GOURD ISLAND CONSERVATION AREA
LAND MANAGEMENT PLAN

ST. JOHNS COUNTY, FLORIDA

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

JULY 9, 2024


Northwest Florida
Water Management District
Suwannee River
Water Management
District
St. Johns
River Water
Management
District
Southwest
Florida Water
Management
District
South Florida
Water Management
District

EXECUTIVE SUMMARY

MANAGEMENT AREA SIZE: 514 acres

DATE OF ACQUISITION: Acquisition of parcels within Gourd Island Conservation Area began in December 2010.

DATE OF PLAN: July 9, 2024
MAJOR BASIN: Lower St. Johns River
PLANNING BASIN: Julington Creek

LOCATION: Gourd Island Conservation Area (GICA or Property) is located west of the city of Ponte Vedra Beach, near the unincorporated area of Sampson in St. Johns County.

FUNDING SOURCES: The acquisition funding sources for GICA include Florida Department of Transportation (FDOT) mitigation donation and property exchange.

MANAGEMENT PARTNERS: The St. Johns River Water Management District (District) is the sole manager of GICA.

VISION STATEMENT: The management focus for Gourd Island Conservation Area is the continued protection of the water resources of the Lower St. Johns River Basin. This includes protection of over 500 acres of uplands and wetlands associated with Durbin and Sampson creeks. Activities occurring within Gourd Island Conservation Area include forest resource management, prescribed fire, and invasive species management for the maintenance and restoration of the Property's natural systems.

RESOURCE PROTECTION AND MANAGEMENT:

- **WATER RESOURCES** – While water resources are largely intact and most protection was accomplished with acquisition, there are some disturbances. Alterations from past management activities include silvicultural bedding, roads, tram roads, and associated ditches.
- **FOREST MANAGEMENT AND RESTORATION** – Forest management activities will include thinning of pine plantations, monitoring for disease and insect infestation, and re-establishing longleaf and slash pine where appropriate.
- **FIRE MANAGEMENT** – The application of prescribed fire will occur in accordance with the annual burn plan and the Gourd Island Conservation Area Fire Management Plan.
- **FLORA AND FAUNA** – GICA provides habitat for numerous wildlife species, including the wood stork (*Mycteria americana*) and gopher tortoise (*Gopherus polyphemus*). Threatened and endangered plants located on GICA include Bartram's ixia (*Calydorea caelestina*), Curtiss' loosestrife (*Lythrum curtissii*), and giant orchid (*Orthochilus ecristatus*). Invasive plant and animal species occur on the Property. The District regularly monitors for the presence of invasive plants and animals and executes appropriate control actions.

- **CULTURAL AND HISTORICAL RESOURCES** – A review of the Department of State Division of Historical Resources Master Site File indicates three known and registered cultural sites within the boundaries of the Property.

LAND USE MANAGEMENT:

- **ACCESS** – One designated public access point is located on the Property.
- **RECREATION** – The Property is open to public recreation including hiking, bicycling, and wildlife viewing.
- **SECURITY** – Maintenance of fence lines, parking areas, gates, and locks is conducted by the District. District staff coordinate with the Florida Fish and Wildlife Conservation Commission (FWC) and local law enforcement for security needs.

ADMINISTRATION:

- **REAL ESTATE ADMINISTRATION** – Forty-nine (49) acres have been identified as potential acquisitions to GICA. Many of the surrounding parcels are developed or are slated to be developed.
- **COOPERATIVE AND SPECIAL USE AGREEMENTS, LEASES, AND EASEMENTS** – The Property was purchased subject to a utility easement for water and sewer utilities in favor of JEA. Two special-use authorizations (SUAs) for biological research are on GICA. The District administers three revenue-generating billboard leases and an apiary lease.
- **MANAGEMENT COSTS AND REVENUES** – Management costs at GICA were $174,533 from 2011–2023 and are projected at $188,130 from 2024–2034. Revenues from billboard leases, timber sales, and an apiary lease were $535,365 from 2010–2023 and are projected at $344,230 from 2024–2034.

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VISION STATEMENT

The management focus for Gourd Island Conservation Area is the continued protection of the water resources of the Lower St. Johns River Basin. This includes protection of over 500 acres of diverse uplands and wetlands associated with Durbin and Sampson Creeks. Activities occurring on the uplands within Gourd Island Conservation Area include management of forest resources, wildland fire and fuels, and invasive species for the maintenance and restoration of the Property's natural systems.

OVERVIEW

This document provides the goals and strategies to guide land management activities at the Gourd Island Conservation Area (GICA or the Property) over the next 10 years. This land management plan was developed in accordance with Section 373.1391 and Section 373.591, Florida Statutes (F.S.). This is the second land management plan for the Property.

The St. Johns River Water Management District (District) owns an interest in nearly 780,000 acres of land across 18 counties, acquired to support its core missions of protecting and restoring water quality, water supply, and natural systems and providing flood protection. The District is the lead manager of approximately 435,000 acres of these lands.

LOCATION

GICA covers approximately 514 acres in St. Johns County, within the Julington Creek planning basin of the lower St. Johns River major and strategic basins. The Property includes two parcels and encompasses numerous sections of Township 5 South, Range 28 East.

The Property is located north of Russell Simpson Road, west of Interstate 95 (I-95), west of the city of Ponte Vedra Beach, near the unincorporated area of St. Johns. Figure 1 depicts the location of the Property and Figure 2 is a 2023 aerial image of the Property.

The District is the lead manager for GICA. There are no secondary managers.

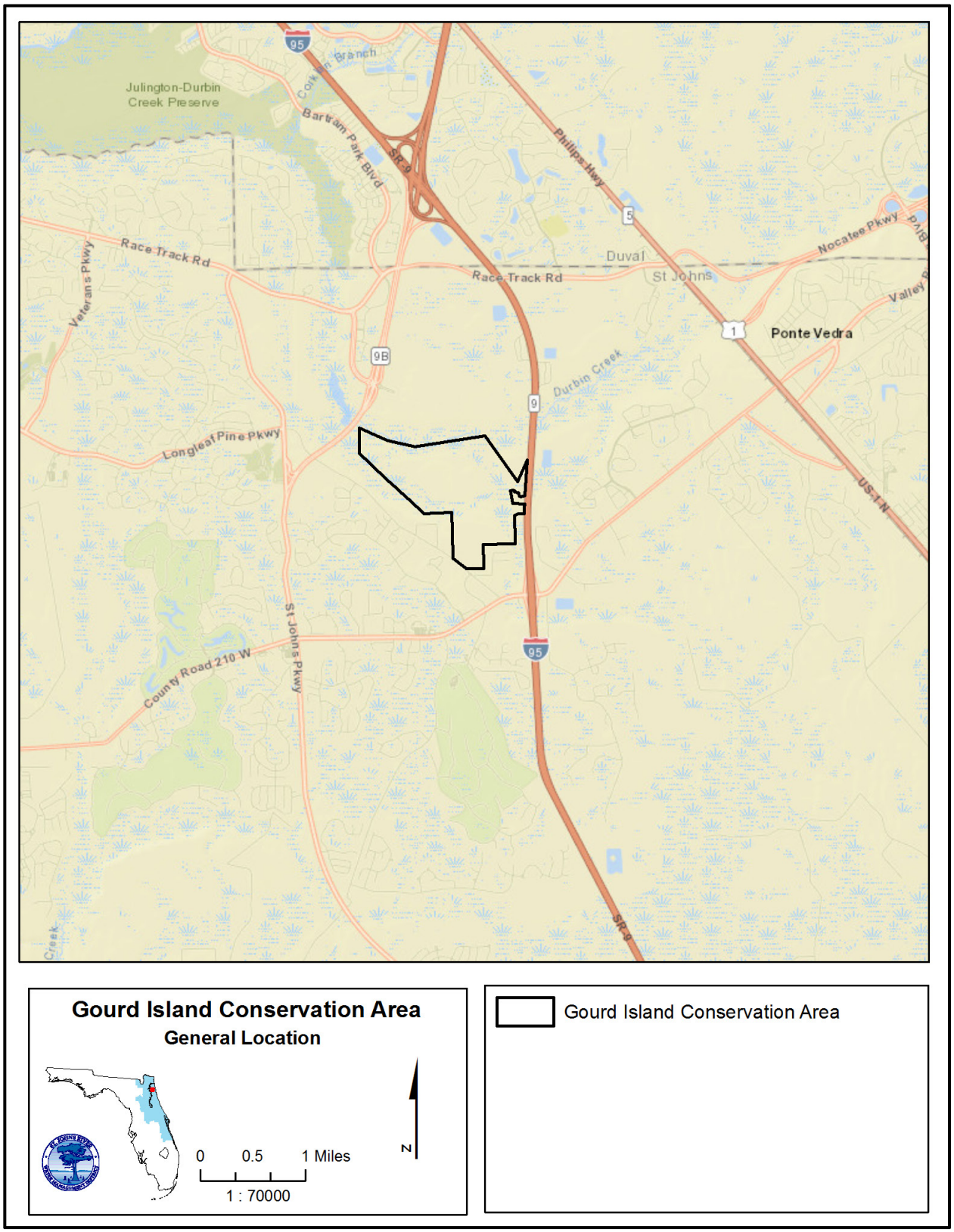

Figure 1: General Location

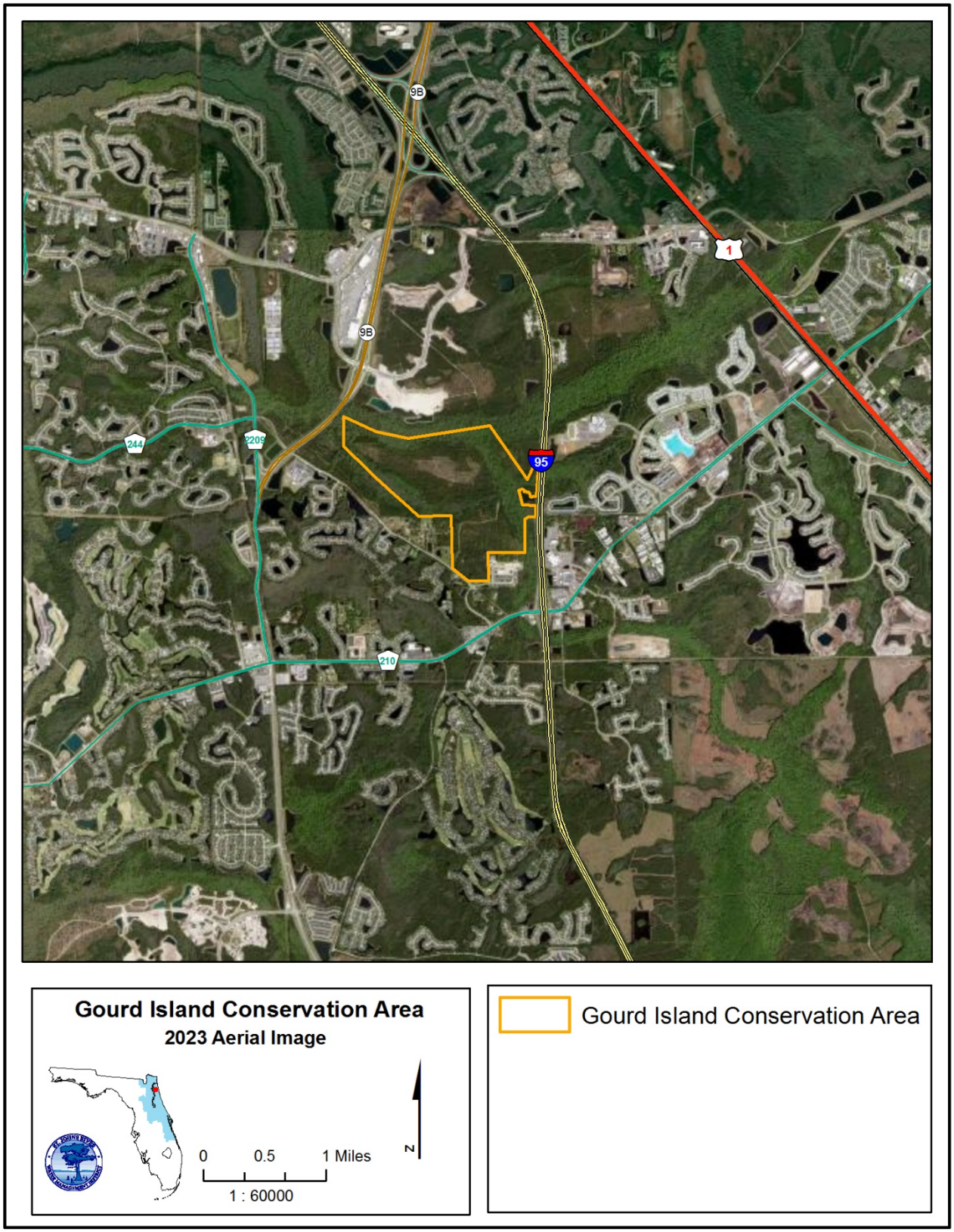

Figure 2: Aerial Imagery

REGIONAL SIGNIFICANCE

GICA is an integral component of a larger network of conservation lands in St. Johns County and provides linkage between a multitude of publicly owned land and conservation easements (Figure 3). These interconnected lands include the Julington-Durbin Preserve, Twelve Mile Swamp Conservation Area, and Guana Tolomato Matanzas National Estuarine Research Reserve (Table 1). This network of lands provides for the protection of water quality and storage and native plant and wildlife species, as well as numerous natural resource-based recreational opportunities.

Table 1: Proximate Properties

Lead Manager	Property
District	Freedom Commerce Center
District	J.P. Hall Bayard Point Conservation Area
District	Julington-Durbin Preserve
District	Stokes Landing Conservation Area
District	Twelve Mile Swamp Conservation Area
Florida Department of Environmental Protection	Guana Tolomato Matanzas National Estuarine Research Reserve
Florida Forest Service	Deep Creek State Forest
Florida Fish and Wildlife Conservation Commission	Guana River Wildlife Management Area
Private Landowner	Hodges Conservation Easements
Private Landowner	Sylvan West Conservation Easement
St. Johns County	Nocatee Preserve
St. Johns County	Turnbull Conservation Area

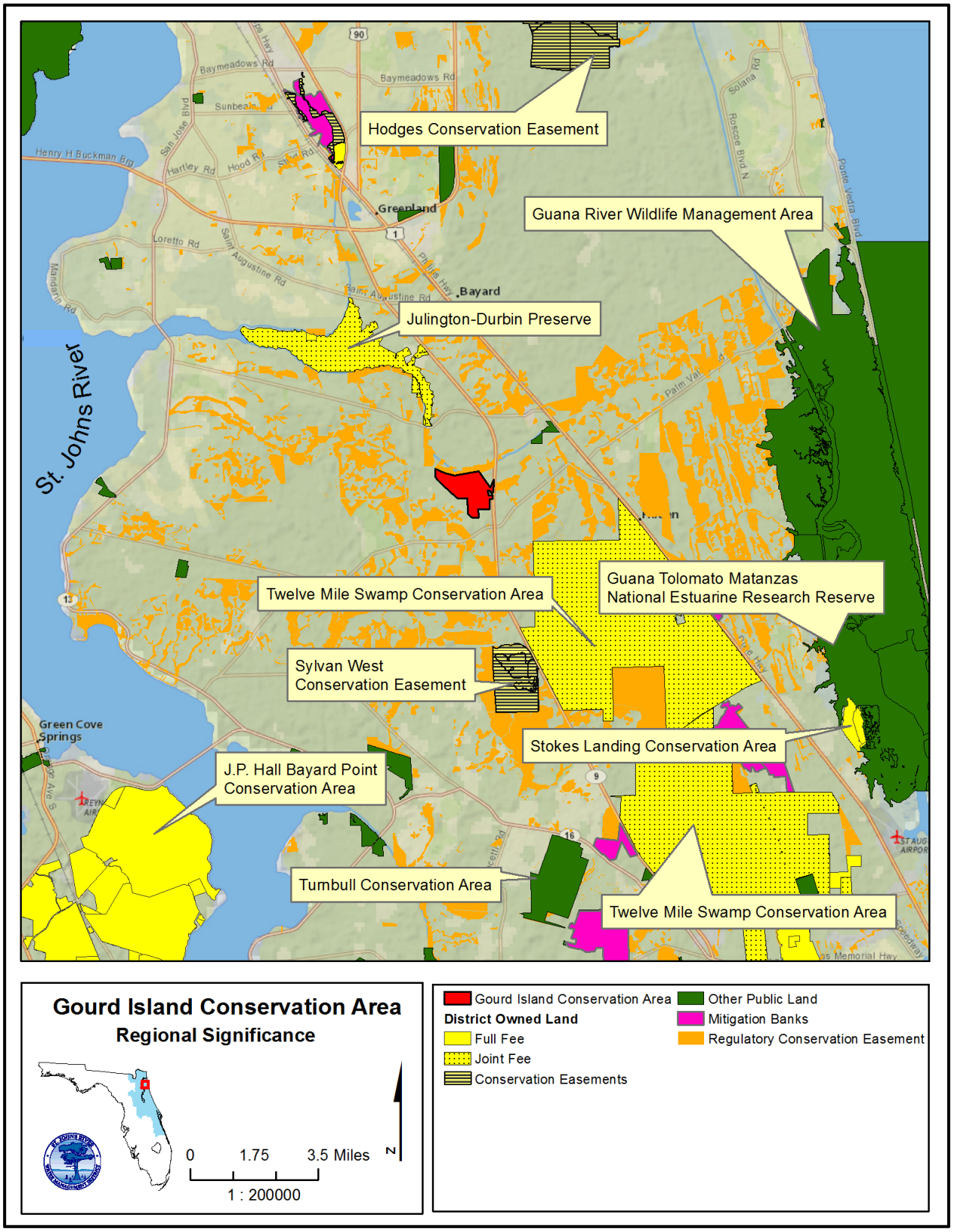

Figure 3: Regional significance

ACQUISITION HISTORY

Acquisition of the parcels that comprise GICA provides for the protection of important water resources and ecological functions. These acquisitions are consistent with the goals of Lower St. Johns River Basin projects as set forth in the District's Five-Year Strategic Plan and the mitigation goals for the Florida Department of Transportation (FDOT). These goals, as they apply to GICA, include:

- Improving water quality, maintaining natural hydrological regimes, and maintaining flood protection by preserving important wetland areas
- Restoring, maintaining, and protecting native natural communities and diversity
- Providing opportunities for recreation where compatible with the above listed goals

GICA comprises two parcels totaling 513.8 deeded acres (Figure 4). The parcels that currently comprise GICA are listed below, and all acreage reported is derived from deed information.

Durbin Creek Gourd Island State Road (SR) 9B (492.29 acres), Land Acquisition No. 2011-002-P1:

The Durbin Creek Gourd Island SR 9B parcel totals 492.29 acres and was donated to the District on Dec. 24, 2010, by FDOT to fulfill wetland impact mitigation for the construction of SR 9B. On May 21, 2013, an exchange of property closed 21.05 acres of the Durbin Creek Gourd Island SR 9B parcel for 21.51 acres of Barco Family Foundation and YMCA property to the District.

Barco Family Foundation and YMCA (21.51 acres), Land Acquisition No. 2012-001-P1:

The Barco Family Foundation and YMCA parcel totals 21.51 acres and was exchanged to the District on May 21, 2013, for 21.05 acres of the Durbin Creek Gourd Island SR 9B parcel. This exchange facilitated better access to the western portion of the Property and eliminated a portion of the Durbin Creek Gourd Island SR 9B parcel that had no legal access.

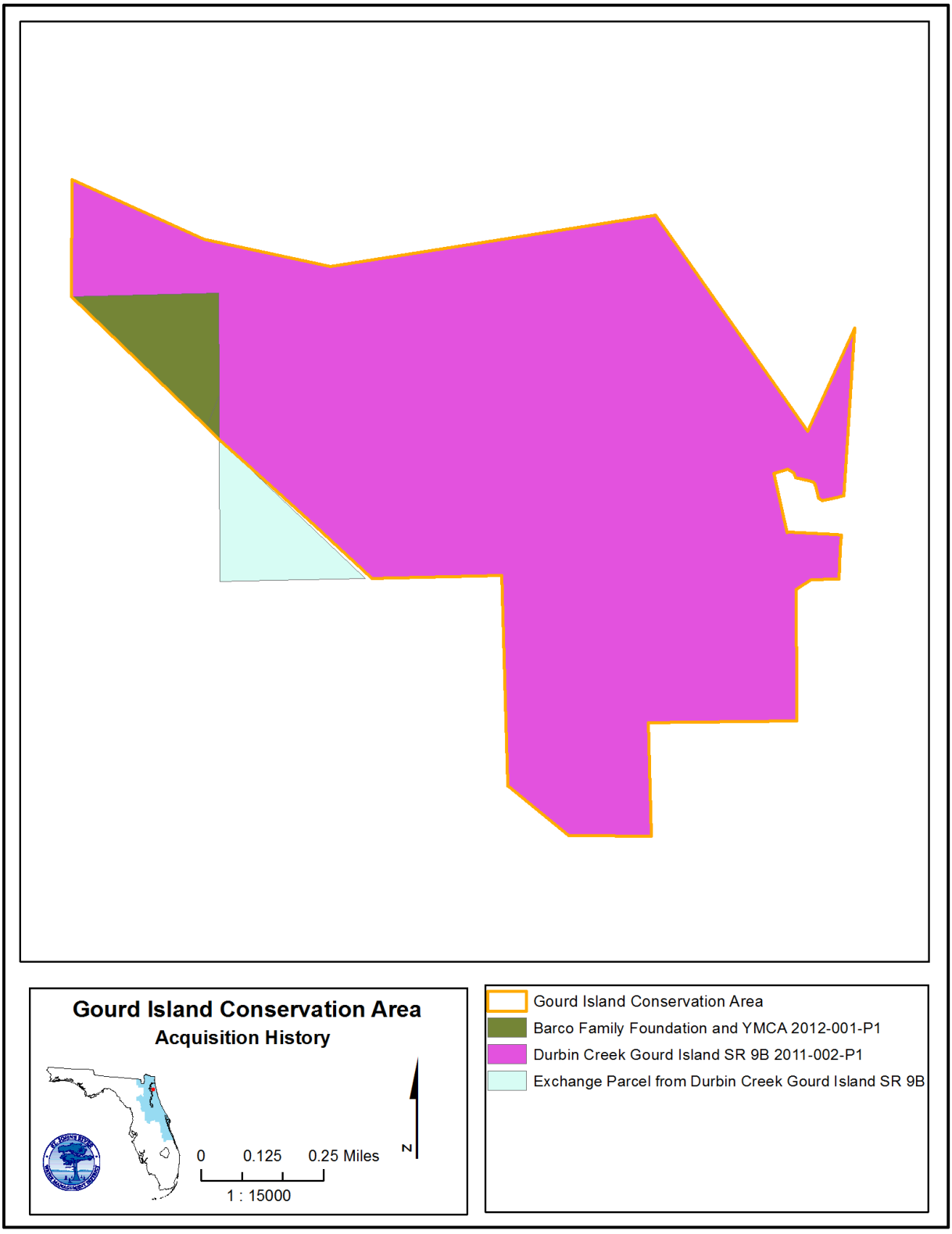

Figure 4: Acquisition

LOCAL GOVERNMENT LAND USE DESIGNATION

St. Johns County

According to the 2010–2025 St. Johns County Comprehensive Plan (St. Johns County Planning and Zoning, 2010), the Future Land Use designations for GICA are:

- Residential – These areas shall be lands designated for single-family or multi-family dwelling units appropriate to the residential densities along with uses supportive or complimentary to residential.
- Rural Silviculture – These areas shall be lands primarily intended for agriculture, silviculture, and other uses typical of rural areas.

The surrounding Future Land Use designations include the above as well as:

- Intensive Commercial – These areas shall be lands for highway commercial or high-intensity commercial uses, along with large office, institutional, and tourist-oriented uses that are generally incompatible with residential uses.
- Mixed Use Development – These areas shall be lands that combine multiple land uses (commercial, industrial, agricultural, public service) with residential of up to 13 units per acre.

NATURAL RESOURCES

WATER RESOURCES

GICA is not located within an Aquatic Preserve or an Area of Critical State Concern pursuant to Section 380.05, Florida Statutes. The Property is located within the Julington Creek planning basin of the Lower St. Johns River Basin. The major waterbodies of this planning basin include Sampson Creek, Durbin Creek, Julington Creek, Big Davis Creek, Flora Branch, and the St. Johns River (Figure 5).

One 303(d) listed impaired water body (Sampson Creek) directly interacts with GICA as determined by the Florida Department of Environmental Protection. The impairment noted is fecal coliform.

Important nearby habitat areas include Twelve Mile Swamp, Julington Durbin Preserve, and the Guana and Tolomato rivers.

