

Draft Land Management Plan

Little Manatee River Corridor Southfork Tract

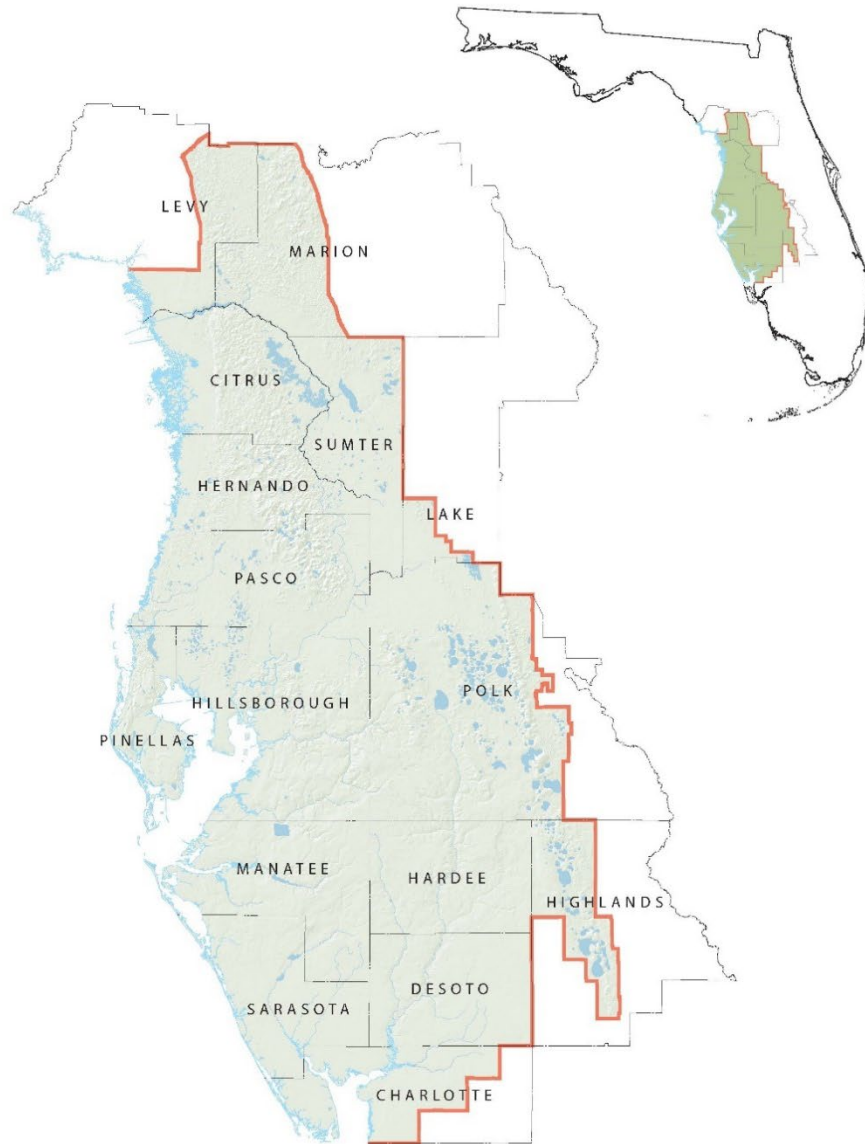
Land Resources Bureau

Southwest Florida Water Management District

July 26, 2022

The Southwest Florida Water Management District (District) is a science-based organization responsible for managing and protecting water resources in west-central Florida. The District's job is to ensure there are adequate water supplies to meet the needs of current and future users while protecting and restoring water and related natural resources.

The District encompasses all or part of 16 counties, from Levy County in the north to Charlotte County in the south. It extends from the Gulf of Mexico east to the highlands of central Florida. The District contains 97 local governments spread over approximately 10,000 square miles, with a total population estimated to be 5.4 million in 2020.



Southwest Florida Water Management District



WATERMATTERS.ORG · 1-800-423-1476

The Southwest Florida Water Management District (District) does not discriminate on the basis of disability. This nondiscrimination policy involves every aspect of the District's functions, including access to and participation in the District's programs, services and activities. Anyone requiring reasonable accommodation, or who would like information as to the existence and location of accessible services, activities, and facilities, as provided for in the Americans with Disabilities Act, should contact the Human Resources Office Chief, at 2379 Broad St., Brooksville, FL 34604-6899; telephone (352) 796-7211 or 1-800-423-1476 (FL only), ext. 4747; or email ADACoordinator@WaterMatters.org. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1-800-955-8771 (TDD) or 1-800-955-8770 (Voice). If requested, appropriate auxiliary aids and services will be provided at any public meeting, forum, or event of the District. In the event of a complaint, please follow the grievance procedure located at WaterMatters.org/ADA.

Executive Summary

Acres: 971

Acquisition Dates: 1999

Plan Term: 10 Years (2023–2032)

Primary Basin: Little Manatee River

Secondary Basin: South Fork of the Little Manatee River

Location: Manatee County

Funding Sources: Water Management Lands Trust Fund (Save Our Rivers, SOR)

Natural Systems: The District uses natural communities as defined by the Florida Natural Areas Inventory (FNAI) to describe habitats of the Southfork Tract (Tract). Eleven natural communities were identified by FNAI; 709.7 acres (73.1%) are uplands. Of those, scrub and scrubby flatwoods communities comprise more than 495 acres (51% of the Tract); relict pastures total 88.6 acres (11.2%). The only two wetland communities on the Tract are bottomland forest and wet flatwoods, which total 261.1 (26.9%) of the Tract.

Water Resources: Water resource benefits provided by the Tract include flood protection, water quality enhancement, protection of the water supply, and natural system protection. The principal water resource feature of the Tract are over three miles of hardwood forests along the southern bank of the South Fork of the Little Manatee River. In a region of increasing agricultural intensity, undeveloped uplands and forested floodplains provide stormwater treatment and a buffer to the Little Manatee River from potential runoff.

Land Management: Management activities on the Tract include prescribed fire, habitat restoration, forest management, feral hog control, and invasive plant species management. The District aims to apply fire to all fire-dependent natural communities based on natural fire return intervals defined by FNAI. A network of firelines and natural firebreaks throughout the property allows for successful fire management and limits the potential for wildfires.

Cultural and Historical Resources: The only records identified in the Florida Master Site File were cultural resources associated with a dog skull found inside the boundary of the Tract.

Recreation: Approximately six miles of hiking-only trails are available on the Tract.

Special Use Authorization: Various uses on the Tract require Special Use Authorization (SUA) approval from the District as set forth in Florida Administrative Code §40D-9. The typical special-use types occurring on the Tract can be categorized as recreation, research, and law enforcement training.

Access: Access to the Tract is available through the parking area on the north side of State Road 62 (S.R. 62) approximately 3.5 miles east of County Road 579 (C.R. 579) and approximately 12 miles east of the community of Parrish.

Real Estate: The District will continue to consider opportunities to purchase lands adjacent to the Tract with the goal of promoting the District's effort to protect the natural features of conservation lands for the benefit of flood protection, water quality, and water supply.

Cooperative Agreements, Leases, and Easements: Two separate Non-Exclusive License Agreements between the District and various utility companies exist on the Tract. They establish an easement over a 50-foot-wide permanent corridor for a natural gas transmission pipeline adjacent to S.R. 62 at the southern end of the Tract.

Table of Contents

Executive Summary	iv
Introduction and General Information.....	1
Management Plan Purpose	1
District Strategic Plan.....	2
Management Authority	2
Location.....	2
Acquisition	5
Current Land Use	9
Local Government Land Use Designation	9
Adjacent Land Uses	9
Management Challenges	10
Historical Land Use and Cultural Resources	11
Historical Land Use.....	11
Cultural and Archaeological Resources	11
Water Resources and Natural Systems.....	12
Water Quality	12
Water Supply.....	14
Flood Protection	14
Natural Systems.....	16
Soils and Topography.....	23
Land Management and Land Use	27
Land Management.....	27
Recreation.....	37
Land Use Administration	39
Land Maintenance and Operations.....	41
Goals and Objectives	42
Overview	42
Resource Protection and Management.....	42
Administration.....	44
Significant Management Accomplishments.....	46
References	47

List of Figures

Figure 1. General Location	3
Figure 2. Aerial Overview	4
Figure 3. Regional Conservation Network	7
Figure 4. Water Resources	13
Figure 5. Floodplain Map	15
Figure 6. Natural Communities – FNAI	22
Figure 7. Soil Types	25
Figure 8. Digital Elevation.....	26
Figure 9. Management Units.....	29
Figure 10. Recreation Trails	38

List of Tables

Table 1. Conservation Lands within the Vicinity	8
Table 2. Natural Community Type Summary.....	16
Table 3. Invasive Plants Known to Occur	31
Table 4. Imperiled Wildlife Species Known or Likely to Occur	33

Introduction and General Information

Management Plan Purpose

The purpose of this Management Plan is to set forth the District's management strategy for the Tract for the next 10 years. The creation, updating, and implementation of this Management Plan is governed by the District's Governing Board Policy titled Land Use and Management Policy (District Policy) and the District's Executive Director Procedure titled Land Use and Management Planning (Procedure) which outlines the use and management of District-owned conservation lands. District-owned conservation lands are managed for the protection of water resources and natural systems through the application of effective and efficient land management practices. This Management Plan provides an overview of the property, a summary of past achievements, and an outline of goals and objectives for the next 10-year planning period.

District Planning Philosophy

The District's planning philosophy is intended to identify the method in which Management Plans are developed and implemented with input from both internal and external stakeholders. Management Plans are designed to guide the use and management of District conservation lands and incorporate input from stakeholders as to the use and management.

Management Plans are developed following an extensive process of planning, coordination, data review, field review, and creation of strategic goals and objectives. Through this process, a draft Management Plan is created and reviewed by key stakeholders, including District staff, subject matter experts, state agencies, local governments, partners, non-governmental organizations, and other interest groups.

Following review of the draft Management Plan by the key stakeholders identified above, a public workshop is held to solicit public input on the draft Management Plan. The workshop is advertised in local newspapers, on the District's website, and via social media outlets, and it is held in the region the property is located. Additionally, the public has an opportunity to provide input via the District's website for a period both preceding and following the workshop. Once the public comment period has expired, a final draft of the Management Plan that includes consideration of public input is presented to the District's Governing Board for approval at a regular Governing Board meeting.

Public Involvement

In addition to the input solicited through a public workshop during the development of the Management Plan, the District also provides the opportunity for stakeholders to provide input during the Land Management Review process. This process occurs periodically to inform the public and hold the District accountable for the management of the property. This process assures the District is managing the land in accordance with the Management Plan and is consistent with the purpose for which the property was acquired. The Land Management Review team is comprised of team members from various state agencies, cooperative partners, private land managers, and other entities involved in land management. The focus is on management activities

and includes a thorough review of the property, followed by an evaluation that is reviewed by the District and ultimately presented to the District's Governing Board.

District Strategic Plan

The 2022 – 2026 Strategic Plan outlines the District's focus in each of the four planning regions over the next five-year planning cycle (SWFWMD, 2022). The Strategic Plan identifies 11 strategic initiatives as they relate to the District's core mission of water supply, water quality, natural systems, and flood protection. The goal for natural systems is to preserve, protect, and restore natural systems to support their natural hydrologic and ecologic functions (Natural Systems Goal). The Conservation and Restoration Strategic Initiative contained within the Strategic Plan supports the Natural Systems Goal, and the major components of this initiative include land acquisition and management, ecosystem monitoring and restoration, education, and regulation. Land acquisition and management are critical to the District's conservation and restoration objectives. If land acquired has been altered, that land may be restored if necessary and then managed to maintain ecological and hydrological functions. In addition, land management is identified as one of seven Core Business Processes critical to achieving the District's Strategic Initiatives and Regional Priorities as defined in the Strategic Plan.

Management Authority

The District considers the Tract as conservation land, which dictates the management intent for the property. Pursuant to Subsection 373.089(6)(c) of the Florida Statutes, all lands titled to the District prior to July 1, 1999, were designated as having been acquired for conservation purposes. This brings parcels that were purchased originally as water control projects within the purview of conservation land management. Other parcels that were later acquired under conservation land acquisition programs are also managed for these same purposes.

Furthermore, pursuant to Section 373.1391 of the Florida Statutes, lands titled to the District should be managed and maintained, to the extent practicable, in such a way as to ensure a balance between public access, recreation, and the restoration and protection of their natural state and condition. District Policy and District Procedure govern the use and management of these lands in accordance with Chapters 259 and 373 of the Florida Statutes.

Location

The 970.8-acre Tract is in the northern portion of Manatee County, east of Lake Parrish, between the communities of Duette and Parrish (**Figure 1**). The Tract lies just north of S.R. 62 (Wauchula Road), approximately 3.5 miles east of Saffold Road (C.R. 579), and about two miles south of the Hillsborough County line. The Tract occurs in a portion of the county that is mostly agricultural and has extensive row-crop production (**Figure 2**). The 1,124-acre Beker-South Fork State Park and the 960-acre Manatee County-owned Moody Branch Wildlife and Environmental Area lie adjacent to the to the north. Together, these parcels encompass the South Fork of the Little Manatee River and several of its tributaries.

