Black Creek Ravines Conservation Area

June 14, 2011
Governing Board Approved
Land Management Plan

Black Creek Ravines Conservation Area
Land Management Plan Summary

Management Area Size: 964 acres
Date of Acquisition: Acquisition of the Black Creek Ravines Conservation Area occurred in September 1996.
Date of Plan: June 2011
Major Basin: Lower St. Johns River **Planning Basin:** Black Creek

Location: Black Creek Ravines Conservation Area (BCRCA) is located in Clay County east of the town of Middleburg. The property is west of the St. Johns River and south of Black Creek.

Funding Source: The acquisition funding source for BCRCA was Save Our Rivers (SOR) bond funds.

Management Partners: An intergovernmental management agreement between the District and Clay County designates the County as the lead managing agency for the BCRCA. Clay County manages the day-to-day activities, which includes the administration of the security residence agreement, parking lot maintenance, trash pick-up, and annual trail mowing. The District performs natural and cultural resource management as well as trail and campsite maintenance.

Key Resource Issues:

Resource Management Issues:

- WATER RESOURCES – While water resources are largely intact and most protection was accomplished with acquisition, there are some disturbances. Alterations are most evident in the areas along the utility (gas and electric lines) corridors.
- FIRE MANAGEMENT – Implementation of prescribed burns occur in accordance with annual burn plans and the BCRCA fire management plan.
- FOREST MANAGEMENT- Prior to acquisition, timber was periodically harvested from portions of the property. The District will utilize a combination of harvesting, mechanical vegetation management, herbicide treatments, and prescription burning to encourage optimal forest health.
- WILDLIFE – The conservation area provides habitat for numerous wildlife species including the Florida black bear (*Ursus americanus floridanus*), Black Creek crayfish (*Procambarus pictus*), and gopher tortoise (*Gopherus polyphemus*).
- 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 executes appropriate control action.
- CULTURAL & HISTORICAL RESOURCES – A review of the Department of State, Division of Historical Resources indicates three known or registered cultural sites within the boundaries of the conservation area.

Key Land Use/Recreation Issues:

Land Use Management Issues:

- ACCESS – Two public access points/trailheads and one walk-thru are located on the conservation area.
- RECREATION USE – The conservation area is open to the public for hiking, wildlife viewing, fishing, horseback riding, and primitive camping. Due to the sensitive ecological nature of the seepage areas/ravines bicycling is prohibited within this conservation area.
- SECURITY – Maintenance of fence lines, parking areas, gates, and locks is conducted. The District maintains contact with the Florida Fish and Wildlife Conservation Commission (FWC), local law enforcement, and a private security firm for any potential security needs. Clay County maintains a residence agreement for onsite security.

Administration:

- ACQUISITION – Although no parcels are uniquely identified, the District may consider purchasing parcels near the BCRCA that become available and that will aid in the conservation of water resources within the Black Creek Basin.
- LEASES, EASEMENTS, SPECIAL USE AUTHORIZATIONS, AND CONCESSIONS- The District administers the following leases, agreements, easements, special use authorizations (SUAs) and concessions:
    - An SUA for the purposes of arthropod research.
    - An SUA for the purpose of tick and sand fly research.
    - An agreement for the purposes of trail development and maintenance.
    - An intergovernmental management agreement designating management responsibilities between the District and Clay County.

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INTRODUCTION

This document provides the guidelines and goals for implementation of land management activities at the Black Creek Ravines Conservation Area (BCRCA) over the next five years. This is the fourth management plan for the conservation area.

The BCRCA covers approximately 964 acres in Clay County within the Black Creek drainage basin, a sub-basin of the Lower St. Johns River Basin. This conservation area is located in numerous sections of Townships 5 South and Range 25 East.

The property is located east of the town of Middleburg. State Highway 21/Blanding Boulevard is approximately one mile to the north and west. Black Creek forms a large portion of the north and east boundaries of the property. Figure 1 depicts the location of the conservation area and Figure 2 is a 2009 aerial image of the property.

While an intergovernmental management agreement between the District and Clay County designates the County as lead manager for the property, The District functions as lead managing agency with regards to cultural and natural resource management. The County conducts routine maintenance within the parking areas and oversees the security residence agreement.

The BCRCA was acquired to help meet the goals of the Black Creek and Lower St. Johns River Basin projects as set forth in the District's Florida Forever Work Plan and the District's Water Management Plan. These goals include:

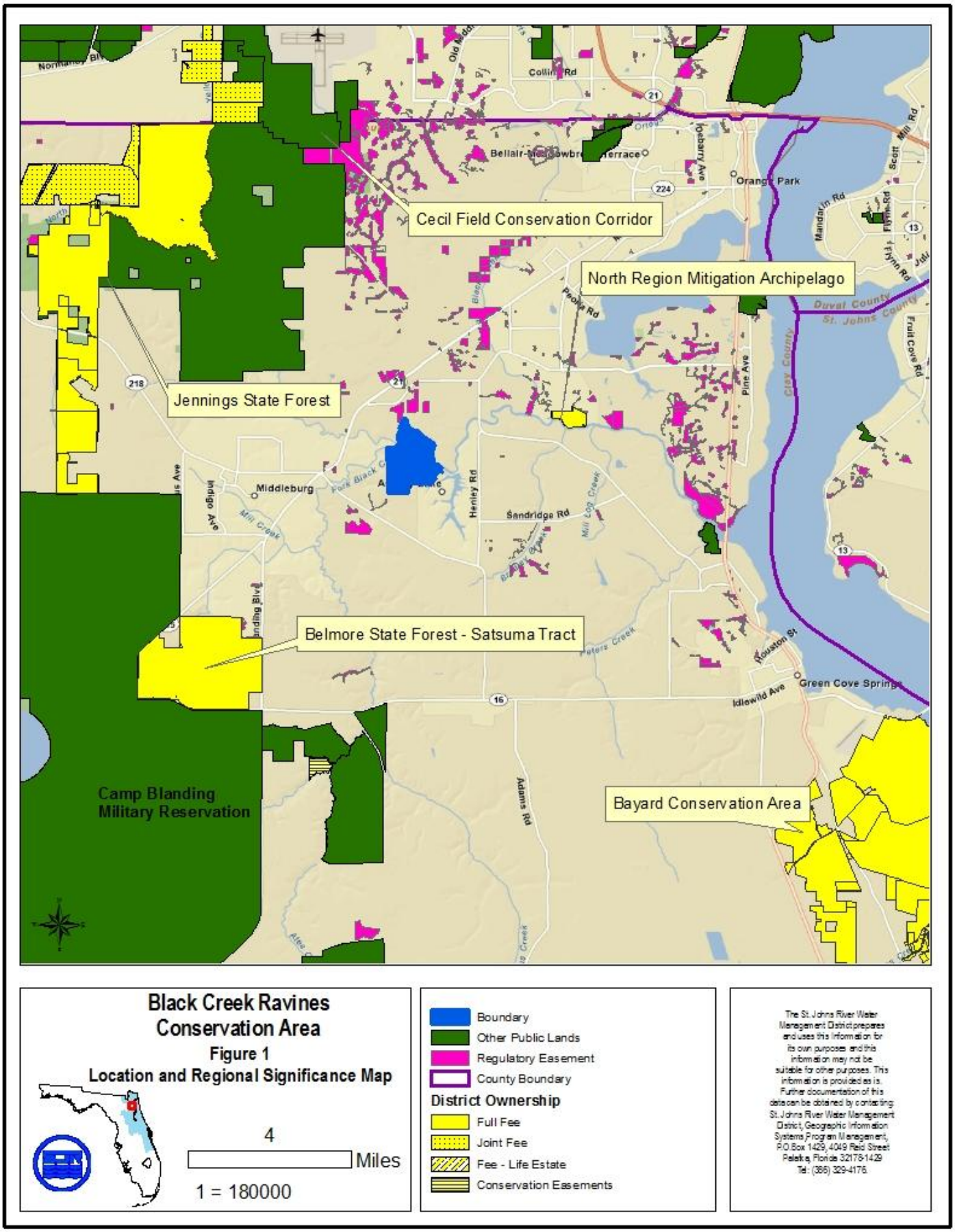
- Improve water quality, maintain natural hydrological regimes, and maintain flood protection by preserving important wetland areas.
- Restore, maintain, and protect native natural communities and diversity.
- Provide opportunities for recreation where compatible with the above listed goals.

