Natural Environment | Report

SR 40 PD&E Study

From Breakaway Trail to Williamson Boulevard

Volusia County, Florida

Prepared For:

The Florida Department of Transportation

Prepared By:

Inwood consulting engineers

FPN: 428947-1-22-01 I November 2012

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APPENDICES

Section 1.0
Introduction

The purpose of the Natural Environmental Report is to document and describe existing wetland communities, protected species, and habitat found within the study area. The report includes an analysis of proposed impacts to these resources and documents potential mitigation alternatives to compensate for any unavoidable impacts.

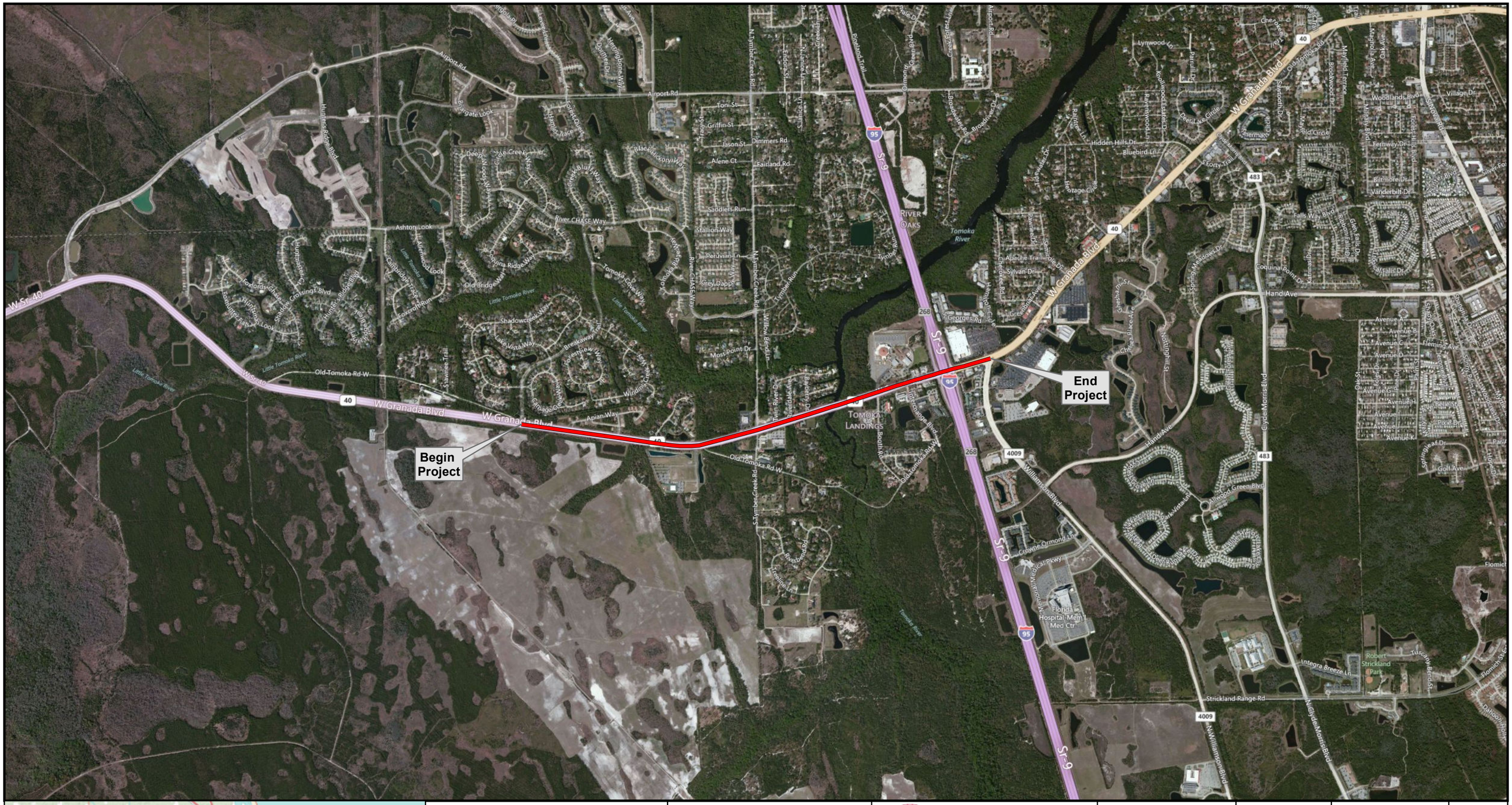
SR 40 connects I-95 in Volusia County to I-75 in Marion County. The existing SR 40 is currently classified as a principal arterial with SR 40 west of Interstate 95 identified as a Scenic Byway. The section of SR 40 west of I-95 is designated as an emerging Strategic Intermodal System (SIS) Facility. As part of the SIS, SR 40 provides valuable intraregional and interregional freight connectivity by linking Florida's East Coast to the Gainesville/Ocala regions. Additionally, SR 40 is designated as a Hurricane Evacuation Route within the project limits by the Florida State Emergency Response Team. It also serves as an evacuation route for other emergencies, including fires and hurricanes. Please refer to Figure 1 (Project Location Map) below for the general location and limits of the project study area.

A traffic study was conducted for this PD&E study, finding that SR 40, including several signalized intersections, between Breakaway Trail and Williamson Boulevard will operate at an unsatisfactory Level of Service (LOS) in the design year 2035. Since SR 40 is an emerging SIS facility west of I-95, a minimum LOS C must be maintained. This analysis shows LOS D from Breakaway Trail to Tymber Creek Road and LOS F from Tymber Creek Road to Williamson Boulevard. The purpose of this project is to provide the roadway capacity improvements needed to address future traffic demand through 2035, provide continuity on this regionally significant roadway, and maintain important freight and emergency mobility.

Existing land use is predominately residential communities (single family and multi-family), with big box retail/commercial, office, and agricultural/undeveloped areas intermittently located throughout portions of the corridor. Community and educational facilities, such as churches and academies, are also located within the study area along SR 40. Residential developments are currently planned in the vicinity of SR 40 within the project limits resulting from two Developments of Regional Impact (DRIs): Hunters Ridge and Ormond Crossings. The LPGA is a major development to the south of SR 40 and has rescinded its DRI status. This project will address the changing land use patterns and additional development intensity by maintaining safe

and efficient access, providing an appropriate roadway context and speed, and serving the increasing multimodal needs (pedestrians and bicycles) of the area.

Volusia County is currently widening Tymber Creek Road, from SR 40 to Airport Road, from 2 to 4 lanes. This improvement is scheduled in two phases and will have construction beginning from SR 40 to Peruvian Way in 2012. To the west of the SR 40 PD&E Study area, FDOT will be preparing final design plans to widen SR 40 from 2 to 4 lanes with the western section from US 17 to SR 11 in 2013 and 2014 and from SR 11 to Cone Road in 2012 to 2014. The widening of SR 40 will accommodate these future planned improvements by providing an adequate roadway network connection.



Legend

Project_Limits

Project Location
Section: 25 & 26
Township: 14 South
Range: 31 East

N

1 inch = 2,000 feet

0 1,000 2,000 Feet

FL Dept. of Transportation
719 South Woodland Blvd.
Deland, Florida 32720

Inwood consulting engineers
3000 Dovera Drive, Oviedo, FL 32765

Figure 1

Location Map

Name:	Date Saved:	Author:
Fig1_Location_Map	5/23/2012 5:10:23 PM	JMH

Date of Photography:
2011

Section 2.0
Alternatives Analysis

Multiple alternatives have been developed to meet the project's purpose and need. These include several roadway typical section alternatives that are being evaluated for the widening of SR 40 in order to avoid and/or minimize right-of-way impacts and environmental impacts. Based on the typical section options, several stormwater management options are being analyzed. Finally, intersection improvement options are being evaluated based on the traffic study performed and the typical section options identified.

2.1 Typical Section Alternatives

The existing roadway typical section for SR 40 consists of four 12-foot wide travel lanes (two lanes in each direction), separated by a 40-foot wide median with paved shoulders adjacent to the outside travel lanes. An 8 to 12-foot wide concrete multi-use trail runs on the north side of SR 40 between Breakaway Trail and Tymber Creek Road. Typical sections for the widening of SR 40 from 4 to 6 lanes were presented for public comment at the Public Kick-off Meeting in July 2011. The study area was broken into two segments for the PD&E Study; from Breakaway Trail to Tymber Creek Road, and from Tymber Creek Road to I-95. Three typical sections were presented for each segment. For the segment from Breakaway Trail to Tymber Creek Road the alternatives included a rural (maintain existing 60 mph design speed, to be posted at 50 mph), suburban (50 mph), and high-speed urban (50 mph) typical sections. For the segment of SR 40 between Tymber Creek Road and I-95, the alternatives included a suburban (50 mph), high-speed urban (50 mph), and urban (45 mph). The segment of SR 40 between I-95 and Williamson Road was developed as an independent alternative to fit within the constraints of the existing roadway, I-95 overpass bridge, and right-of-way. These typical sections were evaluated to determine the comparative costs, constructability, safety, and fit with the surrounding land use context. Based on this evaluation, the suburban typical section was eliminated from further study in both evaluation segments. Copies of the preferred typical section have been included in Appendix F.

The future land uses, desired design speed and pedestrian and bicycle mobility are important factors in addition to vehicle capacity and mobility in the selection of a proposed 6-lane roadway typical section. The remaining two typical sections for each study segment have been applied to the roadway alignment in order to assess

the right-of-way and environmental impacts of each typical section. Based on the different combinations of typical sections possible for the corridor, the following roadway design alternatives were developed:

Table 1. Typical Sections Developed within the Project Corridor

Alternative	Typical Section		
	Breakaway Trail to Tymber Creek Road	Tymber Creek Road to I-95	I-95 to Williamson Boulevard
A	Rural (60 mph design, 50 mph posted)	High-Speed Urban (30-ft median)(50 mph)	Same for Alternatives A, B, C, D. Includes sidewalk adjacent to roadway both sides of SR 40.
B	Rural (60 mph design, 50 mph posted)	Urban (45 mph)	
C	High-Speed Urban (40-ft median)(50 mph)	High-Speed Urban (30-ft median)(50 mph)	
D	High-Speed Urban (40-ft median)(50 mph)	Urban (45 mph)	
E	N/A (Only applies to Williamson Blvd)		Sidewalk on north side of SR 40 set back behind utility poles.

The roadway typical section alternatives outlined above are currently being evaluated to determine how each addresses the purpose and needs of the project. Important factors in this evaluation include compatibility and consistency within the corridor, design speed, right-of-way impacts, utility impacts, environmental impacts, pedestrian and bicycle considerations, drainage needs, and construction cost estimates. Of the alternatives outlined above, a preferred typical section or the no-build alternative will be proposed.

2.2 Stormwater Management

The existing stormwater runoff between Breakaway Trail and I-95 drains to roadside ditches, the median, and to cross-drain pipes and is piped to existing FDOT stormwater retention ponds along the corridor. The section of SR 40 between I-95 and Williamson Road has a closed drainage system with curb inlets that is piped to existing FDOT stormwater retention ponds. With the proposed roadway widening improvements, the stormwater runoff will be collected and treated for pollutant removal before discharging to surface waters based on FDOT stormwater management regulations. Based on the various roadway typical section alternatives and the additional pavement area added with the widening project, stormwater management options include roadside and median swales, closed drainage systems and stormwater ponds. Several pond options are proposed to accommodate the project requirements, and are currently being evaluated for right-of-way costs, environmental impacts, and construction costs. Several of the proposed pond options utilize or expand the existing FDOT ponds along the SR 40 corridor.

2.3 Intersection Improvements

Intersection improvements have been identified at several of the signalized intersections within the project limits to accommodate future traffic demands, including Breakaway Trail, Tymber Creek Road, Booth Road, the I-95/SR 40 ramp intersections, and Williamson Boulevard. The intersection improvements include adding or extending turn lanes, adding additional east/west through lane capacity as well as improvements to the signalization schemes. Based on the various typical section alternatives being studied, preliminary layouts of each intersection have been designed in order to assess the impacts to right-of-way and access to adjacent properties.

Section 3.0
Project Corridor Description

3.1 Existing Soils Conditions

The proposed project corridor and pond site alternatives are located within 34 different soil types according to the NRCS SCS Soil Survey of Volusia County, Florida (1980). Soil types mapped within the project corridor and associated pond site alternatives are included in Table 2 below. Please refer to the Soils Maps (Appendix A/Figures 2A-2B) for the distribution of each soil type within the project corridor.

Table 2. NRCS SCS Mapped Soils within and Adjacent to the Project Corridor

Map Label	Soil Name	Hydrologic Group	High Water Table		
			Depth	Kind	Months
1	Apopka Fine Sand, 0 to 5 percent slopes	A	>6		
3	Arents	Not Determined			
4	Astatula Fine Sand, 0 to 8 percent slopes	A	>6		
8	Basinger Fine Sand, depressional	A/D	+2-1.0	Apparent	Jun-Feb
13	Cassia Fine Sand	C	1.5-3.5	Apparent	Jul-Jan
17	Daytona Sand, 0 to 5 percent slopes	B	3.5-5.0	Apparent	Jul-Nov
19	Deland Fine Sand, 0 to 5 percent slopes	A	>6		
22	Electra Fine Sand, 0 to 5 percent slopes	C	2.0-3.5	Apparent	Jul-Oct
23	Farmton Fine Sand	D	0-1.0	Apparent	Jun-Oct
29	Immokalee Sand	A/D	0-1.0	Apparent	Jun-Feb
30	Immokalee Sand, depressional	A/D	+2-1.0	Apparent	Jun-Sep
32	Myakka Fine Sand	A/D	0-1.0	Apparent	Jun-Feb
34	Myakka-St. Johns Complex	A/D	+2-1.0	Apparent	Jun-Feb
37	Orsino Fine Sand, 0 to 5 percent slopes	A	3.5-5.0	Apparent	Jun-Dec
45	Pineda Fine Sand	B/D	0-1.0	Apparent	Jun-Nov
47	Pits	Not Determined			
49	Pomona Fine Sand	B/D	0-1.0	Apparent	Jul-Sep
50	Pomona Fine Sand, depressional	B/D	+2-1.0	Apparent	Jul-Sep
51	Pomona-St. Johns Complex	B/D	+2-1.0	Apparent	Jul-Sep
52	Pompano Fine Sand	A/D	0-1.0	Apparent	Jun-Nov
54	Quartzipsamments, genty sloping	Not Determined			
59	Scoggin Sand	D	+1-1.0	Apparent	Jun-Feb
63	Tavares Fine Sand, 0 to 5 percent slopes	A	3.5-6.0	Apparent	Jun-Dec
65	Terra Ceia Muck	A/D	+1-1.0	Marsh	Jun-Apr
76	Wauchula Fine Sand, depressional	B/D	+1-1.0	Apparent	Jun-Dec
99	Water	Not Determined			

A plus sign under "Depth to Water Table" indicates that the mapped water table is above the surface of the soil.

3.2 Existing Land Cover and Land Use

The existing land cover and land uses within the project corridor were examined using aerial photographs, habitat and land cover maps, and field reviews in order to document the land cover and land use within the project corridor. Land use maps depicting developed and natural lands both adjacent to and in close proximity of the project corridor and proposed pond sites have been included in Appendix B/Figures 3A-3B. Wetlands indentified within the project area are included in Appendix C/Figures 4A-4B.

The eastern portion of the project corridor is a mixture of residential and commercial land uses interspersed with native wetland and upland habitats. The western portion of the corridor consists largely of residential land uses and native habitat types.

During field surveys, habitat and land use/land cover types were mapped using the Florida Land Cover, Use, and Forms Classification System (FLUCFCS) (FDOT 1999). Land use maps depicting the locations of the various Level III FLUCFCS types within the project corridor are provided in Appendix B. Below is a short description of the land use types found within the project corridor.

3.2.1 Urban and Built-Up (FLUCFCS 100)

According to the FLUCFCS, land uses within the urban and built-up classification consist of "…areas of intensive use with much of the land occupied by man-made structures. Included in this category are cities, towns, villages, strip developments along highways such as those occupied by malls, shopping centers, industrial and commercial complexes and institutions that may, in some instances, are isolated from urban areas". Within the project corridor, identified urban land uses include: Low Density Residential (FLUCFCS 110), Medium Density Residential (FLUCFCS 120), High Density Residential (FLUCFCS 130), Commercial and Services (140), Institutional (FLUCFCS 170), and Open Land (FLUCFCS 190). This FLUCFCS type comprises the majority of the project corridor and is especially prevalent on the north side of the SR 40 corridor.

3.2.2 Upland Forests (FLUCFCS 400)

According to the FLUCFCS, land uses within the upland forest classification consist of "…upland areas which support a tree canopy closure of ten percent or more". These areas include both xeric and mesic forest communities. Within the project corridor, identified upland forest cover types include: Pine Flatwoods (FLUCFCS 411), Coniferous Plantation (FLUCFCS 441), and Hardwood-Conifer Mixed Forest

(FLUCFCS 434). The FLUCFCS type is restricted to areas west of the Tomoka River to the western terminus of the project at Breakaway Trail.

3.2.3 Water (FLUCFCS 500)

According to the FLUCFCS, land uses within the water classification consist of "…all areas within the land mass of the United States that are predominately or persistently water covered". Within the project corridor, cover types within the water classification consist of the Tomoka River (FLUCFCS 510, streams and waterways) and existing stormwater ponds (FLUCFCS 530).

3.2.4 Wetlands (FLUCFCS 600)

According to the FLUCFCS, land uses within the wetlands classification consist of "…areas in which the water table is at, near, or above the land surface for a significant portion of most years. The hydrologic regime is such that aquatic or hydrophytic vegetation usually is established." Within the project corridor, identified wetland cover types include: Mixed Wetland Hardwoods (FLUCFCS 617), Hydric Pine Flatwoods (FLUCFCS 625), Mixed Wetland Forest (FLUCFCS 630), Freshwater Marsh (FLUCFCS 641), Wet Prairie (FLUCFCS 643), and Treeless Hydric Savanna (FLUCFCS 646). These areas are identified in Appendix C/Figures 4A-4B.

3.2.5 Transportation (FLUCFCS 810)

According to the FLUCFCS, land uses within the transportation classification consist of facilities that "…are used for the movement of people and goods; therefore, they are major influences on land and many land use boundaries are outlined by them." Within the project corridor, identified transportation land uses include: SR 40 and I-95(FLUCFCS 814, roads and highways).

Section 4.0
Wetland Evaluation Methods

4.1 Preliminary Data Collection

Prior to conducting the field reviews, a literature review was performed in order to determine the location and extent of potential wetlands and surface waters within the project corridor. Project biologists consulted standard Florida references to gain insight on the characteristics of the existing wetland habitats. Literature reviewed included the USDA-Soils Conservation Service Soil Survey of Volusia County, Florida (1980); USFWS National Wetland Inventory (NWI) maps; United States Geological Survey (USGS) 7.5 minute quadrangle maps; site-specific infrared (2004) and natural color aerial photographs (2010); and land use and land cover maps (SJRWMD 2009).

In accordance with Executive Order 11990, Protection of Wetlands, and the FDOT PD&E Manual Part 2 Chapter 18, the extent and type of wetlands within the project area were documented. Wetlands are defined by the US Army Corps of Engineers (ACOE) as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under natural conditions do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (ACOE 1987). Potential wetland impacts were identified through a review of the above-referenced data and field reviews of the project corridor.

Using information obtained from the literature review as a guide, field reviews were conducted between November 2011 and May 2012 in order to verify the approximated extent of wetland boundaries and characterize habitat within the project corridor. Community composition was noted for each wetland to include type, vegetative composition and stratification, and hydric characteristics. Each wetland within the project corridor was identified in the field using the delineation methods described in the US Army Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987) coupled with the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (ACOE 2008), and Florida statewide unified wetland delineation methodology as adopted by the Florida Department of Environmental Protection (FDEP) and the Water Management Districts in The Florida Wetlands Delineation Manual (Gilbert, *et al.* 1995).

4.2 Field Survey

The project corridor is approximately two miles in length and includes approximately five linear miles, north and south sides, of right-of-way and eleven stormwater pond alternatives. Field surveys of the project and all potential pond sites were conducted by an experienced wetland biologist between November 2011 and May 2012. The pond site locations are included in Appendix D/Figures 5A-5B. Prior to the field surveys, a base map of the study area was developed from aerial photographs. Pedestrian transects were established on either side of the existing roadway running perpendicular to the roadway throughout all the undeveloped portions of the project corridor. Additional pedestrian transects were established within proposed pond site alternatives.

The extent of wetlands and surface waters were documented using a Trimble GPS coupled with Environmental Science Research Institute's (ESRI) ArcPad 8.0 mobile GIS software and aerial photo interpretation based on the findings of the initial data collection efforts. Other survey documentation recorded in the field included the date, vegetation and habitat descriptions, and photographs. Photographs taken during field reviews are located in Appendix E. In addition, modifications of the St. Johns River Water Management District 2009 land use and land cover habitat classifications were made using the FLUCFCS, following the field reconnaissance.

Section 5.0
Wetland Evaluation Results

5.1 Wetlands and Surface Waters

Wetlands and surface waters documented within the project corridor were identified using a combination of literature and data searches coupled with field reviews conducted by an experienced Florida biologist between November 2011 and May 2012. Data and literature sources used to develop preliminary wetland location maps consisted the US Fish and Wildlife Service's National Wetlands Inventory (NWI), the NRCS digital soils data for Volusia County, and the 2009 Land Use/Land Cover maps for Volusia County obtained from the SJRWMD.

During field reviews, observed wetland indicators were noted and subsequently used to update existing land use and land cover GIS layers obtained from the SJRWMD. Common indicators included buttressing of trees, organic nodules or streaking in the A horizon within soils mapped as non-hydric, and a dominance of wetland vegetation within the understory and groundcover. Areas exhibiting wetland characteristics consistent with those identified in the US Army Corps of Engineers Wetlands Delineation Manual and the Florida Wetland Delineation Manual were mapped as wetlands in the updated land use and land cover maps (Appendix B). Please refer to Appendix C for the locations of wetlands within the project corridor and to Appendix E for photos taken during field reviews. Concept Plans with stationing have been included in Appendix F.

Nine wetlands with potential to be affected by the proposed project were identified within the project corridor. Please refer to Table 3 below for the wetland numbers, FLUCFCS classification, FLUCFCS description, NWI classification, and NWI description. Each wetland that may be affected by the construction of the proposed project is described in accordance with Section 18-2.3 of the PD&E Manual in Table 3, below. The FLUCFCS and NWI classifications are based on the results of the literature/data search and subsequent field reviews.

Table 3. Wetland Descriptions

Wetland Number	FLUCFCS Classification	FLUCFCS Description	USFWS NWI Classification	NWI Description
1	643, 630	Wet Priaire, Mixed Wetland Forest	PFO6F, PFO6/EM1C	Palustrine Forested Deciduous Semipermanently Flooded, Palustrine Forested Deciduous/Emergent Persistent Seasonally Flooded Well Drained
2	617	Mixed Wetland Hardwoods	PFO6/3C	Palustrine Forested Deciduous/Broad-Leaved Evergreen Seasonally Flooded
3	617	Mixed Wetland Hardwoods	PFO6/3C	Palustrine Forested Deciduous/Broad-Leaved Evergreen Seasonally Flooded
4	630	Mixed Wetland Forest	PFO6F	Palustrine Forested Deciduous Semipermanently Flooded
5	617	Mixed Wetland Hardwoods	PFO6/3C	Palustrine Forested Deciduous/Broad-Leaved Evergreen Seasonally Flooded
6	617	Mixed Wetland Hardwoods	PFO6/3C	Palustrine Forested Deciduous/Broad-Leaved Evergreen Seasonally Flooded
7	510	Streams and Waterways	R1UBV	Riverine Tidal Unconsolidated Bottom Permanent Tidal
8	617	Mixed Wetland Hardwoods	PFO6/3R	Palustrine Forested Deciduous/Broad-Leaved Evergreen Seasonal Tidal
9	617	Mixed Wetland Hardwoods	PFO6/3R	Palustrine Forested Deciduous/Broad-Leaved Evergreen Seasonal Tidal

Wetland 1

FLUCFCS Code: 643 Wet Prairie
630 Mixed Wetland Forest

NWI Code: PFO6F Palustrine, Forested, Deciduous, Semipermanently Flooded
PFO6/EM1C Palustrine, Forested, Deciduous/Emergent, Persistent, Seasonally Flooded, Well Drained

Wetland 1 is located on the south side of the project corridor, within the existing SR 40 ROW, approximately from station 1280+60 (begin project terminus) to approximately station 1308+60. The system is bounded by SR 40 to the north,

cleared uplands with scattered forested wetlands to the south and west, and cleared uplands and upland forest to the east.

Common canopy species observed within this system include bald cypress (*Taxodium distichum*), laurel oak (*Quercus laurifolia*), slash pine (*Pinus elliottii*), and swamp bay (*Persea palustris*). Mid-story and groundcover vegetation includes wax myrtle (*Myrica cerifera*), saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), St. Johns wort (*Hypericum spp.*), maidencane (*Panicum sp.*), beggarticks (*Bidens alba*), broomsedge bluestem (*Andropogon virginicus*), bahiagrass (*paspalum notatum*), yellow-eyed grass (*Xyris sp.*), greenbriar (*Smilax sp.*), pipewort (*Eriocaulon sp.*), pitcherplant (*Sarracenia sp.*) various rushes (*Juncus spp.*) and water-tolerant grasses.

Wetland 1 is located on private property and does not include any public use opportunities. Public benefits are derived from the wildlife habitat, flood attenuation and water quality treatment functions provided by this system. This system will be considered a jurisdictional wetland under the regulations of the SJRWMD and the ACOE.

Wetland 2

FLUCFCS Code: 617 Mixed Wetland Hardwoods

NWI Code: PFO6/3C Palustrine, Forested, Deciduous/Broad-Leaved Evergreen, Seasonally Flooded

Wetland 2 is located on the south side of the project corridor, just inside the existing SR 40 ROW, approximately from station 1318+80 to approximately station 1321+80. The system is bounded by SR 40 to the north, an FDOT stormwater pond to the west, a church to the east, and a mixture of upland forest and open land to the south.

Common canopy species observed within this system include sweetgum (*Liquidambar styraciflua*), cabbage palm (*Sabal palmetto*), laurel oak, and red bay. Mid-story and groundcover vegetation includes Carolina willow (*Salix caroliniana*), wax myrtle, gallberry, St. Johns wort, cattail (*Typha sp.*), pickerelweed (*Pontederia cordata*), duckweed (*Lemna sp*.), maidencane, bahiagrass, Virginia chain fern (*Woodwardia virginica*), wild grape (*Vitis sp.*), and pennywort (*Hydrocotyle sp.*).

Wetland 2 is located on private property and does not include any public use opportunities. Public benefits are derived from the wildlife habitat, flood attenuation

and water quality treatment functions provided by this system. This system will be considered a jurisdictional wetland under the regulations of the SJRWMD and the ACOE.

Wetland 3
FLUCFCS Code: 617 Mixed Wetland Hardwoods

NWI Code: PFO6/3C Palustrine, Forested, Deciduous/Broad-Leaved Evergreen, Seasonally Flooded

Wetland 3 is located on the north side of the project corridor, just inside the existing SR 40 ROW, approximately from station 1317+40 to approximately station 1322+50. The system is bounded to the south by SR 40 and to the east, west, and north by residential developments.

Common canopy species observed within this system include bald cypress, laurel oak, sweetgum and red maple (*Acer rubrum*). Mid-story and groundcover vegetation includes wax myrtle, saw palmetto, Carolina willow, primrose willow (*Ludwigia sp.*), broomsedge bluestem, pickerelweed, maidencane, duckweed, and various rushes.

Wetland 3 is located on private property and does not include any public use opportunities. Public benefits are derived from the wildlife habitat, flood attenuation and water quality treatment functions provided by this system. This system will be considered a jurisdictional wetland under the regulations of the SJRWMD and the ACOE.

Wetland 4
FLUCFCS Code: 630 Mixed Wetland Forest

NWI Code: PFO6F Palustrine, Forested, Deciduous, Semipermanently Flooded

Wetland 4 is located on the south side of the project corridor, within the existing SR 40 ROW, approximately from station 1353+40 to approximately station 1355+10. The system is bounded on the north by SR 40, commercial developments to the east and west, and residential areas to the south.

Common canopy species observed within this system include red maple, laurel oak, slash pine, and sweetgum. Mid-story and groundcover vegetation includes saw palmetto, Carolina willow, wax myrtle, Carolina laurelcherry (*Prunus caroliniana*), beggarticks, wild grape, Virginia chain fern, St. Johns wort, and dogfennel.

Wetland 4 is located on private property and does not include any public use opportunities. Public benefits are derived from the wildlife habitat, flood attenuation and water quality treatment functions provided by this system. This system will be considered a jurisdictional wetland under the regulations of the SJRWMD and the ACOE.

Wetland 5

FLUCFCS Code: 617 Mixed Wetland Hardwoods

NWI Code: PFO6/3C Palustrine, Forested, Deciduous/Broad-Leaved Evergreen, Seasonally Flooded

Wetland 5 is located on the south side of the project corridor and the west side of the Tomoka River. It is located within the existing SR 40 ROW, approximately from station 1361+00 to approximately station 1363+80. The system is bounded to the north by SR 40, to the west and south by residential areas and forested wetlands, and to the east by the Tomoka River.

Common canopy species observed within this system include laurel oak, red maple, sweetgum, cabbage palm, and bald cypress. Mid-story and groundcover vegetation includes saw palmetto, wax myrtle, gallberry, Virginia chain fern, poison ivy (*Toxicodendron radicans*), and greenbriar.

Wetland 5 is located on private property and does not include any public use opportunities. Public benefits are derived from the wildlife habitat, flood attenuation and water quality treatment functions provided by this system. This system is within the Riparian Habitat Protection Zone for the Tomoka River and will be considered a jurisdictional wetland under the regulations of the SJRWMD and the ACOE.

Wetland 6

FLUCFCS Code: 617 Mixed Wetland Hardwoods

NWI Code: PFO6/3C Palustrine, Forested, Deciduous/Broad-Leaved Evergreen, Seasonally Flooded

Wetland 6 is located on the north side of the project corridor and the west side of the Tomoka River. It is located outside the existing SR 40 ROW, approximately from station 1360+40 to approximately station 1364+50. The system is bounded to the

south by open land, to the west by a residential area, and to the north and east by the Tomoka River.

Common canopy species observed within this system include red bay, red maple, laurel oak, and cabbage palm. Mid-story and groundcover vegetation includes Carolina willow, mimosa (*Albizia julibrissin*), saw palmetto, pickerelweed, primrose willow, Virginia chain fern, St. Johns wort, and various sedges.

Wetland 6 is located on private property and does not include any public use opportunities. Public benefits are derived from the wildlife habitat, flood attenuation and water quality treatment functions provided by this system. This system is within the Riparian Habitat Protection Zone for the Tomoka River and will be considered a jurisdictional wetland under the regulations of the SJRWMD and the ACOE.

Wetland 7
FLUCFCS Code: 510 Streams and Waterways

NWI Code: R1UBV Riverine, Tidal, Unconsolidated Bottom, Permanent Tidal

Wetland 7, the Tomoka River, bisects the project corridor approximately from station 1363+80 to approximately station 1366+90. It is located both within and adjacent to the existing SR 40 ROW, as it bisects the project corridor. Within the project corridor, it is bounded to the west by forested wetlands and a residential area, and to the east by forested wetlands.

Wetland vegetation along the banks is associated with other described wetland systems within the project corridor.

Wetland 7 is sovereign lands of the State of Florida and includes many public use opportunities. Public benefits are derived from commerce, recreation, and wildlife habitat. This system is within the Riparian Habitat Protection Zone for the Tomoka River and will be considered a jurisdictional wetland under the regulations of the SJRWMD and the ACOE.

Wetland 8
FLUCFCS Code: 617 Mixed Wetland Hardwoods

NWI Code: PFO6/3R Palustrine, Forested, Deciduous/Broad-Leaved Evergreen, Seasonal Tidal

Wetland 8 is located on the south side of the project corridor and the east side of the Tomoka River. It is located within the existing SR 40 ROW, approximately from station 1365+50 to approximately station 1368+40. The system is bounded to the north by SR 40, to the west by the Tomoka River, and to the east by an FDOT stormwater pond and upland forest.

Common canopy species observed within this system include laurel oak, red maple, sweetgum, cabbage palm, and bald cypress. Mid-story and groundcover vegetation includes saw palmetto, wax myrtle, gallberry, Virginia chain fern, poison ivy, and greenbriar.

Wetland 8 is located on private property and does not include any public use opportunities. Public benefits are derived from the wildlife habitat, flood attenuation and water quality treatment functions provided by this system. This system is within the Riparian Habitat Protection Zone for the Tomoka River and will be considered a jurisdictional wetland under the regulations of the SJRWMD and the ACOE.

Wetland 9

FLUCFCS Code: 617 Mixed Wetland Hardwoods

NWI Code: PFO6/3R Palustrine, Forested, Deciduous/Broad-Leaved Evergreen, Seasonal Tidal

Wetland 9 is located on the north side of the project corridor and the east side of the Tomoka River. It is located within the existing SR 40 ROW, approximately from station 1366+30 to approximately station 1368+00. The system is bounded to the south by SR 40, to the west by the Tomoka River, and to the east by upland forest.

Common canopy species observed within this system include bald cypress, laurel oak, red maple, sweetgum, cabbage palm, and red bay. Mid-story and groundcover vegetation includes saw palmetto, wax myrtle, Carolina willow, wild grape, maidencane, pickerelweed, primrose willow, Virginia chain fern, St. Johns wort, poison ivy, and various rushes and water-tolerant grasses.

Wetland 9 is located on private property and does not include any public use opportunities. Public benefits are derived from the wildlife habitat, flood attenuation and water quality treatment functions provided by this system. This system is within the Riparian Habitat Protection Zone for the Tomoka River and will be considered a jurisdictional wetland under the regulations of the SJRWMD and the ACOE.

5.2 Wetland Assessment

The SJRWMD and ACOE may claim jurisdiction over all wetlands and surface waters within the project corridor. During the permitting phase of the project, final wetland impacts will be determined and any required mitigation will be identified. The Uniform Mitigation Assessment Method (UMAM) has been adopted by state and federal regulatory agencies to quantify project-related functional losses, and subsequently, the mitigation required to offset the project's adverse impacts. However, some mitigation banks in Florida still require assessments to be conducted using the Wetland Rapid Assessment Procedure (WRAP) methodology. Therefore, the wetlands within the project corridor were assessed using both UMAM and WRAP methodologies.

The SJRWMD and ACOE recognize the potential functions of wetlands to include the following; fish and wildlife habitat, flood storage, nutrient cycling, detritus production, recreation, and water quality and quantity, with the recognition that not all types of wetlands and surface waters express all of these functions equally.

UMAM and WRAP have been used to assess the pre-construction condition of each wetland system within the project limits. Table 4, below, was developed based upon field reviews conducted in support of this study. The functional scores contained in Table 4 are based on scientific evidence and professional experience, and have not been approved by any regulatory agencies.

For purposes of the wetland assessment, wetland areas within the proposed project footprint were identified based on the updated FLUCFCS map, which was developed during this study. The score was assigned based on guidelines outlined in Chapter 62-345 of the Florida Administrative Code and the Wetland Rapid Assessment Procedure. During the design and permitting phase of the project, the UMAM and WRAP scores will need to be reevaluated based on the specific area where impacts are proposed. The results of the UMAM and WRAP assessments are provided in Table 4, below.

Table 4. UMAM and WRAP Assessment Scores

Wetland Number	FLUCFCS Classification	FLUCFCS Description	USFWS NWI Classification	UMAM Score	WRAP Score
1	643, 630	Wet Priaire, Mixed Wetland Forest	PFO6F, PFO6/EM1C	0.67	0.58
2	617	Mixed Wetland Hardwoods	PFO6/3C	0.67	0.55
3	617	Mixed Wetland Hardwoods	PFO6/3C	0.60	0.55
4	630	Mixed Wetland Forest	PFO6F	0.53	0.33
5	617	Mixed Wetland Hardwoods	PFO6/3C	0.80	0.79
6	617	Mixed Wetland Hardwoods	PFO6/3C	0.53	0.38
7	510	Streams and Waterways	R1UBV	0.85	0.95
8	617	Mixed Wetland Hardwoods	PFO6/3R	0.85	0.79
9	617	Mixed Wetland Hardwoods	PFO6/3R	0.85	0.79

5.3 Potential Impact Areas

The project corridor consists of primarily residential, commercial, institutional, and natural upland and wetland areas. There are no public lands within the project study area. Natural habitats commonly found within the project corridor include pine flatwoods, coniferous plantation, hardwood-conifer mixed forest, streams and waterways, mixed wetland hardwood forest, hydric pine flatwoods, mixed wetland forest, freshwater marsh, wet prairie, and treeless hydric savanna. Residential communities can be found in low, medium, and high densities within the corridor, while commercial development is primarily restricted to the intersection of SR 40 and Tymber Creek Road and the area immediately surrounding the I-95/SR 40 interchange.

Potential wetland and surface water impacts were estimated for each Build Alternative. For the purposes of this study, it was assumed that all wetland and surface water habitats identified within the boundaries of each alternative would be impacted. Wetland and surface water impacts will be revised during the design phase of the project once the exact limits of construction are defined.

5.3.1 No-Build Alternative

The No-Build Alternative would not involve new construction, but would involve the continued normal maintenance of SR 40. This alternative would maintain the roadway in a safe operating condition and maintain existing typical sections. Implementing the No-Build Alternative would result in no direct impacts to wetlands or surface waters.

5.3.2 Existing Roadway Right-of-Way

The existing unpaved right-of-way within the project corridor consists of a mixture of undeveloped natural areas and maintained areas dominated by herbaceous vegetation primarily consisting of bahiagrass. Portions of the existing FDOT ROW exhibit wetland characteristics and are likely to be claimed as jurisidictional systems by the SJRWMD and ACOE. Adjacent undeveloped areas are typically forested uplands and wetlands.

5.3.3 Methodology of Pond Determination

Based on the available information, only the hydraulically feasible and environmentally permissible alternative pond sites are considered. Alternative pond sites are analyzed and evaluated for the following parameters:

- Hydrologic and hydraulic factors such as existing ground elevation, soil types, estimated Seasonal High Water Table established by a review of the USDA NRCS soils and geotechnical investigations, stormwater conveyance feasibility, allowable hydraulic grade line, and basin outfalls;
- Environmental resource impacts including wetlands and threatened or endangered species;
- Floodplain impacts;
- Major utility conflict potential;
- Estimated right-of-way acquisition;
- Impacts to cultural resources; and
- Hazardous materials and contamination

5.3.4 Proposed Stormwater Ponds

A field assessment of each proposed pond site was performed. Existing habitat at each site was evaluated for vegetative structure and the presence or potential for occurrence of jurisdictional wetlands or surface waters. Please refer to the Pond Siting Report for a detailed analysis of the proposed pond alternatives.

Wetland impacts associated with the ponds have been restricted to 0.04 acres associated with Pond 3B. Please refer to the Appendix D for the location of each proposed stormwater pond within the project corridor.

Basin 1

Basin 1 is located from the west terminus of the project corridor at the intersection of SR 40 and Breakway Trail (approximately station 1294+46) to a cross drain (double 6'x6' CBC) for a tributary of the Little Tomoka River located approximately at station 1320+50. Land use within the basin consists of medium density residential, open land, hardwood-conifer mixed forest, stormwater treatment ponds, mixed wetland hardwoods forests, and wet prairie.

Pond 1 is located on the south side of the SR 40 corridor at approximately station 1315+00. This pond alternative consists of a slight expansion of the existing FDOT wet detention pond. Pond 1-2 is a larger expansion of the existing FDOT wet detention pond that is sized to accommodate both Basins 1 and 2. There are no wetland impacts associated with either pond alternative.

Basin 2

Basin 2 is located approximately from station 1320+50 to approximately station 1345+00. Land use within the basin consists of residential, commercial, institutional, pine flatwoods, coniferous plantation, stormwater ponds, and forested wetlands.

Pond 2A is located on the south side of the SR 40 corridor at approximately station 1321+00 and is sized to treat all of Basin 2. Pond 2B-1 is located on the south side of the SR 40 corridor at approximately station 1321+00 and is sized to treat a portion of Basin 2 between station 1320+50 and station 1345+00. Pond 2B-2 is located on the north side of the SR 40 corridor at approximately station 1335+00 and is designed to treat a portion of Basin 2 between station 1335+00 and station 1345+00. Pond 2B-3 is location on the north side of the SR 40 corridor at approximately station 1335+00 and is designed to treat a portion of Basin 2 between station 1335+00 and

station 1345+00. Ponds 2B-2 and 2B-3 are intended to be used in conjunction with Pond 2B-1. There are no wetland impacts associated with the pond alternatives.

Basin 3

Basin 3 is located approximately from station 1347+00 to station 1365+24. Land use within the basin consists of residential, commercial, institutional, open land, and forested wetlands.

Pond 3A is located on the south side of the SR 40 corridor, at approximately station 1358+00, and includes the existing FDOT dry retention pond as well as the adjacent commercial parcel abutting the FDOT pond to the west at approximately station 1357+00. Pond 3B is located within an undeveloped upland area on the north side of the SR 40 corridor at approximately station 1361+00. Pond 3B has approximately 0.04 acres of wetland impacts and 0.79 acres of impacts to the protected riparian habitat within the Tomoka River basin.

Basin 4

Basin 4 is located approximately from station 1365+24 to station 1375+00. Land use within the basin consists of commercial, institutional, upland forest, stormwater ponds, and forested wetlands.

There is only one pond alternative for Basin 4. Pond 4 is an expansion of the existing FDOT dry retention pond located approximately at station 1369+50. There are no wetland impacts associated with this pond alternative.

Basin 5

Basin 5 is located approximately from station 1375+00 to station 1416+33 at the eastern terminus of the project. Land use within the basin consists of institutional, commercial, upland forest, stormwater ponds, and forested wetlands.

There is only one pond alternative for Basin 5. Pond 5 is an existing FDOT dry retention pond currently treats Basin 5 of SR 40 and a large portion of I-95. There are no wetland impacts associated with this pond alternative.

5.4 Results

Impacts to wetlands occurring as a result of the construction of the proposed roadway improvements or stormwater management facilities, that are otherwise unavoidable, will be minimized to the greatest extent practicable. Direct impacts to

wetlands within the project footprint will most likely consist of vegetation removal, placement of fill, or shading caused by the proposed widening of the bridges. The proposed roadway build alternatives include approximately 1.18 total acres of direct impacts to wetlands. Table 5 below includes the acreage of anticipated impact to each system as well as the anticipated UMAM functional loss based on the wetland assessment results.

Table 5. Anticipated Wetland Impacts and Assessment Scores

Wetland Number	FLUCFCS Classification	FLUCFCS Description	USFWS NWI Classification	UMAM Score	WRAP Score	Impact (acres)
1	643, 630	Wet Priaire, Mixed Wetland Forest	PFO6F, PFO6/EM1C	0.67	0.58	0.45
2	617	Mixed Wetland Hardwoods	PFO6/3C	0.67	0.55	0.27
3	617	Mixed Wetland Hardwoods	PFO6/3C	0.60	0.55	0.06
4	630	Mixed Wetland Forest	PFO6F	0.53	0.33	0.08
5	617	Mixed Wetland Hardwoods	PFO6/3C	0.80	0.79	0.03
6	617	Mixed Wetland Hardwoods	PFO6/3C	0.53	0.38	0.04
7	510	Streams and Waterways	R1UBV	0.85	0.95	0*
8	617	Mixed Wetland Hardwoods	PFO6/3R	0.85	0.79	0.15
9	617	Mixed Wetland Hardwoods	PFO6/3R	0.85	0.79	0.07

*No advserse impacts are anticipated due to the proposed bride spanning the river. No mitigation is anticpated to be required.

