Wetland Evaluation Report

DRAFT ENVIRONMENTAL IMPACT STATEMENT

FPIN: 410981-2-28-01
FAP: N/A

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August 2013

GULF COAST PARKWAY
WETLAND EVALUATION REPORT
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LIST OF ACRONYMS

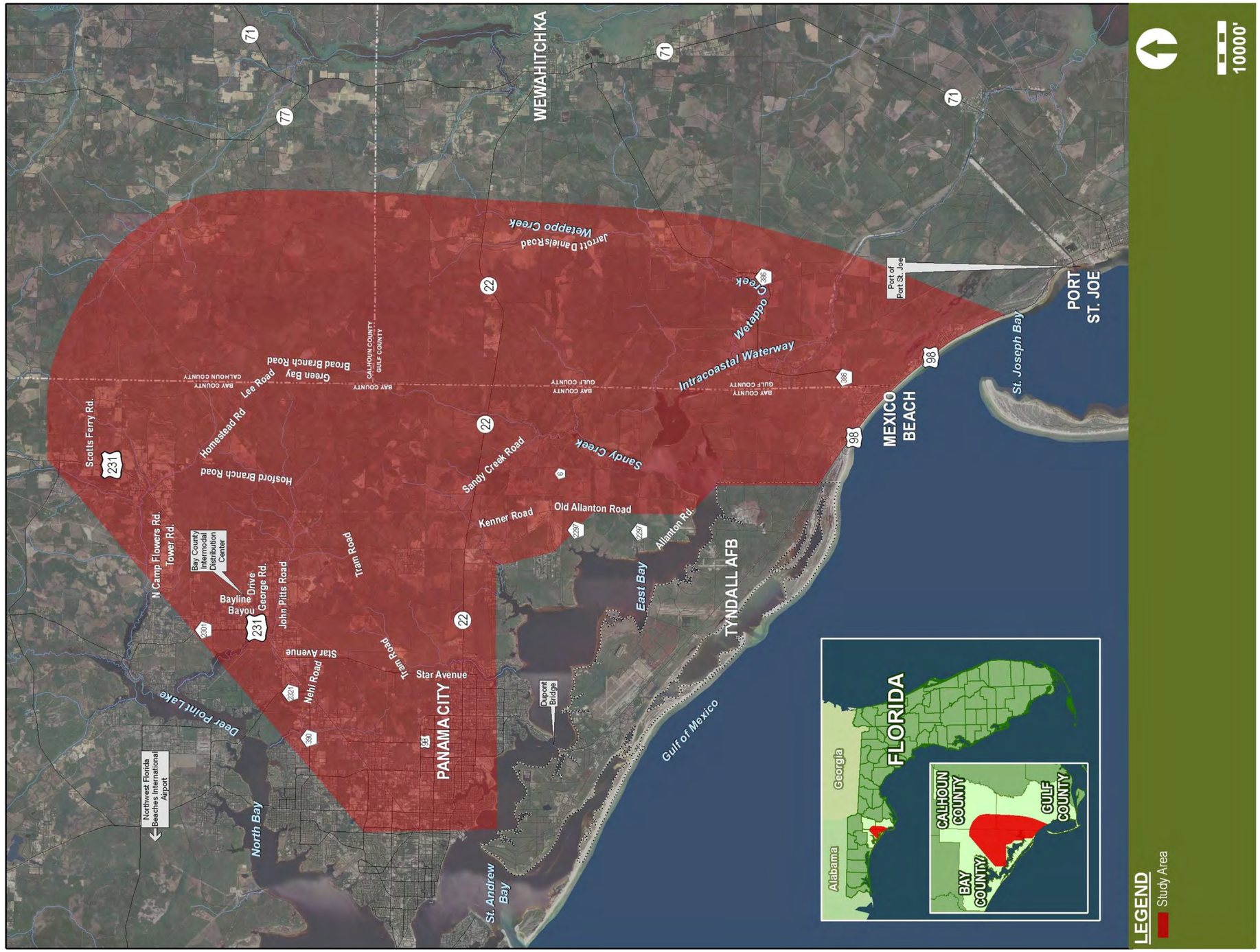
BEBR	Bureau of Economic Research
BMP	Best Management Practices
BMU	Bear Management Unit
CCAA	Candidate Conservation Agreement with Assurances
CR	County Road
DFIRM	Digital Flood Insurance Rate Maps
DOQQ	Digital Orthophoto Quarter-Quadrangle
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ERP	Environmental Resource Permit
ESBAR	Endangered Species Biological Assessment Report
EST	Environmental Screening Tool
ETAT	Environmental Technical Advisory Team
ETDM	Efficient Transportation Decision Making
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FFWCC	Florida Fish and Wildlife Conservation Commission
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Maps
FIS	Flood Insurance Studies
FLUCFCS	Florida Land Use, Cover and Forms Classification System
FMP	Fishery Management Plans
FMRI	Florida Marine Research Institute
FNAI	Florida Natural Areas Inventory
FS	Florida Statutes
GCP	Gulf Coast Parkway
GIS	Geographic Information System
GMFMC	Gulf of Mexico Fishery Management Council
GPS	Global Positioning System
ICE	Indirect and Cumulative Effects
ICWW	Intracoastal Waterway
LOS	Level of Service
LRTP	Long Range Transportation Plan
MANLAA	May Affect, But Not Likely to Adversely Affect
MGD	Million Gallons Per Day
MOU	Memorandum of Understanding
NAVD	North American Vertical Datrum
NEPA	National Environmental Policy Act
NLAA	Not Likely to Adversely Affect
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service

NWFWMD	Northwest Florida Water Management District
NWI	National Wetlands Inventory
PARA	Potentially Affected Resource Area
PCC	Panama City Crayfish
PD&E	Project Development and Environment
RCW	Red-cockaded Woodpecker
RFS	Reticulated Flatwoods Salamander
SAV	Submerged Aquatic Vegetation
SIS	Strategic Intermodal System
SR	State Road
SSURGO	Soil Survey Geographic
SWPPP	Stormwater Pollution Prevention Plan
TAFB	Tyndall Air Force Base
T&E	Threatened & Endangered
TPO	Transportation Planning Organization
TSM	Transportation System Management
UMAM	Uniform Mitigation Assessment Method
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWC	United States Fish and Wildlife Service
USGS	United States Geological Survey
WER	Wetland Evaluation Report
WRAP	Wetland Rapid Assessment Procedure

SECTION 1 INTRODUCTION

The Federal Highway Administration (FHWA), in cooperation with the Florida Department of Transportation (FDOT), is considering the addition of a new link in the transportation network of the central Panhandle of Florida. This new link, known as the Gulf Coast Parkway, (GCP) would provide a connection between US 98 in Gulf County and US 231 and US 98 (Tyndall Parkway) in Bay County, Florida (**Figure 1-1**). The proposed roadway would use a combination of existing and new alignment within a 168-foot to 250-foot wide right-of-way. The right-of-way widths will allow for expansion of the road to a four-lane, divided roadway, when traffic demand warrants. In the rural areas the 250-foot right-of-way width will accommodate the construction of a 12-foot wide multi-use trail. In the urban areas a curb and gutter section with bike lanes and paved sidewalks will be constructed. The project length varies depending on the alternative alignment, but is generally between 30 and 33 miles long.

Figure 1-1: Project Location and Study Area



SECTION 2 PROJECT DESCRIPTION

The FHWA, in cooperation with the FDOT, is considering the addition of a new link in the transportation network of the central Panhandle of Florida. This new link, known as the GCP, would provide a connection between US 98 in Gulf County and US 231 and US 98 (Tyndall Parkway) in Bay County, Florida. The purpose for the GCP is to:

- Enhance economic development in Gulf County through provision of direct access to major transportation facilities (regional freight transportation routes and intermodal facilities); improved mobility; and direct access to tourist destinations in south Gulf County.
- Improve mobility within the regional transportation network by providing a new connection to existing and future transportation routes consistent with the Bay County Long Range Transportation Plan (LRTP) and the Gulf County Comprehensive Plan.
- Improve security of the Tyndall Air Force Base (TAFB) by providing a shorter detour route.
- Improve hurricane evacuation for residents of coastal Gulf County by providing an additional evacuation route.

2.1 EXISTING FACILITIES

The proposed GCP is a new facility on a combination of existing and new alignments. The typical sections for existing roadways in the study area that may be utilized as part of the GCP alternatives are described below.

County Road (CR) 386 from US 98 south of Mexico Beach to Wetappo Creek is a two-lane rural undivided roadway with one 12-foot travel lane and a 5-foot grass shoulder in each direction, except in the area within approximately 1,200 feet on each side of the Intracoastal Waterway (ICWW) bridge, where 12-foot travel lanes and 9-foot shoulders (with 4-foot paved) are provided. The roadway is centered within the existing right-of-way which has a minimum width of 100 feet.

State Road (SR) 22 from Star Avenue (CR 2315) to SR 71 in Wewahitchka is a two-lane rural undivided roadway with one 12-foot travel lane and a 12-foot shoulder (5-foot paved) in each direction. The roadway is centered within the existing right-of-way which has a minimum width of 100 feet.

US 98 south of CR 386 near Mexico Beach is a two-lane rural undivided roadway with one12-foot travel lane and a 9-foot shoulder (5-foot paved) in each direction. The right-of-way north of the centerline varies from 30 to 100 feet, and the right-of-way south of the centerline varies from 33 to 64 feet. The speed limit for this roadway section is 35 mph.
US 98 (SR 30A/Tyndall Parkway) in Springfield is a four-lane urban divided roadway with two 12-foot travel lanes in each direction, separated by a 28-foot raised grass median. The roadway is centered within the existing right-of-way which has a minimum width of 80 feet. The speed limit for this roadway section is 45 mph.

US 231 in the vicinity of Star Avenue (CR 2315) and College Station is a four-lane rural divided roadway with two 12-foot travel lanes in each direction, separated by a 40-foot depressed grass median. The roadway has 8-foot inside shoulders and 10-foot outside shoulders (4-foot paved), and is centered within a right-of-way width of 224 feet. The speed limit for this roadway section is 55 mph.

Star Avenue (CR 2315) from SR 22 to US 231 is a two-lane rural undivided roadway with one 11-foot travel lane and a 5-foot grass shoulder in each direction. The roadway is centered within the existing right-of-way which has a width of 100 feet. The speed limit for this roadway section is 45 mph.

Tram Road (CR 101) from US 98 (SR 30A) to the Clifford Chester Sims State Veteran's Nursing Home facility approximately 1,500 feet east of US 98 is a two-lane rural undivided roadway with 12-foot travel lanes and 6-foot paved shoulders. The roadway is centered within the existing right-of-way which has a width of 100 feet. From approximately 1,500 feet east of US 98 to Star Avenue (CR 2315) Tram Road is an unpaved roadway. The speed limit for this roadway section is 35 mph.

Nehi Road extends from Star Avenue (CR 2315) to US 231 and is an unpaved roadway within these limits, except for the approximately 2,000 foot segment from the Bay County correctional facility to Cherokee Heights Road where the roadway has one 12-foot travel lane in each direction. The speed limit for this roadway section varies between 25 and 30 mph.

2.2 NEED FOR THE PROJECT

The need for the project arose initially from the depressed economic conditions in Gulf County, Florida. As the concept of improving the transportation network as an economic stimulus for the County was investigated, it became apparent that additional needs could be addressed by the proposed facility. These needs included the relief of congestion on existing roads within the network, improving the security of TAFB, and enhancing hurricane evacuation. In order to evaluate alternatives (discussed in Section 2) that would be proposed to satisfy these needs, objectives were developed for each need that would provide a measure of the success each alternative could be expected to achieve in addressing the project needs. The project needs and objectives are discussed below.

2.2.1 Enhance Gulf County's Economic Competitiveness

The need for economic development within the study area, and especially in Gulf County, has been made evident by the classification of Gulf County as a Rural Area of Critical Economic Concern. As a result of this classification, several organizations are in place to promote economic development activities in the northwest region of Florida. These include Opportunity Florida, Enterprise Florida, and Florida's Great Northwest, Inc. Each of these partnerships is focused on providing economic development initiatives and supporting activities that create economic advantages in the region; although, Opportunity Florida is more narrowly focused on those counties within the Northwest Florida Rural Area of Critical

Economic Concern: Calhoun, Franklin, Gadsden, Gulf, Holmes, Jackson, Liberty and Washington counties.

The GCP would also serve as a connection to strategic intermodal facilities throughout the region, such as the Northwest Florida Beaches International Airport, the Port of Panama City and the (future) Port of Port St. Joe, and the Bay County Intermodal Distribution Center, currently under construction.

2.2.1.1 Reduce Travel Times to Employment Centers in Bay County

The GCP would reduce travel times to employment centers in Bay County providing greater job opportunities for those residents of Gulf County that have suffered from the increased unemployment rates in the county. These employment centers largely reside in the Central Business District located in the downtown area of Panama City which is the largest municipality in the study area region.

2.2.1.2 Improve Access between Enterprise Zones and US 231

Among the efforts to improve economic conditions in Gulf County is the establishment of enterprise zones. An Enterprise Zone is an impoverished area in which businesses are exempt from certain taxes and are given other economic advantages as an inducement to locate there and employ residents. Within the project study area, enterprise zones have been designated along US 98 from south of the City of Port St. Joe to CR 386, and along CR 386 from US 98 to the Overstreet area. Improved access between these enterprise zones and US 231 provided by the GCP would encourage development in these areas and contribute to Gulf County's economic growth initiatives. Additionally, growth in both the Enterprise Zones as well as the other areas where the GCP is proposed through Gulf County is consistent with the county's future growth plans.

2.2.1.3 Provide a Direct Route from south Gulf County to US 231 and Freight Transfer Facilities in Bay County

The GCP would provide a direct connection from south Gulf County to US 231 and the freight transfer facilities at the Bay County Intermodal Distribution Center. The linkage provided by the GCP to the Bay County Intermodal Distribution Center would expand the variety of economic development opportunities that could occur in Gulf County and improve access to and from the Port of Port St. Joe, making it more attractive to potential users by expanding the available methods of distributing goods to markets.

2.2.1.4 Provide a More Direct Route from south Gulf County to the Northwest Florida Beaches International Airport

The New Northwest Florida Beaches International Airport is a part of Florida's Strategic Intermodal System (SIS). New roadways connecting to SIS facilities provide enhanced access to economic markets, thereby supporting economic competitiveness. Gulf County would benefit from the linkage provided by the GCP to the airport and other intermodal freight facilities because it would increase the access to goods being shipped via these

locations. In addition, the Port of Port St. Joe would become more attractive to potential users through improved connections to intermodal facilities via the GCP. In turn, this would provide Gulf County greater access to global markets.

2.2.1.5 Provide a More Direct Route for Tourists Traveling US 231 to south Gulf County

Gulf County must compete with Bay County for tourist dollars. Bay County has an estimated seven million people visit their beaches annually. Access to Gulf County beaches is mostly by US 231 to US 98 (Tyndall Parkway); then through the communities of Springfield, Callaway, and Parker; across the ICWW; and finally through the TAFB Reservation to the desired destination. An alternate but little used route is the two-lane SR 71 or SR 71/CR 386, depending on the destination. A new, more direct route bypassing the congested sections of US 231 and US 98 (Tyndall Parkway) and allowing for higher travel speeds would make the Gulf County beaches a more desirable destination.

The GCP will also provide a direct route to south Gulf County recreational resources along the coast. Additionally, the improved connection between the New Northwest Florida Beaches International Airport and Gulf County would also make the coastal communities more accessible and appealing for tourists.

2.2.2 Improve Mobility and Connectivity within the Regional Transportation Network

The proposed project would provide a new link in the regional transportation network. GCP would connect with other regional transportation facilities, like Tyndall Parkway, and relieve congested segments of existing roadways, like US 98. GCP would also improve access within the region by providing connections to other regional facilities such as the Bay County Intermodal Distribution Center, the Northwest Florida Beaches International Airport, The Eastern Shipyard, and the Port of Port St. Joe.

2.2.2.1 Reduce Congestion on the Tyndall Parkway (US 98)

The US 98 (Tyndall Parkway) north of the TAFB Reservation, currently operates at Level of Service (LOS) F, LOS C is the established accepted standard for this roadway. The addition of the GCP to the regional transportation network will benefit US 98 by providing an alternative roadway to relieve traffic congestion along this roadway and therefore improving the LOS at which the roadway currently operates. The GCP will also extend the time before improvements on the existing network are needed by transferring some of the through traffic to a new road with added capacity, providing a more balanced highway network.

2.2.2.2 Provide Future Traffic Capacity between south Gulf County and Bay County

Prior to 1990, Gulf County experienced slow, but steady population growth at a rate of around 6 percent. However, between the 1990 and 2000 census, Gulf County's population increased by 16.1 percent. Future population growth is projected to be even greater. The

Bureau of Economic and Business Research (BEBR) at the University of Florida estimated that Gulf County's population increased approximately 22 percent from 2000 to 2004. The US Geological Survey in Open-File Report 9, *Water use trends and demand projections in the Northwest Florida Water Management District* (1998), projects Gulf County's population to increase 36 percent between 2005 and 2020.

Florida's current growth management policy encourages local governments to be pro-active in planning for future growth and provide the necessary infrastructure needed to support the projected level of growth. In order to adequately prepare for the anticipated growth and development along the Gulf Coast in Gulf County, improved access is needed between US 98 in Gulf County and US 231 in Bay County. The GCP would provide that access.

2.2.2.3 Provide a More Efficient US 98 Detour Route

There are a variety of scenarios that would require US 98 to be closed to through traffic. Should the DuPont Bridge be closed due to high winds or damage, the use of a detour would be required for a lengthy period of time. A 50-mile long detour is particularly onerous if made daily over a period of months. The GCP would provide a more efficient detour route, reducing the detour distance by potentially 30 miles.

2.2.2.4 Maintain Continuity with Planned Future Transportation Projects

The GCP should be consistent with the approved state and local comprehensive and transportation plans.

The proposed project has been developed to be consistent with existing transportation plans and planned projects. Since the project crosses planning jurisdiction boundaries, portions of the projects may only be included in some plans. Also, due to the project's length it is expected that the improvements would occur in phases. Therefore, in some transportation plans, only certain segments have been identified within the planning period of the specific plan. Other segments may occur later than the planning period, or may occur in another planning jurisdiction's plan.

2.2.3 Improve Security of the Tyndall Air Force Base

US 98 is a major east-west roadway serving the Gulf Coast region. A large segment of US 98, between the City of Port St. Joe and Panama City, provides the only through route within this region and lies partly within the TAFB Reservation. When US 98 through TAFB is closed for any reason vehicles must travel a detour route approximately 50 miles long to reach their destination. The closing of US 98 is periodically necessary for security purposes at TAFB. Any time that a training drone is launched, US 98 is closed within one mile of the runway. TAFB will not release data on the frequency or timing of these launches for security reasons. There have also been past instances where accidents involving drone or plane crashes have required the closure of portions of US 98. Drone crashes occurred in November 1996 and again in February 2002, there was a plane crash at TAFB in March 2003. An alternate route to US 98 in the Callaway/Springfield area would benefit both the TAFB and

the traveling public who would not have to travel an approximately 50 mile detour to reach their destination.

TAFB submitted a letter indicating that the project would benefit security at the base by providing a suitable alternative route for the public. TAFB indicated this would significantly upgrade its force protection posture and the safety and security of its personnel and resources, as well as enhance its ability to execute its mission in heightened threat conditions.

2.2.4 Improve Hurricane Evacuation Capability

Recent hurricane seasons have demonstrated the need for improved evacuation (and recovery) routes and additional route options to accommodate area residents and visitors, particularly in Gulf County where there are limited evacuation routes. A hurricane evacuation analysis was conducted for the proposed project to determine whether the road would provide evacuation benefits to the residents and tourists in the coastal areas of Gulf County and southeast Bay County (see *Hurricane Evacuation Analysis for the Proposed Gulf Coast Parkway*, August 2006, for details on the study). The analysis found that the proposed project would provide evacuation benefits and, therefore, it was included in the purpose and need for the project.

Currently, northbound evacuation of Bay County is by US 231, SR 77, and SR 79. Those residents of southeast Bay County would most likely utilize US 231 or SR 77, depending on the direction the hurricane is expected to take. The only northbound routes in Gulf County are CR 386 and SR 71, both two-lane roads. Those evacuees using CR 386 must travel to SR 71 then to Wewahitchka. From there, they either remain on the two-lane SR 71 or take SR 22 west to US 231.

For evacuees in southeastern Bay County and coastal Gulf County to reach any of these northbound evacuation routes, they must travel US 98. US 98 is not an acceptable hurricane evacuation route, as it is within the surge zone for a Category 3 or greater hurricane through most of the corridor. Further, the east-west orientation of US 98 does not promote efficient evacuation of coastal residents needing to travel north to seek safe shelter. Evacuation on US 98 to the west requires residents to travel through Tyndall AFB, across the high-level DuPont Bridge, and through the communities of Parker, Springfield, Callaway, and Panama City to reach US 231, a distance of 27.8 miles from CR 386. Evacuation on US 98 to the east requires residents to travel south, across a high-level bridge and through the community of Port St. Joe to reach SR 71, a distance of 9.5 miles from CR 386. Although this distance is shorter and there is less traffic, SR 71 is only a two-lane road that experiences a severe bottle-neck in Wewahitchka. Evacuation up two-lane CR 386, as described above, requires traveling across the high-level Overstreet Bridge, to SR 71 and on SR 71 through the bottleneck in Wewahitchka. The route evacuees choose will be based on the location they are evacuating as well as the direction the storm is expected to take.

The hurricane evacuation study, which was based on the *Transportation Analysis Update of the Apalachee and Northwest Florida Hurricane Evacuation Restudies* prepared for the USACE and subsequent updated model work prepared for Bay County, found that the Gulf

Coast Parkway would reduce evacuation times on SR 71 and US 231 (under contraflow conditions), Table **1-1** summarizes the results of the study.

Table 2-1 Worst Case Hurricane Clearance Times (in hours)

Evacuation Bottlenecks	Existing Road Network (2006)	Year 2032 No Build Alternative	Year 2032 with Planned Improvements & Gulf Coast Parkway (GCP)	Year 2032 with GCP and US 231 Contraflow
US 231 NB at SR 20	25	32	36	28
SR 71 through Wewahitchka	12	14	10	10

Note: Worst case is a Category 4-5 hurricane during high tourist occupancy

Although clearance times for the two northbound lanes of US 231 would increase with the addition of the Gulf Coast Parkway, the clearance times would decrease if US 231 were operated under contraflow conditions (i.e. by temporarily using 3 or 4 travel lanes for northbound traffic). Evacuation times on a contraflow facility, with traffic from the Gulf Coast Parkway, would decrease to four hours less than evacuation times under the No Build Alternative (and eight hours less than would occur with only two evacuation lanes on US 231). It should be noted that LOS volumes on all evacuation routes decrease as evacuation progresses and then recover near the end of the process.

With the considerable percentage of the study area population living along the coast, the Gulf Coast Parkway would be of particular benefit in evacuation, since it provides residents with a third, more direct alternative to reach either I-10 or to continue northbound. Although it also requires a high level bridge that would be subject to closure when sustained winds reach 40 mph, this bridge would not be directly along the coast (perpendicular to the approaching storm) and the approach roadway would be built to maintain the road surface above the storm surge. Therefore, the likelihood the facility will be operational after a direct hit by a hurricane is improved, enhancing post-storm rescue and recovery efforts.

SECTION 3 PROJECT ALTERNATIVES

The FDOT has established engineering, environmental, economic and public acceptance goals for the identification of potential alternatives for improving transportation facilities. These goals can be summarized as follows:

- Engineering: Improve mobility by reducing travel time, congestion, and improving safety.
- Environmental: Preserve, protect, and enhance the natural, physical, cultural, and social environment.
- Public Acceptance: Produce a plan that is supported by the public, elected officials, and relevant agencies and that is consistent with the adopted transportation goals.
- Economic: Produce cost-effective improvements that assure the overall benefits warrant the overall costs.

No Build, Transportation System Management (TSM), Multi-modal, and Build alternatives were each evaluated considering the aforementioned goals. The alternatives are described below.

3.1 NO BUILD ALTERNATIVE

The No-Build Alternative would simply leave the existing roadway network in its current configuration. No capacity, intersection, pedestrian, bicycle, or safety improvements would be implemented within the corridor.

The No-Build Alternative has a number of positive attributes. No expenditure of public funds for design, right-of-way acquisition, or construction would be required. Traffic would not be disrupted due to construction, thus avoiding inconveniences to local businesses and residences. There would be no impacts to wetlands or threatened or endangered species. With the No-Build Alternative, there is no risk of contamination. No costs would be incurred due to utility relocation. There would be no direct or indirect impacts to the socioeconomic characteristics, community cohesion, or system linkage of the area.

However, the No-Build Alternative option fails to fulfill the project's purpose and need, or meet any of the Bay or Gulf County Comprehensive and LRTP.

The lack of a new roadway would not:

- Help reduce travel time for residents from southeast Bay and coastal Gulf Counties to employment centers in Panama City;
- Provide a more direct route between US 98 in Gulf County and freight transfer facilities on US 231 in Bay County;
- Improve access to Enterprise Zones in Gulf County;

- Provide a direct route for tourists traveling US 231 to reach vacation and recreation areas in south Gulf County;
- Provide a more direct route from south Gulf County to the new Northwest Florida Beaches International Airport;
- Help ease traffic congestion on the surrounding roadway network, including US 98 (Tyndall Parkway) through Bay County;
- Provide an alternative route to US 98 (Tyndall Parkway) in Bay County to US 98 in Gulf County that does not travel through TAFB; or
- Provide an alternative emergency and hurricane evacuation route.

The No-Build Alternative is also inconsistent with the plans and goals of the Bay County Transportation Planning Organization (TPO). It fails to comply with the LRTP as established by the TPO.

However, the No-Build Alternative will remain a viable alternative throughout the entire length of the study along with the Build Alternatives.

3.2 TRANSPORTATION SYSTEM MANAGEMENT ALTERNATIVES

TSM alternatives include those activities that maximize the efficiency of the existing system. Possible options include ride-sharing, fringe parking, the addition of turn lanes, traffic signal timing optimization, and access management measures. While TSM options will be incorporated into the proposed project to the greatest extent possible, TSM improvements alone would provide little to no contributions to meeting the project's purpose and need.

Much like the No-Build Alternative, the TSM alternative fails to fulfill the needs and goals of the Bay and Gulf County Plans. For all of these reasons, no TSM alternative was considered as a solution for the existing and expected deficiencies to the GCP corridor.

3.3 MULTI-MODAL ALTERNATIVES

Multi-modal solutions to substandard roadways are generally only effective within highly urbanized or constrained corridors. Specific examples of multi-modal alternatives are mass transit systems such as bus or rail options.

Multi-modal options usually serve to move people and since the project study area is mostly rural, there is insufficient population to support multi-modal facilities. Further, multi-modal alternatives do not address the need to improve the economic climate within the study area and multi-modal facilities are inconsistent with the needs and goals of the Bay County 2030 LRTP and the Bay and Gulf County Comprehensive Plans. For all of these reasons, no multi-modal alternative was considered as a solution for the existing and expected deficiencies to the GCP corridor.

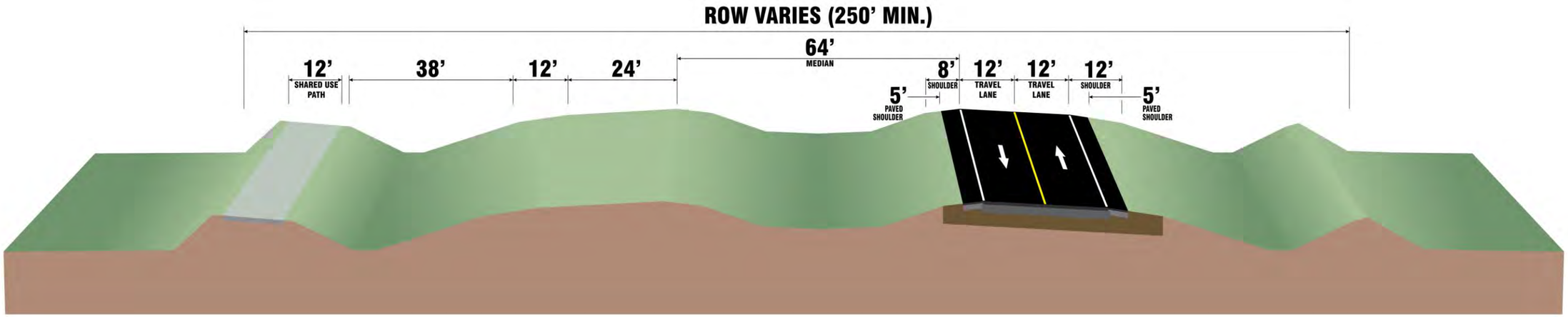
3.4 BUILD ALTERNATIVES

The proposed typical section for the Build Alternatives in the design year (2032) is a four-lane divided roadway with stormwater management and bicycle and pedestrian facilities. The configuration of the typical section depends upon its location. The rural arterial typical section includes four 12-foot lanes with a five-foot outside shoulder and two-foot inside shoulder, separated by a 64-foot median in 250 feet of right-of-way. Included in the rural arterial typical section is a 12-foot paved multi-use trail to one side (**Figure 3-1**). The four-lane high-speed urban arterial section includes four 12-foot lanes with 6.5-foot bicycle lanes in the outside shoulders and four-foot paved inside shoulders, separated by a 46-foot median in 168 feet of right-of-way. This is a curb and gutter section with five-foot paved sidewalks on each side of the roadway (**Figure 3-2**). The bridge typical sections are shown in **Figures 3-3 and 3-4**.

Initially, the project will require only two 12-foot lanes within either typical section; however, the additional right-of-way is being obtained in order to provide for future expansion when needed. The proposed design speed is 65 mph for the rural roadway, and 50 mph for the urban roadway.

Five build alternative alignments have been identified for consideration. These five alignments, Alternatives 8, 14, 15, 17, and 19, are shown in **Figure 3-5** and are described in **Table 3-1**. For a summary of the alternatives development process please refer to Section 2 of the Draft Environmental Impact Statement (EIS).

Figure 3-1: Proposed Rural Arterial Typical Section
Interim Rural Typical



Ultimate Rural Typical

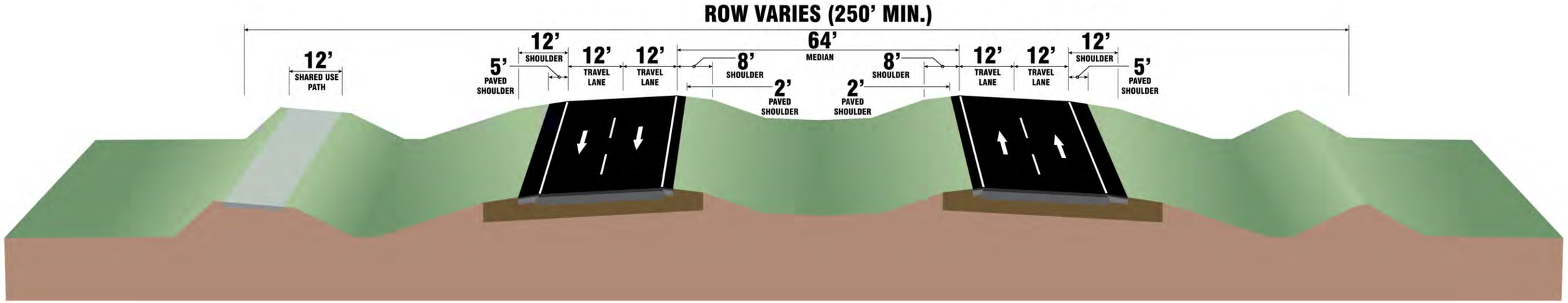
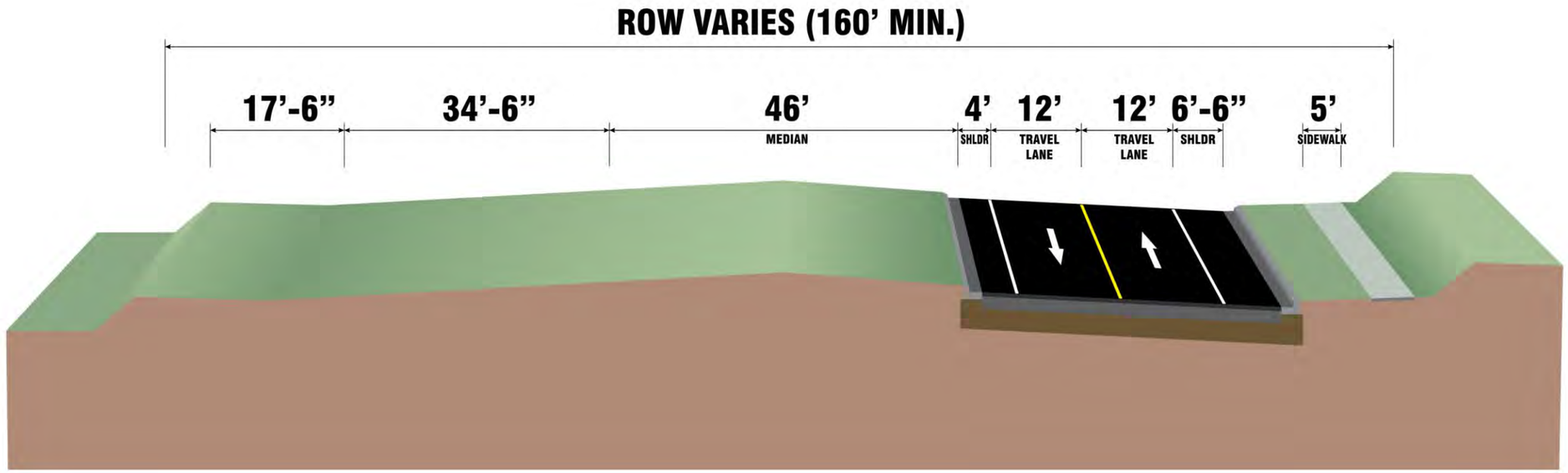


Figure 3-2: Proposed Urban Arterial Typical Section

Interim Urban Typical



Ultimate Urban Typical

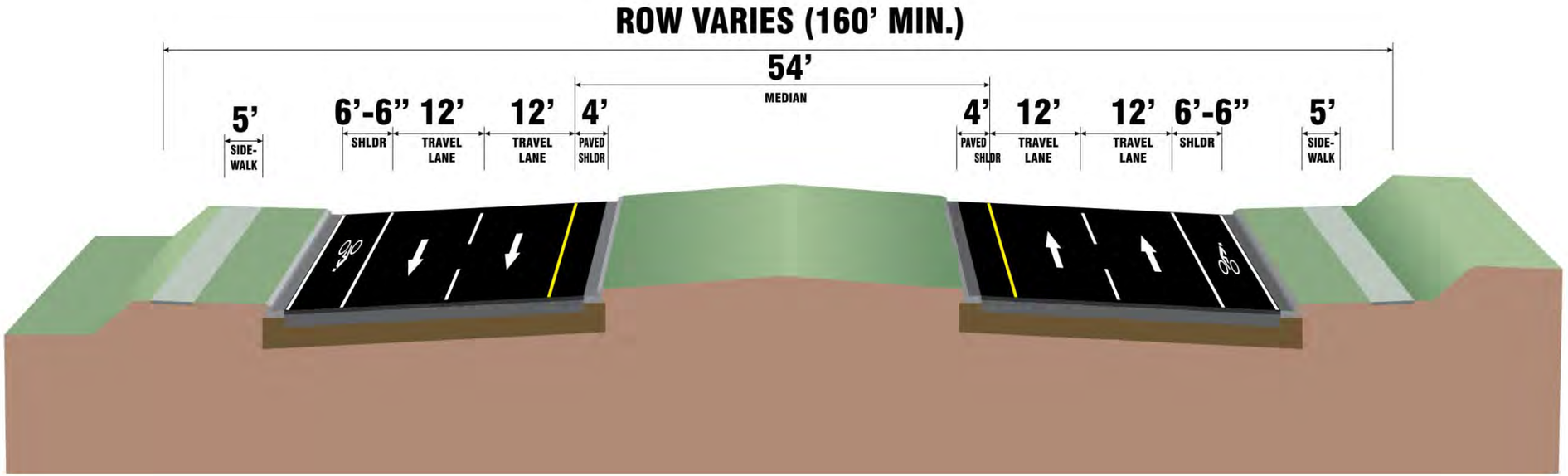
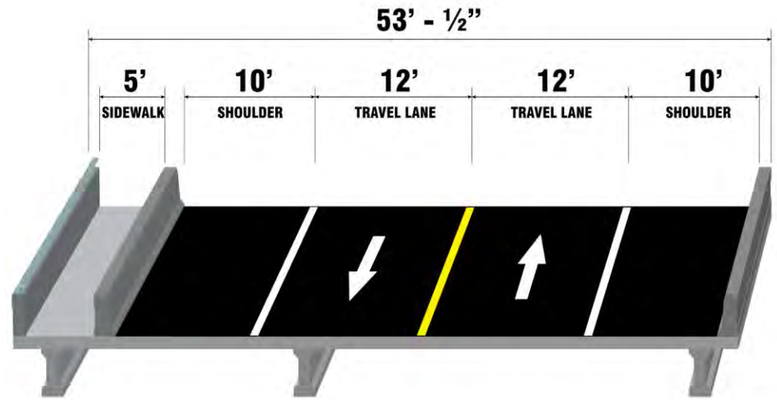


Figure 3-3: Proposed Interim Bridge Typical Sections

Interim Urban Bridge Typical



Interim Rural Bridge Typical

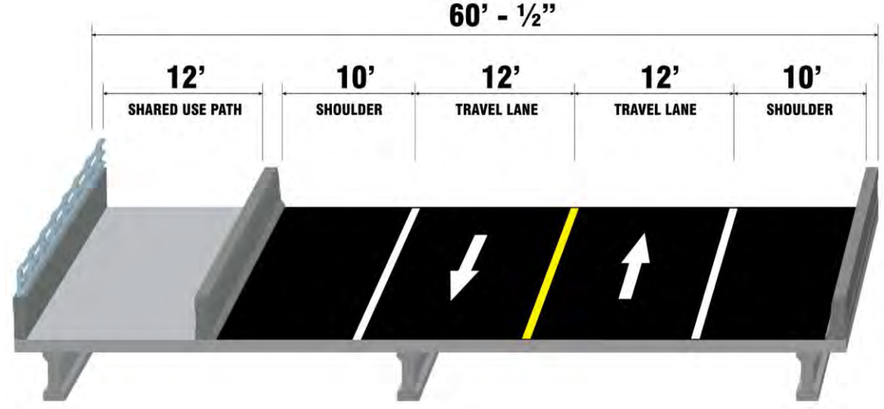
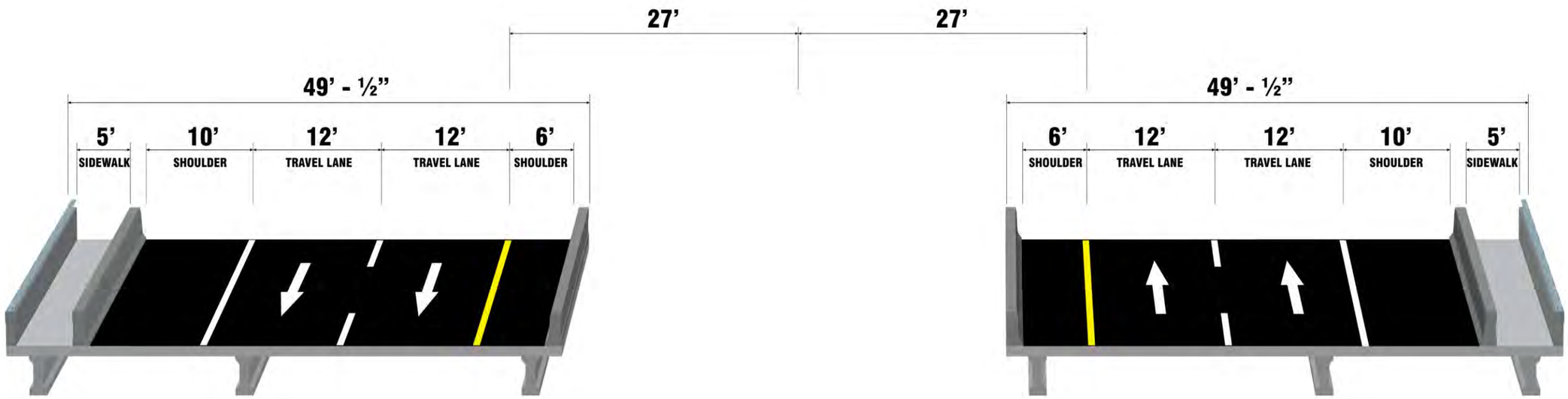


Figure 3-4: Proposed Ultimate Bridge Typical Sections

Ultimate Urban Bridge Typical



Ultimate Rural Bridge Typical

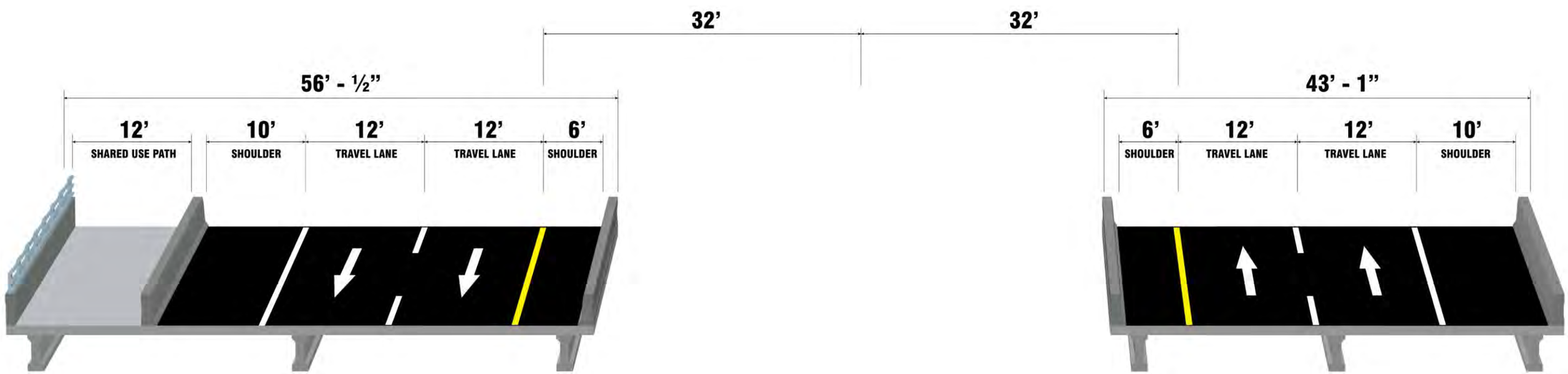


Figure 3-5 Gulf Coast Parkway Build Alternatives

Table 3.1: Description of the Gulf Coast Parkway Build Alternatives

Alternative	Description
8	From the intersection of US 98 and CR 386, Alternative 8 follows CR 386 north utilizing the urban typical section to North 15th Street. From there it transitions to a rural typical section, continuing north along existing CR 386 for approximately 3 miles where it deviates from CR 386. Proceeding north on new alignment for a total of approximately 8.5 miles, Alternative 8 crosses the ICWW and Wetappo Creek on a new high-level bridge, and continues north to intersect SR 22 approximately 11.4 miles east of Callaway. From there the alignment travels west along existing SR 22 for approximately 6.5 miles where it turns northwest and then west on new alignment for approximately 5.0 miles to intersect Star Avenue about 0.3 mile south of Tram Road. From Star Avenue, Alternative 8 transitions to an urban typical section which is carried through to both termini locations. The alternative's through movement continues west on new alignment for approximately 0.7 mile to merge with and follow existing Tram Road for approximately 0.5 mile. It then turns west and continues on new alignment to end at a new intersection with US 98 (Tyndall Parkway). Additionally, the less dominant leg of Alternative 8 proceeds north along existing Star Ave. approximately 2.2 miles until the intersection with Nehi Road where it follows mostly along Nehi Road to the northwest to end at a new intersection with US 231 in the vicinity of the existing CR 2321/US 231 intersection.
14	From the intersection of US 98 and CR 386, Alternative 14 follows CR 386 north utilizing the urban typical section to North 15th Street. From there it transitions to a rural typical section, continuing north along existing CR 386 for approximately 3 miles where it then deviates from CR 386 alignment. Proceeding north on new alignment for a total of approximately 8.5 miles, Alternative 14 crosses the ICWW and Wetappo Creek on a new high-level bridge, and continues north to intersect SR 22 approximately 11.4 miles east of Callaway. From there the alignment travels west along existing SR 22 for approximately 2.5 miles where it splits. To connect with US 98 (Tyndall Parkway), the alignment continues west on SR 22 for approximately 4.0 miles where it turns northwest and then west to intersect Star Ave. about 0.3 mile south of Tram Road. From Star Ave., Alternative 14 transitions to an urban typical section and continues west 0.7 mile to merge with and follow existing Tram Road for approximately 0.5 mile. It then turns west and continues on new alignment to end at a new intersection with US 98 (Tyndall Parkway). To connect with US 231, Alternative 14 after splitting from SR 22 proceeds northwest on new alignment for approximately 8.0 miles where it turns to the west and continuing on new alignment, travels south of and parallel to the Port of Panama City Intermodal Distribution Center and Conservation Boundary. It then transitions to an urban typical section and proceeds northwest to intersect with the planned entrance roadway for the Intermodal Distribution Center which intersects with US 231.
15	From the intersection of US 98 and CR 386, Alternative 15 follows CR 386 north utilizing the urban typical section to North 15th Street. From there it transitions to a rural typical section, continuing north along existing CR 386 for approximately 3 miles where it then deviates from the CR 386 alignment. Proceeding north, on new alignment for a total of approximately 8.5 miles, Alternative 15 crosses the ICWW and Wetappo Creek on a new high-level bridge, and continues north to intersect SR 22 approximately 11.4 miles east of Callaway. From there Alignment 15 has two options depending on the desired terminus. To connect with US 98 (Tyndall Parkway), Alternative 15 travels west along existing SR 22 for approximately 6.5 miles where it turns northwest and then west on new alignment for approximately 5.0 miles to intersect Star Ave. about 0.3 miles south of Tram Road. From Star Ave., Alternative 15 transitions to an urban typical section and continues west on new alignment for approximately 0.7 mile to merge with and follow existing Tram Road for approximately 0.5 mile. It then turns west and continues on new alignment to end at a new intersection with US 98 (Tyndall Parkway). Alternately, from SR 22, Alternative 15 continues across SR 22, traveling north then northwest on new alignment for

Alternative	Description
	approximately 14.0 miles, transitioning back to an urban typical section just before it ends at a new intersection with US 231 near Campflowers Road.
17	From the intersection of US 98 and CR 386, Alternative 17 follows CR 386 utilizing the urban typical section to North 15th Street. From there, it transitions to a rural typical section and continues north along existing CR 386 for approximately 0.5 mile where it then turns west and travels on new alignment for 3.0 miles. The alignment veers to the north for approximately 2.5 miles and then utilizing a new high level bridge crosses over East Bay and the ICWW. The alignment returns to grade on Allanton Point and continues to the north mostly along existing Allanton/Old Allanton Road until it reaches SR 22. After crossing SR 22, the road would travel north then west on new alignment for approximately 5.3 miles to connect at an intersection with Star Ave. about 0.3 mile south of Tram Road. From the intersection at Star Ave., Alternative 17 transitions to an urban typical section and has two termini locations. The alternative's through movement continues west on new alignment for approximately 0.7 mile until it merges with existing Tram Road. From there it travels along existing Tram Road for approximately 0.5 mile and then turns to the west on new alignment to end at a new intersection with US 98 (Tyndall Parkway). Additionally, the alternative travels north along existing Star Ave. approximately 2.2 miles until the intersection with Nehi Road where if follows mostly along Nehi Road to the northwest to end at a new intersection with US 231.
19	From the intersection of US 98 and CR 386, Alternative 19 follows CR 386 utilizing the urban typical section up to North 15th Street. From there it transitions to a rural typical section and continues north along existing CR 386 for approximately 0.5 mile where it then turns west and travels on new alignment for approximately 3.0 miles. The alignment veers to the north for approximately 2.5 miles and then, utilizing a new high level bridge crosses over East Bay and the ICWW. The alignment returns to grade on Allanton Point and continues to the north mostly along existing Allanton/Old Allanton Road until it reaches SR 22. After crossing SR 22, the road has two options. One would turn west to travel on new alignment for approximately 5.0 miles to intersect with Star Ave. about 0.3 mile south of Tram Road. From the intersection at Star Ave., Alternative 19 transitions to an urban typical section, continues west 0.7 mile to merge with and follow Tram Road for approximately 0.5 mile and then turns to the west on new alignment to end at a new intersection with US 98 (Tyndall Parkway). Alternately, Alignment 19 would continue north on new alignment for approximately 6.2 miles where it turns to the west, continuing on new alignment along the south property line of the Port of Panama City Intermodal Distribution Center and its Conservation Boundary. It then transitions to an urban typical section and turns to the northwest to intersect with the planned entrance roadway for the Intermodal Distribution Center which intersects with US 231.

3.5 EVALUATION OF ALTERNATIVES

The evaluation of alternatives involves a comparative evaluation of each alternative's involvement with the socioeconomic, cultural, natural, and physical environments of the study area. The selection of datasets for inclusion in this analysis was accomplished through coordination with the Environmental Technical Advisory Team (ETAT) and particularly the cooperating agencies for this study. Most data identified by the cooperating agencies are Geographic Information System (GIS) desktop level information. However, the data for sensitive resources such as wetlands, listed and endangered species, noise, contamination, cultural and historic impacts, as well as right-of-way and relocation information, were all field-evaluated.

Because of the large number of issues involved and the variation in the alternatives' alignments, some alternatives avoid impacts better than others for one specific issue while performing worse in regards to a different issue, making the evaluation of alternatives complex and the justification for the selection of a particular alternative difficult. Therefore, a methodology for quantifying an alternatives performance so that it could be compared to other alternatives was developed.

The results of the alternatives comparative analysis will be presented to the public at a public hearing after which a recommendation for a preferred alternative will be made. The selection of a preferred alternative will be made in conjunction with the FDOT and FHWA and will take into consideration the comparative analysis of the alternatives direct effects on socioeconomic and natural environment, the results of the Indirect and Cumulative Effects (ICE) analysis of the project effects, and input from the public and the resource agencies. The selection of the preferred alternative will be documented in the Final EIS.

FDOT RECOMMENDED ALTERNATIVE

Based on the comparative analysis of all alternatives (as discussed in detail in Section 2.7.7 of the EIS), the build alternative that performed the best was Alternative 17.

Under species involvement, Alternative 17 and 19 had the least number of bear kills, but Alternative 17 had the most involvement with field surveyed protected species and, with Alternative 8, had the most involvement with the Panama City crayfish habitat. Alternative 17 was ranked third for involvement with wetlands, but was ranked, along with Alternative 19, first for involvement with EFH. Alternative 17 was second, after the No Build alternative, for involvement with floodplains, verified impaired waters, and named waterway crossings, but was fourth in involvement with Class 1 surface waters drainage basins.

Under the physical environment, Alternative 17 was second, after the No Build Alternative for involvement with utilities, and, along with Alternative 8, was first for involvement with railroads, it ranked sixth for involvement with contamination sites (which may be somewhat misleading since it would have involvement with only two sites), and it was second with Alternative 19, after the No Build Alternative in the number of noise sensitive sites it would potentially impact.

Alternative 17 was also ranked second, after the No Build alternative for the number of relocations it would cause. None of the alternatives would have involvement with conservation areas, cultural resources, or community facilities.

Estimated Costs Evaluation Category

This evaluation category compared the right-of-way, mitigation and construction costs of the alternatives. As would be expected, the No Build alternative performed best, because there were no costs associated with this alternative. This does not consider the costs of programmed improvements that would occur under the No Build alternative but might be

delayed were the Gulf Coast Parkway constructed. Nor does it estimate the cost benefits of the Gulf Coast Parkway that would be lost if the Gulf Coast Parkway were not constructed. Of the Build alternatives, Alternative 8, at $501.20 million, was the least expensive alternative followed by Alternative 17, at $518.89 million. A difference of only 3.4 percent.

Public Preference Evaluation Category

The public preference evaluation category evaluated the public's expressed preferences, based on 533 responses to a questionnaire (discussed in Section 5 of the EIS) about the project. Based on these responses, Alternative 17 with 287 votes was overwhelmingly the preferred alternative although all alternatives, including the No Build, received votes expressing support. The second most favored alternative was Alternative 8 with 69 votes. There were 14 votes for the No Build alternative, 67 votes for Alternative 14, 22 votes for Alternative 15 and 17 votes for Alternative 19.

Alternatives Overall Performance and FDOT Recommendation

After completion of the evaluation of the alternatives in each of the four evaluation categories, Alternative 17 performed best in the Purpose and Need and Public Preference categories, was second in the Environmental Involvement Category, and third in the Cost Evaluation Category. Overall it was the top performing alternative.

At this point in time, based on existing public input, early agency coordination, engineering information and environmental studies, which are available for public review, Alternative 17 is currently considered the FDOT recommended alternative. However, FDOT will not make a final recommendation to FHWA on any alternative until all alternative impacts and comments on the EIS and public input resulting from the public hearing have been fully evaluated.

SECTION 4 EXISTING ENVIRONMENTAL SETTING

This section describes the existing land uses, natural and biological features of the project area.

4.1 LAND USE

The Existing Land Use Map for Gulf and Bay County, provided in **Figure 4-1,** is a composite of the existing land use maps for both counties. Due to the large study area for the GCP, a variety of existing land uses is encountered. Beginning at the southern terminus of the project, the land uses are a mix of commercial and residential. These land uses predominate northward through the Overstreet area. From CR 386 north to SR 22 and along SR 22 to the Star Avenue area, the land use is predominantly agricultural. From Star Avenue west, the land use is residential and then transitions to commercial as SR 22 approaches US 98. Following Star Avenue north of SR 22, the land use begins as agricultural, transitions to residential, and in the vicinity of US 231 becomes commercial. At the southernmost portion of US 231, there is a blend of commercial and residential land uses, along with a parcel of industrial land use. Continuing northward on US 231, the land use shifts to agricultural use up to Scotts Ferry Road, with small portions of residential and commercial land uses. From Scotts Ferry Road east, the land use is dominated by agricultural use which includes timberlands and several farms. The agricultural land use is consistent as it approaches SR 22 and through the Jarrott Daniels Road to the Overstreet area.

Future land uses for Gulf and Bay County are shown on **Figure 4-2**. Gulf County did not provide any data for future land use, although the County did state that the majority of the land use would not differ from the existing land use.

In Bay County, an area along the northern half of Star Avenue extending as far west as Jetton Lane and as far north as Johnny Lane is designated City Incorporated (Panama City). Within this area, along John Pitts Road, the land use is residential land use except for a large area of recreation and public/institutional land uses south of John Pitts Road at Old Majette Tower Road. A majority of the land use in Bay County will remained unchanged from their existing land use map.