The above are general goals and objectives for Black Creek Ravines 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 BCRCA is a significant acquisition in an area with distinctive ecological features and that is peppered with a multitude of other publicly owned land and conservation easements. Figure 1 above depicts the regional significance of the conservation area. The public lands in the vicinity of the BCRCA lands include the Camp Blanding Military Reservation, Jennings State Forest, Belmore State Forest, Cecil Field Conservation Corridor, North Region Mitigation Archipelago, and Bayard Conservation Area. These properties combine to create an extensive network of conservation lands, providing for


Cecil Field Conservation Corridor
North Region Mitigation Archipelago
Jennings State Forest
Belmore State Forest - Satsuma Tract
Bayard Conservation Area
Camp Blanding
Military Reservation
Middleburg
Orange Park
Green Cove Springs
Sandridge Rd
Henley Rd
Pine Ave
Indigo Ave
Houston St
Idlewild Ave
Adams Rd
Peters Creek
Mill Creek
Mill Log Creek
Duval County
St. Johns County
Clay County
Black Creek Ravines
Conservation Area
Figure 1
Location and Regional Significance Map
4
Miles
1 = 180000
Boundary
Other Public Lands
Regulatory Easement
County Boundary
District Ownership
Full Fee
Joint Fee
Fee - Life Estate
Conservation Easements
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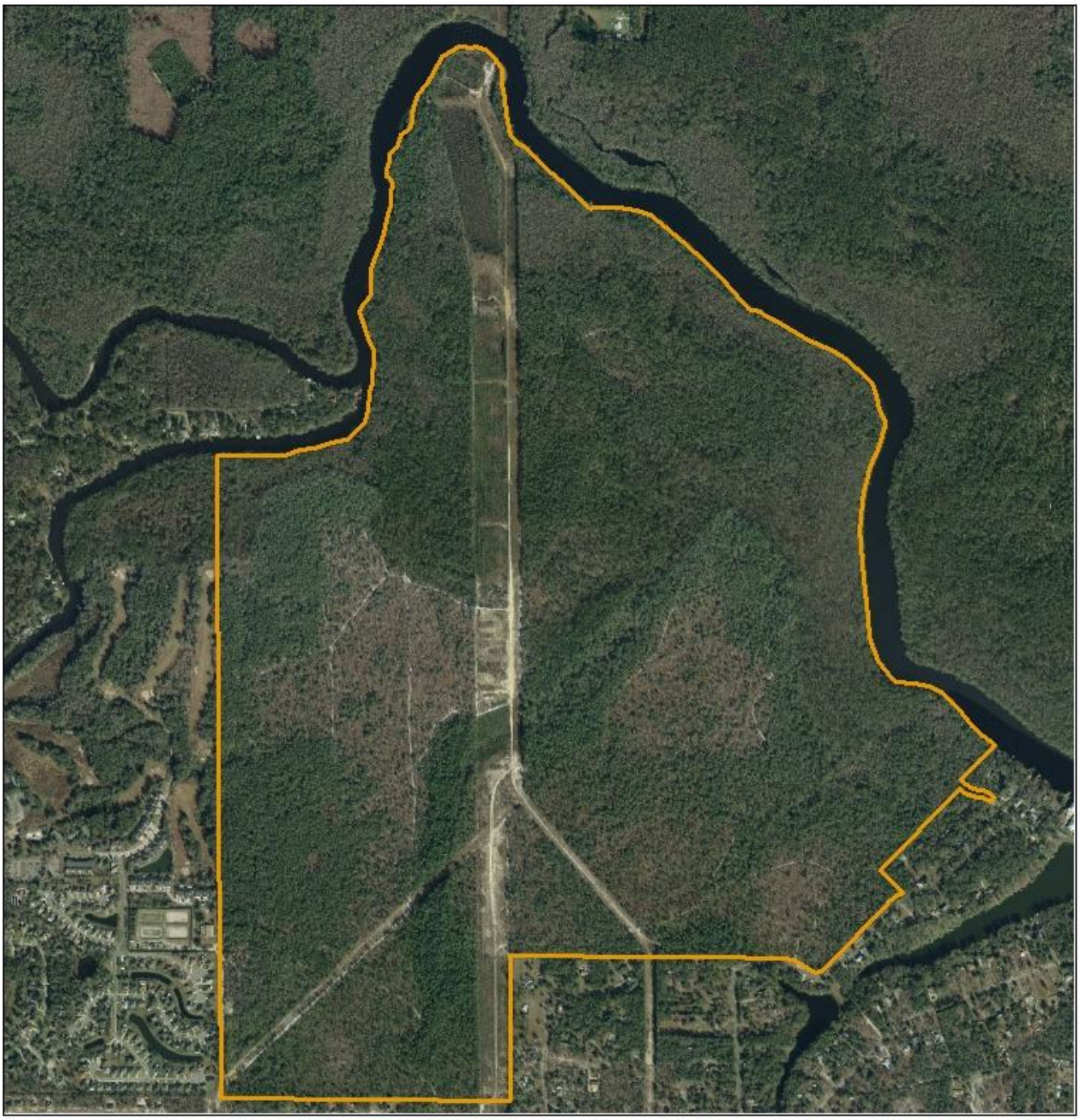

Black Creek Ravines Conservation Area
Figure 2 - 2009 Aerial Image Map

0.25 Miles

1 = 15000

Boundary

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the protection of water quality and storage, indigenous floral and faunal species, as well as numerous natural resource-based recreational opportunities.

