Environmental Assessment for the Transfer of Grant Encumbrance between the Palm Beach Downs Property and Biscayne Bay Coastal Wetlands Properties

Palm Beach and Miami-Dade Counties, Florida
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CHAPTER 1. Purpose and Need

1.1 Background

On May 10, 2018, the U.S. Fish and Wildlife Service (USFWS) completed Step 3 of the Everglades Grant Land Disposition Protocol outlined in a letter provided to the South Florida Water Management District (SFWMD) on March 11, 2016 by the U.S. Department of the Interior (DOI). The Step 3 review focused on the removal of specific grant-funded restrictions on a property owned by SFWMD known as the Palm Beach Downs property, in exchange for the placement of specific grant-funded restrictions on replacement properties owned by SFWMD that are located within Biscayne Bay Coastal Wetlands (BBCW) Phase 1 and Phase 2.

The Palm Beach Downs property is a 97.01-acre property located within the East Coast Buffer project area within Palm Beach County. The property was acquired using federal grant funding and later slated for surplus or exchange during the project review process as it was determined that the subject project was not included within the restoration strategy. The site is currently operated as an equestrian boarding (stables) and training facility. Two alternative impoundment sites were designated along the refuge: The Site 1 Impoundment area is located 8 miles south of the Palm Beach Downs property, and the Acme Basin is located 12 miles north of the Palm Beach Downs property.

The SFWMD's Governing Board has declared the Palm Beach Downs property as surplus lands and will offer the property for sale to the public after the grant funding encumbrance is transferred. The replacement properties are within the Comprehensive Everglades Restoration Plan's (CERP) Biscayne Bay Coastal Wetlands Phase 1 and Phase 2 project area. These properties consist of an estimated 921.96± acres and are a key addition within the BBCW project area. This project will provide increased overland freshwater flow and partially compensate for the reduction in groundwater seepage by redistributing, through a spreader system, available surface water entering the area from regional canals.

The goal of the project is to improve the ecological health of Biscayne Bay (including freshwater wetlands, tidal creeks and nearshore habitat) by adjusting the quantity, quality, timing, and distribution of fresh water entering Biscayne Bay and Biscayne National Park. Redistribution of freshwater flow and the expansion and restoration of wetlands will help to restore or enhance freshwater wetlands, tidal wetlands, and nearshore bay habitat. Improving salinity distribution near the shoreline with sustained lower-than-normal seawater salinities in tidal wetlands can help to reestablish productive nursery habitat for shrimp and shellfish, including oyster reef communities."[1]

Benefits of this exchange include:

[1] EvergladesRestoration.gov – Comprehensive Everglades Restoration Plan (CERP) – Biscayne Bay Coastal Wetlands: http://141.232.10.32/pm/projects/proj_28_biscayne_bay.aspx

- SFWMD is removed from ownership of a highly intense agricultural property that provides no measurable ecological benefit, water quality or flood control. There are no documented plans that include these lands as part of a restoration strategy.

- USFWS gains an encumbrance on SFWMD-owned conservation lands within the Biscayne Bay Coastal Wetlands project area, which will help replace lost overland freshwater flow and partially compensate for the reduction in groundwater seepage by redistributing, through a spreader system, available surface water entering the area from regional canals.

- Appraisals revealed that the Palm Beach Downs property is worth $4.9 million, and the replacement properties within the Biscayne Bay Coastal Wetlands project area are cumulatively worth $4.895 million, resulting in a $5,000 difference in value between the properties. The difference in value is less than 1 tenth of 1 percent, indicating that the properties have equal value and the monetary difference is de-minimis.

Property Name:	**Palm Beach Downs Property**	**Biscayne Bay Coastal Wetland Properties**
Tract ID:	W9100-179	TA500-137, GZ300-013, 45800-171, 45200-070, 45300-080
County:	Palm Beach	Miami-Dade
Acreage:	97.01	921.96
Acquisition date:	7/27/2000	April 1997 through March 2010
Appraised value:	$4,900,000	$4,895,000
Federal share:	$2,450,000	---

Table 1. Locations and values of tracts identified for restriction release as part of exchange.

Note: The Biscayne Bay Coastal Wetlands value represents the sum of the individual appraisals prepared by Ed Parker, MAI.

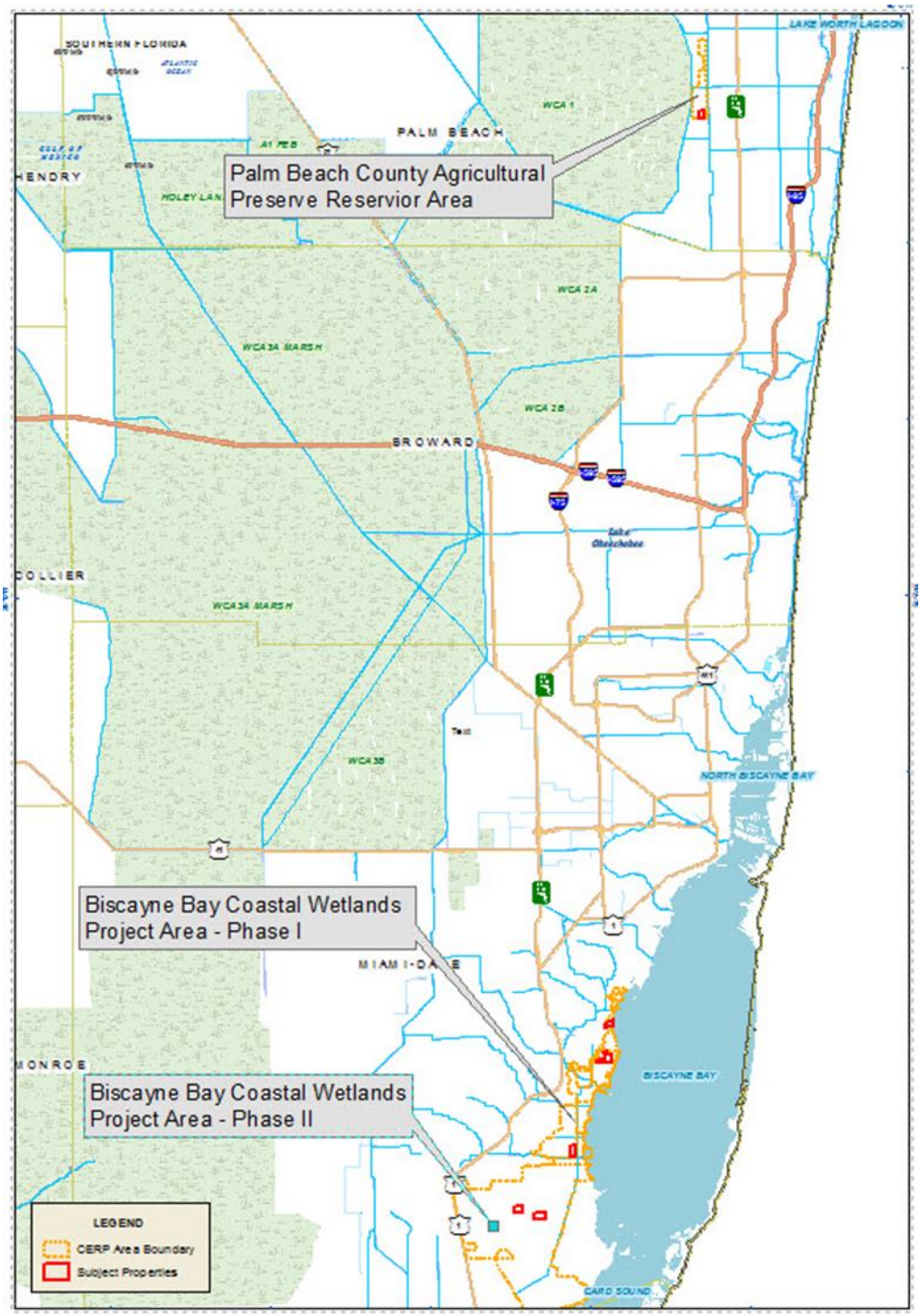

Figure 1. Land Exchange overview map, showing the Palm Beach County Agricultural Preserve Reservoir Area (location of the Palm Beach Downs Property), and the Biscayne Bay Coastal Wetlands Project Area (location of replacement properties).

1.2 East Coast Buffer

The East Coast Buffer project area was part of the earliest Everglades restoration planning, which recognized the need for acquiring undeveloped lands east of the protective levees to better manage water in the Everglades without affecting the communities to the east (SFWMD, 2013). The area was planned as a string of impoundments and restored wetlands that would act as a buffer between the Everglades and urban areas and would be managed to benefit both.

Land and Water Conservation Funds (LWCF-1) provided federal funds to SFWMD to match state funds for the acquisition of land within the East Coast Buffer region in Palm Beach, Broward and Martin counties. This "buffer" is located immediately east of the present Everglades ecosystem (Water Conservation Areas 1, 2 and 3, and Everglades National Park) and includes areas that were contemplated to become part of future authorized U.S. Army Corps of Engineers Everglades restoration projects. The East Coast Buffer is subdivided into multiple units, one of which would be influenced by the land exchange as proposed. The Palm Beach Downs property lies within the "Palm Beach Ag Reserve", while the replacement properties are located within the Biscayne Bay Coastal Wetlands project area, as shown in Figure 1.

1.3 Biscayne Bay Coastal Wetlands

"The proposed project will replace lost overland freshwater flow and partially compensate for the reduction in groundwater seepage by redistributing, through a spreader system, available surface water entering the area from regional canals. The goal of this project is to improve the ecological health of Biscayne Bay (including freshwater wetlands, tidal creeks and nearshore habitat) by adjusting the quantity, quality, timing, and distribution of freshwater entering Biscayne Bay and Biscayne National Park. Redistribution of freshwater flow and the expansion and restoration of wetlands will help to restore or enhance freshwater wetlands, tidal wetlands, and nearshore bay habitat. Improving salinity distribution near the shoreline with sustained lower-than-normal seawater salinities in tidal wetlands can help to reestablish productive nursery habitat for shrimp and shellfish, including oyster reef communities.

The project includes pump stations, spreader swales, stormwater treatment areas, flow-ways, levees, culverts, and backfilling canals located in southeast Miami-Dade County, and covers 13,600 acres along L-31E to capture, treat, and redistribute freshwater runoff from the watershed going into Biscayne Bay, creating more natural water deliveries and expanding spatial extent and connectivity of coastal wetlands, and improved recreational opportunities."[2] The replacement properties are located within the Biscayne Bay Coastal Wetlands project area.

[2] EvergladesRestoration.gov – Comprehensive Everglades Restoration Plan (CERP) – Biscayne Bay Coastal Wetlands: http://141.232.10.32/pm/projects/proj_28_biscayne_bay.aspx

1.4 Department of the Interior and Related Agencies Appropriations Act of 1999, Public Law 105-277 (Land and Water Conservation Funds Grant Agreement - 1) (LWCF-1)

LWCF-1 recognized that the properties acquired might not be used for an Everglades restoration project. In such circumstances, LWCF-1 allowed that SFWMD may:

1) Retain and use the property for other Everglades restoration purposes.
2) Acquire replacement property for Everglades restoration. Such replacement property shall be of at least equal fair market value.

Through this proposed exchange, SFWMD is reviewing the second option. SFWMD would therefore provide replacement property to the DOI for fair market value of their share of the Palm Beach Downs property. SFWMD proposes that DOI's share of the value would be applied to the replacement properties located within the Biscayne Bay Coastal Wetlands project area.

1.5 Scope of Analysis

This supplemental Environmental Assessment evaluates the removal of federal grant funding use for the Palm Beach Downs property purchased pursuant to federal grant agreement LWCF-1. SFWMD proposes to provide replacement land pursuant to the federal grant agreement located within the Biscayne Bay Coastal Wetlands project area. The transaction includes a comparison of property values, which is summarized in Table 1. The effects of the land replacement between the Palm Beach Downs property and replacement properties are evaluated in this limited Environmental Assessment.

CHAPTER 2. Alternatives

2.1 Revised Alternative A: No Action - Current Land Ownership

Under Alternative A, no land replacement would occur. The grant funding would continue to encumber the Palm Beach Downs property owned by SFWMD, eliminating the ability to surplus the property in favor of property better suited for the goals and purposes of SFWMD and Everglades restoration. The utility remaining in the Palm Beach Downs property would no longer meet the needs of Everglades restoration.

2.2 Alternative B: New Proposed Action - Removal of Federal Interest in Palm Beach Downs Property for Biscayne Bay Coastal Wetlands Replacement Property

The new proposed action would replace the Palm Beach Downs property with replacement property of similar value located in the Biscayne Bay Coastal Wetlands project area. SFWMD would convey all real property interest in the 97.01-acre Palm Beach Downs property parcel to an outside purchaser and remove the encumbrance and federal nexus from the Palm Beach Downs property, which was partially acquired with LWCF-1 funds. In exchange, the SFWMD would transfer the federal interest encumbrance to replacement properties located within the Biscayne Bay Coastal Wetlands project area.

2.3 Alternative C: New Proposed Action - Removal of Federal Interest in Palm Beach Downs Property for Newly Identified Property

The new proposed action would require, if available, the acquisition of properties within the Biscayne Bay Coastal Wetlands project area. The estimated acquisition cost is $4.9 million. Once acquired, SFWMD would convey all real property interest in the 97.01-acre Palm Beach Downs property parcel to a potential buyer and remove the encumbrance and federal nexus from the Palm Beach Downs property acquired with Federal Agriculture Improvement and Reform Act of 1996 funds. In exchange, SFWMD would transfer the federal interest encumbrance to the newly acquired property. This alternative is problematic, however, due to property availability, and budgetary and time constraints.

CHAPTER 3. Affected Environment

The following sections provide a review of the Palm Beach Downs and Biscayne Bay Coastal Wetland properties.

3.1 Palm Beach Downs

Location

The Palm Beach Downs property is located north of West Atlantic Avenue and east of State Road 441 within Section 13, Township 46 South, Range 41 East. The West Delray regional park borders the property to the west. The Arthur R. Marshall Loxahatchee National Wildlife Refuge is located three-fourths of a mile west of the property. The property is located within the boundaries of the Palm Beach County Agricultural Reserve (Figure 2).

Property Use

The property is currently operated under a lease for use as an equine boarding and training facility. The property includes six concrete and steel horse stables, an earthen training oval track that measures 1 1/8 miles, excavated lakes, maintenance facilitates and dormitories for staff. During the high season winter months, the facility boards an estimate of 190 horses. Figure 3 identifies the on-site and adjacent property land use.

Topography

The site is estimated to be 13 feet above mean sea level (Figure 4). Elevation data are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). The property is relatively leveled based on site improvement. The site includes two oval lakes on-site: The first is a 15-acre oval lake that is situated in a north-south direction on the property. A second ½-acre oval lake is situated in an east-west direction. It is assumed that fill material from the two lakes was used to level the perimeter training facility around the lakes, pathways and roads. Regionally, the land slopes to the west toward the water conservation area. The subject site is situated within a special flood hazard area.

Hydrology

The site has been improved and filled. The two on-site lakes have a local influence over surface water and groundwater flow and direction. The on-site lake allows some on-site retention of surface water. Overflow of water is directed to the Lake Worth Drainage District pump station. The Lake Worth District has pump stations located north of the site along the L-30W, and south of the site along the L-36W (Roos, 2012). Water levels in the water conservation area to the west will have an influence on groundwater flow and direction. The elevation of the water table will vary seasonally, with winter typically being the dry period of the year in this region. A portion of the property would experience saturation and inundation during a typical rainy season if the site is not adequately maintained with pumps. According to the National Wetlands Inventory, freshwater wetlands are located in the northern section of the property. The area of the wetlands occupies less than 2 acres (Figure 5). The wetlands are currently dominated by exotic/nuisance vegetation, i.e., pepper trees; see Figure 6 (SFWMD, Ecological

Assessment of Surplus Tract , 2014).

Contaminants

Based on the results of the environmental assessment, the Palm Beach Downs site has several closed regulatory files associated with previous waste management issues. The finding of a regulatory file review indicated that the previous enforcement action with the site was related to unregulated spill or discharge of used paint or solvents on-site. The regulatory file review indicated that the investigation was closed, and no open investigation or enforcement issues are ongoing. The site has an equipment maintenance area on-site where mechanical equipment is repaired and chemicals are stored.

Based on the site's use for horse stables, significant volumes of manure and horse bedding are generated on-site. Site observation also indicates that the operator is utilizing a static pile approach to composite the on-site manure, which consists of hay and bedding (wood shaving). On May 31, 2017, SFWMD staff walked the perimeter of the static manure pile with a sub-meter accuracy GPS unit to estimate the area of the manure pile. The height of the pile was estimated using existing LiDAR. The volume of the area was calculated using a computational contouring program. The pile was estimated at 10 feet in the highest area and has a current working area of 1.1 acres. However, based on site observation, the footprint has shifted on a yearly basis. Considering the historic footprints, the manure area covers an estimated 2 acres. The volume of material requiring processing or off-site removal is estimated at 100,000 cubic yards. Based on the current site use and on-site storage of manure and bedding material, nutrient management is required (Taylor, 2017).

Soil Survey

Based on the United States Department of Agriculture and the Natural Resources Conservation Service, soil in undisturbed areas will consist of a thin veneer of less than three feet of sand and organic sediments overlying a weakly cemented limestone or a more comprehensive limestone. The limestone material generally becomes harder with a depth below approximately five feet (Figure 7).

3.2 Biscayne Bay Coastal Wetlands

The purpose of the Biscayne Bay Coastal Wetlands (BBCW) project is part of the Biscayne Bay/comprehensive plan for restoring the South Florida ecosystem. The project intends to redistribute freshwater runoff from the watershed away from the existing canal discharges and into the coastal wetlands adjoining Biscayne Bay to provide a more natural and historic overland flow through existing coastal wetlands. This project will also help restore saltwater wetlands and the nearshore bay through the re-establishment of optimal salinity concentrations for fish and shellfish nursery habitats (SFWMD, BBCW PIR, 2012).

Location

The Biscayne Bay Coastal Wetlands project area is situated within southeast Miami-Dade County, south of Miami and east of Florida City and Homestead, within the South Florida Water Management District's Lower East Coast (LEC) water supply planning region. The Biscayne National Park and Atlantic Ocean are located to the east. The

subject tracts are located within the BBCW Phase I and Phase II project footprint, as identified in Figure 8.

Property Use

The Biscayne Bay properties are currently undeveloped. These properties may have been historically used for row crop cultivation. One of the properties is currently located within an FPL electrical corridor. Land use is identified in Figures 9A-9E.

Topography

Review of the SFWMD's Lidar Map and the United States Geological Survey's (USGS) 7.5-Minute Topographic Quadrangle Map depicts the subject property as nearly level with several small depressional areas. The average elevation on the site is approximately 1-3 feet above mean sea level (Figures 10A–10E). Elevation data are referenced in the National Geodetic Vertical Datum of 1929 (NGVD). Based on the site reconnaissance and a review of the topographic map, the subject property is flat and contains surface depressional areas. Networks of drainage ditches are situated in a north-south and east-west direction. During the SFWMD's site visit, standing water was observed in some of the properties

Hydrology

The hydrology of the Biscayne Bay Coastal Wetlands area is greatly influenced by the highly permeable surficial Biscayne Aquifer and the extensive drainage canal system, which is essential for flood protection. There are four major drainage canals within the BBCW project area. Surface waters that flow within these canals are heavily influenced by groundwater levels in the unconfined surficial Biscayne Aquifer, which is an extremely transmissive geologic formation. The base of the surficial Biscayne Aquifer system ranges from a depth of about 175 to 210 feet below land surface in westernmost Miami-Dade County, to greater than 270 feet in northeastern Miami-Dade County. This aquifer serves as the primary source of municipal and agricultural water supplies in the area.

Drainage as a result of extensive canal systems and large-scale pumping from municipal well fields have greatly altered the pre-development flow system in eastern Miami-Dade County by: 1) eliminating or greatly reducing a seasonal and coastal groundwater ridge; 2) reducing groundwater flow in the lower portion of the Biscayne Aquifer; 3) reducing or eliminating seasonal westward movement of groundwater; 4) causing accelerated stormwater runoff and short groundwater flow paths; and 5) lowering the water table and inducing saltwater intrusion. In eastern Miami-Dade County, the seasonal groundwater ridge that formed under predevelopment conditions supported both easterly and westerly groundwater flows away from the ridge axis (Fish and Stewart, 1991). The canals are generally managed to discharge excess water from basins during flooding and maintain minimum water levels during droughts and incidentally redirect water from wetlands and discharge freshwater to Biscayne Bay. The north-south trending L-31E Levee and L-31E Canal cross the project area, and water control structures exist at its intersections with the major east-west canals (Figures 11A-11E).

Contaminants

As part of the Phase II Environmental Site Assessment investigation of the BBCW project area , soil, sediment and groundwater sampling were conducted to evaluate the presence or absence of contamination from hazardous substances and waste due to historical or current agricultural land use. Previous investigations within the subject areas have documented residual concentrations of agrochemicals within the surficial soils, such as arsenic and DDT degradation products. While the impact of metals such as arsenic may appear to be widespread, the organo-chlorine pesticides typically are only found in isolated locations where concentrations are of concern. Residual agro-chemical impacts are associated with historic farming practices conducted from the 1920s through the 1960s. Additional hazardous, toxic and radioactive waste (HTRW) investigations will be conducted to determine which project soils require remediation to minimize the risk of contaminant bioaccumulation or mobilization (PSI, 2010).

Soil Survey

The soil types within the BBCW project area consist of a mix of Lake Flint Marl and weathered Miami Oolite. Each is fine-grained and varies in thickness, from one foot to approximately ten feet thick. The hydraulic conductivity for these materials is low. The basic soil types found in the coastal areas and creeks of Biscayne Bay are: 1) marl; 2) peat; 3) red mangrove peat; 4) black mangrove peat; 5) sandy mud, and 6) skeletal sand gravel. The marls are predominately calcium carbonate and form dense, impermeable sediments with either a freshwater or low salinity gradient. A carbonate mud, or rich red mangrove peat (marl peat), rarely more than ten centimeters in thickness is found at the surface of small areas near the center of large basins that lack dense mangrove cover. Red mangrove peat is found at the surface throughout most of the coastal wetlands. Black mangrove peat is found as thin shoestring deposits along old tidal creeks and behind the coastal levee. Black mangrove peat differs from red mangrove peat in color and in the presence of black mangrove root systems, as well as in root material as common soil constituents. A thin marine mud or red mangrove peat is present along most of the coastline (Figures 12A-12E).

3.3 Biological Environment – Palm Beach Downs

Vegetation

The Palm Beach Downs property is categorized as improved agricultural lands, specifically a horse training facility, with some pockets of freshwater forest/shrub wetlands according to the U.S. Fish and Wildlife Service's National Wetland Inventory Map (Figures 13A-13E). A review of aerial photographs of the property indicated that from 1940 through 1980, the land was developed for row crop cultivation. Post 1980, the property was improved for a horse training facility.

Based on the SFMWD's site observation during 2018, the Palm Beach Downs property has been improved as a horse training facility. According to the National Wetlands Inventory, several acres of freshwater wetlands are located on the northeast and northwest section of the property. Site observations of these areas document primarily

exotic vegetation and isolated depressional areas that are covered with Australian pine (*Casuarina spp.*) and Brazilian pepper (*Schinus terebinthifolius*) trees (SFWMD, 2014).

Wildlife

The Palm Beach Downs facility is a highly improved property with minimal habitat on-site for natural flora or fauna. The property is near the water conservation area to the west. The north section of the property is described as freshwater depressional wetlands. Additionally, there are scattered trees on-site that would provide roosting habitat and some vegetative cover. According to the SFWMD ecological survey conducted in 2014, the site's wildlife species observations included visual observation of a peregrine falcon (*Falco peregrinus*) and a cattle egret (*Bubulcus ibis*) flying over the site, and the tracks of an American alligator (*Alligator mississippiensis*), which crossed from the on-site lake to an adjacent off-site ditch located to the west of the Palm Beach County's West Delray Regional Park property. The ecological assessment report finding indicated that the site does not contain significant ecological features and is unlikely to provide much habitat value for listed wildlife.

Water Quality

The current site configuration does not provide a water quality component. The property uses two on-site lakes to manage surface water. Based on the restoration strategy, funding this property is not proposed for future restoration plans.

Noise

The site is currently used for agricultural use, specifically a horse training facility. Based on Palm Beach County's agricultural ordinance, the property will remain in agricultural use. The property does not pose as a noise issue.

3.4 Biological Environment – Biscayne Bay Coastal Wetlands

Vegetation

Historically, mangrove communities and seagrass dominate the flora of the Biscayne Bay Coastal Wetlands (BBCW). There are large portions of the mangrove and seagrass beds and hard bottom communities that are at risk of degraded water quality and site improvements. Degraded water quality is thought to be a major factor that caused a massive seagrass die-off in Florida Bay beginning in the late 1980s (Koch et al., 2007). Large sections of the project lands have been cleared for farming. Historical mangrove species found in the Biscayne Bay area include red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), white mangrove (*Laguncularia racemosa*), and buttonwood (*Conocarpus erectus*). Most of the mangrove habitat in the project area can be sub-divided into these four forest types (Gaiser and Ross, 2003). The most landward forest type is the dwarf mangrove forest, which is dominated by red mangroves generally less than six feet in stature (SFWMD, BBCW PIR, 2012).

The mangrove community provides vital support to bay fisheries, including shrimp, tarpon

(*Megalops atlanticus*), and gray snapper (and invertebrate-wading bird food webs). In Biscayne Bay, sport and commercial fisheries rely on mangrove community function to support 11 important species of fish, such as red grouper (*Epinephelus morio*), gray snapper, and common snook (*Centropomis undecimalis*), and shellfish such as the spiny lobster (*Panulirus argus*), blue crab (*Callinectes sapidus*), and stone crab. Red mangrove prop roots also provide physical support for an extremely diverse invertebrate community.

Mangroves provide habitat for numerous bird species. For example, bald eagles and ospreys are top carnivores that utilize mangrove forests. Wading birds, such as great blue herons, little blue herons, tricolor herons, and roseate spoonbills feed on small forage fish that occupy the tidal creeks and open areas of mangrove forests. The presence of mangroves may also have a strong positive influence on coral reef fish community structure and biomass (SFWMD, BBCW PIR, 2012).

Wildlife

The BBCW ecosystem supports coastal wetlands and Biscayne Bay. The BBCW supports seagrass, algal beds, and mixed hardbottom species of plants and animals (sponges, corals and algae) in the bay. These highly productive seagrass beds are important not only in terms of the plant biomass produced to supply the bay's food web, but also as a physically stable refuge and nursery ground for fish, shrimp, crabs and their predators. Species diversity and densities of organisms are typically very high in seagrass beds. The majority of commercial and recreational fish species spends at least some portion of their life history using seagrass beds or rely on their products. Other commercial fishery species, such as stone crab (*Menippe mercenaria*), shrimp and lobster species depend on seagrass for both nursery and adult habitat. Seagrass meadows provide important habitat for other species, including wading birds, waterfowl and manatees (SFWMD, BBCW PIR, 2012).

Water Quality

The implementation of the BBCW project is specifically proposed to improve and increase fresh water in the coastal mangrove shoreline. The increase in fresh water is proposed to mitigate elevated salinity concentrations and improved coastal vegetation mangrove forest and coastal wildlife.

Noise

The proposed project has no measurable impacts on ambient, long-term noise. The implementation of restoration activities would generate a short-term increase in background noise generated from heavy civil work activities. The noise level generated during the proposed restoration activities would be further addressed as part of the SFWMD's permitting with USFWS and the Florida Department of Environmental Protection.

3.5 Socio-economic Environment

Demographics

The Palm Beach Downs property is located within the Palm Beach County Agricultural Reserve, which protects against the loss of agricultural lands for non-agricultural development. The property is used as a horse training facility and is anticipated to stay in this type of use or for other agricultural farming. The land use of the surrounding properties is a mix of agricultural use and residential development. The BBCW property is located in southeast Miami-Dade County. The lands are currently fallow and undeveloped. One of the parcels is used as an electrical corridor. The adjacent land use includes activities and fallow agricultural lands, the Biscayne National Park, and the Homestead Air Reserve Base. No impacts to transportation or land use are anticipated.

Recreation Use

Palm Beach Downs

The Palm Beach Downs property has been in state ownership with federal restrictions since its purchase, as described previously. The property was historically used as a vegetable farm and currently as a private horse training facility. The property was not open to the public, and no public access was proposed for this facility. Based on the current use as an equestrian training facility, no developed or proposed public use facilities are located or planned for this site. The West Delray Regional Park, which consists of 315 acres, is located on SFWMD lands adjacent to the west of the subject site. The public use of this park includes access for fishing, hiking trails, biking, canoeing/kayaking and other outdoor activities. This park facility will continue to provide public recreational access. Other public access opportunities are available through the Arthur R. Marshall Loxahatchee National Wildlife Refuge, which is located to the west of the West Delray Regional Park (PBC, 2018).

Biscayne Bay Coastal Wetlands

SFWMD has developed an interim land management plan for the site that envisioned a variety of compatible public use activities that may be allowed on the property, including, but not limited to, the establishment of hiking, biking, riding trails, fishing, birding, environmental education, and nature appreciation (SFWMD, 2017).

3.6 Cultural and Historic Resources

The Palm Beach Downs site was once part of the larger Everglades system dominated primarily by sawgrass prairies, sloughs, and scattered tree islands. Beginning in the late 19th century, construction of a network of canals, levees, and roads substantially altered the area's hydrology, leading to a shortened hydroperiod and lowered groundwater levels. The introduction of invasive exotic species, as well as the dredge lake to provide on-site fill material, has modified the natural ecological system. The Palm Beach Downs site consists of several structures on-site consisting of horse stables, a single facility house, a two-story dormitory maintenance building and other support

structures. The finding of the Janus Research Inc. cultural resource assessment for the PBD assessment indicated that no archeological site were recorded and that study areas exhibits a low archaeological site potential (Hoffman, 2018) A copy of the Janus Research report is included as attachment

The Biscayne Bay Coastal Wetlands were included within the boundaries of a previous survey (SFWMD, BBCW PIR, 2012). The purpose of this new analysis is to identify/update any previously recorded resources within the two sites that may have been determined as eligible for the National Register of Historic Places, as well as any resources with documented or suspected human remains. The analysis also assessed the site for the potential of archaeological sites within the project areas. The desktop analysis reviewed the most current Florida Master Site File (FMSF) data, as well as a review of the associated FMSF forms and survey reports to assess the accuracy of the locational data and any evaluation of National Register eligibility. An analysis of available historic aerials, historic General Land Office (GLO) plat maps and associated surveyor's notes, USGS quadrangle maps, and pertinent environmental features was also conducted to help identify areas of the high probability of the presence of cultural resources. The analysis of environmental features indicated that most of the property consists of freshwater marshes and low pine flatwoods with low archaeological site potential. No structures were documented on the BBCW properties. The finding of the Janus Research Inc. cultural resource assessment for the BBCW assessment indicated that no recorded archeological site was recorded and that the two study areas exhibits a low archaeological site potential. (Kloetzer.D, 2018) A copy of the Janus Research report is included as attachment

CHAPTER 4. Environmental Consequences

This chapter describes the foreseeable environmental consequences of removing restrictions on the Palm Beach Downs property. The parcels that have been included in the land exchange between USFWS and SFWMD are proposed to achieve equitable value in the exchange. When detailed information is available, a scientific and analytical comparison between alternatives and their anticipated consequences is presented, which is described as "impacts" or "effects." When detailed information is not available, those comparisons are based on the professional judgment and experience of SFWMD staff and concurrence from the USFWS.

4.1 Physical Consequences

Palm Beach Downs

The restrictions that currently exist on Palm Beach Downs require the property to be used for Everglades restoration. Based on a more updated evaluation, SFWMD has determined that the parcel is no longer needed for that purpose. The parcel is located within the Palm Beach County Agricultural Reserve. The Agricultural Reserve has a long history of horse training facilities and the cultivation of winter vegetable crops and is considered highly valuable farmland (PBC, 2000).

It is anticipated that the property will remain as a horse training facility. Any future changes from agricultural use would require a variance of Palm Beach County agricultural ordinance. SFWMD has fee title to 315 acres in West Delray Regional Park, which is west of the site and acts as a buffer between the subject site and the water conservation areas (*no impacts anticipated*).

Biscayne Bay Coastal Wetlands

The interim use of the BBCW site will continue as fallow farmlands and as an electrical power line corridor. The long-term objective of this property is to restore the site to a more natural hydrological pattern to facilitate the storage and flow of fresh water, enhance natural ecological systems, and increase fresh water flows to downstream water bodies (*no impacts anticipated*).

4.2 Impacts to Physical Environment

Palm Beach Downs

The proposed grant funding transfer from the Palm Beach Downs property does not inherently cause a change in the physical environment of this property. Thus, Alternative B would have no impacts on the physical environment, including hydrology, water quality, and air quality.

Biscayne Bay Coastal Wetlands

The proposed grant funding transfer to the BBCW properties would allow for the restoration and rehydration of the site, thereby improving natural hydrologic patterns, water quality and ecological systems within the Biscayne Bay and the adjacent Biscayne

Bay National Park.

4.3 Impacts to Refuge Facilities

Palm Beach Downs / Biscayne Bay Coastal Wetlands

The Arthur R. Marshall Loxahatchee National Wildlife Refuge is located west of the Palm Beach Downs property. The 315-acre West Delray Regional Park is situated between the subject site and the refuge, which provides a buffer between the two sites. The Palm Beach Downs property is hydrologically isolated by an on-site canal, lakes and a levee. Based on the canal and physical barrier (i.e., the levee) and the buffer provided by the West Delray Beach Regional Park, the Palm Beach Downs property does not pose an impact to the Refuge or other federal facilities.

The Biscayne Bay Coastal Wetlands property is not located near a wildlife refuge. The subject property is located on the boundary of Biscayne National Park and the U.S National Park Service. The park provides public access to and protection of the Biscayne Bay ecological system. The park consists of an estimate of 172,971 acres and provides protection to shoreline mangrove, shallow bay waters, coral limestone islands and offshore Florida marine ecosystems (NPS, 2018). The proposed restoration of the Biscayne Bay Coastal Wetlands property is a component of future restoration activities. The proposed grant funding transfer does not impact either wildlife refuge or any other federal facilities (*no impacts anticipated*).

4.4 Biological Consequences

Palm Beach Downs

There are no immediate or anticipated biological consequences to the Palm Beach Downs property tracts associated with the proposed federal grant funding transfer. The site is currently a highly improved horse training facility. The subject tract is located within the Palm Beach County Agricultural Reserve; therefore, the property will continue to be zoned for agricultural use. The surrounding properties are used as a public park, and for agriculture, water catchment areas and residential purposes. The West Delray Regional Park and the Arthur R. Marshall Loxahatchee National Wildlife Refuge are located to the west of the subject site. Other adjacent property usage includes farms and a nursery. The proposed grant funding transfer does not impact either the Wildlife Refuge or any other federal facilities (*no impacts anticipated*).

Biscayne Bay Coastal Wetlands

The BBCW site is proposed for additional restoration activities. Therefore, the proposed grant funding would provide positive biological benefits to the Biscayne Bay Coastal ecosystems (*no impacts anticipated*).

4.5 Impacts to Vegetation and Habitat

Palm Beach Downs Farm
The proposed federal grant funding transfer on the Palm Beach Downs property will not cause a change in vegetation within this property or necessitate a change in use of the land. Based on the local county ordinance, the site is within the Palm Beach County Agricultural Reserve, and it is anticipated the property will stay as a horse training facility or for vegetable crop cultivation. Thus, Alternative B would have minimal impacts on localized vegetation, soil, water, or wildlife habitat.

SFWMD assessments of the Palm Beach Downs property have documented that most of the site is developed for a high intensity horse training facility. The site has some limited degraded wetland areas on the northwest and northeast section of the property. However, these sites have minimal native plant communities (SFWMD, 2014). The proposed transfer is not anticipated to impact or result in any changes to on-site vegetation or habitat (SFWMD, Ecological Assessment of Surplus Tract , 2014).

Biscayne Bay Coastal Wetlands
The proposed federal grant funding transfer for the BBCW will support the inclusion of this property within the proposed BBCW restoration project. The implementation of the BBCW restoration project will improve freshwater flow to the shoreline mangrove habitat, resulting in a healthier ecosystem for USFWS trust species. Therefore, it is anticipated that the proposed grant fund transfer lands will improve native vegetation coverage and habitat, and no impacts are anticipated.

4.6 Impacts to Wildlife

Palm Beach Downs
The proposed federal grant funding transfer within the Palm Beach Downs property does not change the potential for wildlife to occur on-site. The property is currently an intensive horse training facility and will continue to be operated as a horse training facility or converted to row crop cultivations as it is located within the Palm Beach County Agricultural Reserve. The wildlife habitat on this site is not anticipated to experience any wildlife impacts.

Biscayne Bay Coastal Wetlands Property
The BBCW site offers a more productive ecological system. The proposed increase in freshwater flows/rehydration of the coastal mangrove shoreline habitat will improve the natural hydrologic patterns and improve ecological systems as this restoration work is implemented. The proposed federal grant funding transfer would provide wildlife benefits (no impacts anticipated).

4.7 Impacts to Threatened and Endangered Species

Palm Beach Downs
The proposed federal grant funding transfer with the Palm Beach Downs property does not negatively impact threatened and endangered species. The property is currently an

intensive horse training facility and it is anticipated the site will remain as such or as vegetable row crop operations. The wildlife habitat on this site is minimal and no changes are planned. Removing restrictions does not inherently induce a change to wildlife or wildlife habitat in general or to threatened and endangered species on the tracts proposed for inclusion in the exchange.

Biscayne Bay Coastal Property

The BBCW site offers a more productive ecological system. The proposed rehydration to improve the natural hydrologic patterns will continue to improve the ecological system and habitat for USFWS trustee species.

4.8 Socioeconomic Consequences

Palm Beach Downs / Biscayne Bay Coastal Wetlands

The proposed federal grant transfer would not have adverse effects on either of the properties. The Palm Beach Downs property site will remain in its current use as part of the Palm Beach County Agricultural Reserve. The BBCW will remain fallow lands pending implementation to the area is restored to a natural area to improve water quality, flow, ecological habitat and public access. The proposed grant funding transfer (Alternative B) will not cause negative socioeconomic consequences.