Suburban development and silviculture are the principal land uses within the Julington Creek planning basin.

Geomorphology

GICA lies within the Lower St. Johns River Valley Province of the Barrier Island Sequence District.

The Lower St. Johns River Valley Province occupies an ancient marine embayment and river valley system that continued to develop through erosional and depositional processes during periods of both low and high sea level. The St. Johns River is generally broad throughout the extent of the province. Ninety percent of the elevations in the province lie between 5–30 feet MSL (NAVD 88) (Williams, et al., 2022).

Figure 6 depicts the topographic features of GICA and the surrounding area.

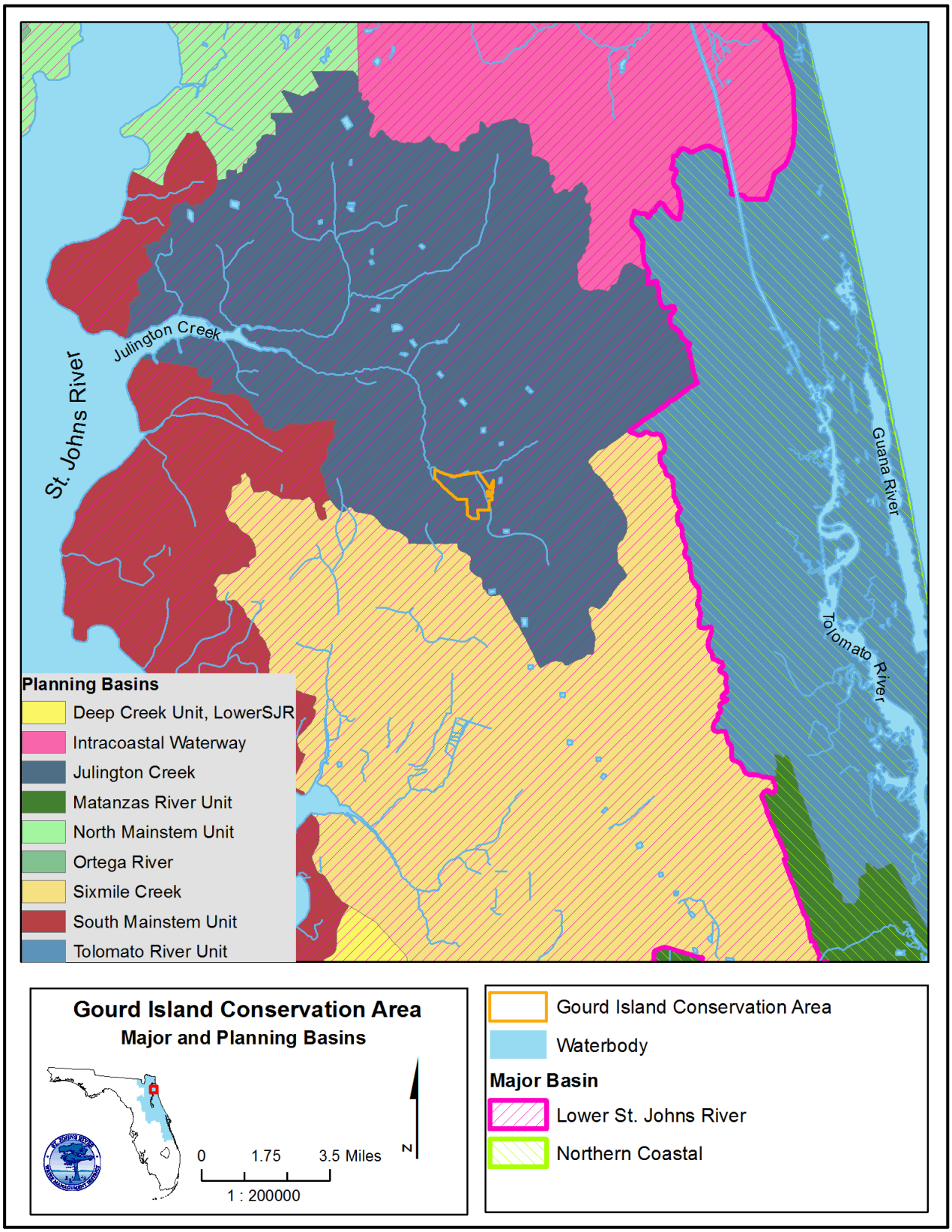

Figure 5: Location within Planning Basins

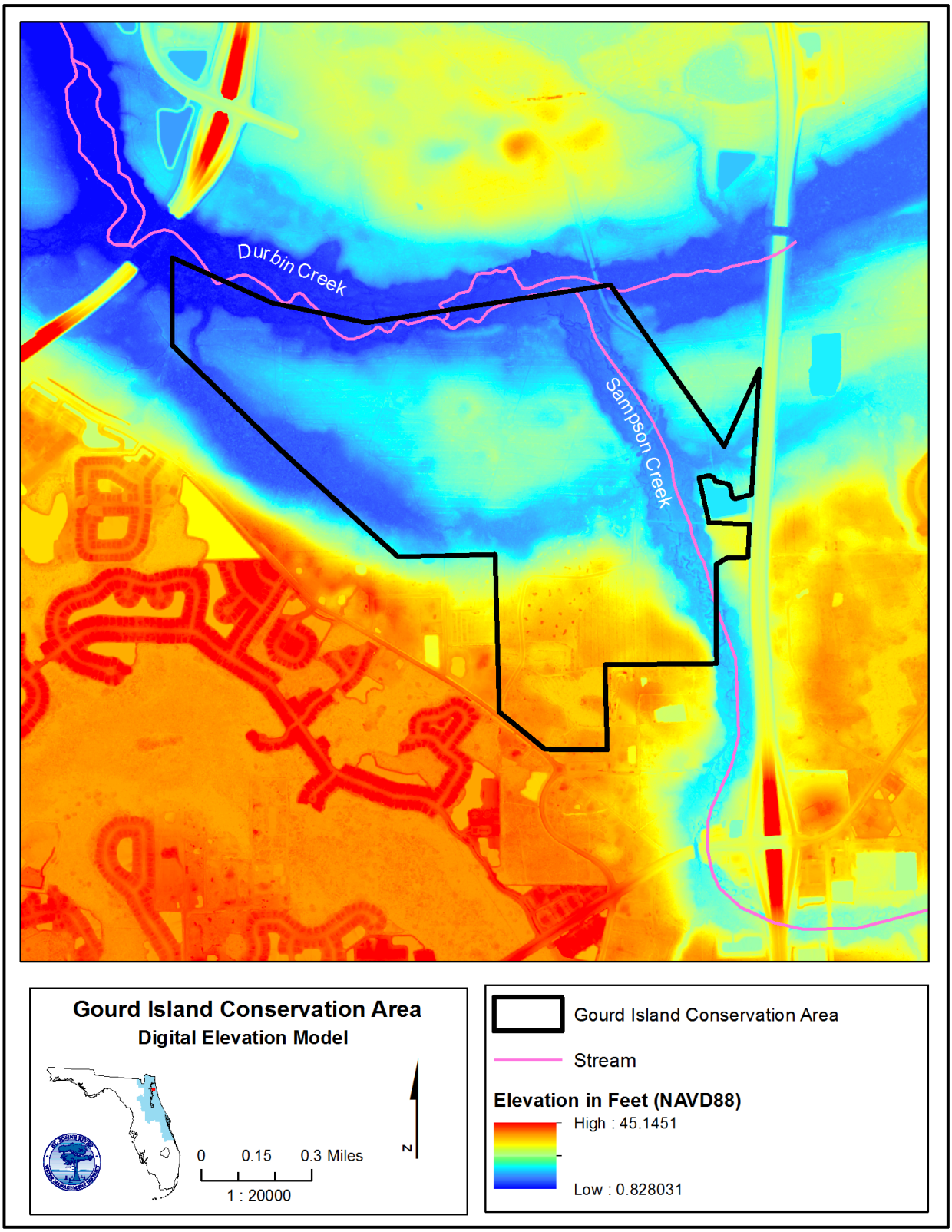

Figure 6: Gourd Island Conservation Area topography

Water Levels

The District has an active groundwater monitoring well site located southeast of the Property at the District's Twelve Mile Swamp Conservation Area identified as SJ-2556 (Upper Floridan aquifer). This site has been automatically monitored daily since 2002 and is the most representative of groundwater conditions found at GICA. Historic groundwater levels for this site are plotted in Figure 7 and the well site is shown on Figure 8.

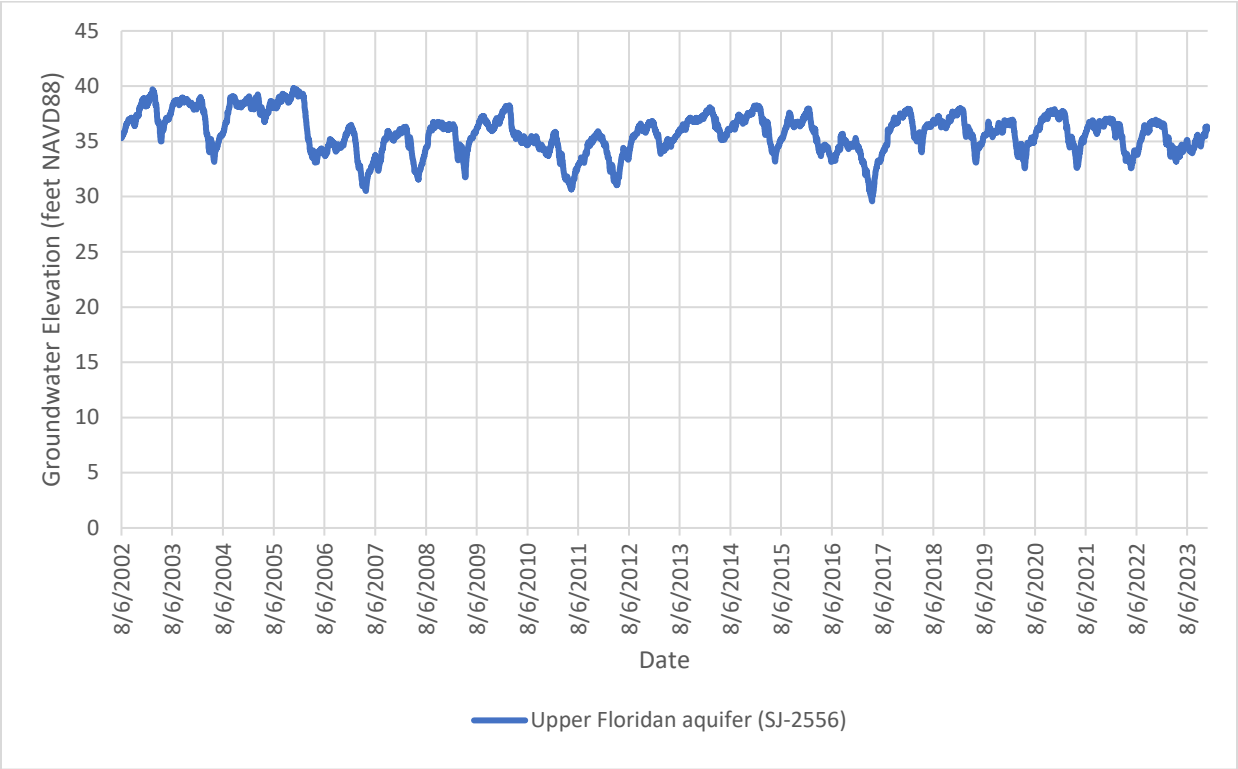

Figure 7: Twelve Mile Swamp Conservation Area Groundwater Observation Well Site SJ-2556

Water Chemistry

The District monitors surface water quality at over 200 long-term sampling stations at rivers, streams, lakes, canals, and estuaries throughout its 18-county service area. Water quality status is an indication of the condition of a water body. The District's 2023 Status and Trends Report is a 15-year assessment that uses data from Jan. 1, 2008 to Dec. 31, 2022. Water quality trends indicate whether a water quality parameter is increasing or decreasing over time. (SJRWMD, 2023).

Basic water chemistry data are collected at one station near GICA within the lower St. Johns River watershed: Station LSJ087 located north of the Property (Figure 8). This station represents surface water quality in Durbin Creek downstream of the property.

Water chemistry data are typically collected on a bimonthly basis. Water chemistry parameters discussed in this section include total phosphorus (phosphorus), total nitrogen (nitrogen), salinity, dissolved oxygen (DO), hydrogen ion potential (pH), total suspended solids (TSS) and Chlorophyll-*a* (Chl-a).

The following parameters are discussed in relative terms for the past 15-year period as described in the 2023 Status and Trends Report.

Station LSJ087
Nitrogen, phosphorous, TSS are in the mid-range and stable. Chl-a, DO, pH, and salinity are in the low range and stable.

Surface water chemistry data do not exist within the Property itself, but the LSJ087 sampling station provides insight to water quality conditions on the Property. These data indicate water quality in Durbin Creek as the creek flows past the northern boundary of the Property is not adversely affected with respect to the tested parameters. The acquisition and protection of GICA helps protect water storage and quality for the Julington Creek planning basin, an important component of the Lower St. Johns River Basin.

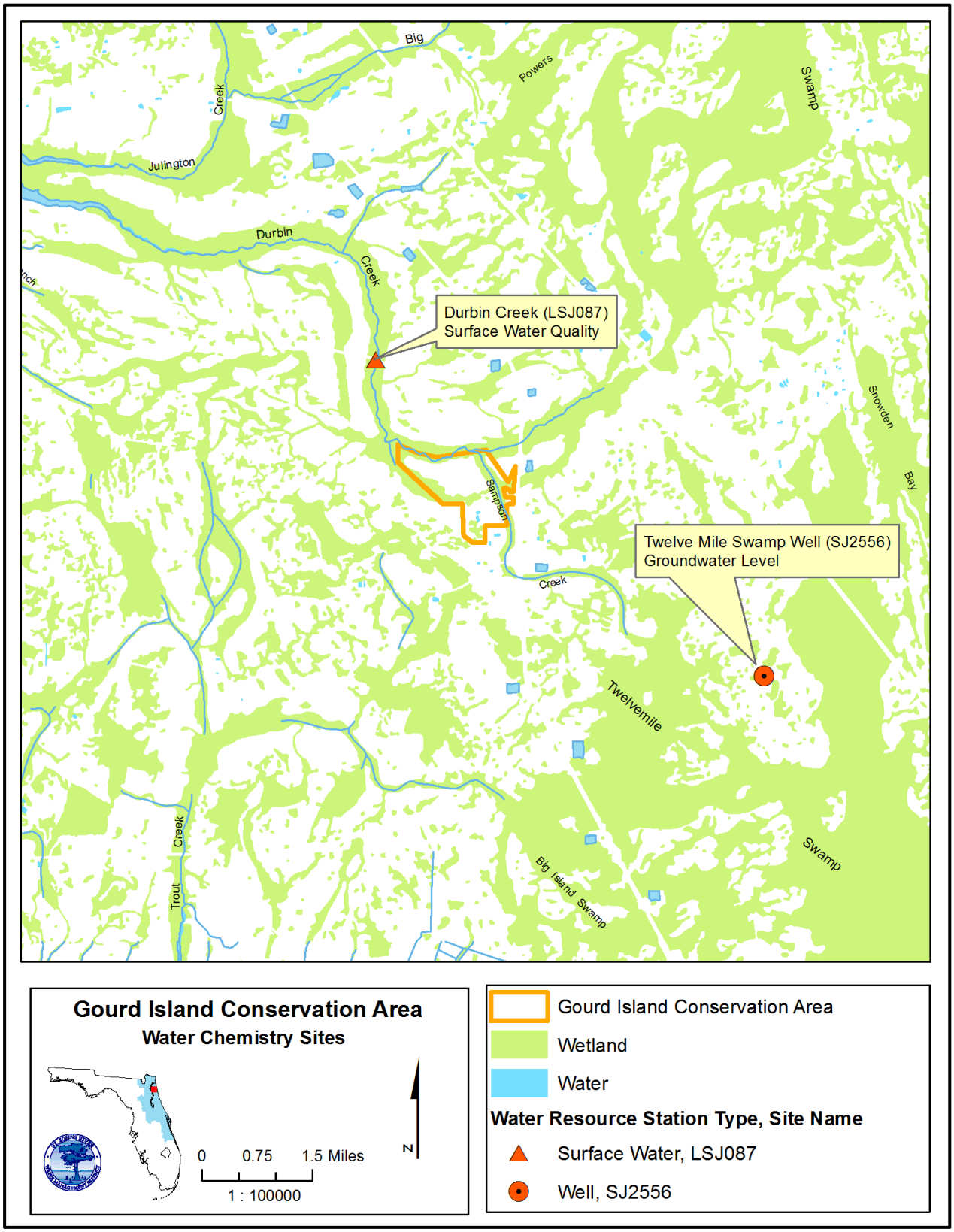

Figure 8: Water Chemistry Sites

NATURAL COMMUNITIES

The 514 acres that comprise GICA consist primarily of floodplain swamp, mesic flatwoods, and sandhill (Figure 9). The natural communities are characterized using descriptions published in the FNAI 2010 *Guide to the Natural Communities of Florida.*

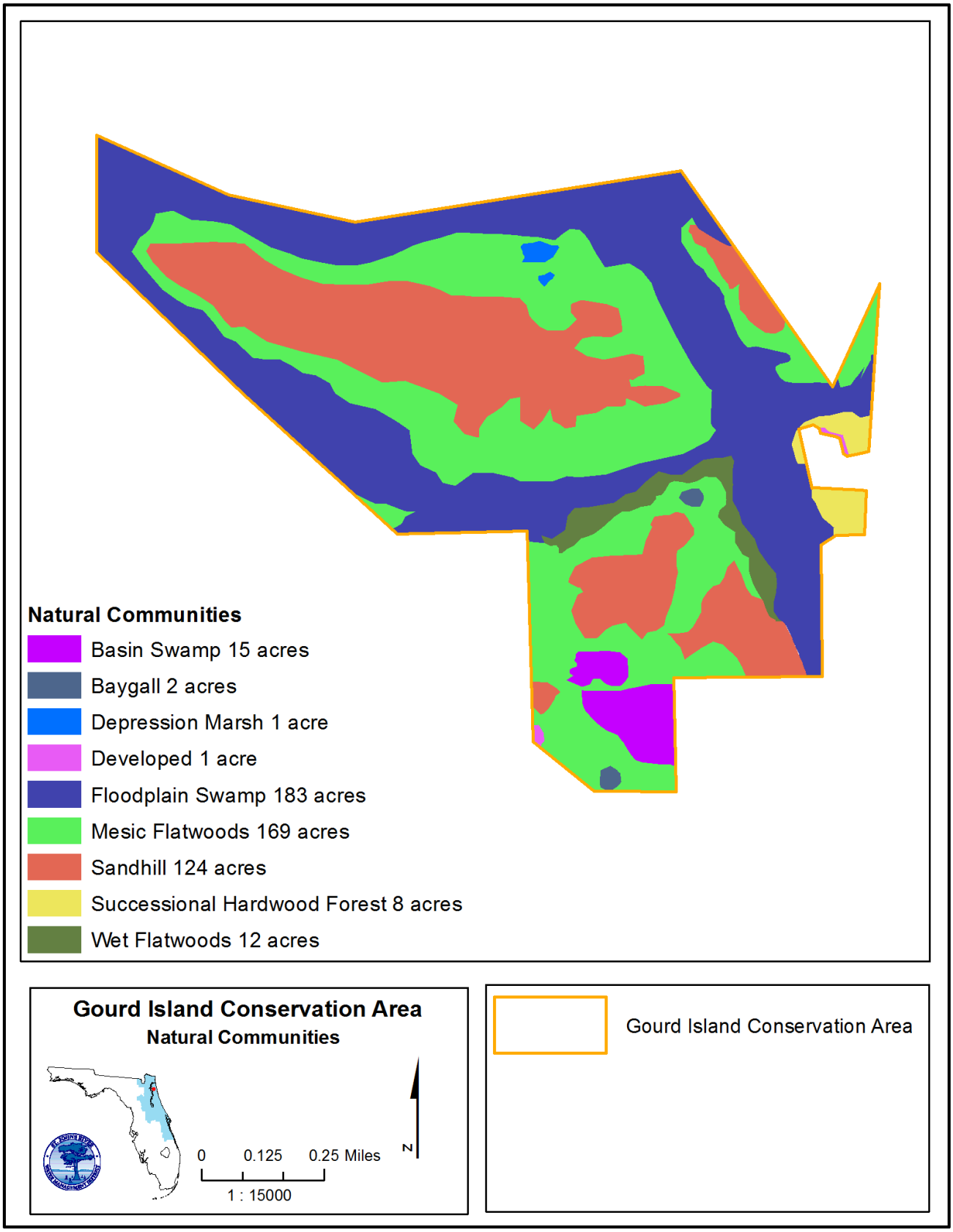

Figure 9: Natural Communities

Basin Swamp (16 acres; 3%)
Basin swamps are large irregularly shaped basins that are thought to have developed in oxbows of former rivers or in ancient coastal swales and lagoons that existed during higher sea levels. Soils that support basin swamp communities are acidic, nutrient-poor peats often overlying a clay lens or other impervious layer. This clay lens or impervious layer may cause a perched water table above that of the adjacent uplands, causing standing water for most of the year. While basin swamps are not associated with rivers, they may contain streams and sloughs that flow during periods of high water.

Examples of basin swamps within GICA are located in the southern portions of the Property where canopies are not altered and are dominated by pond cypress (*Taxodium ascendens*). Sometime after 1999, the large, southernmost example of basin swamp was cleared of cypress and other wetland trees. This area, while regenerating from both coppice sprouting and seed bank, does not have a continuous, closed canopy and numerous opportunistic grasses and sedges occur across the site.

Basin swamps have a typical hydroperiod of approximately 200–300 days and though infrequent, fire is essential for the maintenance of these natural communities. Fire return intervals in basin swamps are variable, but necessary to restrict peat accumulation and the expansion of hardwoods into adjacent communities. The edges of basin swamps may be exposed to frequent fire, often burning in concert with surrounding natural communities (FNAI 2010).

Baygall (2 acres; <1%)
Baygall is an evergreen, forested wetland characterized by a bay tree-dominated canopy typically found at the base of sandy slopes where water seepage maintains a saturated peat substrate. It may form an ecotone between uplands and swamps, or it may develop as a bay swamp in isolated basins or broad areas of seepage.

Baygalls at GICA have a closed canopy consisting mainly of loblolly bay (*Gordonia lasianthus*), but also with some slash pine (*Pinus elliottii*) and pond cypress scattered within. The understory consists of fetterbush (*Lyonia lucida*) and swamp bay (*Persea palustris)* laced together with vines of *Smilax* sp. The low-light conditions limit herb cover. A thick layer of duff covers the ground.

Baygalls should burn infrequently, perhaps only a few times each century in the deepest areas. Although the saturated soils and humid conditions within baygalls typically inhibit fire, droughts may create conditions that allow them to burn catastrophically. These fires not only destroy the canopy but also may ignite the deep peat layers that can smolder for weeks, or even months. If it can be done safely, prescribed fires in adjacent uplands should be allowed to burn into baygall edges to maintain grassy ecotones and to kill bay shrubs encroaching into the uplands. Plowed firebreaks and ditches should be restored, and hydrology should be returned to its natural state where possible (FNAI 2010).

Depression Marsh (1 acre; <1%)
Depression marshes are shallow, typically rounded, herb-dominated, seasonally inundated depressions embedded in pyrogenic communities such as pine flatwoods. These marshes may be dry for part of the year and frequently burn with the surrounding landscape. Fire and fluctuating water levels limit organic accumulation, at least in the shallow edges. Frequently there are concentric zones of vegetation that respond to the hydroperiod and edaphic conditions within each

zone. The depression marshes at GICA are small and embedded within mesic flatwoods. They are ringed with a dense shrub layer associated with fire exclusion. Reintroducing fire will be challenging given the limited smoke shed and high fuel load. The primary ecological driver for this natural community is now seasonal flooding.

Developed (1 acre, <1%)
The developed areas within GICA include the parking area and mowed road around the FDOT-owned retention pond along the eastern boundary.

Floodplain Swamp (183 acres; 35%)
Floodplain swamp communities typically occur on flooded soils along stream channels and within river floodplains. The floodplain swamp communities within the Property are associated with Durbin and Sampson creeks.

Soils that support floodplain swamp communities are variable but may include a mixture of sand, organic, and alluvial material. Peat soils may be present in floodplain swamps associated with smaller streams or in areas of low stream velocity. The most important physical factor associated with the shaping and maintenance of the floodplain swamp is the hydroperiod. Extended periods of inundation, which may last for most of the year, are common in the floodplain swamp environment. Alterations to the hydrology within the floodplain swamp, particularly a reduction in the duration of inundation periods, may have damaging consequences to the creek system and associated flora and fauna. Since this community type is maintained by hydrologic regimes, it is not fire dependent.

