

Micco Water Management Area

Brevard County, Florida



**Governing Board Approved
Land Management Plan
January 2017**

Micco Water Management Area Land Management Plan Summary

Management Area Size: 458 acres

Date of Acquisition: Acquisition of parcels within Micco Water Management Area began in December 2009. The District retains fee simple ownership of the parcels within the Micco Water Management Area.

Date of Plan: January 2017

Major Basin: Indian River Lagoon **Planning Basin:** Mid Central Indian River Lagoon Unit

Location: Micco Water Management Area is located in Brevard County west of the Town of Micco. The property is east of Interstate 95 and south of Micco Road.

Funding Source: The acquisition funding source for the Micco Stormwater Park was Save Our River/Bond95 and Land Acquisition Fund Balance.

Management Partners: The District is lead managing agency for the property.

Key Resource Issues:

Resource Management Issues:

- WATER RESOURCES – Water resources within the property are disturbed, primarily from agricultural activities associated with citrus. Additional alterations have occurred in conjunction with dredge spoil deposition and the creation of stormwater treatment pond projects to aid in the improvement of water quality within the Sebastian River basin and ultimately the Indian River Lagoon.
- FIRE MANAGEMENT – Implementation of prescribed burns occur in accordance with annual burn plans.
- FOREST MANAGEMENT- Prior to acquisition, portions of the property were managed for agricultural activities including citrus. The District may remove any remaining citrus trees. In addition, the District plans to reintroduce site appropriate pine species in portions of the property.
- WILDLIFE – The property provides habitat for numerous wildlife species including abundant usage by water birds.
- EXOTICS – Invasive exotic pest plant and animal species occur on the property. The District regularly monitors for the presence of invasive plants and animals and implements appropriate control actions.
- CULTURAL & HISTORICAL RESOURCES – A review of the Department of State, Division of Historical Resources indicates no known or registered cultural sites within the boundaries of the property.

Key Land Use/Recreation Issues:**Land Use Management Issues:**

- ACCESS – One public access point is identified for development within the property.
- RECREATION USE – The District has selected a site for the public parking area and access point and developed a conceptual marked trail system for the property. The property is scheduled to be open to the public for recreational purposes by October 2017.
- SECURITY – Maintenance of fence lines, parking areas, gates, and locks is conducted. The District maintains contact with local law enforcement and a private security firm for any potential security needs. The District maintains a residence agreement for onsite security. Continuation of this agreement will be determined during the scope of this plan.

Administration:

- ACQUISITION – Although no parcels are uniquely identified, the District may consider purchasing parcels near the Micco Water Management Area that become available and that will aid in the conservation of water resources. Additionally, the District may pursue acquisition of small parcels or property surpluses or exchanges with neighbors to improve and provide additional access to the property. A portion of the Wheeler parcel is identified for potential surplus.
- LEASES, EASEMENTS, SPECIAL USE AUTHORIZATIONS, AND CONCESSIONS- District staff will evaluate the need for or appropriateness of any proposed leases agreements, easements, or special use authorizations as opportunities arise.

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INTRODUCTION

This document provides the guidelines and goals for implementation of land management activities at the Micco Water Management Area over the next ten years. This is the first management plan for the water management area.

The Micco Water Management Area covers approximately 458 acres in Brevard County within the North Prong Sebastian River Basin, a sub-basin of the Indian River Lagoon Basin. The property is located in Section 0 of Township 30 South and Range 38 East.

The property is located east of Interstate 95 and south of Micco Road. Fleming Grant Road runs immediately adjacent to portions of the southeast boundary in the town of Micco. Figure 1 depicts the location of the Micco Water Management Area and Figure 2 is a 2015 aerial image of the property.

The District is the lead managing agency for the property. The purchase of the property is consistent with the goals of the Indian River Lagoon Basin projects as set forth in the District's Land Acquisition and Management Five Year Plan at the time of acquisition, Indian River Lagoon Surface Water Improvement and Management Plan 2002, and the District's Water Management Plan. These goals include:

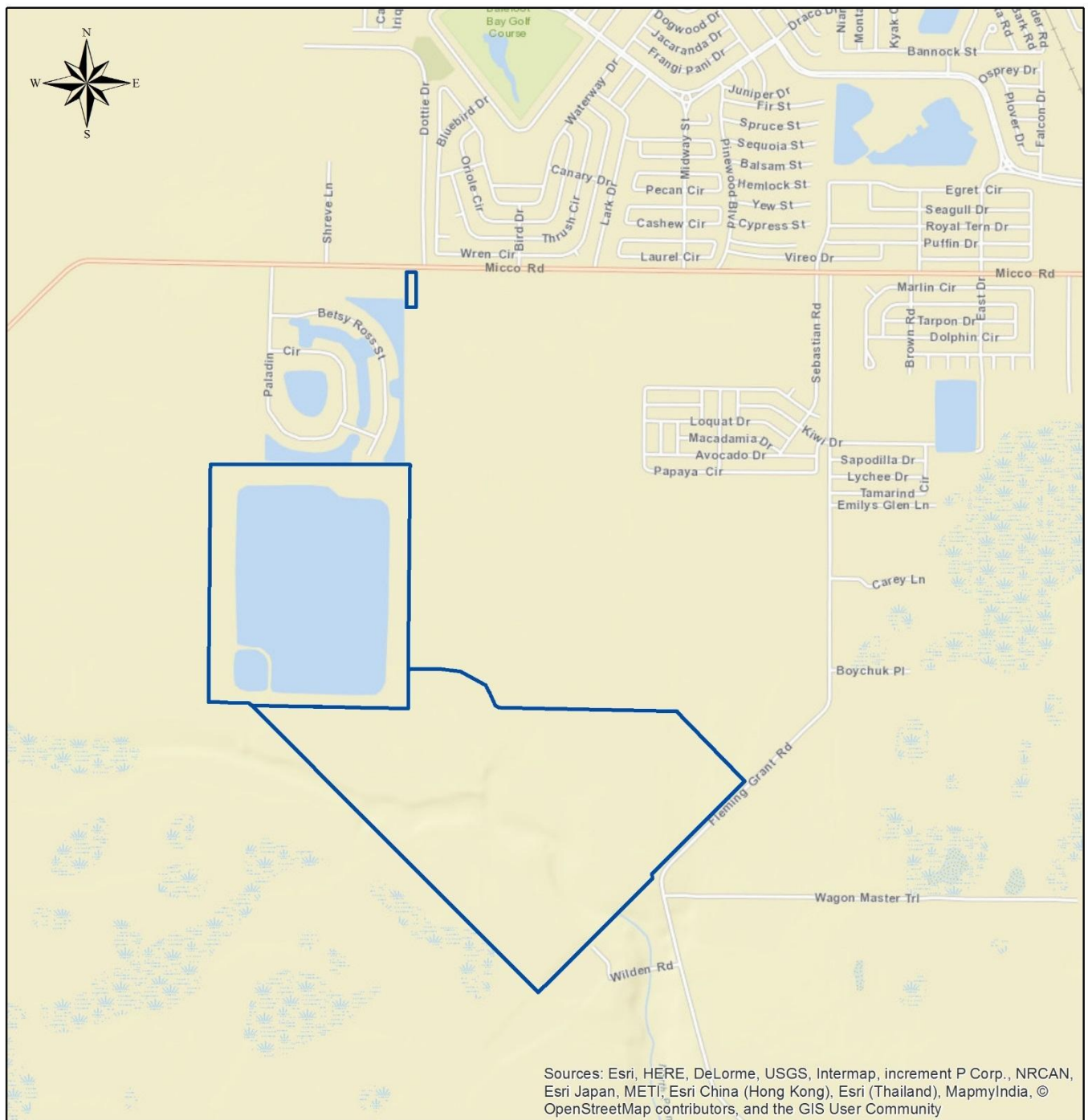
- Improve water quality, maintain natural hydrological regimes, and maintain flood protection by preserving important wetland areas.
- Restore, maintain, and protect native natural communities and diversity.
- Attain and maintain water and sediment of sufficient quality in order to support healthy systems.
- Provide opportunities for recreation where compatible with the above listed goals.

The above are general goals and objectives for Micco Water Management Area. The following plan outlines specific goals and strategies regarding natural, cultural, and water resources as well as recreation management over the next ten years.

WATER MANAGEMENT AREA OVERVIEW

Regional Significance

The Micco Water Management Area is contiguous with the St. Sebastian River Preserve State Park (State Park) and is in an area rich with other public conservation lands and easements. Figure 3 depicts the regional significance of the water management area. In addition to the State Park, other conservation lands include the Valkaria Scrub Sanctuary, Three Forks Conservation Area, Blue Cypress Conservation Area, and Fellsmere Water Management Area. These properties provide for the protection of water quality and storage, indigenous floral and faunal species, as well as numerous natural resource-based recreational opportunities.