It should be noted that, at the time of this report, the jurisdictional extent of wetlands within the project corridor, as well as the UMAM score given to each wetland system, had not been approved by any regulatory agency. Final approval for these will occur during the design and permitting phase of the project.

5.5 Avoidance and Minimization of Impacts

Avoidance and minimization of wetland impacts has been integral to this study and will continue to be evaluated during the design and permitting phase of the project. During the course of this study, specific measures have been taken with the intent of minimizing impacts to wetlands. These steps include restricting the build alternatives to the existing FDOT ROW and the selection of pond site alternatives that do not involve wetlands. The FDOT Quality Enhancement Strategies for

wetland impact avoidance and minimization will be further refined and addressed during the design and permitting phase.

5.6 Secondary and Cumulative Impacts

It is anticipated that secondary wetland impacts will occur as a result of the construction of the proposed project. Anticipated secondary impacts include a large variety of adverse effects typically referred to as "edge effects". Edge effects occur as previously undisturbed habitat is cleared, exposing previously buffered ecosystems to the edge of the road right-of-way. Many deleterious impacts occur to habitat along a roadway edge; including facilitation of weeds, pests, and pathogens (many of which are exotic), changes to microclimate, increased canopy blow-downs, reduction of shade-dependant plants, and a change in the wildlife species within that habitat. As these effects are inevitable within a new roadway alignment, it is likely that mitigation will be necessary to adequately off-set these adverse secondary impacts.

Cumulative impacts are not anticipated, as mitigation will be provided in accordance with §373.413, F.S. and within the same mitigation basin as the impacts.

Section 6.0
Wildlife and Habitat Evaluation Methods

6.1 Preliminary Data Collection

Prior to conducting the field reviews, a literature search was performed in order to determine if any threatened and endangered species, or their critical habitat, had been documented within the project area. Project biologists consulted standard Florida references to gain insight to the characteristics of the existing wildlife habitat. Literature referenced includes the United States Department of Agriculture (USDA)-Soils Conservation Service Soil Survey of Volusia County, Florida (1980); United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps; United States Geological Survey (USGS) 7.5 minute quadrangle maps; site-specific aerial photographs (2010); the Florida Fish and Wildlife Conservation Commission (FFWCC) "Closing the Gaps in Florida's Wildlife Habitat Conservation System" (1994), Florida's Endangered Species, Threatened Species and Species of Special Concern-Official Lists (2012), and a recent query of the Florida Natural Areas Inventory (FNAI) database of listed species for the surrounding area.

A list of 50 protected species that could potentially occur within the project area was derived from this literature search and is presented as Table 8 in Appendix G. The FNAI Database Query Report is located in Appendix H. Literature research indicates 3 mammal, 19 avian, 1 amphibian, 1 fish, 4 reptile, and 22 plant species may occur within the project corridor. The likelihood of each species occurring within the project corridor was evaluated based on historic ranges, literature reviews, aerial photography interpretation to identify suitable habitat, and field investigations.

6.2 USFWS Consultation Areas

The project corridor falls within the designated USFWS Consultation Area for one federally-protected wildlife species: the Florida scrub jay (*Aphelcoma coerulescens*). For projects falling within the consultation area for a federally protected species, consultation with the USFWS should be initiated regardless of whether that species was directly observed or evidence of utilization of habitat was noted in the field.

6.3 Field Survey

The project corridor is approximately two miles in length and includes approximately five linear miles, north and south sides, of right-of-way and eleven stormwater pond alternatives. Listed species field surveys were conducted by the project biologist between November 2011 and May 2012. Modifications of land use and habitat classifications were made, using the FLUCFCS, as a result of the field reconnaissance.

All field surveys were conducted during daylight hours and were tailored to the habitat being surveyed. Typically, the project biologist would conduct pedestrian transects on each side of the roadway along the right-of-way and within each proposed pond site alternative. When possible, transects were traversed in a zig-zag pattern, traveling approximately ten feet on either side of the transect line and covering a swath approximately 20-feet-wide per transect. This method provided appropriate representative coverage of all potential habitats where construction activities may occur as a result of the proposed project.

During the wildlife surveys, indications of the presence of floral or faunal species listed as Endangered, Threatened, or a Species of Special Concern by the USFWS, FFWCC, USDA or Florida Department of Agriculture and Consumer Services (FDACS) were noted and, where possible, located via GPS. Section 7.0 provides a summary of wildlife, including protected species, known or having potential to occur within the project corridor.

Section 7.0
Wildlife Habitat Evaluation Results

7.1 Natural Habitat and Land Use Assessment

During the field surveys, habitat and land use/land cover types were mapped using the FLUCFCS. Land use maps depicting the locations of the various Level III FLUCFCS types within the project corridor are provided in Appendix B. Soils Maps are provided in Appendix A. Below is a short description of the habitat types found within the project corridor.

The potential occurrence of any listed species within each FLUCFCS type was given as low, moderate, or high. A determination of low was given for areas that are developed and, based on Florida Natural Areas Inventory (FNAI) element reports coupled with field reviews, exhibited minimal to no available habitat for listed species. A determination of moderate was given for areas where suitable habitat was identified within one mile. A determination of high was given for directly observed listed species or areas of greater than one mile of contiguous suitable habitat.

7.1.1 Urban and Built-Up (FLUCFCS 100)

Low Density Residential (FLUCFCS 110)

This land use classification is used to describe residential areas with less than two dwelling units per acre. Within the project corridor, this land use is found along the north side of the project corridor, adjacent to the existing SR 40 ROW, approximately from station 1322+00 to station 1333+00. Other areas within the project corridor include residential areas on the south side of the SR 40 corridor, outside of the existing ROW, between Tymber Creek Road and the Tomoka River. Based on field observations, the potential occurrence of listed species within this land use type is moderate.

Medium Density Residential (FLUCFCS 120)

This land use classification is used to describe residential areas with two to five dwelling units per acre. Within the project corridor, this land use is found along the north side of the project corridor, adjacent to the existing SR 40 ROW from approximately station 1291+90 to station 1318+50 and approximately from station 1346+50 (N. Tymber Creek Road) to station

1358+00. Based on field observations, the potential occurrence of listed species within this land use type is low.

High Density Residential (FLUCFCS 130)

This land use classification is used to describe residential areas with more than five dwelling units per acre. Within the project corridor, this land use is found north of the Wal-Mart shopping plaza at the eastern end of the project corridor. Based on field observations, the potential occurrence of listed species within this land use type is low.

Commercial and Services (FLUCFCS 140)

This land use classification is used to describe areas which are predominately associated with the distribution of products and services. This land use is found in the area immediately surrounding the intersection of SR 40 and Tymber Creek Road and in the area immediately surrounding the SR 40/I-95 interchange on the eastern end of the project. Based on field observations, the potential occurrence of listed species within this land use type is low.

Institutional (FLUCFCS 170)

This land use classification is used to describe religious facilities. Examples of this this land use are located adjacent to the existing SR 40 ROW at the Riverbend Community Church, located approximately from station 1321+90 to station 1334+70, and at the Calvary Christian Center, located approximately from station 1374+30 to station 1383+10. However, these are not the only institutional facilities within the project corridor. Based on field observations, the potential occurrence of listed species within this land use type is moderate.

Open Land (FLUCFCS 190)

This land use classification is used to describe cleared upland areas owned by Consolidated Tomoka Land Co. located on the south side outside the existing SR 40 ROW approximately from station 1294+46 (project terminus) to station 1317+70 (in the area of Pond 1-2). This classification also occurs on the north side of the project corridor, adjacent to the existing SR 40 ROW, approximately from station 1359+00 to station 1365+30 and on the south side of the existing SR 40 ROW approximately from station 1353+60 to station 1363+70. Based on field observations, the potential occurrence of listed species within open land owned by Consolidated Tomoka was high while potential occurrence of listed species on other areas of open land is low. This

is due primarily to the large amount of contiguous, undeveloped land held by Consolidated Tomoka and its proximity to other in-tact natural systems.

7.1.2 Upland Forest (FLUCFCS 400)

Pine Flatwoods (FLUCFCS 411)

This land cover classification is used to describe areas dominated by either slash or longleaf pine, with pond pine being less common, and an understory of saw palmetto, wax myrtle, gallberry and a wide variety of herbs and brush. This land cover type occurs on the north side of the project corridor, adjacent to the existing SR 40 ROW, approximately from station 1333+00 to station 1343+90 and on the south side of the project corridor, adjacent to the existing SR 40 ROW, approximately from station 1334+60 to station 1340+80. Based on field observations, the potential occurrence of listed species within this land use type is moderate.

Coniferous Plantation (FLUCFCS 441)

This land cover classification is used to describe pine forests that have been artificially generated by planting seedling stock or seeding. This land cover type occurs along the west side of Tymber Creek Road, approximately 225 feet south of the the existing SR 40 ROW, south of station 1340+00. Based on field observations, the potential occurrence of listed species within this land use type is moderate.

7.1.3 Water (FLUCFCS 500)

Streams and Waterways (FLUCFCS 510)

This land cover classification is used to describe the Tomoka River. Based on field observations, the potential occurrence of listed species within this land use type is High.

Reservoir (FLUCFCS 530)

This land cover classification is used to describe areas comprising artificial impoundments of water typically used for stormwater retention, flood control, irrigation, livestock, etc. This land cover type occurs throughout the project corridor. Based on field observations, the potential occurrence of listed species within this land use type is moderate.

7.1.4 Wetland (FLUCFCS 600)

Mixed Wetland Hardwoods (FLUCFCS 617)

This land cover classification is used to describe forested wetland communities which are composed of a large variety of hardwood species tolerant of hydric conditions, where no one species is predominant. This land cover type occurs on the north and south sides of the project corridor, within the existing SR 40 ROW at the 6'x6' CBC, located approximately from station 1317+40 to station 1321+90. It is also found on the east and west banks of the Tomoka River, on on the north and south sides of the project corridor, within the existing SR 40 ROW, approximately from station 1360+20 to station 1367+50. This classification is used to describe Wetlands 2, 3, 5, 6, 8, and 9. Based on field observations, the potential occurrence of listed species within this land use type is high.

Hydric Pine Flatwoods (FLUCFCS 625)

This land cover classification is used to describe a forested wetland with a sparse to moderate canopy of slash pine and an understory comprised of grasses, forbs and sparse saw palmetto. This land cover type occurs on the south side of the project corridor, approximately 190 feet from the existing SR 40 ROW, south of station 1334+00. Based on field observations, the potential occurrence of listed species within this land use type is high.

Mixed Wetland Forest (FLUCFCS 630)

This land cover classification is used to describe forested wetland communities in which neither hardwood nor conifer species achieve a 66 percent crown canopy composition. This land cover type occurs throughout the project corridor. This classification is used to describe Wetland 4 and portions of Wetland 1. Based on field observations, the potential occurrence of listed species within this land use type is high.

Freshwater Marsh (FLUCFCS 641)

This land cover classification is used to describe herbaceous freshwater marshes. This land cover type occurs on the south side of the project corridor, approximately 420 feet from the existing SR 40 ROW, south of station 1377+00. Based on field observations, the potential occurrence of listed species within this land use type is moderate.

Wet Prairie (FLUCFCS 643)

This land cover classification is used to describe herbaceous wetland systems comprised predominately of grassy vegetation that typically has less water and shorter herbage than marshes. This land cover type occurs on the south side of the project corridor, adjacent to the existing SR 40 ROW, approximately from station 1294+46 (western project terminus) to station 1308+50. This classification is used to describe portions of Wetland 1. Based on field observations, the potential occurrence of listed species within this land use type is high.

Treeless Hydric Savanna (FLUCFCS 646)

This land cover classification is used to describe herbaceous wetland systems typically dominated by wiregrass or cutthroat grass along with wetland plant associates. This land cover type occurs on the south side of the project corridor, approximately 500 feet from the existing SR 40 ROW, south of station 1335+00. Based on field observations, the potential occurrence of listed species within this land use type is high.

7.1.5 Transportation (FLUCFCS 800)

Roads and Highways (FLUCFCS 814)

This land cover classification is used to describe the existing ROW of SR 40 and I-95. Based on field observations, the potential occurrence of listed species within this land use type is low.

7.2 Potential Impact Areas

The project corridor consists of primarily residential, commercial, institutional, and natural upland and wetland areas. There are no public lands within the project study area. Natural habitats commonly found within the project corridor include pine flatwoods, coniferous plantation, hardwood-conifer mixed forest, streams and waterways, mixed wetland hardwood forest, hydric pine flatwoods, mixed wetland forest, freshwater marsh, wet prairie, and treeless hydric savanna. Residential communities can be found in low, medium, and high densities within the corridor, while commercial development is primarily restricted to the intersection of SR 40 and Tymber Creek Road and the area immediately surrounding the I-95/SR 40 interchange.

The project corridor was evaluated for the presence of potentially-occurring species listed in Table 8, Appendix G.

7.2.1 No-Build Alternative

The No-Build Alternative would not involve new construction, but would involve the continued normal maintenance of SR 40. This alternative would maintain the roadway in a safe operating condition and maintain existing typical sections. Implementing the No-Build Alternative would result in additional impacts to listed species or their habitat.

7.2.2 Existing Roadway Right-of-Way

The existing unpaved right-of-way within the project corridor consists of a mixture of undeveloped natural areas and maintained areas dominated by herbaceous vegetation primarily consisting of bahiagrass. Adjacent undeveloped areas are typically forested uplands and wetlands.

7.2.3 Proposed Stormwater Ponds

The preferred pond alternatives are depicted below in ***bold italics***.

Pond 1 and ***Pond 1-2***
Habitat within Pond 1 is limited primary to wading birds and small herptofauna. Vegetation within the existing stormwater includes cattail, arrowhead (*Sagittaria* sp.), pennywort, and duckweed. Habitat within the portions of Pond 1-2 that are outside the limits of Pond 1 is a mixture of the existing stormwater pond, upland forest and open land. The upland forest includes a canopy of live oak (*Quercus virginiana*) and slash pine. Mid-story and groundcover species include gallberry, saw palmetto, bahiagrass, wild grape, scrub palmetto (*Sabal etonia*), prickly pear cactus (*Opuntia humifusa*), and wiregrass (*Aristida stricta*). The open land portion of the pond site is dominated by wiregrass with scattered upland grasses. No listed floral or faunal species were observed within the pond site.

Pond 2 and Pond 2B-1
Habitat within Ponds 2 and 2B-1 is a mixture of upland forest and open land. Vegetation within the forested sections of the pond site includes a canopy of slash pine and live oak. Mid-story and groundcover species include bahia grass, wiregrass, saw palmetto, broomsedge bluestem, and prickly pear cactus. No listed floral or faunal species were observed within the pond site.

Pond 2B-2 and Pond 2B-3

Habitat within Ponds 2B-2 and 2B-3 is pine flatwoods. Vegetation within these pond sites consists of a canopy dominated by slash pine with scattered laurel oak and southern magnolia (*Magnolia grandiflora*). Mid-story and groundcover species are dominated by saw palmetto, but also include wild grape, greenbriar, and wiregrass. No listed floral or faunal species were observed within the pond site.

Pond 3, ***Pond 3A, and Pond 3B***

Pond 3 is comprised of an existing FDOT stormwater pond and an immediately adjacent commercial parcel. Observed vegetation was limited to bahiagrass within the existing FDOT and ornamental landscape species within the commercial property. No listed floral or faunal species were observed within the pond site.

Pond 3A is comprised of Pond 3 and the existing commercial development abutting the exiting FDOT pond ROW to the west. The area consists of the single commercial building with associated parking area and stormwater treatment. Observed vegetation was limited to ornamental species within the landscaped areas. No listed floral or faunal species were observed within the pond site.

Pond 3B is located in an undeveloped upland area on the north side of SR 40 between Bayberry Drive and the Tomoka River. The area consists of primarly of disturbed uplands and a thin wetland edge along the south side of the canal. Vegetation within this pond site consists primarily of a canopy dominated by American elm, laurel oak, live oak, persimmon (*Diospyros virginiana*), and cabbage palm. Mid-story and groundcover species are dominated by Brazilian pepper, Carolina jessamine (*Gelsemium sempervirens*), wax myrtle, wild grape, and greenbriar. Direct wetland impacts associated with this pond site total approximately 0.04 acres.

Pond 4

Pond 4 consists of an existing FDOT stormwater pond. Observed vegetation was limited to bahiagrass. No listed floral or faunal species were observed within the pond site.

Pond 5

Pond 5 consists of an existing FDOT stormwater pond. Observed vegetation was limited to bahiagrass. While no listed species or their habitat was observed within the existing pond site, the pond directly abuts a conservation easement, granted to the SJRWMD (Permit No. 4-127-23036-5), that includes riparian habitat associated with the Tomoka River and valuable habitat for listed species.

7.2.4 Riparian Wildlife Habitat Standard

The SJRWMD has implemented a Riparian Wildlife Habitat Standard (RWHS) for the Tomoka River and Spruce Creek Hydrologic Basins (SJRWMD Applicant's Handbook 11.5.4). The rules states, "The wetlands abutting the Tomoka River and Spruce Creek and their tributaries support an abundance and diversity of aquatic and wetland dependant wildlife. Construction, alteration, operation, maintenance, removal, or abandonment of surface water management systems within those wetlands and uplands can result in adverse changes in the habitat, diversity, abundance and food resources of aquatic and wetland dependant species." Please refer to Appendix I for the entire rule concerning the Tomoka River RWHS.

Within the project corridor, uplands which are within 550 feet landward of the Tomoka River's edge are included within the RWHS (Applicant's handbook 11.5.4 (a)(2)(b)). It is anticipated that, by limiting the build alternatives to within the existing FDOT ROW, impacts to intact wetlands and riparian uplands within the basin will be eliminated.

7.3 Potential Species Affected

Potential effects to protected species and their habitat are detailed below. As much of the project corridor is comprised of a mixture of developed and natural areas, the protected species surveys conducted within the project corridor focused on those species known utilize these habitat types. Additional information obtained from the various regulatory agencies, local governments and the FNAI has been included. Species, not already identified in a USFWS Consultation Area, with potential to occur within the project corridor and/or be affected by the widening of SR 40 are identified below.

7.3.1 Species Documented Through the USFWS Consultation Areas

Florida Scrub Jay (*Aphelocoma coerulescens*)

The Florida scrub-jay is similar in size and shape to the common blue jay, but lacks the crest and white spotting characteristic of this more common species. Habitat for the scrub-jay consists of fire-dominated, low-growing, oak scrub found on well-drained sandy soils. This species may persist in areas with sparser oaks or scrub areas that are overgrown, but at a much lower density and with reduced survivorship. The Florida scrub-jay is the only North American bird species whose entire range is restricted to Florida. The largest populations known to exist are within federally protected lands within the Merritt Island National Wildlife Refuge and the

Ocala National Forest. Smaller populations are found scattered along the Lake Wales Ridge in Polk and Highlands counties. The Florida scrub-jay is listed as Threatened by both the USFWS and the FFWCC. Due to the lack of suitable xeric oak/scrub habitat within the project corridor, has been determined that the project will have **"no effect"** on the Florida scrub jay.

7.3.2 Federally Listed Faunal Species

Reptiles

Eastern Indigo Snake (*Drymarchon corais couperi*)
The eastern indigo snake, listed by both the FFWCC and USFWS as Threatened, is a habitat generalist that is known to use a variety of habitats from mangrove swamps to xeric uplands. These animals are cold-sensitive and require gopher tortoise, other animal burrows or stumps for protection during the winter months. These snakes require large tracts of natural, undisturbed habitat, and prefer to forage in and around wetlands for their preferred prey – other snakes. Suitable habitat for the eastern indigo snake was observed within the project corridor.

As a precaution, the FDOT will implement the *Standard Protection Measures for the Eastern Indigo Snake* (included in Appendix J) during construction. If an eastern indigo snake is observed during construction, the contractor will be required to cease any operation that might cause harm to the snake. The existing riparian wildlife passage underneath the existing bridge is proposed to be maintained to allow this species to safely move between habitat areas that are otherwise bisected by the roadway. In addition, the FDOT will commit to apply the appropriate conservation measures outlined in the current Eastern Indigo Snake Programmatic Effect Determination Key during the design and permitting phase of the project. The current effect determination key has been included in Appendix J. Therefore, it has been determined that the project **"may affect but is not likely to adversely affect"**, the eastern indigo snake.

American Alligator (*Alligator mississippiensis*)
The American alligator is listed as Threatened by the USFWS due to its similarity in appearance to the critically endangered American crocodile (*Crocodylus acutus*) and is listed as a Species of Special Concern by the FFWCC. Alligators inhabit most permanent bodies of water throughout Florida and have been known to also wander into brackish and salt water for short periods. Alligators have been observed in the Tomoka River. However, the bridge widening along with the addition of an additional, stand-alone pedestrian bridge is unlikely to have an adverse effect on

alligators or their habitat. Therefore, it has been determined that the project **"may affect but is not likely to adversely affect"**, the American alligator.

Avians

Wood Stork (*Mycteria americana*)

The wood stork is a large wading bird that is white in color, with black in the wings and a short black tail. Adults have bare, scaly, dark-gray heads and necks and a large curved bill. Nesting habitats include cypress strands, mixed hardwood swamps, sloughs, and mangroves. Foraging areas consist of shallow waters of marshes, swamps, lagoons, ponds, tidal creeks, and ditches. Wood stork population densities are much higher in southern and central peninsular Florida than in the northern portions of the peninsula. The wood stork is listed as Endangered by both the USFWS and the FFWCC.

The project corridor occurs outside of the Core Foraging Area for any wood stork rookeries. While suitable foraging habitat does exist within the project corridor, it is anticipated final determination of **"no effect"**, will be made for the wood stork.

Southern Bald Eagle (*Haliaeetus leucocephalus*)

Bald eagles are no longer federally protected under the ESA, nor are they listed by the State of Florida. FFWCC officially adopted the de-listing and revised management plan as of April 9, 2008. However, the species is still afforded federal protection under the federal Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act (MBTA) and the state level by 68A-16.002.F.S. The Florida Fish and Wildlife Conservation bald eagle nest location data (2007) was reviewed. The research revealed that no bald eagle nests are located within the proposed project area, and the nearest active nest (Nest ID VO115) is approximately 1.25 miles northeast of the project limits. Bald eagles may utilize ponds or creeks adjacent to the project, or within the project limits for foraging, however, with the lack of documented nests in proximity to the project; it is likely that bald eagles would utilize other surface waters, closer to their nest sites, for foraging opportunities. It has been determined that the project will have **"no effect"** on the bald eagle.

Table 6. Determination of Anticipated Effect Summary for Federally Listed Wildlife

Species	Anticipated Effect Determination
Florida Scrub Jay	No effect
Eastern Indigo Snake	May affect, not likely to adversely affect
American Alligator	May affect, not likely to adversely affect
Wood Stork	No effect
Southern Bald Eagle	No effect

7.3.3 Federally Listed Floral Species

A review of agency databases and a field review of the project corridor indicate that there have been few reported occurrences of federally listed plant species in or immediately surrounding the portion of Volusia County that encompasses the proposed project. One federally listed species, the Rugel's pawpaw has been documented to have the potential to occur within the habitat types that comprise the project area. A protected plant field survey covering the area of proposed ROW widening and pond sites was conducted in conjunction with the wildlife survey by the project biologist. No federally listed plant species were identified within the proposed widening impact area or pond sites during the field investigations. Based on field work conducted thus far, no direct or indirect impacts to federally listed plant species are likely to occur and this project should have "**no effect"** on any of the federally listed plant species.

7.3.4 Essential Fish Habitat

The National Marine Fisheries Service has designated the portion of the Tomoka River within the project corridor as Essential Fish Habitat for white shrimp (*Litopenaeus setiferus*). Please refer to Appendix K for the Essential Fish Habitat Technical Memorandum.

7.3.5 State Listed Faunal Species

Mammals

Florida Black Bear (*Ursus americanus floridanus*)

The Florida black bear is a wide-ranging species listed as Threatened by the FFWCC. Preferred habitat of the black bear includes dense forest, both upland and wetland, but the bear is often encountered in other areas during its seasonal movements. The FFWCC GIS database shows bear habitat from the western project

terminus to the riparian areas on the east side of the Tomoka River. Individuals of this species are generally wide ranging and avoidant of human contact, although they can be drawn to human development if garbage or other sources of food are easily accessible. Based on the proposed project, there could be direct and indirect impacts to this species and/or its habitat.

When the construction permit for the existing bridge was issued by the SJRWMD in 1994 (Permit No. 4-127-23005-2), mitigation was provided by FDOT in the form of a "wetland creation area" along the south side of the bridge where plantings and subsequent monitoring was required. Therefore, in order to maintain the mitigation area and maintain existing access for wildlife passage underneath the bridge, the FDOT will commit to maintain the elevations underneath the bridge during the design/permitting phase of the project. Maintenance of existing profiles/elevations underneath the Tomoka River bridge is anticipated to provide continued connectivity for black bears and other wildlife within the river corridor (Please refer to Appendix L for the mitigation area detail sheets). Therefore, it has been determined that the project **"may affect but is not likely to adversely affect"** the Florida black bear.

Florida Mouse (*Podomys floridanus*)

This mouse, listed as a Species of Special Concern by the FFWCC, is one of the two mammal species that are endemic to Florida. It typically lives within gopher tortoise burrows in fire-maintained, xeric uplands. Sub-optimal habitat exists in the upland areas where gopher tortoise burrows are present. Suitable gopher tortoise habitat is located within the project area, but no Florida mice were observed during field surveys. If gopher tortoise burrows are impacted, then this species may be impacted as well. However, a combination of the relocation of gopher tortoises and their burrow commensals should offset any potential impacts to this species. Therefore, it has been determined that the project **"may affect but is not likely to adversely affect** the Florida mouse.

Sherman's Fox Squirrel (*Sciurus niger shermani*)

The Sherman's fox squirrel, listed by the FFWCC as a Species of Special Concern, is the largest of the three fox squirrel subspecies that occur in Florida. They have large ranges that can span over 80 acres. Optimum habitat for this subspecies is composed of longleaf pine-turkey oak sandhills, although they are also reported to occur in mesic forested areas, as well. Suitable habitat is present within the project area, although Sherman's fox squirrels were not observed during the site investigations for this project. While development within the project corridor currently serves as an impediment to the Sherman's fox squirrel, the widening of the road

would have direct and indirect impacts on fox squirrels through the taking of habitat and increasing habitat fragmentation. Regardless, the amount of potential habitat for this species impacted by the project will be minimal. Therefore, it has been determined that the project **"may affect but is not likely to adversely affect"** the Sherman's fox squirrel.

Reptiles

Florida Pine Snake (*Pituophis melanoleucus mugitus*)

This snake, listed as a Species of Special Concern by the FFWCC, is another tortoise burrow commensal species, utilizing both gopher tortoise burrows and also the tunnels of pocket gophers (*Geomys pinetis*) for feeding and shelter. Preferred habitat of the pine snake is xeric uplands, and to a lesser extent, flatwoods and other mesic uplands. Suitable habitat is present within the project. Both the pocket gophers and the pine snakes live nearly their whole lives underground and are difficult to observe directly. Earth work in suitable habitat may impact subterranean pine snakes. As a precaution, the construction contractor will be advised to the potential presence of the species and instructed to cease construction until the FFWCC is contacted for guidance if one is encountered. While SR 40 currently serves as an impediment to the Florida pine snake, the widening of the road would have direct and indirect impacts on pine snakes through the taking of habitat and increasing habitat fragmentation. However, with implementation of the aforementioned precautionary guidelines and the relocation of commensal organisms from gopher tortoise burrows, the impacts to this species should be minimal. Therefore, it has been determined that the project **"may affect but is not likely to adversely affect"** the Florida pine snake.

Gopher Tortoise (*Gopherus polyphemus*)

The occurrence of this species, listed as Threatened by the FFWCC, is a key factor in the determination of habitat suitability for certain other listed species because of the large number of other animals that use gopher tortoise burrows for one or more of their life requisites. While it is common to find gopher tortoise burrows in most types of upland communities, the preferred habitats include xeric uplands and disturbed, ruderal areas.

Suitable gopher tortoise habitat was observed within pond site areas. If impacts to these areas cannot be avoided, then relocation of any occupying tortoises and their commensals will be necessary. During permitting, all gopher tortoise habitat to be impacted will be documented and reported by the Design Project Manager and to the FDOT District Five Environmental Management Office. Not more than six months

before construction, the habitat will be systematically surveyed according to the current guidelines published by the FFWCC. If gopher tortoise burrows are found, they will be excavated and the occupying tortoise and commensal species will be relocated per FFWCC guidelines. Therefore, it has been determined that the project **"may affect but is not likely to adversely affect"** the gopher tortoise.

Amphibians

Gopher Frog (*Rana capito*)

The gopher frog, listed by the FFWCC as a Species of Special Concern (SSC), is a gopher tortoise burrow commensal organism, using tortoise burrows for shelter. Prime gopher frog habitat includes xeric uplands, especially longleaf pine-turkey oak associations with nearby (i.e. within one mile) seasonally flooded marshes or ponds. Field biological surveys have shown that suitable gopher tortoise habitat was located within some of the proposed pond sites along with corresponding habitats within the vicinity. The relocation of gopher tortoises and their burrow commensals is anticipated to offset any potential impacts to this species. Therfore, it has been determined that the project **"may affect but is not likely to adversely affect"** the gopher frog.

Avians

Florida Sandhill Crane (*Grus canadensis pratensis*)

This nonmigratory subspecies, listed as Threatened by the FFWCC, can often be seen foraging in improved pastures, open fields and along the roadside. During the winter months, it is distinguished from its migratory northern cousins by its smaller size and more delicate stature. Sandhill cranes nest in freshwater marshes and feed in adjacent fields and pastures. Some adequate nesting habitat is found within the freshwater marshes located in the project corridor, and foraging habitat was found within the project limits. Sandhill cranes were observed during surveying events. However, limited foraging and nesting habitat was identified within the project corridor. Therefore, it has been determined that the project **"may affect but is not likely to adversely affect"** the Florida sandhill crane.

Wading Birds

Wading bird rookeries were not observed and are not known to occur within or adjacent to the project corridor. Potential foraging habitat for limpkin (*Aramus guarana)*, little blue heron (*Egretta caerulea),* roseate spoonbill (*Ajaia ajaja),* white ibis (*Eudocimus albus*), reddish egret (*Egretta rufescens),* tri-colored heron (*Egretta tricolor*), and snowy egret (*Egretta thula*), all classified as Species of Special

Concern (SSC) by the FFWCC, occurs within the limits of the study area. No wetlands providing critical foraging or nesting habitat for these avian species will be impacted by the proposed project and indirect impacts to wading birds are not anticipated. Mitigation provided to offset impacts to wetlands within the basin will satisfy the loss of foraging habitat for wading birds. Therefore, the proposed project is not likely to adversely affect the wading bird population in the region.

Table 7. Determination of Anticipated Effect Summary for State Listed Wildlife

State Listed Wildlife Species	Anticipated Effect Determination
Florida Black Bear	May affect but is not likely to adversely affect
Florida Mouse	May affect but is not likely to adversely affect
Sherman's Fox Squirrel	May affect but is not likely to adversely affect
Florida Pine Snake	May affect but is not likely to adversely affect
Gopher Tortoise	May affect but is not likely to adversely affect
Gopher Frog	May affect but is not likely to adversely affect
Florida Sandhill Crane	May affect but is not likely to adversely affect
Limpkin	May affect but is not likely to adversely affect
Little Blue Heron	May affect but is not likely to adversely affect
Roseate Spoonbill	May affect but is not likely to adversely affect
White Ibis	May affect but is not likely to adversely affect
Reddish Egret	May affect but is not likely to adversely affect
Tri-Colored Heron	May affect but is not likely to adversely affect
Snowy Egret	May affect but is not likely to adversely affect

7.3.6 State Listed Floral Species

A review of available information revealed that 22 state-listed plant species have the potential to occur within habitats located within the project area. No state listed species were observed during the field survey of the project limits. Two species, cinnamon fern and royal fern, are listed as "Commercially Exploited" and were observed within several pond site alternatives.

Section 8.0
Environmental Permitting and Conceptual Mitigation

8.1 Regulatory Agencies and Required Permitting

As this project will likely impact wetlands regulated by the state and federal government, it will be necessary to submit applications for an Environmental Resource Permit (ERP) to the SJRWMD and a Section 404 dredge and fill permit to the ACOE. These permits address the proposed project's impact on wetlands, including filling of jurisdictional wetlands and the effect of wetland habitat loss on listed species, and help determine the mitigation necessary to offset the loss of wetlands resulting from the project.

ACOE and SJRWMD regulate wetland impacts within this project area. The FDEP, USFWS, and the FWC review and comment on wetland permit applications. It is currently anticipated that the following permits will be required for this project:

Permit	Issuing Agency
Individual Environmental Resource Permit (assuming permanent wetland impacts greater than 1.0 acre)	SJRWMD
Section 404 Individual Dredge and Fill Permit (assuming wetland fill impacts greater than 0.5 acre)	ACOE
National Pollutant Discharge Elimination System Permit	FDEP

The FWC and the USFWS will consult with and provide comments to the SJRWMD and ACOE on the potential impacts of the proposed wetland impacts on state and federal listed species. Their comments and/or objections will be noted in the sufficiency response from the ACOE. The State Historic Preservation Office will comment to SJRWMD on the presence of any historical sites that might be within the project limits.

SJRWMD

The complexity of the permitting process depends greatly on the degree of impact to jurisdictional areas. The SJRWMD requires an ERP when construction of any projects results in the creation of a stormwater management system, impacts waters

of the State, or impacts isolated wetlands. An Individual ERP will most likely be required with mitigation since the project's wetland impacts are likely to be greater than one acre. The Tomoka River is listed by the State as an Outstanding Florida Water. Please refer to Appendix I for additional permitting requirements that are applied to projects within the Tomoka River Basin.

ACOE

An Individual Dredge and Fill permit will be required if wetland impacts are greater than 0.5 acre. An Individual permit requires compliance with CWA § 404(b)(1) guidelines, including verification that all impacts have first been avoided to the greatest extent practicable and that all unavoidable impacts have been mitigated in the form of wetlands creation, restoration, and/or enhancement. However, current direction from the ACOE has indicated that the use of mitigation banks is the preferred method of mitigation.

FDEP

Any project which results in the clearing of one or more acres of land will require a National Pollutant Discharge Elimination System (NPDES) permit from the FDEP, pursuant to 40 CFR parts 122 and 124. The NPDES stormwater program regulates point-source discharges of stormwater into surface waters of the State of Florida from certain municipal, industrial, and construction activities. This includes roadway construction activities and construction of stormwater management facilities. These permits typically utilize Best Management Practices to ensure compliance. Before proceeding with construction, a Notice of Intent (NOI) must be filed with the FDEP.

8.2 Conceptual Mitigation

Mitigation policies have been established by the ACOE, FDEP, and the SJRWMD. Options for mitigating the loss of wetlands include Senate Bill (§373.4137, F.S) or purchasing credits from a permitted mitigation bank whose service area includes the proposed project corridor.

Senate Bill

Wetland impacts which result from the construction of the proposed project can be off-set pursuant to §373.4137, F.S. to satisfy all mitigation requirements of Part IV. Chapter 373, F.S., and 33 U.S.C.s 1344. Under §373.4137, F.S., mitigation for FDOT wetland impacts will be implemented by the appropriate water management district where the impacts occur. Each water management district will develop a regional wetland mitigation plan on an annual basis to be approved by the Florida

State Legislature, which addresses the estimated mitigation needs of the FDOT. The water management district will then provide wetland mitigation for specific FDOT project impacts through a corresponding mitigation project within the overall approved regional mitigation plan. The FDOT will provide funding to the water management district for the implementation of such mitigation projects.

The 2012/2013 Senate Bill funding for mitigation is $104,814 per acre of impact. If Senate Bill is utilized to off-set wetland impacts resulting from the construction of the proposed project, the final mitigation cost through Senate Bill will be determined once the final wetland impacts are determined. Based on the findings of this study, costs associated with wetland mitigation using Senate Bill would total approximately $127,873.

Mitigation Bank

The use of a mitigation bank to off-set wetland impacts associated with a project requires the purchase of credits from a permitted mitigation bank. The bank's Mitigation Service Area (MSA) must cover the area in which the anticipated impacts will occur. At the time of this report, there are two mitigation banks that cover all or part of the project corridor: Lake Swamp Mitigation Bank, and Farmton Mitigation Bank. Lake Swamp Mitigation Bank did not have forested credits available for purchase at the time of this report. Therefore, it was not considered a viable mitigation option for this project due to the fact that forested credits are not available from this bank.

Farmton Mitigation Bank was permitting using ratios under the SJRWMD and WRAP under the ACOE. Typically, the SJRWMD requires mitigation for impacts to forested systems at a ratio of 2:1. At the time of this report, forested wetland credits at Farmton Mitigation Bank were priced at $50,000 per credit. Based on the findings of this study, costs associated with wetland mitigation using Farmton Mitigation Bank would total approximately $122,000.

Section 9.0
Coordination

Comments were received through the Efficient Transportation Decision Making (ETDM) process in December of 2010. A copy of the ETDM Summary Report has been included in Appendix M.

Five agencies commented on the potential impacts to wetlands. These agencies included the USFWS, the US Environmental Protection Agency, the ACOE, the FDEP, and the NMFS. All the agency reviewers assigned the project a Moderate degree of effect for wetland resources. All the commenting agencies identified wetlands associated with the Tomoka River, an Outstanding Florida Water, as resources with a high level of importance. The NMFS indicated that wetlands associated with the Tomoka River are designated as EFH, and that an EFH Technical Memorandum should be completed. All the commenting agencies stated that an alternatives analysis should be completed and included in the PD&E study in order to ensure that impacts to wetlands are avoided or otherwise minimized to the greatest extent practicable.

The FWC and the USFWS commented on the potential impacts to wildlife and habitat. Both agencies assigned a Moderate degree of effect for wildlife and habitat. The FWC requested that the improvements to the Tomoka River bridges include considerations of reduce impacts to wetlands, floodplain, and wildlife habitat. Both agencies commented that field assessments and surveys of the wildlife and habitat resources within the project corridor be completed during the PD&E study. Measures to minimize direct and indirect impacts to the project, including alignment alternatives and stormwater management facilities should be evaluated.

Section 10.0
Recommendations and Commitments

10.1 Wetland Commitments

This wetland evaluation was conducted for the proposed project in compliance with Executive Order 11990, Protection of Wetlands, 1997, to assure that every practicable effort be made to avoid short and long term impacts to wetlands. During the study, nine wetlands were identified within the project corridor. All the wetlands assessed during the study are currently impacted by the existing roadway.

The results of this study conclude that, for the proposed roadway improvements, there are no practicable alternatives to construction within wetlands. Further, all practicable measures to avoid wetlands have been incorporated into the project alignment recommendations. Additional minimization of wetland impacts will be implemented, where possible, during the project design phase. Finally, all unavoidable impacts to wetlands will be adequately mitigated during project permitting through the SJRWMD and the ACOE.

For the duration of this project, the following measures will be taken to address wetland impacts:

1. Profiles and elevations within the mitigation area and areas underneath the existing SR 40 bridges over the Tomoka River will be maintained according to the permitted conditions as depicted in the as-built drawings included in Appendix L.

10.2 Wildlife Commitments

The project corridor was surveyed for current evidence of species listed as Endangered, Threatened, or of Special Concern by the USFWS and/or the FFWCC. Based on current wildlife occurrence data, and observations made during field reviews of the project corridor, it was determined that the construction of this project is not likely to adversely affect any State or Federally listed species. FDOT makes the following commitments to further limit the potential effects on protected wildlife:

1. Prior to project construction, all potential gopher tortoise habitat that could be affected by the project will be systematically surveyed according to the current guidelines published by the FFWCC. For burrows which cannot be avoided, a permit will be obtained from the FFWCC for relocation of gopher tortoises and commensals, and relocation will be performed at a time as close as practicable to the start to construction activities at the site of the burrows.

2. During the permitting phase of the project, the FDOT will utilize the current Eastern Indigo Snake Programmatic Effect Determination Key as directed by the USACOE and the USFWS. The current effect determination key, that is in use at the time of this report, has been included in Appendix J.

3. During the construction phases of the project, the FDOT will implement the USFWS *Standard Protection Measures for the Eastern Indigo Snake*, which specify education of the construction contractor concerning avoidance of indigo snakes and post-construction reporting.

