETARY**

**Office of Environmental Policy and Compliance**

**Richard B. Russell Federal Building  
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ER 14/0618  
9043.1

December 10, 2014

Mr. John Winkle  
Federal Railroad Administration  
1200 New Jersey Avenue  
SE Room W38-311  
Washington, DC 20590

Re: Comments and Recommendations on the Draft Environmental Impact Statement and Section 4(f) Evaluation for the Proposed All Aboard Florida – Orlando to Miami, Phase II Florida Intercity Passenger Rail Project in Miami Dade, Broward, Palm Beach, Marin, St. Lucie, Indian River, Brevard and Orange Counties, Florida

Dear Mr. Winkle:

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The purpose of the Project is to provide reliable and convenient intercity passenger rail transportation between Orlando and Miami, Florida, by extending (in Phase II) the previously reviewed Phase I All Aboard Florida LLC (AAF) passenger rail service between West Palm Beach and Miami and by maximizing the use of existing transportation corridors. This transportation service would offer an alternative to automobile travel on congested highway corridors, add transportation capacity within those corridors (particularly Interstate 95), and encourage connectivity with other modes of transportation such as light rail, commuter rail, and air transportation.

The DEIS evaluates Phase II of the project which includes adding a second track within 128 miles of the existing Florida East Coast Railroad right-of-way between West Palm Beach and Cocoa, constructing a new 40 mile long railroad line parallel to State Road 528 between Cocoa and Orlando International Airport, and constructing a new vehicle maintenance facility south of the airport. The DEIS evaluates a range of alternatives and evaluates in detail three alignment

alternatives.

The DEIS describes three alternatives and describes the affected Section 4(f) resources in the area of potential effect. The AAF and the Federal Railroad Administration (FRA) have not identified a preferred alternative at this time.

### **Section 4(f) Comments**

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The Department recommends that the FRA continue working with the SHPO to develop a Memorandum of Agreement (MOA) which documents the measures agreed upon by the Section 4(f) resource managers, the SHPO, and the FRA to avoid, minimize and mitigate impacts to Section 4(f) resources. Because the MOA has yet to be developed, the Department cannot concur at this time that all possible planning to avoid, minimize or mitigate potential harm to these resources is complete.

The Department has a continuing interest in working with the FRA to ensure that impacts to resources of concern to the Department are adequately addressed. If you have questions, please contact Anita Barnett at [Anita\\_Barnett@nps.gov](mailto:Anita_Barnett@nps.gov). I can be reached at (404) 331-4524 or via email at [joyce\\_stanley@ios.doi.gov](mailto:joyce_stanley@ios.doi.gov).

Sincerely,



Joyce Stanley  
Regional Environmental Protection Specialist

All Aboard Florida Miami – Orlando Passenger Rail Project – ER 14/0618

cc:

Christine Willis – FWS

Anita Barnett – NPS

Gary Lecain – USGS

Chester McGhee – BIA

OEPC - WASH



**UNITED STATES DEPARTMENT OF COMMERCE**

National Oceanic and Atmospheric Administration

**NATIONAL MARINE FISHERIES SERVICE**

Southeast Regional Office

263 13th Avenue South

St. Petersburg, Florida 33701-5505

<http://sero.nmfs.noaa.gov>

December 3, 2014

F/SER47:BH/pw

(Sent via Electronic Mail)

Mr. John Winkle  
Federal Railroad Administration  
1200 New Jersey Avenue, SE Room W38-311  
Washington, DC 20590

Dear Mr. Winkle:

NOAA's National Marine Fisheries Service (NMFS) reviewed the Federal Railroad Administration's (FRA) draft Environmental Impact Statement (DEIS), dated September 19, 2014. All Aboard Florida (AAF) proposes passenger service between Miami International Airport and Orlando International Airport with stops in West Palm Beach, Ft. Lauderdale, and Miami. The proposed rail system has two portions. The North-South portion would be within the existing 100-foot Florida East Coast Railroad (FEC) right-of-way (ROW) between Miami and Cocoa Beach. The East-West portion would be along State Road 528 (SR 528) between Cocoa Beach and Orlando. On October 24, 2014, NMFS provided the U.S. Army Corps of Engineers with comments on public notice SAJ-2012-01564 (SP-AWP) regarding the essential fish habitat (EFH) impacts along the North-South portion. This letter will focus on the freshwater wetland impacts incurred along the entire project. Three action alternatives were considered with wetland and surface water impacts ranging from 127.7 acres to 157.5 acres. As the nation's federal trustee for the conservation and management of marine, estuarine, and anadromous fishery resources, the following comments and recommendations are provided pursuant to authorities of the Fish and Wildlife Coordination Act.

NMFS staff conducted site inspections along the North-South portion of the project on January 23, 2013; May 1, 2013; and April 2, 2014. The proposed railroad corridor will impact wetlands, canals, rivers, and other surface waters between Miami and Cocoa along the east coast and from Cocoa to Orlando in Central Florida. Wetland quality ranges from very high to very low in quality and consist of every major freshwater wetland habitat type in Central and South Florida. The highest quality wetlands lie within Johnathan Dickenson State Park and along SR 528. These are largely high functioning forested systems. Vegetation within these forested wetlands includes red maple (*Acer rubrum*), swamp bay (*Persea palustris*), pond pine (*Pinus serotina*), southern magnolia (*Magnolia grandiflora*), swamp tupelo (*Nyssa sylvatica* var. *biflora*), sweetgum (*Liquidambar styraciflua*) loblolly bay (*Gordonia lasianthus*), and dwarf palmetto (*Sabal minor*). The wetlands that would be impacted by the proposed railroad expansion provide water quality functions, such as removal of sediments, excess nutrients, and contaminants, that benefit and support these aquatic ecosystems. Through hydrological connections, these wetlands also contribute plant material and other useable nutrients (both dissolved and particulate organic matter) into aquatic food webs that include recreationally, commercially, and ecologically important species within downstream estuaries.

Three action alternatives are studied in the DEIS: Alternative A, Alternative C, and Alternative E. The North-South portion is the same for all three alternatives. The differences in the alternatives would occur along SR 528: Alternative A would locate the new East-West portion of the project within the SR 528 right-of-way (ROW); Alternative C adjacent to the SR 528 ROW; and Alternative E 100-feet from the SR 528 ROW. An approximately 30-foot-wide median exists along SR 528. Use of the median to facilitate



the new railroad should be studied as an alternative. This could eliminate the majority of wetland impacts and would demonstrate that adequate avoidance measures have been met. Alternative A is NMFS' preferred alternative of those studied since it will result in the smallest acreage (127.7 acres) of impacts to wetlands and surface waters. Chapter 7 of the DEIS states the project impacts would be mitigated at a federally approved mitigation bank whose service area overlaps the specific wetland being mitigated. This would result in several mitigation banks being used to offset impacts from the project. This approach would also ensure that the lost function and values will be replaced within the same watershed. The Jacksonville District U.S. Army Corps of Engineers will determine the appropriate amount of credits to be purchased based on a functional assessment. NMFS is available to help the FRA and Jacksonville District in evaluating the functional assessment used to determine the number of credits to be purchased.

In addition to the direct impacts from filling wetlands, construction activities may impact adjacent wetlands through sedimentation and runoff. To minimize these impacts, NMFS recommends the applicant utilize best management practices, including staked hay bales, silt fencing, mats for construction equipment, and re-vegetation of denuded areas, to stabilize the disturbed soils.

NMFS appreciates the opportunity to provide these comments. Questions should be directed to the attention of Mr. Brandon Howard at our West Palm Beach Office, 400 North Congress Avenue, Suite 120, West Palm Beach, FL 33401. He also may be reached by telephone at 561 249-1652, or by email at Brandon.Howard@noaa.gov.

Sincerely,



/ for

Virginia M. Fay  
Assistant Regional Administrator  
Habitat Conservation Division

cc:

VHB, AAF\_comments@vhb.com  
FRA, John\_Winkle@dot.gov  
FWS, Ashleigh\_Blackford@fws.gov  
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SECRETARY

March 3, 2015

Mr. John Winkle, Transportation Industry Analyst  
Office of Railroad Policy and Development  
Federal Railroad Administration  
1200 New Jersey Avenue SE, Room W38-311  
Washington, DC 20590

RE: U.S. Department of Transportation, Federal Railroad Administration  
Draft Environmental Impact Statement and Section 4(f) Evaluation,  
All Aboard Florida Intercity Passenger Rail Project, Orlando to Miami  
Orange to Miami-Dade Counties, Florida.  
SAI # FL201409237031C

Dear Mr. Winkle:

The Florida State Clearinghouse has coordinated a review of the referenced Draft Environmental Impact Statement and Section 4(f) Evaluation (EIS) for the All Aboard Florida rail project under the following authorities: Presidential Executive Order 12372; § 403.061(42), *Florida Statutes*; the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended; the National Environmental Policy Act, 42 U.S.C. §§ 4321-4347, as amended; and Section 106 of the National Historic Preservation Act.

The following agencies submitted comments, concerns and recommendations regarding the Draft EIS, all of which (letters, memoranda and Clearinghouse database entries) are attached hereto, incorporated herein by this reference and made an integral part of this letter:

- Florida Department of Environmental Protection
- Florida Fish and Wildlife Conservation Commission
- Florida Department of State, Division of Historical Resources
- Florida Department of Transportation
- St. Johns River Water Management District
- South Florida Water Management District
- East Central Florida Regional Planning Council

The South Florida Regional Planning Council and Treasure Coast Regional Planning Council transmitted their comments on the Draft EIS directly to the Federal Railroad Administration.

Mr. John Winkle  
Page 2 of 2  
March 3, 2015

Based on the information contained in the Draft EIS and enclosed agency comments, the state has determined that the Federal Railroad Administration's Draft EIS for the All Aboard Florida rail project is consistent with the Florida Coastal Management Program (FCMP). To ensure the project's continued consistency with the FCMP, the concerns identified by our reviewing agencies must be addressed prior to project implementation. The state's continued concurrence will be based on the activities' compliance with FCMP authorities, including federal and state monitoring of the activities to ensure their continued conformance, and the adequate resolution of issues identified during this and subsequent regulatory reviews. The state's final concurrence of the project's consistency with the FCMP will be determined during the state's environmental permitting process, in accordance with Section 373.428, *Florida Statutes*.

Thank you for the opportunity to review the draft document. Should you have any questions or require additional information, please don't hesitate to contact me at (850) 245-2170 or [Lauren.Milligan@dep.state.fl.us](mailto:Lauren.Milligan@dep.state.fl.us).

Yours sincerely,



Lauren P. Milligan, Coordinator  
Florida State Clearinghouse  
Office of Intergovernmental Programs

Enclosures

ec: Tim Rach, DEP, DWRM  
Greg Kaufmann, DEP, DRP  
Tom Butler, DEP, DSL  
Paul Wierzbicki, DEP, Southeast District  
Daniel Hall, DEP, Central District  
Chris Wigglesworth, DEO  
Scott Sanders, FWC  
Timothy Parsons, DOS  
Martin Markovich, FDOT  
Todd Gruenemeier, FDOT  
Steve Fitzgibbons, SJRWMD  
Mindy Parrott, SFWMD  
Tara McCue, ECFRPC  
Kathe Lerch, SFRPC  
Stephanie Heidt, TCRPC



# Florida

## Department of Environmental Protection

"More Protection, Less Process"



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Project Information	
<b>Project:</b>	FL201409237031C
<b>Comments Due:</b>	11/04/2014
<b>Letter Due:</b>	12/08/2014
<b>Description:</b>	DEPARTMENT OF TRANSPORTATION, FEDERAL RAILROAD ADMINISTRATION - DRAFT ENVIRONMENTAL IMPACT STATEMENT AND SECTION 4(F) EVALUATION, ALL ABOARD FLORIDA INTERCITY PASSENGER RAIL PROJECT, ORLANDO TO MIAMI - ORANGE TO MIAMI-DADE COUNTIES, FLORIDA.
<b>Keywords:</b>	DOT - DEIS, ALL ABOARD FLORIDA INTERCITY PASSENGER RAIL - ORANGE-MIAMI-DADE CO.
<b>CFDA #:</b>	20.319
Agency Comments:	
<b>COMMUNITY PLANNING - FLORIDA DEPARTMENT OF ECONOMIC OPPORTUNITY</b>	
No Comments	
<b>ENVIRONMENTAL PROTECTION - FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION</b>	
<p>The DEP's Southeast District Office advises that Contamination Screening Evaluations may be required along the corridor prior to construction. Land clearing, construction debris and other non-hazardous debris, drums, solid wastes, tanks and potentially contaminated soils must all be managed in accordance with federal, state and local requirements. The DEP Division of Recreation and Parks has provided a number of comments on the Draft EIS in the enclosed DEP memo regarding the project's potential effects on listed plant and animal species that occur within Savannas Preserve State Park and Jonathan Dickinson State Park. Although briefly mentioned in the Draft EIS, since the Sand Pine Scrub natural community is located throughout the project corridor, staff recommends that the document describe this community as a globally imperiled ecosystem (per Florida Natural Areas Inventory ranking system) with rare flora and fauna. The Division requests additional information as to how impacts to the listed plant and animal species mentioned in the memo will be avoided or minimized. Staff advises that the Florida Greenways and Trails System Plan identifies a priority and opportunity corridor along the entire length of the All Aboard Florida corridor. Due consideration should be given to locating a rail-with-trail, shared-use path along the railroad corridor. A shared-use path would help to close gaps between trails in all counties. If the corridor is developed with such a path, significant gaps in trail would be closed between Miami and Orlando. Along the coastal portion of this corridor lies the East Coast Greenway (ECG), a national effort to connect bicycle facilities from the Florida Keys Overseas Heritage Trail to Maine. With the development of this railroad, significant gaps along the ECG would be closed and bicycle users who arrive in Miami and ride north on a portion of the ECG could have a multi-modal return trip option.</p>	
<b>STATE - FLORIDA DEPARTMENT OF STATE</b>	
<p>The DOS-SHPO notes that staff has worked with the Federal Railroad Administration and All Aboard Florida pursuant to responsibilities under the National Historic Preservation Act of 1966 (NHPA). SHPO advises that its review is structured by the consultation process dictated by 36 CFR 800, the implementing regulations for Section 106 of the NHPA. The required steps include: 1) identification of historic properties within the area of potential effect for the project; 2) evaluation of the significance of any identified historic properties; 3) determination if the project will cause adverse effects due to project activities; and 4) avoidance, minimization, or mitigation of any adverse effects. The All Aboard Florida rail project was identified as a federal undertaking in 2012. At that time, steps one through three summarized above were completed for the southern Miami to West Palm Beach portion of the project. Adverse effects to significant cultural resources were avoided. In 2013 steps one and two were completed for the northern West Palm Beach to Orlando International Airport portion of the project. During both reviews, the Florida SHPO and FRA consulted as required by Section 106 of the NHPA. The submission</p>	

of the Draft EIS in November 2014 proposes to fulfill step three for the northern portion. Our review of the Draft EIS identifies three general topics that must be addressed in order for Section 106 requirements to be fulfilled through the completion of the document. They are: 1) description of the applicable laws; 2) accuracy of the project data; and 3) justification for the conclusions reached in the document. Please refer to the enclosed DOS letter and detailed comments on the Draft EIS for further information.

#### **SOUTH FLORIDA WMD - SOUTH FLORIDA WATER MANAGEMENT DISTRICT**

The SFWMD has issued several permits and exemption verifications for Phase I of the All Aboard Florida project. Additional Environmental Resource Permits and Water Use Permits may be required for Phase II. For portions of Phase II in central Florida, permits will be issued by the SJRWMD. The SFWMD has no specific comments on the Draft EIS.

#### **E. CENTRAL FL RPC - EAST CENTRAL FLORIDA REGIONAL PLANNING COUNCIL**

The ECFRPC has provided a number of comments on the All Aboard Florida Draft EIS recommending that the project follow the natural resource protection, multi-modal transportation system connection, transportation safety and right-of-way co-location policies of the Central Florida 2060 Plan (ECFRPC Strategic Regional Policy Plan). Please refer to the enclosed ECFRPC letter for further details.

#### **TREASURE COAST RPC - TREASURE COAST REGIONAL PLANNING COUNCIL**

The TCRPC advises that, although the general project concept and proposed station location in West Palm Beach appear to advance the relevant policy directives in the Palm Beach County comprehensive plan and City of West Palm Beach Master Plan, the policies in three other county comprehensive plans provide support for passenger rail service. Given the estimated travel times from the three northern counties to the proposed stations in West Palm Beach and Orlando, and further considering the end-to-end travel times to Fort Lauderdale or Miami, it seems unlikely residents in the three northern counties would utilize the AAF service. Further, the DEIS indicates additional stations along the N-S Corridor were not considered as they would increase travel time between Orlando and Miami of an unacceptable duration. Therefore, without the access, mobility, and economic benefits provided by stations, the DEIS conclusions regarding the comprehensive plans in Martin, St. Lucie, and Indian River counties appear inaccurate and are not substantiated by the data provided in the report. Staff offers the following final EIS recommendations: - Include a consistency analysis of all relevant comprehensive plans and community redevelopment agency plans. Mitigation measures or other alternatives should be established and analyzed to resolve inconsistencies or conflicts with local plans. - Include a new alternative that would provide Martin, St. Lucie, and Indian River counties with some level of direct scheduled access to the AAF service, including intermittent or "skip-stop" service. - Confirm the maintenance of a single-track through Historic Downtown Stuart and maintenance of public parking in FEC right-of-way. - Confirm the location of the storage track outside the boundaries of St. Lucie Village to maintain egress and emergency response to Village residents. - Enable local governments to install landscaping/hardscape improvements to enhance safety and beautify the corridor.

#### **FISH and WILDLIFE COMMISSION - FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION**

FWC staff notes that AAF has been coordinating with the FWC in advance of and throughout the project scoping period. The FWC has provided technical assistance regarding fish and wildlife and their habitats within the corridor for use during the initial review. This information has been utilized to inform the development of rail alignment alternatives within the East-West corridor. Consultants for AAF worked with FWC staff on the design of railroad crossings over the Econlockhatchee River and Little Creek to ensure that wildlife movement would not be impeded by the rail line. AAF and their representatives have also coordinated with the FWC regarding the portion of the rail line corridor that will traverse the Tosohatchee Wildlife Management Area. The FWC recognizes that AAF has included many of its recommendations to avoid or minimize potential impacts to fish and wildlife resources, as well as a commitment to utilize best management practices during construction activities, conduct specific wildlife species surveys prior to construction, and implement certain measures designed to mitigate anticipated unavoidable impacts. Staff also recommends that, in addition to the identified federally listed species, a commitment be made to conduct pre-construction surveys for the state-listed species reported in addition to the gopher tortoise, as well as other state-listed species that may have the potential to occur within the project area based upon existing habitats. For further detailed comments and recommendations, please refer to the enclosed FWC letter and contact Ms. Laura DiGruttolo at (386) 758-0525 or Laura.DiGruttolo@MyFWC.com.

#### **TRANSPORTATION - FLORIDA DEPARTMENT OF TRANSPORTATION**

The FDOT has reviewed the DEIS and Section 4(f) Evaluation and notes that the proposed rail project traverses counties within three of its Districts. FDOT staff requests additional data and information regarding the rail project's effects on vehicle and freight traffic. While the proposed rail construction will be located within railroad right-of-way, the project will intersect and impact state roads at a number of railroad crossings. The DEIS should evaluate and account for additional AAF costs necessary to achieve a compatible design transition as the rail crossing surface transitions to the adjacent connecting roadway and document all AAF associated costs for design and construction. This request is based on observations made on prior crossing upgrades in which surfaces were not compatible and resulted in additional costs to the public to improve the interface between the rail and roadway components.

#### **ST. JOHNS RIVER WMD - ST. JOHNS RIVER WATER MANAGEMENT DISTRICT**

Based on the interagency agreement between the St. Johns River Water Management District (SJRWMD) and South Florida Water Management District (SFWMD), SJRWMD will be the permitting authority for that portion of the east/west corridor from International Corporate Park Boulevard (at the SJRWMD/SFWMD jurisdictional boundary line) to the eastern

termination of the corridor near the City of Cocoa. The SFWMD will be the permitting authority for that portion of the east/west corridor from Orlando International Airport to International Corporate Park Boulevard, and the entirety of the north/south corridor from the City of Cocoa to the City of Miami. The project requires an Individual Environmental Resource Permit (ERP) pursuant to Chapter 62-330, Florida Administrative Code (F.A.C.), as well as a Sovereignty Submerged Lands (SSL) authorization under Chapter 18-21, F.A.C. Projects that require an ERP must meet all applicable conditions for issuance. Please note that mitigation will be required for adverse direct and secondary impacts to wetlands and surface waters. The SJRWMD has been coordinating with the applicant since August 2012, on a pre-application review of wetland and surface water boundaries. In addition, the SJRWMD is assisting with evaluating multiple options for mitigation, floodplain impacts, and the design of the stormwater management system. The SJRWMD issued a General Permit (No. GEN-095-136255-1, "All Aboard Florida - Contract PE03") on December 18, 2013, and an associated SSL authorization (No. SSL-095-136255-2) on January 3, 2014, for geotechnical borings.

**SOUTH FL RPC - SOUTH FLORIDA REGIONAL PLANNING COUNCIL**

The SFRPC notes that the proposed Intercity Passenger Rail Project can be consistent with and further the plans and policies of the SFRPC, if actions are taken in the Final EIS to address specific impacts. The Draft EIS substantially addresses any negative impacts caused by the project in Miami-Dade and Broward Counties. The region will gain access to new passenger service while benefitting from improved mobility, air quality, economic expansion and job creation. However, during the Public Information Meetings on the project conducted by the FRA and additional meetings conducted by the U.S. Coast Guard, issues were raised by representatives of the marine industry in South Florida about the project's impacts to the marine industry west of the New River rail bridge in Fort Lauderdale. While adopted policy of the SFRPC supports implementation of proposed Intercity service, specific impacts to road traffic, marine navigation and public safety from the proposed passenger service, in conjunction with increased freight traffic, have been identified to the built and natural environments of Miami-Dade and Broward Counties and the remainder of the proposed Intercity Corridor.

For more information or to submit comments, please contact the Clearinghouse Office at:

3900 COMMONWEALTH BOULEVARD, M.S. 47  
TALLAHASSEE, FLORIDA 32399-3000  
TELEPHONE: (850) 245-2161  
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SECRETARY

**U.S. Department of Transportation, Federal Railroad Administration (FRA)  
Draft Environmental Impact Statement and Section 4(f) Evaluation  
All Aboard Florida Intercity Passenger Rail Project, Orlando to Miami  
Orange to Miami-Dade Counties, Florida  
SAI # FL201409237031C**

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The following comments are provided by the Florida Department of Environmental Protection (DEP) staff for your consideration.

**Southeast District Office**

***Waste Management:***

- DEP's Southeast District notes that, beginning on Page 4-62, hydrogeologic structures, groundwater regulations and wellfield protection ordinances are summarized. There are numerous public supply wellfields in the project boundaries, with many water production wells (irrigation, potable, industrial) potentially within a close proximity to the project.
- Groundwater monitoring wells are likely present along and near the entire length of the project. Arrangements should be made to properly abandon (in accordance with Chapter 62-532, Florida Administrative Code) and/or replace any wells that may be impacted during construction.
- In the event previously unidentified contamination is detected during construction, DEP, Miami-Dade Regulatory and Economic Resources Department, Palm Beach County Environmental Resources Management, Palm Beach County Health Department and the Broward County Environmental Protection and Growth Management Department should be notified (depending on the county), and the project managers may need to address the issue through additional assessment and/or remediation activities. Reference should be made to the most recent Florida Department of Transportation specification entitled "Section 120 Excavation and Embankment -- Subarticle 120-1.2 Unidentified Areas of Contamination of the Standard Specifications for Road and Bridge Construction" in the project's construction contract documents that would require specific actions by the contractor in the event of any hazardous material or suspected contamination issue arises.
- Depending on the findings of the Contamination Screening Evaluations, construction project segments involving "dewatering" should be discouraged or limited given the potential to spread contamination to previously uncontaminated or less contaminated areas and affect contamination receptors, site workers and the public. In DEP's Southeast District, dewatering projects would require permits/approval from the South Florida Water Management District's Water Use Section and with coordination from the Miami-Dade Regulatory and Economic Resources Department, Palm Beach County Environmental Resources Management, Palm Beach County Health Department and Broward County Environmental Protection and Growth Management Department (depending on the county).

- Any land clearing or construction debris must be characterized for proper disposal. Potentially hazardous materials must be properly managed in accordance with Chapter 62-730, Florida Administrative Code. The project developers should specify procedures that would be followed by the applicant in the event drums, solid wastes, tanks or potentially contaminated soils are encountered during construction. Please be advised that Chapter 62-780, Florida Administrative Code, entitled “Contaminated Site Cleanup Criteria” was amended and consolidated DEP’s cleanup rules. In addition, any solid wastes or other non-hazardous debris must be managed in accordance with Chapter 62-701, Florida Administrative Code. DEP rules and statutes are located at <http://www.dep.state.fl.us/legal/Default.htm>.
- Staging areas, with controlled access, should be planned in order to safely store raw material paints, adhesives, fuels, solvents, lubricating oils, etc. that will be used during construction. All containers need to be properly labeled. The project developers should consider developing a written construction Contingency Plan in the event of a natural disaster (e.g., hurricane), spill, fire or environmental release of hazardous materials stored/handled for the project construction. Contingency planning should also include details on how construction and hazardous materials would be safely stored and secured prior to a hurricane or natural disaster.

Please contact Mr. Paul A. Wierzbicki, P.G., in DEP’s Southeast District Office at (561) 681-6677 or [Paul.Wierzbicki@dep.state.fl.us](mailto:Paul.Wierzbicki@dep.state.fl.us) for additional information on the state’s waste management regulations.

***National Pollution Discharge Elimination System Permitting:***

- Railroad infrastructure construction may require the issuance of a National Pollutant Discharge Elimination System (NPDES) permit(s), the *Generic Permit for Stormwater Discharge from Large and Small Construction Activities*, by DEP. Please note that the state’s NPDES rule, 62-621.300, Florida Administrative Code, is currently under revision and project managers should be aware of any regulatory updates. Please contact DEP’s NPDES Stormwater Permitting Program in Tallahassee at [NPDES-stormwater@dep.state.fl.us](mailto:NPDES-stormwater@dep.state.fl.us) or (850) 245-7522 for further information and assistance.
- Southeast District Office staff recommends that, wherever possible, an attempt be made to retain all groundwater recovered from the construction dewatering activities onsite or at a nearby location where the groundwater can be contained and recharged to the aquifer by ground infiltration only. This can be achieved by transferring the recovered groundwater to a nearby dry retention area/stormwater retention pond or a temporarily bermed catchment basin.

***Environmental Resource Permitting:***

- DEP staff advises that both the South Florida Water Management District and St. Johns River Water Management District will be responsible for processing the applicant’s requests for an Environmental Resource Permit (ERP) and sovereignty submerged lands authorization to construct the project within their respective jurisdictions.

**Division of Recreation and Parks**

***Savannas Preserve State Park:***

*Page 4-82, Sand Pine*

- The document only briefly mentions the Sand Pine Scrub natural community. The Division of Recreation and Parks (Division) recommends that the document describe this community as a globally imperiled ecosystem (per Florida Natural Areas Inventory ranking system) with rare flora and fauna.

*Pages 4-84 – 4-88, Preserves, Wildlife Sanctuaries, and Wildlife Corridors*

- Savannas Preserve State Park is not included among the list of affected parks; however, the corridor passes along nine miles of the state park boundary. The above-referenced Sand Pine Scrub natural community is located throughout the project corridor.

*Page 4-99, Table 4.3.6-3*

- The table should include the Savannas mint (*Dicerandra immaculata var. savannarum*), a variety of Lakela's mint and also listed as federally endangered. A population of this species formerly occurred in the railroad corridor and known populations occur very close to the corridor.

*Page 4-100, Affected Environment*

- The Division notes above that fragrant prickly apple cactus is found within the project corridor. Savannas mint (a federally endangered variety of Lakela's mint) was formerly found within the project study area and remaining populations are very near the project study area. It should also be noted that disturbances within the Sand Pine Scrub ecosystem can allow further intrusion of exotic invasive plants. Specifically, Natal grass, cogon grass and Brazilian pepper are widespread along the disturbed railroad right-of-way near Savannas Preserve State Park. This intrusion by exotic species further imperils and alters the habitat needed for many of these threatened and endangered species.

*Page 5-98, North-South Corridor*

- The Division notes that some areas near Savannas Preserve State Park have wildlife habitat. The potential for impacts to natural communities exists through direct or indirect habitat loss and disturbance. The Division encourages minimization and avoidance measures related to impacts adjacent to the state park.

*Page 5-110, Threatened and Endangered Species*

- The Division advises that the project will occur within or directly adjacent to habitat occupied by the federally listed fragrant prickly apple cactus (*Harissia fragrans*). Other plant species such as the federally listed Savannas mint (*Dicerandra immaculata var. savannarum*) occur in the project area as well. Florida scrub-jay populations utilize the railroad corridor and adjacent conservation lands at Savannas Preserve State Park and Jonathan Dickinson State Park. The Division requests additional information as to how impacts to these species will be avoided or minimized.

*Page 5-119, Indirect and Secondary Impacts*

- The Division notes that the studies listed do show that road corridors have adverse effects on health and reproductive success of federally endangered avian species.

*Page 5-121, Section 7 Consultation and Draft Findings*

- The Division notes that Florida scrub-jays are seen flying across the proposed project area in the area of Savannas Preserve State Park. In addition, Florida scrub-jays are commonly observed foraging on the edge of the existing railway corridor in this area.

*Page 7-10, Threatened and Endangered Species and Other Protected Species*

- The Division looks forward to working with All Aboard Florida to ensure potential impacts to protected plant species found within the vicinity of Savannas Preserve State Park are minimized or avoided.
- The Division reports that multiple listed plant and animal species reside in the areas that parallel the Florida East Coast Railway (FEC) corridor adjacent to Savannas Preserve State Park. These species

include: Florida scrub-jay, gopher tortoise, indigo snake, Florida mouse, prickly apple cactus, Savannas mint, large-flowered rosemary and possibly others. Potential impacts to imperiled species within the park may result from three main avenues. First, impacts in the footprint of the development area may remove habitat needed for the imperiled species found within this corridor. Two plants in particular, the prickly apple cactus and the Savannas mint, contain the majority of their current population within close range of the FEC corridor. Second, impacts caused by proposed development may cause disturbance in the Sand Pine Scrub that will allow the intrusion of exotic invasive species. Third, access into these areas for resource management activities such as prescribed burning and exotic plant and animal removal may be hindered, impacting management of the imperiled species. Disrupted access would also affect wildfire response and increase undesirable fuel loading at the urban interface.

- In addition, the Division would encourage All Aboard Florida to maintain the integrity of any impacted gopher tortoise populations adjacent to Savannas Preserve State Park by relocating tortoises on-site.

***Jonathan Dickinson State Park:***

*Page 5-15, Threatened and Endangered Species*

- The Division notes that it is likely that perforated reindeer lichen (*Cladonia perforata*) occurs in the right-of-way.

*Page 4-85, Preserves, Wildlife Sanctuaries and Wildlife Corridors*

- The Division notes that within the descriptions of natural areas, a list of federally or state-listed species is typically included and recommends that one be included for Jonathan Dickinson State Park.

*Page 4-100, Table 4.3.6-5*

- Curtiss' milkweed (*Asclepias curtissi*) occurs in the area, but appears to be omitted from the table.

*Page 5-102, Introduction of Invasive Species*

- Natal grass (*Rhynchelytrum repens*) has been a significant problem in disturbed areas of scrub adjacent to the project area and should be noted in the document at both Jonathan Dickinson State Park and Savannas Preserve State Park. In addition, showy rattlebox (*Crotalaria spectabilis*) and Guinea grass (*Panicum maximum*) are both very problematic at Jonathan Dickinson State Park. The Division requests additional mitigative/preventative measures be outlined in the document. An introduction of a new exotic species or increase in distribution or abundance of existing species would result in a decrease in the quality of habitat for several listed scrub species.

*Page 5-118, Table 5.3.6-3 (This comment applies to all the tables for alternatives that impact threatened and endangered species.)*

- Staff indicates that if impacts to eastern indigo snakes are likely within the N-S Corridor, there is also a high likelihood that other species utilizing similar habitats will be impacted, such as the Florida scrub-jay, gopher tortoise, gopher frog, Florida pine snake, Florida mouse, etc. It is unclear why the acreages for these species differ in the table. At Jonathan Dickinson State Park, all these animals use the corridor area periodically. For example, gopher frogs are likely to cross back and forth across the tracks in the Jonathan Dickinson State Park project area, traveling from the scrub to access breeding wetlands to the west.

*Page 5-147, North-South Corridor*

- The Division notes that closing SE Jonathan Dickinson Way during upgrades to the crossing would have significant impacts. This is a one-way-in and one-way-out road. Emergency vehicles, campers, resident

park staff and other visitors could be stranded in the western part of the park during closures. Temporary or permanent closure of this road as stated would not be acceptable. In addition, closing the park drive would have financial impacts on the local economy.

*Page 5-148*

- Please note that the GIS shapefile depicting the state park boundary on this map is no longer current. This could be rectified with an updated boundary map.

*Page 7-10, Threatened and Endangered Species and Other Protected Species*

- Clarification is needed regarding Florida scrub-jay impacts near Jonathan Dickinson State Park. Is there going to be expansion of the railroad track footprint? The Division notes that any expansion (particularly in certain areas) would likely result in impacts to Florida scrub-jay habitat.

*Page 7-13, Gopher Tortoise Mitigation Measures*

- The Division would encourage All Aboard Florida to maintain the integrity of any impacted gopher tortoise populations adjacent to Jonathan Dickinson State Park by relocating tortoises on-site.

*Appendices*

- Only the plans for Alternative A for the N-S Corridor have been provided. All plans should indicate whether management access would be impeded and park staff could plan accordingly.
- It is unclear whether fences would be erected along the entire right-of-way corridor in Jonathan Dickinson State Park. Fencing may have some negative consequences on wildlife access and movement, which would need to be addressed.
- Does the plan to expand the use of the right-of-way mean that there will be no communication tower near the former LORAN Tower site?

***Office of Greenways and Trails:***

- All Aboard Florida is a large linear rail project transecting eight counties in Southeast and Central Eastern Florida. This evaluation covers the Ecological Greenways Network (EGN) and Florida Greenways and Trails System (FGTS), for which the Office of Greenways and Trails is responsible. The EGN is based on a scale of one to six, with one being the highest priority, and is meant to support connectivity between natural areas. While the EGN is meant to guide acquisition and planning projects, it should not be used as the only measure to determine project acquisitions. The FGTS Network is a statewide effort to establish a regionally connected system of greenways and trails through a priority network, based on opportunity corridors.
- The FGTS Plan identifies a priority and opportunity corridor along the entire length of the All Aboard Florida corridor. Due consideration should be given to locating a rail-with-trail, shared-use path along the railroad corridor. A shared-use path would help to close gaps between trails in all counties. If the corridor is developed with such a path, significant gaps in trail would be closed between Miami and Orlando. Along the coastal portion of this corridor lies the East Coast Greenway (ECG), a national effort to connect bicycle facilities from the Florida Keys Overseas Heritage Trail to Maine. With the development of this railroad, significant gaps along the ECG would be closed and bicycle users who arrive in Miami and ride north on a portion of the ECG could have a multi-modal return trip option. Finally, the Railroad Corridor will cross the Florida National Scenic Trail's (FNST) Priority Corridor in Orange County. The FNST is a federally and state-recognized trail due to its length and exhaustive support network of citizen support organizations and volunteers.

- The EGN is identified along sections of the project in a limited number of counties. In Martin County, the corridor would transect the EGN Corridor in level two linkages. In Brevard, the railroad corridor will transect level one, two and six of the EGN. In Orange County, levels one and two will also be transected by significant portions of the railroad corridor. Because of the encroachment into these linkages, especially in Brevard and Orange counties, special consideration should be given to mitigate impacts on natural areas and wildlife.
- An example of a large-scale transportation project of similar magnitude is the Suncoast Parkway. This project allowed the construction of a multi-use path alongside a portion of a high-speed toll road system. However, if the multi-use path is not built along the railroad corridor, the railroad bed itself may continue to serve as a rails-to-trail project in the future, with due consideration from interested parties.

***Office of Park Planning:***

- Regarding noise/vibration, several areas of the state parks along the corridor are shown within the “Moderate Impact Noise” areas, including shop/residence areas. The Division requests that best management practices to minimize noise impacts be incorporated into the project as much as possible.



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November 14, 2014

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Re: U.S. Department of Transportation, Federal Railroad Administration, Draft  
Environmental Impact Statement and Section 4(f) Evaluation, All Aboard Florida  
Intercity Passenger Rail Project, SAI #FL201409237031C

Dear Ms. Milligan:

Florida Fish and Wildlife Conservation Commission (FWC) staff has reviewed the Draft Environmental Impact Statement (DEIS) and Section 4(f) Evaluation for the All Aboard Florida Intercity Passenger Rail Project and provides the following comments, in accordance with the National Environmental Policy Act, the Coastal Zone Management Act/Florida Coastal Management Program, and Chapter 379, Florida Statutes.

### **Project Background and Description**

All Aboard Florida, LLC (AAF), is proposing to develop a 235-mile long intercity passenger rail service between Miami and Orlando. The project includes two corridors: 1) an approximately 200-mile long corridor from Miami to Cocoa within the existing 100-foot wide Florida East Coast Railway (FEC) right-of-way, and 2) an approximately 40-mile long new railroad line parallel to State Road (S.R.) 528 between Cocoa and the Orlando International Airport (MCO). AAF is implementing the project in two phases. Phase I includes rail service along 66.5 miles of the FEC corridor between Miami and West Palm Beach, and construction of railroad stations in Miami, Fort Lauderdale, and West Palm Beach. The U.S. Department of Transportation Federal Railroad Administration (FRA) and AAF prepared an Environmental Assessment (EA) in 2012, with a Finding of No Significant Impact.

