Murphy Creek Conservation Area

Land Management Plan
Governing Board Approved
May 11, 2010

Murphy Creek Conservation Area

Land Management Plan Summary

Management Area Size: 4,755 acres

Dates of Acquisition: Acquisition of parcels within the Murphy Creek Conservation Area (MCCA) began in December 1987.

Date of Plan: May 2010
Date of Previous Plan: July 2004
Major Basin: Lower St. Johns River **Planning Basin:** South Mainstem Unit Crescent Lake

This management plan includes the addition of both the Horseshoe Point Conservation Area and the Seven Sisters Conservation Area into the Murphy Creek Conservation Area. This plan is a revision of the July 2004 plan, which addressed each conservation area separately.

Location: The conservation area is located in Putnam County between the city of Palatka and Satsuma and is situated along the shores of the St. Johns River and Murphy Creek.

Funding Source: The acquisition funding sources for the conservation area includes Save Our Rivers, ad valorem, and mitigation donation.

Management Partners: The District serves as lead manager for the entire conservation area.

Key Resource Issues:

Resource Management Issues:

At the time of acquisition, portions of the conservation area were in pine plantation. The District will utilize a combination of harvesting, mechanical vegetation management, herbicide treatments, and prescription burning to encourage optimal forest health.

Upland natural communities not utilized in silviculture (sandhill, scrub, scrubby flatwoods, and mesic flatwoods) have suffered from prolonged fire exclusion and land clearing activities that occurred prior to public acquisition. Restoration objectives for these areas include mowing, chopping, overstory oak removal, sand pine removal, selective herbicide treatments, and the reintroduction of prescribed fire.

- **Water Resources** – Water resources are largely undisturbed, most protection was accomplished with acquisition.
- **Fire Management** – Implementation of prescribed burns occur in accordance with annual burn plans. A comprehensive fire management plan has been written for the conservation area.
- **Forest Management** – Forest management activities will include harvest operations of both pines and hardwoods, pine planting, monitoring of tree disease and insect infestation, and the implementation of prescribed fire and herbicide treatments.

- **Wildlife** – The conservation area provides habitat for numerous wildlife species including the Florida gopher tortoise *(Gopherus polyphemus*), a state listed species. Restoration activities within the conservation area will improve burrowing and foraging habitat for this species.
- **Exotics** – Invasive exotic pest plant and animal species occur on the property. The District regularly monitors for the presence of invasive plants and animals and implements appropriate control action.
- **Cultural and Historical Resources** – A review of the Department of State, Division of Historical Resources indicates 14 known cultural sites within the boundaries of the conservation area.

Key Land Use/Recreation Issues: The Murphy Creek Conservation Area includes one public parking area with trailhead and kiosk. A boat dock provides public access from the water to the Murphy Island. The MCCA is open to the public for primitive camping, group camping, bicycling, hiking, and wildlife viewing. Portions of the conservation area have limited public access because they are not served by public roads.

Land Use Management Issues:

- **Access** – Two public access points (one parking area and one boat dock) are located on the MCCA.
- **Recreation Use** – The MCCA is open to the public for primitive camping, group camping, hiking, bicycling, and wildlife viewing.
- **Security** – Maintenance of fence lines, the parking area, gates, and locks is conducted. The District maintains contact with local law enforcement and a private security firm for any potential security needs.

Administration:

- **Acquisition** – Although no parcels are uniquely identified, the District may consider purchasing parcels near the conservation area that become available and that will aid in the conservation of water resources within the Lower St. Johns River basin. Additionally, the District may pursue acquisition of small parcels or property exchanges with neighbors to improve and provide additional access to the conservation area.
- **Leases, Easements, Special Use Authorizations, and Agreements**- The District administers the following leases, agreements, easements, special use authorizations (SUAs) and concessions:
    - An SUA for the purposes of tree removal associated with sandhill habitat restoration/enhancement for the benefit of the Florida gopher tortoise.
    - An SUA for the removal of feral hogs.
    - An SUA for apiary activities.

INTRODUCTION

This document provides the guidelines and goals for implementation of land management activities at the Murphy Creek Conservation Area (MCCA). This is a revision of the July 2004 board approved land management plan, which included the MCCA, Horseshoe Point Conservation Area (HPCA), and Seven Sisters Conservation Area (SSCA).

Due to the close proximity of the three areas to one another, and the disjunct nature of the parcels within the conservation areas, the District has combined these three properties into a single conservation area, now collectively known as Murphy Creek Conservation Area.

The MCCA covers approximately 4,755 acres in Putnam County within the South Mainstem and Crescent Lake planning basins, sub-basins of the Lower St. Johns River basin. This conservation area includes several tracts of land (6 parcels) located in numerous sections of Townships 11 and 5 South and Range 26 and 27 East. The conservation area provides protection of several miles of shorelines of the St. Johns River, Murphy, Dunns, Trout, and Barrentines creeks and includes five island parcels, the largest of which is Murphy Island.

The conservation area is located along the St. Johns River between the city of Palatka and Satsuma. It is located north and west of US Highway (US) 17 and south of State Road (SR) 20 and west of SR 100. The Kay Larkin Airport is approximately 3 miles to the north.

The purchase of the parcels that comprise this conservation area is consistent with the goals of the Lower St. Johns River Basin project as set forth in the District's Land Acquisition and Management Five Year Plan, and the District's Water Management Plan. These goals include:

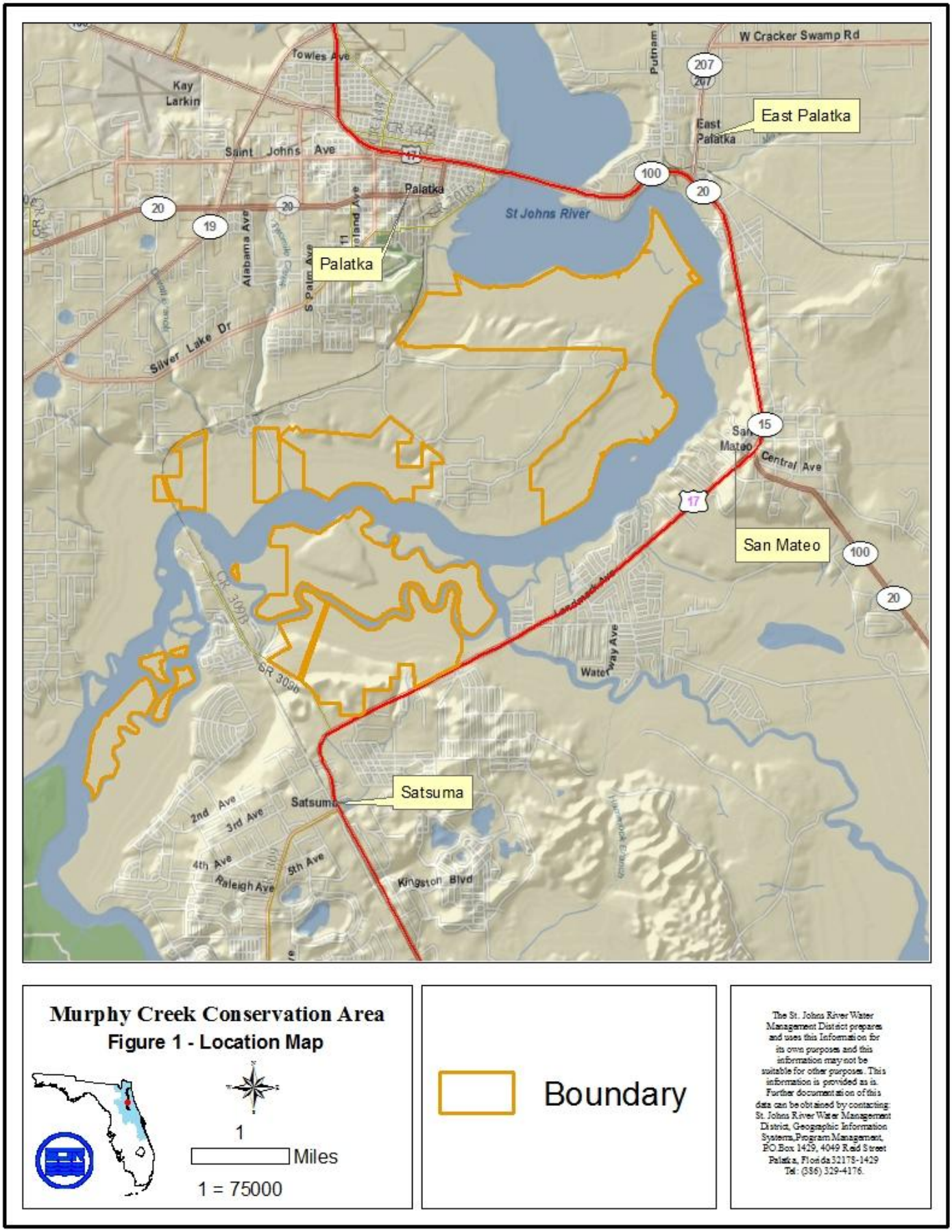
- Improve water quality, maintain natural hydrological regimes, and maintain flood protection by preserving important wetland areas.
- Restore, maintain, and protect native natural communities and diversity.
- Provide opportunities for recreation where compatible with the above listed goals.

The above are general goals and objectives for the conservation area. The following plan outlines specific goals and strategies regarding both natural and cultural resources and recreation management over the next five years.

CONSERVATION AREA OVERVIEW

Regional Significance

The conservation area is a significant acquisition within a larger network of publicly owned land and conservation easements in Putnam County. Figure 1 depicts the general location and Figure 2 illustrates the regional significance of the conservation area. Other publicly owned lands include the Marjorie Harris Carr Cross Florida Greenway State Recreation and Conservation Area, Caravelle Ranch Wildlife Management Area, Dunns Creek State Park, Dunns Creek Conservation Area, Rice Creek Conservation Area, and the Ocala National Forest. These lands provide for the protection of water quality and storage, indigenous floral and faunal species, as well as numerous natural resource-based recreational opportunities.


W Cracker Swamp Rd
Towles Ave
Kay Larkin
Saint Johns Ave
Palatka
East Palatka
St Johns River
Alabama Ave
S Palm Ave
Silver Lake Dr
Central Ave
San Mateo
Landmark Ave
Waterway Ave
SR 309B
SR 309
Satsuma
2nd Ave
3rd Ave
4th Ave
5th Ave
Raleigh Ave
Kingston Blvd
Murphy Creek Conservation Area
Figure 1 - Location Map
1
Miles
1 = 75000
Boundary
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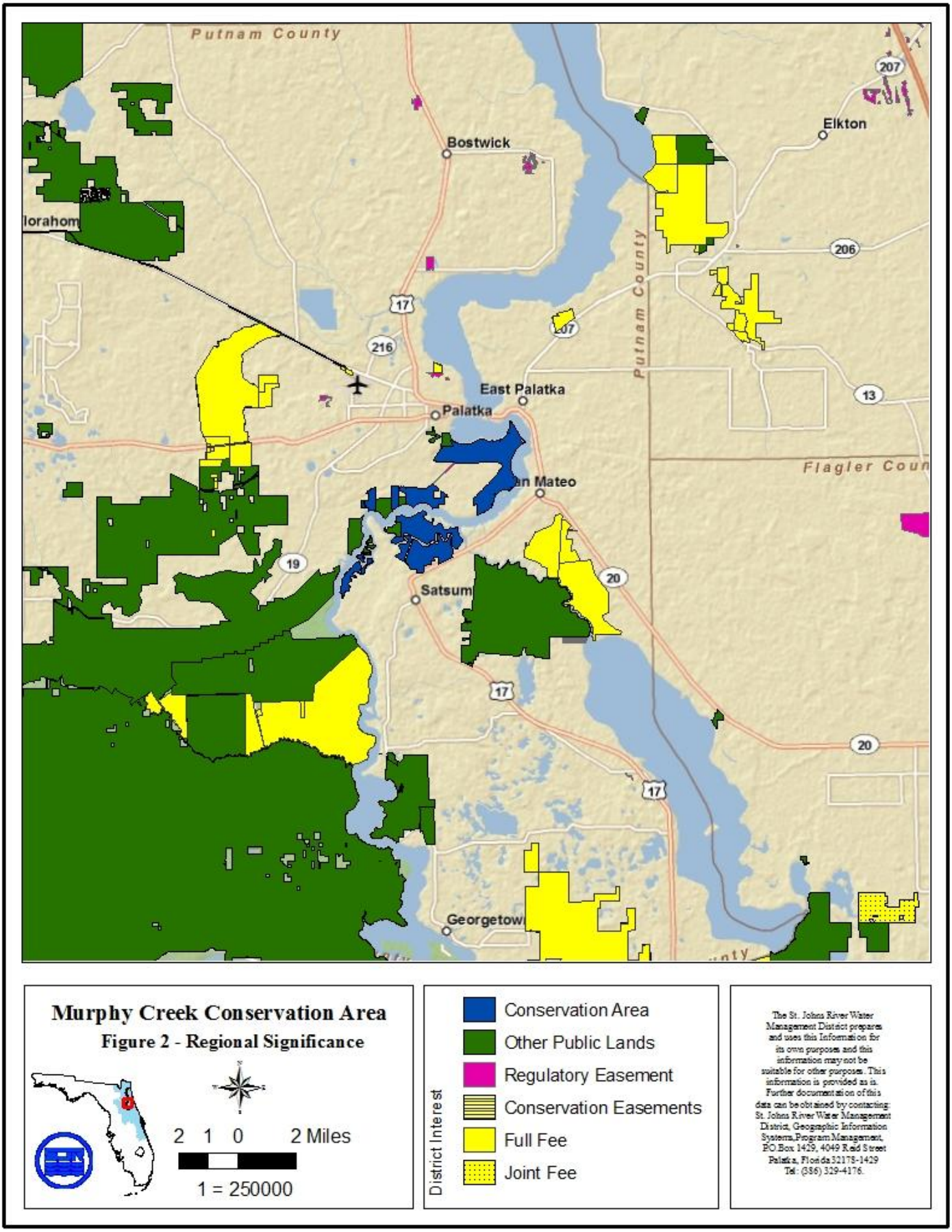
Putnam County
Bostwick
Elkton
207
206
17
216
Putnam County
East Palatka
Palatka
13
Flagler Coun
19
20
Satsum
17
20
17
Georgetow
Murphy Creek Conservation Area
Figure 2 - Regional Significance
2 1 0 2 Miles
1 = 250000
District Interest
Conservation Area
Other Public Lands
Regulatory Easement
Conservation Easements
Full Fee
Joint Fee
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Acquisition History

The conservation area is comprised of six (6) parcels totaling approximately 4,755 acres (Figure 3).

The following properties were purchased using funding sources as indicated. Table (1) one summarizes the land acquisition accomplishments.

Seven Sisters Islands – LA 81-11 – *280 acres* – This parcel was acquired by the District on December 31, 1987 using SOR/Bond85funds.

Skinner – LA 90-35b – *162 acres* - This parcel was acquired on August 30, 1990 as a mitigation donation.

McMillan – LA 91-24 – *854 acres* – This parcel was acquired on December 29, 1993 utilizing ad valorem tax dollars.

Whitehead – LA 89-27 – *2,591 acres* – This parcel was acquired on June 26, 1997 utilizing Save Our River funds.

Goldman – LA 96-30 - *853 acres* – This parcel was acquired on October 28, 1999 utilizing Save Our Rivers and mitigation funds

Turner – LA 99-16 – *4.5 acres* – This parcel was acquired on January 25, 2000 with ad valorem tax dollars.

Additionally, on July 23, 2002, the District exchanged (McMillan LA 91-24) a 10-acre parcel of land valued at $40,000.00 for a 20-acre of land valued at $80,000.00. The original 10-acre parcel was incorporated into a racetrack owned by an adjacent landowner.

Local Government Land Use Designation

Putnam County

According to the current Putnam County Comprehensive Plan and Evaluation and Appraisal Report, the Future Land Use designation for the conservation area is Conservation. This land use category includes lands designated for the purposes of conserving or protecting natural resources including ground water, surface water, wildlife habitats, vegetative communities, floodplains, and wetlands (Planning and Development, 2009).

Other land use designations for property in close proximity to the conservation area include:

- Agriculture II – Areas of land that may be utilized for silviculture and rangeland and other agricultural uses.
- Rural Residential – These areas of land are located adjacent to municipalities, and areas designated urban service, urban reserve, etc., and are interspersed within the active agriculture areas; and areas around water bodies.
- Industrial – Acres of land associated with manufacturing, assembly, processing or storage of products.