Figure 4-1: Existing Land Use Map

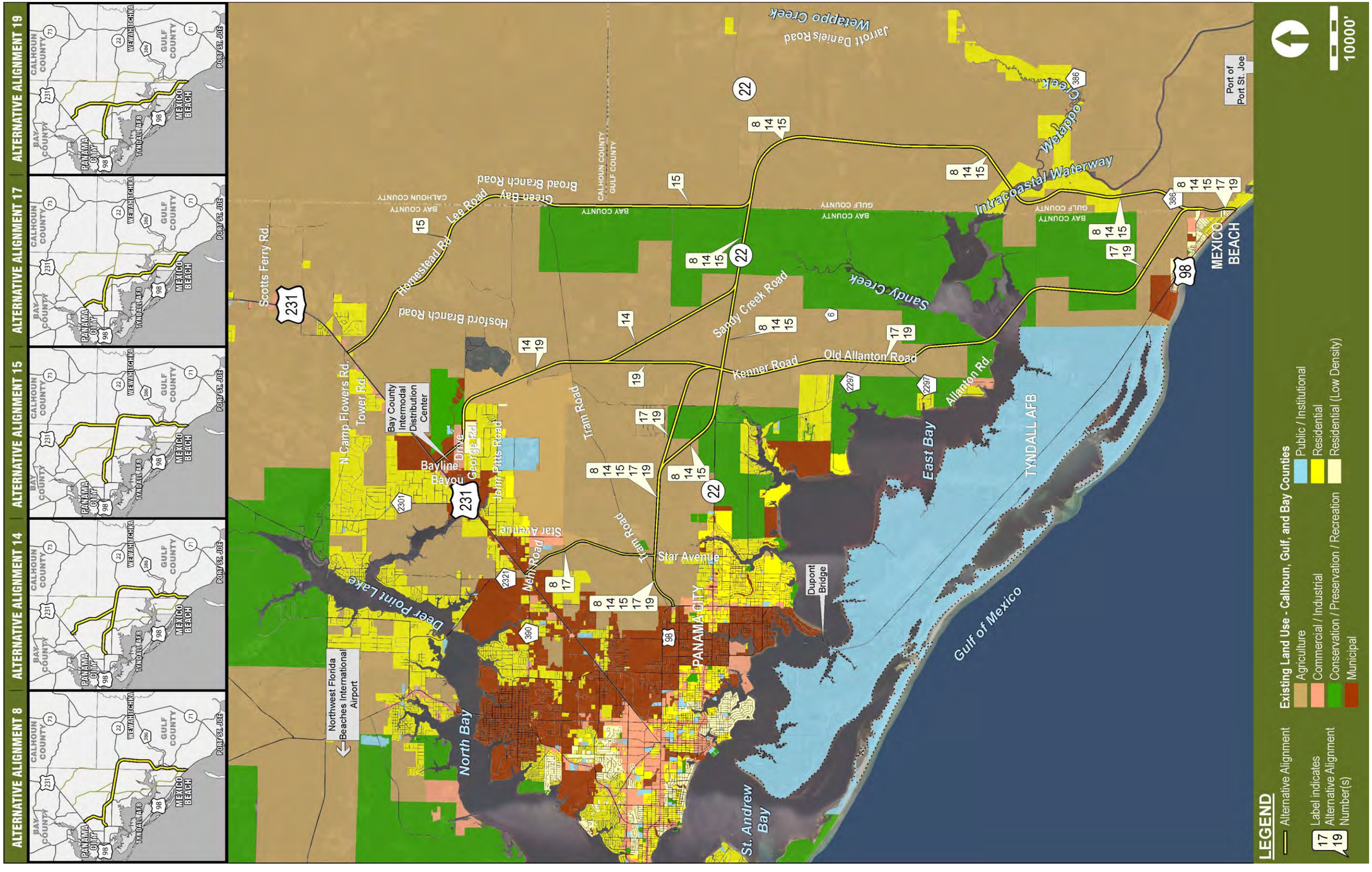
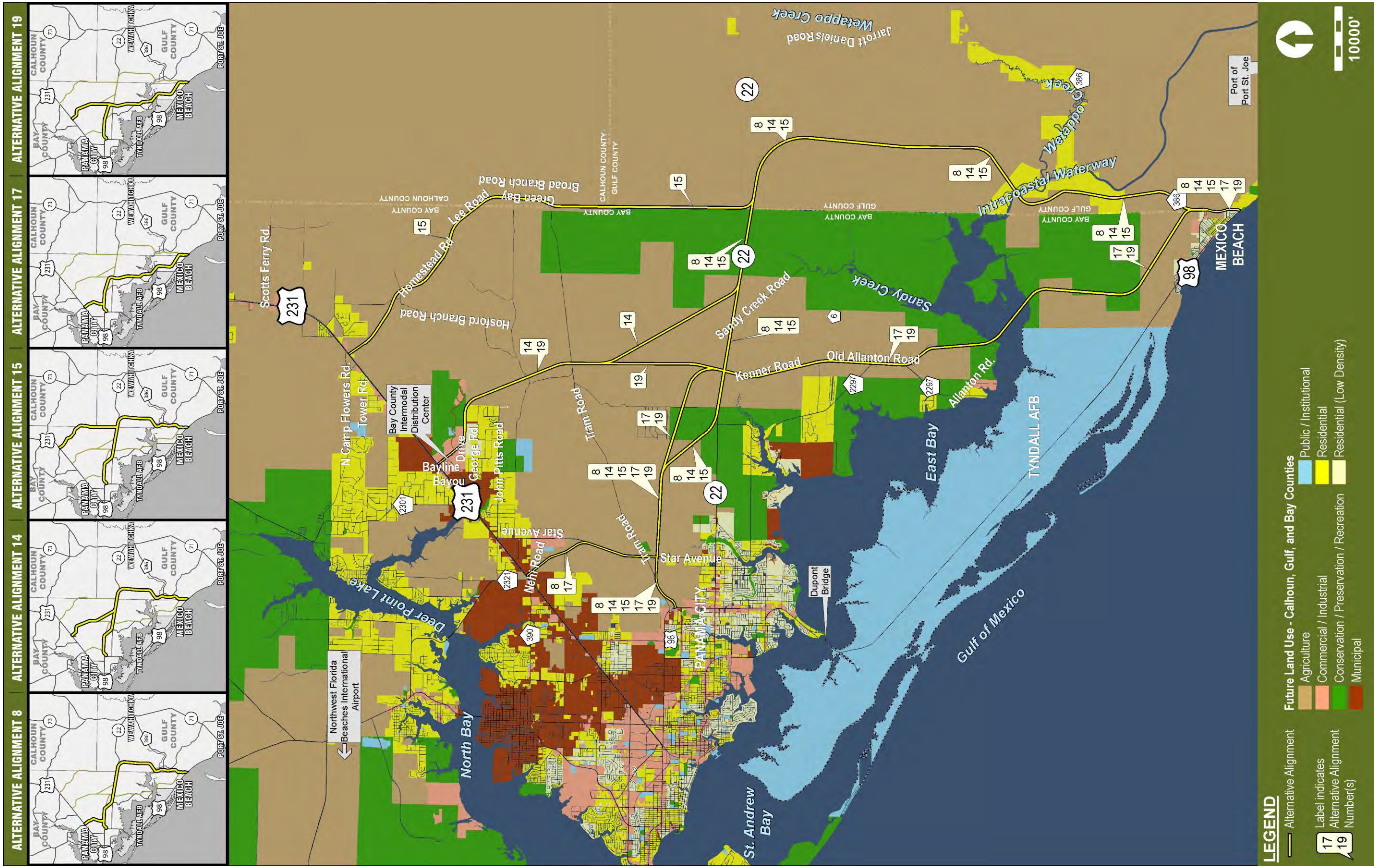


Figure 4-2: Gulf and Bay County Future Land Use Map



4.2 NATURAL AND BIOLOGICAL FEATURES

4.2.1 Physiographic Setting

The areas of Bay, Gulf and Calhoun Counties located within the project area are in the Coastal Plain province and have one physiographic region, the terraced Coastal Lowlands. The Coastal Lowlands occupy the entire periphery of the state and generally are areas of low elevation along the coasts (typical below 30 meters) that have a generally flat topography and are dominated by flatwoods ecosystems. Soils within the region are generally sandy and range from excessively drained in the upper regions to poorly drained in the lower elevations. Historically, fishing, forestry, and recreational uses have comprised the main industries in the region and a majority of the project study area continues to be dominated by silvicultural activities.

The study area is located in the St. Andrews Bay watershed, which is the only major watershed in the Florida panhandle that lies entirely in Florida (Florida Department of Environmental Protection {FDEP}, 2006). It includes Deer Point Lake Reservoir, St. Joseph Bay and the interconnected St. Andrews proper and East, West and North Bays.

The Gulf of Mexico and East Bay are the dominant and defining natural features within or adjacent to the study area. Alignments 17 and 19 would involve spanning East Bay, which is the eastern portion of the St. Andrews Bay estuarine system. East Bay and its tributaries are classified as a Class II Shellfish Propagation or Harvesting area. This designation means that oysters and other shellfish can be harvested in these waters. The standards for Class II water bodies pay particular attention to those components that affect the quality of the shellfish harvested in the area to protect consumers from possible diseases associated with the consumption of raw or cooked shellfish. The St. Andrews Bay estuary contains significant areas of seagrass, saltmarsh and tidal flat communities which are discussed in further detail within the Essential Fish Habitat Assessment (EFH) contained within this report.

The St. Andrews Bay watershed includes a number of streams and freshwater creeks that are located within the study area. The majority of these systems within the study area are hydrologically connected to either East Bay to the south or to Deer Point Lake to the west. The major freshwater creeks entering East Bay are those entering Calloway Bayou, Cooks Bayou, Laird Bayou and Sandy Creek. The primary streams entering Deer Point Lake are Bayou George Creek (Alternative Alignments 14 and 19) and the South Fork Bear Creek (Alternative Alignment 15).

Named waterbodies that will have direct involvement with the proposed alignments are presented in Table 4.1 and shown in Appendix A, Figure 1.

Table 4.1
Named Waterbodies Crossed by the Proposed Alignments

Named Waterbodies and Stream Crossing	Alignment				
	8	14	15	17	19
Bayou George Creek and Tributaries		YES			YES
South Fork Bear Creek Tributaries			YES		
Bear Swamp	YES	YES	YES	YES	YES
Beefwood Branch		YES			YES
Big Branch		YES			YES
Callaway Creek and Tributaries	YES	YES	YES	YES	YES
Cooks Bayou and Tributaries	YES	YES	YES	YES	YES
Cushion Creek	YES	YES	YES	YES	YES
Cypress Creek	YES	YES	YES	YES	YES
East Bay				YES	YES
Gude Branch	YES	YES	YES		
Horseford Branch			YES		
Horseshoe Creek and Tributaries	YES	YES	YES		
Island Branch		YES			YES
Joe Lamb Branch	YES	YES	YES		
Little Sandy Creek and Tributaries	YES	YES	YES		
Olivers Creek	YES	YES	YES		
Panther Swamp	YES	YES	YES	YES	YES
Sandy Creek and Tributaries	YES	YES	YES		
South Fork Bear Creek and Tributaries			YES		
Wetappo Creek	YES	YES	YES		

The majority of named waterbodies within the project area consist of streams which can be best described as blackwater streams. These systems typically emerge from wetlands, mostly bogs, hydric flatwoods and swamps, which release accumulated rain into stream channels. Typically the flow has slow velocities and gradients are low. The water in these systems is typically acidic due to the high amounts of tannin and humic acids which darkly color the water resulting from decaying organic matter in the flatwoods and swamps. Submerged vegetation is limited due to the highly colored and acidic water, which limits light penetration. Blackwater rivers may carry a high sediment loads during high flow events. Temperatures and volumes fluctuate with seasons and rainfall events. Stream beds are typically sandy with a thin layer of detritus, sometimes underlain by limestone which may form outcrops in places.

Some of the streams or their tributaries within the project area may be crossed more than once by the alternative alignments. In addition, some of the creeks crossed are tributaries to larger named streams that are also crossed. For example, Island Branch and Big Branch are tributaries to Bayou George Creek, which is a Class I water body. Likewise, Horseshoe Creek is a tributary to Bear Creek, which is also a Class I water body. Both Bayou George Creek and Bear Creek provide flows to Deer Point Lake, a potable water supply for the region. The Deer Point Lake

Reservoir currently supplies an average of 45 million gallons per day (MGD) of water for public and industrial water uses in Bay County (FDEP, 2006).

The vast majority of land area within the study area is comprised of coniferous plantations, which have had a significant effect on the landscape of the region. Natural ecosystems in this region of Florida are most effectively maintained through frequent fires. Frequent fire restricts the size, abundance, and distribution of woody shrubs while contributing to the development of a diverse groundcover layer characteristic of many native habitats in the region. Many of this region's rare and endangered species depend on these fire-maintained habitats. Generally, the silvicultural areas within the study area represent various understory conditions that have been influenced by prescribed burning, mechanical clearing, and other land management practices. A small percentage of these areas have been burned on a sufficient burn rotation to allow for growth of a native understory, whereas the vast majority of areas are fire suppressed and display an overburden of shrubs that contribute to relatively low species richness in the understory layer. Silvicultural land comprises approximately 62 percent of the total land use across all alternative alignments (includes Florida Land Use, Cover, and Forms Classification System (FLUCFCS) types 441, 441W, 443, 443W), and ranges from 58% coverage in Alternative Alignment 17 to 68% coverage in Alternative Alignment 15 (Table 4.2)

Table 4.2
Direct Involvement with Silviculture Land per Alternative Alignment

	Alignment				
FLUCFCS Type	**8 (Acres)**	**14 (Acres)**	**15 (Acres)**	**17 (Acres)**	**19 (Acres)**
441	381.2	455.3	553.6	252.2	320.7
441W	208.6	279.4	336.5	238.2	306.4
443	2.4	3.4	3.1	1.1	2.2
443W	0	0	0	0	0
Silviculture Acres Total	592.2	738.1	893.2	491.5	629.3
	61.70%	61.14%	67.78%	58.90%	59.51%

When a 300-foot buffer (each side) accompanies each alternative alignment in order to facilitate an assessment of ICE on certain environmental elements under study, it shows that the relative percentage of silviculture lands found is slightly higher when the 300-foot buffer is considered (Table 4.3). However, networks of logging roads associated with the silvicultural lands also traverse the project area. Existing logging roads have been utilized, when feasible, as the proposed location of alignments to reduce potential impacts.

Table 4.3
Indirect Involvement with Silviculture Land per Alternative Alignment

	Alignment				
FLUCFCS Type	**8 (Acres)**	**14 (Acres)**	**15 (Acres)**	**17 (Acres)**	**19 (Acres)**
441	1170.2	1289.1	1451.5	724.5	790.7
441W	630.1	827.6	978.9	664.5	792.6
443	5.0	10.1	10.8	1.9	7.0
443W	2.7	2.7	2.7	0	0
Silviculture Acres Total	1,808.0	2,129.5	2,443.9	1,390.9	1,590.3
	71.8%	70.6%	74.9%	62.7%	60.9%

Additional features normally associated with forest management practices include ditches used to modify wetland hydrology in order to facilitate the establishment and maintenance of pine plantations. Ditches used in any setting can affect site hydrology and depending upon spacing and depth, can significantly alter wetland functions and species composition. Most ditches within stands and adjacent to forest roads within the study area have been in existence for several decades. Some ditches observed during field surveys were bordered by spoil mounds.

Three of the several land use areas observed within the study area are maintained powerline easements, gas transmission easements, and roadside right-of-ways. These areas have been observed to support Threatened and Endangered (T&E) plant species. The frequent maintenance of these areas reduces the shrub and tree canopy. During the various seasonal surveys it has been noted that mowing crews were active along roads in Bay and Gulf Counties, oftentimes mowing the listed species in locations where they were identified for this study. Along Highway 22 in Bay County, maintenance crews plowed fire breaks in 2007 at the edge of the right-of-way and adjacent silviculture lands, resulting in the physical disturbance of several areas observed to contain listed plants.

4.2.2 Soils

Soil map units associated with the GCP Alternative Alignments can be found in Appendix A (Figures 2-13). A total of 68 soil types are present within the Alternative Alignments (Table 4.4). Thirty-five (35) of the soil types are considered hydric, which generally indicates the presence of wetlands or wetland inclusions. The locations of these hydric soils were generally consistent with wetland areas identified via desktop analyses and located during field reconnaissance. Brief descriptions of hydric and non-hydric soils derived from the United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Soil Surveys of Bay, Gulf and Calhoun Counties (2006) are also provided.

Table 4.4
USDA/NRCS Soils Mapped within the Alternative Alignments

Soil	Hydric	Acres by Alignment				
		8	14	15	17	19
ALAPAHA LOAMY FINE SAND	YES			3.6		
ALAPAHA LOAMY SAND	YES	16.2	24.5	34.2		
ALAPAHA LOAMY SAND, 0 TO 2 PERCENT SLOPES	YES			24.6		
ALLANTON SAND	YES		3.2		35.8	38.9
BAYVI AND DIREGO SOILS, FREQUENTLY FLOODED	YES	7.9	7.9	7.9		
CROATAN, RUTLEGE, AND SURRENCY SOILS, DEPRESSIONAL	YES			6.6		
CROATAN-SURRENCY COMPLEX, FREQUENTLY FLOODED	YES	7.2	7.2	7.4		
DOROVAN-CROATAN COMPLEX, DEPRESSIONAL	YES	0.1	0.1	0.1		
LYNN HAVEN FINE SAND	YES	15.4	15.4	15.4		
OSIER FINE SAND	YES		5.8		30.7	53.8
PAMLICO, BIBB, AND RUTLEGE SOILS, FREQUENTLY FLOODED	YES			5.6		
PAMLICO-DOROVAN COMPLEX	YES	6.9	17.8	6.9	4.0	14.9
PAMLICO-PICKNEY COMPLEX, FREQUENTLY FLOODED	YES	1.3	1.3	8.0		
PANSEY LOAMY SAND	YES		1.8	16.0		
PANSEY SANDY LOAM	YES			9.7		
PANTEGO AND BAYBORO SOILS, DEPRESSIONAL	YES			2.5		
PANTEGO SANDY LOAM	YES	5.3	9.2	11.4	10.1	8.7
PELHAM LOAMY FINE SAND	YES	74.8	74.8	89.6		
PELHAM SAND	YES	37.6	24.4	24.5	73.7	59.3
PICKNEY AND RUTLEGE SOILS, DEPRESSIONAL	YES	4.0	4.0	4.0	0.3	0.3
PICKNEY FINE SAND	YES				54.9	54.9

Soil	Hydric	Acres by Alignment				
		8	14	15	17	19
PICKNEY-PAMLICO COMPLEX, DEPRESSIONAL	YES	6.1	6.1	6.1	7.1	7.1
PLUMMER FINE SAND	YES	162.7	162.7	203.7		
PLUMMER SAND	YES	45.5	71.3	35.6	109.1	131.9
PLUMMER SAND, 0 TO 5 PERCENT SLOPES	YES			10.1		
POTTSBURG FINE SAND	YES	37.8	37.8	37.8	16.9	16.9
POTTSBURG SAND	YES	6.2	6.2	6.2	18.1	18.1
RAINS FINE SANDY LOAM	YES	3.9	3.9	4.5		
RAINS SAND	YES	2.8	2.8	2.8		
RUTLEGE SAND	YES	20.6	44.6	19.3	45.8	56.7
RUTLEGE-PAMLICO COMPLEX	YES	49.6	64.6	50.8	57.4	94.9
SURRENCY MUCKY FINE SAND, DEPRESSIONAL	YES	28.2	28.2	30.7		
Hydric Total		**540.1**	**625.6**	**685.6**	**463.9**	**556.4**
WATER	UNRANKED	2.8	2.8	2.8	51.0	51.0
Unranked Total		**2.8**	**2.8**	**2.8**	**51.0**	**51.0**
ALBANY LOAMY SAND, 0 TO 5 PERCENT SLOPES	NO			0.2		
ALBANY SAND	NO	32.3	32.3	53.9		
ALBANY SAND, 0 TO 2 PERCENT SLOPES	NO	184.1	238.0	160.3	184.4	220.2
ALBANY SAND, 2 TO 5 PERCENT SLOPES	NO	1.2	1.2	1.2	4.1	4.1
BLANTON FINE SAND, 0 TO 5 PERCENT SLOPES	NO	20.1	60.9	20.1	8.4	49.2
BLANTON SAND, 0 TO 5 PERCENT SLOPES	NO	2.7	2.7	13.8		
BONIFAY SAND, 0 TO 5 PERCENT SLOPES	NO	23.4	23.5	23.6	3.7	3.8
CHIPLEY SAND, 0 TO 5 PERCENT SLOPES	NO		3.0			3.0
FLORALA LOAMY SAND, 0 TO 2 PERCENT SLOPES	NO			8.3		
FOXWORTH SAND, 0 TO 5 PERCENT SLOPES	NO		4.6			4.6

Soil	Hydric	Acres by Alignment				
		8	14	15	17	19
FRIPP-COROLLA COMPLEX, 2 TO 30 PERCENT SLOPES	NO	0.5	0.5	0.5	0.5	0.5
HURRICANE SAND	NO				6.9	6.9
KUREB-COROLLA COMPLEX, ROLLING	NO	0.9	0.9	0.9	0.9	0.9
LEEFIELD LOAMY FINE SAND	NO	41.2	41.2	67.5		
LEEFIELD LOAMY SAND, 0 TO 5 PERCENT SLOPES	NO			28.2		
LEEFIELD SAND	NO	54.8	83.2	118	48.2	58.5
LEON FINE SAND	NO	15.4	15.4	15.4	3.2	3.2
LEON SAND	NO		0.3		62.6	62.9
MANDARIN FINE SAND	NO	7.7	7.7	7.7		
QUARTZIPSAMMENTS, UNDULATING	NO	2.7	2.7	2.7		
RIDGEWOOD FINE SAND	NO	2.0	2.0	2.0		
ROBERTSDALE FINE SANDY LOAM	NO			6.7		
SAPELO SAND	NO	36.8	36.8	36.8		
SCRANTON FINE SAND	NO	9.0	9.0	9.0		
STILSON LOAMY FINE SAND, 0 TO 5 PERCENT SLOPES	NO			1.6		
STILSON LOAMY SAND, 0 TO 2 PERCENT SLOPES	NO			20.7		
STILSON SAND, 0 TO 5 PERCENT SLOPES	NO	10.4	14.3	30.0	2.8	15.8
STILSON SAND, 0 TO 5 PERCENT SLOPES	NO			0.7		
Non-Hydric Total		**445.2**	**580.2**	**629.8**	**325.7**	**433.6**

4.2.2.1 Soil Descriptions

Hydric Soils

Alapaha loamy fine sand is a very deep, poorly drained soil that is found on broad flats and low knolls on the southern Coastal Plain. Slopes range from 0 to 2 percent. Individual areas are elongated, irregular in shape, and range from 5 to 100 acres in size. The soil surface layer is typically a black loamy fine sand about 6 inches thick. The water table is at or within 12 inches of the soil surface for about six months during most years. Available water capacity is moderate and permeability is moderately slow in the subsoil. Natural vegetation includes slash pine *(Pinus elliotii)*, water oak *(Quercus nigra),* red maple *(Acer rubrum),* black titi *(Cliftonia monophylla),* scattered saw palmetto *(Serenoa repens),* and wiregrass *(Aristida spp.).* Wetness is a severe limitation to most cultivation crops and urban/recreational development. This soil is suitable for pasture and hay.

Alapaha loamy sand is a nearly level, poorly drained soil that occurs in depressional areas along poorly defined drainageways in the flatwoods. Slopes for this soil are smooth to concave and range from 0 to 2 percent. The surface and subsurface layers are loamy sands about 32 inches thick. The upper layer is very dark gray and about 6 inches thick. The water table for the soil is less than 15 inches from the surface for three to six months during most years. It is subject to periods of brief flooding when the water table is high. Permeability is rapid in the surface and subsurface layers and moderately slow in the subsoil. Internal drainage is slow because it is impeded by the high water table. Natural vegetation includes slash and longleaf pine *(Pinus palustris),* scattered sweetgum *(Liquidambar styraciflua),* Blackgum (Nyssa biflora), water oak, red maple, sweet gallberry *(Ilex coriacea),* wax myrtle *(Myrica cerifera),* a few saw palmetto, and pineland threeawn *(Aristida beyrichiana).* This soil is not suitable for cultivated crops and is poorly suitable for pasture because of wetness. High water tables and flooding during rainy seasons severely limits urban and recreational development.

Alapaha loamy sand, 0 to 2 percent slopes is a poorly drained soil found on flats, footslopes, and poorly drained drainageways in the Coastal Plain uplands. Slopes are smooth to concave. Areas of this soil are irregular in shape and range from 3 to 400 acres. Typically, the surface layer is very dark gray loamy sand that is about 6 inches thick. The seasonal high water table is between the soil surface to 7 inches below it from December to March and from June through September. The available water capacity is low in the surface and subsurface layers, moderate in the upper part of the subsoil, and low in the lower part of the subsoil. Natural vegetation consists of slash pine, water oak, blackberry *(Rubus* spp.*),* dog fennel *(Eupatorium capillifolium),* gallberry *(Ilex glabra),* greenbriar *(Smilax* spp.*),* saw palmetto, wax myrtle, chalky bluestem *(Andropogon virginicus),* yellow Indiangrass *(Sorghastrum nutans),* low panicum *(Panicum* spp.), pineland threeawn, and assorted sedges. This soil is not suited for cultivated crops, pasture, hay, or urban or recreational development due to excessive wetness.

Allanton sand is a poorly drained soil on nearly level or slightly depressional areas along poorly defined drainage ways. Slopes are smooth to concave and range from 0 to 2 percent. The surface layer is typically black and very dark gray sand that is about 18 inches thick. The

water table is at or near the soil surface for four to six months during most years, and most low-lying areas and drainage ways are flooded for four to six months annually. Available water capacity is low. Permeability is rapid to moderately rapid above the subsoil and is moderately rapid in the subsoil. Internal drainage is very slow due to the high water table. Natural vegetation consists of titi, sweetbay (*Magnolia virginiana*), blackgum, cypress *(Taxodium* spp.*)*, scattered slash and longleaf pine, gallberry, wax myrtle, and pineland threeawn. Wetness is a very severe limitation to cultivated crops. Use of this soil as sites for most urban and recreational uses is severely limited.

Aquents are gently undulating, somewhat poorly drained to very poorly drained, modified soils that are found on low landscapes adjacent to canals, coastal bays, and marshes in shallow excavated areas. Slopes typically range from 0 to 5 percent. These soils are formed in loamy and sandy dredge spoil, reworked natural soils, and fill of variable composition. In some areas, these soils were formed in the subsoil and underlying material where material had been excavated. Areas of this soil are usually elongated and rectangular in shape. Size ranges for 3 to several hundred acres. No single pedon is typical for this soil type. Commonly, the surface layer is about 4 inches thick and is composed pale brown fine sand that contains shell fragments. The water table is typically at the soil surface to 12 inches from the soil surface between the months of June and November. Native vegetation has not been specified for this soil type. In many areas, the vegetation includes plant species from the adjacent landscape. Wetness is a severe limitation for cultivated crops, pasture, hay, woodland, and urban and recreational development.

Bayvi and Dirego soils, frequently flooded are very deep, very poorly drained soils that are found in salt marshes and tidal bays along the coast. Slopes are typically 0 to 1 percent. Individual areas are generally elongated and range from 5 to 600 acres. Bayvi soil makes up for about 45 percent of the map unit. Dirego soil makes up about 40 percent of the map unit. Up to 15 percent of the map unit can include poorly drained Duckston and Leon soils. The Bayvi surface layer is typically 26 inches thick and is composed of very dark brown fine sand. The Dirego surface layer is typically 19 inches deep. The upper part of the layer is composed of a very dark grayish brown muck. The lower part is composed of a very dark brown muck. The water table is found between soil surface and 12 inches below the surface year round. Available water capacity is low. Permeability is rapid to very rapid. Natural vegetation consists of black needlerush *(Juncus roemerianus)* and cordgrass *(Spartina* spp.*)*. Tidal flooding, high salinity, and wetness are severe limitations for cultivated crops, pasture, hay, and woodlands. These soils are not suitable to urban or recreational development. Wetness, flooding, excess salt, and subsidence in the Dirego soil are severe limitations.

Croatan, Rutledge, and Surrency soils are poorly drained, depressional soils found in upland depressions. Slopes are less than 2 percent. Areas of this soil map unit are irregular in shape and range from 3 to 500 acres in size. The Croatan surface layer soil is black muck that is about 19 inches thick. The Rutledge soil surface layer is about 17 inches thick and consists of black mucky sand. The Surrency surface layer is composed of black mucky sand that is about 5 inches thick and dark grayish brown sand that is about 8 inches thick. The seasonal high water table is at or above the soil surface for the Croatan and Rutledge soils. The water table for the Surrency soils ranges from above to 6 inches below the soil surface for most of

the year. The available water capacity is very high in the surface layer and moderate or high in the subsurface layers of the Croatan soil, very high in the surface layer and very low or low in the subsurface layer of the subsurface layers of the Rutledge soil, and moderate in the Surrency soil. Natural vegetation consists of red maple, blackgum, water tupelo *(Nyssa aquatica)*, cypress, buttonbush *(Cephalanthus occidentalis),* dahoon holly *(Ilex cassine),* cinnamon fern *(Osmunda cinnamomea),* lizard's tail *(Saururus cernuus)* and royal fern *(Osmunda regalis).* This map unit is not suitable for cultivated crops, pasture, hay, pine production, or urban or recreational development. Severe limitations include severe wetness, ponding, and subsidence.

Croatan-surrency complex, frequently flooded are very deep, very poorly drained soils that are located in backswamps on floodplains. Slopes range from 0 to 1 percent. This complex is made up of 45 percent Croatan soil and 35 percent Surrency soil. Poorly drained Pelham and Plummer soils make up about 20 percent and are found on slight knolls near the edge of the mapped complex. Areas of the complex are elongated in shape and range in size from 50 to several hundred acres. The surface layer of the Croatan soil is muck with a depth of 42 inches. The Surrency soil has a surface layer that consists of black mucky fine sand and has a thickness of about 18 inches. The seasonal high water table is at or 12 inches below the soil surface for six to nine months in most years. Available water capacity is very high for the Croatan soil and moderate in the Surrency soil. Permeability is very slow in the Croatan soil and moderate in the Surrency. Natural vegetation includes blackgum, cypress, sweetbay, red maple, swamp tupelo, scattered slash pine, ferns, and grasses. The soils are not suitable for cultivated crops, woodland, pasture, hay, or urban or recreational development. Flooding, ponding, wetness, and low bearing strength are severe limitations.

Dorovan-Croatan complex, depressional are very deep, very poorly drained soils that are found in depressions. Slopes range from 0 to 2 percent. This map unit consists of 55 percent Dorovan soil and 40 percent Croatan soil. Poorly drained Pantego and Surrency soils make up about 10 percent and occur on slight rises within the complex. Areas of these soils are intermingled so it is impractical to separate them at the scale used for mapping. Areas are irregularly shaped and range from 10 to 500 acres. The surface layer of the Dorovan soil is very dark brown and has a depth of 2 inches. The surface layer of the Croatan soil has a depth of 42 inches and is dark brown, very dark brown, and very dark grayish brown muck. For the Dorovan soils, the water table is typically between 6 inches below the soil surface to 12 inches above the soil surface during a typical year. In a typical year, the water table is between 12 inches below the soil surface to the soil surface for the Croatan soils. Permeability is moderate in the Dorovan soil and moderately slow in the Croatan soil. Natural vegetation consists of blackgum, cypress, sweetbay, swamp tupelo, black titi, sawgrass *(Cladium jamaicense)* and scattered slash pine. Ponding, wetness, and low bearing strength are severe limitations for cultivated crops, woodland, pasture, hay, or urban or recreational development.

Lynn Haven fine sand is a very deep, poorly drained soil that is in low areas of flatwoods in the southern Coastal Plain. Slopes range from 0 to 2 percent. Individual areas are irregular in shape and range from 5 to 200 acres in size. The surface layer is very dark grayish brown fine sand that is about 14 inches thick. The seasonal high water table is typically at the soil

surface to 6 inches below the soil surface from February to September. Available water capacity is low. Permeability is moderately rapid. Natural vegetation consists of slash pine, bay trees *(Magnolia* spp.*)*, wax myrtle, black titi, gallberry, scattered saw palmetto, and fetterbush *(Lyonia lucida).* Wetness is a severe limitation for cultivated crops, pastures, and urban or recreational development.

Maurepas muck, frequently flooded is a very deep, very poorly drained soil located on flood plains consisting of slightly brackish swamps and marshes. Slopes are generally 0 to 1 percent. Areas of this soil are elongated or irregular in shape and range from 5 to several hundred acres in size. The surface layer of the soil is very dark brown muck and is about 3 inches thick. In a typical year, the seasonal high water table varies from 12 inches above the soil surface to 6 inches below it. The water table also fluctuates slightly due to the tide. The soil is flooded by high tides several times each month. Natural vegetation consists of sawgrass, big cordgrass, and black needlerush. In some areas, vegetation can also include scattered cypress, bay, and gum trees (*Nyssa* spp.). This soil is not suitable to cultivated crops, pasture, hay, woodland, or urban or recreational development. The flooding, ponding, and low bearing strength of the soil are severe limitations.

Osier fine sand is a poorly drained soil that is in nearly level or slightly depressional areas and flatwoods. Slopes for these soils are between 0 and 2 percent. Typically the surface layer is black fine sand about 8 inches thick. The water table is 10 inches from the surface for three to six months during most years. Some low-lying areas are ponded for brief periods in most years. Permeability is moderately rapid in the surface and subsurface layers and is moderate in the subsoil. Available water capacity is low in the surface and subsurface layers and is moderate in the subsoil. Internal drainage is slow, impeded by the high water table. Natural vegetation includes slash and longleaf pine, sweetgum, water oak, and cypress. Wetness and thick sandy layers above the subsoil are severe limitations for cultivated crops. The high water table and ponding during rainy seasons are limitations for recreational or urban development. The sandy texture and high water table are severe limitations to use of this soil as sites for sanitary landfill.

Pamlico, Bibb, and Rutledge soils, frequently flooded are very poorly to poorly drained soils that are found on floodplains along creeks and streams. Slopes are less than 2 percent. Areas of the map unit are elongated in shape and range from 5 to 900 acres in size. Typically, the surface layer if the Pamlico soil is very dark brown mucky peat that is 7 inches thick and a black muck to a depth of 31 inches. The Bibb surface layer is a very dark gray sandy loam that is about 8 inches thick and a dark gray sandy loam to a depth of 12 inches. The Rutledge surface layer is black sand about 13 inches thick. For most of the year, the seasonal high water table is at or above the surface layer for the Pamlico soil and at or 6 inches below the surface layer for the Bibb and Rutledge soils. Flooding is likely to occur often under unusual weather conditions. Excess water tends to pond in low-lying areas for long periods after heavy rains. Available water capacity is very high in the surface layer and medium to high in the substratum for the Pamlico soil, moderate or high in the Bibb soil, and low in the Rutledge soil. Natural vegetation consists of red maple, blackgum, water tupelo, cypress, buttonbush, dahoon holly, cinnamon fern, lizard's tail, royal fern, and wild pine (*Pinus* spp.).

This map unit is not suitable for cultivated crops, pasture, hay, woodlands, or urban or recreational development. Flooding, excessive wetness and subsidence are severe limitations.

The Pamlico-Dorovan complex consists of very poorly drained soils that occur in intricately mixed patterns, mainly as depressional areas along low gradient drainageways. The Pamlico soils make up about 40 percent of the complex and the Dorovan soils make up about 35 percent. Rutledge, Alapaha, Pansey, Pantego, Plummer, Pottsburg, and Rains soils make up about 25 percent of the complex and generally occur on the edges of the complex. Areas of this complex are mostly rounded or oblong and are from 10 to 200 acres. The surface layer is black muck that is 32 to 60 inches thick. These soils are ponded after flooding for four to twelve months in most years. When not ponded, the water table is usually within 10 inches of the surface. The water table may recede to a depth of 40 inches or more in the late fall or times of extended drought. This complex is moderate in permeability and has a very high available water capacity. The natural vegetation associated with these soils consisting mostly of water-tolerant hardwoods such as water oak, sweetbay, blackgum, red maple, black willow, alder *(Alnus serrulata),* and cypress. Due to the high water table, these soils are not suitable for cultivating crops or pastures. Overcoming the excessive wetness of these soils is difficult. Flooding, thick layers of organic material, and high water table are severe limitations to use of these soils as sites for urban, sanitary, and recreational uses.

Pamlico-Pickney complex, frequently flooded are soils that are very deep and very poorly drained and occur on floodplains. Slopes are 0 to 1 percent. Areas of this soil unit are elongated in shape and range from 10 to several hundred acres in size. The soil complex consists of about 55 percent Pamlico soils and 40 percent Pickney soils. Poorly drained Lynn Haven, Plummer, and Scranton soils make up the remaining 5 percent and are found on knolls and transitions in the flatwoods. The Pamlico soil surface layer is muck about 22 inches deep while the Pickney surface layer is back, very dark brown, and very dark grayish fine sand that is about 51 inches deep. The seasonal high water table is at or 12 inches above the soil surface throughout the year for the Pamlico soil and it ranges from 12 inches above to 18 inches below the soil surface from November through July for the Pickney soil during most years. Available water capacity is very high for the Pamlico soil and low in the Pickney soil. Permeability is moderate in the Pamlico soil and rapid in the Pickney soil. Natural vegetation includes blackgum, cypress, sweetbay, red maple, scattered slash pine, ferns, and grasses. This complex is not suitable for cultivated crops, woodland, pasture, hay, or urban or recreational development. The flooding, ponding, wetness, and low bearing strength are severe limitations.

Pansey loamy sand is a poorly drained, nearly level soil that occurs on broad flats and in poorly drained, low-gradient drainage ways. Slopes are smooth to concave. The surface layer is typically a very dark gray loamy sand that is about 7 inches thick. The water table is usually within 20 inches of the surface during the winter, the wet season during most years and is subject to ponding for short periods of time after flooding. Permeability is moderately rapid in the surface and subsurface layers and slow in most of the subsoil. Available water capacity is moderate in the surface and subsurface and is high in the subsoil. Internal drainage is slow due to a high water table. Natural vegetation consists of slash, loblolly and longleaf pine, sweetgum, blackgum, water oak, red maple, cypress in depressional areas,

gallberry, wax myrtle, saw palmetto, and pineland threeawn. Wetness and naturally low fertility are severe limitations for cultivated crops. High water tables and flooding during the rainy season are severe limitations to recreational and urban development.

Pansey sandy loam is a poorly drained soil that is located on flats and in depressions in interstream divides in the uplands. Slopes range from 0 to 2 percent. Areas of this soil are irregular in shape and range from 3 to 225 acres. The soil surface layer is very dark gray sandy loam and is typically 8 inches thick. The seasonal high water table is at or near the surface from December through March and from June through September during a normal year. Available water capacity is moderate in the surface layer and the upper part of the subsoil and very high in the lower part of the subsoil. Natural vegetation consists of slash pine, water oak, blackberry, gallberry, dog fennel, greenbriar, saw palmetto, wax myrtle, chalky bluestem, yellow Indiangrass, low panicum, pineland threeawn, and assorted sedges. This soil is not suited for cultivated crops, pasture, or hay due to excessive wetness. Wetness and slow percolation are severe limitations for urban and recreational development for this soil.

Pantego and Bayboro soils, depressional are very deep, very poorly drained soils in depressions and along poorly defined streams. Slopes range from 0 to 2 percent. Areas of the soil are elliptical or irregular in shape and range from 3 to 200 acres in size. This map unit consists of about 50 percent Pantego soil and 30 percent Bayboro soil. Poorly drained Bladen and Rains soils make up the remaining 20 percent and occur near the edges of the soil map unit. The Pantego soil has an upper soil layer that is a very dark gray and very dark grayish brown loamy sand that is about 18 inches thick. The Bayboro soil has an upper soil layer that is a fine sandy loam that is about 10 inches thick. The seasonal high water table is above the soil surface for about six to nine months during a typical year. Available water capacity for the soils is moderate. Permeability is moderately slow in the Pantego soil and slow in the Bayboro soil. Natural vegetation includes blackgum, cypress, sweetbay, swamp tupelo, black titi, swamp cyrilla (*Cyrilla racemiflora*), sawgrass, scattered slash pine, titi, St. Johns wort *(Hypericum* spp.*)*, and pitcher plants *(Sarracenia* spp.*)*. These soils are not suited for cultivated crops, woodland, pasture, hay, or urban or recreational development. Ponding and wetness are severe limitations.

Pantego sandy loam is a very poorly drained, nearly level soil that occurs in wet depressions and along poorly defined drainageways in the flatwoods and it occurs along moderately well defined drainageways in the uplands. Slopes are smooth to concave and range from 0 to 2 percent. The surface layer is a dark gray to black sandy loam that is typically 18 inches thick. The water table is typically less than 15 inches from the soil surface and depressional areas are ponded for one to three months annually. Available water capacity is high throughout the soil. Permeability is moderately rapid in the surface layer and moderate in the subsoil. Internal drainage is slow due to the high water table. Natural vegetation consists of pond pine, tupelo gum, sweetbay, cypress, titi, gallberry, reeds, wax myrtle, and pineland threeawn. Wetness is a severe limitation for cultivated crops. Flooding and the very high water table during the rainy seasons are severe limitations to use of this soil as sites for recreational or urban development.

Pelham loamy fine sand is a very deep, poorly drained soil that is found in low areas of flatwoods and on low flats of the southern Coastal Plain. Slopes range from 0 to 2 percent. Areas of this soil are elongated or irregular in shape and range from 5 to 100 acres. The surface layer of the soil is a black loamy fine sand that is about 7 inches thick. The seasonal high water table ranges from soil surface to 12 inches below the surface from January through April. Available water capacity is low. Permeability is moderately slow. Natural vegetation includes slash pine, water oak, red maple, black titi, gallberry, scattered palmetto, and wiregrass. Most areas of this soil are used for the commercial production of pine. This soil is poorly suited for most cultivated crops and urban development. Wetness is a management concern.

Pelham sand is a deep, poorly drained, nearly level soil that is on broad flats and slightly depressional areas along poorly defined drainageways. Slopes are smooth and concave and range from 0 to 2 percent. Typically the surface layer is dark gray sand about 6 inches thick. This soil has a water table within 15 inches of the surface for three to six months during most years and is subject to brief periods of flooding. Available water capacity is low in the surface and subsurface layers and is medium in the subsoil. Permeability is rapid in the surface and subsurface layers and is moderate in the subsoil. The natural vegetation consists of longleaf and slash pine, sweetgum, blackgum, sweetbay, water oak, cypress, gallberry, wax myrtle, and pineland threeawn. Wetness is a severe limitation for cultivated crops. Flooding and the very high water table during the rainy seasons are severe limitations to use of this soil as sites for recreational or urban development.

Pickney and Rutledge soils, depressional are very deep, very poorly drained soils that are located in broad, shallow depressions. Areas of these soils are elongated or irregular in shape and range from 25 to 500 acres in size. This map unit consists of 40 percent Pickney soil and 35 percent Rutledge soil. Poorly drained Lynn Haven, Pottsburg, and Scranton soils make up about 25 percent and can be found on slight knolls within the mapped area. The surface layer of the Pickney soil is typically a black, very dark brown, and very dark grayish brown fine sand that is about 51 inches thick. Typically, the surface layer of the Rutledge soil is black fine sand that is about 19 inches thick. The seasonal high water table is above the soil surface from November through May in a normal year. Available water capacity is low and permeability is rapid throughout the soils. Natural vegetation includes blackgum, cypress, sweetbay, swamp cyrilla, black titi, and scattered slash pine. These soils are not suited for crop cultivation, pasture, hay, or urban or recreational development. Ponding, wetness, and low bearing strength are severe limitations.

Pickney fine sand is a very poorly drained soil that is on nearly level, broad flats and slightly depressional areas along poorly defined drainage ways. Slopes are smooth the concave and range from 0 to 1 percent. The soil surface layer is black fine sand that is about 30 inches thick. The water table is very near or at the soil surface for four to six months most years for this soil. Most of these soils in low-lying areas are ponded for three to six months after flooding during the rainy season. Available water capacity is medium in the surface layer and low below. Permeability is rapid. Internal drainage is very slow due to the high water table. Natural vegetation for the soil consists of sweetbay, blackgum, cypress, titi, scattered slash and longleaf pine, gallberry, wax myrtle, pineland threeawn, St. Johnswort, and maidencane

(Panicum hemitomon). Wetness is a severe limitation for crop cultivation. Extremely high water tables and flooding severely limit recreational and urban development. The sandy texture, flooding, and high water table prohibit the use of these sites for sanitary landfills.

Pickney-Pamlico complex – depressional is a very deep, very poorly drained soil that is located in depressions. Slopes range from 0 to 2 percent. Areas of this soil are irregular in shape and range from 10 to 500 acres. Pickney soil makes up about 50 percent of the complex and Pamlico makes up about 35 percent. Poorly drained Lynn Haven and Scranton soils make up about 15 percent of the complex and are found on slight rises within the mapped area. The surface soil layer of the Pickney soil is black, very dark brown, and very dark grayish brown fine sand that is about 51 inches thick. The Pamlico surface layer consists of a brown to black muck that is about 22 inches thick. Water table levels are above the soil surface for six to nine months during a typical year. Available water capacity is very high for the Pamlico soil and low in the Pickney soil. Permeability is moderate in the Pamlico and rapid in the Pickney soil. Natural vegetation includes blackgum, cypress, sweetbay, swamp cyrilla, black titi, and scattered slash pine. Ponding, wetness, and low bearing strength are severe limitations for cultivated crops, woodland, pasture, hay, or urban or recreational development.

Plummer fine sand is a very deep and poorly drained soil that is found in low areas of flatwoods and in broad, slight depressional areas on flats. Slopes range from 0 to 2 percent. Areas of this soil are irregular in shape and range from 15 to 500 acres in size. The surface layer of the soil is typically very dark gray fine sand and has a thickness of 10 inches. The seasonal high water table is at the surface to 12 inches below the surface from December through July during a normal year. Available water capacity is low and permeability is moderately slow. Natural vegetation includes slash pine, scattered bald cypress (*Taxodium distichum*), sweetbay, scattered saw palmetto, gallberry, wax myrtle, pitcher plants, black titi, and fetterbush. This soil is poorly suited for cultivated crops, and urban development. Wetness is a management concern.

Plummer sand is a poorly drained, nearly level soil that is in low-lying areas and in poorly defined drainage ways. Slopes are concave to smooth and range from 0 to 2 percent. The surface and subsurface layers are sand about 48 inches thick; the top layer being dark gray and about 7 inches thick. The water table for this soil is less than 10 inches from the surface for three to six months during most years. Low-lying areas are sometimes ponded for brief periods during most years. Permeability is moderately rapid in the surface and subsurface layers and moderate in the subsoil. Available water capacity is low in the surface and subsurface layers and medium in the subsoil. Internal drainage is slow, impeded by the high water table. The natural vegetation consists mostly of slash and longleaf pine, sweetgum, water oak, cypress, gallberry, pineland threeawn, pitcher plants, and wax myrtle. Wetness and the thick sandy layers above the subsoil are severe limitation for cultivated crops. The high water table and ponding during the rainy seasons are severe limitations for recreational or urban development. The sandy texture and high water table severely limits the use of the soil as sites for sanitary landfill development.

Plummer sand, 0 to 5 percent is a poorly drained soil that is found in flatwoods and in poorly defined drainageways in the Coastal Plain uplands. Areas of this soil are elongated or irregular in shape and range from 3 to 1,000 acres in size. The soil surface layer is typically very dark gray sand that is about 8 inches thick. The seasonal high water table is at or near the surface From December through March and from June through September. The available water capacity is very low or low in the surface and subsurface layers and low to moderate in the subsoil. Natural vegetation consists of slash pine, water oak, blackberry, gallberry, dogfennel, greenbriar, saw palmetto, wax myrtle, chalky bluestem, yellow Indiangrass, low panicum, pineland threeawn, and assorted sedges. This soil is not suited for cultivated crops, pasture, or hay because of excessive wetness. Wetness is a severe limitation for urban and recreational development.

Pottsburg fine sand is a very deep, poorly drained soil that is found in low areas of flatwoods on the southern Coastal Plain. Slopes range from 0 to 2 percent. Areas of this soil are irregular in shape and range from 5 to 200 acres. Typically, the soil surface layer is very dark gray fine sand that is about 6 inches thick. The season high water table ranges between the soil surface to 6 inches below the soil surface from February to September. Available water capacity is low and permeability is moderate. Natural vegetation consists of slash pine, bay trees, saw palmetto, wax myrtle, gallberry, wiregrass, black titi, and fetterbush. This soil is poorly suited for most cultivated crops. Wetness is a management concern. This soil is suited for pasture and hay. This soil is poorly suited for urban or recreational development. Wetness and seasonal droughtiness are management concerns.

Pottsburg sand is a poorly drained soil that is on nearly level, low-lying areas of the flatwoods. Slopes are 0 to 2 percent. Typically, the surface layer is dark gray sand about 5 inches thick. This soil has a water table within 10 inches of the surface for four to six months during most years. Some included low-lying areas are ponded for two to six months annually. Permeability is rapid in the surface and subsurface layers and is moderate in the subsoil. Internal drainage is very slow, impeded by the high water table. Available water capacity is low in the surface layer and is moderate in the subsoil. Natural vegetation for this soil consists of sweetbay, titi, blackgum, water oak, scattered slash and longleaf pine, gallberry, saw palmetto, wax myrtle, and pine land threeawn. Wetness is a severe limitation for cultivated crops. The high water table is a severe limitation to use of this soil as a site for recreational or urban development. The sandy texture and high water table are sever limitations to use of this soil as sites for sanitary landfills.

Rains fine sandy loam is a very deep and poorly drained soil that is found on low flats. Slopes range from 0 to 2 percent. Areas of the soil are elongated or irregular in shape and range from 5 to 400 acres in size. The surface layer is typically a very dark grayish brown fine sandy loam about 9 inches thick. The water table is at the soil surface to 12 inches below the surface from November through April. Available water capacity and permeability is moderate. Natural vegetation includes slash pine, sweetbay, water oak, red maple, wiregrass, pitcher plants, and scattered black titi, St. Johns Wort, and saw palmetto. This soil is unsuitable for cultivated crops and urban and recreational development because wetness is a management concern.

Rains sand is a poorly drained, nearly level soil that occurs in low-lying areas on the coastal plain and in depressional areas. Slopes are smooth and range from 0 to 2 percent. Typically, the surface layer is very dark gray sand that about 6 inches thick. The water table is typically 10 inches from the surface for two to six months annually. Available water capacity is low in the surface and subsurface and medium in the subsoil. Permeability is rapid in the surface and subsurface and moderate in the subsoil. The natural vegetation consists of slash pine, blackgum, scattered cypress, pineland threeawn, gallberry, and wax myrtle. Cultivated crops are severely limited due to soil wetness. Recreational development, urban development and sanitary landfill development is severely limited by the high water table.

Rutledge sand is a very poorly drained soil found on nearly level or depressional areas along drainageways. Typically, the slopes for this soil are smooth and concave and range from 0 to 2 percent. The surface layer of the soil is sand that is usually about 22 inches thick. The upper 13 inches is black, and the lower 9 inches is very dark gray. The water table is at or near the surface for four to six months during most years and is ponded for four to six months annually. Available water capacity is low. Permeability is rapid and the internal drainage of this soil is very slow, impeded by the high water table. The natural vegetation for this soil is titi, sweetbay, blackgum, cypress, and scattered slash pine. Soil wetness is a severe limitation for cultivated crops. The high water table and ponding of depressional areas during rainy seasons are severe limitations for using a site with this soil for recreational and urban development projects. The high water table and sandy texture limit the use of this soil for sanitary landfills.

Rutledge-Pamlico complex consists if nearly level, very poorly drained, and frequently flooded soils. Areas of these soils occur in irregular patterns and are hard to map separately due to the scale used. This complex is found in mainly in drainageways with a few widespread depressional areas included. The Rutledge soils make up about 35 of the complex and the Pamlico soils make up about 25 of the complex. Pantego, Albany, Allanton, Osier, Pelham, Plummer, and Pottsburg soils make up the remaining portion of the complex although they are not always present in each complex. These soil formations are usually long and moderately narrow and are about 30 to 500 acres in size. The depressional areas are about 10 to 300 acres in size. The Rutledge soils typically have a black and very dark grayish brown loamy sand surface layer about 20 inches thick. The Rutledge soils have a water table near the soil surface for four to six months during a typical year and may be ponded after flooding. Permeability is rapid throughout. Available water capacity is low. Internal drainage is slow due to high water table. The Pamlico soils typically have a black muck surface layer that is 30 inches thick. These soils may be ponded for four to six months in most years after flooding. Even when not flooded, water tables are typically found within 20 inches of the soil surface. During the dry seasons, the water table may fall briefly to 40 inches below the soil surface. Pamlico soils are moderate in permeability and have high available water capacity. Natural vegetation consists of sweetbay, blackgum, red maple, sweetgum, slash pine, titi, wax myrtle, sweet azalea *(Rhododendron viscosum),* gallberry, and greenbriar. Wetness and flooding are severe limitations for cultivated crops. The use of these soils as sites for recreational and urban development is severely limited due to the high water table and the hazard of frequent flooding in rainy seasons. The soils are also unsuitable for use as sanitary landfill sites.

Surrency mucky fine sand, depressional is a very deep, very poorly drained soil that is found in shallow depressions and along poorly defined streams and drainageways. Slopes range from 0 to 2 percent. Areas of this soil are elliptical or irregular in shape and range from 5 to 200 acres in size. The surface layer is typically a black mucky fine sand that is about 18 inches thick. The water table is typically 12 inches above to 6 inches below the soil surface year around. Available water capacity and permeability of the soil is moderate. Natural vegetation consists of blackgum, cypress, sweetbay, swamp tupelo, black titi, swamp cyrilla, sawgrass, scattered slash pine, St. Johnswort, and pitcher plants. This soil is not suited to cultivated crops, woodland, pasture, hay, or urban or recreational development. Ponding and wetness are severe limitations.

Non-Hydric Soils

Albany sand (0 to 2 percent slopes) is a nearly level, somewhat poorly drained sandy soil that occurs along defined drainageways and on areas leading to the lower wet areas. Slopes are smooth and the soil surface layer is grayish brown sand, approximately 8 inches thick. The water table is 18 to 30 inches below the surface for 1 to 3 months during most years. Available water capacity is very low in the surface and subsurface layers and is medium in the subsoil. Permeability is rapid in the surface layer, moderately rapid in the subsurface layer, and moderate in the subsoil. Organic matter content is generally medium. Wetness is a severe limitation for cultivated crops. Wetness is a moderate limitation for local road and street development and a severe limitation for septic tank and trench landfill development, therefore water control is necessary for these uses. Natural vegetation includes longleaf pine, slash pine, blackjack oak (*Quercus marilandica*), post oak (*Quercus stellata*), gallberry, wax myrtle, and pine land threeawn.

Blanton sand (0 to 5 percent slopes) is a moderately well drained soil found on uplands on the southern Coastal plain, with individual areas being irregular in shape and size. Typically, the soil surface layer is dark grayish brown sand approximately 7 inches thick. The water table is anywhere from 48 to 72 inches deep at seasonal highs and may be perched above subsoil following heavy rains. Available water capacity is very low throughout while permeability is moderate or moderately slow in the subsoil. The soil is poorly suited to cultivated crops but suited to pasture and hay. Wetness is a management concern affecting septic tank absorption fields. Droughtiness, rapid leaching of plant nutrients, and wind erosion are management concerns. Natural vegetation includes longleaf pine, slash pine, turkey oak (*Quercus laevis*), live oak (*Quercus virginiana*), ferns, huckleberry (*Gaylussacia dumosa*), and scattered saw palmetto.

Bonifay sand (0 to 5 percent slopes) is a well drained, nearly level to gently sloping soil that occurs on narrow to moderately broad ridges on the uplands. Slopes are smooth to convex. Typically, the surface layer is brown sand about 7 inches thick. The water table is more than 72 inches deep, although after heavy rainfall a perched water table may remain above the subsoil for 1 to 5 days. Available water capacity is low and permeability is rapid in the surface and moderate in the subsoil. Organic matter content is low throughout this soil. Wetness is a moderate limitation for using this soil as a site for dwellings with basements. The soil is moderately suited to pastures and pine production, while it is severely limited to

use for cultivated crops. Natural vegetation includes longleaf pine, slash pine, blackjack oak, turkey oak, live oak, post oak, persimmon (*Diospyros* spp.), huckleberry, and pineland threeawn.

Chipley sand (0 to 5 percent slopes) is a somewhat poorly drained, nearly level (smooth) to gently sloping (convex) soil that is between the higher upland soils and lower lying, wet flatwoods. Typically, the soil surface layer is dark gray sand that is approximately 4 inches thick. The water table has a depth of 30 to 40 inches for 1 to 3 months and a depth of 40 to 60 inches for 3 to 6 months in most years. Available water capacity is low and permeability is rapid. Water is a severe limitation for cultivated crops. The soil is moderately well suited to pasture and hay crops. The high water table is a severe limitation for urban and recreational development. Natural vegetation includes slash and longleaf pine, post oak, bluejack oak (*Quercus incana*), turkey oak, huckleberry, dogwood (*Cornus* spp.), saw palmetto, bluestem (*Schizachyrium* spp.), and pine land threeawn.

Florala sand (0 to 2 percent slopes) is a somewhat poorly drained soil found on toeslopes in the uplands. Slopes are smooth to concave, and, typically, the surface layer is dark grayish brown loamy sand about 8 inches thick. The water table depth reaches a seasonal high of 18 to 30 inches for 8 months out of the year. The available water capacity is low in the surface layer and moderate in the subsoil. Wetness in the soil type limits the variety of crops available, the production of slash pine, and the types of infrastructure it would support. This soil type is well suited to pasture and hay and not suited to infrastructure/construction. Natural vegetation includes loblolly pine (*Pinus taeda*), white oak (*Quercus alba*), pignut hickory (*Carya glabra*), American beech (*Fagus grandifolia*), flowering dogwood (*Cornus florida*), and numerous native herbaceous groundcover. **Foxworth sand (0 to 5 percent slopes)** is a moderately well drained, nearly level (smooth) to gently sloping (convex) soil that occurs between the high upland soils and lower lying, wet flatwoods. The soil surface layer is usually grayish brown sand about 4 inches thick. The water table depth is typically 40 to 72 inches below the soil surface for 1 to 3 months out of the year. The water table can rise to 30 to 40 inches below the surface for less than 30 days in some years. Available water capacity is low and permeability is very rapid. Droughtiness and rapid nutrient leeching are severe limitations for most cultivated crops. The sandy texture is severe limitations for recreational uses. Occasional high water tables are moderate limitations for urban development as cutbanks are subject to caving. Natural vegetation consists of slash and longleaf pine, live oak, post oak, bluejack oak, southern red oak (*Quercus falcata*), huckleberry, dogwood, native shrubs, saw palmetto, and pineland threeawn.

Foxworth sand (5 to 8 percent slopes) is a moderately well drained sloping soil that occurs on upland hillsides leading to lower lying, wet flatwoods and drainageways. The slopes are smooth to convex and the soil surface is dark gray sand about 3 inches thick. The water table is typically 40 to 72 inches from the soil surface for 1 to 3 months a year. For less than 30 cumulative days during the year, the water table can rise to 30 to 40 inches from the soil surface. Available water capacity is very low and permeability is very rapid. Droughtiness, rapid leaching of plant nutrients, and erosion hazards are severe limitations for row crops. Droughtiness is a moderate limitation for pasture and hay. Cutbanks and trenches are subject to caving in this soil. Seepage and high water table are moderate to severe limitations for

urban and recreational uses. Sandy texture has severe limitations for recreational uses. Natural vegetation associated with this soil consists of slash and longleaf pine, live oak, post oak, red oak (*Quercus rubra*), bluejack oak, huckleberry, sparse dogwood, pineland threeawn, and other assorted native understory species.

Fripp-Corolla Complex sand (2 to 30 percent slopes) is composed of excessively drained Fripp soils and moderately well drained to somewhat poorly drained Corolla soils found on undulating, dunelike coastal areas. The soil surface layer is gray sand about 3 inches thick for the Fripp soil and dark gray sand about 3 inches thick for the Corolla soil. Depth to the water table is consistently more than 72 inches for the Fripp soil and 20 to 60 inches below the soil surface for 1 to 3 months for the Corolla soil. Available water capacity for both soils is very low while permeability for both is rapid. Organic matter content for both is very low. This complex is suited for the production of pines, but the soils are not well suited for cultivated crops or pasture. Natural vegetation on this complex include sand pine (*Pinus clausa*), sea-oats (*Uniola paniculata*), switchgrass (*Panicum virgatum*), rosemary *(Conradina canescens),* reindeer lichen (*Cladonia rangiferina*), scrub live oak, and palmetto.

Hurricane sand is a somewhat poorly drained, nearly level soil that occurs between the uplands and the lower lying wet flatwoods. Slopes are smooth to slightly convex and range from 0 to 2 percent. The available water capacity for the soil is low and permeability is rapid. Water is severe limitations for cultivated crops, urban development, and recreational development. Natural vegetation on this soil consists of slash and longleaf pine, bluejack oak (*Quercus incana*), turkey oak, post oak, saw palmetto, broomsedge (*Andropogon* spp.), bluestem, pineland threeawn, and an understory other native plant species.

Krueb-Corolla Complex sand (rolling) is a very deep, poorly to excessively drained soil present on remnant coastal dunes and in swales. The surface layer of the Krueb soil is grey fine sand about 2 inches deep and the surface layer of the Corolla soil is very pale brown fine sand about 4 inches deep; slopes are generally 5 to 15 percent. The water table is below a depth of 72 inches throughout the year for the Kureb soil while it is present at a depth of 18 to 36 inches seasonally in the Corolla soil. The available water capacity is very low and permeability is rapid in the Krueb soil and very rapid in the Corolla soil. This soil is poorly suited for urban development, crop cultivation, or pastures, and the slope, loose surface layer consistency, and droughtiness severely limit use. Natural vegetation on this soil includes sand pine, scattered slash pine, sand live oak (*Quercus geminata*), Chapman oak (*Quercus chapmanii*), myrtle oak (*Quercus myrtifolia*), wax-myrtle, saw palmetto, and sea-oats.

Lakeland sand (0 to 5 percent slopes) is an excessively drained, nearly level (smooth) to gently sloping (generally convex) soil and occurs on broad upland areas. The surface layer is dark brown sand about 4 inches thick and depth to the water table is more than 80 inches throughout the year. The available water capacity is low and permeability is very rapid throughout the layers. The sandy texture severely limits use of this soil for cultivated crops and is too sandy to be trenched. Soil limitations also severely limit recreational development. Natural vegetation found on this soil includes longleaf and slash pine, blackjack oak, bluejack oak, turkey oak, post oak, catbriar (*Smilax* spp.), blackberry, yaupon holly (*Ilex vomitoria*), dwarf live oak (*Quercus minima*), runner oak (*Quercus pumila*), huckleberry,

milkweed (*Asclepias* spp.), ragweed (*Ambrosia* spp.), dog fennel , and sparse pineland threeawn.