The FRA has prepared a DEIS, dated September 2014, to evaluate alignment alternatives for Phase II of the project. Phase II of the project includes:

- Improvements to approximately 128.5 miles of existing FEC rail line from West Palm Beach to Cocoa, known as the North-South corridor,
- Addition of approximately 109 miles of a second track adjacent to the existing FEC rail line and straightening of curves,
- Addition of 8 miles of a third track adjacent to the existing FEC rail line at specific locations in Brevard, Indian River, and Martin counties,
- Reconstruction of bridges over 18 waterways within the West Palm Beach to Cocoa corridor,

- Construction of a new 40-mile long railroad line parallel to S.R. 528 from Cocoa to MCO, known as the East-West corridor, including new infrastructure, structures, systems, and construction of 5 new bridges over waterways,
- Construction of a vehicle maintenance facility south of MCO, and
- Reconstruction of 7 bridges within the West Palm Beach to Miami corridor not considered in the Phase I EA.

AAF has been coordinating with the FWC in advance of and throughout the project scoping period. The FWC has provided technical assistance regarding fish and wildlife and their habitats within the corridor for use during the initial review. This information has been utilized to inform the development of rail alignment alternatives within the East-West corridor. Consultants for AAF worked with FWC staff on the design of railroad crossings over the Econlockhatchee River and Little Creek to ensure that wildlife movement would not be impeded by the rail line. AAF and their representatives have also coordinated with the FWC regarding the portion of the rail line corridor that will traverse the Tosohatchee Wildlife Management Area. The DEIS includes the information provided previously and also analyzes the following action alternatives for the proposed rail line.

1. No Action Alternative, which would not include any changes to the existing railroad line within the FEC corridor.
2. Alternative A, proposing the following:
  - a. Construction of new railroad line extending north through MCO to S.R. 528 including the proposed vehicle maintenance facility.
  - b. In the East-West corridor, construction of new railroad line within the 17.5-mile right-of-way of S.R. 528 owned by the Orlando-Orange County Expressway Authority (OOCEA) and the 15-mile portion within the Florida Department of Transportation right-of-way.
  - c. Use of the existing FEC railroad line within the North-South corridor with a 100-foot right-of-way, including restoration of a second track, straightening curves, and reconstructing 18 bridges across waterways.
  - d. Modifications to 7 bridges within the West Palm Beach to Miami corridor
  - e. Minor track modifications at the Miami Viaduct.
3. Alternative C, differing from Alternative A only in the proposed E-W corridor alignment. In this alternative, the 17.5-mile new railroad line would be constructed along the boundary of the S.R. 528 OOCEA right-of-way.
4. Alternative E, differing from Alternatives A and C only in the proposed E-W alignment, with the 17.5-mile new railroad line to be constructed 100 feet south of the SR 5.28. OOCEA right-of-way.

The analysis of alternatives includes a 100-foot rail line right-of-way in which direct impacts to resources would be anticipated, and an additional 100 feet on either side of the right-of-way where indirect impacts would be anticipated.

### **Potentially Affected Fish and Wildlife Resources**

Chapter 4 of the DEIS discusses the affected environment of the project. Habitats identified as occurring within the project corridor include coastal scrub, pine flatwoods,

sand pine and xeric oak scrub, hardwood forests, forested wetlands, wet prairies to remnant sandhill and scrub. These habitats may support numerous fish and wildlife species, including some that are managed or protected by the FWC. Section 4.3.6 identifies 21 state-listed species as having the potential to occur in the project corridors, and 12 federally listed species. It is noted that the following species were observed during initial field surveys:

- Audubon's crested caracara (*Polyborus plancus audubonii*, Federally Threatened [FT])
- Bald eagle (*Haliaeetus leucocephalus*, protected under the federal Bald and Golden Eagle Protection Act)
- Florida scrub jay (*Aphelocoma coerulescens*, FT)
- Gopher tortoise (*Gopherus polyphemus*, State Threatened [ST])
- Wood stork (*Mycteria Americana*, Federally Endangered [FE])

Additionally, field surveys also identified suitable habitat for:

- Eastern indigo snake (*Drymarchon corais couperi*, FT)
- Florida manatee (*Trichechus manatus latirostris*, FE)
- Smalltooth sawfish (*Pristis pectinata*, FE)
- Wading birds

Chapter 5 of the DEIS discusses potential environmental consequences of the project. Section 5.3.6 discusses the direct impacts that would occur to potential habitat for the following state-listed species.

- Bald eagle – Nest OR-065 was identified as being located within 600 feet of the proposed East-West corridor
- Burrowing owl (*Athene cunicularia*, State Species of Special Concern [SSC])
- Florida sandhill crane (*Grus canadensis pratensis*, ST)
- Gopher tortoise (*Gopherus polyphemus*, ST). The analysis also states that the following commensal species would potentially be impacted:
  - Eastern indigo (*Drymarchon corais couperi*, FE)
  - Florida mouse (*Podomys floridanus*, SSC)
  - Florida pine snake (*Pituophis melanoleucus mugitus*, SSC)
  - Gopher frog (*Lithobates capito*, SSC)
  - Short-tailed snake (*Stilsoma extenuatum*, ST)
- Reddish egret (*Egretta rufescens*, SSC) and rivulus (*Rivulus marmoratus*, SSC)
- Sherman's fox squirrel (*Sciurus niger shermani*, SSC)
- Southeastern American kestrel (*Falco sparverius paulus*, ST)
- American oystercatchers (*Haematopus palliatus*, SSC)
- Wading birds, including habitat for the following species:
  - Limpkin (*Aramus guarauna*, SSC)
  - Little blue heron (*Egretta caerulea*, SSC)
  - Roseate spoonbill (*Platalea ajaja*, SSC)
  - Snowy egret (*Egretta thula*, SSC)
  - Tricolored heron (*Egretta tricolor*, SSC)
  - White ibis (*Eudocimus albus*, SSC)

In a Section 7 consultation under the Endangered Species Act, the U.S. Army Corps of Engineers, with concurrence from the U.S. Fish and Wildlife Service and National

Marine Fisheries, made the following determinations regarding the potential for impacts of the project on federally listed species.

- No effect: Florida panther, Everglade snail kite, red-cockaded woodpecker, and piping plover
- Not likely to adversely affect: wood stork and eastern indigo snake
- May affect but not likely to adversely affect: sea turtles, smalltooth sawfish, Florida manatee, Florida scrub-jay, sand skink, and blue tailed mole skink

### **Comments and Recommendations**

The proposed project seeks to avoid and minimize impacts to fish and wildlife and their habitats, navigation in area waterways, and public access to conservation lands by:

- Utilizing the existing FEC rail line and right-of-way for the North-South corridor.
- Aligning the East-West corridor within the S.R. 528 right-of-way as much as possible.
- Rehabilitating and/or reconstructing rail line bridges in their existing locations and with the same horizontal and vertical clearance.

A navigational study was conducted in New River, Loxahatchee River, and St. Lucie River to assess how additional bridge closure times necessary for the proposed rail line would impact navigation under the bridges. The importance of these rivers for recreational uses and boater access to the Atlantic Ocean and Indian River Lagoon was also discussed in the DEIS. While the study results indicate that the project would not result in major delays during bridge closures, mitigation measures are proposed that would abate potential impacts and reduce vessel delay, including: establishing schedules for closures, providing public access to schedules, coordination with emergency first responders, and a tender at the New River bridge.

Chapter 7 of the DEIS discusses measures for avoidance and minimization of potential impacts to state- or federally listed fish and wildlife species resulting from the project, as well as measures to mitigate for unavoidable impacts to fish and wildlife resources and conservation lands the rail line will traverse. The following avoidance and minimization measures are included:

- Pre-construction:
  - Conduct pre-construction surveys for Audubon's crested caracara, Florida scrub-jay, red-cockaded woodpecker, and sand skink after the alignment of the East-West corridor is selected.
  - Comply with the FWC Bald Eagle Management Plan, and apply for a Bald Eagle Disturbance Permit related to nest OR-065.
  - Conduct gopher tortoise surveys in accordance with FWC methodologies, and obtain relocation permits as appropriate.
- During construction:
  - Adhere to the Standard Manatee Construction Conditions for In-Water Work (2011, U.S. Fish and Wildlife Service [FWS]).
  - Adhere to the Standard Protection Measures for the Eastern Indigo Snake (2013, FWS) as well as the Species Conservation Guidelines: Eastern Indigo Snake (2004, FWS).

- Adhere to the Sea Turtle and Smalltooth Sawfish Construction Conditions (2006, National Marine Fisheries Service).
- Use of best management practices during in-water work, including:
  - Placement of silt barriers and turbidity curtains so as not to trap or entangle sea turtles and manatees.
  - Utilization of floating barges when construction activities take place in the water.
  - Water vessels would follow routes of deep water or operate at no wake/idle speeds at all times.

The following measures are proposed for the post-construction and operational phases to mitigate unavoidable impacts:

- Design wildlife passages under bridges and culverts along the East-West corridor, consistent with those existing along S.R. 528 and future plans for its expansion, including work associated with the Econlockhatchee River and Little Creek.
- Improvements to at-grade rail line crossings within Jonathan Dickinson State Park along the North-South corridor for safety of park visitors.
- Install a wildlife crossing in the Tosohatchee Wildlife Management Area.
- Revegetate areas cleared for construction purposes.
- Purchase credits in a wetland mitigation bank to compensate for impacts to wetlands.

As previously discussed, AAF and their representatives have sought technical assistance from the FWC regarding potential impacts to fish and wildlife resources and have included many of the recommendations to avoid or minimize those impacts. We recognize that AAF has included a commitment to utilize the above identified best management practices during construction activities, conduct specific wildlife species surveys prior to construction, and implement certain measures designed to mitigate anticipated unavoidable impacts. The FWC recommends that the following additional measures be considered in preparation of the Final Environmental Impact Statement.

#### Listed Species Surveys

Species-specific wildlife surveys have not yet been conducted, but are necessary in order to identify potential project impacts and evaluate appropriate avoidance, minimization, permitting, and mitigation alternatives. We recommend that, in addition to the federally listed species noted above, a commitment be made to conduct pre-construction surveys for the state-listed species indicated above in addition to the gopher tortoise, as well as other state-listed species that may have the potential to occur within the project area based upon existing habitats. Because species usage can change between seasons and years, and some wildlife surveys are time sensitive, we recommend that wildlife surveys for the above mentioned state-listed species occur in the breeding season prior to any construction activities. Survey methodologies and additional species information can be found in the Florida Wildlife Conservation Guide (<http://myfwc.com/conservation/value/fwcg/>).

We encourage AAF to coordinate with the USFWS and FWC as species, nests, rookeries, or dens used by listed species are observed in the project corridor. Coordination with

agency staff can help address avoidance and minimization measures as well as permitting alternatives for listed species occurring within the project corridor. For general information on species avoidance and minimization measures as well as permitting alternatives, please review the Florida Wildlife Conservation Guide at the link above.

#### Protective Measures for Manatees

Section 7.2.11.1 states that construction activities will adhere to the Standard Manatee Construction Conditions for In-Water Work. A large number of the waterways in the existing FEC corridor are accessible to manatees, and some are important habitat used by a large number of manatees. Manatee protection measures in addition to the standard conditions are critical in areas of high manatee use, in locations where risk of harm to manatees is higher because of the characteristic of the waterway, and during certain types of construction activities. There is an elevated risk of harm to manatees from in-water work in the narrow waterways located within the project area because of reduced visibility and a confined workspace. The entire width of a waterway accessible to manatees should not be blocked so as to impede manatee movement. In circumstances where construction activity, equipment, and/or turbidity barriers may occupy more than half of narrow waterways, additional manatee observers should be onsite and dedicated to the task of watching for manatees so they can advise personnel to cease operation if a manatee is sighted within 50 feet of any in-water construction activity.

The DEIS discusses the need to replace or rehabilitate 34 bridges in the North-South corridor, with 21 of these requiring in-water work. Section 3.3.3.3 states that bridge plans are currently in the conceptual phase. While no information is provided regarding seasonality of in-water construction, duration of in-water work, or methods for bridge construction, including any related dredging activity, it is possible that protection measures in addition to the standard manatee conditions may be necessary depending on activities occurring during bridge construction to avoid and minimize impacts to manatees. Protection measures could include, but may not be limited to, restrictions on blasting, monitoring of turbidity barriers, exclusionary grating on culverts, manatee observers during in-water work, a seasonal or limited construction work window, and no nighttime work. While blasting is not included in the DEIS as a construction method, should it be included as an alternative, a blast plan and marine species watch plan should be submitted to the FWC and USFWS for approval if blasting is required.

FWC staff is available to discuss any of the potential bridge construction methods or in-water work activities during the planning stages to help identify protective measures for manatees. The protective measures necessary would depend on the type of activities to be conducted during construction. For instance, pile driving can produce impacts similar to blasting events. Noise and pressure wave reduction techniques are sometimes employed to reduce the impact to fish and other marine species; however, the protective benefit to manatees is not well known. There is anecdotal evidence that bubble curtains sometimes employed to attenuate the pile driving pressure waves may attract manatees. We recommend that the AAF take this type of information into consideration when planning the type and methodology of pile installation techniques and pile driving impact reduction measures, and we recommend working with FWC staff when assessing the alternative methodologies to be used during construction.

We appreciate the opportunity to provide input on the DEIS for the All Aboard Florida Project and will continue to coordinate with AAF to protect fish and wildlife resources. We are available to provide technical assistance as needed in preparation of the final Environmental Impact Statement in a manner consistent with FWC's authorities within the Florida Coastal Management Program. If you need any further assistance, please do not hesitate to contact Jane Chabre at (850) 410-5367 or by email at [FWCConservationPlanningServices@MyFWC.com](mailto:FWCConservationPlanningServices@MyFWC.com). If you have specific technical questions regarding the content of this letter, please contact Laura DiGruttolo at (386) 758-0525 or by email at [Laura.DiGruttolo@MyFWC.com](mailto:Laura.DiGruttolo@MyFWC.com).

Sincerely,



Jennifer D. Goff  
Land Use Planning Program Administrator  
Office of Conservation Planning Services

jdg/ld

ENV 1-3-2

All Aboard Florida Intercity Passenger Rail Draft EIS\_19904\_111414

cc: Mr. Alex Gonzalez  
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March 2, 2015

RE: *All Aboard Florida, Draft Environmental Impact Statement*

Dear Ms. Milligan:

The Florida State Historic Preservation Officer (SHPO) is pleased to continue consultation on the All Aboard Florida Project. Since 2012, our office has worked with the Federal Railroad Administration and All Aboard Florida pursuant to responsibilities under the National Historic Preservation Act of 1966 (NHPA). Section 106 of the NHPA instructs federal agencies, with the assistance of the SHPO, to assess the effects of federally funded, permitted, or approved projects on historic properties listed, or eligible for listing, on the National Register of Historic Places.

The All Aboard Florida rail project is considered a federal undertaking due to the involvement of the Federal Railroad Administration (FRA) and the United States Army Corps of Engineers (Corps). The FRA has assumed the responsibility of fulfilling the requirements of Section 106 for this project as the lead federal agency. In addition to review under Section 106 of the NHPA, effects to cultural resources are addressed through the completion of an Environmental Impact Statement (EIS) required by the National Environmental Policy Act (NEPA). Currently, the FRA has chosen to fulfill its Section 106 requirements through the production of the EIS. As a result, the Florida SHPO is providing the following comments on the Draft EIS, along with the enclosed detailed comment table.

This review is structured by the consultation process dictated by 36 CFR 800, the implementing regulations for Section 106 of the NHPA. The required steps include: 1) identification of historic properties within the area of potential effect for the project; 2) evaluation of the significance of any identified historic properties; 3) determination if the project will cause adverse effects due to project activities; and 4) avoidance, minimization, or mitigation of any adverse effects.

The All Aboard Florida rail project was identified as a federal undertaking in 2012. At that time, steps one through three summarized above were completed for the southern Miami to West Palm Beach portion of the project. Adverse effects to significant cultural resources were avoided. In 2013 steps one and two were completed for the northern West Palm Beach to Orlando International Airport portion of the project. During both reviews, the Florida SHPO and FRA consulted as



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Ms. Milligan  
March 2, 2015  
Page 2

required by Section 106 of the NHPA. The submission of the Draft EIS in November 2014 proposes to fulfill step three for the northern portion.

Our review of the Draft EIS identifies three general topics that must be addressed in order for Section 106 requirements to be fulfilled through the completion of the document. They are: 1) description of the applicable laws; 2) accuracy of the project data; and 3) justification for the conclusions reached in the document.

*Description of Applicable Laws:*

The use of legal definitions throughout the document is inconsistent, and the definitions are in some cases transcribed inaccurately. The technical vocabulary used to describe the requirements, processes, and terms associated with the NHPA and NEPA is defined in the federal statutes and their implementing regulations. These definitions should be accurately expressed in the Draft EIS. Furthermore, any discussion of the laws in the document should accurately describe the process by which the laws' requirements are fulfilled.

*Accuracy of Project Data:*

In several locations within the Draft EIS, previous consultation between the Florida SHPO, All Aboard Florida, and FRA were inaccurately described. As a result, recommendations made by the consulting parties appear inconsistent with the requirements of NHPA and NEPA. Additionally, data inconsistencies are present within the Draft EIS, and between the Draft EIS and previous reports submitted to the Florida SHPO. The Draft EIS is intended to provide a summary of the results of these previous reports, but the data presented in the three reports are inconsistent. These errors should be corrected in the Final EIS.

*Justification for Conclusions of the Draft EIS:*

Section 106 of the NHPA requires the assessment of the project's effects on significant historic properties (Step 3, above). The assessment should include a justification for how these determinations were reached when properties appear to be at risk for an adverse effect. This information is left unclear in the Draft EIS, and should be more thoroughly explained.

The Florida SHPO appreciates the time and effort devoted so far to the completion of the Section 106 process. Please let us know if there are any questions about these comments. We look forward to reviewing the Final EIS.

Sincerely,



Robert F. Bendus, Director  
Division of Historical Resources  
and State Historic Preservation Officer

Enclosure: Detailed Comment Table

<b>Florida State Historic Preservation Officer (SHPO) Comments on All Aboard Florida, DEIS</b>		
1	“Acronyms and Abbreviations/ Glossary” (pp. xviii-xxxvi)	The definition of APE is inconsistent with the definition in the federal regulation. Replace the definition of Area of Potential Effect (APE) with the exact definition from Federal Regulation 36CFR800 (800.16.d): “Area of potential effects means the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.”
2	“Acronyms and Abbreviations/ Glossary” (pp. xviii-xxxvi)	Provide the exact definition of “historic property or historic resource” provided in Federal Regulation 36CFR800 (800.16.1): “Historic property means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.”
3	“Affected Environment” – Chapter 4 -Noise and Vibration (beginning on page 4-35, pdf pp 169)	Land Use Categories used for this section are from FTA guidance. Explain why FRA utilized FTA guidance (ie. land use categories) on vibration? The definitions used by each agency are different. In summary – FRA considers sites with national significance with considerable outdoor use as falling into Category 1 but FTA specifies the resources must be a National Historic Landmark with significant outdoor use.  Also see comment 70.
4	“Affected Environment” – Chapter 4 -Cultural Resources (4.4.5) (beginning on page 4-120, pdf pp 253).	2 paragraphs starting with “ <i>Cultural resources as defined by the National Historic Preservation Act of 1966 (NHPA), as amended, ....</i> ” :  This entire section needs to be re-written to correctly reflect the exact wording in the applicable laws and regulations. The following laws and regulations are misquoted in this section: The NHPA, 36CFR60, and 36CFR800. Below are the exact quotes from this law and regulations that should be used word-for-word in this document.  Cultural resources definition provided is for “historic property” or “historic resource” (per NHPA 16USC470

	<p>section 301 Definitions). Replace “cultural resource/s” with historic property or historic resource.</p> <p>The correct definition of historic property or historic resource (NOT cultural resource) from the NHPA: "Historic property" or "historic resource": “means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register, including artifacts, records, and material remains related to such a property or resource.” (SOURCE: NHPA 16USC470 section 301 Definitions)</p> <p>The National Register Criteria for eligibility is located at 36CFR60: “The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and</p> <p>(a) that are associated with events that have made a significant contribution to the broad patterns of our history; or</p> <p>(b) that are associated with the lives of persons significant in our past; or</p> <p>(c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or</p> <p>(d) that have yielded, or may be likely to yield, information important in prehistory or history.”</p> <p>(SOURCE: 36CFR60 section 4)</p> <p>The correct wording for Section 106 of the NHPA follows: “The head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register. The head of any such Federal agency shall afford the Advisory Council on Historic</p>
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		<p>Preservation established under Title II of this Act a reasonable opportunity to comment with regard to such undertaking.”</p> <p>(Source: National Historic Preservation Act of 1966, 16 USC 470 section 106)</p>
5	<p>“Affected Environment” – Chapter 4 -Methodology (4.4.5.1) (beginning at 4-121, pdf pp 253):</p>	<p><i>“AAF conducted initial consultation with FDHR, which is the State Historic Preservation Officer (SHPO), on March 28, 2013 prior to the initiation of the cultural resources survey to establish a methodology and APE. A copy of the meeting minutes is provided in Appendix 4.4.5-A1 On July 8, 2013, FRA and SHPO held a conference call to discuss the cultural resource survey methodology, APE, and Section 106 process timeline.”</i></p> <p>This office first discussed methodology with AAF in a meeting on July 13, 2012. The methodology was used through all portions of the N-S project corridor. The meeting on March 28, 2013 confirmed the continued use of the methodology discussed on July 13, 2012.</p>
6	<p>“Affected Environment” – Chapter 4 -Methodology (4.4.5.1) (beginning at 4-121, pdf pp 253):</p>	<p><i>“A separate Section 106 Determination of Effects Case Study Report was also prepared to determine potential effects of the Project on NRHP listed and eligible resources.”</i></p> <p>There has been no effects document or effects finding for the portion of the project from West Palm Beach to the Orlando International Airport.</p> <p>A separate Section 106 Determination of Effects Case Study Report was only completed for the Miami to West Palm Beach portion of this project (published in 2012). That report resulted in a conditional finding of no adverse effect for the preferred alternatives for that section of the project based on continued consultation on design of replacement bridges and consultation with three local governments (cities of West Palm Beach, Fort Lauderdale, and Miami) through the station design process.</p> <p>Since the Miami-WPB effects finding was made in 2012 there have been some design changes to that portion of the project. The effects finding may change based on the design changes.</p>
7	<p>“Affected Environment” – Chapter 4 -Methodology (4.4.5.1) (beginning at 4-</p>	<p><i>“After consultation with the SHPO, FRA determined that the MCO Segment and the VMF had been adequately addressed by the GOAA in two previous environmental assessments (FAA and GOAA 1998; FAA 2013). In general, the methodology for the E-W Corridor complied with FDHR standards for undeveloped acreage.”</i></p> <p>The SHPO does not have record of an agreement with FRA to use previous environmental assessments to</p>

	121, pdf pp 253):	address MCO or the VMF. These areas were surveyed in 2013 and the resulting Cultural Resources Assessment Report (CRAR) was reviewed by FRA and the SHPO (2013). The SHPO/FDHR does not have standards that apply to undeveloped acreage. The SHPO took into consideration multiple factors during the development of the methodology for the E-W corridor. These factors included the potential for cultural resources, previous land use, and current land use.
8	“Affected Environment” – Chapter 4 - Consultation (4.4.5.1) (beginning at 4-124, pdf pp 256):	<p><i>“At an initial March 28, 2013 consultation meeting between AAF and SHPO, SHPO determined that unlike the West Palm Beach to Miami AAF Passenger Rail Project, the Project was not crossing or near historic districts and would not be affecting railroad terminals except at the MCO. Therefore, the level of coordination with local preservation planning representatives used in Phase I was not warranted In Phase II. During a July 8, 2013 conference call, FRA, SHPO, and AAF discussed potential consulting parties. SHPO concurred with FRA’s determination that consultation with local entities was not required for Phase II.”</i></p> <p>The SHPO did not agree to reduce consultation with the local preservation communities. Contact with local preservation communities is a requirement of 36 CFR 800.4 (a) 3 and Florida <i>Statutes 1A-46</i> (implementing regulation for Florida <i>Chapter 267</i>). This was completed during the fieldwork for the Cultural Resources Assessment Report (CRAR). Janus Research contacted representatives of five Certified Local Governments (CLG) and one local informant regarding the proposed project. Those comments were integrated into the decisions made by the SHPO. The SHPO and FRA agreed to allow the public outreach required in NEPA to fulfill those requirements of the NHPA. This is an approved approach according to 36CFR 800.2. (4) d.3: <i>“Use of agency procedures.</i> The agency official may use the agency's procedures for public involvement under the National Environmental Policy Act or other program requirements in lieu of public involvement requirements in subpart B of this part, if they provide adequate opportunities for public involvement consistent with this subpart.”</p>
9	“Affected Environment” – Chapter 4 - Consultation (4.4.5.1) (beginning at 4-122, pdf pp 256):	<p><i>“On April 23, 2013, FRA initiated consultation via e-mail and letter with five Native American Nations to determine whether traditional use areas or sacred lands would be crossed by the Project. The list of Native American tribes to be consulted was compiled in consultation with SHPO, and used prior contacts with Native American tribes for FRA regulated projects in Florida.”</i></p> <p>FRA is responsible for identifying and contacting the appropriate Native American tribes. SHPO did not provide guidance based on previous FRA projects.</p>

10	<p>“Affected Environment” – Chapter 4 - Consultation (4.4.5.1) (beginning at 4-122, pdf pp 256):</p>	<p><i>“Four Certified Local Governments (CLG) and two local informants were also contacted regarding information on locally designated historic resources.”</i></p> <p>This is inconsistent with the 2013 Cultural Resources Assessment Report (CRAR). Five CLG’s and one local informant was contacted (per Cultural Resources Assessment Report, 2013, page 18).</p>
11	<p>“Affected Environment” – Chapter 4 - MCO Segment (4.4.5.2) (beginning at 4-126 (pdf pp 258):</p>	<p><i>“This information is summarized in the CRAS and Section 106 Determinations of Effects Case Study Report.”</i></p> <p>There has not been a Section 106 Determination of Effects Case Study Report for the portion of the project from West Palm Beach to the Orlando International Airport. A separate Section 106 Determination of Effects Case Study Report was only completed for the Miami to West Palm Beach portion of this project (published in 2012).</p>
12	<p>“Affected Environment” – Chapter 4 - E-W Corridor (4.4.5.2) (beginning at 4-126 (pdf pp 258):</p>	<p><b><i>“East-West Corridor</i></b> <i>For identification of cultural resources, Alignment Alternative E was used to define the APE, as it represents the maximum limit of disturbance.”</i></p> <p>Mention in this introductory paragraph that access issues to some privately-owned property along this corridor will require a supplemental addendum to report the results of survey when access is granted.</p>
13	<p>“Affected Environment” – Chapter 4 - E-W Corridor (4.4.5.2) (beginning at 4-</p>	<p><i>“Table 4.4.5-6 Previously Recorded Historic Resources Adjacent to the E-W Corridor APE”</i></p> <p>The site file number provided for the second structure at 2507 North Cocoa Blvd (Jumping Flea Market) is incorrect. The site file number should be 8BR1736</p>

	126 (pdf pp 259):	
14	“Affected Environment” – Chapter 4 - E-W Corridor (4.4.5.2) (beginning at 4-126 (pdf pp 259):	<p><i>“Three additional historic resources are within the APE for the E-W Corridor (Table 4.4.5-7). Two of these resources are 1960s residences located in Brevard County. The third is a 1963 industrial structure located in Brevard County. None of these resources appear to be eligible for the NRHP (see Appendix 4.4.5-A1-5).”</i></p> <p>Remove the comment “...appear to be eligible...” Replace with the statement that they have been determined not eligible for the NRHP (in the 2013 CRAR) by FRA and SHPO.</p>
15	Section “Affected Environment” – Chapter 4 - E-W Corridor (4.4.5.2) (beginning at 4-126 (pdf pp 259):	<p><i>Table 4.4.5-7 Newly Identified E-W Corridor Historic Resources</i></p> <p>In the last column (for all 3 resources) remove the comment “considered ineligible” and replace with “determined ineligible for the NRHP by FRA and SHPO” (in the 2013 CRAR).</p>
16	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Cocoa - Historic Resources (4.4.5.2) (beginning at 4-129 (pdf pp 261):	<p><i>“For the N-S Corridor, historic resources included individual resources and historic districts located along the FECR Corridor and on adjacent properties/parcels.”</i></p> <p>This statement is inconsistent with the 2013 CRAR. The historic resources Area of Potential Effect (APE) for the N-S Corridor (WPM to Cocoa) included all parcels within 250’ of the project centerline.</p> <p>See page 4-122 of this document.</p>

17	<p>“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Cocoa - Historic Resources (4.4.5.2) (beginning at 4-129 (pdf pp 261):</p>	<p><i>“Historic resource forms (architectural, linear, and district) from FMSF identified previously recorded architectural and historical resources greater than 50 years of age and properties listed in the NRHP.”</i></p> <p>Remove the following phrases from the above sentence: “(architectural, linear, and district)”, “architectural”, “greater than 50 years of age.” Explanation: There are more than architectural, linear, and districts recorded in the FMSF, and resources less than 50 years old are on the FMSF.</p>
18	<p>“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Cocoa - Historic Resources (4.4.5.2) (beginning at 4-129 (pdf pp 261):</p>	<p><i>“Background research identified 19 architectural/historical resources in Brevard County; three architectural/historical resources in Indian River County; three architectural/historical resources in St. Lucie County; six architectural/historical resources in Martin County; and three architectural/historical resources in Palm Beach County.”</i></p> <p>It is unclear what these numbers are referring to. These numbers are not correct for the historic properties/resources identified in the counties in the 2013 CRAR. Please correct the numbers and remove the wording “architectural/historical” and use the vocabulary used in the NHPA and 36CFR800.</p>
19	<p>“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Cocoa - Historic</p>	<p><i>“Previous studies and coordination with SHPO have identified the FECR Corridor (8BR1870/8IR1497/8IR1518/8SL3014/ MT1391/8MT1450/8PB12102) as eligible for listing on the NRHP as a linear district (Table 4.4.5-9).”</i></p> <p>The “FECR Corridor” is not a correct description of this resource. The rail line that is in the corridor is significant. The FRA determined that the portion of the Florida East Coast Railway in the current project APE is eligible for listing in the 2013 CRAR and thus it is unnecessary to mention previous studies and</p>

	Resources (4.4.5.2) (beginning at 4-129 (pdf pp 261):	coordination.
20	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Cocoa - Historic Resources (4.4.5.2) (beginning at 4-129 (pdf pp 262):	<p><i>“An additional nine bridges are not considered individually eligible for listing on the NRHP but are still considered contributing elements to the FECR Railway Historic District.”</i></p> <p>Contributing elements to a district are considered NRHP-eligible. Please clarify this in this sentence.</p>
21	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Cocoa - Historic Resources (4.4.5.2) (beginning at 4-129 (pdf pp 262):	<p><i>“SHPO concurrence is expected for these eligibility recommendations. A request for concurrence with FRA’s eligibility determination was submitted to SHPO on October 31, 2013 (see Appendix 4.4.5-A3).”</i></p> <p>The SHPO concurred on the eligibility determinations made by FRA on the resources identified within the North-South Corridor from West Palm Beach to Cocoa. The concurrence was made on November 20 via letter (DHR no. 2013-4404).</p>
22	Section “Affected	<i>“On properties adjacent to the FECR Corridor, one NRHP • listed site (Florida Power &amp; Light Co. Ice Plant, 8BR215), one NRHP]eligible historic district (Union Cypress Saw Mill Historic District, 8BR2173;</i>

	<p>Environment” – Chapter 4 -North-South Corridor – WPB to Cocoa - Historic Resources (4.4.5.2) (beginning at 4-129 (pdf pp 262):</p>	<p><i>Table 4.4.5 • J11), one other NRHP]eligible linear resource (FECR Railway • ]Lake Harbor Branch, 8SL3014;</i>  <i>Table 4.4.5 • J12), and ten other NRHP • ]eligible historic resources (residences, stores, and cemeteries) were identified (Table 4.4.5□]J13).”</i></p> <p>Remove the phrase, “(residences, stores, and cemeteries).”</p>
23	<p>Section “Affected Environment” – Chapter 4 -North-South Corridor – WPB to Cocoa - Historic Resources (4.4.5.2) (beginning at 4-129 (pdf pp 262):</p>	<p><i>“On properties adjacent to the FECR Corridor, one NRHP • ]listed site (Florida Power &amp; Light Co. Ice Plant, 8BR215), one NRHP]eligible historic district (Union Cypress Saw Mill Historic District, 8BR2173; Table 4.4.5 • J11), one other NRHP]eligible linear resource (FECR Railway • ]Lake Harbor Branch, 8SL3014;</i>  <i>Table 4.4.5 • J12), and ten other NRHP • ]eligible historic resources (residences, stores, and cemeteries) were identified (Table 4.4.5□]J13).”</i></p> <p>The figures in this paragraph are inconsistent with the results of the 2013 CRAR. See the 2013 CRAR for the number of resources within the APE. See the next comments for specific discussion on the tables referred to in this paragraph.</p>
24	<p>“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Cocoa - Historic Resources</p>	<p><b><i>“Table 4.4.5-11 Historic Resources Previously Identified Adjacent to the N-S Corridor APE</i></b>  <b><i>....</i></b>  <b><i>Table 4.4.5-12 Historic District Previously Identified Adjacent to the N-S Corridor APE</i></b>  <b><i>.....</i></b>  <b><i>Table 4.4.5-13 Historic Cemeteries Previously Identified Adjacent to the N-S Corridor APE”</i></b></p> <p>Change the table headings to reflect that these are resources within the N-S Corridor APE. These resources are not adjacent to the APE, they are within the APE. These resources are adjacent to the FEC ROW.</p>

	(4.4.5.2) (beginning at 4-129 (pdf pp 263):	Replace the word “Adjacent” with “Within” and add, “Adjacent to the FEC ROW” OR “within the indirect APE.”
25	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Cocoa - Historic Resources (4.4.5.2) (beginning at 4-129 (pdf pp 263):	<p><b>“Table 4.4.5-11 Historic Resources Previously Identified Adjacent to the N-S Corridor APE</b> .... <b>Table 4.4.5-12 Historic District Previously Identified Adjacent to the N-S Corridor APE</b> ..... <b>Table 4.4.5-13 Historic Cemeteries Previously Identified Adjacent to the N-S Corridor APE”</b></p> <p>These tables do not correctly reflect the historic resources identified in the 2013 CRAR. These tables only list some within Brevard County and none from the rest of the counties in this phase of the project (Martin, St. Lucie, and Indian River). Please refer to the 2013 CRAR for the complete listing of the identified historic resources within the APE.</p>
26	Chapter 4 -North-South Corridor – WPB to Cocoa - Historic Resources (4.4.5.2) (beginning at 4-129 (pdf pp 263):	<p><b>“Table 4.4.5-11 Historic Resources Previously Identified Adjacent to the N-S Corridor APE...”</b></p> <p>Resource 8BR759 (Whaley, Marion S. Citrus Packing House/2275 Rockledge Blvd W) is NRHP-listed. Replace the statement” determined eligible by the SHPO” with “NRHP-listed.”</p>
27	Chapter 4 -North-South Corridor – WPB to Cocoa - Historic	<p><b>“Table 4.4.5-11 Historic Resources Previously Identified Adjacent to the N-S Corridor APE...”</b></p> <p>Resource 8BR1710 (Jorgensen's General Store/5390 US Hwy 1) is NRHP-listed. Replace the statement ”determined eligible by the SHPO” with “NRHP-listed.”</p>

	Resources (4.4.5.2) (beginning at 4-129 (pdf pp 263):	
28	Chapter 4 -North-South Corridor – WPB to Cocoa - Historic Resources (4.4.5.2) (beginning at 4-129 (pdf pp 263):	<p><b><i>“Table 4.4.5-11 Historic Resources Previously Identified Adjacent to the N-S Corridor APE...”</i></b></p> <p>Resource 8BR1744 (Harvey's Groves/3700 US Hwy. 1 E.) was not identified in the 2013 CRAR and appears to be located outside of the APE (250’ from centerline). Please verify that this resource falls within the APE. If this resource was mistakenly omitted from the 2013 CRAR, this should be explained in this document and the 2013 CRAR will have to be re-visited.</p>
29	Chapter 4 -North-South Corridor – WPB to Cocoa - Historic Resources (4.4.5.2) (beginning at 4-129 (pdf pp 263):	<p><b><i>“Table 4.4.5-11 Historic Resources Previously Identified Adjacent to the N-S Corridor APE...”</i></b></p> <p>Resource 8BR2779: Remove the word “Residence” from the address. The address is 317 Rosa Jones Drive.</p>
30	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Cocoa - Historic Resources (4.4.5.2)	<p><b><i>“Table 4.4.5-11 Historic Resources Previously Identified Adjacent to the N-S Corridor APE...”</i></b></p> <p>The Florida East Coast Railroad Platform Structural Remains (8IR1049) resource is within the N-S Direct APE.</p>

	(beginning at 4-129 (pdf pp 263):	
31	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Cocoa - Historic Resources (4.4.5.2) (beginning at 4-129 (pdf pp 263):	<p><b>“Table 4.4.5-13 Historic Cemeteries Previously Identified Adjacent to the N-S Corridor APE”</b></p> <p>Provide explanation for why an unrecorded cemetery – “Unnamed Cemetery on West Railroad Avenue” was included in this report. Only cultural resources identified in the 2013 CRAR should be discussed in this document. If this resource was mistakenly omitted from the 2013 CRAR, this should be explained in this document and the 2013 CRAR will have to be re-visited.</p>
32	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Cocoa - Historic Resources (4.4.5.2) (beginning at 4-129 (pdf pp 263):	<p><b>“Table 4.4.5-13 Historic Cemeteries Previously Identified Adjacent to the N-S Corridor APE”</b></p> <p>Provide explanation for why resource 8BR2808 (Pinecrest Colored Cemetery) was included in this report. Only cultural resources identified in the 2013 CRAR should be discussed in this document. If this resource was mistakenly omitted from the 2013 CRAR, this should be explained in this document and the 2013 CRAR will have to be re-visited.</p>
33	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Cocoa	<p>“All of these sites have experienced some level of previous disturbances.”</p> <p>This statement is not supported by evidence. Please remove or provide evidence.</p>

	– Archaeological Resources (4.4.5.2) (beginning at 4- 129 (pdf pp 263):	
34	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Cocoa – Archaeological Resources (4.4.5.2) (beginning at 4- 129 (pdf pp 263):	<p><b>“Table 4.4.5-14 Archaeological Sites Located within the N-S Corridor APE... ....National Register Significance”</b></p> <p>The last column heading in this table should be consistent with the earlier tables in the section and should be labeled “National Register Status.”</p>
35	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4- 132 (pdf pp 264):	<p><b>“WPB-M Corridor Historical Resources”</b></p> <p>Specify at this point that the following discussion refers to the main line portion of the WPB-M project and does not include the station locations.</p> <p>Clearly differentiate between resources identified in the main line APE and those resources identified in the station location APE. At the beginning of each section define the APE for each portion since they differed.</p>
36	“Affected Environment” –	<b>“WPB-M Corridor Historical Resources”</b>

	Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4- 132 (pdf pp 264):	This section does not identify the 13 historic districts that were identified as being adjacent to the at-grade crossings of the main line FEC Railway Corridor. Add this information into this document.  See the 2012 CRAR for this information.
37	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4- 132 (pdf pp 264):	<b>“WPB-M Corridor Historical Resources”</b>  Move the discussion of archaeological sites in the main line to this portion of the document.  Currently the archaeological discussion is located on page 4-138.
38	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4- 132 (pdf pp 264):	<i>“The SHPO determined that the FECR Corridor itself is considered eligible for inclusion in the NRHP (FRA 2013a).”</i>  The “FECR Corridor” is not a correct description of this resource. The rail line that is in the corridor is significant. The FRA determined that the portion of the Florida East Coast Railway in the current project APE is eligible for listing in the 2012 CRAR.

