

CENTRAL BROWARD EAST-WEST TRANSIT STUDY

Threatened and Endangered Species, Surface Waters, and Wetlands Technical Memorandum



July 2012



JACOBS

CENTRAL BROWARD



TRANSIT STUDY

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1.0 Threatened and Endangered Species

1.1 Legal and Regulatory Context

The Endangered Species Act of 1973 prohibits the destruction of habitats critical to the survival of federally listed species. A listed species is a species on the Secretary of the Interior's list of species that appear in danger of extinction across part or all of its range. The designation of "endangered" indicates that the entire species could be in danger of extinction. A designation of "threatened" indicates a species for which protective measures appear to be required to prevent a species from becoming endangered.

The Florida Fish and Wildlife Conservation Commission (FFWCC) maintains the state list of animals designated as endangered, threatened, or species of special concern (SSC) in accordance with Rules 68A-27.003, 68A-27.004, and 68A27.005, respectively, Florida Administrative Code (F.A.C.) The state list of plants which are designated endangered, threatened, and commercially exploited (CE) are administered and maintained by the Florida Department of Agriculture and Consumer Services (DOACS) via Chapter 5B-40, F.A.C.

1.2 Methodology

Literature reviews, agency database searches, and preliminary field reviews of potential habitat areas were conducted to identify state and federally protected species occurring or potentially occurring within the study area. Recent aerial photographs were reviewed to determine habitat types occurring within and adjacent to the study corridor. Field reviews consisted of vehicular surveys, roadside observations, and pedestrian surveys through natural areas and altered habitats with the potential to support listed species. These surveys took place within the FDOT right-of-way, and in habitats immediately adjacent to the existing roadway with potential to support protected species.

1.3 Existing Conditions within the Study Area

The study corridor occurs in a highly urbanized environment with minimal wildlife habitat remaining. The wildlife commonly found along the study area consists of those species adapted to life in highly urban environments such as a variety of wading and passerine birds, squirrels, and small rodents. No rare plant species or plant communities were observed within the study area. Existing vegetation consists of emergent species associated primarily with littoral zones of ponds and ditches, mowed urban grasses, scattered trees, and landscaping. Native vegetation within the proposed study area has been heavily impacted by commercial and residential development.

A list of potentially occurring protected species was developed for the study corridor, and each species was given a low, moderate or high likelihood for occurrence within habitats found on the study corridor. Exhibit 1 lists the federal and state listed wildlife species with the potential to occur within the study corridor based on potential availability of suitable habitat and known ranges. Species with a low likelihood of occurrence within the study corridor are defined as those species that are known to occur in Broward County or its bio-region, but preferred habitat is limited on the study corridor, or the species is rare or has been extirpated. Species with a moderate likelihood for occurrence are those species known to occur in Broward County or nearby counties, and for which suitable habitat is well represented on the study corridor, but no observations or positive indications exist to verify their presence. Species with a

high likelihood for occurrence are suspected within the study corridor based on known ranges and existence of sufficient preferred habitat on the corridor; are known to occur adjacent to the corridor; or have been previously observed or documented in the vicinity.

Exhibit 1: Listed Wildlife Species Potentially Occurring within the Study Area

SPECIES	COMMON NAME	FFWCC ¹	USFWS ²	HABITAT ³	PROBABILITY OF PRESENCE OR OCCURRENCE ⁴
REPTILES					
<i>Alligator mississippiensis</i>	American Alligator	FT (S/A)	T (S/A)	Tidal marsh, tidal swamp, lacustrine (lakes & ponds), palustrine, riverine	High
<i>Drymarchon corais couper</i>	Eastern Indigo Snake	FT	T	Hydric hammock, palustrine, sandhill, scrub, upland pine forest, mangrove swamp	Low
<i>Gopherus polyphemus</i>	Gopher Tortoise	ST		Old field, sandhill, scrub, xeric hammock, ruderal, dry prairie, pine flatwood	Low
BIRDS					
<i>Aramus guarauna</i>	Limpkin	SSC		Floodplain swamp, floodplain marsh, rivers, streams, sloughs, lakes	Low
<i>Egretta caerulea</i>	Little Blue Heron	SSC		Estuarine, lacustrine, riverine, tidal marsh, tidal swamp	High (Observed)
<i>Egretta thula</i>	Snowy Egret	SSC		Estuarine, lacustrine, riverine, tidal marsh, tidal swamp	High
<i>Egretta Tricolor</i>	Tricolored (Louisiana) Heron	SSC		Estuarine, lacustrine, riverine, tidal marsh, tidal swamp	Moderate
<i>Eudocimus albus</i>	White Ibis	SSC		Estuarine, lacustrine, riverine, tidal marsh, tidal swamp	High (Observed)
<i>Falco sparverius paulus</i>	Southeastern American Kestrel	ST		Sandhill, mesic flatwoods, ruderal, dry prairie	Low
<i>Platalea ajaja</i>	Rosate Spoonbill	SSC		Estuaries, bays, mangrove, swamps, coastal islands, flooded agricultural fields	Low
<i>Speotyto cunicularia</i>	Burrowing Owl	SSC		Dry prairie, sandhill, pastures golf courses, ruderal, athletic fields	Moderate
<i>Grus canadensis pratensis</i>	Florida Sandhill Crane	T		Basin marsh, depression marsh, dry prairie, marl prairie, pastures	Low

SPECIES	COMMON NAME	FFWCC ¹	USFWS ²	HABITAT ³	PROBABILITY OF PRESENCE OR OCCURRENCE ⁴
<i>Mycteria americana</i>	Wood Stork	FE	E	Estuarine, tidal swamps/marshes, lacustrine, seepage stream, ditches, ruderal	High (Observed)
MAMMALS					
<i>Trichechus manatus latirostris</i>	West Indian (Florida) Manatee	FE	E	Alluvial stream, blackwater stream, spring fed stream, estuarine, marine	Moderate

1. FFWCC – Florida Fish and Wildlife Conservation Commission; Official Lists of Florida’s Endangered Species, Threatened Species, and Species of Special Concern, published May 2011. (Ranking: E- Endangered, T – Threatened, SSC – Species of Special Concern)

2. USFWS – U.S. Fish and Wildlife Service Status, Official Lists of Threatened and Endangered Species updated through the USFWS web site last updated on 10/14/08. (Ranking: E – Endangered, T – Threatened)

3. Habitats described by: Hall, D. and Newman, C. 1998. TESS 2.0: Threatened and Endangered Species Software, Professional Version. Envirotools, Inc. Gainesville, FL.