Acquisition History

The BCRCA is comprised of a single parcel totaling 964 acres (Figure 3).
The property was purchased using funding sources as indicated in Table (1) one, which summarizes the land acquisition accomplishments.

Black Creek Ravines (964 acres) Land Acquisition number 1996-064

The Black Creek Ravines parcel totals 964 acres acquired by the District through a single purchase on September 20, 1996 for $2,149,915 using Save Our Rivers (SOR) funds as part of the Upper Black Creek Conservation and Recreation Lands (CARL) Program.

Table 1 – Land Acquisition Summary

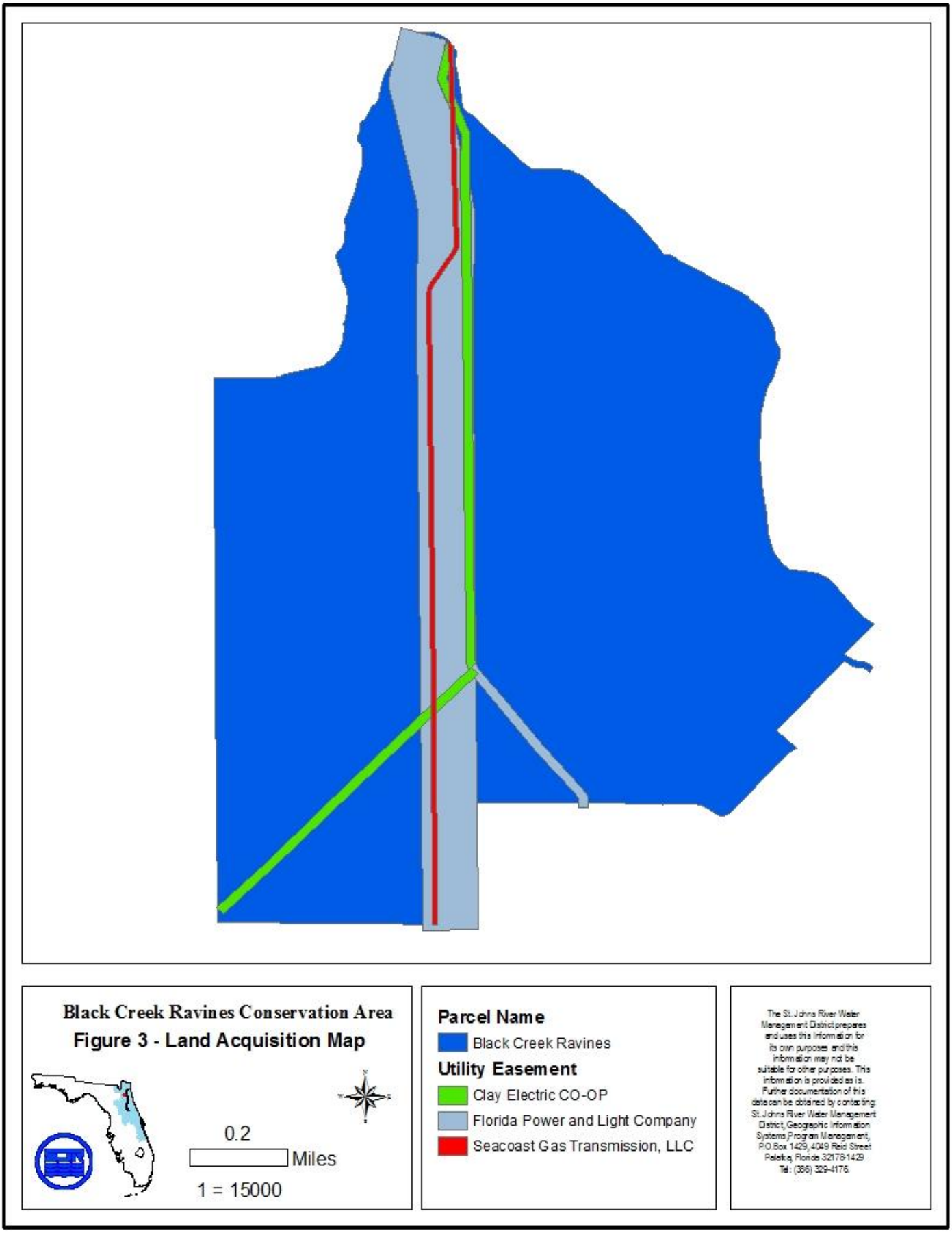
Parcel	LA Number	Acres	Total Purchase Price	Closing Date	District Funding Source
Black Creek Ravines	1996-064	964	$2,149,915	09/20/1996	Save Our Rivers

Local Government Land Use Designation

Clay County

According to the Clay County 2025 Comprehensive Plan (Clay County 2025 Comprehensive Plan - Future Land Use), the Future Land Use designation for the property is:

- Recreation/Preservation - Areas of land that are generally owned by public or quasi-public entities. The lands are held for use as non-profit public recreation and open space amenities, and include natural resource land management activities and associated uses. Those owned and maintained by public agencies and open to the public comprise the inventory of regional park facilities in Clay County.