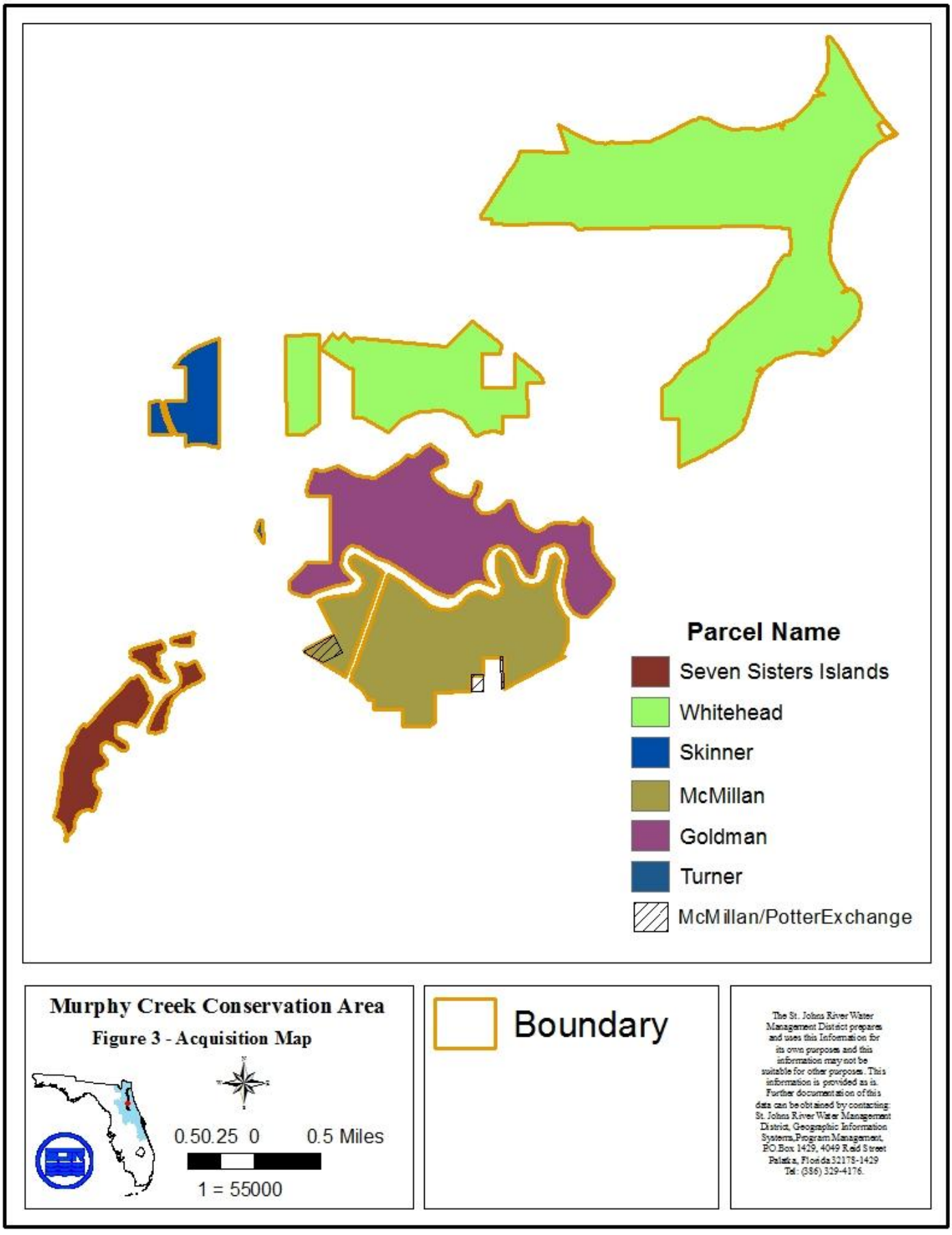
Parcel Name
Seven Sisters Islands
Whitehead
Skinner
McMillan
Goldman
Turner
McMillan/PotterExchange
Murphy Creek Conservation Area
Figure 3 - Acquisition Map
0.50.25 0
0.5 Miles
1 = 55000
Boundary
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Table 1 – Land Acquisition Summary

Parcel	LA Number	Acres	Total Purchase Price	Closing Date	District Funding Source
Seven Sisters Island	1981-11	280	$49,950.00	December 31, 1987	SOR/Bond 85
Skinner-Smith	1990-035-P2	162	$0	August 30, 1990	Mitigation
McMillan	1991-024-P1	854	$255,000.00	December 29, 1993	Ad Valorem
Whitehead Tracts 2 and 3	1989-027	2,591	$1,446,972.50	June 26, 1997	SOR/BOND95
Goldman (Murphy Island)	1996-030	853	$767,700.00	October 28, 1999	P2000
Turner	1999-016	4.5	$2,500.00	January 25, 2000	Ad Valorem
McMillan	1991-024-P1	(10)	Exchange	July 23, 2002	Exchange
Potter	1991-024-P2	20	Exchange	July 23, 2002	Exchange
Total		**4,755**	**$2,522,122.50**		

NATURAL RESOURCES OVERVIEW

Topography and Hydrology

The conservation area lies within the Eastern Flatwoods District and the Central Lake District. The Eastern Flatwoods District is also called the coastal lowlands and has elevations generally less than 90 feet. This district originated as a sequence of barrier islands and lagoons during Plio-Pleistocene and Recent times. The Central Lake District is an area of uplifted limestones of the Floridan Aquifer that lie unconformably below the surficial sands. These areas are sand hill karst with solution basins. Because of the xeric hills and internal drainage, this area is a principle aquifer recharge area (Brooks).

Elevations within the conservation area range from <5 to 70 feet above sea level, with the highest elevations occurring in the sandhills on the southern portions of the McMillan parcel. The conservation area provides shoreline protection for several miles of the St. Johns River and associated floodplain as well as portions of Dunn's Creek, Murphy Creek, Polly Creek, Barrentine Creek, and Trout Creek. Figure 4 depicts the hydrologic features of the conservation and surrounding areas.

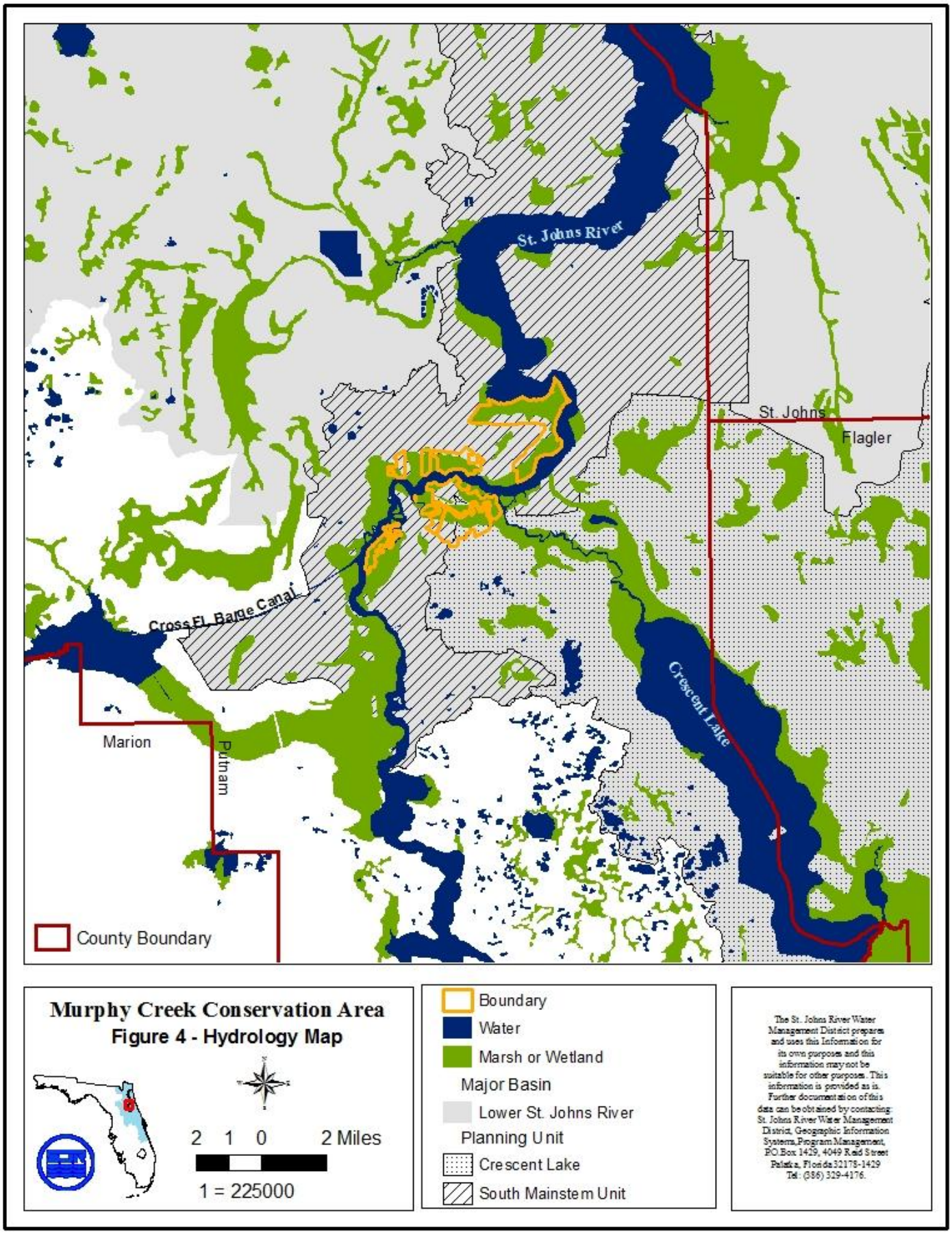
Natural Communities

Although dominated by floodplain swamp, the 4,755 acres that comprise the MCCA include a diverse array of other natural communities (Figure 5.) Table 2 details the percent coverage associated with each natural community documented within the conservation area. Alterations from past management activities (silviculture and land clearing), hydrologic disturbances, and prolonged absence of fire make distinguishing some natural communities difficult. As restorative management practices, including prescribed fire, are implemented within the conservation area, natural community reclassification and refinement may occur. Information relative to the natural communities within the conservation area is derived from several sources including timber stand assessments and personal observations of District staff. Additionally, the general natural community descriptions are characterized using descriptions published in the Florida Natural Areas Inventory's (FNAI) *Guide to the Natural Communities of Florida.* Natural community and species ranking definitions are listed in Addendum 1.

Table 2 – Natural Community Coverages

Natural Community Type	Acreage	Percent Coverage	FNAI Rank
Floodplain Swamp	3,346	70%	G4/S4
Mesic Flatwoods	576	12%	G4/S4
Wet Flatwoods	322	7%	G4/S4
Sandhill	158	3%	G3/S2
Scrubby Flatwoods	126	3%	G3/S3
Mesic Hammock	25	1%	G5/S3
Basin Marsh	9	<1%	G4/S4
Depression Marsh	6	<1%	G4/S4
Scrub	4	<1%	G2/S2
Floodplain Marsh	1	<1%	G3/S2
Altered Landcover Type			
Utility Corridor	182	4%	
Total	**4,755**	**100%**	
*Pine Plantation**	376	7%	

*Indicates the sum of acres across the conservation area that is in pine plantation.


St. Johns River
St. Johns
Flagler
Cross Fl. Barge Canal
Crescent Lake
Marion
Putnam
County Boundary
Murphy Creek Conservation Area
Figure 4 - Hydrology Map
2 1 0 2 Miles
1 = 225000
Boundary
Water
Marsh or Wetland
Major Basin
Lower St. Johns River
Planning Unit
Crescent Lake
South Mainstem Unit
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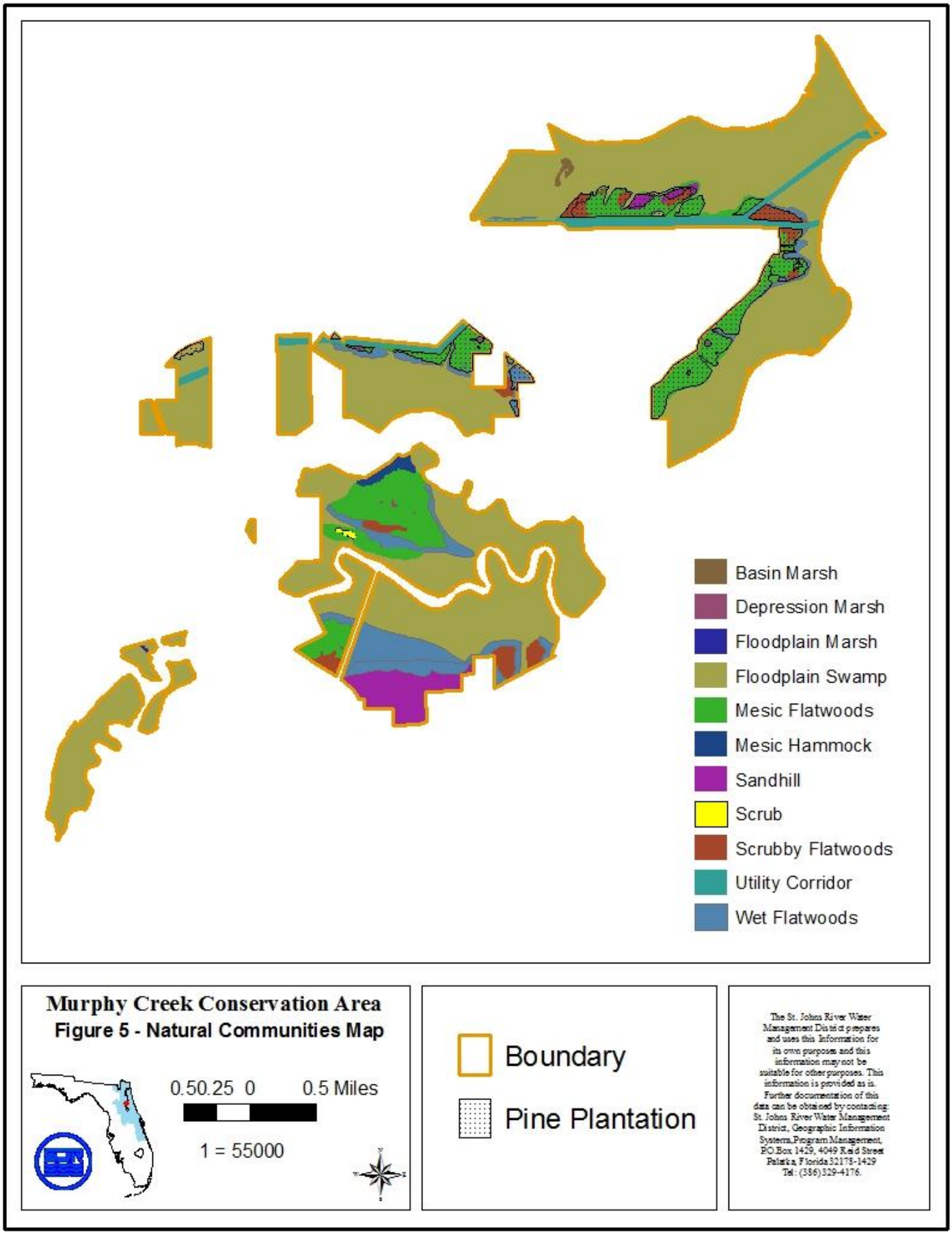
Basin Marsh
Depression Marsh
Floodplain Marsh
Floodplain Swamp
Mesic Flatwoods
Mesic Hammock
Sandhill
Scrub
Scrubby Flatwoods
Utility Corridor
Wet Flatwoods
Murphy Creek Conservation Area
Figure 5 - Natural Communities Map
0.50.25 0
0.5 Miles
1 = 55000
Boundary
Pine Plantation
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Mesic Flatwoods (576)

Soils that support mesic flatwoods communities are generally poorly drained, acidic, and sandy soils deposited on ancient, shallow seabeds. Many flatwoods communities have a clay hardpan. Hardpan soils become saturated during the rainy season causing the accumulation of surface water, inversely, 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 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 (P. *elliottii*), loblolly pine (*P. taeda*), or pond pine (*P. serotina*). The shrub layer may include a mixed palette 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 is often dictated by the openness of both shrub and canopy layers.

The mesic flatwoods communities within the conservation area are disturbed, with the most significant areas of alterations being in the silvicultural areas of the Whitehead parcel. Groundcover assemblages in these areas are suppressed and in some areas void of these components. Approximately 37 acres of mesic flatwoods were roller chopped on the McMillan parcel to reduce shrub heights and fuel loads. Groundcover assemblages in these areas are relatively intact. Pine species present within the flatwoods communities on the conservation area include longleaf, slash, and loblolly.

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 one to eight 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.

Scrubby Flatwoods (126 acres)

Scrubby flatwoods communities generally occur on moderately well drained, sandy soils. This community type occurs on slight rises within mesic flatwoods and in broad transitional areas. Standing water is uncommon in scrubby flatwoods as the depth to the water table is generally higher than adjacent mesic flatwoods.

Scrubby flatwoods have a stratified appearance and are characterized as an open canopy forest of widely scattered pine trees with a sparse shrubby understory and numerous areas of barren white sand. The vegetation in these ecotonal areas is a combination of mesic flatwoods and scrub species. Canopies of the scrubby flatwoods in northern and central Florida may include longleaf

and slash pine. Shrub layers will often include scrub oaks, saw palmetto and various Ericaceous plants. Groundcover, while generally sparse, may include wiregrass.

Scrubby flatwoods communities within the MCCA are disturbed. The most significant areas of alterations occur within the silvicultural areas and are primarily a result of prolonged fire exclusion. The shrub layer in these areas is overgrown and groundcover assemblages are sparse with only the most resilient species remaining. Approximately 33 acres of scrubby flatwoods on the McMillan parcel were roller chopped to reduce shrub heights. Groundcover assemblages in these areas are relatively intact.

Fire is an integral component in the perpetuation of this community type. The open areas of bare sand, sparse groundcover vegetation and coverage of largely incombustible oak leaf litter typical of most scrubby flatwoods results in a fire return interval of between 8 and 25 years. Examples of scrubby flatwoods with a higher herbaceous or saw palmetto component may burn at a lower fire return frequency.

Wet Flatwoods (322 acres)

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 (*Gordonia lasianthus*), and saw palmetto, as well as a suite of Ericaceous plants. 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 edaphic differences as well as hydrologic and fire regimes.

The wet flatwoods plant community is fire dependant with return intervals ranging from three to ten years. In areas such as the MCCA, shrubs tend to dominate wet flatwoods where fire has been either low in intensity or absent. Wet flatwoods within the conservation area suffer from prolonged fire exclusion and include midstory components that are heavily overgrown.

***Sandhill (*158 acres)**

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 wire grass. 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 two to five years.

Sandhills are within the MCCA are degraded. Past alterations from possible cattle grazing operations, silviculture, and a prolonged absence of fire have caused many of these areas to succeed to xeric hammock. These areas have some remnant longleaf pine, but are dominated by offsite oaks including laurel, water, and live oak, as well as cabbage palm. Groundcover is suppressed in most areas and is absent all together in many areas as a result of shading.

Scrub (4 acres)

Scrub is characterized as a closed to open canopy forest of sand pines with dense clumps or vast thickets of scrub oaks and other shrubs dominating the understory. The groundcover is generally very sparse, being dominated by ground lichens or rarely, herbs. Open patches of barren sand are common. Where the overstory is widely scattered or absent altogether, the understory and barren sands are exposed to more intense sunlight.

Scrub occurs on Murphy Island in a small isolated patch. Scrub communities are fire maintained and generally burn catastrophically every 20 to 80 years. The high variability of fire intervals within scrub systems is relative to the productivity of the site (Myers, 1990). Sites with higher productivity will burn more frequently.

Floodplain Swamp (3,346 acres)

Floodplain swamp communities typically occur on flooded soils along stream channels and within river floodplains. The floodplain swamp community comprises approximately 70% of the land cover within the conservation area.

Soils that support floodplain swamp communities are variable, but may include a mixture of sand, organic, and alluvial material. Some floodplain swamps associated with smaller streams or in areas of low stream velocity may have peat present in the soils. 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 entire river system and associated flora and fauna. Since this community type is maintained by hydrologic regimes, it is not fire dependent.

Typical of the floodplain swamp system, the examples of this community type within the conservation area includes a closed-canopy forest of hydrophytic, buttressed trees including bald cypress (*Taxodium distichum*) and water tupelo (*Nyssa aquatica*). Floodplain swamps within the conservation area appear relatively intact.

Depression Marsh (6 acres)

Depression marsh communities typically occur embedded within a matrix of well-maintained pyric plant communities. Depression marshes may be found on flat landscapes throughout Florida. They develop when the overlying sand has slumped into a depression in the limestone underlayment. Soils are typically depressional phases of fine sands. An important physical factor associated with the shaping and maintenance of the depression marsh is the hydroperiod. Depression marshes are maintained in part, against woody shrub invasion by fluctuations in water levels associated with rainfall. These seasonal ponds are important feeding grounds for numerous species of wildlife, but are particularly important for many amphibians that require breeding sites that are free of predatory fish (Moler, 1987)

With few exceptions, the depression marsh communities within MCCA occur within the mesic flatwoods pine plantations and are altered from the plantation activities, with the primary alteration being hydrologic changes and soils disturbances from site preparation techniques such as silvicultural bedding. Additionally, some depression marshes within the conservation area include planted pine.