4. Likelihood of Occurrence: Low, Moderate, or High based on best available data and selective field observations.

Results of database searches revealed two state-listed species, gopher tortoise (*Gopherus polyphemus*) and burrowing owl (*Speotyto cunicularia*), and one state and federally-listed species, West Indian (Florida) Manatee (*Trichechus manatus latirostris*), have been documented within one mile of the study corridor. During field reviews, none of these species, or suitable habitats, was observed within or immediately adjacent to the corridor. One historic wading bird rookery, last recorded as active in the 1970’s, was also documented to the southeast of the corridor, within the Pond Apple Slough Natural Area. No impacts to these habitats are anticipated.

According to the USFWS GIS database, two active wood stork (*Mycteria americana*) nesting colonies are located within 18.6 miles of the study corridor. One of these is shown in Exhibit 2. Wetlands in the study vicinity are therefore considered Core Foraging Areas (CFA) for wood stork, and appropriate mitigation for any impacts to these areas will be required.

During the field surveys performed in May and December of 2006 and February of 2012, two state-listed wildlife species, white ibis (*Eudocimus albus*) and little blue heron (*Egretta caerulea*), and one state and federally-listed wildlife species, wood stork, were observed. White ibis and little blue heron are listed by the state as species of special concern, and wood stork is state and federally listed as endangered. All three species were observed foraging along the edges of ditches, canals or retention ponds adjacent to the study corridor. No nesting areas are known to exist adjacent to the study area.

1.4 Western Segment Threatened and Endangered Species

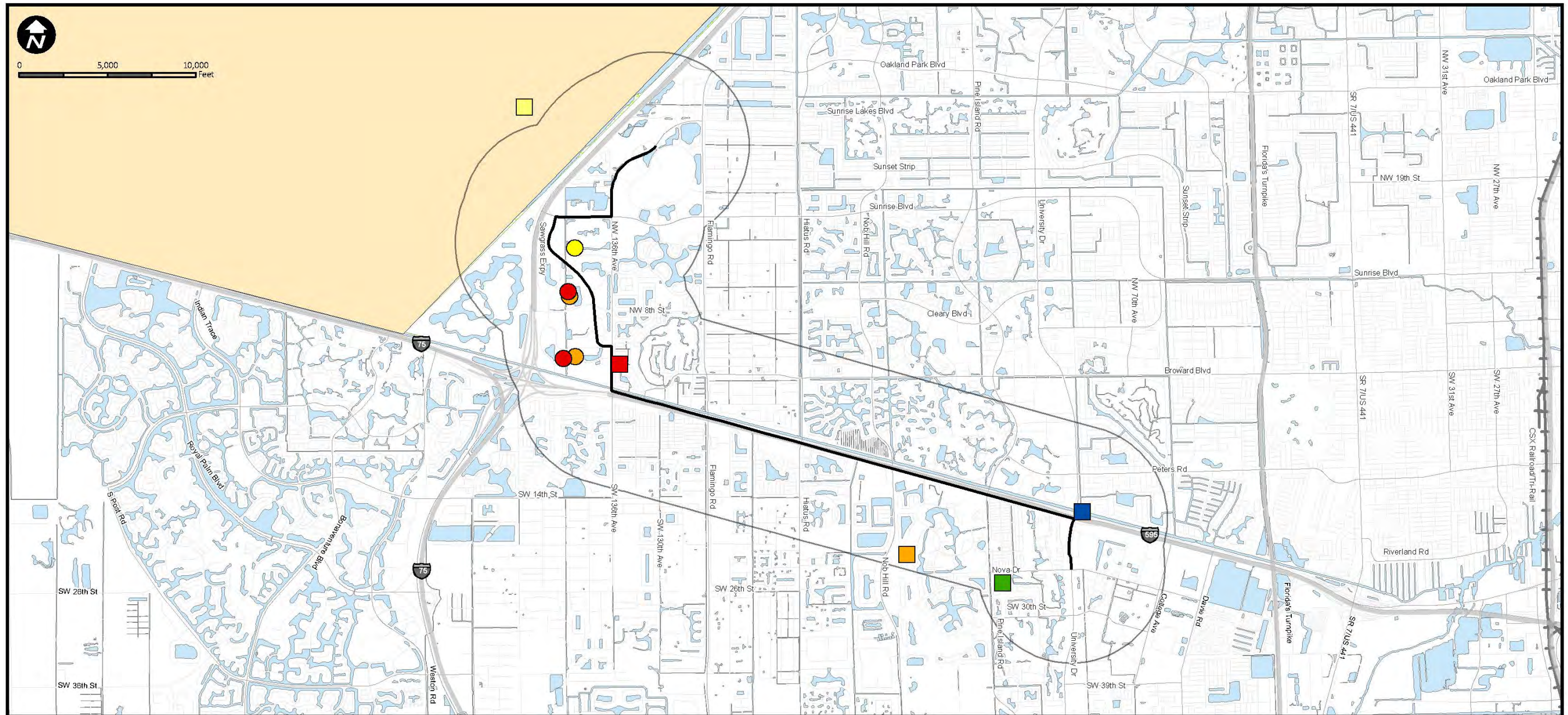
Database search results for threatened and endangered species surrounding the Western Segment include the Burrowing Owl, Gopher Tortoise, and Florida Manatee. Additionally, the adjacent Everglades area to the northwest is considered a Critical Habitat Area for the Everglade Snail Kite, and also contains two Wood Stork rookeries that fall within 18.6 miles of the alignment. Observed species within the Western Segment include the Little Blue Heron, White Ibis, and Wood Stork. All of these five total observations were made on the western portion of the segment in an area bounded by Sunrise Boulevard to the north, NW 136th Avenue to the east, I-595 to the south, and the Sawgrass Expressway

to the west. The locations of database search results and observations for the Western Segment are shown in Exhibit 2.