Micco Water Management Area

Figure 1 - Location Map

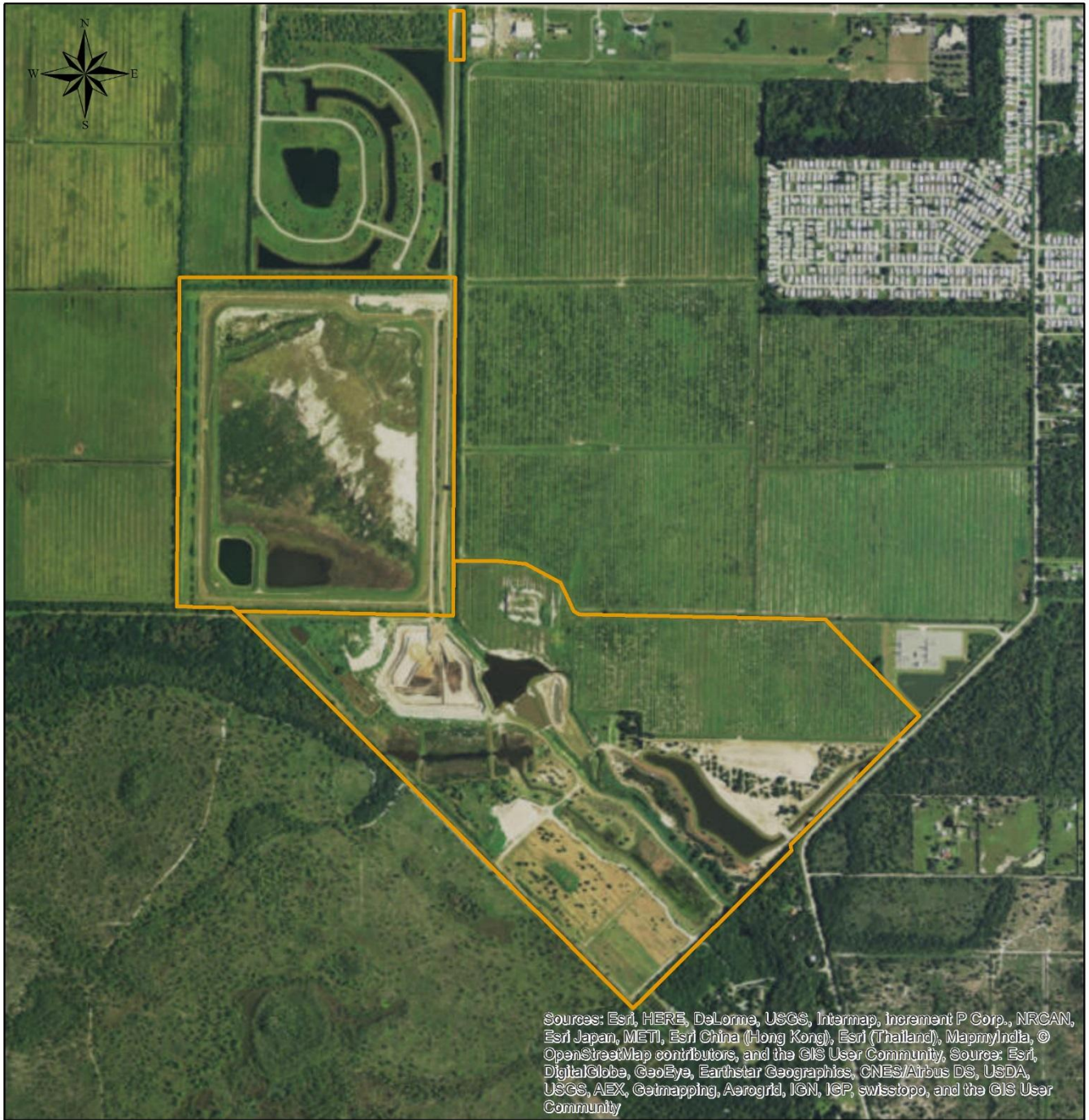


0.35
Miles



Management Area

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Micco Water Management Area

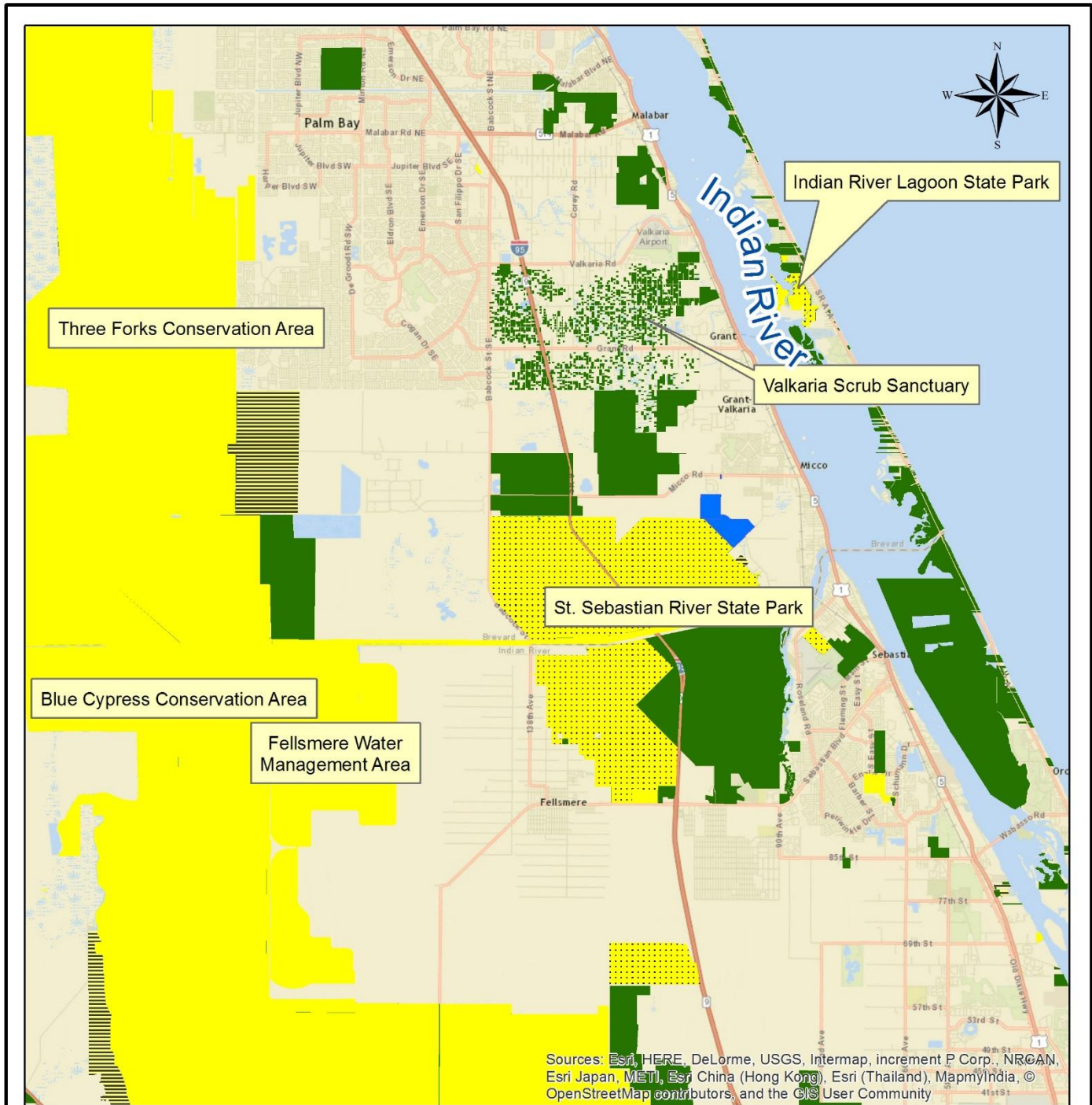
Figure 2 -Aerial Image Map 2015



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Micco Water Management Area
Figure 3 -Regional Significance Map



3.5
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- Management Area
- Other Public Lands
- District Interest**
- Full Fee
- Joint Fee
- District Owned Conservation Easement

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Acquisition History

The Micco Water Management Area is comprised of three parcels totaling 458 acres (Figure 4). The property was purchased using funding sources as indicated in Table (1) one, which summarizes the land acquisition accomplishments.

Met Life - Land Acquisition Number 2001-044

The Met Life parcel totals approximately 176 acres. The parcel was purchased for use as a dredge/spoil deposition site for activities associated with the Sebastian River dredging project and the development of a stormwater facility to benefit water quality within the Sebastian River watershed. In 2007, the District sold a utility easement over approximately 4 acres to Florida Power & Light. In 2008, the District sold an easement over northern portions of this parcel to a neighboring landowner. In addition to payment for this easement, the District received an access easement, which provides management access for the District and contractors to this parcel.

Wheeler - Land Acquisition Number 2001-043

The Wheeler parcel totals approximately 281 acres. The parcel was purchased for use as a dredge/spoil deposition site for activities associated with the Sebastian River dredging project and the development of a stormwater facility to benefit water quality within the Sebastian River watershed. In 2007, the District sold a utility easement over approximately 6 acres to Florida Power & Light.

The District is currently evaluating the potential to surplus approximately 65 acres of this parcel. The area is currently dominated by fallow citrus grove.

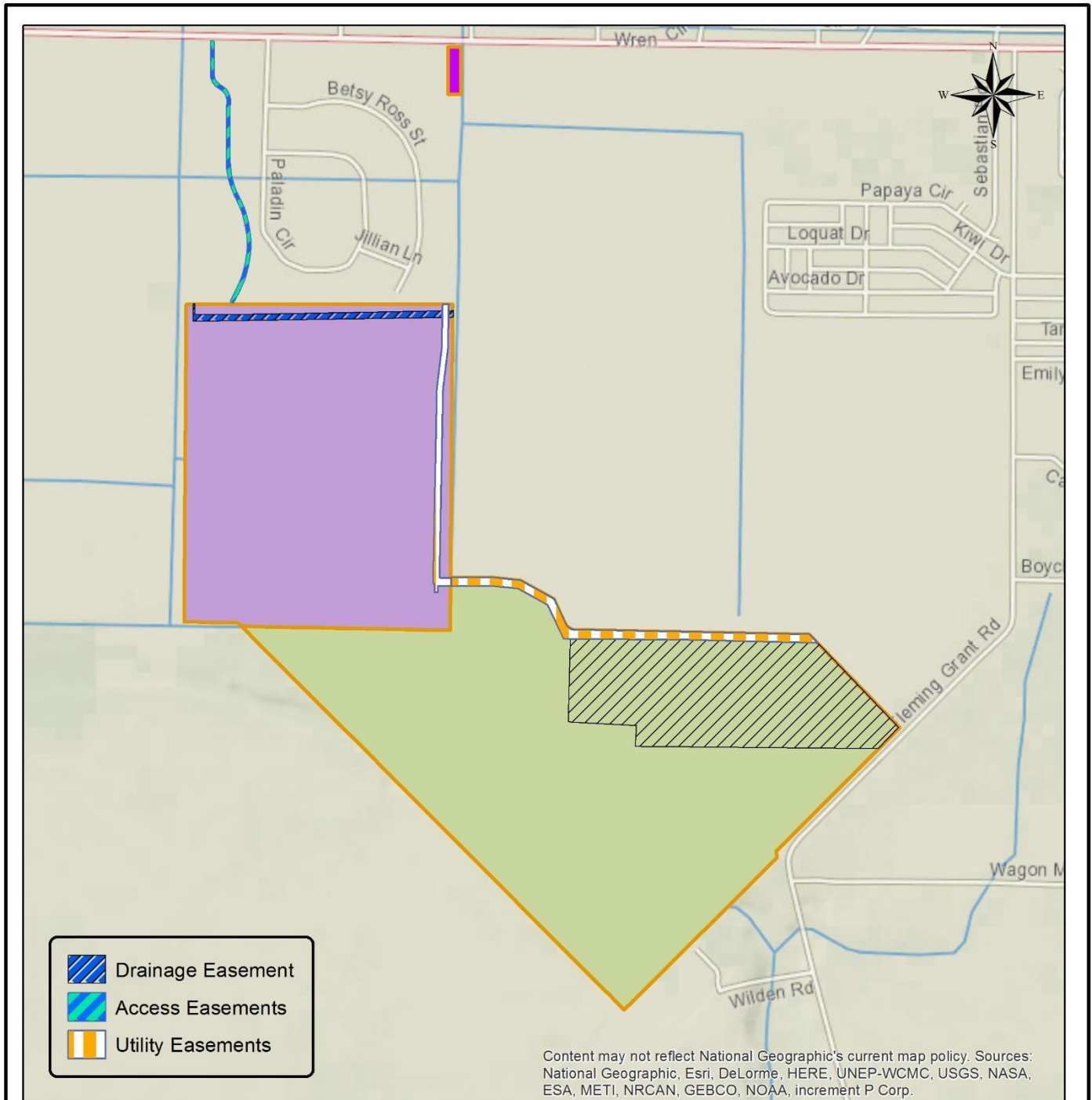
Lequear – Land Acquisition Number 2015-005

The Lequear parcel is approximately an acre in size. The parcel was purchased as means to secure access to the Micco Water Management Area.

In addition to the above land acquisitions, the District is evaluating the potential to acquire an access easement from Micco Road to improve access for management.