Floodplain swamps across GICA are intact with few discernable alterations. Notable disturbances to this community include road crossings. Typical of the floodplain swamp system, the examples of this community type within the Property include a closed-canopy forest of hydrophytic, buttressed trees including bald cypress (*Taxodium distichum*) and water tupelo (*Nyssa aquatica*). This natural community is also home to populations of the state-endangered Curtiss' loosestrife (*Lythrum curtissii*) (FNAI 2010).

Mesic Flatwoods (169 acres; 33%)
Soils that support mesic flatwoods communities are generally poorly drained, acidic, and sandy soils deposited on ancient, shallow seabeds. Many flatwood communities have a clay hardpan. Hardpan soils become saturated during the rainy season causing standing water at the surface. During dry periods, the hardpan layer prevents low groundwater from rising, creating dry, droughty conditions. The presence of the hardpan translates to extreme seasonal fluctuations in the amount of water available to support plant life. These seasonal hydroperiods are essential in the maintenance of the flatwoods system.

Intact or well-maintained mesic flatwoods typically have a layered appearance, with a distinct, high, discontinuous canopy, low shrub layer, and diverse herbaceous layer. The canopy densities are variable and may include (depending on location) longleaf pine (*Pinus palustris*), slash pine, loblolly pine (*P. taeda*), or pond pine (*P. serotina*). The shrub layer may include a mixed palate or be dominated by species such as saw palmetto (*Serenoa repens*), wax myrtle (*Myrica cerifera*), and numerous members of the Ericaceae family. The herbaceous coverage may be dominated by wiregrass; however, species abundance and diversity are often dictated by the openness of both

shrub and canopy layers. Many years prior to public acquisition, the mesic flatwoods within the Property were harvested of overstory pine, bedded, and replanted in slash pine.

The mesic flatwoods communities within the Property vary in levels of disturbance. The most disturbed areas of mesic flatwoods occur on the southern portions of the Property. This area, north of the basin swamps, includes an overgrown subcanopy and is largely void of shrub and groundcover species. Primary disturbances in this area appear to be silvicultural bedding, low windrows, and the prolonged absence of fire. The flatwoods on the extreme southern end of the Property, as well as those located on the north and central portions of the Property, are relatively intact. These areas, although bedded and somewhat overgrown, retain site-appropriate species compositions.

In addition to seasonal hydroperiods, fire is an important physical factor associated with the shaping and maintenance of this community type. Natural fire return intervals in mesic flatwoods are approximately every 2–10 years. Fires in well-maintained mesic flatwoods tend to burn quickly and at relatively low temperatures. In areas of prolonged fire exclusion, altered hydrology, or hardwood encroachment higher soil and fuel moistures may require more extreme conditions to facilitate a fire, causing fires to be more catastrophic in nature (FNAI 2010).

Sandhill (124 acres; 24%)
Sandhills are characterized as a forest of widely spaced pine trees with a sparse understory of deciduous oaks and a fairly dense and diverse groundcover of grasses and herbs on rolling hills of sand. The most typical associations are dominated by longleaf pine, turkey oak (*Quercus laevis*), and wiregrass (*Aristida stricta*). Sandhills occur on crests and slopes of rolling hills and ridges. Soils are deep marine-deposited, yellowish sands that are well drained and relatively infertile.

The sandhill plant community is a fire climax community. Frequent, low-intensity, and seasonally appropriate fire is necessary to perpetuate the proliferation of fire-adapted plant species and to restrict the successional changes that may transition these areas into xeric hammocks. Fire return intervals within sandhill communities range from 1–3 years (FNAI 2010).

Sandhills within GICA are disturbed, with the primary disturbances being silvicultural bedding, windrows, excessive shading, and prolonged fire exclusion. Prior to public acquisition, the sandhills within the Property were cleared of overstory pine and planted in slash pine. While disturbed, these areas retain a suite of desirable, site-appropriate plants including wiregrass, pinewoods milkweed (*Asclepias humistrata*), turkey oak, and blue jack oak (*Quercus incana*). The wiregrass density in the central sandhills is high, likely encouraged by a hardwood reduction herbicide treatment conducted in 2020.

Successional Hardwood Forest (8 acres; 2%)
This natural community is closed-canopied forest dominated by fast-growing hardwoods such as laurel oak (*Quercus hemisphaerica*), water oak (*Quercus nigra*), and/or sweetgum (*Liquidambar styraciflua*), often with remnant pines. These forests are either invaded natural habitat (i.e., mesic flatwoods, sandhill, upland pine, upland mixed woodland) due to lengthy fire suppression or old fields that have succeeded to forest. The subcanopy and shrub layers of these forests are often dense and dominated by smaller individuals of the canopy species. Successional hardwood forests can contain remnant species of the former natural community. Restoration of these forests includes mechanical tree removal and reintroduction of fire. Where characteristic herbaceous species (e.g.,

wiregrass) have been lost, reintroduction via seed or plants may be necessary to restore natural species composition and community function (FNAI 2010). Due to the size and location of this natural community, no restoration will occur.

Wet Flatwoods (12 acres; 2%)
Soils that support wet flatwoods communities are generally very poorly drained sandy soils that may have a mucky texture in the upper horizons. Wet flatwoods occur as ecotonal areas between the drier mesic flatwoods and wetter areas such as bogs or swamps. They may also occur in broad, low flatlands embedded within these communities.

Well-maintained wet flatwoods exhibit a relatively open-canopy forest of scattered pine trees (longleaf, loblolly, slash, or pond) or cabbage palms (*Sabal palmetto*) with either a sparse or absent midstory and a dense groundcover of grasses, herbs, and low shrubs.

Understory species of the subcanopy and shrub layers may include sweetbay (*Magnolia virginiana*), loblolly bay, and saw palmetto. The groundcover layer may include species such as wiregrass, blue maidencane (*Amphicarpum muhlenbergianum*), and numerous hydrophytic species. The variations in structure and composition may be attributed to subtle differences in soil charateristics as well as hydrologic and fire regimes.

The wet flatwoods plant community is fire dependent with return intervals ranging from 1–3 years in grassy systems and 5–7 years in shrubbier systems. In GICA, shrubs tend to dominate wet flatwoods where fire has been either low in intensity or absent. Wet flatwoods within the Property suffer from prolonged fire exclusion and include midstory components that are heavily overgrown (FNAI 2010).

SOILS
According to the U.S. Department of Agriculture (USDA) Soil and Conservation Service, 11 different soil types are within GICA. The St. Johns County Soil Survey (USDA, 2023) provided information used to develop descriptions of the predominant soil series found within the Property. The soil descriptions are in Appendix A.

CULTURAL AND HISTORICAL RESOURCES
A review of the Department of State Division of Historical Resources indicates three registered cultural sites within the boundaries of the Property, identified as historic refuse dumps and a historic bridge. If any additional sites are located, District staff will document and report the sites to the Division of Historical Resources.

IMPLEMENTATION
The following sections outline land management strategies for resource protection, land use, and administration on GICA for the next 10 years.

RESOURCE PROTECTION AND MANAGEMENT

Water Resources

Goal: Protect water quality and quantity, restore hydrology to the extent feasible, and maintain the restored condition.

Strategies:

- Maintain roads and culverts to prevent erosion

While most wetland protection was accomplished through acquisition, portions of the wetlands within the Property have a history of disturbance. Hydrologic disturbances within the Property include roads, ditches, culverts, windrows, and silvicultural beds.

Roads, associated ditches, and culverts are located within the Property and provide access for land management activities (Figure 10). The District has made improvements to and conducted maintenance on many of these features, helping to reduce the potential for erosion. Overall, the culverts on the Property are in fair condition. A set of culverts north of the FDOT stormwater pond, but not associated with the pond, is in poor condition but there are no plans to repair these as they are not essential to access through the Property.

Portions of the upland acreage within the Property are former commercial silviculture sites and some of the acreage was bedded prior to planting. Bedding is a method of site preparation that includes a series of linear mounds and alternating trenches designed to improve soil aeration and nutrient concentrations on wet and/or nutrient-poor sites. Primary objectives of bedding are to elevate seedling root systems out of the waterlogged soil into mounds where the concentrated nutrients are readily available. Bedding also helps to reduce competition for newly planted trees. The trenches associated with bedding channel water and are detrimental to the sheetflow of water across the Property. Where restoration is feasible, and when such activities will not produce unacceptable disturbance to existing, desirable groundcover, leveling of silvicultural beds will be considered as a component of site preparation for replanting after a clearcut harvest.

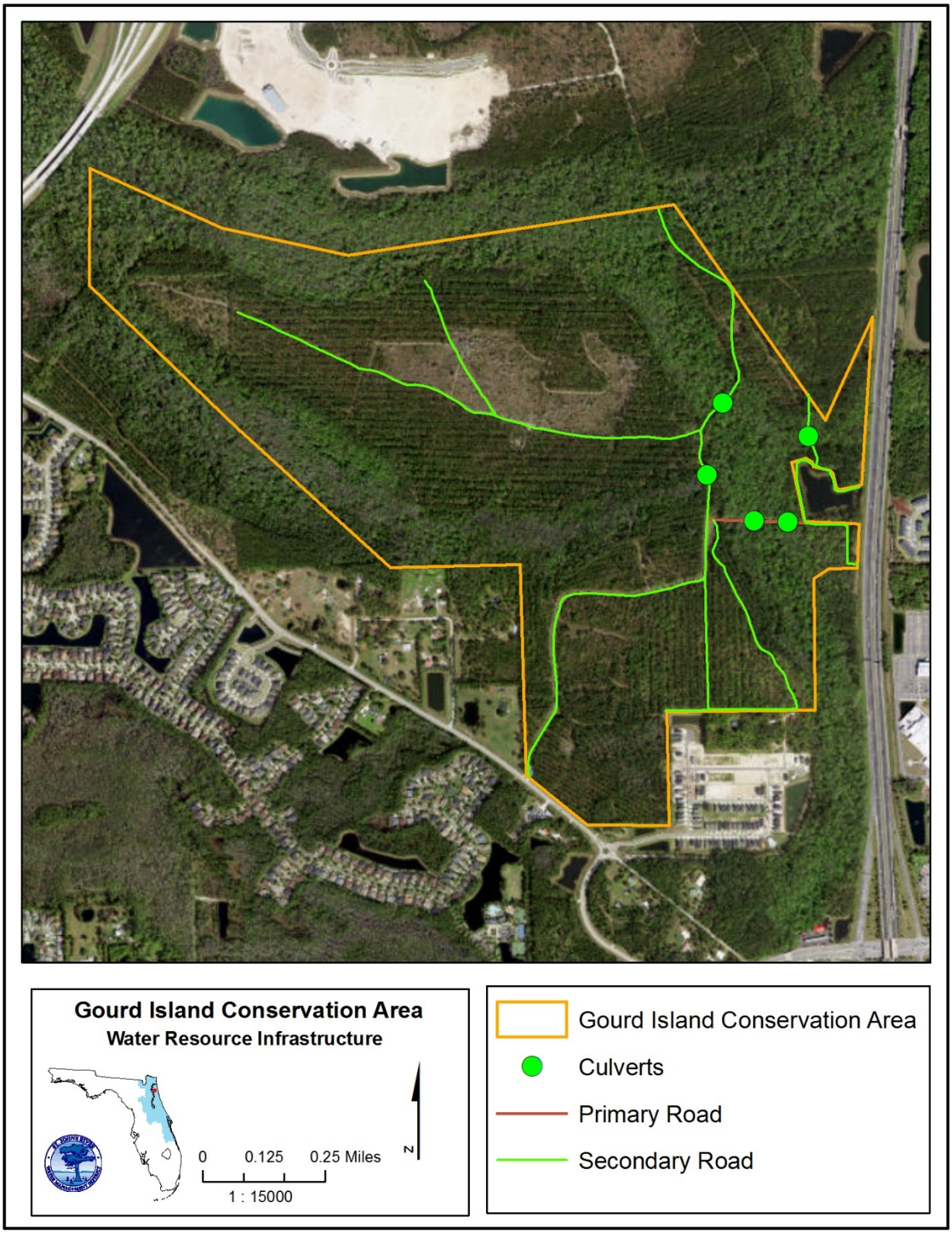

Figure 10: Water Resource Infrastructure

Forest Management

Goal: Maintain, improve, and restore forest resources.

Strategies:

- Update forest management database
- Thin at least 205 acres of timber

The management objectives of the Property will require periodic pine thinning to control tree density. In addition to planned harvest activities, the District will remove trees as needed in the case of insect infestations, disease, and damage from severe weather, wildfire, or other occurrences that could jeopardize the health of natural communities. Periodic thinning harvest provides some protection against wildfires and pine beetle outbreaks. The District will abide by Florida Silviculture Best Management Practices and Florida Forestry Wildlife Best Management Practices for State Imperiled Species and will target the achievement of appropriate overstory species in proper stand densities as described in the District Forest Management Plan (Appendix B).

GICA is partitioned into forest management compartments and each compartment is further divided into stands. Management decisions are made on the stand level. On properties like GICA, where silvicultural management is an intrinsic component of the overall management of the upland portions of the Property, timber inventory is conducted on a small percentage of the Property on a regular, but not necessarily annual, basis. Stand-level values derived from the inventory include number of trees per acre, basal area, and volume of trees by product type and species. After each inventory cycle, growth and yield projections are calculated on all active plots. The inventory data output is then incorporated into the District's forest management database. Harvest operations and reforestation events that may occur over time are also recorded in the database. This information is used to help land management staff forecast needs and make forest management decisions.

Forest management activities anticipated during the scope of this plan include timber inventory and thinning operations. Reforestation projects on District lands may be preceded by various site preparation techniques including mechanical treatments, such as disc harrowing to remove silvicultural bedding, roller chopping, mowing, herbicide applications, and prescribed fire. These techniques may be used singularly or in combination as site conditions warrant.

The forest management and fire management programs are integrated. The application of prescribed fire will be a challenge at GICA due to a lack of smoke dispersal areas and the existence of smoke sensitive areas such as hospitals and major highways near the Property. This will predicate an atypical thinning prescription and the use of fire surrogates to maintain ecological integrity and minimize the possibility of destructive wildfires. Thinnings on GICA will reduce tree density to between 35–50 square feet of basal area, which is 15–30 square feet of basal area less than the District's typical thinnings. This lower density will increase operability for fuels management equipment, reduce the intensity of wildfires, reduce the stand's susceptibility to southern pine beetle outbreak, and create an open forest structure typical of fire-maintained natural communities (FNAI, Undated 1; FNAI, Undated 2). This thinning regime is unlikely to affect long-term economic returns as the residual timber will likely be of higher merchandise value.

Through periodic thinning, the District will remove the poorest trees to reduce crown density and allow the better trees to develop full, vigorous crowns. Since 2011, a total of 264 acres has been thinned (Figure 11). Three (3) second thinnings are planned within the Property from 2024–2034, totaling 205 acres (Figure 12). Additional stands may be added to the forest harvest plan and the timing of the events may change at the discretion of the land manager and District forester. Depending on stand conditions, portions of these sales may include clearcut harvests. Mean annual increment measurements will be used to determine the harvest type (clearcut or thinning). Clearcut harvests will be reforested with site-appropriate pine species.

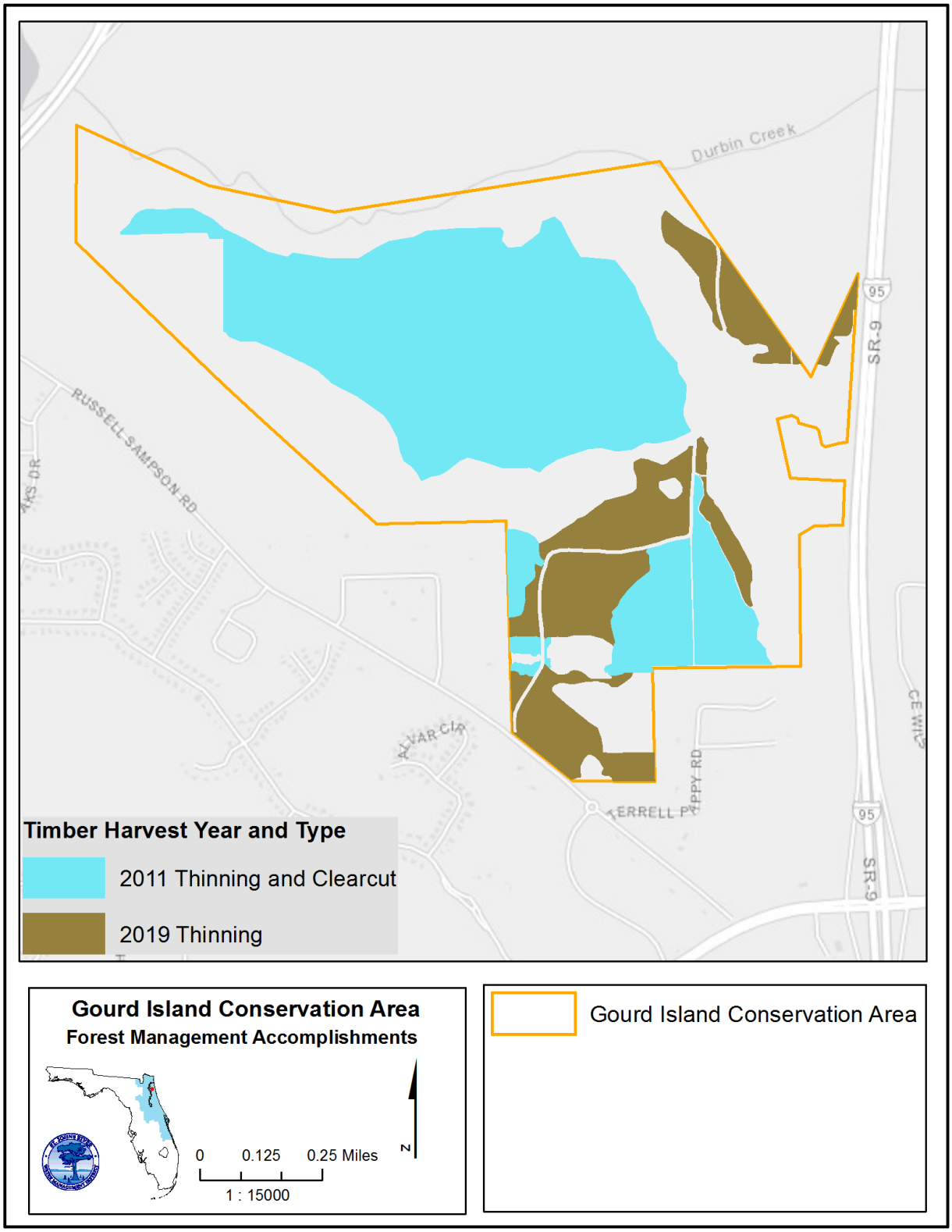

Figure 11: Forest Management Accomplishments

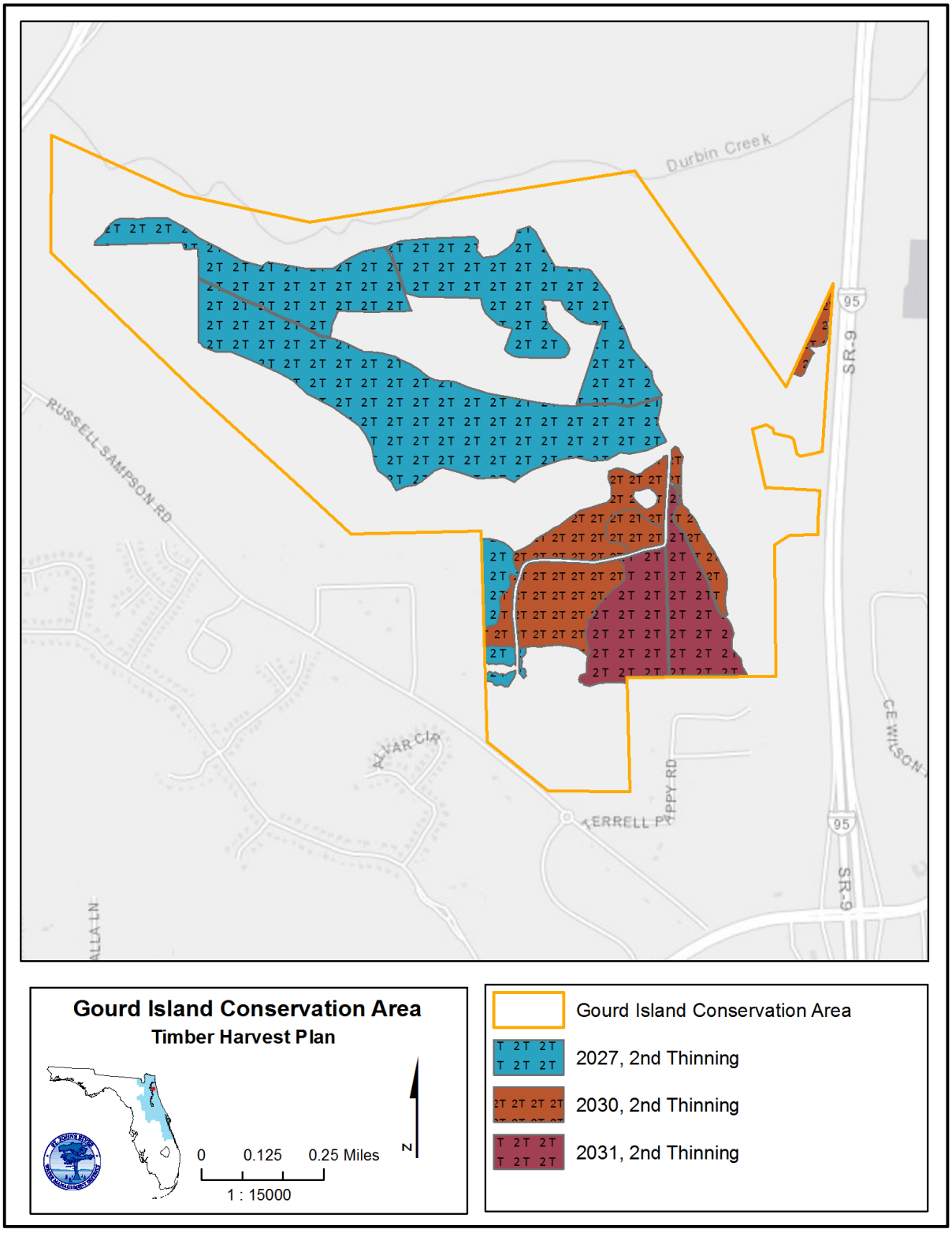

Figure 12: Forest Management Plan

Fire Management

Goal: Implement a prescribed burning program in accordance with District's and GICA's Fire Management Plan.

Strategies:

- Maintain existing firebreaks and create new firebreaks as needed
- Use mechanical fuel reduction or herbicide treatments as fire surrogates in areas where it is difficult to burn due to high fuel loads or smoke management concerns
- Apply prescribed fire to natural communities when fire weather opportunities arise to mitigate smoke production in the challenging smoke management area that surrounds GICA
- Apply prescribed fire or prescribed fire surrogates to at least 34 acres annually, averaged over the next 10 years

Forest and fire management activities within the Property are critically important and integrally linked. The planning and implementation of forest and fire management activities must be coordinated to achieve restoration and management goals.

Fire is a vital factor in managing the character and composition of vegetation in many of the natural communities in Florida. The District's primary use of fire is to mimic natural fire regimes to encourage the amelioration of native pyric plant communities and dependent wildlife. Additionally, the application of fire aids in the reduction of fuels and minimizes the potential for catastrophic and damaging wildfires. All the upland natural communities at GICA are fire adapted, making prescribed fire an important tool to restore and maintain plant communities within the Property. Since the writing of the last plan, approximately 118 acres have received prescribed fire and no acres have burned in wildfires (Figure 13).

Historically, most fires occurring on what is now GICA would have been ignited by lightning during the growing season (April–August). The residential, commercial, and smoke-sensitive infrastructure development surrounding GICA greatly reduce the opportunity for the application of prescribed fire at the Property due smoke management concerns.

Figure 14 shows the approximately 335 acres of fire-maintained natural communities within the Property (65 percent of GICA). These fire-maintained natural communities are broken into Fire Management Units (FMU) to facilitate management planning and project tracking. Since the likelihood of regular, frequent prescribed fire being applied to GICA is low due to the aforementioned surrounding land use limiting smoke management options, disturbance return interval will be used to describe the maintenance activities that mimic, but not replace, the function of fire as a disturbance mechanism. These activities include timber harvest, mechanical fuels reduction, herbicide applications, which often are termed fire surrogates. The annual disturbance goal for the Property, averaged over the 10-year planning period, is 34 acres. This disturbance goal is based on a 3-year disturbance return interval applied to all the fire-dependent natural communities on the Property. Prescribed fire will not be removed as a land management option from this plan as it provides the highest ecological benefit.