1.5 Central Griffin Road Segment Threatened and Endangered Species

Database search results for threatened and endangered species surrounding the Central Griffin Road Segment include the Burrowing Owl and Florida Manatee. Burrowing Owl activity is shown to occur mostly in and around the SFEC area north of Griffin Road and west of Davie Road, while manatee activity and mortalities have mostly been recorded in the waterways north of Griffin Road in between Florida's Turnpike and I-95. There were only two species observations within this segment, both on the north side of Griffin Road near the South New River Canal. A Little Blue Heron was observed on the west side of University Drive, and a Wood Stork was observed midway between University Drive and Davie Road. The locations of database search results and observations for the Central Griffin Road Segment are shown in Exhibit 3.

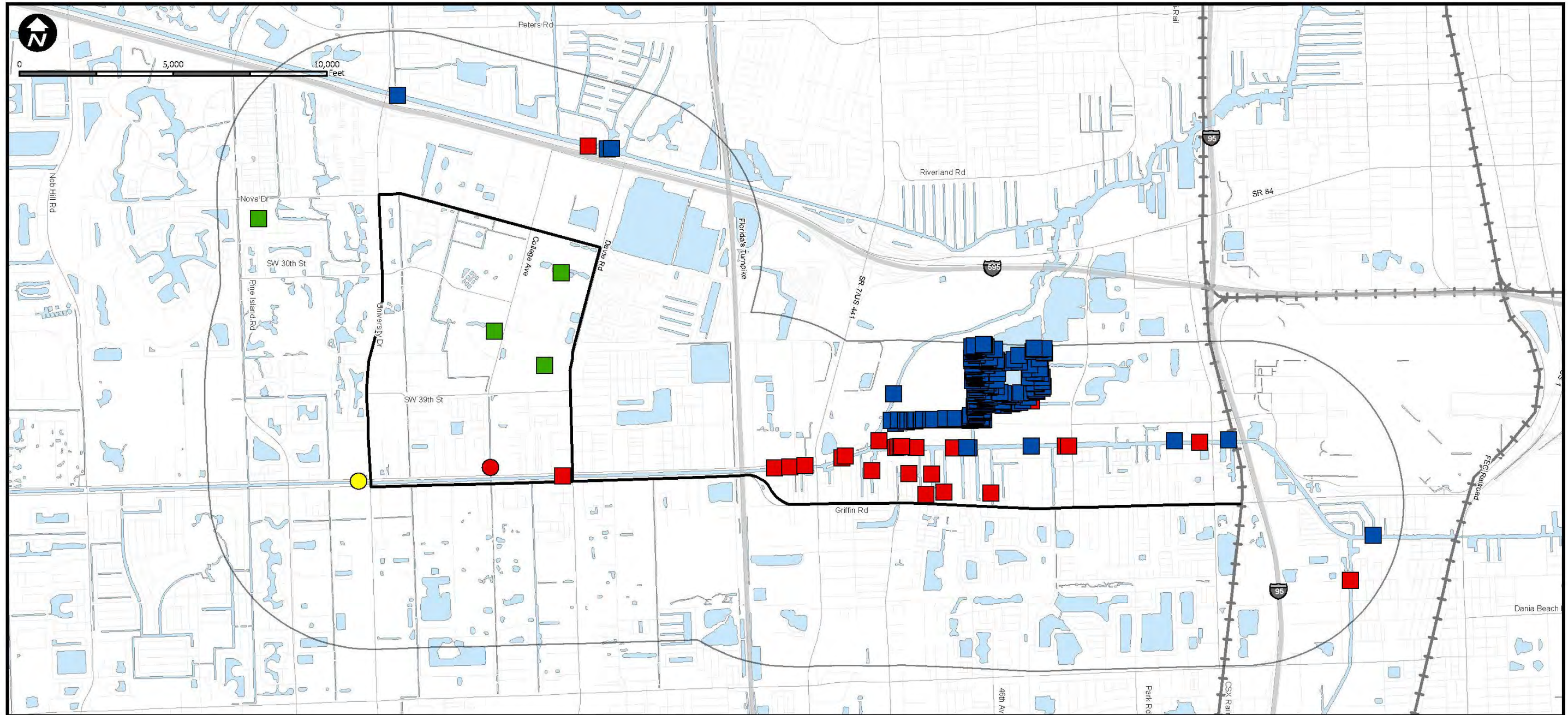
Exhibit 2: Western Segment Threatened and Endangered Species Map



Legend		Species Observations		Species in Database	
Alignment	Water	Little Blue Heron	Woodstork	Burrowing Owl	Manatee Survey: 1991-2007
Broward County Major Roads	Everglades	White Ibis		Gopher Tortoise	Manatee Mortalities: 1974-2008
Interstate/Toll Road					Wood Stork Rookery
Railroad					
One-Mile Buffer					

* Data taken from FGDL and Quest Ecology

Exhibit 3: Central Griffin Road Segment Threatened and Endangered Species Map



Legend		Species Observations		Species in Database	
Alignment	Water	Little Blue Heron	Manatee Mortalities: 1974-2008	Burrowing Owl	
Broward County Major Roads		Woodstork	Manatee Survey: 1991-2007		
Interstate/Toll Road					
Railroad					
One-Mile Buffer					