Section 11.0
References

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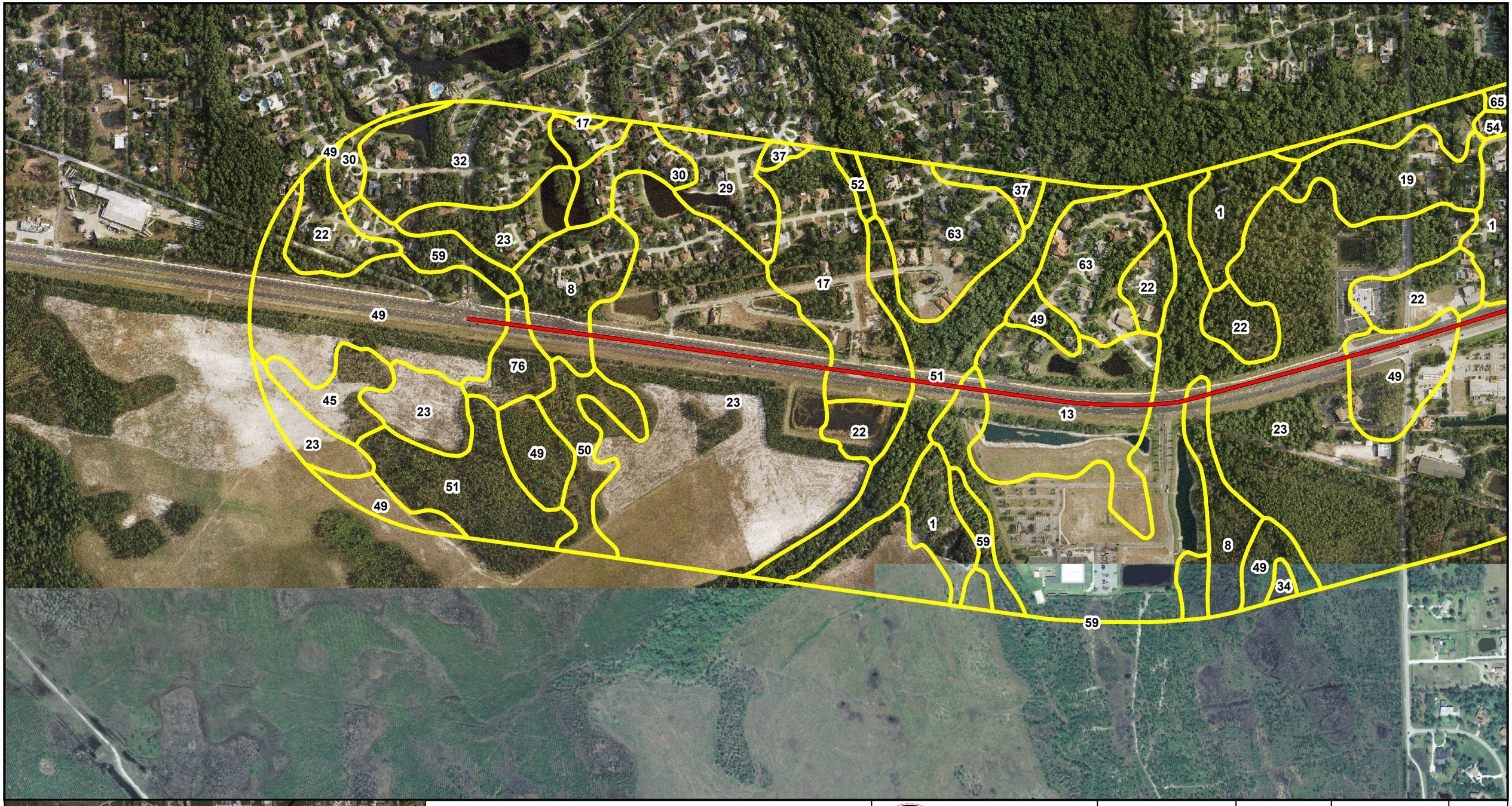
Appendix A

| Soils Maps



Legend

- Project Limits
- NRCS Soils

Project Location

Section: 25 & 26
Township: 14 South
Range: 31 East

N

1:6,000

1 inch = 500 feet

0 250 500 Feet

FL Dept. of Transportation
719 South Woodland Blvd.
Deland, Florida 32720

Inwood consulting engineers
3000 Dovera Drive, Oviedo, FL 32765

Figure 2A

Soils Map

Name:	Date Saved:	Author:
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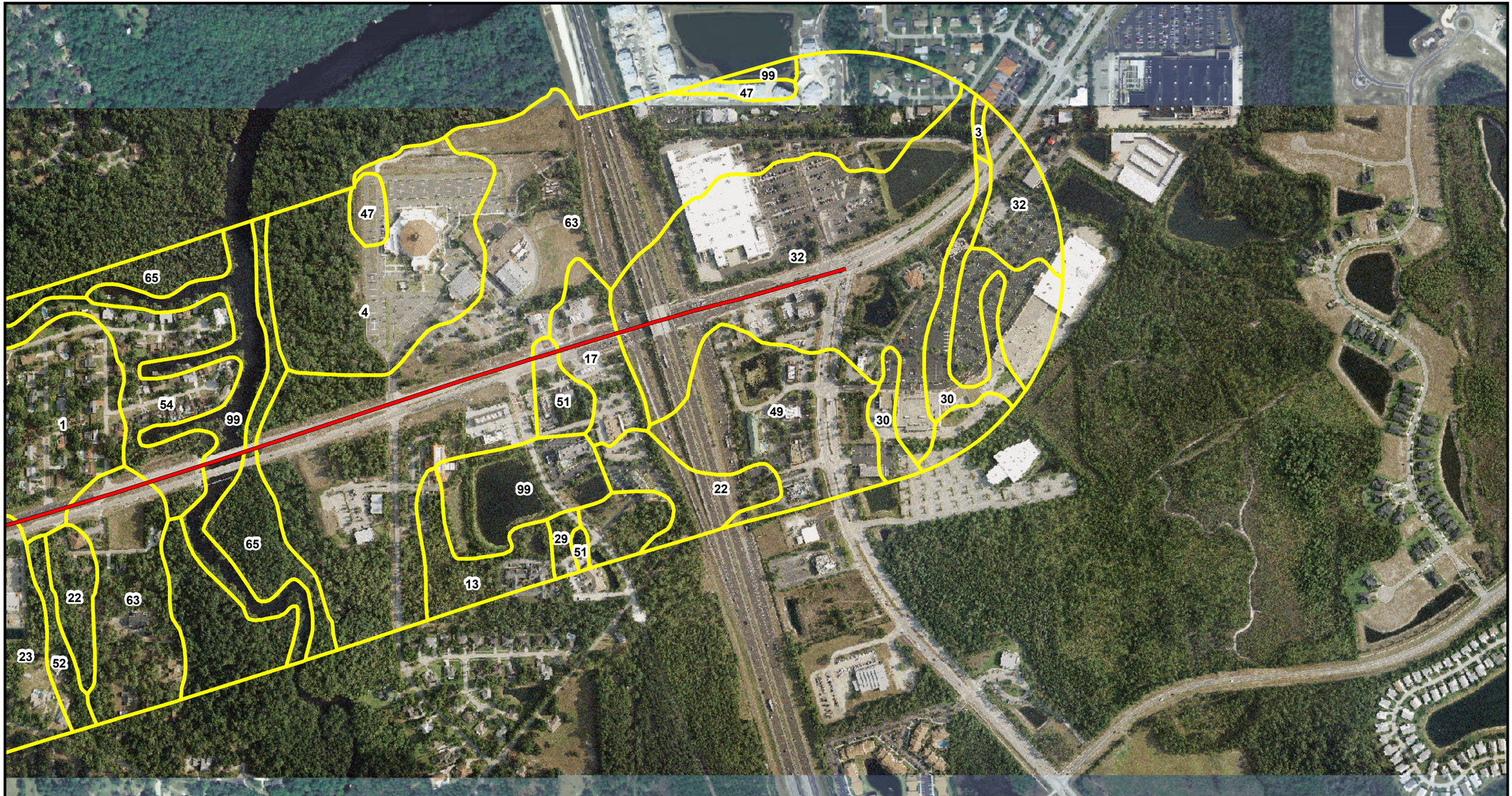
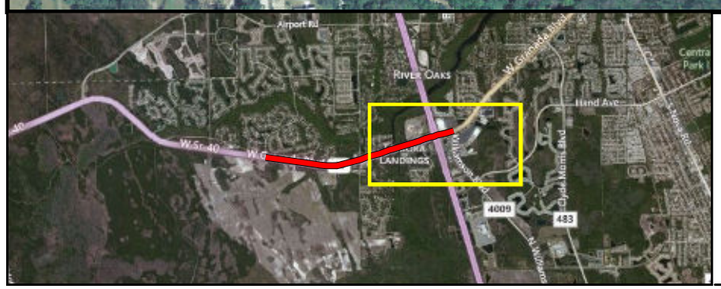
Date of Photography:

2011





Legend

- Project Limits
- NRCS Soils

Project Location

Section: 25 & 26
Township: 14 South
Range: 31 East

N

1:6,000

1 inch = 500 feet

0 250 500 Feet

FL Dept. of Transportation
719 South Woodland Blvd.
Deland, Florida 32720

Inwood consulting engineers
3000 Dovera Drive, Oviedo, FL 32765

Figure 2B

Soils Map

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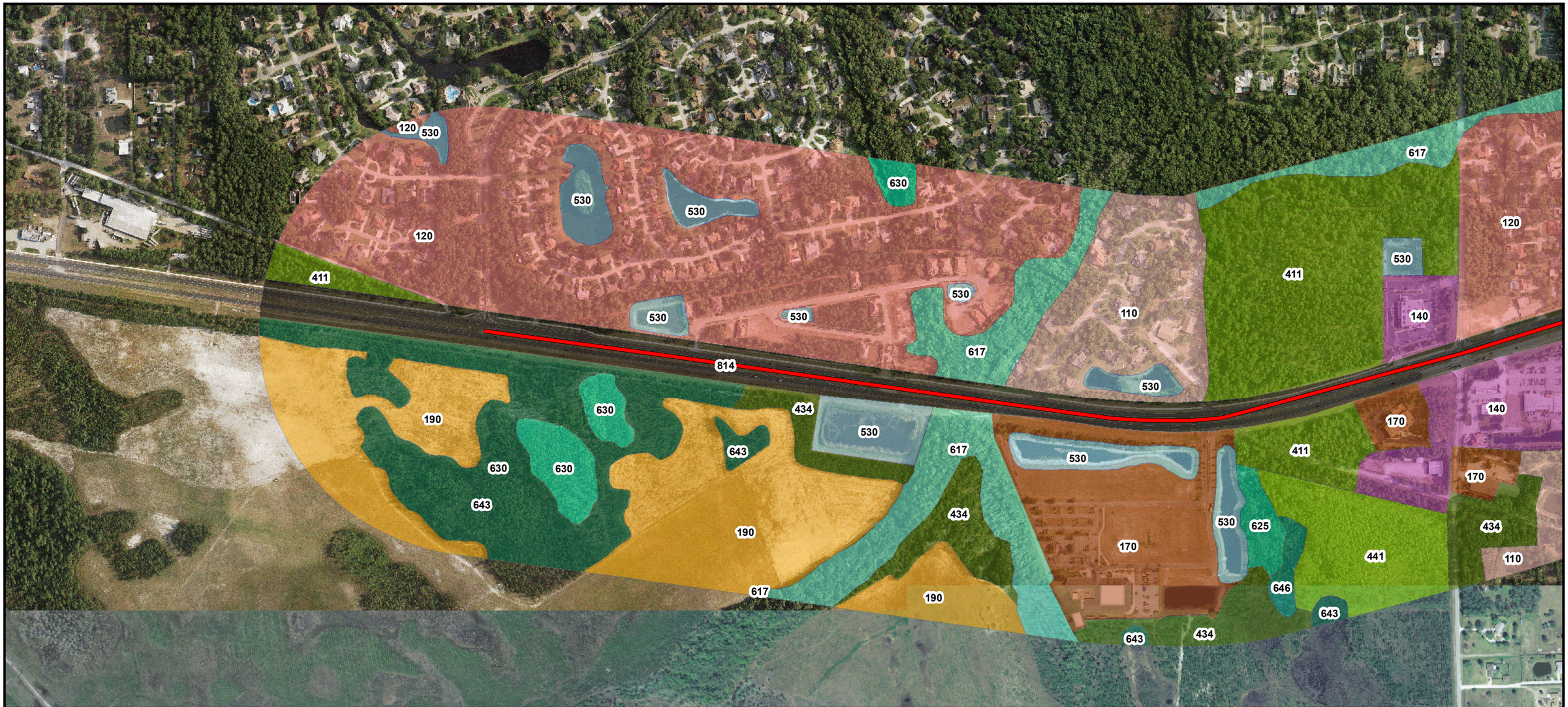
Date of Photography:

2011

Appendix B

Land Use/Land Cover Maps



Level III FLUCFCS

Urban and Built-Up

- 110, Low Density Residential
- 120, Med. Density Residential
- 130, High Density Residential
- 140, Commercial and Services
- 170, Institutional
- 190, Open Land

Upland Forests

- 411, Pine Flatwoods
- 441, Coniferous Plantation
- 434, Hardwood-Conifer Mixed Forest

Water

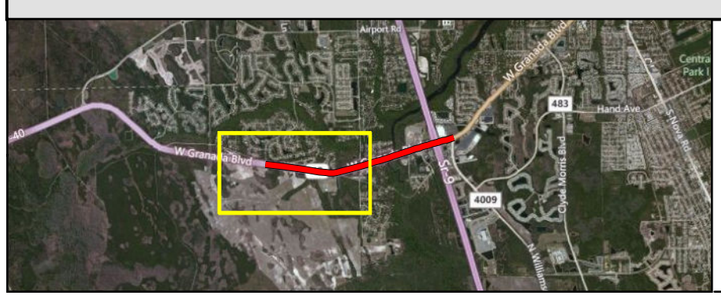
- 510, Streams and Waterways
- 530, Reservoir

Wetlands

- 617, Mixed Wetland Hardwoods
- 625, Hydric Pine Flatwoods
- 630, Mixed Wetland Forest
- 641, Freshwater Marsh
- 643, Wet Prairie
- 646, Treeless Hydric Savanna

Transportation

- 814, Roads and Highways



Legend

Project Limits

Project Location

Section: 25 & 26
Township: 14 South
Range: 31 East

N

1:6,000

1 inch = 500 feet

0 250 500 Feet

FL Dept. of Transportation
719 South Woodland Blvd.
Deland, Florida 32720

Inwood consulting engineers
3000 Dovera Drive, Oviedo, FL 32765

Figure 3A

FLUCFCS Map

Name:	Date Saved:	Author:
Fig3A_FLUCFCS_Map	5/18/2012 8:07:30 AM	JMH

Date of Photography:

2009 and 2011

Level III FLUCFCS

Urban and Built-Up

- 110, Low Density Residential
- 120, Med. Density Residential
- 130, High Density Residential
- 140, Commercial and Services
- 170, Institutional
- 190, Open Land

Upland Forests

- 411, Pine Flatwoods
- 441, Coniferous Plantation
- 434, Hardwood-Conifer Mixed Forest

Water

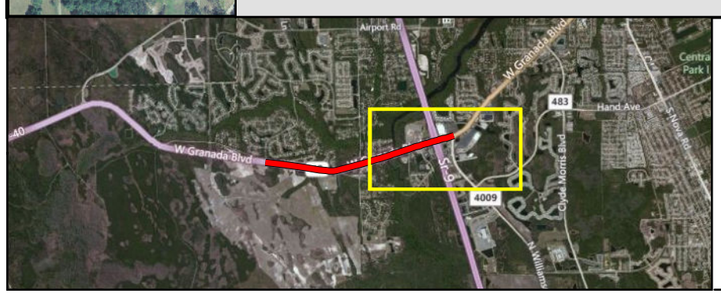
- 510, Streams and Waterways
- 530, Reservoir

Wetlands

- 617, Mixed Wetland Hardwoods
- 625, Hydric Pine Flatwoods
- 630, Mixed Wetland Forest
- 641, Freshwater Marsh
- 643, Wet Prairie
- 646, Treeless Hydric Savanna

Transportation

- 814, Roads and Highways



Legend

Project Limits

Project Location

Section: 25 & 26
Township: 14 South
Range: 31 East

N

1:6,000

1 inch = 500 feet

0 250 500 Feet

FL Dept. of Transportation
719 South Woodland Blvd.
Deland, Florida 32720

Inwood consulting engineers
3000 Dovera Drive, Oviedo, FL 32765

Figure 3B

FLUCFCS Map

Name:	Date Saved:	Author:
Fig3B_FLUCFCS_Map	5/14/2012 3:56:17 PM	JMH

Date of Photography:

2009 and 2011

Appendix C

Wetland Maps

Wetland 1

Wetland 2

Wetland 3

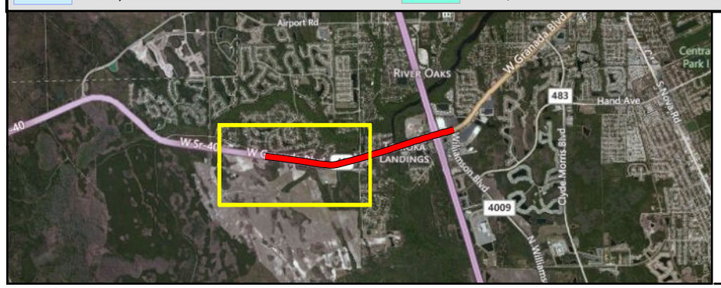
Wetlands and Surface Waters

Surface Waters

- 510, Streams and Waterways
- 530, Reservoir

Wetlands

- 617, Mixed Wetland Hardwoods
- 625, Hydric Pine Flatwoods
- 630, Mixed Wetland Forest
- 641, Freshwater Marsh
- 643, Wet Prairie
- 646, Treeless Hydric Savanna



Legend

- Project Limits
- Project Corridor

Project Location

Section: 25 & 26
Township: 14 South
Range: 31 East

N

1:6,000

1 inch = 500 feet

0 250 500 Feet

FL Dept. of Transportation
719 South Woodland Blvd.
Deland, Florida 32720

Inwood consulting engineers
3000 Dovera Drive, Oviedo, FL 32765

Figure 4A

Wetlands Map

Name:	Date Saved:	Author:
Fig4A_Wetlands_Map	7/17/2012 9:54:04 AM	JMH

Date of Photography:

2009 and 2011

Wetland 9

Wetland 6

Wetland 8

Wetland 7

Wetland 5

Wetland 4

Wetlands and Surface Waters

Surface Waters

- 510, Streams and Waterways
- 530, Reservoir

Wetlands

- 617, Mixed Wetland Hardwoods
- 625, Hydric Pine Flatwoods
- 630, Mixed Wetland Forest
- 641, Freshwater Marsh
- 643, Wet Prairie
- 646, Treeless Hydric Savanna

Legend

- Project Limits
- Project Corridor
- Tomoka River RWHS

Project Location

Section: 25 & 26
Township: 14 South
Range: 31 East

N

1:6,000

1 inch = 500 feet

0 250 500 Feet

FL Dept. of Transportation
719 South Woodland Blvd.
Deland, Florida 32720

Inwood consulting engineers
3000 Dovera Drive, Oviedo, FL 32765

Figure 4B

Wetlands Map

Name:	Date Saved:	Author:
Fig4B_Wetlands_Map	6/13/2012 9:07:01 AM	JMH

Date of Photography:

2009 and 2011

Appendix D

Pond Location Maps

Pond 2B-3

Pond 2B-3

Pond 1

Pond 1-2

Pond 2A

Pond 2B-1

Legend

- Project Limits
- Project Corridor
- Pond Alternative

Project Location

Section: 25 & 26
Township: 14 South
Range: 31 East

N

1:6,000

1 inch = 500 feet

0 250 500 Feet

FL Dept. of Transportation

719 South Woodland Blvd.
Deland, Florida 32720

Inwood consulting engineers

3000 Dovera Drive, Oviedo, FL 32765

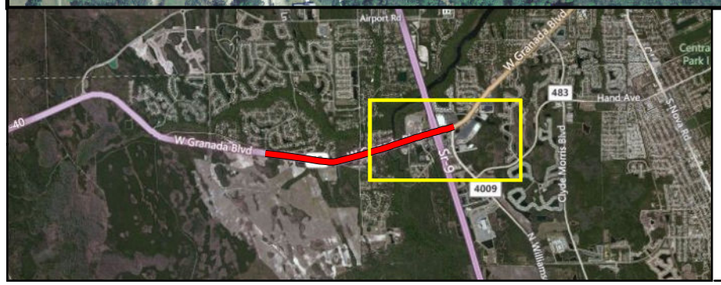
Figure 5A

Pond Location Map

Name:	Date Saved:	Author:
Fig5A_Ponds_Map	6/12/2012 2:06:09 PM	JMH

Date of Photography:

2009 and 2011



Legend

- Project Limits
- Pond Alternative
- Project Corridor

Project Location

Section: 25 & 26
Township: 14 South
Range: 31 East

N

1:6,000

1 inch = 500 feet

0 250 500 Feet

FL Dept. of Transportation
719 South Woodland Blvd.
Deland, Florida 32720

Inwood consulting engineers
3000 Dovera Drive, Oviedo, FL 32765

Figure 5B

Pond Location Map

Name:	Date Saved:	Author:
Fig5B_Ponds_Map	7/2/2012 9:18:11 AM	JMH

Date of Photography:

2009 and 2011

Appendix E

Photographs

Appendix E
Photos

Photo 1: Representative photo of Wetland 1

Photo 2: Representative photo of wetland groundcover observed in Wetland 1

Appendix E
Photos

Photo 3: Representative photo of cleared uplands south of Wetland 1

Photo 4: Representative photo of existing FDOT pond (Pond 1)

Appendix E
Photos

Photo 5: Representative photo of western edge of Wetland 2 abutting Pond 1-2

Photo 6: Representative photo of cleared uplands in the area of Pond 1-2

Appendix E
Photos

Photo 7: Representative photo of Wetland 2

Photo 8: Representative photo of Wetland 2

Appendix E
Photos

Photo 9: Representative photo of Wetland 3

Photo 10: Representative photo of Wetland 3

Appendix E
Photos

Photo 11: Representative photo of gopher tortoise habitat observed in Ponds 2A and 2B-1

Photo 12: Representative photo of cleared uplands in the area of Ponds 2A and 2B-1

Appendix E
Photos

Photo 13: Representative photo of upland forest in the area Ponds 2B-2 and 2B-3

Photo 14: Representative photo of upland forest in the area Ponds 2B-2 and 2B-3

Appendix E
Photos

Photo 15: Representative photo of Wetland 4

Photo 16: Representative photo of Wetland 4

Appendix E
Photos

Photo 17: Representative photo of the western portion of Pond 3

Photo 18: Representative photo of the existing FDOT in the area of Pond 3 and 3A

Appendix E
Photos

Photo 19: Representative photo of Pond 3B

Photo 20: Representative photo of the existing FDOT in the area of Pond 3 and 3A

Appendix E
Photos

Photo 21: Representative photo of Wetland 5

Photo 22: Representative photo of Wetland 5

Appendix E
Photos

Photo 23: Representative photo of the Tomoka River and Wetland 8 south of SR 40

Photo 24: Representative photo of the Tomoka River and Wetland 8 south of SR 40

Appendix E
Photos

Photo 25: Representative photo Wetland 6

Photo 26: Representative photo Wetland 6

Appendix E
Photos

Photo 27: Representative photo of the Tomoka River north of SR 40

Photo 28: Representative photo of the Tomoka River north of SR 40

Appendix E
Photos

Photo 29: Representative photo of Wetland 9

Photo 30: Representative photo of Wetland 9

Appendix E
Photos

Photo 31: Representative photo of Pond 5

Photo 32: Conservation area abutting the northern boundary of Pond 5

Appendix F

Preferred Typical Section Package and Preferred Alternative Concept Plans

PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 428947-1-22-01 COUNTY (SECTION) VOLUSIA

PROJECT DESCRIPTION SR 40 PROJECT DEVELOPMENT & ENVIRONMENTAL STUDY

PROJECT CONTROLS

FUNCTIONAL CLASSIFICATION

(_) RURAL

(X) URBAN

(_) FREEWAY/EXPWY. (_) MAJOR COLL.

(X) PRINCIPAL ART. (_) MINOR COLL.

(_) MINOR ART. (_) LOCAL

HIGHWAY SYSTEM

Yes	No	
(_)	(_)	NATIONAL HIGHWAY SYSTEM
(X)	(_)	FLORIDA INTRASTATE HIGHWAY SYSTEM
(X)	(_)	STRATEGIC INTERMODAL SYSTEM
(_)	(_)	STATE HIGHWAY SYSTEM
(_)	(_)	OFF STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

(_) 1 - FREEWAY

(_) 2 - RESTRICTIVE w/Service Roads

(_) 3 - RESTRICTIVE w/660 ft. Connection Spacing

(_) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing

(X) 5 - RESTRICTIVE w/440 ft. Connection Spacing

(_) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing

(_) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION

(_) RRR INTERSTATE / FREEWAY

(_) RRR NON-INTERSTATE / FREEWAY

(_) TDLC / NEW CONSTRUCTION / RECONSTRUCTION

(_) TDLC / RRR

(_) MANUAL OF UNIFORM MINIMUM STANDARDS (FLORIDA GREENBOOK) (OFF-STATE HIGHWAY SYSTEM ONLY)

TRAFFIC

	YEAR	AADT
CURRENT	2011	11,800*/23,800**
OPENING	2015	18,200*/30,500**
DESIGN	2035	50,200*/63,900**

		DISTRIBUTION	
DESIGN SPEED	60*/45**	K	9.5%
POSTED SPEED	50*/45**	D	62.0%
* = WEST SEGMENT		T_{24}	10.5%
** = EAST SEGMENT			

DESIGN SPEED APPROVALS

_____ _____

DISTRICT DESIGN ENGINEER DATE

_____ _____

DISTRICT TRAFFIC OPERATIONS ENGINEER DATE

LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:

BORDER WIDTH EXCEPTION FOR RURAL TYPICAL SECTION. 34 FEET PROVIDED BOTH SIDES. 40 FEET REQUIRED.

LIST MAJOR STRUCTURES LOCATION/DESCRIPTION - REQUIRING INDEPENDENT STRUCTURE DESIGN:

WIDEN EXISTING TOMOKA RIVER BRIDGE STA. 1363+44.37 TO STA. 1367+25.32
NEW TOMOKA RIVER PEDESTRIAN OVERPASS 1363+44.37 TO STA. 1367+25.32
EXISTING I-95 OVERPASS TO REMAIN APPROX. STA. 1389+83.00 TO STA. 1391+18.00

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:

AT&T FLORIDA
AT&T CORPORATION
BRIGHT HOUSE NETWORKS
CITY OF ORMOND BEACH WATER
FLORIDA POWER & LIGHT DISTRIBUTION
SUNESYS

LIST OTHER INFORMATION PERTINENT TO DESIGN OF PROJECT:

DESIGN SPEED FOR RURAL TYPICAL SECTION BASED ON EXISTING 60 MPH DESIGN SPEED OF ROADWAY.
TURN LANES AND OTHER NEW FEATURES DESIGNED AT 50 MPH DESIGN SPEED.

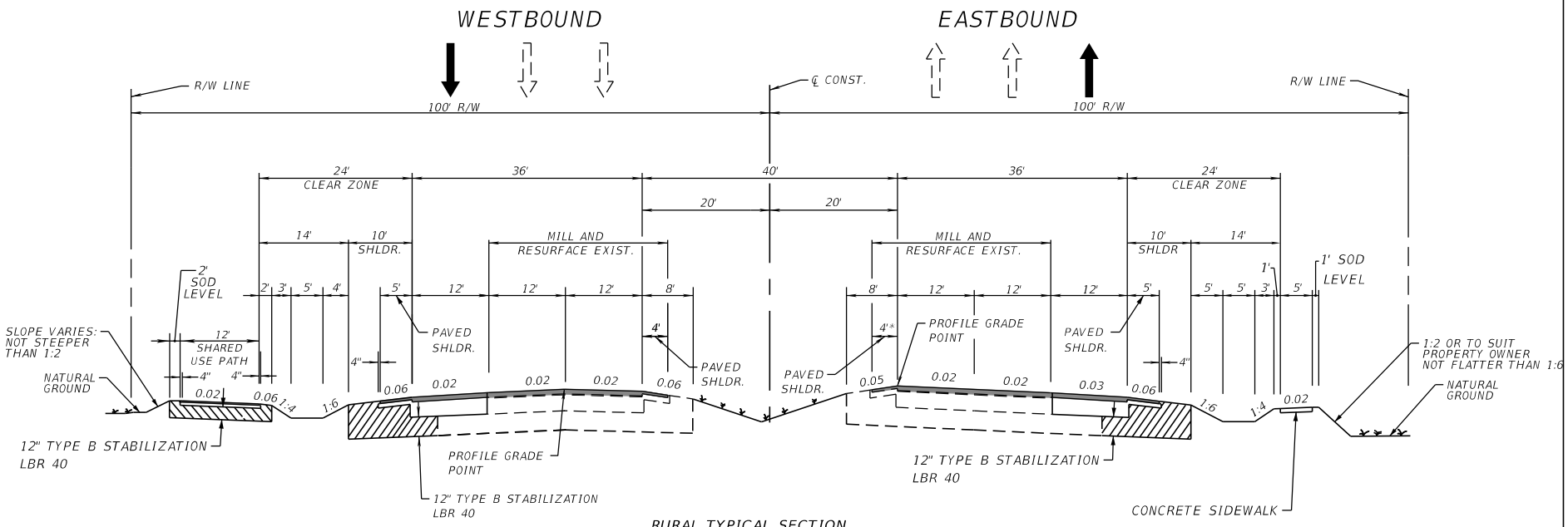
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 428947-1-22-01 FEDERAL AID PROJECT NO. _____ COUNTY NAME VOLUSIA

SECTION NO. _____ ROAD DESIGNATION SR 40 (GRANADA AVENUE) LIMITS/MILEPOST BREAKAWAY TRAIL TO TYMBER CREEK RD

PROJECT DESCRIPTION SR 40 PROJECT DEVELOPMENT & ENVIRONMENTAL STUDY

PROPOSED ROADWAY TYPICAL SECTION



RURAL TYPICAL SECTION
DESIGN SPEED = 60 MPH
POSTED SPEED = 50 MPH
STA. 1281+60.00 TO STA. 1325+86.29

* 4' PAVED SHOULDER FROM STA 1320+59.00 TO STA 1342+65.00 ONLY

APPROVED BY: JOHN R. FREEMAN, JR., P.E.	FDOT CONCURRENCE	FHWA CONCURRENCE
Engineer Of Record Signature and Date	Printed Name _____ FDOT District Design Engineer — Date	Printed Name _____ FHWA Transportation Engineer — Date

jbbansen 10/10/2012 8:33:59 AM H:\dgn_projects\SR40\roadway\typsrd_SR40_typicals.dgn

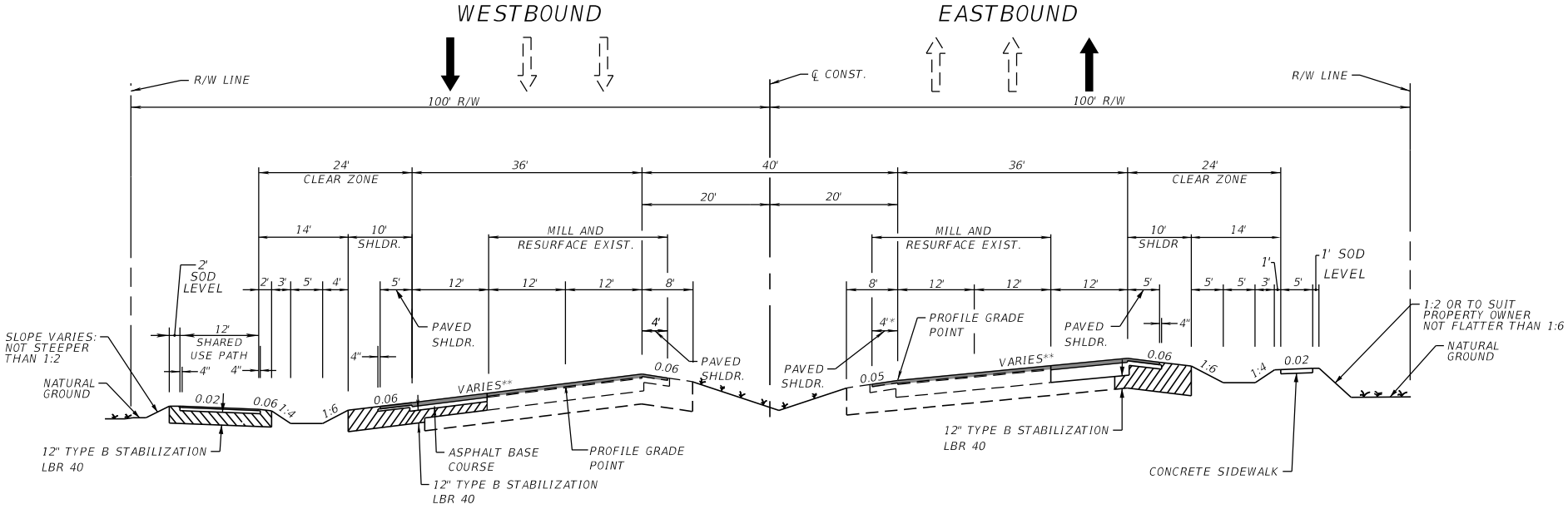
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 428947-1-22-01 FEDERAL AID PROJECT NO. _____ COUNTY NAME VOLUSIA

SECTION NO. _____ ROAD DESIGNATION SR 40 (GRANADA AVENUE) LIMITS/MILEPOST BREAKAWAY TRAIL TO TYMBER CREEK RD

PROJECT DESCRIPTION SR 40 PROJECT DEVELOPMENT & ENVIRONMENTAL STUDY

PROPOSED ROADWAY TYPICAL SECTION



RURAL TYPICAL SECTION
DESIGN SPEED = 60 MPH
POSTED SPEED = 50 MPH
STA. 1325+86.29 TO STA. 1340+25.55

* 4' PAVED SHOULDER FROM STA 1320+59.00 TO STA 1342+65.00 ONLY

** CROSS SLOPE VARIES DEPENDING UPON SUPEREVEVATION RATE. MATCH EXISTING CROSS SLOPE.

APPROVED BY: JOHN R. FREEMAN, JR., P.E.	FDOT CONCURRENCE	FHWA CONCURRENCE
Engineer Of Record Signature and Date	Printed Name _____ Date FDOT District Design Engineer	Printed Name _____ Date FHWA Transportation Engineer

jbbansen 10/10/2012 8:34:34 AM H:\dgn_projects\SR40\roadway\typsrd_SR40_typicals.dgn

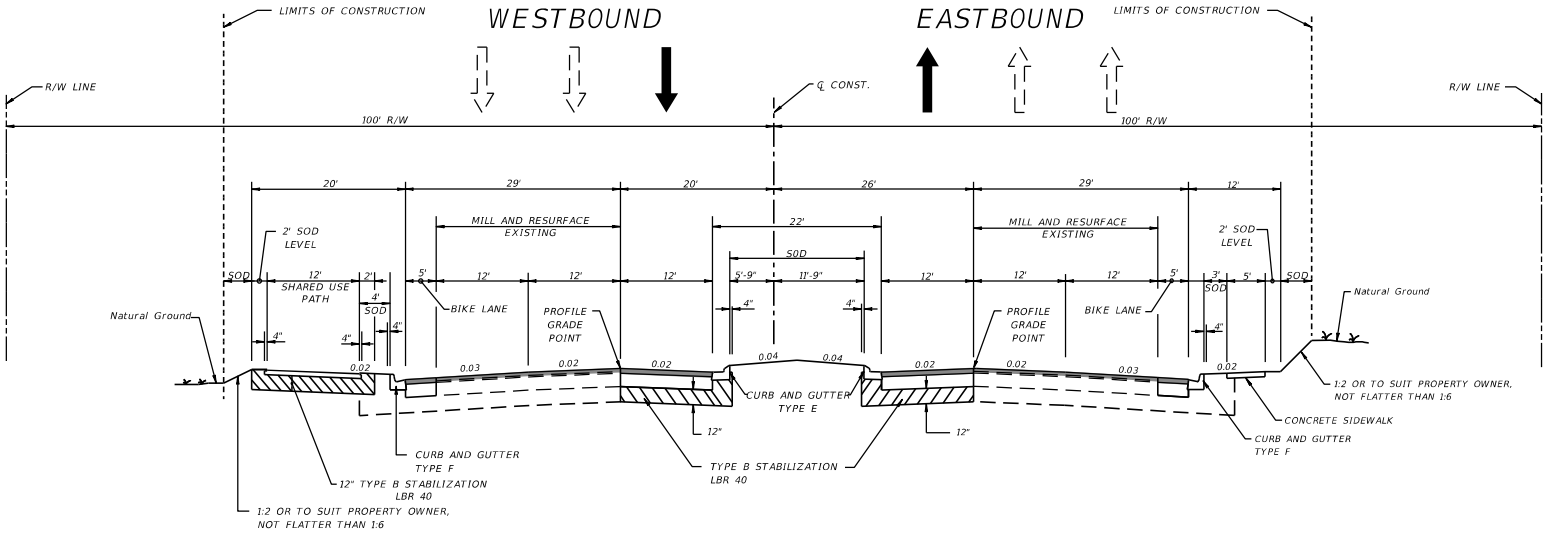
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 428947-1-22-01 FEDERAL AID PROJECT NO. _____ COUNTY NAME VOLUSIA

SECTION NO. _____ ROAD DESIGNATION SR 40 (GRANADA AVENUE) LIMITS/MILEPOST TYMBER CREEK RD TO INTERCHANGE BLVD

PROJECT DESCRIPTION SR 40 PROJECT DEVELOPMENT & ENVIRONMENTAL STUDY

PROPOSED ROADWAY TYPICAL SECTION



URBAN TYPICAL SECTION
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH
STA. 1340+25.55 TO STA. 1409+00.00

APPROVED BY: JOHN R. FREEMAN, JR., P.E.	FDOT CONCURRENCE	FHWA CONCURRENCE
Engineer Of Record Signature and Date	Printed Name _____ FDOT District Design Engineer — Date	Printed Name _____ FHWA Transportation Engineer — Date

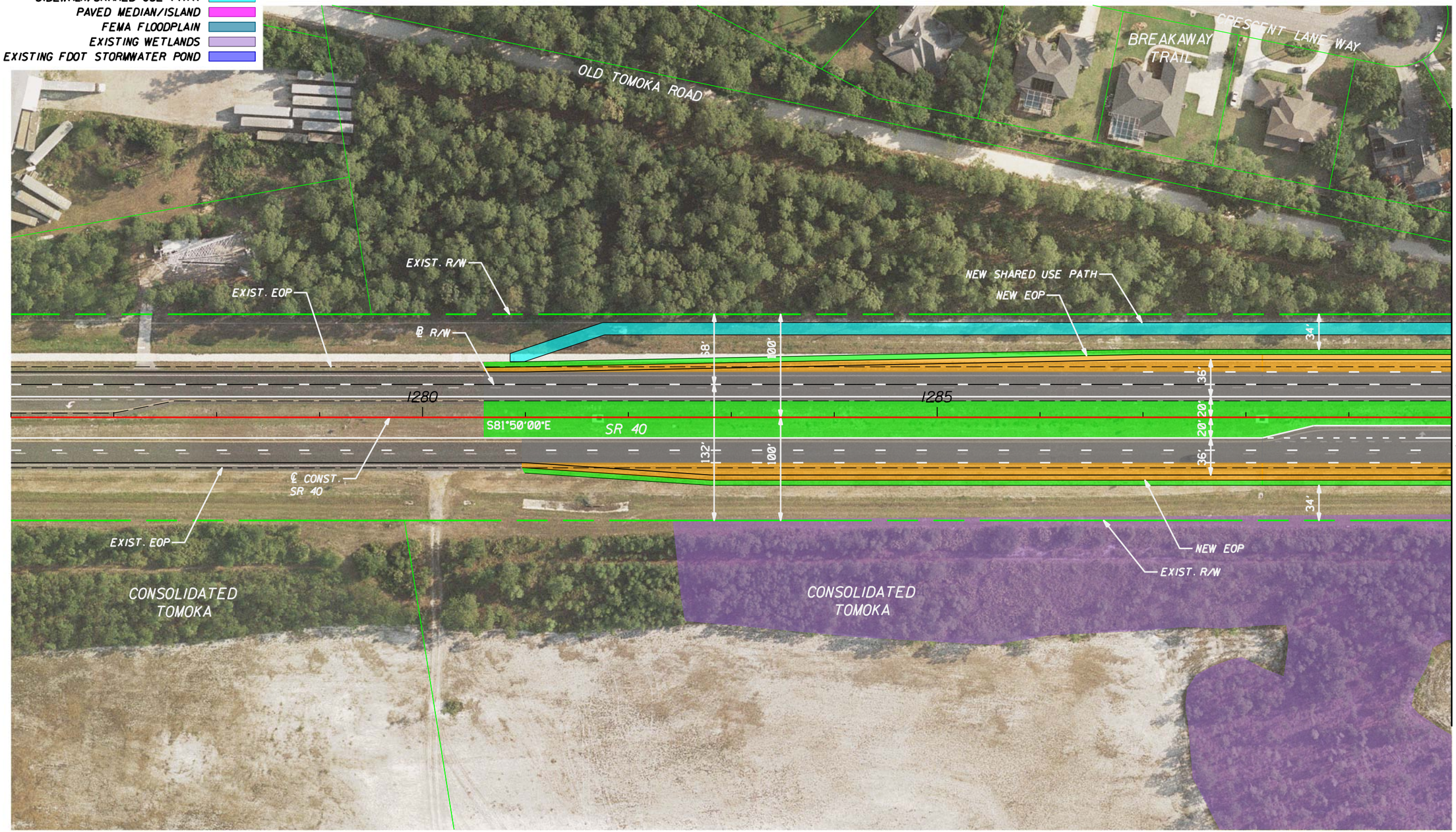
jbbansen 10/10/2012 8:35:05 AM H:\dgn_projects\SR40\roadway\typsrd_SR40_typicals.dgn

PRELIMINARY PLANS NOT FOR CONSTRUCTION

LEGEND
- NEW PAVEMENT
- MILL AND RESURFACE EXISTING PAVEMENT
- TURF MEDIAN/SHOULDER
- SIDEWALK/SHARED USE PATH
- PAVED MEDIAN/ISLAND
- FEMA FLOODPLAIN
- EXISTING WETLANDS
- EXISTING FDOT STORMWATER POND

0 25 100
Feet

N



ALTERNATIVE B
TYPICAL SECTION 1 (WEST)
TO TYPICAL SECTION 4 (EAST)

PRELIMINARY PLANS NOT FOR CONSTRUCTION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Engineer of Record: JOHN R. FREEMAN, JR., P.E., PTOE
P.E. License No.: 25730
KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
225 E. Robinson St, Suite 450, ORLANDO FL 32801
CERTIFICATE OF AUTHORIZATION NO. 007524

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
40	VOLUSIA	428947-1-22-01

SR 40 PD&E Study
Sta 1276+00 to Sta 1290+00

SHEET NO. 1

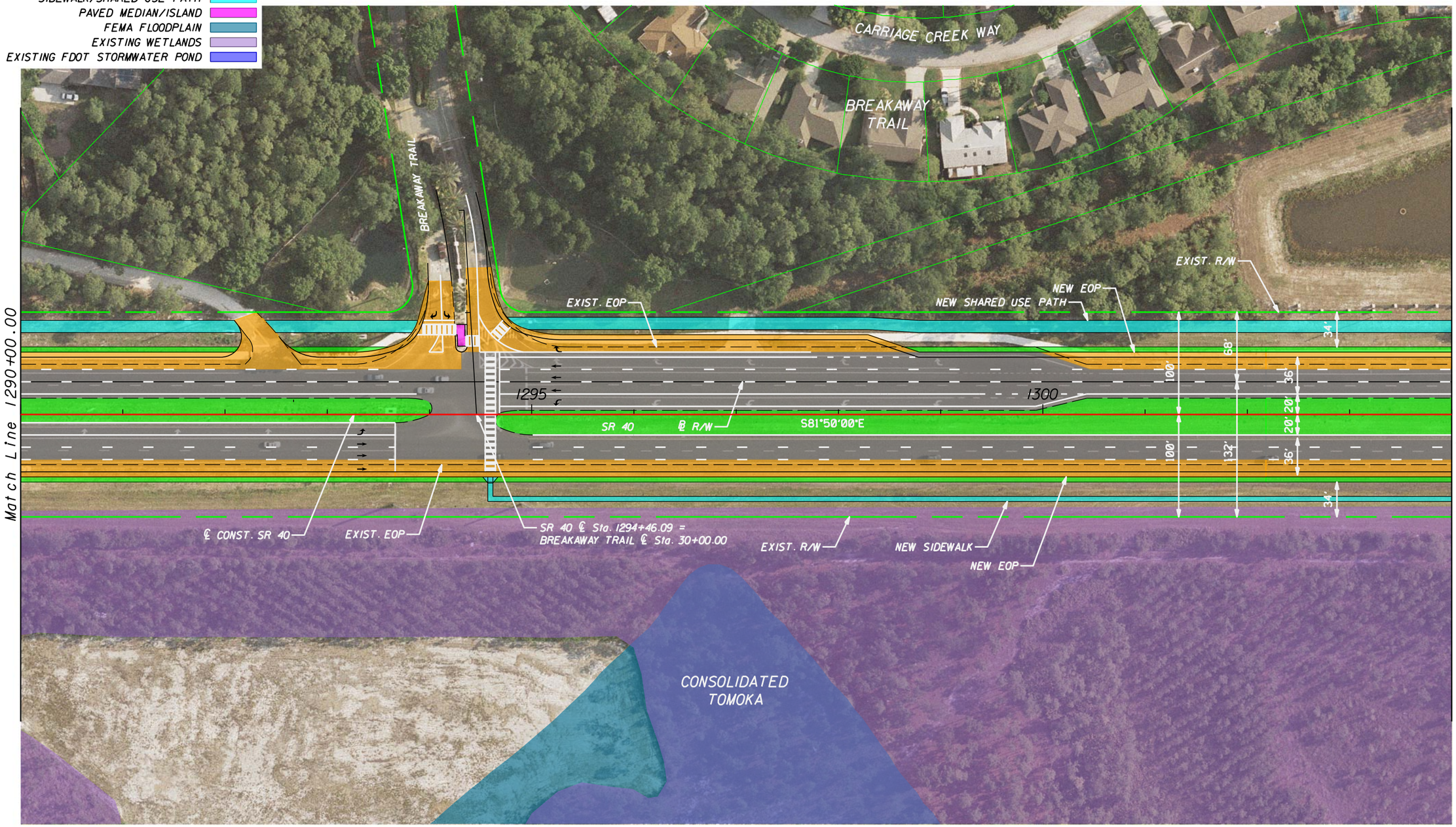
jbbansen 10/9/2012 3:26:51 PM H:\dgn_projects\SR40\roadway\planrd_SR40_01.dgn