Black Creek Ravines Conservation Area
Figure 3 - Land Acquisition Map
0.2
Miles
1 = 15000
Parcel Name
Black Creek Ravines
Utility Easement
Clay Electric CO-OP
Florida Power and Light Company
Seacoast Gas Transmission, LLC
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NATURAL RESOURCES OVERVIEW

Topography and Hydrology

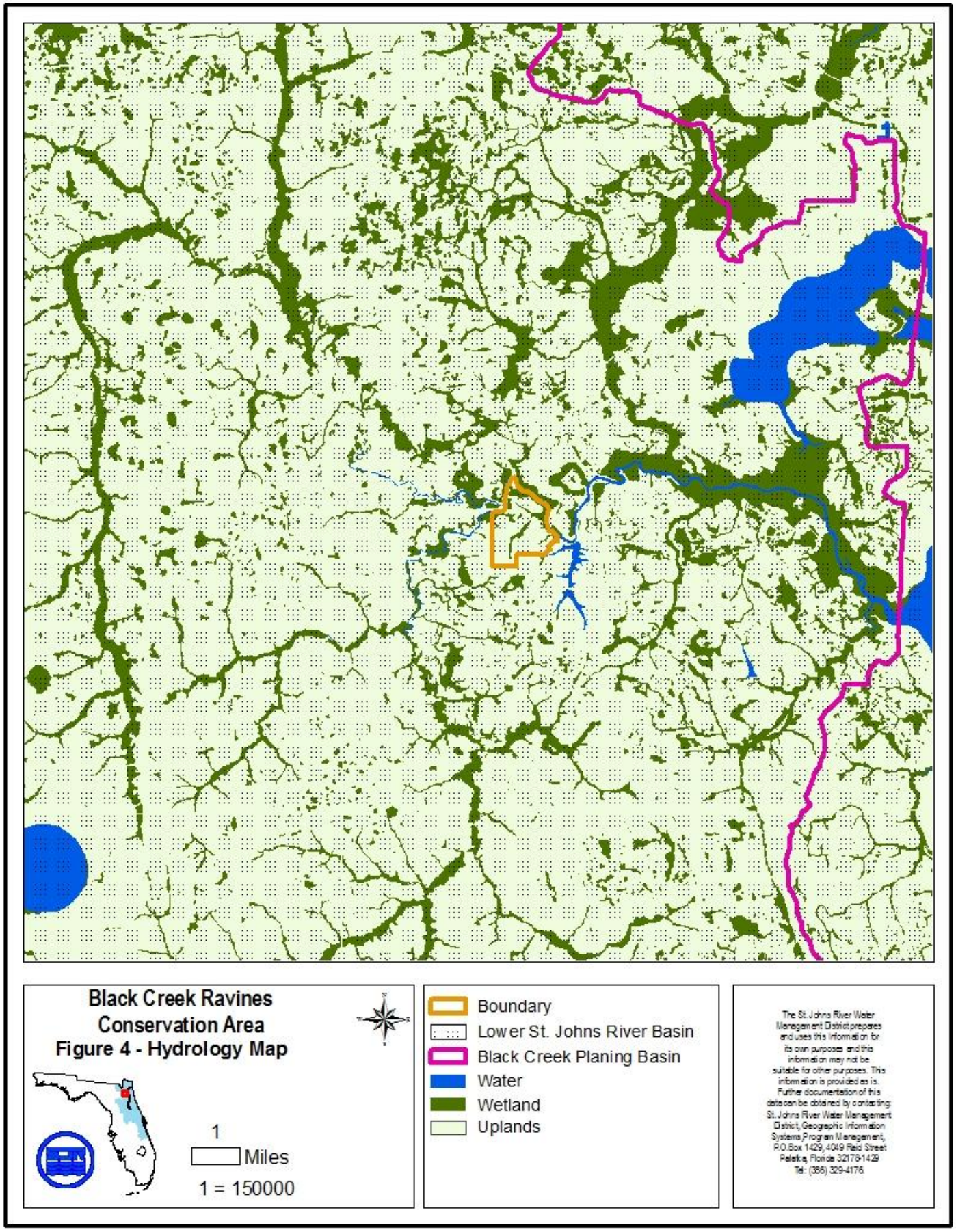
Black Creek Ravines Conservation Area lies within the Duval Upland, a physiographic subdivision of the Sea Island District. The Sea Island District is the portion of Florida associated with the Southeast Georgia Structural Basin. In most places, Ocala limestone is covered by an overburden too thick for it to influence the landscape or drainage. Most areas within the Duval Upland are at elevations between 80 and 100 feet (Brooks). Elevations within the conservation area range from 0 to 95 feet above sea level, with the highest elevation occurring in the xeric hammock along the southwest portions of the property. Lowest elevations, at sea level, occur primarily along the northern reaches of the property near Black Creek

The conservation area drains into the Black Creek Unit, a sub basin of the Lower St. Johns River. The most significant surface hydrological feature of the conservation area is Black Creek and the associated seepage streams and wetlands. The property is located at the confluence of the North Fork of Black Creek and the South Fork of Black Creek. Black Creek forms the northern boundary for much of the property. The lower reaches of Black Creek are affected by the tidal influences of the St. Johns River. Figure 4 depicts the hydrologic features of the conservation area.

An important ecological process occurring within the BCRCA is the recharge and filtering of surface waters. Sandhills are the dominant natural community found at the higher elevations within the conservation area. Sandhills are characterized by deep, nutrient poor sands which are highly permeable, resulting in the rapid infiltration (and low evaporation rate) of rainwater. At the BCRCA, rainwater percolates down until it reaches an impermeable layer located near the base of sandhills, and because the water can no longer move downward, it then flows laterally from the sandhills, forming seepage areas. The characteristics that cause the formation of these seepage areas are the same characteristics that cause them to be extremely fragile. The loosely arranged sands in erosional areas are vulnerable to disturbance. Additionally, the combinations of processes that must occur in concert to form these areas is rare and subsequently so are the associated natural plant communities.

Natural Communities

The 964 acres that comprise the BCRCA consist primarily of sandhills, xeric hammock, floodplain swamp, upland hardwood forest, and mesic and wet flatwoods (Figure 5). Table 2 details the percent coverage associated with each natural community documented within the conservation area. Information relative to the natural communities within the conservation area is derived from several sources including management unit 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.