4.9 Impacts on Environmental Justice

Palm Beach Downs / Biscayne Bay Coastal Wetlands

President Bill Clinton signed Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" on February 11, 1994, to focus federal attention on the environmental and human health conditions of minority and low-income populations with the goal of achieving environmental protection for all communities. The Order directed federal agencies to develop environmental justice strategies to aid in identifying and addressing the disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. The Order is also intended to promote nondiscrimination in federal programs substantially affecting human health and the environment and to provide minority and low-income communities with access to public information and participation in matters relating to human health or the environment.

This assessment has not identified any adverse or beneficial effects as part of the proposed federal grant funding transfer. Therefore, no impacts are anticipated with the grant funding transfer to minority or low-income populations in the affected area. The proposed grant funding transfer (Alternative B) will not disproportionately place any adverse environmental, economic, social, or health impacts on minority or low-income populations.

4.10 Impacts on Public Health and Safety

Palm Beach Downs / Biscayne Bay Coastal Wetlands

The proposed federal grant funding transfer on the Palm Beach Downs property to the BBCW site will not negatively change any activity or infrastructure that serves public health and safety. Therefore, Alternative B is not anticipated to have any impacts on human health and safety.

4.11 Impacts on Recreation

Palm Beach Downs

No recreational opportunities are currently available on the Palm Beach Downs property because of the high intensity agricultural operation (i.e., horse training facility). Public recreation opportunities are available on the adjacent lands purchased in part by SFWMD and operated by Palm Beach County (West Delray Beach Regional Park). The proposed federal grant funding transfer will not negatively affect recreational opportunities on this site.

The Biscayne Bay Coastal Wetlands project will support the development of restoration-compatible recreation that would provide public access and education. The recreation facilities and activities proposed for the project include: environmental interpretation, trailheads with vehicular parking and handicapped-accessible facilities, multi-use trails atop levees adjacent to canals and flow-ways, primitive camping, access for bike riding, bank fishing, and wildlife watching. The proposed project recreation facilities would help to fill six Statewide Comprehensive Outdoor Recreation Plan (SCORP) regional deficits, link with other regional recreation facilities, and develop synergy between facilities by bundling recreation facilities (SFWMD, BBCW PIR, 2012).

4.12 Cultural Resource Consequences

The Palm Beach Downs site, which is included in Alternative B, has no known archaeological or historic resources, and removing restrictions from these parcels does not inherently cause disturbance or disruption of the physical conditions of the properties. The District has retained Janus Research to conduct an updated cultural resource assessment. Cultural resources within the state of Florida are provided protection through the historic preservation statues within Chapter 267.061 and the Division of Historical Resources 2014 Management Procedures and Guidelines for Archaeological and Historical Sites and Properties on State-owned or Controlled Lands. In addition, Chapter 872 of the Florida Statutes provides supplementary assurances that sites would be protected. A copy of the finding of the Janus Research Inc. Report is included as attached

4.13 Cumulative Impacts Analysis

The analysis reviewed the cumulative impacts to the environment resulting from incremental effects of a proposed action when these are added to other past, present, and reasonably foreseeable future actions.

USFWS is currently assessing the cumulative impacts through a Section 7 Intra-Service Biological Evaluation related to this proposal. That decision will be included upon receipt as an addendum to the final Environmental Assessment for this proposed action. While cumulative effects may result from individually minor actions, they may become substantial over time. Based on the current land use, which is a conversion between a horse training facility (agricultural use) to fallow lands proposed for the BBCW restoration, it is anticipated that the USFWS's Section 7 Biological Evaluation will report no impacts to listed or proposed resources.

As stated in Chapter 2, the new proposed grant funding transfer (Alternative B) would transfer funding from the Palm Beach Downs property to the BBCW site. No future land change is anticipated with the Palm Beach Downs site as it is currently located within the Palm Beach County Agricultural Reserve. The BBCW properties are proposed for future restoration to improve degraded natural land and is within a designated restoration area.

In the proposed land exchange (Alternative B), the proposed federal grant funding may be transferred from Palm Beach Downs to more suitable properties in the BBCW restoration area properties. It is the SFWMD staff's opinion that the proposed fund transfer would provide an equitable value and would enhance the physical, biological, socioeconomic, and cultural and historic characteristics of the current environment after the proposed transfer to the state of Florida. As such, there are no expected cumulative impacts of this action.

CHAPTER 5. Consultation and Coordination

The SFWMD and DOI have worked together over the past year to identify and assess properties that could be included in the proposed federal land grant transfer that would result in an equitable exchange and would provide benefits to the mission and goals of both entities. The transfer of the land grant funding from the Palm Beach Downs site to the BBCW restoration area properties would include other federal, state, and tribal agencies, as well as the affected, and interested public will have an opportunity to review and comment on this proposal. Notification of the opportunity to comment and where to obtain copies of the Environmental Assessment were announced in the Palm Beach Post (Appendix C).

References

NPS. (2018, July 10). National Park Service. Retrieved from Biscayne: https://www.nps.gov/bisc/index.htm

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PSI. (2010). Summary of Environmental Findings BBCW. Tampa: PSI.

Roos, M. (2012). LWD control Plan. West Palm Beach.

SFWMD. (2012). BBCW PIR. West Palm Beach: SFWMD.

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Taylor, R. (2017). Palm Beach Downs. West Palm Beach: SFWMD.

APPENDIX A: Environmental Action Statement

Within the spirit and intent of the Council on Environmental Quality regulations for implementation of the National Environmental Policy Act (NEPA) and other statute orders and polices that protect fish and wildlife resources, I have established the following administrative record and determined the proposed land exchange with the State of Florida and the Department of the Interior. The actions include removal of specific grant-funded restrictions on a property owned by the SFWMD known as the Palm Beach Downs Property in exchange for the placement of specific grant-funded restrictions on a second property owned by the SFWMD known as the Biscayne Bay Coastal Wetlands (BBCW) properties. The BBCW properties are a components of Comprehensive Everglades Restoration Plan's (CERP).

Check One:

_____ Is a categorical exclusion as provided by 516DM2, Appendix 1 and 516 DM5, Appendix 1, Section 1.4 A (4). No further NEPA documentation will therefore be made.

__X__ Is found not to have significant environmental effects as determined by the attached Environmental Assessment finding and No Significant impacts.

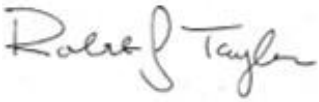
_____ Is found to have a significant effect and therefore further consideration of this action will require a notice of intent to be published in the Federal Register announcing the decision to prepare an EIS.

_____ Is not an emergency action within the context of the 40 CFR 1 506.1 1. Only those actions necessary to control the immediate impacts of the emergency will be taken. Other related actions remain subject to NEPA review.

Other Supporting Documents

Environmental Assessment Report
FWS Endanger Species Act, Section 7 Consultation

Signature Approval:



05/30/18

(1) Originator, Robert Taylor Principal Scientist, SFWMD	Date	(2) Donald R Progulske Everglades Program Supervisor Ecological Services, FL	Date
(3) Mike Piccirilli U.S. Fish and Wildlife Service Chief of Wildlife and Sportfish Restoration Program, Atlanta, Georgia	Date	Only Needed for EIS/ROD (4) Regional Director, Southeast Region	Date

APPENDIX B: Finding of No Significant Impact (FONSI)

Finding of No Significant Impact (FONSI)

Introduction

On February 28, 2018, the U.S. Fish and Wildlife Service (USFWS) completed Step 3 of the Everglades Grant Land Disposition Protocol outlined in a letter provided to the South Florida Water Management District (SFWMD) on March 11, 2016 by the U.S. Department of Interior. The review focused on the removal of specific grant-funded restrictions on a property owned by the SFWMD known as the Palm Beach Downs Property in exchange for the placement of specific grant-funded restrictions on a second properties (multiple tracts) owned by the SFWMD known as the Biscayne Bay Coastal Wetlands Properties.

The Palm Beach Downs Property is a 97-acre property located within the former East Coast Buffer project area within Palm Beach County. The property was acquired using Federal grant funding and later slated for surplus or exchange during the project review process as it was determined that the project was not part of the restoration strategy.

The BBCW properties lies within the Comprehensive Everglades Restoration Plan (CERP) Biscayne Bay Phase I and Phase project area components. This property consists of five tracts an estimated 921.96 acres and is a key addition within the project areas to improve fresh water surface flows, ecological restoration, natural storage and improved water quality within the basin.

An Environmental Assessment (EA) has been prepared to inform the public of the possible environmental consequences of removing the grant funding restrictions. A description of the alternatives, the rationale for selecting the preferred alternative, the environmental effects of the preferred alternative, the potential adverse effects of the action, and a declaration concerning the factors determining the significance of effects, in compliance with the National Environmental Policy Act of 1969, are outlined below. The supporting information can be found in the Environmental Assessment.

Alternatives

In developing the grant-funded restrictions removal, three alternatives were evaluated. Alternative B was selected as the “Preferred Alternative," as the proposed action to allow for long-term resource protection, enhanced wildlife habitat and population management, and further public wildlife-oriented recreation. The overriding concern reflected in this plan is ensuring quality habitat and protection to native species while providing compatible recreational experiences for the public.

Alternative A: No Action Alternative -- Current Land Ownership

Under Alternative A, no land replacement would occur. The grant funding would continue to encumber the Palm Beach Downs property owned by the SFWMD, eliminating the ability to surplus the property in favor of property better suited for the goals and purposes of SFWMD and Everglades restoration. The utility remaining in the Palm Beach Downs property would no longer meet the needs of Everglades restoration.

Alternative B: New Proposed Action -- Removal of Federal Interest in Palm Beach Downs Property for Biscayne Bay Coastal Wetlands Properties

The new proposed action would replace the Palm Beach Downs property with replacement properties of similar value located in the Biscayne Bay Coastal Wetlands project area. The SFWMD would convey all real property interest in the 97.01-acre Palm Beach Downs property parcel to an outside purchaser and remove the encumbrance and federal nexus from the Palm Beach Downs property, which was partially acquired with LWCF-1 funds. In exchange, the SFWMD would transfer the federal interest encumbrance to replacement properties located within the Biscayne Bay Coastal Wetlands project area.

Alternative C: New Proposed Action -- Removal of Federal Interest in Palm Beach Downs Property for Newly Identified Property

The new proposed action would require, if available, the acquisition of properties within the Biscayne Bay Coastal Wetlands project area. The estimated acquisition cost is $4.81 million. Once acquired, the SFWMD would convey all real property interest in the 97.01-acre Palm Beach Downs property parcel to a potential buyer and remove the encumbrance and federal nexus from the Palm Beach Downs property, acquired with Federal Agriculture Improvement and Reform Act of 1996 funds. In exchange, the SFWMD would transfer the federal interest encumbrance to the newly acquired property. This alternative is problematic, however, due to property availability, and budgetary and time constraints.

Selection Rationale

The transfer of grant funding restrictions from the Palm Beach Downs Property to the Biscayne Bay Coastal Wetlands properties removes both the U.S. Department of the Interior (DOI) and the SFWMD from ownership of a highly intense agricultural property that provides no measurable ecological benefit. The Palm Beach Downs property is not part of any current or future restoration strategy project. The funding transfer provides DOI with conservation lands within the BBCW Area, which will enhance hydrologic restoration and will provide ecological and wildlife benefits. The BBCW property is a key addition within the project area to improve fresh water flow and ecological resources.

Environmental Effects and Consequences

The physical, biological, socioeconomic, and cultural and historic characteristics of the BBCW site will be retained and enhanced after the proposed transfer of funding restrictions occurs. This project will provide increased overland freshwater flow and partially compensate for the reduction in groundwater seepage by redistributing, through a spreader system, available surface water entering the area from regional canals. The goal of the project is to improve the ecological health of Biscayne Bay (including freshwater wetlands, tidal creeks and nearshore habitat) by adjusting the quantity, quality, timing, and distribution of freshwater entering Biscayne Bay and Biscayne National Park. Redistribution of freshwater flow and the expansion and restoration of wetlands will help to

restore or enhance freshwater wetlands, tidal wetlands, and nearshore bay habitat. Improving salinity distribution near the shoreline with sustained lower-than-normal seawater salinities in tidal wetlands can help to reestablish productive nursery habitat for shrimp and shellfish, including oyster reef communities."

The Palm Beach Downs site would retain the physical, biological, socioeconomic, and cultural and historic characteristics of the current condition after the proposed removal of DOI funding restrictions. The property is not part of any current or future restoration strategy project. The property is located within the PBC's agricultural reserve and would likely continue to be operated as a high horse training facility. The site currently provides no significant ecological or recreational value. The direct impacts of this action are expected to be minimal.

Cumulative Impacts

Cumulative impacts on the environment result from incremental effects of a proposed action when these are added to other past, present, and reasonably foreseeable future actions. While cumulative effects may result from individually minor actions, they may become substantial over time. The proposed land exchange (Alternative B) would transfer funding restrictions from Palm Beach Downs to the BBCW properties. It is anticipated that the Palm Beach Downs site will remain in agricultural use, while the BBCW site will be incorporated within the future CERP restoration project. Therefore, cumulative effects of this action are not expected to be substantial.

Coordination

The U.S. Fish and Wildlife Service (USFWS) and the SFWMD have actively communicated and coordinated regarding the proposed land exchange. The USFWS and SFWMD have discussed the possibility of a land exchange involving Palm Beach Downs and BBCW for several years, and the public has been kept well-informed of this land exchange through various media. The SFWMD has communicated about grant funding restriction removal and transfers at meetings with various stakeholders over the past year and in a public meeting on the transfer of funding restrictions and land exchange. The Service Regional Office (RO) personnel and staff biologists have conducted reviews of the transfer of funding restrictions.

Findings

Based on the findings of the EA's and the USFWS's review, the proposed removal of funding restriction does not constitute a major Federal action significantly affecting the quality of the human environment under the meaning of Section 102(2)(c) of the National Environmental Policy Act of 1969 (as amended). As such, an environmental impact statement is not required.

1. Both beneficial and adverse effects have been considered, and this action will not have a significant effect on the human environment. (Environmental Assessment, page 13)

2. The actions will not have a significant effect on public health and safety. (Environmental Assessment, page 23)

3. The project will not significantly affect any unique characteristics of the geographic

areas, such as proximity to historical or cultural resources, wild and scenic rivers, or ecologically critical areas. (Environmental Assessment, page 17)

4. The effects on the quality of the human environment are not likely to be highly controversial. (Environmental Assessment, page 14)

5. The actions do not involve highly uncertain, unique, or unknown environmental risks to the human environment. (Environmental Assessment, page 14)

6. The actions will not establish a precedent for future actions with significant effects nor do they represent a decision in principle about a future consideration. (Environmental Assessment, page 15)

7. There will be no cumulatively significant impacts on the environment. Cumulative impacts have been analyzed with consideration of other similar activities on adjacent areas. (Environmental Assessment, page 15)

8. The actions will not significantly affect any site listed in, or eligible for listing in, the National Register of Historic Places, nor will they cause loss or destruction of significant scientific, cultural, or historic resources. (Environmental Assessment, page 18)

9. The actions are not likely to adversely affect threatened or endangered species, or their habitats. (Environmental Assessment, page 21; Section 7, Chapter VII.)

10. The actions will not lead to a violation of Federal, state, or local laws imposed for the protection of the environment. (Environmental Assessment, page 14)

Supporting References

U.S. Fish and Wildlife Service. 2018. RO Vero Beach statement on Trustee Species
Cultural Resources Assessment Property, Janus Research: May, 2018.

Document Availability

The Environmental Assessment was made available to the public electronically on the South Florida Water Management District Website, March, 2018. Additional copies are available by writing:

_____ _____

Mike Piccirilli Date
U.S. Fish and Wildlife Service
Chief of Wildlife and Sportfish Restoration Program
Atlanta, Georgia

APPENDIX C: Public Comment

Transfer of Grant Fund Restrictions
Palm Beach Downs Property to Biscayne Bay Coastal Wetlands Property

On April 4, 2018, an announcement of the proposed grant funding transfer appeared in the Palm Beach Post, a daily newspaper distributed in Palm Beach County, Martin County and St. Lucie County, Florida. The SFWMD has not received comments as of the submittal date.

APPENDIX D: Cultural Resource Desktop Analysis Reconnaissance Survey of the c

1107 N. Ward Street
Tampa, FL 33607
Tel: 813-636-8200
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Janus Research

Memo

To: Robert Taylor, SFWMD

CC: Armando Ramirez, SFWMD

From: Diane K. Kloetzer, Janus Research

Date: September 7, 2018

Re: Cultural Resource Desktop Analysis and Reconnaissance Survey of the Palm Beach Downs Property, Palm Beach County, Florida

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Introduction

At the request of the South Florida Water Management District (SFWMD; District), Janus Research conducted a cultural resources desktop analysis and reconnaissance survey of the Palm Beach Downs Property located in Palm Beach County, Florida (Figure 1). The Palm Beach Downs property is a 97.01-acre property that is within the East Coast Buffer project area. The property was acquired using federal grant funding and later slated for surplus or exchange during the project review process as it was determined that the project was not part of the restoration strategy. The site is currently operated as an equestrian boarding (stables) and training facility.

On May 10, 2018, the U.S. Fish and Wildlife Service (USFWS) completed Step 3 of the Everglades Grant Land Disposition Protocol outlined in a letter provided to the District on March 11, 2016 by the U.S. Department of Interior. The review focused on the removal of specific grant-funded restrictions on a property owned by the District known as the Palm Beach Downs property in exchange for the placement of specific grant-funded restrictions on replacement properties owned by the District located within Biscayne Bay Coastal Wetlands Phase 1 and Phase 2. The District's Governing Board has declared the Palm Beach Downs property as surplus lands and will offer the property for sale to the public after the grant funding encumbrance is transferred.

Study Area

The Palm Beach Downs Property is located in Section 13 of Township 46 South, Range 41 East on the University Park (1962 Photorevised [PR] 1983) United States Geological Survey (USGS) quadrangle map (Figure 2). As the property will be offered for sale and no improvements are planned, the study area for archaeological and historic resources was confined to the footprint of the parcel (Figure 3).

Figure 1: General Location of the Study Area

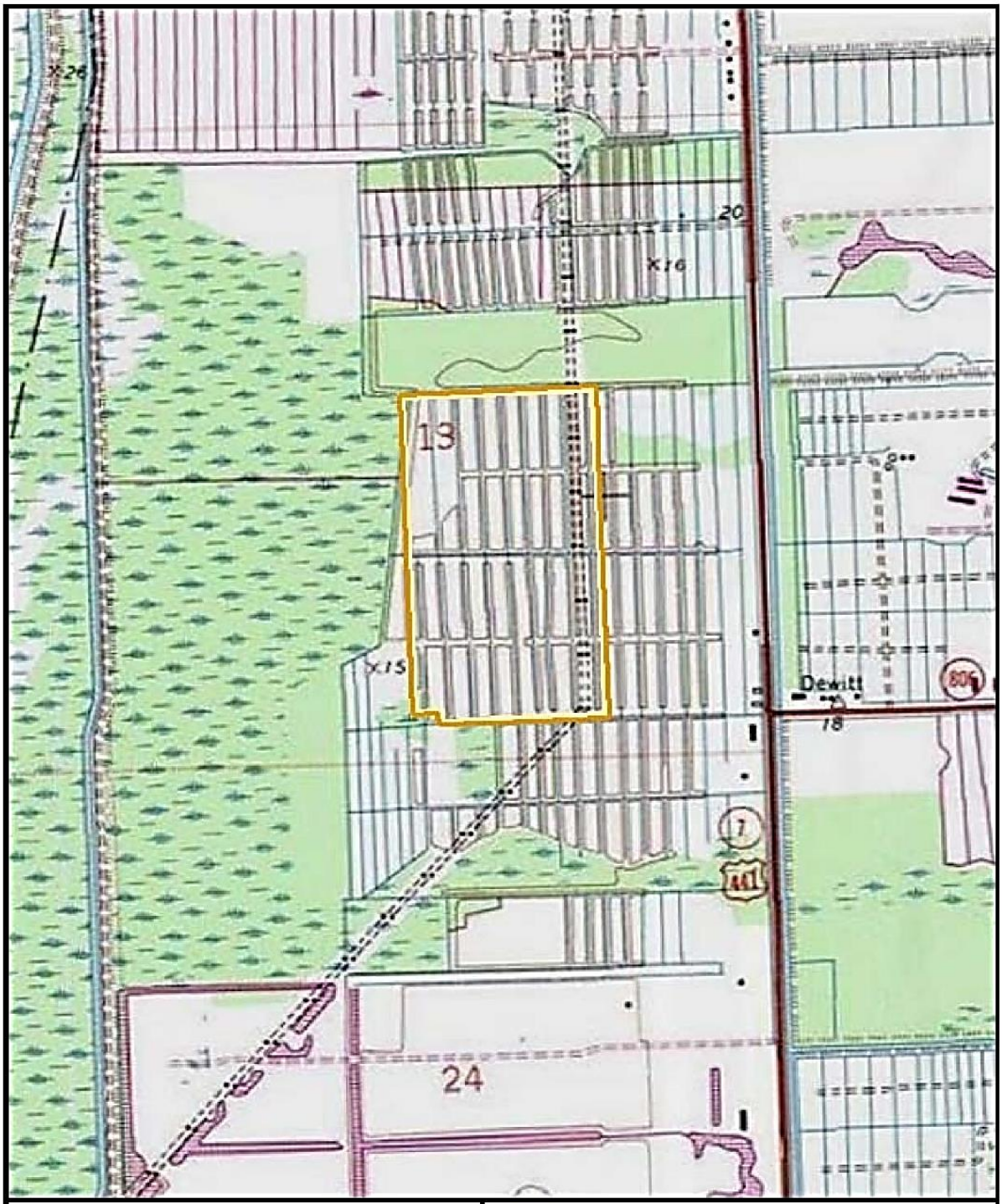

Figure 2: Study Area Illustrated on a Quadrangle Map

USGS Quadrangle Map:
University Park (1962 PR 1983)

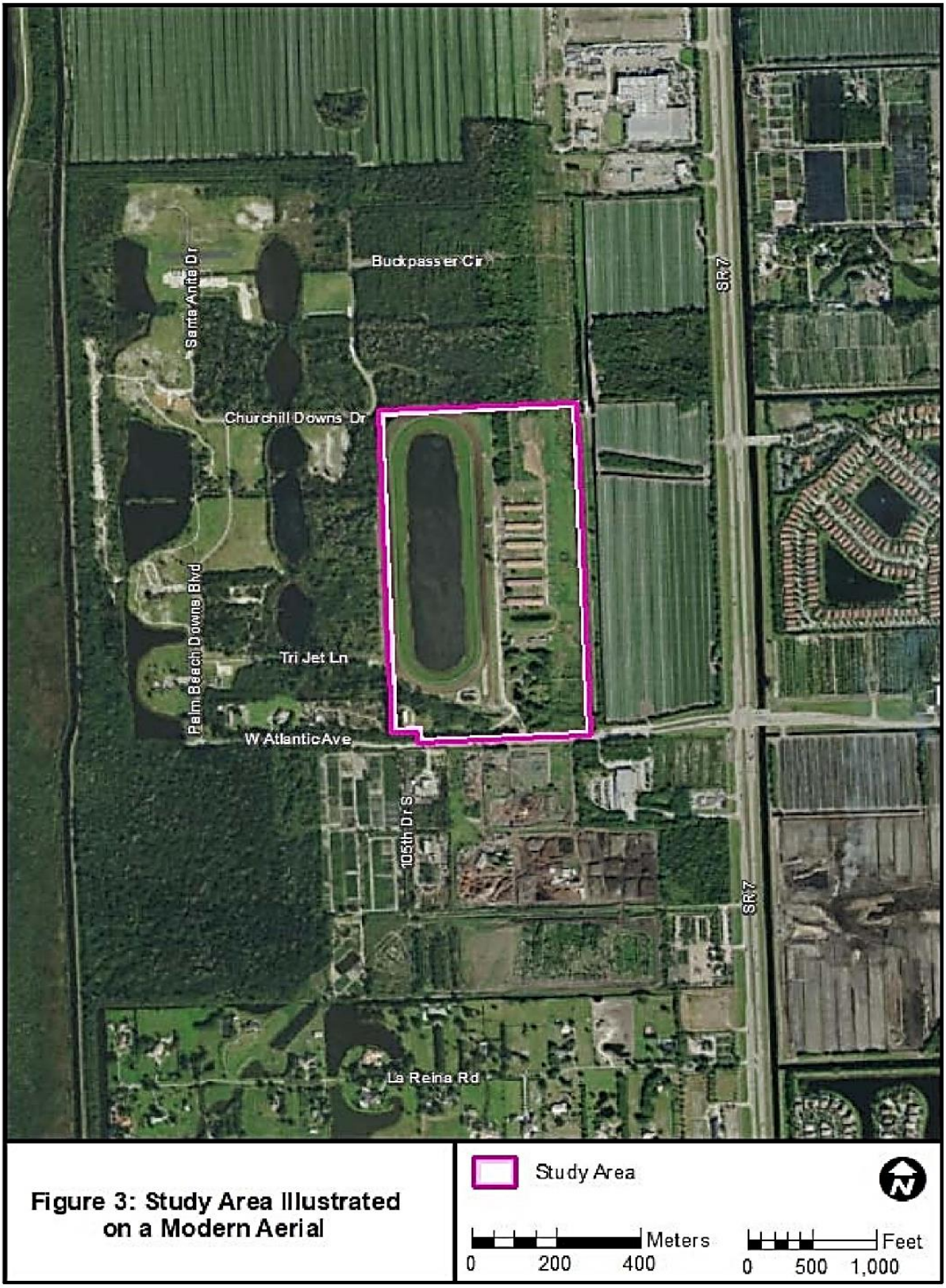

Figure 3: Study Area Illustrated on a Modern Aerial

Methods

An archaeological and historical literature and background information search pertinent to the study area was conducted in order to determine the types, chronological placement, and location patterning of cultural resources adjacent to the study area. This included a search of county and local site inventories, unpublished Cultural Resource Management (CRM) reports, Palm Beach County Property Appraiser records, and other relevant historical research materials.

Background research methods also included a search of the Florida Master Site File (FMSF) to identify cultural resources that are listed, eligible, or considered eligible for listing in the *National Register of Historic Places* (National Register) and resources with potential or confirmed human remains. The FMSF is an important planning tool that assists in identifying potential cultural resources issues and resources that may warrant further investigation and protection. It can be used as a guide but should not be used to determine the official position of the Florida Division of Historical Resources/State Historic Preservation Officer (FDHR/SHPO) regarding the significance of a resource.

The archaeological reconnaissance consisted of a pedestrian survey and judgmental subsurface testing. Shovel tests were circular and approximately 50 centimeters (20 in) in diameter. They were excavated to a minimum depth of one meter (39 in) unless obstructed by solid bedrock or slumping incurred due to the influx of groundwater. All excavated soils were sifted through 6.4-millimeter (¼-in) metal hardware cloth screen suspended from portable wooden frames and all shovel tests were backfilled upon completion.

Standard archaeological methods for recording field data were followed throughout the project. The identification number, location, stratigraphic profile, soil descriptions, and environmental setting were recorded for every shovel test excavated. Locations of all shovel tests were recorded in the field with WAAS-enabled hand-held Global Positioning System (GPS) units. The locations of all shovel tests were also recorded on an aerial photographs (Attachment A).

Desktop Analysis

A review of previous surveys, FMSF data, relevant historical research materials, and Palm Beach County Property Appraiser records was conducted to determine the potential for significant cultural resources in the vicinity of the study area.

Cultural Resource Surveys

No previous cultural resource surveys have been conducted within the study area.

Archaeological Sites

A search of the FMSF data identified no archaeological sites within the study area. This review also identified no previously recorded archaeological sites within one mile of the study area.

Historic Resources
There are no previously recorded historic resources located within the study area. The review of the historic aerial photographs did not identify any potential historic resources within or adjacent to the parcel.

Property Appraiser Records
A search of the Palm Beach County Property Appraiser records was conducted to assess the potential for unrecorded historic buildings within the study area. No parcels within the study area have 'Actual Year Built' (AYRB) dates indicative of containing buildings with a historic date of construction before or during 1970.

Archaeological Desktop Analysis Results

A review of the General Land Office (GLO) historic plat map (Florida Department of Environmental Protection [FDEP] 1872a) and surveyors' field notes (FDEP 1872b) was conducted to examine past environmental conditions within the vicinity of the study area in the 19th century (Figure 4). On the 1872 plat map, the study area is labelled as "Cypress Swamp." The associated surveyors' notes described the area as Everglades "under water" with low swampy pine, marsh, and palmetto. Although the surveyors' notes mentioned scattered coco plum to the north and west of the study area, which corresponded to the locations of unidentified vegetation shown on the historic plat map, none were noted in the study area. Neither the maps nor surveyors' note illustrated or described any hammocks, forts, trails, or camps within or adjacent to the study area.

Modern drainage has drastically changed the nature of the environment of the study area during the past centuries. The excavation of the drainage canals in the 20th century drained the marshes and wetlands. Historic aerial photographs from 1940, 1953, 1964, 1968, 1969, 1975, and 1986 were examined to obtain information regarding land use during the 20th century (Florida Department of Transportation [FDOT], Surveying and Mapping Office 1996–2018; University of Florida, George A. Smathers Libraries 1999–2016). In 1940, the study area was already agricultural fields with small drainage ditches (Figure 5). No tree islands or hammocks are visible on the aerial photograph. The property remained agricultural fields until sometime between 1975 and 1986. By 1986, the track and stables were constructed and the agricultural fields to the west had been abandoned. A review of more recent satellite imagery available from Google Earth indicate additional land alteration activities took place during the 1990s within that portion of the study area to the north of the stables and to the south of the track.

The *Soil Survey of Palm Beach County Area, Florida* (United States Department of Agriculture [USDA] 1978) was reviewed to help determine the predevelopment environment, assess the level of modification, and identify natural features within the study area indicative of increased archaeological site potential. The study area is located within the Myakka-Immokalee-Basinger association. This association is found in broad, flatwood areas interspersed with grassy slough and many shallow depressions or ponds (USDA 1978:4). The study area contains primarily Myakka fine sand. This soil type is found in flatwoods with natural vegetation consisting of slash pine, saw palmetto, inkberry, fetterbush, pineland threeawn, and other native grasses (USDA 1978:24). Two

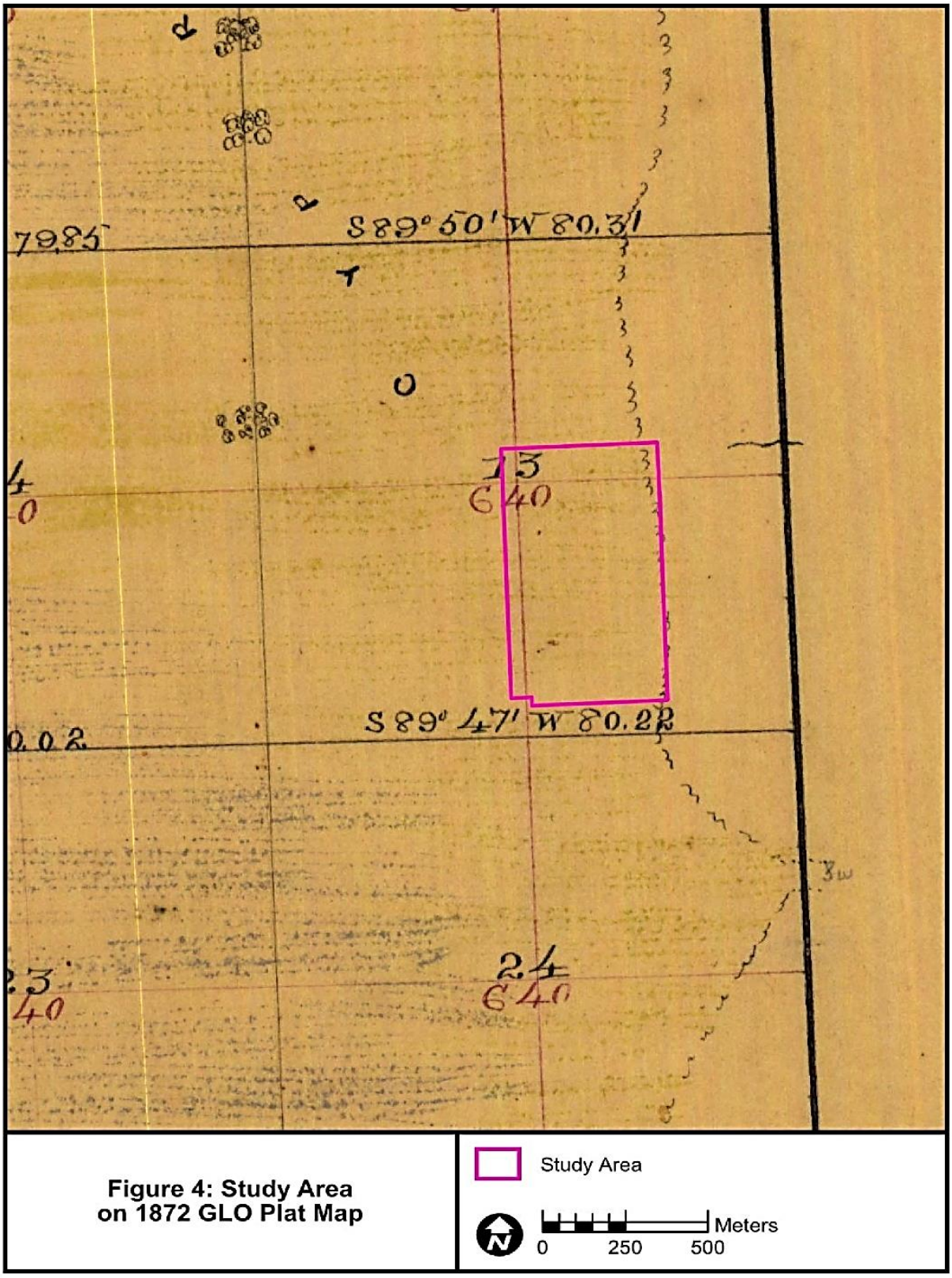

Figure 4: Study Area on 1872 GLO Plat Map

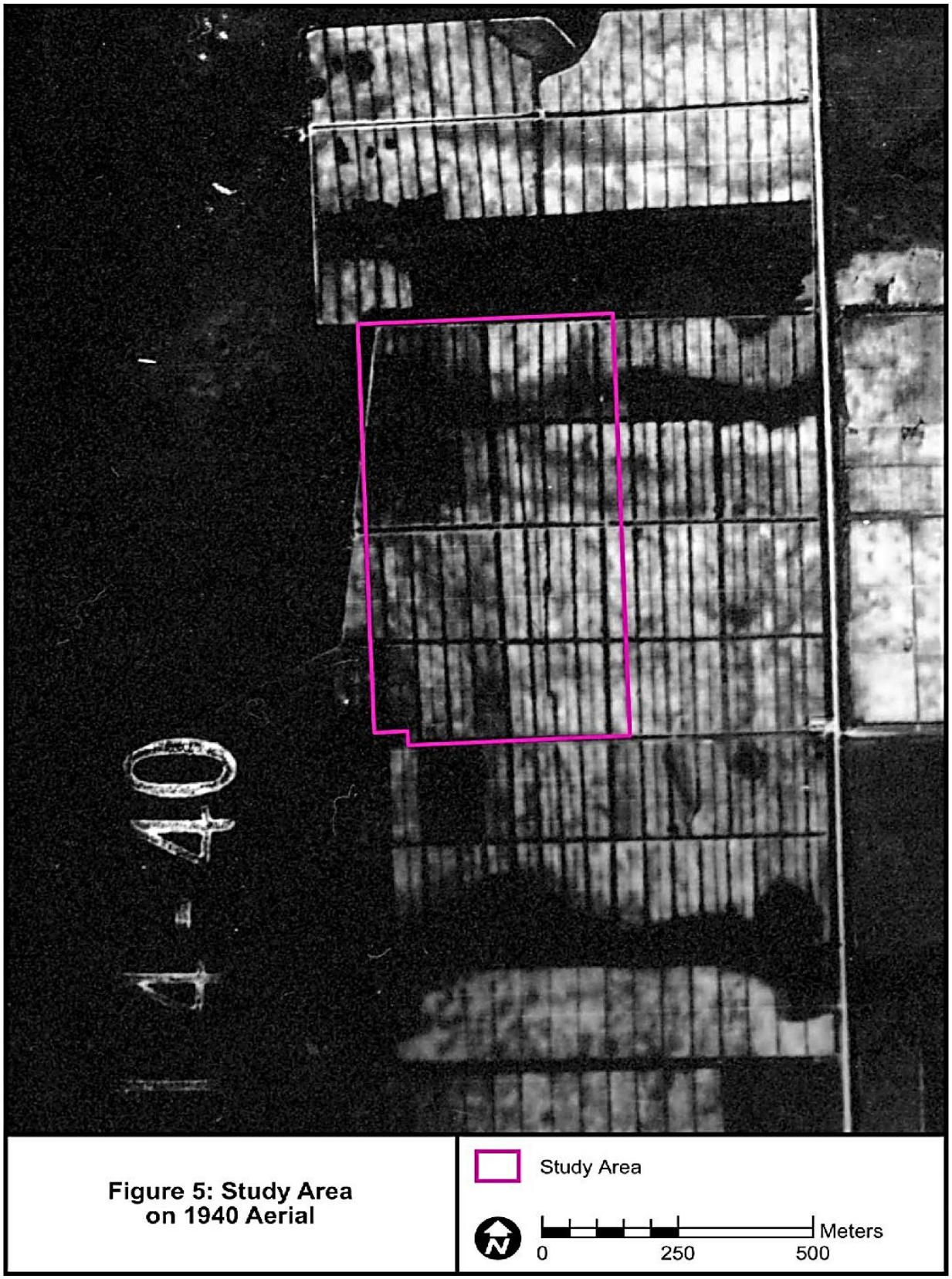

Figure 5: Study Area on 1940 Aerial

small areas contain Basinger and Myakka sands, depressional. This soil type is found in shallow depressions and natural vegetation includes St. Johns wort, cypress, maidencane, needlegrass, sand cordgrass, sedges, and other water-tolerant grasses (USDA 1978:14).

Before modern drainage, the area was part of the Everglades and consisted of marshes and low swampy pine flatwoods. Currently, the study area consists of an equestrian training facility, agricultural fields, which has altered the natural topography due to construction-related activities. Based on the review of environmental variables, the study area has low archaeological site potential.