Without frequent fire, herbaceous components of the depression marsh systems may give way to woody shrub species. The frequency of fire within these areas is determined by the fire frequency of the surrounding natural community. The depression marshes within the conservation area will have fire return intervals influenced by the fire frequency of the surrounding mesic flatwoods, which is between 1 and 8 years.

Basin Marsh (9 acres)

Basin marshes are herbaceous or shrubby freshwater wetlands in large irregularly shaped basins. These marshes typically develop in large solution depressions that were formerly shallow lakes and may also be located within non-pyrogenic plant communities. Plant species compositions can be divided into submersed, floating-leaved, emergent, and grassy zones. An example of a basin marsh community is embedded within the floodplain swamp on the Whitehead parcel.

Hydroperiods of approximately 200 days are essential to the maintenance of this natural community as is frequent fire. The fire return interval for basin marshes is every 1 to 10 years with more herbaceous systems having a return of between 1 and 3 years.

Floodplain Marsh (1 acre)

Floodplain marshes are herbaceous wetland communities occurring in river floodplains. These communities are typically found along rivers and streams from just below the headwaters to the tidally influenced areas, to the extent that salinity remains low.

Hydroperiods of approximately 120-350 days per year are essential to the maintenance of this community as is frequent fire. A fire return interval of no more than three years is necessary to prevent the encroachment of woody species.

***Mesic Hammock* (25 acres)**

Mesic hammocks are well developed evergreen hardwood and/or palm forests on soils that are rarely inundated. They exhibit a closed canopy dominated by live oak and may include cabbage palm (*Sabal palmetto*) and southern magnolia (*Magnolia grandiflora*). The shrub layers may vary in density and include a mix of saw palmetto, American beautyberry (*Callicarpa americana*), and Vacciniums. Herbaceous layers tend to be sparse or patchy, but may consist of numerous graminoids including panic grasses, and sedges, as well as various ferns and forbs.

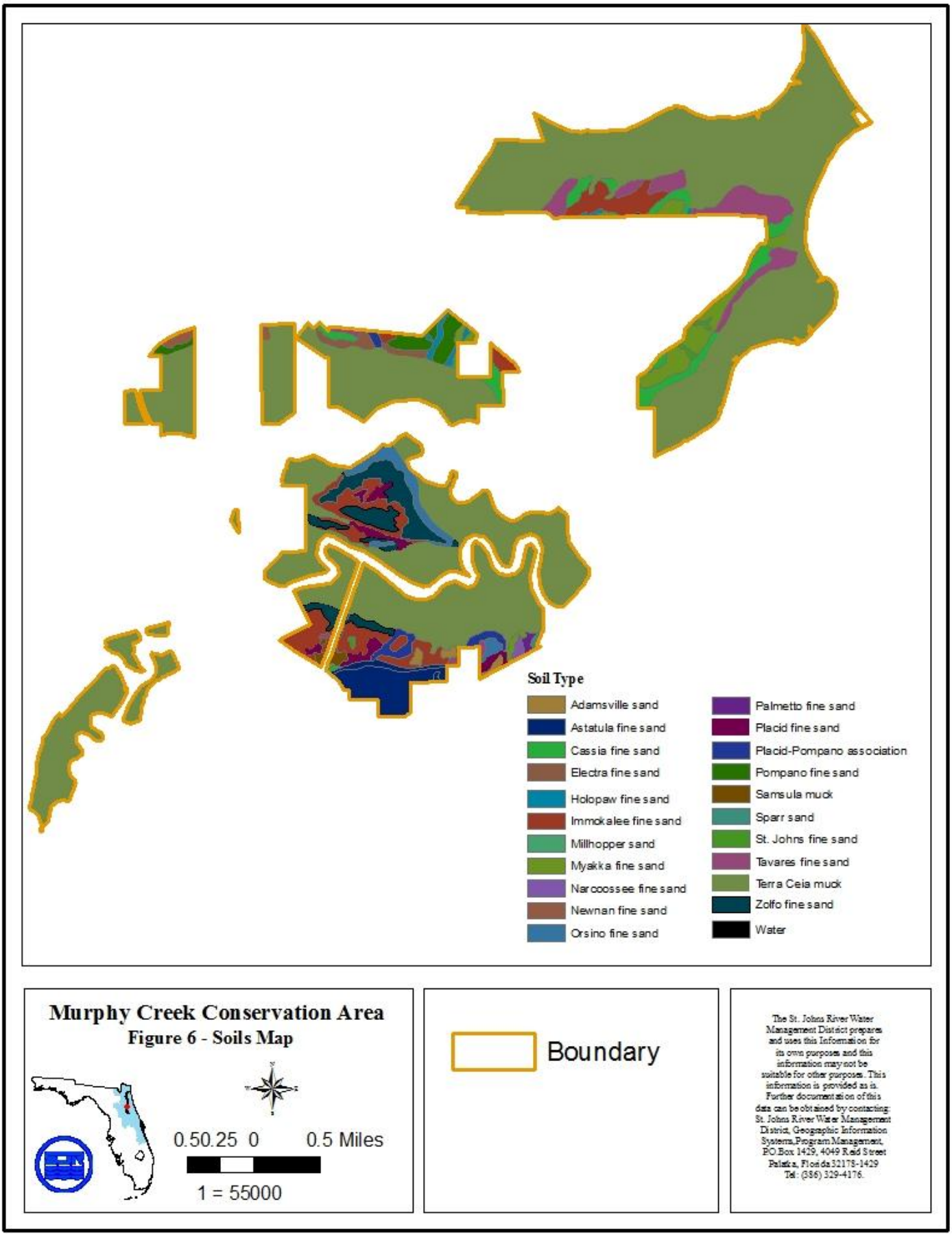
Soils that support mesic hammocks are typically sandy, mixed with organics, and include a thick layer of leaf litter. Mesic hammocks occur as islands on high ground within floodplain wetlands in areas that have been historically protected from fire. Although mesic hammocks are not generally considered a pyric plant community, some may experience occasional low-intensity ground fires. An example of the mesic hammock community is located on Murphy Island.

Utility Corridor (182 acres)

Utility corridors are an altered landtype. They include areas utilized for electric, gas, and telephone right-of-ways. A high-tension electrical line and right-of-way that is collocated with a gas line is located on the MCCA. This utility corridor traverses the Whitehead parcel.

Soils

According to data produced by the United States Department of Agriculture, Soil and Conservation Service, 21 different soil types are within the conservation area. Figure 6 contains a soils map of the conservation area. The Putnam County Soil Survey provided information used to develop descriptions of the predominant soil series. The soil descriptions are located in Addendum 2.


Soil Type
Adamsville sand
Astatula fine sand
Cassia fine sand
Electra fine sand
Holopaw fine sand
Immokalee fine sand
Millhopper sand
Myakka fine sand
Narcoossee fine sand
Newnan fine sand
Orsino fine sand
Palmetto fine sand
Placid fine sand
Placid-Pompano association
Pompano fine sand
Samsula muck
Sparr sand
St. Johns fine sand
Tavares fine sand
Terra Ceia muck
Zolfo fine sand
Water
Murphy Creek Conservation Area
Figure 6 - Soils Map
0.50.25 0
0.5 Miles
1 = 55000
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Past management summary

This section describes management strategies outlined in the 2004 land management plan and provides the status of each item. The summaries are consistent with the previous plan's implementation schedules and include one for MCCA and one for the former HPCA.

Horseshoe Point Conservation Area Past Management Summary

Water Resources 2004 Plan Strategy	Status
Regularly inspect roads for erosion problems.	District staff inspect roads regularly.

Fire Management 2004 Plan Strategy	Status
Introduce dormant season burns in overstocked commercial pine stands.	District staff has burned ~ 75 acres during the dormant season.
Continue to conduct dormant season burns until fuel reduction goals are met.	This element is ongoing.

Forest Management 2004 Plan Strategy	Status
Complete a third row thinning in commercial pine stands.	District staff conducted 5th row thinning operations in the pine plantations.
Utilize prescribed fire as a forest management tool.	Prescribed fire is utilized as a forest management tool. District staff has accomplished 75 acres of prescribed fire on HPCA.
Monitor forested areas for disease or insect infestation	District staff regularly inspects forested areas for disease and insect infestations.

Restoration Areas 2004 Plan Strategy	Status
Remove/reduce fuels mechanically in preparation for initial prescribed burn.	District staff conducted gorilla-mowing operations to reduce fuels and woody vegetation as site preparation for reforestation.
Initiate growing season burns to promote growth of groundcover species.	District staff have not conducted growing season fire since the mowing operation. However, one burn was conducted in 2005.
Evaluate native groundcover for additional restoration.	This element is still under evaluation.
Plant native groundcover if necessary.	District staff have not yet determined the need for native groundcover plantings.
Begin reintroduction of native canopy species if necessary.	District staff have planted longleaf pine at a rate of 500 stems per acre.
Continue to maintain restoration areas with	District staff anticipates the inclusion of

fire or other disturbance.	this element in the 2010 plan revision.

Wildlife 2004 Plan Strategy	**Status**
Continue to restore natural communities.	District staff employ management techniques that are restorative in nature.
Continue to maintain ecotones between natural communities.	District staff implements management techniques that maintain ecotones.

Exotic Species 2004 Plan Strategy	**Status**
Continue to monitor for invasive plant species and treat as necessary.	District staff regularly monitors for exotic species and implement appropriate control.
Continue coordination with hog trapper.	This element is ongoing.

Cultural Resources 2004 Plan Strategy	**Status**
Protect existing cultural and historical sites.	District staff protect cultural and historical resources during the implementation of management activities.
Identify and report any new sites to Florida Division of Historical Resources.	No new sites were identified.

Access 2004Plan Strategy	**Status**
Maintain limited access points and roads necessary for resource management activities.	District staff maintained access points and roads to facilitate resource management.

Security 2004 Plan Strategy	**Status**
Continue contract with private security firm.	The conservation area is included in the private security contract. Regional land management staff coordinates with the private security firm monthly.
Continue coordination with Florida Fish and Wildlife Conservation Commission and local law enforcement.	District staff coordinate with FFWCC and local law enforcement as necessary.
Maintain fencing and boundary marking.	Fencing and boundary marking is maintained as necessary.

Environmental Education 2004 Plan Strategy	**Status**
Encourage educational opportunities as they arise.	District staff encourage educational opportunities as they arise.

Leases, Easements, and Concessions 2004 Plan Strategy	**Status**
Continue cooperation with Florida Power and Light regarding legal access to the property.	District staff maintain communication and continue cooperation with FP&L regarding access to the property.
Continue coordination with Palatka Gas	District staff maintain communication and

Authority regarding underground gas line.	continue cooperation with Palatka Gas Authority regarding access to the property.

Murphy Creek Conservation Area Past Management Summary

Water Resources 2004 Plan Strategy	Status
Regularly inspect roads for erosion problems.	District staff inspect roads regularly.

Fire Management 2004 Plan Strategy	Status
Utilize prescribed fire as a forest management tool.	Since 2004, District staff accomplished ~628 acres of prescribed fire.
Monitor forested areas for disease or insect infestation.	District staff regularly monitor for disease and insect infestations.

Forest Management 2004 Plan Strategy	Status
Introduce dormant season burns in areas where fire has been excluded.	District staff accomplished two dormant season burns totaling ~37 acres.
Continue to implement dormant season burns until fuel reduction goals are met.	This element is ongoing.
Introduce growing season burns in areas with reduced fuels.	District staff accomplished four growing season burns totaling ~591 acres.

Wildlife 2004 Plan Strategy	Status
Continue to restore natural communities.	District staff accomplished ~70 acres of roller chopping in the mesic and scrubby flatwoods to facilitate restoration and enhancement of these communities.
Continue to maintain ecotones between natural communities.	District staff implements management techniques that maintain ecotones.

Exotic Species 2004 Plan Strategy	Status
Continue to monitor for invasive plant species and treat as necessary.	District staff regularly monitors for exotic species and implement appropriate control.
Continue coordination with hog trapper.	District staff continue coordination with the trapper regarding control of feral hogs on the property.

Cultural Resources 2004 Plan Strategy	Status
Protect existing cultural and historical sites.	District staff protects cultural and historical resources during the implementation of management activities.
Identify and report any new sites to Florida Division of Historical Resources.	A potential new site is being researched and has been reported to appropriate authorities.

Access 2004 Plan Strategy	Status
Maintain limited access points and roads necessary for resource management activities.	District staff maintains roads, parking areas, and boat landings as necessary to facilitate both recreational and management access.
Maintain informational signage near trailheads and campsites.	District staff maintain kiosks and campsites as needed to facilitate recreation.

Recreation 2004 Plan Strategy	Status
Mark existing trail system.	District staff marked the multi-use trail system at the MCCA.
Install an informational kiosk.	District staff have installed an informational kiosk at the MCCA.
Maintain multi-use trail and campsites.	District staff maintain trail mowing and blazing and the cleaning and maintenance of campsites.
Maintain boat landing at Murphy Island.	Maintenance is conducted as needed.
Create a brochure detailing trail system.	District staff have implemented all trail development and included all trail and recreational facilities in the *District's Recreation Guide to District Lands.*
Update and maintain brochure for trail system.	District staff have implemented all trail development and included all trail and recreational facilities in the *District's Recreation Guide to District Lands* and the *MCCA trail brochure.*
Evaluate need for bathroom facility in dock area at Murphy Island.	District staff have installed a restroom facility on Murphy Island.

Security 2004 Plan Strategy	Status
Continue contract with private security firm.	The conservation area is included in the private security contract. Regional land management staff coordinates with the private security firm monthly.
Continue coordination with Florida Fish and Wildlife Conservation Commission and local law enforcement.	District staff continue to coordinate as needed with FFWCC and local law enforcement.
Design and distribute brochure describing allowed activities.	District staff have developed a trail brochure and informational kiosk describing permitted recreational opportunities.
Maintain fencing and boundary marking.	District staff maintain fencing and boundary marking as necessary.

Environmental Education 2004 Plan Strategy	Status
Encourage educational opportunities as they arise.	District staff encourage educational opportunities as they arise

Implementation

The following sections outline land management strategies for resource protection, land use, and administration on the conservation area for the next five years.

RESOURCE PROTECTION AND MANAGEMENT

Water Resource Protection

While most wetlands protection was accomplished through acquisition of the individual parcels within the conservation area, portions of the wetlands and surface waters within the conservation area are disturbed. Hydrologic disturbances within the conservation area includes roads, ditches, culverts, and silvicultural beds.

Roads and associated ditches occur within the MCCA, providing access for both management and recreation. The District continues to make improvements to roads within the conservation area, helping to reduce the potential for erosion.

The majority of the upland acreage within the Whithead parcel is a former commercial silviculture site and as such, some of the acreage was bedded prior to planting. Bedding is a method of site preparation, which 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 water into mounds where the concentrated nutrients are readily available. Bedding is also used to reduce competition for newly planted trees. The trenches associated with bedding channel water and may be detrimental to the sheet flow of water across the property.

Water Resource Strategies

- Regularly inspect roads, ditches, culverts, fire lines, and trails for erosion problems.
- Locate and GPS all culvert locations and incorporate into conservation area database. Include type, length and diameter of each culvert.
- Where removal will not further affect desirable groundcover species, remove beds from harvest areas prior to reforestation.

Flora and Fauna

The conservation area has a diverse assemblage of natural communities providing significant habitat for a variety of floral and faunal species. District staff are developing a species inventory for the conservation area.

While there are no listed species requiring special management known to occur within the conservation area, the Florida gopher tortoise (*Gopherus polyphemus*), listed by the State of Florida as a Threatened species, is documented within the conservation area. In addition to disease, threats to the gopher tortoise in Florida include habitat loss and destruction from urbanization and conversion to agriculture and habitat degradation resulting from silvicultural activities and fire exclusion (Gopher Tortoise Management Plan, 2007).

The MCCA includes approximately 140 acres of disturbed sandhill on the McMillan parcel. A closed canopy of various oaks (laurel, live, and turkey), cabbage palm, and a few longleaf pines dominates much of the sandhill acres within this parcel. Canopy closure is approximately 95%. These areas are largely void of groundcover species as a result of excessive shading. The remaining areas (approximately 24 acres), where the canopy remained open ($\leq$ 60%), while highly disturbed, exhibited a diverse array of groundcover species including some wiregrass and numerous asters and legumes.

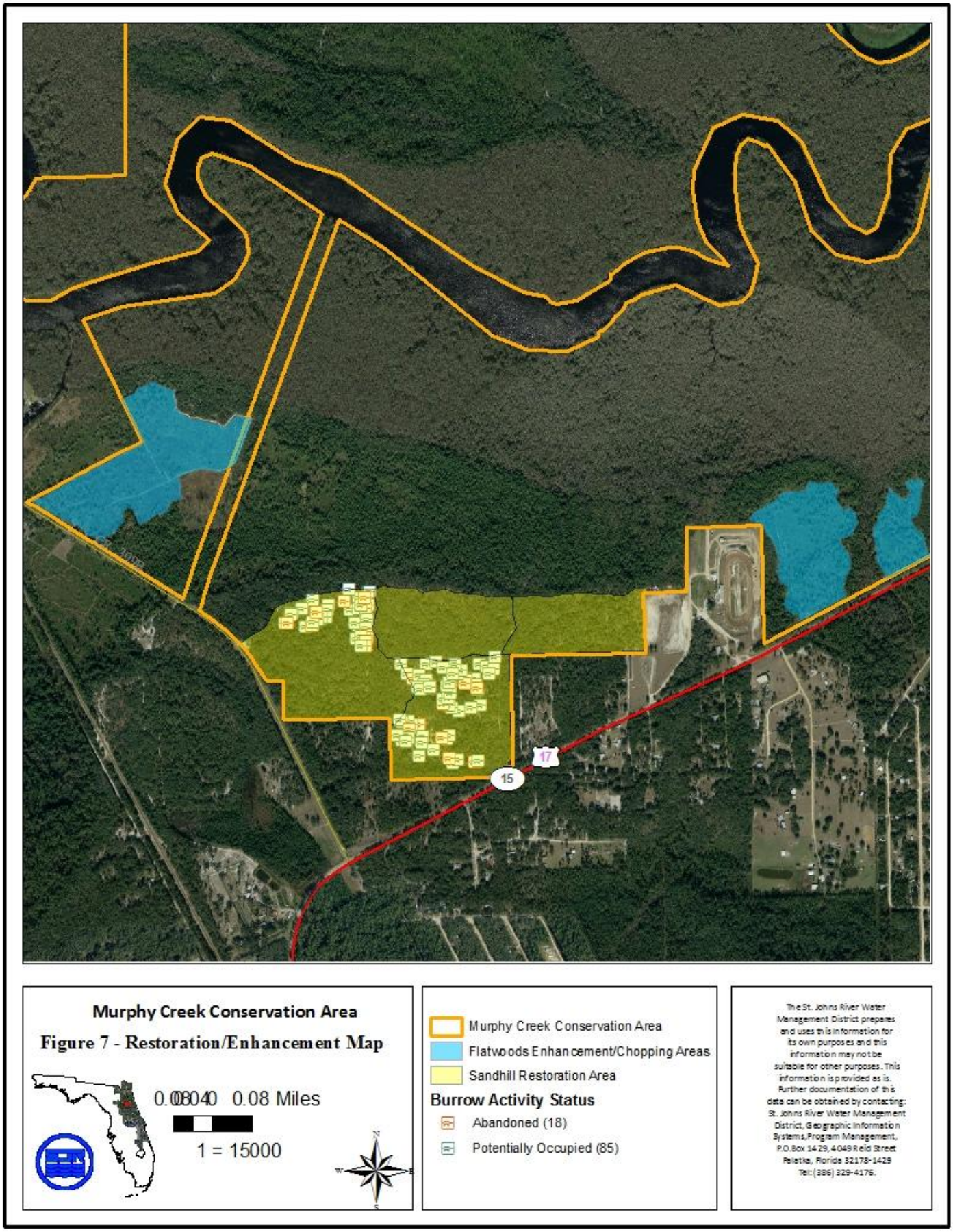
In advance of a sandhill restoration/enhancement project (discussed in the Forest Management Section of this plan), a baseline gopher tortoise burrow survey was conducted within the 24 acres of open canopied, suitable habitat in October 2009. All active and potentially active burrows were documented and flagged and GPS locations were recorded (Figure 7). A total of 103 burrows were identified (18 of which were abandoned.) Using the most recent method of measuring gopher tortoise population densities (Ashton, 2008), District staff determined a population estimate of ~1.8 tortoises/acre.