Black Creek Ravines
Conservation Area
Figure 4 - Hydrology Map
1
Miles
1 = 150000
Boundary
Lower St. Johns River Basin
Black Creek Planing Basin
Water
Wetland
Uplands
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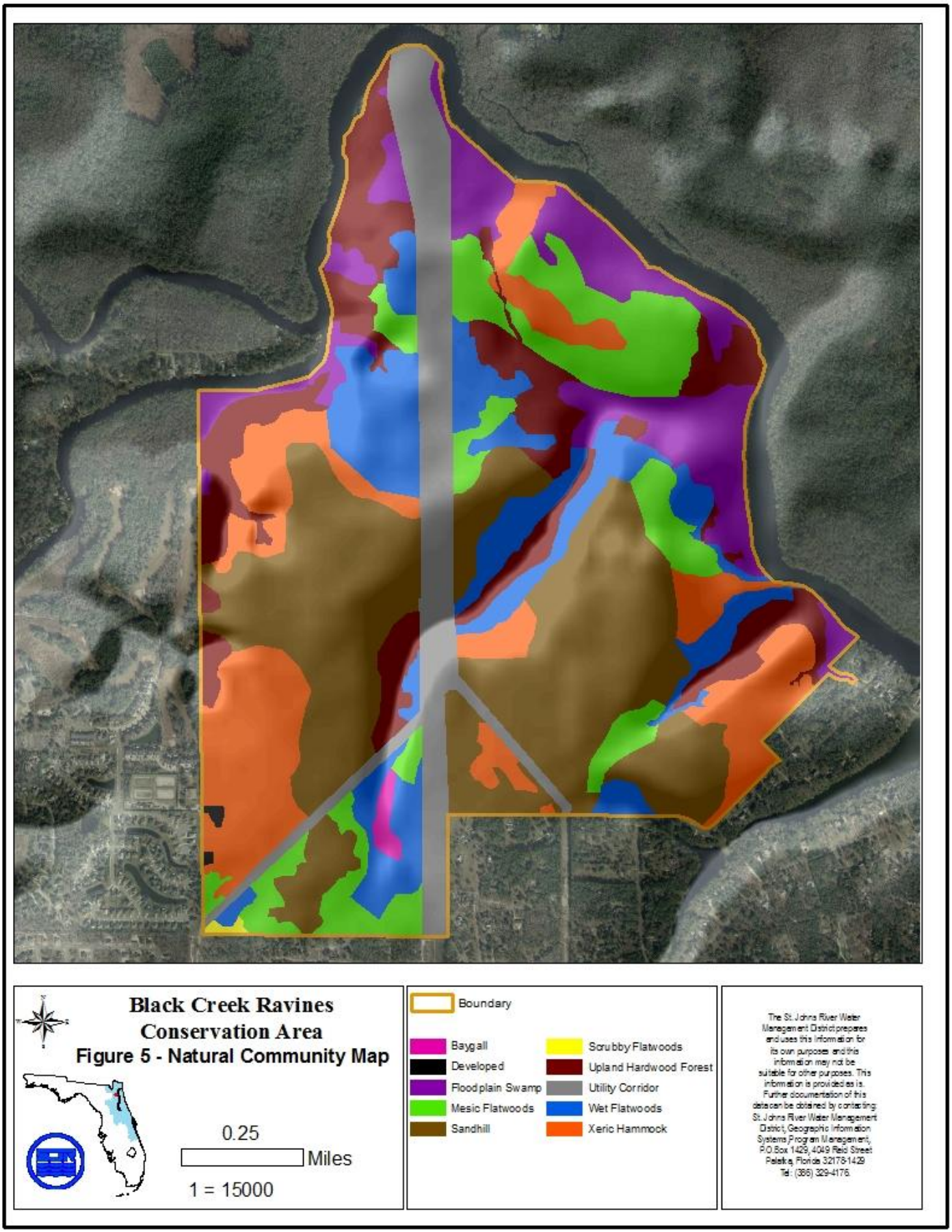
Black Creek Ravines
Conservation Area
Figure 5 - Natural Community Map
0.25
Miles
1 = 15000
Boundary
Baygall
Developed
Floodplain Swamp
Mesic Flatwoods
Sandhill
Scrubby Flatwoods
Upland Hardwood Forest
Utility Corridor
Wet Flatwoods
Xeric Hammock
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Table 2 – Natural Community Coverages

Natural Community Type	Acreage	Percent Coverage	FNAI Ranking	FNAI Fire Return Interval*
Floodplain Swamp	111	12%	G4/S4	This is not a fire adapted community
Baygall	3	<1%	G4/S4	This is not a fire-adapted community; however, fires will burn catastrophically during droughts.
Wet Flatwoods	122	13%	G4/S4	1-3 years in grassy systems 5-7 years in shrubby systems
Mesic Flatwoods	107	11%	G4/S4	2-10 years
Scrubby Flatwoods	1	<1%	G2/S2	5-15 years
Upland Hardwood Forest	109	11%	G5/S3	N/A (edges may burn in conjunction with adjacent natural communities)
Sandhill	269	28%	G3/S2	1-3 years
Xeric Hammock	147	15%	G3/S3	Variable – Fire will be applied in conjunction with adjacent community types (sandhills/flatwoods) or in conjunction with mechanical and chemical restoration techniques.
Subtotal	***869***	**-**	**-**	-
Altered Land Types	**Acreage**	**Percent Coverage**		**Fire Return Interval**
Developed	1	<1%	-	N/A
Utility Corridor	94	10%	-	N/A (grassy vegetation may be burned in conjunction with adjacent communities)
Subtotal	***95***	**-**		**-**
Total	**964**	**100%**		**-**

*Stated FNAI fire return intervals are based on regional differences in communities and fuel loading. The District will target the lowest interval possible that will effectively carry fire.

Pine Flatwoods

Flatwoods communities typically occur in low areas with little topography and may be further classified as wet, mesic, or scrubby. Mesic, wet, and scrubby flatwoods occur within the BCRCA. Alterations from past management activities, hydrologic disturbances, and prolonged absence of fire make distinguishing these areas difficult. Natural community reclassification and refinement may occur as restoration and fire management activities progress. Additionally, prior to the 1940s, much of the pine canopy was harvested from the property.

Mesic Flatwoods (107 acres)

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 standing water at the surface. During dry periods, the hardpan layer prevents low groundwater from rising, creating dry, droughty conditions. The presence of the hardpan translates to extreme seasonal fluctuations in the amount of water available to support plant life. These seasonal hydroperiods are essential in the maintenance of the flatwoods system.

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

The mesic flatwoods communities within the conservation area vary in levels of disturbance. They are largely in good condition with site appropriate species, compositions, and assemblages. The mesic flatwoods located on the southern portions of the property include a newly discovered population of Bartram's ixia (*Calydorea coelestina*). This population was discovered in June 2010 following an early growing season burn that same year.

In addition to seasonal hydroperiods, fire is an important physical factor associated with the shaping and maintenance of this community type. Natural fire return intervals in mesic flatwoods are approximately every two to ten 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. This may cause fires to be more catastrophic in nature.

Scrubby Flatwoods (1 acre)

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 greater 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 or slash pine. Shrub layers will often include scrub oaks, saw palmetto and various Ericaceous plants. Groundcover, while generally sparse, may include wiregrass. The scrubby flatwoods occur on the southwestern portions of the conservation area adjacent to areas of mesic and wet flatwoods and are in good condition.