39	<p>“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4-132 (pdf pp 264):</p>	<p><i>“Potential NRHP eligibility on an individual basis was not determined, consistent with the evaluation methods developed with the SHPO/FDHR for the 2010 FECR Amtrak Passenger Rail Project and the SHPO/FDHR methods established for that project.”</i></p> <p>This office did not agree that there would be no NRHP-evaluations for individual eligibility. Resources identified in the 2012 survey were evaluated for both individual eligibility and for inclusion in a historic district.</p>
40	<p>“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4-132 (pdf pp 264):</p>	<p><i>“Nineteen historic districts were identified within the WPB-M Corridor (Table 4.4.5-16). The FMSF identified four NRHP– listed districts. Fifteen districts have been determined NRHP–eligible by the SHPO or the 2012 CRA. The FMSF also identified four historic linear resources that have been determined NRHP–eligible by the SHPO or the 2012 CRA (Table 4.4.5-17). Thirty significant historic buildings are located within the WPB-M Corridor (Table 4.4.5-18). The FMSF identified six NRHP-listed buildings. Twenty-four buildings have been determined NRHP-eligible by the SHPO or the 2012 CRA. Four significant historic stations or railway related resources (Table 4.4.5-19) and two historic cemeteries (Table 4.4.5-20) were identified within the WPB-M Corridor APE.”</i></p> <p>The determinations of eligibility for resources identified in the 2012 CRAR are finalized. Remove any occurrence of the phrase: “or the 2012 CRA.”</p>
41	<p>“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4-</p>	<p><i>“Nineteen historic districts were identified within the WPB-M Corridor (Table 4.4.5-16). The FMSF identified four NRHP– listed districts. Fifteen districts have been determined NRHP–eligible by the SHPO or the 2012 CRA. The FMSF also identified four historic linear resources that have been determined NRHP–eligible by the SHPO or the 2012 CRA (Table 4.4.5-17). Thirty significant historic buildings are located within the WPB-M Corridor (Table 4.4.5-18). The FMSF identified six NRHP-listed buildings. Twenty-four buildings have been determined NRHP-eligible by the SHPO or the 2012 CRA. Four significant historic stations or railway related resources (Table 4.4.5-19) and two historic cemeteries (Table 4.4.5-20) were identified within the WPB-M Corridor APE.”</i></p> <p>One historic bridge (not eligible for the NRHP) in Miami-Dade County was identified in the 2012 CRAR and</p>

	132 (pdf pp 264):	included in the final effects evaluation but is not included in this figure or the preceding tables. Add the resource into this figure and add a new table to record it.
42	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4-132 (pdf pp 264):	<p>“<i>Thirty significant historic buildings are located within the WPB-M Corridor (Table 4.4.5-18). The FMSF identified six NRHP-listed buildings. Twenty-four buildings have been determined NRHP-eligible by the SHPO or the 2012 CRA.</i>”</p> <p>Two historic buildings were identified in the 2012 CRAR that are locally listed but not eligible for the NRHP. These resources were included in the final effects evaluation. Add these to the figures in the paragraph above and the table (4.4.5.-18).  8BD1330 Broward Plasma Corporation/Archaeology Museum/203 Brickell Avenue  8BD3270 Kester Building/Deerfield Furniture Store/131 Hillsboro Court</p> <p>See next comment.</p>
43	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4-132 (pdf pp 264):	<p>“<b>Table 4.4.5-18 Historic Structures Identified within the WPB-M Corridor APE</b>”</p> <p>Two historic buildings were identified in the 2012 CRAR that are locally listed but not eligible for the NRHP. These resources were included in the final effects evaluation. Add these to the table (4.4.5.-18).  8BD1330 Broward Plasma Corporation/Archaeology Museum/203 Brickell Avenue  8BD3270 Kester Building/Deerfield Furniture Store/131 Hillsboro Court</p> <p>See above comment.</p>
44	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources	<p>“...two historic cemeteries (Table 4.4.5-20) were identified within the WPB-M Corridor APE.”</p> <p>Two additional cemeteries in Broward County were identified in the 2012 CRAR as locally significant but not eligible for the NRHP. The resources were included in the effects evaluation. Add these two cemeteries to the figure above and the table (Table 4.4.5-20).  8BD3410 West Lawn Cemetery  Not recorded Dania Memorial Park Cemetery</p>

	(4.4.5.2) (beginning at 4-132 (pdf pp 264):	See next comment.
45	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4-132 (pdf pp 264):	<p><b>“Table 4.4.5-20 Historic Cemeteries Identified within the WPB-M Corridor APE”</b></p> <p>Two additional cemeteries in Broward County were identified in the 2012 CRAR as locally significant but not eligible for the NRHP. The resources were included in the effects evaluation. Add these two cemeteries to the table (Table 4.4.5-20).</p> <p>8BD3410 West Lawn Cemetery Not recorded Dania Memorial Park Cemetery</p> <p>See above comment.</p>
46	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4-132 (pdf pp 264):	<p><i>“The FECR Corridor is located within the APE for each of the proposed station locations. During previous cultural resources assessment projects that have involved the FECR Corridor, the SHPO determined that the FECR Corridor itself is considered eligible for inclusion in the NRHP.”</i></p> <p>The “FECR Corridor” is not a correct description of this resource. The rail line that is in the corridor is significant. The FRA determined that the portion of the Florida East Coast Railway in the current project APE is eligible for listing in the 2012 CRAR.</p>
47	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami	<p><i>“The FECR Corridor is located within the APE for each of the proposed station locations. During previous cultural resources assessment projects that have involved the FECR Corridor, the SHPO determined that the FECR Corridor itself is considered eligible for inclusion in the NRHP. Additional resources located directly within the APE for the station locations are discussed below.”</i></p> <p>At this location, explain that the following discussion refers to the proposed station locations and provide the</p>

	– Historical Resources (4.4.5.2) (beginning at 4-132 (pdf pp 264):	APE used for these.  See the 2012 CRAR for the information on the APE.
48	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4-132 (pdf pp 264):	<p><i>“The FECR Corridor is located within the APE for each of the proposed station locations. During previous cultural resources assessment projects that have involved the FECR Corridor, the SHPO determined that the FECR Corridor itself is considered eligible for inclusion in the NRHP. Additional resources located directly within the APE for the station locations are discussed below.”</i></p> <p>Include the results for the archaeological resources for the station locations in this area.</p>
49	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4-132 (pdf pp 264):	<p><i>“Two NRHP-eligible historic buildings are located within the West Palm Beach Station North Site APE for Historic Resources (Table 4.4.5-21). The FMSF identified one historic building determined by the SHPO to be NRHP-eligible. The 2012 CRA identified one historic building as NRHP-eligible.”</i></p> <p>The figures in this paragraph are inconsistent with the 2012 CRAR. See the 2012 CRAR for the correct figures.</p>
50	“Affected Environment” – Chapter 4 -North-South	<i>“Two NRHP-eligible historic buildings are located within the West Palm Beach Station North Site APE for Historic Resources (Table 4.4.5-21). The FMSF identified one historic building determined by the SHPO to be NRHP-eligible. The 2012 CRA identified one historic building as NRHP-eligible.”</i>

	Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4-132 (pdf pp 264):	The determinations of eligibility for resources identified in the 2012 CRAR are finalized. Remove any occurrence of the phrase: “or the 2012 CRA” in this and succeeding paragraphs.
51	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4-132 (pdf pp 264):	<p>“Two NRHP-eligible historic buildings are located within the West Palm Beach Station North Site APE for Historic Resources (Table 4.4.5-21). The FMSF identified one historic building determined by the SHPO to be NRHP-eligible. The 2012 CRA identified one historic building as NRHP-eligible.”</p> <p>None of the resources identified in the West Palm Beach – North Site Station location are in the Table referenced (Table 4.4.5-21).</p> <p>Add the resources to the Table.</p>
52	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4-132 (pdf pp 264):	<p>“The FMSF identified one NRHP-listed historic district within the APE for the West Palm Beach Station Central Site (Table 4.4.5-21). .....”</p> <p>Remove the statement “The FMSF identified...” in this and all succeeding paragraphs. Replace with the statement that the resources were identified in the 2012 CRAR.</p>
53	“Affected Environment” –	“The FMSF identified one NRHP-listed historic district within the APE for the West Palm Beach Station Central Site (Table 4.4.5-21). Within this district, the 2012 CRA identified seven buildings that are

	Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4- 132 (pdf pp 264):	<p><i>contributing to the NRHP-listed historic district but are not individually eligible and three contributing buildings to the historic district that are individually NRHP-eligible. The FMSF also identified one NRHP-listed building and three buildings determined NRHP-eligible by SHPO. The 2012 CRA identified two buildings as NRHP-eligible.”</i></p> <p>The figures used in this paragraph are inconsistent with the 2012 CRAR. See the 2012 CRAR for the correct figures.</p>
54	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4- 132 (pdf pp 264):	<p><i>“The FMSF identified one NRHP-listed historic district within the APE for the West Palm Beach Station Central Site (Table 4.4.5-21).</i></p> <p>.....</p> <p><b><i>“Table 4.4.5-21 Historic Resources within the WPB-M Corridor APE for Historic Resources Stations”</i></b></p> <p>Two resources identified in the 2012 CRAR but found to have insufficient information for concurrence on eligibility are not listed in this paragraph or the table. Add these two resources to both areas.</p> <p>8PB602 8PB9848</p>
55	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4- 132 (pdf pp 264):	<p><i>“The FMSF identified one NRHP-eligible historic district within the Fort Lauderdale Station North Site APE for Historic Resources (Table 4.4.5-21); this APE is applicable to the Relocated Fort Lauderdale Station site.”</i></p> <p>Provide further clarification on the relocated Fort Lauderdale station site.</p>

56	<p>“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4-132 (pdf pp 264):</p>	<p><i>“The FMSF identified one NRHP-eligible historic district within the Fort Lauderdale Station North Site APE for Historic Resources (Table 4.4.5-21); this APE is applicable to the Relocated Fort Lauderdale Station site. Within this district, the FMSF identified one building that is contributing to the district and is NRHP-listed, two buildings that are contributing to the district and have previously been determined to be NRHP-eligible by SHPO, and one building that is a contributing element to the district but is not individually eligible. The 2012 CRA identified two additional buildings that are contributing to the NRHP-eligible historic district and are considered NRHP-eligible and one building that is contributing to the NRHP-eligible historic district and is considered individually ineligible.”</i></p> <p>The figures used in this paragraph are inconsistent with the 2012 CRAR and 2014 updated CRAR for the original Fort Lauderdale Station – North site and the proposed relocated site of the Fort Lauderdale Station – North site. See the 2012 CRAR for the correct figures for the original Fort Lauderdale-South site OR use the figures in the 2014 CRAR for the relocated North site. Specify which station location is referred to in the paragraph.</p>
57	<p>“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4-132 (pdf pp 264):</p>	<p><i>“The FMSF identified one NRHP-eligible historic district within the APE for the Fort Lauderdale Station South Site (Table 4.4.5-21). The FMSF identified one building that is contributing to the district and is NRHP-listed and two buildings that are contributing to the district and are determined NRHP-eligible by the SHPO. The 2012 CRA identified two additional buildings that are contributing to the district and are considered NRHP eligible and two buildings that are contributing and considered ineligible for the NRHP.”</i></p> <p>The figures used in this paragraph are inconsistent with the 2012 CRAR. See the 2012 CRAR for the correct figures.</p>
58	<p>“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami</p>	<p><i>“The FMSF identified one NRHP-eligible historic district within the APE for the Fort Lauderdale Station South Site (Table 4.4.5-21).</i></p> <p>... ..</p> <p><b><i>“Table 4.4.5-21 Historic Resources within the WPB-M Corridor APE for Historic Resources Stations”</i></b></p>

	– Historical Resources (4.4.5.2) (beginning at 4-132 (pdf pp 264):	None of the resources identified in the Fort Lauderdale – South Site Station location are in the Table referenced (Table 4.4.5-21).  Add the resources to the Table.
59	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4-132 (pdf pp 264):	<p><i>“The FMSF identified one NRHP-listed Historic District within the APE for the Miami–Central site (Table 4.4.5-21). The 2012 CRA identified one contributing resource within the NRHP-listed Historic District, which is ineligible on an individual basis. The FMSF also identified two buildings which are NRHP-listed or eligible. The 2012 CRA identified one NRHP-eligible building within the Historic Resources APE established for the Miami - Central Elevated Site.”</i></p> <p>The figures used in this paragraph are inconsistent with the 2012 CRAR. See the 2012 CRAR for the correct figures.</p>
60	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4-132 (pdf pp 264):	<p><i>“Within the Miami–South Site the FMSF identified one NRHP-listed historic district and five contributing buildings that are determined NRHP-eligible on an individual basis by SHPO. The 2012 CRA identified one contributing building within the NRHP-listed Historic District which is considered NRHP-eligible and one building that is considered is ineligible. The FMSF identified two additional NRHP-listed or eligible buildings within the Miami–South At Grade Site APE. The 2012 CRA identified one additional individually NRHP-eligible building (Table 4.4.5-21).”</i></p> <p>The figures used in this paragraph are inconsistent with the 2012 CRAR. See the 2012 CRAR for the correct figures.</p>
61	“Affected Environment” – Chapter 4 -North-South	<p><i>“Within the Miami–South Site the FMSF identified one NRHP-listed historic district and five contributing buildings that are determined NRHP-eligible on an individual basis by SHPO. The 2012 CRA identified one contributing building within the NRHP-listed Historic District which is considered NRHP-eligible and one building that is considered is ineligible. The FMSF identified two additional NRHP-listed or</i></p>

	Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4-132 (pdf pp 264):	<p><i>eligible buildings within the Miami–South At Grade Site APE. The 2012 CRA identified one additional individually NRHP-eligible building (Table 4.4.5-21).”</i></p> <p>.....</p> <p><b><i>“Table 4.4.5-21 Historic Resources within the WPB-M Corridor APE for Historic Resources Stations”</i></b></p> <p>None of the resources identified in the Miami – South Site Station location are in the Table referenced (Table 4.4.5-21).</p> <p>Add the resources to the Table.</p>
62	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4-132 (pdf pp 264):	<p><b><i>“Table 4.4.5-21 Historic Resources within the WPB-M Corridor APE for Historic Resources Stations”</i></b></p> <p>In all instances - remove the statement “Considered Ineligible” and replace with “determined not individually eligible.”</p>
63	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Historical Resources (4.4.5.2) (beginning at 4-132 (pdf pp 264):	<p><b><i>“Table 4.4.5-21 Historic Resources within the WPB-M Corridor APE for Historic Resources Stations”</i></b></p> <p>In all instances - remove the statement “Considered NRHP-eligible” and replace with “determined individually eligible”</p>
64	“Affected	<b><i>“Archaeological Resources”</i></b>

	Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Archaeological Resources (4.4.5.2) (beginning at 4- 138 (pdf pp 270):	Move the discussion of archaeological resources to the appropriate sections discussing the mainline and the stations.
65	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Archaeological Resources (4.4.5.2) (beginning at 4- 138 (pdf pp 270):	<p><b>“Archaeological Resources”</b></p> <p>The figures provided in this report are from the 2012 CRAR so remove the mention of the FMSF.</p>
66	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Archaeological Resources	<p><i>“The FMSF identified no previously recorded significant archaeological sites within the Archaeological APE established for the West Palm Beach Station North Site, West Palm Beach Station Central Site, Miami Station Central Site, Miami Station South Site, and the Fort Lauderdale Station North Site (including the Relocated Fort Lauderdale Station Site).”</i></p> <p>Replace the statement “The FMSF identified no previously recorded significant...” with “Archaeological testing in 2012 resulted in the identification of no significant....”</p>

	(4.4.5.2) (beginning at 4-138 (pdf pp 270):	
67	“Affected Environment” – Chapter 4 -North-South Corridor – WPB to Miami – Archaeological Resources (4.4.5.2) (beginning at 4-138 (pdf pp 270):	<p>“<i>The FMSF identified no previously recorded significant archaeological sites within the Archaeological APE established for the West Palm Beach Station North Site, West Palm Beach Station Central Site, Miami Station Central Site, Miami Station South Site, and the Fort Lauderdale Station North Site (including the Relocated Fort Lauderdale Station Site).</i>”</p> <p>This is inconsistent with the results of the 2012 CRAR. The Brickell Block site (8BD2916) is within the archaeological APE for the Fort Lauderdale – South station. This site was not been evaluated for eligibility so should be included in the discussion of the station location.</p>
68	“Affected Environment” – Chapter 4 - Recreation and Other Section 4(f) Resources (4.4.6) (beginning at 4-138 (pdf pp 270):	<p><b>“4.4.6 Recreation and Other Section 4(f) Resources”</b></p> <p>This section does not provide adequate description of what historic resources are protected by Section 4(f). Include a discussion of what historic resources are protected.</p> <p>There are several historic resources that will need to be evaluated under Section 4(f). These should be included in this section.</p>

69	<p>“Environmental Consequences” – Chapter 5 - Temporary Construction-Period Impacts (5.1.1.3) (beginning at 5-5 (pdf pp 289):</p>	<p><b>“5.1.1.3 Temporary Construction-Period Impacts”</b></p> <p>The areas utilized for temporary construction use that are located outside of the cultural resources APE should be surveyed for cultural resources. This office shall consult with FRA on the results of the survey under the <i>National Historic Preservation Act</i> (NHPA).</p>
70	<p>“Environmental Consequences” – Chapter 5 - Noise and Vibration (5.2.2) (beginning at 5-39 (pdf pp 323):</p>	<p><b>“5.2.2.1 [Noise and Vibration] Methodology”</b></p> <p>Explain why FRA utilized FTA guidance (ie. land use categories) on noise and vibration? The definitions used by each agency are different. In summary – FRA considers sites with national significance with considerable outdoor use as falling into Category 1 but FTA specifies the resources must be a National Historic Landmark with significant outdoor use.</p> <p>Also see comment 3.</p>
71	<p>“Environmental Consequences” – Chapter 5 - Noise and Vibration (5.2.2) (beginning at 5-39 (pdf pp 323):</p>	<p>Provide the land use category that the historic resources within the project APE falls within and an explanation for those determinations.</p>

72	<p>“Environmental Consequences” – Chapter 5 - Cultural Resources- Indirect and Secondary Effects (5.2.2) (beginning at 5-55 (pdf pp 330):</p>	<p><b>5.2.2.2 ...noise</b>  <i>A wayside horn does not need to be as loud as a locomotive horn, but the real advantage is the focusing of the warning sound only on the area where it is needed. AAF has committed to installing stationary wayside horns at each of the 159 grade crossings where severe, unmitigated impacts would occur using locomotive-mounted horns. These mitigation measures would eliminate all severe noise impacts for residential and institutional receptors along the N-S Corridor.</i></p> <p>Identify any grade crossings where there are severe noise impacts where there is also a listed or eligible National Register Historic District.</p> <p>Provide a specific commitment for the mitigation (wayside horns) at these at-grade crossings.</p>
73	<p>“Environmental Consequences” – Chapter 5 - Cultural Resources (5.4.5) (beginning at 5-137 (pdf pp 421):</p>	<p><b>5.4.5 Cultural Resources</b></p> <p>Cultural resources definition provided is for “historic property” or “historic resource” (per NHPA 16USC470 section 301 Definitions). Replace “cultural resource/s” with historic property or historic resource.</p> <p>The correct definition of historic property or historic resource (NOT cultural resource) from the NHPA: "Historic property" or "historic resource": “means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register, including artifacts, records, and material remains related to such a property or resource.” (SOURCE: NHPA 16USC470 section 301 Definitions)</p>
74	<p>“Environmental Consequences” – Chapter 5 - Cultural Resources (5.4.5) (beginning at 5-137 (pdf pp 421):</p>	<p><b>5.4.5 Cultural Resources...</b><i>Under Section 106, an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the property’s integrity. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative.”</i></p> <p>Replace this with the exact definition of an adverse effect from the 36 CFR800 Section 5.1 Assessment of Adverse Effects:  “An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those</p>

		that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.”
75	<p>“Environmental Consequences” – Chapter 5 - Cultural Resources (5.4.5) (beginning at 5-137 (pdf pp 421):</p>	<p><i>“This section of the DEIS constitutes FRA’s Findings of Effect under Section 106 of the NHPA. No NRHP-listed or eligible resources were identified within the MCO Segment and VMF APE, or within the E-W Corridor. NRHP-listed or eligible resources were identified within the N-S Corridor, and include the FECR Railway Historic District and several historic railroad bridges as described in Section 4.4.5 of this EIS. For Phase I, FRA determined that the Project would have no adverse effect on these resources, and SHPO has concurred that the use of the historic rail line and restoration of passenger rail service would not constitute an adverse effect.”</i></p> <p>The other NHRP-listed and NRHP-eligible resources in the N-S APE besides the FEC Railroad are not discussed or mentioned in this section.</p>
76	<p>“Environmental Consequences” – Chapter 5 - Cultural Resources- Methodology (5.4.5.1) (beginning at 5-137 (pdf pp 422):</p>	<p>“In consultation with the SHPO, FRA determined that the MCO Segment and the VMF had been adequately addressed by the GOAA in two previous environmental assessments (FAA and GOAA 1998 and FTA, FDOT, and GOAA 2005). In general, the methodology for the E-W Corridor complied with FDHR standards for undeveloped acreage.”</p> <p>The SHPO does not have record of an agreement with FRA to use previous environmental assessments to address MCO or the VMF. These areas were surveyed in 2013 and the resulting Cultural Resources Assessment Report (CRAR) was reviewed by FRA and the SHPO (2013). The SHPO/FDHR does not have standards that apply to undeveloped acreage. The SHPO took into consideration multiple factors during the development of the methodology for the E-W corridor. These factors included the potential for cultural resources, previous land use, and current land use.</p> <p>See comment 7</p>

77	<p>“Environmental Consequences” – Chapter 5 - Cultural Resources-E-W Corridor (5.4.5.2) (beginning at 5-137 (pdf pp 423):</p>	<p><i>“The E-W Corridor has been determined to lack any cultural material and has no features indicative of archaeological site potential.”</i></p> <p>Replace the words “cultural material” and “no features indicative of archaeological site potential.” with: “The 2013 CRAR revealed that there are no historic resources within the E-W Corridor APE.”</p>
78	<p>“Environmental Consequences” – Chapter 5 - Cultural Resources-N-S Corridor (5.4.5.2) (beginning at 5-137 (pdf pp 423):</p>	<p><i>“The N-S Corridor APE contains several NRHP-eligible cultural resources, including the FECR Railway Historic District, the Union Cypress Sawmill historic district, four bridges, and 10 other historic resources. There are also five identified archaeological sites.”</i></p> <p>These figures are inconsistent with the 2013 CRAR. Refer to the 2013 CRAR for the correct figures.</p>
79	<p>“Environmental Consequences” – Chapter 5 - Cultural Resources-N-S Corridor (5.4.5.2) (beginning at 5-137 (pdf pp 424):</p>	<p><b><i>“Adjacent Historic Resources</i></b> <i>Improvements within the N-S Corridor would remain within the existing right-of-way, and will not require right-of-way acquisition from any adjacent historic districts or individual NRHP-listed or eligible historic resources. Therefore, the Project will have no effect on historic resources adjacent to the N-S Corridor or adjacent to at-grade crossings.”</i></p> <p>Clarify that this paragraph is referring to direct impacts to historic resources.</p>

80	<p>“Environmental Consequences” – Chapter 5 - Cultural Resources-N-S Corridor (5.4.5.2) (beginning at 5-137 (pdf pp 424):</p>	<p><b>“Archaeological Resources</b> <i>All of these archaeological sites have experienced some level of previous disturbances.”</i></p> <p>This statement is not supported by evidence. Please remove or provide evidence.</p>
81	<p>“Environmental Consequences” – Chapter 5 - Cultural Resources-N-S Corridor (5.4.5.2) (beginning at 5-140 (pdf pp 424):</p>	<p><b>“Phase I - West Palm Beach - Miami Corridor</b> <i>As stated in the 2013 FONSI, FRA consulted with the Florida SHPO pursuant to NHPA Section 106, and received concurrence on November 6, 2012 with FRA’s finding that the Project would have no significant adverse effect on any of the historic and/or cultural resources found along the WPB-M Corridor.”</i></p> <p>Replace everything in this sentence starting with “significant adverse...” with the statement: “...no adverse effect on any historic resources within the WPB-M APE.”</p>
82	<p>“Environmental Consequences” – Chapter 5 - Cultural Resources- Indirect and Secondary Effects (5.4.5.3) (beginning at 5-141 (pdf pp 425):</p>	<p><b>“Action Alternatives A, C, and E</b> <i>Additional private development along the E-W Corridor would not generally be required to comply with the cultural resource protections afforded by Section 106. However, SHPO does afford a level of historic preservation and protection, as do Florida state environmental regulations and permitting. Local government historic preservation commissions and ordinances provide some protection for historic sites and districts.”</i></p> <p>Please remove this paragraph. This is unnecessary for the purposes of this report.</p>

83	<p>“Environmental Consequences” – Chapter 5 - Cultural Resources- Indirect and Secondary Effects (5.4.5.3) (beginning at 5-141 (pdf pp 425):</p>	<p><b>“5.4.5.3 Indirect and Secondary Effects....Action Alternatives A, C, and E”</b></p> <p>The evaluation of indirect and secondary effects to historic resources in the N-S corridor is inadequate.</p> <p>-Clarify why FTA guidance was used for this evaluation instead of FRA guidance. (See comment 3 and 70) -It is unclear which land use category each historic resource falls into (definitions differ between FTA and FRA guidance).</p> <p>This office needs further description of which land use category (category 1, category 2, or category 3) the historic resources fall within (for noise and vibration).</p> <p>Identify any historic resources that fall within the moderate or severe category for permanent and construction noise impacts (Section 5.2.2).</p> <p>Provide further justification of no adverse effect if there are historic resources that fall within the moderate or severe category for noise or vibratory impacts.</p>
84	<p>“Environmental Consequences” – Chapter 5 - Cultural Resources- Indirect and Secondary Effects (5.4.5.3) (beginning at 5-141 (pdf pp 425):</p>	<p><i>“FDHR and local historic and planning commissions (such as the West Palm Beach Historic Preservation Board and Planning Board) do afford a level of historic preservation and protection (for example, West Palm Beach Ordinance 4265-10 identifies development standards for the City’s historic districts).”</i></p> <p>Please remove this paragraph. This is unnecessary for the purposes of this report.</p>

85	<p>“Environmental Consequences” – Chapter 5 - Cultural Resources- Indirect and Secondary Effects (5.4.5.4) (beginning at 5-142 (pdf pp 426):</p>	<p><i>“Within the N-S Corridor, access to work areas will be primarily from public access points and therefore, will not affect cultural resources. If private property is proposed to be used for site access or for material staging, AAF will conduct such activities in such a manner to avoid effects to known cultural resources listed or eligible for listing on the NRHP, as stipulated in the MOA. Any construction staging areas not currently within the right-of-way will be surveyed.”</i></p> <p>This paragraph is not adequate to ensure that no adverse impacts to historic resources will occur during construction. This does not fulfill the NHPA Section 106 requirements for avoiding adverse impacts to historic resources.</p> <p>When new activities are identified consultation with this office will need to occur to assess the impacts of the new activities on historic resources. Additional cultural resources survey may be required.</p>
86	<p>“Environmental Consequences” – Chapter 5 - Cultural Resources- Indirect and Secondary Effects (5.4.5.4) (beginning at 5-142 (pdf pp 426):</p>	<p><i>“.....as stipulated in the MOA....”</i> (2 mentions in this section)</p> <p>There has been no MOA signed for this project.</p>
87	<p>“Environmental Consequences” – Chapter 5 - Cultural Resources- Regulatory Compliance (5.4.5.5) (beginning at 5-142 (pdf pp 426):</p>	<p><i>“Mitigation measures for adverse effects to historic resources include avoidance, minimization, data recovery, and photographic recordation.”</i></p> <p>Avoidance is not a type of mitigation. If adverse effects are avoided then mitigation is not necessary.</p>

88	<p>“Environmental Consequences”  – Chapter 5  - Cultural Resources-Regulatory Compliance (5.4.5.5)  (beginning at 5-142 (pdf pp 427):</p>	<p><i>“A draft MOA will be included in the Final EIS.”</i></p> <p>The SHPO and Advisory Council on Historic Preservation should be afforded an opportunity to comment on the draft MOA.</p>
89	<p>“Environmental Consequences”  – Chapter 5  - Recreation and Other Section 4(f) Resources (5.4.6)  (beginning at 5-143 (pdf pp 427):</p>	<p><b><i>“5.4.6 Recreation and Other Section 4(f) Resources”</i></b></p> <p>The definition of 4(f) properties in the first paragraph misquotes the definition provided in 49USC303 (c) and omits historic resources. The correct definition is at Section 6.3 (Section 4(f) Applicability).</p>
90	<p>“Environmental Consequences”  – Chapter 5  - Recreation and Other Section 4(f) Resources (5.4.6)  (beginning at 5-143 (pdf pp 427):</p>	<p><b><i>“5.4.6 Recreation and Other Section 4(f) Resources”</i></b></p> <p>This section does not identify or describe the Section 4(f) use of any historic resources. At a minimum, the 2 historic bridges being replaced in Brevard County (Saint Sebastian and Eau Gallie) will be a use under Section 4(f).</p>

91	<p>“Section 4(f) Evaluation” – Chapter 6 – Description and use of Section 4(f) resources - (6.4) (beginning at 6-2 (pdf pp 457):</p>	<p><i>“Publicly owned parks, wildlife refuges, and National Register-eligible historic resources protected under Section 4(f) are located along the entire proposed Project corridor.”</i></p> <p>NRHP-eligible and NRHP-listed resources protected under 4(f) can be either publicly or privately owned. Please clarify this in the above paragraph.</p>
92	<p>“Section 4(f) Evaluation” – Chapter 6 – Description and use of Section 4(f) resources - (6.4.1.3) (beginning at 6-2 (pdf pp 458):</p>	<p><b><i>“6.4.1.3 Avoidance Alternatives”</i></b></p> <p>Provide more description of the problems or factors that contributed to the determination that there is no prudent or feasible alternative to the use of the two historic bridges. Include engineering specifics.</p>
93	<p>“Section 4(f) Evaluation” – Chapter 6 – Description and use of Section 4(f) resources - (6.4.1.3) (beginning at 6-2 (pdf pp 458):</p>	<p><b><i>“6.4.1.3 Avoidance Alternatives”</i></b></p> <p>Provide an analysis of an alternative that will construct a new one-track bridge and retain the existing bridge to be utilized as a one-track bridge.</p>

94	Mitigation Measures and Project Commitments – Chapter 7 – Noise and Vibration - (7.2.4) (beginning at 7-5 (pdf pp 467):	<p><b>“7.2.4 Noise and Vibration (Mitigation)”</b></p> <p>Specify which mitigation (permanent and temporary, noise and vibration) will impact historic resources.</p>
95	Mitigation Measures and Project Commitments – Chapter 7 – Section 4(f) Resources - (7.2.13) (beginning at 7-13 (pdf pp 475):	<p><b>7.2.13 Section 4(f) Resources</b></p> <p><b><i>“The Project would not require a use of Section 4(f) resources except for certain historic railroad bridges, as described in Chapter 6, Section 4(f) Evaluation.”</i></b></p> <p>The project <i>will</i> require a use of Section 4(f) resources. (the 2 historic bridges)</p>
96	Mitigation Measures and Project Commitments – Chapter 7	<p>Provide an appendix with specific commitments (in regards to cultural resources) made during the Section 106 consultation.</p>

97	<p>Summary of Public Involvement.. – Chapter 8 – Scoping - (8.1.1) (beginning at 8-2 (pdf pp 478):</p>	<p><b>“8.1.1 Agency Scoping Meeting”</b></p> <p>Correct any mention of this office to “State Historic Preservation Officer” (NOT State Historic Preservation <i>Office</i>). This is also the case for the THPO (Tribal Historic Preservation Officer)</p>
98	<p>Summary of Public Involvement.. – Chapter 8 – Scoping - (8.1.1) (beginning at 8-2 (pdf pp 478):</p>	<p><b>“8.1.1 Agency Scoping Meeting”</b></p> <p>The SHPO did not attend the agency scoping meeting on May 1, 2013.</p>



## Florida Department of Transportation

RICK SCOTT  
GOVERNOR

605 Suwannee Street  
Tallahassee, FL 32399-0450

ANANTH PRASAD, P.E.  
SECRETARY

### MEMORANDUM

Date: December 1, 2014

To: Lauren Milligan, Florida State Clearinghouse Coordinator  
Florida Department of Environmental Protection

From: Martin Markovich, Senior Economic Analyst  
Florida Department of Transportation, Office of Policy Planning

Re: U.S. Department of Transportation, Federal Railroad Administration – Draft Environmental Impact Statement and Section 4(f) Evaluation for the All Aboard Florida Intercity Passenger Rail Project – Orlando to Miami, Florida

The Florida Department of Transportation (“Department”) has reviewed the Draft Environmental Impact Statement and Section 4(f) Evaluation (“DEIS”) issued by the U.S. Department of Transportation, Federal Railroad Administration for the All Aboard Florida Intercity Passenger Rail Project – Orlando to Miami, Florida (“AAF”). The affected Department Districts and respective counties are: District 4 (Broward, Palm Beach, Martin, St. Lucie, and Indian River), District 5 (Brevard and Orange) and District 6 (Miami-Dade). The Department offers the following comments on the DEIS:

1. Additional comprehensive traffic impact studies and capacity / delay modeling and analysis are recommended. (Page S-8 / Transportation)
2. Traffic impacts resulting from freight diversion (negative and positive) impact support documentation is recommended. (Page S-8 / Transportation)
3. Additional detail on the traffic congestion impacts along the N-S corridor is recommended. (Page S-9 / Transportation)
4. Additional analysis and documentation on the impacts that the greater frequency of trains will have on the increased opportunities for conflict between trains and vehicles or people is recommended in the DEIS. (Page S-17 / Freight Impacts)
5. Table S-2 should include more details and references for potential negative impacts along with project benefits. (Page S-22 / Comparing Alternatives)

6. Intuitively, it does not seem the average train speed is twice as fast (59.4 vs. 28.5 mph) in Palm Beach County compared to all other counties. (Page 2-2 / Table 2.1)
7. Describe the rail capacity analysis that was performed to verify that the Build alternative would have a beneficial impact on existing freight traffic. (Page 4-1)
8. It is not indicated if new track construction will be performed in a manner that would maintain rail operations. (Page 4-2)
9. The Department recommends that a vehicle queuing analysis and comparison to available storage length between crossings and adjacent signalized intersections to identify locations where a propensity for vehicles stopping on the tracks is present.
10. While the proposed rail construction will be located within railroad right-of-way, the project will intersect and impact state roads at a number of railroad crossings. The DEIS should evaluate and account for additional AAF costs necessary to achieve a compatible design transition as the rail crossing surface transitions to the adjacent connecting roadway and document all AAF associated costs for design and construction. This request is based on observations made on prior crossing upgrades in which surfaces were not compatible and resulted in additional costs to the public to improve the interface between the rail and roadway components.
11. As described in the DEIS, AAF will be responsible for obtaining all environmental permits and clearances and easements required under the National Environmental Policy Act (“NEPA”) and various federal, state and local laws and regulations. If there are any environmental permitting or mitigation questions, please contact the Department’s State Environmental Management Office at (850) 414-4447.
12. Operation of overweight/over-dimensional vehicles by AAF on the Department’s right-of-way will be subject to the requirements of Sections 316.550 and 316.535, Florida Statutes, and Rule Chapter 14-26, Safety Regulations and Permitting Fees for Overweight and Over-dimensional Vehicles, Florida Administrative Code.  
  
Overweight/over-dimensional Permits are handled by Department’s Central Office. Additional information regarding those permits can be found at: <https://gis.dot.state.fl.us/OneStopPermitting/Permits/OverweightOverdimensionalPermits>.
13. If any hazardous materials will need to be transported on Department roads, a hazardous spills response plan will need to be prepared and coordination with the Department will be required.
14. It is anticipated that construction of railroad improvements will require railroad crossing closures that create impacts to the roadway network, including pedestrians and bicyclists. The temporary closures and/or lane reductions on the State Highway System will require the permitting of Maintenance of Traffic (MOT) Plans by the Department to mitigate for these impacts by safely redirecting, detouring and channelizing vehicles

and pedestrians around the roadway closures required by the track and crossing upgrades. This can be accomplished through the affected Department District Operations Centers.