PRELIMINARY PLANS NOT FOR CONSTRUCTION

LEGEND
- NEW PAVEMENT
- MILL AND RESURFACE EXISTING PAVEMENT
- TURF MEDIAN/SHOULDER
- SIDEWALK/SHARED USE PATH
- PAVED MEDIAN/ISLAND
- FEMA FLOODPLAIN
- EXISTING WETLANDS
- EXISTING FDOT STORMWATER POND

0 25 100
Feet

N



ALTERNATIVE B
TYPICAL SECTION 1 (WEST)
TO TYPICAL SECTION 4 (EAST)

PRELIMINARY PLANS NOT FOR CONSTRUCTION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Engineer of Record: JOHN R. FREEMAN, JR., P.E., PTOE
P.E. License No.: 25730
KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
225 E. Robinson St, Suite 450, ORLANDO FL 32801
CERTIFICATE OF AUTHORIZATION NO. 007524

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
40	VOLUSIA	428947-1-22-01

SR 40 PD&E Study
Sta 1290+00 to Sta 1304+00

SHEET NO. 2

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PRELIMINARY PLANS NOT FOR CONSTRUCTION

0 25 100
Feet

N

IL VILAGGIO

MONTE SAVINO BLVD

EXIST. R/W
EXIST. EOP
℄ R/W
NEW SHARED USE PATH
NEW EOP

1305
1310
1315

S81°50'00"E
SR 40

34'
100'
68'
36'
20'
20'
36'
100'
132'
34'

EXIST. EOP
EXIST. R/W
℄ CONST. SR 40
NEW EOP
NEW SIDEWALK
NEW R/W POND 1-2

CONSOLIDATED TOMOKA

NEW R/W POND 1

EXISTING FDOT STORMWATER POND

POND ALT 1
(INCLUDES EXISTING FDOT POND)

POND ALT 1-2
(INCLUDES EXISTING FDOT POND AND POND 1 AREA)

Match Line 1304+00.00

Match Line 1318+00.00

LEGEND
- NEW PAVEMENT
- MILL AND RESURFACE EXISTING PAVEMENT
- TURF MEDIAN/SHOULDER
- SIDEWALK/SHARED USE PATH
- PAVED MEDIAN/ISLAND
- FEMA FLOODPLAIN
- EXISTING WETLANDS
- EXISTING FDOT STORMWATER POND

ALTERNATIVE B
TYPICAL SECTION 1 (WEST)
TO TYPICAL SECTION 4 (EAST)

PRELIMINARY PLANS NOT FOR CONSTRUCTION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Engineer of Record: JOHN R. FREEMAN, JR., P.E., PTOE
P.E. License No.: 25730
KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
225 E. Robinson St, Suite 450, ORLANDO FL 32801
CERTIFICATE OF AUTHORIZATION NO. 007524

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
40	VOLUSIA	428947-1-22-01

SR 40 PD&E Study
Sta 1304+00 to Sta 1318+00

SHEET NO. 3

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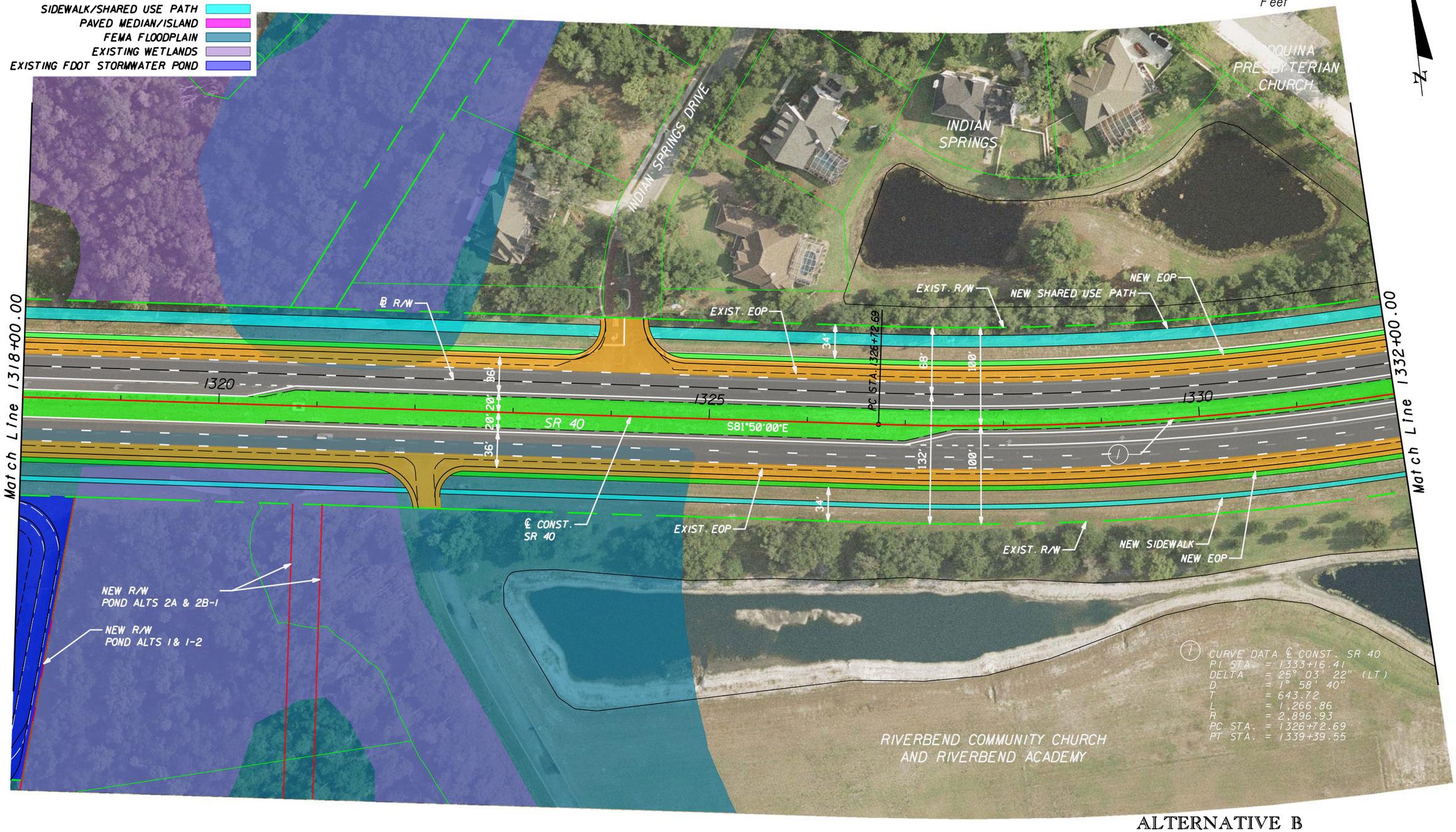
PRELIMINARY PLANS NOT FOR CONSTRUCTION

LEGEND
- NEW PAVEMENT
- MILL AND RESURFACE EXISTING PAVEMENT
- TURF MEDIAN/SHOULDER
- SIDEWALK/SHARED USE PATH
- PAVED MEDIAN/ISLAND
- FEMA FLOODPLAIN
- EXISTING WETLANDS
- EXISTING FDOT STORMWATER POND

0 25 100
Feet

N



ALTERNATIVE B
TYPICAL SECTION 1 (WEST)
TO TYPICAL SECTION 4 (EAST)

PRELIMINARY PLANS NOT FOR CONSTRUCTION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Engineer of Record: JOHN R. FREEMAN, JR., P.E., PTOE
P.E. License No.: 25730
KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
225 E. Robinson St, Suite 450, ORLANDO FL 32801
CERTIFICATE OF AUTHORIZATION NO. 007524

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
40	VOLUSIA	428947-1-22-01

SR 40 PD&E Study
Sta 1318+00 to Sta 1332+00

SHEET NO. 4

PRELIMINARY PLANS NOT FOR CONSTRUCTION

0 25 100
Feet

N

COQUINA PRESBYTERIAN CHURCH

POND ALT 2B-3

POND ALT 2B-2

NEW R/W POND ALT 2B-3

NEW R/W POND ALT 2B-2

① CURVE DATA ℄ CONST. SR 40
PI STA. = 1333+16.41
DELTA = 25° 03' 22" (LT)
D = 1° 58' 40"
T = 643.72
L = 1,266.86
R = 2,896.93
PC STA. = 1326+72.69
PT STA. = 1339+39.55

END TYP. SECTION 1
BEGIN TYP. SECTION 4

SPEED LIMIT 50

SPEED LIMIT 45

WALGREENS

EXIST. R/W

℄ R/W

NEW SHARED USE PATH

NEW EOP

EXIST. EOP

34'

68'

100'

Match Line 1332+00.00

Match Line 1345+00.00

1335

1340

℄ CONST. SR 40

SR 40 N73°06'38"E

PT STA 1339+39.55

EQUATION: Sta 1339+39.55 Bk = Sta 1339+25.90 Ah

36'

20'

12'

132'

100'

PI STA 1333+16.41

NEW SIDEWALK

NEW EOP

EXIST. EOP

34'

EXIST. R/W

FAITH LUTHERAN CHURCH

RIVERBEND COMMUNITY CHURCH AND RIVERBEND ACADEMY

OLD TOMOKA ROAD

LEGEND
NEW PAVEMENT
MILL AND RESURFACE EXISTING PAVEMENT
TURF MEDIAN/SHOULDER
SIDEWALK/SHARED USE PATH
PAVED MEDIAN/ISLAND
FEMA FLOODPLAIN
EXISTING WETLANDS
EXISTING FDOT STORMWATER POND

ALTERNATIVE B
TYPICAL SECTION 1 (WEST)
TO TYPICAL SECTION 4 (EAST)

PRELIMINARY PLANS NOT FOR CONSTRUCTION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Engineer of Record: JOHN R. FREEMAN, JR., P.E., PTOE
P.E. License No.: 25730
KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
225 E. Robinson St, Suite 450, ORLANDO FL 32801
CERTIFICATE OF AUTHORIZATION NO. 007524

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
40	VOLUSIA	428947-1-22-01

SR 40 PD&E Study
Sta 1332+00 to Sta 1345+00

SHEET NO. 5

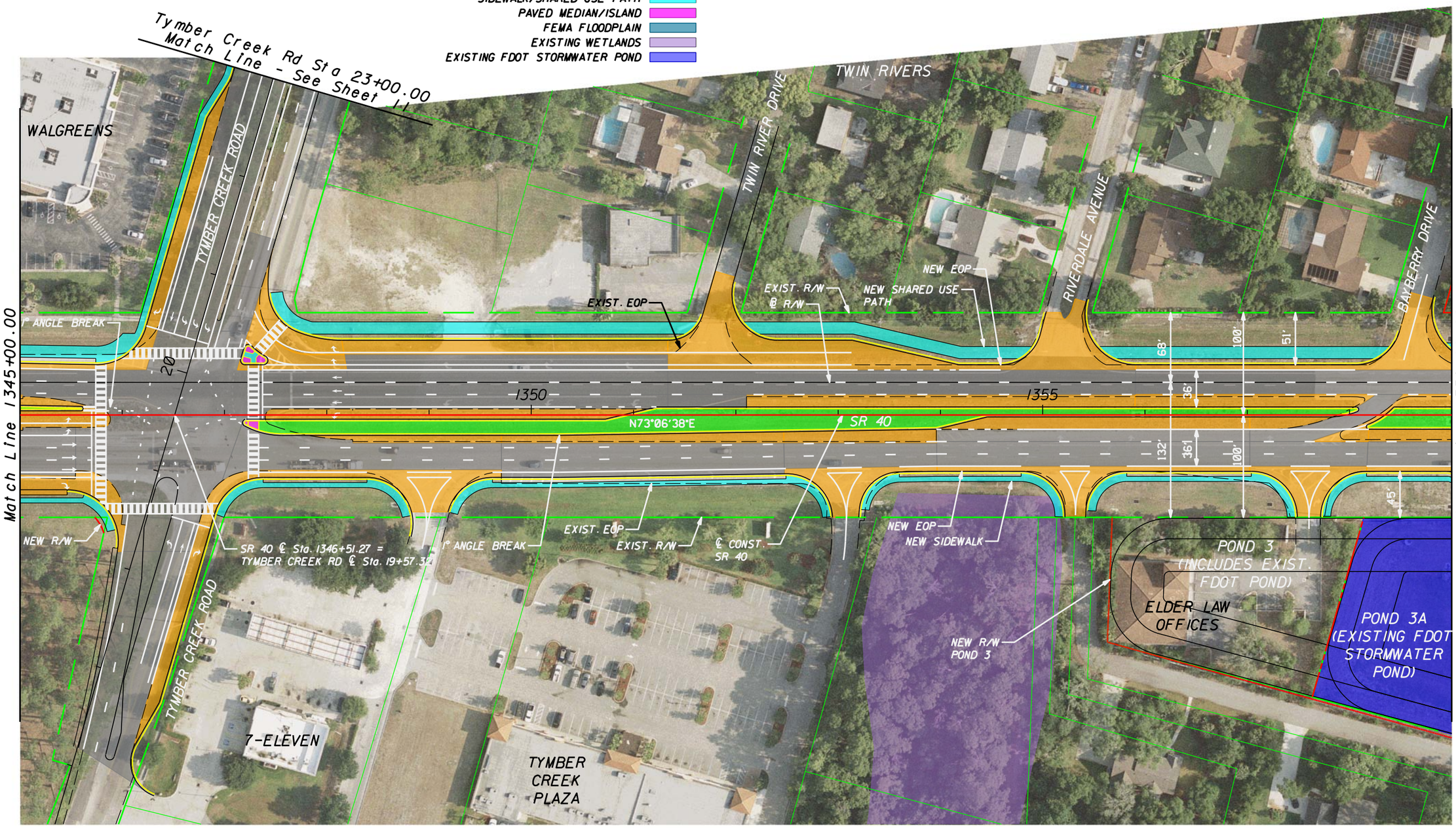
jbbansen 10/9/2012 3:27:20 PM H:\dgn_projects\SR40\roadway\planrd_SR40_05.dgn

PRELIMINARY PLANS NOT FOR CONSTRUCTION

LEGEND
NEW PAVEMENT
MILL AND RESURFACE EXISTING PAVEMENT
TURF MEDIAN/SHOULDER
SIDEWALK/SHARED USE PATH
PAVED MEDIAN/ISLAND
FEMA FLOODPLAIN
EXISTING WETLANDS
EXISTING FDOT STORMWATER POND

0 25 100
Feet

N



ALTERNATIVE B
TYPICAL SECTION 1 (WEST)
TO TYPICAL SECTION 4 (EAST)

PRELIMINARY PLANS NOT FOR CONSTRUCTION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Engineer of Record: JOHN R. FREEMAN, JR., P.E., PTOE
P.E. License No.: 25730
KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
225 E. Robinson St, Suite 450, ORLANDO FL 32801
CERTIFICATE OF AUTHORIZATION NO. 007524

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
40	VOLUSIA	428947-1-22-01

SR 40 PD&E Study
Sta 1345+00 to Sta 1359+00

SHEET NO. 6

PRELIMINARY PLANS NOT FOR CONSTRUCTION

0 25 100
Feet

N

Match Line 1359+00.00

Match Line 1373+00.00

BAYBERRY DRIVE

NEW R/W POND 3B

POND 3B

END GUARDRAIL

NEW EOP

TOMOKA RIVER

② CURVE DATA ℄ CONST. SR 40
PI STA. = 1372+75.74
DELTA = 2° 43' 14" (LT)
D = 0° 34' 35"
T = 235.98
L = 471.88
R = 9,938.24
PC STA. = 1370+39.76
PT STA. = 1375+11.64

EXIST. R/W

NEW SHARED USE PATH

BEGIN GUARDRAIL

EXIST. EOP

BEGIN BRIDGE STA. 1363+65.45

END BRIDGE STA. 1367+25.32

℄ R/W

PC STA. 1370+39.76

PI STA. 1372+75.74

47.5'
68'
100'
36'
8'
14'
38'
32'
45'
100'

1360

1365

1370

N73°06'38"E

SR 40

BEGIN BRIDGE STA. 1363+44.37

END BRIDGE STA. 1367+04.37

℄ CONST. SR 40

END GUARDRAIL

EXIST. EOP

②

NEW SIDEWALK

NEW EOP

BEGIN GUARDRAIL

EXIST. R/W

POND 3A (EXIST. FDOT STORMWATER POND)

TOMOKA RIVER

POND 4 (EXPAND EXISTING FDOT POND)

LEGEND

- NEW PAVEMENT
- MILL AND RESURFACE EXISTING PAVEMENT
- TURF MEDIAN/SHOULDER
- SIDEWALK/SHARED USE PATH
- PAVED MEDIAN/ISLAND
- FEMA FLOODPLAIN
- EXISTING WETLANDS
- EXISTING FDOT STORMWATER POND

ALTERNATIVE B
TYPICAL SECTION 1 (WEST)
TO TYPICAL SECTION 4 (EAST)

PRELIMINARY PLANS NOT FOR CONSTRUCTION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Engineer of Record: JOHN R. FREEMAN, JR., P.E., PTOE
P.E. License No.: 25730
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225 E. Robinson St, Suite 450, ORLANDO FL 32801
CERTIFICATE OF AUTHORIZATION NO. 007524

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
40	VOLUSIA	428947-1-22-01

SR 40 PD&E Study
Sta 1359+00 to Sta 1373+00

SHEET NO. 7

jbbansen 10/9/2012 3:27:36 PM H:\dgn_projects\SR40\roadway\planrd_SR40_07.dgn

PRELIMINARY PLANS NOT FOR CONSTRUCTION

LEGEND
- NEW PAVEMENT
- MILL AND RESURFACE EXISTING PAVEMENT
- TURF MEDIAN/SHOULDER
- SIDEWALK/SHARED USE PATH
- PAVED MEDIAN/ISLAND
- FEMA FLOODPLAIN
- EXISTING WETLANDS
- EXISTING FDOT STORMWATER POND

0 25 100
Feet

N

② CURVE DATA ℄ CONST. SR 40
PI STA. = 1372+75.74
DELTA = 2° 43' 14" (LT)
D = 0° 34' 35"
T = 235.98
L = 471.88
R = 9,938.24
PC STA. = 1370+39.76
PT STA. = 1375+11.64

③ CURVE DATA ℄ CONST. SR 40
PI STA. = 1381+25.88
DELTA = 2° 43' 14" (RT)
D = 0° 34' 35"
T = 235.98
L = 471.87
R = 9,938.24
PC STA. = 1378+89.90
PT STA. = 1383+61.77

Match Line 1373+00.00

Match Line 1387+00.00

CAVALRY CHRISTIAN CHURCH

TEXACO

MOBIL

EXIST. R/W

NEW SHARED USE PATH

NEW EOP

EXIST. EOP

℄ R/W

PT STA. 1375+11.64

1375

1380

1385

SR 40

N78°23'24"E

N73°06'38"E

PI STA. 1381+25.88

SR 40 ℄ Sta. 1381+56.09 = INTERCHANGE BLVD ℄ Sta. 30+00.00

STA. 1386+79.35
BEGIN LA R/W

PC STA. 1378+89.90

PT STA. 1383+61.77

EXIST. EOP

NEW EOP

NEW SIDEWALK

EXIST. R/W

NEW R/W

SR 40 ℄ Sta. 1375+00.00 = BOOTH ROAD ℄ Sta. 30+00.00

℄ CONST. SR 40

STA. 1386+68.41
BEGIN LA R/W

BOOTH ROAD

HALIFAX MEDICAL CENTER

RACE TRAC

INTERCHANGE BOULEVARD

MC DONALDS

NE CLEANERS

B.P. AMOCO

CRACKER BARREL

68' 36' 132' 36' 132' 100' 100' 108' 42' 12' 12' 12' 11' 12' 12' 12'

ALTERNATIVE B
TYPICAL SECTION 1 (WEST)
TO TYPICAL SECTION 4 (EAST)

PRELIMINARY PLANS NOT FOR CONSTRUCTION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Engineer of Record: JOHN R. FREEMAN, JR., P.E., PTOE
P.E. License No.: 25730
KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
225 E. Robinson St, Suite 450, ORLANDO FL 32801
CERTIFICATE OF AUTHORIZATION NO. 007524

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
40	VOLUSIA	428947-1-22-01

SR 40 PD&E Study
Sta 1373+00 to Sta 1387+00

SHEET NO. 8

PRELIMINARY PLANS NOT FOR CONSTRUCTION

0 25 100
Feet

N

Match Line 1387+00.00

Match Line 1401+00.00

EXIST. LA R/W

240'

240'

INTERSTATE 95

EXIST. LA R/W

WALMART

TEXACO

EXIST. 2° ANGLE BREAK

POT STA. 1390+50.08

1390

N73°06'38"E

1395

1400

PC STA. 1400+32.39

SR 40

NEW R/W

0°40' ANGLE BREAK

℄ CONST. SR 40

EXIST. EOP

STA. 1398+22.37
END LA R/W

NEW 8' SIDEWALK

EXIST. R/W

NEW EOP

4 CURVE DATA ℄ CONST. SR 40
PI STA. = 1406+80.74
DELTA = 38° 13' 39" (LT)
D = 3° 03' 45"
T = 648.35
L = 1,248.24
R = 1,870.88
PC STA. = 1400+32.39
PT STA. = 1412+80.63

SR 40 ℄ Sta. 1400+94.78 =
WILLIAMSON BLVD ℄ Sta. 50+00.00

℄ R/W

NEW EOP

END LA R/W

NEW SIDEWALK

EXIST. EOP

EXIST. R/W

NEW R/W

FUTURE SUNOCO

FUTURE SUNOCO

CHEVRON KANGAROO

B.P. AMOCO

EXIST. LA R/W

CRACKER BARREL

240'

240'

TACO BELL

Match Line - See Sheet 11
Williamson Blvd Sta 45+86.00

WILLIAMSON BOULEVARD

WENDY'S

LEGEND

- NEW PAVEMENT
- MILL AND RESURFACE EXISTING PAVEMENT
- TURF MEDIAN/SHOULDER
- SIDEWALK/SHARED USE PATH
- PAVED MEDIAN/ISLAND
- FEMA FLOODPLAIN
- EXISTING WETLANDS
- EXISTING FDOT STORMWATER POND

ALTERNATIVE B
TYPICAL SECTION 1 (WEST)
TO TYPICAL SECTION 4 (EAST)

PRELIMINARY PLANS NOT FOR CONSTRUCTION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Engineer of Record: JOHN R. FREEMAN, JR., P.E., PTOE
P.E. License No.: 25730
KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
225 E. Robinson St, Suite 450, ORLANDO FL 32801
CERTIFICATE OF AUTHORIZATION NO. 007524

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
40	VOLUSIA	428947-1-22-01

SR 40 PD&E Study
Sta 1387+00 to Sta 1401+00

SHEET NO. 9

0 25 100
Feet

N

Match Line 1401+00.00

WALMART

BERMUDA ESTATES DRIVE

(4) CURVE DATA ℄ CONST. SR 40
PI STA. = 1406+80.74
DELTA = 38° 13' 39" (LT)
D = 3° 03' 45"
T = 648.35
L = 1,248.24
R = 1,870.88
PC STA. = 1400+32.39
PT STA. = 1412+80.63

℄ CONST. SR 40
NEW EOP
EXIST. R/W
NEW SIDEWALK
EXIST. EOP
℄ R/W
VARIES
25'
53'
1405
1410
SR 40
4
PT STA. 1412+80.63
N34°52'59"E
92'
82'
90'

NEW EOP
EXIST. EOP
PI STA. 1409+80.74
EXIST. R/W
SUN TRUST
CHICK-FIL-A
BANK OF AMERICA
BERMUDA ESTATES DRIVE
BEALLS DEPARTMENT STORE
TEXACO EXPRESS LUBE
ORMOND TOWNE SQUARE

LEGEND
NEW PAVEMENT
MILL AND RESURFACE EXISTING PAVEMENT
TURF MEDIAN/SHOULDER
SIDEWALK/SHARED USE PATH
PAVED MEDIAN/ISLAND
FEMA FLOODPLAIN
EXISTING WETLANDS
EXISTING FDOT STORMWATER POND

ALTERNATIVE B
TYPICAL SECTION 1 (WEST)
TO TYPICAL SECTION 4 (EAST)

PRELIMINARY PLANS NOT FOR CONSTRUCTION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Engineer of Record: JOHN R. FREEMAN, JR., P.E., PTOE
P.E. License No.: 25730
KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
225 E. Robinson St, Suite 450, ORLANDO FL 32801
CERTIFICATE OF AUTHORIZATION NO. 007524

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
40	VOLUSIA	428947-1-22-01

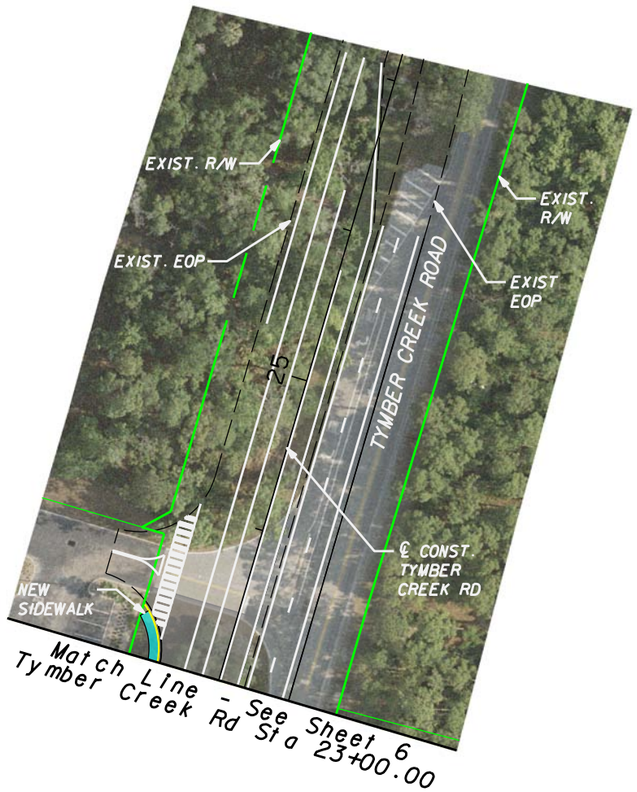
SR 40 PD&E Study
Sta 1401+00 to Sta 1415+00

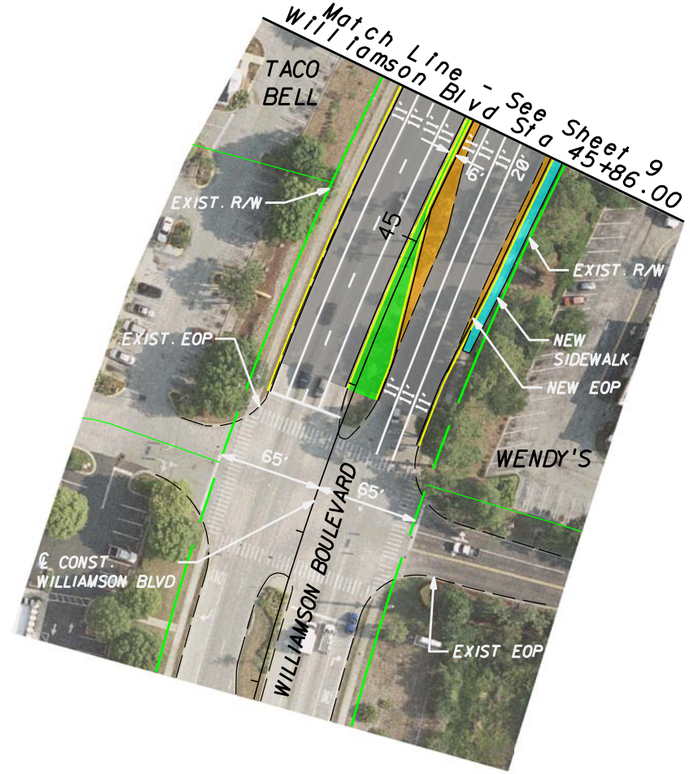
SHEET NO. 10

PRELIMINARY PLANS NOT FOR CONSTRUCTION

0 25 100
Feet

N





LEGEND

- NEW PAVEMENT
- MILL AND RESURFACE EXISTING PAVEMENT
- TURF MEDIAN/SHOULDER
- SIDEWALK/SHARED USE PATH
- PAVED MEDIAN/ISLAND
- FEMA FLOODPLAIN
- EXISTING WETLANDS
- EXISTING FDOT STORMWATER POND

ALTERNATIVE B
TYPICAL SECTION 1 (WEST)
TO TYPICAL SECTION 4 (EAST)

PRELIMINARY PLANS NOT FOR CONSTRUCTION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Engineer of Record: JOHN R. FREEMAN, JR., P.E., PTOE
P.E. License No.: 25730
KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
225 E. Robinson St, Suite 450, ORLANDO FL 32801
CERTIFICATE OF AUTHORIZATION NO. 007524

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
40	VOLUSIA	428947-1-22-01

SR 40 PD&E Study
Sta 1387+00 to Sta 1401+00

SHEET NO. 11

jbbansen 10/9/2012 3:28:07 PM H:\dgn_projects\SR40\roadway\planrd_SR40_11.dgn

Appendix G

Listed Species with Potential to Occur in Volusia County, FL

Table 8. Threatened and Endangered Species Which Could Potentially Occur in Volusia County

GROUP	SCIENTIFIC NAME	COMMON NAME	USFWS	FFWCC	FDACS
Amphibian					
	Rana capito	Gopher frog		SSC	
Birds					
	Ajaia ajaja	Roseate spoonbill		SSC	
	Picoides borealis	Red-cockaded woodpecker	E	T	
	Aphelocoma coerulescens	Florida scrub jay	T	T	
	Aramus guarauna	Limpkin		SSC	
	Charadrius melodus	Piping plover	T	T	
	Egretta caerulea	Little blue heron		SSC	
	Egretta rufescens	Reddish egret		SSC	
	Egretta thula	Snowy egret		SSC	
	Egretta tricolor	Tricolor heron		SSC	
	Eudocimus albus	White ibis		SSC	
	Falco pergrinus tundrius	Peregrine falcon		E	
	Falco sparverius paulus	Southeastern American kestrel		T	
	Grus canadensis	Sandhill crane		T	
	Haematopus palliatus	American oystercatcher		SSC	
	Haliaeetus leucocephalus	Southern bald eagle	T	T	
	Mycteria americana	Wood stork	E	E	
	Pelecanus occidentalis	Eastern brown pelican		SSC	
	Rynchops niger	Black skimmer		SSC	
	Sterna antillarum	Least tern		T	

Table 1. Continued.

GROUP	SCIENTIFIC NAME	COMMON NAME	USFWS	FFWCC	FDACS
Fish					
	Pteronotropis welaka	Bluenose shiner		SSC	
Mammal					
	Podomys floridanus	Florida mouse		SSC	
	Sciurus niger shermani	Sherman's fox squirrel		SSC	
	Ursus americanus floridanus	Florida black bear	T	T	
Plants					
	Acrostichum aureum	Golden Leather Fern			T
	Asplenium erosum	Auricled Spleenwort			E
	Centrosema floridanum	Sand butterfly pea			E
	Chamaesyce cumulicola	Sand-dune Spurge			E
	Conradina grandiflora	Large flowered rosemary			E
	Cucurbita okeechobeensis	Okeechobee gourd	E		E
	Deeringothamnus rugelii	Rugel’s pawpaw	E		E
	Glandularia maritime	Coastal vervain			E
	Glandularia tampensis	Tampa vervain			E
	Helianthus carnosus	Lakeside sunflower			E
	Illicium parviflorum	Yellow star-anise			E
	Lantana depressa var. floridana	Atlantic Coast Florida Lantana			E
	Lechea divaricata	Pine pinweed/spreading pinweed			E

Table 1. Continued.

GROUP	SCIENTIFIC NAME	COMMON NAME	USFWS	FFWCC	FDACS
Plants (cont'd.)					
	Nemastylis floridana	Celestial lily			E
	Nolina atopocarpa	Florida Beargrass			T
	Ophioglossum palmatum	Hand fern			E
	Pecluma plumula	Plume Polypody			E
	Pecluma ptilodom	Swamp plume polypody			E
	Peperomia humilis	Low peperomia			E
	Pteroglossaspis ecristata	Giant orchid			T
	Schwalbea americana	Chaffseed			E
	Tephrosia angustissima	Narrowleaf hoarypea			E
Reptile					
	Alligator mississippiensis	American alligator	T (S/A)	SSC	
	Drymarchon corais couperi	Eastern indigo snake	T	T	
	Pituophis melanoleucus mugitis	Florida pine snake	SSC		
	Gopherus polyphemus	Gopher Tortoise		T	

USFWS = United States Fish and Wildlife Service
FFWCC = Florida Fish and Wildlife Conservation Commission
FDACS = Florida Department of Agriculture and Consumer Services

E = Endangered, T = Threatened, SSC = Species of Special Concern, (S/A) = listed due to Similar Appearance to a listed species

Appendix H

Florida Natural Areas Inventory Report

FLORIDA
Natural Areas
INVENTORY

1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
850-224-8207
fax 850-681-9364
www.fnai.org

May 14, 2012

Jason Houck
Inwood Consulting Engineers
3000 Dovera Drive, Suite 200
Oviedo, FL 32765

Dear Mr. Houck,

Thank you for requesting information from the Florida Natural Areas Inventory (FNAI). We have compiled the following information for your project area.

Project: SR 40 from Breakaway Trail to Williamson Blvd.

Date Received: 05/10/2012

Location: Volusia County

Element Occurrences

A search of our maps and database indicates that we currently have several element occurrences mapped in the vicinity of the study area (see enclosed map and element occurrence table). Please be advised that a lack of element occurrences in the FNAI database is not a sufficient indication of the absence of rare or endangered species on a site.

The element occurrences data layer includes occurrences of rare species and natural communities. The map legend indicates that some element occurrences occur in the general vicinity of the label point. This may be due to lack of precision of the source data, or an element that occurs over an extended area (such as a wide ranging species or large natural community). For animals and plants, element occurrences generally refer to more than a casual sighting; they usually indicate a viable population of the species. Note that some element occurrences represent historically documented observations which may no longer be extant. Extirpated element occurrences will be marked with an 'X' following the occurrence label on the enclosed map.

Likely and Potential Rare Species

In addition to documented occurrences, other rare species and natural communities may be identified on or near the site based on habitat models and species range models (see enclosed Biodiversity Matrix Report). These species should be taken into consideration in field surveys, land management, and impact avoidance and mitigation.

FNAI habitat models indicate areas, which based on land cover type, offer suitable habitat for one or more rare species that is known to occur in the vicinity. Habitat models have been developed for approximately 300 of the rarest species tracked by the Inventory, including all federally listed species.

FNAI species range models indicate areas that are within the known or predicted range of a species, based on climate variables, soils, vegetation, and/or slope. Species range models have been developed for approximately 340 species, including all federally listed species.

The FNAI Biodiversity Matrix Geodatabase compiles Documented, Likely, and Potential species and natural communities for each square mile Matrix Unit statewide.

Florida Resources
and Environmental
Analysis Center

Institute of Science
and Public Affairs

The Florida State University

The Inventory always recommends that professionals familiar with Florida's flora and fauna conduct a site-specific survey to determine the current presence or absence of rare, threatened, or endangered species.

Please visit www.fnai.org/trackinglist.cfm for county or statewide element occurrence distributions and links to more element information.

The database maintained by the Florida Natural Areas Inventory is the single most comprehensive source of information available on the locations of rare species and other significant ecological resources. However, the data are not always based on comprehensive or site-specific field surveys. Therefore this information should not be regarded as a final statement on the biological resources of the site being considered, nor should it be substituted for on-site surveys. Inventory data are designed for the purposes of conservation planning and scientific research, and are not intended for use as the primary criteria for regulatory decisions.

Information provided by this database may not be published without prior written notification to the Florida Natural Areas Inventory, and the Inventory must be credited as an information source in these publications. FNAI data may not be resold for profit.

Thank you for your use of FNAI services. An invoice will be mailed separately. If I can be of further assistance, please contact me at (850) 224-8207 or at mobrien@fnai.org.

Sincerely,

Michael O'Brien

Michael O'Brien
GIS / Data Services

Encl

SR 40 from Breakaway Trail to Williamson Blvd.

Site boundaries are approximate.

Volusia County

1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
(850) 224-8207
(850) 681-9364 Fax
www.fnai.org

FLORIDA Natural Areas INVENTORY

Element Occurrences

- Animals
- Plants
- Communities
- Other
- Data Sensitive
- Point Indicates General Vicinity of Element
- U.S. Fish & Wildlife Service Scrub Jay Survey 1992-96

Conservation Lands

- Federal
- State
- Local
- Private
- State Aquatic Preserves

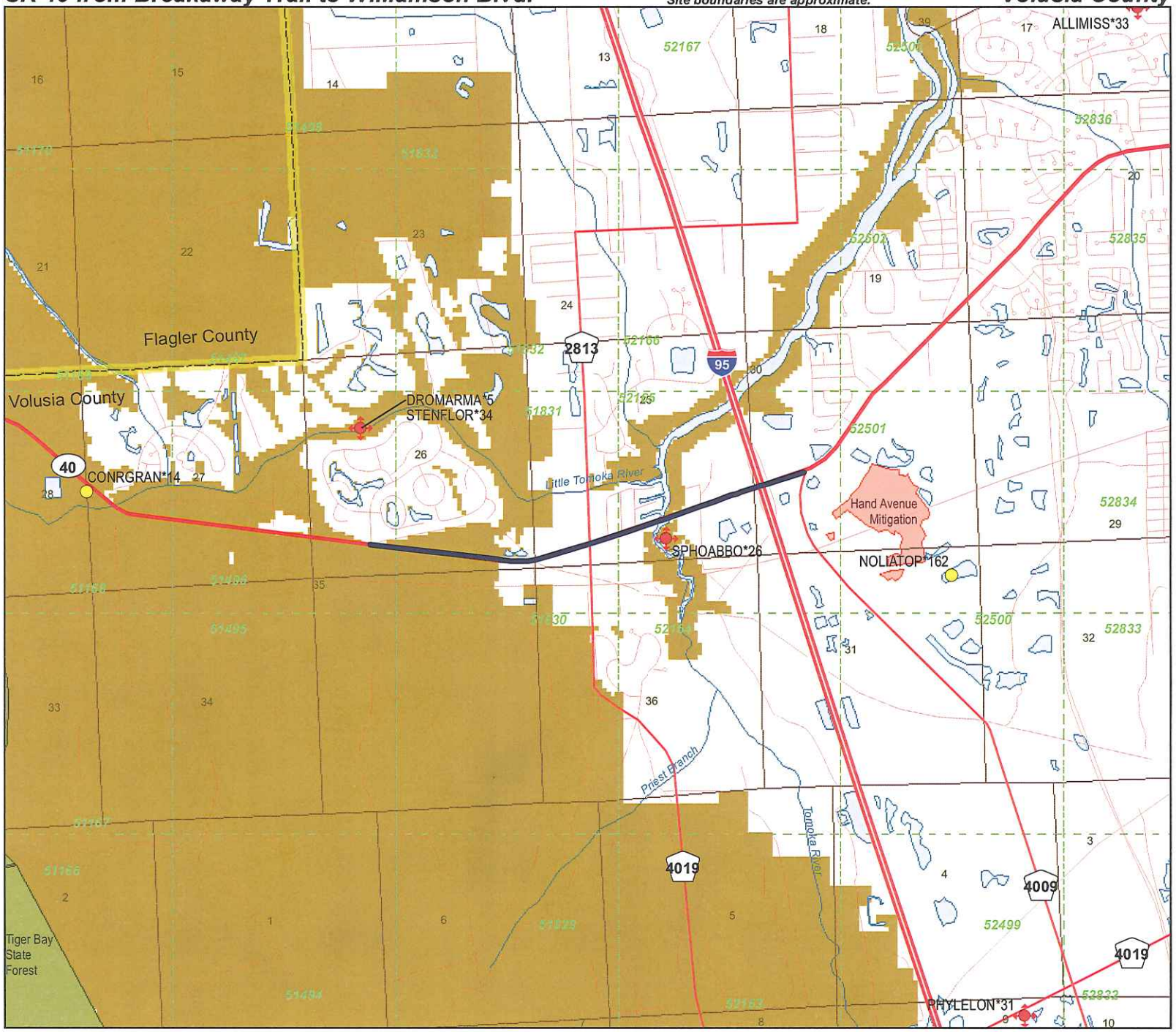
Land Acquisition Projects

- Florida Forever Board of Trustees Projects

- FNAI Rare Species Habitat
- FNAI Biodiversity Matrix Square Mile Units

- County Boundary
- Interstate
- Turnpike
- Major Highway
- Local Road
- Railroad [Inactive railroads shown in Gray]
- Water

NOTE
Map should not be interpreted without accompanying documents.



Map produced by MGO
5/14/2012

1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
(850) 224-8207
(850) 681-9364 Fax
www.fnai.org

FLORIDA Natural Areas INVENTORY

Florida Natural Areas Inventory

DOCUMENTED ELEMENT OCCURRENCES ON OR NEAR
SR 40 from Breakaway Trail to Williamson Blvd.

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
ALLIMISS*33	*Alligator mississippiensis*	American Alligator	G5	S4	SAT	FT(S/A)	2007-00-00	1984 ALONG TOMOKA RIVER (PNDDUT01FLUS).	2007: occasional (PNDDUT01FLUS). 1984: NO POP. ESTIMATE, BUT JUST A FEW (PNDDUT01FLUS).
CONRGRAN*14	*Conradina grandiflora*	Large-flowered Rosemary	G3	S3	N	LT	1955-03-31	IN SCRUB	WOODY STEM, PLANTS UP TO 2' HIGH, FLOWERS WHITE TO PURPLISH LVS IN WHORLS, COMMON IN SCRUB.
DROMARMA*5	*Dromogomphus armatus*	Southeastern Spinyleg	G4	S3	N	N	1998-09-10	1998-09-10: No description given (U09DEP01FLUS).	1998-09-10: Staff from the Florida Department of Environmental Protection collected this species (U09DEP01FLUS).
NOLIATOP*162	*Nolina atopocarpa*	Florida Beargrass	G3	S3	N	LT	1993-09-22	Cut over flatwoods with grassy areas.	Three plants of Nolina atopocarpa seen with flowers. Open grassy area in cut-over flatwoods. Grasses were Aristida beyrichiana and Aristida rhizomophora.
PHYLELON*31	*Phyllophaga elongata*	Elongate June Beetle	G3	S3	N	N	1935-07-05	1935-07-05: No description given (B89WOO01FLUS).	1935-07-05: One specimen was collected by I.J. Cantrall (B89WOO01FLUS).
SPHOABBO*26	*Sphodros abboti*	Blue Purse-web Spider	G4G5	S4	N	N	1998-05-19	1998-05-19: webs found at the bases of trees (U98MOL02FLUS).	1998-05-19: Species was collected on site by P.E. Moler (U98MOL02FLUS).
STENFLOR*34	*Stenacron floridense*	A Mayfly	G3G4	S3S4	N	N	2000-03-08	2000-03-08: No description given (U09DEP01FLUS).	2000-03-08: Staff from the Florida Department of Environmental Protection collected this species (U09DEP01FLUS).