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 5 and 15 years. Examples of scrubby flatwoods with a higher herbaceous or saw palmetto component may burn more frequently.

Wet Flatwoods (122 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 sub canopy and shrub layers may include sweetbay (*Magnolia virginiana*), loblolly bay (*Gordonia lasianthus*), and saw palmetto. The groundcover layer may include species such as wiregrass, blue maidencane (*Amphicarpum muhlenbergianum*), and numerous hydrophytic species. The variations in structure and composition may be attributed to subtle edaphic differences as well as hydrologic and fire regimes.

Many of the historic wet flatwoods within the conservation are associated with seepage areas. These flatwoods occupy the transition between the upland hardwood forests that occur on the slopes and the sandhills. Many of these areas exhibit thick organic and leaf litter, but are otherwise intact.

The wet flatwoods plant community is fire dependant with return intervals ranging from one to three years in grassy systems and five to seven years in shrubbier systems. In areas such as the BCRCA, shrubs and subcanopy trees including loblolly bay and sweet bay tend to dominate wet flatwoods where fire has been either low in intensity or absent. The landscape position of many of the wet flatwoods within the conservation area (associated with seepage areas) is likely contributing to the overgrown nature of the midstory components. The seasonal seepage of water through these areas during wet periods creates soil and fuel moisture conditions that may cause lower intensity fires; conversely, when the seepage areas are dry, the organic accumulation presents severe smoke management concerns.

Floodplain Swamp (111 acres)

Floodplain swamp communities typically occur on flooded soils along stream channels and within river floodplains. The floodplain swamp communities within the conservation area are associated with Black Creek.

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

Floodplain swamps across the BCRCA are intact with few discernable alterations. Notable disturbances to this community include road and utility corridor crossings. Typical of the floodplain swamp system, the examples of this community type within the conservation area include a closed-canopy forest of hydrophytic, buttressed trees including bald cypress (*Taxodium distichum*) and water tupelo (*Nyssa aquatica*).

Baygall (3 acres)

Baygall is an evergreen, forested wetland of bay species situated at the base of a slope or in a depression. Baygalls have organic/peat soils, are acidic, and are typically dominated by a dense overstory of bay trees. This natural community does not burn often, as the peat soils stay relatively wet. When soils dry out, baygalls will readily burn.

Upland Hardwood Forest (109 acres)

Upland hardwood forests are characterized as well-developed, closed-canopy forests dominated by deciduous hardwood trees. The soils that support these communities are typically sandy clays with substantial organic matter. These areas may also have

limestone or phosphatic rock near the surface and the soils may also have calcareous components.

In previous management plans, these areas were classified as slope forests. Since the writing of the last plan, FNAI has refined the natural community classifications for these two communities. While the two are similar community types sharing some species compositions and landscape positions (on slopes), slope forests are further defined by the presence of exceedingly rare and highly localized plant species that occupy a small range within the Apalachicola River Basin.

The areas designated in the 2007 plan as upland mixed forest have been classified in this plan as upland hardwood forests. In the 2010 revision to the FNAI *Guide to Natural Communities*, the upland mixed forest is no longer included as a community type. Much of what was classified as an upland mixed forest under the 1990 FNAI Guide will now be classified as upland hardwood forest, as is the case at BCRCA.

Upland hardwood forests within the BCRCA occur on slopes and in conjunction with seepage streams, as well as in higher elevations and bluffs along Black Creek. These areas are largely in good condition.

Light gap succession is the primary natural process required for the maintenance of upland hardwood forests. This occurs when an emergent tree falls causing an opening in the canopy and allowing direct sunlight to reach the forest floor. While localized damage from fires that creep in from adjacent pyric plant communities may occur along the edges of the upland hardwood forest, fires rarely burn completely through the system.

Sandhill (269 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 one to three years. Sandhills within the BCRCA vary in levels of disturbance, with the primary disturbance being fire exclusion. Since the time of acquisition, restoration activities including mowing, herbicide treatments, and the application of prescribed fire have been conducted in an effort to reverse successional changes within the sandhills.

Xeric Hammock (147 acres)

Xeric hammock is characterized as an evergreen forest with a low canopy and little understory plants other than palmetto, or a multi-storied forest of tall trees with an open or closed canopy. Several gradations between these extremes may occur. The xeric hammock natural community is typically an advanced successional stage of scrub or sandhill. It is a climax community, having been protected from fire for 30 or more years. When fire does occur in the xeric hammock, it is under extreme conditions, burns catastrophically and it may revert the community back to an earlier successional stage.

The xeric hammocks within the BCRCA are typical as described by FNAI in that they have succeeded from sandhill. Many of these areas are dominated by a dense canopy of laurel oak, but retain remnant sandhill vegetation including turkey oak and wiregrass.

Developed (1 acre)