* Data taken from FGD and Quest Ecology

1.6 Central SR 7/Broward Boulevard Segment Threatened and Endangered Species

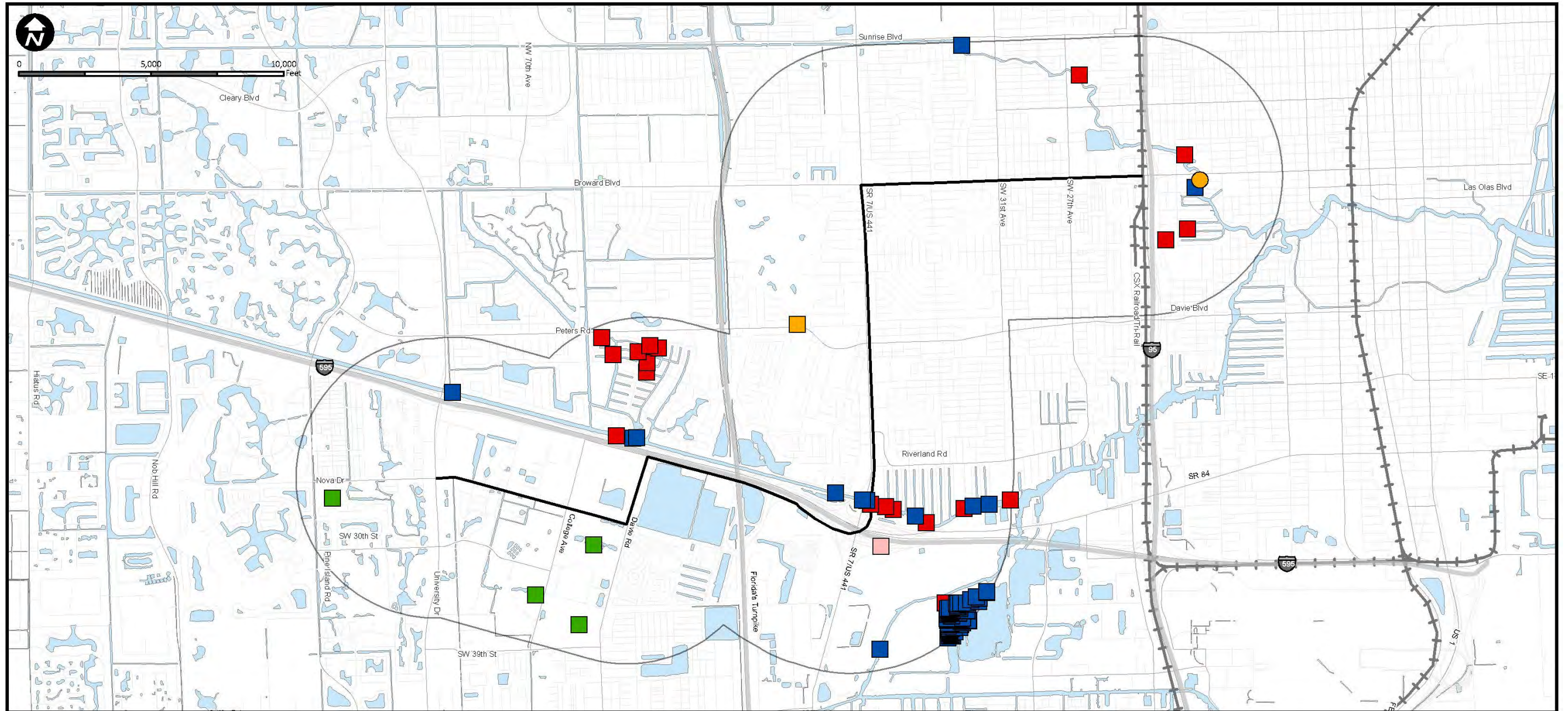
Database search results for threatened and endangered species surrounding the Central SR 7/Broward Boulevard Segment include the Burrowing Owl, Gopher Tortoise, and Florida Manatee. Burrowing Owl activity has been recorded exclusively in the southwestern portion of the segment south of Nova Drive and west of Davie Road. Manatee activity and mortalities have been recorded throughout the segment's major waterways and canals. There is also one historic wading bird rookery located to the southeast of the I-595/ SR 7 interchange. The only observed species within the Central SR 7/Broward Boulevard Segment was the White Ibis, which was seen just south of Broward Boulevard near the North Fork New River. The locations of database search results and observations for the Central SR 7/Broward Boulevard Segment are shown in Exhibit 4.

1.7 Eastern Segment Threatened and Endangered Species

Database search results for threatened and endangered species surrounding the Eastern Segment include the Burrowing Owl and Florida Manatee. Burrowing Owl activity is shown to occur in only one recorded instance just south of the Dania Cut-Off Canal in between I-95 and the FEC Rail Corridor. Manatee activity and mortalities have been recorded throughout this segment's major waterways and canals. There was only one species observation within this segment. A White Ibis was observed on the south side of Broward Boulevard near the North Fork New River. The locations of database search results and observations for the Eastern Segment are shown in Exhibit 5.

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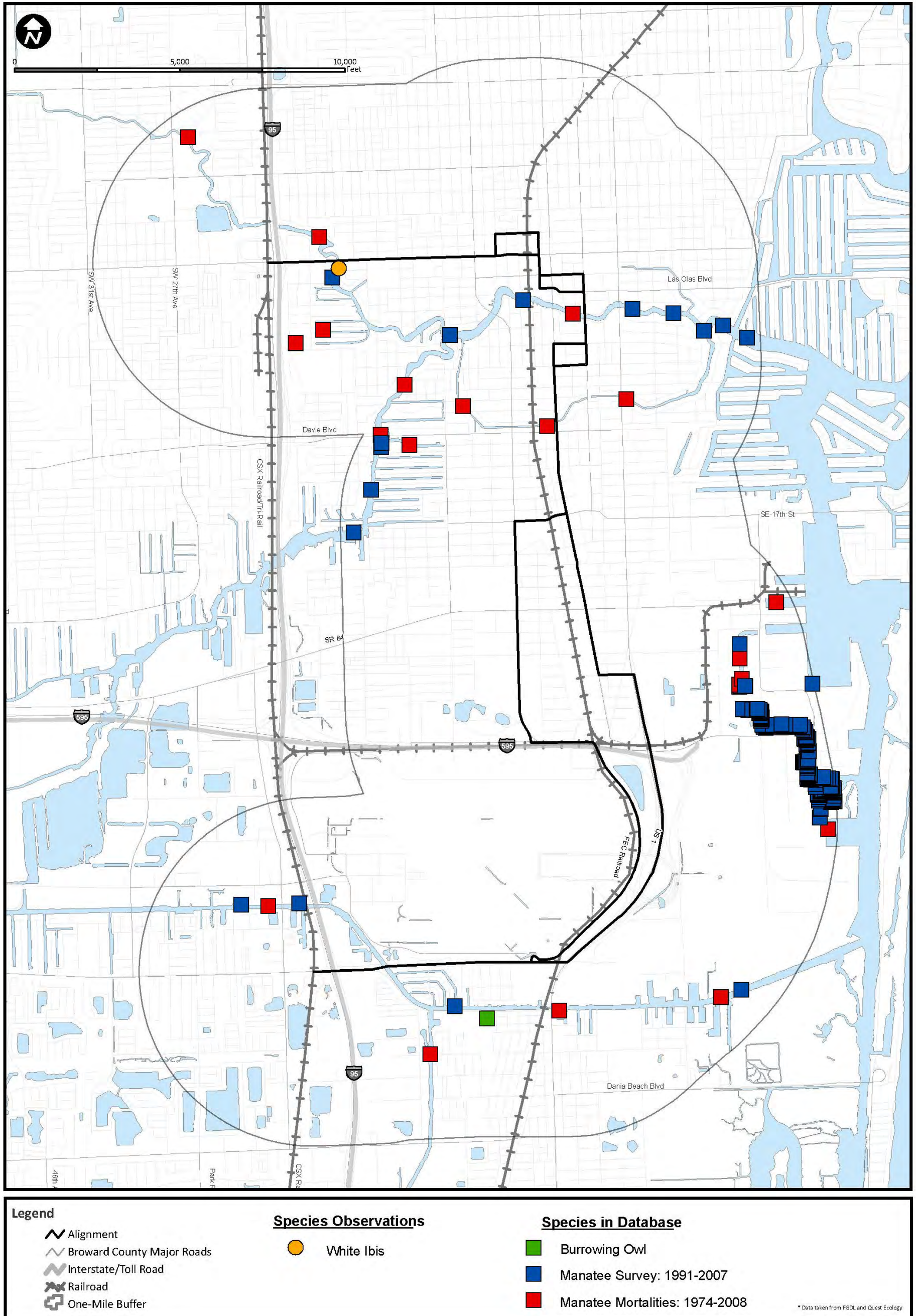
Exhibit 4: Central SR 7/Broward Boulevard Segment Threatened and Endangered Species Map