This population estimate is high for a degraded/marginal site; however, the carrying capacity for intact sandhills can exceed 4 tortoises/acre (Ashton, 2008). The high density of tortoises on this marginal site may be attributed, in part, to the abundance of desirable forage species such as narrowleaf silkgrass (*Pityopsis graminifolia*), bahia grass (*Paspalum notatum*), and partridge pea (*Chamaechrista fasciculata*). These plants, while not all native, are highly palatable to tortoises and provide ample bulk foraging opportunities. Additionally, it is suspected that tortoise burrows are concentrated in the only available habitat onsite and that the density without restoration activities will likely decline.

As restoration and enhancement activities continue in this area, additional burrow surveys will be conducted to monitor the tortoise population on site.

<u>Floral and Faunal Strategies</u>

- Conduct diversity surveys and develop species lists.
- Incorporate species lists into the District's bio-database.
- Continue to monitor for the presence of listed species.
- Conduct gopher tortoise burrow surveys in restoration area every three years.


Murphy Creek Conservation Area
Figure 7 - Restoration/Enhancement Map
0.00 0.04 0.08 Miles
1 = 15000
Murphy Creek Conservation Area
Flatwoods Enhancement/Chopping Areas
Sandhill Restoration Area
Burrow Activity Status
Abandoned (18)
Potentially Occupied (85)
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17
15

Forest Management and Natural Community Restoration/Enhancement

Chapter 253.036, Florida Statutes requires the lead agency of state lands to prepare a forest resource analysis, "…which shall contain a component or section…which assesses the feasibility of managing timber resources on the parcel for resource conservation and revenue generation purposes through a stewardship ethic that embraces sustainable forest management practices if the lead management agency determines that the timber resource management is not in conflict with the primary management objectives of the parcel." The management objectives of this property will require pine and hardwood harvesting.

Primary objectives of harvesting on the MCCA are restorative in nature and are to improve species diversity and the overall natural community health and vigor. All revenue generated through forest management is applied towards the District's Land Management Division budget to offset management costs for the property.

Restoration/Enhancement

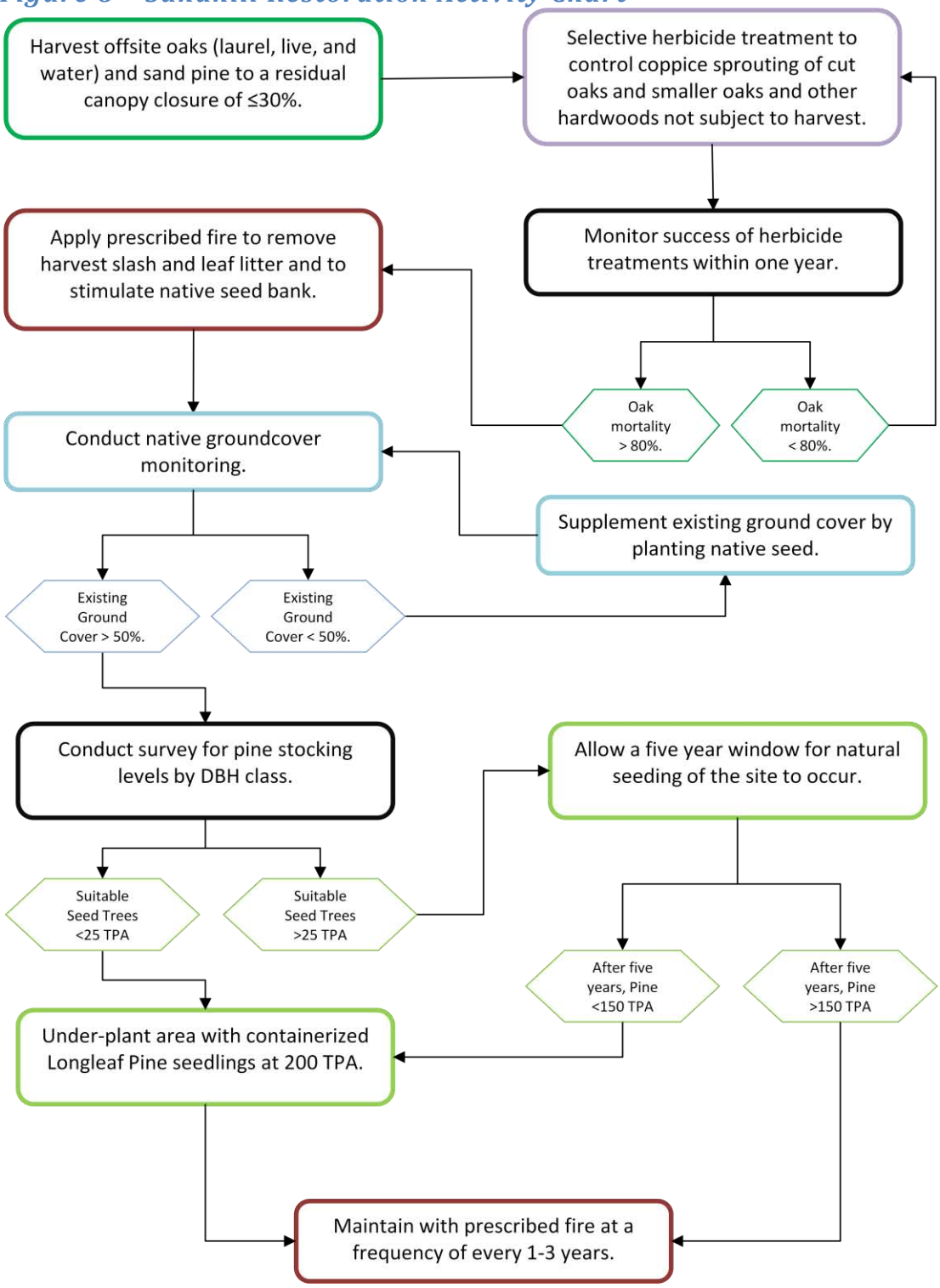
Inspection of 1940s aerial imagery reveals that portions of the sandhill communities within the Murphy Creek Conservation Area (McMillan parcel) were cleared for what appears to be cattle grazing operations and by the mid-1980s, the extent of these areas were cleared and cross fencing is evident. At the time of District acquisition, the 120-acre project site (mentioned under Flora and Fauna) was succeeding to hammock. Currently, a dense closed canopy (~95%) hammock dominates this area and includes a mixed palette of oaks and cabbage palm with scattered longleaf, slash, and sand pines. Groundcover assemblages in these areas are highly suppressed and in many areas absent.

Sandhill restoration and enhancement activities (Figure 8 below) are planned and are intended to improve habitat conditions for the Florida gopher tortoise consistent with the FFWCC 2007 Gopher Tortoise Management Plan (GTMP). The GTMP recommends management goals on protected lands that target a canopy coverage of <60%, a diverse herbaceous groundcover of >50%, and a fire return interval of less than 5 years.

In October 2009, a baseline gopher tortoise burrow survey was conducted in the remaining suitable habitat within the project area and photo documentation points were established. In December 2009, sandhill restoration/enhancement activities began at MCCA. Enhancement activities are subject to budget availability. Figure 8 details anticipated restoration activities.

Recognizing the sensitivity of sandhill soils and the need to maneuver around gopher tortoise burrows, District staff has contracted with a logging company that is able to accomplish the removal of hardwoods and sand pine with a low impact to soils and desirable groundcover. Trees are felled using a chainsaw and loaded into a trailer (pulled by a pick-up truck) using a farm tractor. This method of harvesting also allows work to be accomplished outside a 25' buffer around tortoise burrows. During harvest operations, the recreation trail and campsite within the restoration area may be subject to closure.

Figure 8 – Sandhill Restoration Activity Chart



Upon completion of the harvest operation, herbicide treatments are anticipated to control the coppice re-sprouting of cut oaks and to remove smaller oaks and other hardwoods that were not subject to harvest. Multiple applications of herbicide may be necessary to achieve the desired control of 80%. Once adequate control of oaks is achieved, prescribed fire will be introduced to stimulate the remaining groundcover and herbaceous seed bank.

Depending on residual coverage of herbaceous components, the seeding of native groundcover species maybe necessary. A groundcover that includes a variety of grasses, asters, and legumes at a minimum coverage of 50% is targeted. Multiple seeding operations may be necessary to achieve this objective.

Once groundcover objectives are met, an initial pine survey will be conducted to establish the existing density of trees according to diameter at breast height (dbh) class and to determine the stocking of suitable seed trees (~12"dbh). If the seed tree density is determined to be <25 trees per acre (TPA), the District will conduct a supplemental planting utilizing containerized longleaf pine seedlings at a rate of 200 TPA. If the seed tree density is determined to be ≥ 25 TPA, District staff will then conduct pine sampling after five years, targeting a pine TPA of 150. A pine TPA count of <150 will require supplemental plantings as described above.

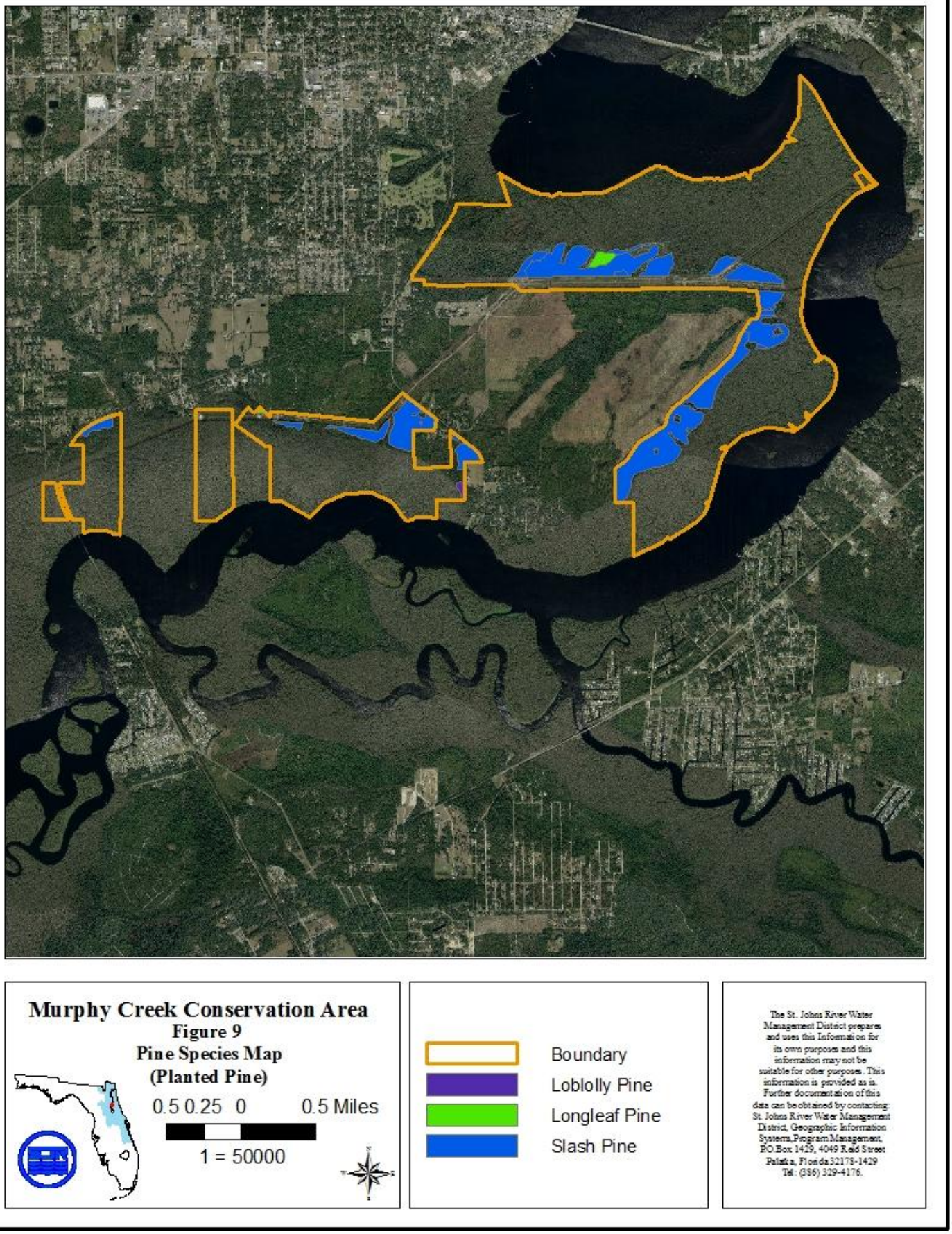
The application of prescribed fire within this project area is essential in achieving successful results and ultimately as a maintenance tool. During the restoration and enhancement period, the use of prescribed fire may occur at intervals that differ from those suggested by FNAI for sandhill communities. This may be due to reduced fuel loads or the need to protect recent seedings or plantings.

Other restoration and enhancement activities within the MCCA include the accomplishment of approximately 70 acres of roller chopping in the mesic and scrubby flatwoods (above Figure 7). This work was conducted to reduce shrub heights and fuel loads and will be maintained with prescribed fire.

Forest Management

Prior to public acquisition, portions of the MCCA were utilized in commercial silviculture operations. The majority of the uplands were bedded and planted primarily in slash pine. Since the time of acquisition, District staff have conducted thinning operations in the flatwoods areas and clearcut harvests in the sandhill areas. The areas subject to clearcut harvest operations have been replanted in longleaf pine. Figure 9 depicts the extent of planted pine by species across the conservation area.

The conservation area is partitioned into five forest management compartments and each compartment is (as necessary) further divided into stands. Figure 10 illustrates the compartments and stands within the conservation area. On properties like the MCCA, where silvicultural management is a component of the overall management of the upland portions of the property, values, including baseline timber volumes/timber inventory, are collected and incorporated into the District's forest management database. Changes that may occur over time within the


Murphy Creek Conservation Area
Figure 9
Pine Species Map
(Planted Pine)
0.5 0.25 0
0.5 Miles
1 = 50000
Boundary
Loblolly Pine
Longleaf Pine
Slash Pine
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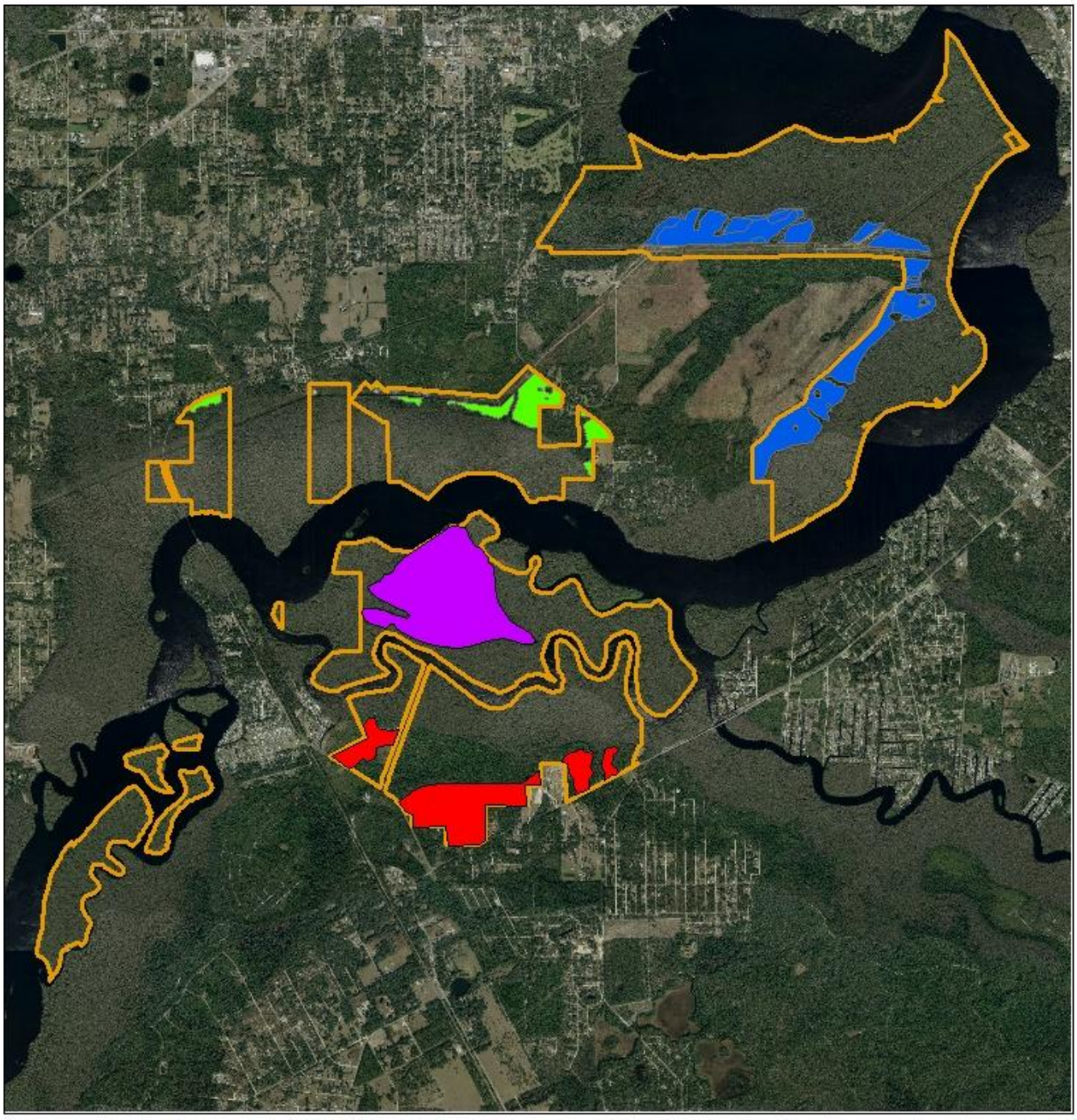

Murphy Creek Conservation Area
Figure 10 - Compartment Map

0.50.25 0 0.5 Miles

1 = 55000

Boundary

Compartment

01

02

03

04

Stand Lines

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compartments and stands resulting from growth and harvest operations, and reforestation are also recorded in the database. This information is used to help land management staff forecast forest management needs. Additionally, as stands are added, the configuration of existing compartments may change.