Leefield loamy fine sand is a very deep, somewhat poorly drained soil found on low uplands and narrow ridges in areas of flatwoods. The surface layer is very dark grey loamy fine sand about 9 inches thick and the slope ranges from 0 to 2 percent. Depth to the water table from the surface is from 18 to 30 inches for most of the year. The available water capacity is low, and permeability is moderately slow throughout. Wetness and seasonal droughtiness are management concerns for this type of soil. This soil is suited to most cultivated crops, pasture, and hay, as well as to local roads and streets. This soil is not suited to urban or small commercial development due to wetness. Natural vegetation found on this soil consists of slash pine, longleaf pine, live oak, laurel oak (*Quercus laurifolia*), dogwood, sweetgum, saw palmetto, and greenbrier.

Leon sand is a poorly drained, nearly level soil that is found in the flatwoods. Slopes are generally smooth to slightly convex and range from 0 to 2 percent. The surface layer is typically very dark gray sand approximately 3 inches thick. Depth to the water table from the soil surface is around 10 inches for 1 to 4 months and 10 to 40 inches for about 9 months in most years. The available water capacity is very low in the surface and subsurface and low in the subsoil. Permeability is rapid in the surface and subsurface layers and is moderate to moderately rapid in the subsoil. Water table height severely limits recreational and urban development. Natural vegetation found on this soil consists of longleaf pine, slash pine, pond pine (*Pinus serotina*), wax myrtle, saw palmetto, runner oak, gallberry, and pineland threeawn. Wetness is a severe limitation for cultivated crops.

Mandarin fine sand is a very deep, somewhat poorly drained soil present on low ridges and knolls in areas of flatwoods. Slopes range from 0 to 2 percent, and the surface layer is very dark gray fine sand approximately 7 inches thick. Depth to the water table ranges from 18 to 42 inches for half of the year. Available water capacity is low, while permeability is moderate. Organic matter content in the surface layer tends to be very low. Wetness and seasonal droughtiness are management concerns for this soil type. This soil type is suited to slash and longleaf pine planting and urban development. This soil is not well suited to pasture and hay or most cultivated crops. Natural vegetation found on this soil includes slash pine, longleaf pine, turkey oak, pennyroyal (*Mentha pulegium*), and saw palmetto.

Quartzipsamments is a very deep, somewhat poorly drained to excessively drained soil present on high deposits of sandy dredge soil. Slopes range from 0 to 5 percent, and the surface layer is light gray coarse sand about 4 inches thick. A seasonal high water table is present at a depth of more than 72 inches. All other soil properties are so variable that they cannot be predicted without personal investigation. Vegetation present is almost nonexistent, with some areas sparsely populated. Some areas are so acidic that no life can be sustained.

Ridgewood fine sand is a very deep, somewhat poorly drained soil present on slightly convex knolls on the Southern Coastal Plain. Slopes range from 0 to 2 percent, and the surface layer is dark grayish brown fine sand about 5 inches thick. The seasonal high water table reaches a depth of 24 to 42 inches for 3-4 months but can reach a depth of 15-24 inches

for brief periods. Available water capacity is low or very low, and permeability is rapid throughout. Wetness, seasonal droughtiness, leaching of plant nutrients, and rapid permeability are management concerns for this soil type. This soil type is suitable for commercial pine production, pasture/hay, and urban development; this soil type is poorly suited to cultivated crops. Natural vegetation found on this soil includes slash pine, longleaf pine, scattered oaks, and saw palmetto.

Robertsdale fine sandy loam is a poorly drained soil found in flat areas that are slightly depressed in relation to the surrounding terrain. Slopes range from 0 to 2 percent, and the surface layer is very dark gray fine sandy loam about 7 inches in depth with iron concretions. The seasonal high water table is located at a depth of 12 to 18 inches for most of the year. Available water capacity is moderate and permeability is low. Wetness is a management concern for production of slash pine and the construction of small commercial structures. This soil is moderately well suited to pasture and hay and production of slash pine; this soil type is poorly suited to cultivated crops and commercial construction. Natural vegetation includes slash pine, live oaks, blackberry, dog fennel, gallberry, greenbrier, saw palmetto, and wax-myrtle.

Sapelo sand is a very deep, poorly drained soil found in flatwoods areas. Slopes range from 0 to 2 percent. The surface layer is very dark grey sand about 6 inches thick. The seasonal high water table is at a depth of 6 to 18 inches for half of the year. Available water capacity is low and permeability is rapid throughout. Wetness is a management concern for urban development. This soil type is suited to pasture and hay as well as the productivity of slash and loblolly pine. This soil is poorly suited for most cultivated crops and urban development. Natural vegetation includes slash pine, longleaf pine, saw palmetto, wax-myrtle, gallberry, runner oak, black titi, and fetterbush.

Scranton fine sand is a very deep, poorly drained soil found in flatwoods areas. Slopes range from 0 to 2 percent. The surface layer is very dark brown fine sand about 9 inches thick. The seasonal high water table is found anywhere from the surface to a depth of 6 to 18 inches for half of the year. Available water capacity is low and permeability is rapid throughout. Wetness is a management concern for cultivating crops and urban development. This soil is suited to pasture and hay as well as the productivity of slash and loblolly pine. This soil is poorly suited for most cultivated crops and urban development. Natural vegetation includes slash pine, longleaf pine, saw palmetto, wax-myrtle, gallberry, runner oak, swamp cyrilla, and fetterbush.

Stilson sand is a very deep, moderately well drained soil found on uplands. Slopes range from 0 to 5 percent. The surface layer is dark grayish brown loamy fine sand about 6 inches thick. The seasonal high water table is found at a depth of 30 to 36 inches for half of the year; the water table may be perched for short periods after any heavy rain event. Available water capacity is low and permeability is moderate. Organic matter content in the surface layer is usually very low. This soil is suited to cultivated crops, pasture and hay, pine production, homesite development, and small commercial buildings. Natural vegetation includes live oak, longleaf pine, ferns, huckleberry, and saw palmetto.

4.2.3 Plant Communities

Habitat within the proposed alignment alternatives were identified and mapped using the FLUCFCS, third edition 1999. A combination of existing FLUCFCS data from the NWFWMD, photo interpretation of aerial photographs, and limited field verification was used to assess habitats within the proposed alternative alignments. Field reconnaissance took place at various times from April through October 2007 and April through October 2009. FLUCFCS data were modified and refined by photo interpretation and field observations. Future analysis of a preferred alignment will likely include more detailed field verified modifications of the FLUCFCS data presented in this report. For the purposes of this report, wetlands were photo interpreted using GIS software, National Wetlands Inventory (NWI), USDA soils data, and FLUCFCS data (see Section 5 for specific methodology).

Wetlands associated with the study area were largely grouped into two primary community types: hydric pine plantation (FLUCFCS Code 441W) and mixed forested wetland (630). As previously noted, silviculture lands are the dominant land use in the study area and comprise approximately 62% of the total land across all alternative alignments. Accordingly, the most abundant wetland community type encountered was hydric pine plantations comprising approximately 60% of the wetlands encountered, which were characterized by slash pine overstories and midstories of myrtle-leaved holly (*Ilex myrtifolia*), wax myrtle, swamp titi, black titi and gallberry. The mixed forested wetland community comprised approximately 23% of the wetlands encountered and had a mixed overstory comprised of varying amounts of red maple, cypress, sweetgum, slash pine, sweetbay, and blackgum, and midstories typically consisted of sweet gallberry, titi, gallberry, and wax myrtle. During the desktop analysis, many of the smaller streams were included within the mixed forested wetland (630) community type due to their size and riparian area composition and structure. FLUCFCS type 510 (Streams and Waterways) was generally used for named stream crossings or where open water was visible on the 2007 high resolution aerials. Hydric pine plantation (FLUCFCS 441W) and mixed forest wetland (FLUCFCS 630) were the dominant wetland ecosystems found across the study area landscape. Wetland types that differ from these two community types are the only ones specifically labeled in Appendix A - Figures 14 through 25.

Titi swamp (614) and cypress (621) wetlands were also encountered, comprising 0.45% and 1.5% of wetlands respectively. Titi swamps were nearly completely dominated by swamp and black titi with sweet gallberry common in the midstory. Very few of the wetlands encountered were exclusively comprised of titi but generally had a mixture of titi, pine and various hardwoods associated with the system. Certain wetland systems may have had titi as a dominant understory species but were classified as mixed forested wetland (630) since there was generally an associated canopy comprised of mixed hardwood species. Cypress wetlands were characterized by pond cypress (*Taxodium ascendens*), myrtle-leaved holly and St. Johns Wort.

Emergent tidal marsh is primarily associated with tidal streams and certain areas of East Bay and the connecting estuarine systems within the project area. Upland ecotones leading to these tidal systems are also affected by fire suppression and the overgrowth of shrub/scrub species. Depending on the specific waterbody and location, the emergent marsh systems are

of relatively higher quality. More details in relation to potential emergent marsh impacts and observed quality are described in the EFH Assessment associated with this report.

The study area also contained areas of scrubby flatwoods and sandhill communities interspersed with wet flatwoods, titi drains, basin swamps, and cypress wetlands among other habitat types. Fire suppression in these areas is also common. These upland areas are often utilized by hunting clubs that plant and maintain small (typically < 1 acre) and widely distributed wildlife food plots.

Descriptions of FLUCFCS associated with the project are presented in the following sections. The information is from the FLUCFCS, FDOT Surveying and Mapping Office Geographic Mapping Section Handbook January 1999 Third Edition.

4.2.4 Upland Communities

A brief description of upland communities by FLUCFCS type is presented below (more detailed descriptions can be found in the Endangered Species Biological Assessment Report {ESBAR}). There are nine (9) upland communities found within the alignment alternatives: swimming beach (181), cropland and pastureland (210), herbaceous/dry prairie (310), shrub and brushland (320), coastal scrub (322), upland coniferous forest (410), hardwood – conifer mixed (434), coniferous plantation (441) and forest regeneration areas (443) (Appendix A – Figures 14-25). FLUCFCS types that are typically highly disturbed due to land-use development such as residential, commercial and industrial uses are not included in this discussion of natural communities. A description of upland plant communities associated with Alternative Alignments is presented in (Table 4.5). Estimated upland involvement (acres) per FLUCFCS type within each Alternative Alignment and 300-foot buffer area presented in Tables 4.6 and 4.7, respectively. Coniferous plantations (FLUCFCS 441) comprise the vast majority of upland habitat types within all the proposed alternative alignments, ranging from approximately 86% of the upland acreage contained in Alternative Alignment 17 to approximately 97% of the upland acreage contained in Alternative Alignment 15. The FLUCFCS 441 upland community has been extensively affected by silvicultural practices and fire suppression as previously described.

Table 4.5
Upland FLUCFCS types within the Alternative Alignments and 300-Foot Buffer

FLUCFCS Designation	Upland Type	Community Description
181	Swimming Beach	Recreational areas used for swimming and active user-oriented recreation.
210	Cropland and Pastureland	Includes agricultural land which is managed for the production of row or field crops and improved, unimproved and woodland pasture.
310	Herbaceous (Dry Prairie)	Includes treeless upland pasture grasslands, which are sometimes inundated.
320	Shrub and Brushland	This category includes saw palmetto, gallberry, wax myrtle, coastal scrub and other shrubs and brush. Generally, saw palmetto is the most prevalent plant cover intermixed with a wide variety of other woody scrub plant species as well as various types of short herbs and grasses.
322	Coastal Scrub	This scrub category represents a wide variety of species found in the coastal zone. Common species are saw palmetto, sand live oak, myrtle oak, yaupon holly, railroad vine (*Ipomoea* spp.), sea oats (*Uniola paniculata*), sea purslane (*Sesuvium portulacastrum*), Spanish bayonet (*Yucca aloifolia*), and prickly pear (*Opuntia* spp.). This cover type is generally found in dune and white sand areas.
410	Upland Coniferous Forest	Xeric habitat comprised of slash pine. Wiregrass and other non-woody groundcover species are more prevalent than in the coastal scrub. Slash pine is the dominant canopy species. Understory species include saw palmetto, wax myrtle, gallberry and other woody and herbaceous species.
434	Hardwood-Conifer Mixed	This community includes those upland forested areas in which neither conifers nor hardwoods achieve a 66 percent crown canopy dominance.
441	Coniferous Plantation	Pine forests exclusively generated by planting seedling stock or seeds characterized by high numbers of trees per acre and their uniform appearance.
443	Forest Regeneration Areas	Areas where harvested stands will be reforested through one of the various silvicultural practices prescribed in Florida's forests rather than being allocated for another land use or for abandonment.

Table 4.6
Upland Habitat (FLUCFCS) Estimated
Direct Involvement per Alternative Alignment

	Alignment				
FLUCFCS Type	**8 (Acres)**	**14 (Acres)**	**15 (Acres)**	**17 (Acres)**	**19 (Acres)**
210	3.8	3.8	11.4	25.3	25.3
310				1.0	1.0
320	1.4			4.2	2.9
410	5.8	3.0	3.0	2.8	2.3
434	3.1	15.6	3.1	2.2	14.7
441	378.4	452.5	551	252.2	318.2
443	2.4	3.4	3.1	1.1	2.2
Upland Acres Total	394.9	478.3	571.6	288.8	366.6

Table 4.7
Upland Habitat (FLUCFCS) Estimated Indirect Involvement
Within 300-Foot Buffers per Alternative Alignment

	Alignment				
FLUCFCS Type	**8 (Acres)**	**14 (Acres)**	**15 (Acres)**	**17 (Acres)**	**19 (Acres)**
181	2.5	2.5	2.5	2.5	2.5
210	27.2	27.2	42.0	77.1	77.1
310				4.3	4.3
320	4.5	4.1		6.7	6.3
322	0.9	0.9	0.9	0.9	0.9
410	17.3	19.4	19.4	21.1	12.6
434	10.2	29.0	9.2	7.8	26.6
441	1,170.3	1,286.9	1,450.2	723.2	789.0
443	5.0	10.1	10.8	1.9	7.0
Upland Acres Total	1,237.9	1,380.1	1,535.0	845.5	926.3

4.2.5 Wetland and Surface Water Communities

Twenty (20) types of wetlands (FLUCFCS) are associated with the five alternative alignments (Table 4.8, Figures 14 through 25 in Appendix A). FLUCFCS types include: hydric cropland and pastureland (210W), hydric pine plantations (441W), forest regeneration areas (443W), streams and waterways (510), roadside ditches (510D), Lakes (524), reservoirs (530), embayments (541), wetland hardwood forest (610), titi swamps (614), wetland coniferous forest (620), cypress (621), hydric pine savannah (626), wetland forested mix (630), vegetated non-forested wetlands (640), freshwater marshes (641), saltwater marshes (642), hydric roads (814W), hydric natural gas transmission lines (817W) and hydric

powerlines 832W). Many of the natural wetland systems have been significantly altered by activities associated with land uses such as hydric pine plantations, hydric forest regeneration areas, ditches, existing roadways and hydric transmission lines among others. Exotic species such as Chinese tallow (*Sapium sebiferum*) are also present throughout the study area, particularly in proximity to development and roads, and have the potential to occur in wetlands within the proposed alternative alignments. Wetland quality (low or high) was also assessed (Figures 26-37 in Appendix A) and is described in greater detail within Section 6. Since the majority of the project is proposed as new alignment for all five alternatives, wetland impacts are unavoidable. Detailed information regarding wetland community types and involvement identified within alternative alignments are discussed in Section 6.

Table 4.8
Wetland (FLUCFCS) within the Alternative Alignments

FLUCFCS Designation	NWI Designation	Wetland Type	Community Description
210W	PEM2	Hydric Cropland and Pastureland	Cropland and Pastureland that may have been drained or converted wetlands.
441W	PFO	Hydric Pine Plantation	Planted pine plantation in wetlands.
443W	PFO	Forest Regeneration Areas	Areas in which it is clearly evident the harvested stands will be reforested through various silvicultural practices that do not involve direct planting of trees. The "w" designation denotes these forest regeneration areas are wetlands.
510	R2UB	Streams and Waterways	This category includes rivers, creeks, canals and other linear water bodies. The boundary between streams and lakes, reservoirs or the ocean is the straight line across the mouth of the stream unless the mouth is more than 1 mile wide.
510D	N/A or same as class it occurs within with "d" modifier	Ditch	Man-made ditches primarily for drainage purposes associated with roads.
524	POWH	Lakes	Lakes less than 10 acres which are dominant features
530	L1UB or L2UB	Reservoirs	Man-made water impoundment areas, excluding stormwater ponds.
541	E1/2	Embayments	Embayments are bays or estuaries that open directly to the Gulf of Mexico or the Atlantic Ocean.
614	PFO6	Titi Swamps	This community is almost exclusively made up of black titi, or swamp titi. Other species found include sweetbay, cypress, tupelos and a variety of wetland hardwoods.
620	PFO	Wetland Coniferous Forests	Wetland Coniferous Forests are wetlands which meet the crown closure requirements for coniferous forests and are the result of natural generation. These communities are commonly found in the interior wetlands in such as places as river flood plains, bogs, bayheads and sloughs.

FLUCFCS Designation	NWI Designation	Wetland Type	Community Description
621	PFO2	Cypress	This community is composed of pond cypress or bald cypress which is either pure or dominant. In the case of pond cypress, common associates are swamp tupelo, slash pine and black titi. In the case of bald cypress, common associates are water tupelo, red maple, American elm (*Ulmus americana*), overcup oak (*Quercus lyrata*) and water hickory (*Carya aquatica*). Bald cypress may be associated with laurel oak, sweetgum and sweetbay on less moist sites.
626	PFO4/PEM1	Hydric Pine Savannah	This community is an open forest with a sparse canopy of longleaf and/or slash pines with a ground cover of grasses, forbs, and wetland shrubs.
630	PFO	Wetland Forested Mixed	This category includes mixed wetlands forest communities in which neither hardwoods nor conifers achieve a 66 percent dominance of the crown canopy composition.
640	PEM1	Vegetated Non-forested Wetland	Include marshes and seasonably flooded basins and meadows. These communities are usually confined to relatively level, low-lying areas. This category does not include areas which have a tree cover which meets the crown closure threshold for the forested categories. Sawgrass and cattail (*Typha* spp.) are the predominant species in freshwater marshes while cordgrass and needlerush are the predominant species in the saltwater marsh communities.
641	PEM1	Freshwater Marsh	The communities included in this category are characterized by having one or more of the following species predominate: sawgrass, cattail, arrowhead (*Sagittaria* sp), maidencane, buttonbush, cordgrass, giant cutgrass (*Zizaniopsis miliacea*), switchgrass, bulrush (*Scirpus americanus*, *Scirpus validus*, *Scirpus robustus*), needlerush, common reed (*Phragmites communnis*, *Phragmites australis*), and arrowroot (*Thalia dealbata*, *Thalia geniuclata*).
642	EEM	Saltwater Marsh	This community is a coastal saltwater marsh that is characterized by having one or more of the following species predominate: saltwort (*Batis maritima*), glasswort (*Salicornia* spp.), fringe rush (*Fimbristylis spp.*), salt dropseed (*Sporobolus virginicus*), seaside daisy (*Borrichia frutescens*), black needle rush, and salt jointgrass (*Paspalum vaginatum*).
814W	PEM1	Hydric Road	Roadway/unimproved trail that is not paved and traversed through wetlands. Certain lengths of the roadway are considered jurisdictional wetlands.
817W	PEM1	Oil, Water, or Gas Long Distance Transmission Lines	Utility long distance transmission facilities through wetland systems that are typically maintained and commonly support heighten diversity of plant species due to overstory competition reduction.

FLUCFCS Designation	NWI Designation	Wetland Type	Community Description
832W	PEM1	Hydric Powerlines	Powerline facilities through wetland systems that are typically maintained and commonly support height diversity of plant species due to overstory competition reduction.

4.2.6 Listed Species

Threatened and Endangered Species

As previously discussed, silvicultural land is the most prevalent community type as it comprises approximately 60% of the alternative alignment acreage. This land-use, which followed a largely agricultural land-use approximately 50-60 years ago, has seen limited frequencies of prescribed burning over the past 15-20 years. As a result of its land-use history, much of the study area is characterized by an abundance of shrubs that contribute to low species richness in the understory layer and limited habitat suitability for many listed plant species. Silvicultural activities typically utilized in these types of landscapes also tend to degrade and reduce ecotones between wetlands and uplands, which also benefit by periodic fires. Because of fire suppression and habitat modifications, much of this area serves as medium to low quality habitat for listed species.

Alternative alignments were evaluated for the potential occurrence of federal and state listed species. Literature reviews were conducted and data collected from the FDOT, United States Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), the Florida Fish and Wildlife Conservation Commission (FFWCC), the Florida Marine Research Institute (FMRI), and the Florida Natural Areas Inventory (FNAI).

The USFWS documents 122 listed species (57 animals and 65 plants) potentially occurring in Bay, Gulf, and Calhoun Counties (Table 4.9). This species list represented a "first approximation" of species that could be potentially involved with alternative alignments. Of the 57 wildlife species, 21 are federally-listed (endangered or threatened), one (1) is a federal candidate species, one (1) is protected by other federal acts, 23 are state listed (endangered, threatened, or species of special concern), and 11 have a "consideration encouraged" designation. Of the 65 plant species included in Table 4.9, eight (8) are federally-listed, 52 are state listed, and five (5) are identified as "consideration encouraged".

An initial desktop habitat evaluation of the study area was conducted based on photo interpretation of both historical and recent aerial photographs. Proposed project corridors and alternative alignments were overlaid on aerial photos with data from sources mentioned above to identify potential involvement with listed species identified in Table 4.9. This general desktop analysis in combination with staff knowledge of the area and results of preliminary field reconnaissance formed the rationale and basis for subsequent field surveys conducted within and in the vicinity of alternative alignments.

Reconnaissance field surveys took place at various times (spring, early summer, late summer) between April through October 2007 and April through October 2009. Throughout

the timeframe of the seasonal surveys, design changes were made to the proposed corridors and eventually the alternative alignments presented for this project were established. Some of these changes were accomplished in part to avoid areas that were determined to have higher observed occurrences of listed species and/or suitable habitat.

Field surveys were limited to those species that could be reasonably expected to occur within or in the vicinity of alternative alignments. Gopher tortoise survey areas were distributed on 15 percent of each suitable and optimal gopher tortoise habitat types resulting in 37 survey areas. Listed plant surveys were conducted across all alternative alignments and various areas across the study area between alignments. Specific desktop habitat evaluations were conducted to identify potentially suitable flatwoods salamander breeding pond habitat and Panama City crayfish (PCC) habitat. While the focus of desktop and field surveys was on federally-listed wildlife and plants and state-listed wildlife, project biologists were instructed to be cognizant of all 122 species identified in Table 4.9. Detailed information on each species can be found in the GCP ESBAR.

Table 4.9
Protected Species Potentially Occurring in Counties Associated with the Gulf Coast Parkway Study Area

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	COUNTY OCCURRENCE
FISH				
Acipenser oxyrinchus desotoi	Gulf sturgeon	T CH	SSC	Bay, Gulf, Calhoun
Cyprinella callitaenia	Bluestripe shiner		CE	Bay, Gulf
Micropterus sp.	Shoal bass		SSC	Bay
Pteronotropis welaka	Bluenose shiner		SSC	Bay, Gulf
AMPHIBIANS and REPTILES				
Alligator mississippiensis	American alligator	T SA	SSC	Bay, Gulf, Calhoun
Ambystoma bishopi	Reticulated flatwoods salamander (RFS)	T	SSC	Bay, Gulf, Calhoun
Caretta caretta	Loggerhead	T	T	Bay, Gulf
Chelonia mydas	Green sea turtle	E	E	Bay, Gulf
Dermochelys coriacea	Leatherback sea turtle	E	E	Bay, Gulf
Drymarchon corais couperi	Eastern indigo snake	T	T	Bay, Gulf, Calhoun
Eretmochelys imbricata imbricata	Hawksbill sea turtle	E	E	Bay, Gulf
Eumeces anthracinus	Coal skink		CE	Gulf, Calhoun
Gopherus polyphemus	Gopher tortoise	CE	T	Bay, Gulf, Calhoun
Graptemys barbouri	Barbour's map turtle	CE	SSC	Gulf, Calhoun
Lepidochelys kempii	Kemp's ridley sea turtle	E	E	Bay, Gulf
Macroclemys temminckii	Alligator snapping turtle	CE	SSC	Bay, Gulf, Calhoun
Nerodia clarkii clarkii	Gulf saltmarsh snake		CE	Bay, Gulf
Pituophis melanoleucus mugitus	Florida pine snake	CE	SSC	Bay, Gulf, Calhoun
Pseudemys concinna suwanniensis	Suwannee cooter		SSC	Gulf, Calhoun
Rana capito	Gopher frog	CE	SSC	Bay, Gulf, Calhoun

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	COUNTY OCCURRENCE
BIRDS				
Aimophila aestivalis	Bachman's sparrow		CE	Bay, Gulf
Aramus guarana	Limpkin		SSC	Gulf, Calhoun
Calidris canutus	Red knot	C		Bay, Gulf
Charadrius alexandrinus tenuirostris	Southeastern snowy plover	CE	T	Bay, Gulf
Charadrius melodus	Piping plover	T, CH	T	Bay, Gulf
Cistothorus palustris marianae	Marian's marsh wren		SSC	Bay
Dendroica dominica stoddardi	Stoddard's yellow-throated warbler	CE		Bay
Egretta caerulea	Little blue heron		SSC	Bay, Gulf, Calhoun
Egretta thula	Snowy egret		SSC	Gulf
Egretta tricolor	Tricolored heron		SSC	Bay, Gulf, Calhoun
Falco peregrinus tundrus	Artic peregrine falcon	CE	E	Bay, Gulf, Calhoun
Falco sparverius paulus	Southeastern American kestrel	CE	T	Bay, Gulf, Calhoun
Grus canadensis pratensis	Florida sandhill crane		T	Gulf
Haematopus palliatus	American oystercatcher		SSC	Gulf
Haliaeetus leucocephalus	Bald eagle	BGEPA, MBTA		Bay, Gulf, Calhoun
Mycteria americana	Wood stork	E	E	Bay, Gulf, Calhoun
Pelecanus occidentalis	Brown pelican		SSC	Bay, Gulf
Picoides borealis	Red-cockaded woodpecker (RCW)	E	SSC	Bay, Gulf, Calhoun
Rynchops niger	Black skimmer		SSC	Bay, Gulf, Calhoun
Sterna antillarum	Least tern		T	Bay, Gulf

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	COUNTY OCCURRENCE
MAMMALS				
Peromyscus polionotus allophrys	**Choctawhatchee beach mouse**	**E, CH**	**E**	**Bay**
Peromyscus polionotus peninsularis	**St. Andrew beach mouse**	**E, CH**	**E**	**Bay, Gulf**
Plecotus rafinesquii	**Southeastern big-eared bat**		**CE**	**Gulf, Calhoun**
Trichechus manatus latirostris	**West Indian manatee**	**E**	**E**	**Bay, Gulf**
Ursus americanus floridanus	**Florida black bear**	**CE**	**T**	**Bay, Gulf, Calhoun**
INVERTEBRATES				
Alasmidonta triangulata	**Southern elktoe (mussel)**	**CE**		**Calhoun**
Amblema neislerii	**Fat threeridge**	**E, CE**		**Bay, Calhoun**
Anodonta heardi	**Apalachicola floater**	**CE**		**Calhoun**
Anodontoides radiates	**Rayed creekshell**	**CE**		**Gulf, Calhoun**
Elliptio chipolaensis	**Chipola slabshell**	**T, CH**		**Gulf, Calhoun**
Elliptiodeus sloatianus	**Purple bankclimber**	**T, CH**		**Gulf, Calhoun**
Hamiota subangulata	**Shinyrayed pocketbook**	**E, CH**		**Gulf, Calhoun**
Medionidus penicillatus	**Gulf moccasinshell**	**E, CH**		**Bay, Gulf, Calhoun**
Pleurobema pyriforme	**Oval pigtoe**	**E, CH**		**Bay, Gulf, Calhoun**
Procambarus econfinae	**Panama City crayfish**	**CE**	**SSC**	**Bay**
Quadrula infucata	**Scupltured pigtoe**	**CE**		**Gulf, Calhoun**
Villosa villosa	**Downy rainbow**	**CE**		**Bay, Gulf, Calhoun**
PLANTS				
Arnoglossum album	**White Indian plantain**	**CE**	**E**	**Bay, Gulf**
Asclepias viridula	**Southern milkweed**	**CE**	**T**	**Bay, Gulf**
Baptisia megacarpa	**Apalachicola wild indigo**		**E**	**Bay, Calhoun**
Boltonia apalachicolensis	**Apalachicola dolls daisy**	**CE**		**Gulf**
Bumelia thornei	**Buckthorn**	**CE**	**E**	**Gulf**
Bumelia lycioides	**Buckthorn**	**CE**	**E**	**Calhoun**

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	COUNTY OCCURRENCE
Calamovilfa curtissii	Curtiss' sandgrass	CE	T	Bay
Calycanthus floridus	Sweet-shrub		E	Bay
Carex baltzellii	Baltzell's sedge	CE	T	Bay, Calhoun
Chrysopsis gossypina ssp. Cruiseana	Cruise's goldenaster	CE	E	Bay
Cleistes divaricata	Rosebud orchid or spreading pagonia		T	Bay
Cornus alterniflora	Alternate-leaf or pagoda dogwood		E	Bay, Calhoun
Cuphea aspera	Tropical waxweed	CE		Gulf, Calhoun
Drosera filiformis	Dew-thread		E	Bay
Drosera intermedia	Spoon-leaved sundew		T	Bay, Gulf, Calhoun
Eriocaulon nigrobracteatum	Dark-headed hatpin	CE		Bay, Gulf, Calhoun
Euphorbia telephioides	Telephus spurge	T	E	Bay, Gulf
Eurybia spinulosus	Pine-woods aster	CE	E	Bay, Gulf, Calhoun
Gentiana pennelliana	Wiregrass gentian	CE	E	Bay, Gulf, Calhoun
Harperocallis flava	Harper's beauty	E	E	Bay, Gulf, Calhoun
Hymenocallis henryae	Henry's spiderlily	CE	E	Bay, Gulf
Hypericum lissophloeus	Smooth-barked St. John's Wort	CE	E	Bay
Justicia crassifolia	Thick-leaved water willow	CE	E	Bay, Gulf
Kalmia latifolia	Mountain laurel		T	Bay, Calhoun
Lilium catesbaei	Southern red lily		T	Bay, Gulf, Calhoun
Linum sulcatum var harperi	Harper's grooved yellow flax	CE	E	Gulf
Linum westii	West's flax	CE	E	Gulf, Calhoun
Lupinus westianus	Gulf coast lupine	CE	T	Bay, Gulf
Lythrum curtissii	Curtiss' loosestrife	CE	E	Bay, Calhoun
Macbridea alba	White birds-in-a-nest	T	E	Bay, Gulf
Macranthera flammea	Hummingbird flower		E	Bay, Calhoun
Magnolia ashei	Ashe's magnolia		E	Bay

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	COUNTY OCCURRENCE
Magnolia pyramidata	Pyramid magnolia		E	Bay, Calhoun
Oxypolis filiformis greenmanii	Giant water-dropwort		E	Bay, Gulf, Calhoun
Paronychia chartacea ssp. minima	Crystal lake nailwort	T	E	Bay
Physocarpus opulifolius	Eastern ninebark		E	Calhoun
Pinckneya bracteata	Hairy fever tree		T	Bay
Pinguicula ionantha	Godfrey's butterwort	T	E	Bay, Gulf, Calhoun
Pinguicula lutea	Yellow butterwort		T	Bay, Gulf
Pinguicula planifolia	Chapman's butterwort	CE	T	Bay, Gulf, Calhoun
Pinguicula primulifolia	Primrose-flower butterwort		E	Bay
Pityopsis flexuosa	Bent golden aster	CE	E	Bay, Gulf
Platanthera ciliaris	Yellow fringed orchid		T	Bay, Gulf, Calhoun
Platanthera integra	Yellow fringeless orchid	CE	E	Bay, Gulf, Calhoun
Platanthera nivea	Snowy orchid		T	Bay, Gulf, Calhoun
Polygonella macrophylla	Large-leaved jointweed	CE	T	Bay
Rhexia parviflora	Small-flowered meadowbeauty	CE	E	Bay, Gulf, Calhoun
Rhododendron austrinum	Orange azalea		E	Calhoun
Rhododendron chapmanii	Chapman's rhododendron	E	E	Gulf
Rudbeckia nitida	St. John's black-eyed susan	CE	E	Bay
Sarracenia leucophylla	White-top pitcher plant	CE	E	Bay, Gulf, Calhoun
Sarracenia minor	Hooded pitcher plant		T	Gulf
Sarracenia psittacina	Parrot pitcher plant		T	Bay, Gulf, Calhoun
Sarracenia purpurea	Decumbant pitcher plant		T	Bay, Gulf, Calhoun
Scutellaria floridana	Florida skullcap	T	E	Bay, Gulf
Sideroxylon thornei	Thorne's buckthorn		E	Gulf, Calhoun
Spigelia gentianoides	Gentian pinkroot	E	E	Calhoun
Spiranthes laciniata	Lace-lip		T	Bay
Stachydeoma graveolens	Mock pennyroyal		E	Bay

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	COUNTY OCCURRENCE
Stewartia malacodendron	**Silky camellia**		**E**	**Bay, Calhoun**
Verbesina chapmanii	**Chapman's crownbeard**	**CE**	**T**	**Bay, Gulf, Calhoun**
Xyris drummondii	**Drummond's yellow-eyed grass**	**CE**		**Bay, Gulf**
Xyris isoetifolia	**Quillwort yellow-eyed grass**	**CE**		**Bay, Gulf**
Xyris longisepala	**Karst (Kral's) pond xyris**		**E**	**Bay**
Xyris scabrifolia	**Harper's yellow-eyed grass**	**CE**	**T**	**Bay, Gulf, Calhoun**

Abbreviations used in the table: E=endangered, T=threatened, P=proposed, C=candidate, SA=similar appearance, SSC=species of special concern, CE=consideration encouraged, CH=Critical Habitat, BGEPA=Bald and Golden eagle protection Act, MBTA = Migratory Bird Treaty Act

4.2.7 Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (16 United States Code {USC} 1801 et seq. Public Law 104-208) reflects the Secretary of Commerce and Fishery Management Council's authority and responsibilities for the protection of essential fishery habitat. The Act specifies that each federal agency shall consult with the Secretary with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency that may adversely affect any EFH identified under this Act. EFH is defined by the Act as "…those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The NMFS reviews potential impacts to EFH.

The GCP project is located within the Gulf of Mexico Fishery Management Council's (GMFMC) area of jurisdiction, which extends from the Texas/Mexico border to the Florida Keys and seaward to the limit of the Exclusive Economic Zone (200 nautical miles from the baseline of the territorial sea). The GMFMC separates EFH into estuarine and marine components. For the estuarine component, EFH is defined as all estuarine waters and substrates (mud, sand, shell, rock and associated biological communities), including sub-tidal vegetation (seagrasses and algae), and adjacent inter-tidal vegetation (marshes and mangroves). In marine waters of the Gulf of Mexico, EFH is defined as all marine waters and substrates (mud, sand, shell, rock, hardbottom, and associated biological communities) from the shoreline to the seaward limit of the Exclusive Economic Zone, which extends from the Virginia/North Carolina border to the east coast of Florida including the Florida Keys.

The alignments originally proposed within the GCP study area have changed over time in an effort to reduce impacts. Significant waterbodies within the project study area include East Bay, Sandy Creek, Horseshoe Bayou, the ICWW, and Wetappo Creek. There are various intertidal streams and emergent marsh ecosystems within proximity to the project area and Alternative Alignments, but only those potential EFH areas where direct impacts could occur were field surveyed and assessed. Previously proposed project alignments were surveyed for potential EFH occurrence. Alternative alignments 8, 14, 15, 17, and 19 (subject of the EFH

assessment, this Wetland Evaluation Report (WER), and associated studies) were essentially covered during the original EFH field surveys conducted on September 5, 7, and 12, 2007. Data and information considered in this EFH assessment are of sufficient detail and specificity to estimate potential impacts to existing marine resources identified at the time field surveys were conducted.

Portions of East Bay and Wetappo Creek contain EFH and therefore represent the potential for direct involvement. Alternative Alignments 17/19 are proposed to cross East Bay near Allanton Point and Alternative Alignments 8/14/15 are proposed to cross Wetappo Creek (east of Alternative Alignments 17/19). Both crossings would require new bridges. The majority of potential impacts to EFH will likely involve emergent marsh and open water/unconsolidated marine sediment habitats. Most emergent marsh habitat (especially large expanses) observed was of relatively high quality. A limited amount of shoreline habitat exhibited varying degrees of erosion. Based on aerial photo interpretation and field survey data, the following potential direct impacts to emergent marsh and open water/unconsolidated marine sediment habitats were estimated (Table 4.10).

Alternative Alignments 17 and 19 are proposed to cross East Bay in one location and Alternative Alignments 8, 14 and 15 are proposed to cross Wetappo Creek in one location. Both crossings would require new bridges. The majority of potential impacts to EFH will likely occur to emergent marsh and open water/unconsolidated marine sediment habitats. Most emergent marsh habitat (especially large expanses) observed was of relatively high quality. A limited amount of shoreline habitat exhibited varying degrees of erosion. Based on aerial photo interpretation and field survey data, the following potential impacts to emergent marsh and open water/unconsolidated marine sediment habitats were estimated (Table 4.10). However, this general assessment assumes that all EFH involvement will result in direct impacts where in the case of a potential bridge crossing, impacts may only be temporary, partial, or not result in direct or complete loss of the resource.

Table 4.10
Potential Direct Impacts to Emergent Marsh and Open Water Habitats

Alternative Alignment	Potential Emergent Marsh Impacts (acres)	Potential Open Water/ Unconsolidated Marine Sediment Impacts (acres)	Total EFH (acres)
Alignments 17/19 (East Bay)	**0**	**50.8**	**50.8**
Alignments 8/14/15 (ICWW/Wetappo Creek)	**6.2**	**3.4**	**9.6**
Total Acres	**6.2**	**54.2**	**60.4**

Submerged aquatic vegetation (SAV) survey data represents an important metric for assessing potential impacts to EFH. Based on the SAV surveys conducted in 2007, there appears to be no direct impact to SAV within the Alternative Alignments. A small patch

(approximately 0.06 acres; indirect impacts) of shoal grass *(Halodule wrightii)* was found southwest of Alignments 17/19.

Based on field observations, data collected during field surveys, and data obtained from FFWCC, oyster occurrence appears to be limited by the availability of hard submerged substrate, intertidal depths, salinity, associated emergent marsh species, and benthic sediment type. The overall assessment of potential impacts to oysters for all the Alternative Alignments appears to be minimal.

Impacts to bivalves (mussels) and other benthic resources (tube worms) are likely to occur within the Alternative Alignments.

The Magnuson-Stevens Act required that each Fishery Management Council amend their existing Fishery Management Plans (FMP) to identify and describe EFH for each species under management. The GMFMC has identified and described EFH for 55 representative managed species and the coral complex. The study area has been reviewed to determine if EFH for the managed species are present. Although not managed by the GMFMC, certain highly migratory species have NMFS-designated EFH requirements and occur within the Gulf of Mexico. The study area has also been reviewed to determine if EFH for these managed species are present. EFH and the 49 highly migratory species that have the potential for occurrence within the project area are summarized in the EFH Report (Appendix C). The EFH review indicates that eighteen (18) of the representative managed species and two (2) highly migratory species have a potential for occurrence in the project area. The potential occurrence determination has been made because: 1) these species utilize the EFH found within the study area, i.e., estuarine waters, at some stage in their life cycles, and 2) corresponding EFH identified and described in species management plans is found within the study area. Species were not included in the analyses if required habitat conditions were absent within the study area.

Most of the managed species determined to have potential involvement with the Alternative Alignments only utilize the associated EFH for a portion of their lifecycle. Juvenile and adult fish species which might visit the area are mobile and would not be affected by the project. Slower moving species, such as shrimp and crab, would not be affected due to the relatively small amount of habitat impact compared to the available habitat present within the immediate surrounding area. The proposed project is not anticipated to have a significant effect on the lifecycle of any potentially involved, managed species.

In addition, there may be temporary impacts to EFH during construction. These temporary impacts can vary depending on the type of construction equipment used. Examples of temporary construction impacts to EFH include: such as increased sediment loads in stormwater runoff from the construction site and increased turbidity during in-water work. Both of these contribute to impacts on benthic aquatic habitats. Specific construction impacts will not be known until the construction methodology has been coordinated. However, these impacts are temporary and with the utilization of construction controls and best management practices during construction these impacts should be minimized. In addition, any EFH impacts will be mitigated.

While the EFH assessment indicates that nineteen (19) of the representative managed species and thirteen (13) highly migratory species have a potential (low or medium) for occurrence in waters associated with Alternative Alignments, the anticipated impact to these species and EFH are not significant as it involves a small percentage of the total amount of EFH present within the regional landscape. Due to the close proximity of the alternative alignments, it can be assumed that the impacts would be the same for all the species. It is anticipated that the potential impact to EFH will be greatly minimized and in some cases eliminated as a result of the proposed design. Alternative Alignments will call for bridge crossings of the entire EFH associated with East Bay and Wetappo Creek, eliminating significant potential fill areas. It is further anticipated that only bridge pilings will be located within the estuarine emergent and open water/unconsolidated marine sediment habitats. While there may be relatively minor impacts associated with construction of the bridges, these impacts would be short term and temporary. In addition, any EFH impacts will be mitigated.

Potential indirect effects associated with this project could include water quality degradation from stormwater runoff or roadway spills, changes in hydrology, edge effect impacts from filling wetlands, habitat fragmentation and potential changes in wildlife utilization, increased constraints on implementing prescribed burning management plans, and creation of a conduit/corridor (roadway) for exotic/invasive species range expansion. Potential wetland involvement within the 300-foot buffer area (indirect impacts) associated with Alternative Alignments is shown in Table 4.11.

A separate EFH report has been prepared for this project and includes details on survey methods, analysis, conservation efforts and mitigation strategies (Appendix C).

Table 4.11
Potential Indirect Impacts to Emergent Marsh, Open Water, and Submerged Aquatic Vegetation Habitats

Alternative Alignment	Potential Emergent Marsh Impacts (acres)	Potential Open Water/ Unconsolidated Marine Sediment Impacts (acres)	Potential SAV Impacts (acres)	Total EFH (acres)
Alignments 17/19 (East Bay)	0.10	120.90	0.06	121.06
Alignments 8/14/15 (ICWW/Wetappo Creek)	8.10	16.90	0.00	25.00

SECTION 5 WETLAND EVALUATION

5.1 WETLAND IDENTIFICATION METHODS AND CLASSIFICATION

In order to determine the approximate locations and boundaries of existing wetland communities within the project area, the following site-specific data were obtained and reviewed:

- U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), Soil Survey Geographic (SSURGO) database for Bay County, Florida, 2006 http://SoilDataMart.nrcs.usda.gov/
- U.S. Department of Agriculture, NRCS, SSURGO database for Gulf County, Florida, 2006 http://SoilDataMart.nrcs.usda.gov/
- U.S. Department of Agriculture, NRCS, SSURGO database for Calhoun County, Florida, 2006 http://SoilDataMart.nrcs.usda.gov/
- USFWS NWI Database
- USFWS Classification of Wetlands and Deepwater Habitats of the United States (1979)
- NWFWMD, FLUCFCS data (1995)
- Aerial photographs of the project area from 1953, 2004 and 2007
- United States Geological Survey (USGS) Topographic Quadrangle maps, 7.5 minute series
- Habitat and species-specific information obtained from the USFWS, the FFWCC, and FNAI
- FDOT, FLUCFCS, Level III, third ed., 1999.

The FDOT, FLUCFCS, Level III, third ed., 1999 system was used rather than the FNAI *Guide to the Natural Communities of Florida* (1990) classification system because it has the advantage of combining natural plant communities with manmade features.

5.2 ALIGNMENT LEVEL DATA ANALYSES AND FIELD TRUTHING

An initial desktop habitat evaluation was conducted based on photo interpretation of both historical (1953) and FDEP Land Boundary Information System (Labins) 2004 Digital Orthophoto Quarter Quads (DOQQ) Aerial Photography (2004 Red, Green and Blue {RGB} State Plane) of the study area. Proposed project corridors/alignments were overlaid on aerial photos with data from sources mentioned above. The approximate boundaries of wetland communities were mapped on true color aerial photographs.

Wetland classifications were based on both NWI and FLUCFCS classification schemes. FLUCFCS codes were determined to at least Level III. Descriptions of the FLUCFCS and NWI codes assigned to each wetland and surface water are provided in (Table 5.3).

Relatively precise and accurate estimates of wetland acres and associated quality were derived by modifying FLUCFCS codes based on interpreting recent and historic aerial photographs, and soils data. These analyses were further refined through field verifications and associated habitat maps were updated as necessary. Field verifications relative to wetland boundaries were based upon delineation methods described in the Interim Regional Supplemental to the Corps of Engineers Wetland Delineations Manual: Atlantic and Gulf Coastal Plain Region, dated October 2008, and Section 62-340, Florida Administrative Code (FAC), "Delineation of the Landward Extent of Wetlands and Surface Waters."

Field reconnaissance took place at various times from April through October 2007 and April through October 2009. Since some of the proposed alignments were located on private land, wetland reconnaissance within the proposed alignments was limited to areas of general public access including along power line easements, gas transmission line easements, existing roads, within public land, and on private land where access was granted. These field reconnaissance events were conducted concurrently with seasonal listed species surveys (see the ESBAR. Wetland quality associated with alternative alignments was also assessed using the Uniform Mitigation Assessment Method (UMAM) defined in Chapter 62-345 FAC (see Section 6 for UMAM methods and results).

Whenever wetlands observed in the field differed from boundaries depicted based on publically-available wetland data (FLUCFCS types), notes were made on field maps and Global Positioning System (GPS) points were logged as necessary. Photo-interpreted wetland lines were then revised based upon field verified data and interpreted FLUCFCS codes were modified where appropriate. All data were uploaded into ArcMap™ 9.2 GIS for processing and further analyses of potential wetlands involvement. As wetland data was received from the field, alignments were adjusted where feasible (considering other parameters) to avoid and minimize potential wetland involvement. This was an ongoing and iterative process.

Wetlands field flagging and verification by the appropriate regulatory agencies is beyond the scope of a Project Development and Environment (PD&E) study however, it is recognized that a wetland jurisdictional determination and agency verification will be required during design and permitting.

Individual Alternative Alignment footprints range between 967 and 1,320 acres (Table 5.1). When viewed as one footprint, i.e., accounting for alignment overlap, the GCP Alternative Alignments comprise approximately 3,674 acres.

Table 5.1
Total Wetland and Upland Acreage per Alternative Alignment

Alignment					
Land Type	**8 (Acres)**	**14 (Acres)**	**15 (Acres)**	**17 (Acres)**	**19 (Acres)**
Wetlands	339.3	503.6	508.2	438.7	575.1
Uplands	394.9	478.3	571.6	288.8	366.6
Total	**734.2**	**981.9**	**1079.8**	**727.5**	**941.7**

A 300-foot buffer (each side) was applied to each Alternative Alignment in order to facilitate an assessment of ICE for certain environmental elements under study. Individual Alternative Alignment footprints plus buffers range between 2,083 and 3,041 acres (Table 5.2). The total area for all the Alternative Alignments and associated buffers is approximately 9,755 acres.

Table 5.2
Total Wetland and Upland Acreage per
Alternative Alignment with 300-Foot Foot Buffer

Alignment					
Land Type	**8 (Acres)**	**14 (Acres)**	**15 (Acres)**	**17 (Acres)**	**19 (Acres)**
Wetlands	1,064.90	1,430.60	1,506.10	1,237.20	1,541.70
Uplands	1,237.90	1,380.10	1,535.00	845.50	926.30
Total	**2,302.80**	**2,810.70**	**3,041.10**	**2,082.70**	**2,468.00**

At this stage of the PD&E process, a preferred alignment has not been identified. Fieldwork conducted along with the associated reports (and desktop analyses) will help guide the identification of a preferred alignment.

5.3 WETLAND CHARACTERIZATION

Baseline information characterizing wetlands (per FLUCFCS type) involved within each alternative alignment included size, contiguity, vegetative structural diversity, edge relationships, wildlife habitat value, hydrologic functions, public use, and integrity (Table 5.3). Due to the size of the area under review, the number of alternative alignments considered, and the relative similarity regarding land-use history and resultant vegetation composition and structure, wetlands were categorized based on generalized characteristics per FLUCFCS type.

Table 5.3
Wetland Characterization Required Attributes

FLUCFCS Designation	NWI Designation	Wetland Type	Community Description	Size (composite or merged acreage for all alignments)	Contiguity	Vegetative Structural Diversity	Edge Relationships	Wildlife Habitat Value	Hydrologic Functions	Public Use	Integrity
210 W	PEM2	Hydric Cropland and Pastureland	Cropland and pastureland that may have been drained or converted wetlands. Limited to a few areas within the project area.	Only found in Alignment Buffers	Sites facilitate some corridor connectivity with undeveloped land, but are of lower quality.	Community structure does not tend to support a large amount of native plant species.	Varies, some are in undeveloped land use areas while others are adjacent to silviculture, residential development, and utility uses.	Sites facilitate some corridor connectivity with undeveloped land, but are of lower quality.	Water levels and flows through these areas are minimal due to proximity to silviculture operations and other uses such as roads.	May provide agricultural products for public use.	Community structure does not tend to support a large amount of native plant species. Observable nuisance and exotic species present.
441 W	PFO	Hydric Pine Plantation	Planted pine in wetlands. Normally high density plantings with bedrows. May or may not be thinned and may comprise different aged stands.	680.6	Tend to form large expanses located in former wet pine flatwoods. Stands facilitate some habitat connectivity with other undeveloped land. Connected to regional drainage systems by distinct natural connections or by well defined ditches or streams.	Generally low species richness due to fire suppression, shading, and often heavy accumulation of pine needle litter. May have significant shrub layer in younger stands generally consisting of gallberry, large gallberry, wax myrtle, fetterbush and sweet pepperbush. Groundcover is usually lacking. Overstory and midstory vegetation layers are typically distinct.	Bordering habitats may include titi swamps, mixed, wetland forested mixed areas and upland pine plantations. Typically dissected by forest roads and associated drainage ditches.	Generally low wildlife forage value. Provide cover for various game species such as white-tailed deer and turkey. May serve as effective corridors between habitats having higher overall wildlife value.	Water retention and groundwater recharge.	Provides recreational uses such as hunting and source of timber and timber by-products.	Alterations include ditching, fire suppression, roads, and bedrowing.
443 W	PFO	Forest Regeneration Areas	Areas where it is evident that harvested stands will be reforested through one of the various silviculture practices prescribed in Florida's forests rather than allocated for another land use or abandonment.	0.3	Stands facilitate some habitat connectivity with other undeveloped land. Connected to regional drainage systems by distinct natural connections or by well defined ditches or streams.	Generally low species richness due to fire suppression, shading, and often heavy accumulation of pine needle litter. May have significant shrub layer in younger stands generally consisting of gallberry, large gallberry, wax myrtle, fetterbush and sweet pepperbush.	Typically dissected by forest roads and associated drainage ditches. Bordering habitats may include titi swamps, mixed, wetland forested mixed areas and pine plantations.	Generally low wildlife forage value. Provide cover for various game species such as white-tailed deer and turkey. May serve as effective corridors between habitats having higher overall wildlife value.	Water retention and groundwater recharge.	Provides recreational uses such as hunting and source of timber and timber by-products.	Alterations include ditching, fire suppression, roads, and bedrowing.
510	R2UB	Streams and Waterways	This category includes rivers, creeks, canals, and other linear water bodies. The boundary between these features and lakes, reservoirs, or oceans is delimited by a straight line across the mouth of the stream that is equal to or less than 1 mile across.	14.2	Within the project area, includes streams and creeks that area contiguous with primary regional drainage ways.	Varies between the systems and location in the landscape. Various streambank species include swamp titi, black titi, swamp bay, sweetbay, slash pine, red maple, and water oak.	Surrounding land uses include silviculture, roads, and residential development.	Provides abundant wildlife opportunities for fish, small mammals, wading birds, raptors, and herptofauna.	Provides water storage, flood abatement and detrital transport to downstream locations in addition to providing food and cover for wildlife species.	Provides variety of passive recreational uses such as boating, fishing, and sightseeing.	Varies by position in the landscape although generally intact systems although may have been impacted by adjacent development, roads and various silviculture practices.
510D	R4UB	Ditch	Man-made ditches associated with pine plantations and all types of roads.	5.3	Connected to regional drainages by distinct natural connections or by other ditches.	Typically low diversity. May be periodically maintained and/or subject to erosion and sedimentation.	May be located within various habitat types but typically found within pine plantations to facilitate drainage.	May provide limited habitat opportunities for aquatic organisms.	Typically has adverse hydrologic functions by serving to drain wetland areas and decreasing hydroperiods.	Can help ameliorate impacts from flooding.	Ditching and draining typically alters hydrology of adjacent wetlands.

FLUCFCS Designation	NWI Designation	Wetland Type	Community Description	Size (composite or merged acreage for all alignments)	Contiguity	Vegetative Structural Diversity	Edge Relationships	Wildlife Habitat Value	Hydrologic Functions	Public Use	Integrity
524	POWH	Lakes	This community includes inland waterbodies that are less than 10 acres, excluding reservoirs.	Only found in Alignment Buffers	Small open water area surrounded by silviculture land.	Low diversity due to being surrounded by active silviculture lands	Ecotone generally lacking due to adjacent silvicultural land use.	May provide limited habitat opportunities for aquatic organisms.	Provide aquifer recharge areas by acting as reservoirs which release groundwater when adjacent water tables drop during drought periods.	Minimal public use except indirect benefits such as minor wildlife refuge opportunities and support for aquatic fauna.	Integrity is impacted and subject to surrounding silviculture activities.
530	L1UB or L2UB	Reservoirs	Reservoirs are artificial impoundments of water. They are used for irrigation, flood control, municipal and rural water supplies, and recreation.	0.8	Varies according to location. Some overflow to creeks or wetlands while others are isolated and located in uplands.	Typically low diversity. May be periodically maintained and/or subject to erosion and sedimentation.	Surrounding land uses include silviculture, roads, and residential development.	May provide limited habitat opportunities for aquatic organisms.	Provide aquifer recharge areas by acting as reservoirs which release groundwater when adjacent water tables drop during drought periods.	Minimal public use as these systems are generally located on private lands within the project area.	Varies with in the project area. Some systems are connected to regional drainage systems while others are hydrologically isolated and constructed in uplands.
541	E1/2	Embayments	Embayments are bays and estuaries that open directly to the Gulf of Mexico or the Atlantic ocean.	50.8	Within the project area includes East Bay and is contiguous with waters of the Gulf of Mexico and tidally driven.	Contains areas of open water in East Bay with SAV or sandy bottoms.	May have areas of emergent salt marsh vegetation along the edges and may border areas of SAV and benthic communities.	Provides abundant wildlife opportunities for fish, shellfish, wading birds, raptors, and marine invertebrates. Provides areas with high rates of primary productivity, nursery habitat for many commercially important fish and shellfish.	Provides storm buffering capacity and water storage areas.	Provides variety of recreational uses such as boating, diving, fishing, and sightseeing.	Alterations are generally limited although may be subject to water quality degradation through point and non-point pollution sources adjacent to East Bay.
614	PFO6	Titi Swamps	This community is almost exclusively made up of black titi *(Cliftonia monophylla)* and/or swamp titi *(Cyrilla racemiflora)*. Other species found include sweetbay, cypress, tupelo, and a variety of wetland hardwoods.	18.2	Generally contiguous and associated with drainage basins and/or seeps; may also contain numerous low-order stream reaches.	Overall vegetation richness and structure are generally low since relatively tall and dense (impenetrable) thickets of titi are typical; little opportunity for other shrubs and groundcover species.	Ecotone generally lacking due to adjacent silvicultural land use.	May provide escape cover for upland game birds, white-tailed deer and black bear. Additionally, provides habitat for variety of herptofauna (snakes, salamanders and frogs).	Acts as water reservoirs, providing pollution abatement, flood and erosion control and ground water recharge. Receive seepage from uphill slopes and tend to gradually release water.	Minimal public use except indirect benefits such as wildlife refuge and detrital transport when associated with drainages.	Fire suppression may result in titi systems encroaching on other native upland and wetland systems. When this occurs, can form dense understory, thus limiting groundcover growth.
620	PFO	Wetland Coniferous Forest	These areas are wetlands which meet the crown closure requirements for coniferous forests and are the result of natural regeneration. These systems may contain pine or cypress in the canopy.	26.1	Stands facilitate some habitat connectivity with other undeveloped land. May be continuous as part of a drainage system or associated with isolated topographic depressions.	May have a combination of pine or cypress in the overstory. Diversity depends on degree of fire suppression and site alteration.	Varies within the project area but generally lacks normal ecotone due to fire suppression and encroachment of titi and black titi around the margins.	May provide escape cover for upland game birds, white-tailed deer and black bear. Additionally, provides habitat for variety of herptofauna (snakes, salamanders and frogs).	Water retention and groundwater recharge.	Public uses include indirect benefits such as wildlife refuge and hunting opportunities. May provide timber and timber byproducts.	Surrounded by silviculture which may cause hydrological alterations through ditching and fire suppression resulting in alterations of community structure.