Legend		Species Observations		Species in Database	
Alignment	Water	White Ibis	Manatee Survey: 1991-2007	Gopher Tortoise	Historic Wading Bird Rookery
Broward County Major Roads			Manatee Mortalities: 1974-2008	Burrowing Owl	
Interstate/Toll Road					
Railroad					
One-Mile Buffer					

* Data taken from FGDL and Quest Ecology

Exhibit 5: Eastern Segment Threatened and Endangered Species Map



2.0 Surface Water and Wetlands

2.1 Legal and Regulatory Context

The Department of the Army, acting through the U.S. Army Corps of Engineers (Corps), has authority to permit the discharge of dredged or fill material in waters of the U.S. under Section 404 of the Clean Water Act (CWA). The Corps is also authorized to permit work and the placement of structures in navigable waters of the U.S. under Sections 9 and 10 of the Rivers and Harbors Act of 1899 (RHA).

In the Corps/Environmental Protection Agency (EPA) CWA regulations (33 CFR 328.3(a)), the term “waters of the U.S.” is defined as follows:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; 2. All interstate waters including interstate wetlands;
2. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters: (i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or (ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or (iii) Which are used or could be used for industrial purpose by industries in interstate commerce;
3. All impoundments of waters otherwise defined as waters of the U.S. under the definition;
4. Tributaries of waters identified in paragraphs (a)(1)-(4) of this section;
5. The territorial seas;
6. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1)-(6) of this section.

In the Corps RHA regulations (33 CFR Part 329.4 (RHA)), the term “navigable waters of the U.S.” is defined to include all those waters that are subject to the ebb and flow of the tide, and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Recent Supreme Court rulings on the jurisdictional scope of Section 404 of the Clean Water Act, specifically the term “waters of the United States”, have created two new analytical standards for determining whether non-traditional navigable waters (TNWs), including wetlands adjacent to those non-TNWs, are subject to CWA jurisdiction: (1) if the water body is relatively permanent, or if the water body is a wetland that directly abuts a relatively permanent water body (RPW), or (2) if a water body, in combination with all wetlands adjacent to that water body, has a significant nexus with TNWs. A significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, and/or biological, integrity of a TNW.

As such, the Corps will assert jurisdiction over:

- TNWs and wetlands adjacent to TNWs
- Non-navigable tributaries of TNWs that are relatively permanent (i.e., the tributaries that typically flow year-round or have continuous flow at least seasonally) and wetlands that directly abut such tributaries

In addition, the following waters will also be found jurisdictional based on a fact-specific analysis that they have a significant nexus with a TNW:

- Non-navigable tributaries that are not relatively permanent
- Wetlands adjacent to non-navigable tributaries that are not relatively permanent
- Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary

Furthermore, in accordance with the latest guidance:

- Certain geographical features (e.g., ditches, canals) that transport relatively permanent (continuous at least seasonally) flow directly or indirectly into TNWs or between two (or more) waters of the U.S., including wetlands, are jurisdictional waters regulated under the CWA;
- Certain geographic features (e.g., swales, ditches, pipes) may contribute to a surface hydrologic connection where the features: replace or relocate a water of the U.S., or connect a water of the U.S. to another water of the U.S., or provide relatively permanent flow to a water of the U.S.;
- Certain geographic features generally are not jurisdictional waters: swales, erosional features (e.g. gullies) and small washes characterized by low volume, infrequent, and short duration flow;
- ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water;
- Uplands transporting over land flow generated from precipitation (i.e., rain events and snowmelt).

As such, all jurisdictional determinations for non-navigable, isolated waters will be elevated for Corps and Environmental Protection Agency (EPA) Headquarters review prior to the district making the final decision on federal jurisdiction.

Once a waterbody has been officially determined to be jurisdictional, then Section 404 of the CWA establishes a program to regulate the discharge of dredged and fill material into waters of the US, including wetlands, and other special aquatic sites. CWA Section 404(b)(1) [40 (CFR) Part 230] presents the EPA guidelines evaluating activities regulated under Section 404 of the CWA. Discharges of dredge and fill material into waters of the U.S. can be authorized by individual or general permits under Section 404.

Disturbance from dredge and fill of up to one half acre at any single water of the United States crossing may potentially be covered by Section 404 Nationwide Permit (NWP) 14 (*Linear Transportation Projects*) if it meets the general conditions of the permit. NWP 14 requires that a preconstruction notification (PCN) be sent to the Corps if the Study results in the permanent loss of more than 0.1 acre of waters of the U.S.,

or any amount of wetlands or other special aquatic sites. Disturbance of any special aquatic site, wetland, or other water of the U.S. over 0.5 acres may require an individual Section 404 Permit.