Table 1 – Land Acquisition Summary

Parcel	LA Number	GIS Acres	Total Purchase Price	District Funding Source	Closing Date	Description
Met Life	2001-044-P1	209.46	\$632,121.00	SOR/BOND95	12/19/2001	Acquisition
		(34.65)	(\$138,349.60)	-----	12/19/2001	Surplus
	2001-044-P2	-----	(\$145,500.00)	-----	07/27/2007	Sale of Easement
	2001-044-P3	-----	(\$3,300.00)	-----	06/05/2008	Sale of Easement/Exchange
Wheeler	2001-043-P1	294.18	\$1,169,000.00	SOR/BOND 95	12/19/2001	Acquisition
		(12.15)	(\$607,250.00)	-----	12/09/2005	Surplus
	2001-043-P2	-----	(\$249,500.00)	-----	07/27/2007	Sale of Easement
Lequear	2015-005-P1	1.23	\$15,000.00	Land Acquisition Fund Balance	09/21/2015	Acquisition
TOTALS	-----	458.07	\$963,221.40	-----	-----	-----



Author: jemanuel

Micco Water Management Area

Figure 4 - Land Acquisition Map



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Miles

Management Area

Potential Surplus

Parcel Name

Jody K. Lequear

Metroplitan Life

Wheeler Farms, Inc

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NATURAL RESOURCES OVERVIEW

Topography and Hydrology

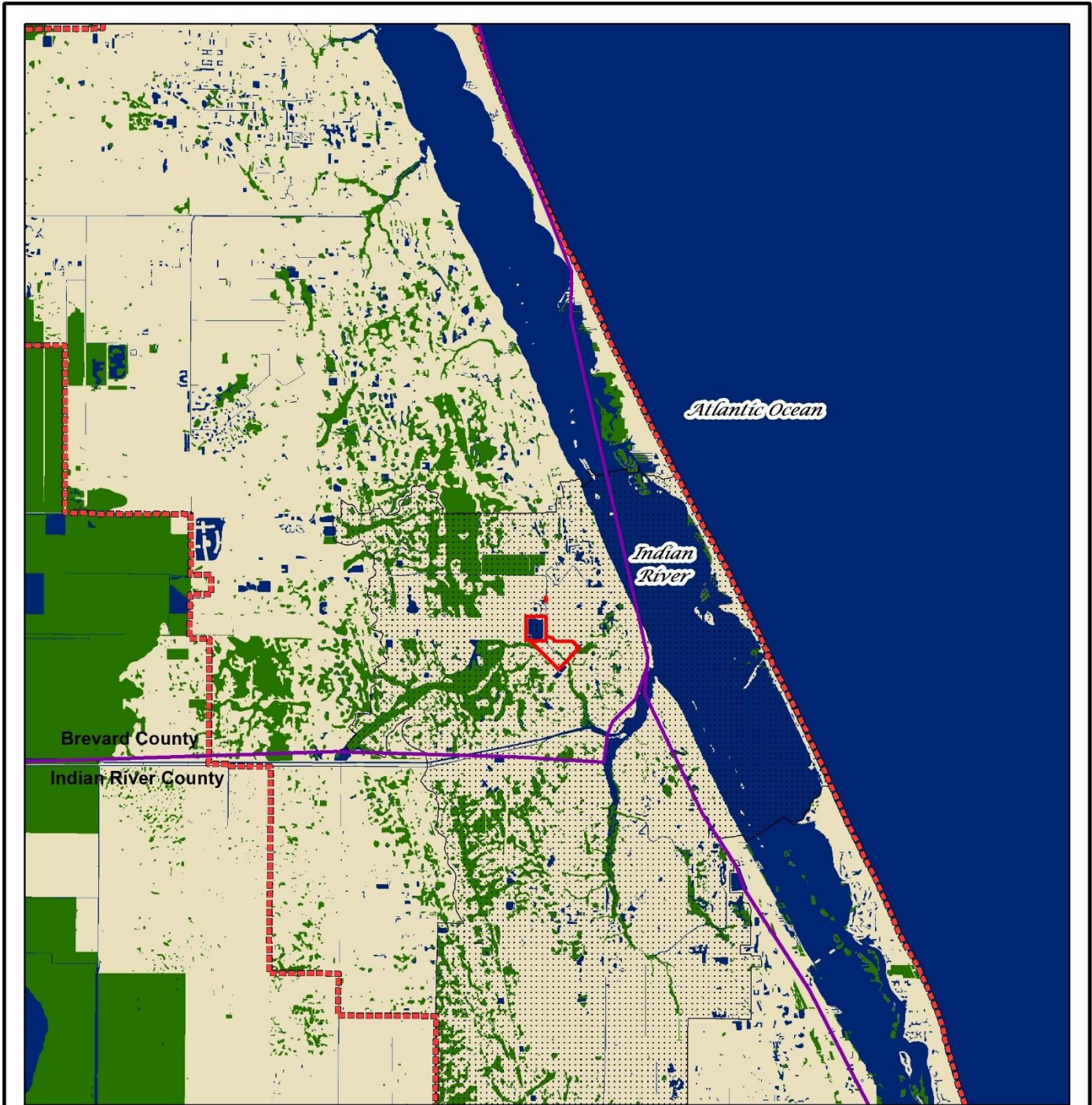
Micco Water Management Area lies within the Sebastian-St. Lucie Flats, a physiographic subdistrict of the Eastern Flatwoods District.

The Eastern Flatwoods District includes areas of uplifted limestone of the Floridan Aquifer that lie unconformably below surficial sands. This is a sandhill karst with solution below surficial sands. It is the region of most active collapsed sinkhole development. Because of the xeric hills and internal drainage, these areas are the principal recharge areas of the Floridan aquifer. The Eastern Flatwoods District is also called the coastal lowlands and has elevations generally less than 90 feet (Brooks). Elevations within the property range up to 20 feet above sea level.

Though highly disturbed, the most significant surface hydrological feature of the water management area is North Prong Sebastian Creek, the remnants of which are located in the southeastern portion of the property. Figure 5 depicts the hydrologic features of the areas surrounding the Micco Water Management Area.

Natural Communities

The 458 acres that comprise the Micco Water Management Area were historically dominated by a matrix of mesic and wet flatwoods interspersed by ephemeral wetlands such as depression marsh and dome swamp with forested wetland communities bordering North Prong Sebastian River. According to analysis of historical aerial imagery, the majority of the property was cleared in the early to mid 1960s to make way for citrus groves. The property was actively managed for citrus until public acquisition. After acquisition, a portion of the remaining groves within the property continued to be managed for fruit via a lease agreement through 2015. Figures 6a-6d illustrate changes associated with the conversion of the property to citrus and through early phases of the installation of stormwater treatment ponds and associated restoration areas.



Micco Water Management Area
Figure 5 - Hydrology Map



4

Miles

- Micco Water Management Area
- County Boundaries
- Indian River Lagoon Basin
- Mid Central Indian River Lagoon Basin
- Upland
- Water
- Wetland