FLUCFCS Designation	NWI Designation	Wetland Type	Community Description	Size (composite or merged acreage for all alignments)	Contiguity	Vegetative Structural Diversity	Edge Relationships	Wildlife Habitat Value	Hydrologic Functions	Public Use	Integrity
621	PFO2	Cypress	This community is composed of pond cypress (*Taxodium ascendens*) or bald cypress (*Taxodium distichum*) which is either pure or predominant. In the case of pond cypress, common associates are swamp tupelo (*Nyssa sylvatica biflora*); slash pine (*Pinus elliotti*) and black titi (*Cliftonia monophylla*). In the case of bald cypress, common associates are water tupelo, red maple (*Acer rubrum*), American elm (*Ulmus americana*), overcup oak (*Quercus lyrata*) and water hickory (*Carya aquatica*). Bald cypress may be associated with laurel oak (*Quercus hemisphaerica*), sweetgum (*Liquidambar styraciflua*) and Sweetbay (*Magnolia virginiana*) on less moist sites.	4.9	Typically in isolated roughly circular depressional areas. Often develop in sandy flatwoods and form as a result of karst features.	Generally dominated by cypress overstory but may have scattered individuals of blackgum, sweetbay, swamp bay, pop ash and some slash pines around the margins. Shrubs either within the interior or around the margins include titi, black titi, myrtle-leaved holly sweet pepperbush, wax myrtle and hazel alder. Depending on amount of canopy closure herbaceous species may include beakrush, maidencane, various sedges (*Carex spp.*) and ferns, such as Virginia chainfern and royal fern. May have various vines scattered throughout.	Within the project area generally lacks normal ecotone due to fire suppression and encroachment of titi and black titi around the margins.	Generally provides important habitat and refuge for variety of wildlife that includes small mammals, black bear, wading birds, raptors, woodpeckers and may provide important breeding sites for variety of herpetofauna including snakes, salamanders (including flatwood salamander), and frogs.	Provides water storage by holding excess water and slowly releasing it into the water table. Enhances water quality by absorbing nutrients from the water.	Environmental education, scientific research and recreation. Valued for cypress wood.	Surrounded by silviculture which may cause hydrological alterations through ditching and fire suppression resulting in alterations of community structure.
626	PFO4/PEM1	Hydric Pine Savannah	This community is an open forest with a sparse canopy of longleaf and/or slash pines with a ground cover of grasses, forbs and wetland shrubs.	13.0	These systems are limited within the project area and where found are surrounded by silviculture land.	Typically very diverse, but restricted to small area within the project area.	Surrounded by silviculture lands.	Not common within project area due to majority of study area being comprised of pine plantation.	Water retention and groundwater recharge.	Pubic uses include indirect benefits such as wildlife refuge and provides areas for native forage production which may lead to areas with greater diversity of grasses and thereby increasing species richness and abundance of wildlife.	Limited within the project area and impacted by adjacent silviculture activities.

FLUCFCS Designation	NWI Designation	Wetland Type	Community Description	Size (composite or merged acreage for all alignments)	Contiguity	Vegetative Structural Diversity	Edge Relationships	Wildlife Habitat Value	Hydrologic Functions	Public Use	Integrity
630	PFO	Wetland Forested Mix	This category includes mixed forested wetlands communities in which neither hardwoods nor conifers achieve a 66 percent dominance within the overstory.	257.4	May be continuous as part of a drainage system or associated with isolated topographic depressions.	Can be relatively high or fairly low diversity depending on age and degree of fire suppression. Canopy stratum is usually dominated by sweetbay, slash pine, red maple, sweetgum and may contain some cypress and swamp tupelo. Subcanopy and shrub layer is generally comprised of saplings of the same species in addition to large gallberry, gallberry, black and swamp titi, sweet pepperbush, fetterbush and highbush blueberry. Groundcover is typically sparse but may contain herbs, grasses and sedges in areas that receive adequate sunlight.	Generally surrounded by silvicultural lands reducing and restricting ecotones that would otherwise be more open and characterized by species-rich herbaceous groundcover.	May provide escape cover for upland game birds, white-tailed deer and black bear. Additionally, provides habitat for a variety of herpetofauna (snakes, salamanders and frogs) and some avian species.	Acts as water reservoirs, providing pollution abatement, flood and erosion control and ground water recharge.	Public uses include indirect benefits such as wildlife refuge and detrital transport when associated with drainages.	Habitat composition and structure have been affected by surrounding silvicultural activities and roads. Invasion by invasive exotics is minimal.
640	PEM1	Vegetated Non-forested Wetland	Include marshes and seasonably flooded basins and meadows. These communities are usually confined to relatively level, low-lying areas that lack tree cover. Sawgrass (*Cladium jamaicense*) and cattail (*Typha spp.*) are the predominant species in freshwater marshes while cordgrass (*Spartina alterniflor*a) and needlerush (*Juncus roemerianus*) are the predominant species in the saltwater marsh communities.	5.9	Generally are small systems located within a pine flatwoods setting in areas with minimal canopy closure.	Typically contain diverse assemblages of herbaceous species as mentioned in "Community Description."	Surrounded by silviculturally impacted pine flatwoods.	Important for amphibians that depend on seasonal wetlands for successful breeding or foraging habitat. Also provides foraging habitat for wading birds.	Acts as water reservoirs, providing pollution abatement, flood and erosion control and ground water recharge. Receive seepage from uphill slopes and tend to gradually release water.	Minimal public use except indirect benefits such as wildlife refuge and detrital transport when associated with drainages.	Alterations include ditching, fire suppression, roads and bedrowing.
641	PEM1	Freshwater Marsh	Generally dominated by herbaceous species such as grasses (*Panicum spp., Dicanthelium spp.*) and sedges (*Cyprus spp., Rhynchospora spp., Carex spp.*)	Only found in Alignment Buffers	Generally are small systems located within pine flatwoods setting in areas with minimal canopy closure. Connect to regional drainage features by distinct natural features or by well defined ditches or stream channels.	Typically contain diverse assemblages of herbaceous species as mentioned in "Community Description."	Surrounded by silviculturally impacted pine flatwoods.	Important for amphibians that depend on seasonal wetlands for successful breeding or foraging habitat. Also provides foraging habitat for wading birds.	Acts as water reservoirs, providing pollution abatement, flood and erosion control and ground water recharge. Receive seepage from uphill slopes and tend to gradually release water.	Provides direct benefits such as recreational use, wildlife refuge and detrital transport when associated with drainages.	Alterations include ditching, fire suppression, roads and bedrowing.

FLUCFCS Designation	NWI Designation	Wetland Type	Community Description	Size (composite or merged acreage for all alignments)	Contiguity	Vegetative Structural Diversity	Edge Relationships	Wildlife Habitat Value	Hydrologic Functions	Public Use	Integrity
642	EEM	Saltwater Marsh	Coastal saltwater marsh characterized by having one or more of the following species dominant: saltwort (*Batis maritima*), glasswort (*Salicornia spp.*), fringerush (*Fimbristylis castanea*), salt dropseed (*Sporobolus virginicus*), seaside daisy (*Borrichia frutescens*), black needle rush (*Juncus roemerianus*), and salt jointgrass (*Paspalum vaginatum*).	6.5	Associated with East Bay estuarine habitats; hydrologically connected to the Gulf of Mexico.	Influenced by tidal patterns and whether it is high marsh or low marsh. Low marsh areas below mean high water are dominated by black needlerush and smooth cordgrass. At or just above mean high water, the most common species are saltwort, sea oxeye and glassworts. Above mean high water, common species include saltbush, saltgrass, fringe rush, marsh elder, and saltmeadow cordgrass.	Typically located between coastal upland communities and open water areas characterized by low wave energy.	Due to high primary productivity, these communities provide exceptional wildlife value for land-based transient small mammals, crabs, oysters, shrimp and many species of fish including juveniles. Provides optimal foraging habitat for wading birds.	Sediment stabilization and detrital transport.	Provides variety of recreational uses such as boating, fishing, and sightseeing.	Some alterations due to roadway improvements, bridges, and vertical seawalls in the project area.
814W	PEM1	Hydric Road	Roadway/unimproved trail that is not paved and crosses through wetlands. Certain sections of roadways can be considered jurisdictional wetlands.	1.0	Generally connected to surrounding natural features although typically filled and may have roadside ditch for drainage.	Generally low and restricted to herbaceous species tolerable of disturbance. Often can harbor or provide a conduit for exotic, invasive species such as torpedo grass *(Panicum repens).*	Varies according to location.	Minimal and may restrict movement.	May act as a sediment retainment area depending upon surrounding land-uses.	Facilitates ingress and egress.	Creates narrow and relatively low-impact habitat breaks.
817W	PEM1	Oil, Water, or Gas Long Distance Transmission Lines	Utility long distance transmission facilities through wetland systems that are typically maintained and commonly support a variety of herbaceous plant species.	16.1	Connected to regional drainage systems by distinct natural connections or by well-defined ditches or stream channels.	Typically maintained through periodic mowing and/or herbicide treatments. Depending on degree and frequency of disturbance and location in the landscape, relatively high herbaceous richness (due to overstory competition reduction) may result.	Bordered by hydric pine plantations.	May provide foraging habitat for some mammals, reptiles and raptors.	Provides water storage by holding excess water and slowly releasing it into the water table. Enhances water quality by absorbing nutrients from the water.	Provides needed utilities.	Impacted by periodic mowing and/or herbicide treatments.
832W	PEM1	Hydric Powerlines	Powerline facilities through wetland systems that are typically maintained and commonly support a variety of herbaceous plant species.	5.3	Connected to regional drainage systems by distinct natural connections or by well defined ditches or stream channels.	Typically maintained through periodic mowing and/or herbicide treatments. Depending on degree and frequency of disturbance and location in the landscape, relatively high herbaceous richness (due to overstory competition reduction) may result.	Bordered by hydric pine plantations.	May provide foraging habitat for some mammals, reptiles, and raptors.	Provides water storage by holding excess water and slowly releasing it into the water table. Enhances water quality by absorbing nutrients from the water.	Provides needed utilities.	Impacted by periodic mowing and/or herbicide treatments.

5.4 WETLAND INVOLVEMENT PER ALTERNATIVE ALIGNMENT

Wetland involvement across the alternative alignments ranged from 35% (339 acres) for Alternative Alignment 8 to 55% (575 acres) for Alternative Alignment 19. Total acreage (wetlands and uplands combined) ranged from 734 acres for Alternative Alignment 8 to 1,080 acres for Alternative Alignment 15 (Table 5.1). Direct involvement with wetlands and surface waters (creeks, streams, ditches) will occur as a result of roadway construction activities in all alternative alignments since a significant amount of each alignment involves new alignment and right-of-way that must be acquired. The relative percentage of wetlands found at the alignment level is consistent with that occurring when the 300-foot buffer was considered; ranged between 42% (Alternative Alignment 8) and 58% (Alternative Alignment 19; Table 5.2).

Direct wetland involvement per FLUCFCS type for each Alternative Alignment is presented in Table 5.4. Wetlands FLUCFCS types are grouped into low or high quality categories based on the degree of disturbance typically associated with each FLUCFCS type. For example, hydric pine plantations are generally considered low quality due to typical silviculture activities such as bedding, ditching and fire suppression, which lead to an overburden of shrubs and relatively low species richness in the understory and groundcover layers. Likewise, even though hydric powerlines and pipeline corridors may sometimes exhibit enhanced species richness, they are usually considered “low quality” due to the potential for abrupt impacts to community structure stemming from maintenance activities such as herbicide treatments, clearing, mowing, and new construction. A brief discussion of overall and individual wetland involvement for each alternative alignment is detailed within Section 5.4.1.

Table 5.4
Comparison of Potential Direct Wetland Involvement per FLUCFCS Code and Wetland Quality by Alignment Alternative

	8			14			15			17			19		
FLUCFCS Type	**Area (AC)**	**No. Areas**	**Avg. Size**	**Area (AC)**	**No. Areas**	**Avg. Size**	**Area (AC)**	**No. Areas**	**Avg. Size**	**Area (AC)**	**No. Areas**	**Avg. Size**	**Area (AC)**	**No. Areas**	**Avg. Size**
530 Reservoirs	0.2	1	0.2	0.6	2	0.3	0.4	2	0.2				0.4	1	0.4
210W Hydric Cropland & Pastureland							1.4	1	1.4	19.8	13	1.5	19.8	13	1.5
441W Hydric Pine Plantation	208.6	89	2.3	279.4	113	2.5	336.5	108	3.1	238.2	86	2.8	306.4	95	3.2
443W Hydric Forest Regneration Areas	0.3	1	0.3	0.3	1	0.3	0.3	1	0.3						
510D Ditch				1.7	3	0.6	1.0	3	0.3	1.7	9	0.2	3.7	13	0.3
814W Hydric Road										1.0	1	1.0	1.0	1	1.0
817W Hydric Oil, Water or Gas Transmission Line				16.1	12	1.3									
832W Hydric Powerline	0.4	1	0.4	5.3	4	1.3	0.4	1	0.4	0.4	1	0.4	2.7	4	0.7
Low Quality	209.5	92	2.3	303.4	135	2.2	340	116	2.9	261.1	110	2.4	334.0	127	2.6
510 Streams & Waterways	7.1	15	0.5	12.8	22	0.6	7.1	16	0.4	2.3	4	0.6	5.4	8	0.7
541 Embayments										50.8	1	50.8	50.8	1	50.8
614 Titi Swamp				6.3	6	1.1	11.9	6	2.0				3.6	3	1.2
620 Wetland Coniferous Forests	18.3	7	2.6	18.3	7	2.6	19.0	7	2.7	7.1	3	2.4	7.1	3	2.4
621 Cypress	3.2	4	0.8	3.6	5	0.7	3.7	5	0.7	1.2	2	0.6	1.2	2	0.6
626 Hydric Pine Savanna	13	2	6.5	13.0	2	6.5	13.0	2	6.5						
630 Wetland Forested Mixed	81.6	75	1.1	139.6	96	1.5	106.9	93	1.2	110.4	66	1.7	167.2	83	2.0
640 Vegetated Non-Forested Wetland	0.1	4	0	0.1	3	0	0.1	3	0	5.8	3	1.9	5.8	2	2.9
642 Saltwater Marsh	6.5	6	1.1	6.5	6	1.1	6.5	6	1.1						
High Quality	129.8	113	1.2	200.2	147	1.4	168.2	138	1.2	177.6	79	2.3	241.1	102	2.4
Wetland Total Acres	339.3	205	1.7	503.6	282	1.8	508.2	254	2.0	438.7	189	2.3	575.1	229	2.5

5.4.1 Alternative Alignments

5.4.1.1 Alternative Alignment 8

The estimated total acreage (wetlands, uplands, water, and developed land) comprising Alternative Alignment 8 is approximately 960 acres. Wetlands account for approximately 339 acres or 35% of the total acreage; of which 210 acres (or 62% of total wetland acreage) are classified as low quality (Table 5.4). Potentially, 205 different wetland areas (polygons) could be involved with this alternative (average wetland involvement is 1.74 acres). Among all five alternative alignments, this alignment had the lowest amount of wetland involvement in terms of total acres.

Approximately 99% of the low quality wetlands within the alignment consist of hydric pine plantation. High quality wetlands within this alignment include the crossing of 13 named streams and creeks: Calloway Creek, a small tributary of Calloway Creek, Cushion Creek, Cooks Bayou/Olivers Creek, Sandy Creek, Little Sandy Creek, Horseshoe Creek, Lamb Branch, Cypress Creek, and Panther Swamp. Additionally, this Alternative Alignment crosses Wetappo Creek/ICWW just north of the Overstreet community.

5.4.1.2 Alternative Alignment 14

Alternative Alignment 14 is associated with a similar route to Alternative Alignment 8, but takes a northeastern route from Highway 22 where it encounters different wetland habitats. The estimated total area (wetlands, uplands, water, and developed land) comprising Alternative Alignment 14 is approximately 1,207 acres. Wetlands account for approximately 503 acres or 41% of the total acreage; of which 303 acres (or 60% of total wetland acreage) are classified as low quality (Table 5.4). Potentially, 282 different wetland areas (polygons) could be involved with this alternative (average wetland involvement is 1.8 acres). Approximately 279 acres (92%) of the low quality wetlands within this alternative alignment consist of hydric pine plantation. The majority of the remaining low quality habitat (5%) is associated with hydric utility transmission corridors. Among all five alternative alignments, the amount of wetland involvement (total acres) for this alignment was intermediate.

Alternative Alignment 14 also involves the crossing of 17 named streams and creeks, which matches the number of crossings for Alternative Alignment 15 (the highest number across all alternative alignments). These water bodies include: Callaway Creek, Cushion Creek, Beefwood Branch, Bayou George/Island Branch, Horseshoe Creek, Lamb Branch, Big Branch, Cooks Bayou/Olivers Creek, Sandy Creek, Little Sandy Creek, Bear Swamp, Cypress Creek, and Panther Swamp. Big Branch, Island Branch and Beefwood Branch are all tributaries to Bayou George, which is a tributary to Deer Point Lake – a designated Class I water body and major potable water source for Bay County. Additionally, this alternative alignment crosses Wetappo Creek/ICWW just north of the Overstreet community.

5.4.1.3 Alternative Alignment 15

The estimated total area (wetlands, uplands, water, and developed land) comprising Alternative Alignment 15 is approximately 1,318 acres. Wetlands account for approximately

508 acres or 39% of the total acreage; of which 340 acres (or 66% of total wetland acreage) are classified as low quality (Table 5.4). Potentially, 254 different wetland areas (polygons) could be involved with this alternative (average wetland involvement is 2.1 acres). Approximately 336.9 acres (99%) of the low quality wetlands within this alternative alignment consist of hydric pine plantation. Among all five alternative alignments, the amount of wetland involvement (total acres) for this alignment was intermediate.

Alternative Alignment 15 involves the crossing of 17 named streams and creeks: Callaway Creek, Cushion Creek, Big Branch, Cooks Bayou/Olivers Creek, Gude Branch, Horesford Branch, Sandy Creek, Bear Swamp, Little Sandy Creek, Horseshoe Creek, Lamb branch, Cypress Creek, and Panther Swamp. Alternative Alignment 15 crosses Horseshoe Creek (a tributary to the South Fork of Bear Creek) and several small unnamed tributaries to the South Fork of Bear Creek. Bear Creek is significant in that it is a tributary to Deer Point Lake, which is a designated Class I water body (see Alternative Alignment 14). Additionally, this alignment crosses Wetappo Creek/ICWW just north of the Overstreet community.

5.4.1.4 Alternative Alignment 17

Alternative Alignment 17 is the shortest alignment with an estimated total area (wetlands, uplands, water, and developed land) comprising approximately 835 acres. Wetlands account for approximately 439 acres or 52% of the total acreage; of which 261 acres (or 59% of total wetland acreage) are classified as low quality (Table 5.4). Potentially, 189 different wetland areas (polygons) could be involved with this alternative (average wetland involvement is 2.3 acres). Approximately 238 acres (91%) of the low quality wetlands within the alignment consist of hydric pine plantation. The majority of the remaining low quality habitat (7%) is comprised of hydric cropland and pastureland (FLUCFCS 210W). Among all five alternative alignments, the amount of wetland involvement (total acres) for this alignment was intermediate.

Alternative Alignment 17 and 19 both involve crossing the open water estuarine habitat of East Bay. Approximately 50.8 acres of open water embayment habitat would be crossed (FLUCFCS 541) by this alternative alignment. Additional high quality wetlands within this alignment include five named stream and creek crossings that include: Calloway Creek and a small tributary of Calloway Creek, Cushion Creek, Cooks Bayou/Olivers Creek and two small tributaries of Cooks Bayou, Cypress Creek, Bear Swamp and Panther Swamp. Alternative Alignment 17 involves the fewest named stream and creek crossings when compared to all other alignments.

5.4.1.5 Alternative Alignment 19

The estimated total area (wetlands, uplands, water, and developed land) comprising Alternative Alignment 19 is approximately 1,057 acres. Wetlands account for approximately 575 acres or 55% of the total acreage; of which 334 acres (or 58% of total wetland acreage) are classified as low quality (Table 5.4). Potentially, 229 different wetland areas (polygons) could be involved with this alternative (average wetland involvement is 2.5 acres). Approximately 306.3 acres (92%) of the low quality wetlands within the alignment consist of hydric pine plantation. The majority of the remaining low quality habitat (7%) is comprised

of hydric cropland and pastureland (FLUCFCS 210W). Among all five alternate alignments, this alignment had the highest amount of wetland involvement in terms of total acres.

Both Alternative Alignments 17 and 19 involve crossing the open water estuarine habitat of East Bay. Approximately 50.8 acres of open water embayment habitat would be crossed (FLUCFCS 541) with this alternative alignment. Additional high quality wetlands within this alignment include nine named stream and creek crossings that include: Beefwood Branch, Bayou George/Island Branch, Big Branch, Boggy Creek, Cooks Bayou/Olivers Creek, Cushion Creek, Cypress Creek, Bear Swamp, and Panther Swamp.

SECTION 6 WETLAND FUNCTIONAL ANALYSIS

6.1 WETLAND FUNCTIONAL ANALYSIS

The UMAM is currently used by FDEP as established by the FAC, Chapter 62-345. UMAM was also accepted as the wetland assessment methodology of the Jacksonville District of the United States Army Corps of Engineers (USACE) via a Public Notice dated August 18, 2005. This wetland assessment methodology has replaced the Wetland Rapid Assessment Procedure (WRAP). UMAM is used to quantify the amount of wetland impacts and compensatory mitigation required for wetland permits.

The UMAM is a rating index that assists in evaluating the functions and values of a wetland system. It establishes a numerical score for a wetland based on various ecological or anthropogenic variables known to influence the functional value of wetlands. UMAM scores are based on the total of three categories, scored from zero (lowest) to 10 (highest), divided by the total maximum score for the variables (30). The UMAM score is expressed as a number between zero and one, with one being assigned to the highest valued/functioning wetlands. The three criteria scored are: Location and Landscape Support, Water Environment, and Community Structure.

6.1.1 Location and Landscape Support

This score assesses uniqueness and how the surrounding landscape benefits (or impacts) a wetland. Factors such as land use, wildlife utilization, buffer potential, and surrounding water quality affect wetland quality.

Lower quality wetlands were assumed to be affected by existing adjacent development and roadways. Untreated stormwater runoff from roads and development were assumed to negatively affect water quality for these wetlands. High levels of human activity and fire suppression of the surrounding uplands and wetlands were also assumed to affect the wildlife utilization of these wetlands. Additionally, disturbance associated with the roads and development presents opportunities for exotic invasive species, such as torpedo grass, to colonize wetlands within alternative alignments.

Higher quality wetlands and adjacent habitats tend to be diverse with respect to vegetation structure and composition and recent impacts from human activities appear to be minimal. In these instances, the upland landscape typically provides high quality buffer habitat for these wetlands since it is managed with fire. Secondary impacts from the existing roadways and degradation of the water quality for these areas is likely minimal due to the lack of development and roads.

6.1.2 Water Environment

This feature addresses wetland hydrology and water quality. Factors such as historic hydroperiod, adjacent roads, ditches, and fire suppression all contribute to the water environment score.

Lower quality wetlands have hydroperiods that are altered by ditching and impacts associated with existing dirt and/or paved roads within the study area. Some mixed forested wetlands have higher flow velocities due to ditching further upstream. Hydric pine plantations also have increased evapotranspiration due to high tree densities and shrub growth, which can lead to a lowering of the water table.

Higher quality wetlands tend to exhibit more natural hydroperiods and good water quality. Little to no ditching is present within or near these wetlands. Additionally, few roads have severed or altered natural hydrologic connections for these wetlands. These wetlands are fire maintained resulting in less shrub growth and generally lower rates of evapotranspiration. The water table associated with these wetlands is assumed to be relatively in-tact or unaltered. Finally, there is little development to provide sources for water quality degradation.

6.1.3 Community Structure

This score assesses the quality of vegetation within the wetland. Wetlands are scored based on presence of exotic species, the condition of the vegetation, and whether the vegetation represents relatively undisturbed conditions. Lower quality wetlands may have some exotic species present. These communities are often overgrown with shrubs and cannot be managed with fire due to their proximity to developed land-uses and/or roads within the study area. Higher quality wetlands have community structures that appear to be relatively undisturbed. Many of these wetlands are fire-maintained, and have little shrub layer and ample groundcover. Canopy trees are typically mature in these wetlands.

6.2 UMAM METHODOLOGY

Due to the size of the area under review, the number of alternative alignments, and access issues concerning some private landowners, each wetland FLUCFCS polygon was not independently assessed for functional value. Instead, UMAM was used to evaluate representative wetlands of each FLUCFCS type (per PD&E Manual) within the alternative alignments. UMAM scores were developed for these wetlands based on desktop and field assessments and observed conditions of similar wetlands within the region (Table 6.1). UMAM data sheets and comments for each wetland type within the project area can be found in Appendix B.

Table 6.1
Generalized UMAM Scores per FLUCFCS Type
Across all Five Alternative Alignments.

FLUCFCS Code	FLUCFCS Designation	Location and Landscape	Water Environment	Community Structure	Total Score
210W	Hydric Cropland & Pastureland	4	5	5	0.47
441W	Hydric Pine Plantation	6	6	5	0.56
443W	Hydric Forest Regneration Areas	4	4	4	0.40
510	Streams & Waterways	8	7	8	0.77
510D	Ditches	4	4	6	0.47
524	Lakes (less than 10 acres)	6	6	7	0.63
530	Reservoirs	5	4	4	0.43
541	Embayments	9	8	8	0.83
614	Titi Swamps	6	5	5	0.53
620	Wetland Coniferous Forests	7	7	8	0.73
621	Cypress	7	7	7	0.70
625	Hydric Pine Flatwoods	6	6	7	0.63
626	Hydric Pine Savanna	6	6	7	0.63
630	Wetland Forested Mixed	6	6	7	0.63
640	Vegetated Non-Forested Wetlands	7	7	7	0.70
641	Freshwater Marshes	7	7	8	0.73
642	Saltwater Marshes	8	8	8	0.80
643	Wet Prairies	7	7	7	0.70
814W	Hydric Road	4	4	5	0.43
817W	Hydric Oil, Water or Gas Transmission Line	6	7	7	0.67
832W	Hydric Powerline	6	7	7	0.67

6.3 UMAM RESULTS

UMAM scores were derived at the FLUCFCS level and not for individual assessment areas or wetland polygons within the alternatives. As such, the resultant UMAM scores approximate mitigation needed to offset wetland impacts. More accurate UMAM scores (specific to each wetland area/polygon) will be derived during the design/permitting phase of the project. UMAM scores for the various FLUCFCS types ranged from 0.40 (443W) to 0.83 (541). Scores were lower for artificial and altered wetlands such as, but

not limited to hydric pine plantations, ditches, fire suppressed titi systems, and manmade ponds. Hydric powerline and natural gas transmission corridors generally had UMAM scores that were "intermediate". These scores were driven by relatively high community structure scores (species richness) resulting from routine maintenance practices that can mimic periodic fire. However, these systems are also subject to abrupt changes in community structure from expansion projects, road installation or pipeline/powerline infrastructure maintenance. The UMAM scores for each FLUCFCS type were multiplied by the acreage of that FLUCFCS type within a proposed alternative alignment to generate the functional wetland loss per alternative alignment (Table 6.2). Functional loss scores are used to determine the amount of mitigation required to offset the estimated functional loss of the impacted wetlands. Potential mitigation options are discussed in Section 8.

Potential functional loss based on UMAM scores for the five alternative alignments ranged between 203.1 (Alignment 8) to 348.7 (Alignment 19). The functional loss scores tended to correspond with the wetland involvement acreages identified in Section 5.4. For example, Alignment 19 had the highest wetland involvement (575.1 acres) and also the highest functional loss score (348.7). Likewise, Alignment 8 had the lowest amount of wetland involvement (339.1 acres) and the lowest functional loss score (203.1). Alternative Alignments 14, 15, and 17 also showed a corresponding decrease in functional loss with decreasing amounts of wetland involvement. These results suggest that the ratio of high quality to low quality wetlands is relatively consistent across all the alignments. However, this general assessment assumes that all impacts will result in direct or complete loss of wetlands where in the case of a potential bridge crossing across East Bay (Alternative Alignments 17 and 19), the impacts may not result in direct or complete loss of wetlands. Wetland-specific and project specific UMAM assessments will be required during the permitting/design phase of this project.

Table 6.2
UMAM Functional Loss Values per Wetland FLUCFCS Type for all Five Alternative Alignments Associated with Gulf Coast Parkway

FLUCFCS	Generalized UMAM Score	Alignment 8		Alignment 14		Alignment 15		Alignment 17		Alignment 19	
		Impact (Acres)	Functional Loss	Impact (Acres)	Functional Loss	Impact (Acres)	Functional Loss	Impact (Acres)	Functional Loss	Impact (Acres)	Functional Loss
530	0.43			0.6	0.3	0.4	0.2			0.4	0.2
210W	0.47					1.4	0.7	19.8	9.3	19.8	9.3
441W	0.56	208.6	116.8	279.4	156.5	336.5	188.4	238.2	133.4	306.4	171.6
443W	0.40	0.3	0.1	0.3	0.1	0.3	0.1				
510D	0.47			1.7	0.8	1.0	0.5	1.7	0.8	3.7	1.7
814W	0.43							1.0	0.4	1.0	0.4
817W	0.67			16.1	10.8						
832W	0.67	0.4	0.3	5.3	3.6	0.4	0.3	0.4	0.3	2.7	1.8
510	0.77	7.1	5.5	12.8	9.9	7.1	5.5	2.3	1.8	5.4	4.2
541	0.83							50.8	42.2	50.8	42.2
614	0.53			6.3	3.3	11.9	6.3			3.6	1.9
620	0.73	18.3	13.4	18.3	13.4	19.0	13.9	7.1	5.2	7.1	5.2
621	0.70	3.2	2.2	3.6	2.5	3.7	2.6	1.2	0.8	1.2	0.8
626	0.63	13.0	8.2	13.0	8.2	13.0	8.2				
630	0.63	81.6	51.4	139.6	87.9	106.9	67.3	110.4	69.6	167.2	105.3
640	0.70	0.1	0.1	0.1	0.1	0.1	0.1	5.8	4.1	5.8	4.1
642	0.80	6.5	5.2	6.5	5.2	6.5	5.2				
Totals		339.1	203.1	503.6	302.5	508.2	299.2	438.7	267.8	575.1	348.7

SECTION 7 WETLAND INDIRECT AND CUMULATIVE EFFECTS

Given the extent of wetlands identified within the study area, ICE will likely occur to adjacent wetlands regardless of alignment. A detailed and comprehensive assessment of indirect and cumulative wetland effects will be conducted after a preferred alternative is selected.

Indirect effects are a by-product of direct effects or impacts. Indirect effects are manifested in the reasonably foreseeable future or some distance away from the location of the direct impact. Indirect effects could include future development, changes in land use, and/or changes in population dynamics that as a result, have the potential to affect natural resources. In this region of Florida, regulatory agencies require an assessment of indirect effects within 300 feet of alignment boundaries. Potential indirect wetland effects follow the same pattern that was found for potential direct effects. Alternative Alignment 8 had the least amount of indirect wetland involvement (1,064.9 acres) and Alternative Alignment 19 (1,541.7 acres) had the most (Table 7.1). Likewise, functional loss scores for indirect wetland involvement were similar to those reported for direct wetland involvement (Table 7.2).

Examples of potential indirect effects associated with this project could include water quality degradation from stormwater runoff or roadway spills, changes in hydrology (alteration of hydroperiods due to more impervious surfaces), edge effect impacts from filling wetlands, habitat fragmentation and potential changes in wildlife utilization, increased constraints on implementing prescribed burning management plans, and creation of a conduit/corridor (roadway) for exotic/invasive species range expansion.

Cumulative impacts on the environment result from the combination of the project's direct and indirect effects plus the effects of foreseeable past, present, and future actions within the area of interest. In order to facilitate the assessment of potential induced growth resulting from the GCP project, an expert panel of land-use planners with intimate knowledge of the study area was assembled from both the public and private sectors. This expert panel met and interacted via the Delphi Technique in order to obtain as unbiased an estimate as possible of potential population growth for a study area given the Alternative Alignments and the No-Build Alternative. Locations of predicted induced growth developed by the expert panel were analyzed to determine potential impacts on socioeconomic, natural, and physical environments. In addition to data derived from the "Delphi Group", various datasets supplied by FDOT, e.g., LRTP Improvement Program, were also considered in gauging potential ICE related to the GCP project.

The results of the analysis will be summarized in the EIS and detailed in the Gulf Coast Parkway ICE Report.

Table 7.1
Comparison of Potential Indirect Wetland Involvement

Indirect Involvement by Alignment	8			14			15			17			19		
	Area (AC)	No. Areas	Avg. Size	Area (AC)	No. Areas	Avg. Size	Area (AC)	No. Areas	Avg. Size	Area (AC)	No. Areas	Avg. Size	Area (AC)	No. Areas	Avg. Size
210W							5.1	1	5.1	54.5	15	3.6	54.5	15	3.6
441W	630.1	141	4.5	827.6	155	5.3	978.9	173	5.7	664.5	124	5.4	792.6	128	6.2
443W	2.7	1	2.7	2.7	1	2.7	2.7	1	2.7						
510D	0.2	1	0.2	2.1	4	0.5	2.7	9	0.3	4.4	9	0.5	7.3	13	0.6
524	0.4	1	0.4	0.4	1	0.4	0.4	1	0.4	0.4	1	0.4	0.4	1	0.4
530	0.6	7	0.1	0.6	7	0.1	1.2	10	0.1	0.2	3	0.1	0.2	3	0.1
817W													0.5	1	0.5
832W	3.6	11	0.3	21.3	14	1.5	1.3	4	0.3	3.8	10	0.4	41.9	18	2.3
Low Quality	**637.6**	**162**	**3.9**	**854.7**	**182**	**4.7**	**992.3**	**199**	5.0	**727.8**	**162**	**4.5**	**897.4**	**179**	**5**
510	20.3	20	1.0	33.3	28	1.2	20.2	21	1.0	7.6	6	1.3	16.7	10	1.7
541										120.9	1	120.9	120.9	1	120.9
614				19.8	8	2.5	15.9	15	1.1	1.7	1		17.4	7	2.5
620	58.1	11	5.3	59.3	12	4.9	58.6	11	5.3	17.0	8	2.1	18.3	9	2.0
621	3.4	6	0.6	6.6	10	0.7	4.9	7	0.7	4.2	6	0.7	4.9	6	0.8
626	33.1	3	11.0	33.1	3	11.0	33.1	3	11.0						
630	293.3	145	2.0	405.5	161	2.5	362.8	160	2.3	342.1	125	2.8	451.0	138	3.3
640	3.5	7	0.5	2.7	5	0.5	2.7	5	0.5	15.2	4	3.8	14.4	2	7.2
641										0.1	1	0.1	0.1	1	0.1
642	15.6	6	2.6	15.6	6	2.6	15.6	6	2.6	0.6	3	0.2	0.6	3	0.2
High Quality	**427.3**	**198**	**2.2**	**575.9**	**233**	**2.5**	**513.8**	**228**	**2.3**	**509.4**	**155**	**3.3**	**644.3**	**177**	**3.7**
Wetland Acres Total	**1,064.9**	**360**	**3.0**	**1,430.6**	**415**	**3.5**	**1,506.1**	**427**	**3.5**	**1,237.2**	**317**	**3.9**	**1,541.7**	**356**	**4.3**

Table 7.2
Comparison of UMAM Functional Loss Values Associated with
Indirect Involvement per Wetland FLUCFCS Type for all Five Alternative Alignments

FLUCFCS	Generalized UMAM Score	Alignment 8		Alignment 14		Alignment 15		Alignment 17		Alignment 19	
		Impact (Acres)	Functional Loss	Impact (Acres)	Functional Loss	Impact (Acres)	Functional Loss	Impact (Acres)	Functional Loss	Impact (Acres)	Functional Loss
210W	0.47					5.1	2.4	54.5	25.6	54.5	25.6
441W	0.56	630.1	352.9	827.6	463.5	978.9	548.2	664.5	372.1	792.6	443.9
443W	0.40	2.7	1.1	2.7	1.1	2.7	1.1				
510D	0.47	0.2	0.1	2.1	1.0	2.7	1.3	4.4	2.1	7.3	3.4
524	0.63	0.4	0.3	0.4	0.3	0.4	0.3	0.4	0.3	0.4	0.3
530	0.43	0.6	0.3	0.6	0.3	1.2	0.5	0.2	0.1	0.2	0.1
817W	0.67									0.5	0.3
832W	0.67	3.6	2.4	21.3	14.3	1.3	0.9	3.8	2.5	41.9	28.1
510	0.77	20.3	15.6	33.3	25.6	20.2	15.6	7.6	5.9	16.7	12.9
541	0.83							120.9	100.3	120.9	100.3
614	0.53			19.8	10.5	15.9	8.4	1.7	0.9	17.4	9.2
620	0.73	58.1	42.4	59.3	43.3	58.6	42.8	17.0	12.4	18.3	13.4
621	0.70	3.4	2.4	6.6	4.6	4.9	3.4	4.2	2.9	4.9	3.4
626	0.63	33.1	20.9	33.1	20.9	33.1	20.9				
630	0.63	293.3	184.8	405.5	255.5	362.8	228.6	342.1	215.5	451	284.1
640	0.70	3.5	2.5	2.7	1.9	2.7	1.9	15.2	10.6	14.4	10.1
641	0.73							0.1	0.1	0.1	0.1
642	0.80	15.6	12.5	15.6	12.5	15.6	12.5	0.6	0.5	0.6	0.5
Totals		1,064.9	637.9	1,430.6	855.0	1,506.1	888.5	1,237.2	751.9	1,541.7	935.6

SECTION 8 AVOIDANCE, MINIMIZATION, MITIGATION AND COMMITMENTS

Avoidance and minimization of potential wetland and surface water involvement was central to both corridor and alignment development. Direct involvement with wetlands and surface waters (creeks, streams, ditches) will occur as a result of roadway construction activities. Recognizing this, efforts have been made throughout the PD&E process via desktop analyses and subsequent field surveys to identify routes that may result in fewer wetland impacts – especially those potentially involving higher quality wetlands. During the project design phase, jurisdictional wetlands will be field-delineated resulting in a more detailed assessment of wetland involvement (quantity and quality) for the Preferred Alternative. These detailed field assessments may facilitate further reductions in potential wetland involvement through minor shifts of the Preferred Alternative, if practicable. Direct and indirect wetland impacts will be minimized through appropriate stormwater design, and utilization of Best Management Practices (BMP) at wetland, bay, and stream crossings (especially East Bay and Wetappo Creek) during construction, e.g., any potential bridge work would adhere to FDOT's *Standard Specifications for Road and Bridge Construction.*

Mitigation will be required for direct and indirect wetland impacts. At this point in project development, FDOT is not prepared to state definitely how impacts to wetlands will be mitigated due to the varying types and locations of resources that could be impacted. It is unknown as to the degree, type, or location of mitigation that will be required until permitting requirements for the Preferred Alternative are evaluated. FDOT will reserve use of multiple mitigation methods, e.g., statute approved mitigation(in-lieu fee program), mitigation banks located near the proposed project, and/or property donations, since the efficiency in acquiring, appropriateness, and value of available wetland credits/offsets are critical to selecting the most appropriate method(s) (373.4137 Florida Statutes {FS}). In many cases involving FDOT projects, wetland impacts are mitigated by purchasing mitigation credits from the NWFWMD via the Northwest Florida Umbrella, Watershed-based, Regional Mitigation Plan or "Umbrella Plan". The Umbrella Plan was established in 2006 by an agreement between NWFWMD and USACE (Jacksonville District). Operated as an in-lieu fee program, it is an outgrowth of the NWFWMD's responsibility under FS to provide mitigation for FDOT impacts to wetlands regulated by federal and state code. Delineated by seven major riverine watersheds, the NWFWMD jurisdiction covers 16 counties (including Bay, Gulf, and Calhoun Counties) and extends from east of Tallahassee to west of Pensacola. With the Umbrella Plan, watershed resources and mitigation needs are identified upfront in a comprehensive manner. The Umbrella Plan establishes a process by, which wetland mitigation projects are strategically identified at a watershed scale evaluated, and approved by consensus of the USACE-led Interagency Review Team. Using a mitigation credit ledger, credits may be used to offset future wetland impacts such as those potentially stemming from the GCP project.

However, wetland impacts which result from the construction of this project will be mitigated *pursuant* to Section 373.4137, F.S. to satisfy all mitigation requirements of Part IV. Chapter 373, F.S. and 33 U.S.C. s. 1344. Compensatory mitigation for this project will be

completed through the use of mitigation banks and any other mitigation options that satisfy state and federal requirements. As mitigation methods pursuant to Section 373.4137, FS have been approved by the permitting agencies as an accepted mitigation process, the following paragraph's discussions are provided to illustrate that at a conceptual mitigation level all alternatives for the Gulf Coast Parkway project have an acceptable and available means for mitigating their wetland impacts.

A critical aspect of securing wetland mitigation concerns the amount, type, and timing of wetland impacts. Wetland involvement associated with the GCP project is contained within the St. Andrews-St. Joseph Bays watershed (hydrologic unit = 03140101; "subject watershed"). At this stage of the project, i.e., PD&E level, potential wetland involvement has been estimated based upon desktop analyses and field reconnaissance/assessments (UMAM functional loss scores ranged between 203 and 349). As mentioned above, several mitigation options are currently available to FDOT. According to data housed and maintained by the USACE Regulatory In-lieu fee and Bank Information Tracking System (http://geo.usace.army.mil/ribits/index.html; accessed March 9, 2012) and the NWFWMD Wetland Programs websites (http://www.nwfwmdwetlands. com/index.php?Page=11; accessed March 9, 2012), it appears that four existing private mitigation banks (Breakfast Point, Devils Swamp, Sweetwater, Nokuse) and seven NWFWMD/umbrella bank sites (Sandhill Lakes, Wards Creek, Wards Creek West, Cat Creek, Devil's Hole, Point Washington, Lynn Haven,) have service areas that include the subject watershed. In addition, one proposed private mitigation bank (Bear Creek) includes the subject watershed in its service area. As of March 9, 2012, the 11 existing mitigation banks/sites identified above collectively have approximately 600 palustrine wetland credits currently available. None of these existing banks/sites appear to provide estuarine credits.

It is important to recognize the temporal nature of mitigation credits and how inventories are affected by demand. While the availability of credits "today" is noteworthy, it is unclear as to the actual time they will be needed for this project. . It is possible that credits available today from existing mitigation banks and sites may still be available at the time needed - the opposite situation is also possible for some or all of the banks and mitigation sites active "today". However, new banks may come on line between now and the time credits are actually needed (design and permitting phase) for this project. Given the high percentage of undeveloped land in this part of Florida, it is also clear that numerous opportunities for future mitigation sites exist. Finally, and in the event that this project results in impacts to estuarine wetlands and estuarine credits are not available, available out-of-kind credits may be utilized for such wetlands per regulatory agency approval.

SECTION 9 REGULARORY AGENCY COORDINATION

9.1 AGENCY COORDINATION

In February 2007, the GCP project was submitted into Efficient Transportation Decision Making (ETDM). ETAT comments were submitted and subsequently reviewed and incorporated into alignment-level analyses. Details concerning ETAT comments can be found at: https://etdmpub.fla-etat.org/est/ project 7559. After ETAT review of the project in the Environmental Screening Tool (EST), FDEP, NMFS, NWFWMD, and USACE responded with their own comments concerning wetlands, which are summarized below:

- *FDEP – Wetland resource / stormwater permit applicant is required to eliminate or reduce impacts through avoidance, fill reductions, typical section, compensatory treatment, and mitigation. Cumulative Effects must be addressed. High-level bridging should be utilized for ICWW/Wetappo Creek. crossing. PCC habitat is a concern.*
- *NMFS –Natural hydrology, freshwater inflow, and stormwater runoff are concerns. Impacts to EFH must be addressed.*
- *NWFWMD – Direct and cumulative impacts should be minimized.*
- *USACE – Due to the overall acreage of wetland impacts an EIS should be prepared. Jurisdictional determination, functional analysis, pond siting analysis, wetland avoidance / minimization, a mitigation plan, limited / restricted access, wetland crossing design, and Quality Enhancement Strategies are all recommended.*

On April 20, 2011, a copy of the Draft WER and EFH were submitted to the USACE, USFWS, NMFS, FFWCC, and NWFWMD for their review. Comments submitted by these agencies have been addressed in the WER and EFH and other technical documents. Additionally, agency comments have been addressed in appropriate sections of the EIS.

On May 1, 2007, a field review of the GCP study area was conducted. The purpose of the field review was to give agency representatives from USFWS the opportunity to visually inspect various sections of proposed road corridors, convey any concerns, and discuss various survey methodologies such as wetlands and potential listed species. Numerous field and office meetings, email correspondences, and phone conversations have also occurred since this project was initiated in 2006 with regards to natural resource assessments and analysis techniques. In addition, dispute resolution issues regarding several natural resource topics resulted in the drafting and subsequent approval of multiple Issue Agreement Plans: Coastal and Marine Action Plan, ICE Action Plan, Wetlands Action Plan, and Wildlife and Habitat Action Plan. Elements of each plan were incorporated into supporting resource assessments that culminated in various technical documents, e.g., ESBAR, WER, in support of the PD&E and National Environmental Policy Act (NEPA) processes. Agency coordination is summarized in the table below.

Table 9. 1: Summary of GCP Agency Correspondence

Date	Agency	Type of Correspondence	Attendees/Email Recipients
2/2/2007	USFWS	Email correspondence concerning Guidelines for Conducting and Reporting the results of Botanical Surveys.	Mary Mittiga, USFWS
4/23/2007	USFWS	Email correspondence to set up field review meeting.	Mary Mittiga, USFWS
5/1/2007	USFWS	Field meeting to review proposed GCP corridors.	Patty Kelly, Mary Mittiga, Vivian Negron-Ortiz, USFWS
5/2007	Multiple Agencies	Wetlands Field Evaluation Methodology Consultation. Email correspondence was sent between the above agencies and FDOT to discuss the proposed wetland evaluation methods for the PD&E study. Revisions and suggestions were shared by the agencies and a methodology was determined.	Mary Mittiga, USFWS; Ted Hoehn, FFWCC; Andy Phillips, USACE
5/14/2007	USFWS	Email correspondence regarding listed plant species information.	Patty Kelly & Mary Mittiga, USFWS
7/24/2007	FFWCC	Meeting to discuss State species concerns.	Scott Sanders, Ted Hoehn, Terry Gilbert, Ernest Ladkani, Greg Vaughn, Eric Schneider
8/28/2007	Multiple Agencies	Meeting to discuss Draft Issue Agreement Plan.	ETAT
8/29/2007	FFWCC	Email correspondence concerning location data for PCC.	John Hines, FFWCC
8/2007 and 9/20/2007	NMFS and FFWCC	Multiple email messages regarding EFH survey methods, modifications to survey methods due to field conditions, and final approval of survey methods.	David Rydene, NMFS; Lisa Gregg, FFWCC; Ted Hoehn, FFWCC
9/20/2007	FFWCC	Email request for black bear data in Bay and Gulf Counties and/or Northwest Florida in general (Bear Roadkill, Bear Telemetry, Nuisance Bear and Bear Range). Also requested two reports: Closing the Gaps (latest edition), Integrated Habitat Ranking System.	FFWCC
10/9/2007	USFWS	Email correspondence about USFWS assessment methods and comments on assessment method approach.	Hildreth Cooper, USFWS

Date	Agency	Type of Correspondence	Attendees/Email Recipients
11/7/2007	Multiple Agencies	Email correspondence concerning PCC field meeting focused on species identification and draft mitigation options.	David Cook, FFWCC
11/29/2007	USACE	Follow-up to USACE inquiring about coordination with the NMFS on EFH.	Andy Phillips, USACE
12/8/2009	FFWCC	Email correspondence listing wildlife species of potential concern, potential indirect impacts, and generalized mitigation objectives and goals.	Terry Gilbert, FFWCC
12/8/2009	NMFS	Email correspondence concerning EFH indirect impact analysis related to alignment buffers.	David Rydene, NMFS
12/9/2009	Multiple Agencies	Email and phone correspondence about buffer widths associated with indirect impact assessments concerning T&E species and EFH.	Ted Hoehn, FFWCC, David Rydene, NMFS; Mary Mittiga, USFWS, Terry Gilbert, FFWCC
12/18/2009	FFWCC	PCC data/assessment methods	John Himes, FFWCC
4/20/2011	Multiple Agencies	Letters and documents sent to individual agency representatives requesting their review of Endangered Species Biological Assessment Report (ESBAR), WER, ICE report, and Draft EIS.	Ted Hoehn, FFWCC, David Rydene, NMFS; Mary Mittiga, USFWS, Terry Gilbert, FFWCC; Andy Phillips and Randy Turner, USACE; Duncan Cairns, NWFWMD
5/18/2011	USFWS	Comment letter regarding draft ESBAR and species concurrence assessments. (Appendix D)	Don Imm, USFWS
5/25/2011	NMFS	Comment letter regarding Draft EIS. (Appendix D)	David Rydene, NMFS
6/1/2011	USFWS	Comment letter regarding draft WER, ICE Report, and Draft EIS (Appendix D)	Don Imm, USFWS
6/13/2011	FFWCC	Comment letter regarding ICE report. (Appendix D)	Scott Sanders, FFWCC
6/24/2011	NWFWMD	Comment letter regarding Draft EIS. (Appendix D)	Duncan Cairns, NWFWMD
7/15/2011	USACE	Comment letter concerning WER, ICE report, and Draft EIS. (Appendix D)	Randy Turner, USACE

9.2 REQUIRED PERMITS

The USACE, FDEP, and NWFWMD regulate wetlands within the project area. The NWFWMD regulates stormwater permitting. The USFWS, United States Environmental Protection Agency (USEPA), NMFS, NWFWMD, and the FFWCC review and comment on wetland permit

applications. It is currently anticipated that the following permits will be required for this project:

Permit	**Issuing Agency**
Environmental Resource Permit (ERP)	FDEP/NWFWMD
Section 404 Dredge and Fill Permit	USACE
National Pollutant Discharge Elimination System Permit (NPDES)	FDEP
Stormwater Permit	FDEP/NWFWMD

Any project which results in the clearing of one or more acre of land will require a NPDES permit from the FDEP, pursuant to Chapter 62-621.300 FAC. In association with this permit, a Stormwater Pollution Prevention Plan (SWPPP), which will be implemented during the construction of the project, will also be required. The primary functions of NPDES requirements are to ensure that erosion and sedimentation are controlled during construction of the project. These permits typically utilize construction BMPs to ensure compliance.

The permitting process for this project is expected to take from two to four years.

Measures proposed to address concerns of regulatory and resource agencies include avoidance of high quality wetlands, the use of bridges and culverts to maintain existing drainage patterns and hydrologic connections between wetlands, and provisions to collect and treat stormwater runoff prior to its discharge to maintain the quality of surface waters in the area. Details of these refinements, along with additional design measures to further reduce wetland impacts, will be determined in consultation with these agencies during the project design phase. It is anticipated that several regulatory agencies will be involved in the permitting for the proposed project.

APPENDICES

APPENDIX A
FIGURES

Figure 1 Named Streams

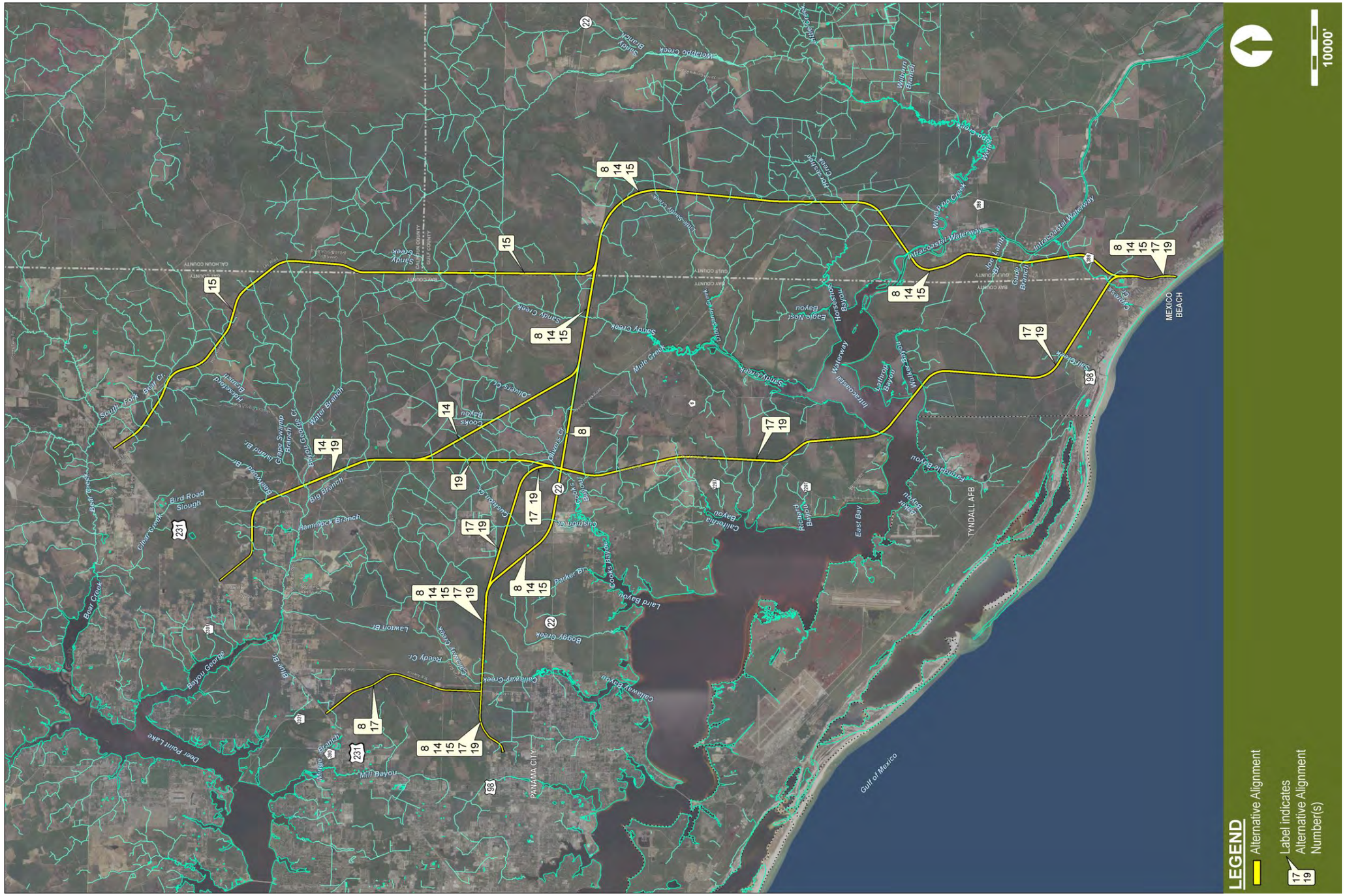
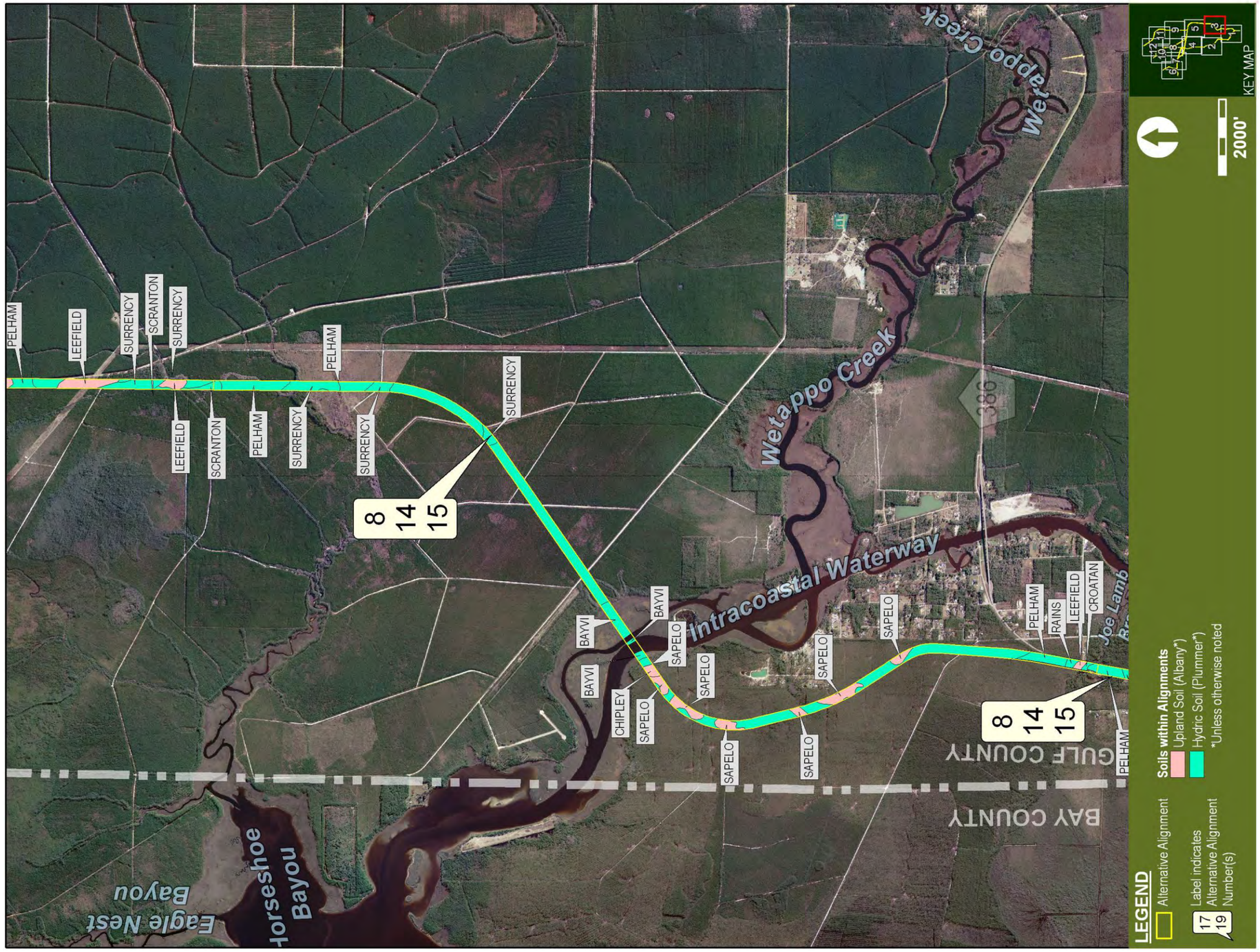