1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
(850) 224-8207
(850) 681-9364 Fax

FLORIDA Natural Areas INVENTORY

Florida Natural Areas Inventory

Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Matrix Unit ID: 51496					
Documented					
Dromogomphus armatus	Southeastern Spinyleg	G4	S3	N	N
Stenacron floridense	A Mayfly	G3G4	S3S4	N	N
Likely					
Conradina grandiflora	Large-flowered Rosemary	G3	S3	N	LT
Mesic flatwoods		G4	S4	N	N
Ursus americanus floridanus	Florida Black Bear	G5T2	S2	N	ST*
Potential					
Aphelocoma coerulescens	Florida Scrub-Jay	G2	S2	LT	FT
Calopogon multiflorus	Many-flowered Grass-pink	G2G3	S2S3	N	LE
Carex chapmanii	Chapman's Sedge	G3	S3	N	LT
Centrosema arenicola	Sand Butterfly Pea	G2Q	S2	N	LE
Deeringothamnus rugelii	Rugel's Pawpaw	G1	S1	LE	LE
Gopherus polyphemus	Gopher Tortoise	G3	S3	N	ST
Grus canadensis pratensis	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
Gymnopogon chapmanianus	Chapman's Skeletongrass	G3	S3	N	N
Heterodon simus	Southern Hognose Snake	G2	S2	N	N
Illicium parviflorum	Star Anise	G2	S2	N	LE
Litsea aestivalis	Pondspice	G3	S2	N	LE
Matelea floridana	Florida Spiny-pod	G2	S2	N	LE
Nemastylis floridana	Celestial Lily	G2	S2	N	LE
Neofiber alleni	Round-tailed Muskrat	G3	S3	N	N
Nolina atopocarpa	Florida Beargrass	G3	S3	N	LT
Phyllophaga elongata	Elongate June Beetle	G3	S3	N	N
Pteroglossaspis ecristata	Giant Orchid	G2G3	S2	N	LT
Pycnanthemum floridanum	Florida Mountain-mint	G3	S3	N	LT
Rana capito	Gopher Frog	G3	S3	N	SSC
Salix floridana	Florida Willow	G2	S2	N	LE
Matrix Unit ID: 51831					
Likely					
Mesic flatwoods		G4	S4	N	N
Trichechus manatus	Manatee	G2	S2	LE	FE
Ursus americanus floridanus	Florida Black Bear	G5T2	S2	N	ST*
Potential					
Aphelocoma coerulescens	Florida Scrub-Jay	G2	S2	LT	FT
Calopogon multiflorus	Many-flowered Grass-pink	G2G3	S2S3	N	LE
Carex chapmanii	Chapman's Sedge	G3	S3	N	LT
Centrosema arenicola	Sand Butterfly Pea	G2Q	S2	N	LE
Conradina grandiflora	Large-flowered Rosemary	G3	S3	N	LT
Deeringothamnus rugelii	Rugel's Pawpaw	G1	S1	LE	LE
Gopherus polyphemus	Gopher Tortoise	G3	S3	N	ST
Grus canadensis pratensis	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
Gymnopogon chapmanianus	Chapman's Skeletongrass	G3	S3	N	N

Definitions: *Documented - Rare species and natural communities documented on or near this site.*
Documented-Historic - Rare species and natural communities documented, but not observed/reported within the last twenty years.
Likely - Rare species and natural communities likely to occur on this site based on suitable habitat and/or known occurrences in the vicinity.
Potential - This site lies within the known or predicted range of the species listed.

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FLORIDA Natural Areas INVENTORY

Florida Natural Areas Inventory

Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Heterodon simus	Southern Hognose Snake	G2	S2	N	N
Illicium parviflorum	Star Anise	G2	S2	N	LE
Matelea floridana	Florida Spiny-pod	G2	S2	N	LE
Nemastylis floridana	Celestial Lily	G2	S2	N	LE
Neofiber alleni	Round-tailed Muskrat	G3	S3	N	N
Nolina atopocarpa	Florida Beargrass	G3	S3	N	LT
Phyllophaga elongata	Elongate June Beetle	G3	S3	N	N
Pteroglossaspis ecristata	Giant Orchid	G2G3	S2	N	LT
Pycnanthemum floridanum	Florida Mountain-mint	G3	S3	N	LT
Rana capito	Gopher Frog	G3	S3	N	SSC
Salix floridana	Florida Willow	G2	S2	N	LE

Matrix Unit ID: 52165

Documented

Sphodros abboti	Blue Purse-web Spider	G4G5	S4	N	N

Likely

Mesic flatwoods		G4	S4	N	N
Scrub		G2	S2	N	N
Trichechus manatus	Manatee	G2	S2	LE	FE

Potential

Alligator mississippiensis	American Alligator	G5	S4	SAT	FT(S/A)
Aphelocoma coerulescens	Florida Scrub-Jay	G2	S2	LT	FT
Calopogon multiflorus	Many-flowered Grass-pink	G2G3	S2S3	N	LE
Carex chapmanii	Chapman's Sedge	G3	S3	N	LT
Centrosema arenicola	Sand Butterfly Pea	G2Q	S2	N	LE
Conradina grandiflora	Large-flowered Rosemary	G3	S3	N	LT
Gopherus polyphemus	Gopher Tortoise	G3	S3	N	ST
Grus canadensis pratensis	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
Gymnopogon chapmanianus	Chapman's Skeletongrass	G3	S3	N	N
Heterodon simus	Southern Hognose Snake	G2	S2	N	N
Illicium parviflorum	Star Anise	G2	S2	N	LE
Lechea cernua	Nodding Pinweed	G3	S3	N	LT
Matelea floridana	Florida Spiny-pod	G2	S2	N	LE
Nemastylis floridana	Celestial Lily	G2	S2	N	LE
Neofiber alleni	Round-tailed Muskrat	G3	S3	N	N
Nolina atopocarpa	Florida Beargrass	G3	S3	N	LT
Phyllophaga elongata	Elongate June Beetle	G3	S3	N	N
Pteroglossaspis ecristata	Giant Orchid	G2G3	S2	N	LT
Pycnanthemum floridanum	Florida Mountain-mint	G3	S3	N	LT
Salix floridana	Florida Willow	G2	S2	N	LE
Ursus americanus floridanus	Florida Black Bear	G5T2	S2	N	ST*

Definitions: *Documented - Rare species and natural communities documented on or near this site.*
Documented-Historic - Rare species and natural communities documented, but not observed/reported within the last twenty years.
Likely - Rare species and natural communities likely to occur on this site based on suitable habitat and/or known occurrences in the vicinity.
Potential - This site lies within the known or predicted range of the species listed.

Elements and Element Occurrences

An **element** is any exemplary or rare component of the natural environment, such as a species, natural community, bird rookery, spring, sinkhole, cave, or other ecological feature.

An **element occurrence (EO)** is an area of land and/or water in which a species or natural community is, or was, present. An EO should have practical conservation value for the Element as evidenced by potential continued (or historical) presence and/or regular recurrence at a given location.

Element Ranking and Legal Status

Using a ranking system developed by NatureServe and the Natural Heritage Program Network, the Florida Natural Areas Inventory assigns two ranks for each element. The global rank is based on an element's worldwide status; the state rank is based on the status of the element in Florida. Element ranks are based on many factors, the most important ones being estimated number of Element Occurrences (EOs), estimated abundance (number of individuals for species; area for natural communities), geographic range, estimated number of adequately protected EOs, relative threat of destruction, and ecological fragility.

FNAI GLOBAL ELEMENT RANK

G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
G2 = Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
G3 = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
G4 = Apparently secure globally (may be rare in parts of range).
G5 = Demonstrably secure globally.
GH = Of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker).
GX = Believed to be extinct throughout range.
GXC = Extirpated from the wild but still known from captivity or cultivation.
G#? = Tentative rank (e.g., G2?).
G#G# = Range of rank; insufficient data to assign specific global rank (e.g., G2G3).
G#T# = Rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1).
G#Q = Rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q).
G#T#Q = Same as above, but validity as subspecies or variety is questioned.
GU = Unrankable; due to a lack of information no rank or range can be assigned (e.g., GUT2).
GNA = Ranking is not applicable because the element is not a suitable target for conservation (e.g. a hybrid species).
GNR = Element not yet ranked (temporary).
GNRTNR = Neither the element nor the taxonomic subgroup has yet been ranked.

FNAI STATE ELEMENT RANK

S1 = Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
S2 = Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
S3 = Either very rare and local in Florida (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
S4 = Apparently secure in Florida (may be rare in parts of range).
S5 = Demonstrably secure in Florida.
SH = Of historical occurrence in Florida, possibly extirpated, but may be rediscovered (e.g., ivory-billed woodpecker).
SX = Believed to be extirpated throughout Florida.
SU = Unrankable; due to a lack of information no rank or range can be assigned.
SNA = State ranking is not applicable because the element is not a suitable target for conservation (e.g. a hybrid species).
SNR = Element not yet ranked (temporary).

FEDERAL LEGAL STATUS

Legal status information provided by FNAI for information only. For official definitions and lists of protected species, consult the relevant federal agency.

Definitions derived from U.S. Endangered Species Act of 1973, Sec. 3. Note that the federal status given by FNAI refers only to Florida populations and that federal status may differ elsewhere.

C = Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened.
LE = Endangered: species in danger of extinction throughout all or a significant portion of its range.
LE, LT = Species currently listed endangered in a portion of its range but only listed as threatened in other areas
LE, PDL = Species currently listed endangered but has been proposed for delisting.
LE, PT = Species currently listed endangered but has been proposed for listing as threatened.
LE, XN = Species currently listed endangered but tracked population is a non-essential experimental population.
LT = Threatened: species likely to become Endangered within the foreseeable future throughout all or a significant portion of its range.
SAT = Treated as threatened due to similarity of appearance to a species which is federally listed such that enforcement personnel have difficulty in attempting to differentiate between the listed and unlisted species.
SC = Not currently listed, but considered a "species of concern" to USFWS.

STATE LEGAL STATUS

Provided by FNAI for information only. For official definitions and lists of protected species, consult the relevant state agency.

Animals: Definitions derived from "Florida's Endangered Species and Species of Special Concern, Official Lists" published by Florida Fish and Wildlife Conservation Commission, 1 August 1997, and subsequent updates.

FE = Listed as Endangered Species at the Federal level by the U. S. Fish and Wildlife Service
FT = Listed as Threatened Species at the Federal level by the U. S. Fish and Wildlife Service
F(XN) = Federal listed as an experimental population in Florida
FT(S/A) = Federal Threatened due to similarity of appearance
ST = State population listed as Threatened by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future. (ST* for Ursus americanus floridanus (Florida black bear) indicates that this status does not apply in Baker and Columbia counties and in the Apalachicola National Forest. ST* for Neovison vison pop.1 (Southern mink, South Florida population) indicates that this status applies to the Everglades population only.)
SSC = Listed as Species of Special Concern by the FFWCC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species. (SSC* indicates that a species has SSC status only in selected portions of its range in Florida. SSC* for Pandion haliaetus (Osprey) indicates that this status applies in Monroe county only.)
N = Not currently listed, nor currently being considered for listing.

Plants: Definitions derived from Sections 581.011 and 581.185(2), Florida Statutes, and the Preservation of Native Flora of Florida Act, 5B-40.001. FNAI does not track all state-regulated plant species; for a complete list of state-regulated plant species, call Florida Division of Plant Industry, 352-372-3505 or see: http://www.doacs.state.fl.us/pi/.

LE = Endangered: species of plants native to Florida that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue; includes all species determined to be endangered or threatened pursuant to the U.S. Endangered Species Act.
LT = Threatened: species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in number as to cause them to be Endangered.
N = Not currently listed, nor currently being considered for listing.

Element Occurrence Ranking

FNAI ranks of quality of the element occurrence in terms of its viability (EORANK). Viability is estimated using a combination of factors that contribute to continued survival of the element at the location. Among these are the size of the EO, general condition of the EO at the site, and the conditions of the landscape surrounding the EO (e.g. an immediate threat to an EO by local development pressure could lower an EO rank).

A = Excellent estimated viability
A? = Possibly excellent estimated viability
AB = Excellent or good estimated viability
AC = Excellent, good, or fair estimated viability
B = Good estimated viability
B? = Possibly good estimated viability
BC = Good or fair estimated viability
BD = Good, fair, or poor estimated viability
C = Fair estimated viability
C? = Possibly fair estimated viability
CD = Fair or poor estimated viability
D = Poor estimated viability
D? = Possibly poor estimated viability
E = Verified extant (viability not assessed)
F = Failed to find
H = Historical
NR = Not ranked, a placeholder when an EO is not (yet) ranked.
U = Unrankable
X = Extirpated

*For additional detail on the above ranks see: http://www.natureserve.org/explorer/eorankguide.htm

FNAI also uses the following EO ranks:

H? = Possibly historical
F? = Possibly failed to find
X? = Possibly extirpated

The following offers further explanation of the H and X ranks as they are used by FNAI:

The rank of H is used when there is a lack of recent field information verifying the continued existence of an EO, such as (a) when an EO is based only on historical collections data; or (b) when an EO was ranked A, B, C, D, or E at one time and is later, without field survey work, considered to be possibly extirpated due to general habitat loss or degradation of the environment in the area. This definition of the H rank is dependent on an interpretation of what constitutes "recent" field information. Generally, if there is no known survey of an EO within the last 20 to 40 years, it should be assigned an H rank. While these time frames represent suggested maximum limits, the actual time period for historical EOs may vary according to the biology of the element and the specific landscape context of each occurrence (including anthropogenic alteration of the environment). Thus, an H rank may be assigned to an EO before the maximum time frames have lapsed. Occurrences that have not been surveyed for periods exceeding these time frames should not be ranked A, B, C, or D. The higher maximum limit for plants and communities (i.e., ranging from 20 to 40 years) is based upon the assumption that occurrences of these elements generally have the potential to persist at a given location for longer periods of time. This greater potential is a reflection of plant biology and community dynamics. However, landscape factors must also be considered. Thus, areas with more anthropogenic impacts on the environment (e.g., development) will be at the lower end of the range, and less-impacted areas will be at the higher end.

The rank of X is assigned to EOs for which there is documented destruction of habitat or environment, or persuasive evidence of eradication based on adequate survey (i.e., thorough or repeated survey efforts by one or more experienced observers at times and under conditions appropriate for the Element at that location).

Appendix I

Riparian Wildlife Habitat Standard for the Tomoka Basin

11.5 Tomoka River and Spruce Creek Hydrologic Basins

In addition to the standards and design criteria described in sections 8.0, 9.0, 10.0, above, and 12.0 below, systems within the Tomoka River Hydrologic Basin or the Spruce Creek Hydrologic Basin must meet the following standards and criteria:

11.5.1 Recharge Standard

Projects, or portions of projects, in the Most Effective Recharge Areas must retain three (3) inches of runoff from the directly connected impervious area within the Most Effective Recharge Area of the project area. As an alternative, applicants may demonstrate that the post-development recharge capacity will be equal to or greater than the pre-development recharge capacity.

Most Effective Recharge Areas, as used in this section, are areas which have 10-20 inches of recharge per year. Most Effective Recharge Areas can be more accurately defined by soils types. Those areas with Type "A" Hydrologic Soil Group shall be considered to be Most Effective Recharge Areas. Figures 11.5-1 and Figure 11.5-2 show the approximate location of the Most Effective Recharge Area in the Tomoka River and Spruce Creek Hydrologic Basins.

Section 18.1 contains a list of Type "A" soils for Flagler and Volusia counties. This list will be used to determine whether a proposed project, or portion of a project, is in the Most Effective Recharge Area. Also, applicants may submit additional geotechnical information to establish whether or not a site contains Type "A" soils and is within the Most Effective Recharge Area.

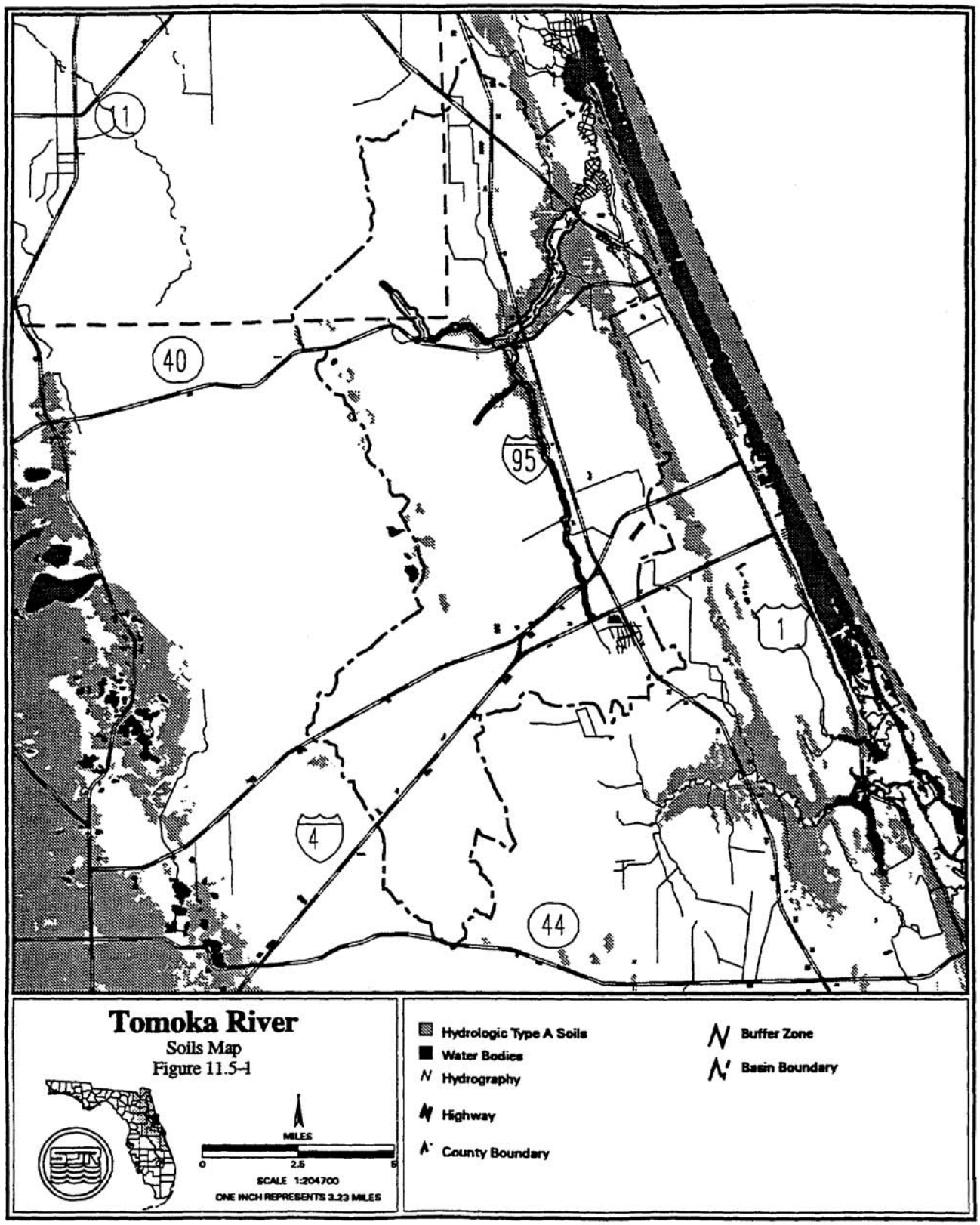


Figure 11.5-1 Tomoka River Soils Map

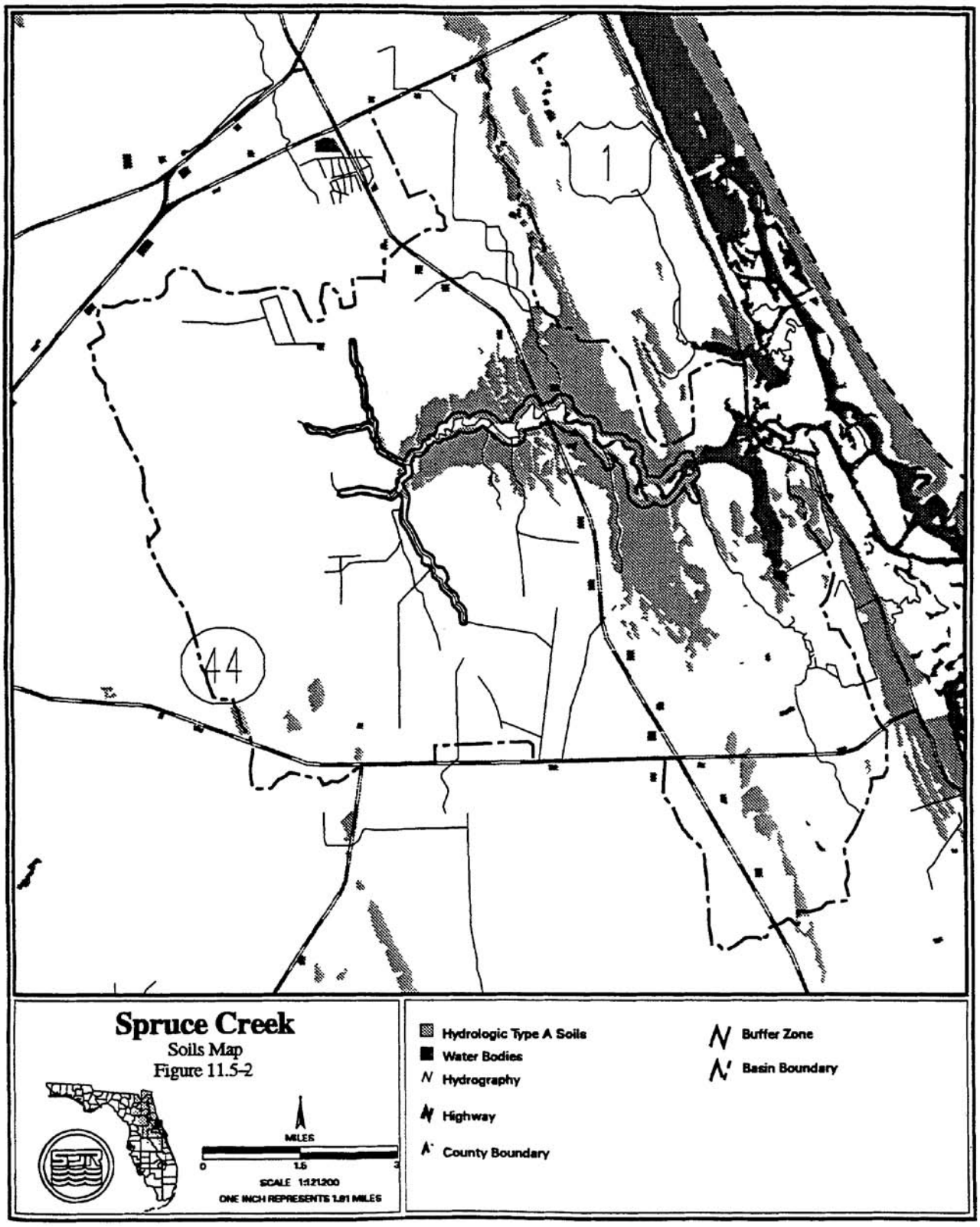


Figure 11.2-5 Spruce Creek Soils Map

Directly connected impervious areas are those impervious areas, which are connected to the surface water management system by a drainage improvement, such as a ditch, storm sewer, paved channel, or other man-made conveyance. Stormwater that is retained must be infiltrated into the soil or evaporated such that the storage volume is recovered within 14 days following the storm event.

11.5.2 Floodplain Storage Criteria

Systems constructed in the 100 year floodplain have the potential to increase flood stages on adjacent property. A system must not cause a net reduction in flood storage within the 100 year floodplain of the Tomoka River or Spruce Creek or any of their tributaries except for structures elevated on pilings or traversing works that comply with conveyance requirements in subsection 10.5.2.

11.5.3 Stormwater Management Standard

Construction of new stormwater management systems must be in accordance with the design and performance standards of chapter 40C-42, F.A.C. However, systems which serve drainage areas in excess of 10 acres cannot use detention with filtration treatment as the sole stormwater treatment methodology. Additionally, when retention systems are not feasible due to limited percolation capacity, wet detention treatment or other treatment demonstrated to be equivalent to retention or wet detention, in accordance with chapter 40C-42, F.A.C., must be used.

11.5.4 Riparian Wildlife Habitat Standard

The wetlands abutting the Tomoka River and Spruce Creek and their tributaries support an abundance and diversity of aquatic and wetland dependent wildlife. Uplands abutting these wetlands protect the wetlands and provide important habitat for aquatic and wetland dependent species. Construction, alteration, operation, maintenance, removal or abandonment of surface water management systems within these wetlands and uplands can result in adverse changes in the habitat, diversity, abundance and food sources of aquatic and wetland dependent species. Implementation of these regulations should be done in a manner which encourages development of functional resource protection plans.

(a) The applicant must provide reasonable assurance that the construction, alteration, operation, maintenance, removal or abandonment of a system within the following designated Riparian Habitat Protection Zone will not adversely affect the abundance, diversity, food sources or habitat (including its use to satisfy nesting, breeding and resting needs) of aquatic or wetland dependent species:

1. The wetlands and uplands which are within 50 feet landward of the landward extent of the wetlands which abut Spruce Creek north of

Pioneer Trail to the FEC railroad, and the Tomoka River north of I-4 to US 1 and the following tributaries:

a. Spruce Creek east of the western section line of Section 35, Township 16 South, Range 32 East, Volusia County, Florida.

b. Spruce Creek east of the power line easement in Section 27, Township 16 South, Range 32 East, Volusia County, Florida.

c. Spruce Creek west of SR 415 and south of the northern section line of Section 23, Township 16 South, Range 32 East, Volusia County, Florida.

d. The Little Tomoka River north of SR 40 in Volusia County and south of the western section line of Section 22, Range 31 East, Township 14 South, Flagler County.

e. Priest Branch east of the power line easement in Section 6, Township 15 South, Range 32 East, Volusia County, Florida.

2. The uplands which are within 550 feet landward of the stream's edge of the following portions of the streams. The stream's edge is defined, for the purpose of this subsection, as the waterward extent of the wetlands abutting the stream:

a. Spruce Creek north of the southern section line of Section 25, Range 32 East, Township 16 South, Volusia County, Florida;

b. Tomoka River north of the confluence of the Tomoka River and Priest Branch; and

3. The uplands which are within 320 feet landward of the stream's edge of the following stream. The stream's edge is defined, for the purpose of this subsection, as the waterward extent of the wetlands abutting the stream:

a. Spruce Creek east of I-95 and west of the FEC railroad; and

4. The uplands that are within 275 feet landward of the edge of the following streams:

a. Spruce Creek south of the southern section line if Section 25, Range 32 East, Township 16 South, Volusia County, Florida;

b. Spruce Creek east of the western section line of Section 35, Township 16 South, Range 32 East, Volusia County, Florida.

c. Spruce Creek east of the power line easement in Section 27, Township 16 South, Range 32 East, Volusia County, Florida.

d. Spruce Creek west of SR 415 and south of the northern section line of Section 23, Township 16 South, Range 32 East, Volusia County, Florida.

e. The Tomoka River south of the confluence of the Tomoka River and Priest Branch in section 36, Range 31 East, Township 14 South, Volusia County, Florida;

f. The Little Tomoka River north of SR 40, Volusia County, and south of the western section line of Section 22, Range 31 East, Township 14 South, Flagler County, Florida.

g. Priest Branch east of the power line easement in Section 6, Township 15 South, Range 32 East, Volusia County, Florida.

(b) Any of the following activities within the Riparian Habitat Protection Zone are presumed to adversely affect the abundance, food sources, or habitat of aquatic or wetland dependent species provided by the Zone: construction of buildings, golf courses, impoundments, roads, canals, ditches, swales, and any land clearing which results in the creation of any system (activities not listed above do not receive a presumption of no adverse effect.)

(c) The presumption in paragraph (b) shall not apply to any activity which promotes a more endemic state, where the land in the Zone has been changed by man. An example of such an activity would be construction undertaken to return lands managed for agriculture or silviculture to a vegetative community that is more compatible with endemic land cover.

(d) The standard of subsection 11.5.4(a) may be met by demonstrating that the overall merits of the proposed plan of development, including mitigation as described in section 12.3, Applicant's Handbook: Management and Storage of Surface Waters, provide a degree of resource protection to these types of fish and wildlife which offsets adverse effects of the proposed system on the uplands and wetlands within the Zone. Some reasonable use of the land within the Protection zone can be allowed under subsection 11.5.4.

(e) Roads or other traversing works which cross the Zone have the potential to fragment the Zone and adversely affect the habitat value of the Zone to aquatic and wetland dependent species. To minimize adverse effects to the Zone, applicants for permits to construct traversing works in the Zone must first demonstrate the need for the traversing works to provide for regional transportation, regional utility services, or reasonable property access, in

addition to meeting the requirement of subsection 11.5.4(a), above. Traversing works must also be designed to meet all requirements of the district rules related to water quality and quantity.

11.6 Sensitive Karst Areas Basin

In addition to the requirements for issuance and design and performance criteria described in chapter 40C-42, F.A.C., systems in the Sensitive Karst Areas Basin must meet the criteria in section 40C-41.063(7), F.A.C.

11.7 Lake Apopka Hydrologic Basin

(a) Pursuant to section 373.461(3)(a), F.S., the total phosphorus criterion for Lake Apopka is 55 parts per billion. To meet this total phosphorus criterion, the applicant must provide reasonable assurance of compliance with the following total phosphorus discharge limitations and comply with the relevant monitoring requirements in section 11.7(b) and relevant inspection requirements of section 11.7(c):

(1) Sites Within Lake Apopka Hydrologic Basin

Applicants required to obtain a permit pursuant to chapters 40C-4, 40C-40, 40C-42, or 40C-44, F.A.C., for a surface water management system located within the Lake Apopka Hydrologic Basin shall demonstrate: (i) that the system provides stormwater treatment equivalent to or greater than any of the applicable stormwater treatment options contained in Table 11.7-1 for the removal of total phosphorus; (ii) that the post-development total phosphorus load discharged from the project area will not exceed the pre-development total phosphorus load discharged from the project area; or (iii) that the system, under the soil moisture conditions described in section 10.3.8(a), will not discharge water to Lake Apopka or its tributaries for the 100-year, 24-hour storm event. Systems described under section 11.7(a)(1)iii shall be considered to discharge to a land-locked lake that must meet the criteria in sections 10.4.1 and 10.4.2. Any alteration of a system originally permitted pursuant to section 11.7(a)(1)iii which results in an increase in discharge of water to Lake Apopka or its tributaries shall be considered an interbasin diversion that must meet the criteria in sections 11.7(a)(2) and 11.7(b)(4).

(2) Interbasin Diversion of Water to Lake Apopka Hydrologic Basin

Applicants required to obtain a permit pursuant to chapters 40C-4, 40C-40, 40C-42, or 40C-44, F.A.C., for a surface water

Appendix J

Standard Protection Measures for the Eastern Indigo Snake and Eastern Indigo Snake Programmatic Effect Determination Key

CONSTRUCTION PRECAUTIONS FOR THE EASTERN INDIGO SNAKE

THE EASTERN INDIGO SNAKE (DRYMARCHON CORAIS COUPERI) COULD BE PRESENT IN THE PROJECT AREA. IN ORDER TO MINIMIZE HARM TO THIS SPECIES, THE FDOT HAS COMMITTED TO IMPLEMENT THE FOLLOWING PROTECTION MEASURES:

A. PROVIDE EASTERN INDIGO SNAKE EDUCATIONAL INFORMATION TO EMPLOYEES PRIOR TO THE INITIATION OF ANY CLEARING OR CONSTRUCTION ACTIVITIES. AN EDUCATIONAL EXHIBIT THAT HAS BEEN APPROVED BY USFWS SHALL BE POSTED CONSPICUOUSLY AT A SITE ACCESSIBLE TO ALL EMPLOYEES AND A HANDOUT WILL BE DISTRIBUTED TO EMPLOYEES.

B. THE CONTRACTOR SHALL POST AND DISTRIBUTE EDUCATIONAL INFORMATION TO ALL ITS WORKERS. THE EXHIBIT AND BROCHURES SHALL INCLUDE PHOTOGRAPHS OF THE EASTERN INDIGO SNAKE, INFORMATION ON LIFE HISTORY, AND LEGAL PROTECTION OF THE SPECIES IN FLORIDA, AND HOW TO AVOID IMPACTS TO THE SPECIES. THIS MATERIAL SHALL BE SUPPLIED TO THE CONTRACTOR BY THE CONSTRUCTION ENVIRONMENTAL LIASON AT THE PRE-CONSTRUCTION CONFERNCE.

THE CONTRACTOR, IN COORDINATION WITH THE FDOT CONSTRUCTION PROJECT MANAGER, SHALL ALSO BE RESPONSIBLE FOR OBTAINING, DEVELOPING AND CARRYING OUT ANY MANAGEMENT PLAN(S)/AGREEMENT(S) OR PERMITS WITH APPROPRIATE REGULATORY AGENCIES DUE TO THE OCCURRENCE OF UNEXPECTED SPECIES. SUCH SPECIES ARE ANY OTHER LISTED/PROTECTED SPECIES THAT ARE IDENTIFIED DURING THE CONSTRUCTION OF THE PROJECT WHICH WERE NOT PREVIOUSLY IDENTIFIED THROUGH PLAN NOTES OR PERMIT CONDITIONS. THE MANAGEMENT PLAN(S)/AGREEMENT(S)/PERMIT WOULD ALLOW FOR CONSTRUCTION TO OCCUR THAT DOES NOT “ADVERSELY AFFECT OR JEOPARDIZE” THE SPECIES IN ACCORDANCE WITH THE ENDANGERED SPECIES ACT AND/OR APPLICABLE STATE STATUTES. THE CONTRACTOR, IN COORDINATION WITH THE FDOT CONSTRUCTION PROJECT MANAGER, SHALL ALSO BE RESPONSIBLE FOR MAKING ANY MODIFICATIONS TO THE PROPOSED MANAGEMENT PLAN(S)/AGREEMENT(S)/PERMIT TO ASSURE LISTED SPECIES REMAIN UNAFFECTED WITH THE APPROPRIATE REGULATORY AGENCIES.

UPDATE ADDENDUM TO
USFWS Concurrence Letter dated January 25, 2010
To U.S. Army Corps of Engineers
Regarding Use of the attached
Eastern Indigo Snake Programmatic
Effect Determination Key

Updated: January 5, 2012

On Page 2

The following replaces the last paragraph above the signatures:

"Thank you for your continued cooperation in the effort to conserve fish and wildlife resources. Any questions or comments should be directed to either Victoria Foster (South Florida ESO) at 772-469-4269 or Dr. Heath Rauschenberger (North Florida ESO) at 904-731-3203."

On Page 5

The following replaces footnote #3:

"…

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

…"

United States Department of the Interior

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

January 25, 2010

David S. Hobbie
Chief, Regulatory Division
U.S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Service Federal Activity Code: 41420-2009-FA-0642
Service Consultation Code: 41420-2009-I-0467
41910-2010-I-0045
Subject: North and South Florida Ecological Services Field Offices Programmatic Concurrence for Use of Original Eastern Indigo Snake Key(s) Until Further Notice

Dear Mr. Hobbie:

The U.S. Fish and Wildlife Service's (Service) South and North Florida Ecological Services Field Offices (FO), through consultation with the U.S. Army Corps of Engineers Jacksonville District (Corps), propose revision to both Programmatic concurrence letters/keys for the federally threatened Eastern Indigo Snake (*Drymarchon corais couperi*), (indigo snake), and now provide one key for both FO's. The original programmatic key was issued by the South Florida FO on November 9, 2007. The North Florida FO issued a revised version of the original key on September 18, 2008. Both keys were similar in content, but reflected differences in geographic work areas between the two Field Offices. The enclosed key satisfies each office's responsibilities under the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C.1531 *et seq.*).

Footnote number 3 in the original keys indicated "A member of the excavation team should be authorized for Incidental Take during excavation through either a section 10(a)(1)(A) permit issued by the Service or an incidental take permit issued by the Florida Fish and Wildlife Conservation Commission (FWC)." We have removed this reference to a Service issued Section 10(a)(1)(A) permit, as one is not necessary for this activity. We also referenced the FWC's revised April 2009 Gopher Tortoise Permitting Guidelines with a link to their website for updated excavation guidance, and have provided a website link to our Standard Protection Measures. All other conditions and criteria apply.

We believe the implementation of the attached key achieves our mutual goal for all users to make consistent effect determinations regarding this species. The use of this key for review of projects

located in all referenced counties in our respective geographic work areas leads the Service to concur with the Corps' determination of "may affect, not likely to adversely affect" (MANLAA) for the Eastern indigo snake. The biological rationale for the determinations is contained within the referenced documents and is submitted in accordance with section 7 of the Act.

Should circumstances change or new information become available regarding the eastern indigo snake or implementation of the key, the determinations may be reconsidered as deemed necessary.

Thank you for your continued cooperation in the effort to conserve fish and wildlife resources. Any questions or comments should be directed to either Allen Webb (Vero Beach) at 772-562-3909, extension 246, or Jay Herrington (Jacksonville) at 904-731-3326.

Sincerely,

Paul Souza
Field Supervisor
South Florida Ecological Services Office

David L. Hankla
Field Supervisor
North Florida Ecological Services Office

Enclosure

cc: electronic only
FWC, Tallahassee, Florida (Dr. Elsa Haubold)
Service, Jacksonville, Florida (Jay Herrington)
Service, Vero Beach, Florida (Sandra Sneckenberger)

Eastern Indigo Snake Programmatic Effect Determination Key

Scope of the key

This key should be used only in the review of permit applications for effects determinations within the North and South Florida Ecological Services Field Offices Geographic Areas of Responsibility (GAR), and not for other listed species or for aquatic resources such as Essential Fish Habitat (EFH). Counties within the **North** Florida GAR include Alachua, Baker, Bradford, Brevard, Citrus, Clay, Columbia, Dixie, Duval, Flagler, Gilchrist, Hamilton, Hernando, Hillsborough, Lafayette, Lake, Levy, Madison, Manatee, Marion, Nassau, Orange, Pasco, Pinellas, Putnam, St. Johns, Seminole, Sumter, Suwannee, Taylor, Union, and Volusia.

Counties in the **South** Florida GAR include Broward, Charlotte, Collier, De Soto, Glades, Hardee, Hendry, Highlands, Lee, Indian River, Martin, Miami-Dade, Monroe, Okeechobee, Osceola, Palm Beach, Polk, Sarasota, St. Lucie.

Habitat

Over most of its range, the eastern indigo snake frequents several habitat types, including pine flatwoods, scrubby flatwoods, high pine, dry prairie, tropical hardwood hammocks, edges of freshwater marshes, agricultural fields, coastal dunes, and human-altered habitats (Service 1999). Eastern indigo snakes appear to need a mosaic of habitats to complete their life cycle. Wherever the eastern indigo snake occurs in xeric habitats, it is closely associated with the gopher tortoise *(Gopherus polyphemus),* the burrows of which provide shelter from winter cold and summer desiccation (Speake et al. 1978; Layne and Steiner 1996). Interspersion of tortoise-inhabited uplands and wetlands improves habitat quality for this species (Landers and Speake 1980; Auffenberg and Franz 1982).

In south Florida, agricultural sites, such as sugar cane fields, created in former wetland areas are occupied by eastern indigo snakes (Enge pers. comm. 2007). Formerly, indigo snakes would have only occupied higher elevation sites within the wetlands. The introduction of agriculture and its associated canal systems has resulted in an increase in rodents and other species of snakes that are prey for eastern indigo snakes. The result is that indigos occur at higher densities in these areas than they did historically.

Even though thermal stress may not be a limiting factor throughout the year in south Florida, indigo snakes still seek and use underground refugia. On the sandy central ridge of central Florida, eastern indigos use gopher tortoise burrows more (62 percent) than other underground refugia (Layne and Steiner 1996). Other underground refugia used include armadillo (*Dasypus novemcinctus*) burrows near citrus groves, cotton rat (*Sigmodon hispidus*) burrows, and land crab (*Cardisoma guanhumi*) burrows in coastal areas (Service 2006). Natural ground holes, hollows at the base of trees or shrubs, ground litter, trash piles, and crevices of rock-lined ditch walls are also used (Layne and Steiner 1996). These refugia are used most frequently where tortoise burrows are not available, principally in low-lying areas off the central and coastal ridges. In extreme south Florida (the Everglades and Florida Keys), indigo snakes are found in tropical

hardwood hammocks, pine rocklands, freshwater marshes, abandoned agricultural land, coastal prairie, mangrove swamps, and human-altered habitats (Steiner et al. 1983). It is suspected that they prefer hammocks and pine forests, because most observations occur in these habitats disproportionately to their presence in the landscape (Steiner et al. 1983). Hammocks may be important breeding areas as juveniles are typically found there. The eastern indigo snake is a snake-eater so the presence of other snake species may be a good indicator of habitat quality.

Conservation Measures

The Service routinely concurs with the Corps' "not likely to adversely affect" (NLAA) determination for individual project effects to the eastern indigo snake when assurances are given that our *Standard Protection Measures for the Eastern Indigo Snake* (Service 2004) located at: http://www.fws.gov/northflorida/IndigoSnakes/indigo-snakes will be used during project site preparation and project construction. There is no designated critical habitat for the eastern indigo snake.

In an effort to reduce correspondence in effect determinations and responses, the Service is providing an Eastern Indigo Snake Effect Determination Key, similar in utility to the West Indian Manatee Effect Determination Key and the Wood Stork Effect Determination Keys presently being utilized by the Corps. If the use of this key results in a Corps' determination of "no effect" for a particular project, the Service supports this determination. If the use of this Key results in a determination of NLAA, the Service concurs with this determination and no additional correspondence will be necessary[1]. This key is subject to revisitation as the Corps and Service deem necessary.

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

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

B. Permit will be conditioned for use of the Service's *Standard Protection Measures For The Eastern Indigo Snake* during site preparation and project construction.....*go to* C

   Permit will not be conditioned as above for the eastern indigo snake, or it is not known whether an applicant intends to use these measures and consultation with the Service is requested[2] .....*"may affect"*

C. There are gopher tortoise burrows, holes, cavities, or other refugia where a snake could be buried or trapped and injured during project activities .....*go to* D

   There are no gopher tortoise burrows, holes, cavities, or other refugia where a snake could be buried or trapped and injured during project activities .....*"NLAA"*

D. The project will impact less than 25 acres of xeric habitat supporting less than 25 active and inactive gopher tortoise burrows.....*go to* E

The project will impact more than 25 acres of xeric habitat or more than 25 active and inactive gopher tortoise burrows and consultation with the Service is requested[2]..... *"may affect"*

E. Any permit will be conditioned such that all gopher tortoise burrows, active or inactive, will be evacuated prior to site manipulation in the vicinity of the burrow[3]. If an indigo snake is encountered, the snake must be allowed to vacate the area prior to additional site manipulation in the vicinity. Any permit will also be conditioned such that holes, cavities, and snake refugia other than gopher tortoise burrows will be inspected each morning before planned site manipulation of a particular area, and, if occupied by an indigo snake, no work will commence until the snake has vacated the vicinity of proposed work..... *"NLAA"*

Permit will not be conditioned as outlined above and consultation with the Service is requested[2] ..... *"may affect"*

---

[1]With an outcome of "no effect" or "NLAA" as outlined in this key, the requirements of section 7 of the Act are fulfilled for the eastern indigo snake and no further action is required.

[2]Consultation may be concluded informally or formally depending on project impacts.

[3] If burrow excavation is utilized, it should be performed by experienced personnel. The method used should minimize the potential for injury of an indigo snake. Applicants should follow the excavation guidance provided within the Florida Fish and Wildlife Conservation Commission's revised April 2009 Gopher Tortoise Permitting Guidelines located at **http://myfwc.com/License/Permits_ProtectedWildlife.htm#gophertortoise**. A member of the excavation team should be authorized for Incidental Take during excavation through an incidental take permit issued by the Florida Fish and Wildlife Conservation Commission.

Appendix K

Essential Fish Habitat Technical Memorandum

Essential Fish Habitat Technical Memorandum

1.0 Introduction

In accordance with the Magnuson-Stevens Fishery Conservation and Management Act of 1996 (CFR 600.920), as administered by the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS), Essential Fish Habitat (EFH) consultation is required for this project. This document represents FDOT's initiation of EFH consultation with the NMFS.