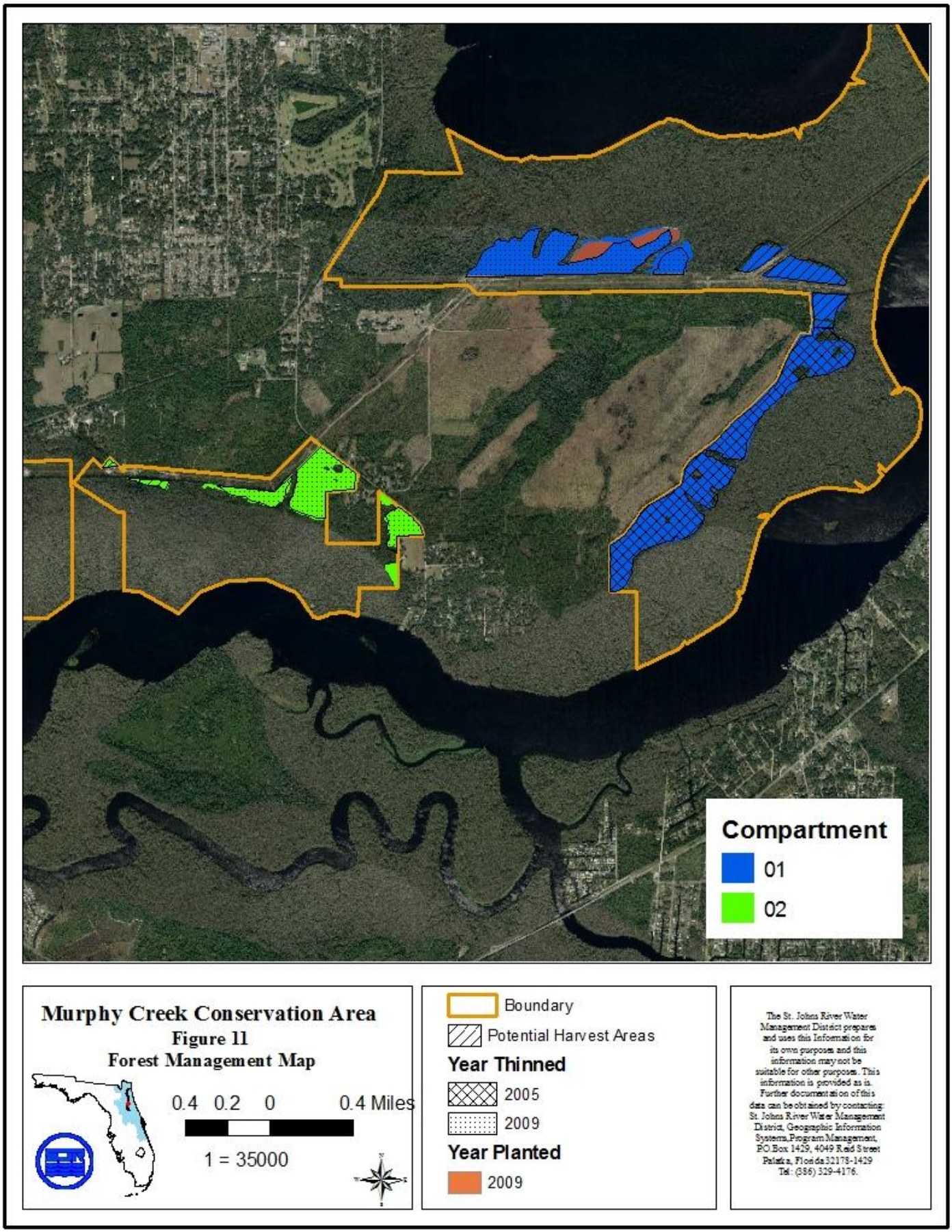
District staff conducted first thinning operations (5^{th} row) on ~296 acres of planted slash pine within compartments 1 and 2. Additional pine management activities anticipated on the MCCA during the scope of this plan may include may include stocking evaluations, reforestation, and potentially some thinning operations in stands 1701020 and 1701016. Stocking evaluations are conducted to assess the need for replanting an area through the determination of the number of target trees per acre. Stocking evaluations will occur in ~13 acres of sandhill that were cleared of slash pine and replanted in longleaf pine in 2009. Selective herbicide of offsite oaks may also be conducted in these areas. Additionally, reforestation projects may be preceded by various site preparation techniques including mechanical treatments such as harrowing and discing to remove silvicultural bedding, roller chopping and mowing, herbicide applications, and prescribed fire. These techniques may be used singularly or in combination as site conditions warrant. Forest Management accomplishments and potential harvest areas are identified in Figure 11.

Through planned harvesting, the District aims to create a more open canopy, which will reduce the competition among trees and in time, allow for larger, more vigorous trees with fuller canopies. Harvesting may also provide some protection against wildfires and pine beetle outbreaks.

The District will abide by Florida Silviculture Best Management Practices and will target the appropriate overstory species in proper stand densities as described in the District Forest Management Plan. In addition to planned forest management activities, the District will harvest trees 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.

<u>Forest Management and Natural Community Restoration/Enhancement Strategies</u>

- Conduct harvest of offsite oaks within the restoration/enhancement area.
- Conduct harvest of sand pine within the restoration/enhancement area.
- Conduct herbicide applications within the restoration/enhancement area to control coppice sprouting of cut oaks and to remove smaller oaks and other hardwoods not subject to harvest.
- Conduct initial groundcover survey in the sandhill restoration/enhancement area to determine planting/seeding needs.
- Conduct overall pine density and pine seed tree surveys in the sandhill restoration/enhancement area.
- Conduct herbicide applications within the 2009 longleaf pine plantings to remove offsite oaks.
- Conduct pine seedling survival surveys in the 2009 longleaf pine plantings.


Compartment
01
02
Murphy Creek Conservation Area
Figure 11
Forest Management Map
0.4 0.2 0 0.4 Miles
1 = 35000
Boundary
Potential Harvest Areas
Year Thinned
2005
2009
Year Planted
2009
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Fire Management

Forest and fire management activities within the MCCA 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.

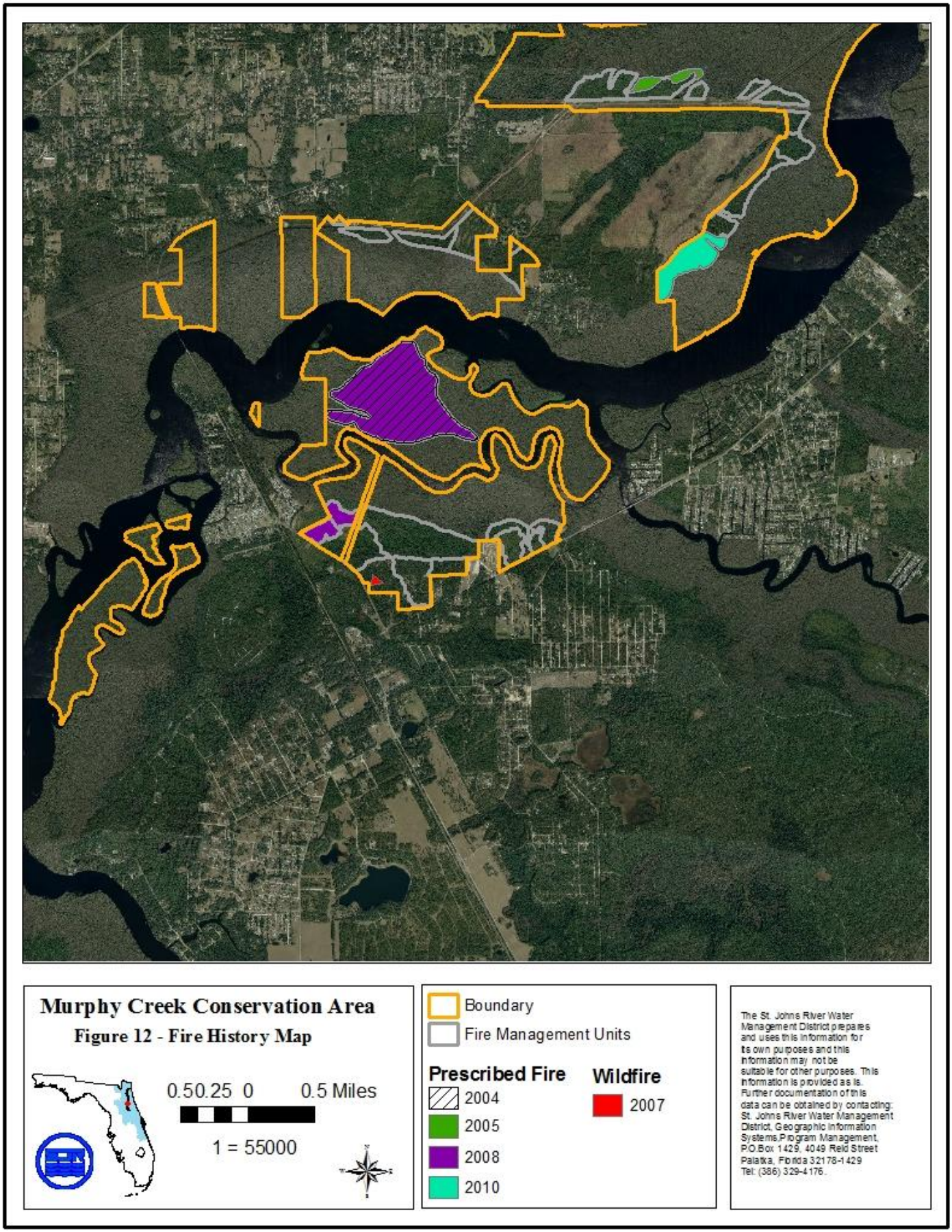
Fire is a vital factor in managing the character and composition of vegetation in many of the natural communities in Florida. The District's primary use of fire is to mimic natural fire regimes to encourage the amelioration of native pyric plant communities and dependant wildlife. Additionally, the application of fire aids in the reduction of fuels and minimizes the potential for catastrophic and damaging wildfires. All of the upland natural communities within MCCA are fire adapted, making prescribed fire an important tool for use in the restoration and maintenance of plant communities within the conservation area. Figure 12 illustrates the known fire history across the conservation area.

Historically, the majority of fires occurring on what is now the MCCA would have been ignited by lightning during the growing season. The District intends to reintroduce growing season fires where possible, understanding that constraints in some areas such as young pine plantations, high fuel loading, and proximity to smoke sensitive areas may predicate the use of dormant season burning.

Limiting factors narrowing the window of opportunity for the application of prescribed fire on the portions of the conservation area is the close proximity to critical smoke sensitive areas including US Highway 17, SR 20, SR 19, CR 207, developed areas such as the city of Palatka, and down drainage effects of the St. Johns River. Smoke management is paramount and any potential burns will be conducted to minimize off-site impacts by maneuvering smoke plumes away from smoke sensitive areas and by ensuring adequate smoke dispersal. Smoke management concerns and smoke radii for the conservation area are depicted in Figure 13.

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

All implementation of prescribed fire within the conservation area will be conducted in accordance with the District's Fire Management Plan, the Murphy Creek Conservation Area Fire Management Plan (Addendum 4), and the annual burn plan for the property.


Murphy Creek Conservation Area
Figure 12 - Fire History Map
0.50.25 0
0.5 Miles
1 = 55000
Boundary
Fire Management Units
Prescribed Fire
2004
2005
2008
2010
Wildfire
2007
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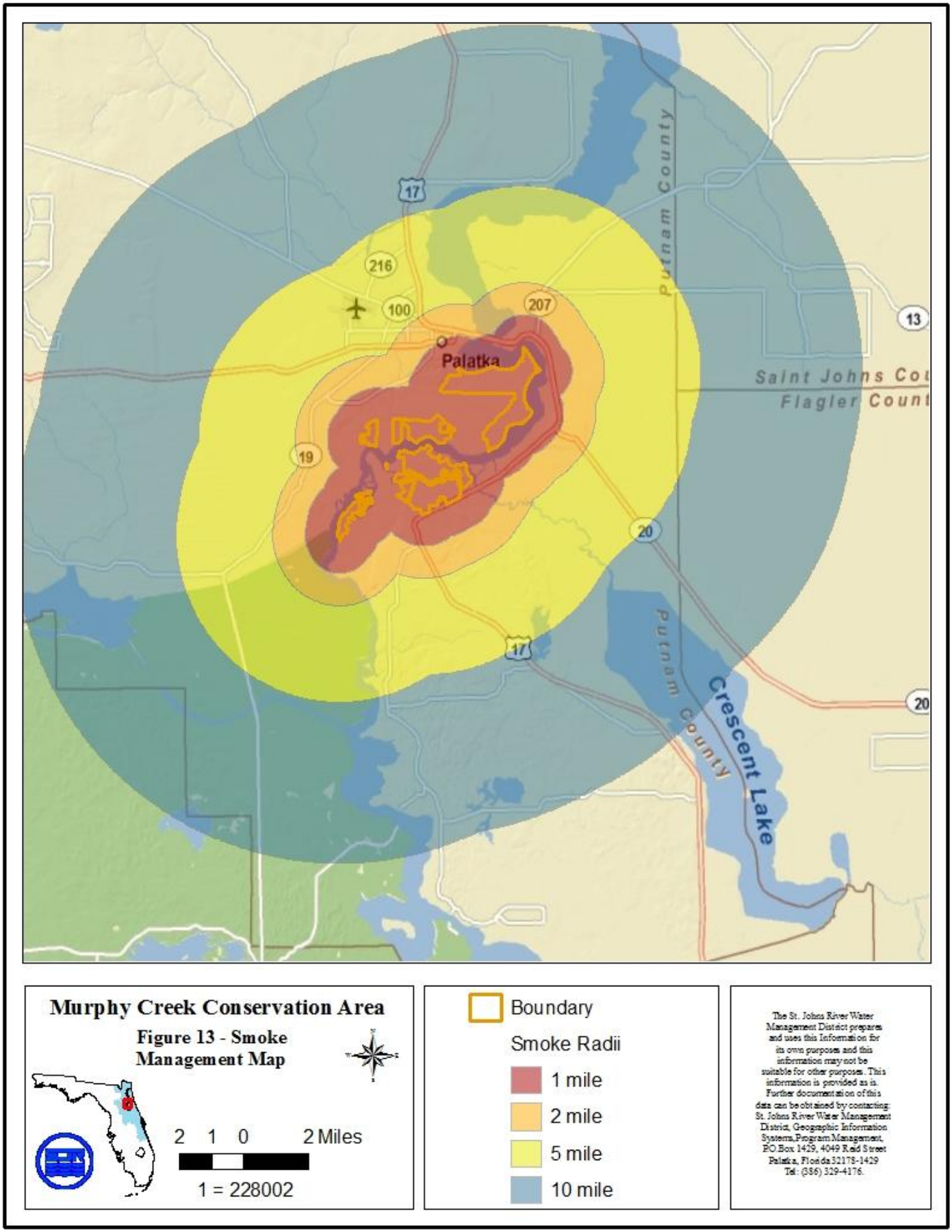
Murphy Creek Conservation Area
Figure 13 - Smoke Management Map
2 1 0 2 Miles
1 = 228002
Boundary
Smoke Radii
1 mile
2 mile
5 mile
10 mile
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Palatka
Putnam County
Crescent Lake
Saint Johns Co
Flagler Count
17
216
100
207
19
20
13

Fire Management Strategies

- Implement prescribed burning as described in the District's Fire Management Plan.
- Develop annual burn plans.
- Introduce growing season burns where possible.
- Introduce dormant season burns in select pine plantations and areas of high fuel loading and/or extended fire exclusion.
- Continue to populate the fire management database.

Exotic Species

Exotic pest plants known to occur within the conservation area include camphor (*Cinnamomum camphora*), cogon grass (*Imperata cylindrica*), Mimosa (*Albizia julibrissin*), and chinaberry (*Melia azedarach*). The MCCA is part of the District's invasive plant management program. Exotic species control is necessary to inhibit the continued proliferation of exotic plants and integral in the maintenance and restoration of natural plant communities. While it is unlikely that the District will entirely eradicate invasive plants within the conservation area, achieving maintenance control of such species is targeted within the scope of this plan. Exotic pest plant infestations are low on the conservation area; the property is regularly monitored and treated as necessary.

Exotic wildlife species known to occur within the conservation area include feral hogs (*Sus scrofa*), brown anole (*Anolis sagreii*), and nine-banded armadillos (*Dasypus novemcinctus*). In addition to feral hog removal agents working under District SUAs, the United States Department of Agriculture may be contracted to assist in the removal of feral hogs from the conservation area.

Laurel wilt, a disease of red bays (*Persea borbonia*) and other trees in the laurel family has been observed in red bay populations within the MCCA. Caused by a fungus, laurel wilt is carried and transmitted by the non-native red bay ambrosia beetle (*Xyleborus glabratus*.) The beetles generally attack healthy mature trees and the subsequent fungal infection causes the flow of water to be restricted to the leaves and branches, eventually causing mortality. Laurel wilt is devastating to infected populations and there are currently no established methods for controlling the laurel wilt disease in wild populations of *Persea*.

This disease has the potential to have detrimental effects on wildlife populations, including the palamedes swallowtail butterfly (*Papilio palamedes*). The palamedes is relatively common in Florida. Larval host plants for the palamedes swallowtail butterfly include species of *Persea*, but are primarily red bay.

Additional information on laurel wilt disease and the red bay ambrosia beetle can be found at http://www.fl-dof.com/publications/fh_pdfs/Laurel_Wilt.pdf and http://edis.ifas.ufl.edu/HS391.

Exotic Species Strategies

- Continue to monitor for exotic species and implement appropriate action.