Figure 2 Soils

Figure 3 Soils

Figure 4 Soils



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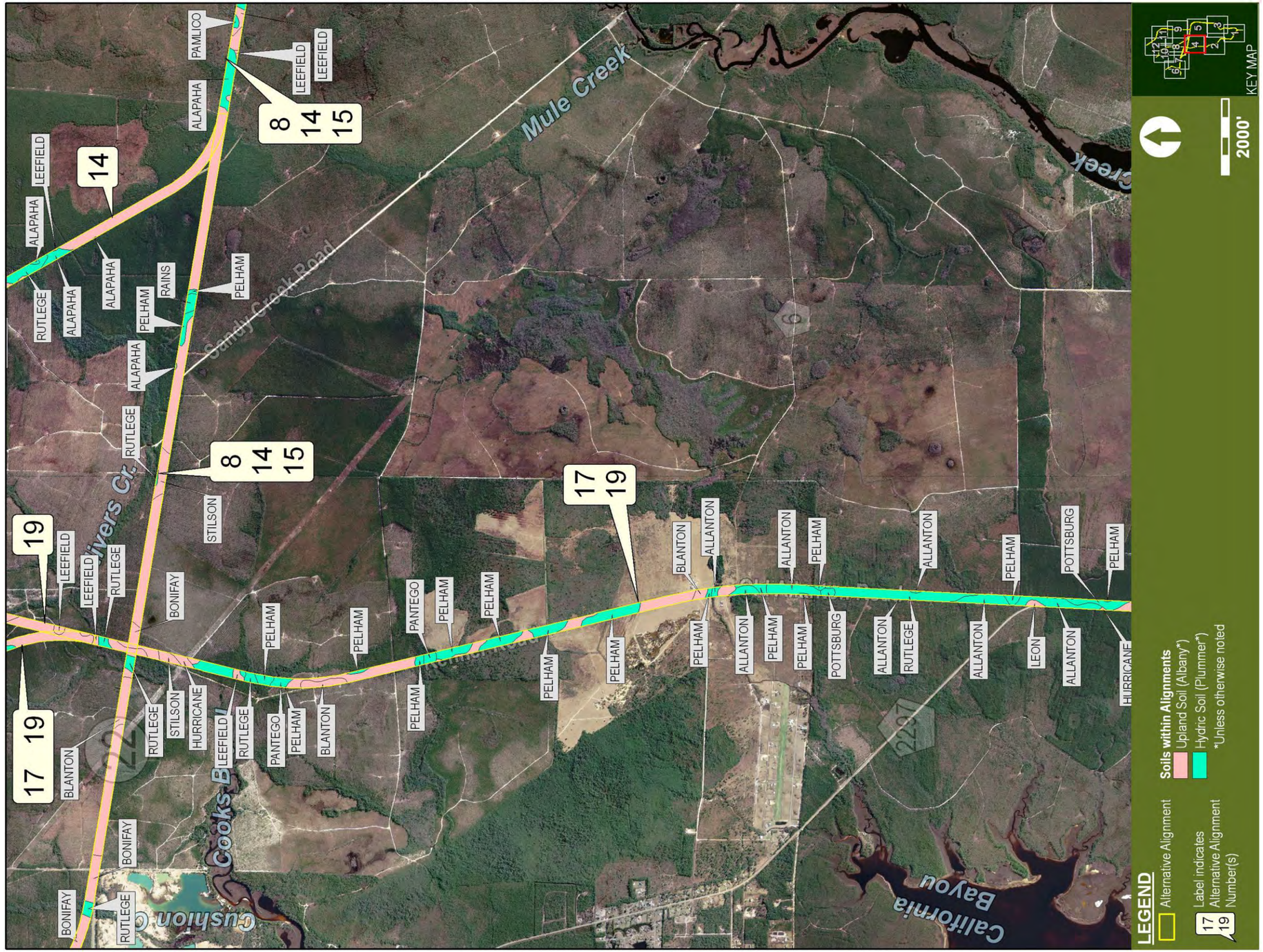

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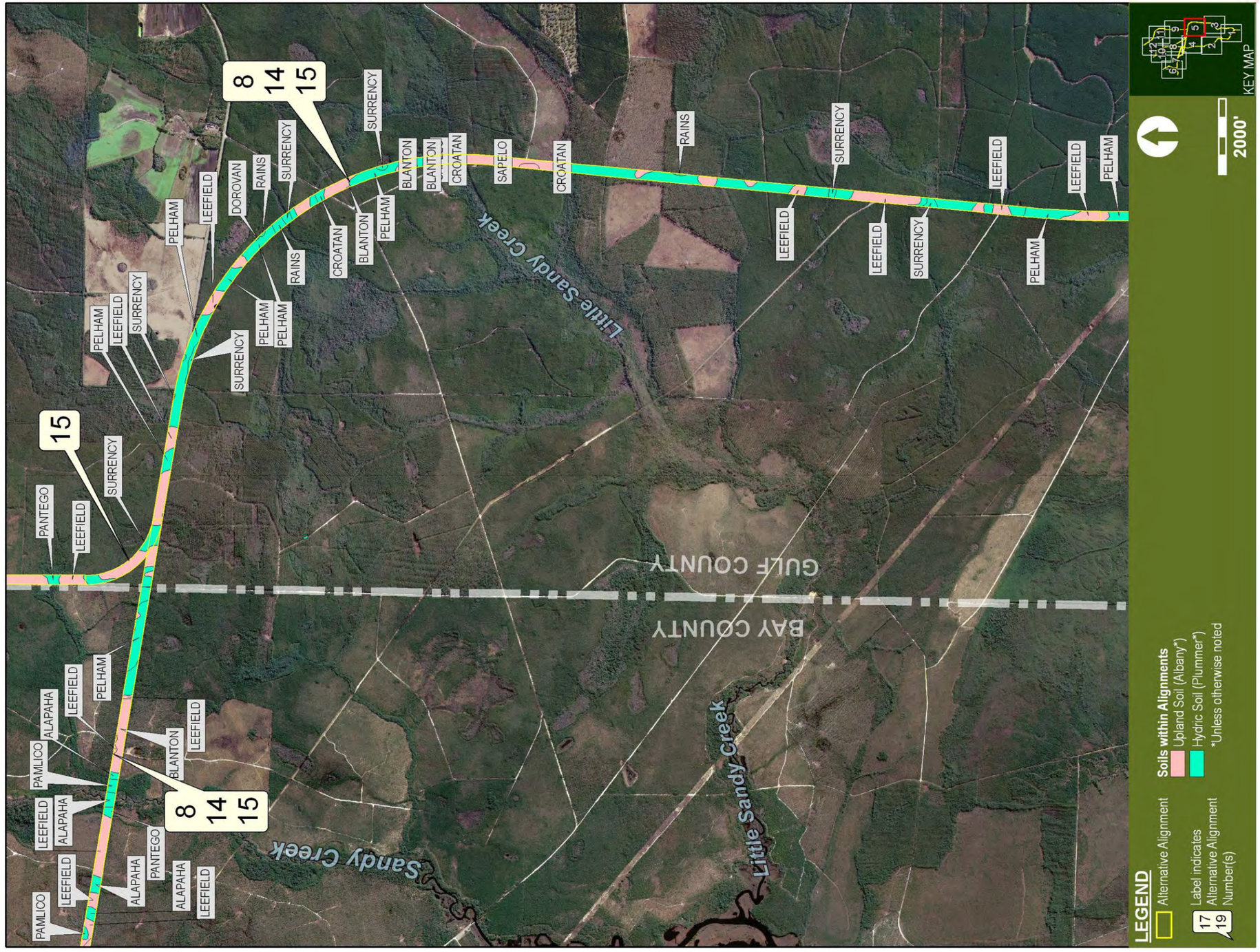

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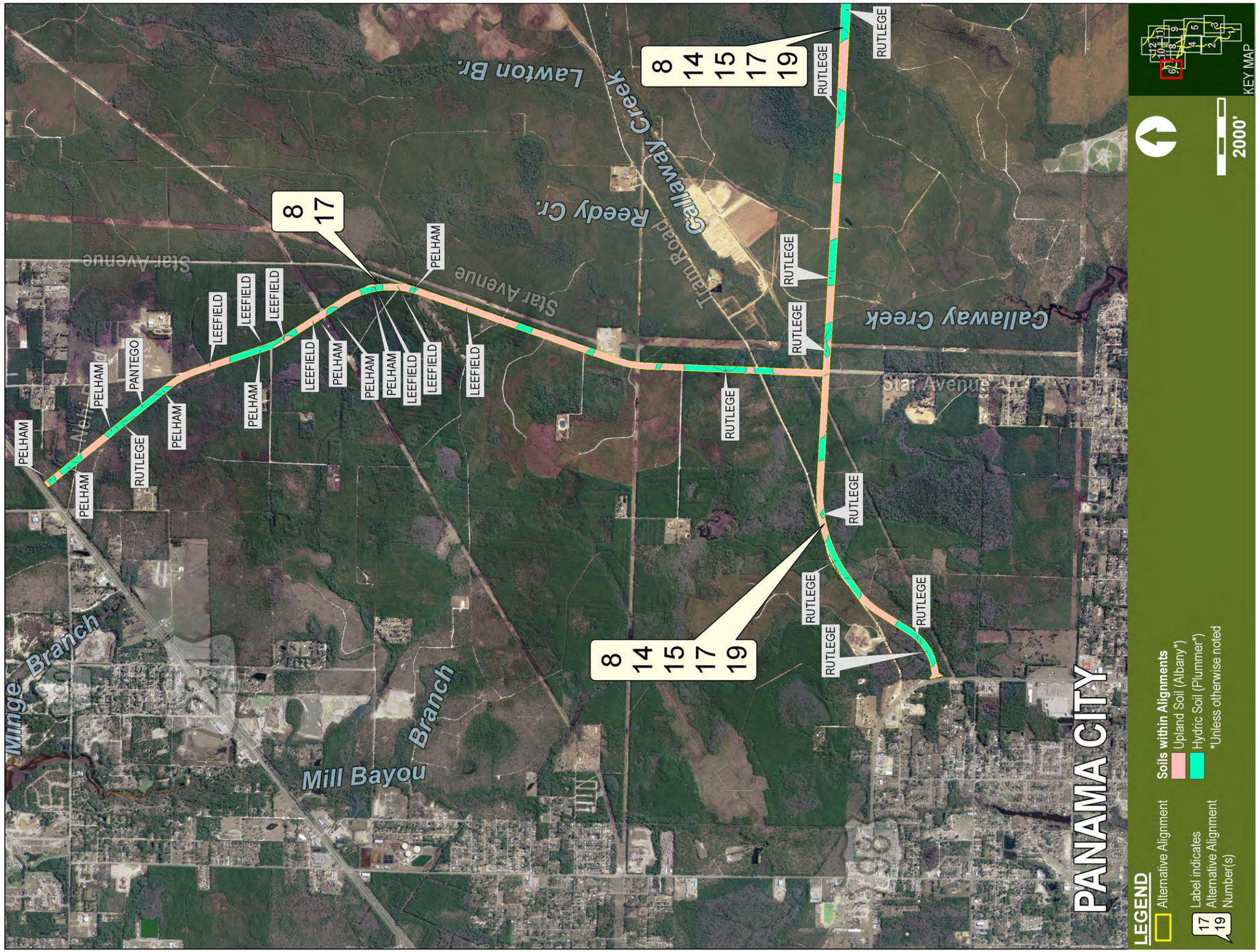

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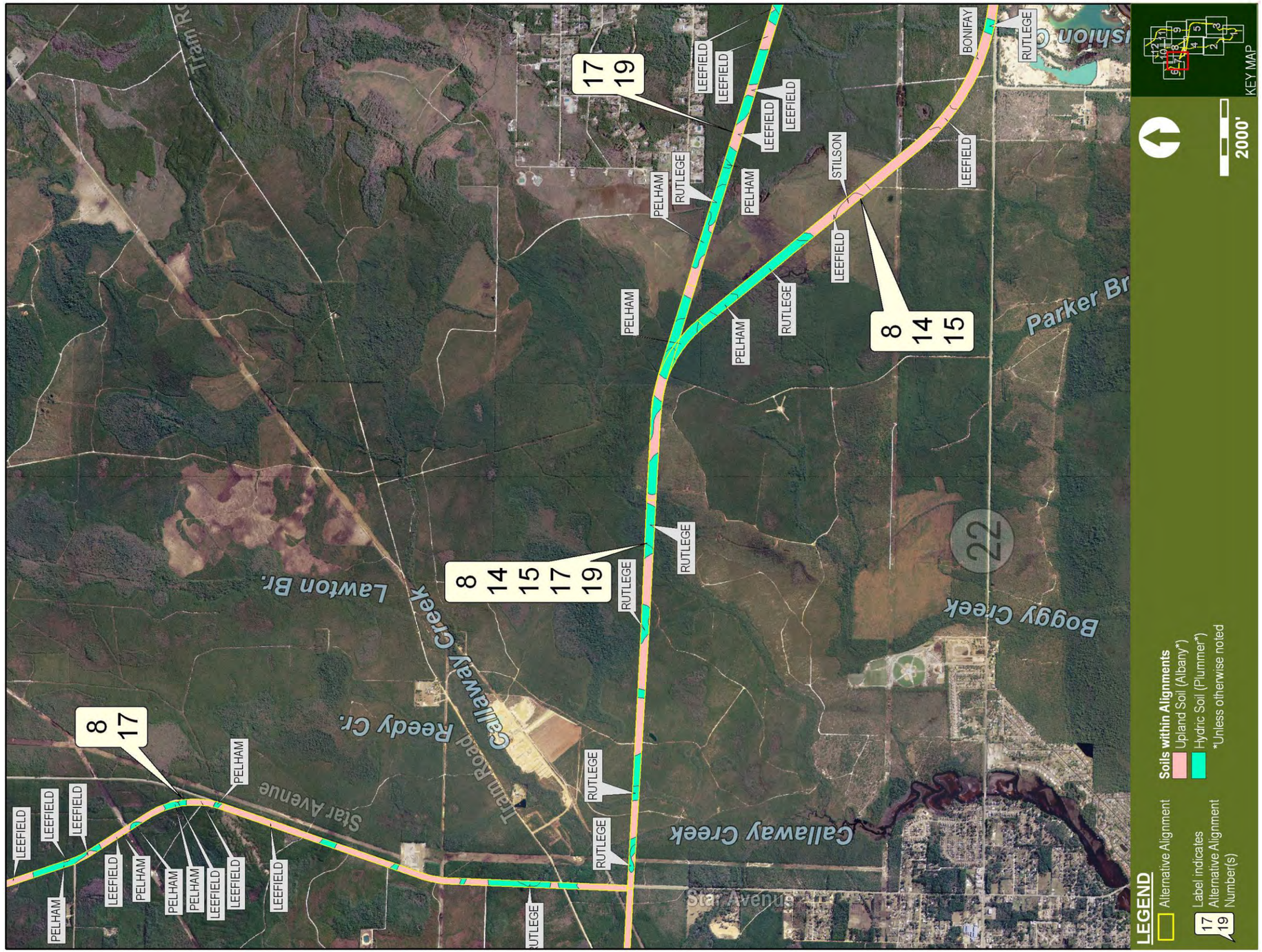


Figure 9 Soils

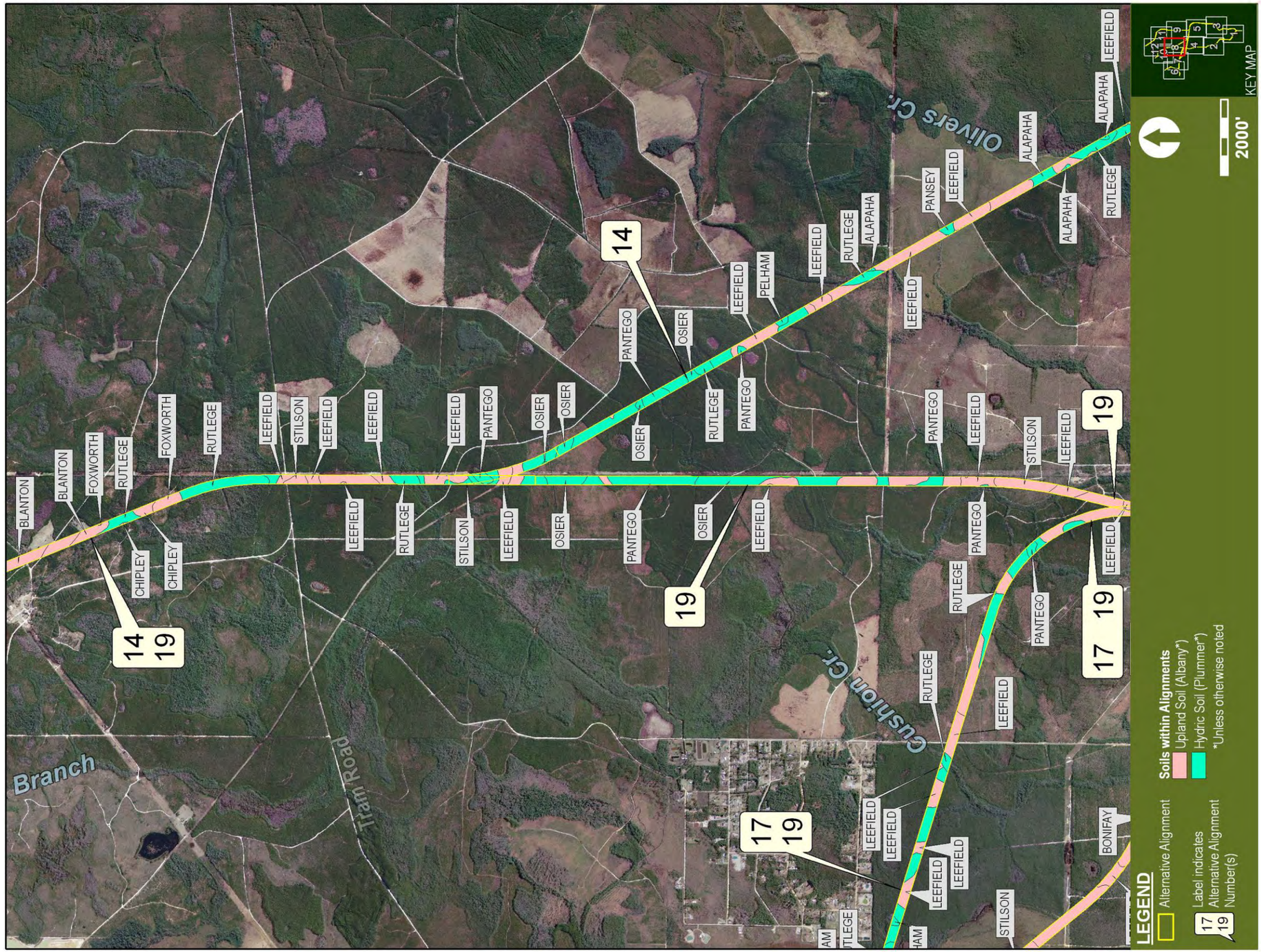


Figure 10 Soils

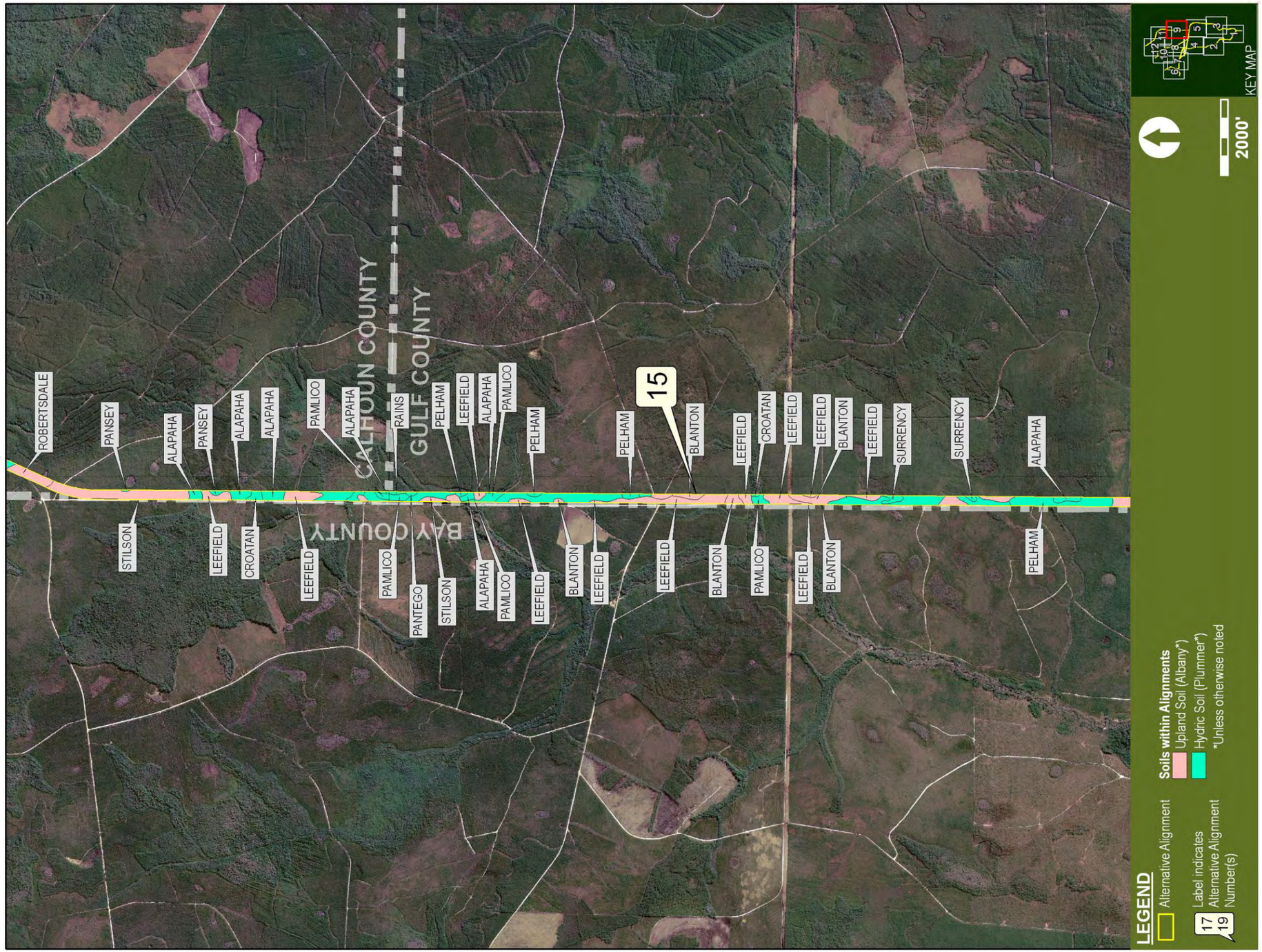
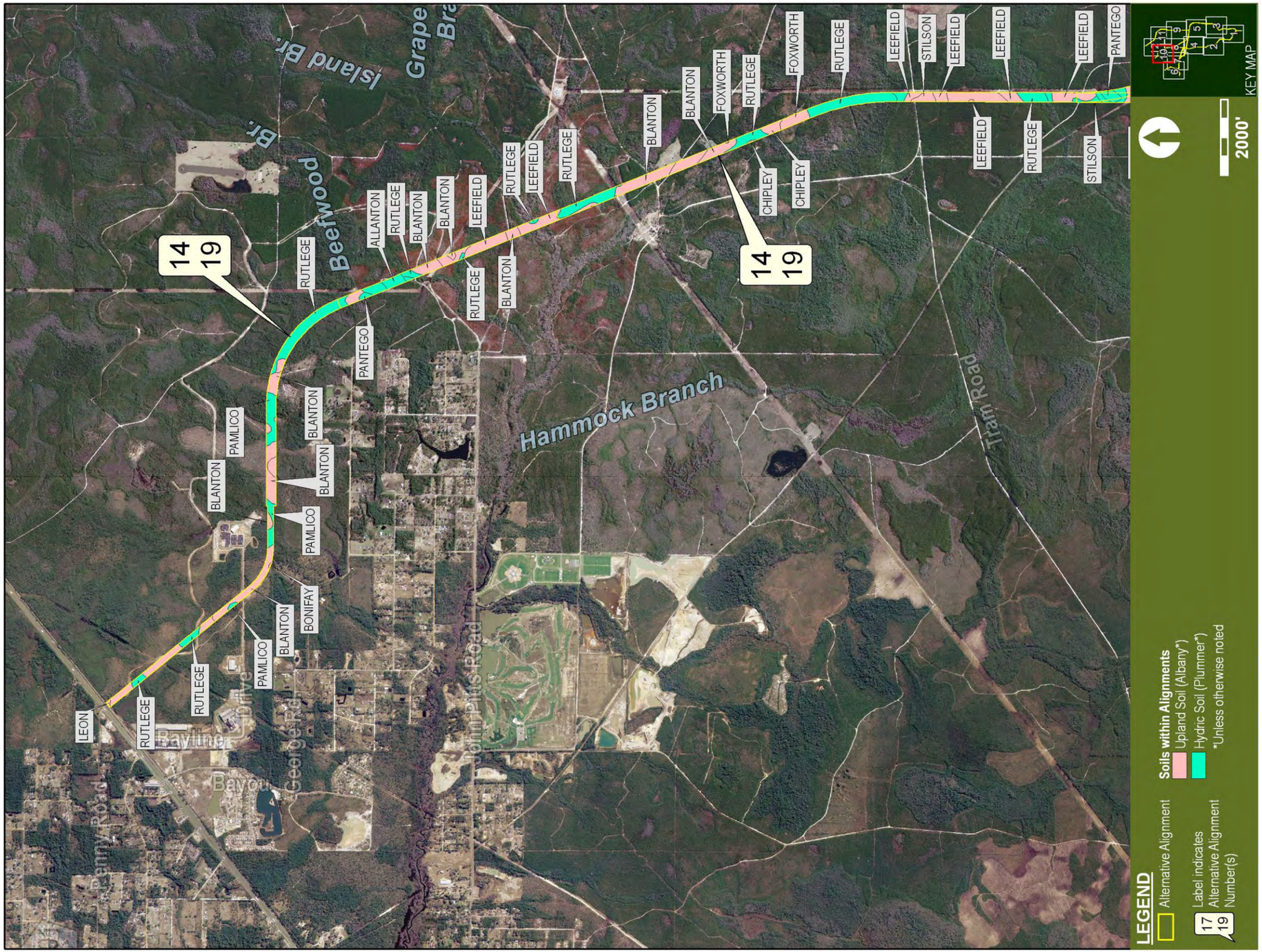


Figure 11 Soils



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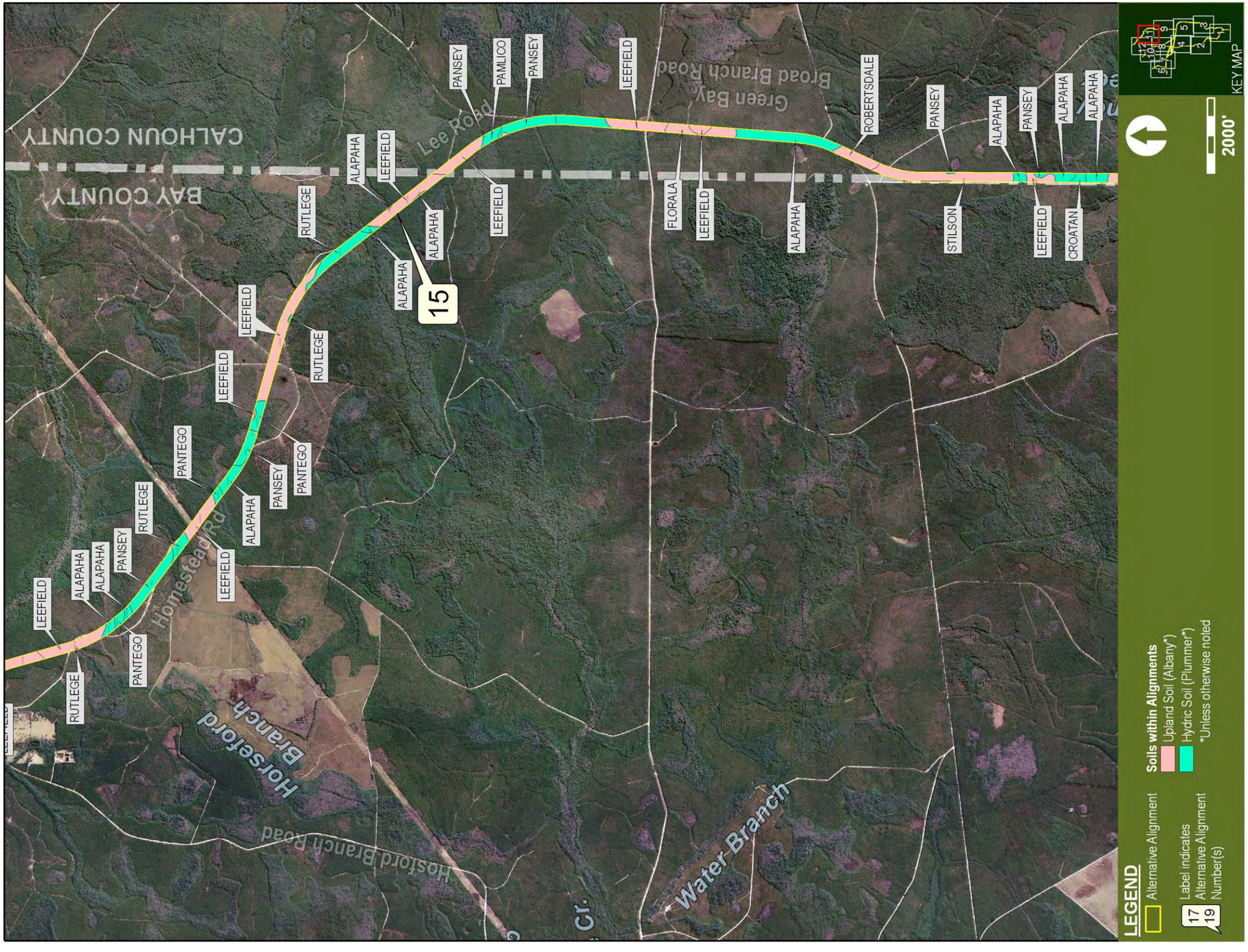


Figure 13 Soils

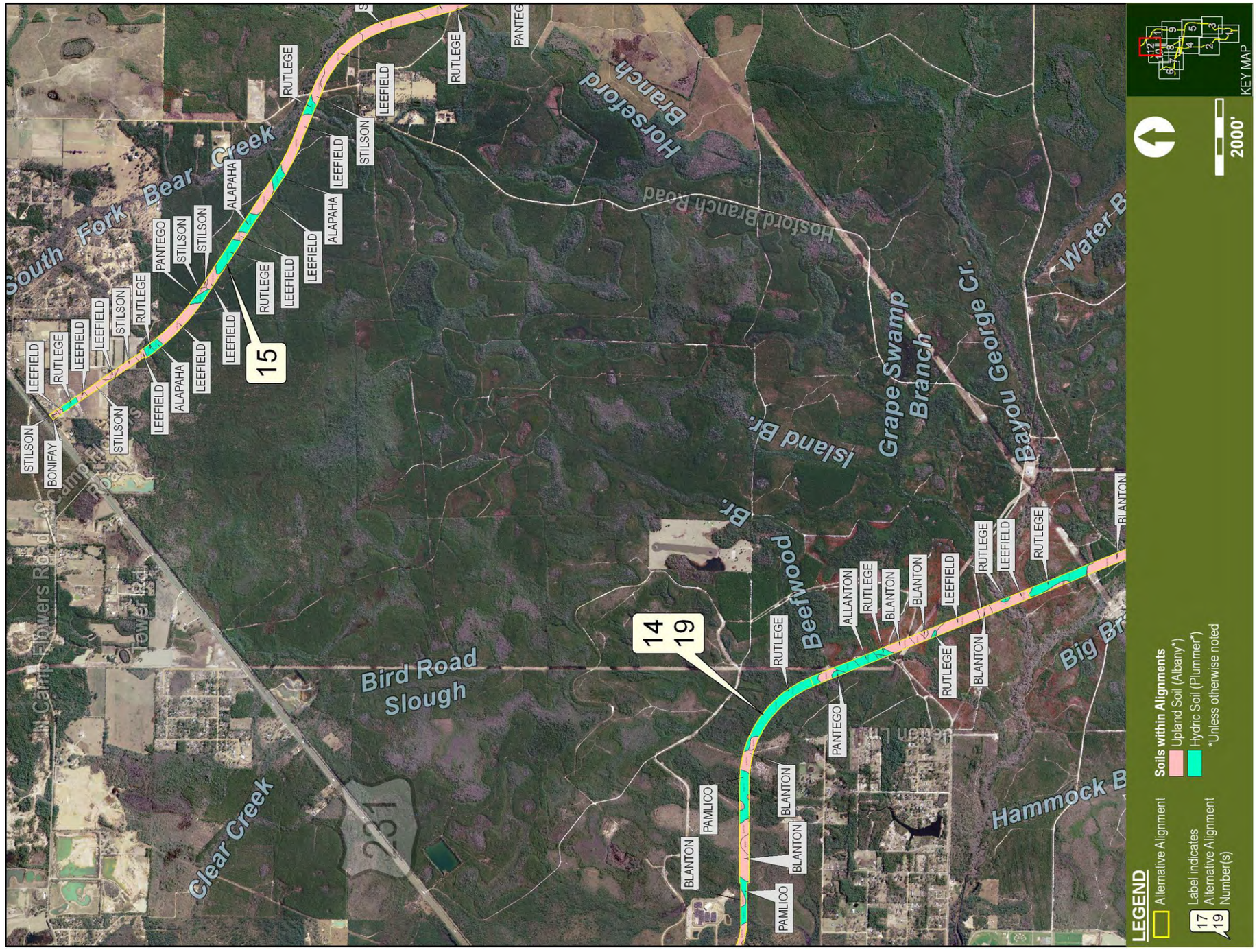
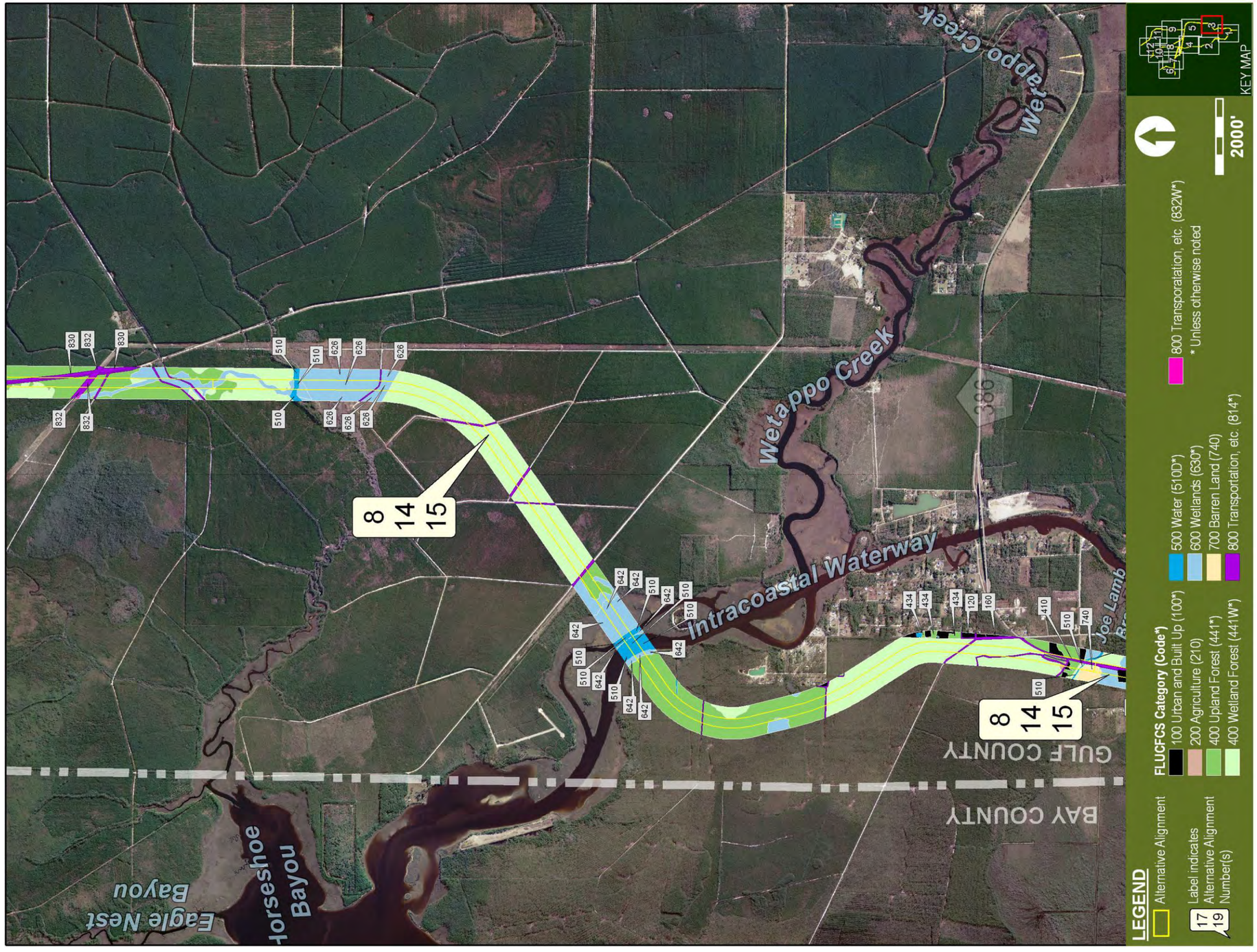


Figure 14 FLUCFCS

Figure 15 FLUCFCS

Figure 16 FLUCFCS



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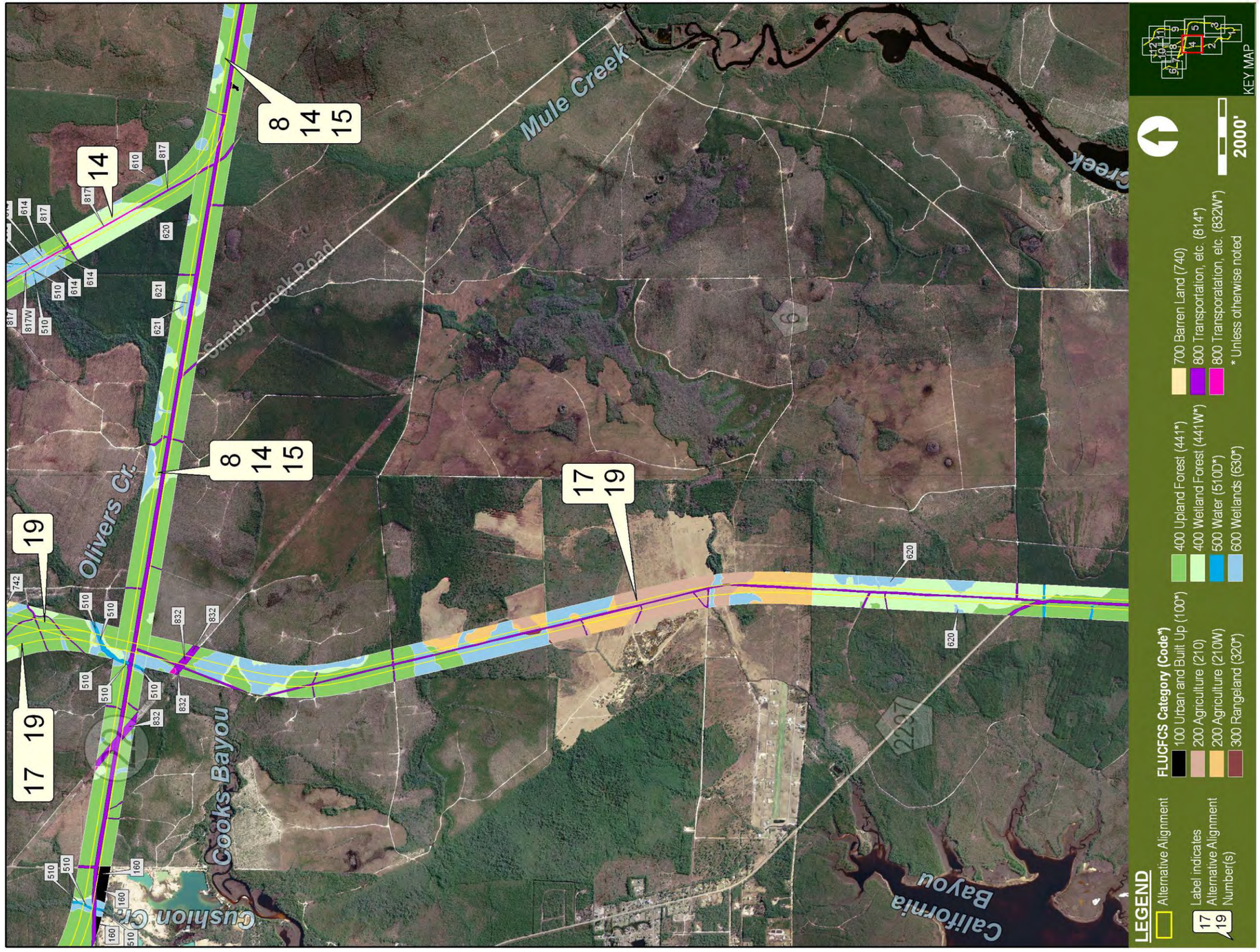

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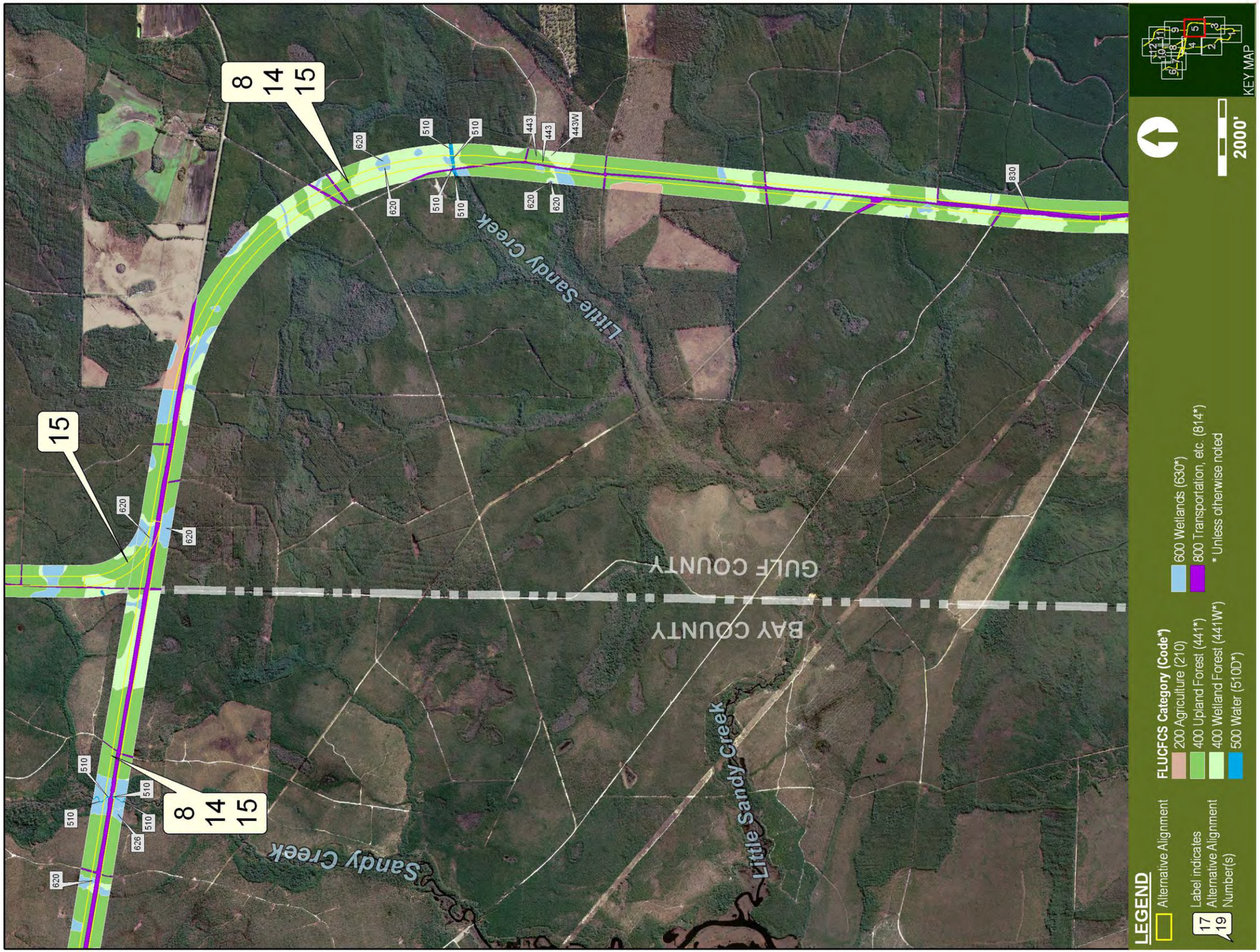

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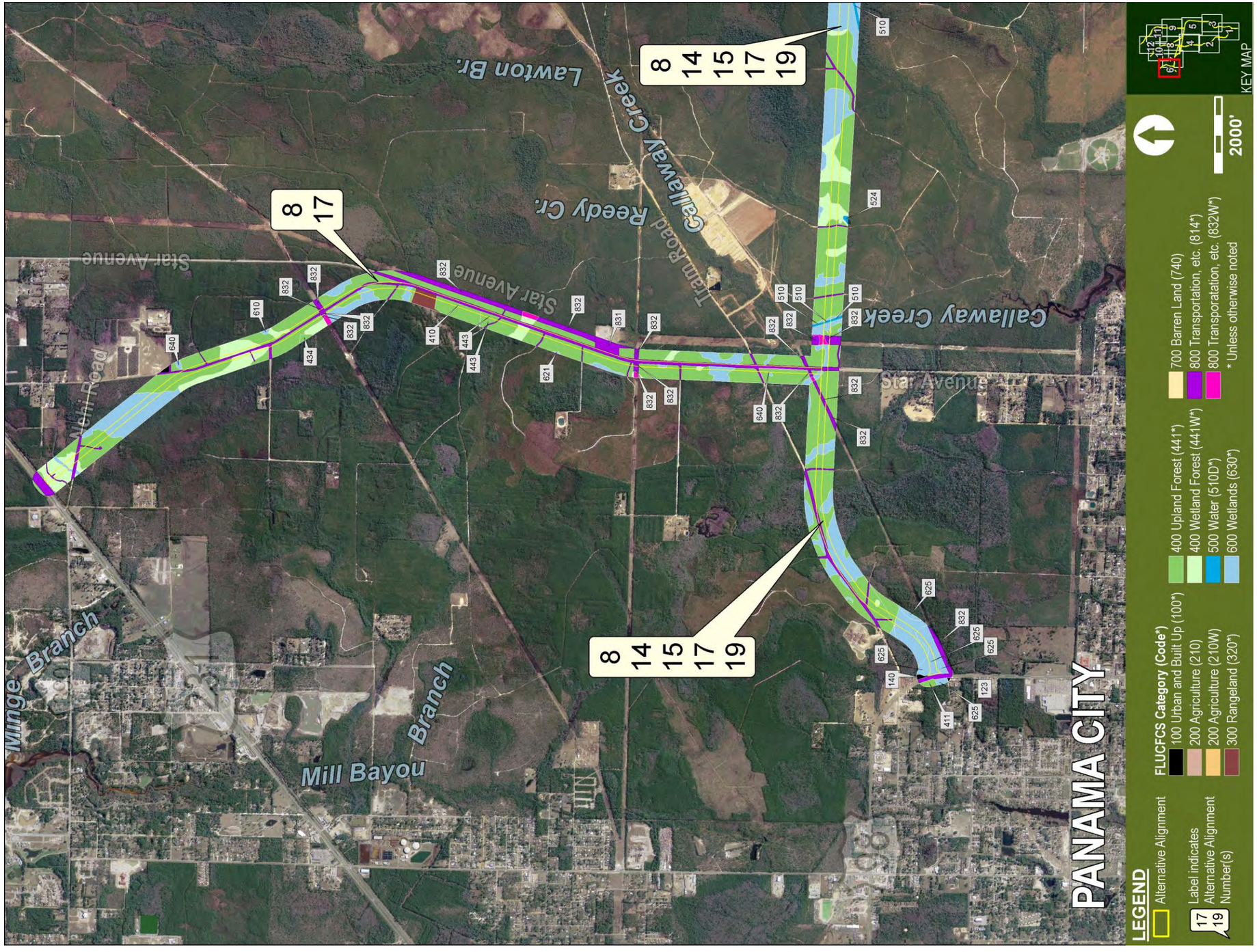

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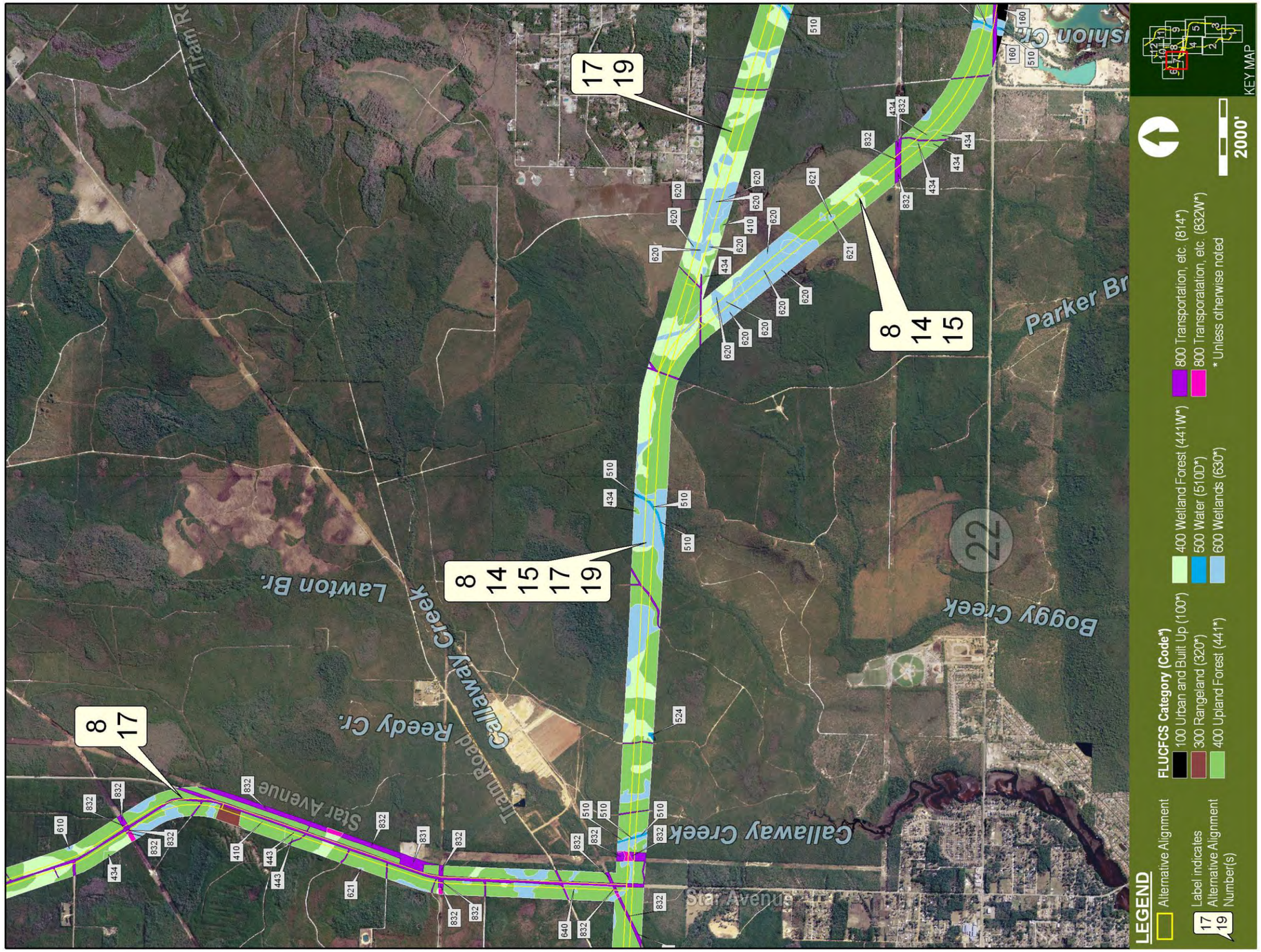

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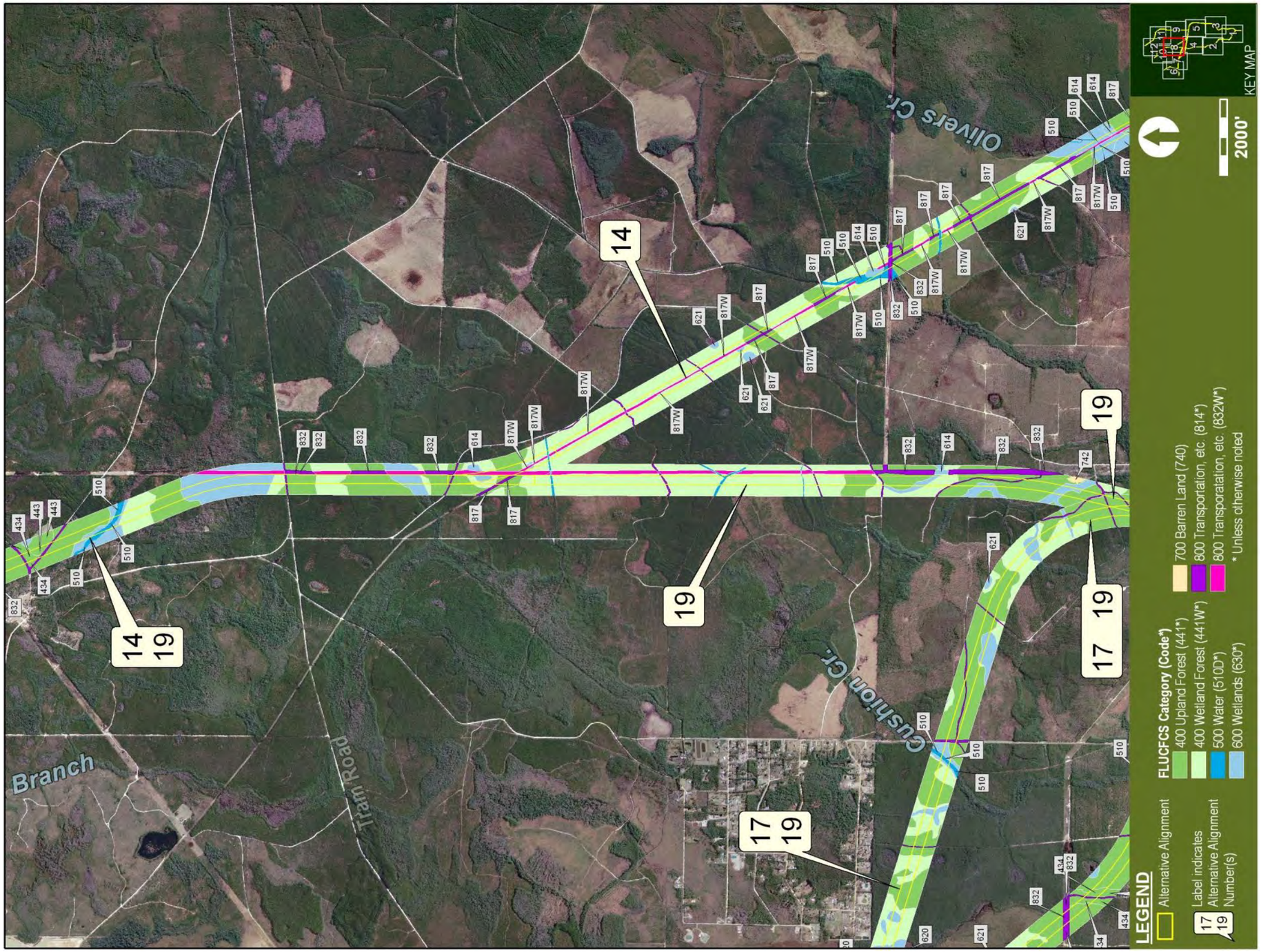
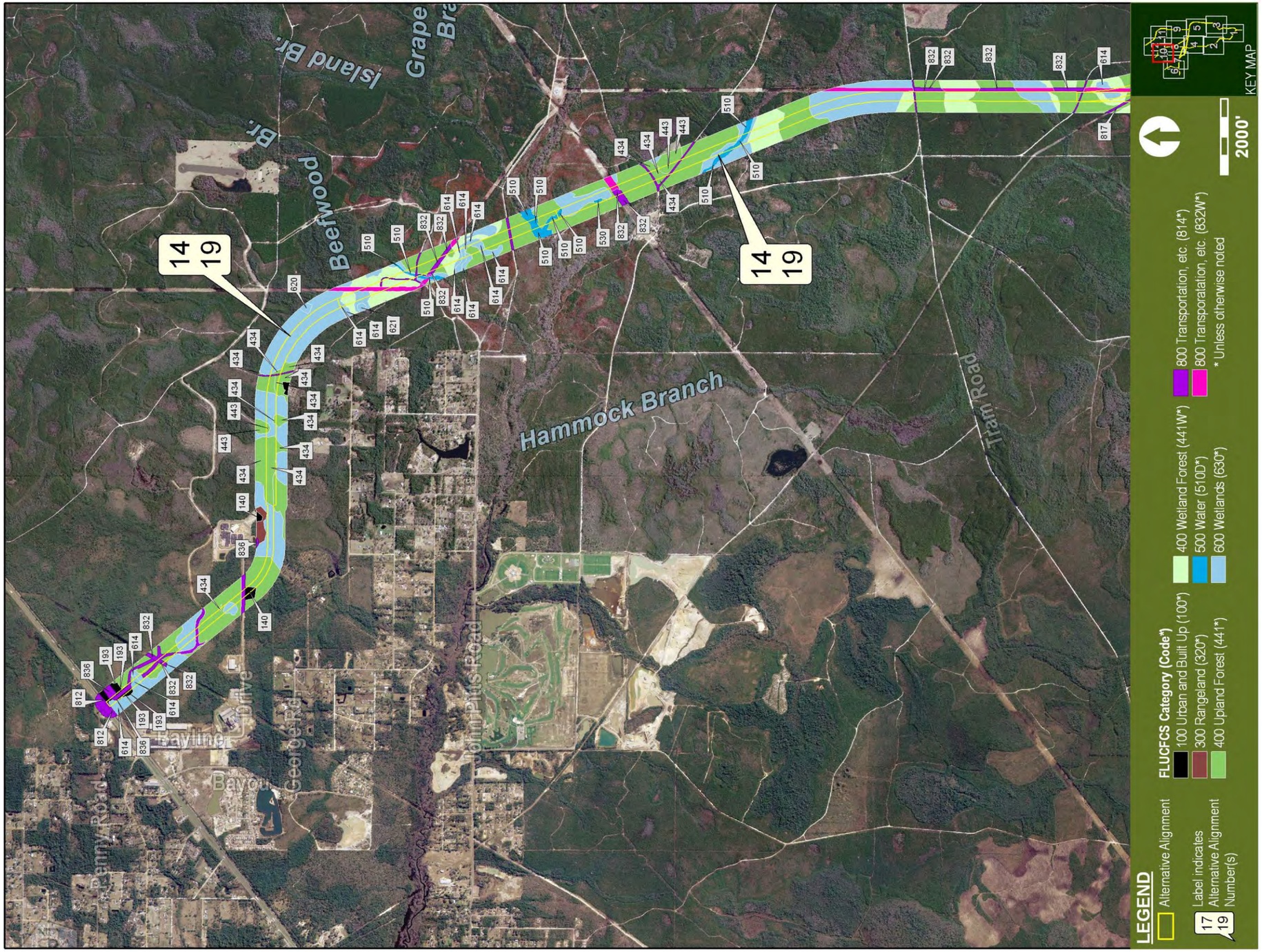