Historic Resources Results

The FMSF background search identified no previously recorded historic resources within the historic resources study area. No potential historic resources were identified during property appraiser parcel data search or during the examination of historic aerials.

Reconnaissance Survey

The reconnaissance survey confirmed that the study area had been disturbed by the construction of the equestrian facility and associated land alteration activities. In addition to the track and associated stables, several trailers, a dormitory, and the foundation of a demolished building are located on the property. Retention ponds and drainage ditches have been excavated throughout the southern and eastern portions of the property. The track itself surrounds a large retention pond. A transmission line corridor runs along the eastern edge of the study area. Representative photographs are included in Figures 6 through 8. Three shovel tests (ST 1–3) were excavated in the only areas that appeared to be relatively undisturbed (Figures 9–11). (Attachment A). In general, the associated strata indicated that the areas where the shovel tests were excavated had also been disturbed. Water was encountered in two of the shovel tests (ST 1 and 2) between 90 and 98 cm below the surface (cmbs). In ST 3, bedrock was encountered at approximately 31 cmbs. No archaeological material was identified in any of the shovel tests.

Conclusions

No previously recorded archeological resources or historic resources are located within the study area. Based on the review of environmental variables, the study area exhibits a low archaeological site potential. The reconnaissance survey confirmed the low potential for archaeological sites. Three shovel tests were excavated, all of which encountered disturbed soils. No archaeological material was encountered in any of the shovel tests.

Figure 6: View of Study Area from South Entrance, Facing West

Figure 7: View of Disturbed Soils in the Northeast Corner of the Study Area, Facing Southwest

Figure 8: View of Track and Retention Pond on the Northwest Corner of the Study Area, Facing Southeast

Figure 9: Soil Profile of ST 1, Facing North

Figure 10: Soil Profile of Shovel Test 2, Facing East

Figure 11: Soil Profile of ST 3, Facing South

References

Florida Department of Environmental Protection (FDEP)

1872a Plat Map for Township 46 South, Range 41 East. Division of State Lands, Board of Trustees Land Document System. Electronic document, http://tlhdslweb.dep.state.fl.us/, accessed August 23, 2018.

1872b Surveyor's Notes for Township 46 South, Range 41 East. Division of State Lands, Board of Trustees Land Document System. Electronic document, http://tlhdslweb.dep.state.fl.us/, accessed August 23, 2018.

Florida Department of Transportation (FDOT), Office of Surveying and Mapping

1996–2018 Aerial Photography Archive. Electronic documents, https://fdotewp1.dot.state.fl.us/AerialPhotoLookUpSystem/, accessed August 23, 2018.

University of Florida, George A. Smathers Libraries

1999–2016 Aerial Photography: Florida Collection. University of Florida Digital Collections. Electronic documents, http://ufdc.ufl.edu/aerials/, accessed August 23, 2018.

United States Department of Agriculture (USDA)

1978 *Soils Survey of Palm Beach County Area, Florida*. United States Department of Agriculture/Natural Resources Conservation Service.

Attachment A:
Shovel Test Map and Current Conditions Map


Oak, Thatch Palm, Brazilian Pepper, Cabbage Palm
Tri Jet Ln
3
Oak, Thatch Palm, Brazilian Pepper, Cabbage Palm
Fill
W Atlantic Ave
Retention Pond
Brazilian Pepper, Wax Myrtle
Cleared Ditch
Retention Pond
Fill
2
Retention Pond
Sugar Cane, Brazilian Palm, Palm
Weeping Fig, Palm, Australian Pine, Alligator Weed
1
Tall Grass
Retention Pond
Oak, Palms, Schefflera, Microstachys, Cabbage Palm, Earpod Wattle,
Demolished House
Disturbed
Disturbed Field
Tall Grasses
Shovel Test and Current Conditions Map
Palm Beach Downs Property
Study Area
Negative Shovel Test
Palm Beach County
0
50
100
Meters
Map 1

APPENDIX E: Cultural Resource Desktop Analysis for Five Parcels Associated with the Biscayne Bay Coastal Wetlands, Miami-Dade County, Florida

1107 N. Ward Street
Tampa, FL 33607
Tel: 813-636-8200
Fax: 813-636-8212

Janus Research

Memo

To: Robert Taylor, SFWMD

CC: Armando Ramirez, SFWMD

From: Kate Hoffman and Cristina Echazabal, Janus Research

Date: September 17, 2018

Re: Cultural Resource Desktop Analysis for Five Parcels Associated with the Biscayne Bay Coastal Wetlands, Miami-Dade County, Florida

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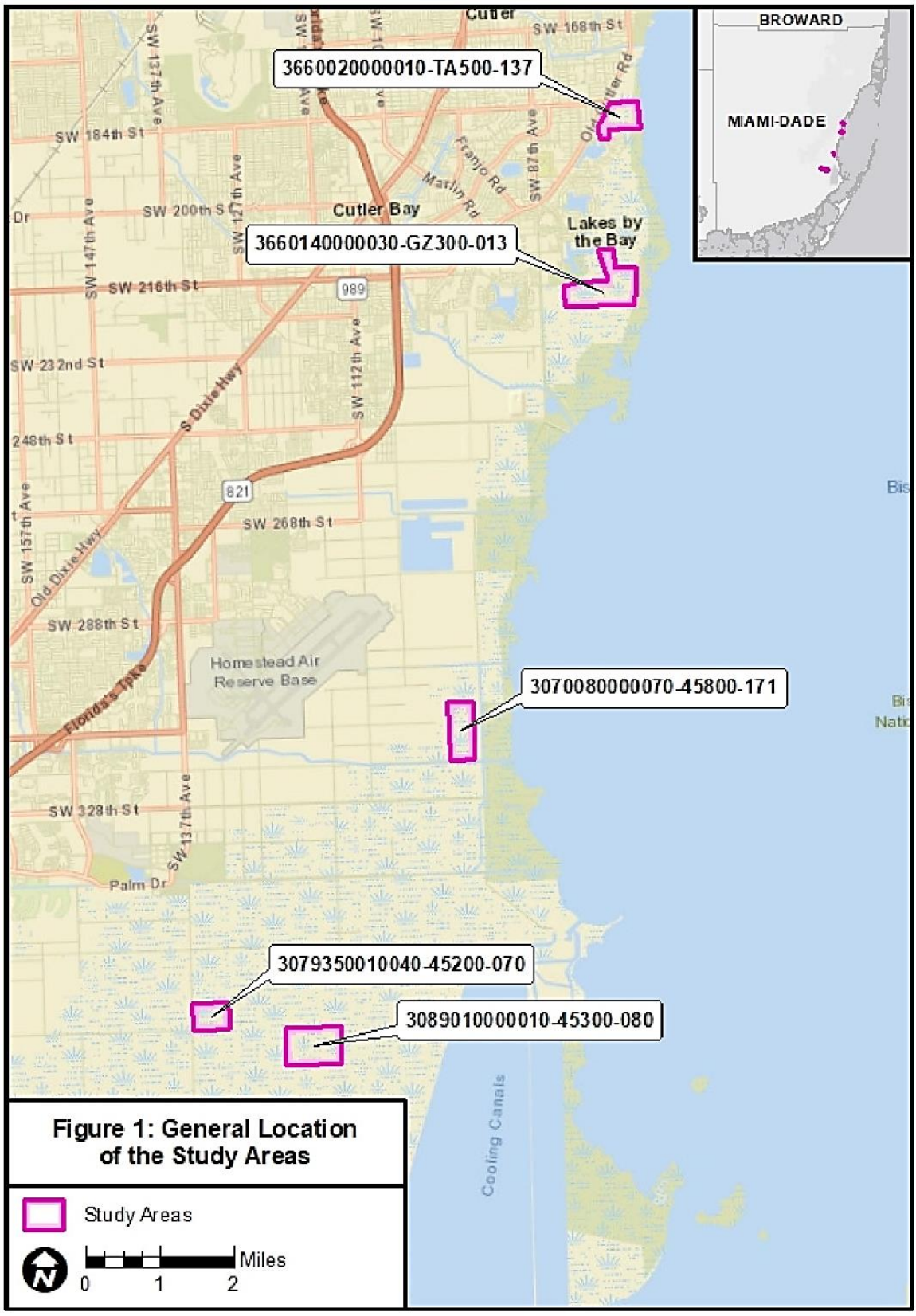
Introduction

At the request of the South Florida Water Management District (SFWMD; District), Janus Research conducted a cultural resources desktop analysis for five SFWMD-owned conservation lands within the Biscayne Bay Coastal Wetlands (BBCW) project area in Miami-Dade County, Florida (Figure 1). The parcels include 3660020000010, TA500-137 (129.88 acres); 3660140000030, GZ300-013 (262.01 acres); 3070080000070,45800-171 (170 acres); 3089010000010, 45300-080 (240.07 acres); and 3079350010040,45200-070 (120 acres).

On May 10, 2018, the U.S. Fish and Wildlife Service (USFWS) completed Step 3 of the Everglades Grant Land Disposition Protocol outlined in a letter provided to the District on March 11, 2016 by the U.S. Department of Interior. The review focused on the removal of specific grant-funded restrictions on a property owned by the District known as the Palm Beach Downs property in exchange for the placement of specific grant-funded restrictions on replacement properties owned by the District located within BBCW Phase 1 and Phase 2.

The replacement properties included in this desktop are within the Comprehensive Everglades Restoration Plan's (CERP) BBCW Phases 1 and 2 project areas. These properties consist of an estimated 921.96± acres and are a key addition within the BBCW project area. This project will provide increased overland freshwater flow and partially compensate for the reduction in groundwater seepage by redistributing, through a spreader system, available surface water entering the area from regional canals.

The goal of the BBCW project is to improve the ecological health of Biscayne Bay (including freshwater wetlands, tidal creeks and nearshore habitat) by adjusting the quantity, quality, timing, and distribution of fresh water entering Biscayne Bay and Biscayne National Park. Redistribution of freshwater flow and the expansion and restoration of wetlands will help to restore or enhance


3660020000010-TA500-137
3660140000030-GZ300-013
3070080000070-45800-171
3079350010040-45200-070
3089010000010-45300-080
BROWARD
MIAMI-DADE
Cutler
SW 168th St
SW 184th St
SW 200th St
Cutler Bay
Lakes by the Bay
SW 216th St
SW 232nd St
248th St
SW 268th St
SW 288th St
SW 328th St
Homestead Air Reserve Base
Palm Dr
S Dixie Hwy
Old Dixie Hwy
Florida's Tpke
SW 87th Ave
SW 127th Ave
SW 137th Ave
SW 147th Ave
SW 157th Ave
SW 112th Ave
Franjo Rd
Matlin Rd
989
821
Cooling Canals
Figure 1: General Location of the Study Areas
Study Areas
Miles
0
1
2

freshwater wetlands, tidal wetlands, and nearshore bay habitat. Improving salinity distribution near the shoreline with sustained lower-than-normal seawater salinities in tidal wetlands can help to reestablish productive nursery habitat for shrimp and shellfish, including oyster reef communities."[1]

Study Area

As the property will be offered for sale and no improvements are planned, the study area for archaeological and historic resources was confined to the footprint of each of the five parcels. (Attachment A).

Methods

An archaeological and historical literature and background information search pertinent to the study area was conducted in order to determine the types, chronological placement, and location patterning of cultural resources adjacent to the study area. This included a search of county and local site inventories, unpublished Cultural Resource Management (CRM) reports, Miami-Dade County Property Appraiser records, and other relevant historical research materials.

Background research methods also included a search of the Florida Master Site File (FMSF) to identify cultural resources that are listed, eligible, or considered eligible for listing in the *National Register of Historic Places* (National Register) and resources with potential or confirmed human remains. The FMSF is an important planning tool that assists in identifying potential cultural resources issues and resources that may warrant further investigation and protection. It can be used as a guide but should not be used to determine the official position of the Florida Division of Historical Resources/State Historic Preservation Officer (FDHR/SHPO) regarding the significance of a resource.

Parcel 3660020000010-TA500-137 Desktop Analysis

Cultural Resource Surveys

A search of the FMSF identified four previously conducted surveys that include the study area but no comprehensive survey has been conducted. FMSF Manuscript Nos. 602 and 2127 are County-wide surveys from the 1980s and did not include systematic surveys of the study area. The eastern boundary of the study area is within the surveys associated with FMSF Manuscript Nos. 3669 and 21445. FMSF Manuscript No. 3669 was a survey of historic structures owned by the National Park Service (NPS) in Biscayne National Park. No archaeological survey was conducted as part of this effort. FMSF Manuscript No. 21445 is listed as a Section 106 statement regarding the Cultural Resource Management Plan for submerged sites in Biscayne National Park.

Archaeological Sites

A search of the FMSF GIS data identified no archaeological sites within the study area. Six sites were identified within a mile of the study area (Table 1).

[1] EvergladesRestoration.gov – Comprehensive Everglades Restoration Plan (CERP) – Biscayne Bay Coastal Wetlands: http://141.232.10.32/pm/projects/proj_28_biscayne_bay.aspx

Table 1. Previously Recorded Archaeological Sites within One Mile of the Study Area

FMSF #	Site Name	Site Type	National Register Evaluation*
8DA2001	Cutler Fossil Site (Simmons Herreros)	Low-density artifact scatter	Not Evaluated
8DA14330	Cutler Fossil 2	Precolumbian cave/rock shelter	Not Evaluated
8DA14331	Deer Trap	Precolumbian cave/rock shelter; 19th century American	Not Evaluated
8DA11728	Bill Sadowsky Park Site	Glades campsite and habitation, precolumbian midden	Not Evaluated
8DA14352	Raccoon Pit	Glades cave/rock shelter	Not Evaluated
8DA14353	Deadwood	Precolumbian cave/rock shelter	Not Evaluated

* *As recorded in the FMSF; may require re-evaluation*

Historic Resources

There are no previously recorded historic resources located within the study area. The review of the historic aerial photographs did not identify any potential historic resources within or adjacent to the parcel.

Property Appraiser Records

A search of the Miami-Dade County Property Appraiser records was conducted to assess the potential for unrecorded historic buildings within the study area. No parcels within the study area have 'Actual Year Built' (AYRB) dates indicative of containing buildings with a historic date of construction before or during 1970.

Archaeological Desktop Analysis Results

The study area is located in Section 35 of Township 55 South, Range 40 East; and Sections 2 and 3 of Township 56 South, Range 40 East on the Perrine (1988) U.S. Geological Survey (USGS) map (Attachment B). A review of the General Land Office (GLO) historic plat map (Florida Department of Environmental Protection [FDEP] 1847a, 1847b) and surveyors' field notes (FDEP 1845, 1847c, 1847d) was conducted to examine past environmental conditions within the vicinity of the study area in the 19th century (Attachment C). Most of the study area is located within a large area labeled "Wet Prairie Land" on the historic plat map. The associated surveyors' notes described the northwest boundary of the study area as containing pine and palmetto. Neither the maps nor surveyors' note illustrated or described any hammocks, forts, trails, or camps within or adjacent to the study area.

Modern drainage has drastically changed the nature of the environment of the study area during the past centuries. Historic aerial photographs from 1938, 1953, and 1968 were examined to obtain information regarding land use during the 20th century (Florida Department of Transportation [FDOT], Surveying and Mapping Office 2018; University of Florida, George A. Smathers Libraries 2018) (Attachment D). In 1938, the western portion of the study area consisted on agricultural fields and small drainage ditches had already been excavated within the study area. The western fields appear to have been under cultivation. No areas of higher ground or hammocks are visible on the aerial photograph. In 1953 and 1968, there was little change in the area and the westernmost fields

were the only ones that appear to be under cultivation. Modern photographs show that the ditches are no longer maintained and the area is overgrown.

A review of the 1947 *Soil Survey Detailed-Reconnaissance, Dade County, Florida* (United States Department of Agriculture [USDA] 1958) was conducted to look at pre-development soil drainage characteristics and environmental associations within the archaeological APE. The 1947 survey identified three detailed soil types. Most of the study area formerly contained Perrine marl on the western half and Perrine marl, tidal phase on the eastern side. Perrine marl is the dominant soil in the marl glades and was derived from "unconsolidated, finely divided, calcareous sediments that are mainly of fresh-water origin" (USDA 1958:24). The soil is poorly to very poorly drained with natural vegetation consisting of sedges and tall grasses, mainly switchgrass, reedgrass, needlegrass, and sawgrass (USDA 1958:24–25). Perrine marl tidal phase was found in narrow belts between Perrine marls and Mangrove swamps near the coasts. Water covers these soils during high tide. Native vegetation consists of salt-tolerant grasses and mangrove trees (USDA 1958:27). A small portion of the eastern boundary of the study area contained Mangrove swamp (unclassified soils). These areas were mapped along the coast and mainly contained mangrove trees with pockets of salt-tolerant grasses or tidal marshes. The soil consists of sand, marl, or peat frequently inundated by salt water (USDA 1958:23).

The *Soil Survey of Dade County Area, Florida* (USDA 1996) indicates that the study area currently contains Perrine marl and Perrine marl tidal. Perrine marl is described as poorly drained marl in broad, low coastal flats and in transverse glades. Under natural conditions, this soil typically has water above the surface between 1 and 3 months, within 10 inches of the surface between 2 and 4 months, and between 10 and 30 inches from the surface the rest of the year. As areas containing these soils have been cleared, drained, and cultivated, no natural vegetation remains. Secondary growth consists of Brazilian pepper, Australian pine, leatherleaf fern, and other shrubs, broadleaf weeds, ferns, and grasses (USDA 1996:17). Perrine marl, tidal is very poorly drained and located in tidal mangrove swamps near the coast. Under natural conditions, it is saturated and the water table fluctuates with the tide. Natural vegetation consists of scattered and stunted red mangrove (USDA 1996:26).

The review of historic maps and aerials indicates that the study area was historically low coastal flats that was either seasonally or tidally inundated. Based on this, the study area has a low potential for archaeological sites.

Parcel 3660140000030-GZ300-013 Desktop Analysis

Cultural Resource Surveys

Parcel 3660140000030-GZ300-013 was surveyed as part of the *Archaeological Reconnaissance of the Biscayne Bay Project Area, Miami-Dade County*, conducted by Janus Research in 2006 at the request of the South Florida Water Management District (SFWMD) (Attachment E). The reconnaissance survey consisted of "a visual inspection and intensive pedestrian survey to field-check archaeological site potential zones based on background research and to locate potentially historic resources and obvious archaeological sites such as mounds, cemeteries, or other surface features" (Janus Research 2006:6). No subsurface testing was conducted as part of the reconnaissance survey. Background research suggested that Parcel 3660140000030-

GZ300-013 has a low probability of containing intact archaeological sites. No archaeological sites or historic resources were identified as a result of this effort.

An updated search of the FMSF data identified no archaeological sites or historic resources within the study area. The search of the Miami-Dade County Property Appraiser records and a review of the historic aerial photographs did not identify any potential historic resources within or adjacent to the parcel.

Parcel 3070080000070-45800-171 Desktop Analysis

Cultural Resource Surveys
A search of FMSF identified two previously conducted surveys that contain the study area. FMSF Manuscript Nos. 602 and 2127 are County-wide surveys from the 1980s that did not comprehensively survey the current study area for archaeological or historic resources.

Archaeological Sites
A search of the FMSF data identified no archaeological sites within the study area. The data also identified a cluster of 61 archaeological sites approximately one mile southeast of the study area: 8DA11941–8DA11945, 8DA11947–8DA11958, 8DA11960–8DA11983, 8DA11985–8DA11989, 8DA11995–8DA11996, 8DA14302–8DA14305, 8DA14308–8DA14312, 8DA14315, and 8DA14317–8DA14319. However, these sites are submerged within Biscayne National Park and their exact location has been withheld due to the sensitive nature of the resource. The FMSF forms indicate that these sites are likely contributing to the Offshore Reefs National Historic District (8DA3219), which is located several miles east of the study area.

Historic Resources
There are no previously recorded historic resources located within the study area. The review of the historic aerial photographs identified one historic canal, the Mowry Canal (C-103) adjacent to but outside of the southern boundary of the study area. Although this resource is not recorded adjacent to the study area, a segment to the several miles northwest of the study area (8DA15002) has been evaluated by SHPO as National Register–ineligible. The review of the 1944 and 1968 historic aerials also identified three additional small east-west running drainage ditches that intersect the study area and are associated with the adjacent agricultural fields. Agricultural drainage ditches are not typically recorded in the FMSF. A 2005 Memorandum on Canals from the FDHR Compliance and Review section states, "canals are ubiquitous and most of those built as drainage ditches in the twentieth century will probably not be considered significant" (Attachment F). Due to the common nature of these three agricultural drainage ditches they are considered National Register–ineligible.

Property Appraiser Records
A search of the Miami-Dade County Property Appraiser records did not identify any parcels within the study area with an AYRB dates indicative of containing buildings with a construction year before or during 1970.

Archaeological Desktop Analysis Results

The study area is located in Sections 8 and 17 of Township 57 South, Range 40 East on the Arsenicker Keys (1988) USGS map (Attachment B). No historic plat maps or surveyors' notes of the study area were available.

Modern drainage has drastically changed the nature of the environment of the study area during the past century. Historic aerial photographs from 1944 and 1968 were examined to obtain information regarding land use during the 20th century (FDOT, Surveying and Mapping Office 2018; University of Florida, George A. Smathers Libraries 2018) (Attachment D). In 1944, small drainage ditches had already been excavated within the study area and small ditches running from the ocean westward were present. The area was not under cultivation, but appears to be grasses and pine. No hammocks are visible on the aerial photograph. The 1968 aerial photograph shows no significant changes in the study area. The small ditches are visible and the area was overgrown. A transmission line had been constructed just to the east of the study area and the canal along the southern boundary of the study area, the Mowry Canal (C-103), had been widened. Modern photographs show that the ditches are no longer maintained and the area is overgrown.

A review of the 1947 *Soil Survey Detailed-Reconnaissance, Dade County, Florida* (USDA 1958) notes that the study area formerly contained poorly to very poorly drained Perrine marl. The *Soil Survey of Dade County Area, Florida* (USDA 1996) indicates that the study area contains Perrine marl, drained.

Before modern drainage, the area was low and flat with scattered wetlands. No hammocks or areas of higher elevation were identified during the background research. Based on the review of environmental variables, the study area has low archaeological site potential.

Parcel 3079350010040-45200-070 Desktop Analysis

Cultural Resource Surveys

A search of FMSF identified two previously conducted surveys that contain the study area. FMSF Manuscript Nos. 602 and 2127 are County-wide surveys from the 1980s that did not comprehensively survey the current study area for archaeological or historic resources.

Archaeological Sites

A search of the FMSF data identified no archaeological sites within the study area. This review also identified no previously recorded archaeological sites within one mile of the study area.

Historic Resources

There are no previously recorded historic resources located within the study area. The review of the historic aerial photographs did not identify any potential historic resources within or adjacent to the parcel.

Property Appraiser Records

A search of the Miami-Dade County Property Appraiser records did not identify any parcels within the study area with an AYRB dates indicative of containing buildings with a construction year before or during 1970.

Archaeological Desktop Analysis Results

The study area is located in Section 35 of Township 57 South, Range 39 East on the Homestead (1988) USGS map (Attachment B). Although the historic plat map (FDEP 1847e) and surveyors' notes (FDEP 1847f) for this Township and Range did not include the vicinity of the study area, the land to the north was described as wet prairie.

Modern drainage has drastically changed the nature of the environment of the study area during the past century. Historic aerial photographs from 1940 and 1968 were examined to obtain information regarding land use during the 20th century (FDOT, Surveying and Mapping Office 2018; University of Florida, George A. Smathers Libraries 2018) (Attachment D). In 1940, the area was a low grassy area with a few scattered wetlands. By 1968, a road and small ditch had been constructed along the western border of the study area and small ditches have been excavated throughout. The area does not appear to have been under cultivation. Modern aerials show that the drainage ditches are no longer maintained and most are no longer visible.

A review of the 1947 *Soil Survey Detailed-Reconnaissance, Dade County, Florida* (USDA 1958) notes that the southwest and south portions of the study area formerly contained poorly to very poorly drained Perrine marl, peat substratum phase. This soil type differed from Perrine marl "in having a 12- to 48-in layer of brown fibrous organic material between the surface layer of marl and the underlying limestone" (USDA 1958:26). The remainder of the study area contains Perrine marl, shallow, peat substratum phase. This soil type had "a 6- to 12-inch layer of brown, fibrous organic matter between the surface layer of marl and the underlying limestone" (USDA 1958:27).

The *Soil Survey of Dade County Area, Florida* (USDA 1996) indicates that the study area mostly contains very poorly drained Biscayne marl. This shallow soil is found on broad, low coastal flats, in freshwater marshes and sloughs, and in small depressional areas. It is covered in water between two and four months of the year and the water table can be as deep as 20 inches during dry periods. Natural vegetation consists of sawgrass, cattails, primrose willow, smooth cordgrass, buttonbush, boneset, gulf muhly, broom sedge, and water-tolerant sedges and grasses (USDA 1996:20–21). The western side of the study area contains Perrine marl and Lauderhill muck, depressional. The latter is a very poorly drained soil found in narrow drainageways and broad open areas within sawgrass marshes. The much is approximately 30 inches deep and underlain by limestone. This soil type is typically covered by water most of the year. Natural vegetation consists of cattail and sawgrass (USDA 1996:14–15).

Before modern drainage, the area was low flats with scattered wetlands. No hammocks or areas of higher ground were identified. Based on the review of environmental variables, the study area has a low archaeological site potential.

Parcel 3089010000010-45300-080 Desktop Analysis

Cultural Resource Surveys

A search of FMSF identified two previously conducted surveys that contain the study area. FMSF Manuscript Nos. 602 and 2127 are County-wide surveys from the 1980s that did not comprehensively survey the current study area for archaeological or historic resources.

Archaeological Sites
A search of the FMSF data identified no archaeological sites within the study area. This review also identified no previously recorded archaeological sites within one mile of the study area.

Historic Resources
There are no previously recorded historic resources located within the study area. The review of the historic aerial photographs did not identify any potential historic resources within or adjacent to the parcel.

Property Appraiser Records
A search of the Miami-Dade County Property Appraiser records did not identify any parcels within the study area with an AYRB dates indicative of containing buildings with a construction year before or during 1970.

Archaeological Desktop Analysis Results
The study area is located in Section 1 of Township 58 South, Range 39 East on the Homestead (1988) USGS map (Attachment B). A review of the GLO historic plat map (FDEP 1875) and surveyors' field notes (FDEP 1874) indicated that the study area was formerly located in a marsh (Attachment C). Neither the maps nor surveyors' note illustrated or described any hammocks, forts, trails, or camps within or adjacent to the study area.

Historic aerial photographs from 1940 and 1968 were examined to obtain information regarding land use during the 20th century (FDOT, Surveying and Mapping Office 2018; University of Florida, George A. Smathers Libraries 2018) (Attachment D). In 1940, the area was a low grassy area with a few scattered wetlands. The 1968 aerial shows no changes in the study area although small drainage ditches had been excavated to the north and east of the study area. Modern aerials illustrate an area that has not been improved and remains a low grassy area with scattered wetlands.

A review of the 1947 *Soil Survey Detailed-Reconnaissance, Dade County, Florida* (USDA 1958) notes that the study area formerly contained poorly to very poorly drained Perrine marl, peat substratum phase; and Perrine marl, shallow, peat substratum phase (USDA 1958:26–27). The *Soil Survey of Dade County Area, Florida* (USDA 1996) indicates that the study area mostly contains very poorly drained Biscayne marl (USDA 1996:20–21). The western boundary of the study area contains Perrine marl and Lauderhill muck, depressional (USDA 1996:14–15).

The study area is low and flat with scattered wetlands. No hammocks or areas with higher elevation was identified during the background research. Based on the review of environmental variables, the study area has low archaeological site potential.

Historic Resources Results
The FMSF background search identified no previously recorded historic resources within the historic resources study area. The Miami-Dade County property appraiser data identified no potential historic resources.

Conclusions

No previously recorded archeological sites or historic resources are located within any of the study areas. A review of historic aerials identified three unnamed and unrecorded drainage ditches within Parcel 3070080000070-45800-171 associated with agricultural activity. These agricultural ditches are generally considered National Register–ineligible. Based on the review of environmental variables, the study area exhibits a low archaeological site potential.

References

Florida Department of Environmental Protection (FDEP)

1845 Surveyors' Notes for Township 55 South, Range 40 East. Land Boundary Information System. Electronic document, http://www.labins.org/survey_data/landrecords/landrecords.cfm, accessed September 10, 2018.

1847a Plat Map for Township 55 South, Range 40 East. Land Boundary Information System. Electronic document, http://www.labins.org/survey_data/landrecords/landrecords.cfm, accessed September 10, 2018.

1847b Plat Map for Township 56 South, Range 40 East. Land Boundary Information System. Electronic document, http://www.labins.org/survey_data/landrecords/landrecords.cfm, accessed September 10, 2018.

1847c Surveyors' Notes for Township 55 South, Range 40 East. Land Boundary Information System. Electronic document, http://www.labins.org/survey_data/landrecords/landrecords.cfm, accessed September 10, 2018.

1847d Surveyors' Notes for Township 56 South, Range 40 East. Land Boundary Information System. Electronic document, http://www.labins.org/survey_data/landrecords/landrecords.cfm, accessed September 10, 2018.

1847e Plat Map for Township 57 South, Range 39 East. Land Boundary Information System. Electronic document, http://www.labins.org/survey_data/landrecords/landrecords.cfm, accessed September 10, 2018.

1847f Surveyors' Notes for Township 57 South, Range 39 East. Land Boundary Information System. Electronic document, http://www.labins.org/survey_data/landrecords/landrecords.cfm, accessed September 10, 2018.

1874 Surveyors' Notes for Township 58 South, Range 39 East. Land Boundary Information System. Electronic document, http://www.labins.org/survey_data/landrecords/landrecords.cfm, accessed September 10, 2018.

1875 Plat Map for Township 58 South, Range 39 East. Land Boundary Information System. Electronic document, http://www.labins.org/survey_data/landrecords/landrecords.cfm, accessed September 10, 2018.

Florida Department of Transportation (FDOT), Office of Surveying and Mapping

1996–2018 Aerial Photography Archive. Electronic documents, https://fdotewp1.dot.state.fl.us/AerialPhotoLookUpSystem/, accessed September 11, 2018.

University of Florida, George A. Smathers Libraries

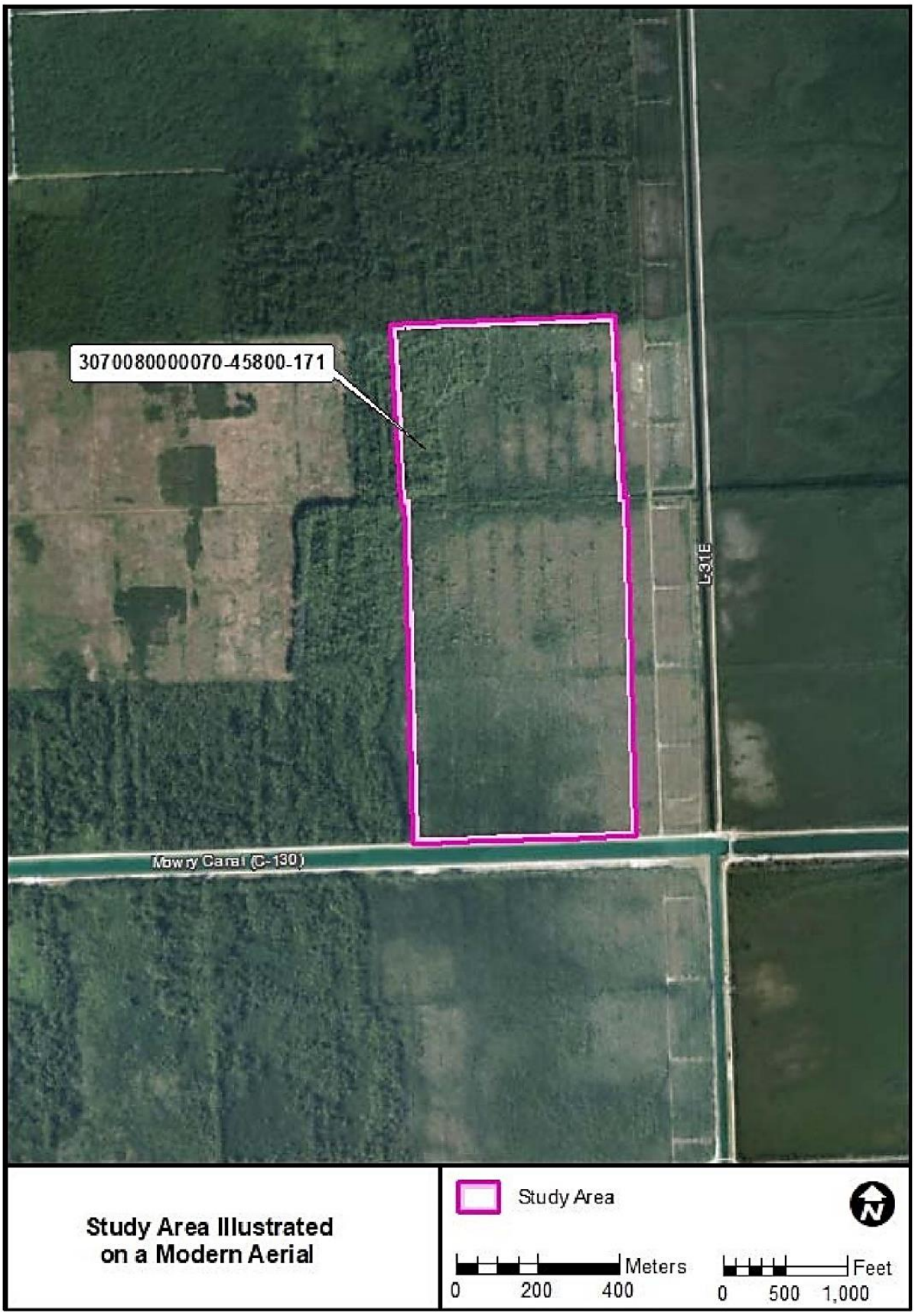
1999–2016 Aerial Photography: Florida Collection. University of Florida Digital Collections. Electronic documents, http://ufdc.ufl.edu/aerials/, accessed September 11, 2018.

United States Department of Agriculture (USDA)
1958 *Soil Survey (Detailed-Reconnaissance), Dade County Florida.* Series 1947, No. 7. United States Department of Agriculture/Soil Conservation Service.
1996 *Soil Survey of Dade County Area, Florida.* United States Department of Agriculture/Natural Resources Conservation Service.