General Condition 21 of the Nationwide Permit Program requires applicants using NWP 14 to comply with Section 401 of the CWA. Compliance with Section 401 requires the use of best management practices (BMPs) to manage water quality on construction sites. In Florida, the Water Management Districts (WMD) enforce state water quality standards and conduct Section 401 certification reviews of Section 404 permit applications.

The State of Florida maintains statutory authority to protect water resources through Chapter 373 of the Florida Statutes. This authority is primarily governed by the state's five (5) Water Management Districts (WMD's or the Districts) and the Florida Department of Environmental Protection (FDEP). Wetlands, which are a large part of Florida's water resources, are specifically defined in Chapter 62-340 of the Florida Administrative Code (F.A.C.) which was finalized in July 1994. This rule provides a precise definition of the delineation of the landward extent of wetlands and surface waters, and was intended to provide a unified statewide methodology for the delineation of wetlands and surface waters. In addition to wetland jurisdiction, the State's WMD's and FDEP are also responsible for permitting construction and operation of surface water management systems. Permitting for these activities is conducted through the Environmental Resource Permitting (ERP) process. Part IV of Chapter 373, Florida Statutes authorizes the Districts to oversee and implement the ERP process. The ERP is a joint permit application which is submitted to the appropriate District or FDEP and the U.S. Army Corps of Engineers (ACOE). Although this is a joint application, separate approval and permits are required by these state and federal agencies.

Chapter 27, Article XI of the Broward County code, Aquatic and Wetland Resource Protection, governs the protection of wetlands and waters of Broward County. An Environmental Resource License must be obtained from the Broward County Environmental Protection Department for activities involving dredging and filling or aquatic resource alterations.

2.2 Methodology

Wetlands and surface water features within and immediately adjacent to the study corridor were identified and classified according to the Florida Land Use Cover and Forms Classification System (FLUCFCS). Wetlands and surface water features were delineated on aerial photographs with the aid of National Wetland Inventory maps, Natural Resource Conservation Service (NRCS) Soil Survey for Broward County, Florida, and field observations.

A total of 18 wetlands and 92 surface water features were identified within or immediately adjacent to the study corridor right-of-way. Areas identified as wetlands (W-1, etc.) are those areas that support natural or altered wetland systems, with the accompanying wetland vegetation, hydrology and soils. These include riverine systems traversed by the Study, wetlands created as mitigation areas, and remnants of native wetlands that historically occurred within the study right-of-way. The only significant natural wetland areas in the vicinity of the Study are those associated with Pond Apple Slough Natural Area, located outside of the study corridor. No impacts to this natural slough system are anticipated.

Surface water features (SW-1, etc.) are those areas typically classified as “other surface waters” and consist of ditches, ponds, canals, and retention areas associated with surface water management systems or provide drainage or water storage functions, and are primarily man-made, excavated systems. Some of these areas within the study right-of-way support hydrophytic vegetation, but are regularly mowed or maintained by FDOT maintenance crews, and in many cases are the result of manmade hydrology. Regulatory agencies typically do not require mitigation for impacts to surface waters associated with stormwater management systems.

Navigable waterways within the study corridor include natural systems such as the North Fork New River and Tarpon River and artificial systems such as the Dania Cut-Off Canal, North New River Canal, and South New River Canal. Boating facilities such as docks and small marinas occur on the North Fork New River, Tarpon River, Dania Cut-Off Canal, and east of locks and water control structures on the North New River Canal and South New River Canal. The North New River Canal and South New River Canal are not classified as navigable west of locks and water control structures.

2.3 Western Segment Surface Water and Wetlands

With the exception of the North New River Canal, which runs parallel to I-595 for most of the length of the alignment, the surface water and wetlands immediately adjacent to the Western Segment are located west of Flamingo Road. There are sixteen bodies of surface water and six wetlands found immediately adjacent to the alignment in between its western terminus at the Sawgrass Mills Mall and I-595. The surface water and wetlands within the Western Segment are listed in Exhibit 6 and their locations are shown in Exhibit 8.

Exhibit 6: Western Segment Surface Water and Wetlands

Map ID Number	Description	FLUCFCS
W-1	Mitigation Area	641
W-2	Remnant Shrub Marsh	631
W-3	Emergent Marsh with Tree/Shrub Islands	644
W-4	Emergent Marsh with Shrub Fringe	644
W-5	Shrub Marsh on Edge of Retention Pond	631
W-6	Large Littoral Zone of Retention Pond	641
SW-1	Retention Pond	530
SW-2	Retention Pond	530
SW-3	Retention Pond	530
SW-4	Retention Pond	530
SW-5	Retention Pond	530
SW-6	Canal	510
SW-7	Retention Pond	530
SW -7a	Retention Pond	530
SW-8	Retention Pond	530
SW-9	Canal	510

Map ID Number	Description	FLUCFCS
SW-10	Retention Pond	530
SW-11	Retention Pond	530
SW-12	Ditch	510
SW-13	Retention Pond	530
SW-14	North New River Canal	510
SW-15	Ditch	510

Source: Quest Ecology, 2012.

2.4 Central Griffin Road Segment Surface Water and Wetlands

Surface water immediately adjacent to the Central Griffin Road Segment is fairly evenly distributed throughout. The neighboring wetlands, however, are more concentrated. They are mostly found along both sides of Griffin Road roughly in between Florida's Turnpike and SW 35th Avenue. This segment contains forty-five bodies of surface water and seven wetlands. The surface water and wetlands within the Central Griffin Road Segment are listed in Exhibit 7 and their locations are shown in Exhibit 9.