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Micco Water Management Area

Figure 6a - Historical Imagery 1958



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Micco Water Management Area

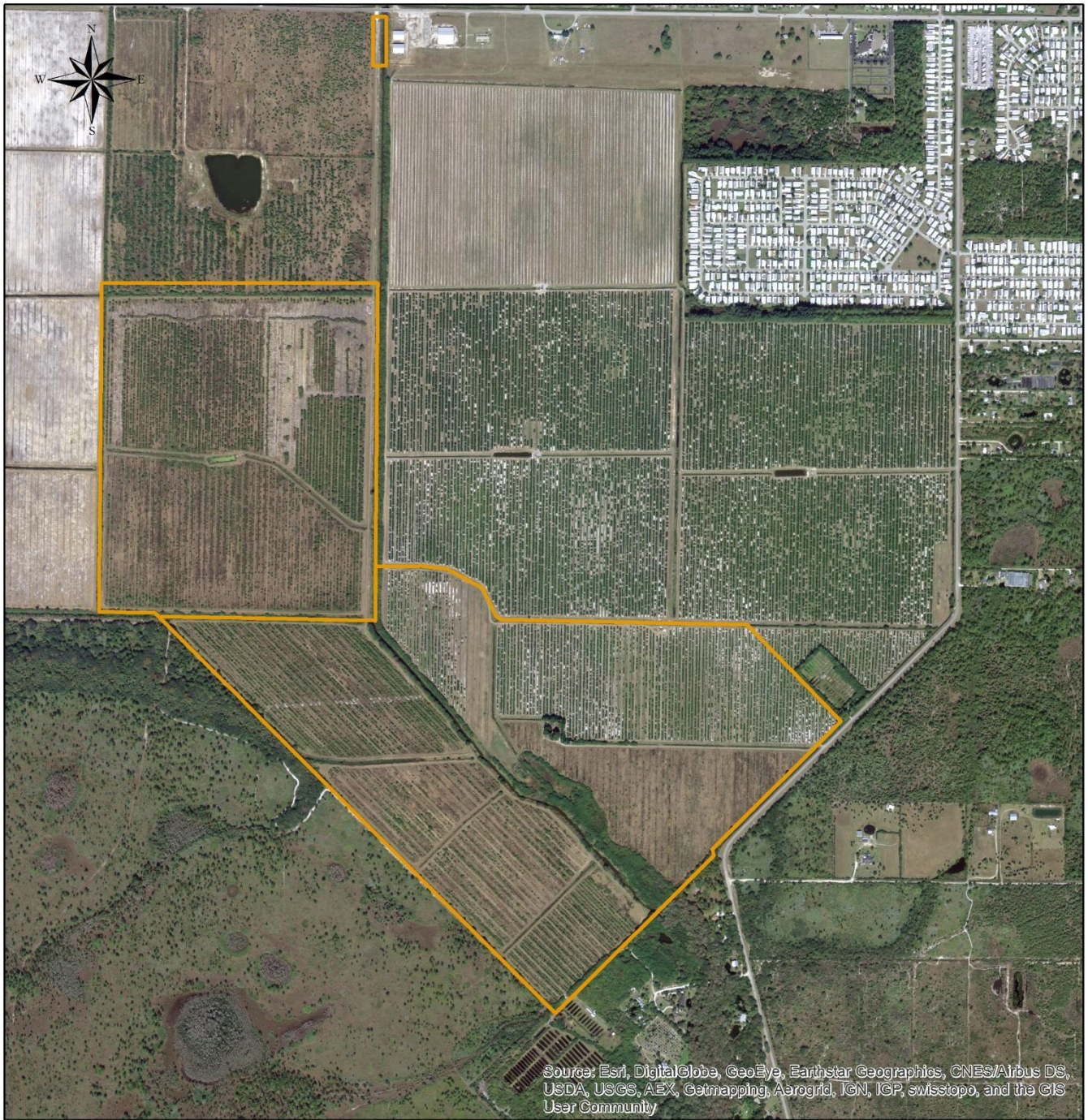
Figure 6b - Historical Imagery 1979



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Micco Water Management Area

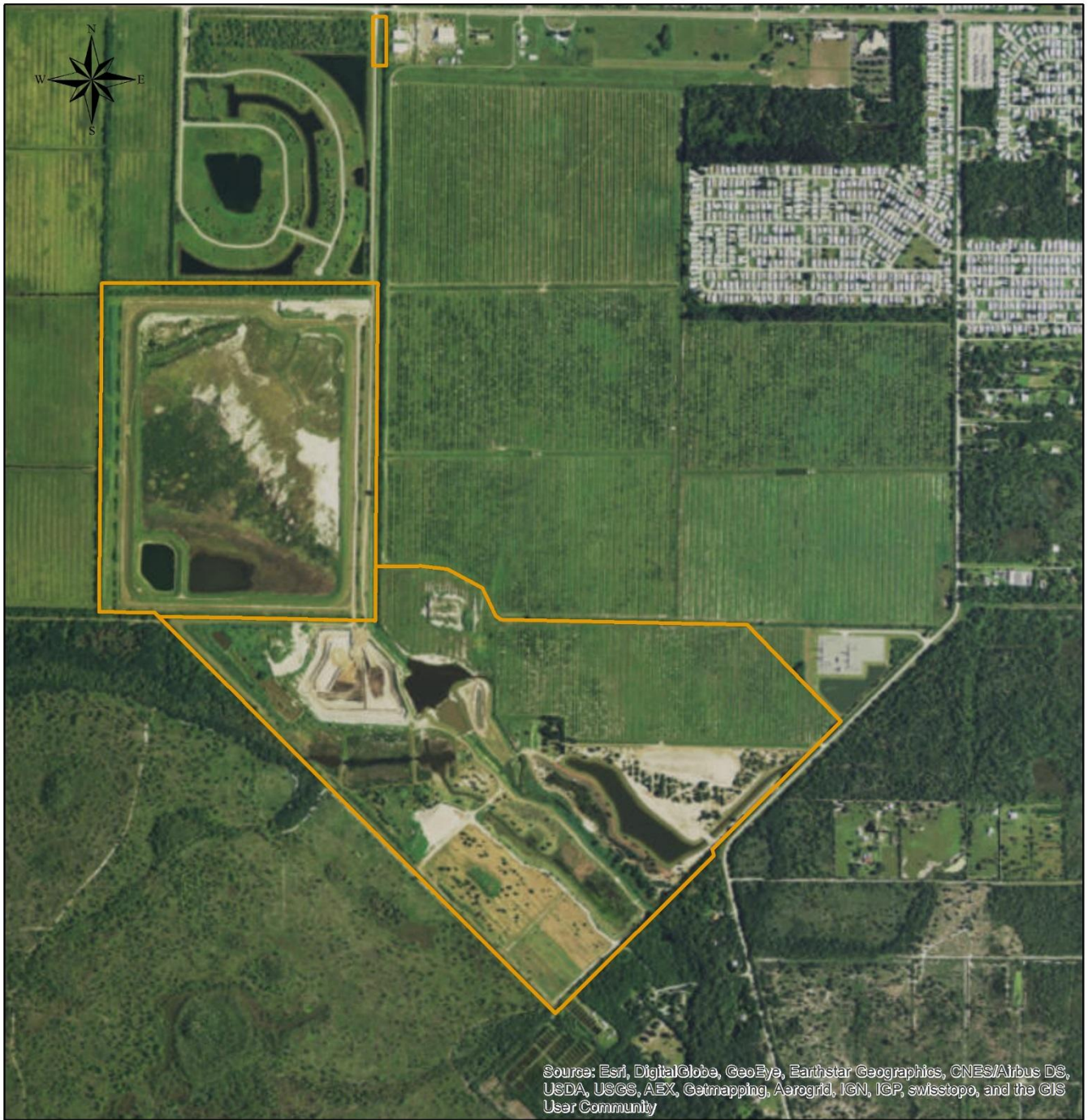
Figure 6c - Historical Imagery 2004



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Micco Water Management Area

Figure 6d - 2015 Imagery



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Soils

According to data produced by the United States Department of Agriculture, Natural Resource Conservation Service, several soil types naturally occurred within the Micco Stormwater Park. These soils include Anclothe, Eau Gallie, Immokalee, Oldsmar, Pineda, and Riviera sands as well as areas of Quartzipsamments. Due to significant alterations to vegetation, site hydrology, and soils resulting from previous conversion of the property to improved rangeland and citrus grove, the deposition of muck and sand from dredging activities, and recent conversion of portions of the property to stormwater ponds, these soil configurations are no longer accurate across much of the property. Figure 7 depicts historical soil coverages within the Micco Water Management Area. District staff estimate that areas outside the dredge deposition and stormwater treatment ponds will, over time and with restoration and enhancement activities, be some arrangement of Eau Gallie and Riviera type soils supporting mesic and wet flatwoods type environments. Portions of the site that have been converted to stormwater ponds and restored wetlands would expect to be considered open water in an updated soil survey.

IMPLEMENTATION

The following sections outline land management strategies for resource protection, land use, and administration on the Micco Water Management Area for the next ten years.

SPECIAL MANAGEMENT CONSIDERATIONS

Dredge Material Containment Area

The Met Life parcel, located on the northwest portion of the property is a dredged material containment area. This site has received muck dredged from the Sebastian River, which aided in the removal of oxygen depleting muck and sands from both the Sebastian River and Sebastian Inlet. Due to the relative instability of the muck and associated risks with access, public access is restricted across the entire footprint of the dredged material deposition site.

Additionally, an underground pipe was installed to direct brackish water from the dredge management area to the C-54. This pipe comes off the dredge material containment area and runs south along the western boundary of the Wheeler parcel and eventually through the St. Sebastian River Buffers State Preserve to the C-54 canal. This pipe should be left in place to facilitate future use if needed.

FDOT Mitigation Areas

The District's FDOT Mitigation Program (F.S. 373.4137) funded the development and implementation of habitat enhancements projects within the property for the purposes of mitigation. The mitigation offsets permitted wetland impacts associated with FDOT roadway projects that occur within SJRWMD Regulatory Basin 22 (Central Indian River Lagoon). In order to provide mitigation for the functional loss of permitted wetland impacts, the District will implement enhancement activities including invasive and exotic plant management, establishment of site appropriate species, enhancement and management of site hydrology, and subsequent monitoring of identified projects. See Addendum 1 for more specific Mitigation Objectives.



Historical Soil Series

-  Ancloste sand
-  EauGallie sand
-  Immokalee sand
-  Oldsmar sand
-  Pineda sand
-  Quartzipsammments
-  Riviera sand

Micco Water Management Area

Figure 7 - Historical Soils Map



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Miles

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Spoil Mounds

Several large spoil mounds are located within the Wheeler parcel. These piles are residual from the excavation of the stormwater ponds. It is anticipated that the spoil from these piles will be sold. Due to the high volume of heavy equipment traffic associated with this activity, the property will remain closed to public access until spoil removal is complete.

RESOURCE PROTECTION AND MANAGEMENT

Water Resource Protection

While some measure of water resource protection was accomplished through acquisition, the majority of the wetlands and surface waters within the Micco Water Management Area are significantly disturbed with the most notable disturbance being the Sotille Canal. Other hydrologic disturbances within the property include stormwater ponds, roads, ditches, swales, culverts, weirs, and low water crossings.

In 2009, the District entered into a grant agreement with the State of Florida Department of Environmental Protection (DEP) to facilitate the development of stormwater treatment ponds and infrastructure on the Micco Water Management Area. This agreement provided the framework for matching grant funds payable to the District for work associated with the development of this project. The stormwater project was designed to capture and impound for treatment stormwater from an approximate 8,000-acre watershed basin that includes the Barefoot Bay community to the north of the project through a series of treatment ponds, restoration of the Herndon Swamp system, and the creation of additional wetlands. The majority of work associated with this project was complete in 2015.

Pond 1

Pond 1 is approximately 25 acres in size and encompasses approximately 1,900 feet of the Sotille Canal. This pond receives discharges from the canal and serves as a primary sediment collection area for flows from the canal. A weir is located at the downstream end of Pond 1 serving to slow discharges allowing time for sediments to settle. The conceptual plan for the stormwater park included designs for a larger footprint for Pond 1. District staff will evaluate the potential need to expand or dig a secondary pond to the northwest of the current footprint within the scope of this plan.

Pond 2

Pond 2 is approximately 6 acres in size and is located east of the Sotille Canal. The construction of this pond was accomplished jointly with Brevard County. The pond receives drainage from Fleming Grant Road and nearby residential areas as well as the roadside ditch. This pond allows for a minimum of 14 days residence time for water, allowing sediments to settle out.

Herndon Swamp

Herndon Swamp slough is the remnants of a once forested system that ran through the property from east to west draining into the Sotille Canal. The installation of weirs and

culverts to slow and direct flow as needed preceded restoration plantings to reestablish hardwoods, which was funded via FDOT mitigation funds.

As part of the required monitoring of the stormwater project, three temporary culverts were installed in the area south of the weir associated with Pond 1. These culverts were installed as part of an effort to collect flow data and determine efficacy of the system. Once monitoring objectives are met, the culverts will be removed. The District anticipates replacing these culverts with either a Bailey bridge or box culvert to maintain access across the site. Additional work anticipated in completion of the stormwater treatment areas includes the installation of a 60-inch gated culvert in the bypass channel, the installation of rails on the Herndon Swamp weir, and a barricade for safety to block public access to the sheet pile weir on Pond 1.

Two FDOT Mitigation Areas were constructed utilizing FDOT mitigation funds available as a result of wetland impacts incurred in SJRWMD Regulatory Basin 22. FDOT Mitigation Areas East and West were constructed to restore wetland functions to the area and aid in the overall functioning of the stormwater park project. In addition to earthwork, these areas were planted with site appropriate native plants. The footprint of the existing FDOT planting areas is indicated in Figure 9 under the Natural Resource Management section of this plan and the associated mitigation plan and criteria are included as Addendum 2.

Additional plantings and restoration work funded through FDOT mitigation are planned. District FDOT mitigation staff will coordinate with land management staff to identify appropriate areas to implement upland pine and oak plantings. District FDOT mitigation staff will also conduct all requisite monitoring and maintenance until mitigation criteria are met.

Operation and maintenance activities are anticipated and will be perpetual. It is expected that approximately 180 acres within the property will be maintained through the District's annual mowing contract with the exception of mowing slopes around ponds and canals, which will be accomplished in house. Additionally, quarterly inspection of the bridge, gates, weirs, structures, and fencing will occur. Maintenance and repair of this infrastructure will occur as needed.

District staff anticipate long-term needs (20-year horizon) to include weir and bridge rehabilitation. These activities may include dewatering, heavy pressure washing, minor repairs, painting, and possibly re-decking of the bridge.

Water Resource Strategies

General Maintenance Activities

- Conduct maintenance and incidental or emergency repair of water resource structures as necessary.
- Maintain water resource structures database and incorporate maintenance, repair, and any new structures.

Specific Strategies

Recurrent

- Visually inspect roads, trails, low water crossings, and culverts for potential erosion problems and maintenance and repair needs.
- Visually inspect pumps, weirs, and other water resource structures for maintenance and repair needs.
- Conduct FDOT mitigation monitoring.
- Conduct maintenance mowing on 180 acres.
- Conduct slope mowing in areas around ponds and canals.