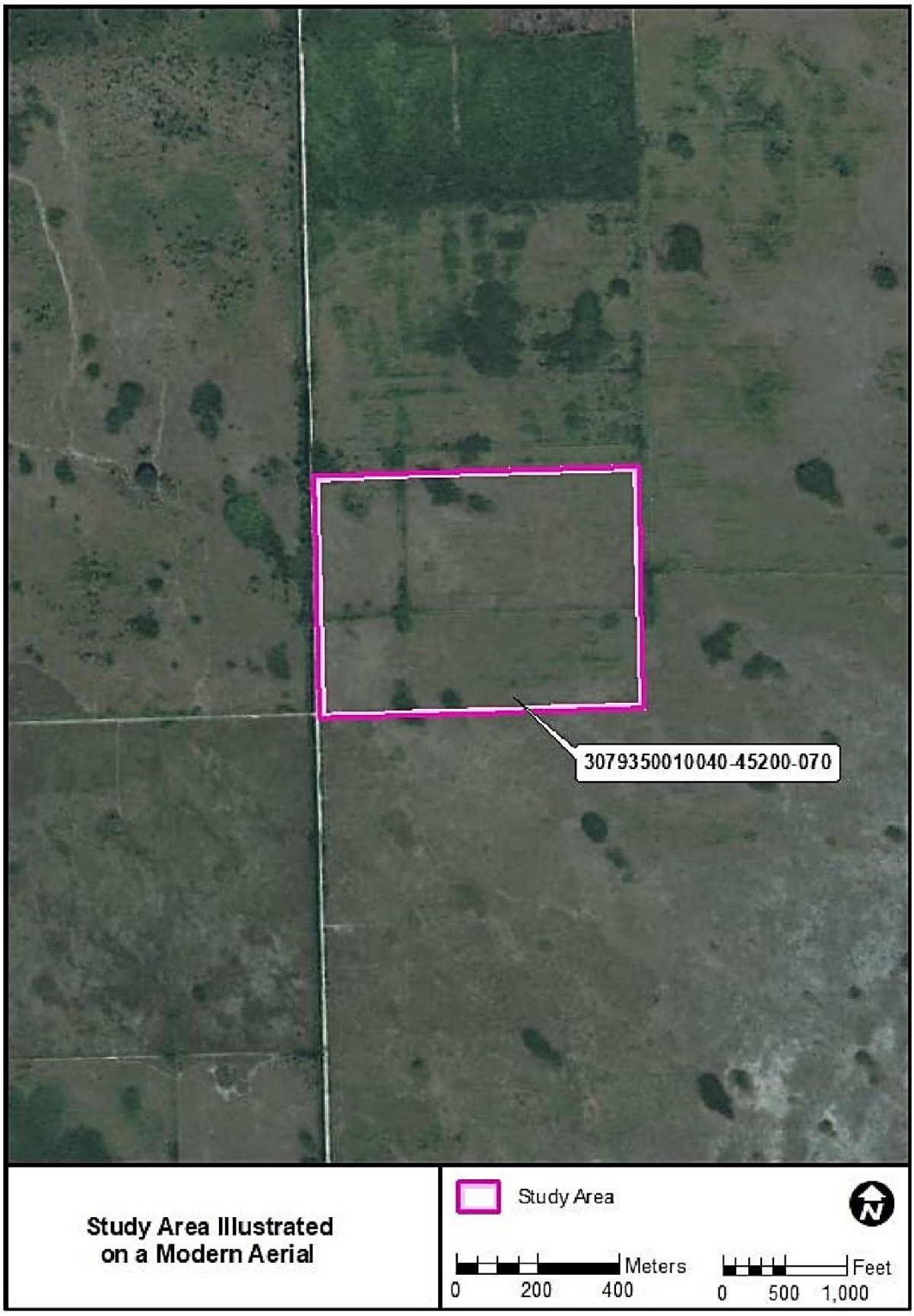
Attachment A:
Study Areas Illustrated on
Modern Aerial Photographs

Study Area Illustrated on a Modern Aerial

Study Area Illustrated on a Modern Aerial



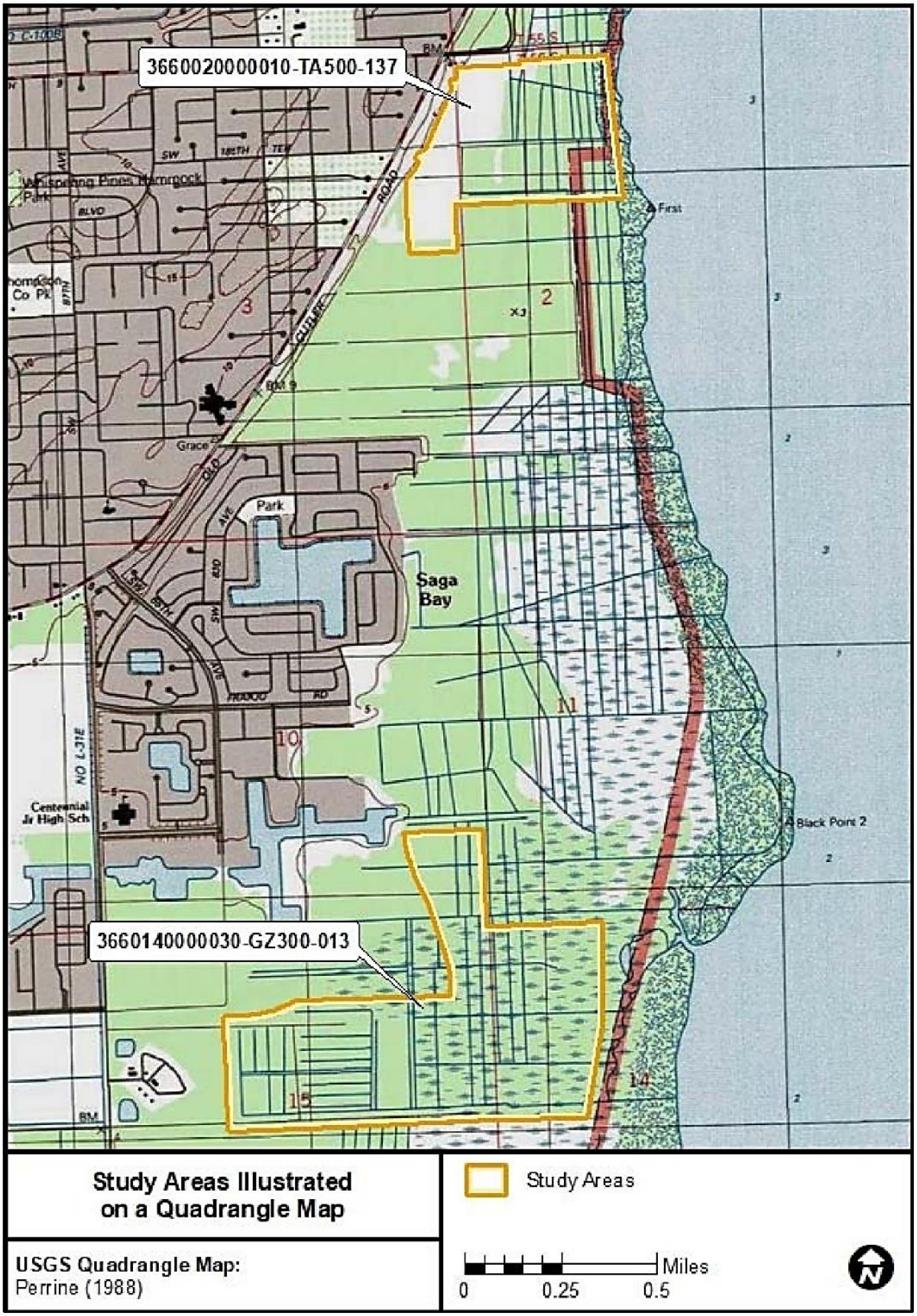
Study Area Illustrated on a Modern Aerial



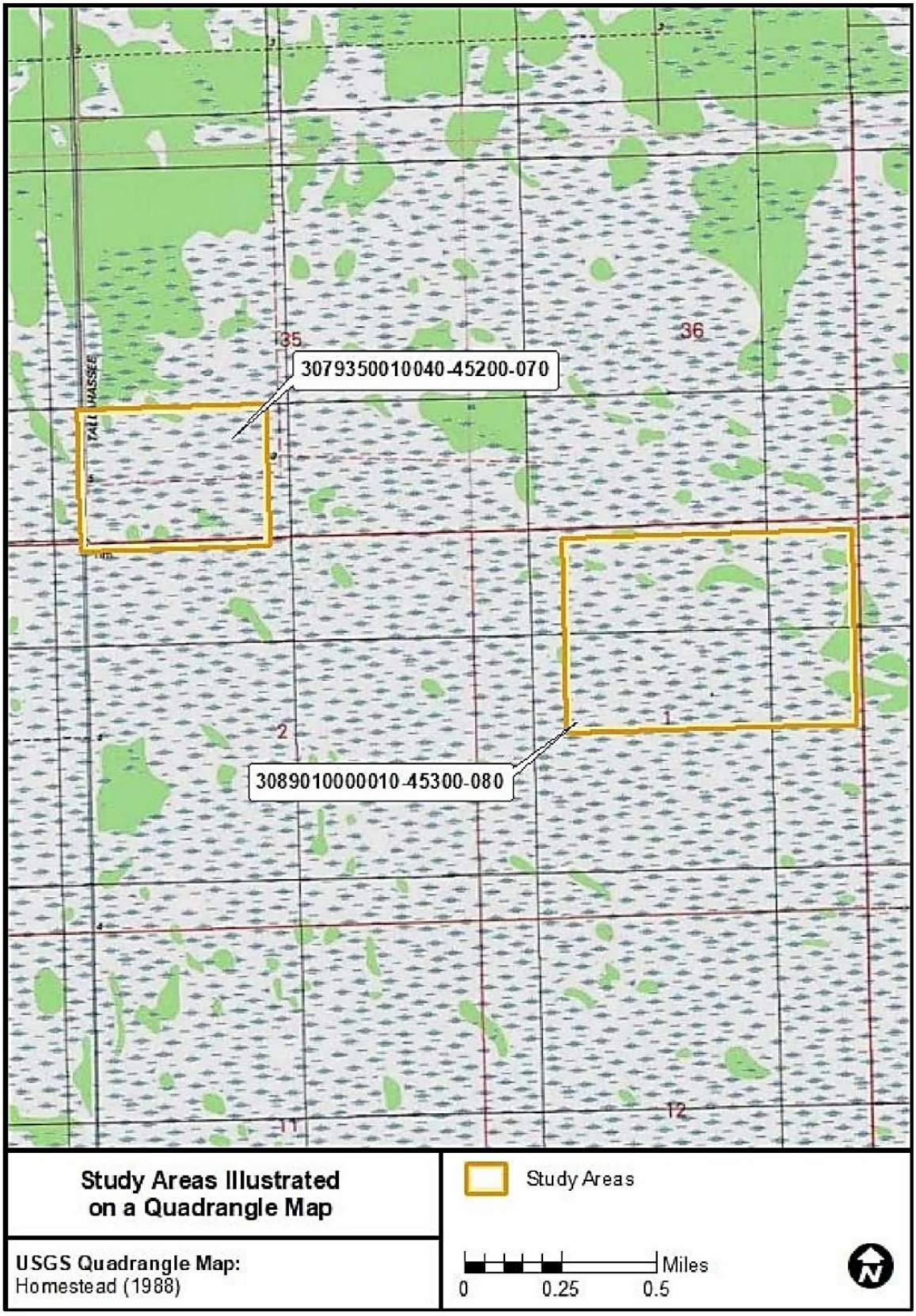
Study Area Illustrated on a Modern Aerial

Study Area Illustrated on a Modern Aerial

Attachment B:
Study Areas Illustrated on
Quadrangle Maps


3660020000010-TA500-137
3660140000030-GZ300-013
Saga Bay
Park
Grace
Centennial Jr High Sch
Black Point 2
First
Study Areas Illustrated on a Quadrangle Map
Study Areas
USGS Quadrangle Map:
Perrine (1988)
Miles
0
0.25
0.5


3070080000070-45800-171
LEVEE
MILITARY
ROAD ON LEVEE
CANAL
RESTRICTED
Floodgate
X BM 5
8
9
17
16
MOWRY
DRIVE
MOWRY
CANAL
NO C 103
NORTH
CANAL
NORTH
CANAL
DRIVE
Gaging Station
BM 7
Boat Ramps
HOMESTEAD BAYFRONT
COUNTY PARK
NATIONAL
PARK
20
21
Study Area Illustrated on a Quadrangle Map
USGS Quadrangle Map:
Arsenicker Keys (1988)
Study Area
Miles
0
0.25
0.5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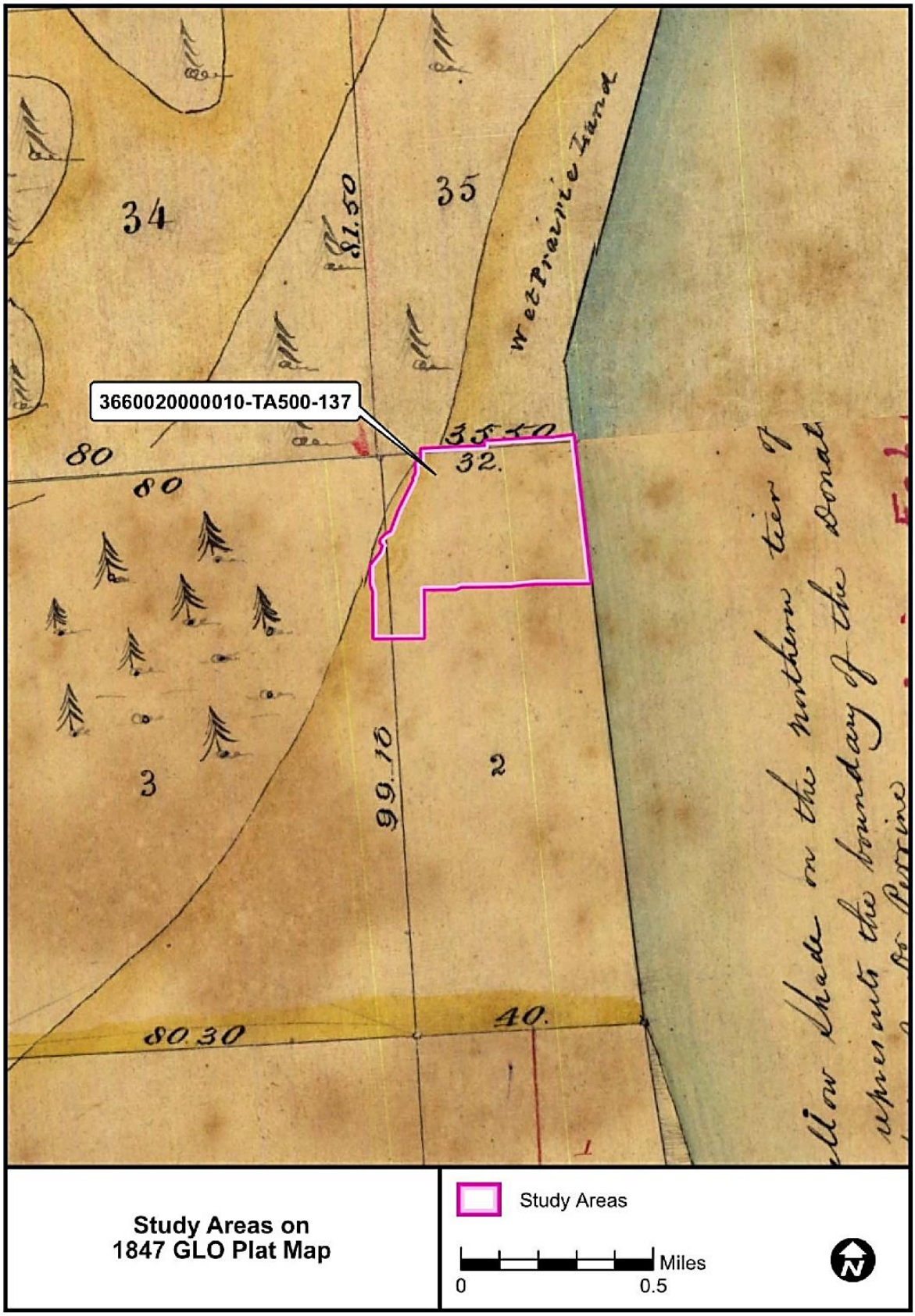
2
1
3089010000010-45300-080
11
12
Study Areas Illustrated on a Quadrangle Map
Study Areas
USGS Quadrangle Map:
Homestead (1988)
Miles
0
0.25
0.5

Attachment C:
Study Areas Illustrated on
Historic Plat Maps


34
35
81.50
Wez Prairie Land
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80
80
35.40
32.
3
2
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40.
1
Study Areas on
1847 GLO Plat Map
Study Areas
Miles
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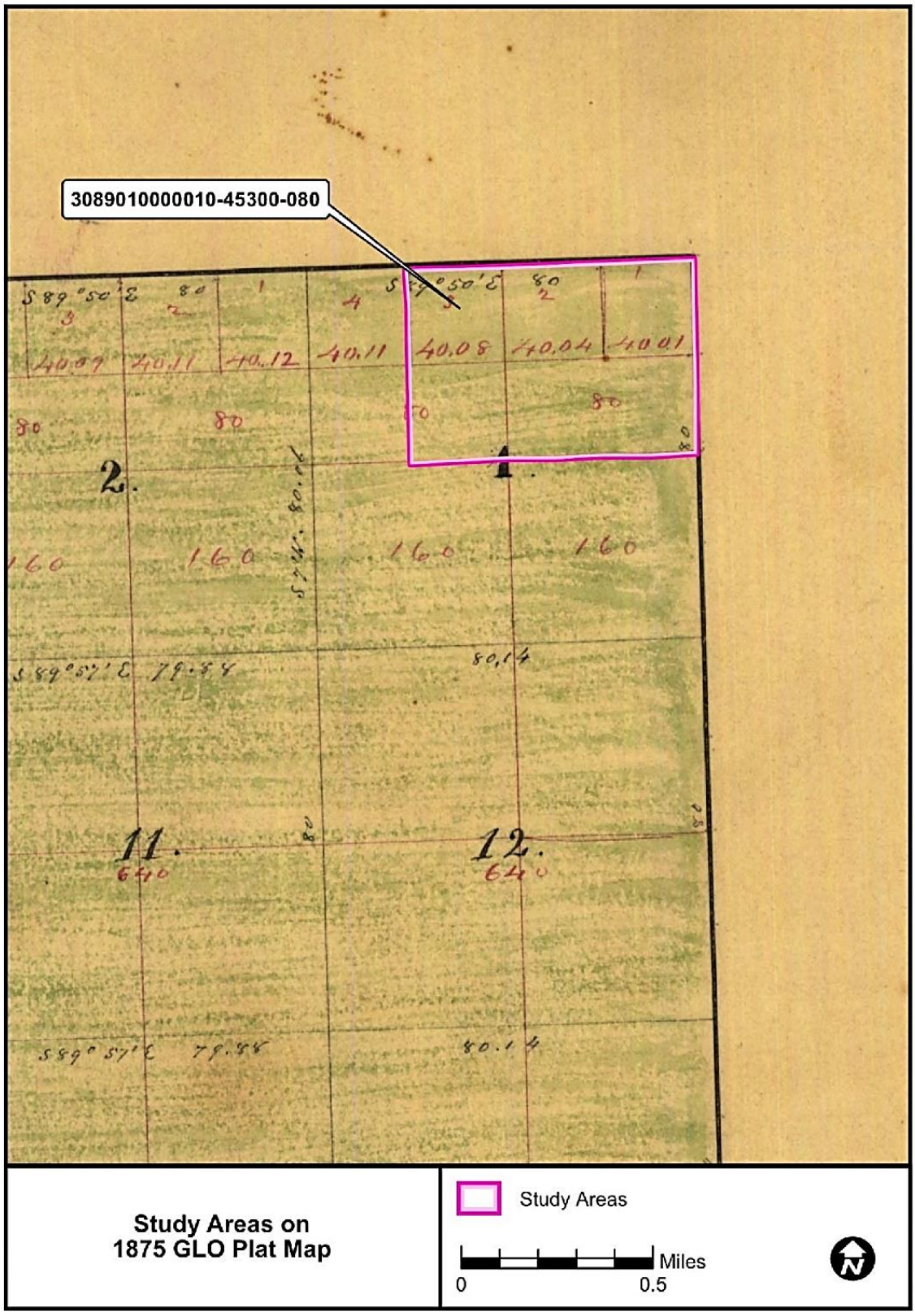
0.5
N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S 89° 50' E
40.09
40.11
40.12
40.11
40.08
40.04
40.01
80
160
2.
1.
11.
640
12.
640
S 89° 57' E 79.84
80.14
Study Areas on
1875 GLO Plat Map
Study Areas
Miles
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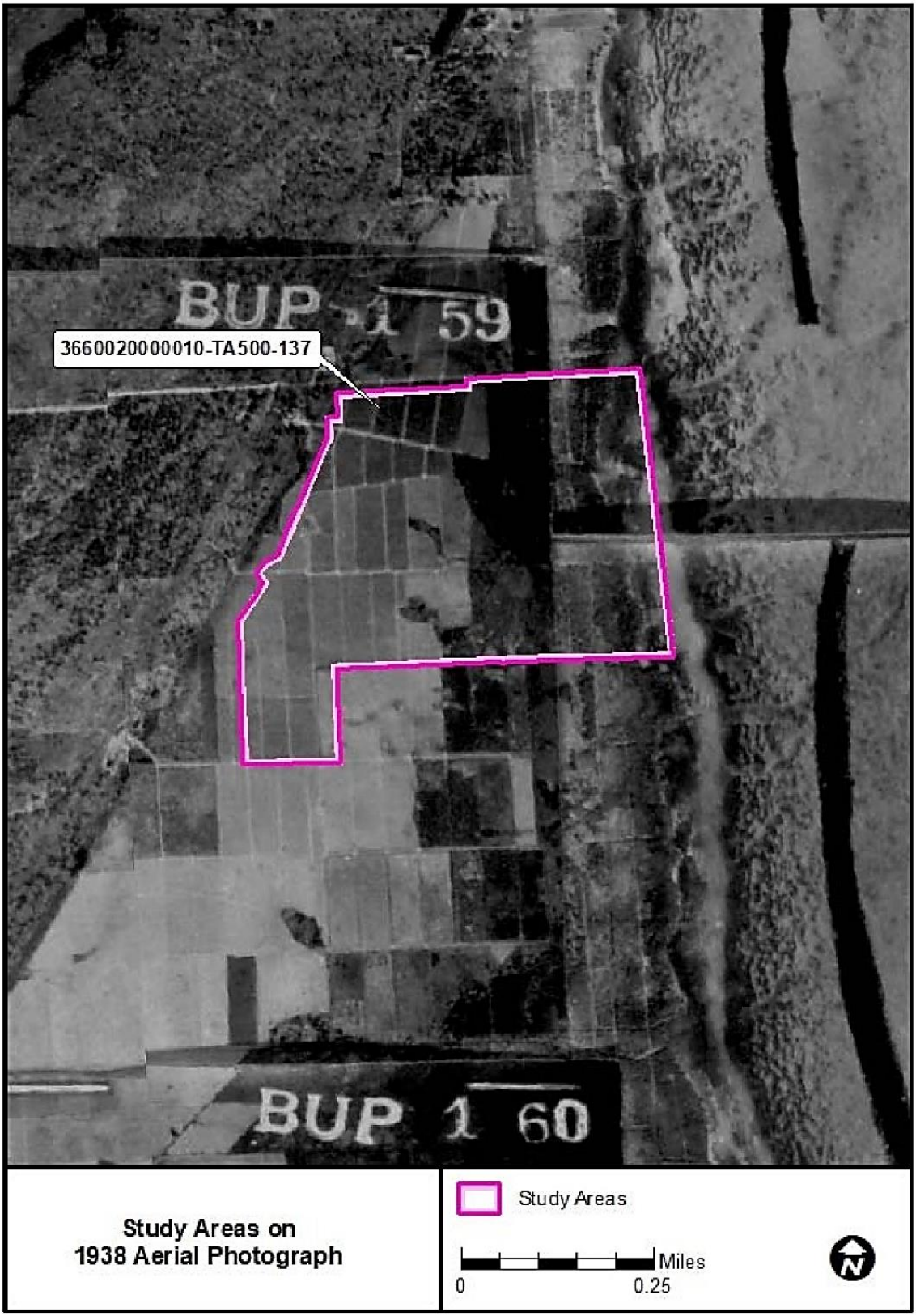
0.5
N


BUP 1 59
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BUP 1 60
Study Areas on
1938 Aerial Photograph
Study Areas
Miles
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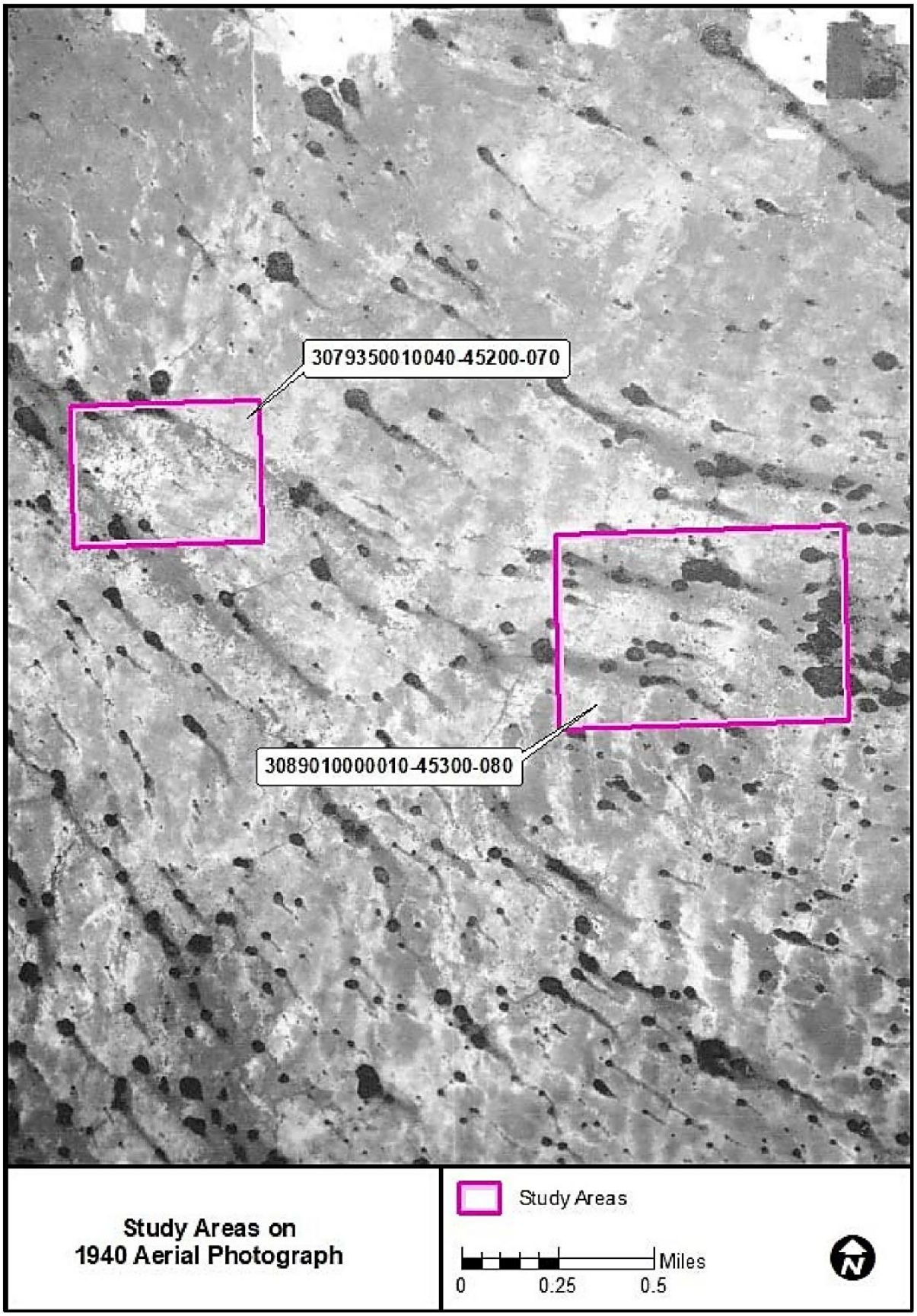
0.25
N


F
3660020000010-TA500-137
Study Areas on
1968 Aerial Photograph
Study Areas
Miles
0
0.25
N


A 563-1V 75
3070080000070-45800-171
Mowry Canal (C-130)
Study Areas on
1944 Aerial Photograph
Study Areas
Miles
0
0.25
N

Study Area on 1968 Aerial Photograph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Study Areas on
1940 Aerial Photograph
Study Areas
Miles
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0.25
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6 3-24-68 F
3079350010040-45200-070
3089010000010-45300-080
Study Areas on
1968 Aerial Photograph
Study Areas
Miles
0
0.25
0.5
N

Attachment E:
***Archaeological Reconnaissance of the Biscayne Bay Project Area, Miami-Dade County* (Janus Research 2006)**

ARCHAEOLOGICAL RECONNAISSANCE OF THE BISCAYNE BAY PROJECT AREA

Miami-Dade County

Prepared for:

South Florida Water Management District
3301 Gun Club Road
West Palm Beach, FL 33406

Prepared by:

Janus Research
1300 North Westshore Boulevard, Suite 100
Tampa, Florida 33607

FINAL REPORT

April 2006

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INTRODUCTION

At the request of the South Florida Water Management District (SFWMD), Janus Research conducted an archaeological reconnaissance of the Biscayne Bay Coastal Wetlands Selected Parcels project area located in Miami-Dade County (Figure 1). Fieldwork was conducted during March of 2006. The purpose of this reconnaissance was to identify areas that have potential for containing unrecorded archaeological sites and, if possible, to identify sites with surface expression. Principal Investigators meet the *Secretary of the Interior's Professional Qualification Standards* (48 CFR 44716). The archaeological reconnaissance was conducted under the direction of John Whitaker, M.A.

The Biscayne Bay Coastal Wetlands Selected Parcels project area consist of three parcels (GZ300-001, GZ300-013, and GZ300-015) located in Sections 10, 11, 14, and 15 of Township 56 South and Range 40 East on the Perrine USGS Quadrangle (1988; Figure 2). The literature search revealed that no previously recorded archaeological sites or historic resources exist within the study area. Photographs of the project area are provided in Appendix A.

The archaeological reconnaissance identified no archaeological sites within the Biscayne Bay project area. Based on the results of the reconnaissance survey, which consisted of an intensive pedestrian survey and visual inspection, archaeological site potential zones were developed for the project area. A cultural resource assessment survey is recommended to identify any cultural resources within the project area. No potential historical resources were observed within or adjacent to the project area.

Figure 1: General Location of the Project Area

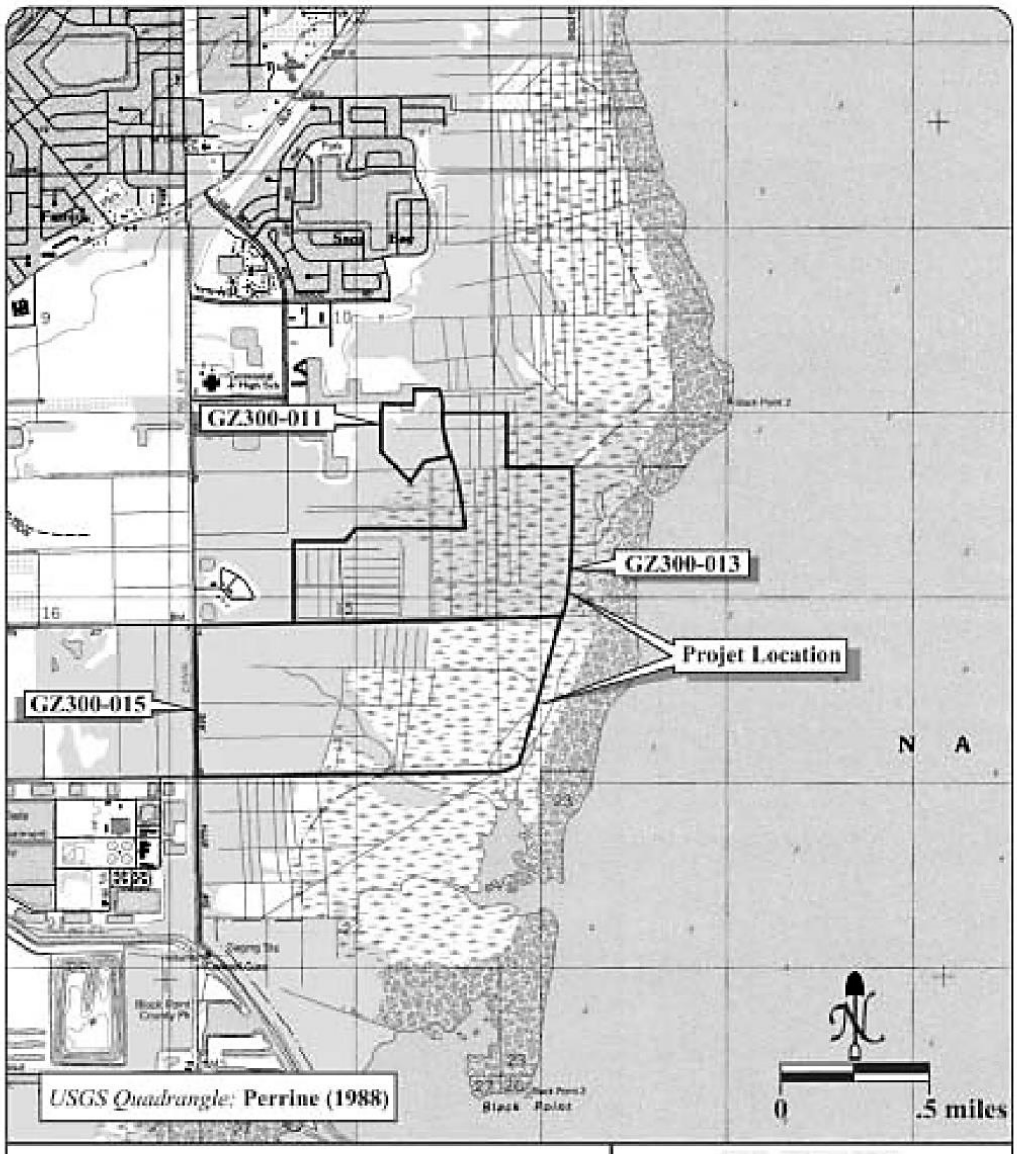


Figure 2: Biscayne Bay Coastal Wetlands Selected Parcels Project Area

BACKGROUND RESEARCH

Background research of the Biscayne Bay project area was performed to identify areas of archaeological site potential and previously recorded archaeological sites. This analysis included an archaeological literature and background information search pertinent to the project area. This search enabled a determination of the types, chronological placement, and location patterning of known archaeological sites within and adjacent to the project area. This included a search of the Florida Master Site File (FMSF), county and local site inventories, books and journal articles, and unpublished Cultural Resource Management (CRM) reports.

Additionally, the environmental conditions and the cultural context of the project area were reviewed as they relate to the prediction of the location of precontact and historic archaeological sites. The designation of zones based on their potential for containing archaeological sites, or site potential zones, was based on previous research conducted within the various archaeological regions of Florida. Four environmental factors were employed in predicting site locations: soil type (soil drainage), distance to fresh (potable) water, distance to hardwood hammocks, and relative topography. The relative importance of each of these variables depends upon the composite environmental setting. In a sand hill environment, for example, a majority of the known sites are located near a water source on a ridge slope. If a water source is not located in the vicinity, the probability of site occurrence decreases dramatically. Water will not be a determining factor, however, if another resource with more limited distribution, such as stone for tool manufacture, is available. In areas of relatively low relief and abundant wetlands, areas of higher elevation relative to the surrounding terrain would be considered more likely to contain sites.

The project area consists of pine rocklands and tidal swamps. Tidal swamps occur on floodplains and near the mouths of rivers, often close to or along the coastline. Typical plants found in these low energy brackish enivronments include red mangrove, black mangrove, white mangrove and buttonwood. These three varieties of mangrove are low and dense with white mangrove growing on the higher points along the shoreline and red mangrove growing in the deepest water. The tidal swamp is also home to a variety of animals, including the mangrove water snake, brown pelican, white ibis, osprey, blad eagle, and other birds associated with marine environments. These areas are also abundant in marine life. Sponge, oyster, mangrove tree crabs, fiddler crabs, black-tipped shark, lemon shark, nurse shark bonnet-head shark, rays, tarpon, ladyfish, bonefish, menhaden, sardines, lookdown, permit, snapper, sheepshead, porgies, pinfish, and mullet are common species found in and around these waters (Florida Department of Natural Resources/Florida Natural Areas Inventory [FNAI/DNR] 1990).

Pine rocklands occur on elevated areas often associated with outcrops and underlying formations of oolitic limestones along the Atlantic Coatal Ridge and the Silver Bluff Scarp. The terrain is characterized as well drained, but this is dependent upon the amount of soil accumulation and the porosity of the limestones.These forests are primarily characterized by slash pine and a variety of underlying palms such as pametto, cabbage palm, and silver palm. Other plants found within these forests include gallberry, velvet seed, blolly, locustberry, myrsine, tetazygia, varnish leaf, marlberry, indigo berry, poisonwood, burstic, live oak,

stoppers, shining sumac, satin leaf, wild tamarind, rubber vine, snowberry, broomsedge, wiregrass, muhly grass, rattlebox, partridge pea, oontie, and pinefern. Additionally, Brazilian pepper and other evasive plants have begun to invaded the pine rockland environment. Southeastern five-lined skink, ringneck snake, pygmy rattlesnake, red-shouldered hawk, Carolina wren, eastern bluebird, pine warbler, oppossum, marsh rabbit, cotton rat, cotton mouse, raccoon, and bobcat are often found inhabiting this environment (FNAI/DNR 1990).

According to the Soils Survey of Dade County (U.S. Department of Agriculture [USDA] 1996), the only natural soil type in the project area is Perrine marl, tidal. This soil type is described as a very poorly drained soil associated with tidal swamps near the coast. Under natural conditions, areas of this soil type remain saturated and the water table fluctuates with the tides. Permeability is moderately slow (USDA 1996:26).

Two cultural resources assessment surveys have been conducted within the general vicinity of the project area and Table 1 describes these surveys. The current project area has not been previously subjected to a cultural resources assessment survey. The FMSF records search revealed no previously recorded archaeological sites located within one mile of the project area.

A review of the historic plat map of 1847 and the original surveyor's notes (Florida Department of Environmental Protection [FDEP] 1847) indicates that there are no military forts, roads, encampments, battlefields, homesteads, or historical Native American villages or trails located within at least three miles of the project area. Additionally, the map indicates that the parcels contained "soft wet prairie land" or "wet marshy prairie" (Florida Department of Environmental Protection [FDEP] 1847).

Table 1. Surveys Conducted in the Vicinity of the Project Area

SURVEY NAME	AUTHOR AND DATE	SURVEY #
Dade County Historic Survey, Phase II, Final Report.	Metropolitan Dade County 1989	2127
An Archaeological and Historical Survey of the FGGF Tower Location in Miami-Dade County, Florida	Panamerican Consultants, Inc.,	8965

METHODS

The reconnaissance survey included a visual inspection and intensive pedestrian survey to field-check archaeological site potential zones based on the background research and to locate potentially historic resources and obvious archaeological sites such as mounds, cemeteries, middens, or other surface features. No subsurface testing was conducted during this reconnaissance.

RESULTS AND CONCLUSIONS

The archaeological reconnaissance identified no archaeological sites within the Biscayne Bay project area. Based on the results of the reconnaissance survey, archaeological site potential zones were developed for the project area (Figure 3). A large area of slash pines and occasional scrub live oaks was observed in the northwestern quarter of Parcel GZ300-015, indicating a pine rockland area adjacent to the mangrove flats. Additionally, there is a small creek running through this area. Similar areas in southern Florida have yielded prehistoric archaeological sites. Therefore, this area is considered to have high to moderate site potential. A cultural resource assessment survey is recommended to identify any archaeological resources within the project area. Site potential zones may be further refined during fieldwork based on the results of subsurface testing. No potential historical resources were observed within or adjacent to the project area.

Unanticipated Finds

Should eventual construction activities associated with this project uncover any archaeological materials, it is recommended that activity in the immediate area be stopped while a professional archaeologist evaluates them. In the event that human remains are found during construction or maintenance activities, the provisions of Chapter 872.05 of the Florida Statutes will apply. Chapter 872.05 states that, when human remains are encountered, all activity that might disturb the remains shall cease and may not resume until authorized by the District Medical Examiner (if less than 75 years old) or the State Archaeologist (if more than 75 years old).

Curation

An original Survey Log sheet is curated at the Florida Master Site File in Tallahassee, along with a copy of this report. Field notes and other pertinent project records are temporarily stored at Janus Research and returned to the client, as appropriate.