The FMUs on the Property have a variety of natural communities embedded within them, which may or may not be fire-dependent, such as basin swamps or baygall. Fire surrogates will not treat these areas, as the impacts from these actions could be detrimental to the hydrology and ecology of these embedded natural communities. The application of prescribed fire in these areas is likely not to occur as this could lead to extended smoke impacts from smoldering combustion.

The Property has 4.3 miles of pre-suppression firebreaks to allow for access and control of prescribed fire and wildfires. These breaks are disked or mowed one to two times a year to maintain the footprint of the break and provide a mineral soil fuel break. Interior roads are also used as firebreaks.

The limiting factors narrowing the window of opportunity for the application of prescribed fire on the Property are significant. GICA is within or near to multiple smoke-sensitive areas, including I-95, State Road 9B, Sampson Road, several schools, and multiple developed areas within St. Johns County. Smoke management is paramount in the execution of prescribed fire. Any potential burns will be conducted to minimize off-site impacts by maneuvering smoke plumes away from smoke-sensitive areas based on wind direction and speed, as well as by ensuring adequate smoke dispersal based on atmospheric stability and dispersion index values.

All implementation of prescribed fire within the Property will be conducted in accordance with the District's Fire Management Plan, the GICA Fire Management Plan (Appendix C), and the annual burn plan for the Property. Prescribed fires and wildfires will be reported in the Prescribed and Wildfire Report in ArcGIS Survey123.

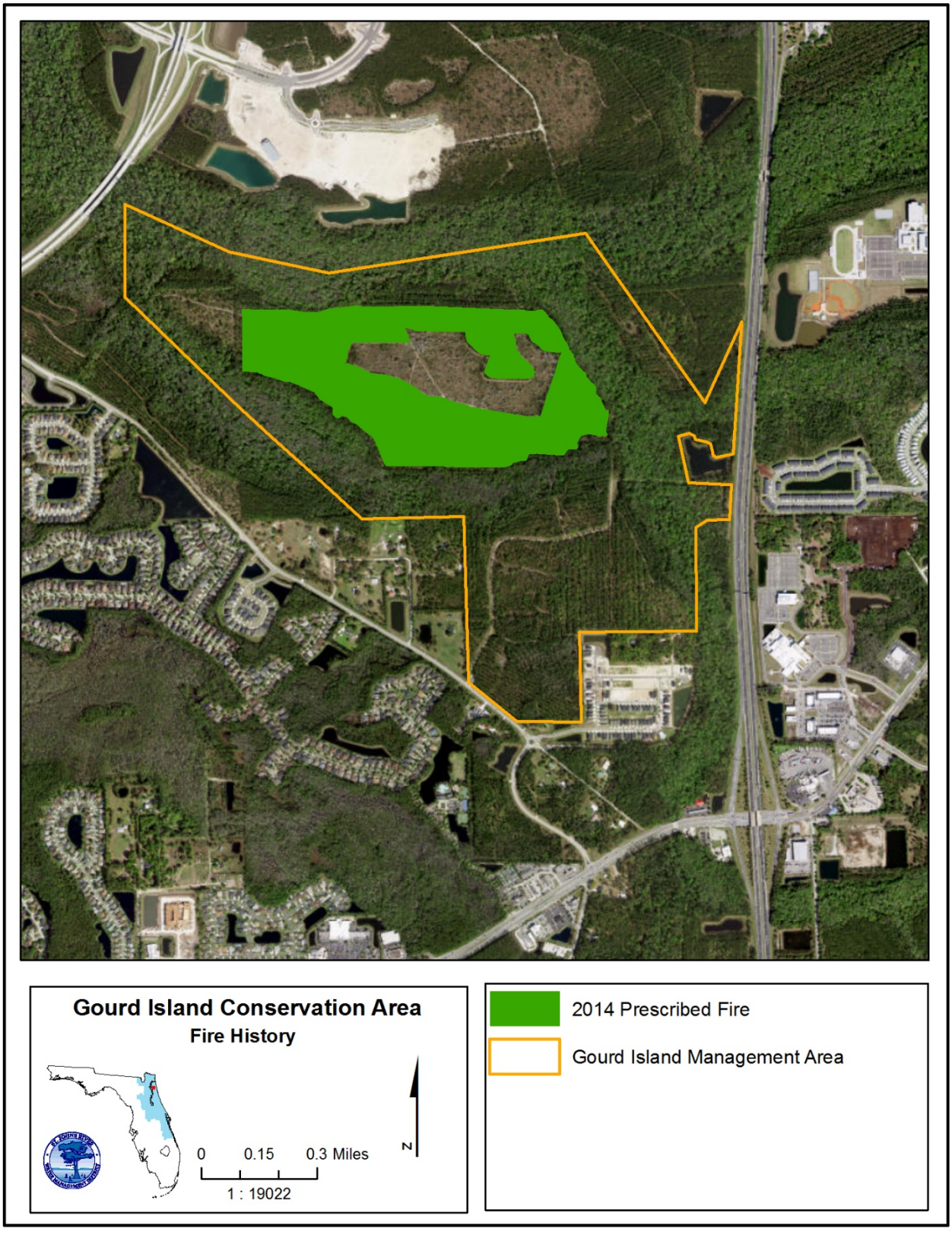

Figure 13: Fire History

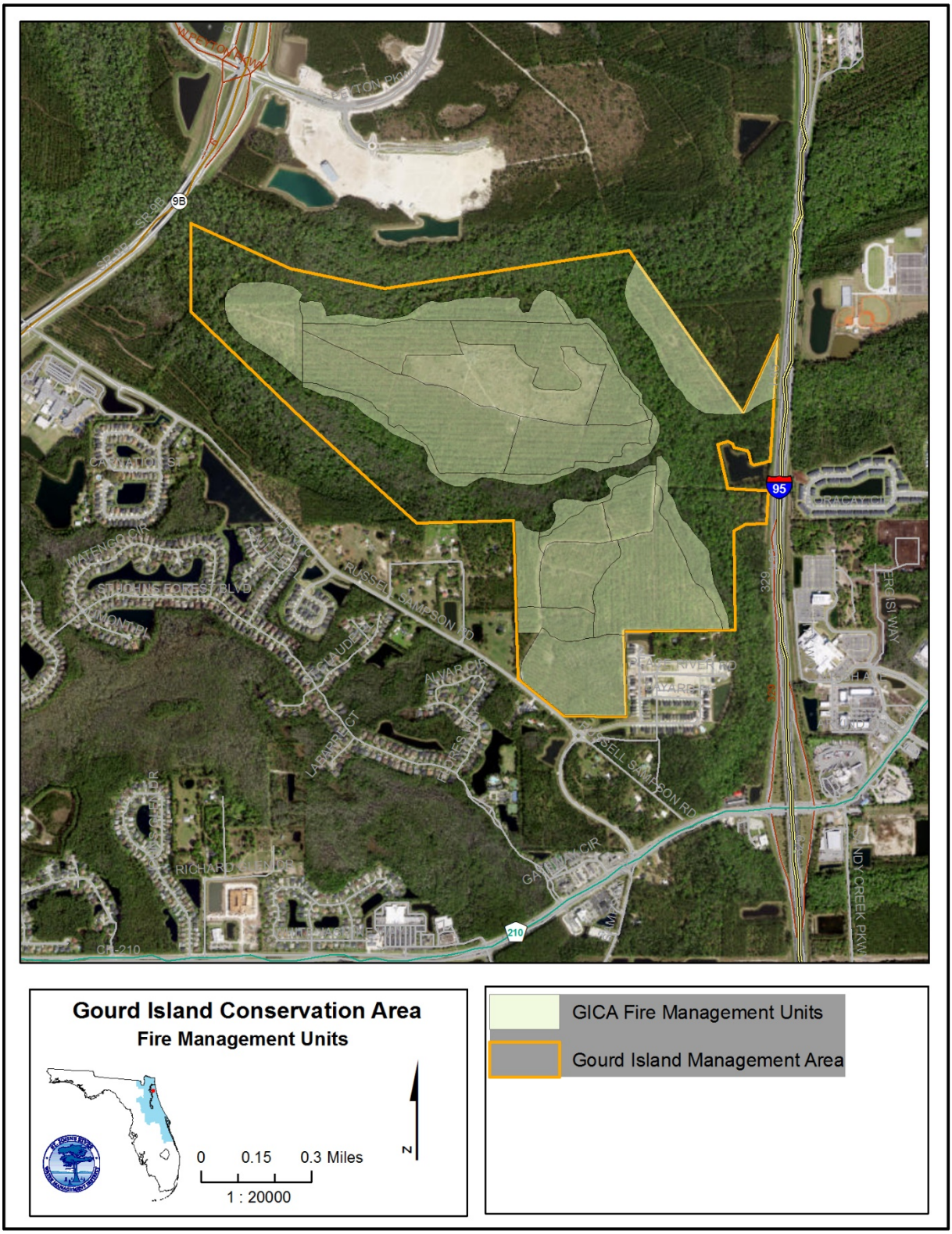

Figure 14: Fire Management Units

A system of Fire Regime Condition Class measures was originally developed by The Nature Conservancy and the USDA Forest Service in 2003, updated in 2010, to assess ecosystem health. The system is based on a relative measure and describes the degree of departure from the historical natural fire regime of a given ecosystem (Barrett, et al., 2010). This departure results in changes to one or more of the following ecological components: species composition, structural stages, stand age, canopy closure, or mosaic pattern. The District adopted the system in 2008 to establish a reference for ecosystem health and land management effectiveness. While fire is the preferred disturbance that maintains most natural communities in Florida, other disturbances, such as timber harvest or mechanical fuels treatments, may serve to accomplish or aid in the accomplishment of management objectives. Annually, each burn zone is assigned a Condition Class score based upon the most recent disturbance and the fire frequency recommended for that plant community by FNAI. If FNAI recommends a fire/disturbance return interval of 3–5 years, a plant community that has benefited from disturbance in the past 5 years is in Condition Class 1. If it has been more than 5 years but less than 15 years, or three cycles, the zone is in Condition Class 2. If it has been more than three times the fire return interval, but can still be recovered by fire, it would fall into Condition Class 3. If the plant community has gone without disturbance so long that fire alone can no longer restore the area, it is in Condition Class 4. GICA has approximately 179 acres that are not maintained by fire or disturbance, such as floodplain swamp, that are not included in the Condition Class report.

District staff will make annual Condition Class assessments and incorporate them into annual burn and work plans. The overall Condition Class distribution of the Property zones in 2023 was 52% Condition Class 1; 47% Condition Class 2; and 1% Condition Class 3. In 2023, no zones fell within Condition Class 4 (Figure 18).

Figure 15: Condition Classes

Flora and Fauna

Goal: Maintain, improve, or restore native and listed species populations.

Strategies:

- Monitor for the presence of listed species and adjust management actions appropriately
- Conduct plant and wildlife surveys and develop species lists

GICA has a diverse assemblage of natural communities providing significant habitat for a variety of floral and faunal species. The Property is within the core forage area for a wood stork (*Mycteria americana*) rookery located 11 miles to the northeast.

Plant, insect, and animal lists are contained in Appendix D. Lists were compiled using observations gathered on site visits by District and FNAI staff as well as crowd-sourced biological data websites. The Property will be managed to improve natural community biodiversity and quality, resulting in diverse wildlife habitat. There are 17 state and/or federally listed plant and animal species found on GICA.

Gopher Tortoise
The gopher tortoise (*Gopherus polyphemus*) is a state-listed threatened species that occurs within GICA. This species is typically found in dry upland habitats, such as sandhill, scrub, and pine flatwoods. Gopher tortoises excavate deep burrows and are considered a keystone species because their burrows provide refuge for more than 300 animal species. Management activities within the sandhills and pine flatwood communities of the Property will focus on restoring species composition and using fire surrogate, which will benefit gopher tortoise. Any management activities will occur in accordance with the FWC's Gopher Tortoise Management Plan (FWC, 2012).

Curtiss' loosetrife
In 2021, FNAI conducted sampling on GICA for the state-endangered Curtiss' loosestrife (*Lythrum curtissii*). Several plants were located within the floodplain swamp of Sampson Creek. This slender herb occurs in canopy openings within wet flatwoods, dome swamps, and floodplain forests. They are very sensitive to canopy closure and changes in drainage. They do need fire to maintain these canopy openings, which poses a management challenge in the low likelihood of fire moving into the wetland ecotone at GICA. Care will be taken to avoid mechanical or herbicide disturbances in the areas of these plants.

Black Creek crayfish
Surveys conducted by District and FWC staff in 2015 found numerous Black Creek crayfish (*Procambarus pictus*) in Sampson Creek. These crayfish are state threatened and only occur in small, swift, sand-bottom, tannic-stained streams of northeastern Florida. They are a medium-sized crayfish that have a distinctive pattern of yellowish to white spots and stripes on a dark brown to black carapace, and a rust-colored abdomen with dark cross-bands. Management recommendations include the protection of wetlands and associated sandhill natural communities to maintain water quality and minimize pollution and siltation (FNAI 2023).

Invasive Species Management

Goal: Manage invasive plants and animals.

Strategies:

- Scout at least 50 acres and treat at least 1 acre of invasive species annually
- Monitor for feral hog damage; reinstate hog removal SUA if needed
- Locate, map, and treat any new infestations of invasive plant species

Invasive plants known to occur within the Property include silk tree (*Albizia julibrissin*), camphor tree (*Cinnamomum camphora*), cogongrass (*Imperata cylindrica*) and Japanese climbing fern (*Lygodium japonicum*), as well as laurel oak trees invading sandhill natural communities. Invasive species control is necessary to inhibit the continued proliferation of invasive plants and is integral in the maintenance and restoration of natural plant communities. The District uses a variety of techniques including fire, mechanical, and herbicide treatments. Herbicide, approved for use in Florida by the Florida Department of Agriculture and Consumer Services, is applied per U.S. Environmental Protection Agency-approved label instructions using the most appropriate method of application for the target species.

While it is unlikely that the District will eradicate invasive plants within the Property, achieving maintenance control of such species is targeted within the scope of this plan. Invasive plant infestations are light across the Property, and the Property is regularly monitored and treated as necessary. All known occurrences of FISC Category I and II invasive plants at GICA are currently at a maintenance level. District staff scout the Property regularly and have treated approximately 1 acre of invasive vegetation since 2017. An annual goal of scouting and treating a minimum 1 acre of invasive plants will be established.

Invasive wildlife species known to occur within the Property include feral hogs (*Sus scrofa*), brown anole (*Anolis sagrei*), and nine-banded armadillos (*Dasypus novemcinctus*). The District currently utilizes feral hog removal agents through a Special Use Authorization (SUA) process to assist in the control of feral hogs on other conservation areas. A hog removal SUA was in place at GICA from 2013–2018 but no hogs were captured during that timeframe, resulting in the SUA not being renewed. The Property will continue to be monitored for hog damage and the hog removal SUA may be reinstated if necessary.

Cultural Resource Protection

Goal: Identify, protect, and maintain any cultural resources found on the Property.

Strategies:

- Monitor the three documented sites at least every other year
- Identify and report sites to the Florida Division of Historical Resources (DHR)
- Identify and report any detrimental activities to the sites to the DHR and law enforcement

A review of the DHR data indicates three documented Florida Master Site File cultural sites within the Property. These sites are identified as historic refuse dumps and a historic bridge. District land management activities that may affect or impact these resources will be evaluated and modified to reduce the potential for disturbance of the identified sites. Additionally, detrimental activities discovered on these sites will also be reported to the DHR and appropriate law enforcement agencies. Due to District and State policy, the locations of such cultural sites are not identified on public maps.

LAND USE MANAGEMENT

Access

Goal: Maintain access to and around the Property to facilitate land management and resource protection.

Strategies:

- Maintain roads and associated swales/ditches
- Update District database on maintenance of existing and creation of new signs, gates, trails, roads, and other related infrastructure

Currently, one gate provides management access to and across the Property. This gate is monitored regularly for maintenance and/or repair needs. Approximately 4 miles of interior management roads traverse the Property. To manage road maintenance, the District utilizes a roads classification system. This system includes the following classifications:

- Paved Road – any road that is paved (there are no paved roads on the Property)
- Primary Road – any road that requires routine maintenance of any kind
- Secondary Road – any road that does not require routine maintenance, only periodic or no maintenance

Approximately 0.2 miles within the Property are classified as primary roads, and 3.8 miles are classified as secondary roads, with the majority consisting of grass or sand surface without stabilization material. District staff will update the roads database to reflect changes to the road network within the Property as necessary.

Roads will be regularly inspected and receive maintenance and repair as necessary. Figure 16 depicts the location of the roads and gates on the Property.

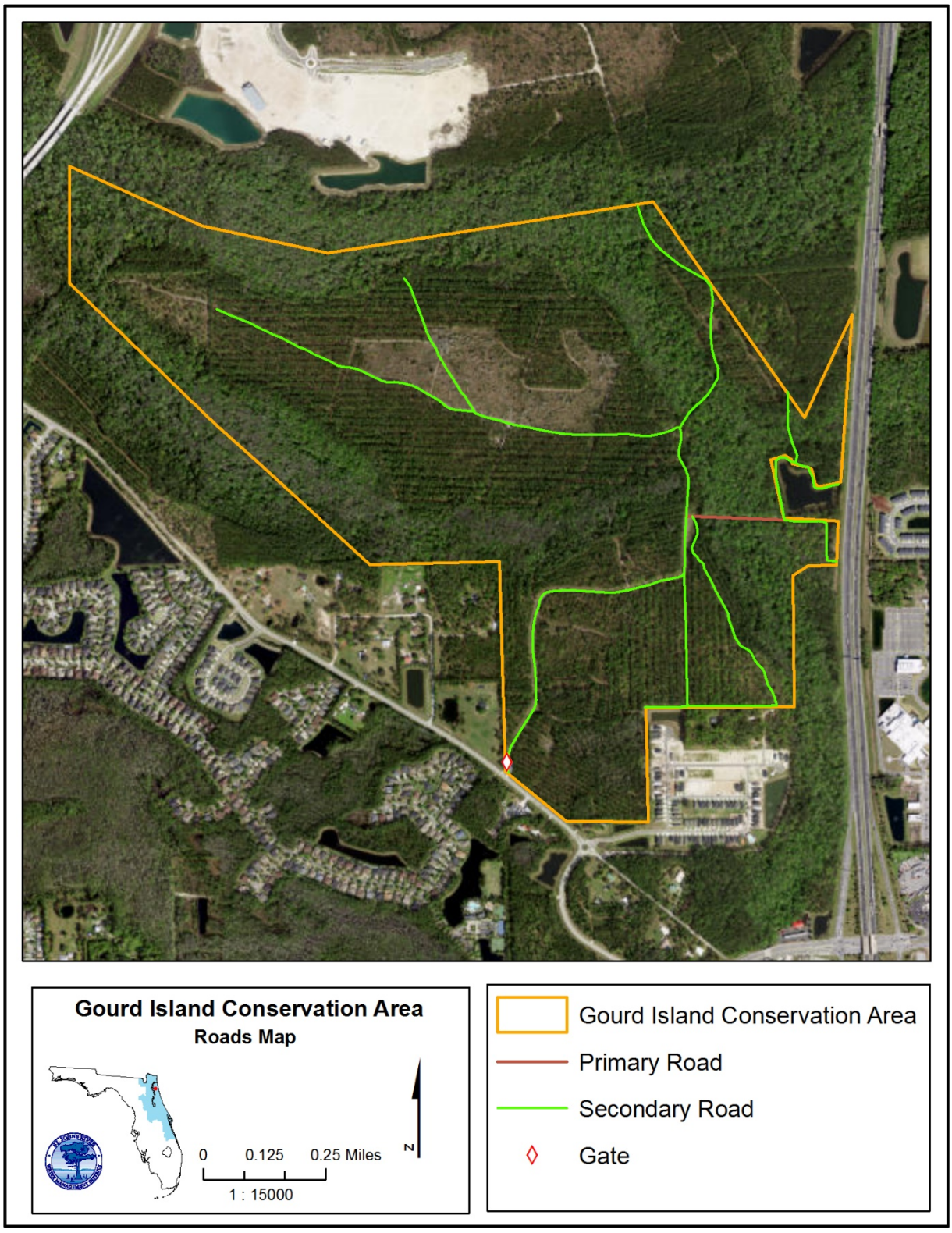

Figure 16: Road Infrastructure

Recreation

Goal: Provide public recreation opportunities on the Property.

Strategies:

- Maintain 3.3 miles of trails, kiosk, and a parking area
- Expand parking area to 0.5 acre
- Cooperate with FWC to allow hunting opportunities if they determine the Property is suitable for limited hunting

Recreation at GICA includes bicycling, hiking, horseback riding, and wildlife viewing. The trailhead, kiosk, and parking area are located at 10182 Russell Sampson Road in the unincorporated community of Saint Johns (Figure 17). The Property features 3.3 miles of multi-use trails accessed by a single trailhead. The trail is maintained by a District mowing contractor with staff oversight.

GICA receives extensive public use due to its location amongst development. The current 0.15-acre parking area reaches capacity many weekends. During the scope of this plan, the parking area shall be expanded to 0.5 acre. The expansion area will be cleared in conjunction with the 2027 timber harvest to utilize the timber removed. The area will be stabilized with rock or shell substrate and fenced.

No hunting opportunities are currently offered on the Property but, in accordance with Section 379.3001(5), F.S., the District will cooperate with FWC if they determine the Property is suitable for limited hunting.

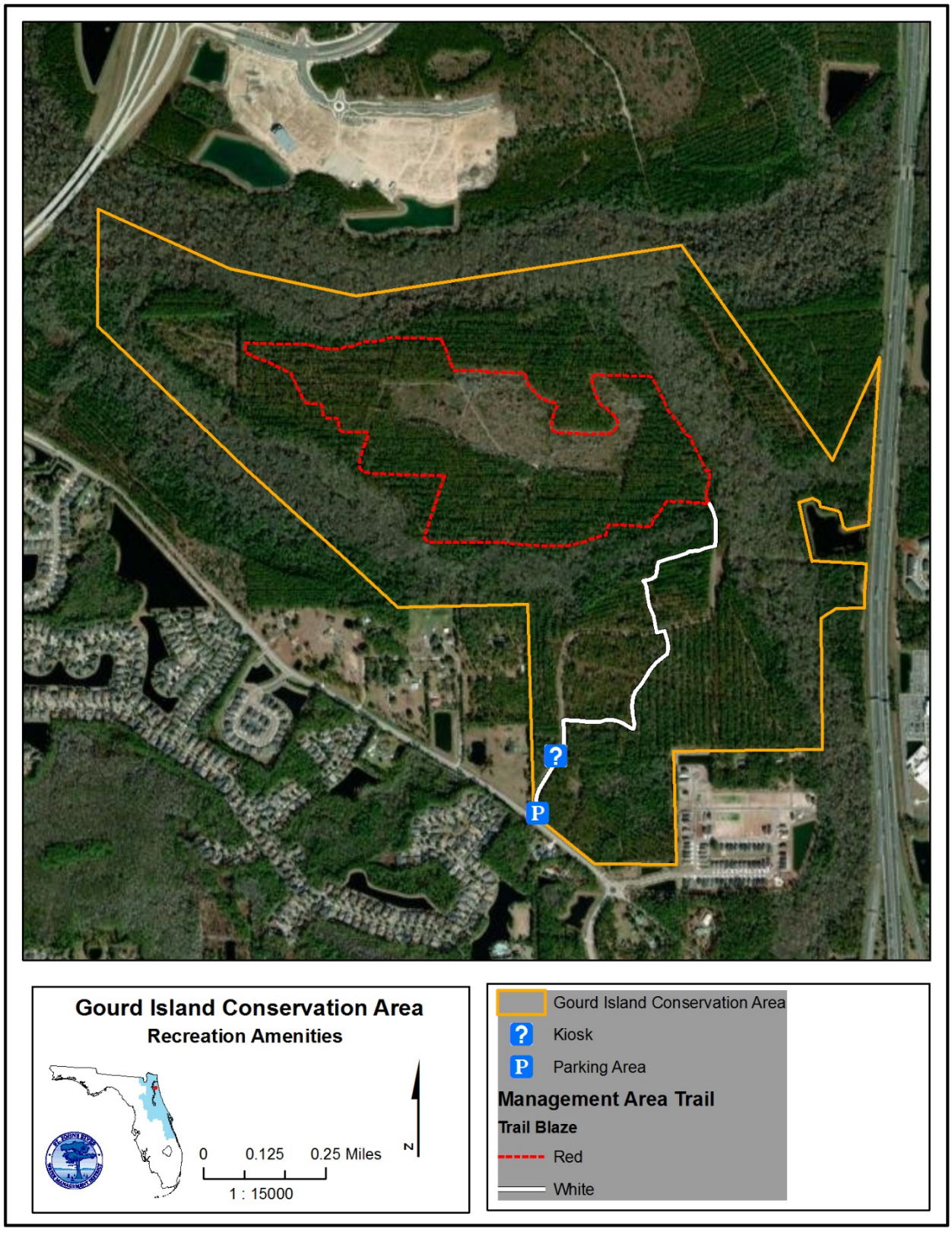

Figure 17: Recreation Trail Map

Security

Goal: Provide and maintain the Property's security.