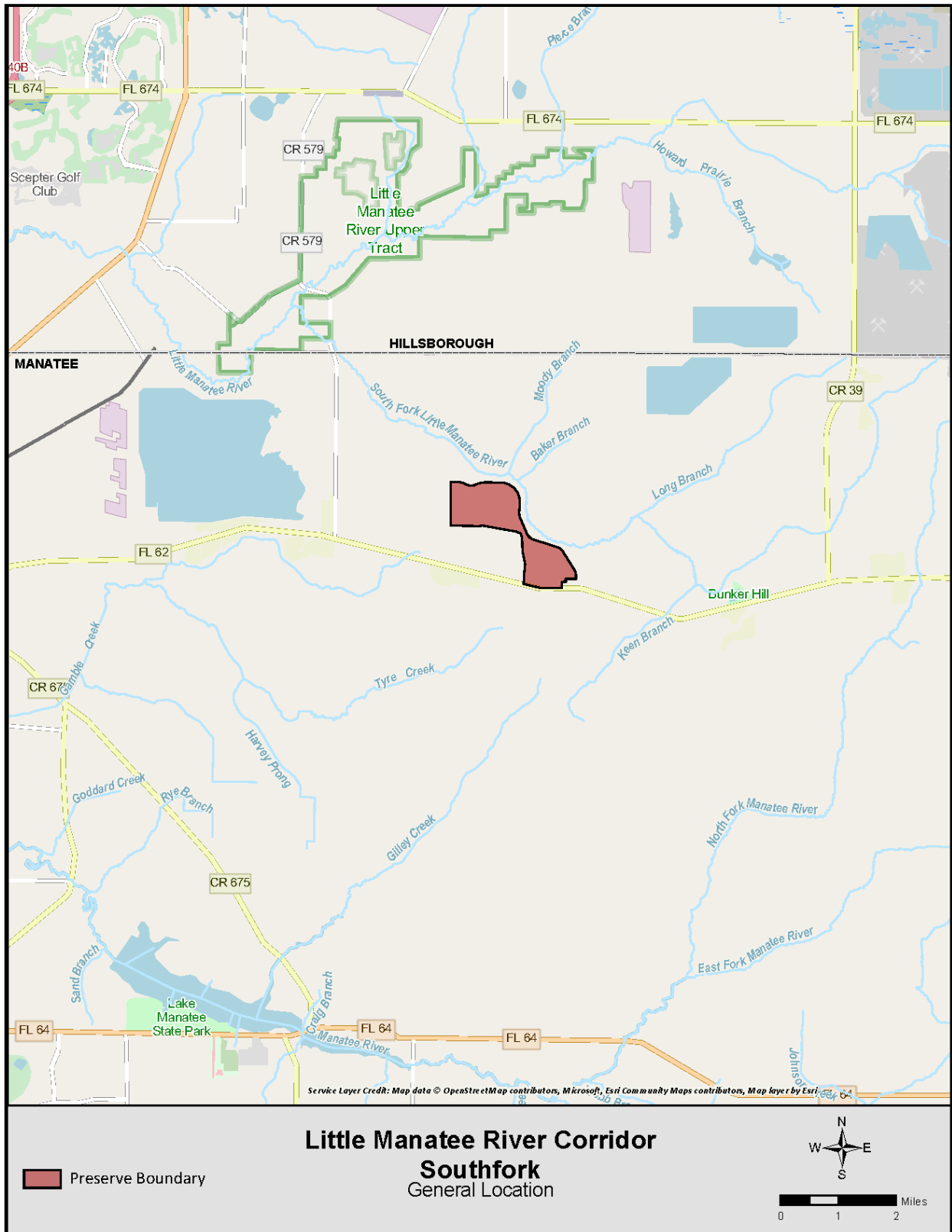


FIGURE 1. GENERAL LOCATION



FIGURE 2. AERIAL OVERVIEW

Acquisition

Policy

Pursuant to Section 373.139(2), Florida Statutes, the District's Governing Board is empowered and authorized to acquire title to real property for purposes of flood control, water storage, water management, conservation and protection of water resources, aquifer recharge, water resource and water supply development, and preservation of wetlands, streams, and lakes. Lands evaluated for purchase by the District shall be evaluated based on the District's four (4) Areas of Responsibility (AORs): water supply, water quality, flood control, and natural systems. The Governing Board is primarily interested in acquiring conservation lands that meet at least two (2) of the four (4) AORs.

History

The Tract was purchased in fee simple in 1999 as a part of the District's Little Manatee River Corridor project that includes lands within both Hillsborough and Manatee counties. Funding for the acquisition was obtained through the Water Management Lands Trust (Save Our Rivers, SOR) program.

The Tract includes 971 acres of conservation lands along the South Fork of the Little Manatee River in north-central Manatee County. The principal water resource features of the Tract are over three miles of hardwood forests along the southern bank of the South Fork of the Little Manatee River. Coupled with the State's adjoining conservation lands along the north bank, these lands provide protection for water resources and natural systems along the forested floodplain.

In addition to the floodplain areas and their associated wetlands functions, the Tract protects areas of oak scrub and scrubby flatwoods, both communities known to support diverse floral and faunal associations with many species of restricted distribution and diminishing populations throughout their Florida range. These xeric upland communities also provide a buffer for the nearby river course and floodplains.

Regional Significance

The FNAI maintains the Florida Forever Conservation Data Viewer which provides access to the organization's ranking of the resource value of natural and agricultural lands across the state (FNAI, 2021). Using information from this database provides a general characterization of the regional significance of the Tract. The FNAI ranks most of the Tract as Priority 2 and 3 for Strategic Habitat Conservation, and the scrub communities are shown as Priority 1 (the highest) for Rare Species Habitat. The Tract is a part of the Florida Ecological Greenway Network, and the collection of natural lands along the Little Manatee River in Hillsborough and Manatee counties is shown as Priority 4. The scrub and scrubby flatwoods communities of the Tract are depicted as Under-represented Natural Communities needing protection. The Tract includes Priority 2 and 3 areas of Significant Surface Waters, which is an indication of the importance of lands that protect surface waters that currently remain in good condition.

Regional Conservation Network

The Tract is part of a large group of conservation lands within an approximately 20-mile radius (**Figure 3**). Dozens of parcels in this portion of the state have been acquired or dedicated to natural

resource protection through efforts of federal, state, and local governments, and private entities (**Table 1**). Conservation initiatives have successfully resulted in protection of natural areas in the regional vicinity of the project through fee simple acquisition or dedication of conservation easements.

Three major river systems have been a primary focus of these acquisitions. The Tract protects lands associated with the South Fork of the Little Manatee River. Other acquisitions in the District's Little Manatee River Corridor project in Hillsborough County provide protection for the headwaters of the river. Farther north in Hillsborough County, acquisitions to protect the watershed of the Alafia River such as Alafia River State Park, Alafia River Corridor, Alderman's Ford Park and Nature Preserve, and Chito Branch Reserve total more than 10,000 acres. Acquisitions associated with protection of the Myakka River system including Myakka River State Park, Carlton Reserve, Coker Prairie Tract, the Upper Myakka River Watershed tract, Deer Prairie Creek, the Myakka Prairie tract, and other conservation lands provide protection for almost 100,000 acres in that river system. Finally, local and state funds have been used to acquire almost 10,000 acres of lands dominated by scrub and sandhill communities, which also provide for aquifer recharge. Some of these tracts include Balm-Boyette Scrub Nature Preserve, Golden Aster Scrub Nature Preserve, and Rhodine Scrub Nature Preserve.



FIGURE 3. REGIONAL CONSERVATION NETWORK

TABLE 1. CONSERVATION LANDS WITHIN THE VICINITY

PROPERTY	MANAGER	OWNER	ACRES	COUNTY
Tampa Bay Estuarine Ecosystem - Frog Creek	SWFWMD	SWFWMD	120	Manatee
Tampa Bay Estuarine Ecosystem - Huber Tract	SWFWMD	SWFWMD	287	Manatee
Edward Chance Reserve	SWFWMD	SWFWMD	7,931	Manatee
Upper Myakka River Watershed-Flatford Swamp	SWFWMD	SWFWMD	2,357	Manatee
Rock Ponds - TECO Tract	SWFWMD	SWFWMD	2,486	Hillsborough
Chito Branch Reserve	SWFWMD	SWFWMD	5,385	Hillsborough
Fred and Ida Schultz Preserve	Hillsborough	SWFWMD	120	Hillsborough
Upper Little Manatee River	Hillsborough	SWFWMD	1,379	Hillsborough
Little Manatee River	Hillsborough	SWFWMD	1,454	Hillsborough
Little Manatee River Corridor	Hillsborough	SWFWMD	4,850	Hillsborough
Alafia River Corridor	Hillsborough	SWFWMD	5,148	Hillsborough
Lake Manatee Lower Watershed CE	SWFWMD	Private	25	Manatee
Upper Myakka River Watershed CE	SWFWMD	Private	1,136	Manatee
Upper Myakka River Watershed CE	SWFWMD	Private	1,142	Manatee
Myakka Prairie Conservation Easements	SWFWMD	Private	2,906	Manatee
Lewis Longino Preserve	SWFWMD	Private	3,422	Sarasota
Longino Ranch Conservation Easement	SWFWMD	Private	3,981	Sarasota
Myakkahatchee Creek Conservation Easement	SWFWMD	Private	7,630	Sarasota
Lake Manatee State Park	FDEP	TIITF	549	Manatee
Wingate Creek State Park	FDEP	TIITF	614	Manatee
Cockroach Bay Preserve State Park	FDEP	TIITF	615	Hillsborough
South Fork State Park	FDEP	TIITF	1,129	Manatee
Terra Ceia Preserve State Park	FDEP	TIITF	1,948	Manatee
Little Manatee River State Park	FDEP	TIITF	2,416	Hillsborough
Alafia River State Park	FDEP	TIITF	7,718	Hillsborough
Myakka River State Park	FDEP	TIITF	37,198	Manatee, Sarasota
Bullfrog Creek Wildlife and Environmental Area	FWC	Hillsborough	833	Hillsborough
Moody Branch Wildlife and Environmental Area	FWC	Manatee	960	Manatee
Walton Ranch	Sarasota	Sarasota	3,760	Sarasota
Carlton Ranch, Inc.	Sarasota	Sarasota	4,746	Sarasota
Pinelands Reserve	Sarasota	Sarasota	6,151	Sarasota
T. Mabry Carlton, Jr. Memorial Reserve	Sarasota	Sarasota	24,565	Sarasota
Rye Preserve	Manatee	Manatee	531	Manatee
Headwaters at Duette Preserve	Manatee	Manatee	2,223	Manatee
Duette Preserve	Manatee	Manatee	21,907	Manatee
Kitchen Preserve	Hillsborough	Hillsborough	427	Hillsborough
Rhodine Scrub	Hillsborough	Hillsborough	479	Hillsborough
Little Manatee River Corridor Addition	Hillsborough	Hillsborough	493	Hillsborough
Bell Creek Nature Preserve	Hillsborough	Hillsborough	520	Hillsborough
Cockroach Creek Greenway Nature Preserve	Hillsborough	Hillsborough	550	Hillsborough
Bullfrog Creek Scrub Nature Preserve	Hillsborough	Hillsborough	778	Hillsborough
Triple Creek Nature Preserve	Hillsborough	Hillsborough	904	Hillsborough
Cockroach Bay Nature Preserve	Hillsborough	Hillsborough	995	Hillsborough
Wolf Branch Nature Preserve	Hillsborough	Hillsborough	1,127	Hillsborough
Fish Hawk Creek Nature Preserve	Hillsborough	Hillsborough	2,551	Hillsborough
Balm Scrub Nature Preserve	Hillsborough	Hillsborough	2,710	Hillsborough
Golden Aster Scrub Nature Preserve	Hillsborough	TIITF	1,191	Hillsborough
Balm-Boyette Scrub Nature Preserve	Hillsborough	TIITF	4,871	Hillsborough
Total			187,218	

Current Land Use

The Tract is managed for the conservation and protection of its water resources and natural resources. In addition, the Tract offers recreational resources and opportunities to visitors. The Tract will continue to support a multiple-use concept for environmental conservation, public water supply, and recreational access. It is the policy of the District that appropriate public recreational use of District lands be permitted, provided the use is compatible with natural resource management and protection needs. This approach is consistent with Chapter 373 of the Florida Statutes, which states that “Lands titled to the governing boards of the districts shall be managed and maintained, to the extent practicable, in such a way as to ensure a balance between public access, general public recreational purposes, and restoration and protection of their natural state and condition.” The Tract protects natural wetland and upland systems that provide habitat for many notable species of wildlife and plants, including federal- and state-listed species. The Tract offers visitors opportunities for passive nature-based recreation. Various recreational opportunities that are available to the public are outlined later in this plan.

Local Government Land Use Designation

Per Section 163, Florida Statutes, local governments are required to create, adopt, and maintain a Comprehensive Plan that addresses where residential and nonresidential uses occur in the area. Manatee County’s Future Land Use Map shows the Tract as Agriculture (Manatee County, 2021).

Based on the Manatee County Land Development Code (LDC), the Tract is currently zoned as Agriculture. The LDC states that the AG-R zoning district is “intended to preserve agricultural lands, promote general agricultural economic activity, and allow for the co-existence of other uses generally consistent with agricultural activities.”

Adjacent Land Uses

The Beker-South Fork State Park and the Moody Branch Wildlife and Environmental Area lie adjacent to the Tract to the north, and they are zoned Conservation. These three parcels, along with other conservation lands in Hillsborough County, provide a patchwork of protection for the Little Manatee River floodplain all the way to the Cockroach Bay Aquatic Preserve.

Most of the adjacent lands to the south, east, and west of the Tract are designated Agriculture for Future Land Use and Zoning. The Manatee County Future Land Use map shows the 21,000-acre Duette Preserve that is southeast of the Tract as Preservation, and the 7,931-acre Edward Chance Reserve to the southwest is zoned Agriculture. All of the Tract occurs more than six miles east of Manatee County’s Future Development Area Boundary and, consequently, it is unlikely to be exposed to comprehensive threats from development in the foreseeable future. Though some rural development may encroach in spots in the vicinity of the Tract, the landscape around it will likely remain predominantly agricultural and conservation in the near term.

Management Challenges

The challenges associated with the management of the Tract include the proximity of the Tract to major roadways (i.e., S.R. 62, Saffold Road) and adjacent solar fields, both of which increase the complexities of land management activities like prescribed fire operations. This results in an increased amount of planning to mitigate and limit impacts to smoke-sensitive features. Agricultural uses adjacent to the Tract have the potential to impact natural systems and operations on the Tract. Portions of the Tract have been influenced by adjacent tomato farming operations. Crop irrigation has contributed to increased surface water loading on the Tract, which has resulted in flooding and erosion. It has also impacted vehicular access since field roads have often been impassable due to high water.

Recreational opportunities on all District conservation lands are typically passive, nature-based outdoor activities. As the population in the regional vicinity of the Tract grows, there is the possible challenge to the District to manage requests for more expansive recreational opportunities. In similar past situations, the District has approved cooperative agreements with other local governing agencies to manage expansive recreational opportunities, as the District does not have the resources to manage such expanded opportunities. Prior to the District approving any cooperative agreements for expansive recreational opportunities, the District Governing Board will need to deem such opportunities as “compatible,” as outlined in the District Policy and District Procedure.

Historical Land Use and Cultural Resources

Historical Land Use

Aerial photography from 1965 to 1980 shows that the Tract was undeveloped with open pastures, areas of heavy vegetation, and wetlands. Jeep trails were apparent throughout the property, and an area of recently planted groves was visible in the southeastern portion of the Tract. Agricultural activities were present to the east, west, and south of the Tract, and scattered rural residences occurred south of S.R. 62. By 1991, the groves in the southeastern portion of the Tract were gone, but additional clearing had occurred in other portions of the Tract. Since that time, there have been no apparent changes from agriculture, or clearing on the Tract (ECT 1999).

Cultural and Archaeological Resources

The Florida Division of Historical Resources (DHR) is responsible for preserving and promoting Florida's historical, archaeological, and folk culture resources. A request was made of DHR for information on known cultural and historical resources on the Tract. There was one record of a cultural resource identified in the Florida Master Site File inside the boundary of the Tract.