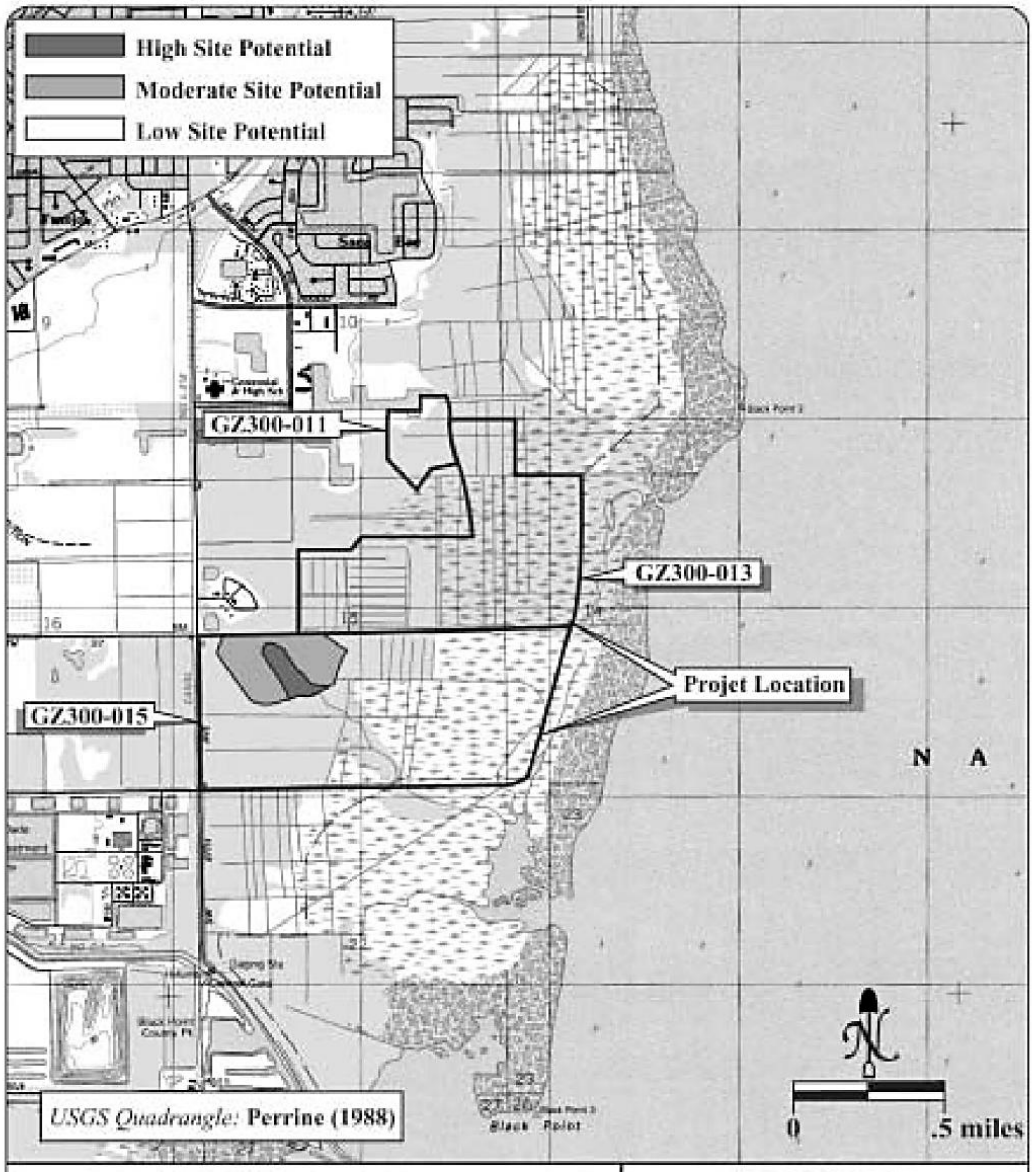


Figure 3: Site Potential Zones

REFERENCES CITED

Florida Department of Environmental Protection (FDEP)
1844 Plat Map for Township 46 South, Range 34 East.

Florida Department of Natural Resources/Florida Natural Areas Inventory (FNAI/DNR)
1990 *Guide to the Natural Communities of Florida*. Florida Natural Areas Inventory and Florida Department of Natural Resources, Tallahassee.

Metropolitan Dade County
1989 Dade County Historic Survey, Phase II, Final Report. Manuscript on file at the Bureau of Archaeological Research, Florida Division of Historical Research, Tallahassee.

Panamerican Consultants, Inc.
2003 An Archaeological and Historical Survey of the FGGF Tower Location in Miami-Dade County, Florida. Manuscript on file at the Bureau of Archaeological Research, Florida Division of Historical Research, Tallahassee.

United States Department of Agriculture (USDA)
1990 *Soil Survey of Hendry County, Florida*. USDA/ Soil Conservation Service.

APPENDIX A:

PHOTOGRAPHS OF PROJECT AREA

Mangrove Swamp Located Near a Stream within Project Area, Facing South

Mangrove Swamp to the South of the Project Area, Looking North from the Bermed Road Lined with Australian Pines

Looking Northwest toward the Pine Rocklands from the Edge of the Mangrove Swamp

Janus Research Crew Conducting the Pedestrian Survey through Mangrove Swamp

APPENDIX B:

SURVEY LOG SHEET

Ent D (FMSF only)__/__/__

Survey Log Sheet

Florida Master Site File
Version 2.0 9/97

Survey # (FMSF only)_____

Consult *Guide to the Survey Log Sheet* for detailed instructions.

Identification and Bibliographic Information

Survey Project (Name and project phase)
Biscayne Bay Project Area Reconnaissance Survey

Report Title (exactly as on title page)
Archaeological Reconnaissance of the Biscayne Bay Project Area, Miami-Dade County

Report Author(s) (as on title page— individual or corporate; last names first)
Janus Research, Inc.

Publication Date (year) 2006 **T**otal Number of Pages in Report (Count text, figures, tables, not site forms) 8

Publication Information (If relevant, series and no. in series, publisher, and city. For article or chapter, cite page numbers. Use the style of *American Antiquity*: see *Guide to the Survey Log Sheet.*)
Janus Research, 1300 N. Westshore Blvd, Suite 100, Tampa FL

Supervisor(s) of Fieldwork (whether or not the same as author[s]; last name first) Whitaker, John

Affiliation of Fieldworkers (organization, city) Janus Research, Tampa

Key Words/Phrases (Don't use the county, or common words like *archaeology, structure, survey, architecture.* Put the most important first. Limit each word or phrase to 25 characters.)
Biscayne Bay, SFWMD, pine rocklands

Survey Sponsors (corporation, government unit, or person who is directly paying for fieldwork)
Name South Florida Water Management District
Address/Phone

Recorder of *Log Sheet* Amber Yuellig Date *Log Sheet* Completed 4/17/06

Is this survey or project a continuation of a previous project? ☑ No ☐ Yes: Previous survey #(s) [FMSF only]

Mapping

Counties (List each one in which field survey was done - do not abbreviate; use supplement sheet if necessary)
Miami-Dade County

USGS 1:24,000 Map(s) : Map Name/Date of Latest Revision (use supplement sheet if necessary):
Perrine (1988)

Description of Survey Area

Dates for Fieldwork: Start 3/27/06 End 3/29/06 **T**otal Area Surveyed (fill in one) _____ hectares 700 acres
Number of Distinct Tracts or Areas Surveyed 1
If Corridor (fill in one for each): **W**idth _____ meters _____ feet **L**ength _____ kilometers _____ miles

HR6E06610-97 Florida Master Site File, Division of Historical Resources, Gray Building, 500 South Bronough Street, Tallahassee, Florida 32399-0250
***Phone* 850-245-6440,*Suncom* 205-6440, *FAX* 850-245-6439, *Email* fmsfile@mail.dos.state.fl.us, *Web* http://www.dos.state.fl.us/dhr/msf/**
P:\FSF\DOCS\MOM\mom_docs\Logshetx.doc 10/26/01 3:06 PM

Survey Log Sheet of the Florida Master Site File

Research and Field Methods

Types of Survey (check all that apply): ☑ archaeological ❑ architectural ❑ historical/archival ❑ underwater ❑ other:__________

Preliminary Methods (✓Check as many as apply to the project as a whole. If needed write others at bottom).

❑ Florida Archives (Gray Building)
❑ library research- *local public*
❑ local property or tax records
❑ windshield
❑ Florida Photo Archives (Gray Building)
❑ library-special collection - *nonlocal*
❑ newspaper files
☑ aerial photography
☑ FMSF site property search
☑ Public Lands Survey (maps at DEP)
☑ literature search
☑ FMSF survey search
❑ local informant(s)
❑ Sanborn Insurance maps
☑ other (describe) Janus Research Library

Archaeological Methods (Describe the proportion of properties at which method was used by **writing in** the corresponding letter. Blanks are interpreted as "None.")

F(-ew: 0-20%), **S**(-ome: 20-50%); **M**(-ost: 50-90%); or **A**(-ll, Nearly all: 90-100%). If needed write others at bottom.

❑ Check here if **NO** archaeological methods were used.

___ surface collection, controlled
___ other screen shovel test (size: ____)
___ block excavation (at least 2x2 M)
_M_ surface collection, **un**controlled
___ water screen (finest size: ____)
___ soil resistivity
___ shovel test-1/4"screen
___ posthole tests
___ magnetometer
___ shovel test-1/8" screen
___ auger (size:____)
___ side scan sonar
___ shovel test 1/16"screen
___ coring
___ unknown
___ shovel test-unscreened
___ test excavation (at least 1x2 M)
___ other (describe):

Historical/Architectural Methods (Describe the proportion of properties at which method was used by **writing in** the corresponding letter. Blanks are interpreted as "None.")

F(-ew: 0-20%), **S**(-ome: 20-50%); **M**(-ost: 50-90%); or **A**(-ll, Nearly all: 90-100%). If needed write others at bottom.

☑ Check here if **NO** historical/architectural methods were used.

___ building permits
___ demolition permits
___ neighbor interview
___ subdivision maps
___ commercial permits
___ exposed ground inspected
___ occupant interview
___ tax records
___ interior documentation
___ local property records
___ occupation permits
___ unknown
___ other (describe):

Scope/Intensity/Procedures

A pedestrian survey of all non-inundated areas was conducted by field crews to look for evidence of prehistoric sites. No subsurface testing was conducted. Environmental variables observed in the field that are thought to be conducive to prehistoric site location were noted on field aerials.

Survey Results (cultural resources recorded)

Site Significance Evaluated? ❑Yes ☑No If *Yes*, circle NR-eligible/significant site numbers below.

Site Counts: Previously Recorded Sites 0 **Newly Recorded Sites** 0

Previously Recorded Site #'s with Site File Update Forms (List site #'s without "8." Attach supplementary pages if necessary)

N/A

Newly Recorded Site #'s (Are you sure all are originals and not updates? Identify methods used to check for updates, ie, researched the FMSF records. List site #'s without "8." Attach supplementary pages if necessary.)

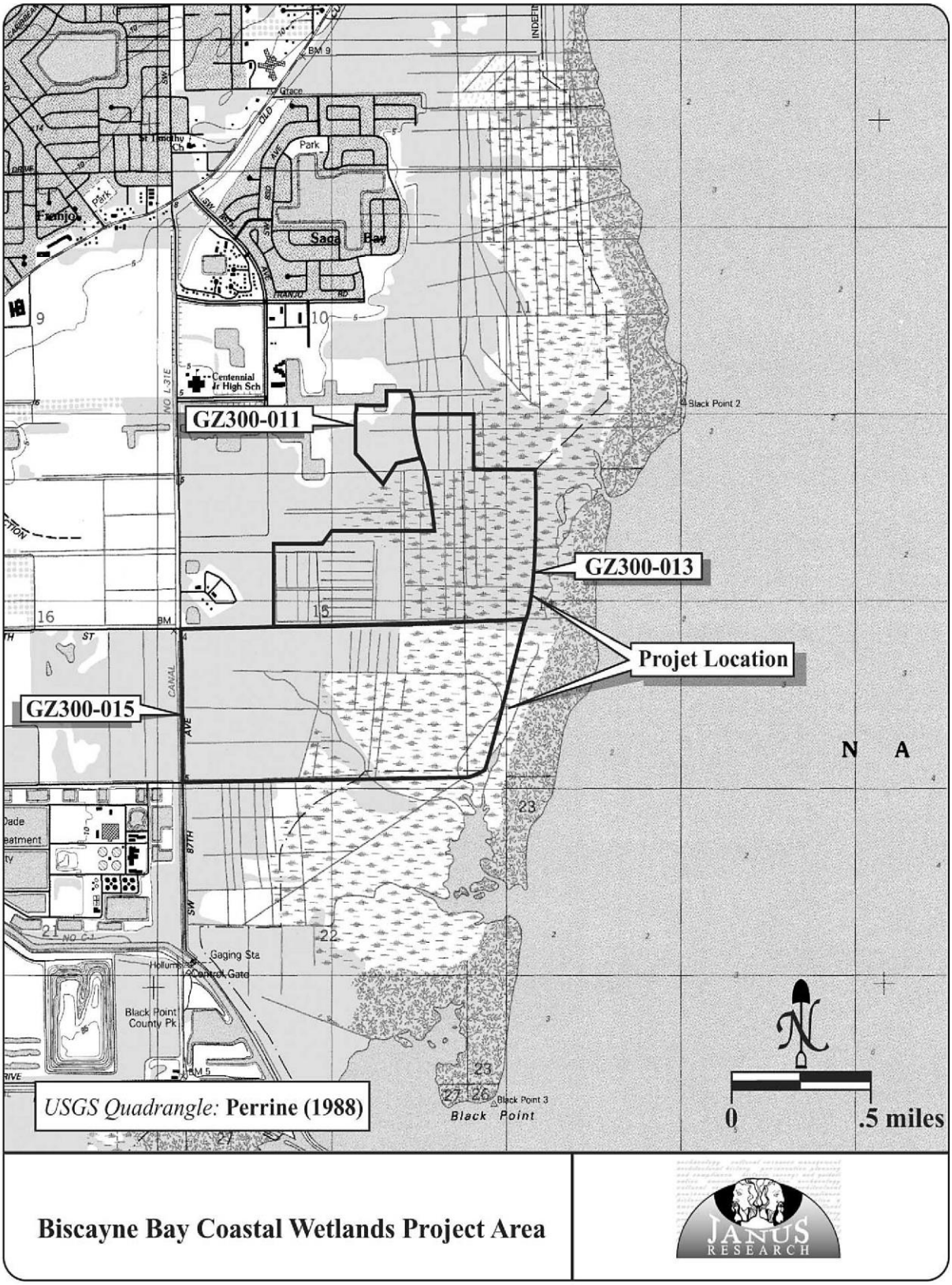
N/A

Site Form Used: ❑ SmartForm ☑ FMSF Paper Form ❑ Approved Custom Form: Attach copies of written approval from FMSF Supervisor.

DO NOT USE ••••• SITE FILE USE ONLY ••••• DO NOT USE

BAR Related		BHP Related
❑ 872	❑ 1A32	❑ State Historic Preservation Grant
❑ CARL	❑ UW	❑ Compliance Review: CRAT #________

ATTACH PLOT OF SURVEY AREA ON PHOTOCOPIES OF USGS 1:24,000 MAP(S)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GZ300-013
Projet Location
GZ300-015
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.5 miles
USGS Quadrangle: Perrine (1988)
Biscayne Bay Coastal Wetlands Project Area
JANUS RESEARCH

Attachment F:
2005 Memorandum on Canals

APPENDIX E: GUIDANCE ON NR ELIGIBILITY OF CANALS

MEMORANDUM

TO: Compliance Review
FROM: Sherry Anderson
RE: Canals
DATE: September 27, 2005; modified November 11, 2005

Below is a list of all of the major canals that have been determined potentially eligible for listing or are currently under review as noted.

Canal	FSF #	Length	Date	Orig. Reclamation
Hillsboro	8BD3229/8PB10311	50 miles	1913	Yes
Miami	8DA6525	78 miles	1913	Yes
North New River	8BD3279/8PB10343	59 miles	1913	Yes
South New River	8BD4153	25 miles	1913	Yes
West Palm Beach	8PB10331	40 miles	1917	Yes; initiated locally
St. Lucie	8MT1316	25 miles	1921	Yes; built later
Tamiami Canal	8DA6766		1923-1928	No
**Bolles Canal	8PB11412			No

(**Bolles Canal is currently under review for potential eligibility)

Potential Eligibility of Canals

Canals are ubiquitous and most of those built as drainage ditches in the twentieth century will probably not be considered significant. It is usually the older canals (19th c.), transportation canals, larger regional canals dug as part of the early 20th c. reclamation activities, or canals used in industry (such as logging, cotton) that may be potentially eligible. Canals can also be contributing resources in a historic district such as a neighborhood where canals were part of the original plan (e.g. Nurmi Isles, Ft. Lauderdale).

Keep in mind that canals need to possess integrity as well. Because significant canals are usually very long, consider thinking in terms of "bird's eye view" when assessing integrity. If you were flying above the resource, would these changes be visible? Types of changes that could substantially damage the integrity of a canal include the following:

- Re-routing of the canal.
- Disruption of canal (cutting off or filling in).
- Substantial widening or substantial loss of width.
- Concentrated number of roadways and other crossovers that prohibit navigability (only important if navigability was part of its historic use).
- Severing of canal from other waterways (larger canals, turning basins, etc.) which results in change of historic function.
- Removal of historic ancillary structures original to canal's design and purpose (pumping stations, locks, railroads, docks, etc.). The loss of one feature may not be enough to substantially damage integrity but the removal of many such features may collectively inhibit the resource's ability to convey its significance.

Types of changes that may not substantially damage the integrity include loss of a single historic ancillary feature, routine maintenance and rebuilding of canal walls using same material type, addition of non-historic feature (pumping station, etc.), addition of several roads that do not prohibit navigability throughout the majority of the canal. Keep in mind that canals can have "non-contributing" portions as well but that the overall canal may still be considered potentially eligible.

When Should Canals be Surveyed?

Consultants should always survey potentially significant historic canals or canal systems within their Areas of Potential Effect (APE). The difficulty arises in how to determine if a canal is historic and significant. Canals, unlike houses, do not typically have visible clues that help us determine their age. Instead, think of canals in terms of historic roads – sometimes only historic research can uncover their age and significance. It is safe to assume that the presence of significant historic canals should be uncovered by appropriate historic research. If a canal was important to the development of a community or area, it should be discussed in the historic context and it should be surveyed.

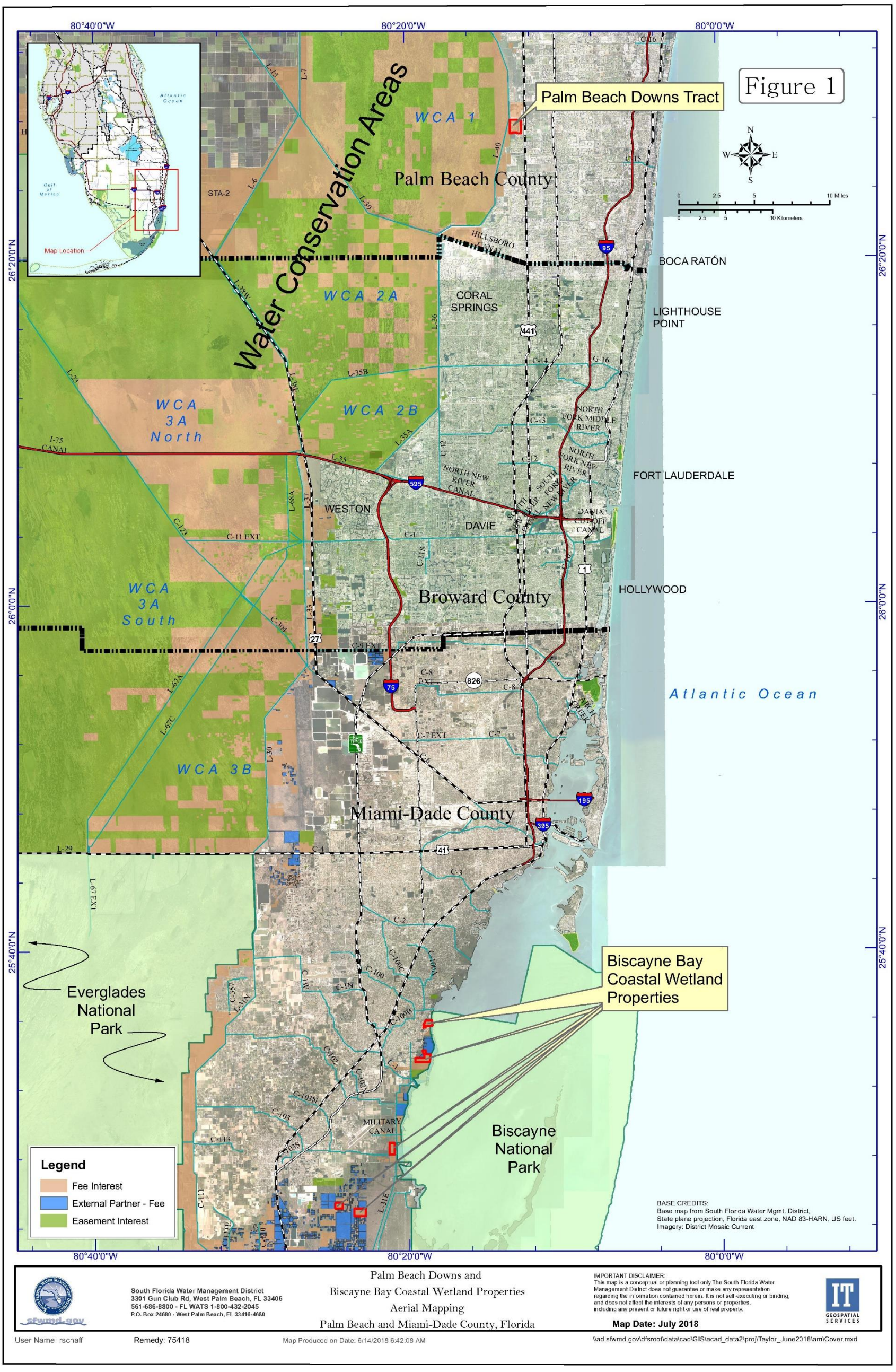
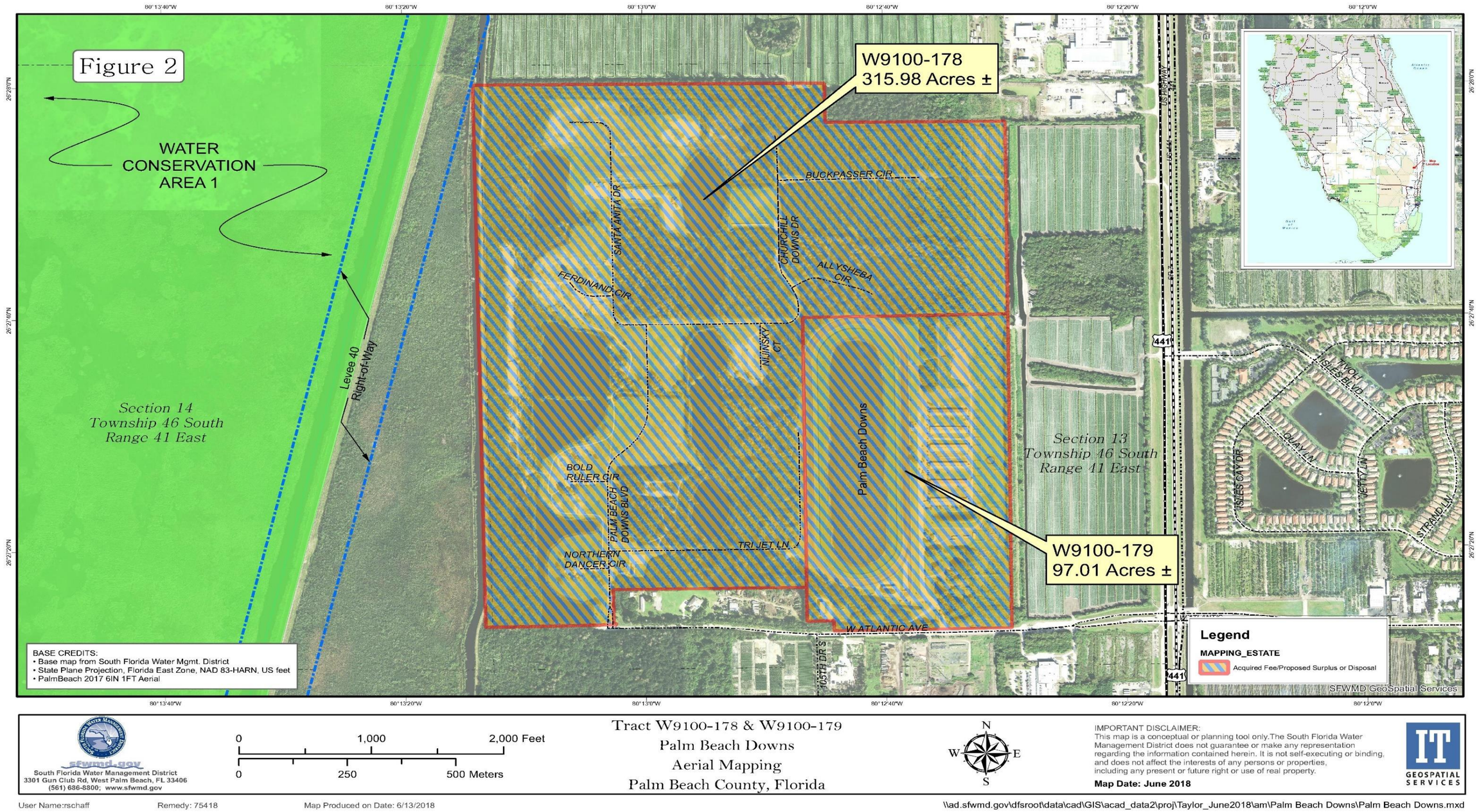


Figure 1. Aerial Mapping of Palm Beach Downs and Biscayne Bay Coastal Wetland Properties in Palm Beach and Miami-Dade Counties, Florida.



South Florida Water Management District
3301 Gun Club Rd, West Palm Beach, FL 33406
(561) 686-8800; www.sfwmd.gov

0 1,000 2,000 Feet
0 250 500 Meters

Tract W9100-178 & W9100-179
Palm Beach Downs
Aerial Mapping
Palm Beach County, Florida

N W E S

IMPORTANT DISCLAIMER:
This map is a conceptual or planning tool only.The South Florida Water Management District does not guarantee or make any representation regarding the information contained herein. It is not self-executing or binding, and does not affect the interests of any persons or properties, including any present or future right or use of real property.

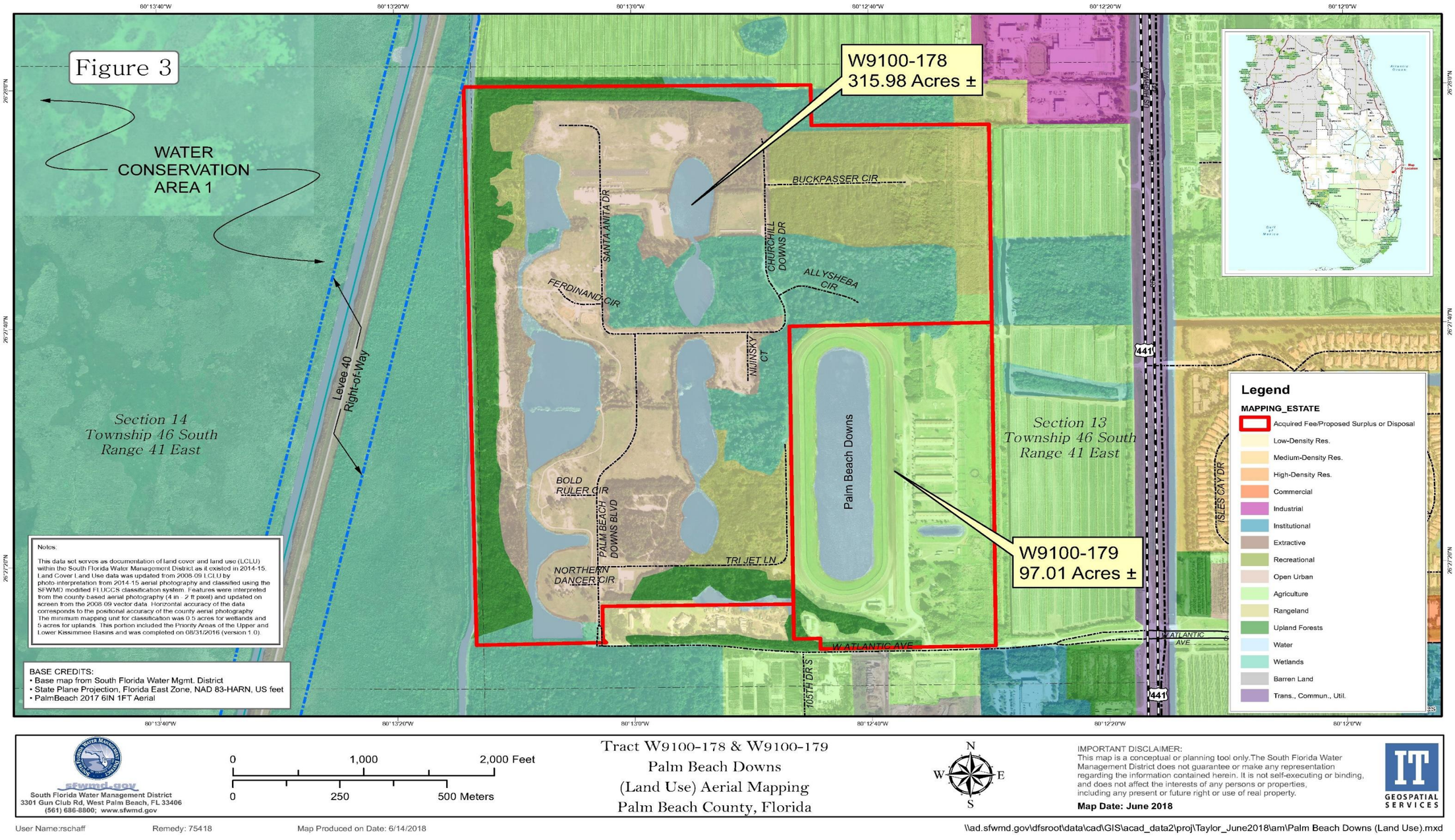
Map Date: June 2018

IT GEOSPATIAL SERVICES

User Name:rschaff Remedy: 75418 Map Produced on Date: 6/13/2018

\\ad.sfwmd.gov\dfsroot\data\cad\GIS\acad_data2\proj\Taylor_June2018\am\Palm Beach Downs\Palm Beach Downs.mxd

Figure 2. Aerial Mapping of Tracts W9100-178 and W9100-179 in Palm Beach Downs in Palm Beach County, Florida.



South Florida Water Management District
3301 Gun Club Rd, West Palm Beach, FL 33406
(561) 686-8800; www.sfwmd.gov

0 1,000 2,000 Feet
0 250 500 Meters

Tract W9100-178 & W9100-179
Palm Beach Downs
(Land Use) Aerial Mapping
Palm Beach County, Florida

N W E S

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Map Date: June 2018

GEOSPATIAL SERVICES

User Name:rschaff Remedy: 75418 Map Produced on Date: 6/14/2018

\\ad.sfwmd.gov\dfsroot\data\cad\GIS\acad_data2\proj\Taylor_June2018\am\Palm Beach Downs (Land Use).mxd

Figure 3. Aerial Mapping of Tracts W9100-178 and W9100-179 (Land Use) in Palm Beach Downs in Palm Beach County, Florida.

South Florida Water Management District
3301 Gun Club Rd, West Palm Beach, FL 33406
(561) 686-8800; www.sfwmd.gov

0 1,000 2,000 Feet
0 250 500 Meters

Tract W9100-178 & W9100-179
Palm Beach Downs
(LiDAR Data) Aerial Mapping
Palm Beach County, Florida

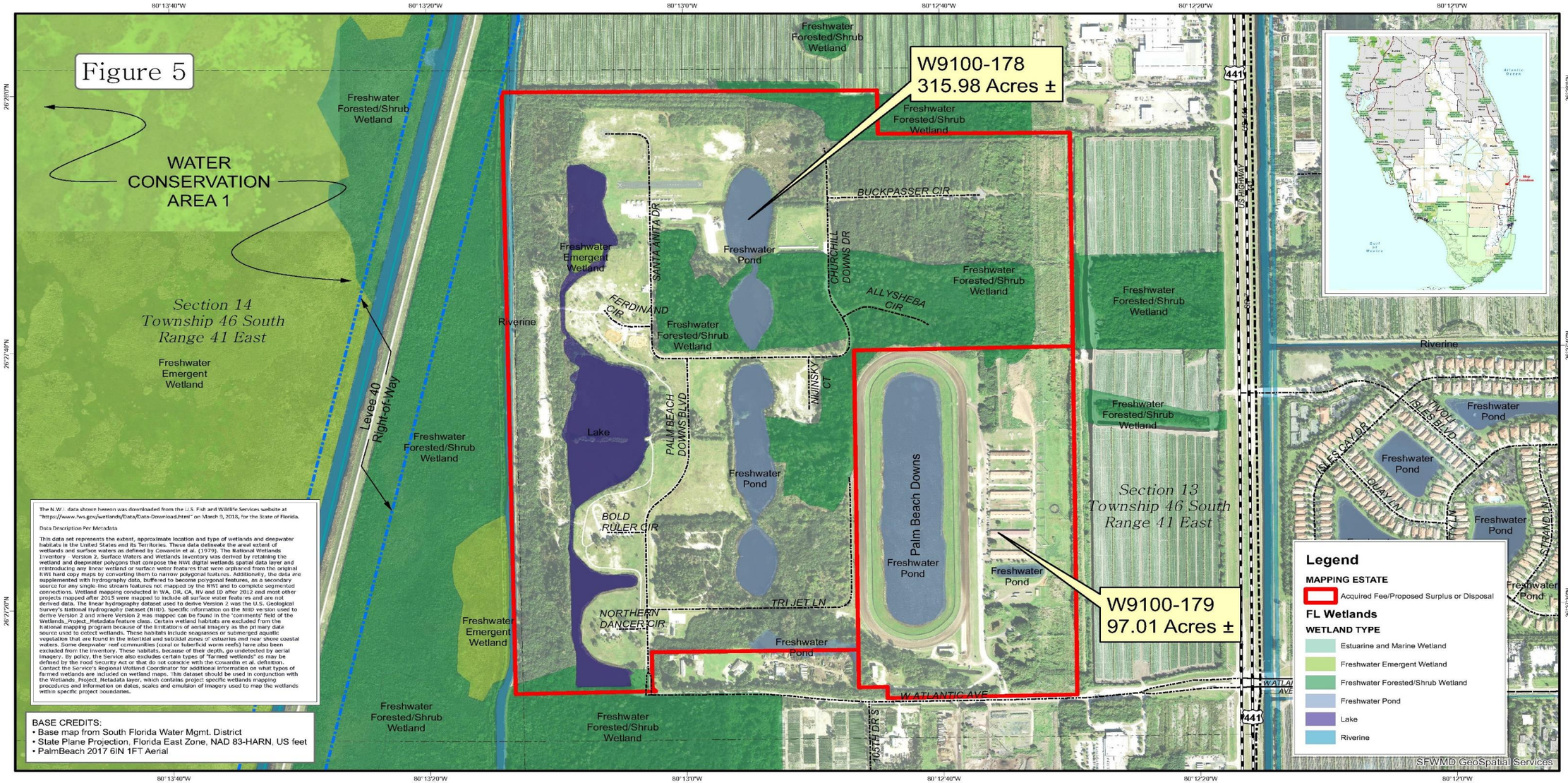
IMPORTANT DISCLAIMER:
This map is a conceptual or planning tool only.The South Florida Water Management District does not guarantee or make any representation regarding the information contained herein. It is not self-executing or binding, and does not affect the interests of any persons or properties, including any present or future right or use of real property.
Map Date: June 2018

GEOSPATIAL SERVICES

User Name:rschaff Remedy: 75418 Map Produced on Date: 6/13/2018

\\ad.sfwmd.gov\dfsroot\data\cad\GIS\acad_data2\proj\Taylor_June2018\am\Palm Beach Downs (LiDAR Data).mxd

Figure 4. Aerial Mapping of Tracts W9100-178 and W9100-179 (LiDAR) in Palm Beach Downs in Palm Beach County, Florida.



South Florida Water Management District
3301 Gun Club Rd, West Palm Beach, FL 33406
(561) 686-8800; www.sfwmd.gov

0 1,000 2,000 Feet
0 250 500 Meters

Tract W9100-178 & W9100-179
Palm Beach Downs
(National Wetlands Inventory) Aerial Mapping
Palm Beach County, Florida

N W E S

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Map Date: June 2018

IT GEOSPATIAL SERVICES

User Name:rschaff Remedy: 75418 Map Produced on Date: 6/14/2018 \\ad.sfwmd.gov\dfsroot\data\cad\GIS\acad_data2\proj\Taylor_June2018\am\Palm Beach Downs (NWI).mxd

Figure 5. Aerial Mapping of Tracts W9100-178 and W9100-179 (National Wetlands Inventory) in Palm Beach Downs in Palm Beach County, Florida.

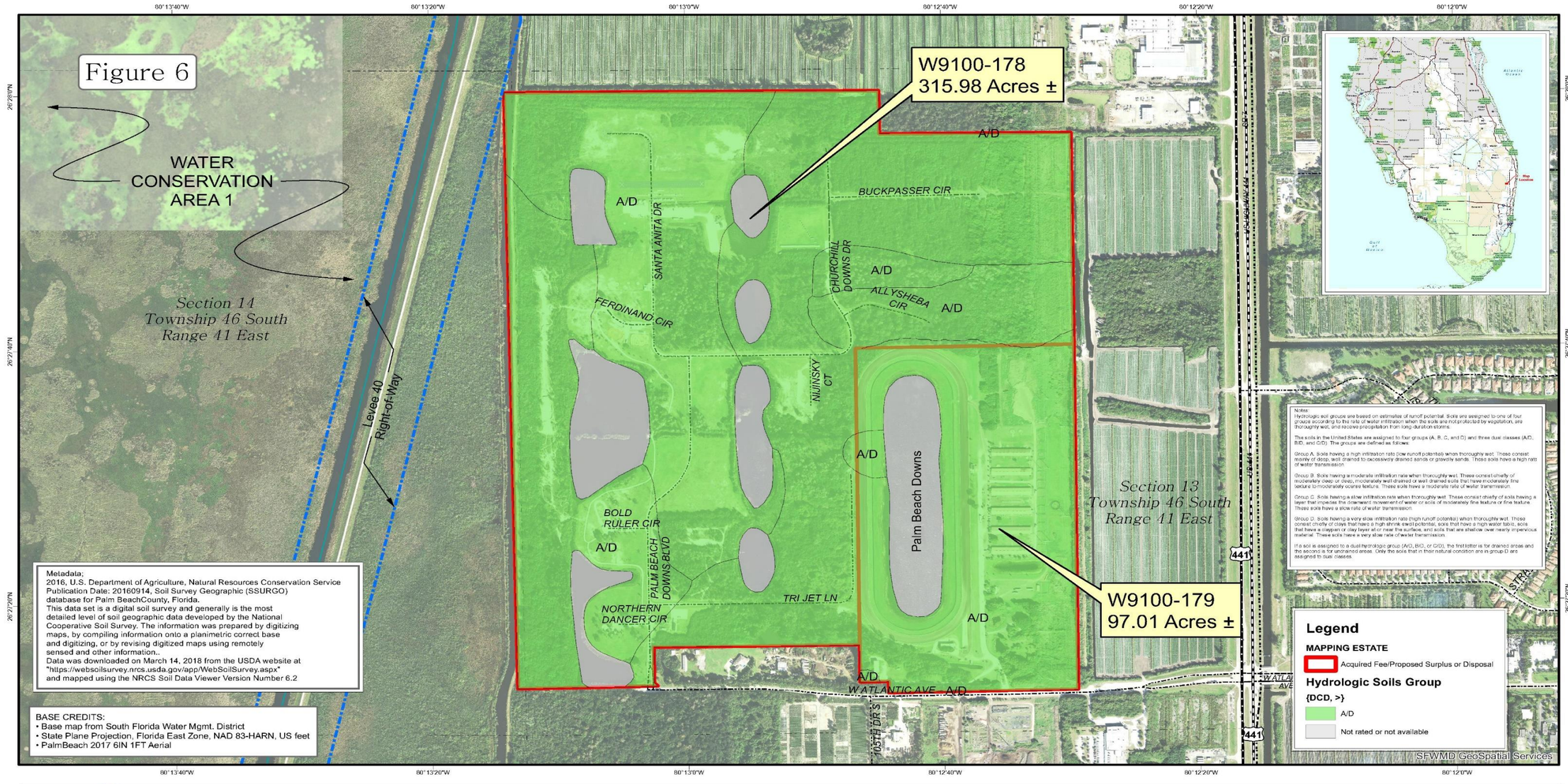

Figure 6. Aerial Mapping of Tracts W9100-178 and W9100-179 (Hydrologic Soils Group) in Palm Beach Downs in Palm Beach County, Florida.