Cultural Resources Protection

A review of the Department of State, Division of Historical Resources (DHR) indicates 14 Florida Master Site File cultural sites within the conservation area. If additional sites are

discovered, District staff will document and report those sites to the DHR. District land management activities that may affect or impact these resources will be evaluated and modified to reduce the potential for disturbance of the identified sites. Additionally, detrimental activities discovered on these sites will also be reported to the DHR and appropriate law enforcement agencies. Due to District and State policy, the location of the sites is not identified on public maps. One potential site has been recently identified and District staff are communicating with DHR.

Cultural Resources Strategies

- Identify and report sites to the DHR.

LAND USE MANAGEMENT

Access

A public parking area is located on the MCCA off Buffalo Bluff Road. The parking area is fenced, and has a walkthrough providing for recreational access. An informative kiosk is provided at the parking area trailhead. A boat dock and kiosk is located on Murphy Island providing public access from the water. Current boundary configurations preclude the installation of additional public access points on other parcels at this time.

There are currently 7 gates providing management access to and across the MCCA. These gates are monitored regularly for maintenance and/or repair needs from normal wear and tear and vandalism. In an effort to expedite emergency responses and to assist law enforcement and fire rescue in locating individuals in the event of an emergency, 911 addresses have been issued for parking areas and select access gates. The MCCA includes the following two 911 addresses:

- 1063 Highway 17 South
- 194 East Buffalo Bluff Road

Several roads traverse the MCCA. In order to maintain District roads within the conservation area, they are identified and classified according to anticipated maintenance needs. All roads within the conservation area are classified by the District as either "Type D" or "Type E." Type D roads are roads with limited stabilized surfaces with or without ditches (existing) that receive occasional traffic. Maintenance consists of routine mowing of the road surface and side and overhead vegetation. Type E roads are seasonal roads that receive infrequent traffic. Maintenance is generally limited to mowing to prevent vegetative encroachment.

Roads will be regularly inspected and receive maintenance and repair as necessary and may be subject to closure during these times. Figure 14 depicts the location of the parking area, boat dock, and roads on the property. Table 4 details the miles of unique road types within the conservation area.

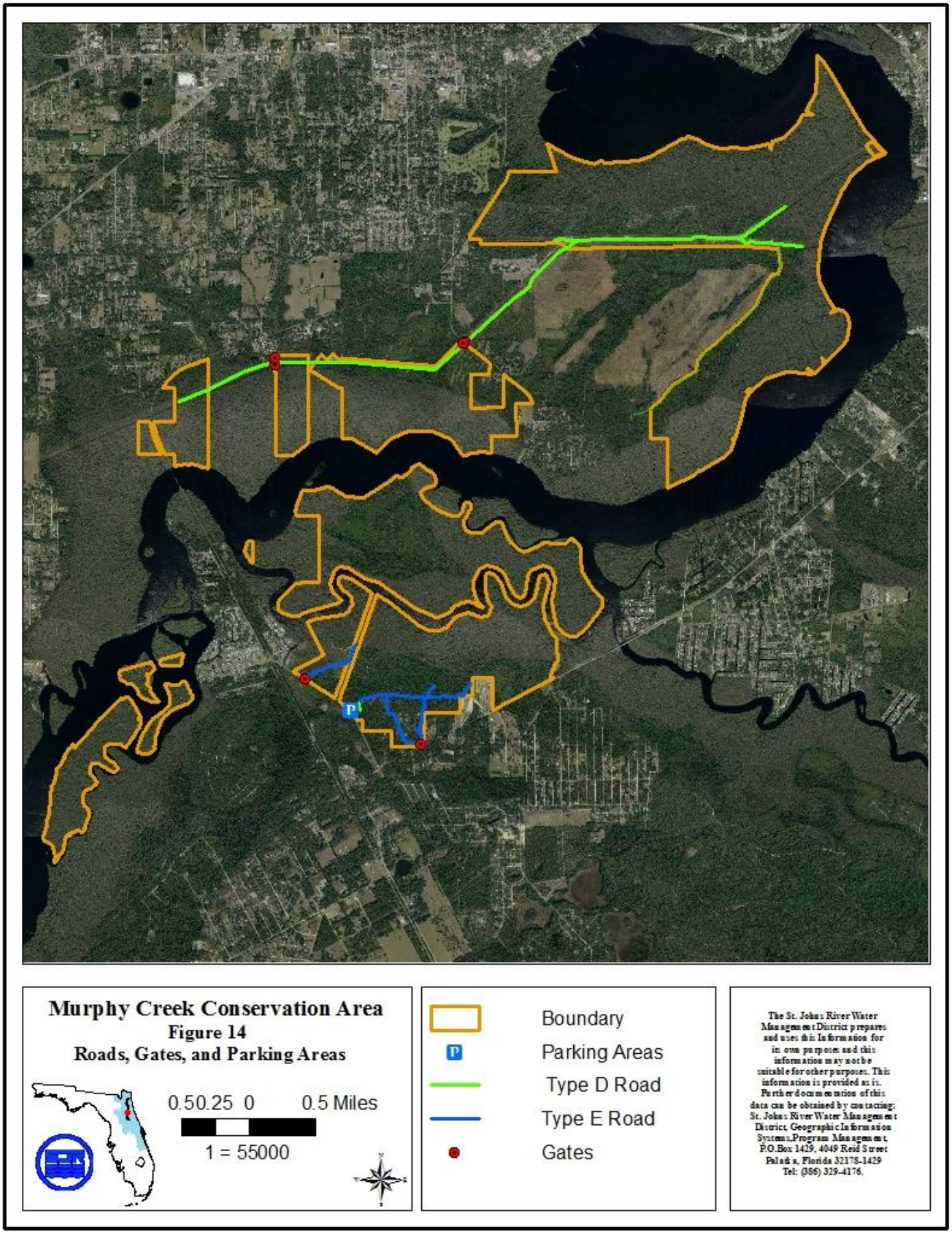

Murphy Creek Conservation Area
Figure 14
Roads, Gates, and Parking Areas
0.50.25 0 0.5 Miles
1 = 55000
Boundary
Parking Areas
Type D Road
Type E Road
Gates
The St. Johns River Water Management District prepares and uses this Information for its own purposes and this information may not be suitable for other purposes. This information is provided as is. Further documentation of this data can be obtained by contacting: St. Johns River Water Management District, Geographic Information Systems,Program Management, P.O.Box 1429, 4049 Reid Street Palatka, Florida 32178-1429 Tel: (386) 329-4176.

Table 4 – Road Classification Table

Road Type	Miles
D	10.6
E	2.1

Access Strategies

- Maintain parking areas, boat dock, signs, gates, trails, and roads.

Recreation

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

Recreational opportunities available within the MCCA include hiking, bicycling, wildlife viewing, equestrian activities, and primitive camping. Boating and canoeing opportunities are available and Murphy Island is accessible by water; however, there are no boat launches located on the property. The conservation area hosts a group campsite and includes a non-potable pitcher pump, picnic tables, and a fire ring. A primitive campsite is located on Murphy island and includes a picnic table, fire ring, and portable restroom.

The conservation area is open to the public for recreational purposes. A 2.2 mile marked loop trail system is established on the McMillan parcel and several trails are available for use on the Murphy Island. Figure 14 depicts the extent of trails and recreation amenities available within the MCCA.

The District maintains trails through a trail maintenance contract. The contract provides for quarterly maintenance that includes mowing and maintenance of overhanging vegetation on established trails, and re-marking existing trail-blazes to delineate the designated trail route. Continuation of the trail maintenance contract is subject to budget availability.

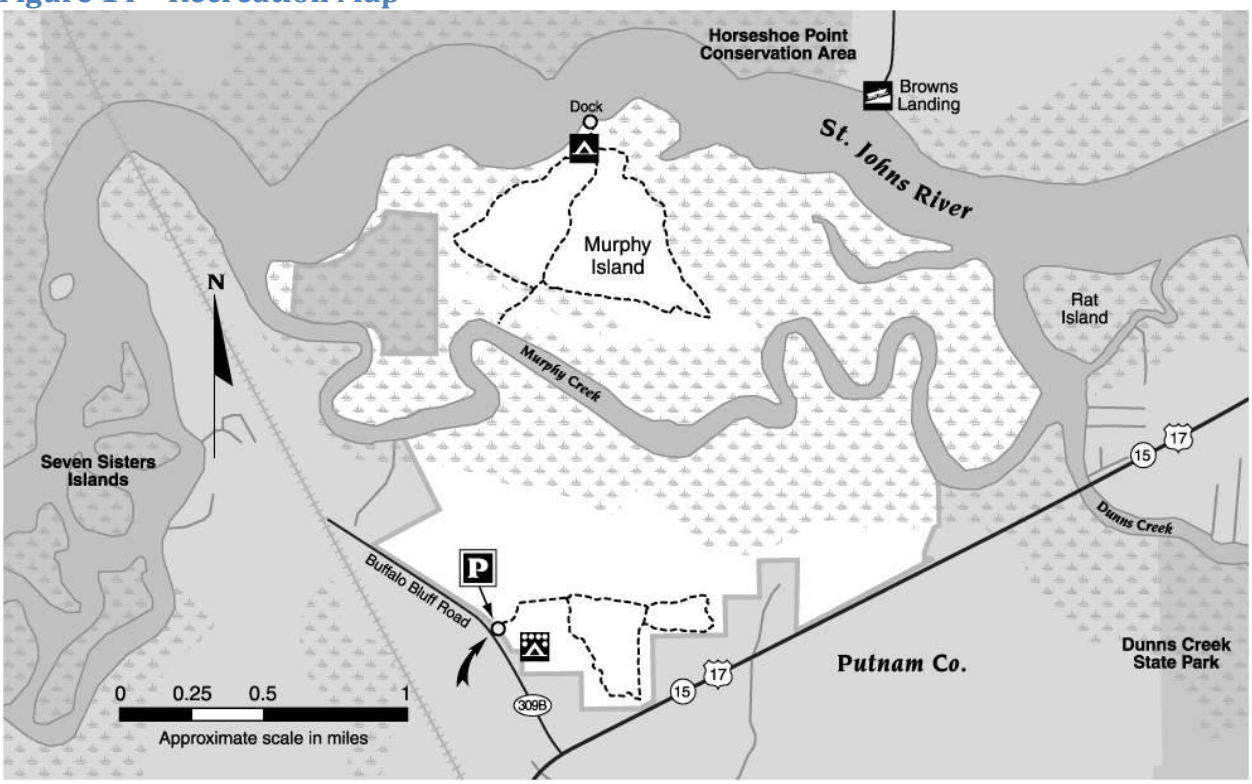
Any improvements will be incorporated into the next edition of the District's *Recreation Guide to District Lands*, which can be viewed online at floridaswater.com.

Recreation Strategies

- Continue trail maintenance contract.
- Continue maintenance of kiosks and informative panels.
- Update Recreation Guide to include the addition of the Horseshoe Point and Seven Sisters Conservation Areas into the Murphy Creek Conservation Area.

- Update information kiosks to include the addition of the Horseshoe Point and Seven Sisters Conservation Areas into the Murphy Creek Conservation Area.
- Update trail brochures to include the addition of the Horseshoe Point and Seven Sisters Conservation Areas into the Murphy Creek Conservation Area.
- Update District website to include the addition of the Horseshoe Point and Seven Sisters Conservation Areas into the Murphy Creek Conservation Area.
- Include any recreation improvements on the District's web site and in the next edition of the District's *Recreation Guide to District Lands*.

Figure 14 – Recreation Map



Environmental Education

The District offers numerous educational opportunities in the form of online materials and workshops. Programs include Project Wet and the Great Water Odyssey. The former, available in Putnam County is a program designed to teach educators about water resources and is based on FCAT standards while the latter is an interactive, multidisciplinary educational experience offered free of charge to educators within the District.

Environmental Education Strategies

- Continue to offer environmental education opportunities.

Security
The boundaries of the conservation area were marked and posted soon after the original survey work was complete. While portions of the boundaries were fenced prior to acquisition, some of the conservation area boundary, particularly through the forested wetlands, remains unfenced. District staff will evaluate the need for fencing in unfenced areas and incorporate all new fencing into future budget and annual work plans.

Security concerns include illegal motorized vehicle access, dumping, and poaching. Law enforcement for the property is administered by the District, primarily through a contract security firm as well as coordination with FWC and local law enforcement.

Security Strategies
- Maintain signage, fencing, gates, and locks.
- Evaluate the need for new fencing.
- Continue coordination with private security firm and FWC local law enforcement.

ADMINISTRATION

Acquisition
There are no anticipated surpluses or acquisitions associated with the conservation area in the next five years.

Acquisition Strategies
- Evaluate adjacent properties for potential acquisition.

Cooperative Agreements, Leases, Easements, and Special Use Authorization
In accordance with District Policy #90-16, the District promotes entering into agreements with other agencies and private parties for cooperation and coordination of management of the District's lands. These cooperative agreements serve to protect the District's water management interests and to enhance the management and public value of the land. The District anticipates entering into a lease for the purposes of cattle grazing on approximately 400 acres of the MCCA.

Table 5 – Agreements, Easements, and SUA Table

Agreement ID	Name	Type	Term	Termination Date
73	Baldwin Honey Farms, LLC	Apiary SUA	One year with four (4) one-year auto renewals	February 19, 2014

426	Pottorf, George	Feral Hog Removal SUA	One year with four (4) one-year auto renewals	December 31, 2012
603	Bob's Fencing	Tree removal for ecological restoration.	One year	August 4, 2010

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

- Continue maintenance of existing agreements

Implementation Chart

Murphy Creek Conservation Area - Management Implementation Chart- 2010

TASK	RESPONSIBLE LEAD	DUE DATE	COOPERATORS
RESOURCE PROTECTION AND MANAGEMENT			
Water Resources			
○ Regularly inspect roads, ditches, turnouts, culverts, fire lines, and trails for erosion problems.	DLM	Annually by September 1	
○ Locate and GPS all culvert locations and incorporate into conservation area database. Include type, length and diameter of each culvert.	DLM	2012	
○ Where removal will not further affect desirable groundcover species, remove beds from harvest areas prior to reforestation.	DLM	As harvests occur	
Flora and Fauna			
○ Continue to conduct diversity surveys and develop species lists.	DLM	Upon discovery	
○ Incorporate species lists into the District's bio-database	DLM	2015	
○ Continue to monitor for the presence of listed species.	DLM		

TASK	RESPONSIBLE LEAD	DUE DATE	COOPERATORS
○ Conduct gopher tortoise burrow surveys every 3 years.	DLM	2012 and 2015	
Forest Management and Natural Community Restoration/Enhancement			
○ Conduct herbicide application within the sandhills to remove offsite oaks. (Compartment 1)	DLM	2011	
○ Conduct pine seedling surveys in the 2009 longleaf plantings. (Compartment 1)	DLM	2011	
○ Conduct harvest of offsite oaks within the restoration/enhancement area.	DLM	Fall 2010	
○ Conduct harvest of sand pine within the restoration/enhancement area.	DLM	Fall 2010	
○ Conduct herbicide applications within the restoration/enhancement area to control coppice sprouting of cut oaks and to remove smaller oaks and other hardwoods not subject to harvest. (Compartment 4)	DLM	2011	
○ Conduct initial groundcover survey in the sandhill restoration/enhancement area to determine planting/seeding needs. (Compartment 4)	DLM	2011	
○ Conduct overall pine density and pine seed tree surveys in the sandhill restoration/enhancement area. (Compartment 4)	DLM	2012	
○ Conduct initial groundcover survey to	DLM	2012	

TASK	RESPONSIBLE LEAD	DUE DATE	COOPERATORS
determine planting/seeding needs in sandhill restoration/enhancement area. (Compartment 4)			
○ Evaluate potential thinning needs in stands 1701020 and 1701016.	DLM	2015	
Fire Management			
○ Implement prescribed burning as described in the District's Fire Management Plan.	DLM		
○ Develop annual burn plans.	DLM	Annually by September 30	
○ Introduce growing season burns where possible.	DLM		
○ Introduce dormant season burns in select pine plantations and areas of high fuel loading and/or extended fire exclusion.	DLM	2015	
○ Continue to populate the fire management database.	DLM	Annually by September 30	
Exotic Species			
○ Continue to monitor for exotic species and implement appropriate action.	DLM	Upon discovery	
Cultural Resources			
○ Identify and report sites to the DHR.	DLM	Upon discovery	
LAND USE MANAGEMENT			
Access			
○ Maintain parking area, signs, gates, trails, and roads.	DLM	Annually by September	
Recreation			
○ Continue trail maintenance contract.	DLM	Annually by September 1.	
○ Continue maintenance of kiosks and informative panels.	DLM	Annually by September 1	
○ Update Recreation Guide to include the addition of the Horseshoe Point and Seven Sisters Conservation Areas into the Murphy Creek Conservation Area.	DLM	2010	OC
○ Update information kiosks	DLM	2011	OC

TASK	RESPONSIBLE LEAD	DUE DATE	COOPERATORS
to include the addition of the Horseshoe Point and Seven Sisters Conservation Areas into the Murphy Creek Conservation Area.			
Update trail brochures to include the addition of the Horseshoe Point and Seven Sisters Conservation Areas into the Murphy Creek Conservation Area.	DLM	2011	OC
○ Update District website to include the addition of the Horseshoe Point and Seven Sisters Conservation Areas into the Murphy Creek Conservation Area.	DLM	2011	OC
○ Include any recreation improvements on the District's web site and in the next edition of the District's *Recreation Guide to District Lands*.	DLM	October 2010	OC
Environmental Education			
○ Continue to offer environmental education opportunities.	DLM		OC
Security			
○ Maintain signage, fencing, gates, and locks.	DLM		
○ Evaluate the need for new fencing.	DLM	Annually by September 1	
○ Continue coordination with private security firm, FWC local law enforcement, and security resident.	DLM	Monthly	
ADMINISTRATION			
Acquisition			
○ Evaluate adjacent properties for potential acquisition.	DLA	Annually by September 1	DLM
Cooperative Agreements			
○ Continue to administer existing leases and agreements.	DLM		

IMPLEMENTATION CHART KEY

DLA	Division of Land Acquisition
DLM	Division of Land Management
DWR	Department of Water Resources
FDHR	Florida Division of Historical Resources
FWC	Florida Fish and Wildlife Conservation Commission
OC	Office of Communication

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ADDENDUM 1 - SPECIES RANKING DEFINITIONS

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.

STATE LEGAL STATUS

LE Endangered: species, subspecies, or isolated population so few or depleted in number or so restricted in range that it is in imminent danger of extinction.
LT Threatened: species, subspecies, or isolated population facing a very high risk of extinction in the future.
LS Species of Special Concern is a species, subspecies, or isolated population which is facing a moderate risk of extinction in the future.
PE Proposed for listing as Endangered.
PT Proposed for listing as Threatened.
PS Proposed for listing as Species of Special Concern.
N Not currently listed, nor currently being considered for listing.