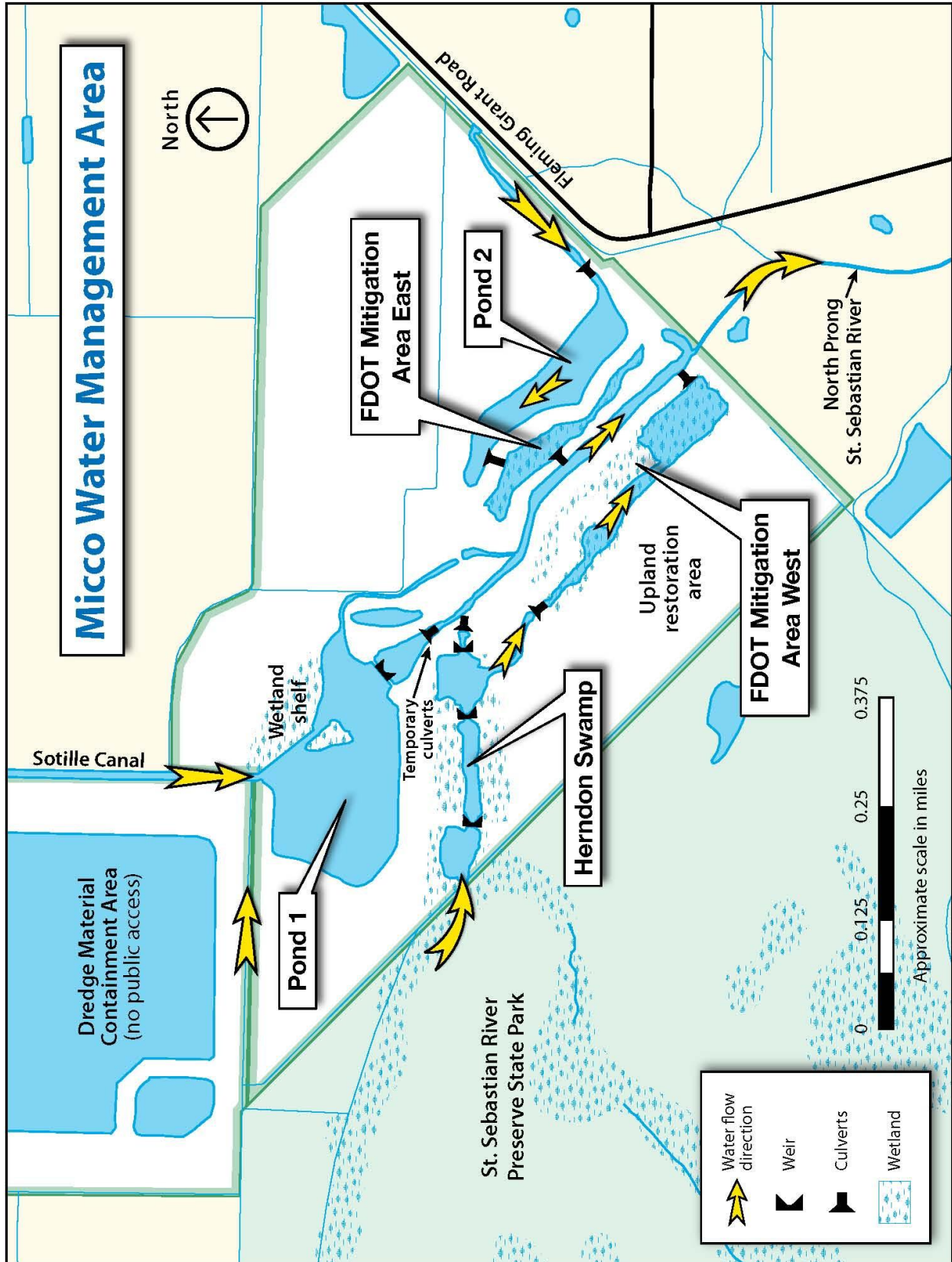
Short-term planning horizon (1-5 years)

- Conduct water quality and flow monitoring.
- Upon completion of required flow monitoring at the culvert south of the Pond 1 weir, install a bridge or box culvert to maintain access across the site.
- Install gated culvert in the bypass channel.
- Install safety barricade to block access to the sheet pile weir on Pond 1.
- Conduct additional restoration planting in FDOT mitigation areas.
- Expand FDOT mitigation areas to include uplands for pine and oak plantings.

Long-term planning horizon (6-10 years)

- Evaluate the potential need for expansion of Pond 1 or the excavation of an additional pond in the area to the northwest of the existing Pond 1 footprint.

Figure 8 – Water Resource and Infrastructure Location Map



Flora and Fauna

Flora

While no comprehensive plant species lists for the property. Should the opportunity arise, District staff will work with local Native Plant Society groups, college groups, or other interested and capable parties to aid in the development of a plant species list.

Fauna

Wood Stork

The property is within the core foraging area for several nesting colonies of the federally endangered Wood Stork (*Mycteria americana*). The closest rookery is documented approximately 2 miles east of the property (Wood Storks, 2010) and the property is within the foraging area radii limits established for north Florida Wood Stork rookeries. The District will adhere to the guidelines established in the January 1990 (or any subsequent revision) U.S. Fish and Wildlife Service (FWS) *Habitat Management Guidelines for the Wood Stork in the Southeast Region*.

Northern Crested Caracara

Northern Crested Caracara (*Caracara cheriway*) are large falcons known to forage within the Micco Water Management Area. Multiple nesting locations are documented within 15 miles of the property. Caracara nests are non-conspicuous, typically constructed in the tops of cabbage palms with nesting generally occurring in the winter-early spring. They eat a wide variety of small vertebrates, including carrion. Should nest sites be observed within the property, GPS locations will be recorded and incorporated into the existing database.

Bald Eagle

There is a known Bald Eagle (*Haliaeetus leucocephalus*) nesting site approximately .25 miles to the west of the Wheeler parcel. The activity status on this nest is unknown; however, several other active nests occur in the area. While there is not likely good Bald Eagle nesting habitat within the property, adjacent property, particularly within the St. Sebastian River State Park provides suitable habitat. Should nest sites be identified within close proximity to or within the property, GPS locations will be recorded and incorporated into the District Bald Eagle database. The District will adhere to the guidelines established in the May 2007 U.S. Fish and Wildlife Service (FWS) *National Bald Eagle Management Guidelines*. This document is effective following the delisting of the species from the Endangered Species list. The Bald Eagle continues to receive protection through the Bald and Golden Eagle Protection Act and the [Migratory Bird Treaty Act](#).

Exotic and Nuisance Species

Several exotic pest plants occur within the Micco Water Management Area including:

- | | |
|---------------------------|---------------------------------|
| • Brazilian pepper | <i>Schinus terebinthifolius</i> |
| • Cogongrass | <i>Imperata cylindrica</i> |
| • Water hyacinth | <i>Eichhornia crassipes</i> |
| • Old World climbing fern | <i>Lygodium microphyllum</i> |
| • Torpedo grass | <i>Panicum repens</i> |
| • Lantana | <i>Lantana camara</i> |

The property is included in the District's invasive plant management program. Exotic species control is necessary to inhibit the continued proliferation of exotic plants and integral in the restoration and maintenance of natural plant communities. While it is unlikely that the District will entirely eradicate invasive plants within the Micco Water Management Area, achieving maintenance control of such species is targeted within the scope of this plan. At this level, the property is regularly monitored and treated as necessary. Additionally, in conjunction with FDOT mitigation projects within the property, District staff manage invasive and exotic plants to specifications associated with and within the footprint those projects. For this work, the District may continue to contract treatment of invasive and exotic plants.

Feral hogs (*Sus scrofa*) are known to occur within the property. Feral hog damage is observed and is problematic, particularly in areas of restoration plantings. Control of feral hogs may be administered through the District's Special Use Authorization (SUA) process and a feral hog removal agent. Should hog populations or damage increase, the District may initiate additional control actions which may include the use of a contract with The United States Department of Agriculture (USDA).

The Herndon Swamp and FDOT Mitigation Areas East and West have a documented occurrence of two invasive fish species, the Hoplo catfish and Nile tilapia. In an effort to increase diversity, bolster the food web, and hopefully outcompete the exotic fishes, District staff in coordination with FWC stocked the pond with native forage fishes. The District will continue these efforts as necessary and as support from FWC continues.

Flora and Fauna Strategies

General Maintenance and Management Strategies

- Collect species occurrence data and incorporate into the District biological database.
- Conduct management activities in a manner consistent with relative rules, regulations, guidelines, and species management plans and in a manner that provides maximum protection for wildlife.
- If necessary, coordinate with USDA hog removal agent.

Specific Strategies

Recurrent

- Continue appropriate treatment of invasive and exotic vegetation.

- Continue feral hog removal as need is indicated.
- Continue to manage invasive plant management contract as needed to support FDOT mitigation projects.
- Continue coordination with FWC for fish stocking as necessary and as FWC support is provided.

Natural Resource Management

Forest Management

Chapter 253.036, Florida Statutes requires the lead agency of state lands to prepare a forest resource analysis, "...which shall contain a component or section...which assesses the feasibility of managing timber resources on the parcel for resource conservation and revenue generation purposes through a stewardship ethic that embraces sustainable forest management practices if the lead management agency determines that the timber resource management is not in conflict with the primary management objectives of the parcel." The management objectives of this property will not require pine harvesting during the scope of this plan. The reintroduction of site-appropriate pine species through small restoration-focused planting efforts is anticipated. Additionally, approximately 85 acres of the property remain in fallow citrus grove. These acres are identified for potential surplus; however, the District may opt to remove the remaining grove if necessary. Figure 9 depicts the areas where pine plantings and other land management activities and FDOT mitigation-funded restoration activities are anticipated.

The District will abide by Florida Silviculture Best Management Practices and will target the achievement of appropriate overstory species in proper stand densities as described in the District Forest Management Plan. In addition to planned forest management activities, the District will harvest trees, including species other than pine as needed in the case of insect infestations, disease, and damage from severe weather, wildfire, or other occurrences that could jeopardize the health of natural communities.

Upland Restoration Planting Areas

District staff have identified approximately 15 acres northeast of Pond 1 for potential hardwood. Once construction and spoil removal activities across the property are complete, District staff will evaluate the site and determine the need for site preparation. Species composition of the planting area will also be determined at that time. Hardwood plantings in this area will be utilized as a means to establish a native canopy coverage. The intent of this planting is primarily to aid in the reduction of exotic vegetation in the shrub and groundcover through shading. As an alternative to hardwoods, this area may be planted in pine.

The District has implemented FDOT mitigation-funded projects within the footprints of FDOT Mitigation Areas East and West as indicated in Figure 9. These projects include control of invasive and exotic plants and planting of native wetland plants as discussed in previous sections of this plan. It is anticipated that FDOT mitigation funds will be utilized to accomplish additional wetland plantings as well as the above-mentioned upland pine and hardwood plantings.

Natural Resource Management

General Maintenance and Management Strategies

General

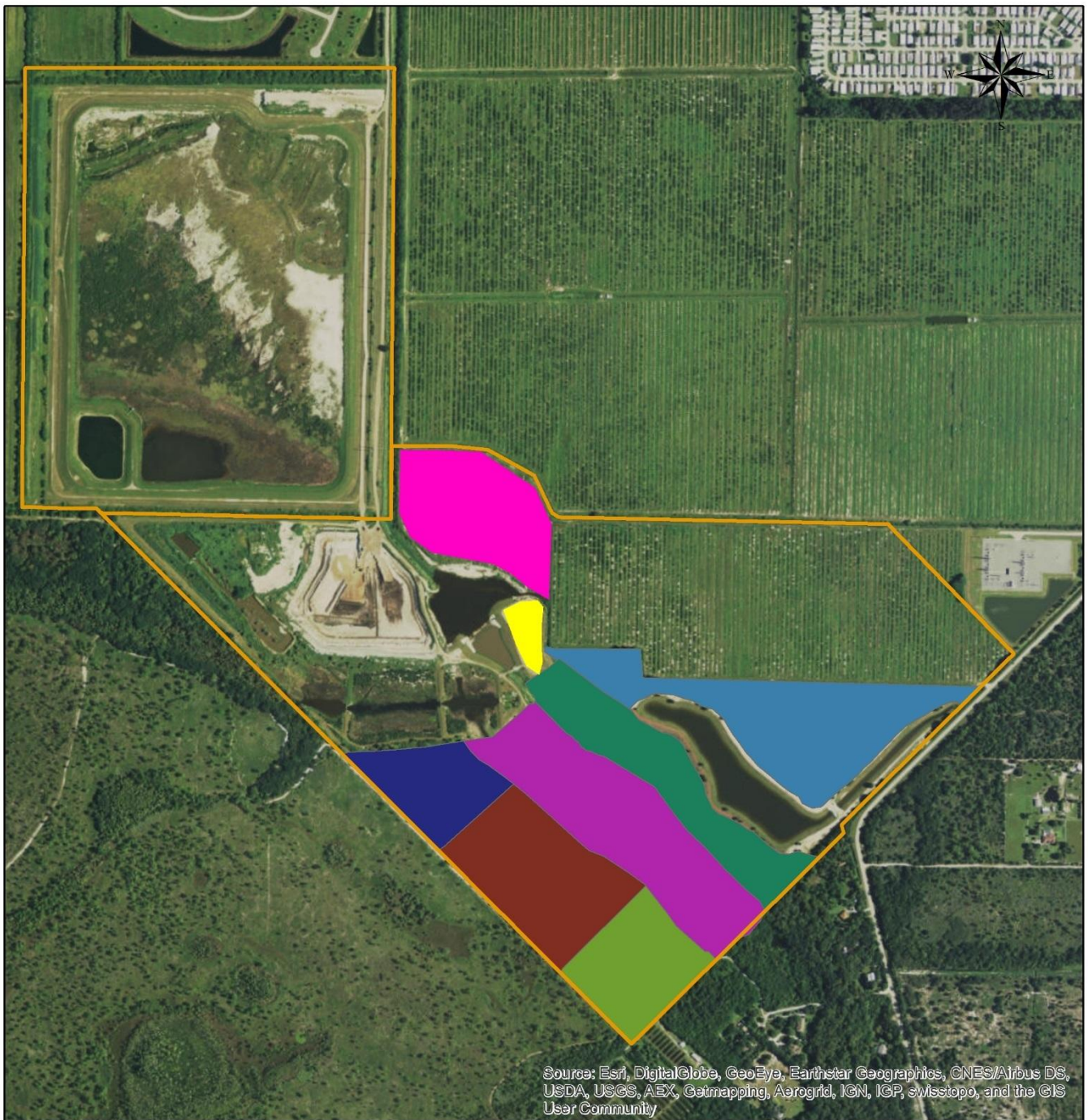
- Consider expanding FDOT Mitigation Restoration Area East to incorporate additional area to the north or potentially create a third FDOT Mitigation Restoration Area.