The District will utilize Best Management Practices for upholding the integrity of historical and cultural resources that may be documented in the future. If warranted, District staff will alert law enforcement of any illegal activities related to pilfering of cultural or archaeological resources. Management of any archaeological resources discovered in the future will consist primarily of preventing disturbance. Proposals to conduct archaeological surveys or related archaeological research on the Tract would be welcomed by the District.

Water Resources and Natural Systems

The acquisition of conservation lands is important for the management of water resources and is a strategic element in the District's effort to meet its four primary AORs: flood protection, water supply, water quality, and natural systems. The District's mission is to protect water resources, minimize flood risks, and ensure the public's water needs are met. The District is one of five regional agencies directed by state law to protect and preserve water resources within its boundaries. Established in 1961 to operate and maintain several large flood protection projects, the District's responsibilities have since expanded to include managing water supply, protecting water quality, and protecting natural systems including rivers, lakes, wetlands, and associated uplands. **Figure 4** depicts the location of the South Fork of the Little Manatee River and its tributaries north and east of the Tract. No water courses or open waterbodies are depicted on the Tract; however, water management benefits achieved and maintained by the original acquisition include protection of natural flood conveyance, conservation of wetland forests and their water quality maintenance functions, and management and restoration of natural systems (SWFWMD, 2012).

Water Quality

The District is actively involved in maintaining and improving water quality through both regulatory and non-regulatory programs. Protecting and improving surface and groundwater quality are the two primary objectives of the Water Quality AOR (SWFWMD, 2021). In a region where agricultural discharges are of concern (quantity and quality), maintaining undeveloped lands, including wetlands, reduces the potential for increased pollutant loads to waterways. In a region of increasing agricultural intensity, undeveloped uplands and forested floodplains provide stormwater treatment and a buffer to the Little Manatee River from potential runoff (SWFWMD, 2012).

Water quality is influenced by agriculture around the site and in the watershed and by activities occurring within the Tract. Management actions and recreation activities on the Tract are not expected to negatively impact water quality on- or off-site. Protected wetlands on the Tract sequester nitrogen through denitrification, plant uptake, and accumulation of soil organic matter and remove phosphorus through geochemical and biological processes such as plant uptake and incorporation into soil organic matter (Widney, 2018). Protection and management of wetland communities will enhance their water quality functions through controlling invasive plants and animals, implementing prescribed fire to sustain biological diversity, and assuring natural flow patterns are maintained.

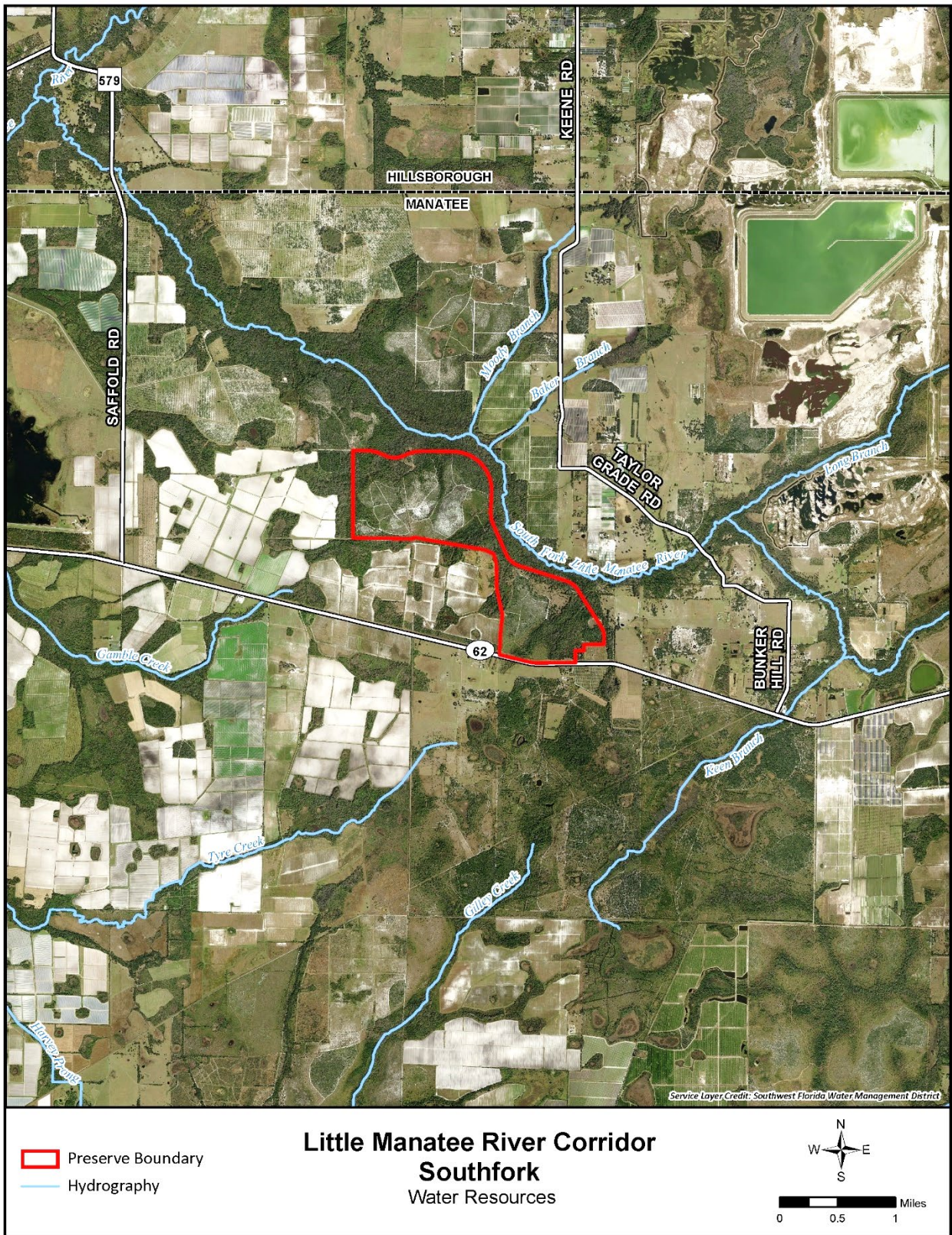


FIGURE 4. WATER RESOURCES

Water Supply

Ensuring adequate water supplies for humans and for the environment is central to the District's mission. The Tract lies in the Southern Water Use Caution Area, or SWUCA, established by the District's Governing Board in 1992 to address resource impacts associated with long-term decline in Upper Floridan aquifer water levels. Drawdown in aquifer water levels in the SWUCA, due primarily to groundwater withdrawals, are contributing to regional saltwater intrusion into the Upper Floridan aquifer along the coast, especially in the Most Impacted Area (MIA). The Tract lies at the eastern edge of the MIA, an area of about 708 square miles located along the coast of southern Hillsborough, Manatee, and northwestern Sarasota counties where the threat of saltwater intrusion is greatest (SWFWMD, 2006). The Tract holds some potential for Aquifer Storage and Recovery (ASR) (SWFWMD, 2012). Acquisition of the Tract provides the potential for future solutions to water supply issues and removes 970 acres from consideration for future consumptive use of groundwater.

Flood Protection

Flood protection is another important element of the District's mission. Historically, flood protection depended upon control structures to provide for the storage and "controlled" conveyance of floodwater. The current approach mimics natural processes and is a more environmentally sound and cost-effective method. The District's primary flood protection strategy depends upon identifying and preserving natural floodplains and other land that can serve as storage areas for storm-generated floodwater.

The principal water resource features of the Tract are over three miles of hardwood forests along the southern bank of the South Fork of the Little Manatee River. Coupled with the State's adjoining conservation lands along the north bank of the river, these lands provide protection for water resources and natural systems along the forested floodplain (**Figure 5**).

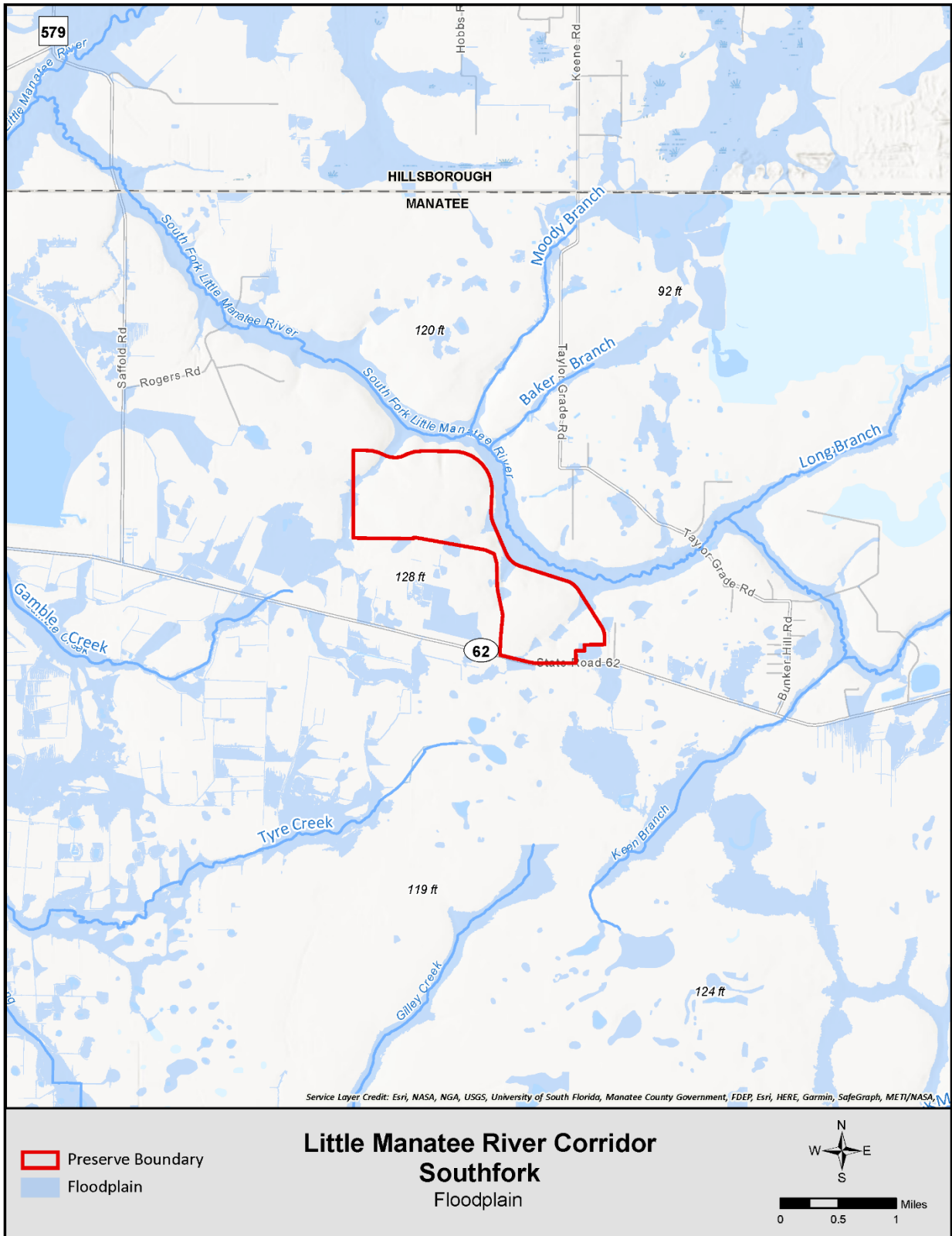


FIGURE 5. FLOODPLAIN MAP

Natural Systems

The District uses natural communities as defined by the FNAI to describe habitats of the Tract. (FNAI 2010). Eleven natural communities were identified by FNAI to occur within the Tract (**Figure 6**). **Table 2** summarizes the acreage and percent cover of each type. The FNAI compiled an extensive database of plants observed in each natural community based on fieldwork conducted in 2009. Additional fieldwork was conducted in January 2022 as a part of this Management Plan update to verify current conditions and to evaluate the effects of land management on each natural community. An excerpt of the FNAI community descriptions and a representative group of the plants observed are provided below for each natural community. **Appendix A** provides a list of all plants (and their scientific names) documented by the FNAI during its field work in 2009 and observations by District staff.

TABLE 2. NATURAL COMMUNITY TYPE SUMMARY

FNAI Natural Community Type	Acreage	Percentage of Community Type
Bottomland forest	57.9	6.0 %
Mesic flatwoods	61.6	6.3 %
Mesic hammock	4.4	0.5 %
Pasture (improved)	74.7	7.7 %
Pasture (semi-improved)	13.9	1.4 %
Ruderal	35	3.6 %
Scrub	394.9	40.7 %
Scrubby flatwoods	100.5	10.4 %
Upland hardwood forest	8.7	0.9 %
Wet flatwoods	203.2	20.9 %
Xeric hammock	16.0	1.7 %
Total Acreage	970.8	100 %

Wetland Communities

Bottomland Forest (57.9 acres)

Bottomland forest is a deciduous or mixed deciduous/evergreen, closed-canopy forest on terraces and levees within riverine floodplains and in shallow depressions. It is found between swamps (which are flooded most of the time) and uplands. Bottomland forest is influenced by high water tables and peak seasonal flooding as well as irregular high flood events. Fire is not a significant factor in bottomland forest and is primarily limited to individual trees affected by lightning strikes. On the Tract, bottomland forest transitions into wet flatwoods as elevation and the distance from a stream increase. Bottomland forest is the dominant natural community along the blackwater stream and drainages at the Tract.

The moderate to dense canopy of bottomland forest consists of red maple, loblolly bay, sweetbay, sweetgum, swamp tupelo, South Florida slash pine, and water oak. The sparse to moderate subcanopy is comprised of the same species, with swamp bay and live oak.

The understory includes a shrub layer of wax myrtle, swamp azalea, possumhaw, common persimmon, dahoon, saw palmetto, deerberry, and Virginia willow. Ground cover is variable in composition and abundance, often with species overlap between herbs suited to either mesic or hydric conditions. Species include slender woodoats, marsh seedbox, goldenclub, cinnamon fern, royal fern, largeflower jointweed, lizard's tail, netted chain fern, and Virginia chain fern. Mosses, such as sphagnum moss, may also be common. Epiphytes are common and include resurrection fern, Bartram's air-plant, ballmoss, southern needleleaf, and Spanish moss.

Wet Flatwoods (203.2 acres)

Wet flatwoods are open pine forests with a sparse or absent midstory and a dense groundcover of hydrophytic grasses, herbs, and low shrubs. Wet flatwoods on the Tract occur in the ecotones between drier communities and bottomland forest and, subsequently, hydrophytic shrubs are generally an important component of this community. These shrubs tend to dominate where fire has been absent for a long period or where cool season fires predominate; herbs are more common in locations that are frequently burned. Included within the wet flatwoods at the Tract are patches of baygall. These areas have a dense canopy and subcanopy of bay species (loblolly bay, sweetbay, and swamp bay) with a dense shrub layer and few herbaceous species.