Strategies:

- Maintain boundary signage, fences, gates, and locks
- Continue coordination with FWC and local law enforcement

Security concerns within the Property include illegal motorized vehicle access and dumping. The District coordinates with FWC and local law enforcement to administer security within the Property.

ADMINISTRATION

Real Estate Administration

Goal: Explore opportunities for adjacent property acquisition, transfer, or surplus.

Strategy:

- Evaluate adjacent properties for potential acquisition

If adjacent or nearby parcels become available that provide additional protection to Durbin Creek or associated tributaries, support water resource projects, increase conservation value, improve manageability of Property boundary, and/or allow for restoration of impacted land, they will be evaluated for acquisition by District staff. To contribute to this effort, the District has developed an optimal boundary for GICA (Figure 18). The land within the optimal boundary for GICA is also included in the District's Critical Wetlands List. An additional parcel south optimal boundary land is not included within the optimal boundary due to its ownership by FDOT. Further expansion of the Property is limited by the lack of undeveloped land surrounding GICA.

No parcels have been identified for surplus at GICA.

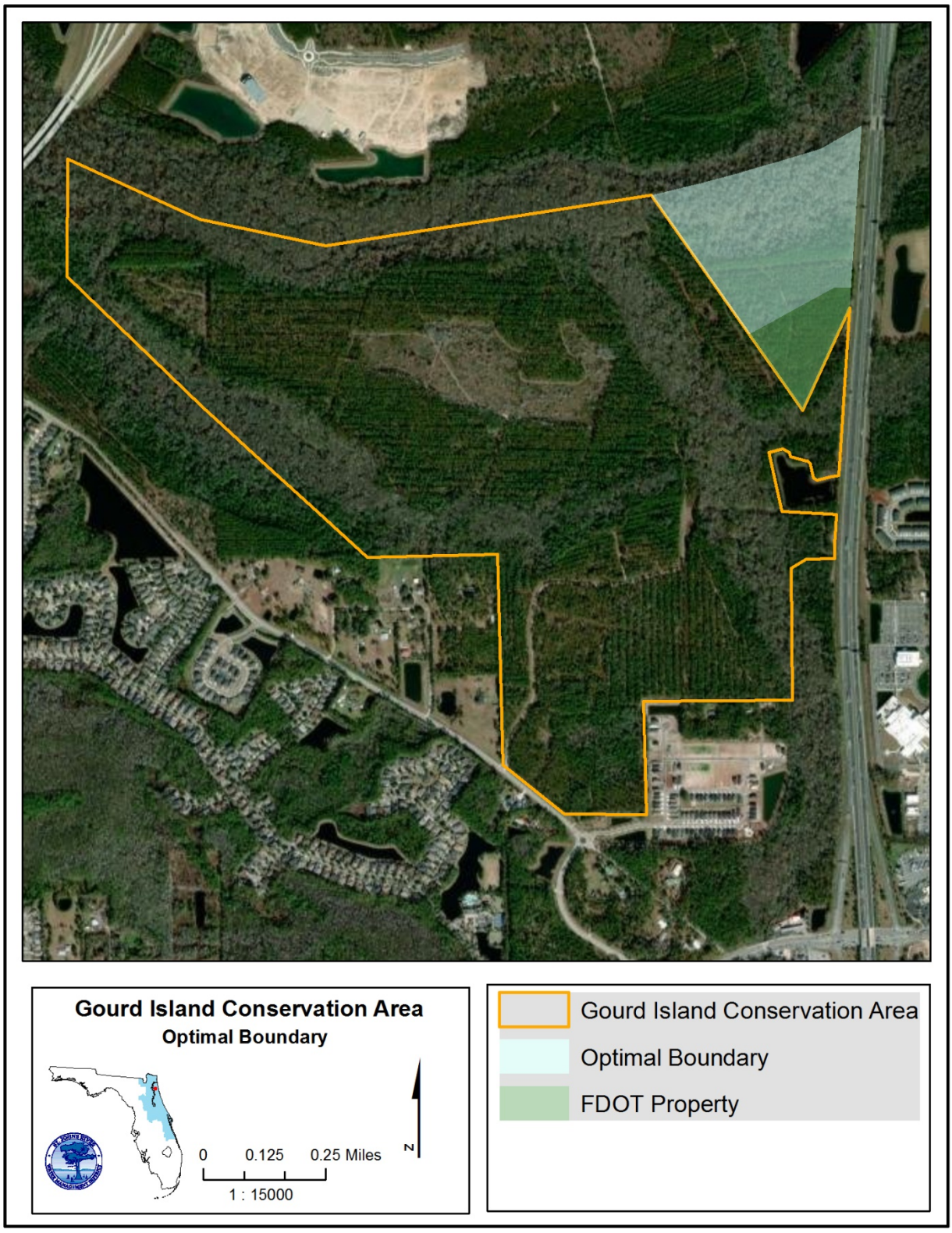

Figure 18: Potential Acquisitions

Cooperative Agreements, Leases, Easements, and SUA

Goal: Evaluate, pursue, and manage cooperative opportunities.

Strategies:

- Maintain three billboard leases and an apiary lease
- Maintain JEA utility easement
- Evaluate new lease and Special Use Authorization (SUA) opportunities for compatibility with conservation and management goals
- Continue to cooperate with researchers and universities as appropriate

Section 373.1391, Florida Statutes, authorizes and encourages the District to enter into cooperative land management agreements with state agencies or local governments to provide for the coordinated and cost-effective management of lands to which the water management districts, the Trustees, or local governments hold title. District Policy #820 promotes the District entering into agreements with other agencies and private parties for cooperation and coordination of management of the District's lands.

In addition, the District is authorized to enter into cooperative agreements, cooperative management leases, leases, easements and SUAs to protect the District's water management interests and to enhance the management and public value of the land. Leases can be a useful tool to accomplish land management objectives and will be evaluated and implemented where appropriate. Common lease examples include cattle grazing and apiaries, and the District remains open to considering other types of leases that help achieve management goals. Table 2 details the agreements, leases, and SUAs in effect during the writing of this plan; Figure 19 shows the location of the easement and leases.

The Property currently hosts three billboard leases that were in place at the time of acquisition. The District has continued to maintain these leases. Two leases are with CBS Outfront Media, each of which provides an annual rent of $8,000 with a 23.5% true-up payment. These two leases expire Aug. 31, 2024, with an annual automatic renewal if 90 days' notice of cancelation is not provided. The third lease is with Clear Channel Outdoors, which provides an annual rent of $7,000 or 35% of revenue, whichever is greater. This lease expires Dec. 31, 2025, and automatically renews on an annual basis if not canceled with 60 days' notice. Also, an apiary lease on the Property is a single site generating $203 annually; the lease expires Aug. 31, 2027.

The Property is subject to a perpetual utility easement held by JEA that was entered into prior to District acquisition. This is an underground easement for the construction and maintenance of potable water, water reuse, and sewer lines. The easement is located on the existing road network. Construction was completed in early 2012.

Two research SUAs currently involve the Property.

Table 2: Cooperative Agreements, Leases, and Special Use Authorizations

Agreement Number	Type/Purpose	Agreement Name	Term
719	Lease/Billboard	Billboard Lease CBS Outfront Media	Aug. 31, 2024; annual auto renewal after this date
720	Lease/Billboard	Billboard Lease CBS Outfront Media	Aug. 31, 2024; annual auto renewal after this date
721	Lease/Billboard	Billboard Lease Clear Channel Outdoor	Dec. 31, 2025; annual auto renewal after this date
1568	Easement/Utility	JEA Utility Easement	Perpetual
2268	SUA/Research	Kent State University Districtwide Lobelia and Soil Sampling	September 2026
2346	Lease/Apiary	Santa Fe Queens	Aug. 31, 2027
2471	SUA/Research	FWC Freshwater Invertebrate Program Crayfish Sampling	July 1, 2024

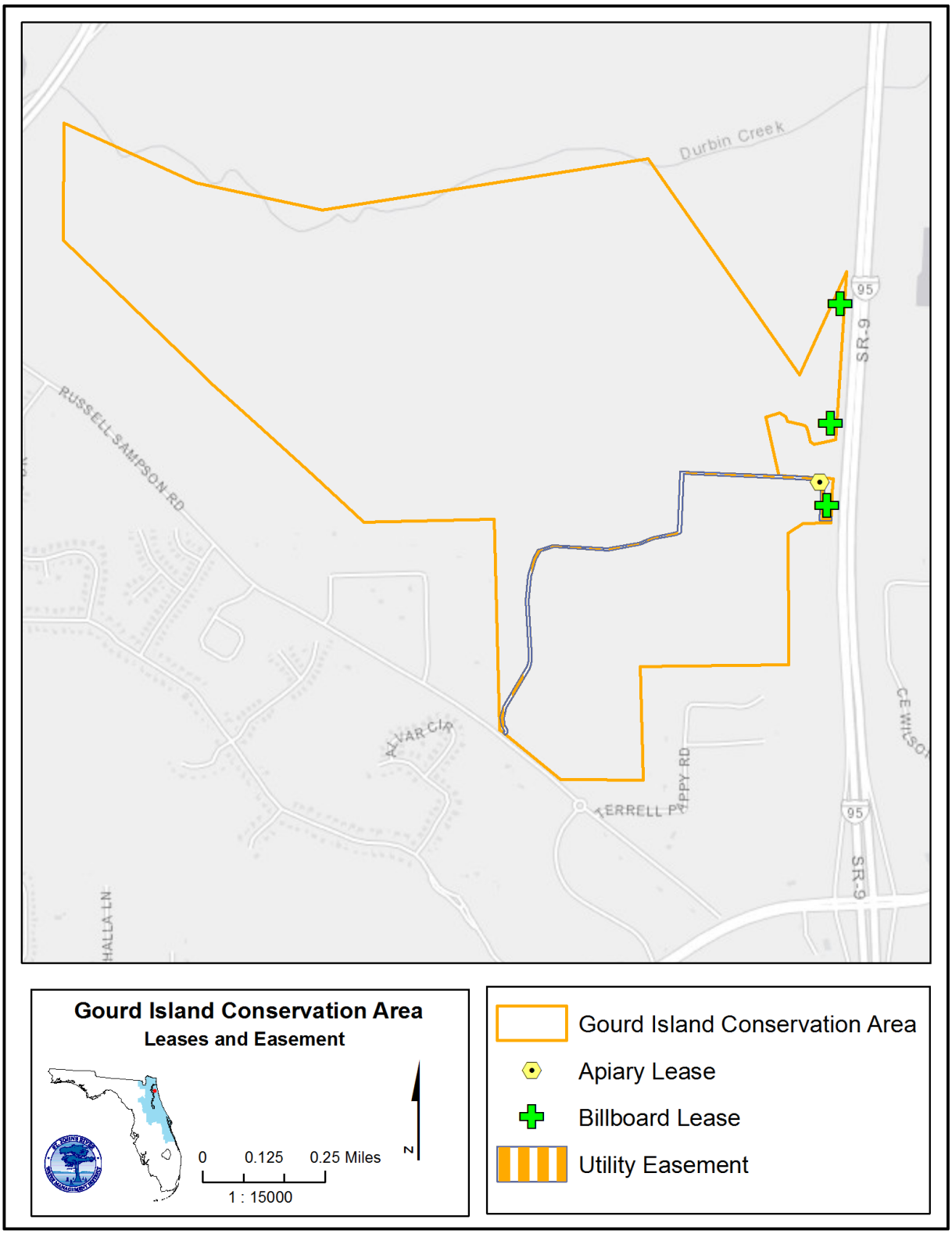

Figure 19: Lease and easement

Management Revenues and Costs

Goal: Analyze and report projected and actual costs and revenues.

Strategies:
- Analyze and report revenues
- Analyze and report land management costs

This section reviews costs and revenues since the last land management plan update (2011–2023) as well projects costs and revenues for the upcoming planning period (2024–2034). All generated revenue will be applied toward the District's land management budget to offset management costs.

Tables 3 and 4 provide the received revenue and land management costs for GICA since the last land management plan update in 2011. Most revenue was produced by billboard leases.

Revenues and Cost Since Last Land Management Plan (2011)

Revenues since the last land management plan update (2011–2023) total $535,365 (Table 3). Costs between 2011–2023 have totaled $174,533 (Table 4).

Table 3: Revenues from 2011-2023

Activity	Revenue Year	Revenue
2012 timber sale	2012	$140,331
2020 timber sale	2020	$34,748
Billboard leases (combined)	2011-2023	$358,412
Apiary lease	2017-2023	$1,874
Total		**$535,365**

Table 4: Management Costs from 2011 to 2023

Recurring Annual Costs

Activity	**Annual Number of Units**	**Units**	**Annual Cost**	**Total Cost (Since 2011)**
Staff time	120	Hours	$3,000	$39,000
Invasive plant control	1	Acre	$150 (average)	$1,950
Firebreak disking	4.3	Miles	$1,290	$16,770
Road mowing	11.6	Acres	$1,004	$13,050
Parking lot mowing	0.15	Acres	$49	$637
Trails mowing, blazing and trimming	3.3	Miles	$1,096	$14,248
Total Annual Costs 2011–2023				*$85,655*

One Time Activity Cost

Activity	**Total Number of Units**	**Units**	**Total**
2012 Fence construction	1,000	Linear feet	$5,550
2014 Prescribed fire	118	Acres	$5,866
2014 Groundcover planting	27	Acres	$37,500
2020, 2022 Forest inventory	33	Plots	$676
2019 Fuel reduction mulching	103	Acres	$30,385
2020 Sandhill hardwood reduction herbicide treatment	27	Acres	$7,452
2023 Road trimming	10.2	Miles	$1,449
Total One-Time Activity Cost 2011-2023			*$88,878*
Total Cost Since 2011			**$174,533**

Projected Land Management Revenues and Costs (2024-2034)

Costs and revenues for GICA are projected into the future. However, prices of timber fluctuate depending on the markets. Projected revenue generated by timber sales, shown in Table 5, is an estimate based on 2024 market prices.

The projected revenues from the billboard lease, forest management, and apiary lease at GICA between 2024–2034 are $344,230 (Table 5). Billboard lease revenue shown is for base rent only and does not include the true-up payments or revenue sharing. Revenue generated from the apiary lease is included as an estimate based on the current rent. The lease term expires in 2027, though the District does intend to rebid the lease. All revenue generated from District lands are applied toward the District's land management budget to offset management costs. Projected management costs for GICA from 2024–2034 are $188,130 (Table 6). Years in which activities take place are estimated.

Table 5: Projected Revenues between 2024 to 2034

Activity	Year	Revenue
Billboard lease (at base rate minimum)	2024–2034	$230,000
Timber thinning	2027	$74,250
Timber thinning	2030	$20,900
Timber thinning	2031	$17,050
Apiary lease	2024-2034	$2,030
Total		**$344,230**

Projected Management Costs

Table 6: Projected Management Costs from 2024–2034

Recurring Annual Costs				
Activity	**Number of Units (annual)**	**Units**	**Annual Cost**	**10-Year Total Cost**
Staff time	120	Hours	$3,360	$33,600
Invasive plant control	1	Acre	$200	$2,000
Fireline Disking	4.3	Miles	$1,290	$12,900
Road Maintenance	4	Miles	$900	$9,000
Mowing (roads)	10.2	Acres	$883	$8,830
Parking area mowing	0.5	Acres	$162	$1,620
Trails mowing, blazing and trimming	3.3 miles of trail		$1,274	$12,740
Timber Inventory	20	Plots	$418	$4,180
Total annual costs				*$84,870*
One-Time Activity Cost				
Activity	**Total Number of Units**	**Units**	**Cost**	**Total**
2026 Timber marking	135	Acres	$65	$8,775
2027 Parking area expansion	0.5	Acre	-	$20,000
2027 Sandhill restoration project	27	Acres	$370	$10,000
2029 Timber marking	38	Acres	$65	$2,470
2030 Timber marking	31	Acres	$65	$2,015
2030 Fuels reduction mowing	150	Acres	$400	$60,000
Total One-Time Activity Cost 2024-2034				*$103,260*
Total cost over 10 years				**$188,130**

LAND MANAGEMENT PLAN IMPLEMENTATION SCHEDULE

Table 7: Land Management Plan Implementation Schedule

RESOURCE PROTECTION AND MANAGEMENT

Water Resources

Goal	**Protect water quality and quantity, restore hydrology to the extent feasible, and maintain the restored condition**	**Measure**	**Planning Period**
Strategy A	Maintain roads and culverts to prevent erosion.	Roads and culverts maintained	Ongoing

Forest Management and Restoration

Goal	**Maintain, improve, and restore forest resources**	**Measure**	**Planning Period**
Strategy A	Update forest management database.	Updated forest management database	Annually by November
Strategy B	Thin at least 204 acres of timber.	Acres of timber thinned	1–5 Years

Fire Management

Goal	**Implement a prescribed burning program in accordance with District's Fire Management Plan**	**Measure**	**Planning Period**
Strategy A	Maintain existing firebreaks and create new firebreaks as needed.	Miles of firebreaks maintained	Ongoing
Strategy B	Use mechanical fuel reduction or herbicide treatments as fire surrogates in areas where it is difficult to burn due to high fuel loads or smoke management concerns.	Number of acres treated	Ongoing
Strategy C	Apply prescribed fire to natural communities when fire weather opportunities arise to mitigate smoke production in the challenging smoke management area that surrounds GICA.	Acres burned	5–10 Years
Strategy D	Apply prescribed fire or prescribed fire surrogates to at least 34 acres annually, averaged over the next 10 years.	Number of acres treated	5–10 Years

Flora and Fauna

Goal	Maintain, improve, or restore native and listed species populations	Measure	Planning Period
Strategy A	Conduct plant and wildlife surveys and develop species lists.	Updates to species list	Ongoing
Strategy B	Monitor the presence of listed species and adjust management actions appropriately.	Updates to species list and adjusted management actions	Ongoing

Invasive Species Management

Goal	Manage invasive plants and animals	Measure	Planning Period
Strategy A	Scout at least 50 acres and treat at least 1 acre of invasive species annually.	Acres treated and scouted	Annually by September
Strategy B	Monitor for feral hog damage; reinstate hog removal SUA if needed.	Number of hogs removed	Annually by September
Strategy C	Locate, map, and treat any new infestations of invasive plant species.	Mapping and treatment of new infestations	Ongoing

Cultural Resource Protection

Goal	Identify, protect, and maintain any cultural resources found on the Property	Measure	Planning Period
Strategy A	Monitor the three sites at least every other year.	Sites identified and reported	Ongoing
Strategy B	Identify and report sites to the Florida Department of Historical Resources (DHR).	Sites identified and reported	Ongoing
Strategy C	Identify and report any detrimental activities to the sites to the DHR and law enforcement.	Sites identified and reported	Ongoing

LAND USE MANAGEMENT

Access

Goal	Maintain access to and around the Property to facilitate land management and resource protection	Measure	Planning Period
Strategy A	Maintain roads and associated swales/ditches.	Roads and swales/ditches maintained	Ongoing
Strategy B	Update District database on maintenance of existing and creation of new trails and roads.	Database updated	Ongoing

Recreation

Goal	Provide public recreation opportunities on the Property		
Strategy A	Maintain 3.3 miles of trails, kiosk, and a parking area.	Miles maintained	Annual, ongoing
Strategy B	Expand parking area to 0.5 acre.	Expansion occurred	5 Years

Security

Goal	Provide and maintain the site's security	Measure	Planning Period
Strategy A	Maintain boundary signage, fences, gates, and locks.	Signs, fences, gates, and locks maintained	Ongoing
Strategy B	Continue coordination with FWC and local law enforcement.	Secure property	Ongoing

ADMINISTRATION

Real Estate Administration

Goal	Explore opportunities for adjacent property acquisition	Measure	Planning Period
Strategy A	Evaluate adjacent properties for potential acquisition.	Properties evaluated	Annually by September

Cooperative Agreements, Leases, Easements, and Special Use Authorizations (SUA)

Goal	Evaluate, pursue, and manage cooperative opportunities	Measure	Planning Period
Strategy A	Maintain three billboard leases and apiary lease.	Lease administered	Ongoing
Strategy B	Maintain JEA utility easement.	Easement administered	Ongoing
Strategy E	Evaluate new lease and Special Use Authorization opportunities for compatibility with conservation and management goals.	Leases and SUAs evaluated	Ongoing
Strategy F	Continue to cooperate with researchers and universities as appropriate.	Research SUAs evaluated	Ongoing

Management Revenues and Costs

Goal	Analyze and report projected and actual costs and revenues	Measure	Planning Period
Strategy A	Analyze and report revenues.	Annual report	Annually by November
Strategy B	Analyze and report land management costs.	Annual report	Annually by November

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APPENDIX A: GOURD ISLAND PROPERTY SOILS

Below is a description of the soils and an accompanying map (Figure 1) at GICA (USDA, 2024).

Bakersville
The Bakersville series consists of very deep, very poorly drained, moderately permeable soils in depressional areas of the flatwoods of peninsular Florida. They formed in sandy and loamy marine sediments. Native vegetation consists of cypress, sweetgum, red maple, white bay, and a few pond pine. The understory vegetation is mainly wax myrtle, greenbriar, bracken fern, and cinnamon fern. Maidencane, switchcane, and various sedges and rushes.

Holopaw
The Holopaw series consists of deep and very deep, poorly and very poorly drained soils formed in sandy marine sediments. Slopes range from 0–2% and are found on low-lying flats, in poorly defined drainages or depressional areas. Native vegetation is scattered slash and pond pine, cabbage and saw palmettos, scattered cypress, myrtle, sand cordgrass, and pineland threeawn.

Myakka
The Myakka series consists of deep and very deep, poorly to very poorly drained soils formed in sandy marine deposits. These soils are on flatwoods, high tidal areas, flood plains, depressions, and gently sloping to sloping barrier islands. Native vegetation includes longleaf and slash pines with an undergrowth of saw palmetto, running oak, inkberry, wax myrtle, huckleberry, chalky bluestem, pineland threeawn, and scattered fetterbush.

Samsula
The Samsula series consists of very deep, very poorly drained, rapidly permeable soils that formed in moderately thick beds of hydrophytic plant remains and are underlain by sandy marine sediments. These soils are in swamps, poorly defined drainageways and flood plains. Natural vegetation is loblolly bay with scattered cypress, maple, gum, and pine trees with a groundcover of greenbriers, ferns, and other aquatic plants.

Smyrna
The Smyrna series consists of very deep, poorly to very poorly drained soils formed in thick deposits of sandy marine materials. Natural vegetation consists of longleaf and slash pines with an undergrowth of saw palmetto, running oak, gallberry, wax myrtle, and pineland threeawn.

Sparr
The Sparr series consists of very deep, somewhat poorly drained, moderately slowly to slowly permeable soils on uplands of the coastal plain. They formed in thick beds of sandy and loamy marine sediments. Native vegetation consists of longleaf pine, slash pine, loblolly pine, magnolia, dogwood, hickory, and live oak, laurel oak, and water oak.

St. Johns
The St. Johns series consists of very deep, very poorly or poorly drained, moderately permeable soils on broad flats and depressional areas of the lower Coastal Plain. They formed in sandy marine sediments. Principal vegetation of the forested areas is longleaf pine, slash pine, and pond

pine with an undergrowth of saw palmetto, gallberry, wax myrtle, huckleberry, and pineland threeawn.

Tavares
The Tavares series consists of very deep, moderately well drained, rapidly or very rapidly permeable soils on lower slopes of hills and knolls of the lower Coastal Plain. They formed in sandy marine or eolian deposits. In most places the natural vegetation consists of slash pine, longleaf pine, a few scattered blackjack oak, turkey oak, and post oak with an undercover of pineland threeawn. In some places natural vegetation consists of turkey oak, blackjack oak, and post oak with scattered slash pine and longleaf pine.