Recurrent

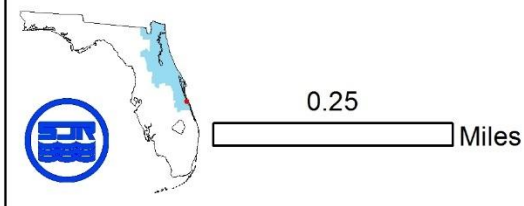
- Conduct survival monitoring of planted pine areas.

Short-term planning horizon (1-5 years)

- Sell spoil from mounds across the property.
- Implement restoration-focused upland pine planting 2016.
- Implement restoration-focused upland pine plantings 2017.
- Implement hardwood plantings 2017.
- Implement restoration-focused upland pine plantings 2018.
- Implement supplemental plantings as needed to meet FDOT mitigation requirements within FDOT mitigation restoration areas.



Micco Water Management Area
Figure 9 - Natural Resource Management Map



- Management Area
- Pine Planting 2016
- Pine or Hardwood Planting 2017
- Pine Planting 2017
- Pine Planting 2017
- Hardwood or Pine Plantings 2018
- Potential FDOT Mitigation Restoration Area
- FDOT Mitigation Area East
- FDOT Mitigation Area West

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Fire Management

Fire is a vital factor in managing the character and composition of vegetation in many of the natural communities in Florida. The District's primary use of fire is to mimic natural fire regimes to encourage the proliferation of native pyric plant communities and dependent wildlife. Additionally, the application of fire aids in the reduction of fuels and minimizes the potential for catastrophic and damaging wildfires.

Historically, the majority of fires occurring on what is now the Micco Water Management Area would have been ignited by lightning during the growing season. While, the District intends to reintroduce growing season fires where possible, it is understood that constraints including drastic alterations to the natural communities and the presence of young pine plantings may predicate the use of dormant season burning.

Smoke management is vital and any potential burns will be conducted to minimize off-site impacts by directing smoke plumes away from any potential smoke sensitive areas and by ensuring adequate smoke dispersal. Smoke management concerns including roads and developed areas and smoke radii for the Micco Water Management Area are depicted in Figure 10.

While prescribed fire is the preferred tool for restoration, enhancement, and maintenance within the property, it may be necessary, under certain circumstances, to implement alternative methods. During periods of extended drought conditions, in areas where implementing prescribed fire safely is not feasible, or in areas where sufficient fuels are not available, the District may employ management methods such as selective herbicide treatments, mowing, and roller chopping.

All implementation of prescribed fire within the Micco Water Management Area will be conducted in accordance with the District's Fire Management Plan and the annual burn plan for the property.

Fire Management Strategies

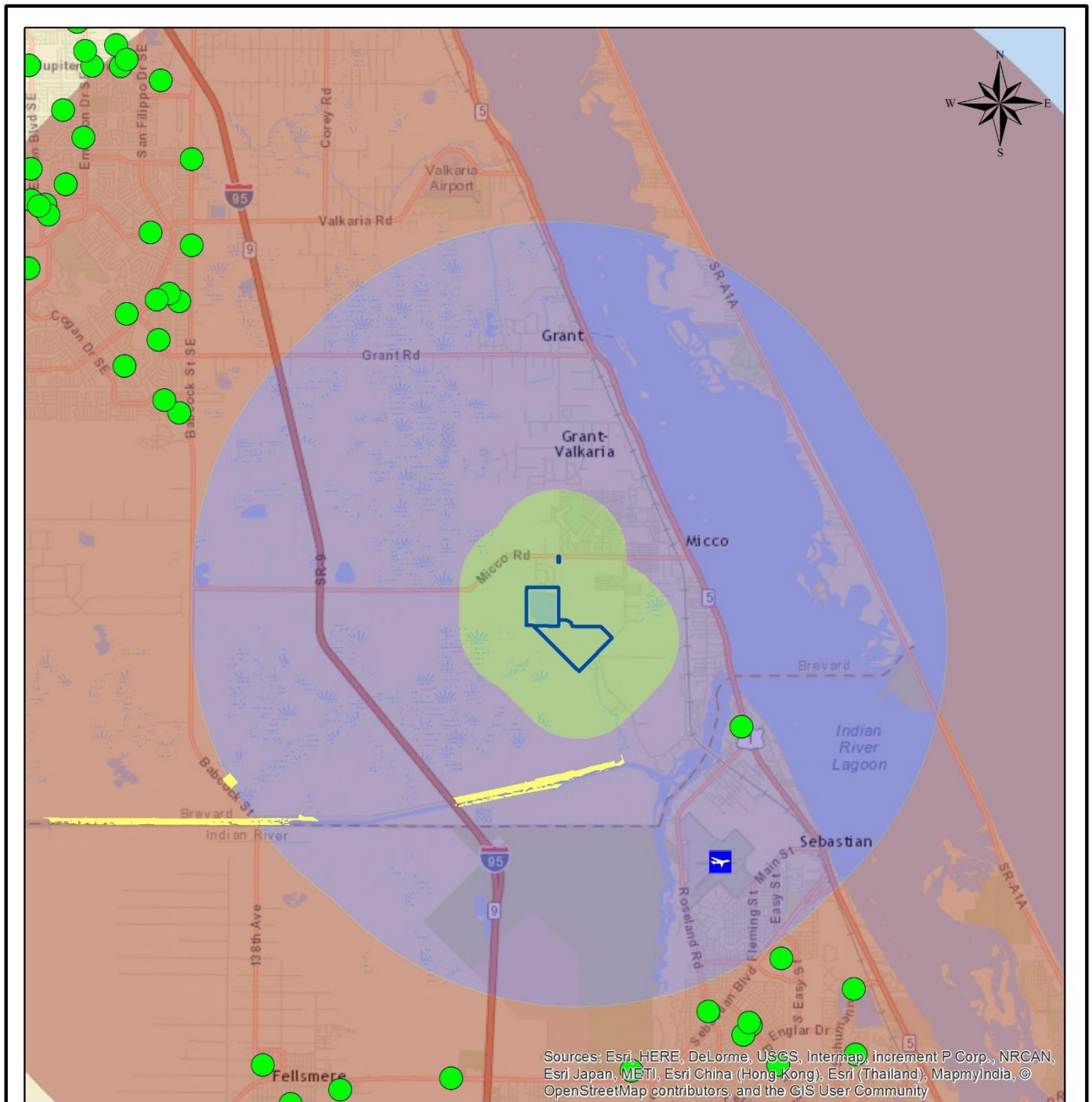
General Maintenance Activities

- Implement prescribed burning as described in the District's Fire Management Plan and annual burn plans.
- Implement fire surrogate activities as needed.

Specific Strategies

Recurrent

- Develop annual burn plans.
- Populate and maintain the fire management database.
- Conduct fireline maintenance.



Micco Water Management Area
Figure 10 - Smoke Management Map



2
 Miles

- Management Area
- Schools and Healthcare Facilities
- Sebastian Municipal Airport
- 1 mile smoke impact
- 5 miles smoke impact
- 10 miles smoke impact

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Cultural Resources Protection

A review of the Department of State, Division of Historical Resources (DHR) indicates no documented Florida Master Site File cultural sites within the Micco Water Management Area. If any sites are located, District staff will document and report sites to the DHR. District land management activities that may affect or impact these resources will be evaluated and modified to reduce the potential for disturbance of the identified sites. Additionally, detrimental activities discovered on these sites will also be reported to the DHR and appropriate law enforcement agencies. Due to District and State policy, the location of the sites is not identified on public maps.

Cultural Resource Protection Strategies

General Maintenance and Management Strategies

- Identify and report any new sites.

LAND USE MANAGEMENT

Access

A public parking area site is planned for development off Fleming Grant Road. Once developed, the parking area will include wood panel fencing, walkthroughs providing for recreational access at the trailhead, and a kiosk with information panels.

There are several gates providing management access to and across the property. These gates are monitored regularly for maintenance and/or repair needs from normal wear and tear and vandalism. A gate currently located at the southern point of the Wheeler parcel boundary will be replaced with a pedestrian access point to provide access from the Micco Water Management Area to the adjacent State Park. District staff will coordinate with the State Park to ensure proper signage is installed on both boundaries.

Several roads traverse the property. In order to maintain District roads, roads within a given management area are identified and classified according to anticipated maintenance needs. The network of roads within the Micco Water Management Area is not yet delineated. Due to the ongoing construction, monitoring, and plantings associated with the stormwater ponds and the pending removal of large spoil piles, District staff will wait to delineate roads until a final footprint can be determined. Once complete, District staff will identify, map, and classify all roads within the property after which, roads will be regularly inspected and receive maintenance and repair as necessary. Roads may serve dual purposes as recreational trails and may be subject to closure to facilitate management needs within the property.

There is a single access route that traverses the property from east to west. Currently, this route is useable due to the presence of temporary culverts south of the weir in Pond 1. These culverts will remain in place through an active phase of flow monitoring. Once required monitoring is complete, the culverts will be removed, effectively cutting off access from east to west. In order to facilitate continued access across the property, District staff will evaluate the feasibility of installing a bridge or box culvert in this location.

Access Strategies

General Maintenance and Management Strategies

- Once installed, maintain parking areas, signs, gates, road, and trails.
- Close or regulate parking areas, roads, and trails in response to management needs.
- Maintain coordination with St. Sebastian River State Park managers regarding common recreation and boundary issues.

Specific Strategies

Recurrent

- Update roads, gates, and firelines in the land management database as maintenance, repair, or creation of new roads or trails occurs.

Short-term Planning Horizon (1-5 years)

- Delineate, map, and classify all roads within the property.
- Replace temporary culverts with a bridge or box culvert.
- Replace Wheeler parcel boundary gate with pedestrian access point and include appropriate signage.