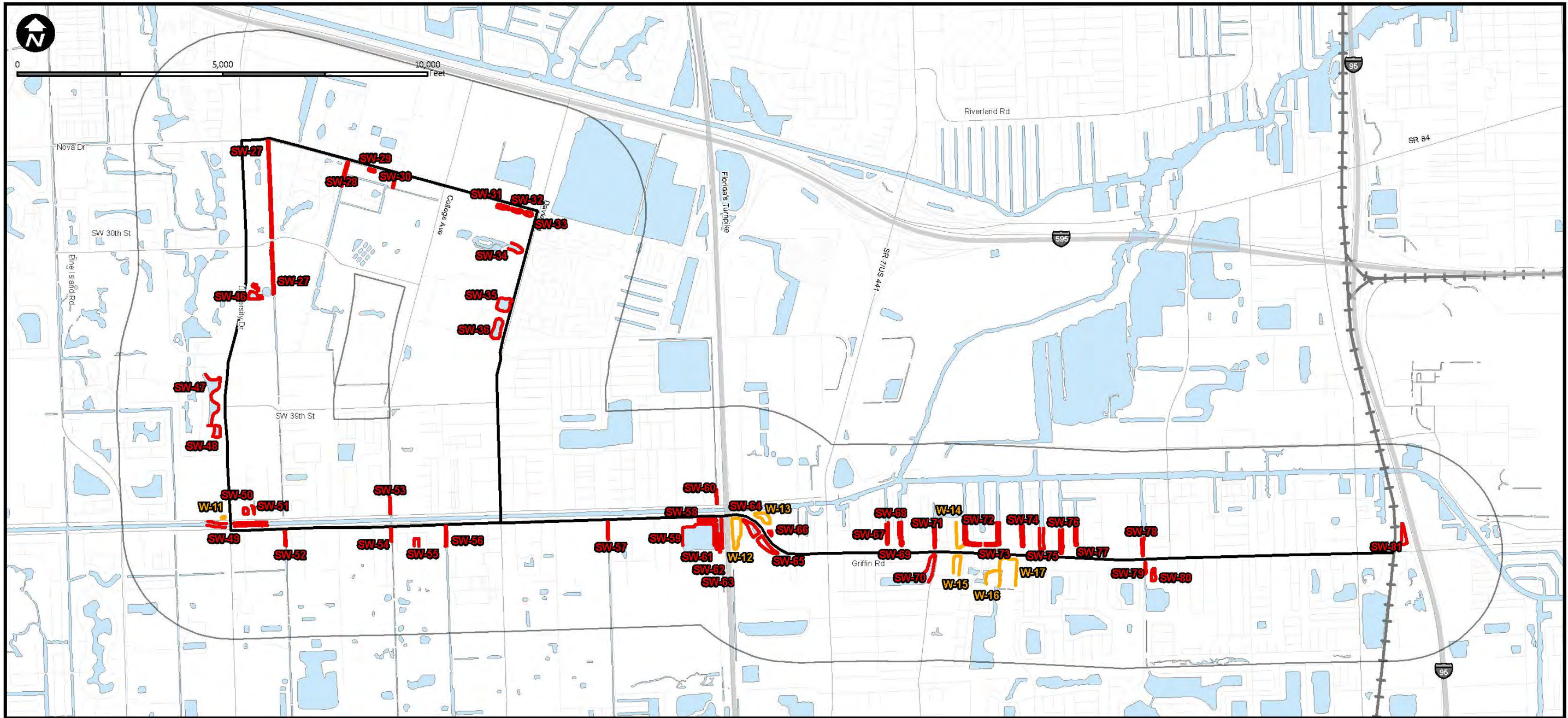
Exhibit 7: Central Griffin Road Segment Surface Water and Wetlands

Map ID Number	Description	FLUCFCS
W-11	Emergent Marsh with Shrub Fringe	644
W-12	Disturbed Vegetated Non-Forested Within a Utility Easement	6401
W-13	Remnant Wetland with Dominant Exotic Species Coverage	619
W-14	Remnant Mangrove Wetland with Dominant Brazilian Pepper Coverage	612/422
W-15	Remnant Wetland with Dominant Exotic Species Coverage	619
W-16	Mitigation Area	6170
W-17	Disturbed Vegetated Non-Forested Within a Utility Easement	6401
SW-27	Canal	510
SW-28	Canal	510
SW-29	Retention Pond	530
SW-30	Ditch	510
SW-31	Ditch	510
SW-32	Retention Pond	530
SW-33	Retention Pond	530
SW-34	Retention Pond	530
SW-35	Retention Pond	530
SW-36	Retention Pond	530
SW-46	Retention Pond	530
SW-47	Retention Pond	530
SW-48	Retention Pond	530

Map ID Number	Description	FLUCFCS
SW-49	South New River Canal	510
SW-50	Retention Pond	530
SW-51	Retention Pond	530
SW-52	Canal	510
SW-53	Canal	510
SW-54	Canal	510
SW-55	Retention Pond	530
SW-56	Canal	510
SW-57	Canal	510
SW-58	Vegetated Stormwater Treatment Area	641
SW-59	Retention Pond	530
SW-60	Canal	510
SW-61	Canal	510
SW-62	Vegetated Stormwater Treatment Area	641
SW-63	Vegetated Stormwater Treatment Area	641
SW-64	Vegetated Stormwater Treatment Area	641
SW-65	Vegetated Stormwater Treatment Area	641
SW-66	Vegetated Stormwater Treatment Area	641
SW-67	Canal	510
SW-68	Canal	510
SW-69	Retention Pond	530
SW-70	Retention Pond	530
SW-71	Canal	510
SW-72	Canal	510
SW-73	Canal	510
SW-74	Canal	510
SW-75	Canal	510
SW-76	Canal	510
SW-77	Canal	510
SW-78	Canal	510
SW-79	Canal	510
SW-80	Retention Pond	530
SW-81	Vegetated Stormwater Treatment Area	641

Source: Quest Ecology, 2012.

Exhibit 9: Central Griffin Road Segment Surface Water and Wetlands Map



Legend

- Alignment
- Broward County Major Roads
- Interstate/Toll Road
- Railroad
- Half-Mile Buffer
- Water
- Wetland
- Surface Water

* Data taken from Quest Ecology, 2012

2.5 Central SR 7/Broward Blvd Segment Surface Water and Wetlands

There are sixteen bodies of surface water immediately adjacent to the Central SR 7/Broward Boulevard Segment. They are concentrated in two main areas. The first is along Nova Drive in between University Drive and Davie Road. The second is along I-595 between Florida's Turnpike and SR 7. There are no wetlands immediately adjacent to this segment. The surface water bodies within the Central SR 7/Broward Boulevard Segment are listed in Exhibit 10 and their locations are shown in Exhibit 12.