It is important that any MOT submitted to the Department conform to the most current edition of the Department's Design Standards and the most current edition of the Department's Standard Specifications for Road and Bridge Construction. These requirements include the Department's Design Standard Index (600 series) and the most current edition of the Manual on Uniform Traffic Control Devices (MUTCD). Special attention should be given to Department Design Standard Index 611, 612, 613, and 660.

# EXHIBIT P



## FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

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RICK SCOTT  
GOVERNOR

CARLOS LOPEZ-CANTERA  
LT. GOVERNOR

HERSCHEL T. VINYARD JR.  
SECRETARY

### MEMORANDUM

**TO:** Lauren Milligan, Office of Intergovernmental Programs  
**FROM:** Dana Bryan, Bureau of Natural and Cultural Resources  
**SUBJECT:** All Aboard Florida Draft EIS – Division of Recreation and Parks Comments  
**DATE:** November 4, 2014

#### Division of Recreation and Parks (DRP) Comments on the Draft EIS Related to Savannas Preserve State Park (SPSP):

##### **Page 4-82, Sand Pine**

The document only briefly mentions the Sand Pine Scrub natural community. DRP recommends that the document describe this community as a globally imperiled ecosystem (per Florida Natural Areas Inventory ranking system) with rare flora and fauna.

##### **Pages 4-84 – 4-88, Preserves, Wildlife Sanctuaries, and Wildlife Corridors**

SPSP is not included among the list of affected parks; however, the corridor passes along nine miles of the state park boundary. The above-referenced Sand Pine Scrub natural community is located throughout the project corridor.

##### **Page 4-99, Table 4.3.6-3**

The table should include the Savannas mint (*Dicerandra immaculata var. savannarum*), a variety of Lakela's mint and also listed as federally endangered. A population of this species formerly occurred in the railroad corridor and known populations occur very close to the corridor.

##### **Page 4-100, Affected Environment**

**Statement:** "Plant species for which known populations do not occur within the Project Study Area include: fragrant prickly apple, Lakela's mint, beach jacquemontia, sand lace, scrub plum, and clasping warea."

**Comment:** DRP notes above that fragrant prickly apple cactus *is* found within the project corridor. Savannas mint (a federally endangered variety of Lakela's mint) was formerly found within the project study area and remaining populations are very near the project study area. It should also be noted that disturbances within the Sand Pine Scrub ecosystem can allow further intrusion of exotic invasive plants. Specifically, Natal grass, cogon grass, and Brazilian pepper are widespread along the disturbed railroad right-of-way near SPSP. This intrusion by exotic species further imperils and alters the habitat needed for many of these threatened and endangered species.

##### **Page 5-98, North-South Corridor**

**Statement:** "All construction activities proposed for the N-S Corridor would occur within previously disturbed areas in the FECR Corridor and would not impact natural communities.

Limited wildlife habitat exists within the N-S Corridor although field surveys indicate some utilization of disturbed habitats.”

**Comment:** DRP notes that some areas near SPSP have wildlife habitat. The potential for impacts to natural communities exists through direct or indirect habitat loss and disturbance. DRP encourages minimization and avoidance measures related to impacts adjacent to the state park.

**Page 5-110, Threatened and Endangered Species**

**Statement:** “The USACE, a cooperating agency with respect to this EIS, is the lead federal agency with ESA Section 7 responsibilities for the Project. As described below, the USACE has evaluated the effects of the Project on federally listed species and determined that the Project would not jeopardize any listed species or modify any designated critical habitat. The USACE has made determinations of “no effect” or “no adverse effect” for each of the listed species within the Project Area. The agencies charged with administering the ESA, the US Fish & Wildlife Service (USFWS), and the NOAA-NMFS, have concurred with these determinations (Appendix 5.3.6-B).

The ESA authorizes the determination and listing of species as Endangered or Threatened and prohibits unauthorized taking, possession, sale, and transport of endangered species. Section 7 of the Act requires federal agencies to ensure that any action authorized, funded, or carried out by a federal agency is not likely to jeopardize the continued existence of listed species or to modify their critical habitat...”

**Comment:** DRP advises that the project will occur within or directly adjacent to habitat occupied by the federally listed fragrant prickly apple cactus (*Harissia fragrans*). Other plant species such as the federally listed Savannas mint (*Dicerandra immaculata var. savannarum*) occur in the project area as well. Florida scrub-jay populations utilize the railroad corridor and adjacent conservation lands at SPSP and Jonathan Dickinson State Park. DRP requests additional information as to how impacts to these species will be avoided or minimized.

**Page 5-119, Indirect and Secondary Impacts**

**Statement:** “Based on these analyses, the Project would not have an adverse indirect effect on federal or state-listed species.”

**Comment:** DRP notes that the studies listed do show that road corridors have adverse effects on health and reproductive success of federally endangered avian species.

**Page 5-121, Section 7 Consultation and Draft Findings**

**Statement:** “May effect, but is not likely to adversely impact the Florida scrub-jay. Habitat documented to be used by this species is outside of the proposed work area.”

**Comment:** DRP notes that Florida scrub-jays are seen flying across the proposed project area in the area of SPSP. In addition, Florida scrub-jays are commonly observed foraging on the edge of the existing railway corridor in this area.

**Page 7-10, Threatened and Endangered Species and Other Protected Species**

**Statement:** “None of the alternatives considered for this analysis would be expected to result in significant adverse impacts to protected species or protected species habitat. However, AAF is committed to these measures to address any significant, unmitigated impacts that may arise as a result of the Project.”

**Comment:** DRP looks forward to working with AAF to ensure potential impacts to protected plant species found within the vicinity of SPSP are minimized or avoided.

**Other Comments:** DRP reports that multiple listed plant and animal species reside in the areas that parallel the FEC corridor adjacent to SPSP. These species include: Florida scrub-jay, gopher tortoise, indigo snake, Florida mouse, prickly apple cactus, Savannas mint, large-flowered rosemary, and possibly others. Potential impacts to imperiled species within the park may result from three main avenues. First, impacts in the footprint of the development area may remove habitat needed for the imperiled species found within this corridor. Two plants in particular, the prickly apple cactus and the Savannas mint, contain the majority of their current population within close range of the FEC corridor. Secondly, impacts caused by proposed development may cause disturbance in the Sand Pine Scrub that will allow the intrusion of exotic invasive species. Thirdly, access into these areas for resource management activities such as prescribed burning and exotic plant and animal removal may be hindered, impacting management of the imperiled species. Disrupted access would also affect wildfire response and increase undesirable fuel loading at the urban interface.

In addition, DRP would encourage AAF to maintain the integrity of any impacted gopher tortoise populations adjacent to SPSP by relocating tortoises on-site.

**DRP Comments Related to Jonathan Dickinson State Park (JDSP):**

**Page S-15, Threatened and Endangered Species**

DRP notes that it is likely that perforated reindeer lichen (*Cladonia perforata*) occurs in the right-of-way.

**Page 4-85, Preserves, Wildlife Sanctuaries, and Wildlife Corridors**

DRP notes that within the descriptions of natural areas, a list of federally or state-listed species is typically included and recommends that one be included for JDSP.

**Page 4-100, Table 4.3.6-5**

Curtiss' milkweed (*Asclepias curtissi*) occurs in the area, but appears to be omitted from the table.

**Page 5-102, Introduction of Invasive Species**

Natal grass (*Rhynchosyrum repens*) has been a significant problem in disturbed areas of scrub adjacent to the project area and should be noted in the document at both JDSP and SPSP. In addition, showy rattlebox (*Crotalaria spectabilis*) and Guinea grass (*Panicum maximum*) are both very problematic at JDSP. DRP requests additional mitigative/preventative measures be outlined in

the document. An introduction of a new exotic species or increase in distribution or abundance of existing species would result in a decrease in the quality of habitat for several listed scrub species.

**Page 5-118, Table 5.3.6-3 (This comment applies to all the tables for alternatives that impact threatened and endangered species.)**

Staff indicates that if impacts to eastern indigo snakes are likely within the N-S Corridor, there is also a high likelihood that other species utilizing similar habitats will be impacted, such as the Florida scrub-jay, gopher tortoise, gopher frog, Florida pine snake, Florida mouse, etc. It is unclear why the acreages for these species differ in the table. At JDSP, all these animals use the corridor area periodically. For example, gopher frogs are likely to cross back and forth across the tracks in the JDSP project area, traveling from the scrub to access breeding wetlands to the west.

**Page 5-147, North-South Corridor**

DRP notes that closing SE Jonathan Dickinson Way during upgrades to the crossing would have significant impacts. This is a one-way-in and one-way-out road. Emergency vehicles, campers, resident park staff, and other visitors could be stranded in the western part of the park during closures. Temporary or permanent closure of this road as stated would not be acceptable. In addition, closing the park drive would have financial impacts on the local economy.

**Page 5-148**

Please note that the GIS shapefile depicting the state park boundary on this map is no longer current. This could be rectified with an updated boundary map.

**Page 7-10, Threatened and Endangered Species and Other Protected Species**

Clarification is needed regarding Florida scrub-jay impacts near JDSP. Is there going to be expansion of the railroad track footprint? DRP notes that any expansion (particularly in certain areas) would likely result in impacts to Florida scrub-jay habitat.

**Page 7-13, Gopher Tortoise Mitigation Measures**

The DRP would encourage AAF to maintain the integrity of any impacted gopher tortoise populations adjacent to JDSP by relocating tortoises on-site.

**Appendices**

Only the plans for Alternative A for the N-S Corridor have been provided. All plans should indicate whether management access would be impeded and park staff could plan accordingly.

It is unclear whether fences would be erected along the entire right-of-way corridor in JDSP. Fencing may have some negative consequences on wildlife access and movement, which would need to be addressed.

Does the plan to expand the use of the right-of-way mean that there will be no communication tower near the former LORAN Tower site?

**DRP Office of Greenways and Trails Comments:**

All Aboard Florida is a large linear rail project transecting eight counties in Southeast and Central Eastern Florida. This evaluation covers the Ecological Greenways Network (EGN) and Florida Greenways and Trails System (FGTS), for which the Office of Greenways and Trails is responsible. The EGN is based on a scale of one to six, with one being the highest priority, and is meant to support connectivity between natural areas. While the EGN is meant to guide acquisition and planning projects, it should not be used as the only measure to determine project acquisitions. The FGTS Network is a statewide effort to establish a regionally connected system of greenways and trails through a priority network, based on opportunity corridors.

The FGTS Plan identifies a priority and opportunity corridor along the entire length of the All Aboard Florida corridor. Due consideration should be given to locating a rail-with-trail, shared-use path along the railroad corridor. A shared-use path would help to close gaps between trails in all counties. If the corridor is developed with such a path, significant gaps in trail would be closed between Miami and Orlando. Along the coastal portion of this corridor lies the East Coast Greenway (ECG), a national effort to connect bicycle facilities from the Florida Keys Overseas Heritage Trail to Maine. With the development of this railroad, significant gaps along the ECG would be closed and bicycle users who arrive in Miami and ride north on a portion of the ECG could have a multi-modal return trip option. Finally, the Railroad Corridor will cross the Florida National Scenic Trail's (FNST) Priority Corridor in Orange County. The FNST is a federally and state-recognized trail due to its length and exhaustive support network of citizen support organizations and volunteers.

The EGN is identified along sections of the project in a limited number of counties. In Martin County, the corridor would transect the EGN Corridor in level two linkages. In Brevard, the railroad corridor will transect level one, two and six of the EGN. In Orange County, levels one and two will also be transected by significant portions of the railroad corridor. Because of the encroachment into these linkages, especially in Brevard and Orange counties, special consideration should be given to mitigate impacts on natural areas and wildlife.

An example of a large-scale transportation project of similar magnitude is the Suncoast Parkway. This project allowed the construction of a multi-use path alongside a portion of a high-speed toll road system. However, if the multi-use path is not built along the railroad corridor, the railroad bed itself may continue to serve as a rails-to-trail project in the future, with due consideration from interested parties.

**DRP Office of Park Planning Comments:**

Regarding noise/vibration:

Several areas of the state parks along the corridor are shown within the "Moderate Impact Noise" areas, including shop/residence areas. DRP requests that best management practices to minimize noise impacts be incorporated into the project as much as possible.

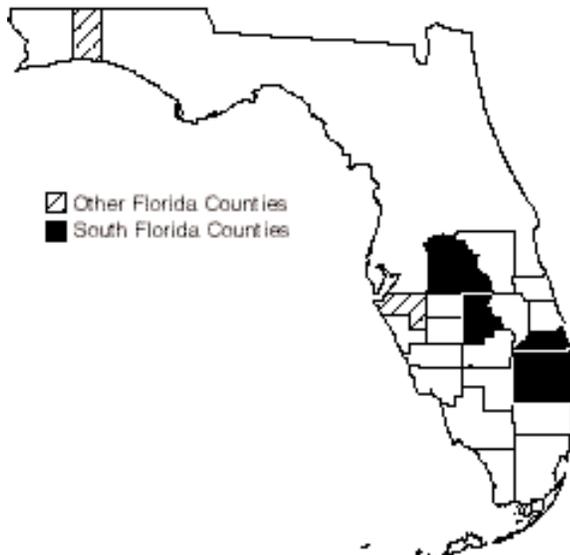
# EXHIBIT Q

## Florida Perforate Cladonia

*Cladonia perforata* Evans

Federal Status:	Endangered (April 27, 1993)
Critical Habitat:	None Designated
Florida Status:	Threatened
Recovery Plan Status:	Revision (May 18, 1999)
Geographic Coverage:	Rangewide

Figure 1. County distribution of Florida perforate cladonia.



*Cladonia perforata* is a member of the family Cladoniaceae, commonly called the reindeer lichens. Unlike the more common and widely distributed species of the Cladoniaceae with which it occurs, *C. perforata* is restricted to the high, well-drained sands of rosemary scrub in Florida. *Cladonia perforata* was listed as endangered because of the significant loss of scrub habitat in Florida. This species is known to occur on approximately 27 sites in Florida; all but two sites are in the South Florida Ecosystem. Sixteen of the sites are protected, and others are proposed for acquisition in the future.

This account represents a revision of the existing recovery plan for the Florida perforate cladonia (FWS 1996).

### Description

*Cladonia perforata* is easily recognized in the field by the conspicuous holes or perforations below each dichotomous branch point and its wide, smooth, yellowish gray-green branches.

Unlike other fruticose lichens whose branches develop from the primary or vegetative body, the branches of members of *Cladonia* and *Cladina* are developmentally derived from spore-producing structures called apothecia, present as colored, expanded tips of fertile branches. These specialized, hollow branches are called podetia and are structurally characteristic of this group. *Cladonia perforata* differs from other fruticose terrestrial Cladoniaceae in several podetial characters, including color, shape and texture, in addition to having specific habitat requirements. *Cladonia perforata* has rather wide (up to 6 mm), pale yellowish gray-green podetia, punctuated in the axils by 1 to 1.5 mm perforations. The branching pattern is complex and consists of roughly subequal dichotomies near the tips and, more commonly, sympodia (unequal branchings with the smaller branch deflected to one side) below (Evans 1952), resulting in a more-or-less compressed tuft. Its outer surface is mostly uniformly smooth. Individual podetia are

typically 4 to 6 cm long (Evans 1952), although specimens of up to 8 cm across and several cm high have been observed (R. Yahr, Archbold Biological Station, personal communication 1995). No primary thallus is known. The oldest parts of the podetia degenerate, leaving no means of determining ages. No studies of growth rates in *C. perforata* have been completed. In boreal areas, growth studies of *Cladonia* species suggest that one branching occurs each year (Thomson 1967); however, in more tropical areas, more than one branching per year may be possible. *Cladonia perforata* is suspected to reproduce only by vegetative fragmentation; no spore-producing organs (apothecia) have been described (Thomson 1967).

*Cladonia uncialis* is a closely related and similar-looking species, although its occurrence in Florida is disputed by Moore (1968). Its podetia are wide and perforate, though not at every dichotomy, and are glossy with greenish areolae (Evans 1952). The other fruticose, terrestrial species of *Cladonia* and *Cladina* which commonly co-occur with *C. perforata* can easily be distinguished from it. Although *Cladonia leporina* may sometimes have small perforations in the podetia and is occasionally confused with *C. perforata*, *C. leporina* is a darker yellow-green color, has narrower podetia with rough surfaces and can often be found with conspicuous red apothecia. *Cladonia pachycladodes* is similar in color to *C. perforata* but is more of a light bluish-grey color and has finer branches, drooping at the tips. *Cladonia subsetacea*, *Cladina evansii*, and *Cladina subtenuis* all have much narrower, filiform podetia, usually less than 1mm wide.

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## Taxonomy

The Cladoniaceae is represented in Florida by the two large, widespread, and closely related genera *Cladonia* and *Cladina*. Moore (1968) considers this conspicuous and diverse group to be one of the most important in the Florida lichen flora, represented by a total of 33 species, three of which are endemic to the state. George Llano first collected *C. perforata* Evans in 1945 from Santa Rosa Island, Florida, and in 1952, Alexander Evans described the species from this type (Buckley and Hendrickson 1988). Both Llano's and Evans' collections of *C. perforata* were purportedly from Escambia County, but Wilhelm and Burkhalter (1990) determined the actual locality to be in Okaloosa County. No other names have been applied to the species.

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## Distribution

In northern biomes such as boreal forests and the tundra, members of *Cladonia* and *Cladina* form continuous mats which cover the ground and provide important forage for caribou and reindeer. In temperate and subtropical regions, open rock outcrops or patches of bare ground or sand provide habitat for reindeer lichens (Thomson, 1967). Florida scrub, which is characterized in part by persistent, open patches of sand, supports a relatively rich assemblage of these terrestrial lichens. Up to eight species of reindeer lichens commonly occur in Florida scrub. *C. perforata* is the most unique member of the scrub-lichen community, by virtue of its restricted and unusual disjunct distribution and overall global rarity.

**Florida perforate cladonia.**  
Original drawing by Rebecca  
Yahr.



In 1991, the Florida Natural Areas Inventory surveyed 111 sites throughout central and coastal Florida to determine the status of *C. perforata*. A total of only 12 sites were located, six of which were at Archbold Biological Station (FWS 1993). Two additional sites were later located at Archbold Biological Station (R. Yahr, Archbold Biological Station, personal communication 1995). With one Eglin Air Force Base site in Okaloosa County, and several other more recently discovered south-central and coastal Florida locations, approximately 27 sites for *C. perforata* are currently known from four disjunct geographic regions; the counties within these regions are shown in Figure 1. The farthest and most disjunct region, supporting the only remaining North Florida site, is defined by Santa Rosa Island in Okaloosa County. This region is about 644 km northwest of the next closest region. Central Florida's Lake Wales Ridge supports the bulk of the known sites for *C. perforata*. South-coastal Martin and Palm Beach counties support three sites, and southwest Florida's Manatee County has one disjunct site for this lichen (K. DeLaney, Environmental Research Consultants, Inc., personal communication 1995).

The type locality, which was reported from Escambia County on the west side of Santa Rosa Island, was likely reported in error according to Wilhelm and Burkhalter (1990), who rediscovered *C. perforata* on the eastern end of

the island. The western part of the island has scrub that should be surveyed. The current patchy distribution of *C. perforata*, represented by the fragmented scrubs on high white-sand ridges of central Florida may reflect all or only part of its historic range.

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### Habitat

Several of the fruticose, terrestrial *Cladonia* and *Cladina* species form a conspicuous and characteristic part of Florida's white sand scrub communities (Moore 1968). Typical habitat for *C. perforata* is found on the high sand dune ridges of Florida's peninsula, including the Atlantic Coastal and the Lake Wales Ridges. In these areas *C. perforata* is restricted to the highest, xeric white sands in sand pine scrub, typically in the rosemary phase (Abrahamson *et al.* 1984). Such rosemary scrubs, frequently referred to as "rosemary balds," are particularly well-drained and structurally open. Specific aspects of *C. perforata* microhabitat require further investigation and, presently, can only be roughly generalized with the following associated plant species: scrub oaks (*Quercus inopina*, *Q. geminata*, *Q. myrtifolia*), which are clumped and scattered throughout, sand pine (*Pinus clausa*), which dominates the tree-layer (although the canopy may be sparse or absent), and Florida rosemary (*Ceratiola ericoides*), which dominates the shrub layer. *Cladonia perforata* typically occurs in open patches of sand between shrubs in areas with sparse or no herbaceous cover.

In Highlands and Polk counties on the Lake Wales Ridge, *C. perforata* occurs at relatively higher elevations than surrounding areas, on excessively well-drained, nutrient-poor, white sands of the St. Lucie series, with pH ranging from 5.0 to 6.0 (Buckley and Hendrickson 1988, R. Yahr, personal communication 1995). At Archbold Biological Station, *C. perforata* occurs in the most xeric microsites even within rosemary scrub (E. Menges, Archbold Biological Station, personal communication 1995). A small site in xeric scrubby flatwoods on Lake Wales Ridge SF (formerly Lake Arbuckle SF) was recently discovered (R. Yahr, Archbold Biological Station, personal communication 1998). Other Lake Wales Ridge SF sites are on open rosemary scrubs or under dense sand pine in rosemary scrub. In the coastal scrubs of Jonathan Dickinson State Park in Martin County, *C. perforata* is reported from open areas in oak-dominated sand pine scrub and scrubby flatwoods. The Okaloosa County sites are on undifferentiated coastal beach sands in white-sand scrub; *C. perforata* was collected from an Okaloosa County site dominated by rosemary and "downslope into margins of gallberry swales" (Johnson and Blythe 1986; collection deposited at Archbold Biological Station).

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### Reproduction

Reproduction in the Cladoniaceae is typically by means of sexually produced spores or dispersal of vegetative fragments, either via soredia (microscopic clumps of algal cells surrounded by fungal threads which emerge from the lichen surface as a powder) or simple fragmentation (Thomson 1967). However, neither spore-producing structures nor soredia are known from *Cladonia perforata* (Thomson 1967). Presumably, the main form of reproduction is via vegetative fragmentation.

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### Relationship to Other Species

*Cladonia perforata* is a habitat-specialist, usually restricted to openings in very xeric sites. It can occur in monospecific mats or in mixed-species mats with *Cladonia leporina*, *Cladonia prostrata*, *Cladonia pachycladodes*, *Cladina evansii*, *Cladonia subsetacea*, and/or *Cladina subtenuis*. However, these other co-occurring *Cladonia* and *Cladina* species appear to be less restricted to rosemary scrub and can also be found in lower, less well-drained communities like scrubby flatwoods and flatwoods, in addition to other xeric upland habitats such as sandhills, from which *C. perforata* is notably lacking.

In addition to the more common reindeer lichen species that co-occur with *C. perforata*, associated vascular plant species may include *Serenoa repens*, *Sabal etonia*, *Lyonia ferruginea*, *L. fruticosa*, *Bumelia tenax*, *Asimina obovata*, *Persea humilis*, *Licania michauxii*, *Hypericum cumulicola*, *Polygonella basiramia*, *Opuntia humifusa*, *Lechea cernua*, and *Selaginella arenicola* (Buckley and Hendrickson 1988). *Cladonia perforata* occurs most commonly with Florida rosemary and sand pine, typically in patches of bare sand with other *Cladonia* and *Cladina* species, sometimes forming mixed-species tangled clumps. It can, however, occasionally occur in dense, long-unburned sand pine scrub on a mat of pine needles, as observed at the southernmost portion of Archbold Biological Station, on an adjacent privately owned parcel, and under dense sand pines on the Lake Wales Ridge SF (R. Yahr, Archbold Biological Station, personal communication 1995). However, Menges and Kohfeldt (1995) found that *C. perforata* decreases in dominance in sites that have gone unburned for more than 20 years. This decrease in dominance on unburned sites may be a result of a combination of factors that influence microhabitat, such as decreased insulation or increased litter accumulation.

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### Status and Trends

The loss of scrub habitat is the primary reason *C. perforata* is listed as endangered (58 FR 25754). Less than 15 percent of the historic distribution of scrub habitat persisted as of 1992 (FWS 1992), and land conversion to citrus and residential development continues to diminish scrub habitat almost daily. As with all species restricted to the developable upland landscape, including species of the scrubs of the Lake Wales Ridge, nearby parallel central ridges, and the Atlantic Coastal Ridge, habitat loss is the most critical concern.

In addition to habitat loss, *C. perforata* is also threatened by trampling, off-road vehicles, hurricane washover, and improper land management (Buckley and Hendrickson 1986, R. Yahr, Archbold Biological Station, personal communication 1995). Sixteen of the 27 known sites for *C. perforata* occur on dedicated conservation lands and are protected. In Highlands County eight sites are protected on Archbold Biological Station and one site is protected at the Lake Apthorpe Preserve (managed cooperatively by The Nature Conservancy and GFC). In Polk County, two sites on the Lake Wales Ridge SF were discovered by R. Yahr in 1996 (C. Weekley, DACS, personal communication 1998). In Martin County, one site occurs at Jonathan Dickinson

SP. There are three protected sites in Palm Beach County: two at the Jupiter Inlet tract, owned and managed by the BLM, and one recently discovered site on the Jupiter Ridge Natural Area (Steve Farnsworth, Palm Beach County DERM, personal communication 1998). A 1997 survey revealed approximately 5,000 lichen fragments on this site. The Okaloosa County site, on Eglin Air Force Base, occurs on a beach with restricted vehicular access, but completely open to foot traffic. In addition to the already-protected sites for *C. perforata*, the Trout Lake site in Polk County is proposed for inclusion in the State's Preservation 2000 program. Other potential sites for protection include several privately held properties in Highlands County.

A low proportion of all known sites support large areas of *C. perforata*. At only two of the Archbold Biological Station sites is this lichen very abundant, making up the dominant ground cover in most of the site with densely crowded and overlapping thalli. Abundant stands are also reported from the site at Jonathan Dickinson SP and from the east end of Santa Rosa Island.

Despite the conservation status of these sites, populations of this lichen may be extremely limited in areal extent and, therefore, subject to significant losses from local events. For example, two former Okaloosa County sites supported only small fragments of *C. perforata* prior to Hurricane Opal, which severely impacted Santa Rosa Island in October 1995. One estimate suggested that more than half of the potential habitat of *C. perforata* on the east end of the island was negatively affected by the storm, with large areas swept clean of all ground lichens or inundated with salt water (R. Yahr, Archbold Biological Station, personal communication 1995). At Archbold Biological Station, *C. perforata* occurs on eight of more than 100 discrete, available habitat patches (rosemary balds). Five of these eight sites were partially burned in a prescribed fire in 1993, but in each, the lichen persisted in unburned patches, although almost certainly in lower numbers.

Throughout its distribution, *C. perforata* is considered as rare. It has a limited areal extent and its management is further complicated by its limited reproduction and dispersal capability.

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## Management

Florida scrub has historically experienced variable fire frequencies and patchy high-intensity fires (Myers 1990). Scrub plant communities are therefore fire-adapted, and recover relatively quickly (Abrahamson 1984). In sand pine and rosemary scrub, however, recovery of dominant species is slower than in oak-dominated scrubs (Johnson *et al.* 1986) and open spaces between shrubs persist longer. In fire-maintained systems, low-fuel, bare sand patches may serve as refugia from fire for *C. perforata* and other lichen species which cannot survive fire. These refugia provide a local source for recolonization and population recovery.

While patch-level dynamics on a long time-scale, including local extirpation and recolonization events, are probably important in the persistence of *C. perforata* in the fire-maintained landscape, improper management may threaten the species at the site level. Due to *C. perforata*'s presumed slow growth and observed slow recolonization (Menges and Kohfeldt 1995), land managers should

avoid complete burns in large areas supporting *C. perforata*. Such fires likely reduce the possibility of recolonization from unburned patches within sites or from nearby sites. Additionally, complete lack of fire is also detrimental to the species. Fire suppression creates closed canopies and causes microsite characteristics to change, possibly encouraging complete burns when a fire does occur.

Management recommendations for *C. perforata* should provide for fire-return intervals long enough to restore vigorous lichen growth and to allow regeneration of mature shrub layers, since reburning rosemary scrub too frequently can deplete its soil seed banks (Johnson 1982, Gibson and Menges 1994). Archbold Biological Station's Fire Management Plan recommends a 20 to 60 year fire interval for rosemary scrub, which is designed to allow recovery of shrub canopy while maintaining the endemic-rich open sand patches (Hawkes and Menges 1996). These factors must also be balanced with caution regarding the build-up of litter and other ground fuels over very long intervals which may contribute to homogeneous burns. Perhaps more frequent burns in adjacent habitats may serve to occasionally burn small areas of rosemary and reduce fuels enough to prevent large, complete fires. Spatially patchy fires leave unburned areas within a burned matrix from which species of *Cladonia* may recolonize, and without which, *C. perforata* may be threatened with local extinctions.

*Cladonia perforata* population dynamics have, to date, only been inferred from observations of occupied sites. Menges and Kohfeldt (1995) found that *C. perforata* and four other terrestrial Cladoniaceae species respond to burning by slow recolonization (within four years) and, later, by steady increases in dominance up to 20 years post fire. However, in contrast to the more common *Cladonia* and *Cladina* species which continue to increase in dominance post fire for at least 60 years, Menges and Kohfeldt (1995) found that *C. perforata* increases in dominance only until an intermediate post fire time of about 20 years, and then decreases in dominance again. Until population trends are studied, it is probably important to provide a mosaic of times-since-fire in the landscape and to encourage patchy burns if fuels have become continuous due to long-unburned conditions. Because *C. perforata*, like other lichens, cannot survive fire and likely can recolonize sites slowly and from local sources, such as unburned patches within sites, it is important to avoid complete burns in sites which support this species. Although *C. perforata* is characteristically found in open sand gaps between shrubs, it can, apparently, persist in long-unburned sites (probably for more than 50 years) under a dense sand pine canopy (R. Yahr, Archbold Biological Station, personal communication 1995). Conducting a mosaic of burns over long time frames would, therefore, be an appropriate management goal for this species.

In some cases, however, prescribed fire may be infeasible due to the proximity of residential development or due to high fuel buildup which could lead to local extirpations. In these instances, it is possible that *C. perforata* would respond well to mechanical clearings adjacent to occupied patches. Evidence of this is noted by the recolonization of some areas disturbed by off-road vehicles with a dense cover of *C. perforata* (R. Yahr, Archbold Biological Station, personal communication 1995). Research on the effects of various

management regimes on *C. perforata* based on such observations may be useful in the recovery of the species.

Recent patchy burns in rosemary scrub at Archbold Biological Station and the Lake Apthorpe Preserve may be successful in promoting the persistence of this species, creating or re-opening new bare sand patches adjacent to occupied, unburned areas. A monitoring project in several sites was instituted in the winter of 1996-97 by Archbold Biological Station to investigate the rate and mode of post-fire recolonization in the peninsular region of *C. perforata*'s range; compare natural recolonization of *C. perforata* with establishment via transplantations into unoccupied suitable habitat and with previously occupied, hand-cleared sites; and to test hypotheses regarding dispersal limitations for *C. perforata*'s persistence and growth in several transplant sites.

Management of *C. perforata* should include protection of all sites from vehicle or heavy foot traffic and promoting fire management planning at sites where fire is an important part of that site's ecology. Because each site has a unique set of circumstances, appropriate management plans should be tailored to accommodate these. Unpredictable events, like hurricanes and wildfires, are best mediated by having a large number of protected sites, which provide local sources for natural recolonization and population recovery. It may be possible to reintroduce *C. perforata* into severely damaged sites, if impacts have been so severe that the nearby natural population has not been able to recolonize the site.

Little is known about the life history and ecology of *C. perforata*. This causes concern regarding its recolonization potential, since relatively large, heavy fragments may not disperse far or fast. Additionally, indeterminate branching structures which vegetatively fragment lead to problems in estimating demographic trends. Counts of individual fragments are infeasible and probably not informative, since individuals cannot be defined. Some estimate of areal coverage may be the best way to describe the population size and spread.

A review of current ecological and management research on the genus may yield valuable suggestions for applied management of *C. perforata*. Studies of boreal forest terrestrial *Cladonia* species biology and ecology, for example, may offer useful information for management of Florida's terrestrial lichen communities.

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# Recovery for the Florida Perforate Cladonia

## *Cladonia perforata* Evans

**Recovery Objective:** RECLASSIFY to threatened.

### Recovery Criteria

*Cladonia perforata* may be reclassified from endangered to threatened when: enough demographic data are available to determine the appropriate numbers of self-sustaining populations and sites needed to assure 20 to 90 percent probability of persistence for 100 years; when these sites, within the historic range of *C. perforata*, are adequately protected from further habitat loss, degradation, and fragmentation; when these sites are managed to maintain the rosemary phase of xeric oak scrub communities to support *C. perforata*; and when monitoring programs demonstrate that these sites support the appropriate numbers of self-sustaining populations, and those populations are stable throughout the historic range of the species.

This recovery objective is an interim goal because of the limited data on the biology, ecology, and management needs of this species. The recovery objective will be reassessed annually based on new research, management, and monitoring information. Reclassification criteria may be refined if new information identifies new ways of re-establishing populations of this species to expand its distribution within its historic range.

### Species-level Recovery Actions

- S1. Determine current distribution of *C. perforata*.** This species' known distribution is scattered from the panhandle area of Florida south to Martin and Palm Beach counties in South Florida with large areas having no individuals. A thorough survey is needed to determine the distribution for this species.
- S1.1. Conduct surveys for additional populations of *C. perforata* in South Florida.**
- S1.1.1. Survey scrub and high pine habitat for *C. perforata* in Osceola, Hardee, and Hendry counties.** Adequate survey work has not been performed off the Lake Wales Ridge. Sites on private property cannot be protected without survey knowledge.
  - S1.1.2. Continue surveys in Polk and Highlands counties.** The Lake Wales Ridge has been well surveyed, though new sites are still being found. This species by nature is hard to identify and dispersed sparsely. Survey work should continue for this species.
  - S1.1.3. Continue surveys on protected lands.** New sites for listed species are still being found on protected lands. This survey work should be continued to catalog all existing protected sites.

- S1.2. Maintain distribution of known populations and suitable habitat in GIS database.** Use GIS to map existing populations and to assess the species' status and trends over time. The database should contain information on locations, population areas and cover, and status. This information should also be used for project review and in land acquisition activities.
- S2. Protect and enhance existing populations. Much of the native xeric uplands on the Lake Wales Ridge and surrounding counties have been converted to agriculture or urban development.** The remaining habitat is fragmented into small parcels and in many cases, isolated. For this reason, existing populations are in need of protection from a variety of threats.
- S2.1. Protect populations on private land through acquisition, conservation easements, or agreements with landowners.**
- S2.2. Protect populations on public lands.** Develop management guidelines that allow for a fire regime that includes a mosaic of successional stages.
- S2.3. Prepare post-hurricane restoration plans for the southeast Florida counties.**
- S2.4. Enforce available protective measures.** Use local, State and Federal regulations to protect this species from overcollecting and damage from off-road vehicle use. Regulations should also be used to protect xeric vegetative communities where *C. perforata* lives.
- S2.4.1. Initiate section 7 consultations when Federal activities may affect this species.** In particular, it will be important to consult with the Florida DOT and the Federal Highway Administration to protect occupied habitat of *C. perforata* from further fragmentation and the secondary effects of road construction.
- S2.4.2. Enforce take and trade prohibitions.** This species is protected by take provisions of the ESA (including its prohibition against removing and reducing to possession any endangered plant from areas under Federal jurisdiction; maliciously damaging or destroying any such species on any such area; or removing, cutting, or digging up any such species), by the Preservation of Native Flora of Florida Act, and by the Florida rules regarding removal of plants from State lands.
- S2.5. Initiate *ex situ* conservation of *C. perforata*.** *Ex situ* collections can preserve genetic diversity, prevent loss of the species, and determine ecological characteristics and habitat management needs. These collections may be instrumental in the recovery of *C. perforata*, although lichens are known to be quite difficult to culture. The efforts of organizations like the Center for Plant Conservation of the Missouri Botanical Gardens, which collect, store, and maintain the germ plasm of rare species should continue to be supported. Emphasis should be placed on culturing techniques rather than trying to maintain living symbioses.
- S3. Conduct research on life history characteristics of *C. perforata*.** Much of the basic biology and ecology of this species remains poorly understood. To effectively recover this species more specific biological information is needed.
- S3.1. Continue research to determine demographic information, such as numbers of sites and populations, numbers of individuals in a population, recruitment, dispersal, growth, survival, and mortality.**

- S3.2.** Continue research to better understand the mechanisms of establishment of *C. perforata*, the effects of translocations of fragments, and the effects of fire on survival.
- S3.3.** Once demographic data are known, conduct population viability and risk assessment analysis to determine the spatial distribution needed to ensure persistence of the species.
- S3.4.** Conduct research to assess management requirements of *C. perforata*. Determine which natural populations can be stabilized or increased by habitat management. Surveys, research, and monitoring will provide information on the localities of *C. perforata* sites, and on the factors contributing to any declines at each site. Site-specific management guidelines should be provided to land managers.
- S4. Monitor existing populations of *C. perforata*.**
- S4.1.** Monitor to detect changes in demographic characteristics, such as reproduction, recruitment, growth, dispersal, survival, and mortality. Also monitor for herbivory, disease and injury.
- S4.2.** Monitor the effects of various land management actions on *C. perforata*. Assess any changes in demographic characteristics of *C. perforata* in response to land management activities, such as prescribed fire, exotic plant control, *etc.*
- S4.3.** Develop a quantitative description of the population structure of *C. perforata*. This description will provide a baseline for monitoring population dynamics in response to natural environmental changes and management treatments. Data recorded should include morphology, survivorship, mortality, and reproduction for individual plants. Data about each plant's (or fragment's) microsite (vegetation cover, litter depth, substrate, and closest neighbors) should also be included.
- S5. Provide public information about *C. perforata*.** It is important for the recovery of this species that governmental agencies, conservation organizations such as the Florida Native Plant Society, and private landowners be appropriately informed about this species. Care is needed, though, to avoid revealing specific locality information about where *C. perforata* is found.
- Public outreach efforts must also continue to address the increasing concern that horticultural demand for this and other rare species may not benefit conservation of threatened and endangered species. Public education should identify that commercial production and horticultural uses of endangered species provide little benefit to species, since the recovery of *C. perforata* and other rare species requires a self-sustaining, secure, number of natural populations.
- S6. Establish delisting criteria.** Once reclassification is achieved, research and monitoring results may provide data necessary to develop delisting criteria.