Terra Ceia
The Terra Ceia series consists of very deep, very poorly drained organic soils that formed from nonwoody fibrous hydrophytic plant remains. They occur mostly in nearly level freshwater marshes and occasionally on river floodplains and in tidal swamps or flats. Natural vegetation includes saw grass, lilies, sedges, reeds, maidencane, and other aquatic plants. Wooded areas include cypress, black gum, cabbage palm, Carolina ash, loblolly bay, red maple, sweet bay, and pond pine. Large undeveloped areas are used for wildlife habitat and water storage.

Tocoi
The Tocoi series consists of very deep, poorly drained, moderately rapidly permeable soils on broad flats in the lower Coastal Plain. They formed in thick beds of sandy marine sediments. Native vegetation consists of slash pine, longleaf pine, wax myrtle, saw palmetto, greenbrier, inkberry, bluestems, and pineland threeawn.

Zolfo
The Zolfo series consists of very deep, somewhat poorly drained soils that formed in thick beds of sandy marine deposits. These soils are on low broad landscapes that are slightly higher than adjacent flatwoods on the lower Coastal Plain of central Florida. Native vegetation consists of scattered turkey, laurel, or water oaks, longleaf or slash pine with an undercover of pineland threeawn, bluestem, lopsided Indian grass, gallberry, native weeds, and saw palmetto.

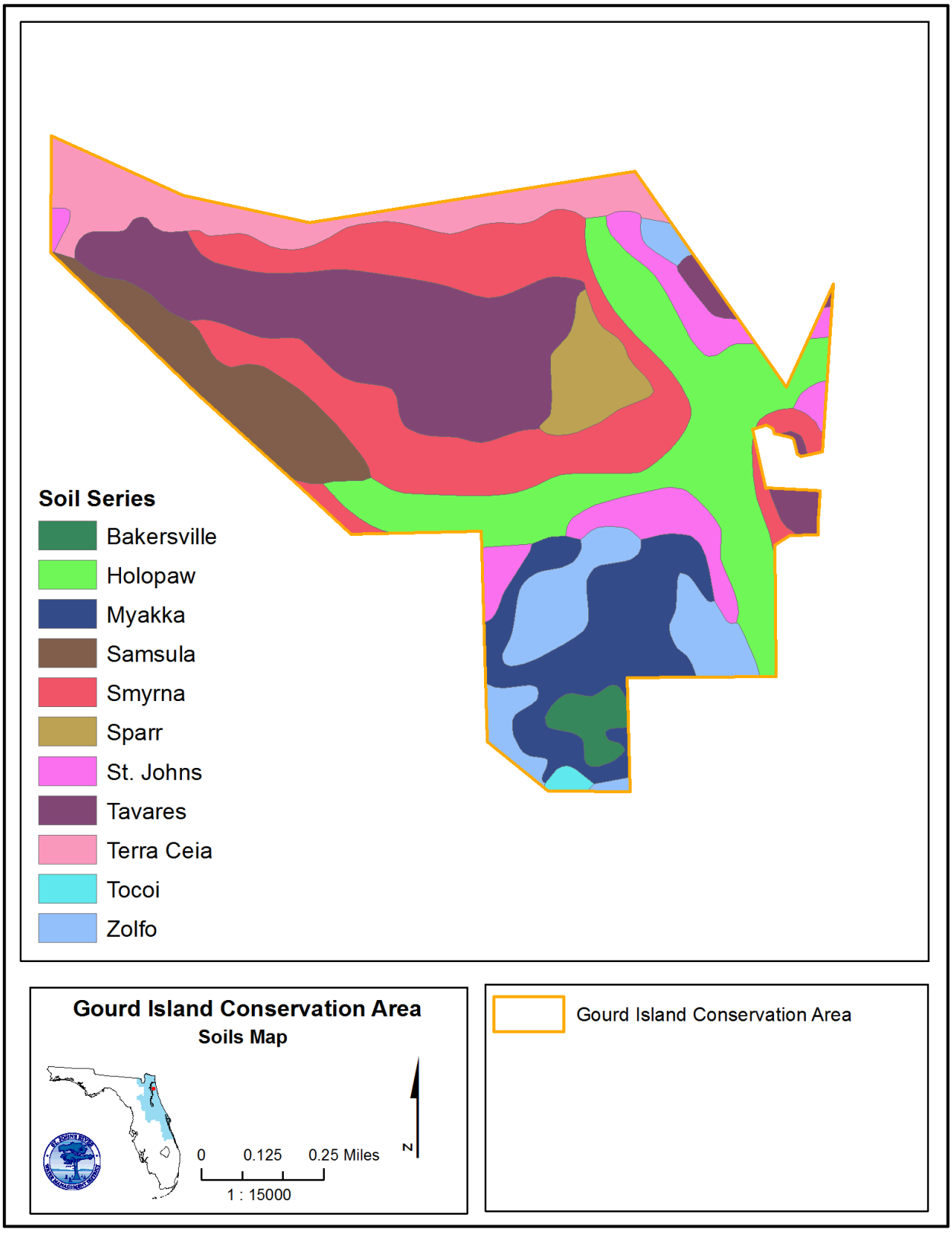

Figure 1: Soil types at Gourd Island Property.

APPENDIX B: DISTRICT FOREST MANAGEMENT PLAN

To date, the St. Johns River Water Management District (District) has acquired over 775,000 acres of land. Approximately 43 percent of these acres are forested. Prior to 2000, no overall long-term plan existed to provide guidance and coordination for the management of the District's forest resources. This plan will provide that guidance and continuity.

Even prior to 2000, the District had been managing its forest resources. Timber sales began in 1991 with a salvage sale at the District's Lake George property following a wildfire. From 1991–2023, nearly 200 timber sales have been completed.

PURPOSE OF FOREST MANAGEMENT

The District manages forest resources for the:

1) Restoration of natural communities
2) Maintenance of the health and vigor of natural communities
3) Generation of revenues to counterbalance the cost of land management activities

Restoring Natural Communities

The District acquires its land from a variety of private owners, and each owner had their own vision for the land. Many times, in fulfilling their vision, private owners altered the natural communities by clearing for agricultural purposes or for planting trees. Whenever practicable, the District is charged with maintaining and/or restoring the land to its natural state and condition.

Thinning, clearcutting, and planting are all tools used to restore natural communities, but in almost all cases they are used in conjunction with fire. The combinations of overstory control and fire management are the primary restoration tools in forested communities.

In forested communities, controlling or manipulating the overstory serves as the primary tool to maintain or restore the natural community. The density of the overstory dictates the health and diversity of understory species. If the overstory becomes too dense, both the overstory and understory species begin to suffer. In cases where the overstory remains crowded too long, individual understory plants begin to disappear. Often, seeds of these plants will remain dormant in the soil. Thinning individual trees from an overcrowded stand allows more light, moisture, and nutrients to be available for groundcover plants. This allows dormant plants to reoccupy their former sites, thereby restoring the natural state and condition.

In some cases, private owners planted a species of tree that did not naturally occupy the site. In these cases, the District will clearcut the undesired tree species and replant with the more appropriate species.

In cases where the previous owner cleared the site, the District will prepare the site and plant the appropriate tree species. Since longleaf pine occupies approximately 5 percent of the area it did in 1900, and since longleaf offers a suite of ecosystem benefits greater than most other pines, the District will emphasize planting of longleaf on all sites where longleaf is suited for the site.

Maintenance of the Health and Vigor of the Natural Communities

The health or quality of a forested natural community is maintained by three primary factors: (1) the availability of water; (2) the frequency of fire; and (3) the density and species composition of the overstory.

In few cases do the activities of the District affect the availability of water on District forestlands. One exception is where sites are restored through the plugging of ditches or rehydration of historically wetland systems. Weather is the primary factor influencing the availability of water.

Fire influences the health of forested communities by altering the process of succession. Fire holds natural communities in an intermediate stage of succession that is referred to as a fire climax community. If fire is removed, these natural communities follow the path of succession to become some other community. In Florida, most natural communities historically experienced fire on a frequent basis. In fact, most communities are dependent upon frequent fire for their continued existence. Because of its importance as a management tool, fire is addressed in detail in the District's Fire Management Plan.

The third factor influencing the health and/or quality of forested natural communities is the overstory density and species composition. In a truly natural system, wildfire, climatic disturbances, along with insects and diseases, combined to control the composition of the overstory, which in turn controls the composition of the understory. Wildfire, insects, and disease kill trees as individuals or groups, which reduces the density of the overstory and alters the species composition. These events or outbreaks would often impact large areas, especially areas where the stand density was high, weakening the overstory trees and increasing their susceptibility to pathogens. Prior to human intervention, there were huge expanses of natural land that could easily absorb large-scale alterations of the overstory so that no plant or animal species could be extirpated. Today, Florida is fast approaching a condition where natural areas are becoming islands. Plants and animals have fewer areas to populate, and it is more difficult to transfer their genetic material between isolated areas of ideal habitat. Therefore, we can no longer rely entirely on large-scale disturbances to control overstory density and species composition. By managing the overstory with selective harvesting, the density and species composition can be controlled to maintain a healthy natural community while minimizing the potential for large-scale impacts.

As land managers, the District also has an obligation to protect neighboring landowners from any large-scale wildfire, insect, or disease outbreaks that may originate on District land and spread to adjacent lands. This obligation prohibits the District from employing a truly natural management system to control overstory species, density, and composition and requires the District to utilize a more interactive management program.

Generation of Revenues

The District manages forest resources for an economic return. The District generates revenue when implementing sound overstory management practices to maintain the health of the natural community. These practices include but are not limited to thinning operations, removal of

undesired species (clearcuts), and salvage cuts to remove trees damaged from wildfires, insect infestations, and/or disease outbreaks. The revenue generated from these operations can be used to fund restoration and other land management activities.

FOREST RESOURCES INVENTORY

Seeking to keep its land management efficient, the District has sought management partners. The following chart illustrates the lead manager status of District-owned lands (Figure 1).

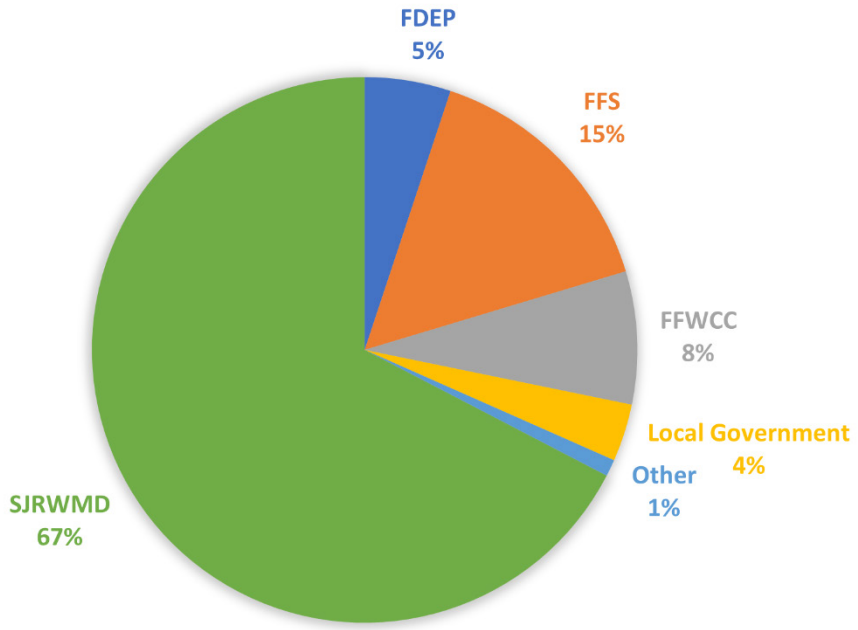

Figure 1: District Owned Land by Lead Manager. Updated January 2020

The District's Land Management Rule, agreements and philosophy call for the lead manager's rules and policies to direct the management of the affected lands, therefore this plan will be focused on the lands where the District is identified as the lead manager. The District serves as the lead manager on 430,000 acres. These acres managed by the District are broken down as follows (Figure 2).

Twenty-seven percent of the District- managed lands are forested, with 12 percent being forested uplands and 15 percent forested wetlands.

OBJECTIVES OF FOREST MANAGEMENT

The District's forest management objectives are to:

- Maintain the health and diversity of forested communities on District lands
- Provide for older aged forest conditions. As public landowners, we have the opportunity to provide habitat for species requiring older age classed trees.
- Provide for an array of forest stand structures and age classes. Each species of plant and animal has an age-class of forest stand that is most desirable. By providing the array of structures and age-classes, the District can provide habitat for a wide variety of species.

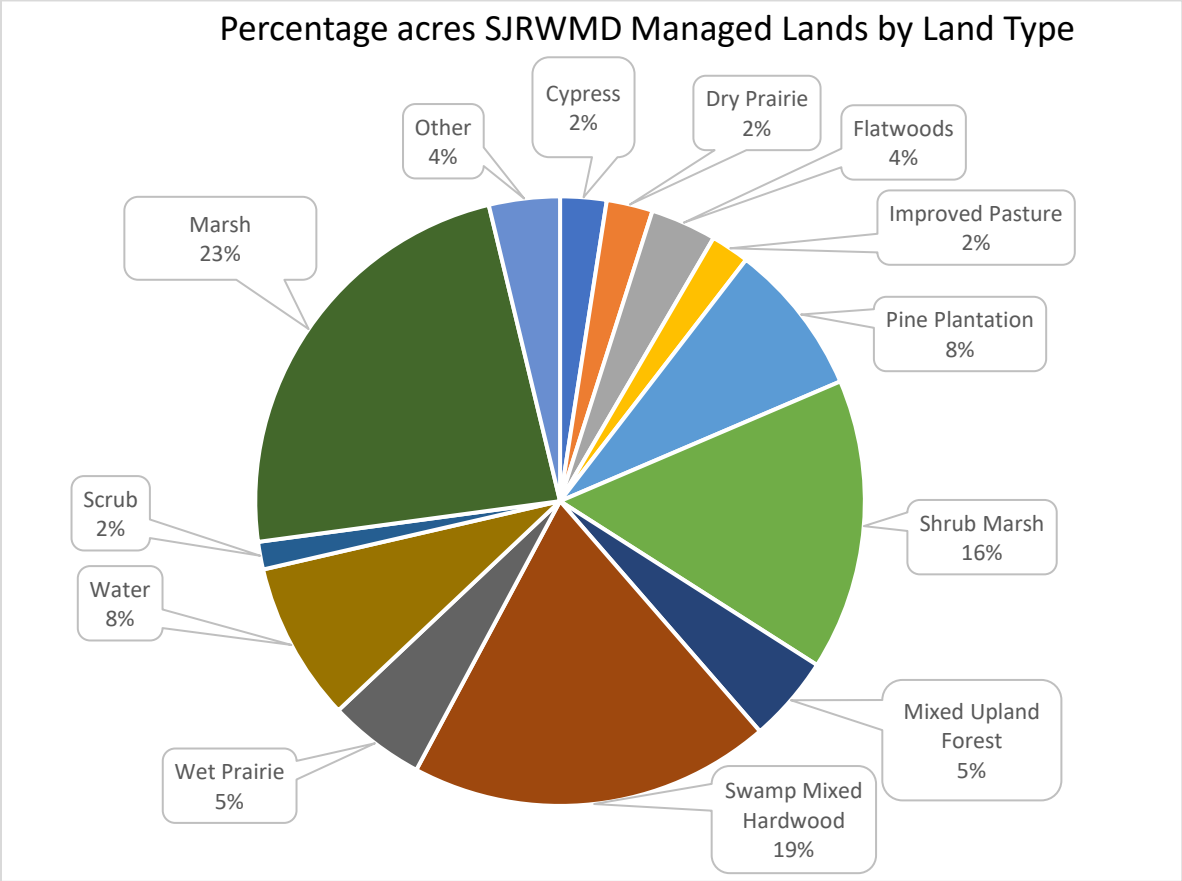

Figure 2: Percentage acres SJRWMD Managed Lands by Land Type. Updated January 2020

Techniques of Forest Management

Inventory

The District is currently developing a timber management database that will directly link timber volume information with the GIS lands database. The database will incorporate inventory data collected at acquisition and track changes overtime. Changes resulting from harvests, wildfires, insect infestations, disease outbreaks and reforestation efforts can be updated quickly and easily. Periodic updates of volume and growth information will be scheduled and incorporated into the database. The database links will aid in determining natural community needs along with geographic distribution and appropriate management techniques to implement. The database will be an integral part in managing community health and in developing future land management workplans.

Harvesting

To accomplish its goals, the District will employ a suite of harvesting systems.

Clearcutting is a silvicultural operation used to remove the entire overstory at one time. This tool will be used with limited application dependent upon the specific management needs. Those needs may include:

1. Insect or disease control. Forest pests occur naturally at low population densities and are a vital part of the forested community. When population densities reach epidemic levels, control measures to remove the host and adjacent trees must be implemented to protect the remainder of the stand.
2. Salvage. If the overstory has been killed or severely damaged, removing (salvaging) the overstory will recover some financial value of the timber and will allow the District access necessary to replant the site.
3. Species conversion. If offsite species exist, clearcutting enables the District to replace the offsite species with one that is appropriate.

Thinning is a silvicultural operation where selected individual trees are removed from the stand to reduce the density of overstory trees to improve growing conditions for the remaining overstory trees and the understory plants. This method is not applied with a goal of establishing regeneration.

The seed tree system is a silvicultural operation where the entire overstory except 10–15 prime trees per acre are harvested at one time. These 10–15 trees serve as the seed source for the next generation. This technique is seldom used by the District. While the seed tree system is effective, it creates major change in the stand condition both visually to the public and biologically to the plants and animals in the stand.

Shelterwood is a silvicultural operation in which the overstory is removed in phases. When it is time to regenerate the stand, approximately 60–70 percent of the stand is removed either in one or two harvests. Again, the older trees serve as the seed source for the next generation. Once the younger trees are established the original overstory trees can be removed or they can remain on site and be subject to thinning at the same time as the younger generation. The major benefit of this

system is it results in a more gradual change from the mature trees to the next generation both visually to the public and biologically to the plants and animals.

A new modification of the shelterwood called an irregular shelterwood has recently been developed and may become the primary silvicultural system employed by the District. An irregular shelterwood begins the same as shelterwood but portions of the original overstory remain on site. When the second-generation trees are thinned, a few of the first-generation trees are also thinned. When it is time for the third generation to be established both the first- and second-generation trees are reduced to 30–40 square feet of basal area to make room for the third-generation trees. Once the third-generation trees are established the site has few first-generation trees, some second-generation trees and many third-generation trees. This provides for a variety of age classes in a single stand but is much easier to apply and should require much less staff time than uneven-aged selection management.

Uneven-aged selection is a silvicultural operation in which trees, either as individuals or in small half-acre groups are harvested from throughout the stand every 5–10 years. The holes left by the removal of these trees are filled with seedlings from adjacent trees thereby creating a patchwork stand composed of trees of all ages. While this system offers the greatest distribution of age within a stand, truly an uneven aged condition which some scientists feel is best for wildlife, it also requires significant staff inputs and to date appears too labor intensive to employ on a large scale.

Site Preparation

When it is necessary to establish regeneration, either naturally or artificially, the District may employ one or more of the site preparation techniques described below.

Herbicide will be used when staff has determined that it is the most effective means to control the competing vegetation. Herbicides will not be used if it adversely effects the desirable understory species within the planting site. The use of herbicide is necessary when attempting to restore native trees and groundcover to areas of improved pasture. Herbicide can be applied with hand sprayers, tank sprayers, or aerially from a helicopter, depending upon the species to be treated and site conditions.

Disking/scalping techniques are most useful when trees are being planted in areas of improved pasture. Both techniques protect the seedlings from grass competition but offer no benefit to groundcover restoration.

Drum chopping is effective at reducing competition from shrub species, especially saw palmetto. If properly applied grasses within the treatment area will survive chopping and will often benefit from the choppers effect on the shrubs.

Bedding is a technique where a small ridge of surface soil is formed to provide an elevated planting or seedbed. It is used primarily in wet areas to improve soil drainage and aeration for seedlings. This type of site preparation technique has not been utilized by the District because of the adverse effects it has on groundcover and sheetflow. Therefore, the District's planting costs are often higher than private industry's because without bedding several plantings are often necessary to establish seedlings on wet sites.

Regeneration

Emphasis will be placed on natural regeneration to the extent practicable. In cases where species conversion is required or where no overstory exists to provide natural seed fall, planting will be necessary.

Hand planting is primarily method used by the District because it offers the following benefits:

1. Trees can be placed on the best microsites (i.e., highest ground in wet areas, areas with the least competition).
2. Groundcover disturbance is minimized.
3. Seedlings can be randomly spaced or planted in clusters to provide for a more natural appearance.

Machine planting is used primarily in old field conditions where scalping is employed and rows are suitable.

OVERALL METHODOLOGY

Forested natural communities can be lumped into three different groups with regards to forest management. These include pine forests, upland hardwoods, and wetland hardwood/cypress. The management of each will differ and be described separately.

Pine Forests

Pine forests include flatwoods, plantations, sandhills and sand pine scrub. With the exception of sand pine scrub pine forests will be managed through thinning. Once the stand is established and trees have reached merchantable size (five inches at diameter breast height) at approximately 15–20 years of age depending on tree species and sites, thinning will begin. Stands will be thinned as necessary to maintain an overstory basal area range of 60–90 square feet per acre. This range promotes good growth of understory plants and provides good habitat for most wildlife using forested natural communities. To maintain this basal area range harvests will occur in each stand approximately every 10 years, depending on growth rates of the trees. Great care will be exercised during harvesting operations to minimize disturbance of the soil and groundcover. When properly performed, harvesting benefits groundcover regeneration by reducing shrub species and improving growing conditions.

The need for regeneration will be determined by an inventory of the health, vigor, and species composition for the trees in each stand. Once the conditions of the overstory trees indicate the need, a regeneration harvest will be scheduled employing the appropriate silvicultural system described previously. Emphasis will be placed on making the most seamless transition from one generation to the next. The irregular shelterwood will be employed frequently in loblolly, slash and longleaf pine stands.

Emphasis will be placed on having a wide array of age classes between stands and an array of different aged trees within stands. Included in the desired array of ages will be trees and stands significantly older than those typically found on private lands.

To ensure the wide array of age classes is met, the District will separate pine stands into four different types based upon general age and condition. These four types include:

1. Regeneration (age 0–10): The site is occupied primarily by tree seedlings and saplings, herbs and shrubs. Competition from the trees has not yet resulted in any reduction in herb or shrub layer. This type begins at planting and continues until crown closure. Herbs, shrubs and grasses occupy 20%-80% of the ground. This type offers benefits to early successional wildlife species such as quail, rabbits, gopher tortoises, deer, turkeys and their predators.
2. Closed Canopy (age 11–20): Trees fully occupy the site and form a single, main canopy layer. There is little understory development due to the lack of light passing through the canopy. Where understory exists, it is dominated frequently by palmetto and/or gallberry. This type benefits fewer wildlife species but does offer bear and deer good escape cover.
3. Understory (age 21–60): The overstory density has been reduced through thinning and the understory is beginning to reinitiate. Adequate light is again available to the forest floor. Groundcover plant species and wildlife both begin to flourish again. Wildlife benefiting from this stand type include deer, turkey, quail, and gopher tortoises.
4. Older Forest Structure (age 60+): This stand type begins to develop a layered overstory. Trees are large, with diameters >12 inches. Snags will begin to appear and should be protected. The understory is diverse and healthy. Wildlife benefiting from this stand are fox squirrels, great horned owl, southeastern kestrel, turkeys, quail, gopher tortoises, red-cockaded woodpeckers, eagles, and ospreys (nesting trees).