Hydrologic Soil Group

Aggregation Method: Dominant Condition
Tie-break Rule: Higher

Palm Beach County Area, Florida
Survey Area Version and Date: 13 - 10/06/2017

Map symbol	Map unit name	Rating	Map unit percent
2	Anclote fine sand	A/D	100
8	Basinger and Myakka sands, depressional	A/D	100
21	Myakka fine sand, 0 to 2 percent slopes	A/D	98
24	Okeelanta muck, drained, frequently ponded, 0 to 1 percent slopes	A/D	100
25	Oldsmar sand, 0 to 2 percent slopes	A/D	94
99	Water		100

Hydrologic Soil Group

Rating Options

Attribute Name: Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value to represent the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. The components in the map unit name represent the major soils within a map unit delineation. Minor components make up the balance of the map unit. Great differences in soil properties can occur between map unit components and within short distances. Minor components may be very different from the major components. Such differences could significantly affect use and management of the map unit. Minor components may or may not be documented in the database. The results of aggregation do not reflect the presence or absence of limitations of the components which are not listed in the database. An on-site investigation is required to identify the location of individual map unit components.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be generated. Aggregation must be done because, on any soil map, map units are delineated but components are not.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Map Unit Description

Palm Beach County Area, Florida

[Minor map unit components are excluded from this report]

Map unit: 2 - Anclote fine sand

Component: Anclote (90%)

The Anclote component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 3 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 6 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 8 - Basinger and Myakka sands, depressional

Component: Basinger, depressional (47%)

The Basinger, depressional component makes up 47 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Myakka, depressional (47%)

The Myakka, depressional component makes up 47 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 21 - Myakka fine sand, 0 to 2 percent slopes

Component: Myakka (85%)

The Myakka component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 24 - Okeelanta muck, drained, frequently ponded, 0 to 1 percent slopes

Component: Okeelanta, drained (90%)

The Okeelanta, drained component makes up 90 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very high. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 75 percent.

Map Unit Description

Palm Beach County Area, Florida

Map unit: 24 - Okeelanta muck, drained, frequently ponded, 0 to 1 percent slopes

Component: Okeelanta, drained (90%)

Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 25 - Oldsmar sand, 0 to 2 percent slopes

Component: Oldsmar (85%)

The Oldsmar component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 99 - Water

Component: Water (100%)

Generated brief soil descriptions are created for major soil components. The Water is a miscellaneous area.

Map Unit Description

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

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

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

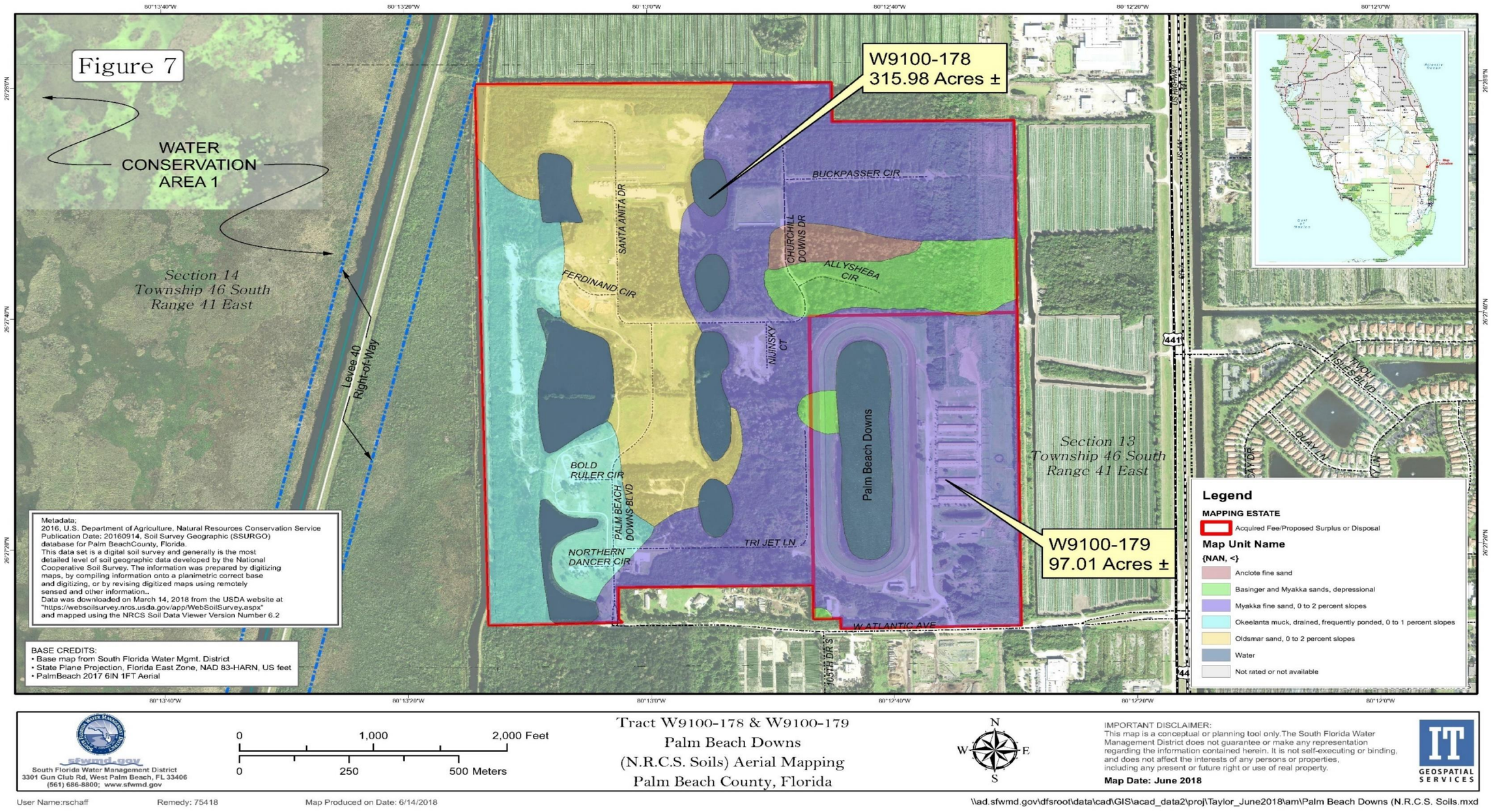

Figure 7. Aerial Mapping of Tracts W9100-178 and W9100-179 (N.R.C.S. Soils) in Palm Beach Downs in Palm Beach County, Florida.

Map Unit Description

Palm Beach County Area, Florida

[Minor map unit components are excluded from this report]

Map unit: 2 - Anclote fine sand

Component: Anclote (90%)

The Anclote component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 3 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 6 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 8 - Basinger and Myakka sands, depressional

Component: Basinger, depressional (47%)

The Basinger, depressional component makes up 47 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Myakka, depressional (47%)

The Myakka, depressional component makes up 47 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 21 - Myakka fine sand, 0 to 2 percent slopes

Component: Myakka (85%)

The Myakka component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 24 - Okeelanta muck, drained, frequently ponded, 0 to 1 percent slopes

Component: Okeelanta, drained (90%)

The Okeelanta, drained component makes up 90 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very high. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 75 percent.

Map Unit Description

Palm Beach County Area, Florida

Map unit: 24 - Okeelanta muck, drained, frequently ponded, 0 to 1 percent slopes

Component: Okeelanta, drained (90%)

Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 25 - Oldsmar sand, 0 to 2 percent slopes

Component: Oldsmar (85%)

The Oldsmar component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 99 - Water

Component: Water (100%)

Generated brief soil descriptions are created for major soil components. The Water is a miscellaneous area.

Map Unit Description

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

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

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

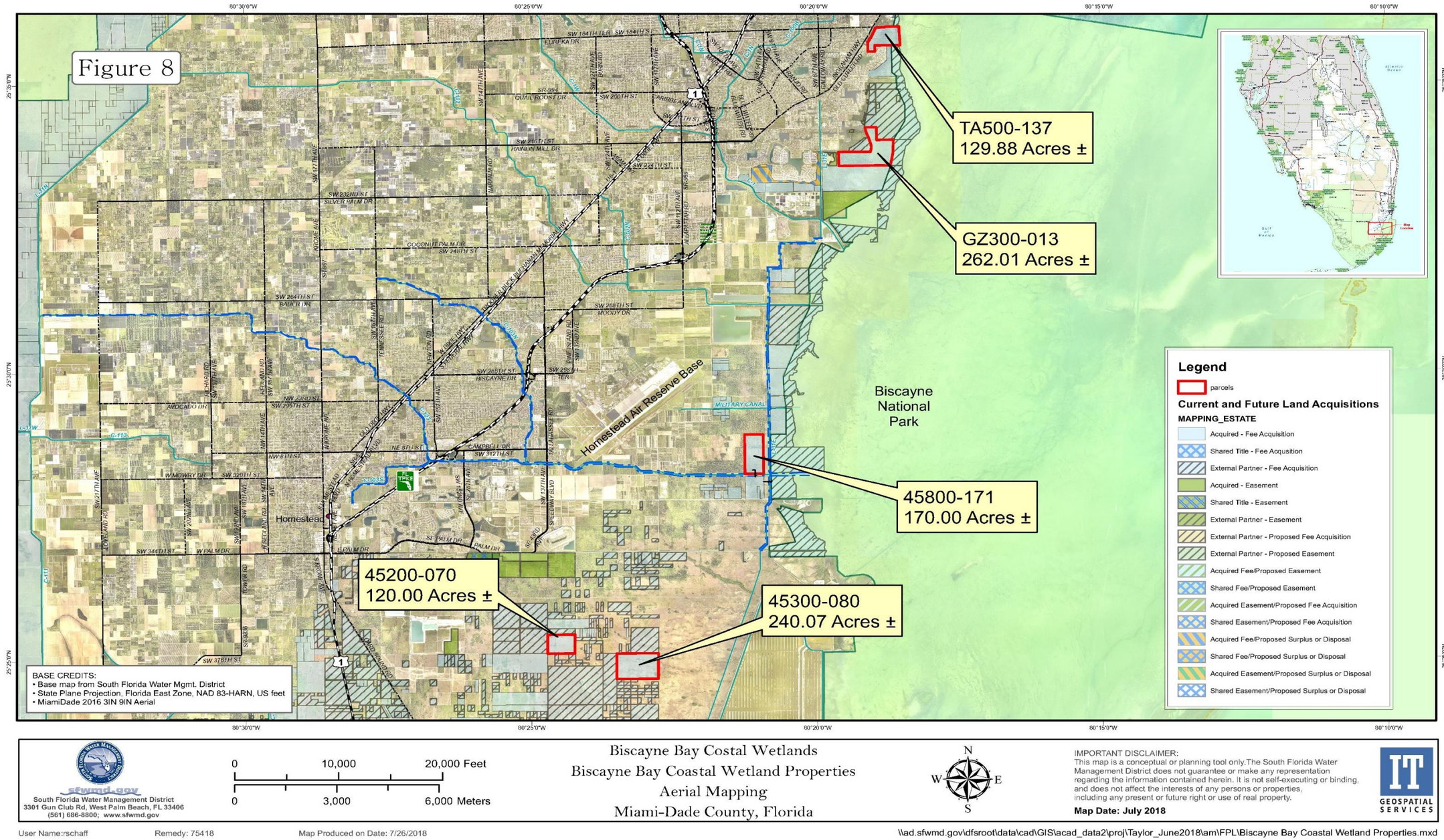

Figure 8. Aerial Mapping of Tracts in Biscayne Bay Coastal Wetlands and Biscayne Bay Coastal Wetland Properties in Miami-Dade County, Florida.

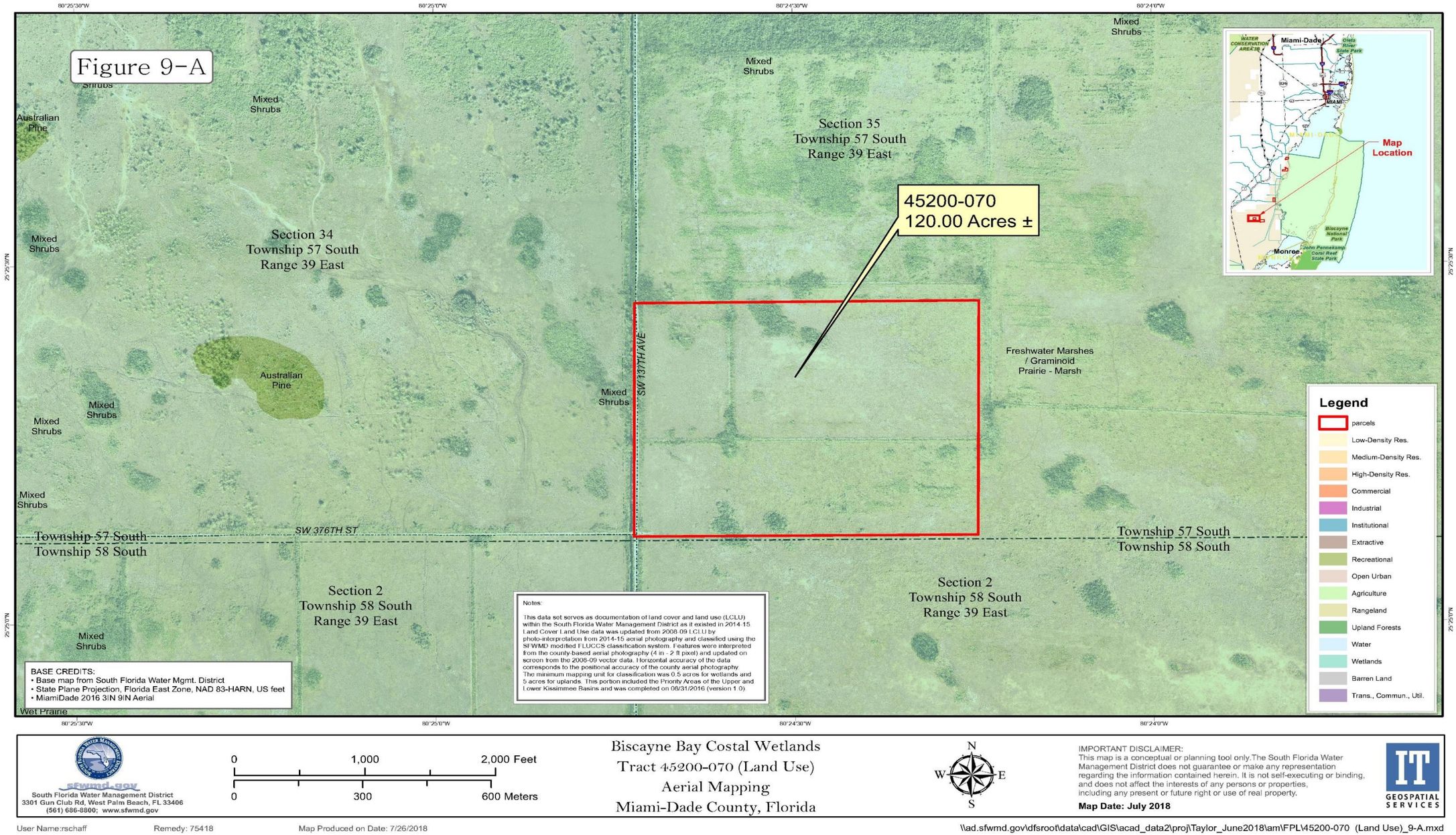

Figure 9-A. Aerial Mapping of Tract 45200-070 (Land Use) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.

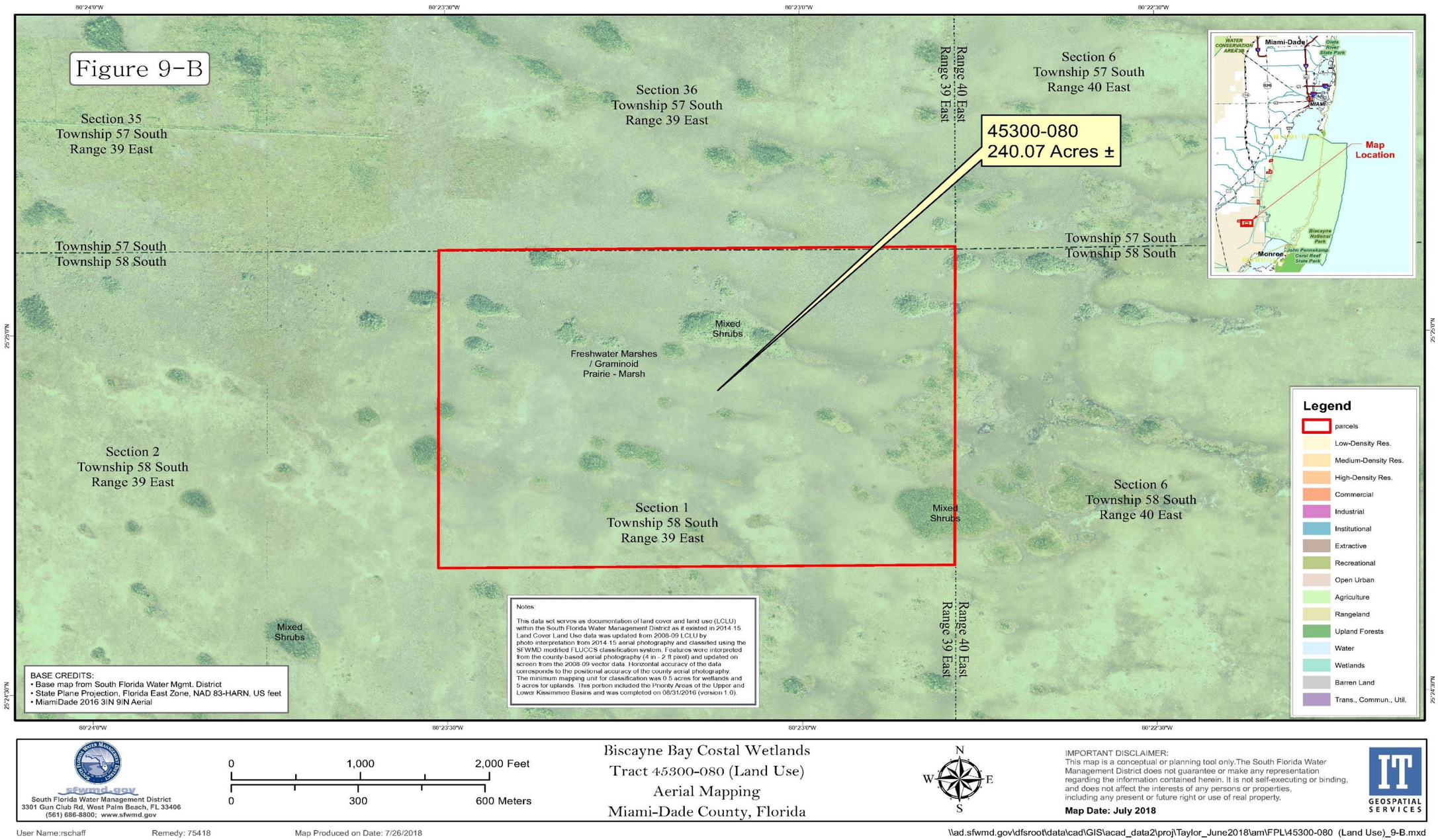

Figure 9-B. Aerial Mapping of Tract 45300-080 (Land Use) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.

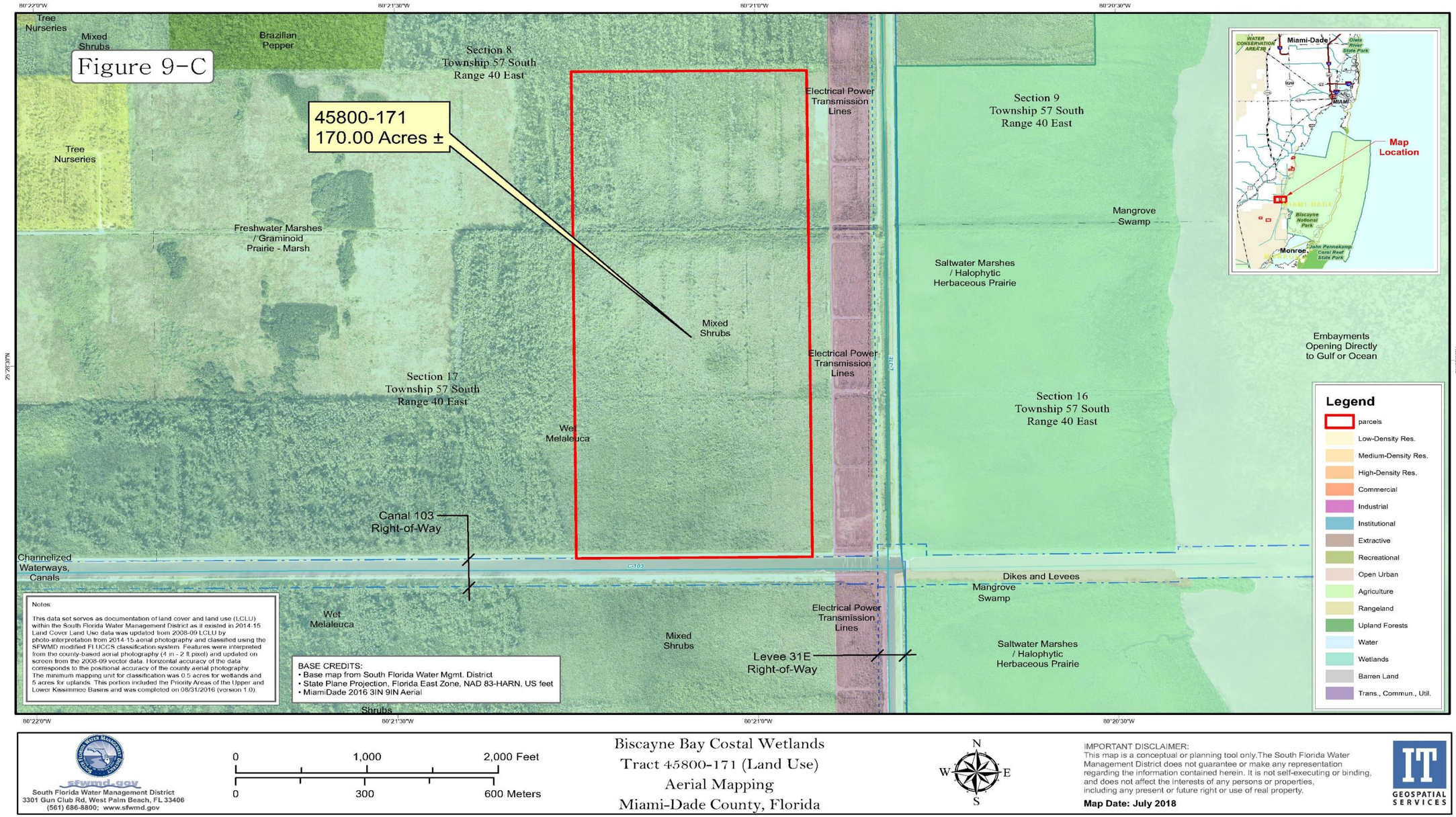

Figure 9-C. Aerial Mapping of Tract 45800-171 (Land Use) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.

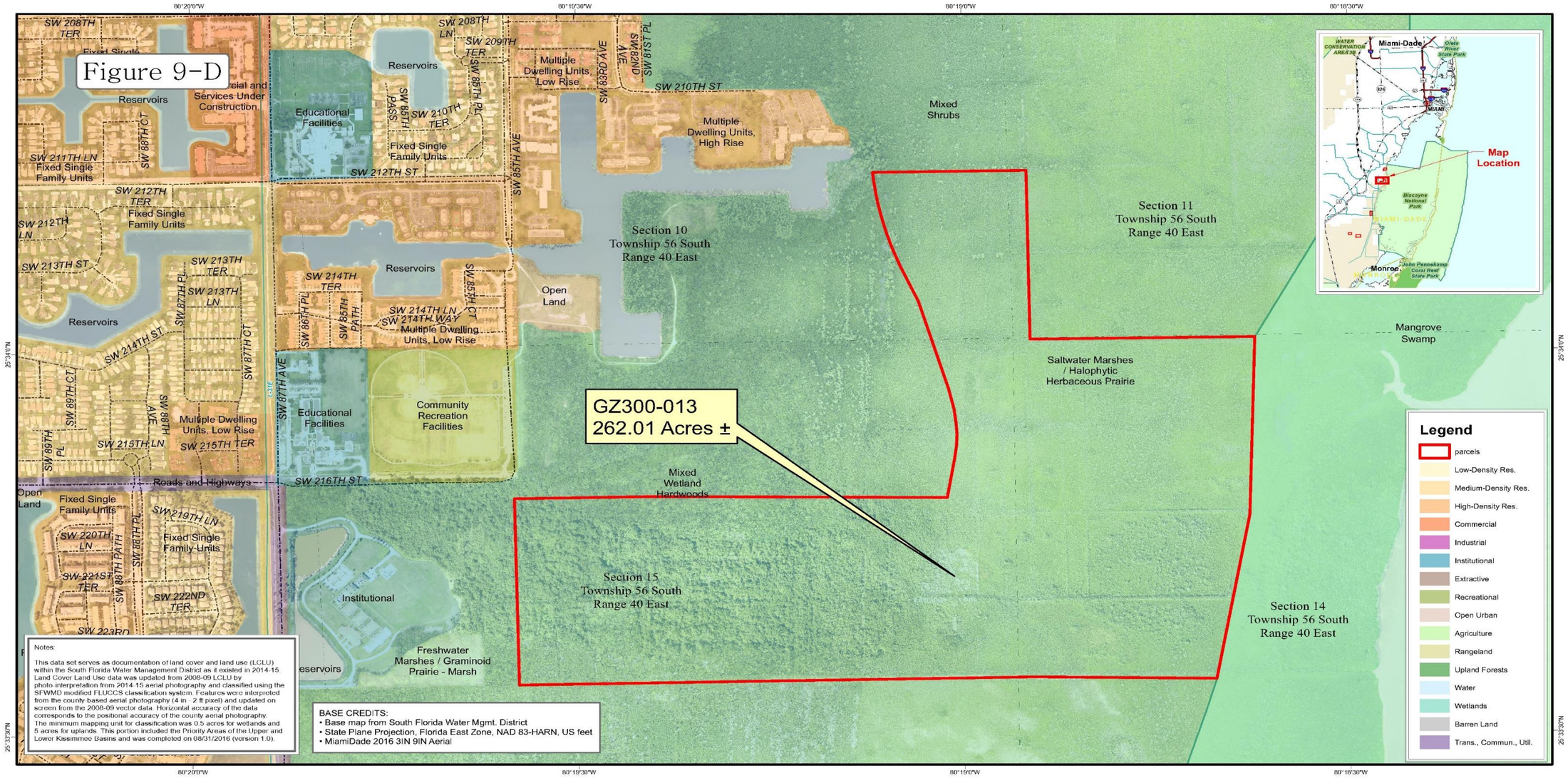

Figure 9-D. Aerial Mapping of Tract GZ300-013 (Land Use) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.

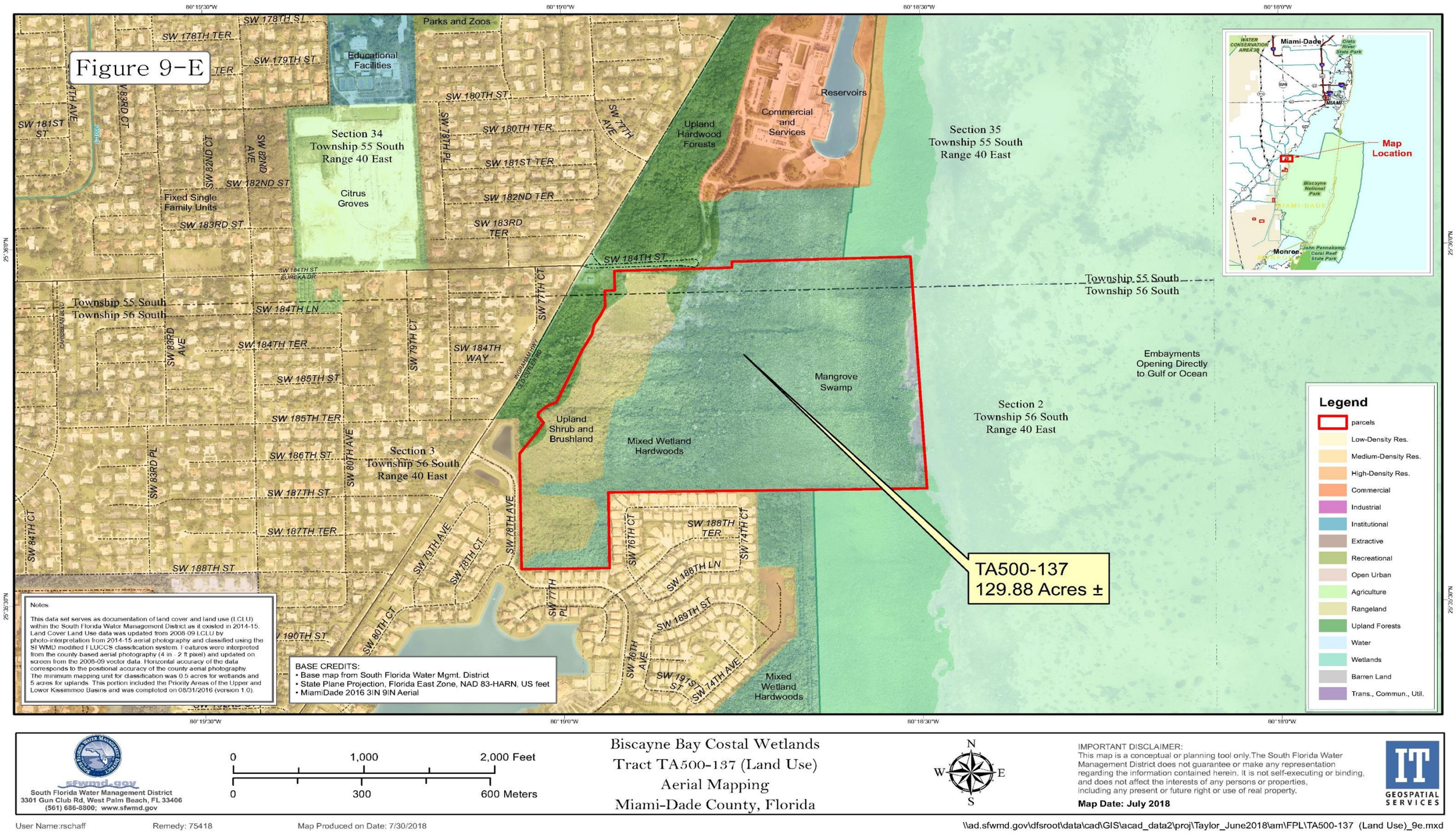

Figure 9-E. Aerial Mapping of Tract TA500-137 (Land Use) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.

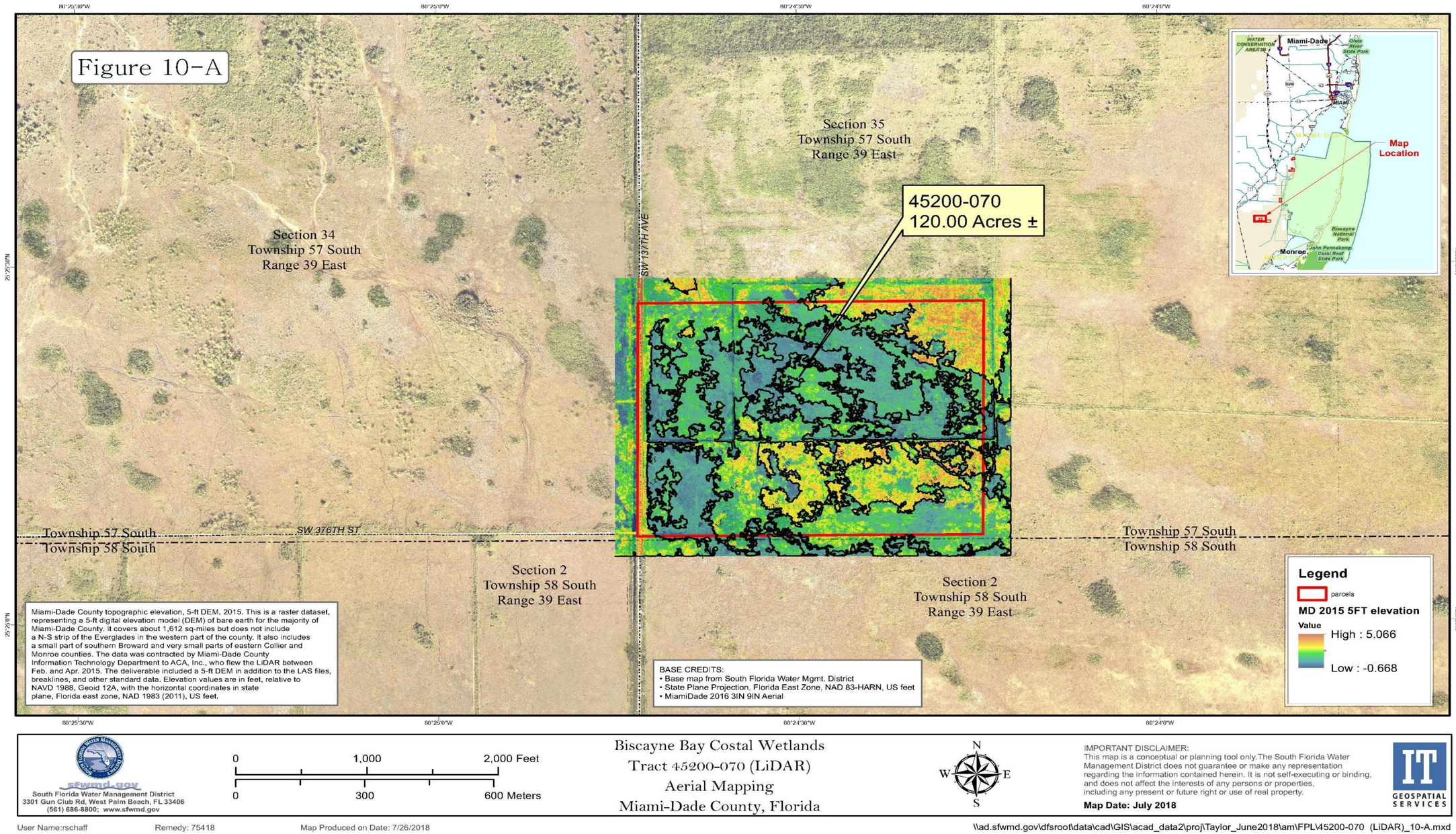

Figure 10-A. Aerial Mapping of Tract 45200-070 (LiDAR) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.