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### Habitat-level Recovery Actions

- H1. Prevent degradation of existing habitat. Extensive habitat loss, degradation, and fragmentation have already occurred throughout the range of this species.** Both urbanization and fire suppression have decreased the available habitat. To date, there are 15 protected sites for *C. perforata* in South Florida.
- H1.1. Secure habitat through acquisition, landowner agreements, and conservation easements.** Little xeric scrub habitat is remaining for this species; any method of securing *in situ* protected populations should be sought.

- H1.2. Manage and enhance habitat.** Manage habitat to maintain *C. perforata* populations by preventing damage from off-road vehicle use and overcollection, and by providing proper management of habitat including prescribed fire.
- H1.2.1. Conduct prescribed burns.** Fire is a necessary and integral characteristic of the scrub community. A variable interval in fire return and in season is important to mimic the natural fire regime. The scrub landscape is naturally made up of islands of suitable and unsuitable habitat. To repeat this landscape pattern, sites should be burned as a mosaic when possible.
- H1.2.2. Control and eliminate exotic and invasive plants and animals.** Exotic plant and animal species are not yet a major threat in this species habitat as compared to other communities in South Florida. However, in isolated areas, exotic species are becoming established. Without control, exotic/invasive plants may become a threat to the survival and recovery of *C. perforata*.
- H2. Restore areas to suitable habitat.** Native habitats that have been disturbed or that have experienced a long history of fire suppression may be good candidates for future reserves.
- H2.1. Restore natural fire regime.** Long periods without fire can change the species composition and the ability of the site to carry fire. Rehabilitation of a site may be a lengthy process, but with fewer and fewer sites remaining, these sites may become more valuable for future recovery.
- H2.2. Enhance sites with native plant species.** Because of logging or long periods without fire, certain native plant species that were present historically may now be absent from the natural composition of the community. These species can be reintroduced if natural colonization is not possible.
- H3. Conduct habitat-level research projects.** Study the response of *C. perforata* to various land management practices, such as prescribed fire regimes, vegetative thinning, and control of exotic/invasive vegetation. Although recently studied, questions still exist on management reactions.
- H4. Monitor habitat/ecological processes.** Monitor the effects of land management actions, such as prescribed fire, exotic plant control, *etc.*, on the habitats where *C. perforata* occurs.
- H5. Provide public information about scrub and its unique biota.** Educational efforts, especially those conducted by Archbold Biological Station, have been successful. Without these successful efforts, the Lake Wales Ridge NWR would not have been created. The State's system of biological preserves depends for its funding and future success on a broad base of public understanding and support. In addition to past and ongoing educational efforts by The Nature Conservancy, Bok Tower Gardens, and Archbold Biological Station, future efforts by these organizations, the Florida Park Service, the Florida Native Plant Society and local garden clubs play crucial roles in increasing public appreciation of scrub, high pineland vegetation, and their plant species.

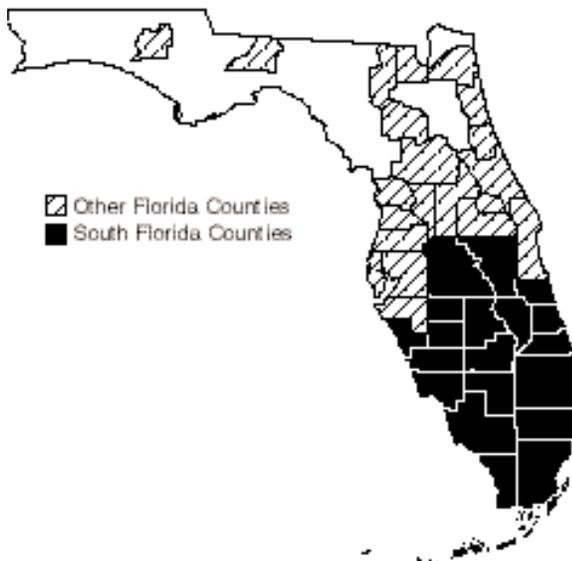
# EXHIBIT R

## Wood Stork

*Mycteria americana*

<b>Federal Status:</b>	<b>Endangered (Feb. 28, 1984)</b>
<b>Critical Habitat:</b>	<b>None Designated</b>
<b>Florida Status:</b>	<b>Endangered</b>
<b>Recovery Plan Status:</b>	<b>Contribution (May 1999)</b>
<b>Geographic Coverage:</b>	<b>South Florida</b>

Figure 1. Florida distribution of the wood stork.



Wood storks (*Mycteria americana*) are one of two species of storks that breed in North America. This large, long-legged inhabitant of marshes, cypress swamps, and mangrove swamps reaches the northern limit of its breeding range in the southeastern U.S., where it breeds in colonies with great egrets, snowy egrets, white ibises, and many other species. The unique feeding method of the wood stork gives it specialized habitat requirements; the habitats on which wood storks depend have been disrupted by changes in the distribution, timing, and quantity of water flows in South Florida. The population declines that accompanied this disruption led to its listing as an endangered species and continue to threaten the recovery of this species in the U.S.

This account represents South Florida's contribution to the rangewide recovery plan for the wood stork (FWS 1997).

### Description

The wood stork is a large, long-legged wading bird, with a body length (head to tail) of 85 to 115 cm and a wingspan of 150 to 165 cm. Their plumage is white, except for iridescent black primary and secondary feathers and a short black tail. On adult wood storks, the rough scaly skin of the head and neck is unfeathered and blackish in color. Their legs are dark with dull pink toes. The bill color is blackish. Male and female wood storks are similar in appearance, although male wood storks tend to be larger, have longer wingspans and weigh more.

Immature storks, up to the age of about 3 years, differ from adults in that their bills are yellowish or straw colored and they exhibit varying amounts of dusky feathering on the head and neck. During courtship and the early nesting season, adults have pale salmon coloring under the wings, fluffy undertail coverts that are longer than the tail, and toes that brighten to a vivid pink.

In the field, wood storks are distinctive among North American wading birds due to their long, heavy bills, black primary and secondary feathers, and black tails. Few other North American wading birds, except sandhill cranes (*Grus canadensis*), whooping cranes (*Grus canadensis americana*), white ibises (*Eudocimus albus*), and roseate spoonbills (*Ajaia ajaja*) fly with their necks and legs extended. Wood storks can be distinguished from sandhill cranes by their white plumage; they can be distinguished from whooping cranes by their size (the body of wood storks are 89 to 115 cm while whooping cranes are 127 to 151 cm), black secondary feathers, and black tail feathers. White ibises and wood storks both have black flight feathers on the wing tips. However, the wood stork is easily distinguished by its black head and its heavy bill. The roseate spoonbill is characteristically pinkish in color and has a spoonbill. At large distances, soaring white pelicans (*Pelecanus erythrorhynchos*) and storks appear similar; both soar in flocks at great heights and have similar color patterns.

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### Taxonomy

The wood stork is one of 17 species of true storks (Ciconiidae) in the world. The wood stork is one of three stork species found in the western hemisphere and is the only one that breeds north of Mexico (Ogden 1990). The wood stork has no described subspecies, races, or distinctive subpopulations (Palmer 1962).

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### Distribution

Breeding populations of the wood stork occur from northern Argentina, eastern Peru, and western Ecuador north to Central America, Mexico, Cuba, Hispaniola, and the U.S. (AOU 1983). In the U.S., wood storks historically nested in all coastal states between Texas and South Carolina (Wayne 1910, Bent 1926, Howell 1932, Oberholser 1938, Dusi and Dusi 1968, Cone and Hall

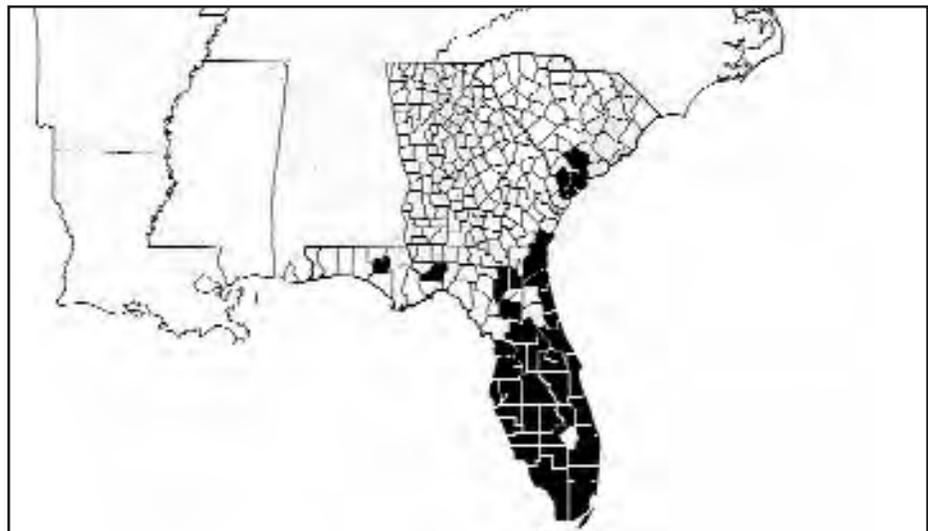


Figure 2. Breeding distribution of the wood stork in the United States (FWS 1996).

**Wood stork.**

*Original photograph by Brian Toland.*



1970, Oberholser and Kincaid 1974). Currently, wood storks breed in Florida, Georgia, and coastal South Carolina (Figures 1 and 2). Post breeding storks from Florida, Georgia, and South Carolina disperse occasionally as far north as North Carolina and as far west as Mississippi and Alabama.

In the U.S., the post breeding dispersal of the wood stork is extensive, with annual variation. The wood stork has been reported both as a casual and regular visitor, ranging from southern California and southern Arizona, north to northern California, southern Idaho, Montana, Colorado, Nebraska, southeastern South Dakota, Missouri, Illinois, southern Michigan, and southern Ontario, Canada; from the Gulf of Mexico north to Arkansas and western Tennessee; and along the Atlantic coast to Maine, southern New Brunswick, Canada, and New York, south to its breeding range in Florida, Georgia, and South Carolina. It is suspected that most wood storks sighted in Arkansas, Louisiana, Texas, and points farther west are birds that have dispersed from colonies in Mexico (FWS 1997). Some of the sightings in this region may also be wood storks dispersing from southeastern U.S. breeding colonies, but the amount of overlap or interchange between populations in the southeastern U.S. and Mexico is unknown.

In South Florida, breeding colonies of the wood stork occur in Broward, Charlotte, Collier, Miami-Dade, Hardee, Indian River, Lee, Monroe, Osceola, Palm Beach, Polk, St. Lucie, and Sarasota counties. Wood storks have also nested

in Martin County, and at one time or another, in every county in South Florida. It is believed that storks nesting in north Florida, Georgia, and South Carolina move south during the winter months (December through February). Bancroft *et al* (1992) have shown that the number of storks feeding in the three WCA's of the central and northern Everglades varied greatly among winters, ranging from a low of 1,233 birds in a high-water year to 7,874 birds in a low-water year. In most of the study years, 1985 to 1989, the total number of storks in the WCA's increased substantially between December and January, and dropped off sharply after March. In some years, the inland marshes of the Everglades have supported the majority (55 percent) of the U.S. population of wood storks (FWS 1997).

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### Habitat

The wood stork is primarily associated with freshwater and estuarine habitats for nesting, roosting, and foraging. Wood storks typically construct their nests in medium to tall trees that occur in stands located either in swamps or on islands surrounded by relatively broad expanses of open water (Palmer 1962, Rodgers *et al.* 1996, Ogden 1991). Historically, wood storks in South Florida established breeding colonies primarily in large stands of bald cypress (*Taxodium distichum*) and red mangrove (*Rhizophora mangle*). The large, historic Everglades NP nesting colonies were in estuarine zones. These estuarine zones are also an important feeding habitat for the nesting birds. In one study of wood stork nesting throughout Florida, which was conducted prior to the 1960s, more than half of all wood stork nests were located in large bald cypress stands, 13 percent were located in red mangrove, eight percent in partially harvested bald cypress stands, six percent in dead oaks (*Quercus* spp.), and five percent in small pond cypress (*T. distichum* var. *nutans*) (Palmer 1962). Wood storks have also been observed constructing their nests in custard (pond) apple (*Annona glabra*), black gum (*Nyssa biflora*), buttonwood (*Conocarpus erectus*), black mangrove (*Avicenna germinans*), strangler fig (*Ficus aurea*), and southern willow (*Salix carolina*). Coastal nest sites occur in red mangroves and, occasionally, Brazilian pepper (*Schinus terebinthifolius*), cactus (*Opuntia stricta*), and Australian pine (*Casuarina equisetifolia*).

During the nonbreeding season or while foraging, wood storks occur in a wide variety of wetland habitats. Typical foraging sites for the wood stork include 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. Because of their specialized feeding behavior, wood storks forage most effectively in shallow-water areas with highly concentrated prey (Ogden *et al.* 1978, Browder 1984, Coulter 1987). In South Florida, low, dry-season water levels are often necessary to concentrate fish to densities suitable for effective foraging by wood storks (Kahl 1964, Kushlan *et al.* 1975). As a result, wood storks will forage in many different shallow wetland depressions where fish become concentrated, either due to local reproduction by fishes, or as a consequence of seasonal drying.

The loss or degradation of wetlands in central and South Florida is one of the principal threats to the wood stork. Nearly half of the Everglades has been drained for agriculture and urban development (Davis and Ogden 1994). The Everglades

Agricultural Area (EAA) alone eliminated 802,900 ha of the original Everglades, and the urban areas in Miami-Dade, Broward and Palm Beach counties have contributed to the loss of spatial extent of wood stork habitat. Everglades NP has preserved only about one-fifth of the original extent of the Everglades, and areas of remaining marsh outside of the Everglades NP have been dissected into impoundments of varying depths.

The U.S. Army Corps of Engineers' (COE) Central and Southern Florida (C&SF) Project encompasses 4,660,000 ha from Orlando to Florida Bay and includes about 1,600 km each of canals and levees, 150 water control structures, and 16 major pump stations. This system has disrupted the volume, timing, and direction of fresh water flowing through the Everglades. The natural sheet flow pattern under which the Everglades evolved since about 5,000 years ago has not existed for about 75 years (Leach *et al.* 1972, Klein *et al.* 1974). The diversion of natural sheet flow to canals, the loss of fresh water to seepage and to pumping to tidal waters, and the extraction of fresh water for irrigation and urban water supply has led to saltwater intrusion in coastal counties from St. Lucie County on the east coast to Sarasota County on the west coast.

Although the major drainage works completed the conversion of wetlands to agriculture in the EAA by about 1963, loss of wetlands continues to the present at a slower, but significant rate. In the entire State of Florida between the mid-1970s to the mid-1980s, 105,000 ha of wetlands (including marine and estuarine offshore habitats) were lost; we do not have an estimate for freshwater wetlands in central and south Florida (Hefner *et al.* 1994).

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## Behavior

### Courtship

Mating occurs after a period of highly ritualized courtship displays at the nest site (Kahl 1972). As a female bird approaches, male birds establish themselves at potential nest sites and perform ritualized preening behavior. Rival males will extend their necks, grab their opponents' bills, and clatter their bills loudly a few times. Females respond by bill gaping and a spread-winged balancing posture. Females will be turned away initially, but after repeated approaches, will respond by swaying their heads, preening, or playing with nearby twigs (Kahl 1972). During copulation, males loudly clatter their bills. Mated pairs greet each other with exaggerated, mutual up-down head movements and hissing calls.

### Reproduction

Wood storks tend to use the same colony sites over many years, as long as the sites remain undisturbed and sufficient feeding habitat remains in the surrounding wetlands. Site turnover rates for the colonies in South Carolina are very low at 0.17 colonies per year. Current year colonies have an 89 percent likelihood of remaining active in consecutive years. However, many of these South Carolina colonies are relatively recent.

Traditional wetland nesting sites may be abandoned by storks once local or regional drainage schemes remove surface water from beneath the colony trees. Maintaining adequate water levels to protect nests from predation is a critical

factor affecting production of a colony. The lowered water levels allow nest access by raccoons and other land-based predators. As a result of such drainages and predation, many storks have shifted colony sites from natural to managed or impounded wetlands. The percentage of wood storks that nested in either altered wetlands (former natural wetlands with impounded water levels) or artificial wetlands (former upland sites with impounded water) in central and north Florida colonies increased from about 10 percent in 1960 to between 60 and 82 percent between 1976 and 1986.

Wood storks are seasonally monogamous, probably forming a new pair bond every season. Three and 4-year-old birds have been documented to breed, but the average age of first breeding is unknown. Once wood storks reach sexual maturity they are assumed to nest every year; there are no data on whether they breed for the remainder of their life or whether the interval between breeding attempts changes as they age (FWS 1997).

Wood storks construct their nests in trees that are usually standing in water or in trees that are on dry land if the land is a small island surrounded by water. The nest are large rigid structures usually found in the forks of large branches or limbs. Storks may add guano to the nest to stabilize the twigs. (Rodgers *et al.* 1988). The nest may be constructed in branches that are only a meter above the water or in the tops of tall trees. They construct their nests out of sticks, with a lining of finer material. Their nests are flat platforms, up to 1 m in diameter, and are maintained by the adult storks throughout the breeding season. Although both adults maintain the nest, the male wood stork usually brings nest material to the female after they complete their courtship (Palmer 1962).

The date on which wood storks begin nesting varies geographically. In Florida, wood storks lay eggs as early as October and as late as June (Rodgers 1990). In general, earlier nesting occurs in the southern portion of the state (below 27°N). Storks nesting in the Everglades and Big Cypress basins, under pre-drainage conditions (1930s to 1940s), formed colonies between November and January (December in most years) regardless of annual rainfall and water level conditions (Ogden 1994 and 1998). In response to deteriorating habitat conditions in South Florida, wood storks in these two regions have delayed the initiation of nesting, approximately two months, to February or March in most years since the 1970s. This shift in the timing of nesting is believed to be responsible for the increased frequencies of nest failures and colony abandonment in these regions over the last 20 years; colonies that start after January in South Florida risk having young in the nests when May-June rains flood marshes and disperse fish.

Female wood storks lay a single clutch of eggs per breeding season. However, they will lay a second clutch if their nests fail early in the breeding season (M. Coulter 1996). Wood storks lay two to five (usually three) eggs depending on environmental conditions; presumably larger clutch size in some years are responses to favorable water levels and food resources. Once an egg has been laid in a nest, one member of the breeding pair never leaves the nest unguarded. Both parents are responsible for incubation and foraging (Palmer 1962). Incubation takes approximately 28 days, and begins after the first one or two eggs are laid; therefore egg-hatching is asynchronous.

Younger, smaller chicks are often the first to die during times of food stress (FWS 1997). It takes about 9 weeks for the young to fledge; once they fledge, the

young stay at the nest for an additional 3 to 4 weeks to be fed by their parents. Parents feed the young nestlings by regurgitating whole fish into the bottom of the nest; parents feed the young three to 10 or more times per day. Larger nestlings are fed directly bill to bill. Feedings tend to be more frequent when young are small. Ogden *et al.* (1978) reported that only one to two feedings per day, per nest, have been recorded in South Florida colonies when adults were forced to fly great distances to locate prey. Kahl (1964) calculated that an average wood stork family (two adults and two nestlings) requires 201 kg (443 lbs) of fish during a breeding season, and that a colony of 6,000 nests therefore requires 1,206,000 kg of fish during the breeding season. A similar calculation for a typical Everglades NP or Corkscrew Swamp colony with 200 nests would require 40,200 kg (88,600 lbs) of fish during the breeding season.

The production of wood stork colonies varies considerably between years and locations, apparently in response to differences in food availability; colonies that are limited by food resources may fledge an average of 0.5 to 1.0 young per active nest; colonies that are not limited by food resources may fledge between 2.0 and 3.0 young per active nest (Ogden 1996a).

### Foraging

Wood storks use a specialized feeding behavior called tactolocation, or grope feeding. A foraging wood stork wades through the water with its beak immersed and partially open (7 to 8 cm). When it touches a prey item, a wood stork snaps its mandibles shut, raises its head, and swallows what it has caught (Kahl 1964). Regularly, storks will stir the water with their feet, a behavior which appears to startle hiding prey (Rand 1956, Kahl 1964, Kushlan 1979). Tactolocation allows storks to feed at night and use water that is turbid or densely vegetated. However, the prey must be concentrated in relatively high densities for wood storks to forage effectively. The natural hydrologic regime in South Florida involves seasonal flooding of extensive areas of the flat, low-lying peninsula, followed by drying events which confine water to ponds and sloughs. Fish populations reach high numbers during the wet season, but become concentrated into smaller areas as drying occurs. Consumers, such as the wood stork, are able to exploit high concentrations of fish in drying pools and sloughs. In the pre-drainage Everglades, the dry season of South Florida provided wood storks with ideal foraging conditions by concentrating prey species in gator holes and other drainages in the Everglades basin. In coastal areas, the tidal cycle strongly influences use of saltwater habitats by wood storks. The relatively great tidal amplitudes characteristic of coastal marshes in northeast Florida, Georgia, and South Carolina serve to concentrate prey. Similarly to the seasonal drawdowns found in freshwater systems (FWS 1997).

Storks forage in a wide variety of shallow wetlands, wherever prey reach high enough densities, and in water that is shallow and open enough for the birds to be successful in their hunting efforts (Ogden *et al.* 1978, Browder 1984, Coulter 1987). Good feeding conditions usually occur in relatively calm water, where depths are between 10 and 25 cm, and where the water column is uncluttered by dense patches of aquatic vegetation (Coulter and Bryan 1993). In South Florida, dropping water levels are often necessary to concentrate fish

to suitable densities (Kahl 1964, Kushlan *et al.* 1975). In east-central Georgia, where stork prey is almost twice as large as the prey in Florida, wood storks feed where prey densities are significantly lower than foraging sites in Florida (Coulter 1992, Coulter and Bryan 1993, Depkin *et al.* 1992). Typical foraging sites throughout the wood stork's range include 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. Almost any shallow wetland depression that concentrates fish, either through local reproduction or the consequences of area drying, may be used as feeding habitat.

Wood storks feed almost entirely on fish between 2 and 25 cm in length (Kahl 1964, Ogden *et al.* 1976, Coulter 1987). In South Florida, Ogden *et al.* (1976) found that certain fish species were taken preferentially. Mosquito fish (*Gambusia affinis*) were under represented in the diet in proportion to abundance, whereas, flagfish (*Jordanella floridae*), sailfin mollies (*Poecilia latipinna*), marsh killifish (*Fundulus confluentus*), yellow bullheads (*Ictalurus natalis*), and sunfish (*Centrarchidae*) were over represented. Wood storks also occasionally consume crustaceans, amphibians, reptiles, mammals, birds, and arthropods. Fish densities at stork foraging sites varied from 15.6 individuals/m<sup>2</sup> in east-central Georgia to 40 individuals/m<sup>2</sup> in South Florida (Ogden *et al.* 1978, Depkin *et al.* 1992).

Because wood storks rely on concentrated food sources which are patchily distributed over large areas, they need to be able to find new feeding grounds with minimal energy expenditure. Wood storks have soaring abilities that allow them to reach high altitudes and many kilometers without the energy expenditure of wing-flapping. A recent study suggested that soaring flight by storks can be accomplished at one-tenth the energetic cost of flapping flight (Bryan and Coulter 1995). The long distances they travel, however, shortens the time available to wood storks for feeding and reduces the number of times an adult stork can return to its nest to feed young (Kahl 1964). During the breeding season, feeding areas proximal to wood stork breeding colonies may play an important role in chick survival and provide enhanced opportunities for newly fledged birds to learn effective feeding skills.

### **Movements**

During the non-breeding season (the summer to fall rainy season in South Florida), juvenile wood storks from South Florida colonies have been located throughout the Florida peninsula, southern Georgia, coastal South Carolina, central Alabama, and east-central Mississippi (Ogden 1996a). Additionally, marked individuals from a colony in east-central Georgia were found in the central Everglades during the winter. This information suggests that the southeastern population of wood storks is a single population that responds to changing environmental conditions through temporal relocation. Rodgers' (1996) data analysis of genetic variation in wood stork populations in South Florida, central Florida, north Florida, Georgia, and South Carolina support this evaluation.

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## Relationship to Other Species

Although the majority of nesting by the southeastern wood stork population no longer occurs in South Florida, the wetlands of the Everglades remain as important feeding areas for large numbers of storks during the dry season (winter-spring) (Bancroft *et al.* 1992). Wood storks may nest with many other wading bird species including white ibis (*Eudocimus albus*), tricolored herons (*Hydranassa tricolor*), snowy egrets (*Egretta thula*), great egrets (*Casmerodius albus*), great blue herons (*Ardea herodias*), little blue herons (*Egretta caerulea*), and cattle egrets (*Bubulcus ibis*).

Suitable foraging habitat for the wood stork occurs in a specific band of the hydrologic and vegetative gradient of South Florida's landscape (see preceding discussions on foraging habitat and foraging behavior). Wood storks share that landscape with other species that occupy different (adjacent) positions along the same hydrologic and vegetative gradients. The endangered snail kite (*Rostrhamus sociabilis plumbeus*) is a nomadic species which moves throughout the South Florida landscape in response to changing habitat conditions. Optimal foraging conditions for the snail kite include areas of variable water depth that support apple snails. Conditions that provide good foraging habitat for the snail kite are too deep to provide optimal foraging conditions for the wood stork. The Cape Sable seaside sparrow (*Ammodramus maritimus mirabilis*) is another endangered species that utilizes the South Florida landscape and whose breeding success is dependent on hydrologic conditions that differ from those of the wood stork and the snail kite. The Cape Sable seaside sparrow requires short-hydroperiod dry marl prairie communities that are dominated by muhly grass (*Muhlenbergia filipes*) for their nesting cycle.

Historically, the large spatial extent and diverse environmental conditions of the South Florida landscape provided the different habitat requirements of these species (Davis and Ogden 1994). In the past century, draining and clearing activities dramatically reduced the spatial extent of the South Florida Everglades. At the same time, humans began to control the timing, distribution, and volumes of water in the South Florida landscape. These practices have resulted in a reduced diversity of environmental conditions and a resultant loss of heterogeneity in the South Florida landscape. The combination of reduced spatial extent and reduced landscape diversity now causes the environmental needs of these species to "conflict" in the current, less-diverse, managed landscape.

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## Status and Trends

The wood stork appears to be experiencing human population pressure throughout its entire New World range. Although specific information on the status and trends of breeding colonies is not available throughout its range, information that has been collected on specific colonies suggests that breeding and foraging habitats of the wood stork are declining in area and quality. Mexico listed its breeding population of the wood stork as endangered in 1991 because of dramatic population declines. The size of the most important breeding colonies for the wood stork in Mexico, which are located in the Usumacinta and Grijalva River Deltas in the states of Tabasco and Campeche, had

declined from 10,000 to 15,000 pairs in 1979 (Luthin 1987) to 3,000 to 3,500 pairs by 1990. Ogden *et al.* (1988) report 6,000-8,000 pairs as the range from 1971 to 1979. The wood stork is considered an endangered species in Belize where all colonies that were identified in the 1970s had disappeared by the late 1980s (Luthin 1987). Only one stable breeding colony is known to exist in Costa Rica; elsewhere in Central America, its status is unknown. Wood storks in South America face similar threats; in Ciénaga de Zapatos (Colombia), wood storks are threatened by pollution in the Rio Magdalena; in the Santa Rosa wetlands of Machalilla NP (Ecuador), wood storks may be affected by the construction of an oil terminal. The enormous wood stork rookeries in the Pantanal (primarily in Brazil), which is the world’s largest wetland, are threatened by expanding agriculture, water pollution, and a massive project to drain, dike, and channelize this massive wetland ecosystem (Alho *et al.* 1988).

The U.S. population of the wood stork was listed as endangered in 1984 because it had declined by more than 75 percent since the 1930s (49 FR 7335). At the time, the FWS believed that the U.S. breeding population would be extirpated by the turn of the century if it continued to decline at the same rate. The original

listing recognized the relationship between the declining wood stork population, the loss of suitable foraging habitat, and colony nesting failures, particularly in the breeding colonies in South Florida where human actions have reduced wetland areas by about 35 percent (Ogden and Nesbitt 1979).

We are uncertain about the size of the U.S. breeding population of wood storks before the statewide surveys of the late 1950s. Published and unpublished estimates of the size of the U.S. breeding population of wood storks prior to the statewide surveys are contradictory. For example, Allen (in Palmer 1962) wrote that the number of breeding wood storks in Florida exceeded 150,000 individuals during the 1930s. However,

Ogden *et al.* (1978) believed this number was an overestimate resulting from an inflated estimate of the Lane River colony. Ogden (1978, 1996a) concluded that the wood stork population in the 1930s was probably less than 100,000 individuals, or between 15,000 and 25,000 pairs. More recent survey data provided by FWS (1997) in the wood stork recovery plan give a U.S. breeding population of 4,073 nests in 1991, 4,084 nests in 1992, 6,729 nests in 1993, 5,768 nests in 1994, and 7,853 nests in 1995 (Table 1). These data suggest that the breeding population of wood storks is increasing although the number of nests per year varies considerably. The next regionwide census of the wood stork population is scheduled for completion in 1999.

Since the 1960s, the wood stork population has shown a substantial decline in southern Florida and a substantial increase in northern Florida, Georgia, and South Carolina (Ogden *et al.* 1987). The number of pairs nesting in the traditional colony sites located in the Everglades and Big Cypress regions of southern Florida

**Table 1. Wood stork breeding population in the southeast U.S., 1991-1995 (1997 wood stork recovery plan).**

Year	Number of nests in southeast U.S.	Number of nests in South Carolina	Number of nests in Georgia	Number of nests in Florida	Number of nests in South Florida Ecoregion
1991	3,933	664	942	2,327	1,339
1992*	4,084	475	1091	2,518	2,518
1993	7,278	806	1649	4,823	2,546
1994	5,768	712	1468	3,588	2,015
1995	7,853	829	1501	5,523	2,639
* No data available for central or north Florida					

Table 2. Pairs of nesting wood storks in Florida, 1991-1995 (from FWS 1997 wood stork recovery plan)

Colony Name	GFC Number	County	1991	1992	1993	1994	1995
Micanopy River Styx	605011	Alachua	90		55	175	250
Moore Creek	612007	Brevard					
U.S. 130 East & West	612138	Brevard	12		50		75
Grant Farm	618004	Brevard	60		150	100	
Mico North & South	616102	Brevard					45
Walkeria	616119	Brevard					25
SW Lake Washington (Hawbill)	No Number	Brevard	60		185	105	300
Hall Island		Brevard	4				
	612127	Brevard	1		110	140	275
Lake Mary Jane	612037	Orange			190	105	175
<b>Subtotal - Central Florida East Coast</b>			<b>177</b>	<b>0</b>	<b>660</b>	<b>625</b>	<b>1,148</b>
Crosses	611015	Herndando					175
Weeks Wachee		Herndando			12	16	
Hillsboro River	611163	Hillsborough				8	215
Lake Yale	612027	Lake	40		275	90	65
Ayers Point		Manatee			140		33
Devils' Creek	611021	Pasco			120	160	210
Little Color Creek	611024	Pasco			60	9	200
<b>Subtotal - Central Florida West Coast</b>			<b>40</b>	<b>0</b>	<b>607</b>	<b>283</b>	<b>798</b>
Olene	605103	Columbia	42				
Falling Creek		Columbia	80		150	110	110
Dee Dot	694004	Duval	250		280	300	325
Cedar Point	694105	Duval	9		65	30	120
Nassauville	604103	Nassau	5				
	606109	St. Johns			170		60
<b>Subtotal - North Central Florida</b>			<b>386</b>	<b>0</b>	<b>665</b>	<b>440</b>	<b>615</b>
Ochlocknee River	692003	Leon	160		115	95	144
Charles	692001	Leon	225		230	120	179
<b>Subtotal - North Florida</b>			<b>305</b>	<b>0</b>	<b>345</b>	<b>225</b>	<b>323</b>
E. Clair Ranch	616016	Hardee	400		320	240	415
Heady Creek	612048	Polk			230	230	180
Lake Rosalie	616037	Polk	20		60	50	115
Mulberry NE	616114	Polk			75	130	110
	28048122	Polk			230	210	
<b>Subtotal - SEFT Central Florida</b>			<b>420</b>	<b>0</b>	<b>935</b>	<b>660</b>	<b>800</b>
Pelican Island	616007	Indian River	110		225	110	230
Sewal Point	616025	Mane					65
Wescott Grove	616106	St. Lucie	40		75		0
Cypress Creek	616047A	St. Lucie	150		375	265	10
<b>Subtotal - Central Florida East Coast</b>			<b>300</b>	<b>0</b>	<b>625</b>	<b>375</b>	<b>313</b>
Tamiami Trail East	620122	Dade			180		
Cutler Lake	620139	Dade	150		275		
I-28 Crossover		Dade			158		
Tamiami Trail West		Dade			123		
East River		Dade			15		
Brookly Branch		Monroe			9		
Rodgers River Bay		Monroe			22		90
Lario River		Monroe			1		
Raurelia Pond		Monroe			25	110	105
Loxhatchee 1&2	618139	Palm Beach	34				
BWA Catchment	No Number	Palm Beach					27
Corkscrew	619018	Collier	300	1800	426	450	564
<b>Subtotal - Everglades and Big Cypress</b>			<b>484</b>	<b>2,518</b>	<b>466</b>	<b>610</b>	<b>996</b>
Morgantown	618185	Charlotte	60				
North Port Charlotte	615995	Sarasota	75		520	170	500
<b>Subtotal - Central Florida West Coast</b>			<b>135</b>	<b>0</b>	<b>520</b>	<b>170</b>	<b>500</b>
<b>Florida Population</b>			<b>2,327</b>	<b>2,518</b>	<b>4,023</b>	<b>3,588</b>	<b>5,523</b>
<b>North Florida</b>			<b>886</b>	<b>0</b>	<b>2,277</b>	<b>1,573</b>	<b>2,884</b>
<b>South Florida</b>			<b>1,339</b>	<b>2,518</b>	<b>2,546</b>	<b>2,015</b>	<b>2,639</b>

declined from 8,500 pairs in 1961 to fewer than 500 pairs from 1987 through 1995. During the same years, the number nesting in Georgia increased from 4 pairs in 1965 to 1,501 pairs in 1995, and the number nesting in South Carolina increased from 11 pairs in 1981 to 829 pairs in 1995.

Between 1957 and 1960, the Florida and National Audubon Societies conducted a series of statewide aerial wood stork surveys of all known or suspected stork nesting colonies. In 1974, Florida statewide aerial surveys were initiated and repeated, annually, until 1986 (Ogden and Nesbitt 1979, Ogden and Patty 1981). In 1959, 14 breeding colonies in Florida supported an estimated 7,657 pairs of wood storks ; in 1960, 15 breeding colonies supported 10,060 breeding pairs; in 1975, 15 breeding colonies supported 5,382 breeding pairs; and in 1976, 17 breeding colonies supported 5,110 breeding pairs. More recent data provided in the wood stork recovery plan (FWS 1997) give a Florida breeding population of 2,327 pairs in 1991, 4,823 pairs in 1993, 3,588 pairs in 1994, and 5,523 breeding pairs in 1995. Twenty-one breeding colonies were present in 1991, 28 breeding colonies were present in 1993, 26 in 1994, and 30 in 1995. Data collections in 1992 did not include north and central Florida populations and are not included for comparisons.

The South Florida Ecosystem's contribution to the Florida population of wood storks is presented in Table 1. On the average the South Florida subpopulation represents 53 percent of the Florida population and 34 percent of the southeastern U.S. population. These data show a nesting population of 1,339 nests in 1991, 2,546 nests in 1993, 2,015 nests in 1994, and 2,639 nests in 1995.

The historical data and the recovery goals in the wood stork recovery plan reference the South Florida population as the Big Cypress Basin system and the Everglades Basin system. These two basins account for, on the average, between 30 to 37 percent of the South Florida Ecosystem sub-population. Table 2

provides a breakdown of the wood stork colonies listed in the recovery plan by general basin boundaries. Based on this general categorization of the colonies, four South Florida Ecosystem colony groupings are identified. These are the Central Florida East Coast colonies, the Everglades and Big Cypress (ECB) basin colonies, the Central Florida West Coast colonies, and the Central Florida colonies.

Historical data on colony locations identify the Everglades basin colonies and the Corkscrew colonies as the primary nesting locations for wood storks in South Florida (Ogden and Nesbitt 1979). In the late 1950s and early 1960s, wood storks nesting in the Everglades basin accounted for 12 percent [1,000 out of 8,609 nests (two-year average)] of the Florida population. The 1991 to 1995 survey data reveal that the Everglades basin colonies represents on the average, 3 percent [129 out of 4,065 nests (four-year average)] of the Florida population. In the late 1950s and early 1960s data, the Corkscrew colonies accounted for 51 percent [4,350 out of 8,609 nests (two-year average)]. The survey data also show that the Corkscrew colonies represent on the average, 12 percent [510 out of 4,065 nests (four-year average)] of the Florida population. More recent data provided by Ogden (1998) on three-year averages on nesting pairs of wood storks in the Everglades Basin (Loxahatchee NWR, WCAs 2 and 3, and mainland Everglades NP) show 343 pairs for the 1994 to 1996 average, 283 pairs for the 1995 to 1997 average, and 228 pairs for the 1996 to 1998 average. These averages are higher than the three-year average for the base years, 1986 to 1995. The base year averages were a low of 130 pairs and a high of 294 pairs. In the 1998 nesting year, only 25 pairs of wood storks were recorded nesting in ENP.