The District will strive to keep 10–15 percent of its pine forests in type 1; 10–15 percent in type 2; 30–40 percent in type 3; and 40 percent in type 4. The present condition is shown below (Figure 3):

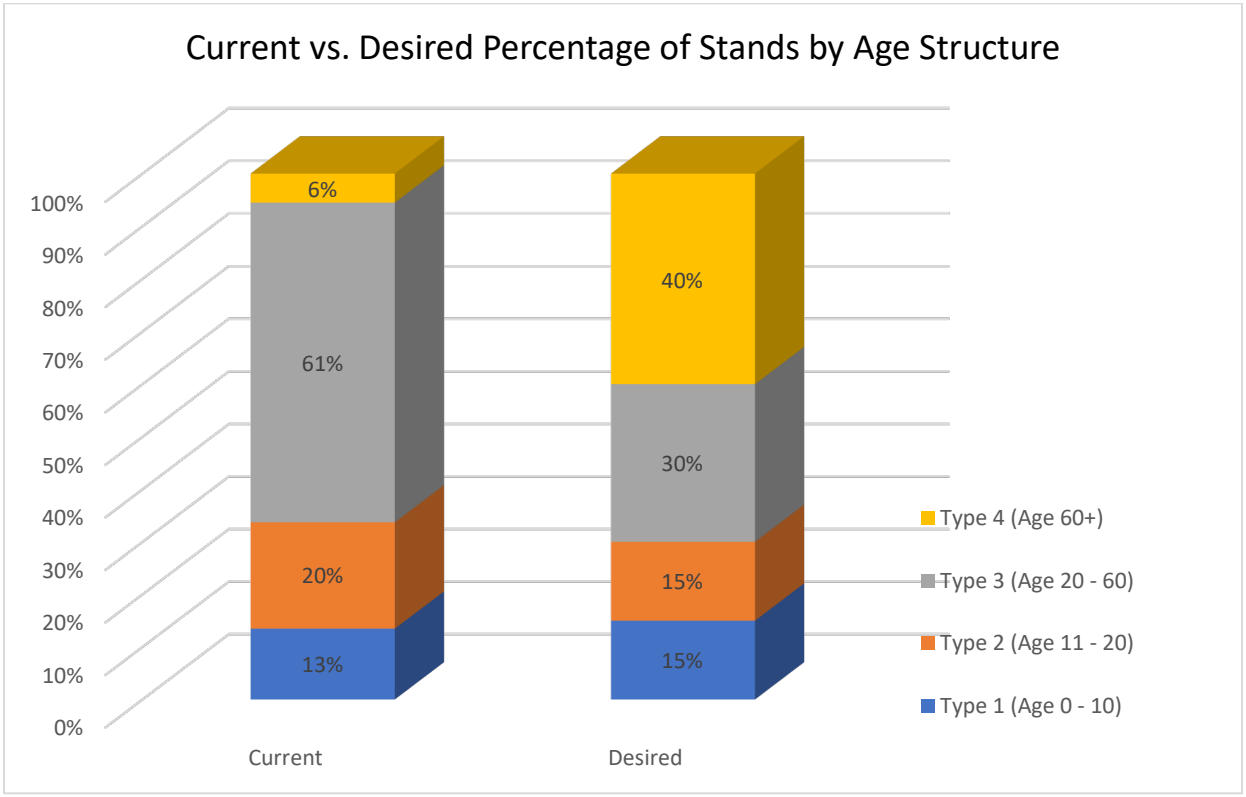

Figure 3: Current vs. Desired Percentage of Stands by Type. Updated January 2020

Sand pine management will differ from other pine types because it is adapted to an even aged environment. Sand pine characteristically grows in dense, even-aged, pure stands, which originated as a direct result of catastrophic fires or similar events. When a killing fire sweeps through a stand of cone-bearing trees, the serotinous cones (which remain tightly closed for many years unless opened by heat) open and release large quantities of seeds to naturally regenerate the area. These catastrophic fires are difficult to mimic with prescribed fire since they are difficult to control. Complete stand removal (clearcutting) is the preferred method available to mimic the natures stand replacing events. The natural cycle for stand replacing events are from 20–60 years. Sand pine stand will therefore be clearcut and regenerated on a similar cycle.

The primary forest management activities of the District will be within these pine stands.

UPLAND HARDWOODS

Currently upland hardwoods constitute 2 percent of District-managed lands. Typically, they are mesic and xeric hammocks with the dominant species being live oak. There is no ecological need for harvesting within these communities and no commercial value to be derived from harvesting live oak.

Limited areas of upland hardwoods have developed on former sand hills and flatwoods due to a lack of fire or other ownership priorities prior to acquisition. These areas can be returned to their original natural community by harvesting the overstory and planting the original specie appropriate to the site. Hardwood species encountered on such sites include turkey oak, laurel oak, bays, and sweetgum.

WETLAND HARDWOODS AND CYPRESS

As with state forests, the District has no plans to harvest timber from the swamps. However, the following may be situations where limited harvesting would offer the District benefits.

Following a catastrophic outbreak of insects, disease, or wildfire, harvesting the dead timber can create the growing space for the next generation. Most swamp species reproduce from both seed and sprouting. Removing the dead overstory will reduce the hazard of trees falling on people and young trees.

Approximately 20–30 years following some catastrophic event, the District may choose to selectively thin the hardwoods and cypress to accelerate the process of developing old-growth conditions. In a truly natural setting, the development of old-growth conditions will take 75–100 years since the trees compete with one another until the weaker individuals die. Through thinning, the number of trees can be reduced, and the growth concentrated on the remaining trees so that they become larger faster and old-growth habitat can be created earlier.

The sensitivity required to log wetland systems cannot be overly stressed. Any harvesting performed in wetlands must be carried out under the most stringent conditions to avoid damage to the site. Harvesting can only be done when rutting and damage to residual trees can be minimized. Harvesting must be closely monitored and shut down if conditions deteriorate.

This plan was approved by the Governing Board in February 2000 with charts updated January 2020

APPENDIX C: GOURD ISLAND CONSERVATION AREA FIRE MANAGEMENT PLAN

The District Fire Management Plan provides general fire management information relative to policy, procedure, and reporting. This document provides the guidelines for the implementation of prescribed fire activities on the Gourd Island Conservation Area (GICA or Property).

Introduction and Objectives

Gourd Island Conservation Area covers approximately 514 acres in St. Johns County. The Property includes two parcels and is located in numerous sections of Township 5 South, Range 28 East.

The Property is located north of Russell Simpson Road, west of I-95, west of the city of Ponte Vedra Beach, near the unincorporated area of Sampson.

Historically, fires have played a vital role in the shaping and maintenance of many of the natural communities in Florida. As such, most vegetative communities and associated wildlife are fire adapted and, in many instances, fire dependent. Conversely, the exclusion of fire from an area allows for successional changes within the natural community. Fire exclusion leads to the excessive accumulation of fuel loads, which increases the risk for catastrophic wildfires. The Property's situation within development, including smoke sensitive areas such as medical centers, schools and state and federal highways, severely limit the use of prescribed fire on GICA.

- Use mechanical fuel reduction and/or herbicide treatments as fire surrogates in areas where it is difficult to burn due to high fuel loads or smoke management concerns.
- Apply prescribed fire to natural communities when fire weather opportunities arise to mitigate smoke production in the challenging smoke management area that surrounds GICA.

The achievement of these goals requires that the Property be partitioned into manageable burn units prior, termed fire management units (FMU), to the application of prescribed fire within those units. The following sections summarize the considerations necessary for the safe and effective use of prescribed fire as a land management tool within the Property.

Disturbance Return Interval

The general frequency to which fire returns to a community type is termed its fire return interval. Some communities require frequent pyric disturbances to perpetuate themselves while others are not fire adapted and subsequently do not require fire to maintain their characteristics. Since the likelihood of prescribed fire being applied to GICA is low due to the aforementioned surrounding land use limiting smoke management options, disturbance return interval will be used to describe the maintenance activities that mimic, but not replace, the function of fire as a disturbance mechanism. These activities, which include mechanical fuel reduction, herbicide applications and timber harvests, are known as fire surrogates. The following discussion of native plant communities occurring on the Property and optimal disturbance return intervals was characterized

in part using fire return interval information from the 2010 Florida Natural Areas Inventory's *Guide to the Natural Communities of Florida* (FNAI 2010) (Table 1).

Natural Community Type	FNAI Fire/Disturbance Return Interval
Mesic Flatwoods	2–4 years
Wet Flatwoods	1–3 years in grass dominated systems; 5–7 years in shrubbier systems; 2–4 year average
Sandhill	1–3 years
Baygall	Infrequent; may burn with adjacent pyric plant communities
Basin Swamp	Infrequent; may burn with adjacent pyric plant communities
Floodplain Swamp	This is not a fire-adapted community.
Successional Hardwood Forest	This is not a fire-adapted community.

The above referenced fire return intervals relate to high quality natural communities. The fire return interval within degraded systems is variable. Prescribed fire or, more likely, fire surrogates will be applied as necessary to achieve restoration and management goals.

Mesic and wet flatwoods are the most prevalent fire-adapted natural community types found within the Property. These communities are located between the floodplain swamp and the sandhills on GICA. The disturbance return interval goal for these combined flatwoods will be 2–4 years. Several timber stands within these flatwoods are slated for thinning in the near term or have recently received mechanical fuels treatments or timber harvests. The sites where disturbance has recently occurred will be the priority for prescribed fires if the conditions arise. Disturbances will be conducted on a rotation basis, similar to prescribed fire application, so as to not treat the entire Property at one time.

The sandhill natural communities will receive disturbances on a 1–3-year interval. The sandhills are the second most prevalent natural community on GICA, located in the higher elevations of the Property. Fire is a primary driver in this natural community. Compared with flatwoods, the fuels are finer and smaller in sandhills, increasing the possibility for prescribed fire application on the Property by a lower chance of long duration, smoldering smoke production. The sandhill located in the northern portion of the Property received a pellet hexazinone application in 2020 to reduce encroaching hardwoods. A similar application should be conducted within the scope of this plan. Mechanical fuels mowing may also be incorporated into the disturbance regime. Roller drum chopping may be applied to the sandhill communities, though soil disturbance should be considered prior to application. Disturbances will be conducted on a rotation basis, similar to prescribed fire application, so as to not treat the entire Property at one time.

Disturbance management within the remaining natural communities will be limited. In the absence of prescribed fire, a disturbance within the ecotone areas will be difficult as basin swamp, baygall and floodplain swamp are wetlands and mechanical or herbicide applications can be detrimental to these natural communities' hydrology and ecology. Hand felling of trees and shrubs using brush

cutters or chainsaws to create openings may be considered in these natural communities at the discretion of the land manager.

No restoration efforts will be employed in the successional hardwood forest altered community type as these efforts would necessitate the application of prescribed fire which is unlikely to occur.

Seasonality and Type of Fire
Historically, most fires in Florida occurred in what is commonly referred to as the "growing season." The growing season usually spans from April through August. Fires during the growing season generally have significant ecological benefits as most fire-adapted flora is perpetuated by fire. Mimicking lightning ignited natural fires by implementing prescribed fire during the growing season provides benefits to natural systems by controlling shrub layers and encouraging diversity in groundcover species.

Dormant season burns, conducted from late November through mid-March, help to reduce fuel loads in overgrown areas or in areas of newly planted pines. Cooler conditions associated with dormant season burning are a consideration in areas of high fuel loads and where only minimal pine mortality is acceptable. Additionally, dormant season burning may result in fewer safety and smoke management issues due to higher fuel moisture and more consistent winds.

Any prescribed fires applied at GICA will take advantage of the weather conditions available, regardless of season. Seasonality of mechanical treatments do not appear to influence fuel loading or natural community composition. Herbicide applications shall be conducted adhering to the label of the herbicide being used.

Wildfire Policy
In the event of a wildfire, if conditions permit, suppression strategies will utilize existing fuel breaks to contain the wildfire. These fuel breaks may include previously burned areas, existing roads, trails, firelines, wetlands, and water bodies. This is only possible with the agreement of local fire rescue, Florida Forest Service, District staff, and when all the following conditions are met:

1) Fuels within the area have been managed.
2) No extreme weather conditions are present or expected.
3) There are no other wildfires that may require action.
4) Sufficient resources are available to manage the fire to containment.
5) The fire and the resulting smoke will not impact neighbors or smoke-sensitive areas.

If any of these conditions are not met, direct suppression action will be taken.

As soon as possible following a fire in which fire lines are plowed, a plan for fire line rehabilitation shall be developed and implemented.

Persons discovering arson or wildfires on the Property should report them to the Florida Forest Service, the District, or by dialing 911.

Post Burn Reports

ArcGIS Survey123 burn reports must be completed after each prescribed burn or wildfire. These reports include detailed information regarding the acreage, fuel models, staff and equipment hours, cooperator hours, contractor hours, as well as a notes section that can include information on weather (forecasted and observed), and fire behavior. The timely completion of these reports is necessary for the compilation of information relative to the entire District burn program. Additionally, these reports provide a documented account of site-specific conditions, which are helpful in the planning of future burns.

Smoke Management

A significant challenge to the implementation of any prescribed burn program is smoke management (Figure 1). Fuel loads across the Property are low to high. Accumulated fuels have the potential to produce a tremendous amount of smoke as areas are burned. The surrounding area is nearly completely developed with additional smoke sensitive infrastructure of Interstate 95 and State Road 9B.

GICA has a very limited smoke shed that is shrinking due to ongoing development, which includes a medical center currently under construction due north of the Property. Residential developments are located to the south, north, and west, as well as two schools. To the east lies I-95 and additional residential developments, including one with an artificial lagoon and beach as well as a high school. If prescribed fire is to be applied at GICA, it will be on a smaller acreage scale compared with other District properties to limit the total volume of smoke produced.

Depending on the arrangement and composition of fuels, fire spread will be through grasses and/or needle litter, the shrub layer, or logging slash. Areas within the Property having heavier shrub and mid-story fuel accumulation or logging slash can burn for long periods of time, causing additional smoke management issues.

A fire weather forecast is obtained and evaluated for suitable burning conditions and smoke management objectives. A wind direction is chosen that will transport smoke away from urbanized areas and/or pose the least possible impact on smoke-sensitive areas. When possible, the smoke plume from burns should be directed back through the property. Smoke can then mix and loft into the atmosphere over uninhabited or rural land adequately enough to minimize off-site impacts.

On burn day, the ability of smoke to mix and disperse into the atmosphere should be good. The dispersion index is a value that indicates the atmosphere's ability to "absorb and disperse" smoke. The higher the index value, the more the smoke dissipates. Dispersion indices at GICA should be above 45. Dispersions of greater than 75 will not be utilized unless other weather and site conditions mitigate expected fire behavior, such as relative humidity no lower than 50% throughout the burn period or recent burn adjacent to the fire management unit. Forecast mixing heights should be above 1,700 feet. Transport winds should be at least 9 mph to effectively minimize residual smoke. Lower transport wind speeds can be utilized if dispersion index and mixing heights are above average. Burns will be conducted with a carefully plotted wind direction to limit and/or eliminate negative impacts from smoke to neighbors and urbanized areas. Land management program managers must be consulted in planning burns that vary from the aforementioned parameters.

Fire Surrogates

Short- and long-term weather conditions and a fire management unit's proximity to urban areas become increasingly important when implementing a prescribed fire program. Should drought conditions become severe, or if smoke management becomes an insurmountable problem, the District may use fire surrogates, such as mechanical or herbicide treatments, as alternatives to prescribed fire. These surrogates can also be used to facilitate the reintroduction of prescribed fire in areas of heavy fuel loading from lack of contemporary fire history.

Some of the pyric plant communities within the Property are dominated by pine plantations. An integral component to the implementation of a successful prescribed fire program within the Property is the harvesting of planted pine. Harvesting of pine trees will provide safer conditions for prescribed fire staff and decrease the potential for fire-related mortality to the remaining pines and other desirable vegetation.

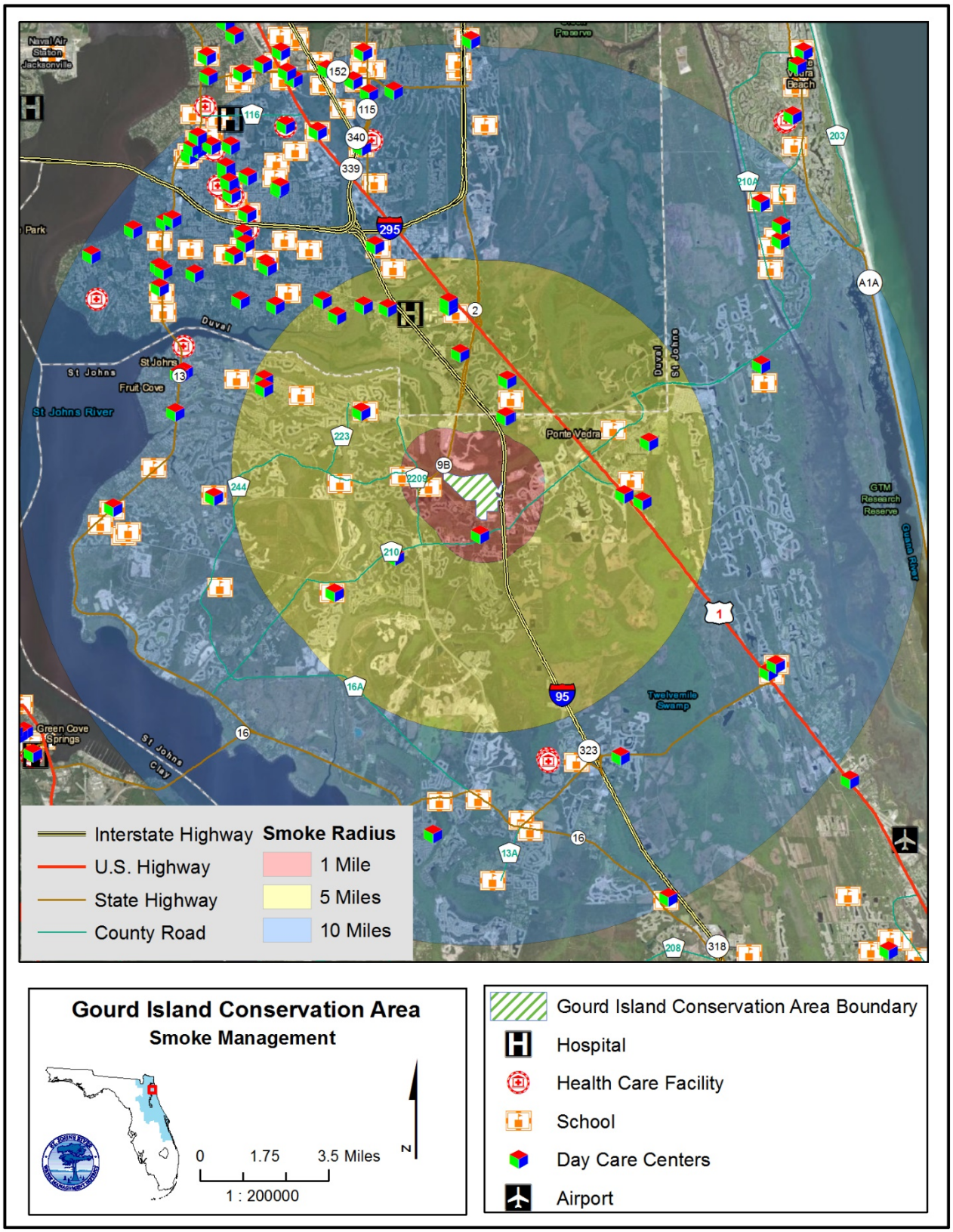

Figure 1: Fire management – smoke sensitive areas.

Hazards
Common hazards include heat stress, venomous snakes, trip hazards or falling trees. Individual prescriptions address the hazards to consider when burning each unit and are discussed during the pre-burn briefing.

Legal Considerations
Only burn managers certified by Florida Forest Service will approve the unit prescriptions and must be on site while the burn is being conducted. Certified burn managers adhering to the requirements of Section 590.125, Florida Statutes, are protected from liability for damage or injury caused by fire or resulting smoke, unless gross negligence is proven.

Fire Management Units
Fire management units (FMU) have been delineated on the Property. Where logical, the District used existing roads and landscape features to delineate fire management units. Occasionally, multiple FMUs with similar fire needs will be burned simultaneously, and roads and natural landscape features provide a break in fuels so that staff may burn smaller areas than initially planned if needed.

Ideally, District staff thoroughly address and describe each fire management unit in terms of its fire management needs. All FMUs are categorized into one of several fuel model (FM) descriptions. The 13 standard fuel models (as described in Hal E. Anderson's *Aids to Determining Fuel Models for Estimating Fire Behavior*) were used as a basis for this categorization. The factors considered in determining each FM are amount, composition and arrangement of available fuels within units, predicted fire behavior within each unit (under conditions acceptable to implement a prescribed burn), and resources necessary to regain management of a fire in the event of an escaped prescribed fire. District staff anticipates the change of vegetative assemblages over time due to growth and/or restoration and understand that fuel characteristics, models, and resulting fire behavior will also change. This may predicate the editing of FMU boundaries.

APPENDIX D: GOURD ISLAND CONSERVATION AREA SPECIES LIST

Plants

Scientific Name	Common Name	Species Status		
		USFWS	FWC	FNAI
Aesculus pavia	red buckeye			
Agalinis fasciculata	beach false foxglove			
Agalinis purpurea	purple false foxglove			
Agarista populifolia	Florida hobblebush			
Aletris obovata	white colic-root			
Arachis pintoi	pinto peanut			
Arisaema triphyllum	Florida jack-in-the-pulpit			
Arnoglossum floridanum	Florida indian plantain			
Asclepias cinerea	Carolina milkweed			
Asclepias humistrata	sandhill milkweed			
Asclepias perennis	aquatic milkweed			
Asimina angustifolia	slimleaf pawpaw			
Asimina incana	woolly pawpaw			
Asimina obovata	bigflower pawpaw			
Axonopus furcatus	big carpetgrass			
Baccharis glomeruliflora	silverling			
Baccharis halimifolia	groundsel tree			
Balduina uniflora	oneflower honeycombhead			
Bejaria racemosa	tarflower			
Berlandiera pumila	soft greeneyes			
Bidens alba	white beggarticks			
Bidens mitis	smallfruit beggarticks			
Bignonia capreolata	cross vine			
Borealiamericanae	eastern american blue violets			
Buchnera floridana	Florida bluehearts			
Callicarpa americana	American beautyberry			
Canna flaccida	golden canna			
Cardamine bulbosa	bulbous cress			
Calydorea caelestina	Bartram's ixia	N	E	G2G3/S2 S3
Carex alata	broadwing sedge			
Carex elliottii	Elliott's sedge			
Carex gigantea	giant sedge			
Carex leptalea	bristle-stalked sedge			
Carex lupuliformis	false hop sedge			
Carex stipata	awl-fruited sedge			

Carphephorus corymbosus	coastalplain chaffhead			
Carpinus caroliniana	American hornbeam			
Carya glabra	pignut hickory			
Cenchrus echinatus	southern sandbur			
Centella erecta	American coinwort			
Centrosema arenicola	pineland butterfly pea			
Centrosema virginianum	butterfly pea			
Chamaecrista fasciculata	partridge pea			
Chlorophyta	green algae			
Chrysopsis mariana	Maryland golden-aster			
Chrysopsis scabrella	coastalplain goldenaster			
Cirsium horridulum	bristle thistle			
Clematis crispa	swamp leatherflower			
Clinopodium brownei	Browne's savory			
Cnidoscolus stimulosus	spurge nettle			
Commelina erecta	whitemouth dayflower			
Commelina virginica	Virginia dayflower			
Conoclinium coelestinum	blue mistflower			
Coreopsis gladiata	coastal plain tickseed			
Coreopsis leavenworthii	Leavenworth's tickseed			
Cornus foemina	stiff dogwood			
Crataegus crus-galli	cockspur hawthorn			
Crataegus marshallii	parsley hawthorn			
Crotalaria rotundifolia	rabbitbells			
Cyperus virens	green flatsedge			
Cyrilla racemiflora	swamp titi			
Dalea pinnata	summer farewell			
Decumaria barbara	woodvamp			
Dichanthelium commutatum	variable witchgrass			
Dichanthelium ensifolium	small-leaved witchgrass			
Dichanthelium laxiflorum	open-flower witchgrass			
Dichanthelium tenue	white-edged witchgrass			
Dichondra carolinensis	Carolina ponysfoot			
Digitaria villosa	shaggy crabgrass			
Dioscorea floridana	Florida yam			
Ditrysinia fruticosa	gulf sebastian-bush			
Drosera capillaris	pink sundew			
Dryopteris ludoviciana	southern wood fern			
Dyschoriste humistrata	swamp twinflower			
Dyschoriste oblongifolia	oblongleaf snakeherb			
Dysphania ambrosioides	Mexican tea			
Eleocharis tuberculosa	long-tubercled spikerush			
Elephantopus elatus	tall elephant's-foot			