Figure 22 FLUCFCS

Figure 23 FLUCFCS



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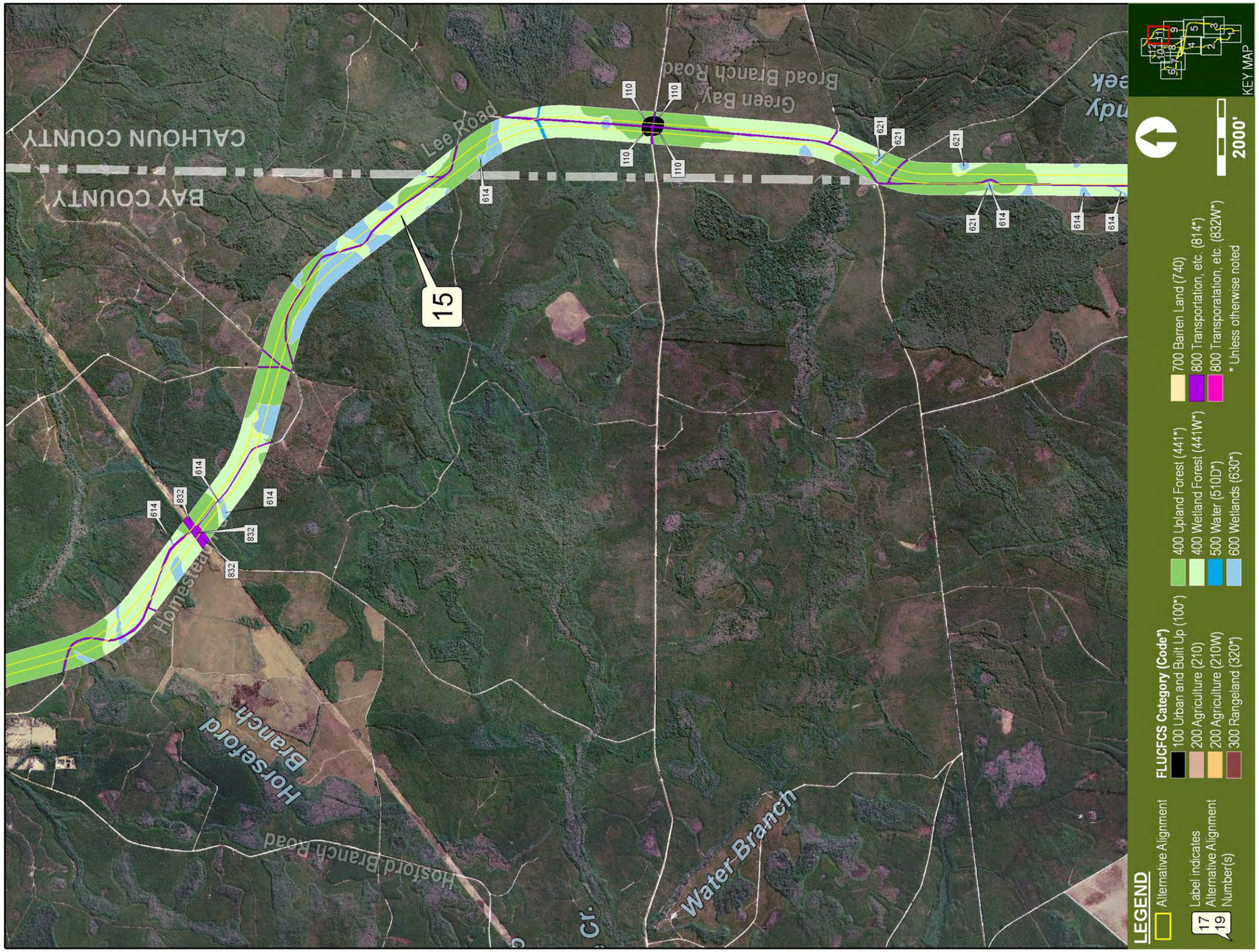

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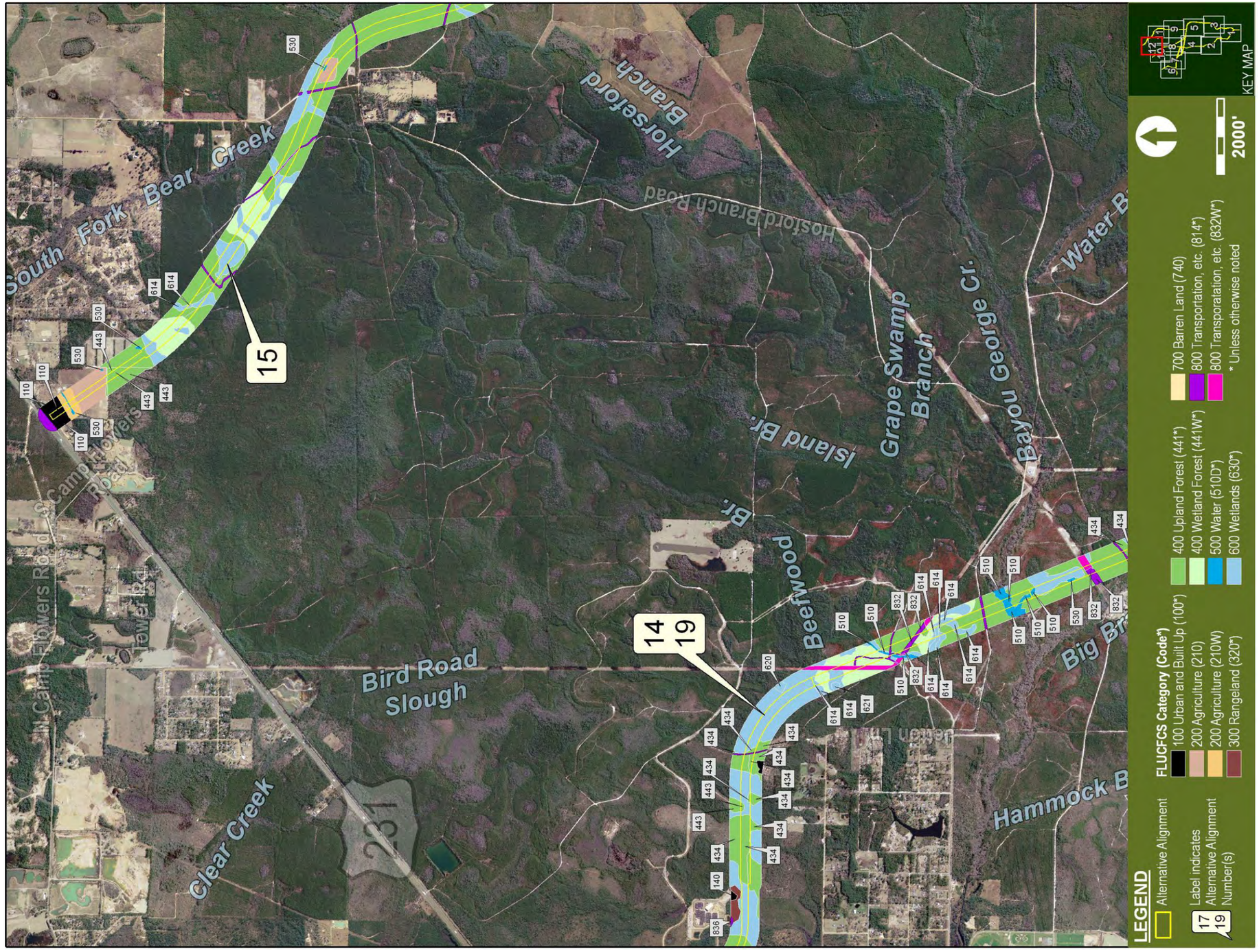


Figure 26 Wetlands

Figure 27 Wetlands

Figure 28 Wetlands

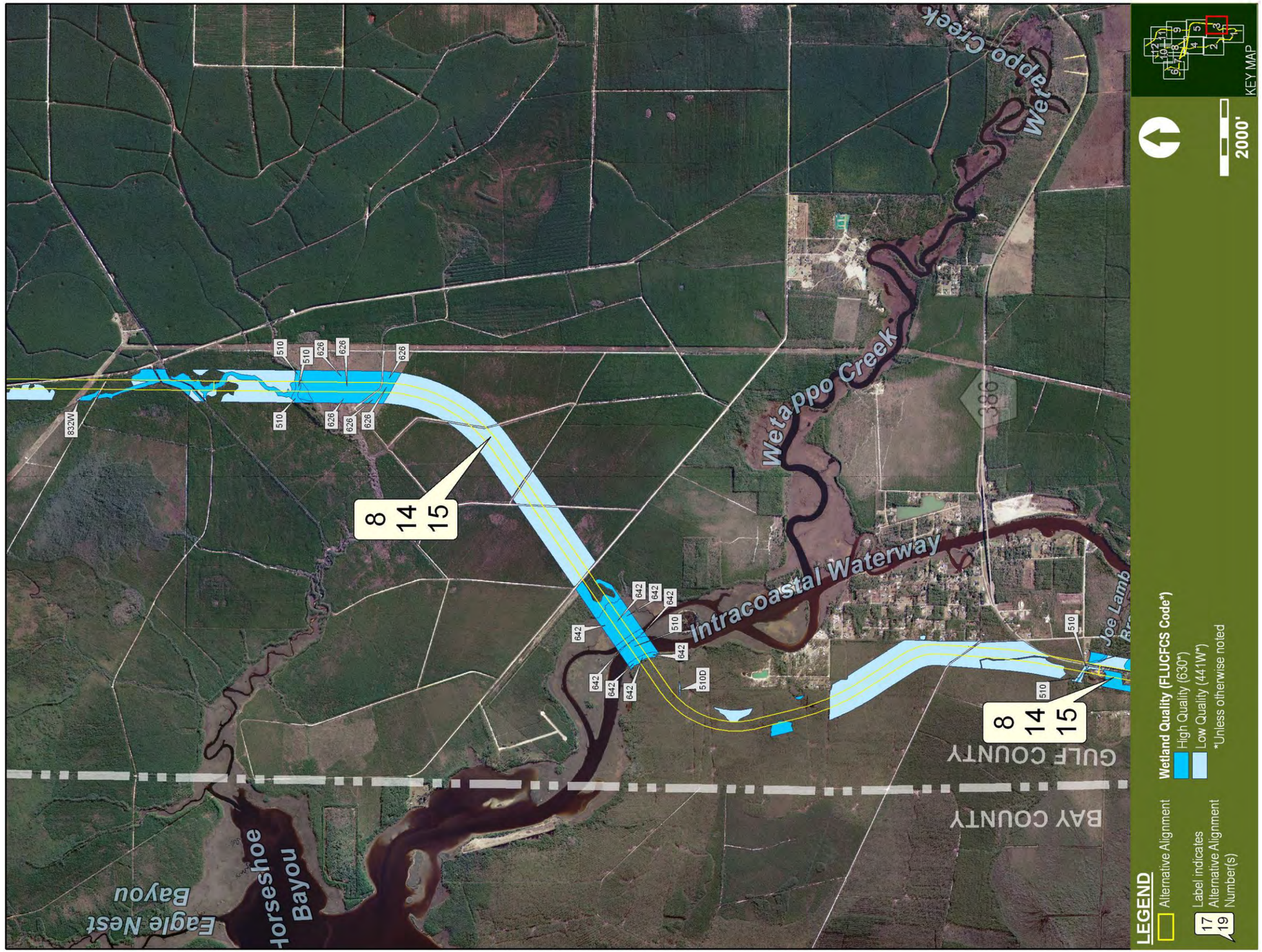


Figure 29 Wetlands

Figure 30 Wetlands

Figure 31 Wetlands

Figure 32 Wetlands

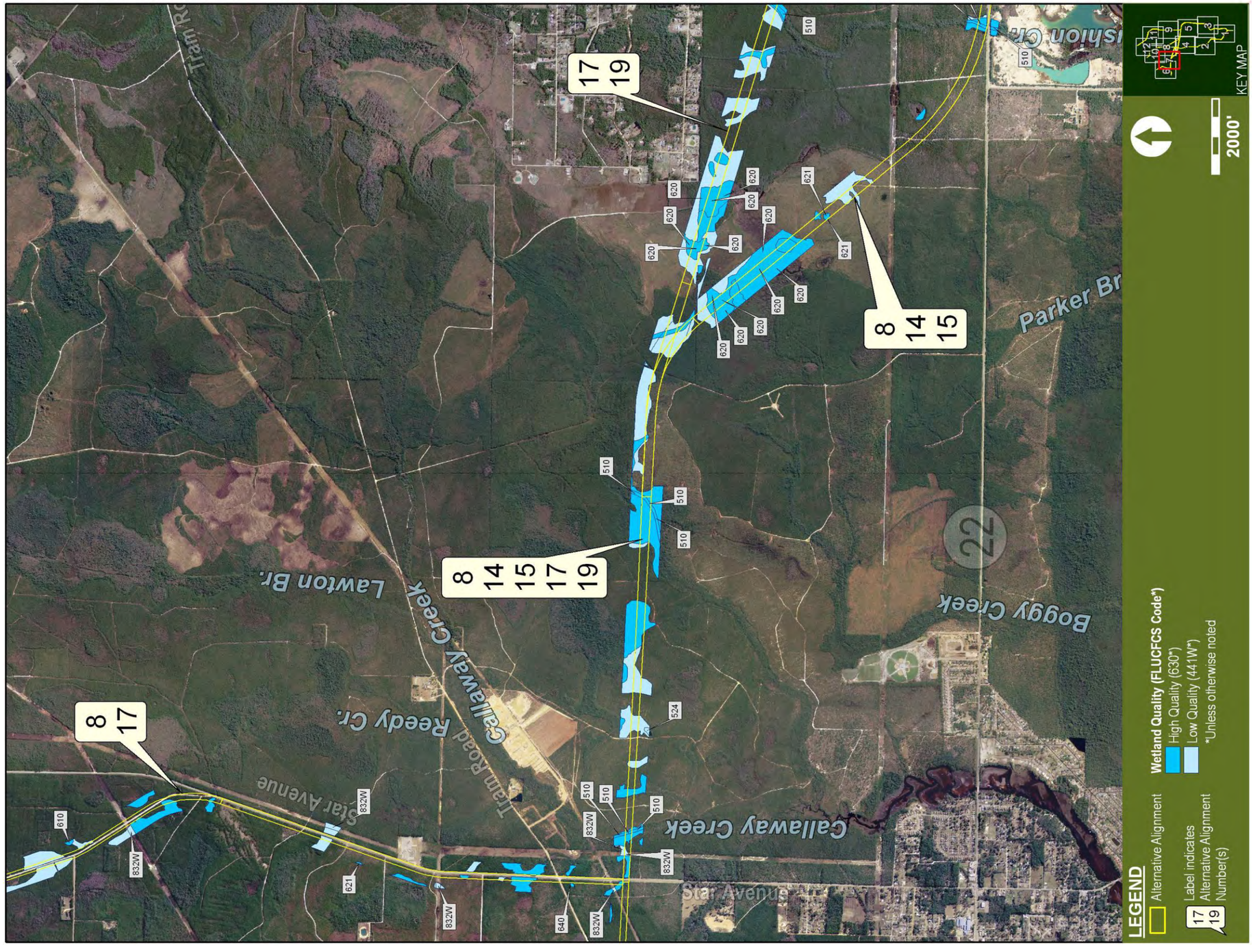


Figure 33 Wetlands

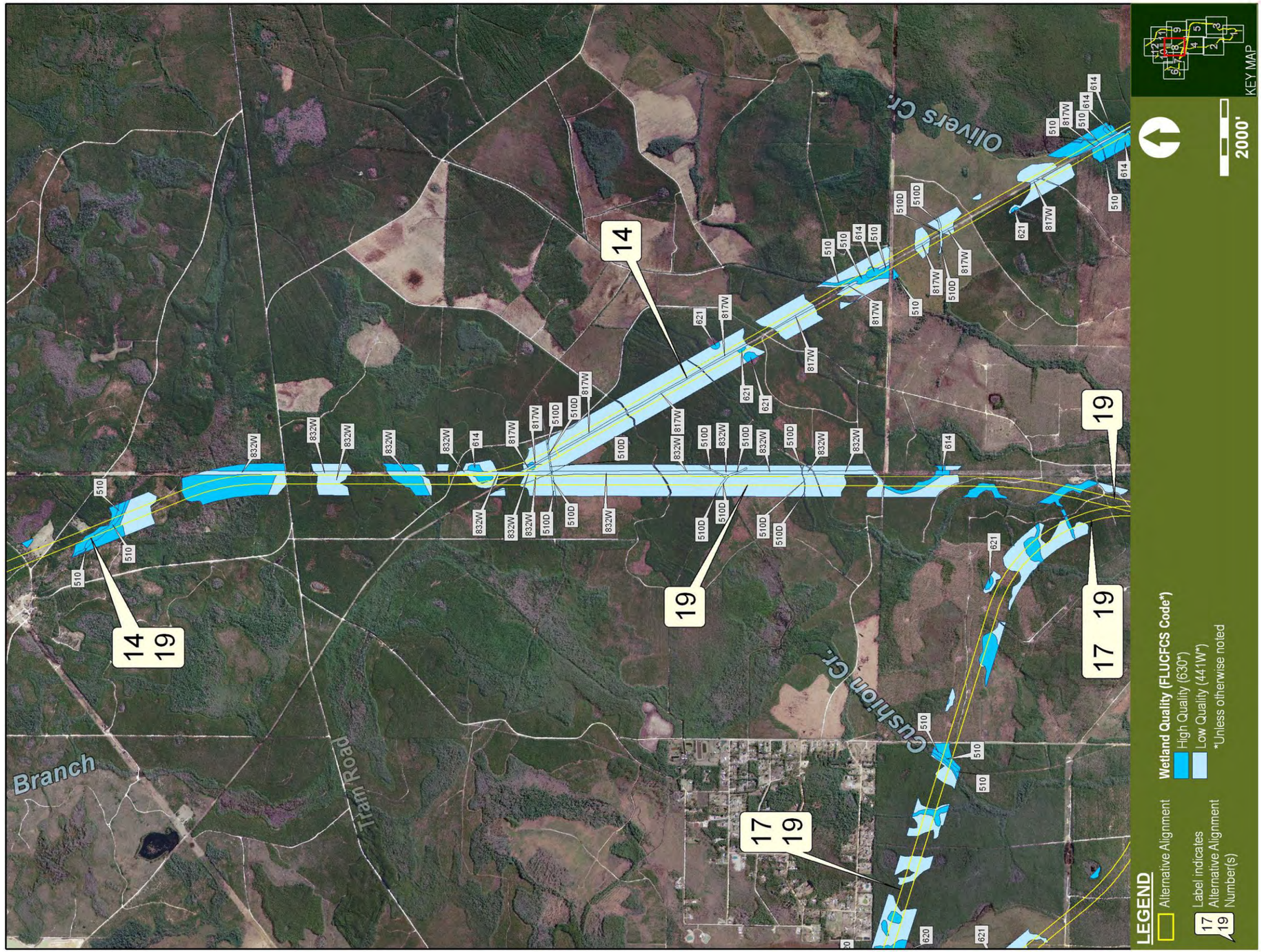


Figure 34 Wetlands

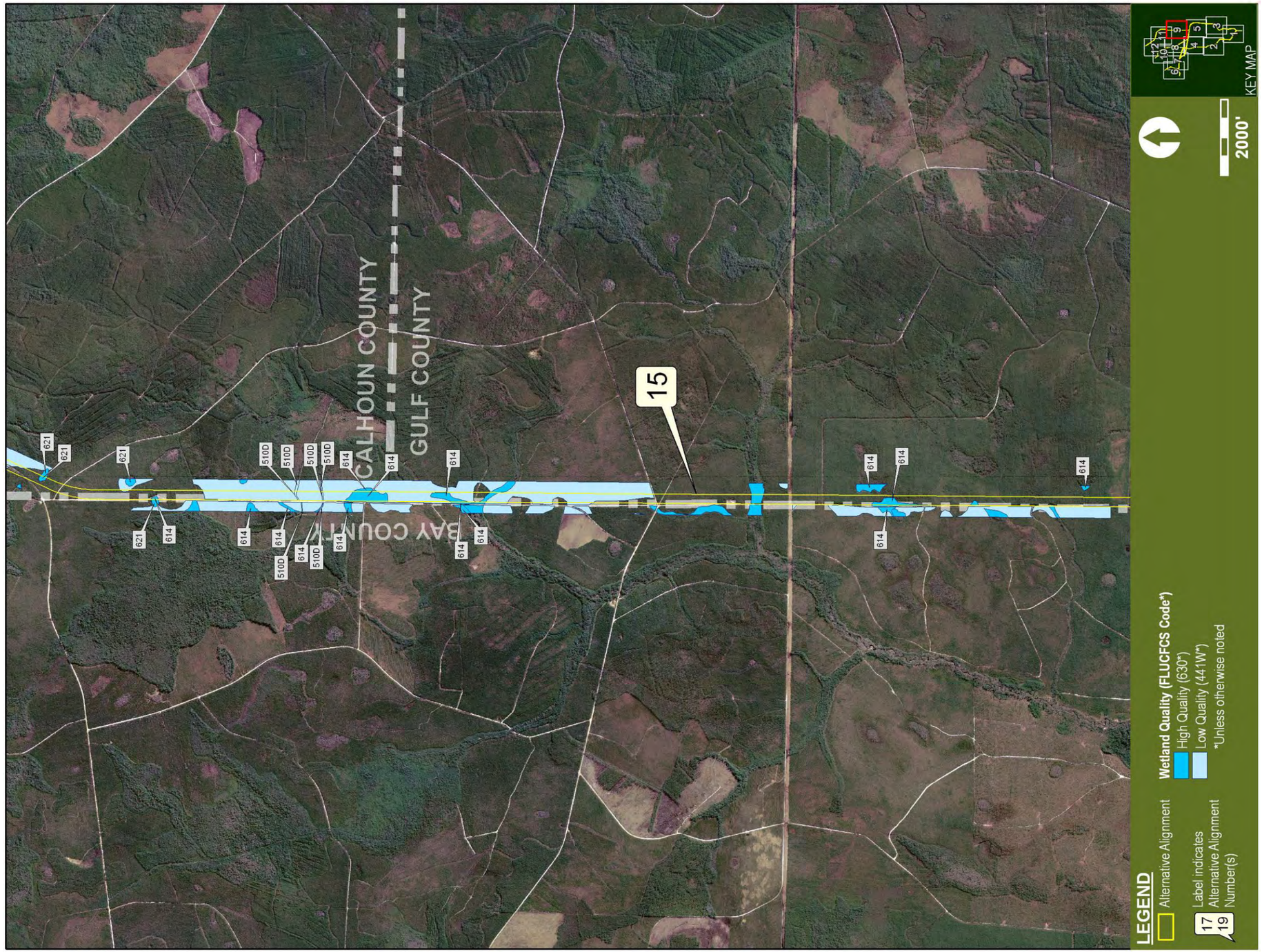


Figure 35 Wetlands

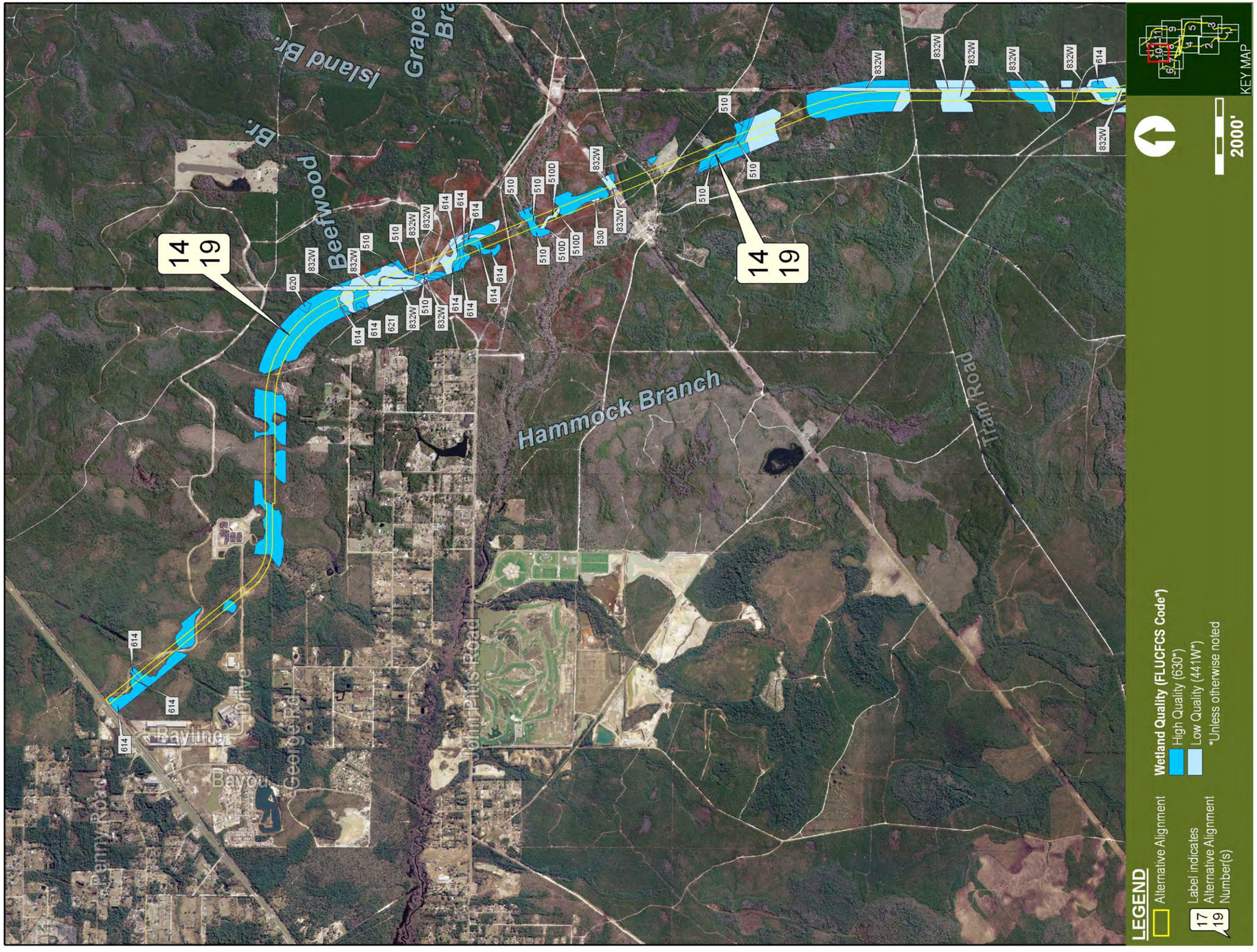
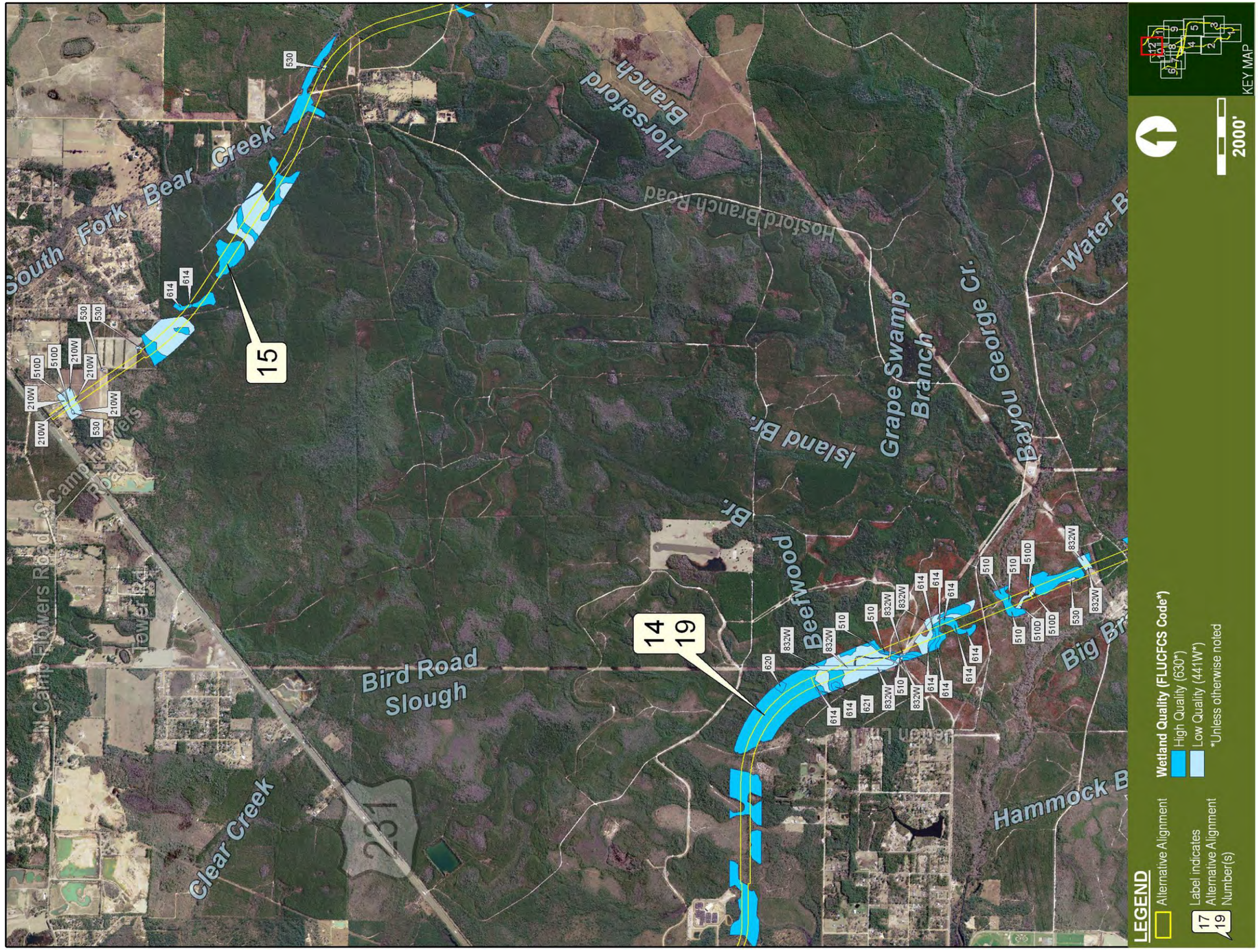


Figure 36 Wetlands

Figure 37 Wetlands



APPENDIX B
UMAM

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Gulf Coast Parkway	N/A	

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
210W, 441W, 443W, 510, 510D, 524, 530, 541, 614, 620, 621, 626, 630, 640, 641, 642, 814W, 817W, 832W		Impact	Approximately 1,139 acres.

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/watershed designation (Aquatic Preserve))
St. Andrews Bay, East Bay, Callaway Bayou, Boggy Bayou, Cooks Bayou, Bayou George, Wetappo Creek, Callaway Creek, Boggy Creek, Big Branch, Olivers Creek, Sandy Creek, Little Sandy Creek, Horseshoe Creek, Cushion Creek, Laird Creek, Mule Creek, Intracoastal Waterway, Tributaries to Deer Point Lake (See WER for full list)	Class I, Class II, Class III	Depending on the waterbody, classifications range i.e. OFW, AP, SWIM

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

Project located in rural and urban areas of Bay, Gulf, and Calhoun Counties. Natural surface waters, silviculture ditches, maintained ditches adjacent to exisitng road right-of-ways (i.e. Hwy 22). Residential and commercial development sporadic throughout the project study area.

Assessment area description

Potential impact area is dominated by hydric pine flatwoods, hydric pine savanna and wetland forested mix habitats among other wetland habitat types. Vegetation typical to the project study area includes:maidencane, St. John's wort, yellow-eyed grass, pipewort, bog button, white top pitcherplants, sundews, sawgrass, lizard's tail, netted chain fern, red maple, cattail , wax myrtle, arrowhead, sweet bay, and dahoon holly, slash pine, cypress, black gum, sweet gum and others. Nuisance and exotic species are present including: torpedo grass, popcorn trees, camphor tree, japanese climbing fern.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
The study area encompasses several nearby features. Various residential and commercial developments are along the proposed alignments.	Various federal and state listed plant and wildlife species are known to occur in the study area. See ESBA for more details.

Functions	Mitigation for previous permit/other historic use
Water storage, food chain support, water quality.	NA

Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
A detailed assessment of the wildlife species and utilization within the project area is provided in the Endangered Species Biological Assessment (ESBA) developed for the Project Development and Environment and Environmental Impact studies.	A detailed assessment of the wildlife species and utilization within the project area is provided in the ESBA.

Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):

Due to the size of the project study area and preliminary field reviews it is expected that various typical wildlife species associated with the wetland habitats described above would be present. A more detailed assessment of the wildlife species within the project area is provided in the ESBA.

Additional relevant factors:

See the Wetland Evaluation Report (WER) and ESBA for more detailed descriptions of environmental resources.

Assessment conducted by:	Assessment date(s):
PBS&J Northwest Florida Environmental Services	Based on various field observations conducted in April - October 2007 and in 2009. Aerial photo interpretation also utilized to assess habitat.

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
GCP PD&E/EIS Study	N/A	FLUCFCS 210W
Impact or Mitigation	Assessment conducted by:	Assessment date:
Potential impact	PBS&J	Various

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	w/o pres or current: 4	with: 0	Systems are limited to a few areas of the study area. Some are in undeveloped land use areas while others are adjacent to siliviculture, residential development, and utility uses. Sites facilitate some corridor connectivity with undeveloped land, but are of lower quality.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 5	with: 0	Water levels and flows through these areas are minimal due to proximity to silvicultural operations and other land uses such as roads.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 5	with: 0	Community structure limits the presence of native plant species. Nuisance and exotic species may be present

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.47	0

Delta = [with-current]
-0.47

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres =XXX

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. (effective date)

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
GCP PD&E/EIS Study	N/A	FLUCFCS 441W
Impact or Mitigation	Assessment conducted by:	Assessment date:
Potential impact	PBS&J	Various

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	Systems are existing silvicultural areas through wetlands. They are associated with non paved and paved roadways, ditches and various other land uses throughout project study area. Sites facilitate some corridor connectivity with undeveloped land. Minimal invasive exotics or other invasive plant species present.	w/o pres or current: 6; with: 0
.500(6)(b)Water Environment (n/a for uplands)	Water levels and flows through this area have been affected by existing silviculture and other land uses. These conditions have reduced hydrologic exchange with adjacent historical wetland connections. Water levels slightly lower than expected. No signs of insect damage or disease associated with hydrological stress, minimal to no signs of water quality degradation.	w/o pres or current: 6; with: 0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	Community structure lacks significant supportive of various species due to fire suppression and overgrowth of titi depending on the exact location where this habitat type is observed. Due to the large expansiveness of this habitat within the study area, more detailed UMAM assessments will need to occur based on individual site assessments. Relatively low nuisance and exotic species present.	w/o pres or current: 5; with: 0

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.56	0

Delta = [with-current]
-0.56

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = XXX

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. (effective date)

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
GCP PD&E/EIS Study	N/A	FLUCFCS 443W
Impact or Mitigation	Assessment conducted by:	Assessment date:
Potential impact	PBS&J	Various

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	Systems are silvicultural areas through wetlands that have been harvested and are in various stages of regrowth. They are associated with non paved and paved roadways, ditches and various other land uses throughout project study area. Sites facilitate some corridor connectivity with undeveloped land.	w/o pres or current: 4; with: 0
.500(6)(b)Water Environment (n/a for uplands)	Water levels and flows through this area have been affected by silviculture and other land uses. These conditions have reduced hydrologic exchange with adjacent historical wetland connections.	w/o pres or current: 4; with: 0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	Community structure lacks significant support for various species due to fire suppression and overgrowth of titi depending on the exact location where this habitat type is observed. Has limited presense in study area. More detailed UMAM assessments will need to occur based on individual site assessments. Relatively low nuisance and exotic species present.	w/o pres or current: 4; with: 0

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.4	0

Delta = [with-current]
-0.4

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = XXX

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. (effective date)

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
GCP PD&E/EIS Study	N/A	FLUCFCS 510
Impact or Mitigation	Assessment conducted by:	Assessment date:
Potential impact	PBS&J	Various

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	w/o pres or current: .8	with: 0	Various streams, waterways, and tributaries provide sufficient wetland and surface water functions. Many wetlands contributing flow to streams and waterways are buffered by fire suppressed wetlands and oftentimes planted pine, and have been hydrologically altered with ditches, unpaved roads and paved roads. Nuisance/exotic vegetation in the vicinity is minimal. Some level of wildlife utilization affected by existing infrastructure and adjacent developments.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 7	with: 0	Some effects to the systems are relative to the existing roadway infrastructure, adjacent developments, and silvicultural practices. A detailed assessment for the waterbodies will need to be conducted if project study progresses to permitting
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: .8	with: 0	Predominant community structure contains native vegetation indicative to the fresh/brackish stream system

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.77	0

Delta = [with-current]
-0.77

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = XXX

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. [effective date]

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
GCP PD&E/EIS Study	N/A	FLUCFCS 510D
Impact or Mitigation	Assessment conducted by:	Assessment date:
Potential impact	PBS&J	Various

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

500(6)(a) Location and Landscape Support	w/o pres or current: 4	with: 0	Roadside ditches for drainge along existing nonpaved (silviculture) and paved roads. Provide minimal support primarily transporting stormwater and adjacent wetland drainage. Have a relatively negative affect to adjacent wetlands by altering hydrologic flow and wetland recharge.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 4	with: 0	Stormwater conveyed through ditches and swales. Varying quality of runoff from the existing nonpaved (silviculture) and paved roads.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 6	with: 0	Some minimal support of native vegetation and aquatic organisms such as small fish and benthic invertebrates.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.47	0

Delta = [with-current]
-0.47

If preservation as mitigation:
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = XXX

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. (effective date)

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
GCP PD&E/EIS Study	N/A	FLUCFCS 524
Impact or Mitigation	Assessment conducted by:	Assessment date:
Potential impact	PBS&J	Various

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	w/o pres or current: 6	with: 0	Systems are limited to buffers adjacent to alignments within the study area. Lakes may facilitate some corridor connectivity with undeveloped land for wildlife.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 6	with: 0	Depending on the historical nature of these features, they could have enhanced conditions or created conditions which have reduced hydrologic exchange with adjacent historical wetland connections.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 7	with: 0	Community structure is potentially supportive of desirable species. More detailed UMAM assessments will need to occur based on individual site assessments.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.63	0

Delta = [with-current]
-0.63

If preservation as mitigation:
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres =XXX

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. (effective date)

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
GCP PD&E/EIS Study	N/A	FLUCFCS 530
Impact or Mitigation	Assessment conducted by:	Assessment date:
Potential impact	PBS&J	Various

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	Systems are located in various areas within the study area. Reservoirs or ponds may facilitate some corridor connectivity with undeveloped land for wildlife.	
w/o pres or current: 5	with: 0	
.500(6)(b)Water Environment (n/a for uplands)	These are typically manmade impoundments, ponds, or borrow pits. These features are likely to have created conditions which have reduced hydrologic exchange with adjacent historical wetland connections.	
w/o pres or current: 4	with: 0	
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	Community structure may support desirable species. More detailed UMAM assessments will need to occur based on individual site assessments.	
w/o pres or current: 4	with: 0	

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.43	0

Delta = [with-current]
-0.43

If preservation as mitigation:
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres =XXX

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. (effective date)

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
GCP PD&E/EIS Study	N/A	FLUCFCS 541
Impact or Mitigation	Assessment conducted by:	Assessment date:
Potential impact	PBS&J	Various

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	w/o pres or current: 9	with: 0	Embayment waterbodies where various streams, waterways, and tributaries provide sufficient wetland and surface water functions. Many wetlands contributing flow to streams and waterways are buffered by fire suppressed wetlands and oftentimes planted pine; and have been hydrologically altered with ditches, unpaved roads and paved roads. Nuisance/exotic vegetation in the vicinity is minimal. Some level of wildlife utilization affected by existing infrastructure and adjacent developments.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 8	with: 0	Some effects to the systems are relative to the existing roadway infrastructure, adjacent developments, and silvicultural practices. A detailed assessment for the waterbodies will need to be conducted if project study progresses to permitting
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 8	with: 0	Predominant community structure contains native vegetation and wildlife species indicative to the estuarine ecosystem

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.83	0

Delta = [with-current]
-0.83

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = XXX

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. [effective date]

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
GCP PD&E/EIS Study	N/A	FLUCFCS 614
Impact or Mitigation	Assessment conducted by:	Assessment date:
Potential impact	PBS&J	Various

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

500(6)(a) Location and Landscape Support	w/o pres or current: 6	with: 0	Systems are located throughout the study area. Some are in undeveloped land use areas while others are adjacent to silviculture, residential development, and utility uses. Sites facilitate some corridor connectivity with undeveloped land. These areas are typically impacted by fire suppression.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 5	with: 0	Water levels and flows through these areas are typically altered due to proximity to silvicultural operations, fire suppression, and other land uses such as roads.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 5	with: 0	Community structures are fire suppressed and dominated by titi *(Cliftonia monophylla* and *Cyrilla racemiflora)*. Vegetation richness and structure generaaly low since relatively tall and dense (impenetrable) thickets of titi are typical: little opportunity for other shrubs and groundcover species. Relatively low nuisance and exotic species present.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.53	0

Delta = [with-current]
-0.53

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres =XXX

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. (effective date)

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
GCP PD&E/EIS Study	N/A	FLUCFCS 620
Impact or Mitigation	Assessment conducted by:	Assessment date:
Potential impact	PBS&J	Various

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

500(6)(a) Location and Landscape Support	Systems are located adjacent to existing silvicultural, roadways, and various other land uses throughout project study area. Sites facilitate some corridor connectivity with undeveloped land. Scores for this habitat type would be scored higher if they exist farther away from the existing roads, residential development etc.	w/o pres or current: 7; with: 0
.500(6)(b)Water Environment (n/a for uplands)	Water levels and flows through this area have typically been affected by surrounding silviculture and other land uses. These conditions have reduced hydrologic exchange with adjacent historical wetland connections. Typically exhibit minimal water quality degradtion.	w/o pres or current: 7; with: 0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	May have a combination of pine and cypress in the overstory. Species richness/diversity depends on degree of fire suppresion and site alteration. More detailed UMAM assessments will need to occur based on individual site assessments. Relatively low nuisance and exotic species present.	w/o pres or current: 8; with: 0

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.73	0

Delta = [with-current]
-0.73

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = XXX

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. (effective date)

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
GCP PD&E/EIS Study	N/A	FLUCFCS 621
Impact or Mitigation	Assessment conducted by:	Assessment date:
Potential Impact	PBS&J	Various

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

500(6)(a) Location and Landscape Support	w/o pres or current: 7	with: 0	Systems are located throughout the study area. Some are in undeveloped land use areas while others are adjacent to silviculture, residential development, and utility uses. Sites facilitate some corridor connectivity with undeveloped land.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 7	with: 0	Water levels and flows through these areas are typically altered due to proximity to silvicultural operations and other land uses such as roads. Typically exhibit minimal water degradation.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 7	with: 0	Characterized by a cypress dominated canopy. Species richness/diversity depends on degree of fire suppresion and site alteration. More detailed UMAM assessments will need to occur based on individual site assessments. Relatively low nuisance and exotic species present.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.7	0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = XXX

Delta = [with-current]
-0.7

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. (effective date)

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
GCP PD&E/EIS Study	N/A	FLUCFCS 626
Impact or Mitigation	Assessment conducted by:	Assessment date:
Potential impact	PBS&J	Various

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

500(6)(a) Location and Landscape Support	w/o pres or current: 6	with: 0	Systems are located adjacent to existing silvicultural, roadways, and various other land uses throughout project study area. Sites facilitate some corridor connectivity with undeveloped land. Scores for this habitat type would be scored higher if they exist farther away from the existing roads, residential development etc.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 6	with: 0	Water levels and flows through this area have been affected by existing silviculture and other land uses. These conditions have reduced hydrologic exchange with adjacent historical wetland connections.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 7	with: 0	May contain diverse assemblages of herbaceous species depending on the specific location where this habitat type is observed. More detailed UMAM assessments will need to occur based on individual site assessments. Relatively low nuisance and exotic species present.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.63	0

Delta = [with-current]
-0.63

If preservation as mitigation:
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = XXX

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. (effective date)

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
GCP PD&E/EIS Study	N/A	FLUCFCS 630
Impact or Mitigation	Assessment conducted by:	Assessment date:
Potential impact	PBS&J	Various

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	w/o pres or current: 6	with: 0	Systems are located adjacent to existing silvicultural, roadways, and various other land uses throughout project study area. Sites facilitate some corridor connectivity with undeveloped land. Scores for this habitat type would be scored higher if they exist farther away from the existing roads, residential development etc.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 6	with: 0	Water levels and flows through this area have been affected by existing silviculture and other land uses. These conditions have reduced hydrologic exchange with adjacent historical wetland connections.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 7	with: 0	Community structure is supportive of various species depending on the exact location where this habitat type is observed. Due to the large expansiveness of this habitat within the study area, more detailed UMAM assessments will need to occur based on individual site assessments. Relatively low nuisance and exotic species present.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.63	0

Delta = [with-current]
-0.63

If preservation as mitigation:
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = XXX

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. (effective date)

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
GCP PD&E/EIS Study	N/A	FLUCFCS 640
Impact or Mitigation	Assessment conducted by:	Assessment date:
Potential Impact	PBS&J	Various

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	w/o pres or current: 7	with: 0	Systems are located adjacent to various waterbodies and various land uses throughout project study area. Sites facilitate corridor connectivity with adjacent undeveloped land.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 7	with: 0	Water levels and flows through these areas have been affected by existing land uses such as roads and existing bridges. Other areas are in natural conditions and would possibly score higher upon individual site specific analysis
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 7	with: 0	May contain diverse assemblages of herbaceous species depending on the specific location where this habitat type is observed. More detailed UMAM assessments will need to occur based on individual site assessments. Relatively low nuisance and exotic species present. More detailed UMAM assessments will need to occur based on individual site assessments. Relatively low nuisance and exotic species present.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.7	0

Delta = [with-current]
-0.7

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = XXX

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. (effective date)

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
GCP PD&E/EIS Study	N/A	FLUCFCS 641
Impact or Mitigation	Assessment conducted by:	Assessment date:
Potential impact	PBS&J	Various

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

500(6)(a) Location and Landscape Support	w/o pres or current: 7	with: 0	Systems are located adjacent to existing silvicultural, roadways, and various other land uses throughout project study area. Sites facilitate some corridor connectivity with undeveloped land. Scores for this habitat type may be scored higher if they exist farther away from the existing roads, residential development etc.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 7	with: 0	Water levels and flows through this area have been affected by existing silviculture and other land uses. These conditions have reduced hydrologic exchange with adjacent historical wetland connections.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 8	with: 0	May contain diverse assemblages of herbaceous species depending on the specific location where this habitat type is observed. More detailed UMAM assessments will need to occur based on individual site assessments. Relatively low nuisance and exotic species present.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.73	0

Delta = [with-current]
-0.73

If preservation as mitigation:
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = XXX

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. (effective date)

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
GCP PD&E/EIS Study	N/A	FLUCFCS 642
Impact or Mitigation	Assessment conducted by:	Assessment date:
Potential Impact	PBS&J	Various

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	w/o pres or current: 8	with: 0	Systems are located adjacent to various waterbodies including the Intracoastal Waterway (ICW) and various other land uses throughout project study area. Sites facilitate corridor connectivity with adjacent undeveloped land.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 8	with: 0	Water levels and flows through these areas have been affected by the ICW, existing land uses such as roads, and existing bridges. Other areas are in natural conditions and would possibly score higher upon individual site specific analysis
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 8	with: 0	Community structure is supportive of various species depending on the exact location where this habitat type is observed. Due to the large expansiveness of this habitat within the study area, more detailed UMAM assessments will need to occur based on individual site assessments. Relatively low nuisance and exotic species present.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres: 0.8	with: 0

Delta = [with-current]
-0.8

If preservation as mitigation:
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = XXX

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. (effective date)

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
GCP PD&E/EIS Study	N/A	FLUCFCS 814W
Impact or Mitigation	Assessment conducted by:	Assessment date:
Potential impact	PBS&J	Various

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

500(6)(a) Location and Landscape Support	w/o pres or current: 4	with: 0	Systems are located adjacent to existing silvicultural operations, roadways, and various other land uses throughout project study area. Sites facilitate some corridor connectivity with undeveloped land and natural habitats, but are disturbed due to continued use for vehicular traffic.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 4	with: 0	Water levels and flows through these areas have been affected by vehicular traffic and impacts from adjacent land uses. Since this FLUCFCS type represents unimproved roads through wetlands, these conditions have reduced hydrologic exchange with adjacent historical wetland connections.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 5	with: 0	Community structure is minimally supportive of desirable species due to continued vehicular use and impacts. More detailed UMAM assessments will need to occur based on individual site assessments. Can harbor or provide conduit for exotic, invasive species to spread.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.43	0

Delta = [with-current]
-0.43

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = XXX

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. (effective date)

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
GCP PD&E/EIS Study	N/A	FLUCFCS 817W
Impact or Mitigation	Assessment conducted by:	Assessment date:
Potential impact	PBS&J	Various

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

500(6)(a) Location and Landscape Support	w/o pres or current: 6	with: 0	Systems are located adjacent to existing silvicultural operations, roadways, and various other land uses throughout project study area. Sites facilitate some corridor connectivity with undeveloped land and natural habitats, but are disturbed due to continued maintenace and use for vehicular traffic.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 7	with: 0	Water levels and flows through these areas have been affected by maintenance, vehicular traffic, and impacts from adjacent land uses. These conditions have affected hydrologic exchange with adjacent historical wetland connections.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 7	with: 0	These areas are typically maintained through periodic mowing and/or herbicide treatments. Depending on the degree and frequency of disturbance and location in the landscape, relatively high herbaceous richness (due to overstory competition reduction) may result. More detailed UMAM assessments will need to occur based on individual site assessments.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.67	0

Delta = [with-current]
-0.67

If preservation as mitigation:
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = XXX

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. (effective date)

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
GCP PD&E/EIS Study	N/A	FLUCFCS 832W
Impact or Mitigation	Assessment conducted by:	Assessment date:
Potential impact	PBS&J	Various

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

500(6)(a) Location and Landscape Support	w/o pres or current: 6	with: 0	Systems are located adjacent to existing silvicultural operations, roadways, and various other land uses throughout project study area. Sites facilitate some corridor connectivity with undeveloped land and natural habitats, but are disturbed due to continued maintenace and use for vehicular traffic.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 7	with: 0	Water levels and flows through these areas have been affected by maintenance, vehicular traffic, and impacts from adjacent land uses. These conditions have affected hydrologic exchange with adjacent historical wetland connections.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 7	with: 0	These areas are typically maintained through periodic mowing and/or herbicide treatments. Depending on the degree and frequency of disturbance and location in the landscape, relatively high herbaceous richness (due to overstory competition reduction) may result. More detailed UMAM assessments will need to occur based on individual site assessments.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.67	0

Delta = [with-current]
-0.67

If preservation as mitigation:
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = XXX

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. (effective date)

APPENDIX C
ESSENTIAL FISH HABITAT REPORT

APPENDIX D
AGENCY COORDINATION

5/18/11 USFWS Comments on Draft ESBAR
FDOT Response Letter

FILE

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Field Office
1601 Balboa Avenue
Panama City, FL 32405-3721
Tel: (850) 769-0552
Fax: (850) 763-2177

IN REPLY REFER TO:

May 18, 2011

Mr. Brandon Bruner
District Project Development Engineer
Florida Department of Transportation
Post Office Box 607
Chipley, Florida 32428-0607

Attn: Mr. Alan Vann

Re: FWS No. 2011-I-0304
Florida Department of Transportation
Gulf Coast Parkway PD&E Study
Endangered Species Biological Assessment
FPID #: 410981-2-28-01
Bay, Gulf, and Calhoun Counties, Florida

Dear Mr. Bruner:

Thank you for your letter to the Fish and Wildlife Service (Service) dated April 20, 2011, providing the above-referenced project reports for our review. You are also requesting concurrence with your determination of effects for resources protected under the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). This response is provided in accordance with provisions of Section 7 of the Act.

The Federal Highway Administration (FHWA) and Florida Department of Transportation (FDOT) propose to construct a new roadway – the Gulf Coast Parkway (GCP) – connecting US 98 in Gulf County to US 231 and US 98 in Bay County, Florida. Five Alternatives (8, 14, 15, 17, and 19) and a No-Build Alternative are being studied during the Project, Design, and Environment (PD&E) phase of the project. The Wetlands Report, Indirect and Cumulative Effects Report, and draft Environmental Impact Statement (EIS) are being reviewed separately by the Service, a cooperating agency on the EIS. At this time, no preferred alternative has been identified.

The GCP is proposed as a four-lane divided roadway with both rural and urban sections. Within a 168-foot right-of-way (ROW), the typical urban section will include a 46-foot grassed median and the following in each direction: two 12-foot travel lanes; paved 4-foot inside and 6.5-foot outside shoulders; 5-foot sidewalks, and a closed curb-and-gutter drainage system with

stormwater treatment. The typical rural section has a 250-foot ROW and will include a 64-foot grassed median and the following in each direction: two 12-foot travel lanes; paved 2-foot inside and 5-foot outside shoulders; and open drainage swales. A 12-foot shared use path will be located on one side of the roadway. Length varies from approximately 28 to 33 miles. All build alternatives include high level bridges either over Wetappo Creek and the Intra-coastal Waterway (ICWW) (Alternatives 8, 14, and 15) or over East Bay (Alternatives 17 and 19). Initially, only two 12-foot lanes within either typical section will be constructed. Design speed is 50 mph for the urban sections and 65 mph for the rural roadway.

Endangered Species Biological Assessment

The FDOT has provided effect determinations for federally protected species, state protected species, and other species of concern, with potential conservation measures and commitments to avoid and minimize impacts to these species. The Service cannot concur with your effect determinations until the preferred alternative is selected and commitments for protection measures are finalized. During the Efficient Transportation Decision Making (ETDM) review, the Service identified all alignments of the GCP as a Potential Dispute for Wildlife and Habitat due to the high potential for significant direct, secondary, and cumulative effects to habitat for federally protected and other fish and wildlife species. In 2007, FDOT developed Action Plans to address the Potential Dispute. The following comments are to assist you in finalizing the Endangered Species Biological Assessment (ESBA) and resolving the Potential Dispute.

Gulf Sturgeon

As indicated in the ESBA, no Gulf sturgeon critical habitat has been designated within the GCP study area, including East Bay. However, Service biologists have noted the occasional occurrence of Gulf sturgeon within the St. Andrew Bay system. The Service recommends incorporating *Construction Protection Provisions Sturgeon Protection Guidelines* during bridge construction activities to assure impacts to the sturgeon are avoided and minimized to the greatest extent practicable (enclosed). Provided that these measures are included in the final EIS, the Service could concur that the proposed work may affect, but is not likely to adversely affect (NLAA) the Gulf sturgeon.

Eastern Indigo Snake

The Service could concur with your determination that the proposed work may affect, but is NLAA the Eastern indigo snake with incorporation of *Standard Protection Measures for the Eastern Indigo Snake* during construction (enclosed).

Reticulated Flatwoods Salamander

The ESBA uses a Phase I desktop habitat evaluation model to identify potential flatwoods salamander breeding ponds across the five alternatives. The report separates involvement into direct (within the alignment) and indirect (within 1,500 feet of the alignment) impacts to breeding ponds. As you are aware, habitat for the reticulated flatwoods salamander has three components: the breeding pond, ecotone, and upland. Upland habitat extends up to 1,500 feet from the edge of a breeding pond. Therefore, upland habitat for the flatwoods salamander could be directly impacted if suitable ponds are located within 1,500 feet of the alignment.

Potential breeding ponds are identified for all five alternatives. While the ESBA notes overall poor flatwoods salamander habitat conditions during limited wetlands surveys, more detailed information is needed before the Service can provide concurrence with your determination. We recommend completing a Phase II field evaluation of all potential ponds once a preferred alternative is selected. Your effect determination should be based the Phase II evaluation. Score sheets, aerial maps, and site photos should be provided to the Service to assist in our review.

Nesting Sea Turtles, Piping Plover, Choctawhatchee Beach Mouse and St. Andrew Beach Mouse
The Service has regulatory responsibility for nesting sea turtles (loggerhead, green, leatherback, and Kemp's ridley) while on land in Gulf and Bay counties. Effects on the five species of sea turtles in-water should be coordinated with the National Oceanic and Atmospheric Administration (NOAA), Southeast Regional Office, 9721 Executive Center Drive North, St. Petersburg, Florida 33702 (Tel: 727/570-5517).

One purpose of the GCP is to enhance economic development and provide direct access to tourist destinations in south Gulf County. While the proposed alternatives do not directly impact coastal beaches, they may indirectly and cumulatively affect coastal threatened and endangered species by encouraging development and increasing recreational use of coastal resources. The GCP Indirect and Cumulative Effects Report shows no impact from the Build Alternatives and 501 acres of coastal impacts from the No Build Alternative. It seems unlikely that the Build Alternatives – as a major new coastal connector – would have no effect on coastal growth. For example, one area of forecasted growth located west of Mexico Beach extends from US 98 to Alternative Alignments 17 and 19, suggesting an influence on that location's growth. It appears that all potential alternatives may have a role in facilitating growth and associated habitat losses. Increased tourism with added recreational use of Shell Island, Crooked Island, and East Crooked Island may also adversely affect listed species.

These potential indirect effects should be considered in the ESBA for coastal species including sea turtles, wintering piping plover, the Choctawhatchee beach mouse, and St. Andrew beach mouse. In consideration of the potential risk of secondary effects impacting coastal habitat, it is unlikely that the proposed project has No Effect on the Choctawhatchee beach mouse and St. Andrew beach mouse. Table 8.2 indicates a No Effect determination for the piping plover. This should be corrected to be consistent with text that concludes the project may affect, but is NLAA the piping plover.

The ESBA provides a potential commitment to "use sea turtle-friendly lighting strategies on bridges, if deemed necessary". It's unclear if lighting is being planned for other typical sections of the roadway. New lighting associated with the alternatives may indirectly affect nesting sea turtles and other coastal species by adding sky glow visible from the shore, even when the alternatives are not immediately adjacent to the beach. Features such as full cut-off fixtures with HPS lamps can be very effective in reducing sky glow from nearby connector roads. To avoid and minimize impacts to sea turtles and other coastal wildlife, we recommend a commitment to either add no new roadway lighting where it previously does not exist, or to work with the

Service to develop a wildlife-friendly lighting plan for any roadway lights potentially visible from the beach.

West Indian Manatee

The Service could concur with your determination that the proposed work may affect, but is NLAA the West Indian manatee with incorporation of *Standard Manatee Conditions for In-water Work* for bridge construction (enclosed).

Red-cockaded Woodpecker

Additional information is needed before the Service can concur with your effect determination for the red-cockaded woodpecker (RCW). This information could be provided once a preferred alternative is selected. The ESBA evaluation is based on a desktop analysis of two known populations at the Wetappo Creek Conservation Area (Wetappo) and Lathrop Bayou Tract (Lathrop), and their proximity to the proposed alternatives. However, additional habitat for RCW may be present within the alternatives' footprint. Indirect effects of the roadway also should be assessed. Indirect effects may include a reduced ability to manage existing RCW tracts by prescribed burning and a loss of habitat connectivity between the two known populations.