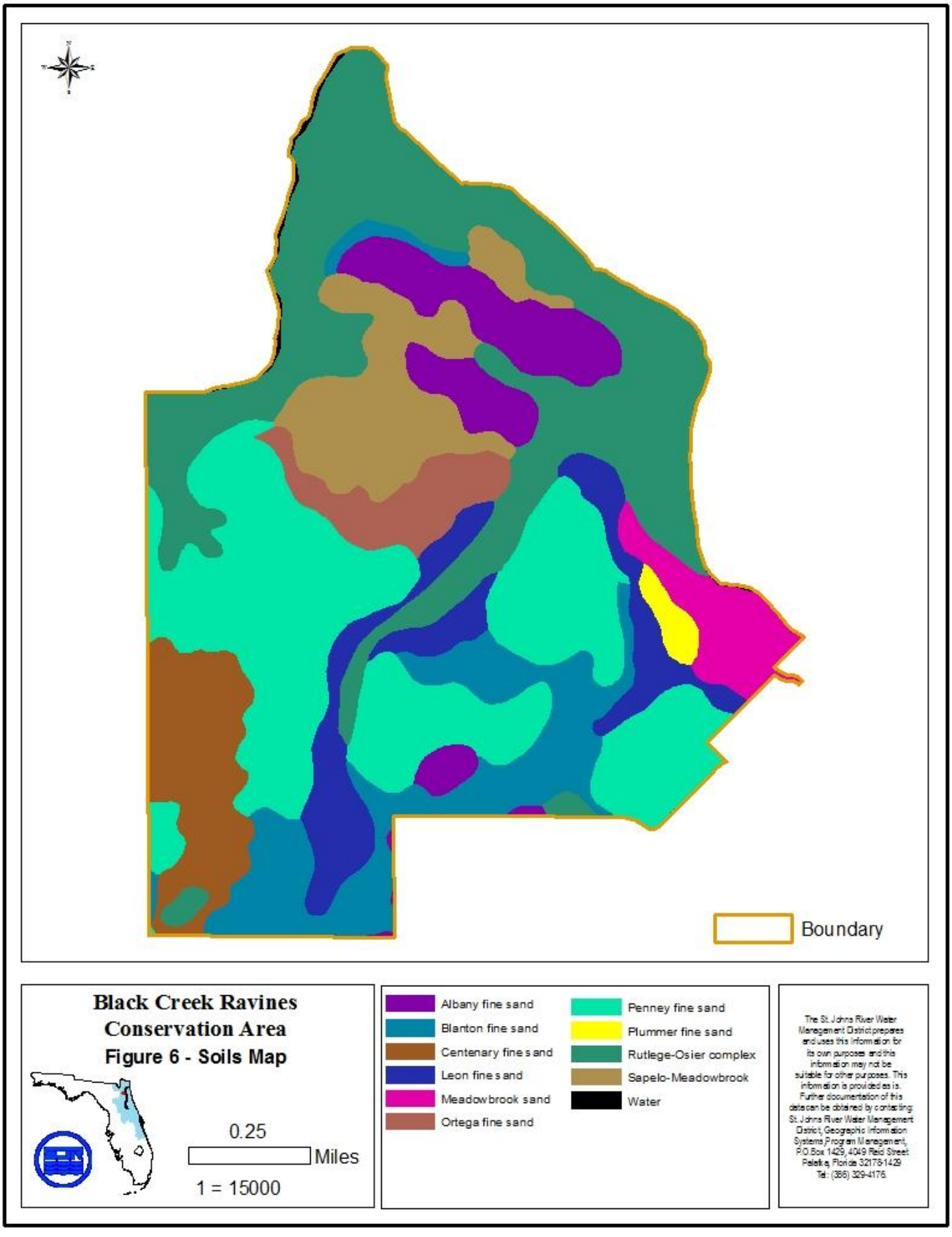
The developed areas within the BCRCA include the security residence and northern parking area.

Utility Corridor (94 acres)

The utility corridor includes a Florida Power & Light high voltage power line and a Clay Electric transmission line. This utility corridor bisects the conservation area, extending the length of the property from north to south with the two lateral lines extending towards the southeast and southwest near the southern end of the property. Additionally, a Seacoast natural gas transmission line is co-located within the high voltage powerline footprint. A parking area is located within the high voltage powerline footprint and is included in these acres. Portions of the utility corridor that bisect seepage areas include many plants indicative of the historic seepage slope community including a large number of native grass species, pitcherplants, sundews, and butterworts.

Soils

According to data produced by the United States Department of Agriculture, Soil and Conservation Service, 10 different soil types are within the BCRCA. Figure 6 contains a soils map of the conservation area. The Clay County Soil Survey provided information used to develop descriptions of the predominant soil series found within the BCRCA. The soil descriptions are located in Addendum 2.


Boundary
Black Creek Ravines
Conservation Area
Figure 6 - Soils Map
0.25
Miles
1 = 15000
Albany fine sand
Blanton fine sand
Centenary fine sand
Leon fine sand
Meadowbrook sand
Ortega fine sand
Penney fine sand
Plummer fine sand
Rutlege-Osier complex
Sapelo-Meadowbrook
Water
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PAST MANAGEMENT SUMMARY

This section describes management strategies outlined in the 2007 land management plan and provides the status of each item.

Water Resources 2007 Plan Strategy	Status
Regularly monitor roads, bridges, crossings, and trails for erosion problems	District staff inspect all roads, trails, and water crossings for erosion problems. In 2009, the District stabilized the road along the powerline at the seepage areas using fill, limerock, scrap rock, and ballast and water bars were installed. Additionally, a portion of the trail system on the south end of the property was re-routed to mitigate erosion problems.

Forest Management 2007 Plan Strategy	Status
Utilize prescribed fire as a forest management tool	Since 2005, District staff has conducted 11 burns for a total of 1018 acres.
Utilize mechanical or chemical methods to manipulate species or density.	District staff has applied herbicide to reduce oak canopies in sandhill areas. Since 2007, approximately 69 acres have been basally treated using Garlon4.
Calculate the costs of road improvements in order to determine whether a timber harvest in the northern portions of the property will be feasible.	District land management staff have determined that timber harvests on the northern portions of the property are not necessary.
Monitor forested areas for drought, disease, or insect infestation.	District land management staff regularly inspect forested areas for drought, disease, and insect infestation. In April 2010, approximately 16 acres of pine were salvaged after mortality associated with flooding.
Evaluate any clearcut areas and implement appropriate restoration techniques.	No clearcut operations have been conducted since the writing of the last plan. The salvage area is being monitored for natural regeneration. Additionally, removal of hazard trees along the southern and eastern boundaries was conducted in 2011.
Complete site preparation burns or chemical applications in appropriate areas prior to replanting.	No clearcut operations or other activities requiring replanting have been conducted.

Fire Management 2007 Plan Strategy	Status
Develop and implement a comprehensive long-term prescribed fire management plan.	A fire management plan was written and included as an appendix in the 2007 land management plan.
Utilize mechanical or chemical methods to manipulate species or density.	District staff have applied herbicide to reduce oak canopies in sandhill areas. Since 2007, approximately 69 acres have been basally treated using Garlon4.
Introduce dormant season burns in areas with high fuel loads and areas where fire has been	Since 2005, District land management staff have conducted 1 burn totaling 60 acres during

excluded.	the dormant season.
Continue to conduct dormant season burns until fuel reduction goals are met.	Conducted as necessary.
Implement growing season burns in areas that have sufficiently reduced fuels.	Since 2005, District land management staff have conducted 10 burns totaling 958 acres during the growing season.

Invasive Species 2007 Plan Strategy	**Status**
Continue to monitor for invasive plant species and treat as necessary.	District staff regularly monitor for invasive plant species and apply appropriate treatment. Infestations across the conservation area are low and in maintenance phase.

Cultural Resources 2007 Plan Strategy	**Status**
Document and report any new cultural sites to the Division of Historical Resources.	No new sites have been identified.
Modify land management activities in order to eliminate potential disturbance to existing cultural sites.	No new sites have been identified

Access 2007 Plan Strategy	**Status**
Perform routine maintenance on roads, crossing, and trails within the BCRCA.	District staff perform road maintenance activities.
Perform any improvements or repairs needed on roads, trails, and crossings.	Since the writing of the last plan, stabilization improvements have been made to the seepage areas on the road beneath the powerline. Equestrian activity has been restricted in this area to minimize erosion problems.
Maintain necessary fencing, gates, and signage within the conservation area.	Fencing and gates are maintained as needed. Portions of the boundary were reposted in 2011.
Maintain boundary markers.	The boundary is marked and posted.
Maintain parking and walk-through areas.	Parking areas and public access/walk-through areas are maintained by Clay County.