The canopy of wet flatwoods on the Tract consists of scattered South Florida slash pine and longleaf pine, along with red maple, loblolly bay, swamp tupelo, swamp bay, and swamp laurel oak. The subcanopy, if present, consists of a mix of these same species along with southern magnolia wax myrtle and winged sumac.

Shrub cover is sparse to moderate, 6 to 15 feet tall, and includes groundsel tree, dwarf huckleberry, gallberry, fetterbush, red chokeberry, swamp azalea, winged sumac, elderberry, saw palmetto, tarflower, American beautyberry, maleberry, and multiple species of blueberry, huckleberry, and blackberry.

The herb layer is occasionally characterized by a high cover of wiregrass. Other herbaceous species include yellow colicroot, broomsedge bluestem, Mohr's thoroughwort, Elliott's milkpea, narrowleaf sunflower, Carolina redroot, whitehead bogbutton, cinnamon fern, royal fern, warty panicgrass, yellow milkwort, bracken fern, bunched beaksedge, whip nutrush, yellow hatpins, bog white violet, Carolina yellow-eyed grass, and two species of chain fern.

Epiphytes in the wet flatwoods community include resurrection fern, ballmoss, southern needleleaf, Spanish moss, and giant air-plant. Vines are common and include Virginia creeper, four species of greenbrier, and muscadine. No rare plant or animal species were found in wet flatwoods communities at the Tract.

Upland Communities

Mesic Flatwoods (61.6 acres)

Mesic flatwoods are characterized by an open canopy of tall pines and a dense ground layer of saw palmetto, other low shrubs, grasses, and forbs. Mesic flatwoods are associated with wet flatwoods, scrubby flatwoods, and scrub at the Tract. Sparse longleaf pine and slash pine are the principal canopy trees in the mesic flatwoods of the Tract. The subcanopy layer includes sparse loblolly bay, wax myrtle, and water oak in wetter areas and sparse live oak in drier areas.

The moderately dense shrub layer follows the same pattern as the subcanopy, with a gradation of wet and dry species, depending on the location and elevation of the community. In addition to saw palmetto, shrubs include gallberry, coastalplain staggerbush, swamp bay, winged sumac, netted pawpaw, tarflower, blue and shiny huckleberry, Atlantic St. John's wort, four petal St. John's wort, gopher apple, coastalplain staggerbush, fetterbush, and hog plum.

The herbaceous layer in the wet flatwoods at the Tract is well developed with a moderate to dense cover of pyrogenic species such as wiregrass, coastalplain honeycomb-head, Florida alicia, tall elephantsfoot, slender flattop goldenrod, camphorweed, fringed yellow stargrass, sensitive briar, narrowleaf silkgrass, bracken fern, blackroot, pale meadowbeauty, queen's delight, yellow hatpins, and Elliott's yellow-eyed grass.

Mesic Hammock (4.4 acres)

Mesic hammocks are evergreen hardwood forests that were likely restricted to natural fire protection in areas such as islands, depressional or basin wetlands, and river floodplains. The small area of mesic hammock on the Tract likely developed from historic mesic and wet flatwoods communities, because of historic clearing and subsequent fire suppression. The mesic hammock at the Tract is a well-developed evergreen hardwood forest with a dense canopy of live oak with remnant longleaf pine. The subcanopy is moderate and contains sweetgum, black cherry, water oak, and live oak. The shrubby understory is composed of a mix of common persimmon, cabbage palm, saw palmetto, wax myrtle, and swamp bay. The herb layer is sparse and consists of various graminoids, bracken fern, and the FISC Category I invasives caesarweed and lantana.

Abundant epiphytes on live oaks and cabbage palms are a characteristic feature of mesic hammocks. In addition to the ubiquitous Spanish moss, other species such as Bartram's air-plant

and ballmoss are common. Vines are common and include yellow jessamine, Virginia creeper, earleaf greenbrier, and muscadine. No rare plants or animals were found in the mesic hammock at the Tract.

Ruderal, Improved and Semi-improved Pasture (123.6 acres)

Ruderal sites are areas where the native vegetation has been disturbed to the extent that it is no longer recognizable as a natural community. Several ruderal types occur on the Tract, including abandoned fields and pastures, clearings, and off-road vehicle trails. These areas were converted from scrub, scrubby flatwoods, and mesic flatwoods. Plant species composition is dependent upon the history, historic community, and soil types within ruderal communities.

Improved pasture is dominated by planted non-native or domesticated native forage species such as bahiagrass, and there is evidence of current or recent pasture activity and/or cultural treatments (mowing, grazing, burning, fertilizing). Improved pastures on the Tract are found on former scrub and/or scrubby flatwoods natural communities as indicated by the presence of scrub species such as myrtle oak and the interpretation of 1940s aerial photography.

Semi-improved pasture is dominated by a mix of planted non-native or domesticated native forage species and native groundcover, due to an incomplete conversion to pasture. Semi-improved pastures have been cleared of a significant percentage of their native vegetation and planted in non-native or domesticated native forage species (bahiagrass), but they still retain scattered patches of native vegetation. On the Tract, semi-improved pasture is found in historic scrub and historic upland hardwood forest. The current community is dominated by mature oak species and resembles a hammock.

Scrub (394.9 acres)

Scrub is composed of evergreen shrubs, with or without a canopy of pines, and is found on dry, infertile, sandy ridges. Three species of shrubby oaks, myrtle oak, sand live oak, and Chapman's oak, Florida rosemary, and sand pine are common to scrubs throughout the state. The dominance of these species, however, is variable from site to site. Scrub on the Tract is composed of a sparse to moderate canopy of sand pine with occasional sand live oak, myrtle oak, and Chapman's oak. Shrubs are moderately dense and range from one to nine feet tall, depending on the time since the last fire, and include scrub hickory, sand holly, coastalplain staggerbush, wild olive, silk bay, sparkleberry, tarflower, Florida rosemary, blue huckleberry, fetterbush, Feay's palaflox, saw palmetto, deerberry, and hog plum.

The herb stratum is generally sparse, consisting of corkscrew threeawn, wiregrass, capillary hairsedge, coastalplain chaffhead, Florida alicia, Florida goldenaster, Michaux's croton, summer farewell, lesser Florida spurge, Florida scrub frostweed, narrowleaf silkgrass, largeflower jointweed, rustweed, sandyfield beaksedge, sand spike moss, and pineland scalypink. Ground lichens are common in patches of open sand.

Scrub harbors a wealth of species endemic to Florida, many of which are considered rare. Rare species found on the Tract include Florida goldenaster and perforate reindeer lichen.

Scrubby Flatwoods (100.5 acres)

Scrubby flatwoods have an open canopy of widely spaced pine trees and a low, shrubby understory dominated by scrub oaks and saw palmetto, often interspersed with areas of barren white sand. Scrubby flatwoods on the Tract are found adjacent to scrub, mesic flatwoods, and wet flatwoods.

Principal canopy species are sand pine and longleaf pine, with occasional mature sand live oak. The shrub layer of the scrubby flatwoods community is dominated by a mixture of common mesic flatwoods species and scrub oak species. The shrub layer can be dense, and it includes tarflower, coastalplain staggerbush, fetterbush, winged sumac, saw palmetto, netted pawpaw, blue huckleberry, gallberry, gopher apple, pricklypear, wild pennyroyal, runner oak, dwarf live oak, scrub palmetto, Florida bully, hog plum, Adam's needle, four species of blueberry, and three species of St. John's wort.

The herb layer is also a mixture of mesic and xeric plant species. Common herbaceous species include wiregrass, coastalplain honeycombhead, coastalplain chaffhead, Florida alicia, lesser Florida spurge, rough hedgehyssop, Florida scrub frostweed, coastalplain palaflox, narrowleaf silkgrass, candyroot, coastalplain milkwort, largeflower jointweed, rustweed, sandyfield beaksedge, whip nutrush, Piedmont blacksenna, and pineland scalypink. No rare or invasive plant species were found in scrubby flatwoods the Tract.

Upland Hardwood Forest (8.7 acres)

Upland hardwood forests are closed-canopy forests dominated by broadleaved hardwood trees in areas sheltered from fire. They typically have a diverse assemblage of tree species in the canopy and midstory, shade-tolerant shrubs, and sparse groundcover.

The upland hardwood forest on the Tract is dominated by a moderately dense mature canopy of pignut hickory, swamp laurel oak, and occasionally slash pine, near wet flatwoods, and sand live oak, near xeric hammock and scrub. The subcanopy and shrub layer consist of Carolina laurelcherry, southern magnolia, red bay, sparkleberry, sweetbay, wild olive, and saw palmetto. Herbs are sparse, and the ground is covered with heavy leaf litter. Herbaceous species found in this community include hammock snakeroot and whip nutrush.

The state-Endangered Florida spiny-pod was found in a former upland hardwood forest community that now has a dense herbaceous layer of bahiagrass and is mapped as semi-improved pasture.

Xeric Hammock (16.0 acres)

Xeric hammocks are evergreen forests on dry sandy soils. They typically develop where fire-exclusion allows for the establishment of an oak canopy. On the Tract, xeric hammock is found on the edge of scrub and upland hardwood forest. This community is believed to have formerly been scrub or scrubby flatwoods. The canopy and subcanopy are moderate to dense and dominated by sand live oak, scrub hickory, and laurel oak. Common understory plants include American beautyberry, sand holly, Chapman's oak, myrtle oak, live oak, sparkleberry, and hog plum. The herb layer is generally very sparse. Common herbaceous species include Elliott's milkpea,

sandyfield beaksedge, and whip nutrush. There were no rare or invasive plant species found in xeric hammock on the Tract.



FIGURE 6. NATURAL COMMUNITIES – FNAI

Soils and Topography

Soils

Soils mapped by the Natural Resource Conservation Service (NRCS) are depicted in **Figure 7**. Generally, there are three distinct soil groupings based on soil moisture: xeric, mesic, and hydric. Xeric soils are located on higher and drier areas, capable of supporting scrub, sandhill, scrubby flatwoods, and xeric hammock. Mesic soils are located in areas that seasonally retain moisture and are capable of supporting pine flatwoods and mesic hammock communities. Hydric soils are located in lower, wetter areas and support wetland communities. Data on individual soil types on the Tract were derived from the *Soil Survey of Manatee County, Florida* (USDA 1980) and the natural community descriptions provided by the FNAI (FNAI 2009b).

Xeric soils occur on approximately 548.0 acres (56.4%) of the Tract. Xeric soils include Duette (which underlies almost 25% of the Tract), Orsino, Pomello, and Tavares fine sands. They have a depth to water table of 2.5 - 6 feet during the wet season and greater than six feet during dry periods. Permeability is rapid, soil fertility is low. Xeric soils on the Tract are associated with scrub, scrubby flatwoods, and xeric hammock communities.

Mesic soils occur on more than 225.5 acres (23.2%) of the Tract. The predominant mesic soils include Myakka fine sand, Waveland fine sand, and St. Johns fine sand. These poorly drained soils are characterized by a water table within 10 inches of the surface for one to four months per year, but the water table may also drop below 48 inches from the surface during particularly dry seasons. Internal drainage and runoff are slow. Mesic soils on the Tract are associated with mesic flatwoods, mesic hammock, pasture, and wet flatwoods communities.

Approximately 197.4 acres (20.3%) of the Tract are underlain by hydric soils. Hydric soils include Canova, Anclote, and Okeelanta soils; soils of the Felda-Wabassa association, frequently flooded; Manatee mucky loamy sand; and Myakka-Myakka wet, fine sands, zero to two percent slopes. These soils are poorly drained, mineral, and organic soils that are ponded or have a water table near the surface for significant portions of each year. Hydric soils on the Tract are associated with bottomland forest and wet flatwoods communities.

Topography

The Tract is located within the Southern Coastal Plain Ecoregion (Sayler et al. 2016); specifically, the Southwestern Florida Flatwoods Subregion (Griffith et al. 1994), which covers parts of northern Florida and most of central Florida. The subregion includes barrier islands and peninsulas, Gulf Coastal Lowlands, and the DeSoto Plain. The Tract is in the Coastal Lowlands natural topographic division, which is characterized by Pleistocene-epoch marine terraces along historical shelves from 25 to 100 feet above sea level (USDA 1980). Locally, the site lies on a ridge above the relatively steep slopes of the South Fork of the Little Manatee River. At a broader landscape scale, the site lies at the beginning of a ridge that continues to the east, eventually ascending toward and culminating at the Lake Wales Ridge in Central Florida (FNAI 2009b).

Topography on the Tract is gently sloping, with elevations ranging from the high of 128 feet in the southwestern corner, to below 100 feet on the northern boundary along the slope to the South Fork of the Little Manatee River (**Figure 8**).