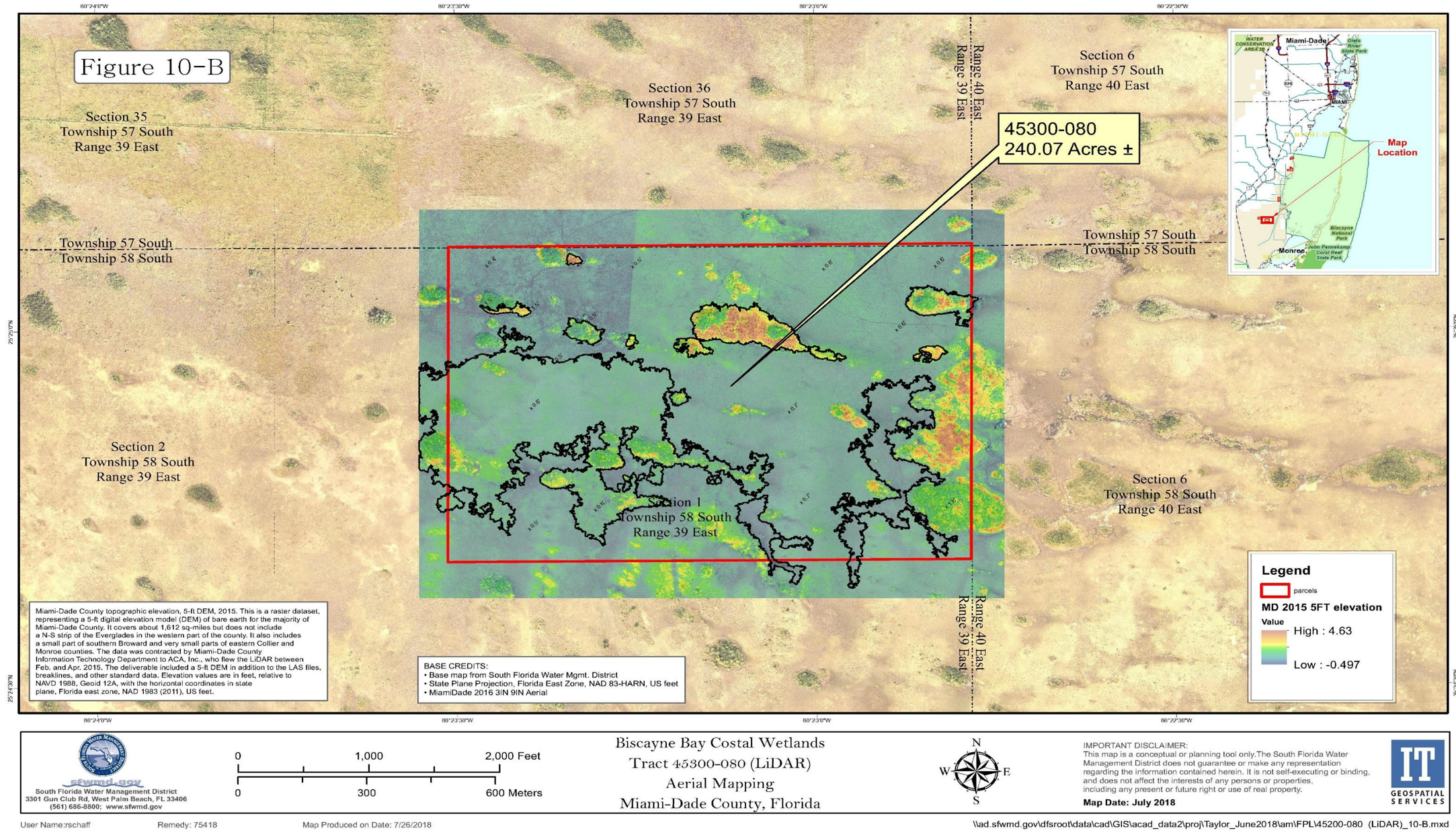

Figure 10-B. Aerial Mapping of Tract 45300-080 (LiDAR) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.

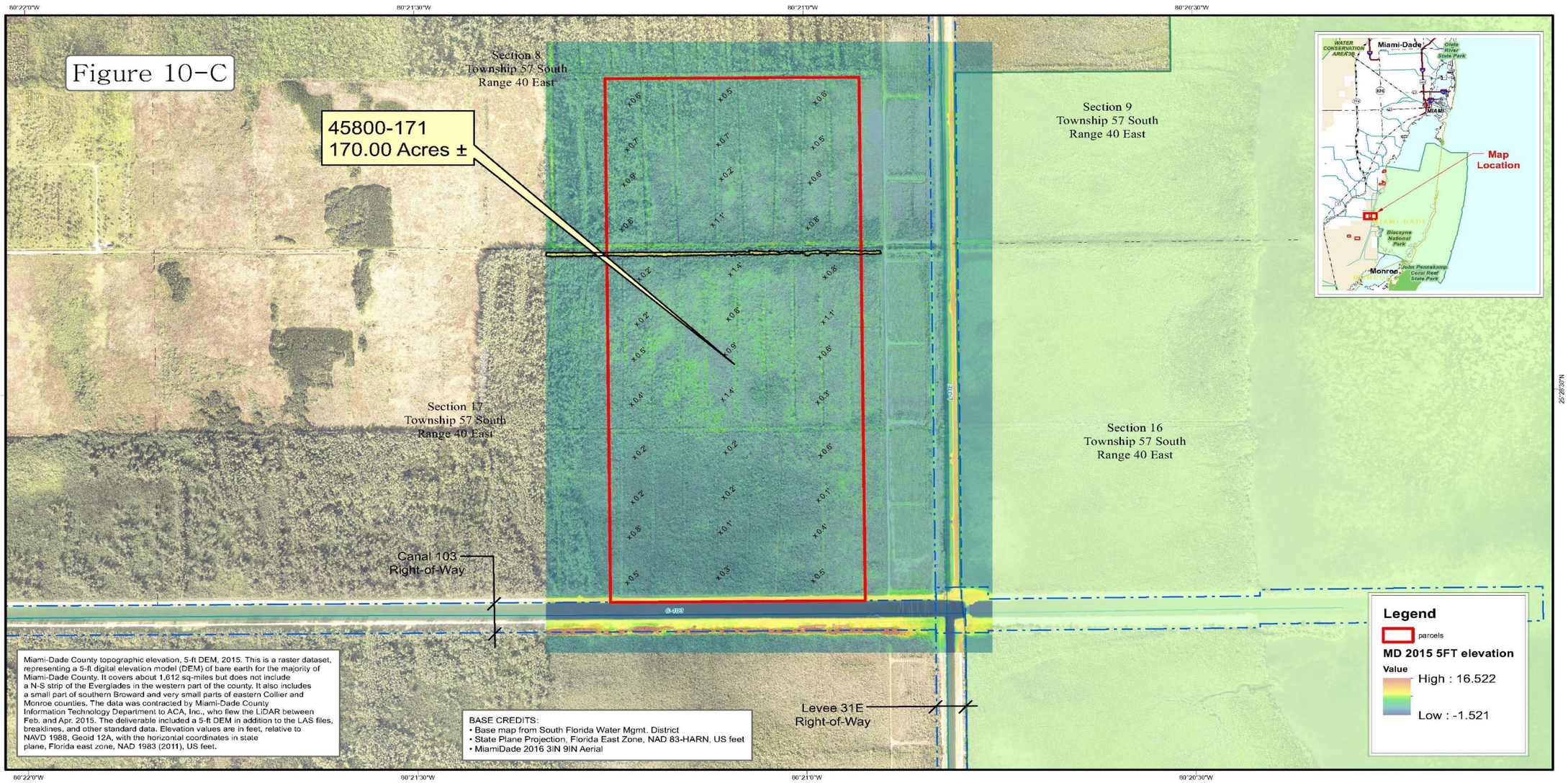

Figure 10-C. Aerial Mapping of Tract 45800-171 (LiDAR) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.

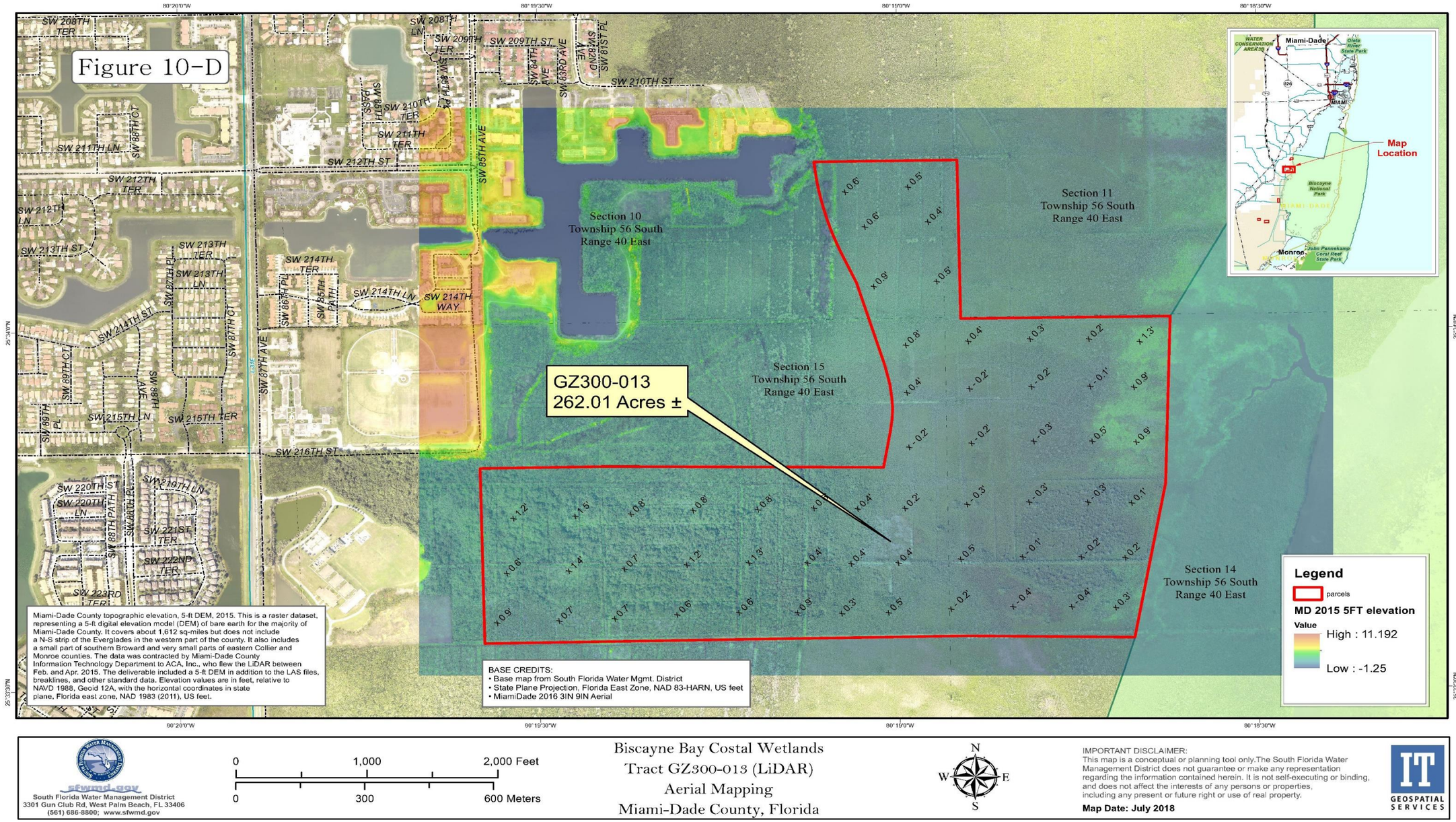

Figure 10-D. Aerial Mapping of Tract GZ300-013 (LiDAR) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.

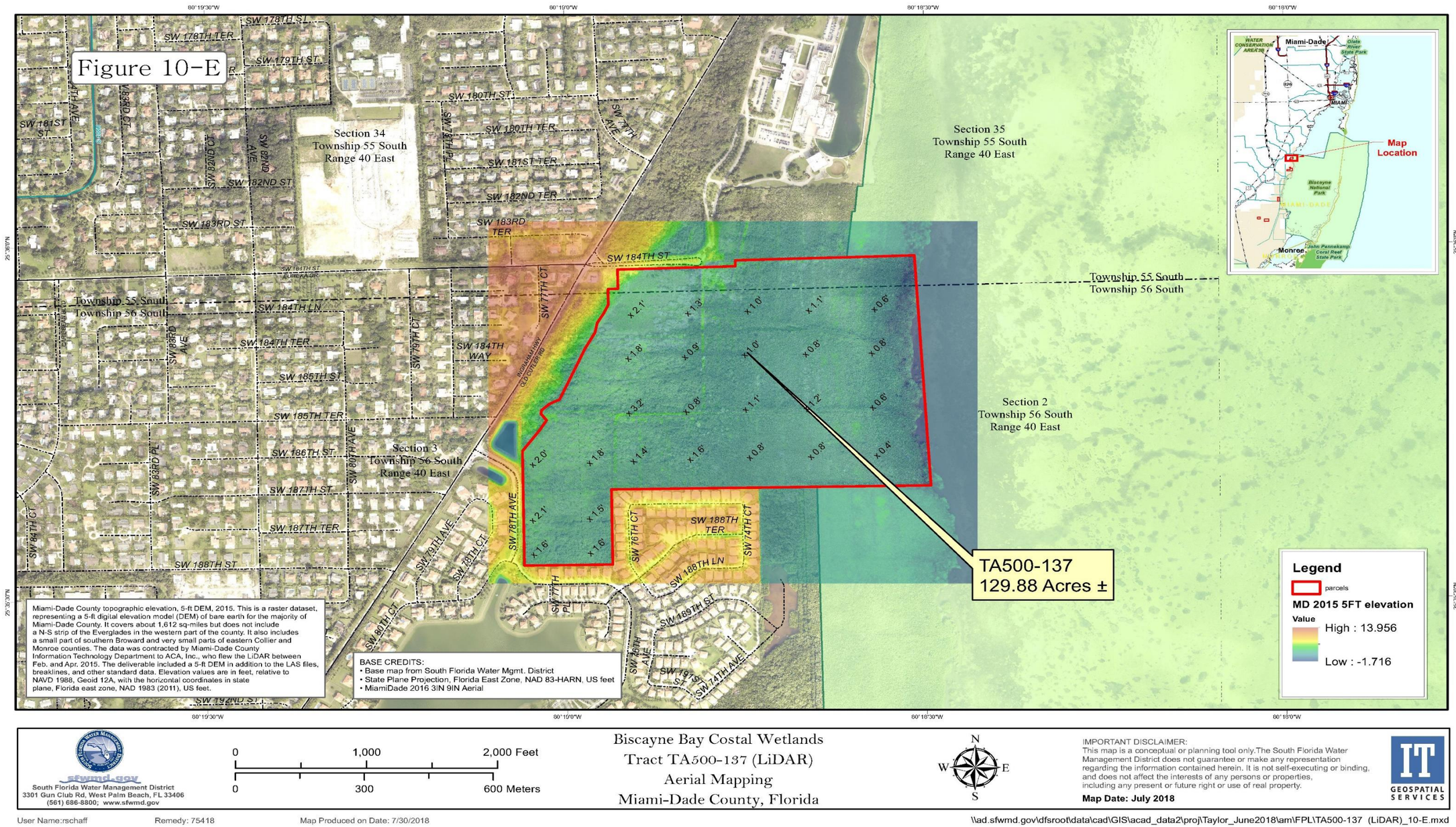

Figure 10-E. Aerial Mapping of Tract TA500-137 (LiDAR) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.

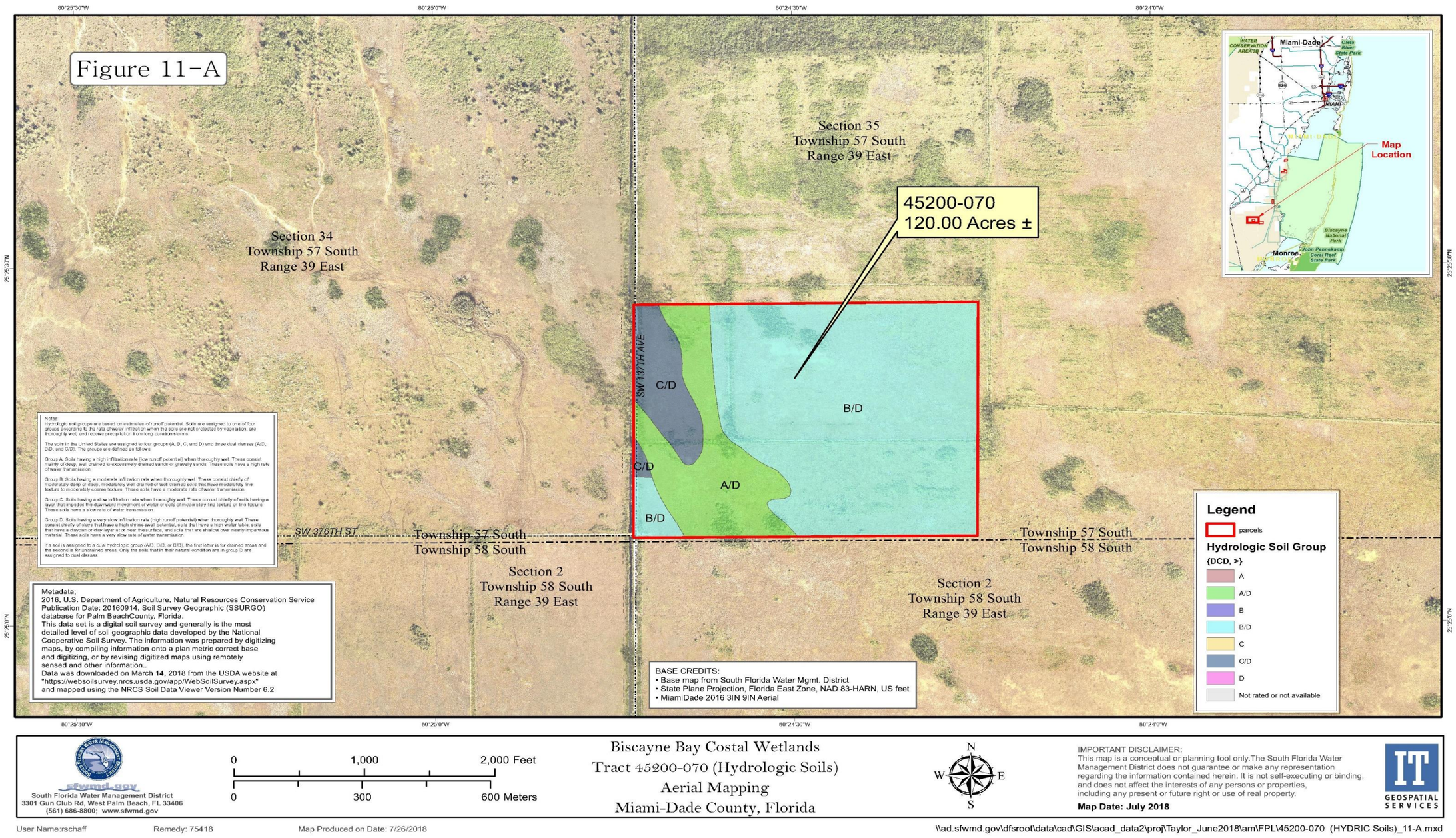

Figure 11-A. Aerial Mapping of Tract 45200-070 (Hydrologic Soils) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.

Figure 11-B

Section 35
Township 57 South
Range 39 East

Section 36
Township 57 South
Range 39 East

Range 40 East
Range 39 East

Section 6
Township 57 South
Range 40 East

45300-080
240.07 Acres ±

Township 57 South
Township 58 South

Section 2
Township 58 South
Range 39 East

B/D

C/D

A/D

C/D

Section 6
Township 58 South
Range 40 East

Section 1
Township 58 South
Range 39 East

Range 40 East
Range 39 East

Notes:
Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Metadata;
2016, U.S. Department of Agriculture, Natural Resources Conservation Service
Publication Date: 20160914, Soil Survey Geographic (SSURGO)
database for Palm BeachCounty, Florida.
This data set is a digital soil survey and generally is the most detailed level of soil geographic data developed by the National Cooperative Soil Survey. The information was prepared by digitizing maps, by compiling information onto a planimetric correct base and digitizing, or by revising digitized maps using remotely sensed and other information..
Data was downloaded on March 14, 2018 from the USDA website at "https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx" and mapped using the NRCS Soil Data Viewer Version Number 6.2

BASE CREDITS:
- Base map from South Florida Water Mgmt. District
- State Plane Projection, Florida East Zone, NAD 83-HARN, US feet
- MiamiDade 2016 3IN 9IN Aerial

Legend
- parcels

Hydrologic Soil Group
{DCD, >}
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

80°24'0"W
80°23'30"W
80°23'0"W
80°22'30"W
25°25'0"N
25°24'30"N

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Biscayne Bay Costal Wetlands
Tract 45300-080 (Hydrologic Soils)
Aerial Mapping
Miami-Dade County, Florida

N W E S

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Map Date: July 2018

GEOSPATIAL SERVICES

User Name:rschaff Remedy: 75418 Map Produced on Date: 7/30/2018

\\ad.sfwmd.gov\dfsroot\data\cad\GIS\acad_data2\proj\Taylor_June2018\am\FPL\45200-080 (HYDRIC Soils)_11-B.mxd

Figure 11-B. Aerial Mapping of Tract 45300-080 (Hydrologic Soils) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.

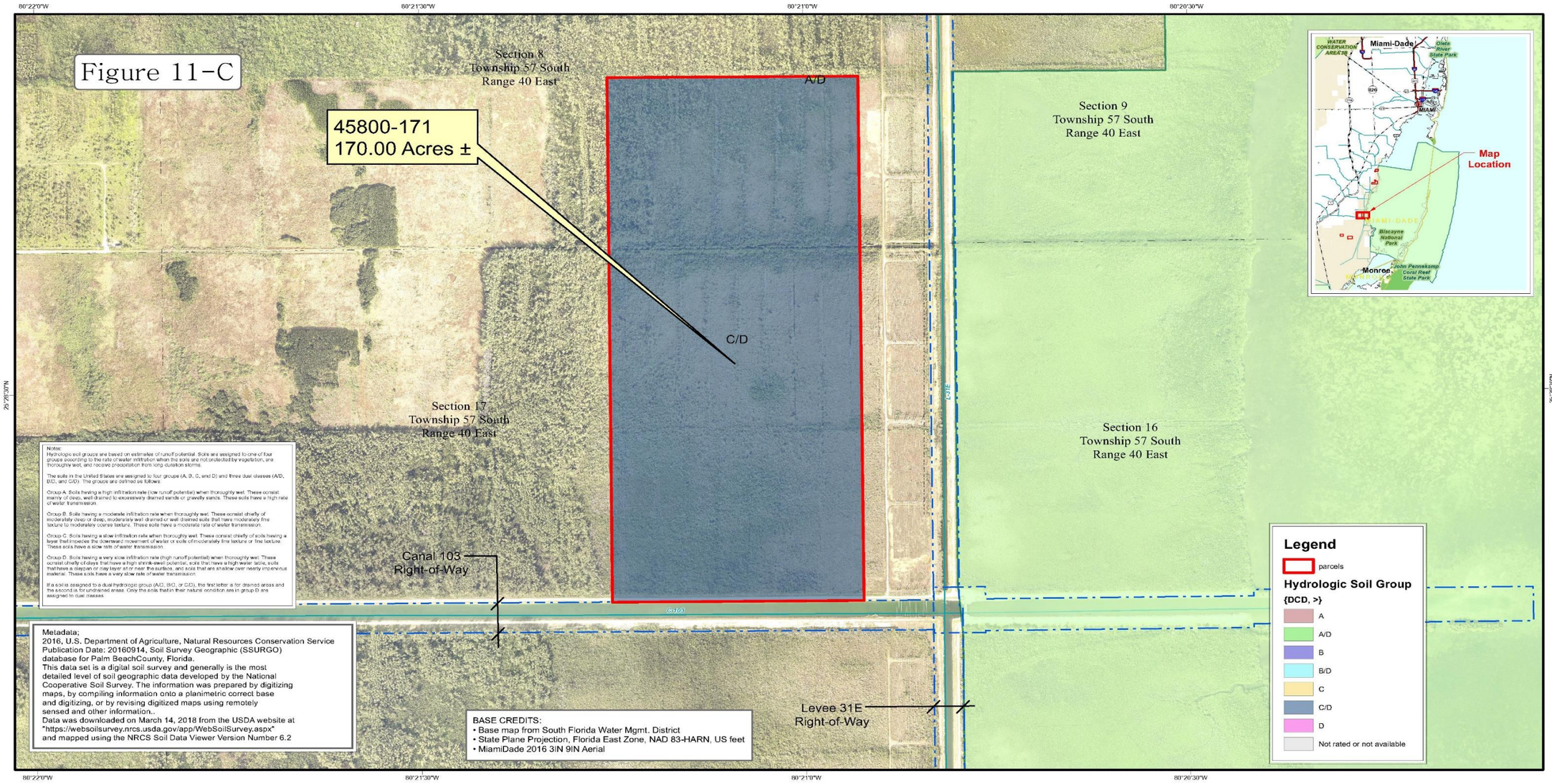
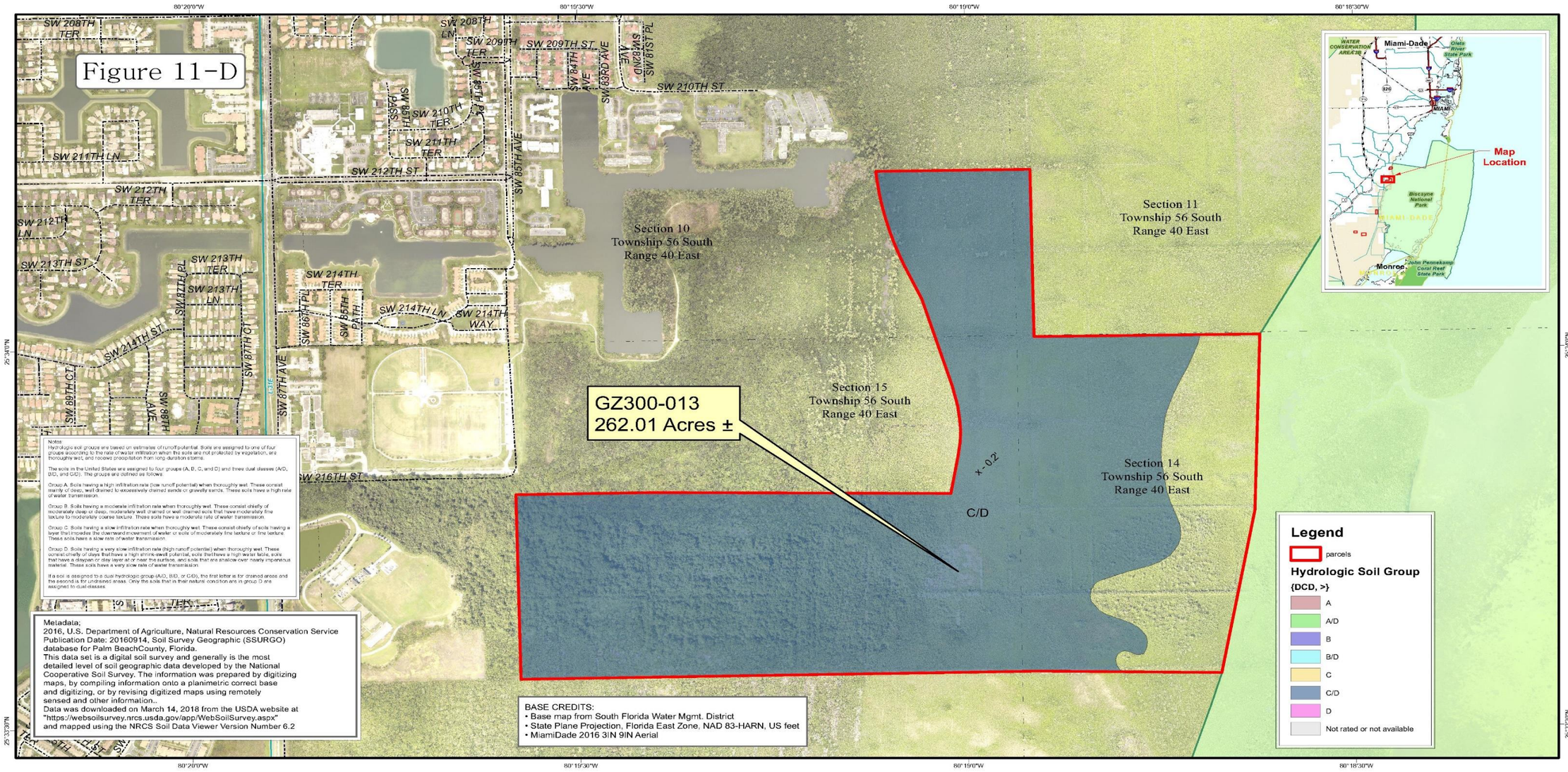


Figure 11-C. Aerial Mapping of Tract 45800-171 (Hydrologic Soils) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.



Notes:
Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

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Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Metadata;
2016, U.S. Department of Agriculture, Natural Resources Conservation Service
Publication Date: 20160914, Soil Survey Geographic (SSURGO)
database for Palm BeachCounty, Florida.
This data set is a digital soil survey and generally is the most
detailed level of soil geographic data developed by the National
Cooperative Soil Survey. The information was prepared by digitizing
maps, by compiling information onto a planimetric correct base
and digitizing, or by revising digitized maps using remotely
sensed and other information..
Data was downloaded on March 14, 2018 from the USDA website at
"https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx"
and mapped using the NRCS Soil Data Viewer Version Number 6.2

BASE CREDITS:
- Base map from South Florida Water Mgmt. District
- State Plane Projection, Florida East Zone, NAD 83-HARN, US feet
- MiamiDade 2016 3IN 9IN Aerial

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Biscayne Bay Costal Wetlands
Tract GZ300-013 (Hydrologic Soils)
Aerial Mapping
Miami-Dade County, Florida

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Map Date: July 2018

User Name:rschaff Remedy: 75418 Map Produced on Date: 7/30/2018 \\ad.sfwmd.gov\dfsroot\data\cad\GIS\acad_data2\proj\Taylor_June2018\am\FPL\GZ300-013 (HYDRIC Soils)_11-D.mxd

Figure 11-D. Aerial Mapping of Tract GZ300-013 (Hydrologic Soils) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.

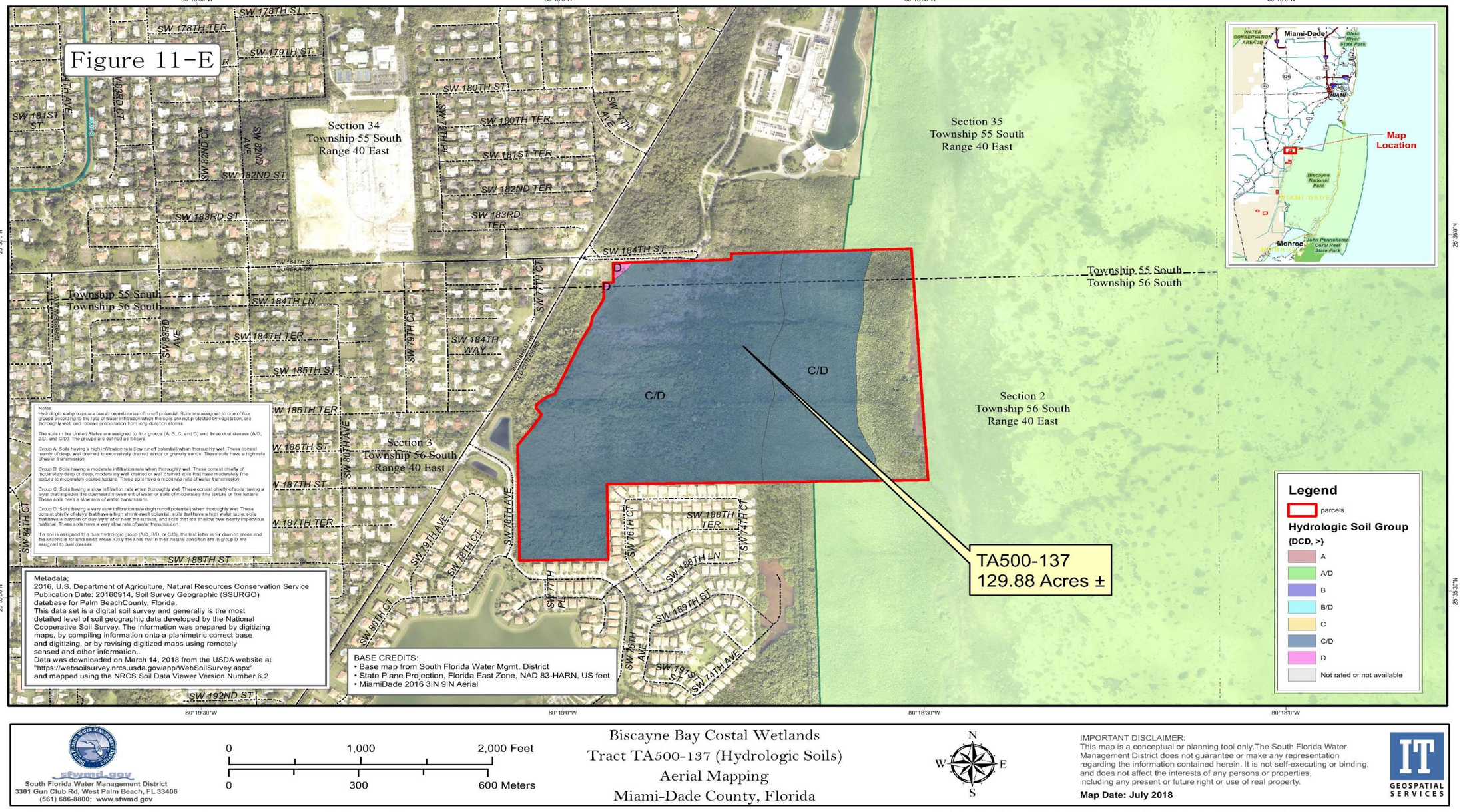

Figure 11-E. Aerial Mapping of Tract TA500-137 (Hydrologic Soils) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.

Hydrologic Soil Group

Aggregation Method: Dominant Condition
Tie-break Rule: Higher

Miami-Dade County Area, Florida
Survey Area Version and Date: 9 - 10/05/2017

Map symbol	Map unit name	Rating	Map unit percent
6	Perrine marl, drained	C/D	98
16	Biscayne marl, drained	B/D	92
32	Terra Ceia muck, tidal	A/D	95

Hydrologic Soil Group

Rating Options

Attribute Name: Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

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Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value to represent the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. The components in the map unit name represent the major soils within a map unit delineation. Minor components make up the balance of the map unit. Great differences in soil properties can occur between map unit components and within short distances. Minor components may be very different from the major components. Such differences could significantly affect use and management of the map unit. Minor components may or may not be documented in the database. The results of aggregation do not reflect the presence or absence of limitations of the components which are not listed in the database. An on-site investigation is required to identify the location of individual map unit components.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be generated. Aggregation must be done because, on any soil map, map units are delineated but components are not.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Map Unit Description

Miami-Dade County Area, Florida

[Minor map unit components are excluded from this report]

Map unit: 6 - Perrine marl, drained

Component: Perrine, drained (98%)

The Perrine, drained component makes up 98 percent of the map unit. Slopes are 0 to 1 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of loamy marine deposits over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 60 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 16 - Biscayne marl, drained

Component: Biscayne, drained (90%)

The Biscayne, drained component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of loamy marine deposits. Depth to a root restrictive layer, bedrock, lithic, is 1 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 95 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 32 - Terra Ceia muck, tidal

Component: Terra Ceia, tidal (92%)

The Terra Ceia, tidal component makes up 92 percent of the map unit. Slopes are 0 to 1 percent. This component is on tidal marshes on marine terraces on coastal plains. The parent material consists of herbaceous organic material. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very high. Shrink-swell potential is low. This soil is very frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 73 percent. Nonirrigated land capability classification is 8. This soil meets hydric criteria. The soil has a slightly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map Unit Description

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

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

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

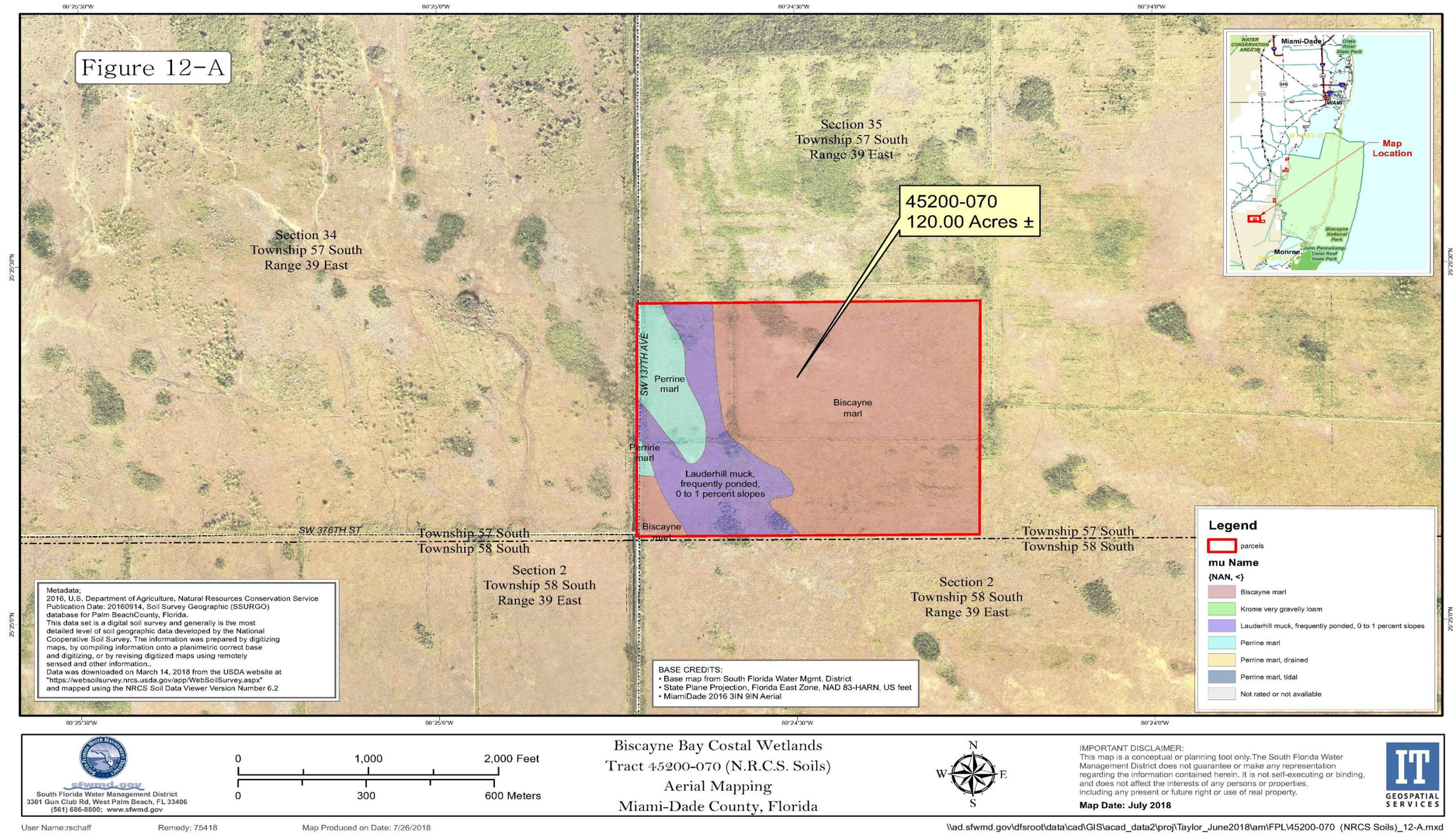


Figure 12-A. Aerial Mapping of Tract 45200-070 (N.R.C.S. Soils) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.