Rodgers *et al.* (1995) pointed out shortcomings in the aerial surveys used to generate population estimates for storks in Florida, Georgia, and South Carolina. Rodger's study compared ground surveys of wood stork colonies with aerial surveys of the same colonies. The variability of the aerial estimates was very large. For example, an approximately 95 percent confidence interval for the 1993 Florida statewide nesting population was 3,807 to 12,653 nests. The aerial count was 4,262 nests. The greatest variability occurred in large colonies with a high proportion of other white-plumage nesting birds. The FWS acknowledges the limitations involved in relying on aerial surveys for developing population estimates. However, over the long-term, aerial surveys are the most cost-effective method for estimating population trends. Ground surveys, while providing greater individual colony accuracy, are more time consuming and expensive on a regionwide basis. Rodgers recommended the incorporation of ground counts at selected colonies, training observers in presurvey flights, and replicating counts for each colony as actions to minimize variability in aerial surveys.

Historically, wood storks were recorded nesting in all coastal states between Texas and South Carolina (Ogden et al. 1987, FWS 1997); however, the largest colonies were located in South Florida. Since the 1960s, the decline in the U.S. population size of wood storks has been accompanied by a change in the size and distribution of their breeding colonies. Since the 1970s, the number of wood storks breeding in South Florida has substantially decreased. In north Florida, Georgia, and South Carolina the number of breeding wood storks has significantly increased (Ogden et al. 1987). From 1958 to 1960, 80 to 88 percent of wood stork nesting pairs were located at six sites in South Florida. Surveys from 1976 showed a decline to 68 percent, with a further decline to 13 percent in 1986. Since the late 1970s, a majority of wood storks have nested in central and north Florida, and an increasing number have nested in coastal colonies in Georgia and South Carolina. Between 1965 and 1995, the number of wood storks nesting in Georgia increased from four pairs to 1,501 pairs; between 1981 and

1995, the number of wood storks nesting in South Carolina increased from 11 pairs to 829 pairs. Since the 1970s, associated with this shift to the north, the U.S. southeast wood stork population appears to be gradually increasing, from a low of 3,000 to 4,000 pairs in the late 1970s, to over 7,800 pairs in the mid-1990s.

From 1991 through 1995, the FWS coordinated a systematic multi-state survey of wood stork nesting colonies. The results of these surveys suggest that, on average, from 1991 to 1995, approximately 35 percent of the total nesting effort in the southeast U.S. occurred in South Florida (Table 1). Historically, South Florida supported greater than 70 percent of the total nesting effort in the southeast U.S.; if these data are indicative of the ability of degraded South Florida ecosystems to support wood stork nesting, then South Florida ecosystems are functioning at approximately 50 percent of their previous capabilities.

Both 1992 and 1995 were years with high nesting effort. In 1995, nesting effort in South Florida improved from the previous two years, most likely in response to improved foraging conditions as a result of a rapid dry-down following the high-water years. In Everglades NP, Big Cypress National Preserve, Corkscrew National Sanctuary, and Florida Panther NWR, there were a total of approximately 996 nesting pairs. The North Port Charlotte nesting colony, which is north of the Corkscrew National Sanctuary had a breeding population of 500 nest pairs.

Since the 1970s, wood storks have also shifted their nest sites to areas that are artificial impoundments or where islands have been created by dredging activities (Ogden 1991). The percentage of nests in artificial habitats in central and north Florida has increased from approximately 10 percent of all nesting pairs in 1959 to 1960 to 60 to 82 percent between 1976 and 1986 (Ogden 1991). Nests in these artificially impounded sites often support exotic species such as Brazilian pepper (*Schinus terebinthifolius*) or Australian Pine (*Casuarina spp.*). Ogden (1996a) has suggested that the use of these artificial wetlands indicates that wood storks are not finding suitable conditions within natural nesting habitat or that they are finding better conditions at the artificial wetlands.

The 1960s and 1970s were a period of transition for wood storks breeding in South Florida. The most significant change was a delay in the timing of colony formation, from November and December in most years prior to the 1970s, to a pattern of colony formation between January and March. During the late 1970s, delayed colony formation by wood storks became the norm (Ogden 1994). Historically, wood storks formed colonies in November and December and concentrated the majority of their feeding efforts within the estuaries at the time of traditional colony formation (J. Ogden, SFWMD, personal communication 1996b).

The November/December feeding efforts appear to historically correspond to the annual mullet runs that occur on both of Florida's coastal systems. Before spawning, which usually peaks from November through January, large schools and concentrations of mullet form in the estuarine habitat (J. Cato, et al. 1976). During low tide, these large schools of mullet, which are concentrated in the shallow estuarine bays and mud flats, provide a concentrated food source for the wood stork during the early nesting cycle.

By the time the young of the year were ready to fledge and begin foraging independently, the dry season in South Florida was well underway and fish were

being concentrated in the interior freshwater sloughs, making feeding easy. Presently, wood storks in South Florida appear to be initiating nesting in response to the drying of the interior marshes in February to April; by the time the young fledge and begin foraging on their own, the wet season is underway, water levels in the interior marshes are rising, and many young starve. Such a change suggests that the estuarine habitats no longer provide suitable foraging conditions during the early dry season months, November to January.

The reproductive success of storks requires habitats that provide high concentrations of certain size-classes of fish, over a 125 to 150 day breeding cycle. Because seasonal and annual rainfall patterns are so variable in South Florida, the quantity of these foraging habitats also varies among years (J. Ogden, SFWMD, personal communication 1998). As a result, wood storks probably have always had highly variable reproductive success throughout their history, a phenomenon that is mitigated by the relatively long life spans of adult storks. Nevertheless, most authors agree that the decline of the U.S. wood stork population far exceeds the range of historic variability in total population size, and is correlated with water management activities in South Florida (Palmer 1962, Frederick 1993, Ogden 1996). During wet years, current water management practices prevent the formation of shallow pools that concentrate the fish on which wood stork forage. During dry years, current water management practices overdrain the freshwater sloughs, reduce freshwater flows into the mainland estuaries and reduce their ability to produce the fish on which wood storks forage.

As a result of these water management practices, wood storks in South Florida have experienced increased frequencies of nest failure. For example, in 1962, 1978, and 1983, wood storks in Everglades NP did not initiate nesting. In 1990, all nestlings in the Cuthbert Lake colony starved. In 1995, none of 250 nestlings survived in the Paurotis Pond colony. In the 1998 nesting year, only 25 pairs of wood storks were recorded nesting in ENP.

The threat of mercury contamination in the Everglades food web and its impact on the success of wood storks in South Florida is not clearly understood. Researchers have suggested that declines in wading bird populations may be partially a result of mercury toxicity (Frederick and Spalding 1994, Sundlof *et al.* 1994). In 1991, mercury contamination was documented in a wood stork carcass found in the Big Cypress basin (Facemire and Chlebowski 1991). The average mercury contents in the liver and feathers of the wood stork were 10.1 and 9.93 mg mercury per kg weight, respectively. The report concluded that, although the documented levels were generally less than those noted in the literature for fish-eating birds from mercury-contaminated freshwater systems, they were, most likely, sufficient to cause an adverse effect to the population. More recently, Beyer *et al.* (1997) found mercury concentrations in the livers of four wood storks collected in South Florida that were higher than the concentrations reported in seven other species of wading birds from South Florida. Frederick and Spalding (1994) reviewed the current knowledge on mercury contamination in wading birds, and concluded:

In light of work that has been done in other species, it is not unreasonable to assume that high concentrations of mercury found recently in Everglades wading birds could result in the sublethal effects of reduced foraging and courtship ability. Each of these

symptoms could result in reduced breeding effort and success and could be a powerful factor in explaining the reduced reproduction observed in the Everglades. The current state of knowledge on the effects of specific concentrations of mercury on wading bird behavior and survival is nonexistent.

Clearly much more specific research needs to be conducted on the levels of mercury in wood storks in the Everglades and the effects of these levels on the population. Potential impacts from contaminants need to be reconsidered in light of recent findings concerning the amount of mercury present in the Everglades ecosystem and the discovery of severe impacts of DDT/DDE-based estrogen-mimicking compounds on wildlife in a large Florida wetland (Guillette *et al.* 1994). The Science Sub-Group of the Interagency Task Force on the South Florida Ecosystem has acknowledged this in the section of their report dealing with threatened and endangered species. For the wood stork, the report calls for “a detailed study of the effects of mercury, other toxins, and parasites on the survivorship and reproductive success of wood storks” (Science Sub-Group, 1996).

Prognosis of the U.S. wood stork population between 1996 and 2020 is partially dependent on the success of the overall South Florida Ecosystem restoration effort. The freshwater flows need to be restored to more closely mimic the pre-drainage system; it is believed that by restoring the quantity, quality, timing, and distribution of flows in the remaining Everglades wetlands that the prey base so critical to wood storks during the breeding season will be recovered in both the estuarine and freshwater systems. Although we have lost approximately 35 percent of the original foraging grounds and the quality of much of the remaining wetlands has become degraded as foraging habitats, if our efforts to restore the South Florida Ecosystem are successful, we will recreate a system with heterogeneity and inherent variability, which should provide the prey base necessary to restore the wood stork in South Florida.

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## Management

South Florida has been severely degraded by the C&SF Project, which encompasses 4,660,000 ha from Orlando to Florida Bay and includes about 1,600 km each of canals and levees, 150 water control structures, and 16 major pump stations. This system has disrupted the natural volume, timing, quality and distribution of surface and ground water throughout South Florida. In recognition of the detrimental effects that this flood control system has had on the ecosystems in South Florida, numerous hydrologic projects, whose purposes are to aid in the restoration of South Florida’s ecosystems, while maintaining flood control, are in varying stages of planning and implementation.

The 1992 Water Resources Development Act (WRDA) authorized the Kissimmee River and the Kissimmee River Headwaters Revitalization Project. In 1994, a Project Cooperative Agreement between the COE and the local

sponsor, the SFWMD, combined the two authorized projects into one project, the Kissimmee River, Florida Project. The purpose of the project is to provide the flows necessary to restore the Kissimmee River ecosystem. We have the ability to increase the spatial extent and quality of foraging habitat available to wood storks by returning the natural functions to the Kissimmee River basin.

The C-111 and Modified Water Deliveries Projects were congressionally authorized in 1994 and 1990, respectively. The purpose of these two projects is to begin the process of restoring freshwater flows into Everglades NP. This will be accomplished by modifying the structures, canals and levees that deliver water to Everglades NP, and by changing the operational schedules. The future breeding success of the wood stork in Everglades NP is closely tied to the success or failure of these two projects. While other aspects of the overall Everglades restoration will be necessary to re-establish pre-drainage-like flows, these two projects will set the precedent for the restoration of South Florida, including the restoration of the prey base available to breeding wood storks in the southern Everglades.

The Experimental Program of Water Deliveries to Everglades NP was authorized in 1983; its purpose is to provide a vehicle to field-test water delivery methods into ENP. Each iterative test builds on the results of the previous tests and is aimed at furthering the goal of restoring, to the extent practicable, the ecological integrity of the native fauna and flora within Everglades NP, including Florida Bay. As operational flexibility increases with the completion of the Modified Water Deliveries, C-111, and other restoration projects, the ability to implement an operational plan that optimizes ecological restoration will substantially increase, and with it, our ability to recover the wood stork in South Florida.

Water supply and water delivery programs are also addressing habitat degradation of wood stork nesting and foraging areas in the Big Cypress basin and in the Corkscrew Regional Ecosystem Watershed. The hydrologic restoration of Southern Golden Gate Estates, a 113 square miles rehydration project being jointly designed by the SFWMD and the Corps of Engineers, will provide surface storage and aquifer recharge and water quality enhancement in the Big Cypress Basin.

WRDA further authorized a comprehensive review of the Central and Southern Florida Project. The purpose of the review is to develop a comprehensive plan to restore, preserve, and protect the South Florida ecosystem. This is to be accomplished through the restoration of more natural flows to the southwest coastal areas, including the Big Cypress basin, and through the Everglades NP to Florida Bay. The WRDA of 1996 accelerated this process and calls for a plan to be sent to Congress for authorization by September 30, 1999. This project, in combination with previously authorized projects, should result in the enhancement of nesting and foraging habitat that is necessary for the recovery of the wood stork subpopulations in South Florida.

In addition to hydrologic restoration projects, the State of Florida administers land acquisition programs that may enhance opportunities to restore wood storks in South Florida. The Save Our Rivers program identifies

lands of environmental significance and prioritizes their acquisition. Of these lands identified, the Model Lands and Pennsuco wetlands in Miami-Dade County, the Golden Gate Estate wetlands in Collier County, and CREW wetlands in Lee and Collier counties are of significance to the wood stork for foraging. Public acquisition of these lands will increase our ability to manage them in an ecologically-sensitive fashion. The Conservation and Recreation Lands Acquisition program is an additional program that may provide some opportunities for wood stork recovery in South Florida, and should be acknowledged and incorporated into long-term planning efforts. Nesting habitat should be protected from disturbance and human alteration through purchase into the public lands system, easements, partnerships and private landowner/government assistance and agreements. Watersheds supporting natural nesting habitat should remain unaltered, or be restored to function as a natural system if previously altered.

Lands can be purchased by Federal agencies through section 104 of the Everglades NP Protection and Expansion Act of 1989 (P.L. 101-229) and section 390 of the Federal Agriculture Improvement and Reform Act of 1996 (P.L. 104-127).

The Everglades NP Protection and Expansion Act of 1989 authorized the purchase of lands to be added to the park that encompass approximately 44,379 ha within northeast Shark River Slough (NESS) and the East Everglades. The purchase of these lands and the hydrological improvements to these lands are critical to restoring ecosystem productivity in the southern Everglades and maintaining adequate freshwater inflow to the downstream estuaries along the Gulf of Mexico and Florida Bay. The purchase of these lands is necessary to limit further habitat destruction outside former boundaries and to restore natural water flow patterns that are critical to the long-term viability of the park.

Section 390 of the Federal Agriculture Improvement and Reform Act of 1996, referred to as Farm Bill 390, provides two distinct funding programs for land acquisition to support restoration of the Everglades. The first program provided \$200,000,000 to the Secretary of the Interior to conduct restoration activities in the Everglades Ecosystem in South Florida, including acquisition of real property and interests in real property and resource protection and resource maintenance activities. An additional \$100,000,000 is available under the Farm Bill 390 authorization from the sale of Federal surplus lands to purchase lands necessary for the Everglades restoration efforts.

The Corkscrew colony in Collier County continues to occasionally produce large numbers of young in South Florida (Table 2). The acquisition or preservation of this colony's habitat and recovery of more natural hydropatterns within the foraging grounds surrounding this colony, are critical to the recovery of wood storks in South Florida. Wood storks nesting at Corkscrew now show a similar pattern of delayed nesting in many years. Private lands initiatives, conservation easements, and mitigation banking should all be considered as viable opportunities for managing these lands.

Ogden (1990) developed a set of management guidelines for the FWS on wood stork nesting, feeding, and roosting habitats. The guidelines recommend

buffer zones that may be necessary to reduce human disturbance of storks in feeding and roosting habitats. These efforts have substantially contributed to the protection of stork habitat, particularly where new developments have been proposed in areas used by storks. The buffer zones recommended in the management guidelines are larger than those recommended by Rodgers and Smith (1995) in their analysis. At the time the guidelines were developed, little empirical data were available on the response of wood storks to human activities. Rodgers and Smith analyzed only three types of human activities: walking, canoeing, and a small motorboat with two persons. They did not evaluate responses to other activities such as construction or aircraft. The current guidelines recommend buffer zones to protect colonies from many kinds of activities including human disturbance. Rodgers and Smith, (1997) study of human disturbance to foraging and loafing waterbirds recommends a buffer of about 100 meters.

An understanding of the relationships between storks and water conditions in the Everglades has provided a basis for restoration planning for the region. Wood storks have been recommended by the Science Sub-Group of the South Florida Ecosystem Restoration Task Force as a species to be used for measuring the success of the overall South Florida Ecosystem restoration. Everglades NP and SFWMD staff have used a 64-year record of stork nesting in the Everglades basin (1932-1995) for this purpose. The C-111 Project, Modified Water Deliveries Project, the Experimental Program of Water Deliveries to Everglades NP, and the regional water management plans being developed for the EAA, the Big Cypress basin and the CREW should eventually result in much improved habitat conditions for storks in South Florida. It is currently assumed, as a part of the restoration planning, that the recovery of increased volumes of freshwater flows through the Everglades marshes and into the estuaries of Florida Bay will increase primary and secondary production in these regions.

Regional surveys of nesting colonies conducted from 1957 through 1961, and again in the mid-1970s, have been essential for locating important habitats, and for understanding the threats to the southeastern population of storks. These surveys were the first to measure the status of the regional population of storks, and have been used to measure responses by nesting storks to water management practices in the Everglades region. Over the 5 years from 1991 to 1995, the FWS coordinated a systematic multi-state survey of stork nesting colonies (L. Finger, FWS, personal communication 1996). The census continued through the 1995 nesting season. After a 5-year hiatus where financial efforts were directed towards research, a new series of censuses began again in the year 1999.

Stangel *et al.* (1990) employed starch gel electrophoretic techniques to examine genetic variation in Florida wood stork colonies. This study did not indicate significant allozyme differences within or between colonies. In 1994, a genetics study incorporating DNA microsatellites of breeding storks in Florida, Georgia, and South Carolina was initiated to further investigate the geographic and genetic origins of wood stork colonies in the three states. By assessing the degree of genetic interrelatedness among wood stork colonies, vital information may be obtained concerning population movements, allowing us to determine whether the increase in numbers of storks breeding in the

northern portion of their range is the result of high productivity in those colonies, increased immigration from Florida colonies, or both. However, the increase in the size and number of “northern” colonies almost certainly occurred too rapidly to be explained by local recruitment.

An effort should be made to place transmitters on juvenile wood storks in South Florida. This will help us to identify critical foraging grounds and gain insight into post-fledging survivorship.

A Wetlands-Wood Stork Summit was held on October 13-14, 1994 in Georgia. The Georgia Conservancy and Zoo Atlanta convened this summit to initiate a coordinated regionwide effort in wetlands education focusing on the wood stork. The initiative would be comprised of both an education and a research component. A grant proposal was submitted in early 1995 requesting support for this effort.

The informal Wood Stork Management Group, formed 3 years ago by the Georgia Conservancy and more recently hosted by the FWS, should continue to meet annually as a means for reviewing trends and assessing the influences of Everglades restoration projects relative to patterns by total stork populations in the Southeast.

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# Recovery for the Wood Stork

*Mycteria americana*

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**Recovery Objective:** RECLASSIFY to threatened, then delist.

**South Florida Contribution:** The former Science Subgroup (now Science Coordination Team) of the South Florida Ecosystem Restoration Task Force and Working Group prepared a set of recommendations for success measures for the South Florida Ecosystem restoration program. Included in these recommendations are targets for the recovery of nesting wading birds in the Everglades basin (WCAs and ENP). The Science Subgroup's measure of success for the wood stork is a breeding population between 1,500 to 2,500 pairs. The goal for wood stork recovery in South Florida is to support 2,500 nesting pairs in the Everglades and Big Cypress Basin systems and to support, as a South Florida Ecosystem component, 35 percent (3,500 nesting pairs) of the southeast United States recovery and delisting nesting population of 10,000 pairs.

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## Recovery Criteria

South Florida will contribute to the recovery of the total population, if the wood stork foraging and nesting habitat in the Everglades watershed is restored and/or enhanced as a result of the modified water storage and delivery programs being developed by the SFWMD and the COE. The recovery criteria as identified in the wood stork recovery plan, for the Everglades and Big Cypress Basin is a population of 2,500 nesting pairs. The recovery criteria for the South Florida Ecosystem populations, which also includes nesting colonies in coastal counties in central Florida and nesting colonies in the Kissimmee Basin, is 35 percent (3,500 nesting pairs) of the total recovery population of 10,000 pairs.

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## Species-level Recovery Actions

- S1. Determine the distribution and status of wood storks in South Florida.** All evidence suggests that the wood stork population in the southeast U.S. is a single population, with individuals moving throughout the landscape in response to habitat conditions; the recovery of wood storks depends on the success of the birds throughout their range. Historically, South Florida supported greater than 70 percent of the nesting wood storks in the Southeast. Recent nesting populations in South Florida average around 10 to 13 percent with the major nesting occurring at the Corkscrew colony. More recent data provided by Ogden (1997) also present evidence that South Florida provides winter foraging grounds for many of the recently developed northern breeding colonies in north Florida, Georgia, and South Carolina. The restoration and enhancement of the South Florida foraging habitat is important to the overall

recovery of the wood stork population and the reversal of the decreasing nesting trends in South Florida. Distribution must be monitored into the future to determine wood stork response to Everglades restoration activities.

- S1.1. Conduct wood stork annual nesting surveys within the Everglades and Big Cypress Basins and the east and west coast populations.** The health and productivity of colonies must be known to evaluate the status and recovery of the wood stork. Long-term wading bird nesting data in South Florida suggest that the number of pairs of birds initiating nesting in a given year is a better indicator of ecosystem health than is nesting success. The number of pairs of wood storks attempting to breed in South Florida should be monitored annually to determine wood stork response to ecosystem conditions in South Florida. Conducting annual nesting surveys within these basins will provide information on annual nesting patterns for wood storks in South Florida and will allow us to best respond with the appropriate management strategies for the species. Much could be learned about wood stork ecology in the Everglades by detailed review of the multi-year systematic reconnaissance flight data. Detailed evaluation of these data is necessary.
- S1.2. Locate foraging and roosting habitat.** Wood storks take several years to mature to breeding age. The survival of birds during these years is critical. Research that gains a better understanding of where non-breeding birds go in Florida needs to be conducted. Research on what habitats are critical to their survival and what factors may be limiting their survival is also necessary. Identifying important foraging and roosting habitat is critical to the recovery of the wood stork. Recent studies along the Georgia and South Carolina coast have provided valuable information on roosting and foraging behavior (Bryan and Coulter 1995); additional work of this sort is needed in South Florida.
- S1.3. Develop standardized census procedures for wood storks nesting in South Florida.** Systematic nesting survey protocol should be developed for both the Everglades and Big Cypress basins. This protocol will allow for comparison between years and between basins.
- S2. Protect and enhance wood storks in the South Florida Ecosystem through provisions of section 7 of the ESA.** The majority of management activities to protect and enhance wood storks in the South Florida ecoregion must occur at an ecosystem level (see habitat-level recovery actions), not a species-specific level; wood storks respond to changing environmental conditions by integrating habitat conditions over a large geographic area and therefore will be more affected by large-scale management practices. However, the review of Federal water management practices through section 7 consultations is one vehicle whose implementation will be imperative to the survival and recovery of the wood stork. Much of the landscape utilized by wood storks in South Florida is subject to Federal and State water management practices; water management of the COE's C&SF project is critical to the survival and recovery of the wood stork. The FWS needs to provide conservation recommendations to enhance habitat conditions for the wood stork throughout the C&SF project. Specific guidance should include operational schedules (water regulation) for Lake Okeechobee, the WCAs, Everglades NP, and Big Cypress National Preserve. The Kissimmee River basin also supports important colonies of wood storks. The water management goals of the Kissimmee River basin may affect foraging and nesting success in these colonies. Proposed land management actions on these restoration lands need to be examined in relation to wood stork habitat requirements.

- S3. Conduct research on the biology and life history of wood storks.** Recovery efforts for wood storks will be more effective with a complete understanding of population biology, movement patterns, foraging ecology and behavior, the importance of roost sites, and the possible impacts of contaminants on South Florida wood storks. To date, information on nesting patterns and the number of wood storks initiating nesting in South Florida has been collected for some regions in some years. Additional information is needed on wood stork demographics and movement patterns between the colonies and foraging and roosting sites.
- S3.1. Determine the productivity of wood storks nesting in South Florida.** To estimate the productivity of wood storks, the number of fledged young per nest and the number of fledged young per successful nest must be determined for the major nesting colonies in South Florida during the same breeding cycle.
- S3.2. Determine survivorship of wood storks in South Florida.** This parameter is one of the least understood, and research on this topic may provide more new insights into population dynamics than any other effort. We need to determine survivorship of fledged young to adulthood to better gauge what amount of productivity is required to maintain or increase wood storks nesting in South Florida. This might be accomplished through a massive multi-year leg banding (or wing tagging) effort in multiple colonies, radio-instrumenting a certain number of birds (with mortality sensors) or possibly by surveys during the non-breeding season to determine the adult:sub-adult ratio.
- S3.3. Determine the age structure of the wood stork population in the southeast U.S.** This information will be necessary to determine whether the population is sustainable and can be delisted.
- S3.4. Determine the movement patterns of South Florida wood stork fledglings and post-breeding South Florida adult wood storks.** Movement patterns will provide information on behavior, habitat utilization, and potential critical foraging areas. The survival of fledgling wood storks is dependent on their ability to find suitable foraging areas when they first begin to forage independently. If fledglings must travel great distances to forage, their survival may be hampered. Additionally, understanding the movement patterns of adult wood storks after they complete breeding will answer questions such as: 1) Do adult wood storks “help” fledglings to find suitable foraging sites, and 2) Are there foraging sites within a “critical” distance from breeding colonies in South Florida, or do adult storks, upon completion of breeding, move out of South Florida?
- S3.5. Determine foraging ecology and behavior of wood storks.** The number of wood storks nesting in South Florida has greatly declined. Information on foraging by wood storks in South Florida needs to be completed to determine the interdependence of successful nesting by wood storks in South Florida and the availability of suitable foraging sites. Information from the systematic reconnaissance flights should provide information on foraging distribution for multiple years and should help to answer some questions on the foraging ecology of the wood stork, but additional work must be completed to understand the characteristics of the forage base that are necessary to provide functional wood stork foraging habitat in South Florida.

- S3.5.1. Re-evaluate wood stork foraging studies in Everglades NP.** Studies on the forage base available and utilized by storks in Everglades NP were done in the 1970s. A comparative study should be completed to determine if changes have occurred in the prey base available to wood storks. This issue should again be addressed since this ecosystem is vital to recovery goals, is important as a wintering area for all storks, and has recently been documented to have problems with mercury contamination (Sundlof *et al.* 1994).
- S3.5.2. Conduct studies on the prey base available in areas identified as critical foraging sites during the breeding season.** We need to collect information on the prey base available to wood storks at foraging areas receiving high use during the breeding season. This information should be compared to identical information collected at sites not utilized by wood storks during the same time period.
- S3.5.3. Determine foraging requirements of wood storks during the non-breeding season.** Research concerning the foraging ecology of this species should also examine foraging requirements during the wintering or non-breeding period. In some years, the inland marshes of the Everglades have supported the majority of the U.S. population of wood storks. During the non-breeding seasons in 1985 to 1989, up to 55 percent of the entire U.S. population may have relied on the WCAs (which comprise only a portion of the Everglades system) to meet their foraging requirements (Bancroft *et al.* 1992). Understanding the processes that determine whether storks in the non-breeding season are concentrated on a small area of habitat or dispersed throughout their entire winter range will provide management flexibility and decrease the likelihood of negative impacts to a large proportion of the population during a single season.
- S3.5.4. Continue studies on wood stork nocturnal foraging activities.** Preliminary studies by Bryan (1995) indicate that storks in South Carolina and Georgia are active nighttime feeders. The prevalence of nocturnal foraging activities by this species needs to be studied both seasonally and geographically in South Florida. Nocturnal feeding may be more important for wood storks feeding in tidal marshes than in freshwater marshes, but, if nocturnal feeding by wood storks is significant, regulatory decisions may need to reflect this information to protect wood stork foraging grounds from disturbance “around the clock”.
- S3.6. Determine the importance of wood stork roost sites.** Recent surveys of the Georgia and South Carolina coast documented the presence of a large number of stork roost sites, but only a limited number of roosts were inhabited repeatedly by numerous storks. Research concerning the function and use of such sites and habitats in South Florida is needed. If important roost sites are identified in South Florida, protective measures should be developed. These studies could also assess foraging habitats utilized from these sites, thus providing important information about the non-breeding season.

- S3.7. Determine the impacts of contaminants on wood storks in South Florida.** Potential impacts from contaminants need to be reconsidered in light of recent findings concerning the amount of mercury present in the Everglades Ecosystem and the discovery of severe impacts of DDT/DDE-based estrogen-mimicking compounds on wildlife in a large Florida wetland (Guillette *et al.* 1994).
- S3.7.1. Conduct mercury studies on wood storks in South Florida.** Studies should be conducted in the South Florida Ecosystem to document effects of mercury on wood storks.
- S3.7.2. Conduct contaminant studies on wood storks throughout the region.** Develop baseline contaminant information from a variety of colony sites throughout the region to determine if further studies are needed.
- S3.8. Complete models for the wood stork population.** Population viability assessment and risk analysis models should be performed for the wood stork population once the necessary information is acquired. Once completed, the relative importance of the South Florida Ecosystem, and the ability of the wood stork to successfully breed in South Florida, should be determined.
- S3.9. Develop models of wood stork colony dynamics in South Florida wetlands.** These models are needed as planning tools for improved ecosystem restoration programs. Potentially one important ecological model for the Everglades is a wood stork population dynamics model that is a part of the “Across-Trophic-Level System Simulation” (ATLSS) set of models being developed by the South Florida/Caribbean Field Station of the USGS, BRD.
- S4. Monitor wood storks in South Florida.** Annual nesting and foraging surveys should be completed for wood storks in South Florida. These surveys will provide the information necessary to monitor the success of ecosystem and species-specific recovery actions. Surveys should be performed on an annual basis within both the Everglades and Big Cypress basins until the species is delisted.
- S4.1. Conduct long-term monitoring of the number of wood storks initiating nesting in South Florida, as described by tasks 1.1. and 1.2.**
- S4.2. Organize systematic censuses of wood stork foraging habitat in the Big Cypress region, comparable to existing censuses (systematic reconnaissance flights) in the Everglades basin.** The fact that declines in nesting effort and delays in timing of colony formation have shown similar trends in the Big Cypress basin have been well documented in the Everglades basin suggests that the Big Cypress colonies are dealing with similar kinds of habitat deterioration on the foraging grounds. The location and relative importance of stork foraging grounds in the Big Cypress basin are much less known, and should be determined as a basis for developing protection strategies in this region; this survey would provide the information necessary to monitor the success of both ecosystem and species-specific recovery actions.
- S4.3. Continue foraging surveys in the Water Conservation Areas and Everglades NP.** This information is necessary to follow the trends of wood storks in South Florida and should be continued until the species is delisted.
- S4.4. Initiate and continue demographic surveys,** such as colony surveys to determine productivity; additionally, studies to determine survivorship should be continued until

enough data have been collected to determine wood stork rates of growth, reproduction, and survival. This information will be critical to determine whether or not the species can be delisted.

**S5. Increase public awareness.** Wood storks are an indicator species of the Everglades Ecosystem; the health of the Everglades can be measured by the ability of the wood stork to successfully breed in the Everglades. The Maine coastal seabird colony restoration program uses the puffin as its symbol. The wood stork is a symbol of the health of the Everglades and Big Cypress basins and could be used as a barometer of the success of Everglades restoration projects.

**S5.1. Increase awareness and appreciation of wood storks through educational materials.** Wood storks utilize a variety of wetland habitats and have been identified as an indicator species for the Everglades. Additionally, they are visually unique and generate interest from the general public. Make the wood stork a symbol of the Everglades through the use of environmental education materials and programs.

**S5.1.1. Develop and distribute educational materials.** Currently, there are several brochures, videos, and educational packets available that focus on wood storks. This information needs to be kept up to date. New educational material should be developed to increase the awareness of a larger audience.

**S5.1.2. Develop information for private landowners.** Wood storks breeding in the Corkscrew Swamp and in the northern and central Big Cypress basin in South Florida forage in surrounding wetlands, many of which are on private lands. Material explaining wood stork ecology and suggesting management practices benefiting storks should be distributed to private landowners.

**S5.1.3. Develop educational materials for schools.** Since wood storks occur in Florida, Georgia and South Carolina, it would be cost-effective to develop educational materials that could be used in schools in all three states.

**S5.1.4. Develop material for policy makers and elected officials.** The wood stork should be included as part of a larger effort to inform and educate South Florida policy makers and elected officials of the importance of maintaining and protecting wetland habitats throughout the Big Cypress and Everglades basins.

**S5.2. Provide opportunities for the public to view wood storks in captivity.** Maintaining wood storks in captivity should be for the sole purpose of public education, awareness, and research to enhance survival of the species. Currently, there are nearly two dozen American wood storks in captivity in North American zoos and related facilities.

**S5.2.1. Maintain captive populations for the purpose of education, awareness, and research.** FWS draft policy on controlled propagation sanctions captive propagation of listed species when recommended in an approved recovery plan and supported by an approved genetics management plan. Captive propagation of wood storks is not considered necessary for the purpose of supplementing wild populations through

reintroduction programs. Captive breeding and rearing efforts will not be made for this purpose. However, good captive management of wood storks may result in reproduction. The resulting progeny may be used to supplement other captive populations under approval of the FWS. If available space within captive facilities becomes saturated, further production of offspring should be prevented within the scope of laws governing captive endangered wildlife.

- S5.2.2. Develop policy on rescue, rehabilitation and release of injured wood storks.** The FWS, in conjunction with the American Zoological Association, should develop a policy for dealing with wood storks that are rescued from the wild. Adult wood storks are not as frequently received by licensed wildlife rehabilitators as other wetland bird species. Opportunities for rescue may most likely occur when field personnel are in the colonies and witness distress. This may be as a result of nest abandonment when food sources become scarce or when chicks fall out of the nest for reasons such as adult bird interactions or wind storms. Where possible, field personnel should return downed chicks to the nest. When replacement is not viable, the usual protocols for triage and rehabilitation should be followed in placement with a licensed wildlife rehabilitator.

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### Habitat-level Recovery Actions

- H1. Prevent degradation of existing wood stork habitat in South Florida through identification and protection.** At a minimum, for continued survival of the U.S. population, currently occupied nesting, foraging, and roosting habitat in South Florida must be protected from further loss or degradation. Watersheds supporting natural nesting habitat should remain unaltered, or be restored to function as a natural system if previously altered.
- H1.1. Create distribution maps of important wood stork colony, foraging, and roosting sites in South Florida for protection and restoration.** Important colony sites have been identified for the WCAs and Everglades NP. However, colony sites in the Big Cypress basin are not as well known. Very little is known about roosting sites in South Florida. Identifying all important colony sites, roosting sites, and foraging habitat is critical to the recovery of the wood stork. A GIS database should be developed from data collected by colony, roosting, and foraging surveys, as delineated by species-specific tasks **S1.1** and **S1.3**; a GIS database will aid recovery biologists in targeting areas in need of protection, restoration, or management, and will allow managers and private landowners to more efficiently protect and manage these lands for wood storks.
- H1.2. Prioritize habitats that need protection.** Develop a prioritization scheme to focus protection and restoration efforts on colonies and feeding sites with the greatest degree of threat. Efforts should be made to identify important foraging and roost sites associated with high priority colonies.
- H1.3. Work with private landowners to protect habitat.** Conservation agencies need to recognize the significant contributions that private landowners can make for the protection of wood storks. For example, many of the foraging grounds utilized by storks breeding at the Corkscrew colony in South Florida are in private ownership

and are threatened by conversion to citrus farming; the future success of this colony is dependent on maintaining viable foraging habitat within the region.

- H1.3.1. Inform landowners.** Inform all landowners having critical foraging and roost sites (as defined in task **H1.2.**) on their properties. Encourage compliance with existing regulatory mechanisms (see task **H1.6.**).
- H1.3.2. Provide assistance and support to landowners in managing their property for the benefit of wood storks.** Assistance can be in the form of written material explaining best management practices, site visits, local recognition, tax and/or monetary incentives. State and Federal agencies should work with private landowners in an effort to incorporate wood stork feeding habitat into current management practices.
- H1.3.3. Develop management plans for private lands.** Conservation agencies should assist landowners in developing specific management plans for their properties. These management plans should adequately protect sites yet be flexible enough to respond to the changing needs of the landowner. The success or failure of management prescriptions for nesting, roosting, and foraging areas should be clearly documented and reported.
- H1.4. Protect sites from disturbance.** The FWS developed habitat management guidelines for wood storks (Ogden 1990) in an effort to reduce disturbance to colony sites. These management guidelines discuss various types of activities known to disturb nesting wood storks. Additionally, certain types of habitat management activities can adversely impact colony sites. Cypress logging is a potential threat to some colonies. Human disturbance causes wood storks to leave nests, exposing eggs to predation and exposure. Posting or other appropriate protection may provide some benefit to storks nesting or foraging within the Big Cypress and Everglades basins.
- H1.5. Use existing regulatory mechanisms to protect foraging habitat in South Florida.** The central and northern Big Cypress basin historically supported large numbers of nesting wood storks. Presently, much of this historic range is being converted to citrus and pasture for cattle grazing. Coordinated efforts should also be used to seize opportunities to provide enhanced feeding areas through the mitigation process.
  - H1.5.1. Review Federal actions for impacts to wood storks.** Wetlands are altered for mining, agriculture, and residential purposes. Permitting authority over such activities is held by local governments, agencies in the State of Florida (DEP, SFWMD) and the Federal government (COE, EPA). Important feeding areas should be included as a category of waters for which the FWS receives COE pre-discharge notification pursuant to section 404 of the Clean Water Act. section 7 of the Endangered Species Act requires that all Federal agencies ensure that their actions are not likely to jeopardize the continued existence of any listed species or destroy or modify their critical habitat. Federal agencies conducting actions that may affect the continued existence of wood storks must consult with the Service.
  - H1.5.2. Encourage conservation of wood stork habitat in conservation plans.** Section 10(a) (1)(B) of the Endangered Species Act provides for incidental take permits that have the potential to contribute to the

conservation of listed species. If appropriate, applicants should be encouraged to consider conservation of wood stork habitat when preparing Habitat Conservation Plans.

**H2. Restore and enhance habitat.** A prerequisite for the recovery of wood storks in the southeastern United States is the restoration and enhancement of suitable habitat throughout the mosaic of habitat types used by this species. Historically, South Florida supported greater than 70 percent of the nesting by wood storks in the Southeast. The deterioration of the Everglades and Big Cypress basins has resulted in decreased nesting by wood storks in South Florida and increased nesting in northern Florida, Georgia, and South Carolina.