EFH is defined in the Magnuson-Stevens Act as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity". The word "fish" includes finfish, mollusks, crustaceans, and all other forms or marine animal and plant life with the exception of marine mammals and birds. During the ETAT review process in 2010, the NMFS identified high quality forested Palustrine wetlands and sand bottom as EFH for juvenile white shrimp. Potential impacts to these wetland types are anticipated with the project. However, it is anticipated that impacts to wetlands in the project corridor would be minimal and would not adversely affect EFH.

2.0 EFH Assessment

White Shrimp (*Litopenaeus setiferus*)

The white shrimp is neritic to estuarine, and pelagic to demersal, depending on the life stage. Eggs and early planktonic larval stages occur in nearshore marine waters. Postlarvae seek estuarine habitats of shallow water with muddy/sand bottoms high in organic detritus, or abundant in marsh grass in oligohaline to euhaline salinities. Juveniles prefer lower salinity waters, and are frequently found in tidal rivers, such as the Tomoka River, and tributaries throughout their range. Juveniles and sub-adults move into offshore waters during fall and winter. Adults generally inhabit nearshore waters of the Gulf in depths less than 27 m, and are usually more abundant at a depth of 14 m (Pattillo, *et al*. 1997). The proposed bridge improvements are not expected to have an adverse affect on this species.

2.1 Analysis of the effects to Essential Fish Habitat\

Degradation of water quality result from the construction of the roadway and bridge improvements or excess pollutant loading of stormwater runoff from the project has the potential to adversely affect wetlands and EFH in the Tomoka River and downstream in the Halifax River. Best Management Practices (BMP's) will implemented in order to avoid, where practicable, or otherwise minimize impacts to water quality associated with construction activities. BMP's utilized will generally include phased construction, turbidity screens, silt fences, and other construction techniques approved by the St. Johns River Water Management (SJRWMD) and the Florida Department of Environmental Protection (FDEP). Stormwater treatment will be provided for the bridges is accordance with current SJRWMD and FDEP regulations and Rules 40D-4, 40D-40, and 40D-41 of the Florida Administrative Code.

3.0 EFH Conclusion

The proposed project is expected to have minimal impacts to the EFH in the Tomoka River. No direct impacts to open-water habitat of the Tomoka River are expected. Direct impacts to wetlands abutting the Tomoka River are estimated at 0.25 acres. Mitigation measures have been identified in the Natural Environment Report and will be developed during the design and permitting phase of the project with further consultation with the NMFS and the US Army Corps of Engineers.

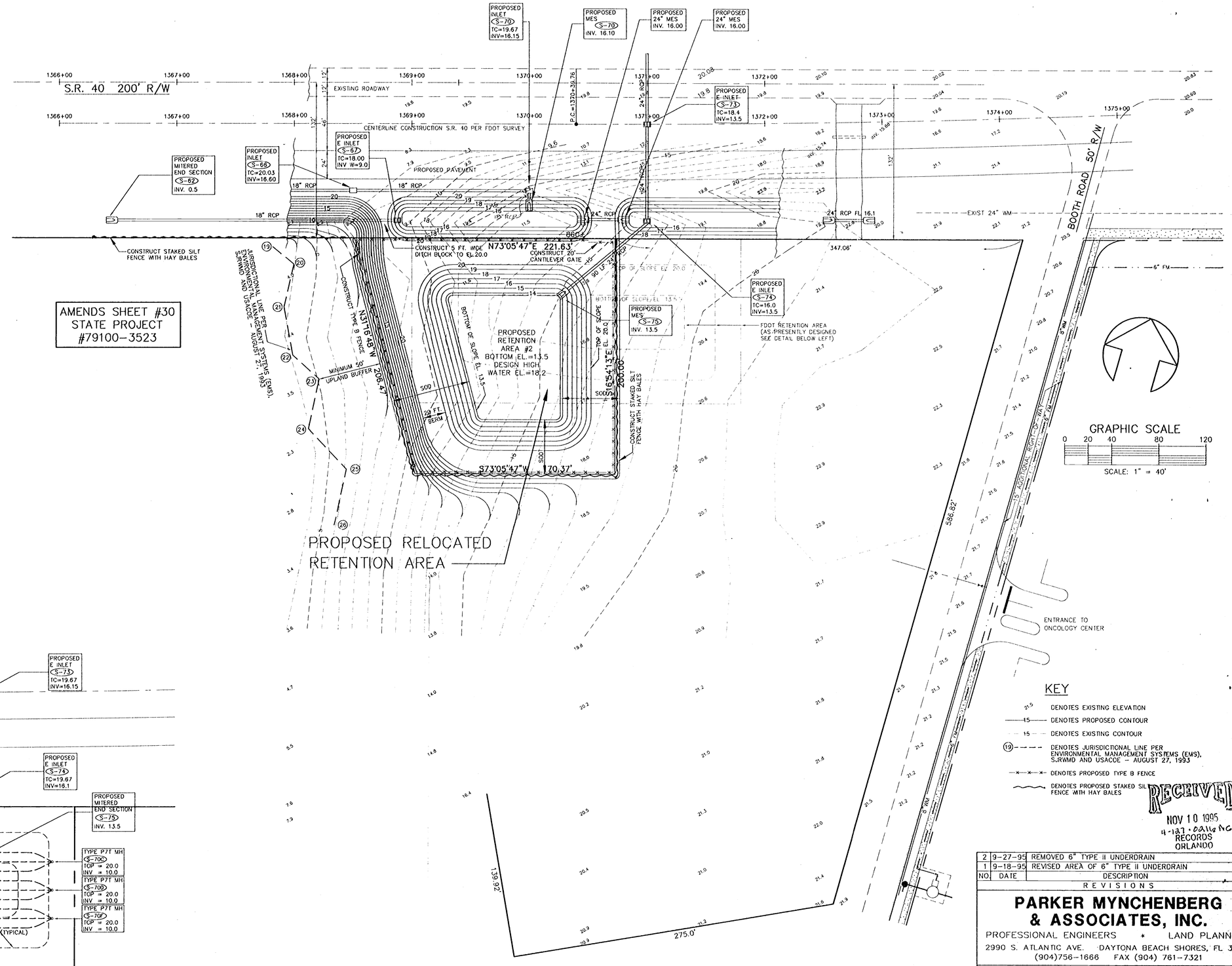
4.0 References

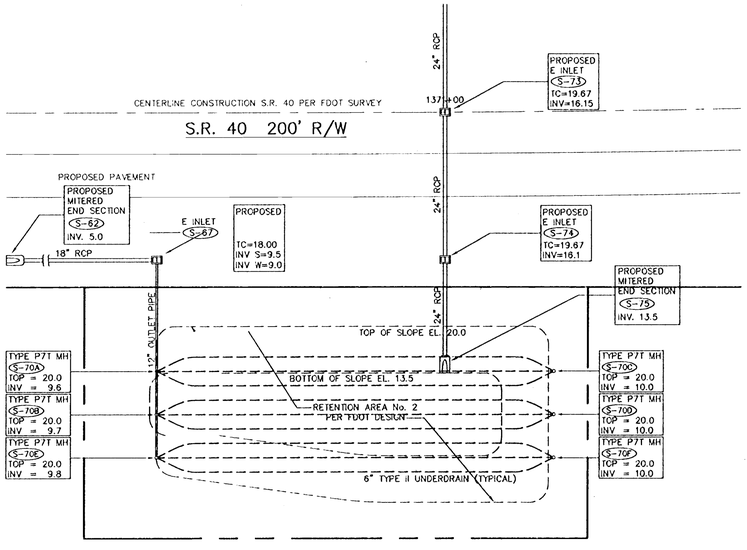
Pattillo, M.E., et al. 1997. Distribution and abundance of fishes and invertebrates in Gulf of Mexico estuaries, Vol. II: Species life history summaries. ELMR Rep. No. 11. NOAA/NOS SEA Division, Silver Spring, MD. 377 p.

Appendix L

As-Built Drawings for Tomoka River Bridge Mitigation Area

AMENDS SHEET #30
STATE PROJECT
#79100-3523





PRESENT FDOT RETENTION AREA DESIGN

SCALE: 1" = 40'

KEY

- 21.5 DENOTES EXISTING ELEVATION
- 15 DENOTES PROPOSED CONTOUR
- 15 DENOTES EXISTING CONTOUR
- (19) DENOTES JURISDICTIONAL LINE PER ENVIRONMENTAL MANAGEMENT SYSTEMS (EMS), SJRWMD AND USACOE – AUGUST 27, 1993
- DENOTES PROPOSED TYPE B FENCE
- DENOTES PROPOSED STAKED SILT FENCE WITH HAY BALES

RECEIVED
NOV 10 1995
4-187 DAYTONA BCH
RECORDS
ORLANDO

NO.	DATE	DESCRIPTION	BY
2	9-27-95	REMOVED 6" TYPE II UNDERDRAIN	JW
1	9-18-95	REVISED AREA OF 6" TYPE II UNDERDRAIN	JW

REVISIONS

PARKER MYNCHENBERG & ASSOCIATES, INC.
PROFESSIONAL ENGINEERS * LAND PLANNERS
2990 S. ATLANTIC AVE. DAYTONA BEACH SHORES, FL 32118
(904)756-1666 FAX (904) 761-7321

FDOT RETENTION AREA RELOCATION

S.R. 40 & BOOTH ROAD

FILE NO. 9407-RET.DWG	DESIGNER: P. MYNCHENBERG
DATE: 6-8-95	DRAFTSMAN: TOM WALKER
SCALE: 1" = 40'	SHEET 1 OF 1

SEAL

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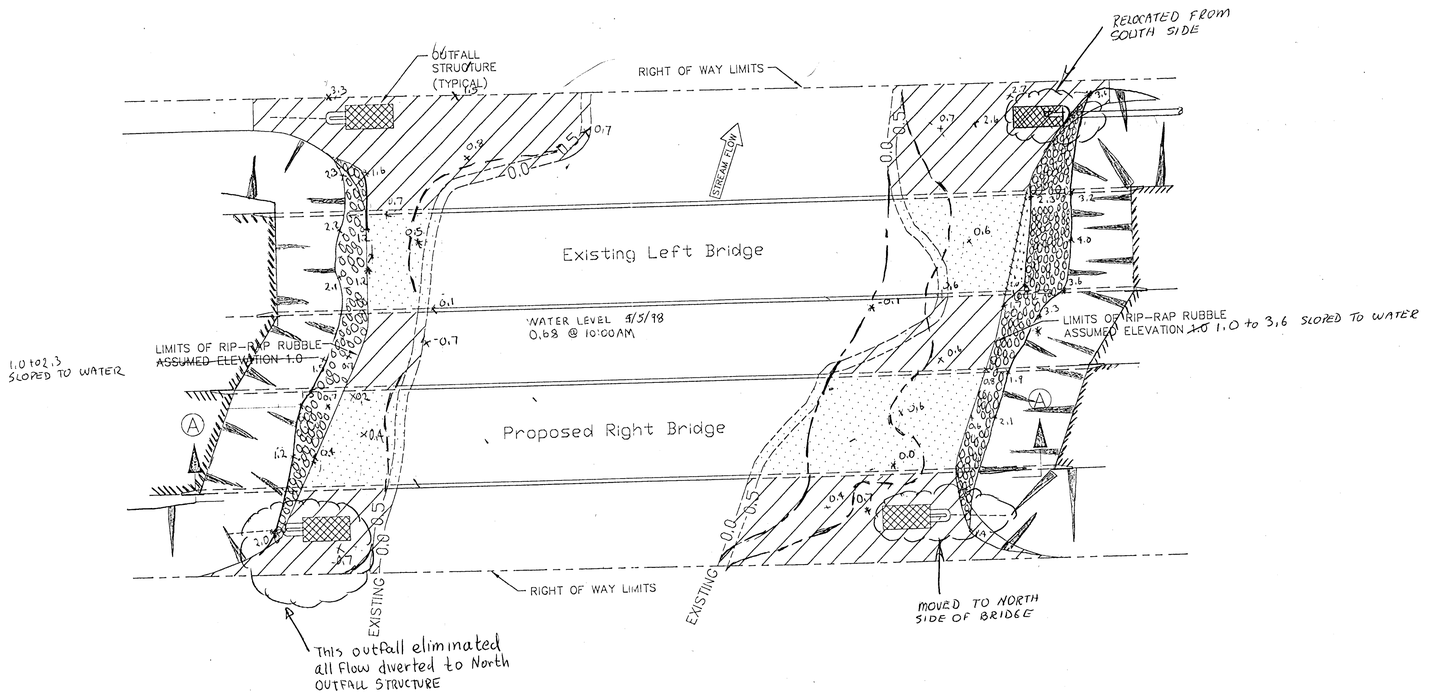


MITIGATION AREAS

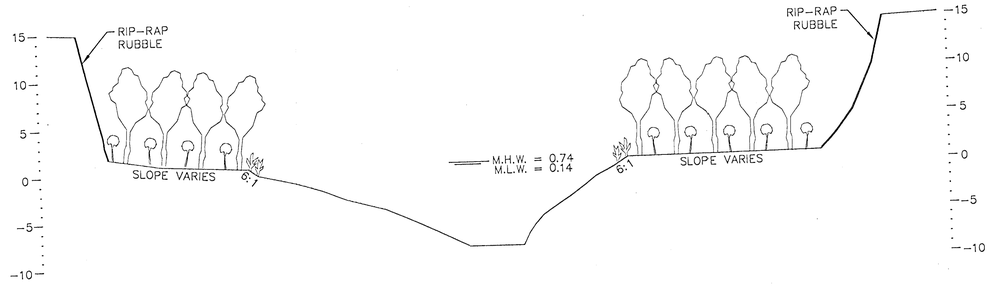
AREA UNDER BRIDGES	S.F.
EL. 0.0--0.5	754
EL. 0.5--1.0	6995

ALL OTHER AREAS	S.F.
EL. 0.0--0.5	1226
EL. 0.5--1.0	13,839

RECEIVED
MAR 30 2001
PDS ORLANDO SUN RAIL

4-127-0216AGM

I CERTIFY THE AREA SHOWN WAS CONSTRUCTED IN ACCORDANCE WITH THIS PLAN AS AMENDED
Thomas R. Whalen
05-20-98



PLANT SPECIFICATIONS

AREA UNDER BRIDGES	DENSITY	SIZE	QUANTITY	SPECIES
EL. 0.0–0.5	2' O.C.	1gal.	189	CRINUM AMERICANUM
EL. 0.5–1.0	2' O.C.	1gal.	1749	WOODWARDIA SPP.

ALL OTHER AREAS	DENSITY	SIZE	QUANTITY	SPECIES
EL. 0.0–0.5	2' O.C.	1gal.	306	CLADIUM JAMAICENSE
EL. 0.5–1.0 SUB CANOPY	3' O.C.	1gal.	513	OSMUNDA CINNOMOMEA
	3' O.C.	1gal.	256	ACROSTICHUM SPP.
	3' O.C.	1gal.	256	PELTANDRA SPP.
	3' O.C.	1gal.	513	CEPHALANTHUS OCCIDENTALIS
CANOPY	10' O.C.	7gal.	27	ACER RUBRUM
	10' O.C.	7gal.	57	TAXODIUM DISTICHUM
	10' O.C.	7gal.	57	NYSSA SYLVATICA

NOTE: THIS SHEET HAS BEEN INCLUDED FOR INFORMATIONAL PURPOSES ONLY. WORK IS TO BE PERFORMED UNDER A SEPARATE CONTRACT.

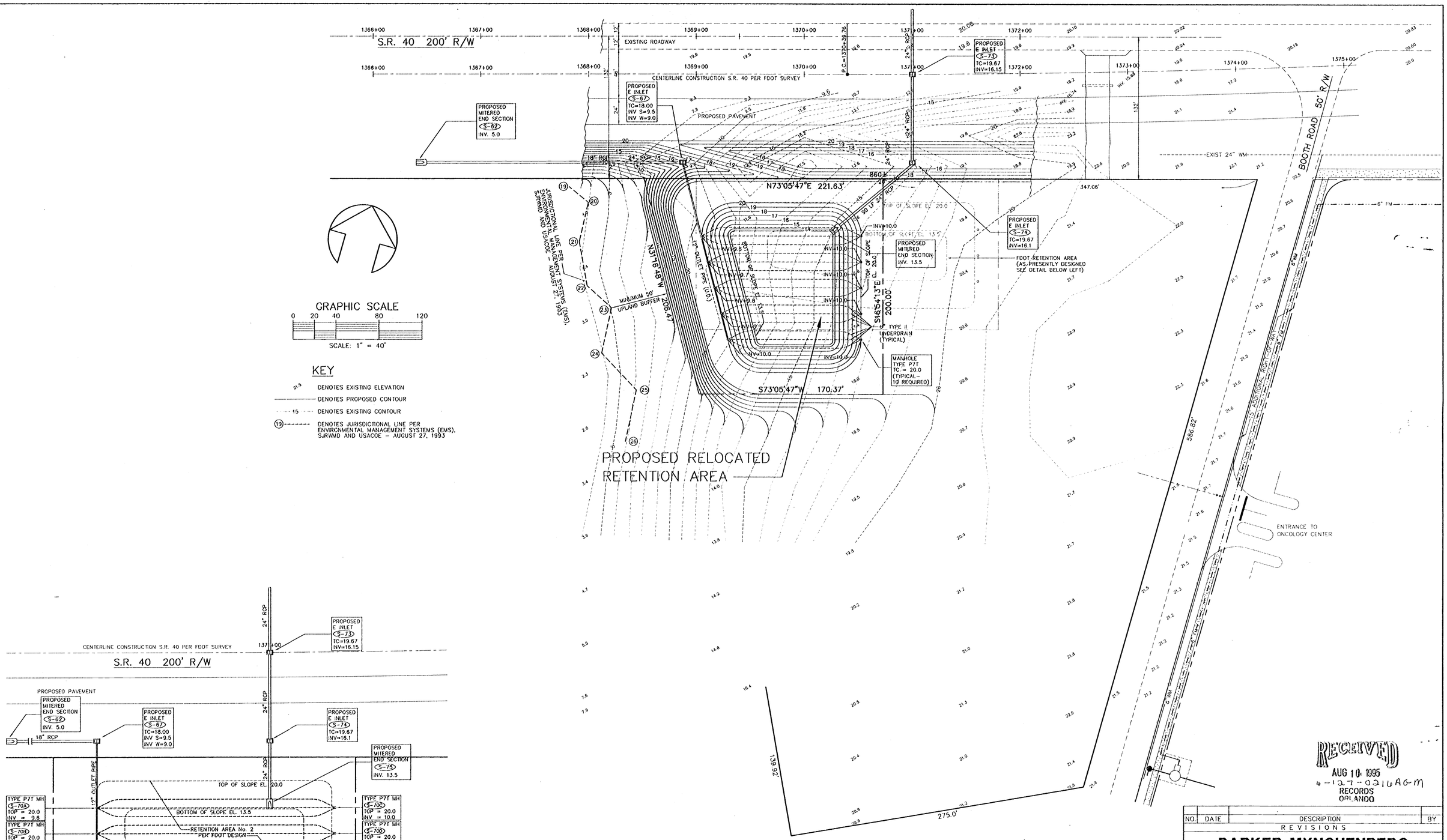
AS BUILT PLAN OF MITIGATION AREA

REVISIONS																	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

FLORIDA DEPARTMENT OF TRANSPORTATION

STATE ROAD 40 – TOMOKA BRIDGE
MITIGATION PLAN & CROSS SECTION

ED01119A.DWG



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SCALE: 1" = 40'

KEY

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- ——— DENOTES PROPOSED CONTOUR
- ····15···· DENOTES EXISTING CONTOUR
- (19)-------- DENOTES JURISDICTIONAL LINE PER ENVIRONMENTAL MANAGEMENT SYSTEMS (EMS), SJRWMD AND USACOE – AUGUST 27, 1993

PRESENT FDOT RETENTION AREA DESIGN

SCALE: 1" = 40'

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4-127-0216A6-M
RECORDS
ORLANDO

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

PARKER MYNCHENBERG & ASSOCIATES, INC.

PROFESSIONAL ENGINEERS * LAND PLANNERS

2990 S. ATLANTIC AVE. DAYTONA BEACH SHORES, FL 32118

(904)756-1666 FAX (904) 761-7321

FDOT RETENTION AREA RELOCATION

S.R. 40 & BOOTH ROAD

FILE NO. 9407-RET.DWG	DESIGNER: P. MYNCHENBERG
DATE: 6-8-95	DRAFTSMAN: TOM WALKER
SCALE: 1" = 40'	SHEET 1 OF 1

SEAL

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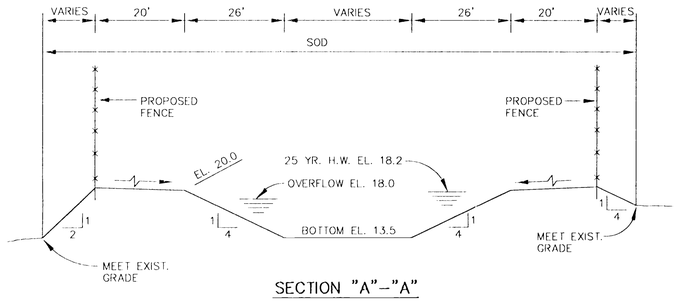
STATE PROJECT
#79100-3523



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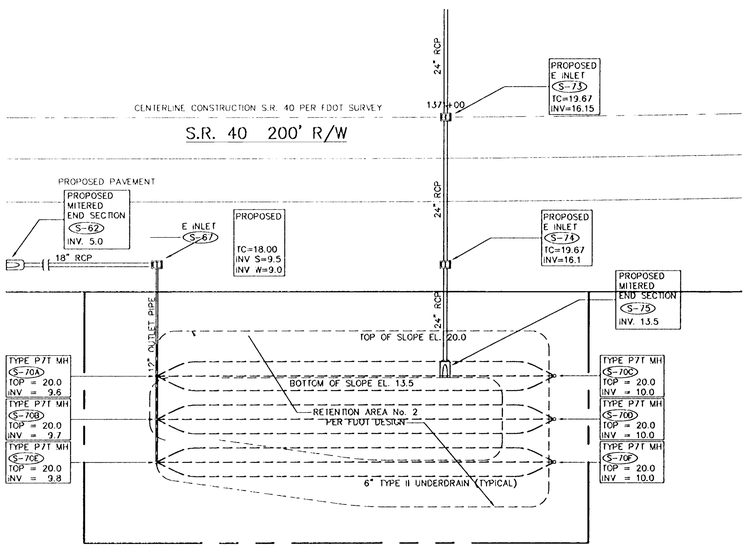

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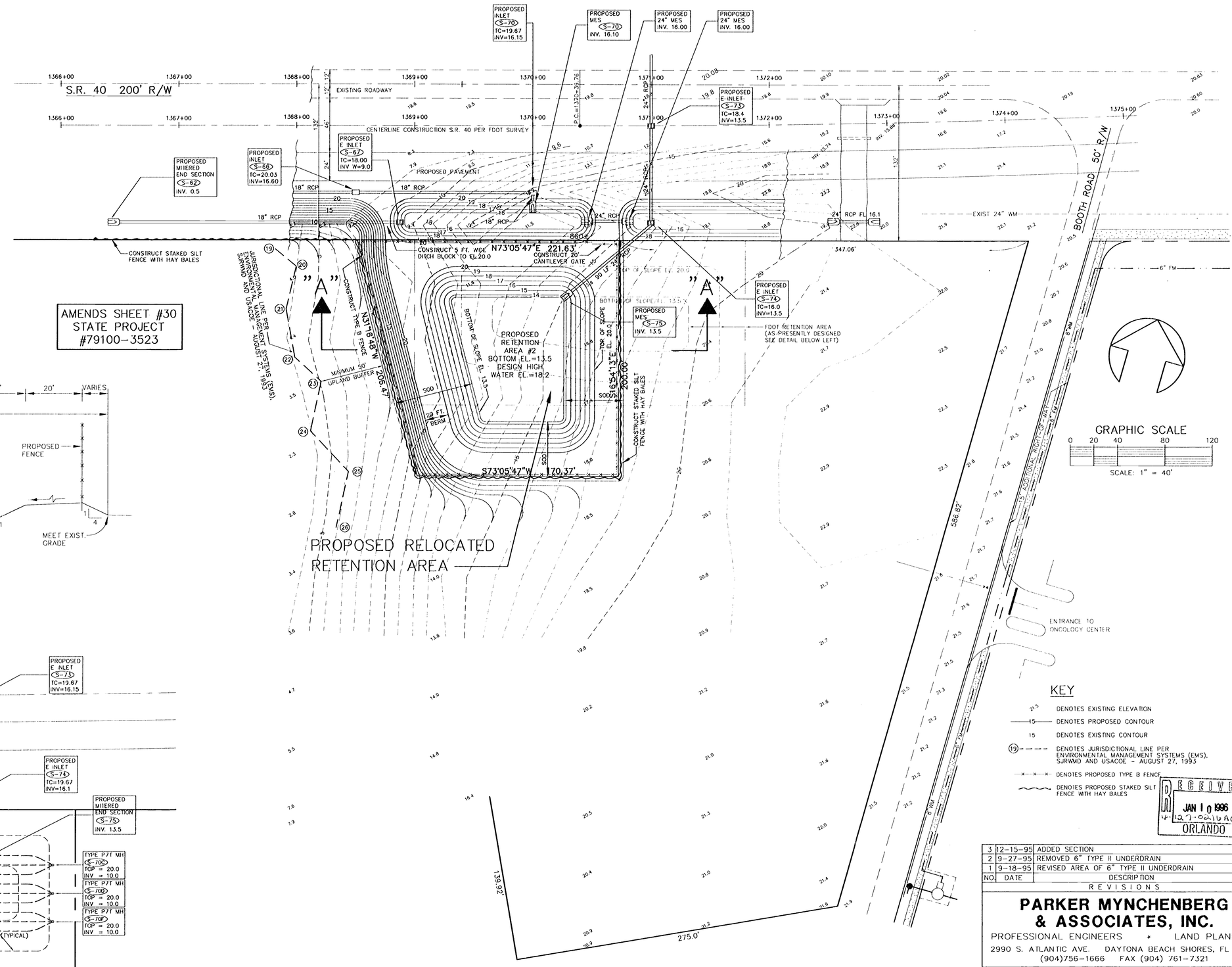

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- 15 — DENOTES PROPOSED CONTOUR
- 15 — DENOTES EXISTING CONTOUR
- (19) - - - DENOTES JURISDICTIONAL LINE PER ENVIRONMENTAL MANAGEMENT SYSTEMS (EMS). SJRWMD AND USACOE - AUGUST 27, 1993
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- ~~~ DENOTES PROPOSED STAKED SILT FENCE WITH HAY BALES

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1	9-18-95	REVISED AREA OF 6" TYPE II UNDERDRAIN	TW

REVISIONS

PARKER MYNCHENBERG & ASSOCIATES, INC.
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FDOT RETENTION AREA RELOCATION

S.R. 40 & BOOTH ROAD

FILE NO. 9407-RET.DWG	DESIGNER: P. MYNCHENBERG
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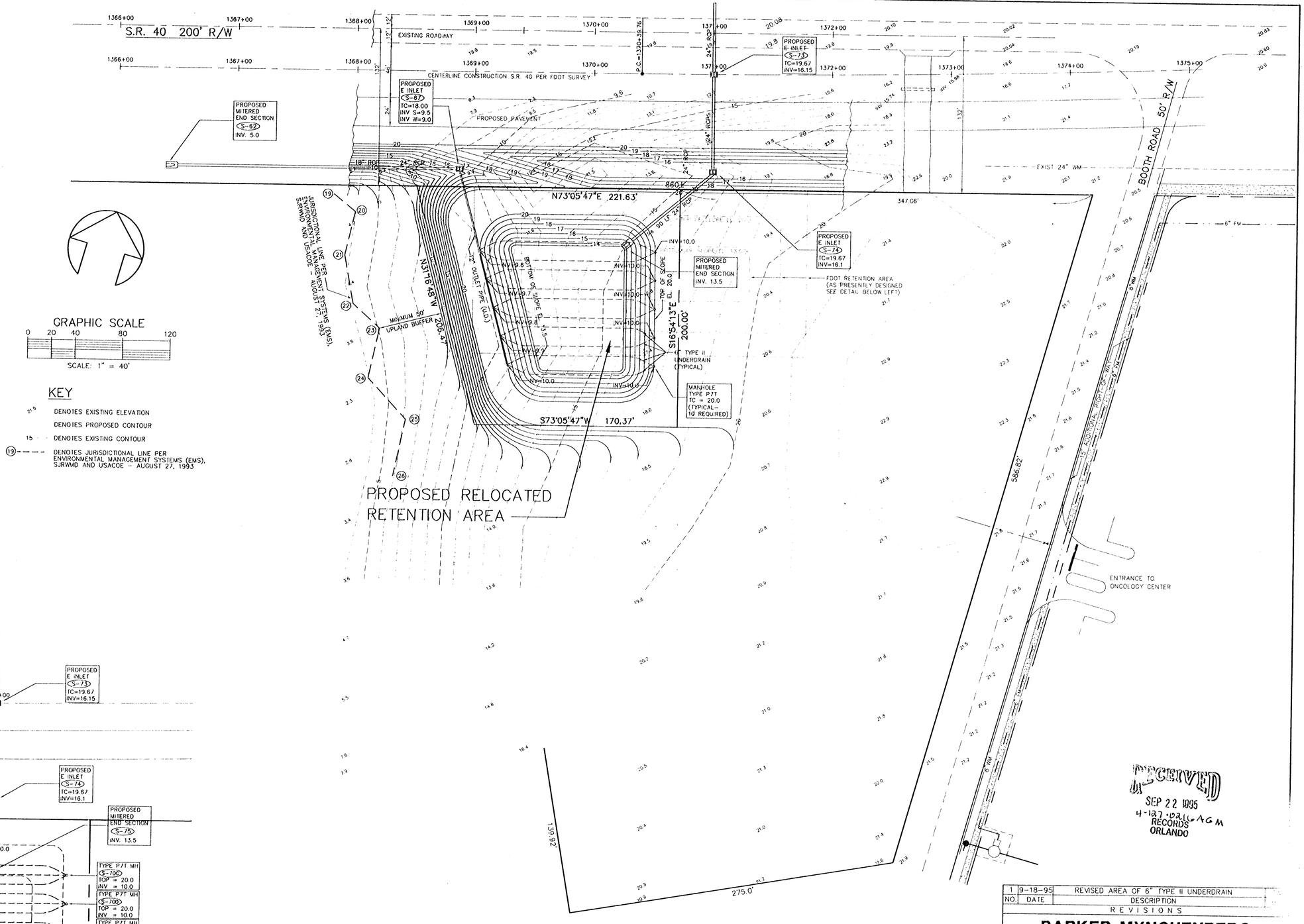
SEAL



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SCALE: 1" = 40'

KEY

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- DENOTES PROPOSED CONTOUR
- 15 — DENOTES EXISTING CONTOUR
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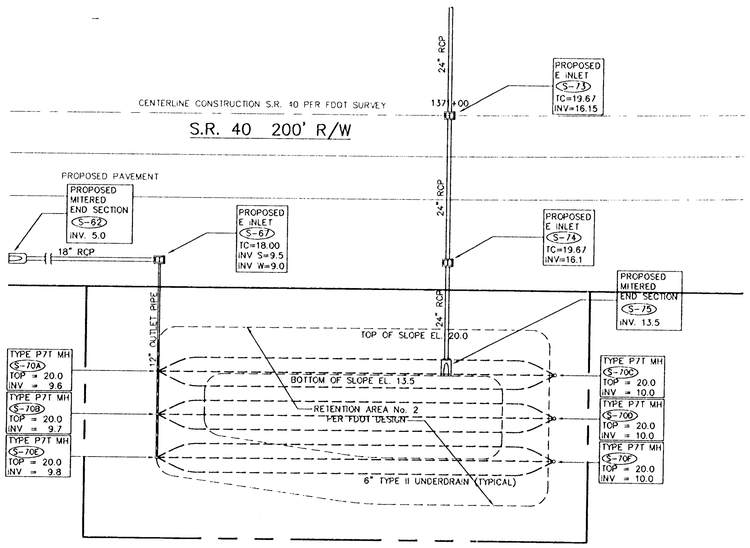

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REVISIONS

PARKER MYNCHENBERG & ASSOCIATES, INC.

PROFESSIONAL ENGINEERS * LAND PLANNERS

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(904)756-1666 FAX (904) 761-7321

FDOT RETENTION AREA RELOCATION

S.R. 40 & BOOTH ROAD

FILE NO. 9407-RET.DWG	DESIGNER: P. MYNCHENBERG
DATE: 6-8-95	DRAFTSMAN: TOM WALKER
SCALE: 1" = 40'	SHEET 1 OF 1

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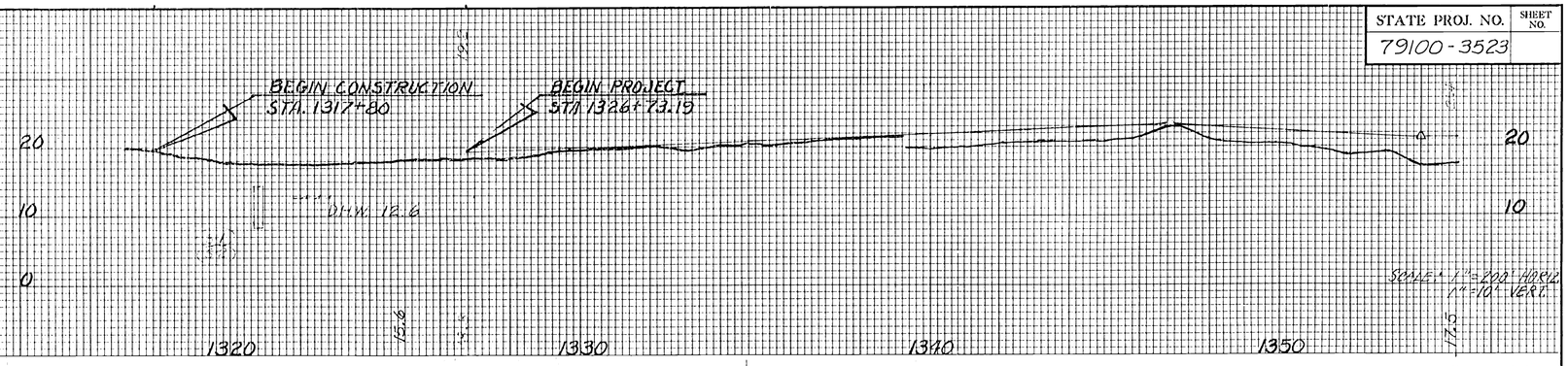

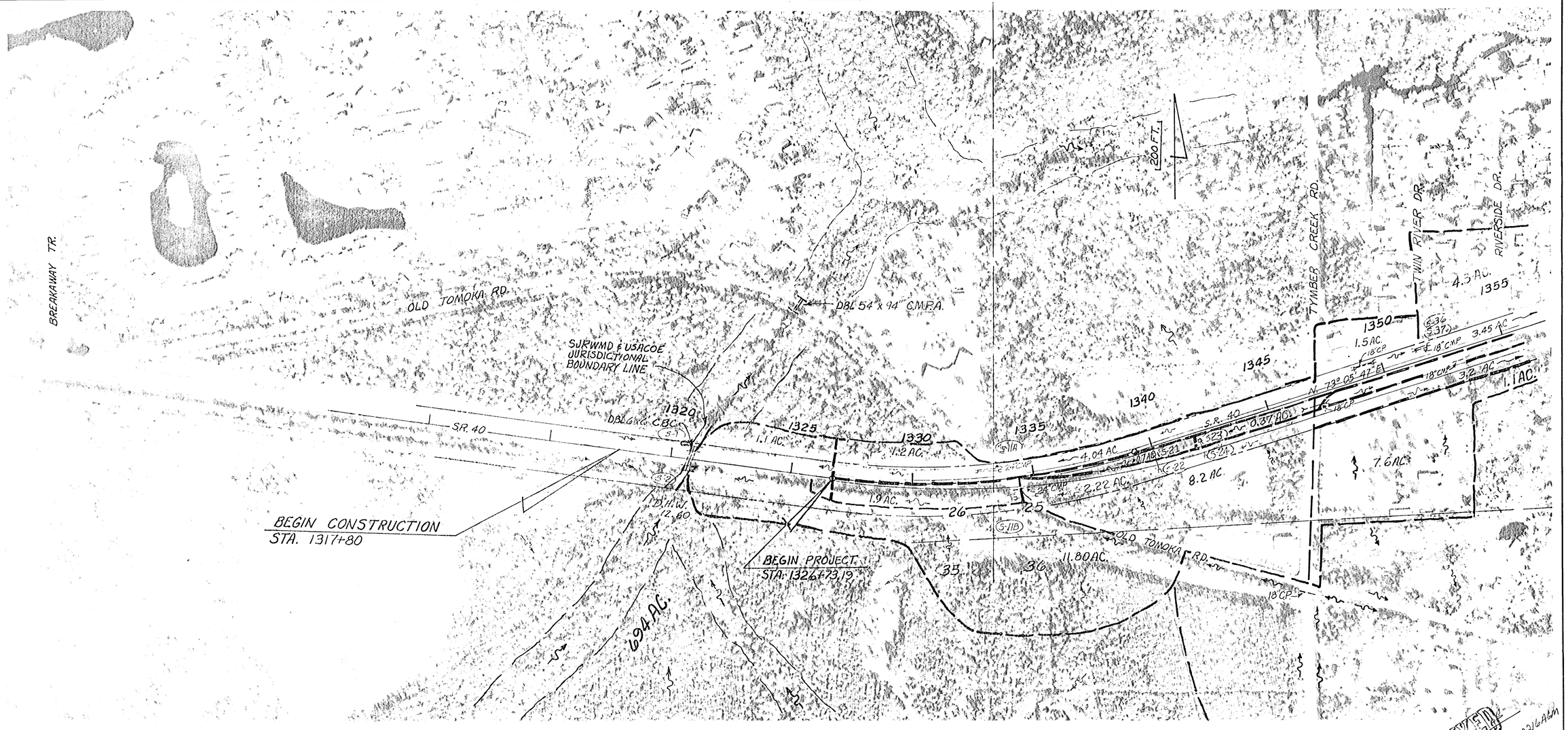

REVISIONS								
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FLOWN BY
PHOTO DATE
PHOTO ID. NO.

	NAME	DATE		NAME	DATE
DESIGNED BY			DRAWN BY		
CHECKED BY			CHECKED BY		

SUPERVISED BY :

FLORIDA DEPARTMENT OF TRANSPORTATION
APPROVED BY :
DATE :

DRAINAGE MAP

RECEIVED
MAR 22 1994

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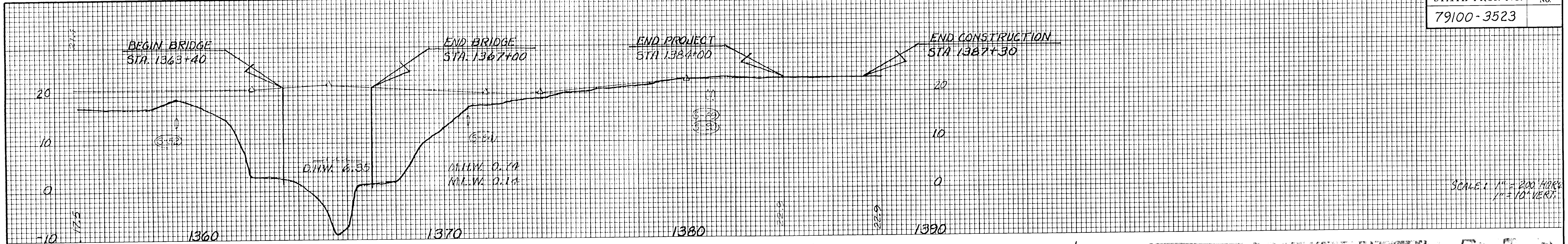
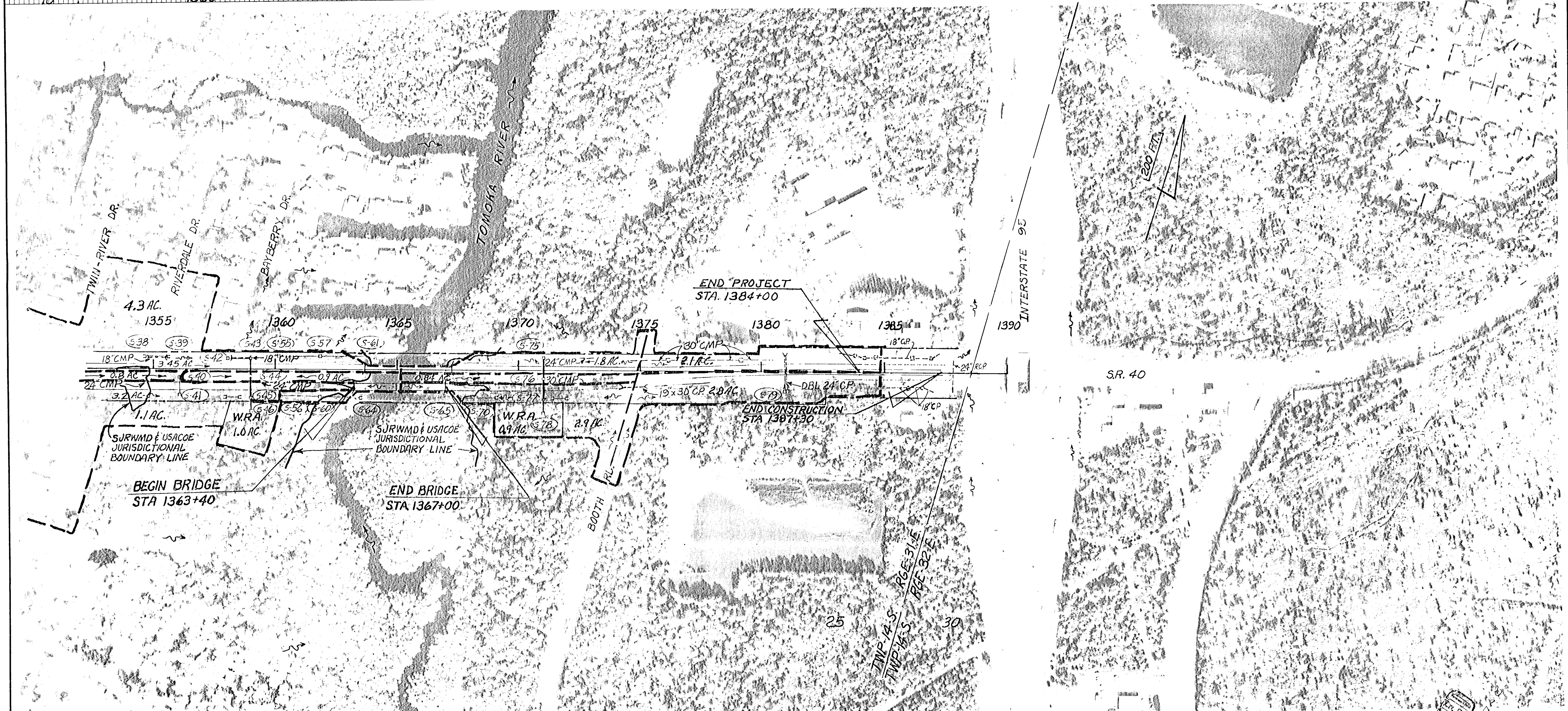
79100-3523	





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DESIGNED BY			DRAWN BY		
CHECKED BY			CHECKED BY		
SUPERVISED BY :					

FLORIDA DEPARTMENT OF TRANSPORTATION

APPROVED BY :

DATE :

DRAINAGE MAP

RECEIVED MAR 22 1994

F.A. PROJECT NO.	SHEET NO.
N/A	

J.B.L. AREA 1

FLAG NO.	NORTHING	EASTING	STATION	OFFSET
2	1789479.7506	618650.9407	1384+69.14	99.23 RT.
3	1789465.8443	618593.1468	1384+09.80	95.74 RT.
4	1789440.7063	618517.2020	1383+29.83	97.74 RT.
WL12	1789436.8846	618512.3975	1383+24.12	100.00 RT.
WL13	1789479.0073	618651.1565	1384+69.13	100.00 RT.
AREA INSIDE RIGHT OF WAY: 416± SQUARE FEET				
OUTSIDE RIGHT OF WAY:				
1	1789465.5540	618655.0622	1384+68.96	114.01 RT.
5	1789430.2734	618504.0860	1383+14.24	103.91 RT.
6	1789407.6638	618511.7546	1383+15.02	127.77 RT.