As indicated in our 2007 ETDM comments, field surveys for RCW nesting and foraging habitat should be done wherever suitable habitat is present. Aerial photography and coordination with landowners could assist in determining whether suitable habitat is present. Suitable nesting habitat is defined as pine, pine/hardwood, and hardwood/pine stands that contain pines 60 years in age or older. Suitable foraging habitat is defined as a pine or pine/hardwood stands of forest, woodland, or savannah in which 50 percent or more of the dominant trees are pines and the dominant pine trees are generally 30 years in age or older. If no suitable nesting or foraging habitat is present within the project impact area, then the project will have no direct effects to the RCW. If no suitable nesting habitat is present within the project impact area, but suitable foraging habitat is present and will be impacted, potential use of this foraging habitat by groups outside the project boundaries must be determined. This is done by identifying any potential nesting habitat within 0.5 mile of the suitable foraging habitat that would be impacted by the project. Any potential nesting habitat is then surveyed for cavity trees. If no active clusters are found, then the project will not directly affect the RCW. If one or more active clusters are found, a foraging habitat analysis is conducted to determine whether sufficient amounts of foraging habitat will remain for each group post-project. More detail on the RCW survey protocol is available in Appendix 4 of the recovery plan for the red-cockaded woodpecker.

In our 2007 ETDM comments, the Service indicated one long-term regional goal was to provide habitat connectivity between the two RCW populations at Wetappo and Lathrop. The 2007 FDOT Dispute Resolution Wildlife and Habitat Action Plan stated the analysis of potential impacts on listed species and habitats would include an evaluation of the connectivity between related populations and the potential for fragmentation of habitats. This analysis should be included in the ESBA for RCW. Only Alternatives 17 and 19 avoid fragmenting the habitat corridors between the Wetappo and Lathrop tracts. For the remaining alternatives, mitigation measures should be considered to protect habitat along the Wetappo Creek and Little Sandy Creek riparian corridors.

Listed Plants

Preliminary plant surveys identified three listed plant species associated with the Alternative Alignments and their 300-foot Buffer: white birds-in-a-nest (*Macbridea alba*)(Alternative Alignments 8/14/15), Godfrey's butterwort (*Pinguicula ionantha*)(Alternative Alignments 8/17 Buffer), and Florida skullcap (*Scutellaria floridana*)(Alternative Alignments 8/14/15 and Buffers). As indicated in the ESBA, additional seasonally-appropriate surveys for listed plants may be warranted for the preferred alternative. The Service agrees that additional comprehensive plant surveys are needed once the preferred alternative has been selected. Results should be provided in a report with maps that gives the methodology used, calendar date of surveys, plant locations, number of plants observed, and location of survey transects. The secondary and cumulative impacts to federally protected and other rare plants should also be assessed. Future growth target areas identified by the Delphi Group along Wetappo Creek could impact locations known to provide habitat for the 21 most imperiled plants in Northwest Florida. Consideration should be given to protecting these important areas for plants as you begin mitigation planning for this project. Strategic mitigation can be an effective tool in addressing the direct, indirect, and cumulative effects of a new roadway in a watershed with minimal development impacts.

The Service recommends modifying the plant conservation measure to read: "Impacts to listed plants should be avoided and minimized to the extent practicable". If the project has unavoidable impacts to listed plants, section 7(a)(2) of the Act requires federal agencies to formally consult with the Service to ensure that actions they authorize, fund, or carry out do not jeopardize the continued existence of threatened and endangered species.

Panama City Crayfish

The Service considers the state-listed Panama City crayfish (PCC) to be a "species of special concern." While this designation provides no regulatory protection under the Act, the Service is currently reviewing a petition for listing the PCC. Habitat loss and degradation are considered the greatest threats to its future survival. Our office is working in partnership with the Florida Fish and Wildlife Conservation Commission (FWC) and a private landowner on a Candidate Conservation Agreement with Assurances (CCAA) to protect and manage habitat for the PCC. Measures to protect the PCC and proactively address threats may help avoid the need for future federal listing.

The ESBA estimates that the western portion of all five alternatives may impact 124.3 acres of PCC core and secondary soils. FWC data identified multiple PCC occurrences along Star Avenue and Tram Road, locations known for their high density of PCC. You have indicated that coordination will take place with the FWC and site-specific surveys will likely be required for the preferred alternative. Your conclusion that the proposed project may affect, but is NLAA the PCC is not supported by the information provided in the ESBA. The draft Panama City Crayfish Management Plan (2007) indicates that an FWC Incidental Take Permit will be needed for activities that result in take of the PCC or its habitat. To address the potential direct and indirect habitat losses consistent with the draft plan, mitigation for loss of PCC habitat should be provided at a ratio that demonstrates a net benefit to the species. For example, mitigation at a

ratio of 2:1 where one acre of PCC habitat loss is offset with two acres of PCC habitat restored, would provide an overall benefit to the species.

Wood Stork

The FDOT has determined that the proposed alternatives will have "no effect" on the wood stork. However, the ESBA indicates that there is potential wood stork habitat within the GCP study area. While the nearest nesting colonies are in Leon County, Florida, wood storks may occur wherever suitable habitat is present. They sometimes forage and roost well beyond known nesting locations. For example, wood storks are routinely sighted on Northwest Florida Water Management District's wetland restoration sites in Washington and Santa Rosa counties. Since occurrences are rare in Gulf and Bay counties, the effects of the work are likely to be insignificant (too small to measure) and discountable (extremely unlikely to occur). Therefore, the Service could concur with a determination that the proposed alternatives may affect, but are NLAA the wood stork.

We appreciate the opportunity to provide comments. We look forward to working with you as we continue informal consultation on this project. Please contact Ms. Mary Mittiga (ext. 236) if you have any questions or comments.

Sincerely,

Dr. Donald W. Imm
Project Leader

Literature Cited

Florida Fish and Wildlife Conservation Commission. 2007 draft. Draft Panama City Crayfish Management Plan, Draft 2. Tallahassee, Florida. 50 pp. and appendices.

Enclosures:
Sturgeon Protection Guidelines
Standard Protection Measures for the Eastern Indigo Snake
Standard Manatee Conditions for In-water Work

cc: (without enclosures)
ACOE, Cocoa, FL (Andrew Phillips)
ACOE, Jacksonville, FL (Randy Turner)
FWCC, Tallahassee, FL (Scott Sanders, Ted Hoehn)
FWCC, Panama City, FL (John Himes)
NMFS, St. Petersburg, FL (Dave Rydene)

STANDARD MANATEE CONDITIONS FOR IN-WATER WORK
2011

The permittee shall comply with the following conditions intended to protect manatees from direct project effects:

a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.

b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.

d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.

e. Any collision with or injury to a manatee shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or in Vero Beach (1-772-562-3909) for south Florida, and emailed to FWC at ImperiledSpecies@myFWC.com.

f. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the FWC must be used. One sign which reads *Caution: Boaters* must be posted. A second sign measuring at least 8½" by 11" explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at http://www.myfwc.com/WILDLIFEHABITATS/manatee_sign_vendors.htm. Questions concerning these signs can be forwarded to the email address listed above.

STANDARD PROTECTION MEASURES FOR THE EASTERN INDIGO SNAKE

1. An eastern indigo snake protection/education plan shall be developed by the applicant or requestor for all construction personnel to follow. The plan shall be provided to the Service for review and approval at least 30 days prior to any clearing activities. The educational materials for the plan may consist of a combination of posters, videos, pamphlets, and lectures (*e.g.*, an observer trained to identify eastern indigo snakes could use the protection/education plan to instruct construction personnel before any clearing activities occur). Informational signs should be posted throughout the construction site and along any proposed access road to contain the following information:

    a. a description of the eastern indigo snake, its habits, and protection under Federal Law;
    b. instructions not to injure, harm, harass or kill this species;
    c. directions to cease clearing activities and allow the eastern indigo snake sufficient time to move away from the site on its own before resuming clearing; and,
    d. telephone numbers of pertinent agencies to be contacted if a dead eastern indigo snake is encountered. The dead specimen should be thoroughly soaked in water and then frozen.

2. If not currently authorized through an Incidental Take Statement in association with a Biological Opinion, only individuals who have been either authorized by a section 10(a)(1)(A) permit issued by the Service, or by the State of Florida through the Florida Fish Wildlife Conservation Commission (FWC) for such activities, are permitted to come in contact with an eastern indigo snake.

3. An eastern indigo snake monitoring report must be submitted to the appropriate Florida Field Office within 60 days of the conclusion of clearing phases. The report should be submitted whether or not eastern indigo snakes are observed. The report should contain the following information:

    a. any sightings of eastern indigo snakes and
    b. other obligations required by the Florida Fish and Wildlife Conservation Commission, as stipulated in the permit.

Revised February 12, 2004

CONSTRUCTION SPECIAL PROVISIONS
STURGEON PROTECTION GUIDELINES
(PURSUANT TO NMFS AND USFWS)

The shortnose sturgeon (*Acipenser brevirostrum*) and the gulf sturgeon (*A. oxyrinchus desotoi*) are listed under the Endangered Species Act as endangered and threatened, respectively. These species are under the jurisdiction of the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS). Potential habitat for the gulf sturgeon is located within the limits of this project.

The following special provisions will be incorporated into any construction contract where involvement with sturgeon may occur:

The FDOT has coordinated with the NMFS and USFWS early in the project development stage. The following provisions are intended to avoid/ protect known spawning habitats, nursery areas, feeding areas and thermal refuges.

1. The Florida Department of Transportation (FDOT) shall advise all FDOT project personnel and Contractor personnel on the project that there are civil and criminal penalties for harming, harassing or killing sturgeon, which are protected under the Endangered Species Act of 1973. The FDOT and the Contractor will be held responsible for any sturgeon harmed, harassed, or killed as a result of the project activity.

2. The FDOT shall provide information to all FDOT and Contract personnel for identification of sturgeon.

3. No dredging of the river bottom will be conducted for barge access.

4. Drilled shaft pile construction will be used whenever prudent and feasible as determined by FDOT.

5. Care shall be taken in lowering equipment or material below the water surface and into the stream bed. These precautions will be taken to ensure no harm occurs to any sturgeon which may enter the construction area undetected.

6. If the use of explosives is necessary, the following protection measures will be employed for projects in FDOT's District 3.

   <u>In riverine areas:</u>
   - No blasting will occur in known spawning, staging, feeding, or nursery areas.
   - In-water explosive work should be avoided between the months of April to October.
   - If explosive work becomes necessary within the April to October time frame, a non-lethal "Fish Scare" charge will be detonated one minute prior to detonation of the underwater blast.

   In estuarine areas:
   - No blasting will occur in known spawning, staging, feeding, or nursery areas.
   - In-water explosive work should be avoided between the months of October to April.
   - If explosive work becomes necessary within the October to April time frame, a non-lethal "Fish Scare" charge will be detonated one minute prior to detonation of the underwater blast.

Florida Department of Transportation

RICK SCOTT
GOVERNOR

1074 Highway 90
Chipley, Florida 32428

OFFICE OF THE
SECRETARY

Dr. Donald W. Imm
US Fish and Wildlife Service
1601 Balboa Avenue
Panama City, Florida 32405-3721

Re: Re: Gulf Coast Parkway
FPID #: 410981-2-28-01
County: Bay, Calhoun and Gulf
Endangered Species Biological Assessment Report

Dear Dr. Imm

Thank you for your comments on the Endangered Species Biological Assessment Report (ESBAR) for the above referenced project. The Service (USFWS) has indicated that they cannot concur with our effect determinations until the preferred alignment is selected and commitments for protection measures are finalized and submitted comments to assist in finalizing the ESBAR and resolving the Potential Dispute.

The following presents our proposed responses to those comments.

General Comments

Comment: As indicated in the ESBA, no gulf sturgeon critical habitat has been designated within the GCP study area, including East Bay. However, the Service biologists have noted the occasional occurrence of Gulf sturgeon within the St. Andrew Bay system. The Service recommends incorporating *Construction Special Provisions Sturgeon Protection Guidelines* during construction activities to assure impacts to the Gulf sturgeon are avoided and minimized to the greatest extent practical (enclosed). Provided that these measures are included in the final EIS, the Service could concur that the proposed work may affect, but is not likely to adversely affect (NLAA) the Gulf sturgeon.

Response: The ESBAR and DEIS will be revised to include text amendments to include a commitment to incorporating *Construction Special Provisions Sturgeon Protection Guidelines* and to modify the finding to MANLAA.

Comment: The Service could concur with your determination that the proposed work may affect, but is NLAA the Eastern indigo snake with incorporation of *Standard Protection Measures for the Eastern Indigo Snake* during construction.

Response: A commitment to include the *Standard Protection Measures for the Eastern Indigo Snake* during construction will be provided in the ESBAR and DEIS.

Comment: The ESBA uses a Phase I desktop habitat evaluation model to identify potential flatwoods salamander breeding pond across the five alternatives. The report separates involvement into direct (within the alignment) and indirect (within 1,500 feet of the alignment) impacts to breeding ponds. As you are aware, habitat for the reticulated flatwoods salamander has three components: the breeding pond, ecotone, and upland. Upland habitat extends up to 1,500 feet from the edge of a breeding pond. Therefore, upland habitat for the flatwoods salamander could be directly impacted if suitable ponds are located within 1,500 of the alignment. Potential breeding ponds are identified for all five alternatives. While the ESBA notes overall poor flatwoods salamander habitat conditions during limited wetlands surveys, more detailed information is needed before the Service can provide concurrence with your determination. We recommend completing a Phase II field evaluation of all potential ponds once a preferred alternative is selected. Your effect determination should be based on the Phase II evaluation. Score sheets, aerial maps, and site photos should be provided to the Service to assist in our review.

Response: Given the number of corridors and alignments considered and assessed for this project, along with the length of each typical alternative, e.g. ± 30 miles, RFS assessments using the HDR method were limited to Phase I for all potential ponds within 1,500 feet of said alternatives. In light of this, FDOT agrees to conduct a Phase II RFS field evaluation for a representative sample of potential ponds within 1,500 feet of the preferred alternative during design and permitting. A re-assessment of the determination of effect for the preferred alternative will be based on the results of the Phase II field evaluation and has been added as a commitment in the ESBAR. FDOT's determination of effect for the RFS – as it relates to the project itself- has been changed in the ESBAR to "MANLAA".

Comment: The Service has regulatory responsibility for nesting sea turtles (loggerhead, green, leatherback, and Kemp's ridley) while on land in Gulf and Bay counties. Effects on the five species of sea turtles in-water should be coordinated with the National Oceanic and Atmospheric Administration (NOAA).

One purpose of the GCP is to enhance economic development and provide direct access to tourist destinations in south Gulf County. While the proposed alternatives do not directly impact coastal beaches, they may indirectly and cumulatively affect coastal threatened and endangered species by encouraging development and increasing recreational use of coastal resources. The GCP Indirect and Cumulative Effects Report shows no impact from the Build Alternatives and 501 acres of coastal impacts from the No Build Alternative. It seems unlikely that the Build Alternatives – as a major new coastal connector – would have no effect on coastal growth. For example, one area of forecasted growth located west of Mexico Beach extends from US 98 to Alternative Alignments 17 and 19, suggesting an influence on that location's growth. It appears that all potential alternatives may have a role in facilitating growth and associated habitat losses. Increased tourism with added recreational use of Shell Island, Crooked Island, and East Crooked Island may also adversely affect listed species.

These potential indirect effects should be considered in the ESBA for coastal species including sea turtles, wintering piping plover, the Choctawhatchee beach mouse, and St. Andrews beach mouse. In consideration of the potential risk of secondary effects impacting coastal habitat, it is unlikely that the proposed project has No Effect on the Choctawhatchee beach mouse and St. Andrew beach mouse. Table 8.2 indicates a No Effect determination for the piping plover. This should be corrected to be consistent with text that concludes the project may affect, but is NLAA the piping plover.

The ESBA provides a potential commitment to "use sea-turtle friendly lighting strategies on bridges, if deemed necessary". It's unclear if lighting is being planned for other typical sections of the roadway. New lighting associated with the alternatives may indirectly affect nesting sea turtles and other coastal species by adding sky glow visible from the shore, even when the alternatives are not immediately adjacent to the beach. Features such as full cut-off fixtures with HPS lamps can be very effective in reducing sky glow from nearby connector roads. To avoid and minimize impacts to sea turtles and other coastal wildlife, we recommend a commitment to either add no new roadway lighting where it previously does not exist, or to work with the Service to develop a wildlife-friendly lighting plan for any roadway lights potentially visible from the beach.

Response: The effects of the project on sea turtles in-water will be coordinated with NOAA.

As stated in the ESBAR: Potential habitat for beach mice is located south of US 98. The proposed southern termini for all Alternative Alignments are located north of US 98. None of the Alternative Alignments (proposed right-of-way and associated 300-foot buffers) will involve beach mice, potential habitat, or critical habitat. While platted developments located with the study area contain potential beach mouse habitat, each has existing conservation plans to address potential impacts (See ICE Report in EIS). Therefore, FDOT concludes that the subject project will have **no effect** on either the federally-endangered Choctawhatchee beach mouse or the St. Andrews beach mouse.

The effects on the beach mouse habitat shown in the ICE Report were in error. The 501 acres should have been 53.8 acres. The 53.8 acres of habitat impacts are from the Bon Fire and WindMark developments. These developments already have mitigation plans established.

There is no need to update Table 8.2 since piping plover is MANLAA for Alternatives 17 and 19 only. This, therefore, results in an overall determination of effect of MANLAA.

FDOT will commit to working with USFWS on a wildlife-friendly lighting plan in the event lighting becomes a part of the project during design.

Comment: The Service could concur with your determination that the proposed work may affect, but is NLAA the West Indian manatee with incorporation of *Standard Manatee Conditions for In-water Work* for bridge construction.

Response: The *Standard Manatee Conditions for In-water Work* have been incorporated into the ESBAR and DEIS.

Comment: Additional information is needed before the service can concur with you effect determination for the red-cockaded woodpecker (RCW). This information could be provided once a preferred alternative is selected. The ESBA evaluation is based on a desktop analysis of two known populations at the Wetappo Creek Conservation Area (Wetappo) and Lathrop Bayou Track (Lathrop), and their proximity to the proposed alternatives. However, additional habitat for RCW may be present within the alternatives' footprint. Indirect effects of the roadway also should be assessed. Indirect effects may include a reduced ability to manage existing RCW tracts by prescribed burning and a loss of habitat connectivity between the two known populations.

As indicated in out 2007 ETDM comments, field surveys for RCW nesting and foraging habitat should be done wherever suitable habitat is present. Aerial photography and coordination with landowners could assist in determining whether suitable habitat is present. Suitable nesting habitat is defined as pine, pine/hardwood, and hardwood/pine stands that contain pines 60 years in age or older. Suitable foraging habitat is defined as a pine or pine/hardwood stands of forest, woodland, or savannah in which 50 percent or more of the dominant trees are pines and the dominant pine trees are generally 30 years in age or older. If no suitable nesting habitat is present within the project impact area, but suitable foraging habitat is present and will be impacted, potential use of this foraging habitat by groups outside the project boundaries must be determined. This is done by identifying any potential nesting habitat within 0.5 mile of the suitable foraging habitat that would be impacted by the project. Any potential nesting habitat is then surveyed for cavity trees. If no active clusters are found, then the project will not directly affect the RCW. If one or more active clusters are found, a foraging habitat analysis is conducted to determine whether sufficient amounts of foraging habitat will remain for each group post-project. More detail on the RCW survey protocol is available in Appendix 4 of the recovery plan for the red-cockaded woodpecker.

In our 2007 ETDM comments, the Service indicated one long-term goal was to provide habitat connectivity between the two RCW populations at Wetappo and Lathrop. The 2007 FDOT Dispute Resolution Wildlife and Habitat Action Plan stated the analysis of potential impacts on listed species and habitats would include an evaluation of the connectivity between related populations and the potential for fragmentation of habitats. This analysis should be included in the ESBA for RCW. Only Alternatives 17 and 19 avoid fragmenting the habitat corridors between the Wetappo and Lathrop tracts. For the remaining alternatives, mitigation measures should be considered to protect habitat along the Wetappo Creek and Little Sandy Creek riparian corridors.

Response:

RCW habitat evaluations were centered on aerial photo interpretation of known populations and their proximity to Alternative Alignments. Habitat conditions proximal to known RCW populations were noted during field surveys for wetlands and other listed species. Specific field surveys for RCWs or cavity trees were not conducted.

Two RCW populations are associated with the GCP study area: Lathrop Bayou Management Area (LBMA) is being protected and enhanced by Bureau of Land Management (BLM) and The St. Joe Company where a small population of RCWs is located on Raffield Island. LBMA is located at the east end of East Bay, between two GCP Alternative Alignments (17/19 and 8/14/15) and includes 539 acres of late-successional, longleaf pine flatwoods. Approximately 22 cavity trees have been identified in a cluster on Raffield Island with a total of five birds banded as of December 2002. Alternative Alignments 17/19 are located approximately 6,000' west of the LBMA RCW cluster. The Wetappo Creek Conservation Area (WCCA) is located on St. Joe property in north Gulf County, just west of Wewahitchka, off of SR 22. WCCA comprises approximately 1,500 acres of late-successional longleaf pine habitat and currently supports eight RCW clusters (population goal of 10 active clusters) (St. Joe 2007). Alternative Alignments 8/14/15 are located approximately 1 mile (5,280') west of the WCCA. The LBMA and WCCA RCW populations are threatened by small numbers of birds and genetic isolation. Plans to translocate birds from other RCW populations to

improve genetic diversity in both populations are included in the overall management plan for both properties (United States Department of Interior {USDOI}, 2003). Publically-available data does not indicate the presence of any other RCW groups other than the Wetappo Creek and Lathrop Bayou clusters.

In addition to these two RCW populations, two documented historic RCW cavity trees/ clusters (circa 1980) were identified by FNAI along SR 22 in Gulf County in the vicinity of Oliver's Creek near the junction of Alternative Alignments 17/19 and 8/14/15. Limited reconnaissance along this section of SR 22 along with desktop analyses indicated that these cavity trees are no longer present as the habitat is dominated by various planted pine stands approximately 10-25 years old.

RCW habitat typically consists of contiguous stands of longleaf, loblolly, slash, and or pond pine ranging in age between 30-120 years old. Younger stands provide foraging habitat while older stands serve as potential sources of cavity trees. RCW clusters (aggregation of cavity trees) generally comprise about 10 acres. Associated foraging habitat to support RCW groups is contained within an adjacent area extending to 0.5 mile with most foraging habitat preferably found within 0.25 mile of the cluster (USFWS 2003). Extensive forested tracts characterized by planted pine stands dominate the landscape adjacent to the WCCA. LBMA is surrounded by East Bay on three sides and is adjacent to planted pine stands similar to those described above along its southeastern border. These planted pine stands are generally 10-25 years old and are overburdened with midstory shrubs which, results in a vegetation structure unfavorable to RCWs. Alternative Alignments are located well beyond the 0.5-mile RCW foraging territory boundary.

USFWS concerns about the potential for the Gulf Coast Parkway to fragment habitat that separates these two RCW populations have been considered. The St. Joe Company-BLM Memorandum of Understanding (MOU) addresses the management of both RCW populations. Nothing in the MOU indicates that these two populations are "connected". In fact, the Lathrop Bayou and Wetappo Creek RCW populations are located approximately eight miles (8) from each other. None of the alternatives would have an effect on the management of either RCW nesting and/or foraging habitat for both the Wetappo Creek or Lathrop Bayou RCW populations. In addition, the land between these two populations is predominantly forested (planted pine 10-25 years old – technically not even foraging habitat) and primarily, if not entirely, privately owned. While private landowners may chose to manage their land to benefit listed species, e.g., RCWs, they are not required to do so. Based on habitat conditions in the study area and biological requirements of the species, i.e., foraging territories extend out 0.5 mile from a cluster, potential direct or other effects related to "fragmentation" are not anticipated.

FDOT submits that an adequate assessment of the habitat conditions associated with alternative alignments and the overall habitat context of the study area has been conducted. In light of these findings, FDOT concludes that the subject project will have **no effect** on the federally-endangered RCW.

Comment: Preliminary plant surveys identified three listed plant species associated with the alternative Alignments and their 300-foot buffer: white birds-in-a-nest (*Macbridea Alba*) (Alternative 8/14/15), Godfrey's butterwort (Pinguicula ionantha) (Alternatives 8/17 buffer), and Florida skullcap (Scutellaria floridana)(Alternatives 8/14/15 and buffers). As indicated in the ESBA, additional seasonally-appropriate surveys for listed plants may be warranted for the preferred alternative. The Service agrees that additional comprehensive surveys are needed once the preferred alternative has been selected. Results should be provided in a report with maps that gives the methodology used, calendar date of surveys, plant locations, number of plants observed, and location of survey transects. The secondary and cumulative impacts to federally protected and other rare plants should also be assessed. Future growth target areas identified by the Delphi Group along Wetappo Creek could impact locations known to provide habitat for the 21 most imperiled plants in Northwest Florida. Consideration should be given to protecting these important areas for plants as you begin mitigation planning for this project. Strategic mitigation can be an effective tool in addressing the direct, indirect, and cumulative effects of a new roadway in a watershed with minimal development impacts.

The Service recommends modifying the plant conservation measure to read: "Impacts to listed plants should be avoided and minimized to the extent practicable". If the project has unavoidable impacts to listed plants, Section 7(a)(2) of the Act requires federal agencies to formally consult with the Service to ensure that actions they authorize, fund, or carry out do not jeopardize the continued existence of threatened and endangered species.

Response: A 2001 report by The Nature Conservancy (TNC) and Florida Natural Areas Inventory (FNAI) identified 21 plant species in northwest Florida, that in their opinion, are in need of protection due to be being rare and in danger of being extirpated due to being on private lands. Shapefiles were provided with the report that identified three areas on private lands in the study area that support rare communities including: Ridges of Gulf County (9,825 acres); Wetappo Creek South (3,543 acres), and Sandy Creek Bogs (6,998 acres). As described in the ESBAR, the initial desktop evaluation included data from the most current FNAI report (2007) for the area. As the PD&E study progressed and field surveys were conducted across various alignments, proposed alignment footprints changed several times to address a variety of different potential impacts including those to listed species actually observed in the field. The results of the data synthesis and field reconnaissance indicated that listed plant species occurrences within the respective alignments and buffers and potential involvement was minimal.

The above referenced areas harboring rare plant communities were avoided to the greatest extent practicable during the PD&E stage of this project. The Ridges of Gulf County has been completely avoided. The majority of potential involvement with Sandy Creek Bogs and Wetappo Creek South are associated with existing paved highways, SR 22 and CR 386, respectively. Of the "21 most imperiled species" identified by FNAI and TNC, only 4 species are located within the "3 Rare Plant Areas" and 3 of these species are state listed ((*Aster spinulosus* – currently *Eurybia spinulosus*, *Eriocaulon nigrobractatum*, and *Xyris isoetifolia*). The only federally-listed plant is Florida skullcap, which is found 4 miles east of Alternative Alignment 8/14/15. The "TNC-FNAI 21 species report" was developed at a coarse scale for the entire panhandle (Jefferson County to Alabama). Surveys conducted by project biologists were more current and thorough, as was the project-specific FNAI Report.

As is the case with all FDOT projects, listed and even rare (un-listed species) will be avoided and impacts minimized to the extent practicable. Depending on the alternative selected, it is

possible that there may be very minimal involvement with the areas identified as having rare species. Once a preferred alternative is selected supplemental seasonal surveys are anticipated to determine accurate and current impacts to listed species.

The plant conservation measure in the ESBA has been modified as requested.

Comment: The service considers the state-listed Panama City crayfish (PCC) to be a "species of special concern". While this designation provides no regulatory protection under the Act, the Service is currently reviewing a petition for listing the PCC. Habitat loss and degradation are considered the greatest threats to its future survival. Our office is working in partnership with the FFWCC and a private landowner on a Candidate Conservation Agreement with Assurances (CCAA) to protect and manage habitat for the PCC. Measures to protect the PCC and proactively address threats may help avoid the need for future federal listing.

The ESBA estimates that the western portion of all five alternatives may impact 124.3 acres of PCC core and secondary soils. FWC data identified multiple PCC occurrences along Star Avenue and Tram Road, locations known for their high density of PCC. You have indicated that coordination will take place with the FWC and site-specific surveys will likely be required for the preferred alternative. Your conclusion that the proposed project may affect, but is NLAA the PCC is not supported by the information provided in the ESBA. The draft Panama City Crayfish Management Plan (2007) indicates that an FWC Incidental Take Permit will be needed for activities that result in take of the PCC or its habitat. To address the potential direct and indirect habitat losses consistent with the draft plan, mitigation for loss of PCC habitat should be provided at a ratio that demonstrates a net benefit to the species. For example, mitigation at a ratio of 2:1 where one acre of PCC habitat loss is offset with two acres of PCC habitat restored, would provide an overall benefit to the species.

Response: The USFWS did not finalize the CCAA with the private landowner and it is currently not being considered as necessary.

The Panama City Crayfish Management Plan (2007) is still a draft. Any potential mitigation requirements or a state-issued incidental take permit will be addressed by the project sponsor and the FFWCC during design and permitting. According to the FFWCC website (accessed on October 16, 2012) http://myfwc.com/wildlifehabitats/imperiled/listing-process/) the draft management plan for the Panama City crayfish will be finalized by spring 2013. Based on this information and the status of the species, FDOT still concludes that this project is MANLAA for the Panama City crayfish.

Potential conservation measures for this state-listed species will be addressed by the project sponsor and FFWCC.

Comment: The FDOT has determined that the proposed alternatives will have "no effect' on the wood stork. However, the ESBA indicates that there is potential wood stork habitat within the GCP study area. While the nearest nesting colonies are in Leon County, Florida, wood storks may occur wherever suitable habitat is present. They sometimes forage and roost well beyond known nesting locations. For example, wood storks are routinely sighted on NWFWMD wetland restoration sites in Washington and Santa Rosa counties. Since occurrences are rare in Gulf and Bay Counties, the effects of the work are likely to be insignificant (too small to measure) and discountable (extremely unlikely to occur). Therefore, the Service could concur with a determination that the proposed alternatives may affect, but are NLAA the wood stork.

Response: Based on the data collected and reviewed for the ESBAR, the distance to the closest CFA (~ 50 miles to the east), the fact that any wood storks observed in this area would be considered "transient", and that USFWS concurred with a "no effect" determination for the nearby West Bay Parkway Segments 1 and 2 in Bay County (very similar habitat conditions and landscape features), FDOT concludes that this project will have "no effect" on wood storks.

Sincerely,

Alan Vann

5/25/11 National Marine Fisheries Service Comment Letter
FDOT Response Letter

From: David Rydene [mailto:David.Rydene@noaa.gov]
Sent: Wednesday, May 25, 2011 9:55 AM
To: Vann, Alan
Subject: NMFS comments on the Gulf Coast Parkway DEIS

NOAA's National Marine Fisheries Service offers the following comments regarding the Gulf Coast Parkway's Draft Environmental Impact Statement:

It was surprising that a preferred alternative was not named in the DEIS. The CEQ NEPA regulations (40 CFR 1502.14) state that the lead agency should "identify the agency's preferred alternative or alternatives, if one exists, in the draft statement". If a preferred alternative is not identified until the FEIS, then it will be difficult for the public and the resource agencies to provide input on the preferred alternative that is chosen. However, based on a conversation with Alan Vann, there will be opportunities for comments regarding the preferred alternative during the FEIS phase.

In regards to the selection of a preferred alternative, the original and primary purpose of the Gulf Coast Parkway (GCP) was to help stimulate Gulf County's depressed economy. It would seem that Alternatives 17 and 19 would do little to achieve this goal with the possible exception of Mexico Beach. If the GCP were built, the transfer of freight between Gulf County and Bay County, and the movement of Gulf County residents to employment centers in Bay County, would appear to send substantial truck and car traffic through Mexico Beach on US 98 when heading to the GCP.
This would seem to be incompatible with Mexico Beach's tourism and retiree-based economy. In addition, Alternatives 17 and 19 would provide little benefit to the designated Enterprise Zones.

Another purpose for the GCP was to provide improved hurricane evacuation capability, in part because the high-level US 98 Dupont Bridge must be closed during high winds (over 55 mph). However, all of the proposed GCP alternatives also include a high-level bridge (see pg. 12). It would seem that any GCP bridge would also have to be closed during high winds, at least partially defeating the improved hurricane evacuation goal of the GCP.

Although a major purpose of the road is the stimulation of economic growth in the region, the indirect effects analysis indicates that the GCP will result in only minor growth over and above that which would occur under the No Build Alternative. There seems to be a logical disconnect in that regard.

The conclusions of the indirect effects analysis tend to finish with rationalizing statements in instances where it seems that a resource may be more than minimally impacted (e.g. regulations, permitting, or a potential conservation agreement will fix the problem). While these types of actions may help to minimize development impacts to some extent, they do not eliminate

those impacts, and there is also uncertainty with regards to their effectiveness that is not addressed.

Uncertainty also surrounds the results of the Delphi Group's analysis, and the whole indirect effects analysis hinges on the accuracy of those results.

Depending on which alternative is chosen, a bridge would be built to span either East Bay or Wetappo Creek. Under the essential fish habitat discussion, the potential direct effects of bridge construction are addressed, but the document does not consider impacts from the operation of a bridge once it is built. Effects such as the alteration of reproductive behavior of soniferous fishes and other estuarine species due to noise from bridge traffic or nighttime bridge lighting should be considered. NMFS would strongly recommend that any bridge built should be designed to convey stormwater off the bridge for treatment. If Alternative 17 or Alternative 19 is selected, before any actual East Bay Bridge construction begins, there should be a commitment made to conduct another seagrass survey during the June-August prime growing season.

On page 4-124 under Summary of Cumulative Effects Analysis, NMFS disagrees with the statement "In the case of new commercial areas, the high percentage is a benefit, not an adverse effect." New commercial areas may be beneficial in terms of economic development, but they are detrimental in other ways (e.g. habitat loss, pollutants). NMFS also disagrees with the statement "Potentially impaired waters and Class I drainage basins would probably benefit from future development, as it would be required to provide treatment of stormwater runoff that currently is draining untreated into these basins." While future developments may be required to treat stormwater, they will also introduce new contaminants that did not presently exist in undeveloped areas. It has not been NMFS' experience that increased development improves water quality.

Some editorial comments follow:

On page 4-6 in the bottom paragraph, the sentence "A negative number means the growth trend method predicted a larger population within the particular PARA than the Delphi Group." in reference to Table 4-5 appears incorrect. A negative number seems to indicate that the Delphi Group predicted a larger population in the PARA than the growth trend method.

On page 4-104 in the top paragraph, the sentence "The crossing of the ICWW would also provide the same horizontal clearance (50 feet) as the Du Pont Bridge.", should read 150 feet not 50 feet.

On page 4-130 under Commitment of Funds, the statement "The total commitment of funds for the proposed project is estimated to be 25 million dollars.", needs to be clarified. The 25 million dollars obviously does not include

construction costs, as according to Table
2-29 the total cost estimates for the GCP range between 540 and 619 million dollars.

Thank you for the opportunity to comment on the Gulf Coast Parkway DEIS.

--
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Florida Department of Transportation

RICK SCOTT
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OFFICE OF THE
SECRETARY

Dr. David Rydene, Ph.d.
Fishery Biologist
National Marine Fisheries Service
Habitat Conservation Division
263 13th Avenue South
St. Petersburg, Florida 33701

Re: Re: Gulf Coast Parkway
FPID #: 410981-2-28-01
County: Bay, Calhoun and Gulf
Preliminary Draft Environmental Impact Statement

Dear Dr. Rydene:

Thank you for your comments on the Preliminary Draft Environmental Impact Statement for the above referenced project. The following presents our proposed responses to those comments.

Comment: It was surprising that a preferred alternative was not named in the DEIS. CEQ NEPA regulations (40 CFR 1502.14) state that the lead agency should "identify the agency's preferred alternative or alternatives, if one exists, in the draft statement". If a preferred alternative is not identified until the FEIS, then it will be difficult for the public and the resource agencies to provide input on the preferred alternative that is chosen. However, based on a conversation with Alan Vann, there will be opportunities for comments regarding the preferred alternative during the FEIS phase.

Response: Comment noted.

Comment: In regards to the selection of a preferred alternative, the original and primary purpose of the Gulf Coast Parkway (GCP) was to help stimulate Gulf's County's depressed economy. It would seem that Alternatives 17 and 19 would do little to achieve this goal with the possible exception of Mexico Beach. If the GCP were built, the transfer of freight between Gulf County and Bay County, and the movement of Gulf County residents to employment centers in Bay County, would appear to send substantial truck and car traffic through Mexico Beach on US 98 when heading to the GCP. This would seem to be incompatible with Mexico Beach's tourism and retiree-based economy. In addition, Alternatives 17 and 19 would provide little benefit to the designated Enterprise Zones.

Response: If the proposed Gulf to Bay Highway project is built prior to the Gulf Coast Parkway, it would accommodate the through traffic that currently travels on US 98 to CR 386.

It is noted that Alternatives 17 and 19 would be less beneficial to the Enterprise Zone on CR 386 than Alternatives 8, 14, or 15.

Comment: Another purpose of the GCP was to provide improved hurricane evacuation capability, in part because the high-level US 98 DuPont Bridge must be closed during high winds (over 55 mph). However, all of the proposed GCP alternatives also include a high-level bridge (see p. 12). It would seem that any GCP bridge would also have to be closed during high winds, at least partially defeating the improved hurricane evacuation goal of the GCP.

Response: Unfortunately, there is no possible route from the coastal area that would not involve a high-level crossing.

Comment: Although a major purpose of the road is the stimulation of economic growth in the region, the indirect effects analysis indicates that the GCP will result in only minor growth over and above that which would occur under the No Build Alternative. There seems to be a logical disconnect in that regard.

Response: Several factors were considered in identifying the locations and types of future development scenarios for Gulf County. One factor was the time frame for constructing the proposed Gulf Coast Parkway. Given that the project is only in the preliminary engineering phase, it would likely be five to ten years before the first phase of the project is constructed. The first phases of the project are not even located within Gulf County. Another factor is that Gulf County's generally depressed economy coupled with the continuing effects of the 2008 recession leave considerable room for economic expansion without altering the population projections for the study period. Further, the ICE analysis noted that on-going and planned development projects within the Mexico Beach-St. Joe Beach study area were more than adequate to accommodate the projected population growth within the study period. Even if these developments were not fully adequate to accommodate the projected population growth, the coastal area of southeast Bay County and south Gulf County will be in competition with other areas of Bay County better equipped to attract tourist dollars and any influx of new population. Therefore, without any basis for an increase in the projected population, there is no need for additional housing within the planning period. Without the demand for housing in other areas of Gulf County, most future development associated with the project alternatives would be of the commercial type that tends to pop-up at new intersections of major roads and some office or commercial development within the enterprise zones.

As construction of the Gulf Coast Parkway within Gulf County won't likely occur for ten to fifteen years, or more, the amount of development that is implied by the commenter won't likely occur for 30 to 40 years, well beyond the analysis period of the ICE report.

Comment: The conclusions of the indirect effects analysis tend to finish with rationalizing statements in instances where it seems that a resource may be more than minimally impacted (e.g. regulations, permitting, or a potential conservation agreement will fix the problems). While these types of actions may help to minimize development impacts to some extent, they do not eliminate those impacts, and there is also uncertainty with regards to their effectiveness that is not addressed.

Response: Comment noted.

Comment: Uncertainty also surrounds the results of the Delphi Group's analysis and the whole indirect effects analysis hinges on the accuracy of those results.

Response: The Delphi Group's involvement with indirect and cumulative effects analysis was confined to identifying the probable locations of future development. Uncertainty cannot be avoided when predicting future actions of others. Without specific development plans, it is not possible to provide more than a generalized assessment of impacts. However, it was felt that the assessment procedure was sufficient to accomplish the goals of the indirect and cumulative effects analysis which were: 1) to determine the project's potential indirect and cumulative effects in the study area; 2) to determine whether the cumulative effects of future development within the planning period would be substantial enough to risk the continued existence of a resource of concern; and 3) to provide enough information that those with responsibility for the resources of concern would have sufficient information to be able to determine their future course regarding their responsibilities for the resource(s).

Comment: Depending on which alternative is chosen, a bridge would be built to span either East Bay or Wetappo Creek. Under the essential fish habitat discussion the potential direct effects of bridge construction are addressed, but the document does not consider impacts from the operation of a bridge once it is built. Effects such as the alteration of reproductive behavior of soniferous fishes and other estuarine species due to noise from bridge traffic or nighttime bridge lighting should be considered. NMFS would strongly recommend that any bridge built should be designed to convey stormwater off the bridge for treatment. If Alternatives 17 or Alternative 19 is selected, before any actual East Bay Bridge construction begins, there should be a commitment made to conduct another seagrass survey during the June-August prime growing season.

Response: In addition to impacts to the human environment, construction noise and vibration impacts are thought to have impacts on fish and wildlife. Unfortunately very few reliable studies have been conducted on the impacts of either traffic or construction noise on wildlife. Additionally, of the studies that have been conducted, the results cannot necessarily be assumed applicable to wildlife species other than the ones studied due to the differences in hearing and noise sensitivity between and among species.

However, of the various sources that cause construction noise and vibration, the effects of pile-driving on fish and other aquatic species appear to have been more frequently studied than those from other sources, probably since pile-driving generates some of the most severe noise and vibration effects. The type and intensity of the sounds produced during pile driving depend on a variety of factors, including but not limited to, the type and size of the pile, the firmness of the substrate into which the pile is being driven, the depth of water, and the type and size of the pile-driving hammer[1]. The degree to which an individual fish exposed to sound is affected is also dependent upon a multitude of factors, including 1) species of fish, 2) fish size, 3) presence of a swim bladder, 4) physical condition of the fish, 5) peak sound pressure and frequency, 6) shape of the sound wave (rise time), 7) depth of the water around the pile, 8) depth of the fish in the water column, 9) amount of air in the water, 10) size and number of waves on the water surface, 11) bottom substrate composition and texture, 12) effectiveness of any attenuation technology employed, 13) tidal currents (if present), and 14) presence of predators[2].

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[1] PND Engineering, Inc., *Knik Arm Crossing Pile-driving Noise Attenuation Measures Technical Report Final*, prepared for, Knik Arm Bridge and Toll Authority, November 2005, pp. 32-33.

[2] PND Engineering, Inc., *Knik Arm Crossing Pile-driving Noise Attenuation Measures Technical Report Final*, prepared for, Knik Arm Bridge and Toll Authority, November 2005, pp. 32-33.

According to the Washington State DOT the "risk of injury or mortality for aquatic species and fish associated with noise, in general, is related to the effects of rapid pressure changes, especially on gas filled spaces in the body"[3]. Pile-driving can generate intense underwater sound pressure waves. When a fish is exposed to pressure waves of sufficient intensity and/or for sufficient duration, the fish's swim bladder may rupture or the decompression accompanying the sound waves forces the gas in the blood and tissue to vaporize causing the veins to rupture and organ failure[4].
Measures to minimize the effects of pile driving on fish that have been identified in the literature are listed below.

1) Use of wood or concrete piles instead of hollow steel piles.
2) If using hollow steel piles, restrict their installation to a time of year when larval and juvenile stages of fish species with designated EFH are not present; drive piles during low tide periods when located in intertidal and shallow subtidal areas; use a vibratory hammer as much as possible; monitor peak SPLs during pile driving to ensure that they do not exceed the 190 dB re 1PA threshold for injury to fish; employ measures to attenuate sound should SPLs exceed 180 dB re 1 PA (i.e. air bubble curtain system or air-filled coffer dam, use of a smaller hammer, and use of a hydraulic hammer if impact driving cannot be avoided); and drive piles when the current is reduced in areas of strong current.
3) Use of the construction technique called "ramping up" which requires the contractor to use soft-start procedures where the hammer is not used at full strength at the start of a pile driving session.

Because the proposed improvement includes bridge construction, the need for these measures will be evaluated during the project's design and special provisions may be added to the project's construction specifications as appropriate.

Stormwater conveyance for bridge runoff will be built to meet all state and federal standards.

It is noted that a commitment needs to made that if Alternative 17 or 19 are selected an additional seagrass survey during the June-August prime growing season must be completed.

Comment: On page 4-124 under Summary of Cumulative Effects Analysis, NMFS disagrees with the statement "In the case of new commercial areas, the high percentage is a benefit, not an adverse effect". New commercial areas may be beneficial in terms of economic development, but they are detrimental in other ways (e.g. habitat loss, pollutants). NMFS also disagrees with the statement "Potentially impaired waters and Class I drainage basins would probably benefit from future development, as it would be required to provide treatment of stormwater runoff that currently is draining untreated into these basins." While future developments may be required to treat stormwater, they will also introduce new contaminants that did not presently exist in undeveloped areas. It has not been NMFS' experience that increased development improves water quality.

Response: The intent was to indicate that an increase in new commercial areas was a benefit to the local economy. The sentence has been revised to delete the phrase "is not an adverse effect".

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[3] Washington State Department of Transportation, *Biological Assessment Preparation Advanced Training Manual*. Version 02-2012, 7.0 Construction Noise Impact Assessment, p. 7.51

[4] Transportation Research Board, *Hydroacoustic Impacts on Fish from Pile Installation*, Research Results Digest 363, October 2011, p. 5

The sentence regarding improved water quality has been deleted.

Comment: On page 4-6 in the bottom paragraph, the sentence "A negative number means the growth trend method predicted a larger population within the particular PARA than the Delphi Group" in reference to Table 4-5 appears incorrect. A negative number seems to indicate that the Delphi Group predicted a larger population in the PARA than the growth trend method.

Response: Comment has been noted and is correct. The reference has been corrected in the document.

Comment: On page 4-104 in the top paragraph, the sentence "The crossing of the ICWW would also provide the same horizontal clearance (50 feet) as the Du Pont Bridge" should read 150 feet, not 50 feet.

Response: Clearance has been corrected.

Comment: On page 4-130 under the Commitment of Funds, the statement "The total commitment of funds for the proposed project is estimated to be 25 million dollars" needs to be clarified. The 25 million dollars obviously does not include construction costs, as according to Table 2-29 the total cost estimates for the GCP range between 540 and 619 million dollars.

Response: Sentence has been modified.

Sincerely,

Alan Vann

Alan Vann

7/15/2011 US Corps of Engineers Comment Letter on DEIS, WER and ICE Report

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P. O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

July 15, 2011

North Permits Branch
SAJ-2009-02076 (IP-AWP)

Florida Department of Transportation – District 3
Attn: Alan Vann
1074 Highway 90
Chipley, Florida 32428

Dear Mr. Vann:

Reference is made to your February 2011 submittal of the Gulf Coast Parkway, Draft Environmental Impact Statement (EIS). The U.S. Army Corps of Engineers has completed its review of the draft EIS, Wetland Evaluation Report and Indirect and Cumulative Effects Report and does not have any comments to provide at this point in the DEIS process.

We appreciate the opportunity to review and comment on the documents and we are looking forward to working with you in the near future. If you have any questions regarding this letter, please contact Randy Turner at the letterhead address or by telephone at 904-232-1670.

Sincerely,

Randy L. Turner
Project Manager, Jacksonville
Permitting Section

6/24/11 Northwest Florida Water Management District Comment Letter
FDOT Response Letter

Northwest Florida Water Management District

81 Water Management Drive, Havana, Florida 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)

(850) 539-5999 • (Fax) 539-2777

Douglas E. Barr
Executive Director

MEMORANDUM

TO: Alan Vann, Project Coordinator, Florida Department of Transportation
Greg Garrett, Group Manager, Transportation Planning, Atkins

THROUGH: Duncan J. Cairns, Chief, Bureau of Environmental and Resource Planning

FROM: Paul Thorpe, Resource Planning Section Director

DATE: June 24, 2011

SUBJECT: Gulf Coast Parkway Preliminary Draft Environmental Impact Statement

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The Gulf Coast Parkway would provide a major new highway corridor, combining development of new alignment sections with the widening and expansion of existing roadway segments in rural Gulf and Bay counties. District staff have participated in early review and technical assistance through the Efficient Transportation Decision-Making (ETDM) process. Detailed descriptions of resource concerns previously provided by the District during the ETDM process remain applicable. Following are technical comments and recommendations concerning the Preliminary Draft Environmental Impact Statement (EIS) transmitted by FDOT on April 20, 2011. Comments and recommendations concerning the Indirect and Cumulative Effects analysis were provided under separate cover on June 3, 2011.

Floodplains and Floodplain Functions

- Data shown on Figure 3-15 (section 3, page 3-54) appear to reflect old, no longer effective data from November 2002. Effective data, dated April 2009 is referenced in Table 3-23 (Section 3, page 3-53) but not reflected on the map. It is unclear whether the effective or old data were utilized in the quantitative analysis.

- Calhoun County flood information was included in the maps on page 3-54, but not referenced in Table 3-23 (FEMA Flood Insurance Rate Maps within the Study Area). Additionally, the data were not referenced in Table 3-24 (FEMA Flood Insurance Studies [FIS] within the Study Area). It is unclear whether the mapped data were considered in the tabulated analysis in Section 2, page 2-90 (Table 2-27, Natural Environmental Involvement Category Ranking). There appear to be no text references to the Calhoun County data within the Draft EIS. It is unclear whether impacts to floodplains in Calhoun County were evaluated.

- Section 3.6.5, Floodplains, states that the storm surge zones of East Bay have a base flood elevation of 8.0 feet, but data referenced in-house reflect storm surge elevations ranging from 8 to 11 feet. Storm surge zones near the project terminus are mapped as high as 16 feet, but no reference to this was found in the document.

GEORGE ROBERTS, Chair, Panama City
PHILIP K. McMILLAN, Vice Chair, Blountstown
STEVE GHAZVINI, Secretary/Treasurer, Tallahassee
PETER ANTONACCI, Tallahassee
STEPHANIE BLOYD, Panama City Beach
JOYCE ESTES, Eastpoint
TIM NORRIS, Santa Rosa Beach
JERRY PATE, Pensacola
RAPLH RISH, Port St. Joe

Water Quality

- It is recommended that the Chapter 4 of the DEIS include a discussion of likely or potential short-term and long-term water quality impacts that would result from construction and operation of a major roadway. Section 4.3.7 discussed water quality, but potential effects were not clearly identified. Pollutants and their potential effects should be identified, as well as the potential for stormwater treatment systems to minimize such effects. Long-term impacts, for example, would include nonpoint source discharge of pollutants, as well as disruption of adjacent wetland and floodplain water quality functions. Short term impacts would include discharge of sediments during construction, increased turbidity in the proximity of construction and downstream, with resulting impacts on benthic aquatic habitats. It would also be appropriate to identify specific stream crossings and proximate surface waters that would potentially be affected by both construction-related impacts and long-term operation. The EIS should also include an assessment of anticipated success of construction BMPs to control sedimentation and turbidity during possible major storm events, such as are not infrequent in the region.

- Section 4.3.7 of the DEIS appears to conclude that the no build alternative would result in greater water quality impacts than any of the build alternatives. The rationale given is that existing stormwater would continue to be untreated under the no-build alternative, while the build alternatives would all meet permitting requirements for treating runoff from the new construction. The given conclusion, however, would only seem valid to the degree that existing stormwater and nonpoint source pollution impacts (which are not otherwise detailed in the analysis) would also be corrected in the process of the new facility construction. In general, construction of new roadways, land disturbance, and impervious surface area would be expected to increase nonpoint source pollution (adding to the existing sources) unless significant existing problems are described and actions proposed to be taken to address the existing impacts are clearly articulated. Thus, it is recommended that the analysis and discussion reflected in this section of the report be reevaluated.

  It would seem that the potential for individual build alternatives to correct existing stormwater and nonpoint issues would differ based how much each proposed alignment incorporates existing roadway corridors. An analysis of this, identifying the relative potential of each build alternative to address existing impacts would be appropriate. If this project does include, as a mitigating measure, the correction and retrofit of existing nonpoint sources, it would be well-worth describing this within the document. Paragraph seven on p. 4-74, however, indicates that no additional stormwater mitigation is being considered beyond meeting direct construction regulatory requirements.

District staff appreciate the opportunity to review the preliminary draft EIS and associated documents. If there are any questions concerning this review, please do not hesitate to contact Paul Thorpe or Duncan Cairns at (850) 539-5999.

Florida Department of Transportation

RICK SCOTT
GOVERNOR

1074 Highway 90
Chipley, Florida 32428

OFFICE OF THE
SECRETARY

Mr. Duncan Cairns, Chief
Bureau of Environmental and Resource Planning
Northwest Florida Water Management District
81 Water Management Drive
Havana, Florida 32333-4712

Re: Gulf Coast Parkway
FPID #: 410981-2-28-01
County: Bay, Calhoun and Gulf
Draft Indirect and Cumulative Effects Report

Dear Mr. Cairns:

Thank you for your comments on the Draft Indirect and Cumulative Effects Report for the above referenced project. The following presents our proposed responses to those comments.

Comment: The methodology incorporates an assumption (p.3-3) that any induced growth would not reflect any increase in the project area population, but rather a reallocation of population from one location within the study area to another. Especially since it is applied to the evaluation of indirect and cumulative effects, additional data and analysis are needed to support this assumption. Additionally, the internal consistency of this assumption should be clarified with respect to conclusions elsewhere in the document of induced overall economic growth and activity within the PARA.

Response: Several factors were considered in identifying the locations and types of future development scenarios for Gulf County. One factor was the time frame for constructing the proposed Gulf Coast Parkway. Given that the project is only in the preliminary engineering phase, it would likely be five to ten years before the first phase of the project is constructed. The first phases of the project are not even located within Gulf County. Another factor is that Gulf County's generally depressed economy coupled with the continuing effects of the 2008 recession leave considerable room for economic expansion without altering the population projections for the study period. Further, the ICE analysis noted that on-going and planned development projects within the Mexico Beach-St. Joe Beach study area were more than adequate to accommodate the projected population growth within the study period. Even if these developments were not fully adequate to accommodate the projected population growth, the coastal area of southeast Bay County and south Gulf County will be in competition with other areas of Bay County better equipped to attract tourist dollars and any influx of new population. Therefore, without any basis for an increase in the projected population, there is no need for additional housing within the planning period. Without the demand for housing in other areas of Gulf County, most future development associated with the project

alternatives would be of the commercial type that tends to pop-up at new intersections of major roads and some office or commercial development within the enterprise zones.

As construction of the Gulf Coast Parkway within Gulf County won't likely occur for ten to fifteen years, or more, the amount of development that is implied by the commenter won't likely occur for 30 to 40 years, well beyond the analysis period of the ICE report.

Comment: The document seems to indicate that very little new development would be induced by a new roadway even along the road frontage and at the coastal terminus area. This conclusion seems counter-intuitive and inconsistent with past development trends. Additional data and analysis are needed to support this conclusion. This is particularly important given that the conclusion substantially informs the results of the analysis.

Response: See response to the comment above.

Comment: Much of the related analysis appears to rely on the evaluation of a Delphi group. Additional description is needed concerning the composition of the Delphi group, the information presented to it, and the methodology followed. It is recommended that this be specifically described within the methodology of the report. Also, as stated previously by District staff, it is recommended that more specific and quantitative methods should be incorporated into the methodology for projecting induced growth. The Delphi technique does not seem very decisive in the actual identification and evaluation of potential impacts. This has significance later in the report, where detailed quantitative calculations are based on growth projections.

Response: Representatives of seventeen organizations were initially invited to participate in the Delphi Group. An organization meeting was held at which the Delphi process was explained and a notebook of information was provided to all those in attendance. The information notebook included the following information: PARA maps with known developments shown; population tables; Bay and Gulf Counties' development criteria; selected figures from the Bay County 2003-2030 Projected Change from 2030 Long Range Transportation Plan; the E-Florida Bay County Profile; the Florida Legislature Bay County Profile; Headwaters Economics - *A SocioEconomic Profile: Bay County;* E-Florida Gulf County Profiles; Florida Legislature Gulf County Profile; Gulf County Economic Development, Inc. 2005-2006 Profile; Opportunity Florida Gulf County Employment; Opportunity Florida Gulf County Income; and Headwaters Economics - *A SocioEconomic Profile: Gulf County*

Five organizations ultimately participated in the Delphi process including volunteers from the Bay and Gulf County Planning Departments, the Apalachee Regional Planning Council, and two local developers.

After the organization meeting assignments were sent to the participants consisting of questionnaires and maps. The questionnaires included questions such as how much does this alignment alternative affect changes in land uses? What non-transportation features affect the assignment of population to the land use types? Would this alignment cause population to move from one area to another? Why?, etc. The participants provided their responses to the questionnaires and marked the locations where they expected future development to occur on the maps. It was the information provided by the Delphi Group members that determined the location and size of future developments.

By quantitative methods, it is assumed that the NWFWMD is referring to the use of land use allocation models. Modeling provides forecasts of future land use changes based on data and trends, rather than regional goals and intangibles such as landownership. Because of the dearth of information for large parts of the study area, the relatively stagnant growth trends in those portions of Gulf and Calhoun Counties within the study area, the relatively small size of the area being studied, and those intangible attributes that will affect future growth, it was felt that a land use allocation model would not provide as realistic a forecast as a Delphi Group composed of planners from different professions who were intimately familiar with the area.

The Delphi Group did not participate in the identification or evaluation of the potential impacts of the forecasted developments.

Comment: It is recommended that the discussion of land use plans and land development regulations address Gulf County in a manner comparable to that provided for Bay County.

Response: The discussion of land use plans and land development regulations addresses the potential for future development to have involvement with conservation land uses in Bay County. There is no involvement with conservation land uses in Gulf County. Nor does Gulf County utilize transfer development rights at this time.

Comment: It is recommended that indirect and cumulative effects on Class III waters be analyzed.

Response: Class III waters have been added to the Table 4-6 (indirect effects summary table) and Table 5-47 (cumulative effects summary table).

Comment: Additional consideration and analysis of the cumulative effects of land use change and increased impervious surface area on water quality are recommended. The analysis provided concludes that permitting requirements would both fully address these effects and likely improve existing water quality problems. Additional analysis is needed to support such conclusions. Past water quality analyses have consistently shown linkages between water quality and land use, impervious surface area and wetland and floodplain resources and functions. These tend to reflect interactive effects of physical changes to the watershed and runoff quality and quantity. District staff are available to provide related literature and data as needed.

Response: A generalized estimate of impervious surface cover has been added. Any reference to improvement in water quality has been eliminated.

Comment: Page 5-37 states that the "direct effect of the proposed project on the 100-year floodplain is the area of 100-year floodplain encompassed by the footprint of each Build Alternative; however, impact on the flood storage function of floodplains will be offset by the construction of stormwater management facilities that will replace the loss of storage capacity by the filling of the floodplain." It is recommended that hydrologic and impoundment effects of the roadway be analyzed, in addition to the direct 100-year floodplain footprint.

Response: The design of the proposed road will include the placement and sizing of drainage structures to maintain the existing hydrology in accordance with FDOT design guidelines and ERP permitting requirements.

Comment: The region III RWSP does not refer to 10 MGD as being a "reserve". It would be more appropriate to provide an analysis of whether any projected growth in water demand would exceed existing permitted amounts.

Response: "Reserve" was removed from the text. Since the ICE report utilized different population projections it is difficult to assess whether the future growth would actually exceed permitted demand without revising the analysis using the same population data that was used in the RWSP. However, the ICE report does provide an estimate of the amount of increased demand for the induced population that was allocated to Bay County instead of Gulf County under Alternatives 17 and 19 (299,800 gpd). A conservative approach was taken that assumed all of the allocated population would be on public supply at a higher rate of usage than if a portion of the induced population was self supplied (individual wells). The 299,800 gpd is about 0.47 percent of the total estimated future public supply. If it is assumed that the population in the RWSP used all the available supply from Deer Point Lake by the end of the planning period, there would still be adequate capacity within the 10 MGD provided by the inland wells to more than cover the increase in demand.