FEDERAL LEGAL STATUS

LE Endangered: species in danger of extinction throughout all or a significant portion of its range.
LT Threatened: species likely to become Endangered within the foreseeable future throughout all or a significant portion of its range.
LT, PDL Species currently listed threatened but has been proposed for delisting.
LT,PE Species currently listed Threatened but has been proposed for listing as Endangered.
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.
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.
XN Non-essential experimental population.
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.

ADDENDUM 2 – SOIL DESCRIPTIONS

The Adamsville series consists of very deep, somewhat poorly drained, rapidly permeable soils on broad flats, low knolls, and lower side slopes. They formed in thick sandy marine sediments in central and southern Florida. Natural vegetation consists of pines, laurel, and water oaks with a ground cover of saw palmetto, pineland threeawn, indiangrass, bluestem grasses, and several low panicums.

The Astatula series consists of very deep, excessively drained, rapidly permeable soils that formed in eolian and marine sands. Natural vegetation may consist of blue jack, blackjack, turkey oaks, longleaf pine, sand pine, and an understory of rosemary, pineland threeawn, bluestem, paspalum, lopsided indiangrass, and panicum.

The Cassia series consists of very deep, somewhat poorly drained, moderately rapid permeable soils on low ridges and knolls that are slightly higher than the adjacent flatwoods. The native vegetation supported by this series generally consists of scattered slash pine, longleaf pine, and saw palmetto.

The Electra series consists of somewhat poorly drained soils that formed in thick beds of sandy and loamy marine sediments on slight ridges in the flatwoods areas of central and southern Florida. Native vegetation may include dwarf live oak, a few longleaf and sand pine, running oak, saw palmetto, and blueberry. Understory vegetation may include creeping bluestem, chalky bluestem, lopsided indiangrass, low panicum, pineland threeawn, paspalum, and numerous forbs.

Holopaw – 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 three awn.

Immokalee – These soils are deep to very deep and poorly drained to very poorly drained soils that formed in sandy marine sediments. They occur on flatwoods and in depressions of Peninsular Florida. Slopes tend to be 0 – 2%, but may range to 5%. Principle vegetation is longleaf and slash pine with undergrowth of saw palmetto, gallberry, wax myrtle, and pineland threeawn. In depressions, water tolerant plants such as cypress, loblolly bay, gorodonia, red maple, sweetbay, maidencane, bluestem, sand cordgrass, and blue joint panicum are more common. Most areas with Immokalee soils are in rangeland and forests.

The Millhopper series consists of very deep, moderately well drained, moderately permeable soils that formed in thick beds of sandy and loamy marine sediments. They occur in central and southern Florida. Native vegetation consists of live oak, laurel oak, post oak, water oak, sweetgum, cherry laurel, few hickory, and slash and longleaf pine. The understory is chiefly lopsided indiangrass, hairy panicum, low panicum, greenbrier, hawthorne, persimmon, fringeleaf paspalum, chalky and creeping bluestems, and pineland threeawn.

Myakka – 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 barrier islands. Slopes in areas where these soils are found range from 0-8%. 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.

The Narcoossee series consists of very deep, somewhat poorly drained soils that formed in thick sandy sediments of marine origin. These soils are on low knolls and ridges in the flatwoods areas of central and southern Peninsular Florida. Native vegetation is dominantly water oak, willow oak, live oak, laurel oak, longleaf pine, slash pine, greenbrier, sawpalmetto, pineland threeawn, creeping bluestem, panicum, purple lovegrass, and lopsided Indiangrass.

The Newnan series consists of somewhat poorly drained soils that formed in thick beds of sandy and loamy marine sediments of slight ridges in the flatwoods areas of central and southern Florida. Native vegetation consists of slash and longleaf pine and scattered live and turkey and laurel oaks. Understory components are chiefly huckleberry, blueberry, gallberry, running oak, brackenfern, bluestems, paspalums, pineland threeawn, sawpalmetto, greenbrier, lovegrass, and lopsided indiangrass.

The Orsino series consists of very deep, moderately well drained, very rapidly permeable soils that formed in thick beds of sandy marine or aeolian deposits. They are on moderately high ridges in the coastal plain. Native vegetation consists primarily of scrub vegetation with sand live oak, Chapman oak, myrtle oak, and scrub hickory. Scattered sand, slash, and longleaf pines and scattered blue jack, turkey, and post oak are found with a sparse understory.

The Palmetto series consists of deep, poorly drained, moderately slowly permeable soils that formed in unconsolidated marine sandy and loamy materials. They occur in sloughs, depressions, and poorly defined drainageways in the flatwoods in Peninsular Florida. Slopes are 0 to 2 percent. Natural vegetation is chalky bluestem, blue maidencane, sand cordgrass, pineland threeawn, low panicums, and scattered slash pines and scattered clumps of sawpalmetto, sawgrass, arrowhead, cattail, spikerush, St. Johnswort, and cypress.

The Placid series consists of very deep, very poorly drained, rapidly permeable soils on low flats, depressions, poorly defined drainageways on uplands, and flood plains on the Lower Coastal Plain. They formed in sandy marine sediments. Natural vegetation consists of pond pine, bay, cypress, gum, pickerel weed, and coarse grasses.

Pompano – Pompano consists of very deep, very poorly drained, rapidly permeable soils in depressions, drainageways, and broad flats. They formed in thick beds of marine sands. Mean annual precipitation is about 50 inches and slopes range from 0-2%. Natural vegetation consists of palmetto, widely spaced cypress, gum, slash pine, and native grasses.

Samsula – 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 drainage ways, and flood plains. Slopes are less than 2%.

Natural vegetation is loblolly bay, with scattered cypress, maple, gum, and trees with a ground cover of greenbriers, ferns, and other aquatic plants.

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.

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.

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 – 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 sawgrass, 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.

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, long leaf or slash pine with an undercover of pineland threeawn, bluestem, lopsided indiangrass, gallberry, native weeds and saw palmetto.

Murphy Creek Conservation Area

FIRE MANAGEMENT PLAN

PREPARED BY

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
DIVISION OF LAND MANAGEMENT

Murphy Creek Conservation Area
Fire Management Plan
Putnam County, Florida

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 Murphy Creek Conservation Area (MCCA.)

Introduction and Objectives

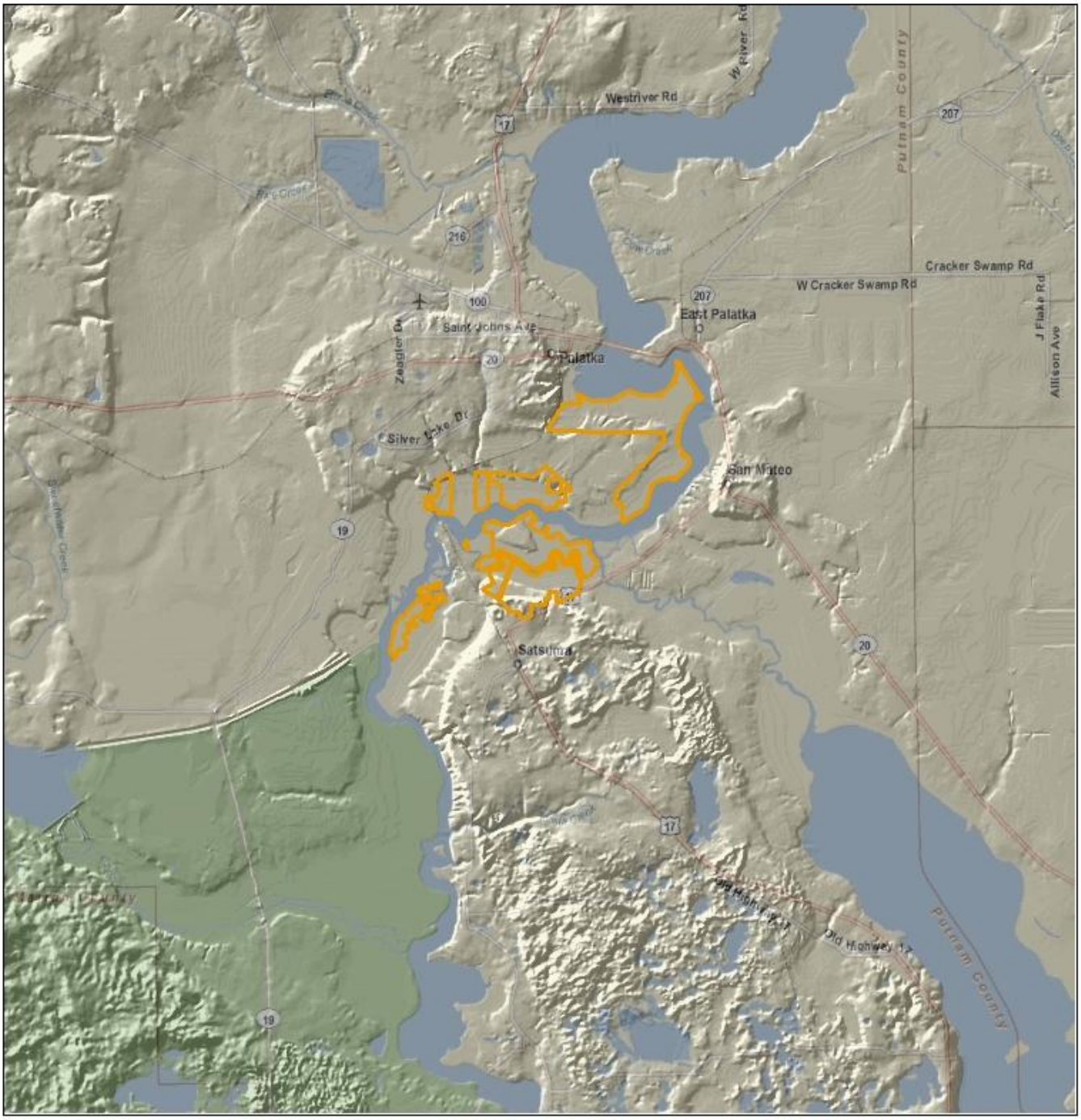
The MCCA covers approximately 4,755 acres in Putnam County and provides protection for several miles of shoreline of both Murphy Creek and the St. Johns River. These conservation area include several disjunct parcels and are located in numerous sections of Townships 11 and 5 South and Range 26 and 27 East.

The conservation area is located along the St. Johns River between the city of Palatka and Satsuma. It is located north and west of US Highway (US) 17 and south and west of State Road (SR) 20. The Kay Larkin Airport is approximately 3 miles to the north. Figure 1 depicts the general location of the conservation area.

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 dependant. 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 goals for the implementation of fire management activities within the conservation area include:

- Reduction of fuel loads through the application of dormant season burns to decrease potential risk of damaging wildfires
- Reintroduction of growing season burns to encourage the perpetuation of native fire adapted ground cover species
- Mitigation of smoke management issues
- Restoration and maintenance of a mosaic of natural plant communities and ecological diversity
- Maintenance and restoration of ecotonal areas

The achievement of these goals requires that the conservation area be partitioned into manageable burn units prior 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 MCCA.



Murphy Creek Conservation Area

Figure 1 - Location Map

10.5 0 1 Miles

1 = 175000

Boundary

The St. Johns River Water Management District prepares and uses this Information for its own purposes and this information may not be suitable for other purposes. This information is provided as is. Further documentation of this data can be obtained by contacting: St. Johns River Water Management District, Geographic Information Systems, Program Management, P.O.Box 1429, 4049 Reid Street Palatka, Florida 32178-1429 Tel: (386) 329-4176.

Fire Return Interval

The general frequency to which fire returns to a community type under natural conditions 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. Table 1 and the following discussion of native plant communities occurring within the conservation area and optimal fire return intervals was characterized in part using information from the Florida Natural Areas Inventory's *Guide to the Natural Communities of Florida*.

Table 1.

Community Type	Fire Return Interval
Floodplain Swamp	This community is not fire adapted.
Basin Marsh	1 to 10 years (1 to 3 if herbaceous)
Depression Marsh	Will burn in conjunction with surrounding community type.
Mesic Hammock	This community is generally non pyrogenic, but will occasionally burn.
Wet Flatwoods	3 to10 years
Mesic Flatwoods*	1to8 years
Scrubby Flatwoods*	8 to 25 years
Sandhill**	2 to 5 years
Scrub	20 to 80 years

*Fire return intervals in planted pine stands vary depending on species and age.
**Fire return intervals in areas of active restoration and enhancement activities may vary depending on fuel availability and duration between plantings.

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

Wet, mesic, and scrubby flatwoods (flatwoods) are prevalent fire adapted natural community types found within the conservation area. The majority of the flatwoods within the MCCA were utilized in commercial silviculture operations. As a result, much of this natural community type is bedded and planted in primarily slash pine (*Pinus elliottii*). Additionally, the midstory and groundcover species within these pine plantations are altered. In some areas, the midstory and groundcover components are highly suppressed and leaf litter is the primary carrier of fire. In other areas the, midstory species are heavily overgrown and combine with leaf litter, will contribute to the spread of fire. Shrub and groundcover components of the flatwoods on the MCCA in areas where roller chopping has been accomplished, include a more diverse and abundant coverage of herbaceous and shrub components including wiregrass and saw palmetto and will contribute to the spread of fire.

At the time of acquisition, the sandhills found within the conservation area were altered. On the northern parcels, these areas were in dense stands of slash pine. On the southern parcels, theses areas had been cleared as early as the 1940s for possible cattle grazing operations. The sandhillls within the conservation area suffer from prolonged fire exclusion.

Restoration driven management techniques implemented within these areas includes clear cut harvesting of slash pine on the northern parcels (and subsequent replanting of longleaf pine) and the harvesting of sand pine and offsite oaks on the southern parcels of the MCCA. Groundcover and shrub layers in most of these areas are highly suppressed, consisting of the more resilient and disturbance adapted, yet site appropriate species. The dead fuel will be the primary carrier of fire for the initial burns implemented in MCCA. Currently, due to the absence of fine fuels and leaf litter, fire will likely not carry through the sandhills on the north end of the conservation area.

Basin marsh is a fire-adapted community. An example of this community type is located on the northern portions of the conservation area and is embedded within the floodplain swamp. Since floodplain swamps are a non-pyric plant community, it is unlikely that prescribed fire will be applied to this area. Natural fires may burn through this area every 1 to 10 years

Fire management within the remaining pyric plant communities (below) will be in conjunction with the associated flatwoods communities. These plant communities will burn as site conditions permit during the implementation of controlled burns in the adjacent plant communities. Additionally, these areas will not be excluded from fire activities unless warranted by safety or smoke management issues.

Depression marsh is a fire-adapted community. Though fire may not carry entirely across each marsh during every burn, it is an important factor in the maintenance of the edge habitats surrounding them. The natural fire regime would burn approximately every 1-8 years. Depression marshes are embedded within the uplands across the conservation area. In general, depression marsh fires are carried through the herbaceous layer. Many of these marshy areas have been disturbed by past land use and are small, but all still occupy an important niche in providing habitat for numerous species of wildlife. Fire will be applied to these marshes any time surrounding natural communities are burned.

Scrub occurs on Murphy Island in a small isolated patch embedded within the flatwoods. Scrub communities are fire maintained and generally burn catastrophically every 20 to 80 years. Fire will be applied to this area anytime the surrounding flatwoods are burned.

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 mid March through July. Fires during the spring and early summer months generally have significant ecological benefits by perpetuating fire adapted flora. 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 mid November through the end of February, are less intense than growing season burns and are a desirable alternative when igniting fire in young pine plantations. Additionally, dormant season burns help to reduce fuel loads

resulting in fewer safety and smoke management issues. Fuel loads are high across most of the conservation area and includes heavy duff and needle litter accumulation in some areas. These fuel conditions may require that some of the initial applications of fire be in the form of dormant season burning. This will allow for the reduction of fuel loads while providing for the protection of desirable vegetation. The ultimate goal of this strategy will be to move the prescribed fire application into a growing season rotation. District staff anticipates the transition to growing season burns to occur only after a sufficient reduction of fuel levels and tree growth is achieved.

Many of the fire management units (FMUs) within the conservation area have row-based silviculture present in various stages of development. It is not the purpose of this prescribed fire program to harm existing mature pine within the conservation area and furthermore, extra caution will be taken when applying fire to a pine plantation, especially a young plantation where the height to the crown is short. Severe scorch can lly harm or even cause mortality in young pine trees. This type of damage will be mitigated by burning during the dormant season when the trees are not actively growing and the meristem areas are protected by a needle layer.

Prescribed fire should not be applied to a recently thinned area of pines. A period of at least one (1) growing season, post harvest will allow the residual trees adequate recovery time. The implementation of prescribed fire inside the recovery window may further stress, weaken, and potentially cause mortality on the remaining trees.

In many cases, fire management units with similar fire management needs may be burned simultaneously, either with crews igniting the areas by hand from the ground, or with the aid of aircraft. Aerial ignition allows District staff to ignite fire management units more quickly, resulting in a faster burnout. In an area with a large mosaic of unavailable fuels, fire can be applied easily to all portions of the unit. With ground based crews this sometimes is infeasible or impossible and may pose a safety issue. An aerial burn safety plan (Exhibit 1) will accompany the individual burn prescriptions and be onsite and on the ground the day of any aerial burn.

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, and firelines, and wetlands and other water bodies. This is only possible, with the agreement of local fire rescue, DOF, District staff, and when all of 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) There are sufficient resources 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 firelines are plowed, a plan for fireline rehabilitation shall be developed and implemented.

Persons discovering arson or wildfires on the conservation area should report them to the Florida Department of Agriculture and Consumer Services, Division of Forestry (DOF), the St. Johns River Water Management District, or by dialing 911.

Post Burn Reports

Burn reports must be completed after each controlled burn or wildfire. These reports include detailed information regarding the acreage, natural communities, staff and equipment hours, and contractor hours. 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.