Elephantopus nudatus	smooth elephant's foot			
Elytraria caroliniensis	Carolina scalystem			
Emilia sonchifolia	lilac tasselflower			
Epidendrum conopseum	greenfly orchid			
Eragrostis secundiflora	red lovegrass			
Erechtites hieraciifolius	American burnweed			
Eriocaulon compressum	flattened pipewort			
Eryngium aromaticum	aromatic eryngium			
Eryngium baldwinii	Baldwin's eryngo			
Eryngium yuccifolium	rattlesnake master			
Erythrina herbacea	coral bean			
Eubotrys racemosa	fetterbush			
Eupatorium compositifolium	coastal dog fennel			
Eupatorium mohrii	Mohr's thoroughwort			
Eupatorium rotundifolium	round-leaved boneset			
Euthamia caroliniana	slender goldentop			
Fraxinus profunda	pumpkin ash			
Galactia elliottii	Elliott's milkpea			
Galium tinctorium	stiff marsh bedstraw			
Gamochaeta pensylvanica	Pennsylvania cudweed			
Gaylussacia dumosa	dwarf huckleberry			
Gaylussacia nana	dwarf dangleberry			
Gelsemium sempervirens	yellow jessamine			
Gleditsia aquatica	water locust			
Gordonia lasianthus	loblolly bay			
Gratiola virginiana	Virginia hedge-hyssop			
Halesia carolina	Carolina silverbell			
Hamamelis virginiana	American witch-hazel			
Hieracium gronovii	hairy hawkweed			
Houstonia procumbens	roundleaf bluet			
Hydrangea barbara	woodvamp			
Hydrocotyle prolifera	whorled marshpennywort			
Hydrocotyle verticillata	whorled pennywort			
Hymenocallis duvalensis	whitesands spiderlily			
Hypericum brachyphyllum	coastal plain St. John's-wort			
Hypericum galioides	bedstraw St. John's-wort			
Hypericum suffruticosum	pineland St. John's-wort			
Hypericum tetrapetalum	fourpetal St. John's-wort			
Hypericum virginicum	Virginia marsh St. John's-wort			
Hypericum walteri	greater marsh St. John's-wort			
Hypoxis curtissii	swamp star grass			
Hyptis alata	musky mint			

Ilex glabra	gallberry			
Ilex myrtifolia	myrtle dahoon			
Indigofera caroliniana	Carolina indigo			
Iris savannarum	prairie iris			
Iris virginica	southern blue flag			
Juncus coriaceus	leathery rush			
Juncus marginatus	grass-leaved rush			
Juniperus virginiana silicicola	southern redcedar			
Justicia ovata var. ovata	looseflower waterwillow			
Lachnocaulon anceps	common bogbuttons			
Lechea mucronata	hairy pinweed			
Lepidium virginicum	Virginia pepperweed			
Lespedeza hirta	hairy lespedeza			
Liatris gracilis	slender blazing-star			
Liatris laevigata	clusterleaf blazing star			
Liatris pauciflora	fewflower blazing star			
Liatris tenuifolia	shortleaf blazing star			
Lindernia monticola	Piedmont false-pimpernel			
Liquidambar styraciflua	sweetgum			
Liriodendron tulipifera	tulip tree			
Lobelia cardinalis	cardinal flower			
Lobelia feayana	bay lobelia			
Lobelia glandulosa	glade lobelia			
Ludwigia linearis	narrowleaf primrose-willow			
Ludwigia maritima	seaside primrose-willow			
Ludwigia microcarpa	smallfruit primrose-willow			
Ludwigia palustris	water purslane			
Ludwigia virgata	savannah primrose-willow			
Lupinus diffusus	skyblue lupine			
Lupinus villosus	lady lupine			
Lycopodiella alopecuroides	foxtail bog clubmoss			
Lycopodiella appressa	appressed bog clubmoss			
Lygodesmia aphylla	rose rush			
Lyonia ferruginea	rusty staggerbush			
Lyonia fruticosa	coastal plain staggerbush			
Lyonia ligustrina var. foliosiflora	maleberry			
Lyonia lucida	fetterbush lyonia			
Lythrum alatum	winged loosestrife			
Lythrum alatum lanceolatum	winged lythrum			
Lythrum curtissii	Curtiss' loosestrife	UR	E	G2/S2
Macroptilium lathyroides	phasey bean			
Macrothelypteris torresiana	mariana maiden fern			

Magnolia virginiana	sweetbay magnolia			
Melanthera nivea	snow squarestem			
Micranthemum umbrosum	dwarf helzine			
Mikania cordifolia	Florida keys hempvine			
Mimosa microphylla	littleleaf sensitive-briar			
Mimosa quadrivalvis floridana	Florida sensitive briar			
Mitchella repens	partridgeberry			
Mitreola petiolata	lax hornpod			
Morella cerifera	wax myrtle			
Murdannia nudiflora	nakedstem dewflower			
Nephrolepis cordifolia	fishbone fern			
Nyssa sylvatica	black tupelo			
Oenothera laciniata	cutleaf evening primrose			
Oenothera simulans	southern beeblossom			
Onoclea sensibilis	sensitive fern			
Orthochilus ecristatus	giant orchid			
Osmunda spectabilis	American royal fern			
Osmundastrum cinnamomeum	cinnamon fern			
Palhinhaea cernua	staghorn clubmoss			
Paspalum floridanum	Florida paspalum			
Pelazoneuron kunthii	widespread maiden fern			
Peltandra virginica	green arrow arum			
Persea palustris	swamp bay			
Persicaria punctata	dotted knotweed			
Photinia fraseri	red tip photinia			
Phyla nodiflora	turkey tangle frogfruit			
Physostegia leptophylla	slenderleaf false dragonhead			
Pinguicula caerulea	blue butterwort			
Pinguicula pumila	small butterwort			
Pinus clausa	sand pine			
Pinus elliottii	slash pine			
Pinus palustris	longleaf pine			
Piptochaetium avenaceum	blackseed needlegrass			
Piriqueta cistoides	pitted stripeseed			
Pityopsis graminifolia	narrowleaf silkgrass			
Pleopeltis michauxiana	resurrection fern			
Pluchea longifolia	longleaf camphorweed			
Polygala grandiflora	sweet pea shrub			
Polygala incarnata	pink milkwort			
Polygala lutea	orange milkwort			
Polygala nana	candyroot			
Polygala ramosa	low pinebarren milkwort			

Polygonella gracilis	tall jointweed			
Pontederia cordata	pickerelweed			
Proserpinaca palustris	marsh mermaidweed			
Prunus serotina	black cherry			
Pseudognaphalium obtusifolium	sweet everlasting			
Ptelea trifoliata	common hoptree			
Pterocaulon pycnostachyum	dense-spike blackroot			
Ptilimnium	mock bishopweeds			
Pyrrhopappus carolinianus	Carolina desert-chicory			
Quercus geminata	sand live oak			
Quercus incana	bluejack oak			
Quercus laurifolia	swamp laurel oak			
Quercus michauxii	swamp chestnut oak			
Quercus nigra	water oak			
Rhexia mariana	Maryland meadowbeauty			
Rhexia nuttallii	nuttall's meadowbeauty			
Rhexia petiolata	short-stemmed meadowbeauty			
Rhexia virginica	virginia meadowbeauty			
Rhododendron canescens	sweet pinxter azalea			
Rhynchospora cephalantha	bunched beaksedge			
Rhynchospora colorata	whitetop sedge			
Rhynchospora inundata	narrowfruit horned beaksedge			
Rhynchospora microcephala	bunched beaksedge			
Rhynchospora miliacea	millet beaksedge			
Rubus cuneifolius	sand blackberry			
Rubus trivialis	southern dewberry			
Rudbeckia hirta	black-eyed susan			
Ruellia caroliniensis	Carolina ruellia			
Sabal plametto	sabal palm			
Sabal minor	dwarf palmetto			
Sabatia brevifolia	shortleaf rose gentian			
Sabatia calycina	coastal rose gentian			
Sabatia difformis	lanceleaf rose-gentian			
Sagittaria graminea	grass-leaved arrowhead			
Salvia lyrata	lyreleaf sage			
Sambucus canadensis	American black elderberry			
Saururus cernuus	lizard's tail			
Sceptridium biternatum	sparse-lobed grapefern			
Scutellaria integrifolia	helmet skullcap			
Serenoa repens	saw palmetto			
Seymeria cassioides	yaupon blacksenna			

Sideroxylon reclinatum	Florida bully			
Sideroxylon reclinatum reclinatum	common Florida bully			
Sisyrinchium	blue-eyed grasses			
Sisyrinchium nashii	Nash's blue-eyed grass			
Smilax walteri	coral greenbrier			
Solanum carolinense	Carolina horsenettle			
Solidago altissima pluricephala	southern late goldenrod			
Solidago chapmanii	Chapman's goldenrod			
Solidago fistulosa	pine-barren goldenrod			
Solidago virgata	wand goldenrod			
Sonchus oleraceus	common sow-thistle			
Sorghastrum secundum	lopsided indiangrass			
Spermacoce remota	woodland false buttonweed			
Sphagnum magellanicum	sphagnum moss			
Spiranthes odorata	marsh ladies' tresses			
Spiranthes praecox	grass-leaved ladies' tresses			
Spiranthes vernalis	spring ladies' tresses			
Stachys floridana	Florida hedgenettle			
Stillingia sylvatica	queen's delight			
Stylisma angustifolia	narrowleaf coastalplain dawnflower			
Styrax americanus	American snowbell			
Symphyotrichum adnatum	scaleleaf aster			
Symphyotrichum dumosum	bushy aster			
Symphyotrichum elliottii	Elliott's aster			
Symphyotrichum lateriflorum	calico aster			
Symphyotrichum simmondsii	Simmonds' aster			
Syngonanthus flavidulus	yellow hatpins			
Taxodium acsendens	pond cypress			
Taxodium distichum	bald cypress			
Tephrosia chrysophylla	scurf hoarypea			
Teucrium canadense	American germander			
Thelypteridoideae	maiden ferns			
Thymophylla tenuiloba	bristleleaf pricklyleaf			
Tillandsia sp.	airplants			
Tillandsia bartramii	Bartram's airplant			
Torenia crustacea	brittle false pimpernel			
Toxicodendron radicans	eastern poison ivy			
Trichostema dichotomum	blue curls			
Tridens ambiguus	pine barren fluffgrass			
Tridens flavus	purpletop tridens			

Ulmus alata	winged elm			
Ulmus americana	American elm			
Utricularia purpurea	purple bladderwort			
Utricularia radiata	small swollen bladderwort			
Utricularia subulata	zigzag bladderwort			
Vaccinium fuscatum	black highbush blueberry			
Vaccinium stamineum	deerberry			
Vaccinium stamineum caesium	Florida deerberry			
Viburnum obovatum	Walter's viburnum			
Viola palmata	palm violet			
Viola primulifolia	primrose-leaved violet			
Viola septemloba	southern coastal violet			
Viola vittata	southern water violet			
Vitis aestivalis	summer grape			
Woodwardia virginica	Virginia chainfern			
Xyris ambigua	coastalplain yellow-eyed grass			
Xyris caroliniana	Carolina yellow-eyed grass			
Xyris difformis	bog yellow-eyed grass			
Xyris jupicai	Richard's yellow-eyed grass			
Xyris platylepis	tall yellow-eyed grass			
Yucca filamentosa	common yucca			
Yucca flaccida	weak-leaf yucca			

Invasive Plants

Includes both Florida Invasive Species Council (FISC) Category I (natural community altering) and Category II (significant population expansion but not yet natural community altering) plants.

Scientific Name	**Common Name**
Albizia julibrissin	silk tree
Cinnamomum camphora	camphortree
Imperata cylindrica	cogongrass
Lygodium japonicum	Japanese climbing fern
Panicum repens	torpedo grass
Triadica sebifera	Chinese tallow

Birds

Scientific Name	**Common Name**	**Species Status**		
		USFWS	**FWC**	**FNAI**
Accipiter cooperii	Cooper's Hawk			

Agelaius phoeniceus	Red-winged Blackbird			
Aix sponsa	Wood Duck			
Anas platyrhynchos	Mallard			
Anhinga anhinga	Anhinga			
Antigone canadensis	Sandhill Crane			
Antrostomus carolinensis	Chuck-will's-widow			
Archilochus colubris	Ruby-throated Hummingbird			
Ardea alba	Great Egret			
Ardea herodias	Great Blue Heron			
Baeolophus bicolor	Tufted Titmouse			
Bombycilla cedrorum	Cedar Waxwing			
Branta canadensis	Canada Goose			
Bubulcus ibis	Western Cattle Egret			
Buteo jamaicensis	Red-tailed Hawk			
Buteo lineatus	Red-shouldered Hawk			
Cardinalis cardinalis	Northern Cardinal			
Cathartes aura	Turkey Vulture			
Catharus guttatus	Hermit Thrush			
Catharus minimus	Gray-cheeked Thrush			
Catharus ustulatus	Swainson's Thrush			
Chaetura pelagica	Chimney Swift			
Charadrius vociferus	Killdeer			
Chordeiles minor	Common Nighthawk			
Coccyzus americanus	Yellow-billed Cuckoo			
Colaptes auratus	Northern Flicker			
Colinus virginianus	Northern Bobwhite			
Columbina passerina	Common Ground Dove			
Contopus virens	Eastern Wood-Pewee			
Coragyps atratus	Black Vulture			
Corthylio calendula	Ruby-crowned Kinglet			
Corvus brachyrhynchos	American Crow			
Corvus ossifragus	Fish Crow			
Cyanocitta cristata	Blue Jay			
Dendrocygna autumnalis	Black-bellied Whistling-Duck			
Dryobates pubescens	Downy Woodpecker			
Dryocopus pileatus	Pileated Woodpecker			
Dumetella carolinensis	Gray Catbird			
Egretta caerulea	Little Blue Heron	N	T	G5/S4
Egretta thula	Snowy Egret	N	N	G5/S3
Elanoides forficatus	Swallow-tailed Kite	N	N	G5/S2
Eudocimus albus	White Ibis	N	N	G5/S4

Falco sparverius	American Kestrel			
Gallinula galeata	Common Gallinule			
Geothlypis trichas	Common Yellowthroat			
Haemorhous mexicanus	House Finch			
Haliaeetus leucocephalus	Bald Eagle	N	N	G5/S3
Helmitheros vermivorum	Worm-eating Warbler	N	N	G5/S1
Hirundo rustica	Barn Swallow			
Hylocichla mustelina	Wood Thrush			
Ictinia mississippiensis	Mississippi Kite			
Lanius ludovicianus	Loggerhead Shrike			
Larus delawarensis	Ring-billed Gull			
Leiothlypis celata	Orange-crowned Warbler			
Leucophaeus atricilla	Laughing Gull			
Lophodytes cucullatus	Hooded Merganser			
Melanerpes carolinus	Red-bellied Woodpecker			
Melanerpes erythrocephalus	Red-headed Woodpecker			
Meleagris gallopavo	Wild Turkey			
Melospiza melodia	Song Sparrow			
Mimus polyglottos	Northern Mockingbird			
Mniotilta varia	Black-and-white Warbler			
Mycteria americana	Wood Stork	DL	FT	G4/S2
Myiarchus crinitus	Great Crested Flycatcher			
Nannopterum auritum	Double-crested Cormorant			
Pandion haliaetus	Osprey	N	N	G5/S3S4
Parkesia motacilla	Louisiana Waterthrush	N	N	G5/S2
Parkesia noveboracensis	Northern Waterthrush			
Passerculus sandwichensis	Savannah Sparrow			
Peucaea aestivalis	Bachman's Sparrow	N	N	G3/S3
Pheucticus ludovicianus	Rose-breasted Grosbeak			
Pipilo erythrophthalmus	Eastern Towhee			
Piranga rubra	Summer Tanager			
Podilymbus podiceps	Pied-billed Grebe			
Poecile carolinensis	Carolina Chickadee			
Polioptila caerulea	Blue-gray Gnatcatcher			
Progne subis	Purple Martin			
Protonotaria citrea	Prothonotary Warbler			
Quiscalus major	Boat-tailed Grackle			
Quiscalus quiscula	Common Grackle			
Sayornis phoebe	Eastern Phoebe			
Seiurus aurocapilla	Ovenbird			

Setophaga americana	Northern Parula			
Setophaga caerulescens	Black-throated Blue Warbler			
Setophaga castanea	Bay-breasted Warbler			
Setophaga coronata	Yellow-rumped Warbler			
Setophaga dominica	Yellow-throated Warbler			
Setophaga magnolia	Magnolia Warbler			
Setophaga palmarum	Palm Warbler			
Setophaga pinus	Pine Warbler			
Setophaga ruticilla	American Redstart	N	N	G5/S2
Setophaga striata	Blackpoll Warbler			
Setophaga tigrina	Cape May Warbler			
Sialia sialis	Eastern Bluebird			
Sitta pusilla	Brown-headed Nuthatch			
Sphyrapicus varius	Yellow-bellied Sapsucker			
Spinus tristis	American Goldfinch			
Spizella passerina	Chipping Sparrow			
Strix varia	Barred Owl			
Tachycineta bicolor	Tree Swallow			
Thryothorus ludovicianus	Carolina Wren			
Toxostoma rufum	Brown Thrasher			
Troglodytes aedon	House Wren			
Turdus migratorius	American Robin			
Tyrannus tyrannus	Eastern Kingbird			
Vireo flavifrons	Yellow-throated Vireo			
Vireo griseus	White-eyed Vireo			
Vireo olivaceus	Red-eyed Vireo			
Vireo solitarius	Blue-headed Vireo			
Zenaida macroura	Mourning Dove			

Reptiles

Scientific Name	**Common Name**	**Species Status**		
		USFWS	**FWC**	**FNAI**
Agkistrodon conanti	Florida cottonmouth			
Anolis carolinensis	green anole			
Anolis sagrei	brown anole			
Aspidoscelis sexlineatus	six-lined racerunner			
Coluber constrictor	black racer			
Crotalus adamanteus	eastern diamondback rattlesnake	UR	N	S3/G3
Deirochelys reticularia	chicken turtle			
Gopherus polyphemus	gopher tortoise	N	T	G3/S3

Kinosternon baurii	striped mud turtle			
Liodytes alleni	striped swamp snake			
Micrurus fulvius	harlequin coral snake			
Nerodia fasciata pictiventris	Florida watersnake			
Opheodrys aestivus	rough green snake			
Pantherophis alleghaniensis	eastern rat snake			
Pantherophis guttata	corn snake			
Pseduemys nelsoni	Florida redbelly turtle			
Pseduemys peninsularis	peninsula cooter			
Sceloporus undulatus	eastern fence Lizard			
Sistrurus miliarius barbouri	dusky pygmy rattlesnake			
Terrapene carolina bauri	Florida box turtle			
Thamnophis sirtalis sirtalis	eastern garter snake			

Amphibians

Scientific Name	**Common Name**	**Species Status**		
		USFWS	**FWC**	**FNAI**
Acris gryllus	southern cricket frog			
Anaxyrus quercicus	oak toad			
Anaxyrus terrestris	southern toad			
Hyla cinerea	green Treefrog			
Hyla crucifer	spring peeper			
Hyla femoralis	pinewoods Treefrog			
Hyla gratiosa	barking Treefrog			
Hyla squirella	squirrel Treefrog			
Lithobates sphenocephalus	southern leopard frog			
Pseudacris ocularis	little grass frog			

Fish

Scientific Name	**Common Name**	**Species Status**		
		USFWS	**FWC**	**FNAI**
Aphredoderus sayanus	pirate perch			
Elassoma sp.	pygmy sunfish			
Etheostoma sp.	darter (genus)			

Gambusia holbrooki	eastern mosquitofish			
Heterandria formosa	least killifish			
Hoplosternum littorale	brown hoplo			
Lepomis sp.	sunfish (genus)			
Notropis sp.	shiner (genus)			
Noturus sp.	madtom (genus)			
Poecilia latipinna	sailfin molly			

Mammals

Scientific Name	**Common Name**	**Species Status**		
		USFWS	**FWC**	**FNAI**
Dasypus novemcinctus	nine-banded armadillo			
Dedelphis virginiana	opossum			
Myotis austroriparius	southeastern myotis	N	N	G4/S3
Odocoileus virginianus	white-tailed deer			
Procyon lotor	racoon			
Sciurus carolinensis	eastern gray squirrel			
Sus scrofa	feral hog			
Sylvilagus floridanus	eastern cottontail rabbit			

Invertebrates

Scientific Name	**Common Name**	**Species Status**		
		USFWS	**FWC**	**FNAI**
Acmaeodera pulchella	flat-headed baldcypress sapwood beetle			
Anisomorpha buprestoides	southern two-striped walkingstick			
Anisoptera sp.	dragonflies			
Aphididae sp.	aphids			
Aptenopedes sphenarioides	linear-winged grasshopper			
Arctiini sp.	tiger moths			
Argyrostrotis flavistriaria	yellow-lined chocolate moth			
Arphia granulata	southern yellowwinged grasshopper			
Ascaloptynx appendiculata	owlfly			
Atalopedes huron	huron sachem			
Atlides halesus	great purple hairstreak			
Atteva aurea	ailanthus webworm moth			

Augochlora pura	pure green sweat bee			
Battus philenor	pipevine swallowtail			
Bombus pensylvanicus	American bumble bee			
Calopteryx maculata	ebony jewelwing			
Canthon sp.	dung rollers			
Carynota maculata	treehopper			
Celithemis eponina	halloween pennant			
Chortophaga australior	southern green-striped grasshopper			
Coleophora xyridella	unmaned moth			
Cuerna costalis	lateral-lined sharpshooter			
Datana major	azalea caterpillar moth			
Epicauta batesii	blister beetle			
Epicauta heterodera	blister beetle			
Epimecis sp.	moths			
Erynnis zarucco	zarucco duskywing			
Euphoria sepulcralis	dark flower scarab			
Eurema daira	barred yellow			
Eurytides marcellus	zebra swallowtail			
Euschistus	brown stink bugs			
Gelis sp.	ichneumon wasps			
Harmonia axyridis	asian lady beetle			
Hemiargus ceraunus	ceraunus blue			
Heraclides cresphontes	eastern giant swallowtail			
Hermeuptychia sosybius	Carolina satyr			
Junonia coenia	common buckeye			
Leptoglossus phyllopus	eastern leaf-footed bug			
Leptysma marginicollis	cattail toothpick grasshopper			
Lethe portlandia	southern pearly-eye			
Megisto cymela viola	viola's wood-satyr			
Neoscapteriscus vicinus	tawny mole cricket			
Nephrotoma	tiger crane flies			
Orsilochides guttata	shield-backed bug			
Papilio glaucus	eastern tiger swallowtail			
Papilio palamedes	palamedes swallowtail			
Papilio troilus	spicebush swallowtail			
Parrhasius m-album	white m hairstreak			
Phanaeus igneus	scarab beetle			
Phyciodes phaon	phaon crescent			
Phyciodes tharos	pearl crescent			
Phymata mystica	unamed ambush bug			

Platydracus sp.	rove beetle			
Polites vibex	whirlabout			
Procambarus paeninsulanus	peninsula crayfish			
Procambarus pictus	Black Creek crayfish	N	T	G2/S2
Proctacanthus sp.	robber fly			
Pyrausta tyralis	coffee-loving pyrausta moth			
Rivula propinqualis	spotted grass moth			
Scarabaeinae sp.	dung beetles			
Schistocerca alutacea	leather-colored bird grasshopper			
Schistocerca americana	American bird grasshopper			
Schistocerca damnifica	mischievous bird grasshopper			
Scudderia sp.	scudder's bush katydids			
Spharagemon marmorata picta	southern marbled grasshopper			
Stenacris vitreipennis	glassy-winged toothpick grasshopper			
Strangalia sexnotata	six-spotted flower longhorn beetle			
Strymon melinus	gray hairstreak			
Thorybes pylades	northern cloudywing			
Tipuloidea sp.	typical crane flies			
Toxomerus floralis	Florida calligrapher			
Trichiotinus sp.	bee-like flower scarabs			
Ululodes	split-eyed owlfly			
Uresiphita reversalis	genista broom moth			
Utetheisa ornatrix	ornate bella moth			

FNAI GLOBAL RANKING

G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.

G2 = Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.

G3 = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.

G4 = Apparently secure globally (may be rare in parts of range).

G5 = Demonstrably secure globally.

G#T# = Rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1).

FNAI STATE RANKING
S1 = Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
S2 = Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
S3 = Either very rare and local in Florida (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
S4 = Apparently secure in Florida (may be rare in parts of range).
S5 = Demonstrably secure in Florida.

FEDERAL LEGAL STATUS
C = Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened.
E = Endangered: species in danger of extinction throughout all or a significant portion of its range.
T = Threatened: species likely to become Endangered within the foreseeable future throughout all or significant portion of its range.
SAT = Treated as threatened due to similarity of appearance to a species which is federally listed such that enforcement personnel have difficulty in attempting to differentiate between the listed and unlisted species.
PE = Proposed for listing as Endangered species.
PT = Proposed for listing as Threatened species.
SC = Not currently listed but considered a "species of concern" to USFWS.
N = Not currently listed, nor currently being considered for listing as Endangered or Threatened.

STATE LEGAL STATUS
Animals:
FT(S/A) = Threatened due to similarity of appearance
FEL = **L**isted as Endangered Species at the Federal level by the USFWS
FT = Listed as Threatened Species at the Federal level by the USFWS
ST = State population listed as Threatened by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.
SSC = Listed as a Species of Special Concern by the FFWCC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species.
N = Not currently listed, nor currently being considered for listing.
Plants:
E = Endangered: species of plants native to Florida that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue; includes all species determined to be endangered or threatened pursuant to the U.S. Endangered Species Act.

T = Threatened: species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in number as to cause them to be Endangered.
N = Not currently listed, nor currently being considered for listing.