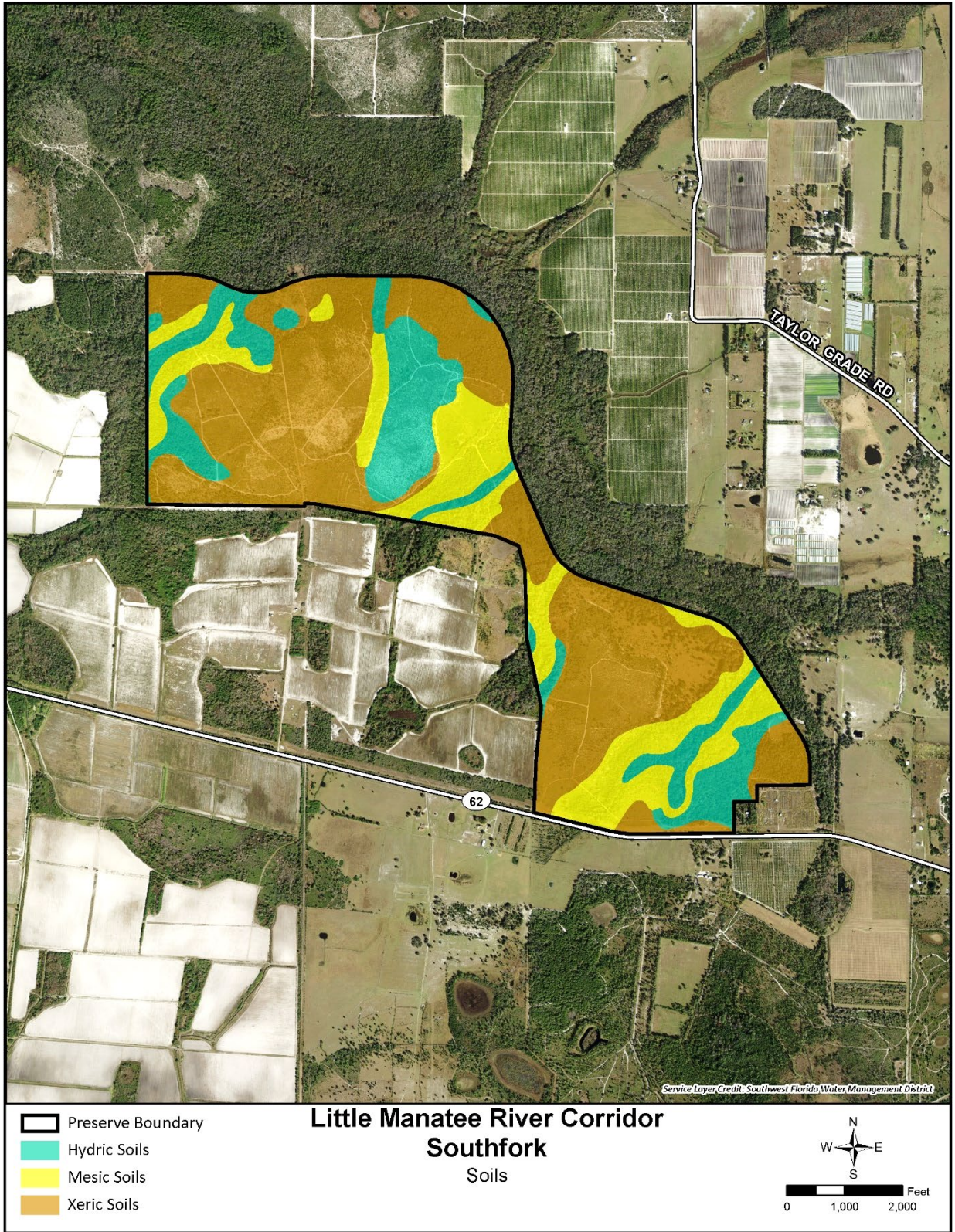


FIGURE 7. SOIL TYPES

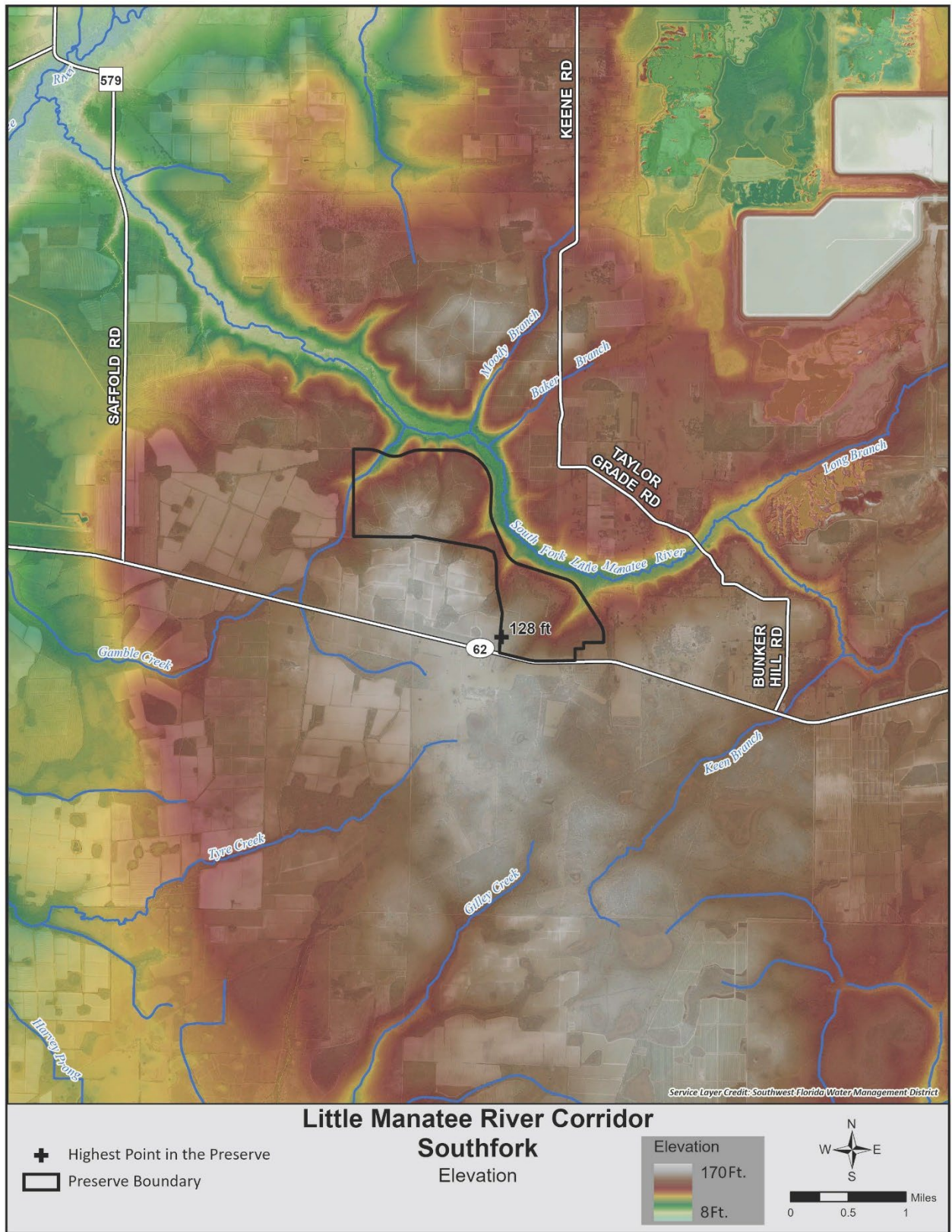


FIGURE 8. DIGITAL ELEVATION

Land Management and Land Use

Land Management

As part of the ownership of conservation lands, the District is responsible for the protection of water resources and natural systems through the application of effective and efficient land management practices. These land management practices include prescribed fire, forest management, habitat restoration, invasive species control, and habitat maintenance. The primary land management tool that land managers utilize is the application of prescribed fire. This is the most cost-effective method to maintain the natural communities in their natural condition. Along with prescribed fire, the District uses some of the other common land management techniques referenced above to achieve specific land management objectives. The goal of the District's land management program is to maintain and restore natural systems according to their natural community descriptions outlined by the FNAI Natural Communities Guide.

Fire Management

Prescribed fire is the primary tool for management of District conservation lands. Fire is a natural process that has occurred on Florida's landscape for thousands of years. The goal of the District's fire program is to mimic that natural process and apply prescribed fire in a safe, efficient, and effective manner to maintain the natural function of the plant and animal communities. Many of the plant and animal species that occur on the Tract are specifically adapted to fire to maintain a healthy and successful population. As a result, the District aims to apply fire to all fire-dependent natural communities based on their natural fire return intervals defined by FNAI (2010).

The program targets the natural fire season, or the "growing" season, which occurs during the spring and summer. Research indicates that burning during the growing season has the most beneficial impact on native plant communities but maintaining a consistent burn frequency can be just as valuable. Therefore, the District conducts prescribed burns throughout the year to achieve various objectives.

The District's fire management program seeks to achieve the following:

- Maintain and restore natural systems.
- Promote water resource benefits.
- Reduce hazardous fuel loads and minimize wildfire risk.
- Promote native plant diversity and habitat function.
- Maintain wildlife habitat quality.
- Support forest management activities.
- Maintain aesthetics and access for recreation.

On the Tract, there are 22 management units encompassing the entire Tract. These management units are illustrated in **Figure 9**. District burn managers always take precautions to limit potential negative impacts from prescribed burns and target specific weather conditions. There is a network of firelines and natural firebreaks throughout the property that allow for successful fire management and limit the potential for wildfires.

The term “condition class” is a reference to the status of District-owned and managed lands relative to a historic fire return interval described in the natural history of each community type. The fire return interval demonstrates the amount of time between disturbances that resets succession within a natural community. Condition Class 1 would be within one fire return interval and Condition Class 2 would be within two fire return intervals. Condition Class 3 would represent any unit that is at three or more intervals since the last disturbance. Condition Class 4 represents any system that has had fire excluded for so long that it is beyond recovery through reintroduction of fire without implementing cost-prohibitive measures. Condition Class 5 was developed to represent systems that are not regularly fire-maintained, such as hydric hammock. Condition Classes 1–5 represent most of the prescribed burn program aside from special circumstances that have been identified and treated separately for a variety of reasons.

The primary objective of the Land Management Condition Class Evaluation Program is to assign a Condition Class value to all fire management units based on the natural fire return interval of the targeted community type. The purpose of the Condition Class Evaluation Program is to provide an accurate representation of the condition of lands managed by the District with fire. It is the District’s goal to preserve, protect, and restore natural systems to support their natural hydrologic and ecological functions.

Forest Management

The Tract does not have any Timber Management Zones (TMZ) actively managed by the District. On other District lands, plantations were created to restore the pine overstory in previously altered areas and improve habitat. The goal is to manage these areas using standard silvicultural practices to maintain forest health, provide habitat, support local economies, and generate revenue to offset the cost to manage these properties.

Restoration and Maintenance

Managing altered lands on conservation tracts often necessitates additional management activity, especially if fire-dependent communities can no longer carry fire at the necessary time (seasonality) or intensity. The primary tool to restore natural communities to their historical diversity and structure is prescribed fire. Additional maintenance activities ongoing on the Tract include control of invasive species and maintenance of roads, firebreaks, and recreational facilities.



FIGURE 9. MANAGEMENT UNITS

Invasive Species Management

Invasive plants are a threat to ecosystems worldwide and are an especially serious issue in Florida due to the state's warm, amenable climate and many ports of entry, which import non-native plants. This high rate of introduction, combined with the sub-tropical climate, makes it more likely for non-native plant and animal species to be introduced into the wild and to establish successful self-propagating populations. As a result, Florida is home to many non-native plant and animal species that have become aggressive invaders severely impacting natural systems.

Invasive Plant Management

The Florida Invasive Species Council (FISC) tracks non-native plant species in the state, compiles species lists, and categorizes these species based on their impact to natural systems. Category I species are the most aggressive and can impact natural communities by displacing native species, changing community structure or ecological functions, or by hybridizing with native species. Category II species are those that are increasing in abundance but have not yet altered Florida plant communities to the extent shown by Category I species. Many species on the FISC lists also appear on the Florida Department of Agriculture and Consumer Service's Noxious Weed List.

The District is committed to the management of invasive plant species and uses an adaptive management strategy to control their establishment and spread on the Tract. The District has a Vegetation Management Section with dedicated staff who spearhead control efforts by surveying, prioritizing, and treating invasive plant populations on District conservation lands. The District focuses management efforts on invasive plant species that the FISC has deemed Category I or II plants, as set forth above. Furthermore, the Vegetation Management Section uses the framework set out in The Nature Conservancy's Site Weed Management Plan Template to analyze and prioritize invasive plant species for treatment based on several factors, including:

1. their infestation levels;
2. the current and potential impacts of the species;
3. the value of habitat that the species does or could infest; and
4. the difficulty controlling the species.

Under this system, developed by the FNAI, the highest priority total score is 4, and the lowest priority is 16. This prioritization scheme ensures that the District's resources are spent where they will have the greatest impact on the ecosystem. Four species have been identified as the highest priority for invasive plant control operations on the Tract; cogongrass, old world climbing fern, Japanese climbing fern, and skunkvine. Additionally, the District has implemented an Early Detection, Rapid Response (EDRR) strategy, which identifies and rapidly treats occurrences of invasive species that are not currently present or are not widespread on the property but have the potential to become invasive if they get established. Thirty EDRR species are identified in the Southfork Invasive Plant Management Prioritization Plan (SWFWMD, 2020). **Table 3** lists the most common or problematic invasive plant species found on the Tract, their priority level for control if applicable and their FISC status.

The District employs a variety of measures to control invasive plant species including thorough surveying, chemical treatment (basal-bark treatment, cut-stump applications, hack-and-squirt

methods, and foliar applications), mechanical treatment, and the use of biological control agents or some combination thereof, which are done with both in-house and through contractual services. Upland treatments are often scheduled to occur in the year following a prescribed burn, because access to a site is easier and visibility is increased at this time. Personnel using herbicides comply with instructions found on the herbicide label and employ Best Management Practices (BMPs) for their application.

TABLE 3. INVASIVE PLANTS KNOWN TO OCCUR

Common Name	Scientific Name	FISC Status	Priority Level for Control
Brazilian pepper	<i>Schinus terebinthifolius</i>	Category I	
Caesarweed	<i>Urena lobata</i>	Category I	
Cogongrass	<i>Imperata cylindrica</i>	Category I	6
Japanese climbing fern	<i>Lygodium japonica</i>	Category I	6
Lantana	<i>Lantana camara</i>	Category I	
Natalgrass	<i>Rhynchelytrum repens</i>	Category I	
Old world climbing fern	<i>Lygodium microphyllum</i>	Category I	4
Paragrass	<i>Urochloa mutica</i>	Category I	
Skunkvine	<i>Paederia foetida</i>	Category I	7
Torpedograss	<i>Panicum repens</i>	Category I	
Tropical soda apple	<i>Solanum viarum</i>	Category I	
Wax begonia	<i>Begonia cucullata</i>	Category I	

Invasive Wildlife Management

The monitoring and control of non-native animal species statewide is overseen by the Florida Fish and Wildlife Conservation Commission (FWC). The District obtains annual control permits through FWC to track and conduct invasive wildlife removal practices on District-owned properties.

The primary invasive wildlife species that the District focuses control efforts on is the feral hog (*Sus scrofa*). Feral hogs are the most conspicuous and destructive exotic animal species found throughout the conservation lands owned and managed by the District. The species' ability to readily adapt to a wide variety of habitats, combined with their high reproductive rates and a lack of significant natural predators, has led to rapidly increasing population densities throughout North America (West et al. 2009).

Feral hogs cause millions of dollars in damages to lawns, ponds, natural areas, flood control structures, and rights-of-way each year (Giuliano 2016). Feral hogs can carry multiple zoonotic and epizootic diseases, including brucellosis, leptospirosis, and pseudorabies. They also have the potential to be aggressive if startled or angered and are vectors for many invasive plant species on

site; specifically, caesarweed. Feral hogs are known to consume young from nests of reptiles and ground-nesting birds (Coblentz and Baber 1987). They are prolific breeders capable of producing three litters per year (Dzieciolowski et al. 1992), and they are renowned for impacts caused by rooting, resulting in destabilized soil surfaces and disruption of native vegetation (Singer et al. 1984).

Recognizing the severe ecological threat posed by this exotic species, the District first developed and implemented a feral hog population control plan in 1995. Due to the adaptive nature of feral hogs, the District has since taken a multi-faceted approach to their removal. Current control methods include trapping, FWC-administered Wildlife Management Area hog hunts, special District administered hog hunts, and on select properties, aerial operations conducted by the United States Department of Agriculture, Wildlife Services program. The use of electronically controlled hog traps in targeted areas has also proven highly effective.