**H2.1. Restore the South Florida Ecosystem.** Recover traditional Everglades and Big Cypress colony locations. The water delivery formula and schedules developed by the Experimental Water Deliveries Program, the structural modifications to canals and levees proposed for ecosystem restoration of Everglades NP through the Modified Water Deliveries and C-111 Projects, and the regional Everglades restoration planning process (C&SF Restudy) conducted by the COE, should address the recovery of the ecological processes that made it possible for the pre-drainage Everglades basin to support large numbers of storks and other wading birds. These ecological processes were made possible by the large spatial scale of the pre-drainage Everglades, the strong between-year variation in surface water patterns, and the strong flows of surface water into the estuaries.

**H2.1.1. Reevaluate the effectiveness of all authorized projects on restoring habitat in the Everglades basin.** The Southern Everglades Restoration Alliance (SERA), a group of cooperating agencies, was created to oversee the implementation of authorized ecosystem restoration projects associated with the C&SF Project. SERA is presently re-evaluating projects in the southern Everglades for their effectiveness in ecosystem restoration. The FWS should be involved in project evaluations, and should determine whether recovery efforts will improve habitat conditions for the wood stork. If any authorized projects are found to lack the necessary components (including the appropriate operational schedules and regulatory components) to increase the ability of the wood stork to successfully nest or forage in South Florida, the FWS should help in the development of alternative designs that maximize ecosystem benefit.

**H2.1.2. Develop operational criteria that re-establish hydropatterns of the pre-drainage system.** Operational schedules will be the most important component of Everglades restoration efforts. Operational schedules must truly balance the needs for flood protection with those of the Everglades ecosystem.

**H2.1.3. Restore the timing of nesting by wood storks in the southern Everglades through ecosystem restoration measures.** Develop a restoration plan that includes the necessary addition or removal of structures, levees, and canals, to restore hydropatterns throughout the Everglades system; depths, period of inundation and sheetflow patterns should more closely match those of the pre-drainage system.

- H2.1.4. Provide feedback for adaptive restoration planning.** Monitor stork colony patterns during implementation and testing of future efforts to improve hydrologic conditions. Use information on the location, timing, size and success of stork colonies in the Everglades and Big Cypress basins to evaluate ecological responses to the restoration programs and as a basis for designing future iterations in the restoration process.
- H2.1.5. Analyze and report on existing record of stork colony patterns in the Everglades basin,** including the effects of initial restoration programs on the ecological recovery of Everglades NP. A report should be completed that incorporates all stork colony data from the Everglades basin and which assesses the impacts of past and current restoration programs, such as the Experimental Program of Water Deliveries to Everglades NP, on wood stork and wading bird colony patterns in Everglades NP; this report should be used to evaluate restoration efforts to date, and to improve future restoration programs.
- H2.2. Protect and enhance wood stork foraging habitat in private ownership in South Florida through partnership agreements.** Historically, South Florida supported greater than 70 percent of the wood stork nesting effort in the southeast U.S.; the number of wood storks nesting in South Florida has been reduced to a fraction of the historic number. Every effort should be made to protect and enhance that portion of the population that continues to breed and winter in South Florida. For example, the Corkscrew Swamp colony has consistently supported a significant number of nesting wood storks in South Florida. Many of the surrounding wetlands used for foraging by wood storks in this colony are in private ownership and are in danger of being converted to other land uses, such as citrus farming. Protecting these wetlands will be critical to protect the Corkscrew colony and help to preserve wood stork colonies in South Florida.
- H2.3. Acquire land identified as important habitat for wood storks in South Florida.** Federal and State conservation agencies and private conservation organizations should continue efforts to acquire important habitat utilized by wood storks in South Florida. Initial land acquisition efforts should be carefully targeted to sites having the greatest potential for maintaining storks over time. Large, stable colonies that are in immediate threat from disturbance either through direct threat to the colony site or through a loss of surrounding foraging habitat, should be of highest priority. Priority should also be given to larger colonies with a history of annual use, sites most in need of management, and colony sites where alternate habitat is not available.
- H3. Conduct research on the critical habitat components necessary to trigger successful nesting by wood storks in South Florida.** We do not know what specific habitat characteristics are necessary to trigger nesting by wood storks in South Florida. Wood storks could be responding to a suite of habitat characteristics such as water depth, photoperiod, rainfall patterns, prey densities, *etc.* Projects should be completed that will help to identify some of these habitat characteristics.
- H3.1. Determine the densities, species composition and size classes of fishes necessary to result in successful nesting by wood storks in South Florida.** Use information gathered in task **S3.5** (species-level) to establish study locations. Water management practices may have resulted in fish populations that no longer represent “natural”

populations. This information may aid us in developing the appropriate operational criteria for the Everglades restoration. It will also establish a baseline from which to compare the effects of ecosystem restoration activities.

- H3.2. Determine the effects of natural and human-caused hydrologic events on the ecology of the prey base utilized by wood storks in South Florida.** This information can be used to determine the optimal operational schedules for South Florida's public lands.
- H3.3. Determine if reduced freshwater flows into the northern Florida Bay mainland estuaries, as a result of the South Dade Conveyance System and the Experimental Program of Water Deliveries to Everglades NP, have caused wood storks to delay nesting in South Florida.** These mainland estuaries historically provided important early dry season foraging habitat; reduced freshwater flows may have significantly altered available prey base.
- H4. Monitor the status of areas identified as important wood stork habitat in South Florida.** Monitor habitats identified by task **H1.1.** annually to determine whether changes are occurring in response to management actions. For example, habitats likely to be affected by hydrologic restoration projects should be monitored to determine impacts, both beneficial and adverse, on wood storks. The appropriate management decisions need to be considered, discussed, and implemented if adverse impacts are detected.
- H5. Increase public awareness about wood storks as an indicator of the health of the Everglades Ecosystem.** Educational materials should be developed that identify the importance of the wood stork as an indicator of the health of the Everglades Ecosystem. This information will be key to gain the necessary public support for the restoration of the Everglades. The wood stork is a highly visible component of the Everglades and is perfect to serve as an indicator species to the public.



# EXHIBIT S

## ABANDONED PASTURE

**Description and assessment:** There is one large abandoned pasture in the park, which was cleared of a monoculture of Brazilian Pepper and now is dominated by another non-native, Guinea Grass (in the JD-H03 management zone).

**General management measures:**

The long-term goal includes restoration of this area, beginning with the removal of non-native invasive plants and if needed replanting of native species.

## CANAL/DITCH

**Description and assessment:** Approximately 5 miles of old agricultural ditches and canals have been identified within the park.

**General management measures:**

The long-term goal includes restoration of these areas, beginning with the removal of non-native invasive plants, followed by hydrological restoration and if needed replanting of native species. Restoration of these areas will involve much effort.

## CLEARING

**Description and assessment:** In the northeast corner of the park, the United States Coast Guard maintains a 50-acre cleared area for a Long Range Navigation (LORAN) radio tower. This openly maintained area includes a variety of scrub plant and animal species.

**General management measures:**

The Coast Guard maintains the vegetation in its open state using mechanical means.

## DEVELOPED

**Description and assessment:** There are several developed areas in the park. The developed areas include the campgrounds, river area, administrative buildings, roads, a variety of old Camp Murphy era roadbeds and building foundations and other small areas.

**General management measures:** The developed areas within the park will be managed to minimize the effect of the developed areas on adjacent natural areas. Priority invasive plant species (FLEPPC Category I and II species) will be removed from all developed areas. Other management measures include proper stormwater management and development guidelines that are compatible with prescribed fire management in adjacent natural areas.

## Imperiled Species

Imperiled species are those that are (1) tracked by FNAI as critically imperiled (G1, S1) or imperiled (G2, S2); or (2) listed by the United States Fish and Wildlife Service (USFWS), FFWCC or the FDACS as endangered, threatened or of special concern.

**Plants:** Curtiss' milkweed (*Asclepias curtissi*) is an herbaceous perennial that dies back to its rootstock each year. It is very cryptic and has a variety of leaves with shapes resembling other scrub species. This scrub species can persist for a number of years in shaded areas, but usually flowers and fruits only in full sunlight.

The four-petal pawpaw (*Asimina tetramera*) is found only at exacting elevations within the scrub where it can reach the water table. It is restricted to Martin and Palm Beach counties.

Although not identified until 1993, perforated reindeer lichen (*Cladonia perforata*) are found in both in scrubby flatwoods and open scrub. This species cannot survive direct flame yet still depends on a disturbance maintained environment (which naturally would be wildfires) that promotes gaps, open sandy patches, reduced canopy vegetation and a lack of fine fuels (grass, litter, etc.) on the ground.

Large-flowered rosemary (*Conradina grandifolia*) is an aromatic shrub found in the scrub. This plant belongs to the mint family and is found in burned and disturbed sites, such as trails, with open sand.

Both nodding pinweed (*Lechea cernua*) and pineland pinweed (*Lechea sessiliflora*) are small perennial herbs that prefer the park's open, sandy soils in the scrub and scrubby flatwoods communities.

Like many of the other designated scrub plants, Small's milkwort (*Polygala smallii*) prefers areas of open sand, with little litter buildup and no canopy vegetation. While this shallow rooted plant is killed by fire, the proper fire and/or mechanical management maintains these conditions and favors seed germination.

Dancing lady orchid (*Tolumnia bahamensis*) occurs in scrub and scrubby flatwoods, usually within the leaf litter or near the lower branches of the Florida rosemary or scrub oak plants. The range of this plant in Florida is restricted to Martin and Palm Beach counties.

Satinleaf is a distinctive and attractive tree found in maritime hammocks and near the Loxahatchee River's floodplain swamp communities where fire is not a threat.

There are many designated orchid species. The pine pink orchid (*Bletia purpurea*), two grass pinks (*Calopogon* spp.), wild coco (*Eulophia alta*), snowy orchid (*Habenaria nivea*), rose pogonia (*Pogonia ophioglossoides*), giant orchid (*Pteroglossaspis ecristata*), lace-lip ladiestresses (*Spiranthes laciniata*) and spiral orchid are all normally found within the wet, mesic or scrubby flatwoods communities. The clamshell orchid (*Prosthechea cochleata*), butterfly orchid (*Encyclia tampensis*) and stiff-flower star orchid or rigid

epidendrum (*Epidendrum rigidum*) are observed in the floodplain swamp and hydric and mesic hammocks along the river and its tributaries.

Hand ferns (*Ophioglossum palmatum*) are almost exclusively located in the detritus filled base or boot of cabbage palms. Very sensitive to fire and drought, its habitat in the park has been located in the strand swamp and floodplain swamp communities.

The sometimes-epiphytic low peperomia (*Peperomia humilis*) has only been located in one small locale within the floodplain swamp of the river.

A small area of seepage slope was found in 2004 along the North Fork of the Loxahatchee River. This community contains a small area of cutthroat panicum.

**Animals:** The American alligator (*Alligator mississippiensis*) occurs in all of the park's wetland habitats and moves on land. Currently, monitoring is minimal because this animal is abundant in the natural communities where it is typically observed. In 2009 and 2010 alligator surveys were conducted on the river to determine how they respond to fresh and saltwater influxes. Alligators turn out to be an excellent indicator for freshwater inflows into the Northwest Fork of the Loxahatchee River. Management of this species is discussed further in the Exotic/Nuisance Animal Section of this plan.

The gopher tortoise (*Gopherus polyphemus*) occurs mainly in the park's upland pine forest in areas with dense herbaceous ground cover and sandy soils. Occasionally it digs burrows in low-lying areas during the drier winter months. The gopher tortoise is a keystone species because it provides shelter for many species, including invertebrates, amphibians, other reptiles and mammals. Several imperiled species share its burrow. The park staff's largest management concern for these animals is road kill mortality. Road fatalities occur within the park along Park Drive and at the edge of the park along US-1. Since 1997, 26 gopher tortoise fatalities have been observed on US-1, 14 within the park, with 19 of those occurring between July 2006 and September 2008. The implication of this mortality on long-term population viability is unclear. However, with the knowledge that many species use gopher tortoise burrows, it is clear that the impact of these road kills is much greater than what is observed. As the park's outlying areas continue to be burned, gopher tortoise populations should be surveyed to determine if reintroduction into these fragmented areas (such as JD-I management zones) is feasible.

The Florida pine snake is an example of a species that takes refuge in gopher tortoise burrows. The snake has a unique head and muscular body that allows for burrowing into loose sand. This seldom-observed snake is adapted to life in open sandy habitats. According to herpetologists, there have been serious declines in the numbers of these snakes in the last 20 years due to excessive collecting, road mortality and habitat alteration (Franz, 1992).

Gopher frogs are another species inhabiting tortoise burrows. These frogs are restricted to the park's drier habitats such as scrub, scrubby flatwoods, mesic flatwoods and sandhills. It almost exclusively utilizes the burrow of the gopher tortoise.

The eastern indigo snake is an imperiled species that requires a large territory of high quality and diverse habitats in order to maintain a viable population. Home ranges sometimes extend beyond 500 acres and may include wet and dry habitats.

The Florida mouse is limited to well-drained, sandy soils of the scrub and scrubby flatwoods of the park. To ensure their continued survival, prescribed fire application maintains early successional stages of this community. Prescribed fire is important to Florida mouse populations because this species prefers lower shrub height and thick cover. In 1983 and 1984, four sites in the park were surveyed. In response to this survey, a research project was conducted from 1986 to 2003 to monitor the population trends after fire (Roberts and Stout, unpublished).

The Florida scrub-jay (*Aphelocoma coerulescens*) inhabits the fire maintained communities of scrub and scrubby flatwoods. This species requires low, open scrub or scrubby flatwoods for nesting and relies on the acorns produced by the oaks of these communities.

The Florida sandhill crane (*Grus canadensis*) utilizes mostly wetland habitats for nesting and upland and transition areas for foraging. Casual observations indicate between four and six breeding pairs within the park. Management for this animal falls into two categories: first, maintaining the viability of park wetlands by maintaining groundwater levels and backfilling agricultural ditches and second, applying fire in a variety of seasons. Increased public awareness through education should help reduce feeding, poaching, disturbance and road kill incidents of this species in sites adjacent to the park. Feeding these animals is common and perhaps one reason a particular group annually nests next to Pine Grove Campground. Bird mortality caused by vehicle collisions occurs regularly on US-1 adjacent to the campground and outside of the park.

Bald eagles (*Haliaeetus leucocephalus*) were first observed nesting in the park in 1966 and since 1979, the park's eagles have produced 31 fledglings (as of 2010). Continued destruction of coastal feeding habitat is a serious threat to their continued presence at this location. Prescribed burning and non-native plant removal near the nest can only occur prior to the eagles' incubating the eggs in the nest or until after fledging of the eaglets. Therefore, it is important to monitor the nest on an annual basis to determine when management activity needs to stop and start.

Adult eagles are observed in the park from early September to early June. After fledging, immature birds migrate north. The breeding pair is most vulnerable to disturbance from the start of courtship through the first 12 weeks of nesting. This time

includes nest building, egg laying, incubation and early brooding of the eggs. If disturbed during this critical period, the nest may be abandoned with eggs or nestlings left to the elements. Monitoring of the nest site includes surveys between October to fledging (typically in April or May) to determine nesting success along with incomplete records produced prior to 1979 prior to improved monitoring beginning in 1988.

Observations will continue into the future. Since bald eagles often use alternate nest sites and old nests are sometimes rebuilt and occupied after years of inactivity, all new and old nests alike are legally protected by federal law. Nesting locations are not advertised to visitors, nor are hikers brought to these sites as part of the park's interpretive programming.

During certain times of the year, wood storks are often seen in the park's freshwater and estuarine wetlands. However, the birds have no known nesting rookeries at this location.

Snail kites (*Rostrhamus sociabilis*) are rarely observed in or around the park. These birds are somewhat nomadic in their search for apple-snails (*Pomacea paludosa*). The park does not have many open marshes where these snails are easily found.

In 2008, one crested caracara (*Polyborus plancus*) was observed and photographed in burn zone JD-H4 and remains the only verified sighting of this species in the park. Caracaras are regularly seen in cattle pastures along Bridge Road, west and north of the park.

West Indian manatees (*Trichechus manatus latirostris*) are observed along the Northwest Fork of the Loxahatchee River throughout the year in salt, brackish and fresh water.

A singular report of Sherman's fox squirrel was documented (*Sciurus niger shermanii*) photographically in JD-E14 in June of 2009. Previous sightings were unverified photographically. JD-E14 and adjacent areas contain small pockets of sandhill and are thought to be marginal for these creatures because of the relatively small amount of suitable habitat.

One listed species that is no longer found within the park is the red-cockaded woodpecker, which was last seen in 1983.

Table 2 contains a list of all known imperiled species within the park and identifies their status as defined by various entities. It also identifies the types of management actions that are currently being taken by DRP staff or others and identifies the current level of monitoring effort. The codes used under the column headings for management actions and monitoring level are defined following the table. Explanations for federal and state status, as well as FNAI global and state rank, are provided in Addendum 6.

Detailed management goals, objectives and actions for imperiled species in this park are discussed in the Resource Management Program section of this component and the Implementation Component of this plan.

Table 2: Imperiled Species						
Common and Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FFWCC	USFWS	FDACS	FNAI		
<b>PLANTS</b>						
Giant leather fern <i>Acrostichum danaeifolium</i>			T		2,4	1,2
Pinewoods bluestem <i>Andropogon arctatus</i>			T	S3	1,2	1
Curtiss' milkweed <i>Asclepias curtissii</i>			E	S3	1,2	1
Four-petal pawpaw <i>Asimina tetramera</i>		E	E	S1	1,2	1,2,3,4
Pine pink Orchid <i>Bletia purpurea</i>			T		1,2	1
Many-flowered grass pink <i>Calopogon multiflorus</i>			E		1,2	1
Sand dune spurge <i>Chamaesyce cumulicola</i>			E	S2	2	1
Satinleaf <i>Chrysophyllum oliviforme</i>			T		2	1
Perforated reindeer lichen <i>Cladonia perforata</i>		E	E	S1	1,2,3	1,2
Florida jointtail grass <i>Coelorachis tuberculosa</i>			T	S3	1,2	1
Large-flowered rosemary <i>Conradina grandiflora</i>			T	S3	1,2	1
Clamshell orchid <i>Encyclia cochleata</i>			E	S2	2	1
Rigid epidendrum <i>Epidendrum rigidum</i>			E		2	1
Nodding pinweed <i>Lechea cerua</i>			T	S3	2	1
Pine pinweed <i>Lechea divaricata</i>			E	S2	2	1
Catesby's lily <i>Lilium catesbaei</i>			T		2	1

**Table 2: Imperiled Species**

Common and Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FFWCC	USFWS	FDACS	FNAI		
Twinberry <i>Myrcianthes fragrans</i>			T	S3	2	1
Hand fern <i>Ophioglossum palmatum</i>			E		2	1
Dancing lady orchid <i>Oncidium bahamensis</i>			E	S1	1,2,3	1,2
Cutthroat grass <i>Panicum abscissum</i>			E	S2	1	1
Low peperomia <i>Peperomia humilis</i>			E	S2	2	1
Rose pogonia <i>Pogonia ophioglossoides</i>			T		2	1
Small's milkwort <i>Polygala smallii</i>		E	E	S1	1,2	1
Giant orchid <i>Pteroglossaspis ecristata</i>			T	S2	1,2	1
Lace-lip ladies' tresses <i>Spiranthes laciniata</i>			T		1,2	1
Reflexed airplant <i>Tillandsia balbisiana</i>			T		2	1
Common wild pine <i>Tillandsia fasciculata</i>			E		2	1
Twisted airplant <i>Tillandsia flexusa</i>			T		2	1
Giant wild pine <i>Tillandsia utriculata</i>			E		2	1
Soft-leaved wild pine <i>Tillandsia variabilis</i>			T		2	1
Florida mock gama grass <i>Tripsacum floridanum</i>			T	S2	2	1
Blodgett's ironweed <i>Vernonia blodgettii</i>			E	S3	2	1
<b>FISH</b>						
Opossum pipefish <i>Microphis brachyurus</i>		SSC*				
<b>AMPHIBIANS</b>						
Gopher frog <i>Rana capito</i>	SSC			S3	1,2,13	1,2
<b>REPTILES</b>						

**Table 2: Imperiled Species**

Common and Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FFWCC	USFWS	FDACS	FNAI		
American alligator <i>Alligator mississippiensis</i>		T (S/A)		S4	2,10	1,2
Eastern indigo snake <i>Drymarchon corais couperi</i>		T		S3	1,2	1
Gopher tortoise <i>Gopherus polyphemus</i>	ST			S3	1,2	1,2
Florida pine snake <i>Pituophis melanoleucus mugitus</i>	SSC			S3	1,2,13	1
<b>BIRDS</b>						
Roseate spoonbill <i>Ajaia ajaja</i>	SSC			S2		1
Florida scrub-jay <i>Aphelocoma coerulescens</i>		T		S3	1,2,7,13	1,2,3,4,5
Limpkin <i>Aramus guarana</i>	SSC			S3	4	1
Kirtland's warbler <i>Setophaga kirtlandii</i>	E	E				1
Little blue heron <i>Egretta caerulea</i>	SSC			S4	2,4	1
Snowy egret <i>Egretta thula</i>	SSC			S3	2,4	1
Tricolored heron <i>Egretta tricolor</i>	SSC			S4	2,4	1
White Ibis <i>Eudocimus albus</i>	SSC			S4	2,4	1
Florida sandhill crane <i>Grus canadensis pratensis</i>	ST			S2,S3	1,2,4	1
Bald eagle <i>Haliaeetus leucocephalus</i>		T/DM		S3	1,2,10	1,2,3,4
Wood stork <i>Mycteria americana</i>		E		S2	2,4	1
Brown pelican <i>Pelecanus occidentalis</i>	SSC	DM		S3		1
Audubon's crested caracara <i>Polyborus plancus</i>	T	T		S2	1	1
Snail kite <i>Rostrhamus sociabilis</i>		E		S2		1
Black skimmer <i>Rynchops niger</i>	SSC			S3		1

Table 2: Imperiled Species						
Common and Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FFWCC	USFWS	FDACS	FNAI		
Least tern <i>Sterna antillarum</i>	ST			S3		1
<b>MAMMALS</b>						
Florida mouse <i>Podomys floridanus</i>	SSC			S3	1	1
Sherman's fox squirrel <i>Sciurus niger shermanii</i>	SSC			S3	1	1
West Indian manatee <i>Trichechus manatus</i>		E		S2	4,10, 13, 14	1

\*listed by National Oceanographic and Atmospheric Administration, National Marine Fisheries Service

**Management Actions:**

1. .... Prescribed Fire
2. .... Exotic Plant Removal
3. .... Population Translocation/ Augmentation/ Restocking
4. .... Hydrological Maintenance/ Restoration
5. .... Nest Boxes/ Artificial Cavities
6. .... Hardwood Removal
7. .... Mechanical Treatment
8. .... Predator Control
9. .... Erosion Control
- 10..... Protection from visitor impacts (establish buffers)/law enforcement
- 11..... Decoys (shorebirds)
- 12..... Vegetation planting
- 13..... Outreach & Education
- 14..... Other

**Monitoring Level:**

**Tier 1.** .....Non-Targeted Observation/Documentation: includes documentation of species presence through casual/passive observation during routine park activities (i.e., not conducting species-specific searches). Documentation may be in the form of *Wildlife Observation Forms*, or other district specific methods used to communicate observations.

**Tier 2.** .....Targeted Presence/ Absence: includes monitoring methods/activities that are specifically intended to document presence/absence of a particular species or suite of species.

- Tier 3.** .....Population Estimate/Index: an approximation of the true population size or population index based on a widely accepted method of sampling.
- Tier 4.** .....Population Census: A complete count of an entire population with demographic analysis, including mortality, reproduction, emigration, and immigration.
- Tier 5.** .....Other: may include habitat assessments for a particular species or suite of species or any other specific methods used as indicators to gather information about a particular species.

### **Exotic Species**

Exotic species are plants or animals not native to Florida. Invasive exotic species are able to out-compete, displace or destroy native species and their habitats, often because they have been released from the natural controls of their native range, such as diseases, predatory insects, etc. If left unchecked, invasive exotic plants and animals alter the character, productivity and conservation values of the natural areas they invade.

Invasive non-native plants including the Old World climbing fern, downy rose myrtle, Brazilian pepper, java plum, strawberry guava, shoebutton ardisia, melaleuca, Natal grass, arrowhead vine, wild taro, Australian pine and rosary pea are all problems at the park and every effort is being made to eliminate them. The extent of the non-native plant problem is large and complex but is actively being managed.

Old World climbing fern is the most dominant, widespread and expensive invasive non-native plant species to treat at this management unit. Treatment for old world climbing fern started in 1993 in localized areas. However, since 2000, the scale of treatment has increased dramatically with contractors and dedicated park and district staff. Significant progress has been made since 2000, but several large areas remain untreated. A continuing problem following initial treatments is the re-colonization from untreated sources on adjacent natural or ruderal lands.

Control of the downy rose myrtle infestation saw much improvement in 2006 to 2008 with initial treatments of heavily infested areas. Retreatment continues in areas of infestation by contractors and staff. The work done to reduce the acreage of this plant was largely accomplished through the creative use of grant funding. The infestation was reduced from major to manageable in a very short time. Vigilance by land managers is required as the populations of this plant outside the park are at very high levels. Continued short interval fire application will reduce the ability of this plant to reproduce because fire top-kills large plants and can kill small plants. Unfortunately, this plant also does very well in areas with longer hydro-periods than mesic and wet flatwoods, such as cypress domes and mesic hammock. Therefore, burning alone will not solve the problem of this plant's spread.



**UNITED STATES DEPARTMENT OF COMMERCE**

National Oceanic and Atmospheric Administration

**NATIONAL MARINE FISHERIES SERVICE**

Southeast Regional Office

263 13th Avenue South

St. Petersburg, Florida 33701-5505

<http://sero.nmfs.noaa.gov>

December 3, 2014

F/SER47:BH/pw

(Sent via Electronic Mail)

Mr. John Winkle  
Federal Railroad Administration  
1200 New Jersey Avenue, SE Room W38-311  
Washington, DC 20590

Dear Mr. Winkle:

NOAA's National Marine Fisheries Service (NMFS) reviewed the Federal Railroad Administration's (FRA) draft Environmental Impact Statement (DEIS), dated September 19, 2014. All Aboard Florida (AAF) proposes passenger service between Miami International Airport and Orlando International Airport with stops in West Palm Beach, Ft. Lauderdale, and Miami. The proposed rail system has two portions. The North-South portion would be within the existing 100-foot Florida East Coast Railroad (FEC) right-of-way (ROW) between Miami and Cocoa Beach. The East-West portion would be along State Road 528 (SR 528) between Cocoa Beach and Orlando. On October 24, 2014, NMFS provided the U.S. Army Corps of Engineers with comments on public notice SAJ-2012-01564 (SP-AWP) regarding the essential fish habitat (EFH) impacts along the North-South portion. This letter will focus on the freshwater wetland impacts incurred along the entire project. Three action alternatives were considered with wetland and surface water impacts ranging from 127.7 acres to 157.5 acres. As the nation's federal trustee for the conservation and management of marine, estuarine, and anadromous fishery resources, the following comments and recommendations are provided pursuant to authorities of the Fish and Wildlife Coordination Act.

NMFS staff conducted site inspections along the North-South portion of the project on January 23, 2013; May 1, 2013; and April 2, 2014. The proposed railroad corridor will impact wetlands, canals, rivers, and other surface waters between Miami and Cocoa along the east coast and from Cocoa to Orlando in Central Florida. Wetland quality ranges from very high to very low in quality and consist of every major freshwater wetland habitat type in Central and South Florida. The highest quality wetlands lie within Johnathan Dickenson State Park and along SR 528. These are largely high functioning forested systems. Vegetation within these forested wetlands includes red maple (*Acer rubrum*), swamp bay (*Persea palustris*), pond pine (*Pinus serotina*), southern magnolia (*Magnolia grandiflora*), swamp tupelo (*Nyssa sylvatica* var. *biflora*), sweetgum (*Liquidambar styraciflua*) loblolly bay (*Gordonia lasianthus*), and dwarf palmetto (*Sabal minor*). The wetlands that would be impacted by the proposed railroad expansion provide water quality functions, such as removal of sediments, excess nutrients, and contaminants, that benefit and support these aquatic ecosystems. Through hydrological connections, these wetlands also contribute plant material and other useable nutrients (both dissolved and particulate organic matter) into aquatic food webs that include recreationally, commercially, and ecologically important species within downstream estuaries.

Three action alternatives are studied in the DEIS: Alternative A, Alternative C, and Alternative E. The North-South portion is the same for all three alternatives. The differences in the alternatives would occur along SR 528: Alternative A would locate the new East-West portion of the project within the SR 528 right-of-way (ROW); Alternative C adjacent to the SR 528 ROW; and Alternative E 100-feet from the SR 528 ROW. An approximately 30-foot-wide median exists along SR 528. Use of the median to facilitate



the new railroad should be studied as an alternative. This could eliminate the majority of wetland impacts and would demonstrate that adequate avoidance measures have been met. Alternative A is NMFS' preferred alternative of those studied since it will result in the smallest acreage (127.7 acres) of impacts to wetlands and surface waters. Chapter 7 of the DEIS states the project impacts would be mitigated at a federally approved mitigation bank whose service area overlaps the specific wetland being mitigated. This would result in several mitigation banks being used to offset impacts from the project. This approach would also ensure that the lost function and values will be replaced within the same watershed. The Jacksonville District U.S. Army Corps of Engineers will determine the appropriate amount of credits to be purchased based on a functional assessment. NMFS is available to help the FRA and Jacksonville District in evaluating the functional assessment used to determine the number of credits to be purchased.

In addition to the direct impacts from filling wetlands, construction activities may impact adjacent wetlands through sedimentation and runoff. To minimize these impacts, NMFS recommends the applicant utilize best management practices, including staked hay bales, silt fencing, mats for construction equipment, and re-vegetation of denuded areas, to stabilize the disturbed soils.

NMFS appreciates the opportunity to provide these comments. Questions should be directed to the attention of Mr. Brandon Howard at our West Palm Beach Office, 400 North Congress Avenue, Suite 120, West Palm Beach, FL 33401. He also may be reached by telephone at 561 249-1652, or by email at Brandon.Howard@noaa.gov.

Sincerely,



/ for

Virginia M. Fay  
Assistant Regional Administrator  
Habitat Conservation Division

cc:

VHB, AAF\_comments@vhb.com  
FRA, John\_Winkle@dot.gov  
FWS, Ashleigh\_Blackford@fws.gov  
COE, Andrew.W.Phillips@usace.army.mil  
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AMEC, Shannon.McMorrow@amec.com  
F/SER4, David.Dale@noaa.gov  
F/SER47, Karazsia, Getsinger, Howard

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**From:** Bradley Mueller [mailto:bradleymueller@semtribe.com]  
**Sent:** Wednesday, December 17, 2014 12:18 PM  
**To:** Winkle, John (FRA)  
**Subject:** Seminole Tribe of Florida: All Aboard Florida EIS

To: Mr. John Winkle, Federal Railroad Administration  
1200 New Jersey, SE Room W38-311  
Washington, D.C. 20590  
Email: [john.winkle@dot.gov](mailto:john.winkle@dot.gov)

Good Afternoon Mr. Winkle,

I was unable to successfully send comments concerning the All Aboard Florida Draft EIS to the [AFF\\_comments@vhb.com](mailto:AFF_comments@vhb.com) email address so I am sending them via [john.winkle@dot.gov](mailto:john.winkle@dot.gov). Please see below.

---

Dear Mr. Winkle,

Thank you for contacting the Seminole Tribe of Florida – Tribal Historic Preservation Office and providing us the opportunity to comment on the Draft Environmental Impact Statement and 4(f) Evaluation for the proposed All Aboard Florida Intercity Passenger Rail Project. Pursuant to Section 106 of the National Historic Preservation Act we have reviewed the report sections dealing with Cultural Resources and have no objection to the report's findings concerning historic properties at this time. I would however like to point out one error that occurs on page 5-137, Section 5.4.5 Cultural Resources, the definition of "cultural resources" provided in paragraph one of this section is in fact a definition for "historic properties". As I am sure you are aware the distinction between cultural resource and historic property is a critical one in the 106 process. Thanks again and feel free to contact me with any questions.

Regards,

**Bradley M. Mueller, MA**  
*Compliance Supervisor*  
*Tribal Historic Preservation Office*  
*Seminole Tribe of Florida*

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 4  
ATLANTA FEDERAL CENTER  
61 FORSYTH STREET  
ATLANTA, GEORGIA 30303-8960

December 3, 2014

Mr. John Winkle  
Federal Railroad Administration  
1200 New Jersey Avenue, SE  
Room W38-311  
Washington, D.C. 20590

RE: Federal Draft Environmental Impact Statement for the All Aboard Florida Phase II – Orlando to Miami, Florida Intercity Passenger Rail Project; CEQ No.: 20140280

Dear Mr. Winkle:

The U.S. Environmental Protection Agency (EPA) has reviewed the Federal Draft Environmental Impact Statement and Section 4(f) Evaluation for the All Aboard Florida Phase II – Orlando to Miami, Florida Intercity Passenger Rail Project and is commenting in accordance with Section 309 of the Clean Air Act (CAA) and Section 102(2)(C) of the National Environmental Policy Act (NEPA). The proposed project includes adding a second track within 128.5 miles of the existing Florida East Coast Railroad right-of-way between West Palm Beach and Cocoa, Florida. Additionally, the project includes a new 40-mile railroad line parallel to State Road 528 between Cocoa and Orland International Airport and a new vehicle maintenance facility south of the airport. Grade crossings, bridges, and signalization improvements are planned along with adding new communications and train control systems.

Phase I of the proposed passenger rail project was addressed in a 2012 Environmental Assessment (EA) which included rail improvements between West Palm Beach and Miami. A 2013 Finding of No Significant Impact (FONSI) was issued by the Federal Rail Administration (FRA) which included the construction of three (3) new stations, purchasing five (5) train sets, adding a second track along most of the 66.5-mile corridor and adding new roundtrip service between West Palm Beach and Miami. Direct impacts from Phase I are not addressed in this DEIS for Phase II but the cumulative effects of both phases are included in the DEIS. FRA determined that Phase I of the passenger rail project has independent utility.

EPA's has provided detailed review comments in an attachment to this letter (See Attachment A). The DEIS identifies the No Action alternative and three (3) detailed study alternatives (i.e., Alternatives A, C and E).

EPA has identified Alternative A as its environmentally-preferred alternative because of reduced impacts to jurisdictional wetlands and several other resources. EPA has provided a rating of "EC-2", indicating that there are environmental concerns for the overall proposed

project and that additional information (2) is being requested for inclusion in the Final Environmental Impact Statement (FEIS). EPA has identified jurisdictional wetland and stream issues, potential water quality and sole source aquifer issues, and noise and vibration impacts as the primary environmental concerns requiring additional information and analysis. In the attachment, EPA has requested detailed information be included in the FEIS. Jurisdictional wetland and stream compensatory mitigation requirements need to be identified and fully disclosed in the FEIS and further addressed and resolved during the Section 404 permitting process with the EPA.

EPA supports alternative modes of transportation such as high-speed, passenger rail due to the potential environmental air quality benefits as identified in the DEIS from the long-term reductions in emissions from automobiles and other vehicles. EPA requests that continued coordination with local, state and Federal cooperating agencies continue during the preparation of the FEIS as well as ongoing dialogue with affected communities. If you have any questions concerning these comments, please contact Mr. Christopher Militscher of my staff at 404-562-9512 or by e-mail at [Militscher.chris@epa.gov](mailto:Militscher.chris@epa.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "Heinz J. Mueller", with a long horizontal flourish extending to the right.

Heinz J. Mueller, Chief  
NEPA Program Office

w/Attachment A

Attachment A – Detailed Technical Review Comments  
Federal Draft Environmental Impact Statement for the All Aboard Florida Phase II – Orlando to  
Miami, Florida Intercity Passenger Rail Project; CEQ No.: 20140280

Alternatives Considered

The DEIS provides a generally summary of the alternatives considered for the proposed project in Table S-1. The No Action alternative is also described in this table. Each segment of the project is broken down in this table including the Phase I West Palm Beach to Miami section (WPB-M), and adding a second track along the 128.5 mile corridor between WPM and Cocoa (N-S) section, the construction of a new rail line of approximately 35 miles between Cocoa and Orlando International Airport (MCO) (E-W section), the construction of a new Vehicle Maintenance Facility (VMF) and various station improvements at Miami, West Palm Beach and Fort Lauderdale. For the E-W section, 5 new bridges over water are proposed for all three alternatives examined (Alternatives A, C and E). For the N-S corridor segment, 18 bridges would need to be reconstructed. For the WPB-M section, 7 bridges would require reconstruction. The construction of the new VMF would require the construction of 1 new bridge.

Each of the 3 alternatives would provide 16 roundtrip services (32 trains/day). Ridership is anticipated to be 3.5 million persons in the design year for each alternative. The differences between Alternative A, C and E are primarily in the 17.5-mile section of the E-W corridor. Alternative A would provide 17.5 miles of new rail within the State Road (SR) 528 right-of-way (ROW) owned by the Orlando-Orange County Expressway Authority (OOCEA) and the Florida Department of Transportation (FDOT). Alternative C would provide the 17.5 miles of new rail along the boundary of this ROW and Alternative E would provide the 17.5 miles of new rail 100 feet south of the current ROW.

The proposed project is not anticipated to impact local vehicular traffic along the MCO segment or along the E-W corridor as there are no at-grade road crossings proposed. For the N-S corridor, typical at-grade crossings would be closed an average of 54 times per day (3 times per hour), with closure times ranging from 1.7 minutes for passenger trains to 2.8 minutes for freight trains. The total hourly closure rate at these at-grade crossings would range between 4.2 minutes and 4.5 minutes per hour. This is approximately 2 minutes per hour above the 'No Action' existing conditions.

Air Quality Impacts

The 9 counties within the project study area are designated as being in attainment with the National Ambient Air Quality Standards (NAAQS) for carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide, and particle pollution (PM<sub>2.5</sub> and PM<sub>10</sub>). Baseline mobile source emissions for the Phase II area of the project for the year 2008 including Brevard, Indian River, St. Lucie, Martin and Palm Beach Counties are shown in Table 4.2.1-3 of the DEIS. Emission rates in tons per year are provided for carbon monoxide, sulfur dioxide, nitrogen dioxide, PM<sub>10</sub> and volatile organic compounds (VOCs) are provided. The DEIS indicates that most of the primary source of these pollutants are from combustion engines from automobiles.