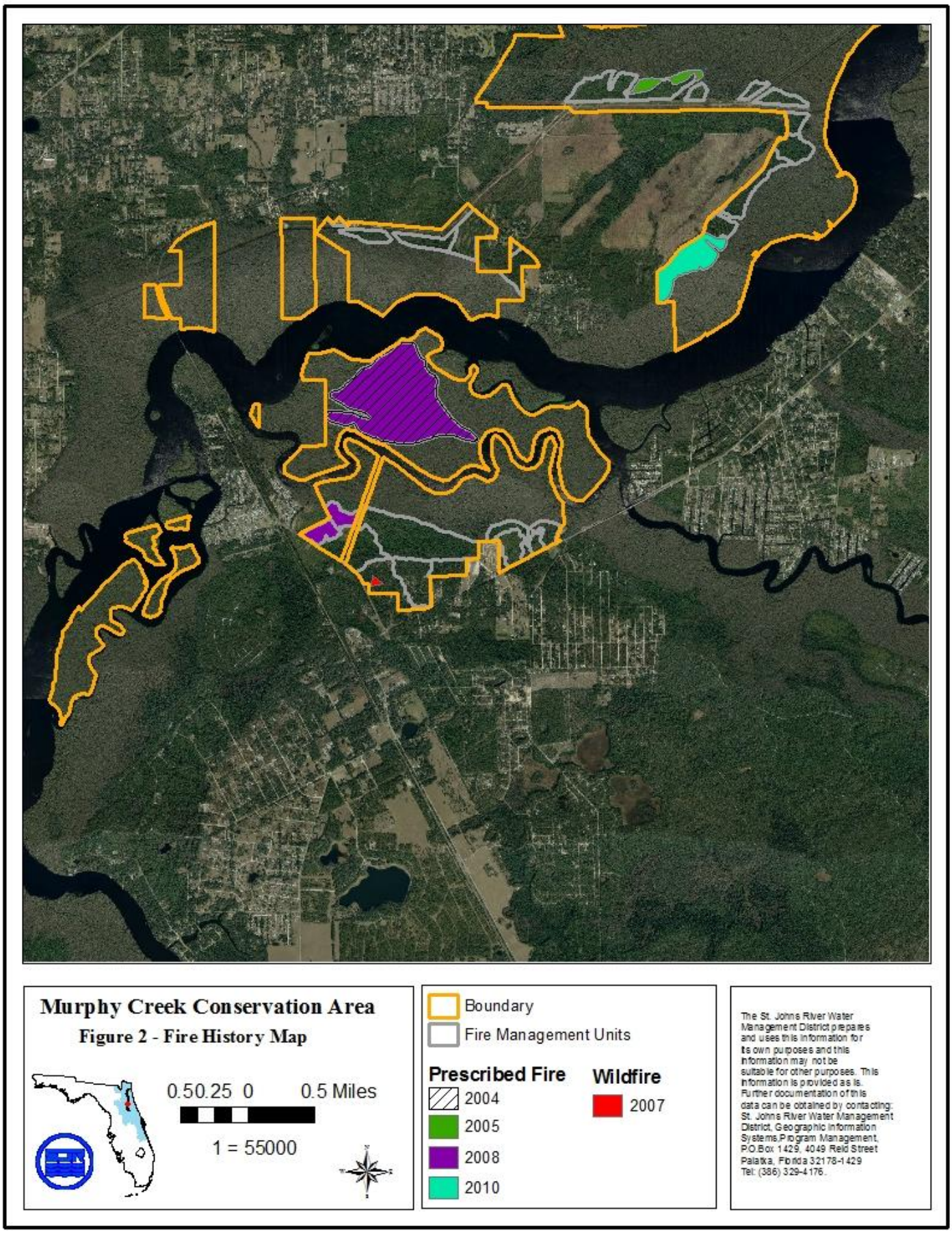
Smoke Management

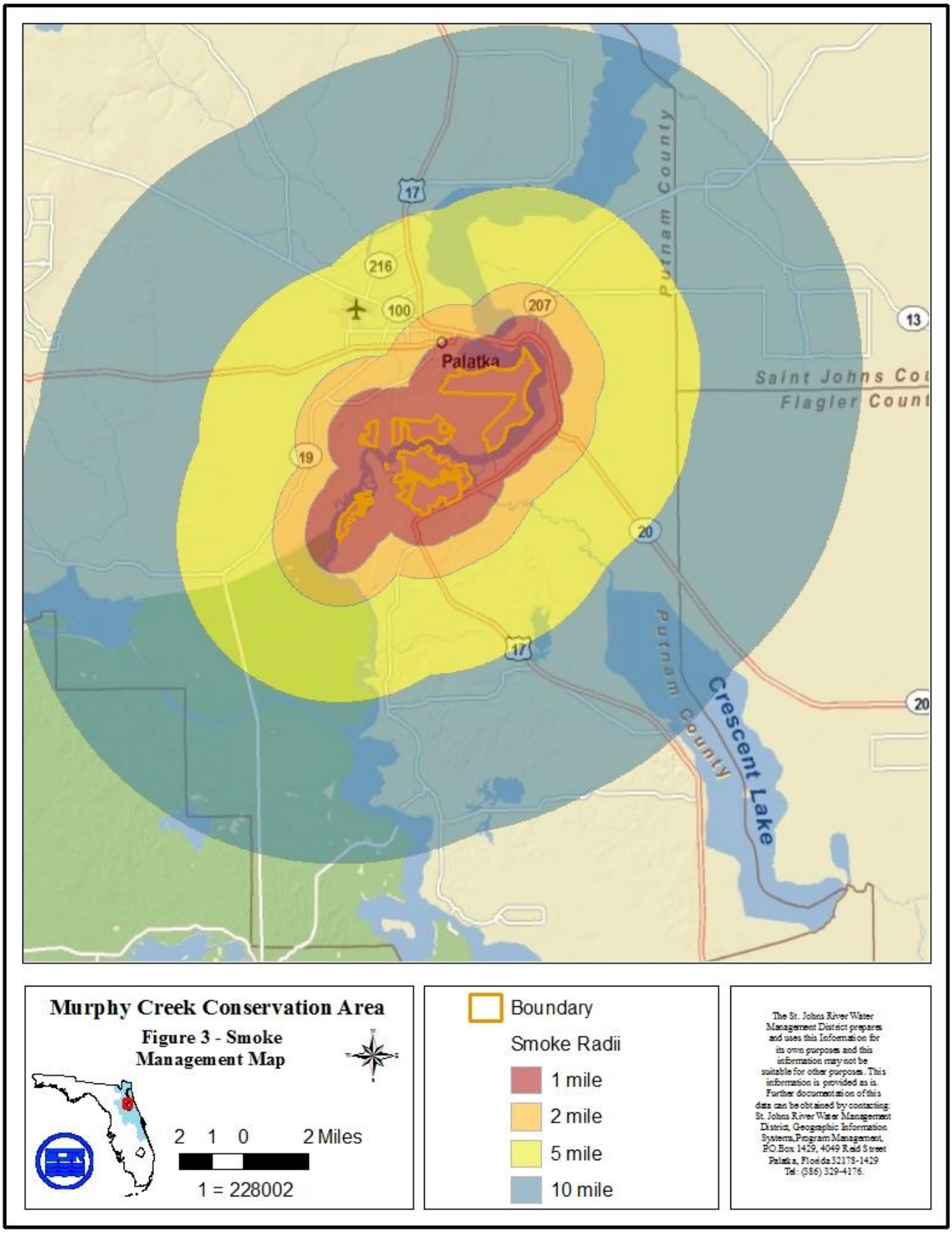
A significant challenge to the implementation of any prescribed burn program is smoke management. Since 2004, approximately 703 acres have been prescribed burned and 7.5 acres burned in a wildfire (Figure 2). Fuel accumulation (dead and live) across the flatwoods communities is high. This accumulation of fuels has the potential to produce a tremendous amount of smoke as areas are burned. As surrounding areas become increasingly urbanized, this problem will increase in magnitude, as there become fewer acceptable places to maneuver a smoke column from a prescribed fire.

While the MCCA has an acceptable smoke shed in which to place a smoke column from a prescribed fire, there are smoke sensitive areas that surround the conservation area and may affect the smoke management of each burn unit. Smoke management is a limiting factor in the application of prescribed fire with in the conservation area. Figures 3 illustrates smoke sensitive areas in relation to the conservation area. As development increases in the area, fire management will become more difficult. Increasing daily traffic on US 17, and SR 20 and other local roads will further impair the District's ability to implement prescribed burns at the appropriate fire return intervals within the conservation area.

The majority of fire dependent areas at the MCCA fall within fuel models 2, 4, 7, and 9 or a combination thereof. Depending on the arrangement and composition of fuels, fire spread will be through grasses, needle litter, and/or, the shrub layer. Areas within the conservation area having heavier fuel accumulations can burn for long periods causing additional smoke management issues.

A smoke screening process will be completed with each prescription, before an authorization is obtained from the FDOF. A fire weather forecast is obtained and


Murphy Creek Conservation Area
Figure 2 - Fire History Map
0.50.25 0
0.5 Miles
1 = 55000
Boundary
Fire Management Units
Prescribed Fire
2004
2005
2008
2010
Wildfire
2007
The St. Johns River Water Management District prepares and uses this information for its own purposes and this information may not be suitable for other purposes. This information is provided as is. Further documentation of this data can be obtained by contacting: St. Johns River Water Management District, Geographic Information Systems,Program Management, P.O.Box 1429, 4049 Reid Street Palatka, Florida 32178-1429 Tel: (386) 329-4176.


Murphy Creek Conservation Area
Figure 3 - Smoke Management Map
2 1 0 2 Miles
1 = 228002
Boundary
Smoke Radii
1 mile
2 mile
5 mile
10 mile
The St. Johns River Water Management District prepares and uses this Information for its own purposes and this information may not be suitable for other purposes. This information is provided as is. Further documentation of this data can be obtained by contacting: St. Johns River Water Management District, Geographic Information Systems, Program Management, P.O.Box 1429, 4049 Reid Street Palatka, Florida 32178-1429 Tel: (386) 329-4176.
Palatka
Putnam County
Crescent Lake
Flagler Count
17
216
100
207
13
19
20

evaluated for suitable burning conditions and smoke management objectives. A wind direction is chosen that will transport smoke away from urbanized areas and/or impact these smoke sensitive areas in the least possible way. When possible, the smoke plume from burns should be directed back through the conservation area. 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. Dispersion indices should be above 35. Dispersions of greater than 69 will only be selected if other weather and/or site conditions allow for the mitigation of potential extreme fire behavior. Forecast mixing heights should be above 1700ft. 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.

Mechanical Treatments

Short and long term weather conditions and urban interface issues are important considerations when implementing a prescribed fire program. Weather conditions such as extended droughts or insurmountable smoke management issues due to increased urbanization may require the District to manage natural systems mechanically. A variety of methods including mowing, roller chopping, and herbicide applications may be incorporated as alternatives to prescribed fire.

Many of the pyric plant communities within the MCCA are dominated by pine plantations. An integral component to the implementation of a successful prescribed fire program within the MCCA 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. Prescribed fire activities are planned for the conservation area over the next five years and will be conducted in conjunction with annual burn plans.

Legal Considerations

Only burn managers certified by FDOF will approve the unit prescriptions and must be on site while the burn is being conducted. Certified burn managers adhering to the requirements of F.S. 590.026 are protected from liability for damage or injury caused by fire or resulting smoke, unless negligence is proven.

Fire Management Units

Fire management units have been delineated on the conservation area. Where logical, the District used (or will use) existing timber stand boundaries to delineate fire management units. In many cases, individual timber stands represent the smallest areas of land that are free of roads, trails, or other barriers to fire. Occasionally, several fire management units with similar fire needs will be burned simultaneously and stand lines provide a break in fuels so that staff may burn smaller areas than initially planned if needed. Additionally, in an effort to mitigate smoke management and potential urban interface issues, fire management units may be smaller in size than on other parcels or conservation area.

Ideally, District staff would thoroughly address and describe each fire management unit in terms of its fire management needs. Though all units within the bounds of the conservation area are somewhat different, all can be categorized into one of several fuel model (FM) descriptions. The thirteen 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 extenuating circumstances. 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.

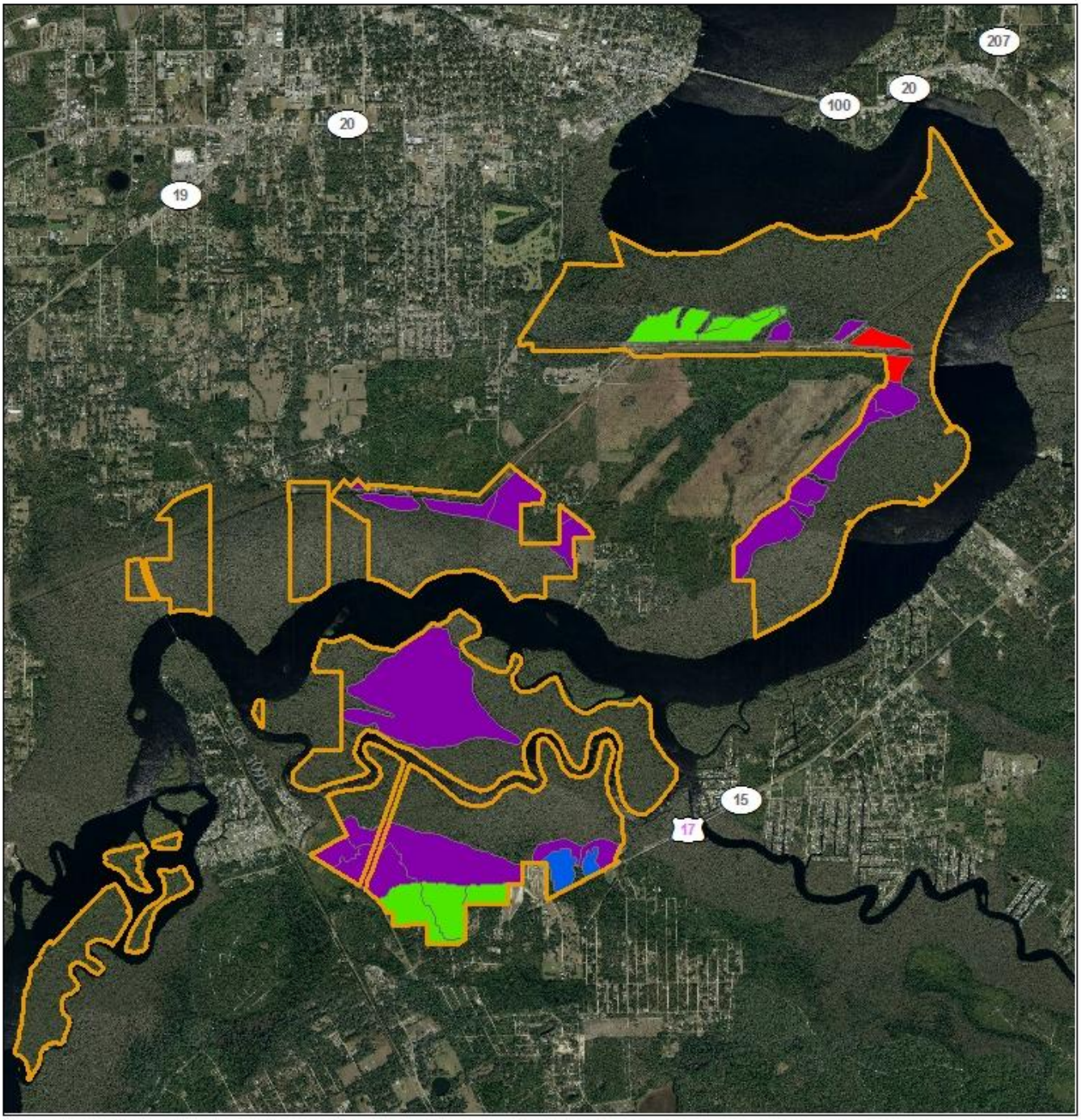
Below is a brief description of each fuel model occurring within the MCCA and associated natural communities. A detailed description of each individual fire management unit and its associated objectives will be included in the individual prescriptions. Some fire management units within the conservation area contain multiple FMs. In these instances, the designated FM is dominant in coverage. Figure 4 illustrates the FM associated with individual fire management units.

Fuel Models

Fuel Model 2
This category includes fire management units within the conservation area that can best be described as sandhill. Fires in these fuels are typically spread through the herbaceous layer and may include an overstory of longleaf and slash pine and turkey oak. Given appropriate wind speeds and fuel moisture conditions, fire spread can be very rapid. The optimal fire return interval in this fuel model is approximately every 2-8 years with growing season burns being preferred.

Fuel Model 4
This category includes fire management units within the conservation are that are best described as scrubby flatwoods. Fire intensity and fast spreading fires involving foliage and live and dead fine woody materials in the crowns of a nearly continuous secondary overstory characterize Fuel Model 4. Besides flammable foliage, there is dead woody material in the stand that significantly contributes to fire intensity.

Fuel Model 7
This category includes fire management units that are best described as mesic, although they may have both wet, and scrubby flatwoods embedded within. Some of the FMUs with this designation are in pine plantations. Many of these areas include moderate to heavy fuel loading in the shrub layer. Fire in these fuel types is spread through both the shrub and herbaceous layers. The shrub layer components present within the fire management units of this FM on the conservation area include saw palmetto, gallberry and other ericaceous shrubs between 3 and 5 feet tall and are contiguous across the units.



Murphy Creek Conservation Area

Figure 4 - Fuel Model Map

0.6 0.3 0 0.6 Miles

1 = 55000

Fuel Model 2
Fuel Model 4
Fuel Model 7
Fuel Model 9
FMU Boundaries

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Fuel Model 9

This category includes fire management units that are best described as scrubby flatwoods with moderate to dense canopies of oaks. These areas exhibit suppressed groundcover and shrub layers. While pockets of shrubs (palmetto/gallberry) and groundcover (wiregrass) may contribute to the fire, the contiguous leaf litter will serve as the primary carrier of the fire.

Exhibit 1
Aerial Burn Safety Plan
Murphy Creek Conservation Area

The hazards associated with this type of burning are related to working with the helicopter, the sphere dispenser, and dealing with active fire. All helicopter safety procedures and all district fireline policies and procedures will be followed.

1. **BRIEFING -** During the operational briefing, the safety plan will be reviewed with all personnel on the burn.
2. **HELICOPTER SAFETY -** The pilot will give a helicopter safety briefing at the morning operational briefing.
3. **IGNITION MACHINE SAFETY –** The operator will review the operation and cleaning procedures for the dispenser at the morning briefing.
4. **PERSONAL PROTECTIVE EQUIPMENT –** The incident commander will ensure that all personnel have the required PPE.
5. **HIGH HAZARD AREAS –** All high hazard areas such as power lines shall be designated on the map and attached to the burn plan.
6. **EMERGENCY LANDING ZONES –** These should be confirmed with the pilot and indicated on the burn map. **Helispot** **Latitude** **_____"N**
   Longitude **_____"W**

Crash Rescue Plan

In the event of an accident involving the helicopter, the following procedures will be followed.

INCIDENT COMMANDER or BURN BOSS

1. **Notify 911**
2. Notify Putnam County Fire Rescue (386) 329-0479
3. Notify Putnam County Sheriff's Office (386) 329-0800
4. Assume responsibility of the Rescue Operation.
5. Notify NTSB (305)957-4610 OR 404-462-1666)
6. Delegate responsibility of fire control to the second in command or the most qualified.

SECOND IN COMMAND

1. Assume responsibility of the burn.
2. Assist the IC or Burn Boss with resource and personnel needs for the rescue operation.
3. If the IC is in the helicopter, second in command will assume rescue operation responsibilities and assign the most qualified to fire control.

Level I Trauma Center

1. Shands Gainesville – 352-265-0111
2. Halifax – Daytona - 386-254-4000

DIVISION OF FORESTRY

1. Waccassa Dispatch 352-355-6454

NTSB

1. Southeast Regional Office **305-957-4610**
2. Southeast Field Office **404-462-1666**