Given the current array of practical, environmental, and social constraints, it is generally recognized that the complete eradication of feral hogs from District conservation lands is an unattainable goal. Therefore, the overall goal of the feral hog management strategy is to reduce the number of feral hogs on District conservation lands to a maintenance level, thus reducing the overall ecological damage resulting from feral hog rooting. This is done using a comprehensive and scientifically based management strategy that is humane, cost-effective, and compatible with ecologically sustainable land management.

Imperiled Species Management

For the purposes of this Plan, the term “Imperiled Species” refers to plant and animal species that are designated as Endangered or Threatened by the FWC or the U.S. Fish and Wildlife Service (USFWS). The unique natural communities within the Tract provide significant habitat for a variety of imperiled and locally important species. The continued land management efforts within the property maintain important ecosystem functions and landscape structure that can support a mix of species.

Imperiled Wildlife

The District manages the Tract in a holistic fashion with an overall objective to sustain the vegetative community structure and diversity, hydrologic regime, and fire return intervals characteristic of the FNAI communities on the Tract. This approach is believed to benefit a wide array of native plant and animal species, including those that are considered imperiled. Numerous imperiled species are known to exist on the Tract. According to FNAI there are two federal and/or state-listed wildlife species have been documented on or near the Tract (**Table 4**).

TABLE 4. IMPERILED WILDLIFE SPECIES KNOWN OR LIKELY TO OCCUR

Common Name	Scientific Name	Federal Status*	State Status*
Florida scrub-jay	<i>Aphelocoma coerulescens</i>	FT	FT
Gopher tortoise	<i>Gopherus polyphemus</i>		ST

*FT=Federally Threatened, ST=State Threatened

Florida scrub-jay (*Aphelocoma coerulescens*)

The FNAI Element Occurrence report cites the presence of numerous groups of the federally-Threatened Florida scrub-jay in the conservation lands from the Tract to the Moody Branch Wildlife and Environmental Area in 2017 and 2018. Florida scrub-jay ecology and habitat requirements will continue to be a consideration of land management, particularly the use of fire, across the Tract. The Tract is a part of a network of habitats that is still capable of supporting viable Florida scrub-jay populations. These areas, referred to as “focal landscapes,” were developed from a comprehensive range-wide habitat mapping exercise (USFWS 2019). With guidance from the *Draft Revised Recovery Plan for the Florida Scrub-Jay* (USFWS 2019) and the body of knowledge about scrub-jays and fire (Breininger et al. 2014, Kent and Kindell 2009, Breininger 2004, Fitzpatrick et al. 1991), the District will continue to implement the FNAI-recommended fire return intervals for scrub, scrubby flatwoods, xeric hammock, and mesic flatwoods communities on the Tract.

Gopher tortoise (*Gopherus polyphemus*)

Gopher tortoises and their burrows were observed in upland habitats across the Tract. Gopher tortoises are listed as a Threatened species by the FWC. The life history and management guidelines for gopher tortoises and their commensals are well documented in the expansive *Gopher Tortoise Management Plan* published by the FWC in 2012, with updates. The FWC Management

Plan provides a comprehensive statement (pages 38–39) for consideration by public entities charged with managing conservation lands with gopher tortoises:

Xeric uplands and natural communities that support the gopher tortoise will be managed to achieve/maintain vegetative parameters comparable to those found in comparable reference sites. Frequent prescribed fire is the preferred tool, but other treatments will be used when necessary. Maintaining these communities in a manner that replicates their natural form and function helps ensure they meet the needs of the gopher tortoise and the other species dependent on these communities.

Reference sites have been established by the FNAI and serve as models for vegetative parameters and fire return intervals for natural communities. These intervals are used by the District as the goals for implementing prescribed fire. Implementation of prescribed fire at frequencies recommended by FNAI for each pyrogenic community is understood to be beneficial for tortoises and their commensals and burning to meet these return intervals will continue to be an objective on the Tract.

Imperiled Plants

Six species of imperiled plants are known to occur or likely to occur on the Tract. Four were observed by either the FNAI team or other botanists working on-site: Florida goldenaster, perforate reindeer lichen, scrub plum, and Florida spiny-pod. Two others, giant orchid and nodding pinweed, were detected in the vicinity (**Appendix A**).

Florida goldenaster (*Chrysopsis floridana*)

The FNAI field team identified the state- and federally-Endangered Florida goldenaster in scrub habitat on the Tract. The FNAI Field Guide Summary for the Florida goldenaster identifies suitable habitat as sunny, bare patches of sand in sand pine scrub and ecotones between this community and scrubby flatwoods, or disturbed areas of loose sand. For protection and management, FNAI recommends avoiding the use of herbicides in rights-of-way and using prescribed fire in scrub and other xeric habitats to create a mosaic of conditions suitable for Florida goldenaster.

Florida goldenaster was planted on the Tract to increase the 38 known populations of this species, more than half of which are on conservation lands (FNAI 2009a). The Moody Branch Wildlife and Environmental Area supports a population of this species on the north side of the Little Manatee River, and other populations of this species are found on ridges along the river to the west.

Perforate reindeer lichen (*Cladonia perforata*)

The FNAI field team identified the state- and federally-Endangered perforate reindeer lichen in scrub habitat on the Tract. The FNAI Field Guide Summary for the perforate reindeer lichen identifies suitable habitat as rosemary scrub on FL Panhandle coasts, the Lake Wales Ridge, and the Atlantic Coastal Ridge. For protection and management, FNAI recommends avoiding frequent or catastrophic fires, managing scrub fires to create a mosaic of microhabitats, monitoring recolonization after fire, and limiting foot and vehicle traffic in scrub.

Florida spiny-pod (*Matelea floridana*)

The FNAI field team identified the state-Endangered Florida spiny-pod on the Tract in semi-improved pasture in an area that was formerly upland hardwood forest. The FNAI Field Guide Summary for the Florida spiny-pod describes suitable habitat as sandhill, upland pine, and dry hammocks. For protection and management, FNAI recommends keeping ecotones to hardwood hammocks open with fire and protecting hammocks from canopy disturbance and rooting by feral hogs. Additionally, FNAI recommends that since reproductive individuals are more likely to be found along trails where they may receive more sunlight, care should be taken while maintaining vehicle and foot trails to avoid damage to these plants.

Scrub plum (*Prunus geniculata*)

In addition to the listed plants observed by the FNAI field team, the federally-Endangered scrub plum was found on the Tract. The FNAI field guide for scrub plum defines its habitat as sandhill and oak scrub. It is endemic to central Florida. Conservation objectives include acquisition of remaining tracts of scrub habitat. Management actions should be focused on the use of prescribed fire to create sunny openings preferred by the shrub.

Nodding pinweed (*Lechea cernua*)

The FNAI field team identified the state-Threatened nodding pinweed in scrub and scrubby flatwoods near the Tract in 2020. The FNAI Field Guide Summary for the nodding pinweed identifies suitable habitat as open, unshaded white sands of scrub and scrubby flatwoods. For protection and management, FNAI recommends fire management, as nodding pinweed reacts to fire by both resprouting and increased seed production. Similarly, Menges and Kohfeldt (1995) found that nodding pinweed prefers open, sandy spaces formed when scrub stands are burned.

Giant orchid (*Orthochilus ecristatus* syn. *Eulophia ecristata* and *Pteroglossaspis ecristata*)

The FNAI field team identified the state-Threatened giant orchid (aka non-crested eulophia) in scrub and scrubby flatwoods near the Tract in 2009. The FNAI Field Guide summary for the giant orchid defines suitable habitat as sandhill, scrub, pine flatwoods, pine rocklands, and occasionally old fields. The greatest threat to the species is the destruction of habitat from conversion to urban, suburban, or agricultural uses. Management objectives for giant orchid are to use prescribed fire to create openings and reduce competition from woody species, and to avoid soil-disturbing activities such as bedding and plowing fire lanes. Protection of habitat and the current focus on prescribed fire on the Tract are consistent with the management needs of the giant orchid.

Arthropod Management

In compliance with Section 388.4111, Florida Statutes and in Section 5E-13.042, Florida Administrative Code, land within the Tract in Manatee County has been evaluated and subsequently designated as environmentally sensitive and biologically highly productive. Such designation is appropriate and consistent with the previously documented natural resources and ecosystem values and affords the appropriate protection for these resources from arthropod control practices that could impose a potential hazard to fish, wildlife, and other natural resources existing on this property.

Recreation

Part of the District Policy governs the authority of the District to provide passive, natural resource-dependent recreational uses on its conservation lands, as well as appropriate public access. The compatibility for such recreational uses and public access points considers the environmental sensitivity and the suitability of the property. Compatible uses generally consist of outdoor recreation and educational activities, while public access points are minimal and only allow for walkthrough foot traffic. The District Governing Board holds authority to determine the compatibility of recreational uses on District conservation lands, as based upon the purpose of the property acquisition.

For some District properties, there are cooperative agreements associated with other public agencies to provide for a more expansive recreational use. Currently, there are no such partnerships on the Tract. At this time, hiking is the only recreational activity permitted on the Tract (**Figure 10**).

Trails

Nature trails give nature-based experiences while minimizing impacts to natural systems. The Tract provides approximately six miles of hiking trails. White triangular signs depicting the trail system provide directions to the network of hiking experiences across the Tract.

Access to the Tract is available through the small parking area at the southwestern corner of the Tract. Access is on the north side of S.R. 62 (Wauchula Road) approximately 3.5 miles east of Saffold Road (C.R. 579) and approximately 12 miles east of the community of Parrish.

Camping

No camping is currently available at the Tract.

Wildlife Viewing, Hunting, Fishing, and Boating

The Tract has a wide variety of wildlife viewing opportunities. The mosaic of habitats provides the opportunity for observing an abundance of bird species. The property also contains many other species of wildlife such as gopher tortoise, eastern ratsnake (*Pantherophis alleghaniensis*), white-tailed deer (*Odocoileus virginianus*), wild hog, and bobcat (*Lynx rufus*). This species richness is indicative of land management practices that provide habitat for a diverse abundance of wildlife in natural communities managed for their historical vegetative structure, fire regime, and hydrology.

Currently, the Tract is not open to hunting, except for any feral hog population management hunts administered by the District. There are no meaningful opportunities for fishing on the Tract.

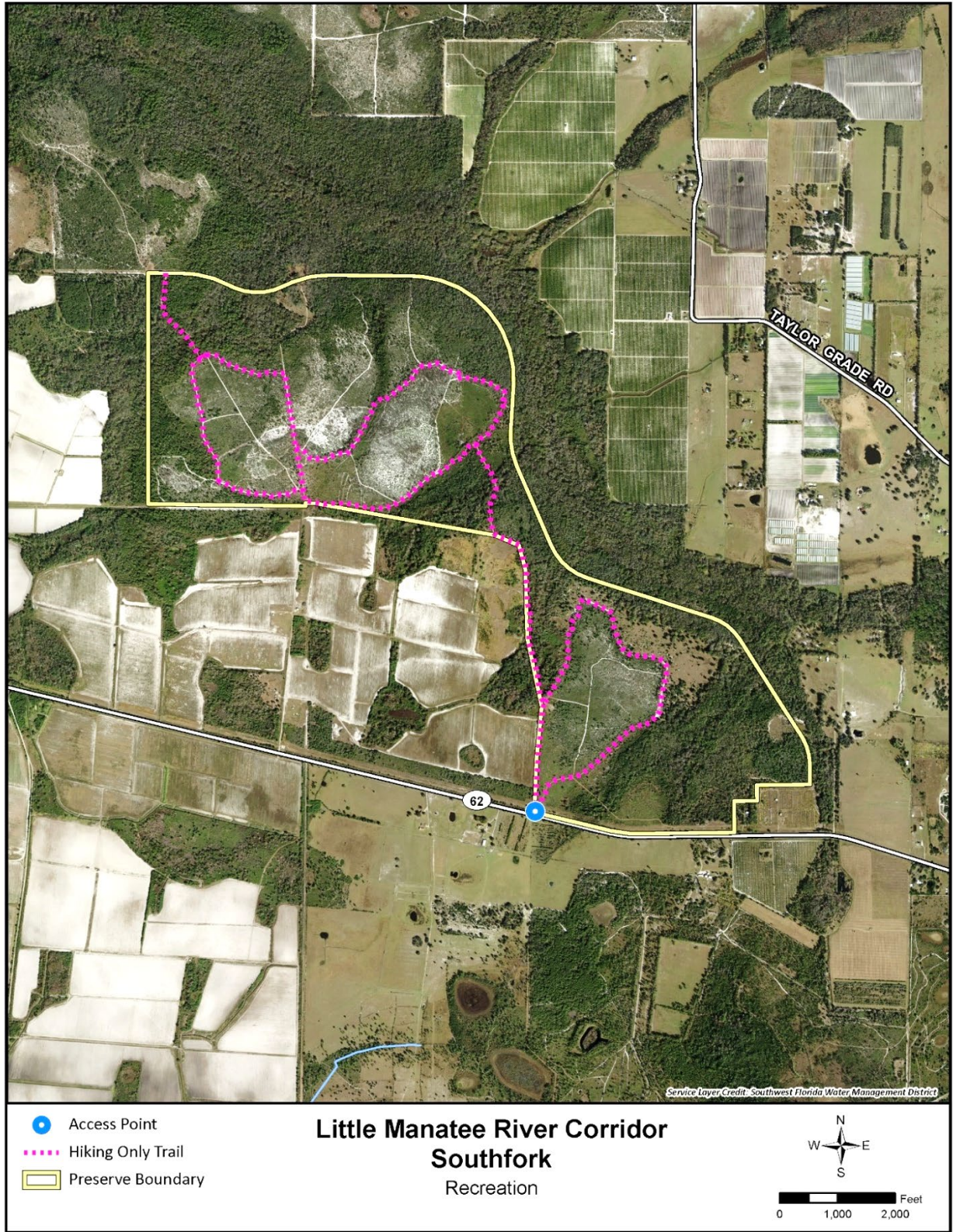


FIGURE 10. RECREATION TRAILS

Land Use Administration

The land uses administered on District conservation lands are governed by District Policy and Rules established in Florida Administrative Code. According to District Policy, appropriate land use types are separated into two categories: public recreation use and non-recreational public use. Public recreation uses vary by property and compatibility is based upon the environmental sensitivity and suitability of the property. Furthermore, some District conservation lands are subject to cooperative agreements with other public agencies to administer the responsibilities for any expansive recreational opportunities that the District may deem as compatible on its conservation land. Cooperative agreements support the District's efforts to protect water resources and provide nature-based recreation to the greatest extent practicable by working together to create partnerships with other agencies to streamline management. The specific public recreation uses on the Tract are discussed in the previous Section. Non-recreational public uses include, but are not limited to, linear facilities, scientific research opportunities, water resource development projects, sustainable forestry, and environmental education. Like cooperative agreements for expansive recreational uses, the District is a party to a variety of agreements with private entities for the allowance of the aforementioned use types. The administration of non-recreational and recreational public uses for the Tract is discussed in the subsequent sections.