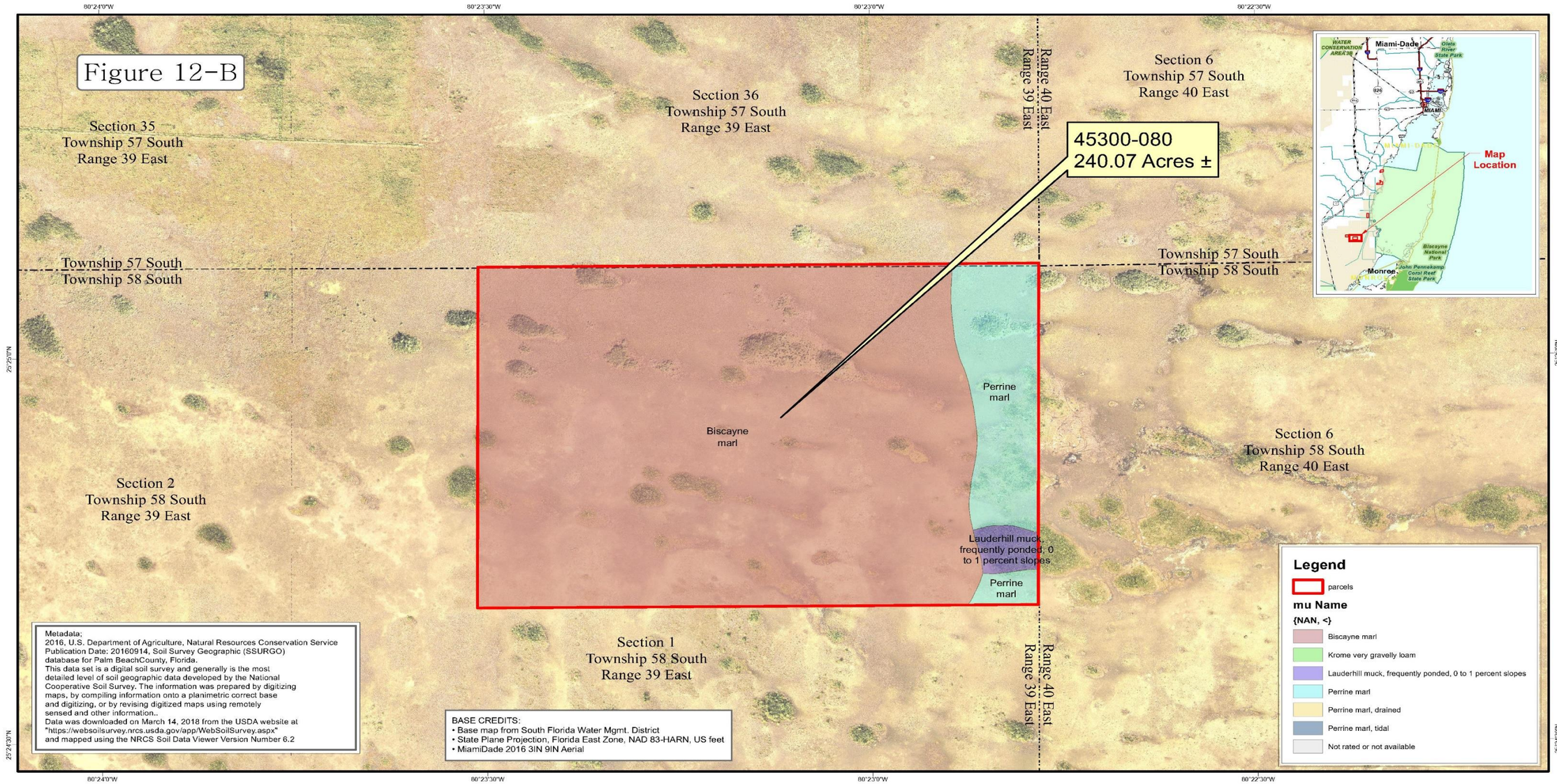
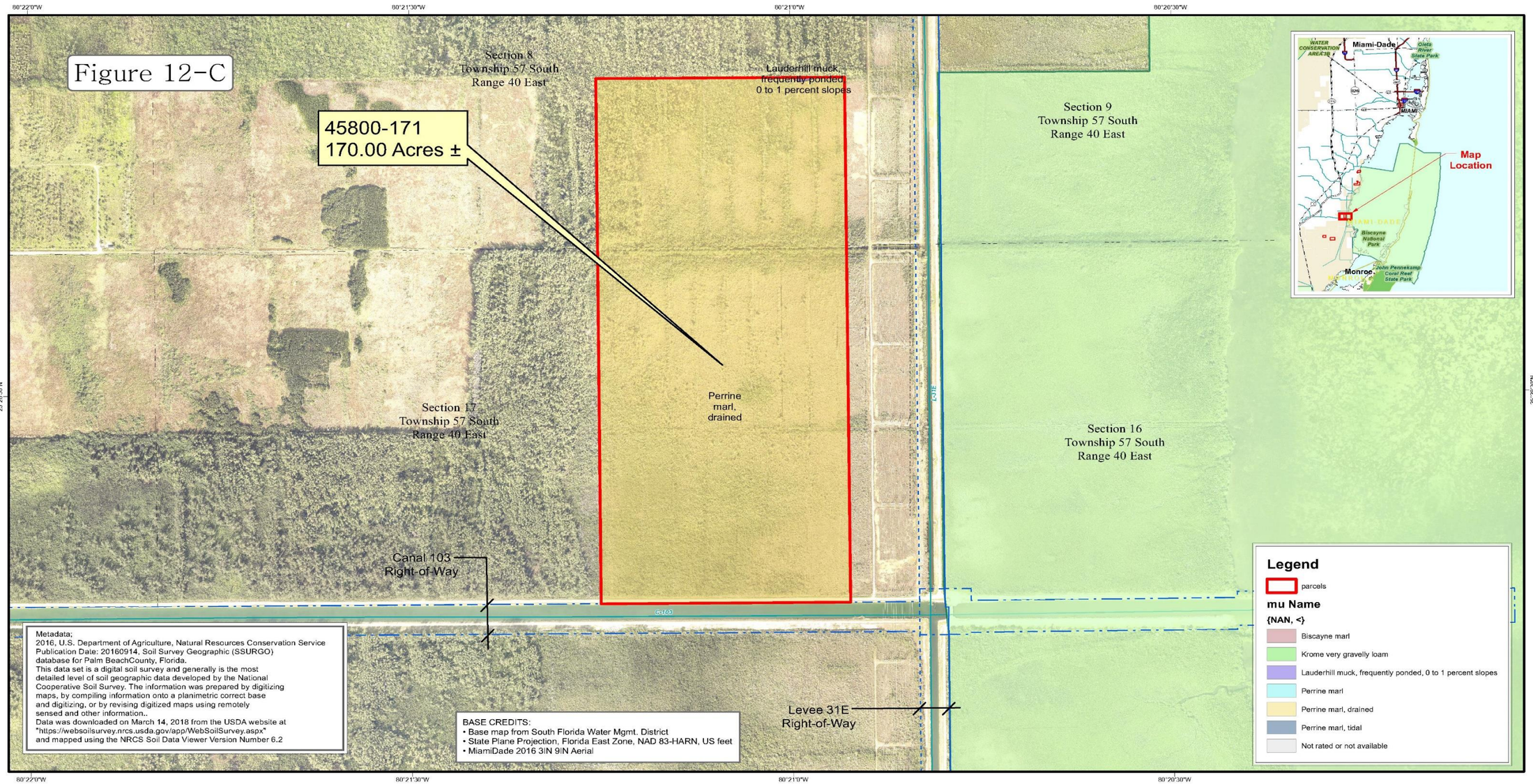


Figure 12-B. Aerial Mapping of Tract 45300-080 (N.R.C.S. Soils) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.

Figure 12-C



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Biscayne Bay Costal Wetlands
Tract 45800-171 (N.R.C.S. Soils)
Aerial Mapping
Miami-Dade County, Florida

N W E S

Map Date: July 2018

IT GEOSPATIAL SERVICES

User Name:rschaff Remedy: 75418 Map Produced on Date: 7/30/2018 \\ad.sfwmd.gov\dfsroot\data\cad\GIS\acad_data2\proj\Taylor_June2018\am\FPL\45800-171 (NRCS Soils)_12-C.mxd

Figure 12-C. Aerial Mapping of Tract 45800-171 (N.R.C.S. Soils) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.

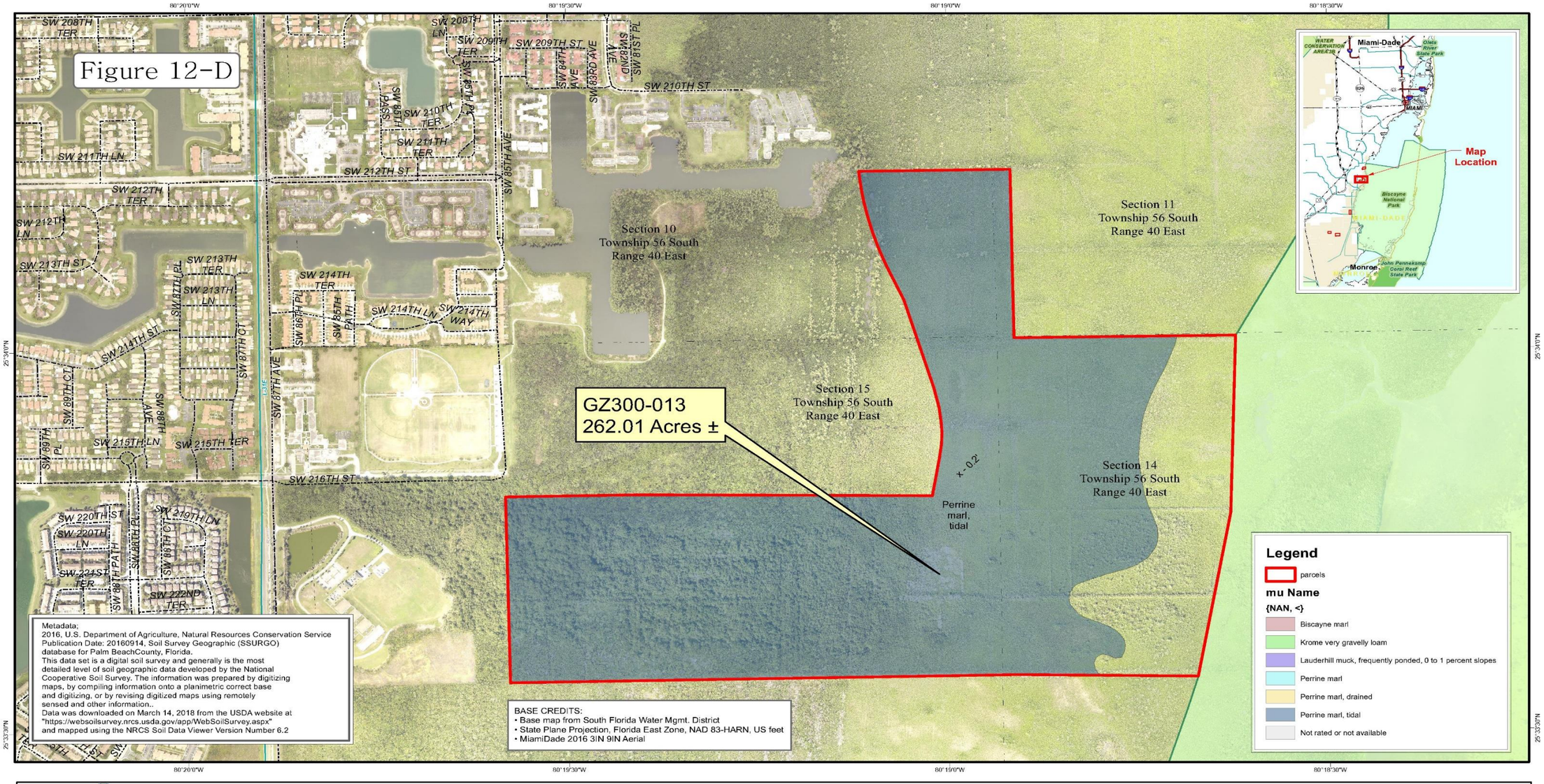
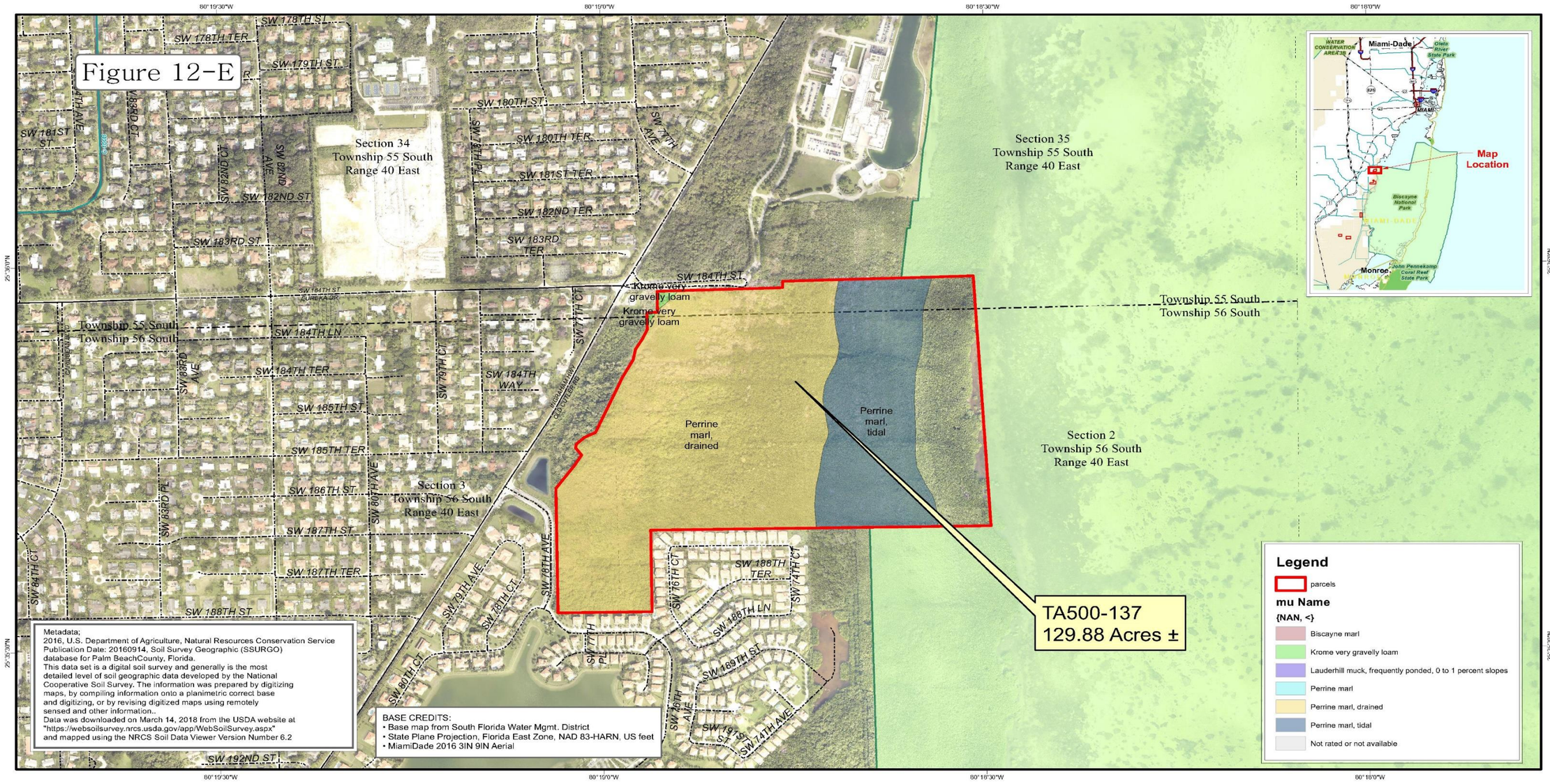


Figure 12-D. Aerial Mapping of Tract GZ300-013 (N.R.C.S. Soils) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.



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Biscayne Bay Costal Wetlands
Tract TA500-137 (N.R.C.S. Soils)
Aerial Mapping
Miami-Dade County, Florida

N W E S

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Map Date: July 2018

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User Name:rschaff Remedy: 75418 Map Produced on Date: 7/30/2018 \\ad.sfwmd.gov\dfsroot\data\cad\GIS\acad_data2\proj\Taylor_June2018\am\FPL\TA500-137 (NRCS Soils)_12-E.mxd

Figure 12-E. Aerial Mapping of Tract TA500-137 (N.R.C.S. Soils) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.

Map Unit Description

Miami-Dade County Area, Florida

[Minor map unit components are excluded from this report]

Map unit: 6 - Perrine marl, drained

Component: Perrine, drained (98%)

The Perrine, drained component makes up 98 percent of the map unit. Slopes are 0 to 1 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of loamy marine deposits over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 60 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 16 - Biscayne marl, drained

Component: Biscayne, drained (90%)

The Biscayne, drained component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of loamy marine deposits. Depth to a root restrictive layer, bedrock, lithic, is 1 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 95 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 32 - Terra Ceia muck, tidal

Component: Terra Ceia, tidal (92%)

The Terra Ceia, tidal component makes up 92 percent of the map unit. Slopes are 0 to 1 percent. This component is on tidal marshes on marine terraces on coastal plains. The parent material consists of herbaceous organic material. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very high. Shrink-swell potential is low. This soil is very frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 73 percent. Nonirrigated land capability classification is 8. This soil meets hydric criteria. The soil has a slightly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map Unit Description

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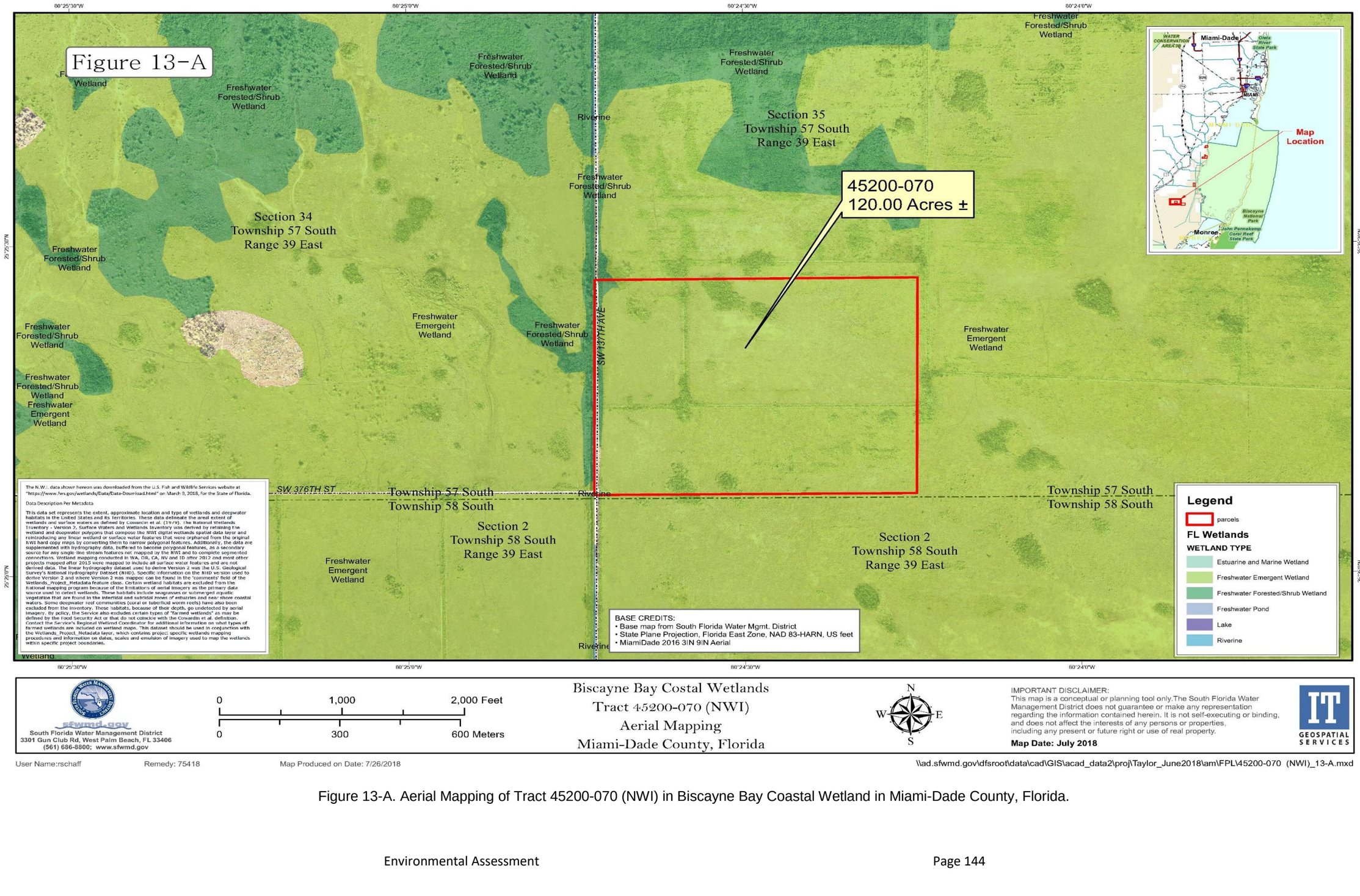


Figure 13-A. Aerial Mapping of Tract 45200-070 (NWI) in Biscayne Bay Coastal Wetland in Miami-Dade County, Florida.

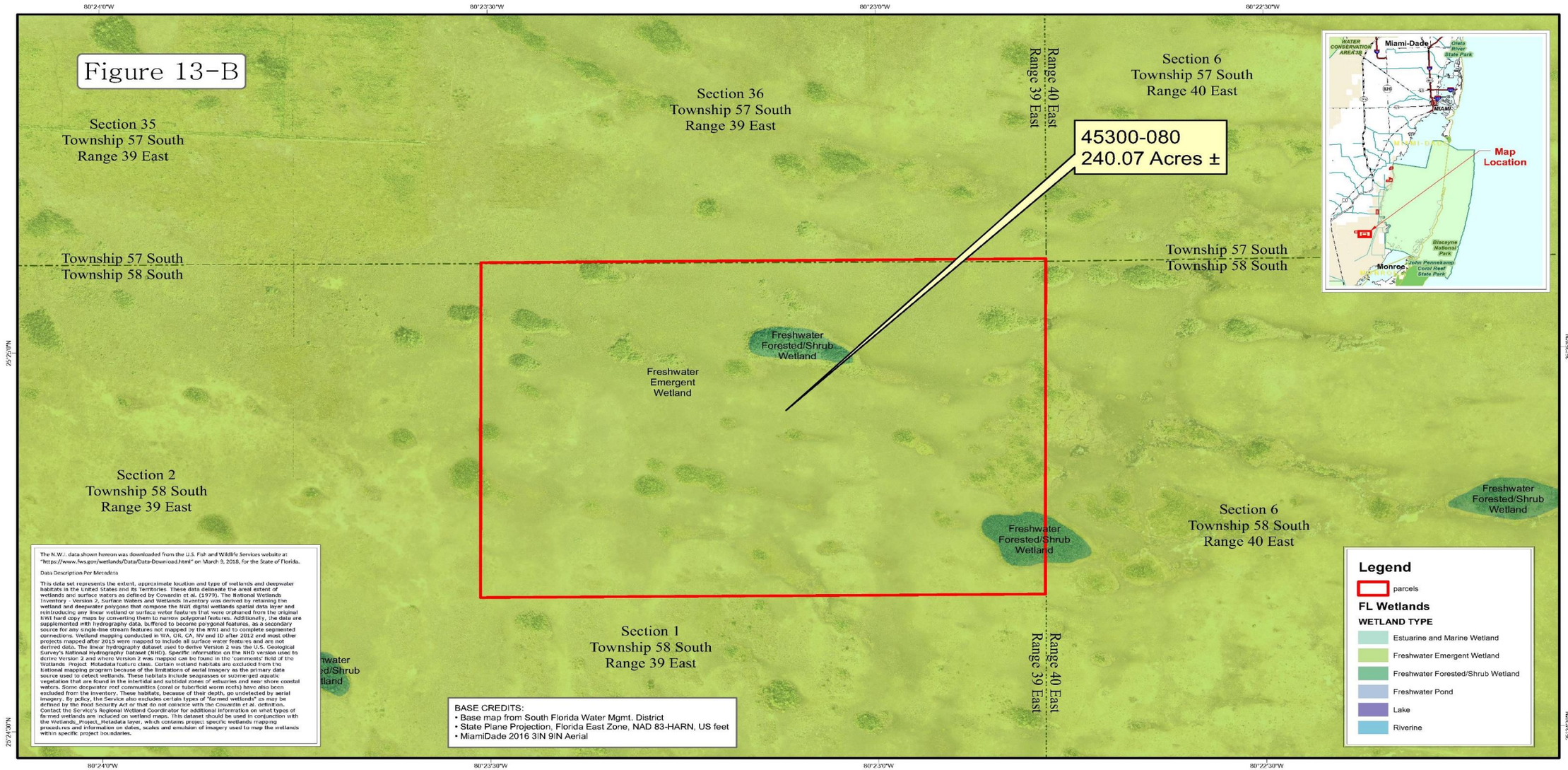


Figure 13-B. Aerial Mapping of Tract 45300-080 (NWI) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.

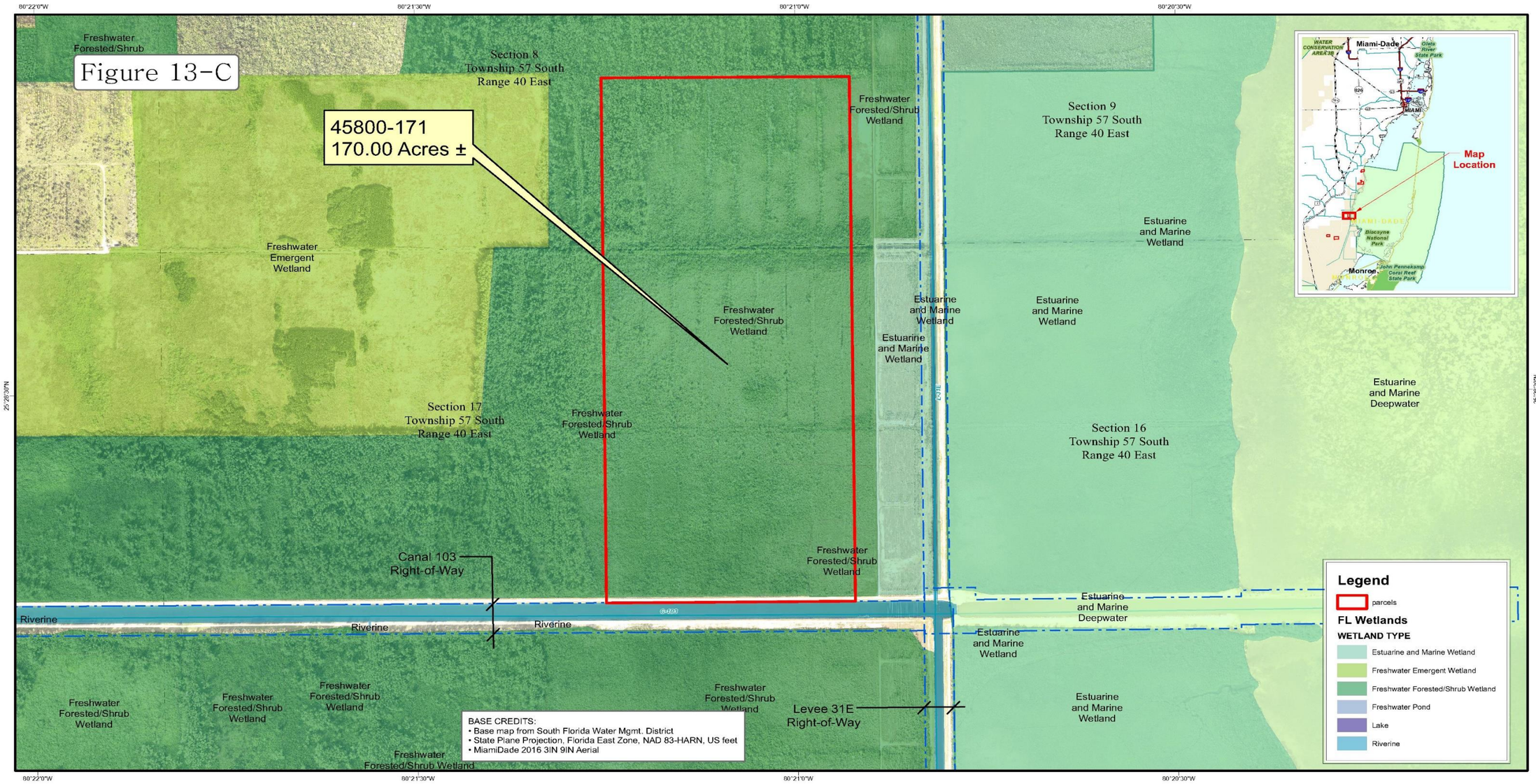
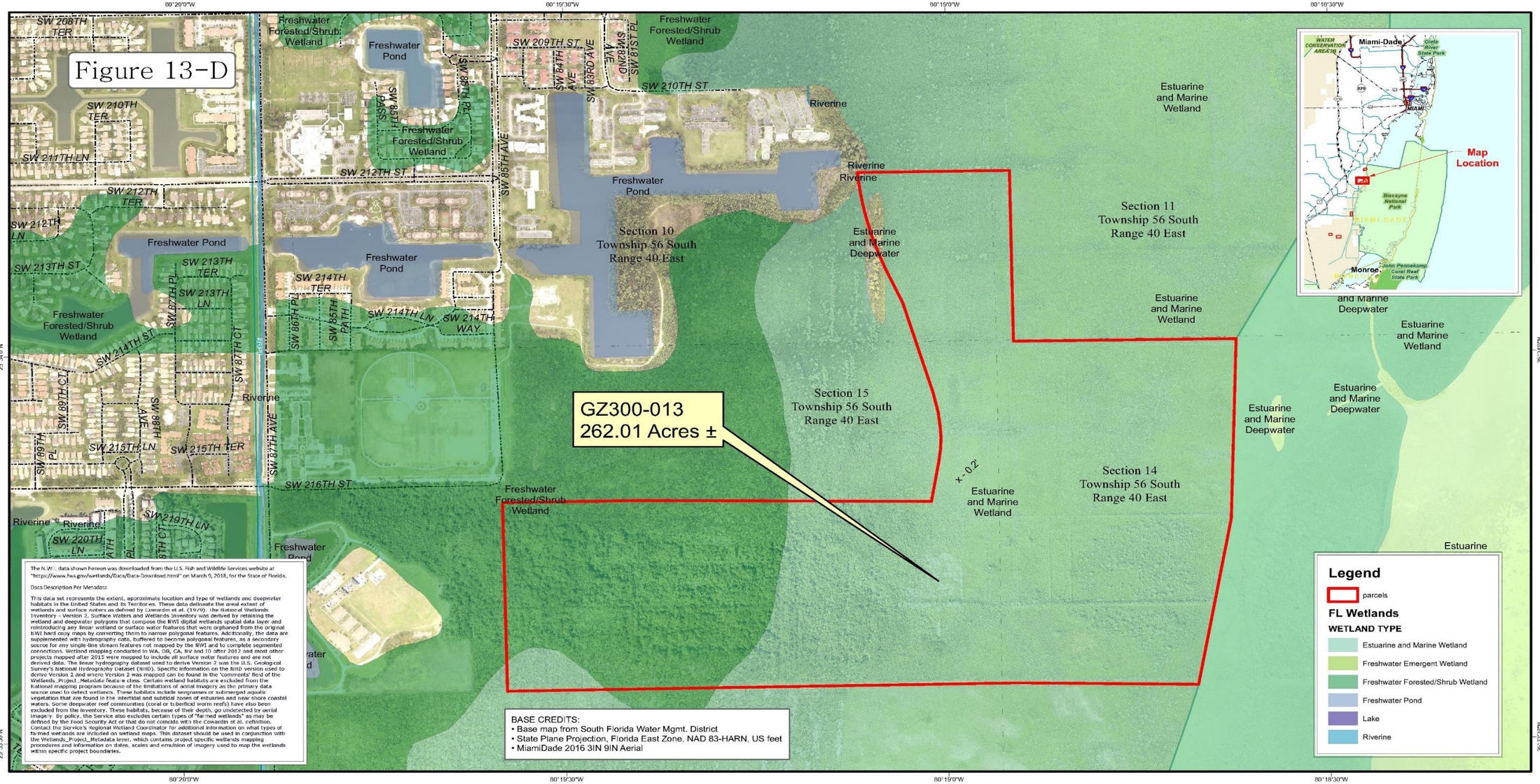
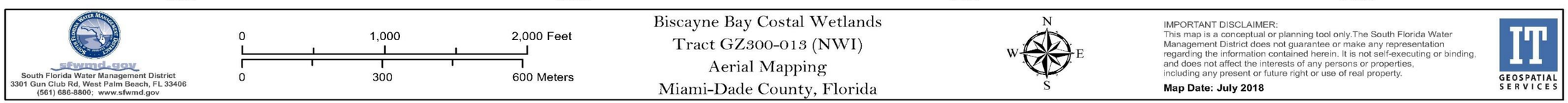


Figure 13-C. Aerial Mapping of Tract 45800-171 (NWI) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.

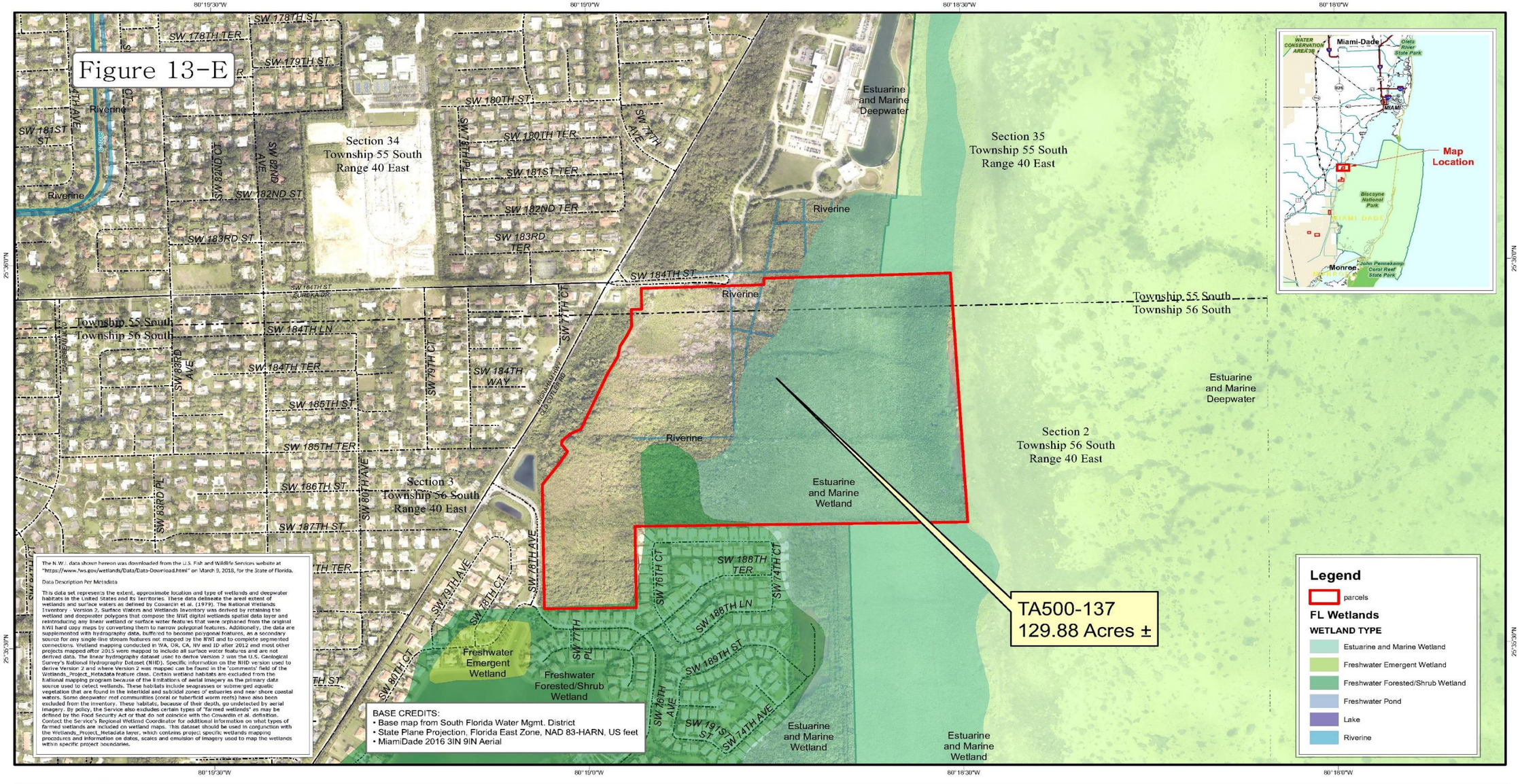




User Name:rschaff Remedy: 75418 Map Produced on Date: 7/30/2018 \\ad.sfwmd.gov\dfsroot\data\cad\GIS\acad_data2\proj\Taylor_June2018\am\FPL\GZ300-013 (NWI)_13-D.mxd

Figure 13-D. Aerial Mapping of Tract GZ300-013 (NWI) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.

Figure 13-E



South Florida Water Management District
3301 Gun Club Rd, West Palm Beach, FL 33406
(561) 686-8800; www.sfwmd.gov

0 1,000 2,000 Feet
0 300 600 Meters

Biscayne Bay Costal Wetlands
Tract TA500-137 (NWI)
Aerial Mapping
Miami-Dade County, Florida

IMPORTANT DISCLAIMER:
This map is a conceptual or planning tool only.The South Florida Water Management District does not guarantee or make any representation regarding the information contained herein. It is not self-executing or binding, and does not affect the interests of any persons or properties, including any present or future right or use of real property.

Map Date: July 2018

GEOSPATIAL SERVICES

User Name:rschaff Remedy: 75418 Map Produced on Date: 7/26/2018

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Figure 13-E. Aerial Mapping of Tract TA500-137 (NWI) in Biscayne Bay Coastal Wetlands in Miami-Dade County, Florida.