J.B.L. AREA 2

FLAG NO.	NORTHING	EASTING	STATION	OFFSET
OUTSIDE RIGHT OF WAY:				
19	1788950.8505	617048.1835	1367+81.86	139.75 RT.
20	1788942.0843	617069.4759	1367+99.68	154.33 RT.
21	1788904.8313	617071.9930	1367+91.27	190.71 RT.
22	1788867.7584	617091.0633	1367+98.75	231.72 RT.
23	1788854.7516	617118.4502	1368+21.18	252.12 RT.
24	1788811.8769	617122.0121	1368+12.13	294.18 RT.
25	1788788.3946	617162.7756	1368+44.32	328.49 RT.
26	1788739.8300	617166.7582	1368+34.02	376.12 RT.

J.B.L. AREA 3

FLAG NO.	NORTHING	EASTING	STATION	OFFSET
27	1788670.1431	615779.8849	1354+86.71	39.95 RT.
28	1788665.2585	615746.7251	1354+53.56	34.99 RT.
29	1788645.0203	615688.6717	1353+92.13	37.49 RT.
30	1788628.7753	615646.2613	1353+46.83	40.72 RT.
31	1788615.6806	615635.8488	1353+33.06	50.22 RT.
32	1788603.2014	615677.7747	1353+69.55	74.34 RT.
33	1788583.2590	615667.8249	1353+54.24	90.53 RT.
34	1788567.7102	615647.7257	1353+30.49	99.57 RT.
35	1788561.8028	615656.5696	1353+37.24	107.79 RT.
36	1788565.3865	615696.5973	1353+76.58	115.99 RT.
197	1788623.4127	615765.0092	1354+58.90	80.34 RT.
198	1788612.2489	615779.6101	1354+69.63	95.26 RT.
WL8	1788551.3545	615705.4823	1353+81.01	132.00 RT.
WL9	1788580.5738	615801.7353	1354+81.60	132.00 RT.
AREA INSIDE RIGHT OF WAY: 0.26± ACRES				
OUTSIDE RIGHT OF WAY:				
37	1788534.6655	615716.0497	1353+86.27	151.04 RT.
105	1788504.2944	615739.7085	1354+00.09	186.97 RT.
1C6	1788479.1855	615759.6407	1354+11.87	216.79 RT.
199	1788580.0483	615802.1024	1354+81.79	132.61 RT.
200	1788524.1559	615794.3240	1354+58.12	183.83 RT.

J.B.L. AREA 4

FLAG NO.	NORTHING	EASTING	STATION	OFFSET
OUTSIDE RIGHT OF WAY:				
50	1788760.5349	616465.4001	1361+68.92	152.58 RT.
51	1788726.6048	616459.3296	1361+53.25	183.28 RT.
52	1788690.0308	616457.2671	1361+40.66	217.68 RT.
53	1788655.5105	616436.2743	1361+10.54	244.61 RT.
54	1788607.6711	616441.6919	1361+01.83	291.96 RT.
57	1788461.8769	616433.1148	1360+51.27	428.98 RT.

J.B.L. AREA 5

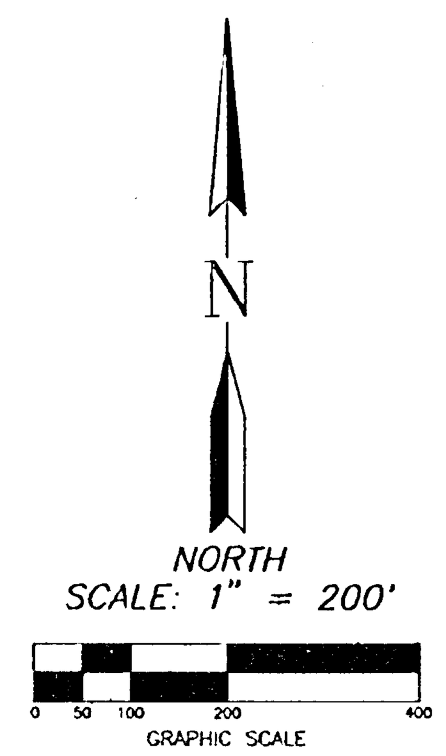
FLAG NO.	NORTHING	EASTING	STATION	OFFSET
59	1788291.4729	612487.8344	1321+12.36	51.79 LT.
60	1788289.1015	612503.7161	1321+28.42	51.70 LT.
61	1788302.7359	612494.4757	1321+17.33	63.89 LT.
64	1788273.6834	612453.7602	1320+81.16	29.34 LT.
65	1788295.9171	612462.3383	1320+86.49	52.57 LT.
66	1788300.7489	612415.7899	1320+39.73	50.74 LT.
67	1788307.9023	612418.9909	1320+41.88	58.28 LT.
68	1788306.0071	612464.1334	1320+86.83	62.81 LT.
WL5	1788310.8102	612467.1776	1320+89.17	68.00 LT.
WL6	1788306.5757	612496.6798	1321+18.97	68.00 LT.
WL7	1788269.7776	612480.4797	1321+08.16	29.27 LT.
AREA INSIDE RIGHT OF WAY: 1561± SQUARE FEET				
OUTSIDE RIGHT OF WAY:				
62	1788320.7031	612504.7890	1321+24.99	83.14 LT.
63	1788348.5533	612522.7349	1321+38.80	113.26 LT.
69	1788337.8164	612484.2946	1321+02.27	97.16 LT.
70	1788373.2527	612507.4895	1321+20.20	135.54 LT.

J.B.L. AREA 5-A

FLAG NO.	NORTHING	EASTING	STATION	OFFSET
71	1788215.2121	612427.3452	1320+63.32	32.29 RT.
72	1788199.5533	612418.1216	1320+56.41	49.10 RT.
73	1788174.2420	612413.3841	1320+55.32	74.83 RT.
74	1788156.3980	612391.6874	1320+36.38	95.57 RT.
76	1788196.0249	612447.0210	1320+85.52	48.48 RT.
77	1788194.8016	612473.2719	1321+11.68	45.97 RT.
78	1788188.3028	612469.2538	1321+08.63	52.97 RT.
79	1788184.2151	612444.5591	1320+84.76	60.52 RT.
80	1788149.7269	612426.9423	1320+72.22	97.17 RT.
81	1788120.4622	612397.3319	1320+47.07	130.34 RT.
WL1	1788125.0641	612353.5882	1320+03.12	132.00 RT.
WL2	1788118.9982	612395.8505	1320+45.81	132.00 RT.
WL3	1788218.4707	612429.2646	1320+64.76	28.79 RT.
WL4	1788214.8083	612453.8534	1320+89.62	28.92 RT.
AREA INSIDE RIGHT OF WAY: 3570± SQUARE FEET				

J.B.L. AREA 6

FLAG NO.	NORTHING	EASTING	STATION	OFFSET
100	1789156.6455	617024.5821	1368+19.05	64.02 LT.
101	1789136.8947	617005.1717	1367+94.74	50.76 LT.
103	1789118.0285	616941.4852	1367+28.32	51.21 LT.
104	1789099.5684	616924.2600	1367+06.48	38.55 LT.
38	1788955.7397	616636.2851	1363+89.14	15.43 RT.
39	1788926.3958	616635.7684	1363+80.12	43.36 RT.
40	1788906.0864	616617.1502	1363+56.41	57.38 RT.
41	1788891.5685	616554.3866	1362+92.13	53.04 RT.
42	1788874.0969	616528.8120	1362+62.58	62.33 RT.
43	1788863.3978	616535.5212	1362+65.90	74.52 RT.
44	1788871.6985	616597.4248	1363+27.54	84.56 RT.
47	1788826.2808	616569.8796	1362+87.99	120.02 RT.
48	1788829.9020	616538.4496	1362+58.97	107.42 RT.
49	1788800.5870	616489.6893	1362+03.80	121.31 RT.
7	1789030.6818	616945.9821	1367+07.25	33.68 RT.
8	1789019.2731	616969.0760	1367+26.04	51.30 RT.
9	1789019.2925	616988.5304	1367+44.66	56.94 RT.
10	1789037.7379	617036.6647	1367+96.07	53.27 RT.
11	1789051.5745	617090.1366	1368+51.26	55.56 RT.
12	1789049.0043	617110.0168	1368+69.54	63.79 RT.
13	1789038.1948	617083.6950	1368+41.21	66.49 RT.
14	1789016.5604	617074.3286	1368+25.96	84.47 RT.
15	1788998.6521	617069.1241	1368+15.78	100.10 RT.
16	1788990.3301	617035.4667	1367+81.16	98.28 RT.
17	1788978.5363	617027.9349	1367+70.52	107.38 RT.
18	1788968.7324	617032.3490	1367+71.90	118.04 RT.
WL10	1788786.8933	616481.3849	1361+91.87	132.00 RT.
WL11	1788957.2379	617042.5274	1367+78.30	132.00 RT.
WL14	1789162.5862	617030.4575	1368+26.40	68.00 LT.
WL15	1788988.7238	616624.9207	1363+87.85	19.43 LT.
WL16	1789009.3721	616610.5794	1363+80.12	43.36 LT.
WL17	1789011.1513	616583.0160	1363+54.26	53.07 LT.
WL18	1789021.5469	616565.8516	1363+40.86	68.00 LT.
WL19	1789077.6166	616924.1772	1367+00.02	17.57 LT.
WL20	1789043.0662	616931.8451	1366+97.32	17.72 RT.
AREA INSIDE RIGHT OF WAY: 1.92± ACRES				



SPECIFIC PURPOSE SURVEY PREPARED BY:
BUCHHEIT ASSOCIATES, INC.
SURVEYORS & MAPPERS
401 WHOOPING LOOP SUITE 1539
ALTAMONTE SPRINGS, FLORIDA 32701

SURVEYOR'S NOTES

1. JURISDICTIONAL LINES AS SHOWN REPRESENT STAKING PER ENVIRONMENTAL MANAGEMENT SYSTEMS (EMS). ST. JOHNS RIVER WATER MANAGEMENT DISTRICT (SJRWMD), AND THE UNITED STATES ARMY CORPS OF ENGINEERS (USACOE) ON AUGUST 27, 1993.
2. THE COORDINATES SHOWN HEREON REFER TO THE FLORIDA STATE PLANE COORDINATE SYSTEM (EAST ZONE). BEARINGS REFER TO A LINE BETWEEN GEODETIC CONTROL POINTS "I95 71 A30" AND "I95 71 A31" BEING S 15°50'23" E.
3. CENTERLINE OF SURVEY DATA FOR STATE ROAD NO. 40 IS BASED ON RIGHT OF WAY MAPS PREPARED BY D.O.T. 5TH DISTRICT, SECTION 79100-2524. ALL JURISDICTIONAL BOUNDARY LINE (JBL) FLAGS WERE LOCATED FROM THIS ALIGNMENT. AND THE STATIONS/OFFSETS SHOWN WERE CALCULATED FROM THIS ALIGNMENT. JBL POINTS DESIGNATED WITH A "WL" PREFIX ARE CALCULATED POINTS OF INTERSECTION WHERE JBL LINES INTERSECT EXISTING RIGHT OF WAY LINES OR EXISTING FEATURES. ALL OTHER POINT DESIGNATIONS ARE WETLAND FLAGS AS FIELD LOCATED.
4. THE PURPOSE OF THIS SURVEY WAS EXCLUSIVELY FOR THE LOCATION OF SELECTED WETLANDS AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE.

4-127-0216AGM

RECEIVED MAR 22 1994 RECORDS ORLANDO

4-127-0206AB

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE SURVEY REPRESENTED HEREON WAS MADE UNDER MY DIRECTION AND CONFORMS TO THE APPLICABLE SECTIONS OF THE MINIMUM TECHNICAL STANDARDS FOR LAND SURVEYING FOR THE STATE OF FLORIDA IN ACCORDANCE WITH CHAPTER 21HH-6. FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 472.027, FLORIDA STATUTES.

NOT VALID WITHOUT EMBOSSED SEAL

KIMBERLY A. BUCHHEIT
P.L.S. #4838
DATE: 11/15/93

FLORIDA DEPARTMENT OF TRANSPORTATION
RIGHT OF WAY MAPPING

SPECIFIC PURPOSE SURVEY

FOR LOCATION OF SELECTED WETLANDS

STATE ROAD NO. 40 — VOLUSIA COUNTY

	BY	DATE	APPROVED BY	DATE
DRAWN	RSW	10/25/93		
DESIGNED				
CHECKED			FOR DISTRICT SECRETARY	

REVISION	BY	DATE

MAPS PREPARED BY BUCHHEIT ASSOCIATES, INC.
FIELD BOOK NO'S. 2108576
W.P.I. NO. 5119223
SCALE 1" = 200'
SECTION 79100-2524
SHEET 1 OF 1

Appendix M

Regulatory Agency Coordination (ETDM)

ETDM Summary Report

Project #9491 - SR 40 - Breakaway Trail to Williamson Blvd.

Preliminary Programming Screen - Published on 01/20/2011

Generated by Kathaleen Linger (on behalf of FDOT District 5)

Printed on: 1/25/2011

Table of Contents

Introduction to Programming Screen Summary Report

The Programming Screen Summary Report shown below is a read-only version of information contained in the Programming Screen Summary Report generated by the ETDM Coordinator for the selected project after completion of the ETAT Programming Screen review. The purpose of the Programming Screen Summary Report is to summarize the results of the ETAT Programming Screen review of the project; provide details concerning agency comments about potential effects to natural, cultural, and community resources; and provide additional documentation of activities related to the Programming Phase for the project. Available information for a Programming Screen Summary Report includes:

- Screening Summary Report chart
- Project Description information (including a summary description of the project, a summary of public comments on the project, and community-desired features identified during public involvement activities)
- Purpose and Need information (including the Purpose and Need Statement and the results of agency reviews of the project Purpose and Need)
- Alternative-specific information, consisting of descriptions of each alternative and associated road segments; an overview of ETAT Programming Screen reviews for each alternative; and agency comments concerning potential effects and degree of effect, by issue, to natural, cultural, and community resources.
- Project Scope information, consisting of general project commitments resulting from the ETAT Programming Screen review, permits, and technical studies required (if any)
- Class of Action determined for the project
- Dispute Resolution Activity Log (if any)

The legend for the Degree of Effect chart is provided in an appendix to the report.

For complete documentation of the project record, also see the GIS Analysis Results Report published on the same date as the Programming Screen Summary Report.

#9491 SR 40 - Breakaway Trail to Williamson Blvd.			
District	District 5	**Phase**	Programming Screen
County	Volusia	**From**	Breakaway Trail
Planning Organization	FDOT District 5	**To**	Williamson Blvd.
Plan ID		**Financial Management No.**	42894712201
Federal Involvement	No federal involvement has been identified.		
Contact Information	Name: Lance Decuir Phone: (386) 943-5383 E-mail: lance.decuir@dot.state.fl.us		
Snapshot Data From: Programming Screen Summary Report Published on 01/20/2011 by Kathaleen Linger			

Overview

Legend

- N/A — N/A / No Involvement
- 0 — None (after 12/5/2005)
- 1 — Enhanced
- 2 — Minimal (after 12/5/2005)
- 3 — Moderate
- 4 — Substantial
- 5 — Dispute Resolution (Programming)

	Evaluation of Direct Effects																				
	Natural											Cultural			Community						
	Air Quality	Coastal and Marine	Contaminated Sites	Farmlands	Floodplains	Infrastructure	Navigation	Special Designations	Water Quality and Quantity	Wetlands	Wildlife and Habitat	Historic and Archaeological Sites	Recreation Areas	Section 4(f) Potential	Aesthetics	Economic	Land Use	Mobility	Relocation	Social	Secondary and Cumulative Effects
ETAT Review Period: 11/17/2010 - 01/01/2011. Published: 01/20/2011																					
Alternative #1 - SR40 From Breakaway Trail to Williamson	2	3	2	0	3	2	0	3	3	3	3	3	0	0	2	2	2	1	2	2	2

Project Description Data

Description Statement

FDOT is conducting a study for proposed improvements along SR 40 from Breakaway Trail to Williamson Blvd. The majority of the project will be paid for with developer funds. Since no federal funding is being pursued for this project, FDOT will be conducting a State Environmental Impact Review (SEIR) on this project, to be executed in the summer of 2011.

Summary of Public Comments not available at this time

Consistency

- Consistent with Air Quality Conformity.
- Consistency information for Coastal Zone Management Program is not available.
- Consistency with Local Government Comp Plan is unknown.
- Consistency with MPO Goals and Objectives is unknown.

Potential Lead Agencies

- FL Department of Transportation

Exempted Agencies

No exemptions have been assigned for this project.

Community Desired Features

No desired features have been entered into the database. This does not necessarily imply that none have been identified.

Purpose and Need

Purpose and Need Statement

The following is a purpose and need statement for proposed improvements along SR 40, in the vicinity of I-95, and located in the City of Ormond Beach. The limits under consideration are from Breakaway Trail to Williamson, a distance of approximately 2 miles. SR 40 connects I-95 in Volusia County to I-75 in Marion County. The section of S.R. 40 west of I-95 is designated as an emerging Stratetgic Intermodal System (SIS) Facility.

The existing S.R. 40 is currently classified as a principal arterial with SR 40 west of Interstate 95 identified as a Scenic Byway. The existing roadway consists of 4 travel lanes with an urban, closed drainage system. The proposed action is a capacity project and would involve widening the existing facility to 6 lanes.

A feasibility study was performed on proposed improvements and is included in the project attachments. In summary, the feasibility study (see attachment) recommended a 4 to 6 lane widening of SR 40 from Breakaway Trail to Williamson Boulevard, along with improvements to a parallel facility, Hand Ave. The Hand Avenue project (#13020) was also recently sent out for an ETDM Programming Screen Review on 9/16/2010, and includes the following: a Hand Avenue extension from Williamson Blvd. to Tymber Creek Rd., widening of Tymber Creek Rd. from Hand Ave. up to SR 40, and a Tymber Creek Rd. extension down to LPGA Blvd.

FEDERAL, STATE, AND LOCAL AUTHORITY

It was identified in the 2030 SIS Needs Plan that there is a need on SR 40 from Tymber Creek to I-95 to add 2 lanes by the year 2015. The other portion of the proposed S.R. 40 project was not identified in the Volusia County Transportation Planning Area YR 2025 Long Range Transportation Plan (LRTP), Cost Feasibility Plans, and / or any adopted County / City Comprehensive Plans. FDOT has coordinated with the Volusia County MPO about amending their LRTP to include the improvements now that developer funding is being acquired for the project.

HISTORICAL GROWTH AND PLANNED DEVELOPMENT

Residential developments are currently planned in the vicinity of S.R. 40 within the project limits resulting from three DRIs (Developments of Regional Impact): Hunters Ridge, Ormond Crossings, and LPGA and sub DRIs to include the CTLC development. The PD&E is being paid for, initially, by the state; however, reimbursement is due for PD&E and Design from the Hunter's Ridge DRI which has mitigation requirements on SR 40.

PLANNED AND PROGRAMMED IMPROVEMENTS

Volusia County is currently in the planning stage for the Hand Avenue 2 lane extension, from Williamson Boulevard to Tymber Creek Road, as identified in the Volusia County MPO FY 2007/08 to 2011/12 Transportation Improvement Plan (TIP), Capital Improvement Element, and Long Range Transportation Plan. Also identified in the TIP, is the widening of Tymber Creek Road, from S.R. 40 to Airport Road, from 2 to 4 lanes. This improvement is currently in the right-of-way acquisition stage with construction beginning next year.

EXISTING AND FUTURE LAND USE

Existing land use is predominately residential communities (single family and multi family), with big box retail / commercial, office, and agricultural / undeveloped areas intermittently located throughout portions of the corridor. In the future, some areas of undeveloped land are expected to be acquired for conservation and storm water purposes and future development from the above mentioned DRIs. Community and educational facilities, such as churches and academies, are also located within the study area along S.R. 40.

MODAL RELATIONSHIPS

Within the project limits, S.R. 40 is designated as an emerging Strategic Intermodal System (SIS) Facility, as mentioned previously. As part of the SIS, S.R. 40 provides valuable intraregional and interregional freight connectivity by linking Florida's East Coast to the Gainseville / Ocala regions.

Generally, bicycle facilities consist of paved shoulders at the edge of the travel lanes and exist intermittently throughout the study area. Also provided are sidewalks on both the north and south side of S.R. 40 for safe pedestrian travel due to the heavy amount of residential and retail within the area.

EMERGENCY EVACUATION

Within the project limits, S.R. 40 is designated as a Hurrican Evacuation Route by the Florida State Emergency Response Team. It also serves as an evacuation route for other emergencies, including fires and tornadoes.

Purpose and Need Reviews

Agency	Acknowledgment	Review Date
Natural Resources Conservation Service	Understood	11/23/2010
US Fish and Wildlife Service	Understood	12/03/2010
FL Department of State	Understood	12/07/2010
FL Fish and Wildlife Conservation Commission	Understood	12/21/2010
National Marine Fisheries Service	Understood	12/21/2010
Comments: None.		
FL Department of Environmental Protection	Understood	12/23/2010
US Environmental Protection Agency	Understood	12/29/2010

Agencies That Did Not Comment on the Purpose and Need Statement

Alternative #1 - SR40

Alternative Description

From:	Breakaway Trail	**To:**	Williamson
Type:	Widening	**Status:**	ETAT Review Complete
Total Length:	? mi.	**Cost:**	
Modes:	Roadway	**SIS:**	N

Segment Description(s)

Location and Length

Segment No.	Name	Beginning Location	Ending Location	Length (mi.)	Roadway Id	BMP	EMP
Segment #1				0.969	79100000		
Segment #2				0.819	79100000		
Segment #3				0.193	79100000		

Jurisdiction and Class

Segment No.	Jurisdiction	Urban Service Area	Functional Class
Segment #1			URBAN: Principal Arterial - Other
Segment #2			URBAN: Principal Arterial - Other
Segment #3			URBAN: Principal Arterial - Other

Base Conditions

Segment No.	Year	AADT	Lanes	Config
Segment #1	2008	10800		
Segment #2	2008	26500		
Segment #3	2008	37500		

Interim Plan

Segment No.	Year	AADT	Lanes	Config
Segment #1				
Segment #2				
Segment #3				

Needs Plan

Segment No.	Year	AADT	Lanes	Config
Segment #1				
Segment #2				
Segment #3				

Cost Feasible Plan

Segment No.	Year	AADT	Lanes	Config
Segment #1				
Segment #2				
Segment #3				

Funding Sources

No funding sources found.

Project Effects Overview

Issue	Degree of Effect	Organization	Date Reviewed
Natural			
Air Quality	2 Minimal	US Environmental Protection Agency	12/30/2010
Coastal and Marine	3 Moderate	National Marine Fisheries Service	12/21/2010
Contaminated Sites	2 Minimal	US Environmental Protection Agency	12/30/2010
Contaminated Sites	2 Minimal	FL Department of Environmental Protection	12/23/2010
Farmlands	0 None	Natural Resources Conservation Service	11/23/2010
Floodplains	3 Moderate	US Environmental Protection Agency	12/30/2010
Infrastructure	No reviews recorded.		
Navigation	2 Minimal	US Army Corps of Engineers	12/28/2010
Navigation	0 None	US Coast Guard	12/06/2010
Special Designations	3 Moderate	US Environmental Protection Agency	12/30/2010

Water Quality and Quantity	3 Moderate	US Environmental Protection Agency	01/01/2011
Water Quality and Quantity	3 Moderate	FL Department of Environmental Protection	12/23/2010
Wetlands	3 Moderate	US Fish and Wildlife Service	12/31/2010
Wetlands	3 Moderate	US Environmental Protection Agency	12/30/2010
Wetlands	3 Moderate	US Army Corps of Engineers	12/28/2010
Wetlands	3 Moderate	FL Department of Environmental Protection	12/23/2010
Wetlands	3 Moderate	National Marine Fisheries Service	12/21/2010
Wildlife and Habitat	3 Moderate	US Fish and Wildlife Service	12/31/2010
Wildlife and Habitat	3 Moderate	FL Fish and Wildlife Conservation Commission	12/21/2010
Cultural			
Historic and Archaeological Sites	3 Moderate	FL Department of State	12/08/2010
Historic and Archaeological Sites	2 Minimal	Miccosukee Tribe of Indians of Florida	12/08/2010
Recreation Areas	0 None	US Environmental Protection Agency	12/30/2010
Recreation Areas	0 None	FL Department of Environmental Protection	12/23/2010
Section 4(f) Potential	No reviews recorded.		
Community			
Aesthetics	No reviews recorded.		
Economic	No reviews recorded.		
Land Use	No reviews recorded.		
Mobility	No reviews recorded.		
Relocation	No reviews recorded.		
Social	2 Minimal	US Environmental Protection Agency	01/01/2011
Secondary and Cumulative			
Secondary and Cumulative Effects	No reviews recorded.		

ETAT Reviews and Coordinator Summary: Natural Issues

Coordinator Summary: Air Quality Issue

2 *Minimal* assigned 01/20/2011 by FDOT District 5

Comments: The US EPA indicated that the project area has not been designated as a non-attainment or maintenance area for ozone, carbon monoxide or particulate matter in accordance with the Clean Air Act. The project area is designated attainment for all of the National Ambient Air Quality Standards; therefore Clean Air Act conformity requirements do not apply to the project at this time. As the project moves forward, it should be reviewed for air quality impacts in accordance with the guidance provided by FHWA, including a project level air quality screening analysis for carbon monoxide.

ETAT Reviews: Air Quality Issue: 1 found

2 *Minimal* assigned 12/30/2010 by Madolyn Dominy, US Environmental Protection Agency

Coordination Document: No Selection
Dispute Information:N/A
Identified Resources and Level of Importance: Resources: Air Quality

Level of Importance: Low, due to minimal degree of effect
Comments on Effects to Resources: EPA has no significant comments relating to air quality for the proposed roadway widening project (ETDM #9491, SR 40 - Breakaway Trail to Williamson Boulevard).

General comments include:

Volusia County has not been designated non-attainment or maintenance for ozone, carbon monoxide (CO) or particulate matter (PM) in accordance with the Clean Air Act. There are no violations of National Ambient Air Quality Standards (NAAQS). Nevertheless, it is recommended that the environmental review phase of this project include air impact analyses which documents the current pollutant concentrations recorded at the nearest air quality monitors, an evaluation of anticipated emissions, and air quality trend analyses. It is also recommended that environmental reviews of the project include hot spot analyses at the points in time and places where congestion are expected to be greatest or in areas of sensitive receptors.
Additional Comments (optional): As population growth and vehicle volumes increase, there is the potential to have air quality conformity and non-attainment issues in the future. FDOT, MPOs, municipalities, and regional planning agencies should conduct air quality modeling as traffic forecasts increase.
Coordinator Feedback: None

The following organization(s) were expected to but did not submit a review of the Air Quality issue for this alternative: Federal Highway Administration

Coordinator Summary: Coastal and Marine Issue

3 *Moderate* assigned 01/20/2011 by FDOT District 5

Comments: The NMFS indicated that the project may affect wetlands and sand bottom within the Tomoka River, which are resources protected by the Magnuson-Stevens Act and Fish and Wildlife Coordination Act. They recommended that widening to the inside of the existing 4-lane roadway and bridges over the Tomoka River be evaluated as a primary alternative for minimizing wetland impacts. The NMFS requested further coordination during future project phases and indicated that a technical memo should be prepared.

ETAT Reviews: Coastal and Marine Issue: 1 found

3 *Moderate* assigned 12/21/2010 by Brandon Howard, National Marine Fisheries Service

Coordination Document: Tech Memo Required
Dispute Information:N/A
Identified Resources and Level of Importance: Magnuson-Stevens Act and Fish and Wildlife Coordination Act: The portion of the project that crosses the Tomoka River could impact high quality freshwater forested palustrine wetlands and sand bottom. The South Atlantic Fishery Management Council (SAFMC) has designated these wetlands and sand bottom as essential fish habitat (EFH) for juvenile white shrimp (Litopenaeus setiferus). These habitats support both recreational and commercial fisheries in the Tomaka River and downstream estuaries.
Comments on Effects to Resources: Impacts to these wetlands should be sequentially avoided, minimized, and compensated with mitigation. FDOT should explore expanding into the existing median. A wide median exists along the entire length of the study area. In addition, there is a 35-foot space between the existing twin span bridges. When the bridges are replaced to accommodate additional lanes, FDOT should make use of this space. There is little vegetation between the bridges currently and this would demonstrate that adequate avoidance measures have taken place. If the project continues to PD&E without this sequential mitigation, NMFS would likely find it necessary to issue EFH conservation recommendations.

With construction of the new lanes and bridges, impervious surface area will be replaced or expanded. Surface and stormwater runoff into the surrounding waters may result. The discharge of hydrocarbons and other contaminants may degrade water quality. Subsequently, NOAA trust resources located in the receiving waters could be adversely affected. To the extent practicable, runoff from the new roads should be treated before being discharged.
Additional Comments (optional): NMFS recommends that the following measures be taken as project development progresses from Programming to PD&E, design, and construction phases:

1) Adverse impacts to wetlands should be sequentially avoided and/or minimized, and unavoidable impacts should be offset in a manner that precludes a net loss of wetland function.

2) A habitat characterization of the wetlands within the project site, including the size and location of wetlands that would be directly and/or indirectly impacted by the proposed project should be prepared.

3) Information on measures to avoid and/or minimize adverse impacts to EFH within the vicinity of the project site should be identified.

4) Conservation measures (i.e., best management practices for water quality and erosion control) should be included in the project design and implemented during project construction.

5) A Stormwater Management Plan for containment/treatment of surface and stormwater runoff from impervious surfaces should be prepared. Treatment should be in accordance with state and federal (NPDES) standards. Details of the stormwater plan should include location, area, and cross section of proposed stormwater swales, and/or ponds and information on wetland vegetation planting if proposed.

6) A mitigation plan should be developed that includes the following items:
Detailed overview and cross-sectional drawings of the mitigation area(s) with elevations.
A vegetative planting plan for the mitigation site.
A detailed description of the proposed mitigation plan, including success criteria. The mitigation plan should contain sufficient detail to ensure no net loss of wetland functions and values as a result of project authorization.
A functional assessment such as the Uniform Mitigation Assessment Method (UMAM) should be prepared for the impact and mitigation sites.

7) Timely coordination between NMFS and FDOT staff should continue through project planning and until environmental issues are addressed and resolved.

Endangered Species Act: We are not aware of any threatened or endangered species or critical habitat under the purview of NMFS that occur within the project area. However, it should be noted that a "no effect" determination must be made by the action agency and the reasoning underlying the determination should be documented in a project file. Please coordinate closely with the U.S. Fish and Wildlife Service for other species listed under the Endangered Species Act that may require consultation.
Coordinator Feedback: None

The following organization(s) were expected to but did not submit a review of the Coastal and Marine issue for this alternative: Federal Highway Administration, Saint Johns River Water Management District

Coordinator Summary: Contaminated Sites Issue

2 *Minimal* assigned 01/20/2011 by FDOT District 5

Comments: The FDEP and US EPA reviewed the project for potential contamination issues and assigned the project a degree of effect of Minimal. Both agencies indicated that based on the GIS analysis; there are contaminated sites along the corridor. A Contamination Screening Evaluation should be completed during the Project Development study. FDOT concurs with this finding and assigns a Summary Effect of Minimal.

ETAT Reviews: Contaminated Sites Issue: 2 found

2 *Minimal* assigned 12/30/2010 by Madolyn Dominy, US Environmental Protection Agency

Coordination Document: No Selection
Dispute Information:N/A
Identified Resources and Level of Importance: Resources: Soils, groundwater, surface water which have the potential to be negatively affected by contaminated site features such as underground petroleum storage tanks, industrial/commercial facilities with onsite storage of hazardous materials, solid waste facilities, hazardous waste facilities, National Priority List (NPL) sites, etc.

Level of Importance: These resources are of a high level of importance in the State of Florida. However, a minimal degree of effect is being assigned for the proposed project project (ETDM #9491, SR 40 - Breakaway Trail to Williamson Boulevard).
Comments on Effects to Resources: Existing land use along the proposed roadway widening project is predominately residential communities (single family and multi family), with big box retail / commercial, office, and agricultural / undeveloped areas intermittently located throughout portions of the corridor. In the future, some areas of undeveloped land are expected to be acquired for conservation and storm water purposes and future development from the above mentioned DRIs. Community and educational facilities, such as churches and academies, are also located within the study area along S.R. 40.

Residential developments are currently planned in the vicinity of S.R. 40 within the project limits resulting from three DRIs (Developments of Regional Impact): Hunters Ridge, Ormond Crossings, and LPGA and sub DRIs to include the CTLC development. The PD&E is being paid for, initially, by the state; however, reimbursement is due for PD&E and Design from the Hunter's Ridge DRI which has mitigation requirements on SR 40.

EPA reviewed the following contaminated sites GIS analysis data for buffer distances of 100, 200, and 500 feet.

There are some gasoline stations and RCRA facilities located with in the buffer distances, however, they are limited in number. Due to the location of this section of SR 40 and the fact that there are minimal contaminated sites features identified to be within the buffer boundaries, impacts to and/or from contaminated site features are expected to be minimal.

The environmental review (PD&E) phase of the project should include a survey of the area to confirm the location of current listed contaminated site features, along with other contaminated site features which may have been previously located in the area. A Contamination Screening Evaluation (Phase I or Phase II) may be necessary for the project. If any contaminated sites features (e.g., petroleum storage tanks) are to be impacted or removed during the construction phase of the project, sampling and analysis should be conducted to determine if pollutants are present above regulatory levels. If high levels of pollutants are identified, remediation may be required prior to commencement of construction of the project.
Coordinator Feedback: None

2 *Minimal* assigned 12/23/2010 by Lauren P. Milligan, FL Department of Environmental Protection

Coordination Document: No Selection
Dispute Information:N/A
Identified Resources and Level of Importance: GIS data indicates that there are five RCRA regulated facilities within the 500-ft. project buffer zone.
Comments on Effects to Resources: The proposed project is not expected to significantly affect potential contaminated sites. A Contamination Screening Evaluation similar to Phase I and Phase II Audits may need to be performed along the proposed project right-of-way considering the proximity to local petroleum and hazardous material handling facilities.
Coordinator Feedback: None

The following organization(s) were expected to but did not submit a review of the Contaminated Sites issue for this alternative: Federal Highway Administration, Saint Johns River Water Management District

Coordinator Summary: Farmlands Issue

0 *None* assigned 01/20/2011 by FDOT District 5

Comments: The USDA-NRCS reviewed the GIS analysis of Prime Farmland and Important Farmland Analysis and determined that there are approximately 2.8 acres of Unique Farmland at the 5280 foot buffer width, but the scope of this project will not impact these areas. FDOT concurs with these findings and assigns the Summary Effect as None for Farmlands.

ETAT Reviews: Farmlands Issue: 1 found

0 *None* assigned 11/23/2010 by Rick Allen Robbins, Natural Resources Conservation Service

Coordination Document: No Selection
Dispute Information:N/A
Identified Resources and Level of Importance: The USDA-NRCS considers soil map units with important soil properties for agricultural uses to be Prime Farmland. In addition, the USDA-NRCS considers any soils with important soil properties and have significant acreages that are used in the production of commodity crops (such as, cotton, citrus, row crops, specialty crops, nuts, etc.) to be considered as Farmlands of Unique Importance. Nationally, there has been a reduction in the overall amount of Prime and Unique Farmlands through conversion to non-farm uses. This trend has the possibility of impacting the nation's food supply and exporting capabilities.
Comments on Effects to Resources: Conducting GIS analysis of Prime Farmland (using USDA-NRCS data) and Important (Unique) Farmland Analysis (using existing WMD land use data and 2010 SSURGO data) has resulted in the determination that there are no Prime, Unique, or Locally Important Farmland soils within any buffer width within the Project Area. Therefore, no degree of effect to agricultural resources.
Additional Comments (optional): Note: There are approximately 2.8 acres of Unique Farmland at the 5280 foot buffer width but the scope of this project will not impact these areas.
CLC Commitments and Recommendations: Coordinator Feedback: None

The following organization(s) were expected to but did not submit a review of the Farmlands issue for this alternative: Federal Highway Administration

Coordinator Summary: Floodplains Issue

3 *Moderate* assigned 01/20/2011 by FDOT District 5

Comments: The US EPA indicated that based on the GIS analysis of the 100-ft and 500-ft buffer width, the project may directly and indirectly result in impacts to floodplains and their functions. Avoidance and minimization of floodplain impacts should be considered through the development of roadway alignment and stormwater treatment alternatives during Project Development.

ETAT Reviews: Floodplains Issue: 1 found

3 *Moderate* assigned 12/30/2010 by Madolyn Dominy, US Environmental Protection Agency

Coordination Document: No Selection
Dispute Information:N/A
Identified Resources and Level of Importance: Resources: Floodplains

Level of Importance: Development within the 100-year floodplain is of a high level of importance. Construction of roadways within the floodplain should not impede, obstruct or divert the flow of water or debris in the floodplain which would alter the roadway's discharge capacity or otherwise adversely affect public health, safety and welfare, or cause damage to public or private property in the event of a flood. A moderate degree of effect is being assigned for the proposed project (ETDM #9491, SR40 - Breakaway Trail to Williamson Blvd). EPA is assigning a moderate degree of effect primarily due to indirect and cumulative effects that the roadway and surrounding development would have on floodplains.
Comments on Effects to Resources: A review of GIS analysis data (DFIRM 100-Year Flood Plain and Special Flood Hazard Areas) in the EST at the programming screen phase of the project indicates that approximately 10% to 15% of the total area falls within the 100-year floodplain, as designated by Zones A and AE of the flood hazard zone designation.

According to DFIRM 100-Year Flood Plain information in the GIS analysis data, approximately 5 acres of 100-year floodplain are identified within the 100 foot buffer distance, 10 acres of 100-year floodplain are identified within the 200 foot buffer distance, and 40 acres of 100-year floodplain are identified within the 500 foot buffer distance of the proposed bridge replacement project. This project has the potential to impact floodplains and their functions in the area due to direct impacts but also due to indirect and cumulative effects that the roadway and surrounding development would have on floodplains.

General comments relating to floodplains include the fact that any development within the 100-year floodplain has the potential for placing citizens and property at risk of flooding and producing changes in floodplain elevations and plan view extent. Development (such as roadways, housing developments, strip malls and other commercial facilities) within floodplains increases the potential for flooding by limiting flood storage capacity and exposing people and property to flood hazards. Development also reduces vegetated buffers that protect water quality and destroys important habitats for fish and wildlife. The area surrounding the proposed project will continue to experience significant growth. There are at least three Developments of Regional Impact (DRIs) currently planned along this portion of SR 40. The direct and indirect impact to floodplains from this roadway project and the surrounding development is of importance.

The PD&E phase of the project should include an evaluation of floodplain impacts. FDOT should consider alternatives to avoid adverse effects and incompatible development in the floodplains. Efforts should be made to avoid or minimize impacts to floodplain resources and functions. Engineering design features and hydrological drainage structures should be such that stormwater transport, flow, and discharge meet or exceed flood control requirements. Consultation and coordination with appropriate flood management agencies should occur relating to regulatory requirements, avoidance, minimization and/or mitigation strategies.
Coordinator Feedback: None

The following organization(s) were expected to but did not submit a review of the Floodplains issue for this alternative: FL Department of Environmental Protection, Federal Highway Administration, Saint Johns River Water Management District

Coordinator Summary: Infrastructure Issue

2 *Minimal* assigned 01/20/2011 by FDOT District 5

Comments: No agency reviews for this issue were provided in the EST. Results of the GIS analysis determined that there are two FDOH Limited Use Drinking Water Wells located within the 100-ft. project buffer area. Additionally, the Calvary Assembly of God School was identified within the 200-ft. buffer area. Further analysis of the project's impacts on infrastructure resources should be provided during Project Development. FDOT assigns a Summary Effect of Minimal.

ETAT Reviews: Infrastructure Issue: None found

The following organization(s) were expected to but did not submit a review of the Infrastructure issue for this alternative: Federal Highway Administration

Coordinator Summary: Navigation Issue

0 *None* assigned 01/20/2011 by FDOT District 5

Comments: Two agencies reviewed this issue. The US Coast Guard assigned the project a degree of effect of None, indicating that no resources were identified. The US COE indicated that the Tomoka River is navigable water subject to jurisdiction under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. The COE indicated that the USCG will be the agency responsible for ensuring clearance requirements in accordance with Section 9 of the Rivers and Harbors Act. Further coordination with these agencies should be conducted during Project Development to ensure that all navigational issues are addressed.

ETAT Reviews: Navigation Issue: 2 found

2 *Minimal* assigned 12/28/2010 by Andrew Phillips, US Army Corps of Engineers

Coordination Document: Permit Required
Dispute Information:N/A

Identified Resources and Level of Importance: The project involves the widening of an existing bridge over Tomoka River. Tomoka River is a navigable water subject to jurisdiction under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act.
Comments on Effects to Resources: The project involves a modified bridge crossing the Tomoka River. The U.S. Coast Guard will be the agency charged with ensuring clearance requirements are met in accordance with Section 9 of the Rivers and Harbors Act. The U.S. Army Corps of Engineers will provide assistance where required, in accordance with Section 10 of the Rivers and Harbors Act.
Coordinator Feedback: None

0 *None* assigned 12/06/2010 by Brodie E. Rich, US Coast Guard

Coordination Document: No Involvement
Dispute Information:N/A
Identified Resources and Level of Importance: None found.
Comments on Effects to Resources: None found.
CLC Commitments and Recommendations: Coordinator Feedback: None

The following organization(s) were expected to but did not submit a review of the Navigation issue for this alternative: Federal Highway Administration

Coordinator Summary: Special Designations Issue

3 *Moderate* assigned 01/20/2011 by FDOT District 5

Comments: The US EPA assigned the project a moderate degree of effect for this issue due to the presence of the following specially designated resources: Florida Black Bear Scenic Byway; Outstanding Florida Waters-Tomoka River; Volusia-Floridan Sole Source Aquifer; and Special Flood Hazard Areas. Further consideration of the project's potential for impacts to these resources should be included in the Project Development study.

ETAT Reviews: Special Designations Issue: 1 found

3 *Moderate* assigned 12/30/2010 by Madolyn Dominy, US Environmental Protection Agency

Coordination Document: No Selection
Dispute Information:N/A
Identified Resources and Level of Importance: Resources: Florida Scenic Highways and Byways, Outstanding Florida Waters, Sole Source Aquifers, Special Flood Hazard Areas

Level of Importance: The resources listed above (identified as special designations) are of a high level of importance in the State of Florida. EPA is assigning a moderate degree of effect to this issue for the proposed project.
Comments on Effects to Resources: A review of GIS analysis data at the programming screen phase of the project indicates that the following features identified as Special Designations are located within proximity of the project:

Special Flood Hazard Areas - See Comments under Floodplains issue regarding potential floodplain impacts.