Partnerships and Cooperative Management

A Coordination Agreement was executed on June 2, 2009, between the District and the Suncoast Chapter of the Florida Native Plant Society to access portions of the Tract for research and study associated with restoration of habitat and supplemental plantings for the Florida goldenaster. Work included plantings in 2009 and 2010 as part of the U.S. Fish and Wildlife Service's species delisting efforts. This effort was completed, and the agreement is no longer current.

A Non-Exclusive License Agreement between the District and Gulf Stream Natural Gas System LLC was executed on November 8, 2001 to construct, operate, and maintain a 36 inch natural gas transmission pipeline in an area 50 feet wide and lying adjacent to S.R. 62 at the southern end of the Tract.

An additional Non-Exclusive License Agreement was executed on April 5, 2010 between the District and the Florida Gas Transmission Company LLC to construct, operate, and maintain a 30-inch natural gas transmission pipeline for domestic and industrial purposes

Special Use Authorizations (SUA)

An SUA from the District's Land Resources Bureau (LRB) is required for any use of District property not authorized through statute or rule, and are available upon approved application. When an application for the SUA is made to the LRB, its staff reviews the application to determine the compatibility of the requested special use with the specified District conservation lands. If LRB staff determine the requested special use is compatible and no other conflict exists, the SUA is issued for the time period necessary to accommodate the requested use.

The types of approved SUAs on the Tract can be categorized under recreational uses, research opportunities, training, and general granted access allowances. As previously mentioned, the

approval for obtaining accommodations to the designated trails for a mobility impaired person is completed through the SUA process.

District properties provide for a variety of research opportunities for the benefit of natural resource conservation and preservation efforts and advancements. These opportunities can consist of wildlife surveys, groundwater sampling, natural communities research or wetland studies. Overall, District properties provide an abundance of research opportunities due to the proper management of healthy ecosystems.

Future Land Conservation

The District will continue to consider the opportunity to purchase lands adjacent to the Tract with the goal of promoting the District's efforts to protect the natural features of conservation lands for the benefits of flood protection, water quality, and water supply. It would be advantageous to seek possible opportunities for acquiring fee simple and less-than-fee properties to further promote protections of the natural systems within the region.

Land Maintenance and Operations

Roads and Boundaries

The District is responsible for maintaining the infrastructure on District lands for access to conduct management activities, to provide recreational opportunities, and to provide site security. This includes roads, trails, firelines, culverts, wet crossings, recreational amenities, and perimeter fencing that requires periodic maintenance, which occurs throughout the year. Properly established and maintained roads are required to provide access for management activities and public use. Well-maintained roads minimize erosion, sedimentation and minimize water quality impacts. These roads also provide quick access for wildfire protection and serve as firelines for prescribed fires. Continuous observation will ensure that roads remain clear and that they are suitable for vehicles essential for management and public use.

Motorized access on the Tract is restricted to authorized personnel only. As part of the general road maintenance, the District maintains a network of culverts and wet crossings to ensure the conveyance of water. Culverts are periodically replaced based on the results from a culvert inspection process, which identifies culverts that are damaged or are nearing the end of their expected service life. Wet crossings are utilized, where feasible, to mimic the natural conveyance of water and to provide limited disturbance in wet areas. These low water crossings are typically at ground level and are improved with rock or other suitable material to limit erosion while allowing for the natural flow of water to occur.

Properly marked and maintained boundaries of District conservation lands help to minimize disputes, encroachments, trespassing, and other unwanted impacts from adjoining properties. Well-marked boundaries also aid in proper placement of firelines for wildfire protection and prescribed fire application. Boundaries on the Tract are identified by perimeter fencing and District boundary signs.

District staff secure the Tract by maintaining perimeter fencing, removing unauthorized access gates, posting appropriate boundary signage, identifying frequent points of unauthorized access, documenting evidence of illegal activities, and placing entry barriers at designated points to stop unauthorized vehicle access. The District also contracts with FWC law enforcement for site security.

Facilities and Infrastructure

Consistent with legislation that was adopted by the state in 1999, lands acquired through state-funded acquisition programs can be used for a variety of public facilities. These include utility lines and other linear facilities, stormwater management projects, and water supply development projects. Approval of such uses is contingent upon several criteria, such as compatibility with the natural resource values of the property, compensation provided for the use, location of the proposed use within the Tract, and consistency with the Management Plan. Currently, there are currently two such facilities, both natural gas lines, on the Tract.

Goals and Objectives

Overview

The following represents a general overview of the goals and objectives over the next 10-year planning period for the Tract. This set of goals will serve as an outline of management expectations and provide direction over the management activities for the life of this plan. These goals are not an annual work plan, which is beyond the scope of this Plan.

Resource Protection and Management

Hydrologic Management

Goal: Protect water resources within the Tract and associated tributaries.

- Objective 1: Continue to observe and assess water resources within the Tract to ensure desired hydrologic function and develop restoration projects, as necessary.
- Objective 2: Continue monitoring water quality and wetland conditions through the data collection network and periodic wetland assessments.
- Objective 3: Protect water resources during management activities by continued implementation of Silvicultural and Agricultural Best Management Practices.

Fire Management

Goal: Maintain and restore function of natural systems through application of prescribed fire as the primary management tool.

- Objective 1: Develop and implement an annual burn plan and apply prescribed fire according to the District's Fire Management Guidelines.
- Objective 2: Conduct the majority of prescribed burns during the growing and dormant seasons to support development of native fire-dependent species and habitat function.
- Objective 3: Update and maintain a Condition Class database to track management activities on specific management units.
- Objective 4: Maintain perimeter firelines on an annual basis and disk strategic internal management lines supporting the seasonal needs of prescribed fire program and to support wildfire protection.

Restoration and Natural System Maintenance

Goal: Evaluate individual management units and develop restoration projects to recover historic natural communities.

- Objective 1: Assess habitat conditions and develop restoration strategy to recover historic natural communities on previously altered sites targeting imperiled natural communities.
- Objective 2: Utilize information obtained from historic imagery, FNAI Natural Communities Mapping, and on-site investigations to implement site specific restoration projects that support the District's restoration goals.

- Objective 3: Develop annual workplan to implement these restoration and enhancement projects.

Goal: Maintain and enhance natural system structure and function.

- Objective 1: Continue to maintain existing habitat enhancement projects over the long-term to achieve desired future conditions outlined in the FNAI Natural Community Guide.
- Objective 2: Evaluate and develop habitat enhancement projects to improve habitat function.
- Objective 3: Implement habitat management projects that support the improvement and development of native plant and animal communities, including imperiled species.

Forest Management

Goal: Manage the forest resources on the Tract by applying sound silvicultural techniques, with consideration for maintenance of sustainable forest resources to achieve the District's land stewardship goals.

- Objective 1: Manage the forest resources in accordance with the District's 10-Year Timber Management Plan and conduct timber harvests as scheduled.
- Objective 2: Evaluate and develop forest management projects to support specific restoration and enhancement objectives developed for the Tract.
- Objective 3: Conduct annual inspections of forest resources for indication of disease, insect infestations, or damage from fire to promote forest health and sustainability.

Imperiled Species Management

Goal: Manage and maintain natural systems to support development of imperiled, threatened, or endangered plant and animal species.

- Objective 1: Implement land management strategies and techniques that support development of habitat required for known imperiled species.
- Objective 2: In cooperation with other agencies and partners, implement survey and monitoring protocol where feasible for imperiled species and identify strategies for their recovery.
- Objective 3: Work with other state agencies, conservation organizations, and landowners to maintain habitat connectivity.

Invasive and Exotic Species Management

Goal: Manage the populations of exotic and invasive plants and animals found on the Tract at a maintenance level.

- Objective 1: Implement the District's Invasive Plant Management Plan for the Tract.
- Objective 2: Employ an early detection rapid response methodology on new infestations identified in the Invasive Plant Management Plan.
- Objective 3: Implement the feral hog control plan and manage the feral hog population on the Tract.

Infrastructure and Maintenance

Goal: Manage and maintain the infrastructure to protect the water resources and support the District's management objectives.

- Objective 1: Annually inspect and maintain roads and trails according to their designated maintenance schedule.
- Objective 2: Monitor and maintain culverts, bridges, and low water crossings to prevent adverse impacts on hydrology.
- Objective 3: Periodically inspect boundary fencing and gates to assure adequate protection and site security of resources and repair, as needed.

Administration

Land Acquisition

Goal: Pursue land acquisition projects that support the Florida Forever acquisition plan and seek to obtain conservation easements to maintain critical habitat linkages.

- Objective 1: Consider acquisition of inholding parcels to complete project boundary and improve management.
- Objective 2: Evaluate opportunities to acquire fee interest of parcels within the District's optimal boundary and Florida Forever work plan.
- Objective 3: Pursue acquisition of less-than-fee interest through strategic conservation easements that complement the District's existing network of fee interest and less-than-fee acquisitions.

Land Use and Recreation

Goal: Manage District lands for multiple-use purposes through the administration of leases, easements, and various types of agreements.

- Objective 1: Routinely review and update as necessary agreements, easements, and leases.
- Objective 2: Review special requests and issue special use authorizations for uses that are consistent with the District policies.
- Objective 3: Maintain cooperative relationships with state, local, and other governmental entities along with stakeholders.

Goal: Provide quality, resource-based passive recreational opportunities for the public's enjoyment.

- Objective 1: Maintain appropriate public access and quality compatible recreational opportunities.
- Objective 2: Evaluate requests for additional compatible public access and recreational opportunities.

Archaeological and Cultural Resources

Goal: Manage cultural and historical resources to protect and preserve natural and cultural history.

- Objective 1: Coordinate and follow the Division of Historical Resources' recommendations for protection on known sites. Continue to monitor, protect, and preserve as necessary any identified sites.
- Objective 2: Take precautions to protect these sites from potential impacts resulting from looting, management or maintenance activities.
- Objective 3: Maintain qualified staff as an Archaeological Site Monitor.

Security

Goal: Provide site security and resource protection.

- Objective 1: Identify, document, and address security issues, including encroachments and unauthorized access.
- Objective 2: Maintain and inspect boundary fences, boundary lines, and gates to deter encroachment and unauthorized access. Post and maintain rule and boundary signage.
- Objective 3: Maintain and as needed, update the law enforcement agreement with FWC or other agencies as appropriate.

Significant Management Accomplishments

Below is a summary of the significant management accomplishments over the last 10 years for the Tract. This is not an exhaustive list of all the management activities that have occurred, but a brief highlight of the significant accomplishments over the last 10 years.

Land Management

- Developed annual burn plans.
- Completed prescribed burns on approximately 410 acres.
- Maintained perimeter firelines on an annual basis for prescribed fire and wildfire mitigation.
- Performed maintenance of internal roads and trails along with mowing twice per year on primary and secondary roads.
- Removed 30 feral hogs.
- Over 1,998 acres surveyed for invasive plants and any invasives found within the surveyed area were treated.

Recreation

- Created parking area for improved public access at the State Road 62 access point.
- 138 volunteer hours were logged to help with trail maintenance, trash cleanup, amenities maintenance, and invasive plant removal.

Administration

- Authorized 6 SUAs for recreational uses, research opportunities, and training.

References

- Breining, D. R. 2004. An adaptive approach to managing Florida scrub-jay habitat. NASA Technical Memorandum NASA/TM-2004-211532.
- Breining, D. R., E. D. Stolen, G. M. Carter, D. M. Oddy, and S. A. Legare. 2014. Quantifying how territory quality and sociobiology affect recruitment to inform fire management: Recruitment in fire-maintained ecosystems. *Animal Conservation* 17:72–79.
- Coblentz, B. E. and D.W. Baber. 1987. Biology and control of feral pigs on Isla Santiago, Galapagos, Ecuador. *J. Appl. Ecol.* 24:403–418.
- Dzieciolowski, R. M., C. M. H. Clarke, and C. M. Frampton. 1992. Reproductive characteristics of feral pigs in New Zealand. *Acta Theriologica* 37:259–270.
- Environmental Consulting and Technology, Inc. (ECT). 1999. Phase I Environmental Site Assessment, Cordell Property, Manatee County, Florida. Prepared for the SWFWMD. 68 pp.
- Fitzpatrick, J. W., G. E. Woolfenden, and M. T. Kopeny. 1991. Ecology and development-related habitat requirements of the Florida scrub jay (*Aphelocoma coerulescens coerulescens*). Florida Fish and Wildlife Conservation Commission Nongame Wildlife Program Technical Report No. 8. Tallahassee, FL. 49 pp.
- Florida Invasive Species Council (FISC). 2019. *2019 List of Invasive Plant Species*. [http://bugwoodcloud.org/CDN/fleppc/plantlists/2019/2019 Plant List ABSOLUTE FINAL.pdf](http://bugwoodcloud.org/CDN/fleppc/plantlists/2019/2019%20Plant%20List%20ABSOLUTE%20FINAL.pdf)
- Florida Natural Areas Inventory (FNAI). 2021. Conservation Lands Database. <https://www.fnai.org/conslands/florida-forever>.
- Florida Natural Areas Inventory (FNAI). 2010. *Guide to the Natural Communities of Florida: 2010 edition*. Florida Natural Areas Inventory, Tallahassee, FL.
- Florida Natural Areas Inventory (FNAI). 2009a. Element Occurrence Database. Florida Natural Areas Inventory, Tallahassee, FL.
- Florida Natural Areas Inventory (FNAI). 2009b. Natural Community Descriptions to accompany a Natural Community and Historic Map of Little Manatee River Southwest Florida Water Management District. Florida Natural Areas Inventory, Tallahassee, FL. 33 pp.
- Giuliano, W. 2016. *Wild Hogs in Florida: Ecology and Management*. UF IFAS Publication #WEC277. <https://edis.ifas.ufl.edu/pdf%5Carchived%5CUW%5CUW322%5CUW322-10870481.pdf>
- Griffith, G., J. Omernik, C. Rohm, and S. Pierson. August 1994. *Florida Regionalization Project*. U.S. Environmental Protection Agency, Environmental Research Laboratory. Corvallis, OR.
- Iannone III, B. V., S. Carnevale, M. B. Main, J. E. Hill, J. B. McConnell, S. A. Johnson, S. F. Enloe, M. Andreu, E. C. Bell, J. P. Cuda, and S. M. Baker. 2020. Invasive Species Terminology: Standardizing for Stakeholder Education. *Journal of Extension* 58(3): 27.

Kent, A. and C. Kindell. 2009. *Scrub Management Guidelines for Peninsular Florida: Using the Scrub-Jay as an Umbrella Species*. Florida Fish and Wildlife Conservation Commission and Florida Natural Areas Inventory, Florida State University. 10 pp.