Exhibit 10: Central SR 7/Broward Boulevard Segment Surface Water and Wetlands

Map ID Number	Description	FLUCFCS
SW-14	North New River Canal	510
SW-16	Retention Pond	530
SW-17	Retention Pond	530
SW-18	Vegetated Stormwater Treatment area	631
SW-19	Vegetated Stormwater Treatment area	631
SW-20	Ditch	510
SW-27	Canal	510
SW-28	Canal	510
SW-29	Retention Pond	530
SW-30	Ditch	510
SW-31	Ditch	510
SW-32	Retention Pond	530
SW-33	Retention Pond	530
SW-42	Retention Pond	530
SW-43	Vegetated Stormwater Treatment Area	641
SW-44	Vegetated Stormwater Treatment Area	641

Source: Quest Ecology, 2012

2.6 Eastern Segment Surface Water and Wetlands

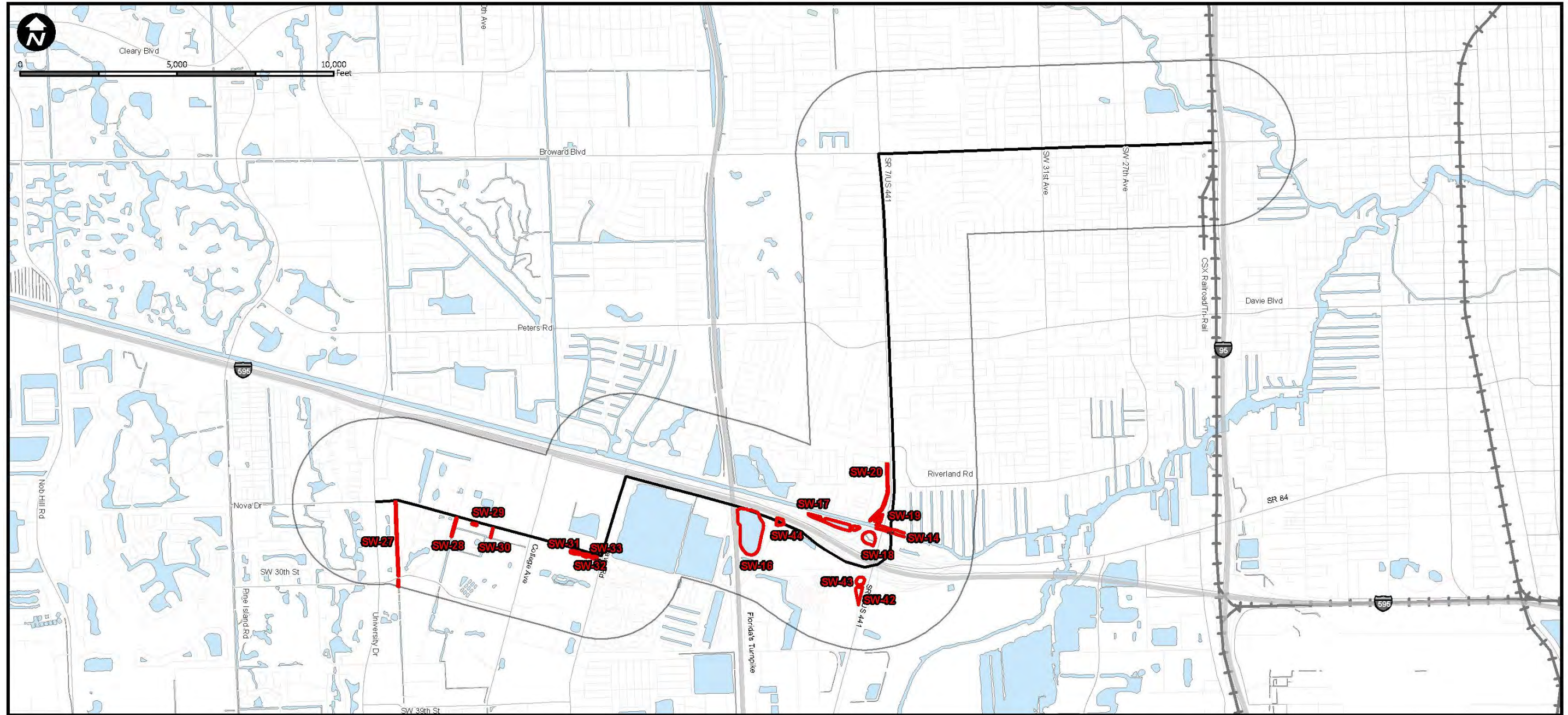
Surface water and wetlands immediately adjacent to the Eastern Segment are found either north of Davie Boulevard or south of SR 84. There are fourteen bodies of surface water within this segment, none of which is located north of SR 84, and a total of five wetlands spread throughout. The surface water and wetlands within the Eastern Segment are listed in Exhibit 11 and their locations are shown in Exhibit 13.

Exhibit 11: Eastern Segment Surface Water and Wetlands

Map ID Number	Description	FLUCFCS
W-7	North Fork New River	510
W-8	North Fork New River	510
W-9	Tarpon River	510
W-10	Remnant Shrub Marsh	631
W-18	Disturbed Cat-tail Marsh	6412
SW-25	Retention Pond	530
SW-26	Vegetated Stormwater Treatment area	641
SW-81	Vegetated Stormwater Treatment Area	641
SW-82	Dania Cut-Off Canal	510
SW-83	Retention Pond	530
SW-84	Retention Pond	530
SW-85	Retention Pond	530
SW-86	Vegetated Stormwater Treatment Area	641
SW-87	Ditch	641
SW-88	Ditch	641
SW-89	Vegetated Stormwater Treatment Area	641
SW-90	Vegetated Stormwater Treatment Area	641
SW-91	Vegetated Stormwater Treatment Area	641
SW-92	Surface Water Management System Beneath an Elevated Roadway	510

Source: Quest Ecology, 2012.

Exhibit 12: Central SR 7/Broward Boulevard Segment Surface Water and Wetlands Map



Legend			
Alignment	Water	Wetland	Surface Water
Broward County Major Roads			
Interstate/Toll Road			
Railroad			
Half-Mile Buffer			

* Data taken from Quest Ecology, 2012

Exhibit 13: Eastern Segment Surface Water and Wetlands Map