Recreation

The primary objective of the Recreation Management Program is to facilitate resource-based recreational activities on District lands. An aspect in developing the SJRWMD Recreation Program is not to compete with other local recreational opportunities, but rather to complement what they already have in place by filling an outdoor recreation niche through dispersed recreation opportunities. Dispersed recreation activities generally require large tracts of land with some level of isolation. This type of recreation blends well with District properties, providing numerous opportunities for passive recreation which also provides solitude and challenge.

Anticipated recreational opportunities within the Micco Water Management Area will include hiking, bicycling, wildlife viewing, and equestrian activities. A conceptual map depicting recreational infrastructure is included in Figure 11. In an effort to provide a safe and pleasant recreational experience, the property will remain closed to recreation until construction and removal of large spoil piles is complete. It is anticipated that the property will be open for public recreation purposes by late 2017.

The former caretaker residence and associated structures will be removed. Once the structure is removed, this area will be developed into a day use picnic area.

As mentioned previously, temporary culverts south of the weir on Pond 1 provide an opportunity for access from the west side of the property to the east. Understanding that these culverts are temporary and will be removed once required monitoring is complete, the District is working to maintain connectivity via installation of a bailey bridge or box culvert. It is anticipated that recreational opportunities will be phase in with eastern trail opening first. Once connectivity to the west side of the property is secured, trails to the west will be incorporated. The District will evaluate the need for picnic shelters or tables.

Per the agreement between the District and FDEP, educational and interpretive signage is to be installed on the property. Once trail development is complete, District staff will incorporate interpretive signage. Additionally, educational signage will be installed in the area near the dredge containment area.

Once all recreation improvements are complete, the management area will be incorporated into the next edition of the District's [Recreation Guide to District Lands](http://www.SJRWMD.com), which can be viewed online at www.SJRWMD.com.

Trails and other recreation improvements may be altered, relocated, or closed during certain management activities such as road and trail maintenance and repair, culvert and other water resource infrastructure maintenance and repair, and prescribed fire.

Recreation Strategies

General Maintenance and Management Strategies

- Once installed, maintain parking area, kiosks, and trails.
- Maintain current information in recreation guide, trail guides, kiosk, and District website.

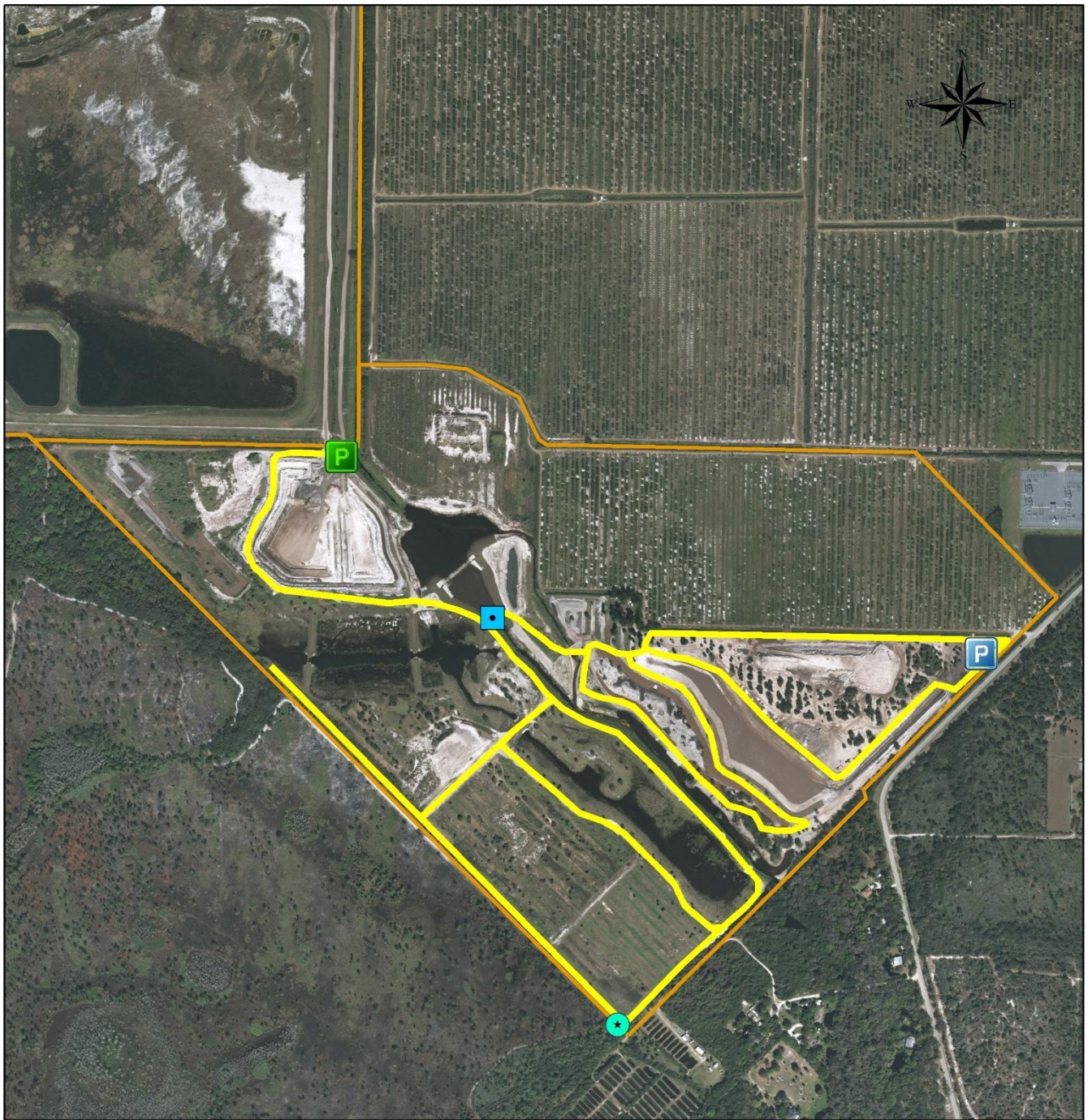
Specific Strategies

Recurrent

- Mow recreational trails four times each year.
- Conduct trail blazing and trimming maintenance.

Short-term Planning Horizon (1-5 years)







- Install Phase 1 trails (eastern) by 2017.
- Once access is secured in area of temporary culverts, install Phase 2 trails (west).
- Install educational signage.
- Remove caretaker residence and associated infrastructure by 2017.
- Establish picnic area in the caretaker residence location by 2017.



Micco Water Management Area
Figure 11 - Conceptual Trail Map



0.2
 Miles

-  Property Boundary
-  Conceptual Trail Route
-  Pedestrian Access to SSRPSP
-  Alternative Parking for Westside Access
-  Temporary Culvert Location
-  Parking Area

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Environmental Education

The District continues to look for opportunities to collaborate with local schools and organizations to encourage the use of District lands for environmental education. Opportunities vary by school district and the needs of the community. The District will offer staff expertise and support, along with the use of District lands, to continue fostering an appreciation for and stewardship of water resources.

Environmental Education Strategies

General Maintenance Strategies

- Continue to offer environmental education opportunities subject to staff and budget availabilities.

Security

Security concerns within Micco Water Management Area include illegal motorized vehicle access, dumping, and vandalism of gates, fences, and signage. The District, primarily through a contract security firm as well as coordination with FWC, and local law enforcement administers security and law enforcement for the property.

Security Strategies

General Maintenance and Management Strategies

- Coordinate with local law enforcement and FWC for security needs.
- Maintain contract with private security firm.
- Maintain fences, gates, and conservation signage.

Specific Strategies

Recurrent

- Develop monthly, prioritized security needs and provide to contracted security firm.
- Conduct biennial boundary line posting.

ADMINISTRATION

Land Acquisition

There are no anticipated acquisitions associated with the Micco Water Management Area. The District may pursue the acquisition of additional parcels or easements that may provide for improved access for management purposes or as they may relate to added protection of water resources. District staff have identified the need for access across the Wheeler Farms, LLC property to the north from Micco Road.

The District is evaluating the potential to surplus approximately 65 acres of the Wheeler parcel, which is currently dominated by fallow citrus grove.

Land Acquisition Strategies

General Maintenance and Management Strategies

- Evaluate adjacent properties and in holdings for potential acquisition.

Short-term Planning Horizon (1-5 years)

- Evaluate portion of Wheeler Farms parcel for potential surplus.
- Evaluate acquisition of access easement from Micco Road.

Cooperative Agreements, Leases, Easements, and Special Use Authorization

In accordance with District Policy #90-16, the District promotes entering into agreements with other agencies and private parties for cooperation and coordination of management of the District's lands. These cooperative agreements serve to protect the District's water management interests and to enhance the management and public value of the land.

The existing agreements and leases associated with the Micco Water Management Area are detailed in Table 2.

Table 2

Agreement Number	Type	Agreement Name	Term
SO436	Agreement	DEP Grant Assistance Agreement	Sept 2017 per 3 rd amendment

Cooperative Agreements, Leases, Easements, and Special Use Authorizations Strategies

General Maintenance and Management Strategies

- Administer easements, agreements, leases, and SUAs as necessary

Short-term Planning Horizon (1-5 years)

IMPLEMENTATION CHART

Micco Water Management Area – Management Implementation Chart

TASK	RECURRENT	1-5 YEARS	5-10 YEARS	LEAD (COOPERATOR)
RESOURCE PROTECTION AND MANAGEMENT				
Water Resources				
<i>General Maintenance</i>				
Conduct maintenance and incidental or emergency repair of water management structures as necessary.	---	---	---	BOM
Maintain water management structures database and incorporate maintenance, repair, and any new structures.	-----	-----	-----	BLR, BOP
<i>Recurrent</i>				
Visually inspect roads, trails, low water crossings, bridges, and culverts for erosion problems and maintenance and repair needs.	Annually	-----	-----	BLR, BOM
Visually inspect pumps, weirs, and other water resource structures for maintenance and repair needs.	As Required	-----	-----	BDPC, BLR, BOM
Conduct FDOT mitigation monitoring.	As Required	-----	-----	BERR
Conduct maintenance mowing on approximately 180 acres.	Quarterly or as needed.	-----	-----	BOM
Conduct slope mowing along ponds and canals.	Quarterly	-----	-----	BOM
<i>Short-term Planning Horizon</i>				
Conduct water quality and flow monitoring.	-----	As required	-----	BWRI
Upon completion of required flow monitoring at the culvert south of the Pond 1 weir, install a bridge or box culvert to maintain access across the site.	-----	2017	-----	BOM
Install gated culvert in the	-----	2017	-----	BOM

bypass channel.				
Install safety barricade to block access to the sheet pile weir on Pond 1.	-----	2017	-----	BOM
Conduct additional restoration planting in FDOT mitigation areas.	-----	2020	-----	BERR
Expand FDOT mitigation areas to include uplands for pine and oak plantings.	-----	2018	-----	BERR
<i>Long-term Planning Horizon</i>				
Evaluate the potential need for expansion of Pond 1 or the excavation of an additional pond in the area to the northwest of the existing Pond 1 footprint.	-----	-----	2026	BDPC
Floral and Faunal				
<i>General Maintenance</i>				
Collect species occurrence data and incorporate into the land management biological database.	---	---	---	BDPC, BLR, BERR, BRS
Conduct management activities in a manner consistent with relative rules, regulations, guidelines, and species management plans and in a manner that provides maximum protection for listed, rare, sensitive, or otherwise desirable species.	---	---	---	BLR, BERR
If necessary, coordinate with USDA hog removal agent.	-----	-----	-----	BLR
<i>Recurrent</i>				
Continue appropriate treatment of invasive and exotic vegetation.	-----	-----	-----	BLR, BERR
Continue feral hog removal as need is indicated.	-----	-----	-----	BLR
Continue to manage invasive plant management contracts as needed to support FDOT mitigation projects.	-----	-----	-----	BERR, BLR
Continue coordination with	-----	-----	-----	BERR, BLR.