Manatee County Future Land Use Map. 2021. (<https://www.mymanatee.org/gisapps/mobile/index.html?type=land-development>).

Menges, E. S. and N. Kohfeldt. 1995. Life history strategies of Florida scrub plants in relation to fire. *Bulletin of the Torrey Botanical Club* 122(4):282–297.

Sayler, K. L., W. Acevedo, and J. L. Taylor, eds. 2016. Status and trends of land change in the Eastern United States — 1973 to 2000: U.S. Geological Survey Professional Paper 1794–D, 195 pp.

Singer, F. J., W. T. Swank and E. E. C. Clebsch. 1984. Effects of wild pig rooting in a deciduous forest. *J. Wildl. Manage.* 48: 464–473.

Southwest Florida Water Management District (SWFWMD). 2021. 2021 Consolidated Annual Report. 210 pp. <https://www.swfwmd.state.fl.us/sites/default/files/medias/documents/2021-Consolidated-Annual-Report-Approved.pdf>

Southwest Florida Water Management District (SWFWMD). February 2022. 2022-2026 Strategic Plan. <https://www.swfwmd.state.fl.us/resources/plans-reports/2022-2026-strategic-plan>

Southwest Florida Water Management District (SWFWMD). 2020. Southfork Invasive Plant Management Prioritization Plan. 7 pp.

Southwest Florida Water Management District (SWFWMD). 2012. Surplus Lands Assessment (SLA), Little Manatee River, *Southfork Tract*. 3 pp.

Southwest Florida Water Management District (SWFWMD). 2006. Southern Water Use Caution Area Recovery Strategy. 305 pp.

U. S. Department of Agriculture Soil Conservation Service. 1980. Soil Survey of Manatee County, Florida. 161 pp.

U.S. Fish and Wildlife Service. 2019. Draft Revised Recovery Plan for the Florida Scrub-Jay (*Aphelocoma coerulescens*). U.S. Fish and Wildlife Service. Atlanta, GA. 6 pp.

West, B. C., A. L. Cooper, and J. B. Armstrong. 2009. Managing wild pigs: A technical guide. *Human-Wildlife Interactions Monograph* 1:1–55.

Widney, S., A. K. Klein, J. Ehman, C. Hackney, and C. Craft. 2018. The value of wetlands for water quality improvement: An example from the St. Johns River watershed, Florida. *Wetlands Ecol Manage* 26:265–276.

Appendix A

PLANT SPECIES KNOWN TO OCCUR OR LIKELY TO OCCUR

Common Name	Scientific Name
Adam's needle	<i>Yucca filamentosa</i>
American beautyberry	<i>Callicarpa americana</i>
American Wisteria	<i>Wisteria frutescens</i>
Atlantic St. John's wort	<i>Hypericum reductum</i>
Azalea	<i>Rhododendron sp.</i>
Bahiagrass	<i>Paspalum notatum</i>
Ball moss	<i>Tillandsia recurvata</i>
Bartram's air plant	<i>Tillandsia bartramii</i>
Beaked sedge	<i>Rhynchospora sp.</i>
Beaksedge	<i>Rhynchospora sp.</i>
Beggarticks	<i>Bidens sp.</i>
Black cherry	<i>Prunus serotina</i>
Blackroot	<i>Pterocaulon pycnostachyum</i>
Blue huckleberry	<i>Gaylussacia frondosa var. tomentosa</i>
Blueberry	<i>Vaccinium sp.</i>
Bluestem	<i>Andropogon sp.</i>
Bog white violet	<i>Viola lanceolata</i>
Bogbutton	<i>Lachnocaulon sp.</i>
Bracken fern	<i>Pteridium aquilinum</i>
Brazillian pepper	<i>Schinus terebinthifolius</i>
Broomsedge bluestem	<i>Andropogon virginicus</i>
Buckthorn	<i>Sideroxylon sp.</i>
Bunched beaksedge	<i>Rhynchospora cephalantha</i>
Cabbage palm	<i>Sabal palmetto</i>
Caesarweed	<i>Urena lobata</i>
Camphorweed	<i>Heterotheca subaxillaris</i>
Candyroot	<i>Polygala nana</i>
Capillary hairsedge	<i>Bulbostylis ciliatifolia</i>
Carolina laurelcherry	<i>Prunus caroliniana</i>
Carolina redroot	<i>Lachnanthes caroliana</i>
Carolina yellow-eyed grass	<i>Xyris caroliniana</i>
Cat greenbriar	<i>Smilax glauca</i>
Chaffhead	<i>Carphephorus sp.</i>
Chapman's oak	<i>Quercus chapmanii</i>

Cinnamon fern	<i>Osmunda cinnamomea</i>
Climbing hempvine	<i>Mikania scandens</i>
Coastalplain chaffhead	<i>Carphephorus corymbosus</i>
Coastalplain honeycomb-head	<i>Balduina angustifolia</i>
Coastalplain milkwort	<i>Polygala setacea</i>
Coastalplain palafox	<i>Palafoxia integrifolia</i>
Coastalplain Staggerbush	<i>Lyonia fruticosa</i>
Cogon grass	<i>Imperata cylindrica</i>
Combleaf mermaidweed	<i>Proserpinaca pectinata</i>
Common persimmon	<i>Diospyros virginiana</i>
Corkscrew threeawn	<i>Aristida gyrans</i>
Dahoon	<i>Ilex cassine</i>
Darrow's blueberry	<i>Vaccinium darrowii</i>
Dayflower	<i>Commelina sp.</i>
Deerberry	<i>Vaccinium stamineum</i>
Dogfennel	<i>Eupatorium capillifolium</i>
Dropseed grass	<i>Sporobolus sp.</i>
Dwarf huckleberry	<i>Gaylussacia dumosa</i>
Dwarf live oak	<i>Quercus minima</i>
Dwarf wax myrtle	<i>Myrica cerifera var. pumila</i>
Earleaf greenbriar	<i>Smilax auriculata</i>
Eastern poison ivy	<i>Toxicodendron radicans</i>
Elderberry	<i>Sambucus nigra ssp. canadensis</i>
Elliott's milkpea	<i>Galactia elliotii</i>
Elliott's yellow-eyed grass	<i>Xyris elliotii</i>
Feay's palafox	<i>Palafoxia feayi</i>
Fetterbush	<i>Lyonia lucida</i>
Fimbry	<i>Fimbristylis sp.</i>
Fireweed	<i>Erechtites hieraciifolius</i>
Florida alicia	<i>Chapmannia floridana</i>
Florida bully	<i>Sideroxylon tenax</i>
Florida goldenaster	<i>Chrysopsis floridana</i>
Florida rosemary	<i>Ceratiola ericoides</i>
Florida scrub frostweed	<i>Helianthemum nashii</i>
Florida spiny pod	<i>Matelea floridana</i>
Fourpetal St. John's wort	<i>Hypericum tetrapetalum</i>

Fringed yellow stargrass	<i>Hypoxis juncea</i>
Gallberry	<i>Ilex glabra</i>
Giant air plant	<i>Tillandsia utriculata</i>
Giant orchid	<i>Pteroglossaspis ecristata</i>
Goldenclub	<i>Orontium aquaticum</i>
Goldenrod	<i>Solidago sp.</i>
Gopher apple	<i>Licania michauxii</i>
Groundnut	<i>Apios americana</i>
Groundsel tree	<i>Baccharis halimifolia</i>
Hammock snakeroot	<i>Ageratina jucunda</i>
Highbush blueberry	<i>Vaccinium corymbosum</i>
Hog plum	<i>Ximenia americana</i>
Ilex ambigua	<i>Sand holly</i>
Indiangrass	<i>Sorghastrum sp.</i>
Japanese climbing fern	<i>Lygodium japonicum</i>
Knotweed	<i>Polygonum sp.</i>
Lantana	<i>Lantana camara</i>
Largeflower jointweed	<i>Polygonella robusta</i>
Laurel greenbriar	<i>Smilax laurifolia</i>
Laurel oak	<i>Quercus hemisphaerica</i>
Lesser florida spurge	<i>Euphorbia polyphylla</i>
Licoriceweed	<i>Scoparia dulcis</i>
Live oak	<i>Quercus virginiana</i>
Lizard's Tail	<i>Saururus cernuus</i>
Loblolly bay	<i>Gordonia lasianthus</i>
Longleaf pine	<i>Pinus palustris</i>
Lupine	<i>Lupinus sp.</i>
Maiden fern	<i>Thelypteris sp.</i>
Maleberry	<i>Lyonia ligustrina var. foliosiflora</i>
Marsh seedbox	<i>Ludwigia palustris</i>
Meadow beauty	<i>Rhexia sp.</i>
Michaux's croton	<i>Croton michauxii</i>
Mohr's thoroughwort	<i>Eupatorium mohrii</i>
Muscadine	<i>Vitis rotundifolia</i>
Myrtle oak	<i>Quercus myrtifolia</i>
Myrtleleaf St. John's wort	<i>Hypericum myrtifolium</i>
Narrowleaf silkgrass	<i>Pityopsis graminifolia</i>
Narrowleaf sunflower	<i>Helianthus angustifolius</i>
Natal grass	<i>Rhynchelytrum repens</i>
Netted chain fern	<i>Woodwardia areolata</i>
Netted pawpaw	<i>Asimina reticulata</i>

Nodding pinweed	<i>Lechea cernua</i>
Nutrush	<i>Scleria sp.</i>
Nutsedge	<i>Cyperus sp.</i>
Old world climbing fern	<i>Lygodium microphyllum</i>
Pale meadowbeauty	<i>Rhexia mariana</i>
Panic grass	<i>Panicum sp.</i>
Paragrass	<i>Urochloa mutica</i>
Partridge pea	<i>Chamaecrista fasciculata</i>
Paspalum	<i>Paspalum sp.</i>
Pennywort	<i>Hydrocotyle sp.</i>
Perforate reindeer lichen	<i>Cladonia perforata</i>
Piedmont blacksenna	<i>Seymeria pectinata</i>
Pignut hickory	<i>Carya glabra</i>
Pinebarren frostweed	<i>Helianthemum corymbosum</i>
Pineland scalypink	<i>Stipulicida setacea</i>
Pinweed	<i>Lechea sp.</i>
Possumhaw	<i>Viburnum nudum</i>
Primrose	<i>Oenothera sp.</i>
Queensdelight	<i>Stillingia sylvatica</i>
Red bay	<i>Persea borbonia</i>
Red chokeberry	<i>Photinia pyrifolia</i>
Red maple	<i>Acer rubrum</i>
Resurrection fern	<i>Pleopeltis polypodioides var. michauxiana</i>
Rough hedgehyssop	<i>Gratiola hispida</i>
Royal fern	<i>Osmunda regalis var. spectabilis</i>
Runner oak	<i>Quercus elliotii</i>
Rush	<i>Juncus sp.</i>
Rustweed	<i>Polypremum procumbens</i>
Sand blackberry	<i>Rubus cuneifolius</i>
Sand holly	<i>Ilex ambigua</i>
Sand live oak	<i>Quercus geminata</i>
Sand pine	<i>Pinus clausa</i>
Sand spike moss	<i>Selaginella arenicola</i>
Sandyfield beaksedge	<i>Rhynchospora megalocarpa</i>
Sarsaparilla vine	<i>Smilax pumila</i>
Saw greenbriar	<i>Smilax bona-nox</i>
Saw palmetto	<i>Serenoa repens</i>
Sawtooth blackberry	<i>Rubus argutus</i>
Scrub hickory	<i>Carya floridana</i>

Scrub palmetto	<i>Sabal etonia</i>
Scrub plum	<i>Prunus geniculata</i>
Sensitive briar	<i>Mimosa quadrivalvis</i>
Shiny blueberry	<i>Vaccinium myrsinites</i>
Showy milkwort	<i>Polygala violacea</i>
Silk bay	<i>Persea borbonia var. humilis</i>
Slender flattop goldenrod	<i>Euthamia caroliniana</i>
Slender woodoats	<i>Chasmanthium laxum</i>
Soft rush	<i>Juncus effusus ssp. solutus</i>
Sour orange	<i>Citrus x aurantium</i>
South Florida slash pine	<i>Pinus elliotii var. densa</i>
Southern magnolia	<i>Magnolia grandiflora</i>
Southern needleleaf	<i>Tillandsia setacea</i>
Spadeleaf	<i>Centella asiatica</i>
Spanish moss	<i>Tillandsia usneoides</i>
Sparkleberry	<i>Vaccinium arboreum</i>
Sphagnum moss	<i>Sphagnum spp.</i>
Spiderwort	<i>Tradescantia sp.</i>
Spurred butterfly pea	<i>Centrosema virginianum</i>
St. Andrew's cross	<i>Hypericum hypericoides</i>
Summer farewell	<i>Dalea pinnata</i>
Swamp azalea	<i>Rhododendron viscosum</i>
Swamp bay	<i>Persea palustris</i>
Swamp laurel oak	<i>Quercus laurifolia</i>
Swamp Tupelow	<i>Nyssa sylvatica var. biflora</i>
Sweet orange	<i>Citrus x aurantium</i>
Sweetbay	<i>Magnolia virginiana</i>

Sweetgum	<i>Liquidambar styraciflua</i>
Sword fern	<i>Nephrolepis sp.</i>
Tall elephantsfoot	<i>Elephantopus elatus</i>
Tarflower	<i>Bejaria racemosa</i>
Threeawn grass	<i>Aristida sp.</i>
Torpedograss	<i>Panicum repens</i>
Tough bully	<i>Sideroxylon tenax</i>
Tread Softly	<i>Cnidocolus stimulosus</i>
Tropical soda apple	<i>Solanum viarum</i>
Virginia chain fern	<i>Woodwardia virginica</i>
Virginia creeper	<i>Parthenocissus quinquefolia</i>
Virginia pepperweed	<i>Lepidium virginicum</i>
Virginia willow	<i>Itea virginica</i>
Warty panicgrass	<i>Panicum verrucosum</i>
Water oak	<i>Quercus nigra</i>
Wax begonia	<i>Begonia cucullata</i>
Wax myrtle	<i>Myrica cerifera</i>
Whip nutrush	<i>Scleria triglomerata</i>
Whitehead bogbutton	<i>Lachnocaulon anceps</i>
Wild olive	<i>Osmanthus americanus</i>
Wild pennyroyal	<i>Piloblephis rigida</i>
Winged sumac	<i>Rhus copallinum</i>
Wiregrass	<i>Aristida stricta var. beyrichiana</i>
Witchgrass	<i>Dichanthelium sp.</i>
Yellow colicroot	<i>Aletris lutea</i>
Yellow hatpins	<i>Syngonanthus flavidulus</i>
Yellow jessamine	<i>Gelsemium sempervirens</i>
Yellow-eyed grass	<i>Xyris sp.</i>