The proposed project is expected to remove approximately 336,000 vehicle trips per year from the regional roadway network in 2016 and 1.2 million vehicles in 2019. The new passenger rail service is also expected to remove ridership from inter-city motorbus services and regional air flights. The FRA and AAF are projecting an overall decrease in criteria pollutants [and mobile source air toxics] as a result of project implementation from the reduction of automobiles and other vehicles from regional roadways. The DEIS provides projected quantified reductions of 1,654 tons of CO, emissions, 192 tons of NO<sub>x</sub> emissions, 59 tons of VOC emissions, and 7 tons of PM<sub>10</sub> by the Year 2030.

### Noise and Vibration Impacts

The proposed project is not expected to create adverse noise conditions for the MCO section. For the E-W corridor, passenger rail operations adjacent to SR 528 would increase future noise levels and potential noise impacts. In the E-W corridor section, the project is anticipated to moderately impact 105 residential receptors and severely impact 5 residential receptors and 1 moderate impact for an institutional receptor. Noise impacts are essentially the same for all three build alternatives. Noise along the E-W corridor is due primarily to the sound created by the passing trains.

Based upon information presented in the DEIS (Tables 5.2.2-9 and 5.2.2-10), no receptors along the N-S Corridor would experience noise levels that exceed impact criteria. However, the proposed project will result in long-term noise adverse impacts to residents and properties along the N-S corridor primarily due to the increased frequency of warning horn use at 'at-grade' crossings. The use of wayside horns is being proposed as a mitigation measure to eliminate severe noise impacts for residential and institutional receptors along the N-S corridor. AAF (All Aboard Florida) has committed to installing stationary wayside horns at each of the 159 grade crossings between Cocoa and West Palm Beach. Noise analysis was based upon the use of the use of wayside horns along N-S corridor. The use of wayside horns are expected to minimize impacted receptors. The DEIS also states that where compliant with safety regulations and FRA guidelines, AAF will work with local communities that would like to create 'quiet zones' as an alternate noise abatement measure to wayside horns. The DEIS states that AAF cannot create a quiet zone and that the public entity must go through the application process with FRA.

Similar to noise impacts, there are no expected vibration impacts for the MCO section. The greatest potential for vibration impacts is along the existing N-S corridor section due to the approximate doubling of vibration events (i.e., passing trains). The N-S corridor is expected to have potential vibration impacts to 3,317 residences, 513 institutions, 3 Television studios, 9 auditoriums and 3 theaters. In the E-W corridor, there are potential vibration impacts to 118 residences and 12 institutional receptors.

The DEIS states that FRA and AAF will potentially minimize vibration impacts by wheel and rail maintenance activities that will help to control unacceptably high vibration levels. Furthermore, the DEIS indicates that vibration levels will be minor in nature and would not exceed the threshold for structural damage to buildings. EPA requests that FRA and AAF

elaborate on proposed maintenance activities that will potentially reduce noise and vibration impacts in the FEIS.

The DEIS identifies that there will also be temporary, short-term vibration [and noise] impacts to nearby receptors during construction, particularly from pile-driving during bridge construction. EPA recommends that FRA guidelines and requirements for noise abatement for severe (and moderate) noise impacts be followed and that noise abatement mitigation measures be implemented. Table 7.2-2 includes installing noise barriers along the E-W corridor where effective in reducing noise impacts near elevated structures and install pole-mounted horns at grade crossings. EPA recommends that these, as well as any other noise mitigation and abatement measures that are feasible and of public importance, be considered and evaluated. EPA acknowledges the commitment to project BMPs and mitigation measures for noise and vibration during the construction phase as well as operational phase. The FRA should consider and identify any other appropriate and cost-effective noise and vibration abatement measures during construction and for passenger train operations in the FEIS. EPA recommends that FRA and AAF consider the use of vegetation and other types of screens or barriers that can potentially minimize noise impacts to receptors.

#### Water Resources Impacts

On page 5-76 of the DEIS, for Alternative A, the paragraph states that there are 21 new and 10 replacement bridges over waterways. However, Table 5.3.1-1 illustrates 6 new bridges and 25 replacement bridges. This needs to be corrected or clarified by FRA in the FEIS.

The proposed project has the potential to impact surface and groundwater based upon the overall length of the entire project corridor and the number of water crossings (bridges), as well as the project overlapping portions of a Sole Source Aquifer protection zone or zones. Some of the surface water crossings are over Outstanding Florida Waters (OFWs). The project also crosses several well field protection zones or SWAPP (surface water assessment and protection) zones in Brevard, Indian River, St. Lucie, Martin, and Palm Beach Counties, which have well field protection ordinances to protect drinking water supplies from contamination. The DEIS states that AAF will implement BMPs to protect discharge water quality and ensure that freshwater recharge is maintained. Alternative A will 161 acres of pervious vegetated areas to railroad and create 139 acres of new impervious surfaces in the form of buildings, parking lots and roads. The MCO segment and the VMF are also expected to increase impervious surfaces and impact (fill) an existing detention water pond at the airport. A new wet detention pond is proposed to treat stormwater runoff from the VMF. FRA and AAF should ensure that there is no net loss of stormwater treatment and runoff volume in their final design plans for the VMF.

The DEIS indicates that there is little difference between the 3 build alternatives with regard to the impact to surface or groundwater. The DEIS also states that the project would have negligible impacts to surface or groundwater resources. Based upon the size of the project and the potential for surface and groundwater impacts, EPA recommends that the FEIS identify the specific BMPs to be applied to attain appropriate reductions in sediment loads and what additional monitoring will be conducted to achieve pollutant reductions. Mitigation measures related to protection of water quality should be tailored depending on the condition of the

specific water resource as well as the severity of potential impacts. Proper control of storm water runoff during construction will also be critical. Construction activities have the potential to introduce sediments in adjacent water bodies that could exacerbate problems relative to increasing sediment oxygen demand which affects dissolved oxygen levels. Monitoring commitments should be included to ensure that water quality and in-stream habitat are fully protected. Storm water controls should be monitored periodically for the duration of construction and maintained to help ensure successful BMP implementation. To further assist in the long-term reduction of pollutant loadings to surface water resources in the project area, EPA recommends that storm water runoff from the proposed project (rail line and adjacent ROW) be collected and treated before being discharged to surface waters. The FEIS should comprehensively address environmental commitments to protect water resources within the project study area.

The proposed project includes the construction of or repair/replacement of several bridges and crosses several OFWs, as well as Sole Source Aquifer (SSA) protection zones and well head protection zones. The fact that the project involves Sole Source Aquifer zones, consultation with EPA's Sole Source Aquifer coordinator is strongly encouraged. Please refer to the following link which includes a document entitled "Sole Source Aquifer Memorandum of Understanding (MOU) - The United States Environmental Protection Agency, Region 4, The Federal Highway Administration, Florida Division, and The State of Florida, Department of Transportation" ([http://www.epa.gov/safewater/sourcewater/pubs/fs\\_ssamou\\_fhadotflusepareg4.pdf](http://www.epa.gov/safewater/sourcewater/pubs/fs_ssamou_fhadotflusepareg4.pdf)). While this MOU is with USDOT's FHWA and not specifically FRA, EPA recommends that the FRA and AAF follow the basic provisions of this MOU and address additional coordination efforts in the FEIS.

As stated in the DEIS, a portion of the project lies within the Biscayne Aquifer SSA Streamflow and Recharge Zone area. EPA has designated the Biscayne Aquifer SSA Streamflow and Recharge Zone as a sole source aquifer. EPA defines a sole source aquifer as an underground water source that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. These areas can have no alternative drinking water sources that could physically, legally, and economically supply all those who depend upon the aquifer for drinking water. The Sole Source Aquifer Program is authorized by Section 1424(e) of the Safe Drinking Water Act of 1974. Designation of an aquifer as a sole source aquifer provides EPA with the authority to review federal-financially assisted projects planned for the area to determine their potential for contaminating the aquifer.

Table 5.3.3-4 in the DEIS provides a comparison of wetlands acreage impacts for the project alternatives. Of the three build alternatives, Alternative A impacts 128 acres of aquatic resources; 17 acres of surface waters/aquatic habitat and 111 acres of wetlands (70 acres forested and 41 acres non-forested), Alternative C impacts 165 acres of aquatic resources; 7 acres of surface waters/aquatic habitat and 159 acres of wetlands (90 acres forested and 60 acres non-forested) and Alternative E impacts 157 acres of aquatic resources; 6 acres of surface waters/aquatic habitat and 152 acres of wetlands (100 acres forested and 53 acres non-forested). Overall, Alternative A results in the lowest acreage of loss of aquatic resources, including wetlands.

The DEIS included a summary of direct wetland impact acreage but did not include information regarding the estimated UMAM scores for each of the build alternatives. The State of Florida utilizes UMAM to determine the amount of mitigation required to offset wetland and surface water impacts. USACE accepts UMAM as a suitable qualitative wetland assessment methodology. A comparison of the UMAM functional loss for the build alternatives was not included in the DEIS. This information should be included in the FEIS. From a strictly quantitative perspective of impacts to jurisdictional resources, EPA environmentally prefers Alternative A.

Regarding mitigation, the DEIS only includes "Purchase wetland mitigation credits" as a mitigation measure. The DEIS does not contain specific mitigation commitments. The FEIS should include avoidance and minimization measures, as well as specific compensatory mitigation plans for unavoidable impacts to jurisdictional wetlands. The FEIS should present whether the preferred alternative selected is the least environmentally damaging practicable alternative (LEDPA) that satisfies the purpose and need per the Clean Water Act Section 404(b)(1) Guidelines.

Regarding floodplain impacts, Table 5.3.4-1 of the DEIS includes summaries for the 3 build alternatives. Alternative A has the least impact to floodplains at 284.0 acres while Alternative C has 340.5 acres and Alternative E has 339.8 acres. EPA recommends that the FEIS include information regarding floodplains associated with the preferred alternative and what type of additional avoidance or minimization efforts will be needed to meet regulatory floodplain standards. The FEIS should also include appropriate mitigation commitments for unavoidable floodplain impacts.

#### Other Natural Resources Impacts

Page S-16 and 5-110 of the DEIS states that the USACE is the lead federal agency for Endangered Species Act (ESA) compliance requirements. This information should be clarified in the FEIS to state that the U.S. Fish and Wildlife Service and National Marine Fisheries Service are the lead federal agencies for ESA compliance and that the USACE has agreed as a cooperating agency with FRA to insure that the ESA requirements are being satisfied. The USACE cannot issue the Section 404 permit until the permit applicants (FRA and AAF) satisfy any appropriate ESA requirements. For Essential Fish Habitat (EFH) issues, EPA defers to National Marine Fisheries Service for specific comments and continued consultation. EPA acknowledges the ESA determinations stated on page 5-110 and referenced to Appendix 5.3.6-B.

For any habitat fragmentation issues associated with the E-W corridor segment, EPA defers to the State and Federal wildlife agencies on specific comments. EPA requests that FRA and AAF consider the requirements of E.O. 13112 on Invasive Species and develop and implement appropriate BMPs during construction to minimize the establishment and spread of invasive plant species near new ROW areas. EPA requests that these BMPs be identified in the FEIS as an environmental commitment.

## Other Human Resources Impacts

EPA notes from the DEIS that land use will change substantially with the proposed passenger rail project. AAF proposes to purchase privately owned property, as well as lease property, which would result in the conversion of up to approximately 423 acres of land to transportation use. Land use conversions will occur in the E-W corridor only. The DEIS indicates the following: Alt A – 44 acres acquired, 245 leased; Alt C – 44 acres acquired, 374 leased; and Alt E – 44 acres acquired, 374 leased. EPA recommends the minimization of land conversion to the greatest extent practicable and that Alternative A presents the least amount of land conversion.

Navigation impacts associated with major bridge crossings such as St. Lucie River, Loxahatchee River and New River and changes to existing conditions are addressed in pages 5-17 to 5-33 of the DEIS. EPA has general environmental concerns with bridge removal, repairs/modifications, and replacement or reconstruction practices and how these activities may affect water quality, both during and after construction and during operation of the facility. BMPs for stormwater management should be included in final designs for the project and potential impacts to jurisdictional waters should be avoided and minimized to the extent practicable. Regarding transportation and public safety issues associated with these crossings, EPA defers to the U.S. Coast Guard who is also a cooperating agency on this proposed project.

Regarding hazardous materials and solid waste disposal issues, potential impacts are expected to be the same for the three build alternatives. According to the DEIS, the MCO segment has no contaminated sites located within 500 feet of the project. For the E-W corridor segment, there are 16 potentially contaminated sites located within the 500-foot buffer. For the N-S corridor segment a total of 337 potentially contaminated sites were identified within the 200-foot evaluation area along the 128.5 mile corridor. There is a slight potential for soil disturbance resulting from underground utility installations and storm water pond construction. DEIS states that potential contaminated sites lie outside of the planned construction area. Therefore, impacts from the existing contaminated areas are not anticipated by FRA and AAF. Acquisition of property adjacent to the SR 528 ROW may require further assessment regarding contamination on those properties. This portion of the project is anticipated to be completed within the existing FECR Corridor and would result in minimal subsurface disturbance. EPA requests that the existing ROW be further assessed to determine if contamination resulting from many years of freight train usage is present along the existing FECR rail lines. If any subsurface or soil disturbance is expected to occur in areas that are potentially contaminated, these areas should be assessed and remediated, if necessary, according to FDEP and EPA regulations. EPA recommends that the FEIS include information regarding potentially contaminated sites associated with the preferred alternative and what type of additional site assessment and any remediation activities that may be needed.

Under Section 106 of the National Historic Preservation Act (NHPA), there are two eligible historic bridges (Gallie River and St. Sebastian River) that are proposed to be demolished with either of the 3 build alternatives and constitute an 'adverse effect' determination. EPA defers to the State Historic Preservation Office for further consultation.

The DEIS provides an evaluation of Environmental Justice (EJ) effects for low income and minority communities in Section 5.4.2 of the DEIS. The DEIS provides an overall of Executive Order 12898, pertinent demographic information, and a methodology for determining EJ status. FRA and AAF utilized a new or existing rail line 1,000-foot project study area for census tract estimations and a 10% threshold value (Page 5-124). For the MCO segment, no adverse and disproportionate impacts to EJ communities were identified. For the E-W corridor segment, 2 census tracts were identified as meeting the threshold as EJ communities. Based upon the analysis, the DEIS indicates that there would be no disproportionate and adverse impacts to EJ communities. For the N-S corridor segment, there were 29 census tracts meeting the established EJ criteria. According to the analysis, noise and vibration impacts would be possibly adverse but would not be disproportionate to non-qualifying communities. FRA and AAF are proposing noise abatement (e.g., wayside horns) and vibration mitigation measures (e.g., ballast mats beneath rail lines; “frogs” at selected switch locations) to lessen the severity of impacts to all communities along the N-S corridor segment. If any EJ communities that were not captured through this detailed analysis before the FEIS is issued, EPA requests that FRA continue coordination efforts consistent with the intent of E.O. 12898.

Community impacts such as noise and vibration and indirect and cumulative effects from the 3 build alternatives are discussed in the DEIS. Public health and safety and other related issues are also disclosed in Section 5.4.4 of the DEIS. This section includes information concerning at-grade crossings and train operations. EPA requests that FRA and AAF continue to work closely with affected local communities to address issues of concern such as safety, noise and other related environmental concerns. Appropriate documentation on the response/resolution of these issues should be provided in the FEIS and/or ROD, as appropriate.

FRA and AAF have coordinated with the Natural Resources Conversation Service (NRCS) regarding potential prime and unique farmland impacts. The MCO and N-S corridor segments would have no potential impact on prime farmland soils. Page 5-56 of the DEIS indicates that 19.3 acres of prime farmland soils would be impacted by Alternative A and with Alternatives C and E having ‘slightly’ more than Alternative A. Regarding farmland conversion and any compensation required, EPA defers to NRCS for any requirements and comments.



# United States Department of the Interior



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

December 3, 2014

John Winkle  
Federal Railroad Administration  
1200 New Jersey Avenue  
SE Room W38-311  
Washington DC 20590

Service CPA Code: 2013-CPA-0029  
Service Consultation Code: 2013-F-0025  
Date Received: September 22, 2014  
Project: All Aboard Florida Passenger Rail  
Service from Orlando to Miami  
Counties: Brevard, Orange, Palm Beach,  
Martin, St. Lucie, Indian River

Dear Mr. Winkle:

The U.S. Fish and Wildlife Service (Service) has reviewed your Draft Environmental Impact Statement (DEIS) dated September 19, 2014, and other information submitted by the Federal Railroad Administration (FRA) for All Aboard Florida Passenger Rail Service from Orlando to Miami. The Service's comments on the DEIS are presented below and are provided in accordance with the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C. 1531 *et seq.*).

## PROJECT DESCRIPTION

All Aboard Florida LLC (AAF) is proposing to construct and operate a privately owned and operated intercity passenger railroad system that will connect Orlando and Miami, with intermediate stops in Fort Lauderdale and West Palm Beach, Florida (Project). To finance the Project, AAF has applied for \$1.6 billion in Federal funds through the FRA's Railroad Rehabilitation and Improvement Financing (RRIF) program. AAF proposes to implement the Project through a phased approach. Phase I would provide rail service on the West Palm Beach to Miami section while Phase II would extend service to Orlando. Phase I would provide passenger rail service along the 66.5 miles of the Florida East Coast Railroad (FECR) Corridor connecting West Palm Beach, Fort Lauderdale, and Miami.

Phase I of the Project includes the construction of three new stations (West Palm Beach, Fort Lauderdale and Miami), acquisition of five trains, construction of a second track along most of the 66.5-mile corridor, and 16 new round-trip intercity passenger train trips (32 one-way trips) on the West Palm Beach to Miami section of the FECR Corridor. FRA and AAF conducted an

environmental review of Phase I in 2012 and 2013 and made a finding of “No Significant Impact” (FONSI). FRA concluded Phase I has independent utility, and could be advanced and serve a transportation need even if Phase II were not constructed. Consequently, FRA authorized AAF to construct the Phase I component of the Project. However, to date, FRA has not determined if a RRIF loan would be provided independently for Phase I.

Phase II of the Project includes: constructing a new railroad line parallel to State Road (SR) 528 from the Orlando International Airport to Cocoa; constructing a new vehicle maintenance facility on property owned by the Greater Orlando Airport Authority; adding a second track, straightening curves, and reconstructing 18 bridges within 128.5 miles of the FECR Corridor between West Palm Beach and Cocoa; and additional bridge work along the corridor from Miami to West Palm Beach. Phase II would add 16 new round-trip intercity passenger train trips (32 one-way trips) on the new railroad segment and on the FECR Corridor between Cocoa and West Palm Beach. Maximum operating speeds along the entire corridor would range from 79 to 125 miles per hour (mph), depending upon the location. Operating speeds will be greatest along the SR 528 corridor where there would be no highway-rail grade crossings.

Construction and operation of AAF passenger train service will include the entire corridor from Orlando to Miami. Therefore, the FRA produced a DEIS that analyzes the cumulative effects of completing both phases of the Project. However, because Phase I has already been addressed under the National Environmental Policy Act with a FONSI, it is not reanalyzed in the DEIS. The DEIS compares the effects of three action alternatives (Alternatives A, C, and E) and the “no-build” alternative. Alternatives A, C, and E present different locations of the 17.5 miles of new railroad tracks along SR 528 from Orlando to Cocoa (Alternative A - within the existing SR 528 right-of-way south of the paved travel lanes; Alternative C – along the boundary of the SR 528 right-of-way south of the paved travel lanes; Alternative E – 100 feet south of SR 528 right-of-way boundary south of the paved travel lanes).

## DEIS COMMENTS

### **Florida scrub-jay**

The Project occurs within the geographic range of the threatened Florida scrub-jay (*Aphelocoma coerulescens*). Surveys conducted by the consultants for AAF found active territories of Florida scrub-jays at four localities immediately adjacent to the AAF rail corridor: 1) Helen and Allen Cruickshank Sanctuary, between Malabar Road and Valkaria Road, and south of Micco Road in Brevard County; 2) North Sebastian Conservation Area in Indian River County; 3) Savannas Preserve State Park (SPSP) and a Florida Inland Navigation District site in St. Lucie County; and 4) Hobe Sound National Wildlife Refuge and Jonathan Dickinson State Park in Martin County. Florida scrub-jays have been observed near and flying across, the track corridor. Moreover, the Service notes it is likely Florida scrub-jays will occasionally occur within the rail corridor, either foraging or flying across the tracks. The AAF project will result in passenger trains travelling past and/or through these territories at 79 to 125 mph, 32 times a day and moving at significantly

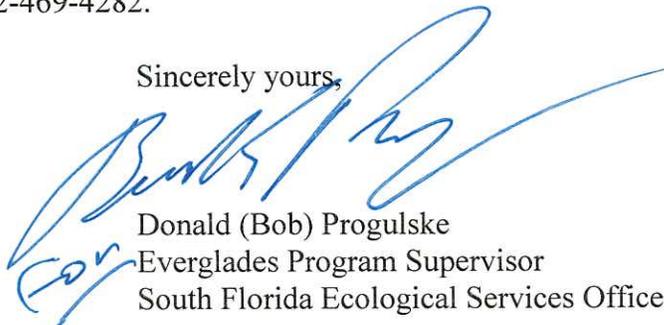
faster speeds than the freight trains currently using the corridor. This increase in rail traffic in addition to the speed of trains traveling in these areas increases the likelihood that Florida scrub-jays will be struck by a train and either injured or killed. Although the species may eventually learn to avoid the trains, the Service finds it likely that injuries or deaths of scrub-jays are reasonably certain occur as a result of the Project from train collisions. Consequently, the Service finds the Project is likely to result in adverse effects to Florida scrub-jay. We understand the U.S. Army Corps of Engineers (Corps) is completing section 7 consultation on the project on behalf of the FRA (the lead agency for the AAF project). We have contacted the Corps and recommended they request formal consultation for the Project.

### **Federally listed plant species**

The Project occurs within the geographic range of the endangered fragrant prickly apple (*Cereus eriophorus var. fragrans*). Specimens of fragrant prickly apple were observed within the existing railroad footprint SPSP by staff of the SPSP. We recommend a botanical survey of the Project footprint adjacent to the SPSP be conducted to determine the status of the fragrant prickly apple and any other federally listed plant species. In addition, we recommend you contact the SPSP to obtain further information regarding the locations of the observed specimens. The results of these surveys should be provided to the Service to determine if further consultation on the fragrant prickly apple or other federally-listed plant species is necessary.

Thank you for the opportunity to comment on the proposed Project and your cooperation in the effort to protect fish and wildlife resources. If you have any questions regarding our comments, please contact John Wrublik at 772-469-4282.

Sincerely yours,



Donald (Bob) Progulske  
Everglades Program Supervisor  
South Florida Ecological Services Office

cc: electronic only

FWC, Tallahassee, Florida (FWC-CPS)

NOAA Fisheries, West Palm Beach, Florida (Brandon Howard)

Corps, Cocoa, Florida (Andrew Phillips)

U.S. Department of  
Homeland Security

United States  
Coast Guard



Commander  
United States Coast Guard  
Seventh District

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DEC 3 2014

Mr. John Winkle  
Federal Railroad Administration  
1200 New Jersey Ave SE, Room W38-311  
Washington, DC 20590

Dear Mr. Winkle,

The Coast Guard Seventh District Bridge Branch completed its review of the September 2014 All Aboard Florida Draft Environmental Impact Statement (AAF DEIS).

The navigational conditions at the New, Loxahatchee, and St Lucie River bridge sites consist of strong currents, constrained channels, and a heavy volume of boats. Given the proposed AAF operating schedule, it is very likely that future regulatory action will be required for these bridges. Details of navigational impact are borne out of studies associated with that rulemaking. Because we have not entered into that rulemaking process for the AAF proposal, the Coast Guard has not made a reasonable needs of navigation determination.

With regard to navigation, the Coast Guard does not typically consider navigational impacts to be environmental impacts that must be studied under the National Environmental Policy Act. The Coast Guard does not adopt the conclusions and assertions encompassed in the Navigation Discipline Report (NDR) included with the AAF DEIS for the purposes of rulemaking that will likely occur in order to alter existing bridge schedules. In a general sense, we consider the NDR inconclusive but will consider it as supporting information for taking future Coast Guard actions. In the enclosed document we have included comments regarding the NDR and other navigational related statements in the AAF DEIS.

If you have any questions about this matter please contact Mr. Barry Dragon at 305-415-6743.

Sincerely,

A handwritten signature in blue ink, appearing to read "W. R. REAMS".

W. R. REAMS  
Captain, U. S. Coast Guard  
Chief, Prevention Division

Enclosure: Coast Guard Comment Matrix to Sep 2014 AAF DEIS

## USCG Comments on September 2014 AAF Draft Environmental Impact Statement

Location	Statement	CG Comment
4-18	The videos contain approximately two to three weeks of data from the peak vessel traffic season, and in some instances a holiday, and were used to quantify the number and types of recognizable vessels that pass under the bridges under existing conditions.	Coast Guard studies evaluate vessel traffic data that encompasses all seasonal variations. This can be, and is often inclusive of 12 months of data.
4-19	Concerning the New River: This effort was conducted for five days during the peak season for vessel traffic, including weekdays and one full weekend.	The New River is the busiest waterway potentially impacted. See comment in 4-18.
4-21	St. Lucie: The vessel traffic data show an average of 102 vessel crossings per day (Min=28; Max=263) from Monday to Friday, compared to about 315 vessels (Min=157; Max=413) per day on a weekend. Sundays had the most vessel activity, with a range of 296 to 395 vessel counts (AMEC 2014a).	Notwithstanding the above comments on traffic data. The Coast Guard would avoid drawing conclusions based on average vessel crossings when data indicates a wide range of traffic, as indicated here.
4-23	Loxahatchee: The vessel traffic data show an average of 108 vessels per day (Min=5; Max=335) from Monday to Friday, compared to about 271 vessels (Min=119; Max=502) per day on a weekend.	
4-24	New River: Based on the January 2014 FECR video, an average of 157 vessel crossings occurred at the New River Bridge (Min=99; Max=289) on a daily basis (6:00 AM to 6:30 PM) from Monday through Friday compared to an average of 356 vessels (Min=262; Max=508) per day on a weekend day.	
Table 7.2-2, pg 7-3	Develop a set schedule for the down times of each bridge location. This schedule will include both freight and passenger rail service. Provide that schedule of bridge closures in an internet-accessible format to offer the public with access to that information, including the boating community and marinas. This will be posted on the AAF website and/or the US Coast Guard website.	Changing the operating schedule of a movable bridge requires a Coast Guard rule making process. Bridge operating schedules are not posted to a Coast Guard website, they are codified in 33 CFR 117.
7-4	Local mariners should be able to predict approximate crossing times once they are familiar with the passenger rail schedule, which will be consistent and unchanging from week to week. Mariners will be able to plan travel times and avoid unnecessary wait times according to the posted schedule.	All three moveable bridges are currently open on demand and any change to that will require a change to the current CG regulations through the rulemaking process.
7-4	Schedules for each bridge will be posted on the AAF website and/or the United States Coast Guard (USCG) website.	Schedules are posted within regulations located within 33 CFR 117.

7-4/5	<p>Develop a coordination plan between AAF and the USCG to communicate bridge operating schedules to the commercial and recreational boating communities. Such a plan will allow updates to the bridge operating schedule to be disseminated throughout these communities.</p> <p>Communication will be through the USCG, local marinas, and on the official scheduling website.</p>	<p>Placing the bridges on a schedule will require a change to existing CG regulation through the rulemaking process. See previous comments related to bridge operating schedules.</p>
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### Comments concerning Navigation Discipline Report

Location	Statement	CG Comment
Table ES-4	Summarized impacts to navigation after mitigation.	Coast Guard has not made the determination that the proposed increases in waterway closures would meet the reasonable needs of navigation. Any such determination will happen through a separate rulemaking process and not as part of the NEPA process.
2-7	Concerning the New River traffic survey: This effort was conducted for five days during the peak season for vessel traffic (as characterized by previous studies, see Table 3.3-1), including weekdays and one full weekend.	The New River is the busiest waterway potentially impacted. Coast Guard studies evaluate vessel traffic data that encompasses all seasonal variations. This can be, and is often inclusive of 12 months of data.
3-20	However, it is worth mentioning that the number of vessels observed in this study only reflect traffic east of the New River Bridge and not the number of vessels directly crossing New River Bridge.	
3-22	This study also conducted aerial flight surveys to assess vessel traffic trends for all of Broward County. <sup>12</sup> Aerial surveys were conducted from May 2004 to January 2005 to estimate weekday and weekend vessel trends as well as trends throughout the week separated by morning and afternoon	
3-23	Video recordings from a camera placed by the New River Bridge were provided by FECR. These videos consist of two full consecutive weeks of the peak season for vessel traffic, from January 14th to the 27th, 2014 and were assessed to extract data of vessel traffic traversing the New River Bridge during daylight hours (from 6:00 am through 6:30 pm each day).	
3-28	Even the largest vessels (e.g., Jungle Queen) will not take more than 5 to 6 seconds to cross the bridge, thus shorter periods of bridge opening (e.g., 5 minutes) should be enough to clear queue vessels at both sides of the bridge.	

		create a choke point on the waterway due to the fact that the opening is very narrow, and will often only allow for one vessel to pass through the opening at a time. Time must also be afforded for bridge cycle time.
Table 3.4-5	Summary of Operation at New River Bridge.	The proposed schedule indicates bridge closures increasing by roughly 3.4 hours per weekday and 2.78 hours per weekend day from the current state due to project. The Coast Guard is concerned that this is a significant increase in closure time which will result in increased time that queued vessels spend maintaining position while waiting for bridges to open. Coast Guard has not made the determination that the proposed increases in waterway closures would meet the reasonable needs of navigation. Any such determination will happen through a separate rulemaking process and not as part of the NEPA process
3-31	For commercial vessels that wait, the average wait time is expected to decrease from 7.3 minutes under the No-Build Alternative to 6.3 minutes under the Combined Effect. For recreational vessels that wait, the average wait time is expected to decrease from 8.1 minutes under the No-Build Alternative to 6.3 minutes under the Combined Effect.	The total number of vessels that experience a delay increased from 23% to 36%. The Coast Guard is concerned that this is a significant increase in closure time which will result in increased time that queued vessels spend maintaining position while waiting for bridges to open. Coast Guard has not made the determination that the proposed increases in waterway closures would meet the reasonable needs of navigation. Any such determination will happen through a separate rulemaking process and not as part of the NEPA process
4-19	There were more vessels observed during the summer as compared to all other seasons, with an average of 113 vessels during weekdays and an average of 851 vessels observed during weekends.	This statement appears to contradict an earlier statement that peak boating traffic occurs during winter months. Coast Guard studies evaluate vessel traffic data that encompasses all seasonal variations. This can be, and is often inclusive of 12 months of data.
4-20	Data gathered through a three week video assessment of the Loxahatchee Bridge during winter, shows an average of 108 vessel crossings per day occurred (Min=5; Max=335) from Monday to Friday, compared to about 271 vessels (Min=119; Max=502) per day on a weekend (Table 4.3-6).	The Coast Guard is concerned about the sample size being too small and the range of data is too large to draw accurate conclusions from this data. Also, it is noted that summer months are peak traffic times for this waterway according to the aerial study mentioned previously.
4-24	Although the Proposed Action (2016 Passenger and upgraded infrastructure) will add to the total daily bridge closure time (about 5.53 hours during the weekdays and 5.41 hours during weekends), improvements to the rail infrastructure are expected to increase the speed of rail traffic, reducing the Proposed Action average time of single closures (11 minutes) by approximately 8 minutes when compared to Existing Conditions (19 minutes) or about 9 minutes when compared to the No-Build Alternative respectively (20 minutes).	The proposed action more than doubles the total current closure times. Even if the average wait is decreased, the number of vessels experiencing a wait increases significantly. The Coast Guard is concerned that this is a significant increase in closure time which will result in increased time that queued vessels spend maintaining position while waiting for bridges to open. Coast Guard has not made the determination that the proposed increases in waterway closures would meet the reasonable needs of navigation. Any such determination will happen through a separate rulemaking process and not as part of the NEPA process.
4-26	When comparing Case 2a (2016 No-Build	A 17% increase in vessels experiencing a wait is a

	Alternative) to Case 3 (2016 Freight and Passenger, Combined Effect) an increase in the percentage of vessels experiencing a wait from 25% under the No-Build Alternative to 42% under the Combined Effect is observed.	significant increase. The Coast Guard is concerned that this is a significant increase in closure time which will result in increased time that queued vessels spend maintaining position while waiting for bridges to open. Coast Guard has not made the determination that the proposed increases in waterway closures would meet the reasonable needs of navigation. Any such determination will happen through a separate rulemaking process and not as part of the NEPA process.
Table 4.5-1	Simulation results	Currently, 7% of vessels experience a wait. The report predicts that 25% will experience a wait in 2016 without the project. The proposed action will cause 42% of vessels to experience a wait. The Coast Guard is concerned that this is a significant increase in closure time which will result in increased time that queued vessels spend maintaining position while waiting for bridges to open. Coast Guard has not made the determination that the proposed increases in waterway closures would meet the reasonable needs of navigation. Any such determination will happen through a separate rulemaking process and not as part of the NEPA process.
5-11	No commercial barge traffic occurs in the St. Lucie River. Inland commercial vessel activities are primarily associated with water taxi/bus, restaurant, and touring operations.	The St. Lucie River connects to the Okeechobee waterway. Barges and other commercial traffic do continue to utilize the waterway.
5-17	Data gathered through a two-week video assessment of the St. Lucie River Bridge during winter shows an average of 102 vessel crossings per day occurred (Min=28; Max=263) from Monday to Friday, compared to about 315 vessels (Min=157; Max=413) per day on a weekend (Table 5.3-1). Sundays had the most vessel activity, with a range of 296 to 395 vessel counts.	Coast Guard studies evaluate vessel traffic data that encompasses all seasonal variations. This can be, and is often inclusive of 12 months of data. Notwithstanding this, the Coast Guard would avoid drawing conclusions based on average vessel crossings when data indicates a wide range of traffic, as indicated here.
Table 5.4-2	Summary of existing and project operation for St. Lucie River Bridge	The proposed action significantly increases closure time. Currently the bridge is closed for 4.01 hours during weekdays and 2.74 hours during weekends. The proposed action increases closure times to 9.79 and 7.63 hours, with the majority of the waterway closure time occurring during peak vessel transit periods. The Coast Guard is concerned that this is a significant increase in closure time which will result in increased time that queued vessels spend maintaining position while waiting for bridges to open. Coast Guard has not made the determination that the proposed increases in waterway closures would meet the reasonable needs of navigation. Any such determination will happen through a separate rulemaking process and not as part of the NEPA process.
Table 6.0-5	Intervals of peak traffic with closure periods over 30 mins.	The St. Lucie River will experience 5 closures of over 30 mins during peak traffic periods per week. The Coast Guard is concerned that this is a significant

		<p>increase in closure time which will result in increased time that queued vessels spend maintaining position while waiting for bridges to open. Coast Guard has not made the determination that the proposed increases in waterway closures would meet the reasonable needs of navigation. Any such determination will happen through a separate rulemaking process and not as part of the NEPA process.</p>
6-13	<p>Develop a set schedule for the down times of the bridge for passenger rail service.</p>	<p>The Coast Guard is responsible for setting bridge closure schedules as part of the rulemaking process.</p>
Table 6.7-1	<p>Summary of impacts</p>	<p>Coast Guard has not made the determination that the proposed increases in waterway closures would meet the reasonable needs of navigation. Any such determination will happen through a separate rulemaking process and not as part of the NEPA process.</p>

**Pickart, Kenneth**

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**From:** Virginia.Lane@faa.gov  
**Sent:** Tuesday, December 9, 2014 2:51 PM  
**To:** AAF\_Comments\_Reply  
**Cc:** john.winkle@dot.gov  
**Subject:** Draft EIS and Section 4(f) Evaluation for the All Aboard Florida Intercity Passenger Rail Project

The Federal Aviation Administration (FAA), as a cooperating agency, has reviewed the Draft Environmental Impact Statement (DEIS) provided in September 2014. FAA comments provided on the preliminary DEIS were adequately addressed by the FRA.

Virginia Lane, Environmental Protection Specialist  
FAA Orlando Airports District Office  
5950 Hazeltine National Drive, Suite 400  
Orlando, FL 32822  
407-812-6331 Ext. 129



UNITED STATES  
HOUSE OF REPRESENTATIVES

December 4, 2014

Mr. John Winkle  
Federal Railroad Administration  
1200 New Jersey Avenue, SE  
Room W38-311  
Washington, DC 20590

Dear Mr. Winkle:

All Aboard Florida will generate billions of dollars in economic impact to the State of Florida, therefore, I have been carefully monitoring the progress of this ground-breaking system and believe it has the potential to dramatically improve mobility options in Florida's most crowded regions. The historic Florida East Coast Railway corridor, on which All Aboard Florida will primarily operate, extends to Jacksonville, providing an economically viable opportunity to serve this region and other east coast metropolitan centers in the future. Such an opportunity to expand passenger rail in a cost-effective manner and with minimal environmental impact has never been more within reach.

Florida is poised to welcome nearly 100 million visitors this year and projected to become the third most populous state in the nation. We must introduce additional transportation options as more people visit and move here. As stated in the Draft Environmental Impact Statement, "The All Aboard Florida project would have a beneficial impact on the passenger rail transportation network between Orlando and Miami by providing potential customers with an alternative means of transportation."

In addition to creating thousands of jobs, generating billions of dollars in economic impact, including adding \$1.2 billion to Florida's Gross Domestic Product and \$187 million in annual federal, state, and local government tax revenue through 2021, All Aboard Florida will result in tremendous benefits to the environment, removing cars from our highways, reducing congestion, and moving more people with lower fuel consumption.

For these reasons and more, I support this private sector initiative to restore much-needed passenger rail to this corridor.

Sincerely,

A handwritten signature in black ink, appearing to read "Ander Crenshaw", written in a cursive style.

ANDER CRENSHAW  
Member of Congress