Florida Scenic Highways and Byways - Florida Black Bear Scenic Byway
The Florida Black Bear Scenic Byways is a 123-mile route that encompasses virtually all the paved road within the Ocala National Forest. This portion of Florida is one of the places where you will find the densest population of black bears in North America. It also includes many rare and endangered animals and plants. The Ocala National Forest also includes several huge springs. The Florida Black Bear Scenic Byway ties together several Florida state parks and other recreation areas on and around Ocala National Forest.

Outstanding Florida Waters - Tomoka River
The Tomoka River is listed as an Outstanding Florida Waters (OFWs). OFWs are provided the highest level of protection under the Florida Administrative Code (F.A.C.). Degradation of water quality in an OFW is prohibited except under certain circumstances. Pollutant discharges must not lower existing ambient water quality. Any activity within an OFW requiring a Florida Department of Environmental Protection (FDEP) Environmental Resource Permit (ERP) must be deemed to be clearly in the public interest. Additional stormwater retention and treatment requirements may be required. FDOT should coordinate and consult with FDEP regarding specific permitting requirements relating to this OFW.

Sole Source Aquifer - Volusia-Floridan
The project lies within the Volusia-Floridan Aquifer. EPA has designated the Volusia-Floridan Aquifer as a sole source aquifer. EPA defines a sole source aquifer as an underground water source that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. These areas can have no alternative drinking water sources that could physically, legally, and economically supply all those who depend upon the aquifer for drinking water. The Sole Source Aquifer Program is authorized by Section 1424(e) of the Safe Drinking Water Act of 1974. Designation of an aquifer as a sole source aquifer provides EPA with the authority to review federal financially assisted projects planned for the area to determine their potential for contaminating the aquifer. Federally funded projects reviewed by EPA under the Sole Source Aquifer Program may include highway improvements and new road construction. During the PD&E review phase of the project, FDOT should consult with the EPA Region 4 Sole Source Aquifer Program Coordinator and the Florida sole source program coordinator for review of the project and its potential to contaminate the aquifer.
Coordinator Feedback: None

The following organization(s) were expected to but did not submit a review of the Special Designations issue for this alternative: FL Department of Agriculture and Consumer Services, Federal Highway Administration, Saint Johns River Water Management District

Coordinator Summary: Water Quality and Quantity Issue

3 *Moderate* assigned 01/20/2011 by FDOT District 5

Comments: The US EPA and FDEP assigned the potential for adverse effects on water quality and quantity as Moderate. The US EPA indicated that the project area includes the Tomoka River basin and the Little Tomoka River basin. The Tomoka River is an OFW and it is listed on the Clean Water Act 303(d) list of impaired waters for dissolved oxygen, coliforms, nutrients, iron, and lead. A stormwater management plan should be developed during Project Development to ensure that all permitting criteria are met.

ETAT Reviews: Water Quality and Quantity Issue: 2 found

3 *Moderate* assigned 01/01/2011 by Madolyn Dominy, US Environmental Protection Agency

Coordination Document: No Selection
Dispute Information:N/A
Identified Resources and Level of Importance: Resources: Water quality - surface water, groundwater

Level of importance: The protection of water quality in surface waters and groundwaters is of a high level of importance. This project has the potential to have at least a moderate degree of environmental impact to the water quality resource.
Comments on Effects to Resources: The project area includes two drainage basins, the Tomoka River and Little Tomoka River. The Tomoka River is listed on the Clean Water Act 303(d) list of impaired waters for dissolved oxygen, coliforms, nutrients, iron, and lead. It is also listed as an Outstanding Florida Waters (OFWs). OFWs are provided the highest level of protection under the Florida Administrative Code (F.A.C.). Degradation of water quality in an OFW is prohibited except under certain circumstances. Pollutant discharges must not lower existing ambient water quality. Any activity within an OFW requiring a Florida Department of Environmental Protection (FDEP) Environmental Resource Permit (ERP) must be deemed to be clearly in the public interest. Additional stormwater retention and treatment requirements may be required. FDOT should coordinate and consult with FDEP regarding specific permitting requirements relating to this OFW.

The PD&E study should include a review of water quality standards in the above listed water bodies, sources of water quality impairments, and any TDML requirements and how these regulations and/or requirements may affect the proposed project and environmental resource permits.

Potential impacts to surface water quality include stormwater runoff into nearby surface water bodies via drainage ditches or other conveyance systems. Stormwater runoff from urban sources, including roadways, carry pollutants such as volatile organics, petroleum hydrocarbons, heavy metals, and pesticides/herbicides. Proper stormwater conveyance, containment, and treatment will be required in accordance with state and federal regulations and guidelines. It appears from the project description and supporting documents that the stormwater infrastructure has been designed for the project.

The replacement of a bridge structure, along with operation of the roadway, future development in the area, and increases in traffic volumes as a result of the roadway project could potentially have both direct and indirect impacts to water quality in surface water bodies (Tomoka River).

See comments regarding the potential impacts to the Volusia-Floridan Sole Source Aquifer under the Special Designations issue.
Coordinator Feedback: None

3 *Moderate* assigned 12/23/2010 by Lauren P. Milligan, FL Department of Environmental Protection

Coordination Document: Permit Required
Dispute Information:N/A
Identified Resources and Level of Importance: Every effort should be made to maximize the treatment of stormwater runoff from the proposed SR 40 widening project, as area stormwater ultimately discharges to the Tomoka River, designated Outstanding Florida Waters (OFW) under section 62-302.700(9), F.A.C., and afforded a high level of protection under sections 62-4.242(2) and 62-302.700, F.A.C. Pursuant to section 373.414(1), F.S., direct impacts to these waterbodies and associated wetlands must be demonstrated to be "clearly in the public interest" as part of the ERP permitting process. We recommend that the PD&E study include an evaluation of existing stormwater treatment adequacy and details on the future stormwater treatment facilities.
Comments on Effects to Resources: The project should ensure that bridge crossing culverts are adequate to avoid habitat loss and degradation on small tributary streams and to promote hydrological and habitat connectivity functions. With construction of the new lanes and bridges, impervious surface area will be replaced or expanded. Stormwater runoff from the road surface may alter adjacent wetlands and surface waters through increased pollutant loading. Natural resource impacts within and adjacent to the proposed road right-of-way will likely include alteration of the existing surface water hydrology and natural drainage patterns, and reduction in flood attenuation capacity of area creeks, ditches, and sloughs as a result of increased impervious surface within the watershed. Retro-fitting of stormwater conveyance systems would help reduce impacts to water quality.
Coordinator Feedback: None

The following organization(s) were expected to but did not submit a review of the Water Quality and Quantity issue for this alternative: Federal Highway Administration, Saint Johns River Water Management District

Coordinator Summary: Wetlands Issue

3 *Moderate* assigned 01/20/2011 by FDOT District 5

Comments: Five agencies commented on the project's potential impacts on wetland resources. The USFWS, US EPA, USACOE, FDEP and NMFS all assigned the project a Moderate degree of effect for wetland resources. All of the agencies identified the wetlands associated with the Tomoka River, an Outstanding Florida Water, as resources with high level of importance. The NMFS indicated that these wetlands are designated as essential fish habitat (EFH), and that an EFH Technical Memorandum should be completed. An alternative analysis should be included in the Project Development Study to ensure that wetland impacts are avoided and minimized to the greatest extent feasible.

ETAT Reviews: Wetlands Issue: 5 found

3 *Moderate* assigned 12/31/2010 by Jane Monaghan, US Fish and Wildlife Service

Coordination Document: To Be Determined: Further Coordination Required
Dispute Information:N/A
Identified Resources and Level of Importance: High quality riverine ecosystems including floodplains and an Outstanding Florida Waterway.
Comments on Effects to Resources: Project description: The proposal includes widening SR 40 from four to six lanes along a two mile stretch of roadway from Breakaway Trail to Williamson blvd. The area in Volusia County under consideration is east of I-95 and also includes the improvements to a parallel roadway that was previously reviewed on the ETDM online commenting system (Hand Ave. Extension #13020). A feasibility study recommended the widening of SR 40 along with an extension of Hand Ave from Williamson Blvd to Tymber Creek road, widening of Tymber Creek road from Hand Avenue to SR 40 and extending Tymber Creek road down to LPGA blvd.

This proposed widening of SR 40, the extension of Hand Ave, and the expansion of Tymber Creek road would directly impact high quality hardwood swamp floodplains, freshwater marshes, cypress swamps, shrub swamps and open water. The proposed new roadways would cross the Priest branch and the Tomoka River at the junction of Priest branch. These ecosystems are valuable to federally listed species and federal trust resources such as migratory birds and wetlands. In addition, this area is considered a strategic habitat conservation area for Florida.
Direct, indirect and cumulative effects to these high quality wetlands from increased storm water runoff from roadways and residential areas should be avoided. Further fragmentation of this important wildlife corridor should be avoided.

Our agency recommends that other alternatives should be proposed that would reduce the impacts identified by all of the resource agencies on fish and wildlife habitat in the action area.
Coordinator Feedback: None

3 *Moderate* assigned 12/30/2010 by Madolyn Dominy, US Environmental Protection Agency

Coordination Document: No Selection
Dispute Information:N/A
Identified Resources and Level of Importance: Resources: Wetlands, wetlands habitat, water quality

Level of Importance: These resources are of a high level of importance in the State of Florida and within the project area. A moderate degree of effect is being assigned to the wetlands issue for the proposed project.
Comments on Effects to Resources: The GIS analysis data at the programming screen phase of the project indicates that approximately 5 acres of wetlands (palustrine and riverine) wetlands are located within the 200-foot buffer distance and approximately 20 acres are located within the 500-foot buffer distance. This portion of SR 40 also crosses the Tomoka River. Wetland areas are associated with the Tomoka River and its shoreline. The project feasibility study calls for a bridge replacement on SR 40 over the Tomoka River. There will also be additional right-of-way needed for stormwater management/treatment units. The proposed project is likely to have direct, indirect, and cumulative effects on wetlands, wetlands habitat and water quality in the area. Construction of a new bridge within the same footprint and/or location would have the least amount of direct impact to wetlands. The degree of direct wetlands impacts associated with the project will be dependent upon the right-of-way needs for the entire project. Potential impacts include, but are not limited to, loss of wetlands function, loss of wildlife habitat, degradation of water quality in wetlands, degradation of water quality in surface waters, and reduction in flood storage and capacity.

Other issues of concern include increased stormwater runoff and the increase of pollutants into surface waters and wetlands as a result of the project and other point and nonpoint sources. Every effort should be made to maximize the collection and treatment of stormwater. Stormwater collection and treatment mechanisms should be designed to protect the function of surrounding wetlands, floodplains, and surface water features.

The PD&E study should focus on identifying wetlands areas to be potentially impacted by the project. The PD&E study should include a delineation of wetlands; functional analysis of wetlands to determine their value and function; an evaluation of stormwater pond sites to determine their impact on wetlands; avoidance and minimization strategies for wetlands; and mitigation plans to compensate for adverse impacts.

Indirect and cumulative effects on wetlands should be evaluated to identify and quantify incremental and cumulative impacts on natural resources (wetlands) as a result of past, present, and reasonably foreseeable actions, including the proposed project and other land use actions.
Coordinator Feedback: None

3 *Moderate* assigned 12/28/2010 by Andrew Phillips, US Army Corps of Engineers

Coordination Document: Permit Required
Dispute Information:N/A
Identified Resources and Level of Importance: The proposed project would impact Tomoka River and its associated wetlands. These wetland systems play a vital role as habitat for wildlife, flood storage, water quality issues, and drainage for the surrounding areas. These waters and their associated floodplain and tributaries would be considered a high importance. Remnant wetlands scattered throughout the proposed corridor vary in functions and value which may reduce their importance. A functional analysis would determine the extent of high, moderate, and low quality wetland.
Comments on Effects to Resources: Direct impacts would include the elimination of functions and values of the wetlands within the roadway footprint, any disturbed buffer, and extend secondary effects along adjacent waters/buffer. Permanent and temporary impacts will be generated by the construction of a widening of the existing roadway. Due to the overall acreage of wetland impact associated with this alternative, the high value and undisturbed nature of the wetlands within the review area, lack of known in-kind mitigation, and taking into account the overall potential cumulative and secondary impacts a degree of effect moderate was selected.
Coordinator Feedback: None

3 *Moderate* assigned 12/23/2010 by Lauren P. Milligan, FL Department of Environmental Protection

Coordination Document: Permit Required
Dispute Information:N/A
Identified Resources and Level of Importance: The National Wetlands Inventory GIS report indicates that there are 16.9 acres of palustrine and 3.7 acres of riverine wetlands within the 500-ft. project buffer zone. The riverine wetlands are associated with the Tomoka River, designated Outstanding Florida Waters.
Comments on Effects to Resources: The project will require an environmental resource permit (ERP) from the St. Johns River Water Management District. The ERP applicant will be required to eliminate or reduce the proposed wetland resource impacts of the highway expansion project to the greatest extent practicable:
- Minimization should emphasize avoidance-oriented corridor alignments, wetland fill reductions via pile bridging and steep/vertically retained side slopes, and median width reductions within safety limits.
- Wetlands should not be displaced by the installation of stormwater conveyance and treatment swales; compensatory treatment in adjacent uplands is the preferred alternative.
- After avoidance and minimization have been exhausted, mitigation must be proposed to offset the adverse impacts of the project to existing wetland functions and values. Significant attention is given to forested wetland systems, which are difficult to mitigate.
- The cumulative impacts of concurrent and future road improvement projects in the vicinity of the subject project should also be addressed.
Coordinator Feedback: None

3 *Moderate* assigned 12/21/2010 by Brandon Howard, National Marine Fisheries Service

Coordination Document: Tech Memo Required
Dispute Information:N/A
Identified Resources and Level of Importance: Magnuson-Stevens Act and Fish and Wildlife Coordination Act: The portion of the project that crosses the Tomoka River could impact high quality freshwater forested palustrine wetlands and sand bottom. The South Atlantic Fishery Management Council (SAFMC) has designated these wetlands and sand bottom as essential fish habitat (EFH) for juvenile white shrimp (Litopenaeus setiferus). These habitats support both recreational and commercial fisheries in the Tomaka River and downstream estuaries.
Comments on Effects to Resources: Impacts to these wetlands should be sequentially avoided, minimized, and compensated with mitigation. FDOT should explore expanding into the existing median. A wide median exists along the entire length of the study area. In addition, there is a 35-foot space between the existing twin span bridges. When the bridges are replaced to accommodate additional lanes, FDOT should make use of this space. There is little vegetation between the bridges currently and this would demonstrate that adequate avoidance measures have taken place. If the project continues to PD&E without this sequential mitigation, NMFS would likely find it necessary to issue EFH conservation recommendations.

With construction of the new lanes and bridges, impervious surface area will be replaced or expanded. Surface and stormwater runoff into the surrounding waters may result. The discharge of hydrocarbons and other contaminants may degrade water quality. Subsequently, NOAA trust resources located in the receiving waters could be adversely affected. To the extent practicable, runoff from the new roads should be treated before being discharged.
Additional Comments (optional): NMFS recommends that the following measures be taken as project development progresses from Programming to PD&E, design, and construction phases:

1) Adverse impacts to wetlands should be sequentially avoided and/or minimized, and unavoidable impacts should be offset in a manner that precludes a net loss of wetland function.

2) A habitat characterization of the wetlands within the project site, including the size and location of wetlands that would be directly and/or indirectly impacted by the proposed project should be prepared.

3) Information on measures to avoid and/or minimize adverse impacts to EFH within the vicinity of the project site should be identified.

4) Conservation measures (i.e., best management practices for water quality and erosion control) should be included in the project design and implemented during project construction.

5) A Stormwater Management Plan for containment/treatment of surface and stormwater runoff from impervious surfaces should be prepared. Treatment should be in accordance with state and federal (NPDES) standards. Details of the stormwater plan should include location, area, and cross section of proposed stormwater swales, and/or ponds and information on wetland vegetation planting if proposed.

6) A mitigation plan should be developed that includes the following items:
Detailed overview and cross-sectional drawings of the mitigation area(s) with elevations.
A vegetative planting plan for the mitigation site.
A detailed description of the proposed mitigation plan, including success criteria. The mitigation plan should contain sufficient detail to ensure no net loss of wetland functions and values as a result of project authorization.
A functional assessment such as the Uniform Mitigation Assessment Method (UMAM) should be prepared for the impact and mitigation sites.

7) Timely coordination between NMFS and FDOT staff should continue through project planning and until environmental issues are addressed and resolved.

Endangered Species Act: We are not aware of any threatened or endangered species or critical habitat under the purview of NMFS that occur within the project area. However, it should be noted that a "no effect" determination must be made by the action agency and the reasoning underlying the determination should be documented in a project file. Please coordinate closely with the U.S. Fish and Wildlife Service for other species listed under the Endangered Species Act that may require consultation.
Coordinator Feedback: None

The following organization(s) were expected to but did not submit a review of the Wetlands issue for this alternative: Federal Highway Administration, Saint Johns River Water Management District

Coordinator Summary: Wildlife and Habitat Issue

3 *Moderate* assigned 01/20/2011 by FDOT District 5

Comments: The FFWCC and USFWS assigned the potential for the project to adversely affect wildlife resources as Moderate. Wildlife habitat associated with the Tomoka River and its tributaries is of particular concern for both agencies. The FFWCC requested that extension of the Tomoka River bridges be considered to reduce wetland, floodplain and wildlife impacts. Field assessment and surveys of the project's wildlife and habitat resources should be completed during Project Development. Measures to minimize direct and indirect impacts of the project, including alignment alternatives and the stormwater management plan should be evaluated.

ETAT Reviews: Wildlife and Habitat Issue: 2 found

3 *Moderate* assigned 12/31/2010 by Jane Monaghan, US Fish and Wildlife Service

Coordination Document: To Be Determined: Further Coordination Required
Dispute Information:N/A
Identified Resources and Level of Importance: Federally listed species and the ecosystems upon which they depend. Other federal trust resources such as migratory birds and wetlands.
Comments on Effects to Resources: Project description: The proposal includes widening SR 40 from four to six lanes along a two mile stretch of roadway from Breakaway Trail to Williamson blvd. The area in Volusia County under consideration is east of I-95 and also includes the improvements

to a parallel roadway that was previously reviewed on the ETDM online commenting system (Hand Ave. Extension #13020). A feasibility study recommended the widening of SR 40 along with an extension of Hand Ave from Williamson Blvd to Tymber Creek road, widening of Tymber Creek road from Hand Avenue to SR 40 and extending Tymber Creek road down to LPGA blvd.
Federally listed species that would need to be addressed within the action area would include eastern indigo snakes, Florida scrub-jays and wood storks.
The Service recommends further study of the proposal and the development of feasible alternatives that avoid direct impacts to the Tomoka River and surrounding floodplains.
Coordinator Feedback: None

3 *Moderate* assigned 12/21/2010 by Scott Sanders, FL Fish and Wildlife Conservation Commission

Coordination Document: To Be Determined: Further Coordination Required
Dispute Information:N/A
Identified Resources and Level of Importance: The Habitat Conservation Scientific Services Section of the Florida Fish and Wildlife Conservation Commission (FWC) has coordinated an agency review of ETDM 9491, Volusia County, and provides the following comments related to potential effects to fish and wildlife resources on this Programming Phase project.

The Project Description Summary states that the project's purpose is to expand SR-40 in the vicinity of I-95 in Ormond Beach from four to six lanes from Breakaway Trail to Williamson Boulevard over a distance of about 2.0 miles.

The project area was evaluated for potential fish, wildlife, and habitat resources within 500 feet of the existing alignment to account for both direct and indirect impacts, including construction of future Drainage Retention Areas (DRAs), equipment staging or storage areas, and areas for roadway fill. The project area crosses I-95 and runs adjacent to the Little Tomoka River, and also crosses the Tomoka River and Priest Creek. Our assessment reveals that the project area is in a somewhat suburban area as 50.9 percent (131.1 acres) of the area is classified as High and Low Impact Urban lands, while 11.7 percent (33.9 acres) is in wetlands, and 32.2 percent (85.2 acres) is represented by upland forests. Based on our assessment, native plant communities are represented by cypress swamp (2.7 acres, 1.0 percent), freshwater marsh (3.8 acres, 1.5 percent), hardwood swamp (5.1 acres, 2.0 percent), mixed wetland forest (7.1 acres, 2.8 percent), open water (8.7 acres, 3.4 percent), and shrub swamp (6.5 acres, 2.5 percent), with uplands including dry prairie (4.9 acres, 1.9 percent), hardwood forests (0.2 acres, 0.1 percent), mixed hardwood-pine forests (12.7 acres, 5.0 percent), pinelands (41.3 acres, 16.0 percent), and shrub and brushland (26.3 acres, 10.2 percent).

Based on range and preferred habitat type, the following species listed by the Federal Endangered Species Act as Federally Endangered (FE) or Federally Threatened (FT), or the State of Florida as State Threatened (ST), or State Species of Special Concern (SSC) may occur along the project area and nearby regional area: Florida black bear (ST), Sherman's fox squirrel (SSC), Florida mouse (SSC), limpkin (SSC), snowy egret (SSC), little blue heron (SSC), tricolored heron (SSC), white ibis (SSC), Florida sandhill crane (ST), wood stork (FE), burrowing owl (SSC), Southeastern American kestrel (ST), Florida scrub jay (FT), Eastern indigo snake (FT), Florida pine snake (SSC), gopher tortoise (ST), and gopher frog (SSC). Hereafter, these species are collectively referred to as "listed species," unless otherwise noted.

The following wildlife species, while not officially listed, are considered by FWC as Species of Greatest Conservation Need, and have a high agency priority for habitat conservation and protection due to prior habitat loss or degradation, and may occur within the project area or upland and wetland plant community types within this region: swallow-tailed kite, short-tailed hawk, Cooper's hawk, Northern bobwhite, red-headed woodpecker, common ground dove, bald eagle, prothonatary warbler, yellow-crowned night heron, Florida mottled duck, Florida box turtle, spotted turtle, Eastern diamondback rattlesnake, Eastern kingsnake, Southern hognose snake, Eastern cottontail rabbit, river otter, spotted skunk, and the round-tailed muskrat.

The GIS analysis within 500 feet of the existing and proposed ROW also revealed several specific characteristics associated with lands along the project area that provide some indication of potential habitat quality or sensitivity that may require field studies to verify the presence or absence of Listed Species and the quality of wildlife habitat resources. This analysis shows that the project area is within the Secondary Range of the St Johns population of the Florida black bear, and the boundary for the Primary range of this species is located within about 1 mile. FWC Strategic Habitat Conservation Areas (SHCA) have been established for the Cooper's hawk and the American swallowtail kite within 500 feet of the roadway, while an SHCA for the Florida scrub jay is located within 1 mile of the project area. The project area is also within the U.S. Fish and Wildlife Service Consultation Area for the Florida scrub jay. Based on FWC's Potential Habitat Richness data layer, 14.6 percent (37.7 acres) of habitat within the assessment area was rated as low, 30.4 percent (46.4 acres) was ranked as medium, and 1.0 percent (2.5 acres) was ranked as moderately high quality. Furthermore, approximately 21.1 percent (54.4 acres) of natural plant communities adjacent to the project area was ranked as Moderately High value by FWC's Integrated Wildlife Habitat Ranking System. Finally, Florida beargrass, a plant species listed as Threatened by the State of Florida has been documented within 500 feet of the project area according to the Florida Natural Areas Inventory database.
Comments on Effects to Resources: Based on our assessment of the project information provided, we believe that direct effects could be moderate. The herbaceous and forested wetlands and upland plant communities in the project area provide habitat for a wide variety of birds, mammals, amphibians and reptiles, including a number of listed species that could potentially be adversely affected due to habitat loss or degradation. However, those effects could be reduced to minimal through identification and successful implementation of proper measures to avoid and minimize impacts. We recommend that further studies and comparisons of habitat quality and identification of potential site-specific opportunities to avoid and minimize impacts to natural plant communities be accomplished, especially in the area of the Tomoka River and floodplain and other tributary streams.

Indirect effects of the project could also be moderate. Upland and wetland habitat loss, fragmentation and isolation may occur due to future residential and commercial development in this area that may be facilitated by improved access to the area. However, this roadway project appears to be a response to previous and planned development and the need for increased access. A number of listed species that may occur along the Right-of-way (ROW) and in the region could be adversely affected by the project. In addition, adverse effects could occur from potential water quality degradation as a result of stormwater runoff from the additional impervious roadway surface draining into area wetlands, and from a significant increase in roadkills of mammals, birds, reptiles, and amphibians along the project area, including listed species and recreationally important species.
Additional Comments (optional): In summary, our Moderate Degree of Effect is based on impacts to forested wetlands and tributary streams, including those of the Tomoka River, potential impacts to listed species and other wildlife and habitat resources, and indirect impacts including habitat fragmentation and degradation resulting from expanding the roadway to six lanes. This Degree of Effect could be reduced to minimal if positive measures are undertaken to specifically address the above issues, such as increased habitat connectivity at the Tomoka River and quantity and quality of stormwater runoff. FWC biologists are available to work with other resource and permitting agencies to assist FDOT in this regard during the upcoming Project Development and Environment (PD&E) Study.

We recommend that the PD&E Study address natural resources by including the following measures for conserving fish and wildlife and habitat that may occur within and adjacent to the project area. Plant community mapping and wildlife surveys for the occurrence of listed species should be performed, both along the ROW and within sites proposed for DRAs. Based on the survey results, a plan should be developed to address direct, indirect, and cumulative effects of the project on wildlife and habitat resources. Avoidance, minimization, and mitigation measures should also be formulated and implemented. If gopher tortoises are present within any permanent or temporary construction area, a permit should be obtained from the FWC. Drainage Retention Areas and equipment staging areas should be located in previously disturbed sites to avoid habitat destruction or degradation. Wet Detention Areas should be designed with meandered shorelines and variable slopes, and planted with native wetland trees and marsh plants. All offsite areas identified for fill material for the roadway should also be surveyed for Listed Species.

If the bridge across the Tomoka River is to be replaced due to lane expansion, we recommend consideration of bridging both the stream bed and a significant area of the floodplain. We also recommend the use of small bridges or oversized box culverts to avoid habitat loss and degradation on small tributary streams and to promote hydrological and habitat connectivity functions. Appropriately designed exclusionary fencing along the roadway associated with these structures would materially reduce roadkills of mammals, amphibians and reptiles and promote public safety. A compensatory mitigation plan should include the replacement of any wetland, upland, or aquatic habitat lost as a result of the project. This could be achieved by purchasing land, or securing conservation easements over lands adjacent to existing public lands, and by habitat restoration. Replacement habitat for mitigation should be type for type, and as productive, and equal to or of higher functional value. We recommend land acquisition and restoration of appropriate tracts adjacent to existing public lands near the project area, or tracts placed under conservation easement or located adjacent to large areas of jurisdictional wetlands that currently serve as regional core habitat areas. FWC staff is available to assist in this effort by providing wildlife and habitat resource information and other related technical assistance. Please notify us immediately if the design, extent, or footprint of the current project is modified, as we may choose to provide additional comments and/or recommendations.

We appreciate the opportunity to provide input on highway design and the conservation of fish and wildlife resources. Please contact Terry Gilbert at (850) 402-6311 or email terry_gilbert@urscorp.com to initiate the process for further overall coordination on this project.
Coordinator Feedback: None

The following organization(s) were expected to but did not submit a review of the Wildlife and Habitat issue for this alternative: Federal Highway Administration, US Forest Service

ETAT Reviews and Coordinator Summary: Cultural Issues

Coordinator Summary: Historic and Archaeological Sites Issue

3 *Moderate* assigned 01/20/2011 by FDOT District 5

Comments: The SHPO and the Miccosukee Tribe of Indians of Florida commented on the potential for the project to affect historic and archaeological resources. The SHPO assigned the project a Moderate degree of effect. They stated that the most recent cultural resource survey in the area was completed in 1991 and that the bridges over the Tomoka River are not historic. Both SHPO and the Miccosukee Tribe indicated that there is the possibility of finding unrecorded historic or archaeological resources within the project area. FDOT concurs and assigns a Summary Effect of Moderate.

ETAT Reviews: Historic and Archaeological Sites Issue: 2 found

3 *Moderate* assigned 12/08/2010 by Ginny Leigh Jones, FL Department of State

Coordination Document: PD&E Support Document As Per PD&E Manual
Dispute Information:N/A
Identified Resources and Level of Importance: FDOT RCI Bridges:
The GIS analysis revealed that there are 4 bridges with 1,320ft of the project area.

No other recorded cultural resources within 1,320 ft of the proposed project area.
Comments on Effects to Resources: Effects to resources:
None of the bridges are historic age. Because of the age of the RCI bridges this project will have no affect on these resources.

No other recorded cultural resources within 1,320 ft of the proposed project area. However, there is a possibility that there are unrecorded cultural resources in the proposed project area that may be affected by the proposed project.
Additional Comments (optional): A GIS analysis revealed that there have been seven cultural resources surveys completed within 1320ft of the proposed project area. Three of the surveys were conducted on SR 40. The most recent of the surveys was completed in 1991 (FMSF No. 3247). Because of the significant length of time between the most recent survey and the completion of the proposed project this office is recommending a cultural resources assessment survey be completed for the proposed project. It is therefore our recommendation that prior to initiating any project related land clearing or ground disturbing activities within the project area it should be subjected to a systematic archaeological and architectural survey. All historic-age resources, including potential historic districts, within the area of potential effects should be documented and assessed for NRHP eligibility. The resultant survey report shall conform to the specifications set forth in Chapter 1A-46, Florida Administrative Code and need to be forwarded to this agency for review and comment.
Coordinator Feedback: None

2 *Minimal* assigned 12/08/2010 by Steve Terry, Miccosukee Tribe of Indians of Florida

Coordination Document: No Selection
Dispute Information:N/A
Identified Resources and Level of Importance: There are no recorded archaeological sites reported near this project. However, a Cultural Resources Survey will need to be done to ascertain if there are any archaeological sites within the project boundaries.
Comments on Effects to Resources: Once a Cultural Resources Survey has been done, then effects, if any, to archaeological sites can be ascertained.
Additional Comments (optional): If the Cultural Resources Survey shows there are no archaeological sites that will be impacted by this project, then no further consultation is necessary. However, if the Cultural Resources Survey does show that archaeological sites will be impacted by this project, then further consultation with the Miccosukee Tribe should be done.

Coordinator Feedback: None

The following organization(s) were expected to but did not submit a review of the Historic and Archaeological Sites issue for this alternative: Federal Highway Administration, Seminole Tribe of Florida

Coordinator Summary: Recreation Areas Issue

0 *None* assigned 01/20/2011 by FDOT District 5

Comments: The USEPA and FDEP assigned the project a degree of effect of none for recreational resources. FDEP noted that the project crosses the Tomoka River State Recreational Canoe Trail. The potential for impacts to this trail, including temporary impacts that may result during project construction should be evaluated during Project Development.

ETAT Reviews: Recreation Areas Issue: 2 found

0 *None* assigned 12/30/2010 by Madolyn Dominy, US Environmental Protection Agency

Coordination Document: No Selection
Dispute Information:N/A
Identified Resources and Level of Importance: None found.
Comments on Effects to Resources: None found.
Coordinator Feedback: None

0 *None* assigned 12/23/2010 by Lauren P. Milligan, FL Department of Environmental Protection

Coordination Document: No Selection
Dispute Information:N/A
Identified Resources and Level of Importance: The project does cross the Tomoka River State Recreational Canoe Trail.
Comments on Effects to Resources: None found.
Coordinator Feedback: None

The following organization(s) were expected to but did not submit a review of the Recreation Areas issue for this alternative: Federal Highway Administration, National Park Service, Saint Johns River Water Management District

Coordinator Summary: Section 4(f) Potential Issue

0 *None* assigned 01/20/2011 by FDOT District 5

Comments: No agency reviews for this issue were provided in the EST. The project is being developed using state funds only. Section 4(f) only applies if federal funds are sought. FDOT assigns a Summary Effect of None, since no federal funds are being requested.

ETAT Reviews: Section 4(f) Potential Issue: None found

The following organization(s) were expected to but did not submit a review of the Section 4(f) Potential issue for this alternative: Federal Highway Administration

ETAT Reviews and Coordinator Summary: Community Issues

Coordinator Summary: Aesthetics Issue

2 *Minimal* assigned 01/20/2011 by FDOT District 5

Comments: No ETAT comments on aesthetic issues were provided. A review of the GIS analysis found that portions of the project lie within the city limits of Ormond Beach. The dominant land uses within the 100-ft. buffer area are classified as Roads and Highways (41.9%), Pine Flatwoods (17.79%), Shrub and Brush land (9.27%) and Residential Low and Medium (7.94%), based on the 2004 SJRWMD FL Land Use and Land Cover data. Future land use data in the 100-ft. buffer area indicates greater than 50% residential and 42% commercial land use. A program for public involvement and outreach should be developed to solicit input regarding project aesthetic impacts. Additionally, a noise study will be needed to evaluate the potential for adverse noise impacts. FDOT assigns a summary effect of Minimal.

ETAT Reviews: Aesthetics Issue: None found

The following organization(s) were expected to but did not submit a review of the Aesthetics issue for this alternative: Federal Highway Administration, Volusia TPO

Coordinator Summary: Economic Issue

2 *Minimal* assigned 01/20/2011 by FDOT District 5

Comments: No ETAT comments regarding economic issues were provided. The need for the project is primarily driven by residential development associated with three Developments of Regional Impact: Hunters Ridge, Ormond Crossings, and LPGA. A primary purpose of the project is to reduce congestion on SR 40. State Road 40, west of I-95, is designated as an emerging Strategic Intermodal System facility. Public involvement opportunities should be provided as the project develops to solicit public input and to ensure that transportation needs are addressed, while minimizing adverse impacts. FDOT assigns a Summary Effect of Minimal.

ETAT Reviews: Economic Issue: None found

The following organization(s) were expected to but did not submit a review of the Economic issue for this alternative: Federal Highway Administration, Volusia TPO

Coordinator Summary: Land Use Issue

2 *Minimal* assigned 01/20/2011 by FDOT District 5

Comments: No ETAT comments were provided regarding Land Use issues. Based on the GIS analysis 100-ft. buffer area, the dominant land uses are classified as Roads and Highways (41.9%), Pine Flatwoods (17.79%), Shrub and Brush land (9.27%) and Residential Low and Medium (7.94%), according to the 2004 SJRWMD FL Land Use and Land Cover data. In the 200-ft. buffer current land use is identified as Retail/Office (10.17%), Residential (9.29%), Institutional (7.93%) and Vacant Non Residential (5.44%), in the District 5 Generalized Land Use Data. Future land use data for the 100-ft. buffer area shows the area as greater than 50% residential and 42% commercial land use. Issues and concerns regarding the project's effects on land use should be solicited through the project's public involvement program. FDOT assigns a Summary Effect of Minimal.

ETAT Reviews: Land Use Issue: None found

The following organization(s) were expected to but did not submit a review of the Land Use issue for this alternative: FL Department of Community Affairs, Federal Highway Administration, Volusia TPO

Coordinator Summary: Mobility Issue

1 *Enhanced* assigned 01/20/2011 by FDOT District 5

Comments: No ETAT comments were provided regarding mobility issues. The purpose of the project is to relieve existing and future traffic congestion on SR 40. Within the project limits, SR. 40 is designated as an emerging Strategic Intermodal System (SIS) Facility. It provides valuable intraregional and interregional freight connectivity by linking Florida's East Coast to the Gainesville / Ocala regions. State Road 40 is also a designated Emergency Evacuation Route. FDOT assigns a Summary Effect of Enhanced.

ETAT Reviews: Mobility Issue: None found

The following organization(s) were expected to but did not submit a review of the Mobility issue for this alternative: Federal Highway Administration, Federal Transit Administration, Volusia TPO

Coordinator Summary: Relocation Issue

2 *Minimal* assigned 01/20/2011 by FDOT District 5

Comments: No agency commented on relocation issues. The project is not anticipated to involve residential or business relocations. FDOT will continue to assess the potential for relocations during Project Development and through the project's public involvement program. FDOT assigns a Summary Effect of Minimal.

ETAT Reviews: Relocation Issue: None found

The following organization(s) were expected to but did not submit a review of the Relocation issue for this alternative: Federal Highway Administration, Volusia TPO

Coordinator Summary: Social Issue

2 *Minimal* assigned 01/20/2011 by FDOT District 5

Comments: The US EPA assigned a minimal degree of effect for social issues. They indicated that congestion relief would provide benefit to residents of the area. Based on the GIS analysis, there are several social service centers listed within the 100-ft. buffer area. During project development FDOT will evaluate the potential impacts of the project on nearby communities, including community goals and quality of life issues. Public concerns regarding the project should be solicited and addressed through the project's public involvement program. FDOT assigns a Summary Effect of Minimal.

ETAT Reviews: Social Issue: 1 found

2 *Minimal* assigned 01/01/2011 by Madolyn Dominy, US Environmental Protection Agency

Coordination Document: No Selection
Dispute Information:N/A
Identified Resources and Level of Importance: Resources: Social impacts such as residential populations, commuter populations, residential communities, commercial businesses, social service facilities, religious facilities, minority or low-income populations, disadvantaged populations, etc.

Level of Importance: These resources are of a high level of importance. Impacts to these types of resources should be evaluated and documented in the PD&E phase of the project.
Comments on Effects to Resources: The purpose and need for this project is proposed improvements along SR 40, in the vicinity of I-95, and located in the City of Ormond Beach. The limits under consideration are from Breakaway Trail to Williamson, a distance of approximately 2 miles. The existing S.R. 40 is currently classified as a principal arterial with SR 40 west of Interstate 95 identified as a Scenic Byway. The existing roadway consists of 4 travel lanes with an urban, closed drainage system. The proposed action is a capacity project and would involve widening the existing facility to 6 lanes.

A feasibility study was performed on proposed improvements and is included in the project attachments. In summary, the feasibility study (see attachment) recommended a 4 to 6 lane widening of SR 40 from Breakaway Trail to Williamson Boulevard, along with improvements to a parallel facility, Hand Ave.

According to the project description, there are several roadway improvement projects within the project area. Volusia County is currently in the planning stage for the Hand Avenue 2 lane extension, from Williamson Boulevard to Tymber Creek Road, as identified in the Volusia County MPO FY 2007/08 to 2011/12 Transportation Improvement Plan (TIP), Capital Improvement Element, and Long Range Transportation Plan. Also identified in the TIP, is the widening of Tymber Creek Road, from S.R. 40 to Airport Road, from 2 to 4 lanes. This improvement is currently in the right-of-way acquisition stage with construction beginning next year.

Existing land use is predominately residential communities (single family and multi family), with big box retail / commercial, office, and agricultural / undeveloped areas intermittently located throughout portions of the corridor. In the future, some areas of undeveloped land are expected to be acquired for conservation and storm water purposes and future development from the above mentioned DRIs. Community and educational facilities, such as churches and academies, are also located within the study area along SR 40.

EPA is assigning a minimal degree of effect to the social issues for the proposed project. There will be social benefits resulting from the project due to congestion relief and an improvement in mobility with the SR 40 roadway widening project and upgrades to a parallel facility (Hand Avenue). There are social issues to be considered such as a disruption in traffic patterns (lane reductions, detours, etc) during the project construction, an increase in noise to surrounding businesses and residents, and increase in traffic volumes. There are also natural resource areas directly adjacent to and within close proximity of this project which could be impacted by the project and subsequent development along the corridor. These issues should be addressed during the PD&E phase of the project. Project impacts to sensitive populations such as minority, elderly, or disabled populations should be avoided or minimized to the best extent practicable. EPA recommends that public involvement activities be conducted throughout the PD&E phase of the project.
Coordinator Feedback: None

The following organization(s) were expected to but did not submit a review of the Social issue for this alternative: FL Department of Community Affairs, Federal Highway Administration, Volusia TPO

ETAT Reviews and Coordinator Summary: Secondary and Cumulative Issues

Coordinator Summary: Secondary and Cumulative Effects Issue

2 *Minimal* assigned 01/20/2011 by FDOT District 5

Comments: No ETAT reviews were provided for this issue. FDOT should develop avoidance and minimization alternatives during the Project Development phase, which would reduce the secondary and cumulative impacts of the project. FDOT assigns a Summary Effect of Minimal.

ETAT Reviews: Secondary and Cumulative Effects Issue: None found

Eliminated Alternatives

No eliminated alternatives present.

Project Scope

General Project Commitments

No General Project Commitments Found

Required Permits

No Permits Found.

Required Technical Studies

No Technical Studies Found.

Dispute Resolution Activity Log

No Dispute Actions Found.

Appendices

Degree of Effect Legend

Legend			
Color Code	**Meaning**	**ETAT**	**Public Involvement**
N/A	Not Applicable / No Involvement	There is no presence of the issue in relationship to the project, or the issue is irrelevant in relationship to the proposed transportation action.	
0	None (after 12/5/2005)	The issue is present, but the project will have no impact on the issue; project has no adverse effect on ETAT resources; permit issuance or consultation involves routine interaction with the agency. The *None* degree of effect is new as of 12/5/2005.	No community opposition to the planned project. No adverse effect on the community.
1	Enhanced	Project has positive effect on the ETAT resource or can reverse a previous adverse effect leading to environmental improvement.	Affected community supports the proposed project. Project has positive effect.
2	Minimal	Project has little adverse effect on ETAT resources. Permit issuance or consultation involves routine interaction with the agency. Low cost options are available to address concerns.	Minimum community opposition to the planned project. Minimum adverse effect on the community.
2	Minimal to None (assigned prior to 12/5/2005)	Project has little adverse effect on ETAT resources. Permit issuance or consultation involves routine interaction with the agency. Low cost options are available to address concerns.	Minimum community opposition to the planned project. Minimum adverse effect on the community.
3	Moderate	Agency resources are affected by the proposed project, but avoidance and minimization options are available and can be addressed during development with a moderated amount of agency involvement and moderate cost impact.	Project has adverse effect on elements of the affected community. Public Involvement is needed to seek alternatives more acceptable to the community. Moderate community interaction will be required during project development.
4	Substantial	The project has substantial adverse effects but ETAT understands the project need and will be able to seek avoidance and minimization or mitigation options during project development. Substantial interaction will be required during project development and permitting.	Project has substantial adverse effects on the community and faces substantial community opposition. Intensive community interaction with focused Public Involvement will be required during project development to address community concerns.
5	Potential Dispute (Planning Screen)	Project may not conform to agency statutory requirements and may not be permitted. Project modification or evaluation of alternatives is required before advancing to the LRTP Programming Screen.	Community strongly opposes the project. Project is not in conformity with local comprehensive plan and has severe negative impact on the affected community.
5	Dispute Resolution (Programming Screen)	Project does not conform to agency statutory requirements and will not be permitted. Dispute resolution is required before the project proceeds to programming.	Community strongly opposes the project. Project is not in conformity with local comprehensive plan and has severe negative impact on the affected community.
	No ETAT Consensus	ETAT members from different agencies assigned a different degree of effect to this project, and the ETDM coordinator has not assigned a summary degree of effect.	
	No ETAT Reviews	No ETAT members have reviewed the corresponding issue for this project, and the ETDM coordinator has not assigned a summary degree of effect.	

GIS Analyses

Since there are so many GIS Analyses available for Project #9491 - SR 40 - Breakaway Trail to Williamson Blvd., they have not been included in this ETDM Summary Report. GIS Analyses, however, are always available for this project on the Public ETDM Website. Please click on the link below (or copy this link into your Web Browser) in order to view detailed GIS tabular information for this project:

http://etdmpub.fla-etat.org/est/index.jsp?tpID=9491&startPageName=GIS%20Analysis%20Results

Special Note: Please be sure that when the GIS Analysis Results page loads, the **Programming Screen Summary Report Published on 01/20/2011 by Kathaleen Linger Milestone** is selected. GIS Analyses snapshots have been taken for Project #9491 at various points throughout the project's life-cycle, so it is important that you view the correct snapshot.

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