FWC for fish stocking as necessary and as FWC support is provided.				(FWC)
Fire Management				
<i>General Maintenance</i>				
Implement prescribed burning as described in the District's Fire Management Plan and annual burn plans.	---	---	---	BLR
Implement fire surrogate activities as needed.	-----	-----	-----	BLR, BERR
<i>Recurrent</i>				
Develop annual burn plans.	Annually by September 30 th .	-----	----	BLR
Populate and maintain fire management database.	Annually by September 30 th .	-----	-----	BLR (BRS)
Conduct fireline maintenance.	Biannually Spring and Fall	-----	-----	BLR
Natural Resource Management				
<i>General Maintenance</i>				
Consider expanding FDOT Mitigation Restoration Area East to incorporate additional area to the north or potentially create a third FDOT Mitigation Restoration Area.	-----	-----	-----	BWRI
<i>Recurrent</i>				
Conduct survival monitoring of planted pine areas.	-----	-----	-----	BERR, BLR
<i>Short-term planning horizon</i>				
Sell spoil from mounds	-----	2017	-----	BLR, BOM
Implement restoration-focused upland pine planting.	-----	2016	-----	BLR, BERR
Implement restoration-focused upland pine planting.	-----	2017	-----	BERR, BLR
Implement hardwood plantings.	-----	2017	-----	BERR, BLR
Implement restoration-focused upland pine planting.	-----	2018	-----	BERR, BLR
Implement supplemental plantings as needed to meet	-----	2021	-----	BERR

FDOT mitigation requirements within FDOT mitigation restoration areas.				
Cultural Resource Protection				
<i>General Maintenance</i>				
Identify and report any new sites.	---	---	---	BLR BOM, BERR, BRS (DHR)
Access				
<i>General Maintenance</i>				
Once installed, maintain parking areas, signs, gates, roads, and trails.	---	---	---	BLR
Close or regulate parking areas, roads, and trails in response to management needs.	-----	-----	-----	BLR
Maintain coordination with St. Sebastian River State Park managers regarding common recreation and boundary issues.	-----	-----	-----	BLR
<i>Recurrent</i>				
Update roads, gates, and firelines in the land management database as maintenance, repair, or creation of new roads or trails occurs	Annually by September 30th	-----	----	BLR, BOM (BRS)
<i>Short-term planning horizon</i>				
Delineate, map, and classify all roads within the property.	-----	2017	-----	BLR, BOM
Replace temporary culverts with bailey bridge or box culvert.	-----	2017	-----	BOM, BLR
Replace Wheeler Parcel boundary gate with pedestrian access point and include appropriate signage.	-----	2017	-----	BLR, BOM
Recreation				
<i>General Maintenance</i>				
Once installed, maintain parking areas, kiosks, and trails.	---	---	---	BLR
Maintain current information	---	---	---	BLR,

in recreation guide, trail guides, kiosk, and District website.				(BRS, OC)
<i>Recurrent</i>				
Mow recreational trails.	Quarterly			BLR
Mow/maintain parking areas.	Bimonthly	-----	-----	BLR
Conduct trail blazing and trimming maintenance.	Annually by December 31 st .	-----	-----	BLR
<i>Short-term planning horizon</i>				
Install Phase 1 trails (eastern).	-----	October 2017	-----	BLR, BOM
Once access is secured in area of temporary culverts, install Phase 2 trails (west).	-----	2018	-----	BLR, BOM
Install educational signage.	-----	2017	-----	BLR
Establish picnic area in the area of the caretaker residence once structure is demolished	-----	2021	----	BLR, BOM
Environmental Education				
<i>General Maintenance</i>				
Continue to offer educational opportunities if possible and subject to staff and budget availability.	-----	-----	-----	OC (BLR)
Security				
<i>General Maintenance</i>				
Coordinate with local law enforcement and FWC for security needs.	---	---	---	BLR FWC, County
Maintain contract with private security firm.	---	---	---	BLR(BRS)
Maintain fences, gates, and signage.	-----	-----	-----	BLR
<i>Recurrent</i>				
Develop monthly, prioritized security needs and provide to contracted security firm.	Monthly	-----	-----	BLR
Conduct biennial boundary posting maintenance.	Starting 2017	-----	-----	BLR
Real Estate Administration				
<i>General Maintenance</i>				
Evaluate adjacent properties for potential acquisition.	---	---	---	BRS (BLR)
<i>Short-term Planning Horizon</i>				

Evaluate portion of Wheeler Farms parcel for potential surplus.	-----	2021	-----	BRS
Evaluate acquisition of access easement from Micco Road.	-----	2021	-----	BRS
Cooperative Agreements, Leases, Easements, and Special Use Authorizations				
<i>General Maintenance</i>				
Administer easements, agreements, leases, and SUAs	-----	-----	-----	BLR (BRS)
Terminate caretaker residence agreement.	-----	2017	-----	BLR, BRS

IMPLEMENTATION CHART KEY

BERR – Bureau of Environmental Resource Regulation
 BDPC – Bureau of District Projects and Construction
 BLR – Bureau of Land Resources
 BOM – Bureau of Operations and Maintenance
 BWR – Bureau of Water Resources
 BRS – Bureau of Real Estate Services
 DHR – Division of Historical Resources
 FWC – Florida Fish and Wildlife Conservation Commission
 OC – Office of Communications

ADDENDUM 1 – Estimated Expense and Revenue Schedule

Management activities planned for the Micco Water Management Area are designed to protect and conserve water and other natural resources and recreational opportunities of the within the property. Estimated expenses and revenue associated with management activities is based on current knowledge of costs and various markets. Work will be accomplished utilizing District staff and equipment as well as private sector contracting where appropriate.

Activity	Expense	Revenue	Frequency
Sale of Spoil		\$300,000.00	One Time 2017
Install Bailey Bridge*	\$175,000.00		
Supplemental FDOT mitigation plantings*	\$25,000.00		One Time 2020
Gated culvert installation*	\$30,000.00		One Time 2017
Install safety barricades*	\$20,000.00		One Time 2017
TOTAL	\$250,000.00	\$300,000.00	-----
Activity	Expense	Revenue	Frequency
Site maintenance/Acreage Mowing	\$22,000.00		Annual
Site maintenance/slope mowing and pond and structure inspection and small repairs	\$10,000.00		Annual
TOTAL	\$32,000.00	\$0	Annual

*These expenses are offset through the sale of spoil detailed in line #1.

In addition to the anticipated 10-year expenses and revenue estimated above, longer term expenses are anticipated. Specifically, weir and bridge rehabilitation activities that may include dewatering, heavy pressure washing, metal repairs and painting are expected on the 20-year horizon. Current estimates for these costs are approximately \$100,000 per structure.

ADDENDUM 2 – FDOT Mitigation Performance Standards

The District's FDOT Mitigation Program (F.S. 373.4137) funded the development and implementation of habitat enhancement projects within the property for the purposes of mitigation. The mitigation offsets permitted wetland impacts associated with FDOT roadway projects that occur within SJRWMD Regulatory Basin 22 (Central Indian River Lagoon). In order to provide mitigation for the functional loss of permitted wetland impacts, the District will implement enhancement activities including invasive and exotic plant management, establishment of site appropriate species, enhancement and management of site hydrology, and subsequent monitoring of identified projects.

Objectives

The proposed management goals include the reestablishment of major vegetative components of historic habitat communities through plantings, the potential application of prescribed fire, and the control of nuisance and exotic species. Performance standards established to promote the restoration efforts are detailed below.

The SJRWMD performance standards for the Micco Water Management Area include the following:

1. Successful canopy establishment and growth
2. Successful understory establishment and growth
3. Suitable hydrology for the target communities
4. Wildlife utilization
5. Less than ten percent invasive or exotic species
6. Less than 20% mortality of planted vegetation by the end of the 5th year

To meet the above performance standards, the following table is provided as objectives and provisional action plan.

Performance Standard No.	Performance Criteria	Time Frame
1	20% areal coverage of native canopy species with less than 20% mortality of planted canopy wetland species after three growing seasons within the forested wetland communities	5 years with provision for replanting if areal cover requirements are not achieved
2	Herbaceous zones will have 60% cover with 50% or more cover by species listed as FAC or wetter after three growing seasons and 80% cover by the fifth year	3 years with provision for replanting if areal cover requirements are not achieved
2	Wood stork foraging areas will have 10% cover with 50% or more cover by species listed as FAC or wetter after three growing seasons	3 years with provision for replanting if areal cover requirements are not achieved
3	Hydrology must meet wetland definition of 1987 Corps of Engineers Wetland Manual, with saturation to the surface of the soil for 31 days of the growing season	5 years
4	Direct observations of at least 4 species of wading birds or waterfowl; observations of macro invertebrate and native fish species, and evidence of usage by wetland dependent mammal and reptiles	5 years
5	Less than 20 percent invasive or exotic species by the third year and less than 10 percent by the fifth year	5 years with provision for remedial action if more than 20 percent cover is documented in year 3 monitoring
6	Less than 20% mortality of planted vegetation	5 years with provision for remedial planting if mortality exceeds 20% by year 3
1-3	Must meet the regulatory definition of wetlands with specified portions of the mitigation area meeting the definition of palustrine forested, palustrine emergent, and palustrine open water as per the document Classification of Wetlands and Deepwater Habitats of the United States.	5 years

If the performance standards are met prior to the five-year monitoring requirements as set forth, the permittee can request a release of monitoring.

Monitoring

Monitoring will occur bi-annually in spring and autumn after the restoration project is complete. To effectively evaluate the above performance standards of the restoration area the following criteria will be implemented during the baseline monitoring event:

1. Two (2) 6-meter wide belt transects will be established from one side of the upland slope to the adjacent slope that represents all six (6) planting zones. Transect endpoints will be designated by 3-foot long PVC pipes at the toe of slope for replication. Data collected within the belt transects will include the height, diameter at base height (dbh), overall condition, and survivorship of all planted canopy species. Additional data collected within each belt transect will include the overall percent coverage of native and non-native species, observations of stressed and moribund specimens, and native recruitment. Photo stations will be instituted at the ends of each of the belt transects with panoramic photos generated for the report.
2. The ground cover of the hydric hammock, mixed wetland hardwood forest, herbaceous marsh, wood stork foraging habitat, and upland buffers will be sampled by the placement of six (6) randomly placed 1-meter squared quadrats per community (36-total). Within each quadrat, data will be collected to include a total inventory of every species, the percent cover of each species recorded, a listing of the National Wetland Inventory (NWI) indicator status (i.e. FAC, FACW, and a total percent cover of the quadrat). Each quadrat will include a photo documenting the conditions for subsequent comparisons.
3. Documentation of wildlife utilization by direct observations or other evidence. This performance standard will be evaluated by maintaining wildlife observations (log) over the course of each year by SJRWMD staff. The wildlife log will be included as a table in each annual monitoring report to demonstrate that wildlife usage, primarily by wading bird species will increase each year as the restoration area moves closer to completion. The baseline conditions contemplate the baseline conditions

of a disturbed citrus grove.

4. Evaluation of representative soil pedons will be conducted to determine the hydrologic regime. Additional observations of normal pool and seasonal high elevations will also be recorded and documented in the baseline report.

The baseline monitoring report will present this data in a table format to be used for the 5 years of monitoring and will be presented on an annual basis to document site conditions.