Comment: The concluding analyses of cumulative effects on wetland and floodplain resources are based on incorporating calculations that all such resources within areas of projected development would be impacted under the no-build alternative. Thus, the final cumulative effects conclusions (Table 5-48) project that 90 percent of all cumulative wetland impacts and 87-91.7 percent of all cumulative floodplain impacts would occur under the no-build alternative. This analysis and these conclusions do not appear supportable. For example, 100% of the direct roadway footprint impacts and the associated secondary impacts would be certain under a build scenario, whereas full loss of all wetlands in the projected growth areas under no-build conditions would not be at all likely.

Response: It is agreed that the developments shown under the No Build Scenario are not certain, but these developments were projected to the best of the Delphi Group's knowledge and abilities, which is an acceptable method for projecting future growth for an indirect and cumulative effects analysis.

It is understood that the actual impacts to wetlands, and floodplains, in the future developed areas, whether under the Build or No Build alternatives, would be less than actually reported and the percentage contribution of the No Build development when compared to the Build Alternatives' development scenarios would likely be different. Since there is no way of knowing what the exact impacts of future development would be, a more precise comparison of the impacts under the No Build development scenario with the impacts under the Build Alternatives' development scenarios cannot be made. However, in an effort to address the commenter's concerns that the conclusions are not supportable because the future development impacts would in reality be less than those used in the study resulting in the Build Alternatives providing a greater percentage of the impacts, a hypothetical analysis was conducted to determine the potential effect of a reduction in the future development impacts.

Wetland impacts within the boundaries of the future developments were reduced by 20 percent. This reduction was also applied to the Build Alternatives' induced developments, since it cannot fairly be assumed that only 80% of wetlands would be impacted by No Build future developments and 100% of wetlands would be impacted by the Build induced developments. The Build Alternatives' direct impacts (roadway footprint) remained at 100%. The analysis resulted in a change in the percentage contribution of the No Build development scenario impacts of approximately 1% less than originally calculated. This

indicates that the percentage of No Build future development impacts would be, as expected, less than reported, however, the relative contribution of impacts by the No Build future development and the Build Alternatives would not change substantially or alter the conclusion that the majority of the impacts to wetlands and floodplain can be attributed to the growth under the No Build scenario.

Since one, if not the main purpose, of the indirect and cumulative effects analysis is to determine whether the cumulative effects of the project and the reasonably foreseeable future actions of others would threaten the survival of sensitive resources, it was assumed that analysis of the worst case scenario (i.e. impacts to all resources within the development boundaries) would provide sufficient indication of the degree of threat the cumulative future actions would have on the health of the sensitive resources. Therefore, the important point here is not the accuracy of the percentage of impact of the No Build future development, but the percentage of impact of the cumulative development.

Comment: In accordance with the Methodology for the Analysis of Cumulative Effects for the Gulf Coast Parkway Project Development & Environment Study, as developed pursuant to the Agency Advisory Group Process, the analysis should address the likelihood that any identified or recommended mitigation or avoidance actions will (or will not) be implemented. In the event that implementation of an avoidance or mitigation action appears questionable, unmitigated cumulative impacts that may result should be clearly identified. This is particularly important given that the final document (Section 5.11.2) emphasizes that the project sponsor and land developers lack responsibility for providing such mitigation.

Response: Discussion on recommended mitigation has been revised. All the discussion prior to the section on mitigation addresses what cumulative effects can be expected if mitigation measures are not implemented.

Sincerely,

Alan Vann

6/1/11 USFWS Comment Letter
FDOT Response Letter

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Field Office
1601 Balboa Avenue
Panama City, FL 32405-3721
Tel: (850) 769-0552
Fax: (850) 763-2177

IN REPLY REFER TO:

RECEIVED
JUN 3 2011
ENVIRONMENTAL MANAGEMENT OFFICE

June 1, 2011

Mr. Brandon Bruner
District Project Development Engineer
Florida Department of Transportation
Post Office Box 607
Chipley, Florida 32428-0607

Attn: Mr. Alan Vann

Re: FWS No. 2011-I-0304
Florida Department of Transportation
Gulf Coast Parkway PD&E Study
Wetlands Evaluation Report
Indirect and Cumulative Effects Report
Draft Environmental Impact Statement
FPID #: 410981-2-28-01
Bay, Gulf, and Calhoun Counties, Florida

Dear Mr. Bruner:

Thank you for your letter to the Fish and Wildlife Service (Service) dated April 20, 2011, providing the above-referenced project reports for our review. The Endangered Species Biological Report (ESBA) was reviewed separately and comments were provided by this office in a letter dated May 20, 2011. This response is provided in accordance with provisions of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*), Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*), Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712), and the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4231 *et seq.*).

The Federal Highway Administration (FHWA) and Florida Department of Transportation (FDOT) propose to construct a new roadway – the Gulf Coast Parkway (GCP) – connecting US 98 in Gulf County to US 231 and US 98 in Bay County, Florida. Five Alternatives (8, 14, 15, 17, and 19) and a No-Build Alternative are being studied during the Project, Design, and Environment (PD&E) phase of the project. The Service is a cooperating agency on the Environmental Impact Statement (EIS). At this time, no preferred alternative has been identified.

The GCP is proposed as a four-lane divided roadway with both rural and urban sections. Within a 168-foot right-of-way (ROW), the typical urban section will include a 46-foot grassed median and the following in each direction: two 12-foot travel lanes; paved 4-foot inside and 6.5-foot outside shoulders; 5-foot sidewalks, and a closed curb-and-gutter drainage system with stormwater treatment. The typical rural section has a 250-foot ROW and will include a 64-foot grassed median and the following in each direction: two 12-foot travel lanes; paved 2-foot inside and 5-foot outside shoulders; and open drainage swales. A 12-foot shared use path will be located on one side of the roadway. Length varies from approximately 28 to 33 miles. All build alternatives include high level bridges either over Wetappo Creek and the Intra-coastal Waterway (ICWW) (Alternatives 8, 14, and 15) or over East Bay (Alternatives 17 and 19). Initially, only two 12-foot lanes within either typical section will be constructed. Design speed is 50 mph for the urban sections and 65 mph for the rural roadway.

Wetland Evaluation Report

The Service identified the GCP as a Potential Dispute during the 2007 Efficient Transportation Decision Making (ETDM) review process due to its high potential to have a significant direct, indirect, and cumulative impact on water resources that support numerous fish, wildlife, and plant species, including federally protected and other rare species. The FDOT developed a Wetlands Action Plan in 2007 to address agency concerns and resolve the Potential Dispute. After review of the Wetlands Evaluation Report, the following items warrant further discussion:

1. Some wetlands identified as low quality (page 5-10) may have a high potential for rare plant and wildlife habitat. The "openness" of maintained powerline easements can result in a diverse herbaceous layer in locations with remnant wet prairie. Ditches (510D), utility transmission lines (817W), and powerline easements (832W) may provide habitat for the Panama City crayfish (PCC) – a species of concern for the Service and a state-protected wildlife species. Within the range of the PCC, the Uniform Mitigation Assessment Method (UMAM) scores should be higher to reflect the potential for PCC occurrence in these wetland types.

2. In Section 7 (page 7-1), the report notes that regulatory agencies in Northwest Florida require an assessment of the indirect effects to wetlands within 300 feet of the alignment boundaries. The 300-foot secondary effect distance has routinely been used when evaluating wetland dredge-and-fill permits for the expansion of existing roadways. The secondary effects of a new roadway in a previously minimally-developed environment can be expected to have large-scale landscape effects by: facilitating habitat fragmentation; disrupting wildlife movement corridors; introducing roadside invasive and exotic species; and providing new points of human access. Such broad-scale effects can occur at distances of over 1000 meters from the road surface (Forman et. al. 2003). The Service recommends using a greater than 300-foot indirect effect distance for sections of the GCP that do not follow existing roadways. This should be part of the detailed and comprehensive assessment of indirect and cumulative wetland effects to be conducted after a preferred alignment is selected.

3. In Section 8 (page 8-1), FDOT indicates that wetland impacts will be mitigated using either Florida statute approved mitigation (373.4137 F.S.), mitigation banks, or property donations. The Service recommends developing a mitigation plan at the earliest time conceivable well in advance of the wetland dredge-and-fill permit application. A carefully-considered mitigation plan can be a valuable tool toward offsetting unavoidable wetland losses, meeting conservation goals, preventing "missed opportunities", and proactively addressing the threats of future secondary and cumulative growth.

   We encourage taking a holistic approach to mitigation planning for the GCP that balances transportation needs, conservation priorities, and growth management concerns. Due to the potential for this new roadway to highly alter the surrounding landscape, mitigation for impacts should be strategically-located to protect important water/wetland resources and help achieve regional conservation objectives. A landscape planning effort using tools such as Strategic Conservation Planning Using a Green Infrastructure Approach, Sector Planning, or a Regional General Permit would assist in identifying conservation priorities while providing a mechanism to direct growth away from key resources at-risk. In November 2010, the Service hosted a local training on Green Infrastructure to familiarize our partners with its principles. The Service is available to work with FDOT and FHWA toward developing and implementing a regional Green Infrastructure Plan for the project area.

4. Measures to reduce the GCP's direct and indirect effects to wetlands (and the fish, wildlife, and plant resources they support) should be provided once a preferred alternative is determined. These commitments should include: environmentally-sensitive bridging of waters and high quality resources; protecting riparian corridors along Wetappo Creek and Little Sandy Creek to maintain connectivity between two populations of the red-cockaded woodpecker; acquisition and restoration of habitat for the PCC; reducing the project footprint in high quality habitat; stringent limited access; avoiding imperiled plants, including areas identified by the Nature Conservancy and Florida Natural Areas Inventory as important to the survival of the 21 most imperiled plant species in the Florida panhandle; provide wildlife crossings to reduce habitat fragmentation for the Florida black bear and other wide-ranging species; an erosion control plan to prevent degradation of downstream waters; water quality protection measures; post-project monitoring to identify and control invasive and exotic species; and measures to reduce impacts to migratory birds.

5. The Wetlands Action Plan indicated there would be agency coordination throughout the PD&E process. As indicated in Section 9, no coordination has taken place with the Service to discuss and resolve wetland concerns since 2007. We recommend periodic meetings to further progress toward resolving the Potential Dispute.

Indirect and Cumulative Impacts Report

The Service identified the GCP as a Potential Dispute during the 2007 review process due to its high potential to have significant secondary and cumulative impacts on wetlands, and wildlife

and their habitat. The FDOT developed an Indirect and Cumulative Effects Action Plan in 2007 to address agency concerns and resolve the Potential Dispute. Several interagency meetings have been held to discuss assessment approaches for determining secondary and cumulative effects. After review of the Indirect and Cumulative Effects Report, the Service has the following comments:

1. Table 5-18 indicates that 60.6% of the Potentially Affected Resource Area (PARA) for Water Quality is verified impaired waters. How was this calculation made, as only one basin (East Bay) in the referenced Florida Department of Environmental Protection 2006 Water Quality Assessment Report is identified as verified impaired? As Class II shellfish waters, this water body was determined to be verified impaired for fecal coliforms.

2. The report suggests that future development may provide beneficial effects to water quality in impaired basins through improved stormwater management. Additional support should be provided for this statement. Generally, stormwater treatment is designed to mitigate the effects of new development and does not provide overall watershed improvement, unless existing systems are being retrofitted.

3. Other metrics may be available to better identify potential future effects to water quality in the PARA. For example, studies have shown that water quality degradation can begin with as little as 10% impervious surface in a watershed (Schueler 1994; Schueler and Holland 2000; Arnold and Gibbons 1996). Determining the percent impervious surface of predicted future development within individual water bodies in the PARA may be a more useful tool in determining which water bodies are at-risk of future water quality degradation as an indirect and cumulative effect of the GCP.

4. The Delphi Group has indicated that none of the forecasted new coastal growth is associated with the Build Alternatives. It seems likely that the GCP – as a new coastal connector road – will have some degree of effect on coastal growth.

5. Page 4-33 indicates that any commensal species, including the Eastern indigo snake, captured during gopher tortoise relocation efforts, must be relocated to a certified gopher tortoise recipient site. The Service recommends that you first follow *Eastern Indigo Snake Standard Construction Conditions* and allow the snake sufficient time to move out of the construction area. If the snake must be moved, only personnel authorized under a U.S. Fish and Wildlife Service Section 10 permit may handle this federally protected species. A state gopher tortoise permit does not provide authorization for moving the Eastern indigo snake.

6. For the Florida black bear, the Service's greatest concern is the fragmentation of its habitat by a new future four-lane roadway. If the road becomes a barrier to movement, it could eliminate access to habitat. For example, bears in the Apalachicola population could lose all suitable habitat to the west of the road. Measures to offset fragmentation should be identified in the report. These measures may include construction of wildlife

crossings, reducing speed limits, prioritizing corridors that reduce east-west habitat fragmentation, and/or minimizing the overall footprint in high quality habitat areas.

7. On page 4-47, habitat for the red-cockaded woodpecker (RCW) is prioritized by nesting habitat (highest), foraging habitat, and a flight/dispersal corridor between the two known tracts (lowest). All these habitat types are priorities for the Panama City Field Office, and should be identified by function rather than an assigned relative importance. Measures to offset impacts to the flight corridor could include protection/management of suitable habitat within the corridor. Another potential secondary effect of the GCP is a reduced ability to manage existing RCW tracts by prescribed burning due to smoke management concerns. Other secondary effects in addition to new growth should be discussed in the report.

8. The RCW PARA should be the same as the Wildlife PARA, as RCW may potentially occur wherever suitable habitat is present and not just within known tracts.

9. Page 4-50 refers to a single 59-acre site for the "21 most imperiled species". It is unclear what site the document is referencing. The Service provided information to Greg Garrett, PBS&J, in a note dated October 16, 2009, on a 2001 report by The Nature Conservancy and Florida Natural Areas Inventory that identified areas important to the survival of the 21 most imperiled plant species in the Florida panhandle. A copy of the report and a geographic information system (GIS) shapefile were also provided at that time. Several of these important plant areas occur in the study area, including: Ridges of Gulf County (9,825 acres); Wetappo Creek South (3,543 acres), and Sandy Creek Bogs (6,998 acres). The Indirect and Cumulative Effects Report should be updated to accurately assess potential effects to the "21 most imperiled plant species".

10. Page 4-43 indicates that since the Florida Fish and Wildlife Conservation Commission (FWC) and Service are working on a Candidate Conservation Agreement with Assurances (CCAA) with a major private landowner to protect habitat for the Panama City crayfish (PCC) "it is assumed that a core population of PCC will be managed in perpetuity...Therefore, any induced development...was determined not to have a substantial adverse effect on the PCC". The intent of the CCAA, which has yet to be finalized, is to provide sufficient habitat to offset direct losses from projects sponsored by the landowner. Under the Build Alternative, the potential for 124.3 acres direct and 1,329 to 1,774 acres indirect loss of PCC habitat could have a substantial impact on the PCC. The Service is concerned that cumulative effects could impact up to 26.7 % of PCC habitat. The report should include commitments to address potential habitat loss consistent with the draft 2007 Panama City Crayfish Management Plan during the FWC incidental take permitting process.

11. On page 6-1, the list of Past, Present, and Reasonable Foreseeable Actions should also include: Gulf-to-Bay Highway Segments 1, 2, and 3; St. Joe Company WindMark Phase 1 and future phases; St. Joe Company RiverCamp on Sandy Creek; Biomass Gas and Electric Biofuels Facility; Port St. Joe port expansion; Bay Industrial Park; St. Joe

cc:
ACOE, Cocoa, FL (Andrew Phillips)
ACOE, Jacksonville, FL (Randy Turner)
FWCC, Tallahassee, FL (Scott Sanders, Ted Hoehn)
FWCC, Panama City, FL (John Himes)
NMFS, St. Petersburg, FL (Dave Rydene)

Florida Department of Transportation

RICK SCOTT
GOVERNOR

1074 Highway 90
Chipley, Florida 32428

OFFICE OF THE
SECRETARY

Dr. Donald W. Imm
US Fish and Wildlife Service
1601 Balboa Avenue
Panama City, Florida 32405-3721

Re: Re: Gulf Coast Parkway
FPID #: 410981-2-28-01
County: Bay, Calhoun and Gulf
Wetlands Evaluation Report
Indirect and Cumulative Effects Report
Draft Environmental Impact Statement

Dear Dr. Imm

Thank you for your comments on the Wetlands Evaluation Report, Indirect and Cumulative Effects Report, and Draft Environmental Impact Statement for the above referenced project. The following presents our proposed responses to those comments.

Wetland Evaluation Report

Comment: Some wetlands identified as low quality (page 5-10) may have a high potential for rare plant and wildlife habitat. The "openness" of maintained powerline easements can result in a diverse herbaceous layer in locations with remnant wet prairie. Ditches (510D), utility transmission lines (817W), and powerline easements (832W) may provide habitat for the Panama City crayfish (PCC) – a species of concern for the Service and a state-protected wildlife species. Within the range of the PCC, the Uniform Mitigation Assessment Method (UMAM) scores should be higher ro reflect the potential for PCC occurrence in these wetland types.

Response: Given the size, scope, number of alternative corridors, and number of alternative alignments considered for this project since 2003, UMAM scores were generalized for the various wetland habitats encountered. This level of detail is warranted and appropriate for PD&E studies. The assertion for "higher scores" in certain areas is taken under advisement and may prove to be true should this project go to permitting and wetland-specific UMAM scores are generated to support the overall assessment of wetland impacts via the ERP application process.

Comment: In Section 7 (page 7-1), the report notes that regulatory agencies in Northwest Florida require an assessment of the indirect effects to wetlands within 300 feet of the alignment boundaries. The 300-foot secondary effect distance has routinely been used when evaluating wetland dredge-and-fill permits for the expansion of existing roadways. The secondary effects of a

new roadway in a previously minimally-developed environment can be expected to have large-scale landscape effects by: facilitating habitat fragmentation; disrupting wildlife movement corridors; introducing roadside invasive and exotic species; and providing new points of human access. Such broad-scale effects can occur at distances of over 1000 meters from the road surface (Forman et. al. 2003). The Service recommends using a greater than 300-foot indirect effect distance for section of the GCP that do not follow existing roadways. This should be part of the detailed and comprehensive assessment of indirect and cumulative wetland effects to be conducted after a preferred alignment is selected.

Response: Additional assessments of indirect and cumulative wetland effects, i.e. beyond the 300-foot indirect effects distance, will be considered, as warranted (wouldn't be necessary in an area void of wetlands) for the preferred alternative during design and wetlands permitting.

Comment: In Section 8 (page 8-1), FDOT indicates that wetland impacts will be mitigated using either Florida statute approved mitigation (373.4137 F.S.), mitigation banks, or property donations. The Service recommends developing a mitigation plan at the earliest time conceivable well in advance of the wetland dredge-and-fill permit application. A carefully-considered mitigation plan can be a valuable tool toward offsetting unavoidable wetland losses, meeting conservation goals, preventing "missed opportunities", and proactively addressing the threats of future secondary and cumulative growth.

We encourage taking a holistic approach to mitigation planning for the GCP that balances transportation needs, conservation priorities, and growth management concerns. Due to the potential for this new roadway to highly alter the surrounding landscape, mitigation for impacts should be strategically-located to protect important water/wetland resources and help achieve regional conservation objectives. A landscape planning effort using tools such as Strategic Conservation Planning Using a Green Infrastructure Approach, Sector Planning, or a Regional general Permit would assist in identifying conservation priorities while providing a mechanism to direct growth away from key resources at-risk. In November 2010, the Service hosted a local training on Green Infrastructure to familiarize our partners with its principles. The Service is available to work with FDOT and FHWA toward developing and implementing a regional Green Infrastructure Plan for the project area.

Response: Agreed.

Comment: Measures to reduce the GCP's direct and indirect effects to wetlands (and the fish, wildlife, and plant resources they support) should be provided once a preferred alternative is determined. These commitments should include: environmentally-sensitive bridging of waters and high quality resources; protecting riparian corridors along Wetappo Creek and Little Sandy Creek to maintain connectivity between two population of the red-cockaded woodpecker; acquisition and restoration of habitat for the PCC; reducing the project footprint in high quality habitat; stringent limited access; avoiding imperiled plant species in the Florida panhandle; provide wildlife crossings to reduce habitat fragmentation for the Florida black bear and other wide-ranging species; an erosion control plan to prevent degradation of downstream waters; water quality protection measures; post-project monitoring to identify and control invasive and exotic species; and measures to reduce impacts to migratory birds.

Response: WER Section 8 (Avoidance, Minimization, Mitigation, and Commitments) currently states: "Avoidance and minimization of potential wetland and surface water involvement was central to both corridor and alignment development. Direct involvement with wetlands and surface waters (creeks, streams, ditches) will occur as a result of roadway construction activities.

Recognizing this, efforts have been made throughout the Project Development and Environment (PD&E) process via desktop analyses and subsequent field surveys to identify routes that may result in fewer wetland impacts – especially those potentially involving higher quality wetlands. During the project design phase, jurisdictional wetlands will be field-delineated resulting in a more detailed assessment of wetland involvement (quantity and quality) for the Recommended Alternative. These detailed field assessments may facilitate further reductions in potential wetland involvement through minor shifts of the Recommended Alternative, if practicable. Direct and indirect wetland impacts will be minimized through appropriate stormwater design, and utilization of Best Management Practices (BMPs) at wetland, bay, and stream crossings (especially East Bay and Wetappo Creek) during construction."

In keeping with the format utilized in other PD&E documents, additional commitments have been included in the updated ESBAR Sections 8 (Determination of Effect) and 10.2 (Conservation Measures and Commitments). If warranted and practicable, additional measures identified by USFWS (and discussed below) will be addressed during project design and wetland permitting to reduce direct and indirect effects to wetlands and associated plants and animals for the preferred/recommended alternative.

- environmentally-sensitive bridging of waters and high quality resources: updated in ESBAR;
- protecting riparian corridors along Wetappo Creek and Little Sandy Creek to maintain connectivity between two populations of the red-cockaded woodpecker: updated in ESBAR;
- acquisition and restoration of PCC habitat: discussed in ESBAR. The referenced management plan for this state listed species of special concern is still a draft. Any potential mitigation requirements or a state-issued incidental take permit will be addressed by the project sponsor and FWC during design and permitting. According to FFWCC website (accessed on October 16, 2012, http://myfwc.com/wildlifehabitats/imperiled/listing-process/) the draft management plan of the Panama City crayfish will be finalized by spring 2013. Based on this information and the status of the species, FDOT still concludes that this project MANLAA the PCC.
- reducing the project footprint in high quality habitat: standard practice during PD&E process; considered further for the preferred alternative during design/permitting
- stringent limited access: not appropriate for this project given its purpose and need;
- avoiding imperiled plants, including areas identified by TNC and FNAI (21 most imperiled plant species in the Florida panhandle): addressed in ESBAR; see response to Comment 9 ICE.
- provide wildlife crossings to reduce habitat fragmentation for the Florida black bear and other wide-ranging species: addressed in ESBAR;
- an erosion control plan to prevent degradation of downstream waters: commitments have been added to ESBAR;
- water quality protection measures: commitments have been added to ESBAR;
- post-project monitoring to identify and control invasive and exotic species: No specific plan is needed at this time. FDOT has a ROW maintenance program that encourages native plant diversity and habitat connectivity. FDOT also has a program that considers the management/control of invasive/exotic species http://www.dot.state.fl.us/statemaintenanceoffice/invasivespecies.shtm

- measures to reduce impacts to migratory birds: No rookeries were observed or identified in public databases. Listed migratory birds were fully considered in the ESBAR and, along with un-listed migratory birds, were considered to be transient.

Comment: The Wetlands Action Plan indicated there would be agency coordination throughout the PD&E process. As indicated in Section 9, no coordination has taken place with the Service to discuss and resolve wetland concerns since 2007. We recommend periodic meetings to further progress toward resolving the Potential Dispute.

Response: Further coordination with the USFWS is planned to be conducted following the public hearing and prior to recommendation of a preferred alternative.

Indirect and Cumulative Effects Report

Comment: Table 5-18 indicates that 60.6% of the Potentially Affected Resource Area (PARA) for Water Quality is verified impaired waters. How was this calculation made, as only one basin (East Bay) in the referenced Florida Department of Environmental Protection 2006 Water Quality Assessment Report is identified as verified impaired? As Class II shellfish waters, this water body was determined to be verified impaired for fecal coliforms.

Response: Since this report was prepared, the FDEP has published revisions to their lists of impaired waters as result of the second rotation of water quality assessment. Therefore, this table has been revised.

The calculation of the area of verified impaired waters within the PARA was made by calculating the area of verified impaired waters that fell within the PARA boundary and dividing by the total area of the PARA.

Based on FDEP's data published after the second rotation of water quality assessment, East Bay is verified impaired for bacteria (in shellfish) and mercury (in fish tissue).

Comment: The report suggests that future development may provide beneficial effects to water quality in impaired basins through improved stormwater management. Additional support should be provided for this statement. Generally, stormwater treatment is designed to mitigate the effects of new development and does not provide overall watershed improvement, unless existing systems are being retrofitted.

Response: The statement has been removed.

Comment: Other metrics may be available to better identify potential future effects to water quality in the PARA. For example, studies have shown that water quality degradation can begin with as little as 10% impervious surface in a watershed (Schueler 1994; Schueler and Holland 2000; Arnold and Gibbons 1996). Determining the percent impervious surface of predicted future development within individual water bodies in the PARA may be a more useful tool in determining which water bodies are at-risk of future water quality degradation as an indirect and cumulative effect of the GCP.

Response: Since there are no development plans for the forecasted future developments only a general estimate of future impervious cover could be calculated. These calculations were made for the study area as a whole and by drainage basin.

Comment: The Delphi Group has indicated that none of the forecasted new coastal growth is associated with the Build Alternatives. It seems likely that the GCP - as a new coastal connector road - will have some degree of effect on coastal growth.

Response: The Delphi Group indicated that the on-going and known planned developments would accommodate the projected population in the coastal area within the study period. The discussion has been revised to include additional information for the basis of no increase in population projections in the coastal area during the study period. These include the schedule for the project's construction and the study area's competition with west Bay County for any population migrating into the County.

Please note, that there was some increased development in the coastal area associated with the alternatives. This development was mostly office/commercial type development; however, there was a residential component. The residential component was not the result of migration from outside the study area but due to the allocation of projected population to this area due to the presence of the project. Also, on the assumption that the coastal area would eventually develop similar to other coastal areas of the Panhandle, some of the residential component would be in the form of condominiums which have a much smaller footprint than subdivision type development and would likely occur where existing single-family homes are purchased by investors for redevelopment. Certainly redevelopment would need to occur for the area to be competitive with the Panama City Beach area.

Comment: Page 4-33 indicates that any commensal species, including the Eastern indigo snake, captured during gopher tortoise relocation efforts, must be relocated to a certified gopher tortoise recipient site. The Service recommends that you first follow *Eastern Indigo Snake Standard Construction Conditions* and allow the snake sufficient time to move out of the construction area. If the snake must be moved, only personnel authorized under a U.S. Fish and Wildlife Service Section 10 permit may handle this federally protected species. A state gopher tortoise permit does not provide authorization for moving the Eastern indigo snake.

Response: Agreed. All necessary permits will be sought per the federal Endangered Species Act. Language in WER, ESBAR, ICE Report, and DEIS for this section will be modified accordingly. Commitments have been updated in the ESBAR and WER, as necessary.

Comment: For the Florida black bear, the Service's greatest concern is the fragmentation of its habitat by a new future four-lane roadway. If the road becomes a barrier to movement, it could eliminate access to habitat. For example, bears in the Apalachicola population could lose all suitable habitat to the west of the road. Measures to offset fragmentation should be identified in the report. These measures may include construction of wildlife crossings, reducing speed limits, prioritizing corridors that reduce east-west habitat fragmentation, and/or minimizing the overall footprint in high quality habitat areas.

Response: The Florida black bear is a state-listed species protected by the FFWCC. The analysis of indirect and cumulative effects on the black bear was coordinated with the FFWCC and the Agency Advisory Group prior to conducting the analysis. The direct and indirect (non-induced growth effects of the project alternatives and measures for offsetting impacts (including consideration of wildlife crossings) have been addressed in the ESBAR and the Wildlife and Habitat sections of the DEIS. The ICE analysis, while including the project's quantifiable direct effects and indirect effects and acknowledging unquantifiable indirect effects, is primarily focused on the quantifiable induced growth effects of the project and the effects of the reasonably foreseeable future actions of others.

Please note that the habitat connectivity section of the Final Florida Black Bear Management Plan (approved June 27, 2012) no longer specifically identifies a corridor for east-west movement between the Eglin population and the Apalachicola National Forest population. It does recommend promoting landscape connectivity from the East Panhandle BMU to the Econfina Creek Water Management Area.

Comment: On page 4-47, habitat for the red-cockaded woodpecker (RCW) is prioritized by nesting habitat (highest), foraging habitat, and a flight/dispersal corridor between the two known tracts (lowest). All these habitat types are priorities for the Panama City Field Office, and should be identified by function rather than an assigned relative importance. Measures to offset impacts to the flight corridor could include protection/management of suitable habitat within the corridor. Another potential secondary effect of the GCP is a reduced ability to manage existing RCW tracts by prescribed burning due to smoke management concerns. Other secondary effects in addition to new growth should be discussed in the report.

Response: The analysis of RCW habitat was performed in accordance with the directions provided by Agency Advisory Group (on which the Service had a representative), and included input from the FFWCC. There are no secondary effects of the project on the RCW, except for the potential induced growth effects discussed in the ICE Report, due to the distance of the alternatives from the RCW colonies' nesting and foraging habitats. The FHWA and FDOT are not required to offset induced growth or cumulative effects; however, the text will be revised in the section on mitigation opportunities to note that the management or conservation of suitable habitat within the potential RCW flight corridor would be consistent with the Service's goal to protect potential flight/dispersal corridors and that it should be a priority for preservation.

Comment: The RCW PARA should be the same as the Wildlife PARA, as RCW may potentially occur wherever suitable habitat is present and not just within known tracts.

Response: The PARA for the red-cockaded woodpecker was established with the ICE Agency Advisory Group and, therefore, will not be changed. Further, the identification of the locations of RCW populations, as well as those for any other federally-listed species, is limited to that which is available via public sources/websites. Considerations beyond that would be based on an inappropriate and misleading premise that RCW nesting habitat exists because pine-dominated forests exist. Furthermore, given RCW life history traits and foraging territory boundaries, there would be no involvement by the project on any level outside of the 0.5 mile foraging territory boundary per active cluster. All alternatives for this project are outside the foraging territory boundaries for the only known RCW populations within the project area (Wetappo Creek and Lathrop Bayou).

Comment: Page 4-50 refers to a single 59-acre site for the "21 most imperiled species". It is unclear what site the document is referencing. The Service provided information to Greg Garrett, PBS&J, in a note dated October 16, 2009, on a 2001 report by The Nature Conservancy and Florida Natural Areas Inventory that identified areas important to the survival of the 21 most imperiled plant species in the Florida panhandle. A copy of the report and a geographic information system (GIS) shapefile were also provided at that time. Several of these important plant areas occur in the study area, including: Ridges of Gulf County (9,825 acres); Wetappo Creek South (3,543 acres), and Sandy Creek Bogs (6,998 acres). The Indirect and Cumulative Effects Report should be updated to accurately assess potential effects to the "21 most imperiled plant species".

Response: The ICE Report has been revised to include the missing information.

A 2001 report by The Nature Conservancy (TNC) and Florida Natural Areas Inventory (FNAI) identified 21 plant species in northwest Florida, that in their opinion, are in need of protection due to be being rare and in danger of being extirpated due to being on private lands. Shapefiles were provided with the report that identified three areas on private lands in the study area that support rare communities including: Ridges of Gulf County (9,825 acres); Wetappo Creek South (3,543 acres), and Sandy Creek Bogs (6,998 acres). As described in the ESBAR, the initial desktop evaluation included data from the most current FNAI report (2007) for the area. As the PD&E study progressed and field surveys were conducted across various alignments, proposed alignment footprints changed several times to address a variety of different potential impacts including those to listed species actually observed in the field. The results of the data synthesis and field reconnaissance indicated that listed plant species occurrences within the respective alignments and buffers and potential involvement was minimal.

The above referenced areas harboring rare plant communities were avoided to the greatest extent practicable during the PD&E stage of this project. The Ridges of Gulf County has been completely avoided. The majority of potential involvement with Sandy Creek Bogs and Wetappo Creek South are associated with existing paved highways, SR 22 and CR 386, respectively. Of the "21 most imperiled species" identified by FNAI and TNC, only 4 species are located within the "3 Rare Plant Areas" and 3 of these species are state listed (*Aster spinulosus* – currently *Eurybia spinulosus*, *Eriocaulon nigrobractatum*, and *Xyris isoetifolia*). The only federally-listed plant is Florida skullcap, which is found 4 miles east of Alternative Alignment 8/14/15. The "TNC-FNAI 21 species report" was developed at a coarse scale for the entire panhandle (Jefferson County to Alabama). Surveys conducted by project biologists were more current and thorough, as was the project-specific FNAI Report.

As is the case with all FDOT projects, listed species and even rare (un-listed species) will be avoided and impacts minimized to the extent practicable. Depending on the alternative selected it is possible that there may be very minimal involvement with the areas identified as having rare species. Once a preferred alternative is selected supplemental seasonal surveys are anticipated to determine accurate and current impacts to listed species.

Comment: Page 4-43 indicates that since the Florida Fish and Wildlife Conservation Commission (FWC) and Service are working on a Candidate Conservation Agreement with Assurances (CCAA) with a major private landowner to protect habitat for the Panama City crayfish (PCC) "it is assumed that a core population of PCC will be managed in perpetuity... Therefore, any induced development...was determined not to have a substantial adverse effect on the PCC". The intent of the CCAA, which has yet to be finalized, is to provide sufficient habitat to offset direct losses from projects sponsored by the landowner. Under the Build Alternative, the potential for 124.3 acres direct and 1,329 to 1,774 acres indirect loss of PCC habitat could have a substantial impact on the PCC. The Service is concerned that cumulative effects could impact up to 26.7 % of PCC habitat. The report should include commitments to address potential habitat loss consistent with the draft 2007 Panama City Crayfish Management Plan during the FWC incidental take permitting process.

Response: One purpose of the ICE analysis is to identify any threat to the survival of sensitive resources and recommend measures that can be taken (by someone other than the project's proponent) to offset the predicted adverse effects. The report has done that. Commitments are not part

of an Indirect and Cumulative Effects analysis as the FDOT and FHWA are not required to mitigate for the impacts of induced development or the future actions by others.

Comment: On page 6-1, the list of Past, Present, and Reasonable Foreseeable Actions should also include: Gulf-to-Bay Highway Segments 1,2, and 3; St. Joe Company WindMark Phase I and future phases; St. Joe Company RiverCamp on Sandy Creek; Biomass Gas and Electric Biofuels Facility; Port St. Joe port expansion; Bay Industrial Park; St. Joe Company Bonfire Beach; Deer Point Elementary School; Creekside Partners LLC; St. Joe Company The Landing at Wetappo Creek; and Sweetwater Mitigation Bank.

Response: The list will be revised to include most of the projects identified in the comment. Unless the Service can provide information on locations and dimensions of RiverCamp on Sandy Creek and Creekside Partners LLC within the study area, they cannot be included. The Biomass Gas and Electci Biofuels Facility, Deer Point Elementary School and Port St. Joe expansions are thought to be located beyond the boundaries of the PARA.

Draft Environmental Impact Statement

Comment: Comments provided by Service on the ESBA, Wetlands Evaluation Report, and Indirect and Cumulative Effects Report should be addressed in final EIS (FEIS). Conservation measures and commitments should be provided to avoid and minimize impacts to federally protected and other rare species, and their habitats consistent with recommendations of the Service.

Response: Agreed. Updates to referenced documents will be made as necessary.

Sincerely,

Alan Vann

Alan Vann

7/28/11 US Coast Guard Comment Letter
FDOT Response Letter

U.S. Department of Homeland Security
United States Coast Guard

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16591A
July 28, 2011

RECEIVED
AUG 3 2011
ENVIRONMENTAL MANAGEMENT OFFICE

Florida Department of Transportation
Attn: Mr. J. Brandon Bruner, P. E.
1074 Highway 90
Chipley, FL 32428

Dear Mr. Bruner:

We have completed our review of Florida Department of Transportation's (FDOT) undated Pre-Draft Environmental Impact Statement (PDEIS) for the Gulf Coast Parkway project in Gulf and Bay Counties, Florida. The Federal Highway Administration will be the lead federal agency for satisfying requirements of the National Environmental Policy Act (NEPA) and the Coast Guard will be a cooperating federal agency. While the Coast Guard will primarily limit its NEPA jurisdiction to the bridge or bridges and their approaches, we must also consider both the immediate impacts of the bridges and those which are considered to be secondary or cumulative. The Coast Guard is bound by its own instructions to assess all of the potential navigational and environmental impacts of the construction, maintenance and operation of bridges which cross navigable waterways. As such, we offer the following comments.

NEPA Compliance - Due to a lack of detail about bridge design and impacts, we would have difficulty adopting the document as fulfilling U.S. Coast Guard (USCG) responsibilities under the National Environmental Policy Act without supplementation. It might be that a bridge-specific appendix could consolidate existing information and provide additional detail we need with the least disruption to the document preparation. The following comments identify details that we ask be included. For all information, please indicate any differences between the East Bay and the Intracoastal Waterway (ICWW)/Wetappo Creek alternative locations or affirm that there are no differences.

Alternatives Description – Please clarify whether the East Bay and the ICWW/Wetappo Creek crossings to be permitted would be a single 2-lane bridge, a single 4-lane bridge, or dual bridges each having 2 lanes. Please include general bridge design information such as overall length, the elevation of the base flood elevation and the location of abutments and seawalls relative to that elevation, the number of piers in emergent and submerged wetlands, and estimates of any cut and fill, including scour protection. Page 2-22 indicates that all water from the bridge will be emptied into drainage areas off the bridge and page 4-74 indicates that storm water runoff will be treated before discharge to surface waters. Please include this information and describe or show where any collection ponds or basins would be located. The description should include the clearance information from page 4-104. Because the project need is based in part on improving hurricane evacuation capability, please indicate the wind speed at which the East Bay and the ICWW/Wetappo Creek bridges would be closed.

Construction Methodology - Please provide general information about how the bridge(s) would be constructed, such as lay-down locations and post-construction disposition, use of work bridges and/or barges, schedule start and duration, and use of cofferdams. Because of the extensive amount of wetlands at the ICWW/Wetappo Creek crossing, construction techniques there have the potential for causing significant wetland impacts that we must evaluate.

Navigation - Please describe historic, current, and prospective waterway navigational usage, including type, frequency, and height of craft, for the ICWW and Wetappo Creek. The document must contain some analysis of impacts to navigation. Section 4.3.17, on page 4-101 does not do this. Page 4-109 concludes that there would be no substantial direct or indirect impacts, but the conclusion is not supported by any analysis. Stating that the impact is "New high-level crossing of Wetappo and ICWW," as done on the page 27 summary for operation impacts, is insufficient. The analysis should explain the meaning of the page 28 summary for construction impacts that states "Increased hazards to vessels due to bridge construction." To the extent that there is a difference between impacts for the alternative locations, the differences should be indicated. Please provide the clearance information for the DuPont and Overstreet bridges as well as any others that are considered limiting.

Floodplains - Much of the PDEIS impact analysis is written at the alternative level to allow a comparison between the five roadway alternatives. For USCG purposes, the document needs to have bridge-specific information. Page 3-52 states that the base floodplains in proximity to East Bay are storm surge related and have a base flood elevation of 8 feet. Please clarify whether this applies to the ISCWW/Wetappo bridge as well as the East Bay bridge and describe, in combination with information identified above in item 2 for each bridge location, floodplain encroachment. The PDEIS, page 4-82, references a location hydraulic report but the report does not give bridge-specific information and indicates that no flow rate analysis was done for the bridges. The final document should contain, or reference, an analysis that demonstrates the predicted changes to the base flood elevation. Consistent with the requirements of Executive Order 11988, the document should include a finding that there is no practicable alternative to siting in the floodplain and that the design minimizes potential harm.

Wetlands – PDEIS section 4.3.4, page 4-56, states that planning-level wetland assessments have been conducted and more detailed assessments appropriate for permit application submittal will be required. Please describe in the DEIS plans for more detailed assessments for the East Bay and ICWW/Wetappo Creek bridge rights-of-way and indicate whether the results will be in the final EIS. The DEIS should provide description of the direct and indirect impacts to the wetlands, including construction impacts and mitigation. Construction impacts at the IGCWW/Wetappo Creek location would be of particular concern due the presence of the extensive wetland area. If the wetlands impacts would be the same as those described in the PDEIS discussion of essential fish habitat, please add section 4.3.4 a reference to section 4.3.5 for the additional wetlands information. Consistent with the requirements of Executive Order 11990, the document should include a finding that there is no practicable alternative to construction in the wetlands and that all practicable measures to minimize harm to wetlands have been included.

Essential Fish Habitat – If additional assessments of essential fish habitat (EFH) would be conducted, please add information as described above for wetlands. Page 4-64 indicates that the alignment was shifted post-EFH assessment. Please indicate whether the assessment information provided remains representative of the new alignment or whether it will be revised after additional assessment. The wetlands report, page 61, and the EFH assessment, page 23, discuss indirect impacts to EFH. Please include this information, corrected as needed for the re-alignment, in section 4.3.19.3 of the DEIS.

Historic Resources – PDEIS page 4-48 states that there is no direct impact and page 4-109 states that there are no indirect impacts to historic resources. However, page 4-45 indicates that the state historic preservation officer (SHPO) considers the visual impact of the East Bay bridge on the Allenton Farmstead to detract from the farm's historic setting. Please resolve the apparent inconsistency and indicate whether the SHPO concern could be mitigated.

Migratory Birds – The PDEIS does not address compliance with the Migratory Bird Treaty Act, a topic that was raised by the U.S. Environmental Protection Agency and the U.S. Fish and Wildlife Service (USFWS), appendix J. For the East Bay and ICWW/Wetappo Creek bridges, please add, at a minimum, discussion of whether construction would begin during the nesting season and whether construction would impact nesting migratory birds.

Wildlife – Sections 3.6.8 and 4.3.14 provide an extensive description and listing of species, including federally listed threatened and endangered species, for the project area. Because the analytical focus is on roadway alignments, the USCG is unable to determine which species are present and may be affected by the East Bay and the ICWW/Wetappo Creek bridges. Please provide this information, particularly for the table 4-41, page 4-96, determination of effect. Page 4-48 states that the endangered species biological assessment report was submitted to the USFWS but does not indicate whether it was submitted to the National Marine Fisheries Service (NMFS). Please indicate whether the report was submitted to the NMFS Office of Protected Resources for the purposes of the Endangered Species Act and the Marine Mammal Protection Act consultation and if not, explain why.

Coastal Zone Consistency - Section 4.3.12, page 4-83, states that the Florida State Clearinghouse has determined that this project is consistent with the Florida Coastal Zone Management Plan. The Clearinghouse statement addresses the PD&E study and is misleading in the PDEIS because it is out of context. The NWFWMD will determine construction and operation consistency through issuance of the environmental resource permit. Please clarify the PDEIS statement.

Indirect Impacts – At either location, a new bridge and its right-of-way will provide a new landward access point to a portion of the waterway that currently is relatively inaccessible and wild. If provisions would be made for public access, please describe them and their potential impacts. If not, please acknowledge the potential for unauthorized usage and impact.

Before the final environmental document for this project is prepared, the locations and plans for all of the bridge crossings should be developed, at least to the extent that the document may incorporate the potential direct and indirect impacts, associated with the construction of the

bridges. Although the GIWW crossing will be the most significant, any and all other waterway crossings will need to be independently evaluated from the standpoint of navigation to determine the level of Coast Guard bridge permitting action that may be required for each one.

Thank you for the opportunity to provide input. If we can be of further assistance, please contact our office.

Sincerely,

DAVID M. FRANK
Chief, Bridge Administration Branch
U.S. Coast Guard
By direction

Copy: Alan Vann, FDOT
David Gibbs, FHWA
COMDT, CG-5512

Florida Department of Transportation

RICK SCOTT
GOVERNOR

1074 Highway 90
Chipley, Florida 32428

OFFICE OF THE
SECRETARY

Mr. David M. Frank, Chief
Bridge Administration Branch
U.S. Coast Guard, Eighth District
500 Poydras Street
New Orleans, Louisiana 70130-3310

Re: Gulf Coast Parkway
FPID #: 410981-2-28-01
County: Bay, Calhoun and Gulf
Preliminary Draft Environmental Impact Statement

Dear Mr. Frank:

Thank you for your comments on the Preliminary Draft Environmental Impact Statement for the above referenced project. The following presents our proposed responses to those comments.

NEPA Compliance

Comment: Due to a lack of detail about bridge design and impacts, we would have difficulty adopting the document as fulfilling U.S. Coast Guard (USCG) responsibilities under the National Environmental Policy Act without supplementation. It might be that a bridge –specific appendix could consolidate existing information and provide additional detail we need with the least disruption to the document preparation. The following comments identify details that we ask be included. For all information, please indicate any differences between the East Bay and the Intracoastal Waterway (ICWW)/Wetappo Creek alternative locations or affirm that there are no differences.

Alternatives Description

Comment: Please clarify whether the East Bay and the ICWW/Wetappo Creek crossings to be permitted would be a single 2-lane bridge, or dual bridges each having 2 lanes. Please include general bridge design information such as overall length, the elevation of the base flood elevation and the location of abutments and seawalls relative to that elevation, the number of piers in emergent and submerged wetlands, and estimates of any cut and fill, including scour protection. Page 2-22 indicates that all water from the bridge will be emptied into drainage areas off the bridge and page 4-74 indicates that storm water runoff will be treated before discharge to surface waters. Please include this information and describe or show where any collection ponds or basins would be located. The description should include the clearance information from page 4-104. Because the project need is based in part on improving hurricane evacuation capability, please indicate the wind speed at which the East Bay and the ICWW/Wetappo Creek bridges would be closed.

Response: Ultimately (in 2035), the project would have dual two-lane bridges; however, the initial construction is expected to be limited to a single two-lane bridge offset within right-of-way of sufficient width to allow for future expansion. Therefore, at some future date a second permit application would be submitted for a second parallel bridge.

Some of the general bridge design information requested is not yet available, but will be provided for the preferred alternative when a preferred alternative has been selected. Any general information that is available, such as bridge length, that hasn't been included in the draft EIS will be added.

In East Bay, the highest flood stage is elevation 10 NAVD 88 (0.00 NAVD = 0.52 NGVD). This is a Zone VE, thus associated with wave action. The adjacent Zone AE still water elevations are 6, 7, or 8 depending on location in the bay or along the shore. At the crossing of the ICWW at CR 386 and Wetappo Creek, the flood zones are Zone A "Elevation Not Determined".

Pages 2-22 and 4-74 will be revised to reflect that stormwater will drain directly off the bridge through scuppers and that compensatory stormwater treatment will be provided. The size and location of stormwater treatment ponds will be provided for the preferred alternative.

The guide clearance information for the ICWW from Section 4 has been added to Section 2.

High-level bridges are usually closed to traffic when sustained wind speeds exceed 40 mph. This will be added to DEIS.

Construction Methodology

Comment: Please provide general information about how the bridge(s) would be constructed, such as lay-down locations and post-construction disposition, use of work bridges and/or barges, schedule start and duration, and use of cofferdams. Because of the extensive amount of wetlands at the ICWW/Wetappo Creek crossing, construction techniques there have the potential for causing significant wetland impacts that we must evaluate.

Response: Much of the information requested will not be known until the project design phase. Once a preferred alternative is selected the FDOT will coordinate with the USCG regarding the agency's specific needs and will provide the requested information as it becomes available.

Navigation

Comment: Please describe historic, current, and prospective waterway navigational usage, including type, frequency, and height of craft, for the ICWW and Wetappo Creek. The document must contain some analysis of impacts to navigation. Section 4.3.17, on page 4-101 does not do this. Page 4-109 concludes that there would be no substantial direct or indirect impacts, but the conclusion is not supported by any analysis. Stating that the impact is "New high-level crossing of Wetappo and ICWW" as done on page 27 summary for operation impacts, is insufficient. The analysis should explain the meaning of the page 28 summary for construction impacts that states "Increased hazards to vessels due to bridge construction". To the extent that there is a difference between impacts for the alternative locations, the differences should be indicated. Please provide the clearance information for the DuPont and Overstreet bridges as well as any others that are considered limiting.

Response: Commercial traffic on the Gulf ICWW is primarily barge-carried bulk cargo with some recreational traffic. A boat survey will be performed after selection of the preferred alternative to identify current traffic. The Port of Port St. Joe is trying to become an operational port again. At some point in the future it will influence the amount of boat traffic on the ICWW; however, at this time the amount of additional barge traffic it is likely to generate cannot be estimated. A bridge construction permit application will be submitted during the project's design phase.

The presence of another high-level bridge is not expected to provide a substantial impact to navigation. During construction of the bridge there could be some temporary restrictions due to blockages from barges and cranes used to construct piers and lift bridge segments into place. Most vessels that currently use the navigation channel would be able to continue to use the channel throughout most of the construction. In any event, work in the waterway would be coordinated with USCG and a notice to mariners would be published.

The principal difference between the two bridge locations is the length of the structures. The East Bay Crossing is estimated to be 9,100 feet long while the ICWW/Wetappo crossing is estimated to be 7,000 feet long.

Floodplains

Comment: Much of the PDEIS impact analysis is written at the alternative level to allow a comparison between the five roadway alternatives. For USCG purposes, the document needs to have bridge specific information. Page 3-52 states that the base floodplains in proximity to East Bay are storm surge related and have a base flood elevation of 8 feet. Please clarify whether this applies to the ICWW/Wetappo Bridge as well as the East Bay bridge and describe, in combination with information identified above in item 2 for each bridge location, floodplain encroachment. The PDEIS, page 4-82, references a location hydraulic report but the report does not give bridge-specific information and indicates that no flow rate analysis was done for the bridges. The final document should contain, or reference, an analysis that demonstrates the predicted changes to the base flood elevation. Consistent with the requirements of Executive Order 11988, the document should include a finding that there is no practicable alternative to siting in the floodplain and that the design minimizes potential harm.

Response: The Preliminary Engineering Report that accompanies the Environmental Impact Statement will provide engineering information on the proposed bridges, although much of the specific information requested won't be available until after a preferred alternative is identified.

The flood zones at the crossing of the ICWW at CR 386 and Wetappo Creek are Zone A (Elevation Not Determined). In East Bay, the highest flood elevation is 10 NAVD 88 (0.00 NAVD=0.52 NGVD). This is a Zone VE, thus associated with wave action. The adjacent Zone AE still water elevations are 6, 7, or 8 depending on location in the bay or along the shore.

During this phase of project development, a flow rate analysis will not be done for the high level bridges over the ICWW at CR 386 and Wetappo Creek because the bridge sizes and therefore the preliminary cost estimates are not controlled by the hydraulics. During the final design phase, hydraulics will be evaluated to address scour and potential backwater effects.

but the structure sizes are controlled (minimum size) by other factors such as roadway geometry rather than hydraulics.

The high level structures, like the other structures, will be designed to cause minimal changes in flood stages and flood limits. These changes will not result in any significant adverse impacts on the natural and beneficial floodplain values or any significant changes in flood risk or damage. The project will enhance emergency services and evacuations. Therefore, it has been determined that the encroachments associated with this project are not significant. Please note that the floodplain finding cannot be stated until after the selection of a preferred alternative, therefore, the Final EIS will contain the floodplain finding.

Wetlands

Comment: PDEIS section 4.3.4, page 4-56 states that planning-level wetland assessments have been conducted and more detailed assessment appropriate for permit application submittal will be required. Please describe in the DEIS plans for more detailed assessments for the East Bay and ICWW/Wetappo Creek bridge rights-of-way and indicate whether the results will be in the final EIS. The DEIS should provide description of the direct and indirect impacts to the wetlands, including construction impacts and mitigation. Construction impacts at the ICWW/Wetappo Creek location would be of particular concern due the presence of the extensive wetland area. If the wetlands impacts would be the same as those described in the PDEIS discussion of essential fish habitat, please add section 4.3.4 a reference to section 4.3.5 for the additional wetland information. Consistent with the requirements of Executive Order 11990, the document should include a finding that there is no practicable alternative to construction in the wetlands and that all practicable measures to minimize harm to wetlands have been included.

Response: The term "planning-level assessment" is being removed from the text of the EIS as it has generated confusion among reviewers. The methodology utilized in conducting the wetlands assessment for the alternatives analysis phase of project development was the commonly accepted procedure previously-approved by the permitting agencies and used on numerous projects at this level of analysis. The detailed UMAM assessment will be conducted on the preferred alternative; therefore, it will only be conducted at the bridge location associated with the preferred alternative.

Direct and indirect impacts to wetlands and construction impacts have been provided in the draft EIS. FDOT is committed to providing mitigation for unavoidable wetland impacts and has committed to doing so in the draft EIS. However, mitigation plans are still being formulated since there are issues to be resolved such as the fact that there are no current mitigation sites with estuarine credits. However, once the preferred alternative is identified, resolution of outstanding mitigation issues can be resolved and the full conceptual mitigation plan will be presented in the final EIS.

Section 4.3.4 will reference Section 4.3.5.

The Final EIS will contain the wetlands findings.

Essential Fish Habitat

Comment: If additional assessments of essential fish habitat (EFH) would be conducted, please add information as described above for wetlands. Page 4-64 indicates that the alignment was

shifted post-EFH assessment. Please indicate whether the assessment information provided remains representative of the new alignment or whether it will be revised after additional assessment. The wetlands report, page 61, and the EFH assessment, page 23, discuss indirect impacts to EFH. Please include this information, corrected as needed for the re-alignment, in Section 4.3.19.3 of the DEIS.

Response: The original EFH field surveys conducted on September 5, 7, and 12, 2007 encompassed an area of sufficient extent to allow for the shifting of an alternative's alignment to avoid or reduce impacts without requiring additional new surveys. Therefore, the data and information presented in the EFH assessment are of sufficient detail and specificity to estimate potential impacts to existing marine resources identified at the time field surveys were conducted and are applicable to the adjusted alignments.

Historic Resources

Comment: PDEIS page 4-48 states that there is no direct impact and page 4-109 state that there are no indirect impacts to historic resources. However, page 4-45 indicates that the state historic preservation officer (SHPO) considers the visual impact of the East Bay bridge on the Allanton Farmstead to detract from the farm's historic setting. Please resolve the apparent inconsistency and indicate whether the SHPO concern could be mitigated.

Response: The discrepancy has been resolved and the SHPO has determined that there would be no adverse effect on cultural resources, including the Allanton Farmstead. The SHPO correspondence making this determination is provided in the revised DEIS appendices.

Migratory Birds

Comment: The PDEIS does not address compliance with the Migratory Bird Treaty Act, a topic that was raised by the US Environmental Protection Agency and the U.S. Fish and Wildlife Service (USFWS), appendix J. For the East Bay and ICWW/Wetappo Creek bridges, please add, at a minimum, discussion of whether construction would begin during the nesting season and whether construction would impact nesting migratory birds.

Response: A statement has been added to the DEIS that the project has been developed in accordance with the Migratory Bird Treaty Act. The construction period for the bridges has not been determined yet. A commitment will be added to the DEIS that the FDOT will require the contractor to conduct a survey to determine the presence of nesting migratory birds in the vicinity of the proposed bridge and, if present, to schedule the bridge construction after the nesting season.

Wildlife

Comment: Sections 3.6.8 and 4.3.14 provide an extensive description and listing of species, including federally listed threatened and endangered species, for the project area. Because the analytical focus is on roadway alignments, the USCG is unable to determine which species are present and may be affected by the East Bay and the ICWW/Wetappo Creek bridges. Please provide this information, particularly for the table 4-41, page 4-96 determination of effect. Page 4-48 states that the endangered species biological assessment report was submitted to the USFWS but does not indicate whether it was submitted to the National Marine Fisheries Service (NMFS). Please indicate whether the report was submitted to the

NMFS Office of Protected Resources for the purposes of the Endangered Species Act and the Marine Mammal Protection Act consultation and if not, explain why.

Response: The referenced Table 4-41 (now Table 4-51) is for each alternative's entire alignment. It does not distinguish between land and waterway crossings. The information on potentially affected species at the waterway crossing will be made available after selection of the preferred alternative and the completion of detailed surveys.

The Endangered Species Biological Assessment report was submitted to the NMFS on The Essential Fish Habitat report was provided to NMFS on April 20, 2011 along with the Draft EIS, Wetlands Evaluation Report, Endangered Species Biological Assessment, Indirect and Cumulative Effects Report, and other technical documents. Marine Fisheries provided response back from their review to the FDOT on May 25, 2011. They were not mentioned as having received the report because the Essential Fish Habitat report is the coordination document for NMFS. Any comments provided by the NMFS and other resource agencies are included in the appendices to the draft EIS.

Coastal Zone Consistency

Comment: Section 4.3.12, page 4-83, states that the Florida State Clearinghouse has determined that this project is consistent with the Florida Coastal Zone Management Plan. The Clearinghouse statement addresses the PD&E study and is misleading in the PDEIS because it is out of context. The NWFWMD will determine construction and operation consistency through issuance of the environmental resource permit. Please clarify the PDEIS statement.

Response: The FDOT PD&E Manual requires that the following standard statement be provided (unless the project is not found consistent) "*The State of Florida has determined that this project is consistent with the Florida Coastal Zone Management Plan*". However, additional information on CZMA consistency process has been added to the text that explains that a separate consistency review is undertaken at the permitting phase.

Indirect Impacts

Comment: At either location, a new bridge and its right-of-way will provide a new landward access point to a portion of the waterway that currently is relatively inaccessible and wild. If provisions would be made for public access, please describe them and their potential impacts. If not, please acknowledge the potential for unauthorized usage and impact.

Response: There are no plans for public access at the bridge locations. The property surrounding the bridge approaches is privately-owned and not likely to allow public access. Further, should these locations be used to provide wildlife crossings the right-of-way would likely be fenced for some distance to funnel wildlife to the crossing, preventing public access from the road to the waterway. Therefore, any discussion of unauthorized usage would be purely speculative. Since NEPA only requires the analysis of reasonably, foreseeable future actions, no discussion has been provided.

Other

Comment: Before the final environmental document for this project is prepared, the locations and plans for all of the bridge crossings should be developed, at least to the extent that the document may incorporate the potential direct and indirect impacts, associated with the construction of

the bridges. Although, the GIWW crossing will be the most significant, any and all other waterway crossings will need to be independently evaluated from the standpoint of navigation to determine the level of Coast Guard bridge permitting action that may be required for each one.

Response: Comment noted.

Sincerely,

Alan Vann