Recreation 2007 Plan Strategy	**Status**
Determine appropriate type of restroom needed at BCRCA.	See Below
Install restroom facility.	In 2007, District land management staff had a portable restroom facility installed at the group campsite.
Maintain restroom facility.	The restroom facility is regularly serviced via a maintenance contract.
Perform intensive trail maintenance activities, including refreshing trail markings and trimming limbs.	The District, through a trail maintenance contract, performs trail maintenance as necessary. In 2009, a portion of the trail on the southern end of the property was re-routed off the seepage areas on the powerline to mitigate erosion problems.
Update trail guide.	Updates to the District website and trail

	brochures are made as necessary.
Maintain kiosk and entrance signs.	Kiosks and entrance signs are maintained monthly.
Perform routine maintenance of camping and picnic areas.	The District and Clay County perform maintenance at the camping areas.
Perform intensive maintenance of camping and picnic areas.	The District and Clay County perform maintenance at the camping areas.

Environmental Education 2007 Plan Strategy	**Status**
Encourage educational opportunities as they arise.	The District encourages educational opportunities as they arise.

Security 2007 Plan Strategy	**Status**
Maintain contract with private security firm.	The District land management staff coordinate monthly with private security firm.
Continue coordination with Clay County and on-site security resident.	The District land management staff coordinate monthly or as needed with Clay County/local law enforcement, FWC, and the security resident.

Acquisition 2007 Plan Strategy	**Status**
Pursue acquisition of additional lands in the vicinity of the conservation area.	No acquisition opportunities have been available since the writing of the last plan.

Cooperative Agreements 2007 Plan Strategy	**Status**
Maintain cooperative agreement with Clay County.	The cooperative agreement is current.

Leases, Agreements, and Concessions 2007 Plan Strategy	**Status**
Maintain SUA issued to on-site security resident.	The security resident agreement is between Clay County and the resident.
Maintain SUA issued to an individual to perform scientific research.	This SUA has expired.

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, portions of the wetlands and surface waters within the conservation area are disturbed. Hydrologic disturbances within the conservation area include roads, utility corridors, ditches, swales, water bars, and low water crossings.

Roads and associated ditches exist across the conservation area, providing access for both management and recreation. The District has made improvements to roads and installed water bars within the conservation area, helping to reduce erosion problems associated with seepage areas along the powerline corridor.

An erosion issue exists on the road/trail that runs adjacent to the creek on the northwest portion of the property. In this area, the road is bound by the creek to the west and the slope of the upland hardwood forest to the east. The District plans to stabilize the road edge with gabions and restore the road section to functionality

Water Resource Strategies

- Regularly inspect roads, ditches, crossings, fire lines, and trails for erosion problems.
- Stabilize erosion problems on road adjacent to creek.
- Continue to protect the seepage areas that are bisected by roads and utility corridors.

Utilities

In 2010, construction of a natural gas transmission line through the conservation area was complete. The gas line is co-located within the Florida Power & Light utility corridor. District land management staff coordinated closely with staff from Seacoast Natural Gas and their consultants to minimize impacts to the conservation area. Unfortunately, the work did result in the loss of a population of Bartram's ixia (*Calydorea coelestina*) located within the project footprint. District staff discovered this population of Bartram's ixia during the utility work process. The Florida Natural Area's Inventory has requested documentation of this population should it regenerate.

Utilities Strategies

- Monitor the gas line for reestablishment of Bartram's ixia and report any sightings to FNAI.

Flora and Fauna

The Black Creek Ravines Conservation Area has a diverse assemblage of natural communities providing significant habitat for a variety of floral and faunal species.

The Florida black bear, listed by the State of Florida as a Threatened species, is documented within the conservation area. In addition to a host of diseases and parasites and habitat loss and fragmentation, threats to the bear include human caused mortality and incompatible habitat management. Human caused mortality typically includes illegal killing, euthanasia performed on nuisance bears, and roadkill (Draft Black Bear Management Plan for Florida Ursus americanus floridanus, 2008). The conservation area lies within the secondary range for the Ocala subpopulation of the black bear in Clay County. The conservation area is a significant acquisition in providing connectivity to other conservation lands and provides an optimal range of desirable habitat and seasonal food sources for bears.

The 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).

In 2010, a gopher tortoise burrow survey was conducted within the sandhills and xeric hammocks targeted for restoration/enhancement. The survey yielded a population estimate of 3.003 tortoises/acre, with the majority of the potentially occupied burrows occurring in the higher quality sandhills. Tortoise population estimates within the xeric hammock and the more degraded/canopied sandhills are ~1.051/acre.

The BCRCA includes approximately 269 acres of sandhill and 147 acres of xeric hammock. The xeric hammocks are advanced successional stages of sandhill, likely resulting from disturbances including the removal of pine and prolonged fire exclusion. In areas where the canopy closure exceeds 60%, restoration and enhancement activities will occur (discussed below in Ecological Management section). Restoration within these areas is intended to improved and expand habitat for the onsite population of gopher tortoises and burrow commensals.

The Black Creek crayfish (*Procambarus pictus*), designated by the U.S. Fish and Wildlife Service as a Species of Concern and by the State of Florida as a Species of Special Concern, is documented within the conservation area. The range of this crustacean is restricted to a few small water bodies in northeast Florida, particularly within the Black Creek and Rice Creek drainage basins.

In 2007, seepage streams within the BCRCA were sampled as part of the larger research project, Status of Caddisflies (Insect: Trichoptera in Greatest Conservation Need), which was grant funded by the FWC. The project "investigated the status of caddisfly species that [were] designated as Species of Greatest Conservation Need in Florida's

Comprehensive Wildlife Conservation Strategy" (Rasmussen, 2008). The streams within BCRCA yielded six caddisfly species during the survey period, including the Little-entrance Oxyethiran Microcaddisfly (*Oxyethira janella*), which is listed by FWC as a Species of Greatest Conservation Need.

In 2009, student volunteers constructed bat boxes as part of a community service project. Three of these boxes were installed on the BCRCA. Boxes are checked periodically when staff or volunteers are onsite. No bats or evidence of bats has been observed in the boxes to date.

Floral and Faunal Strategies

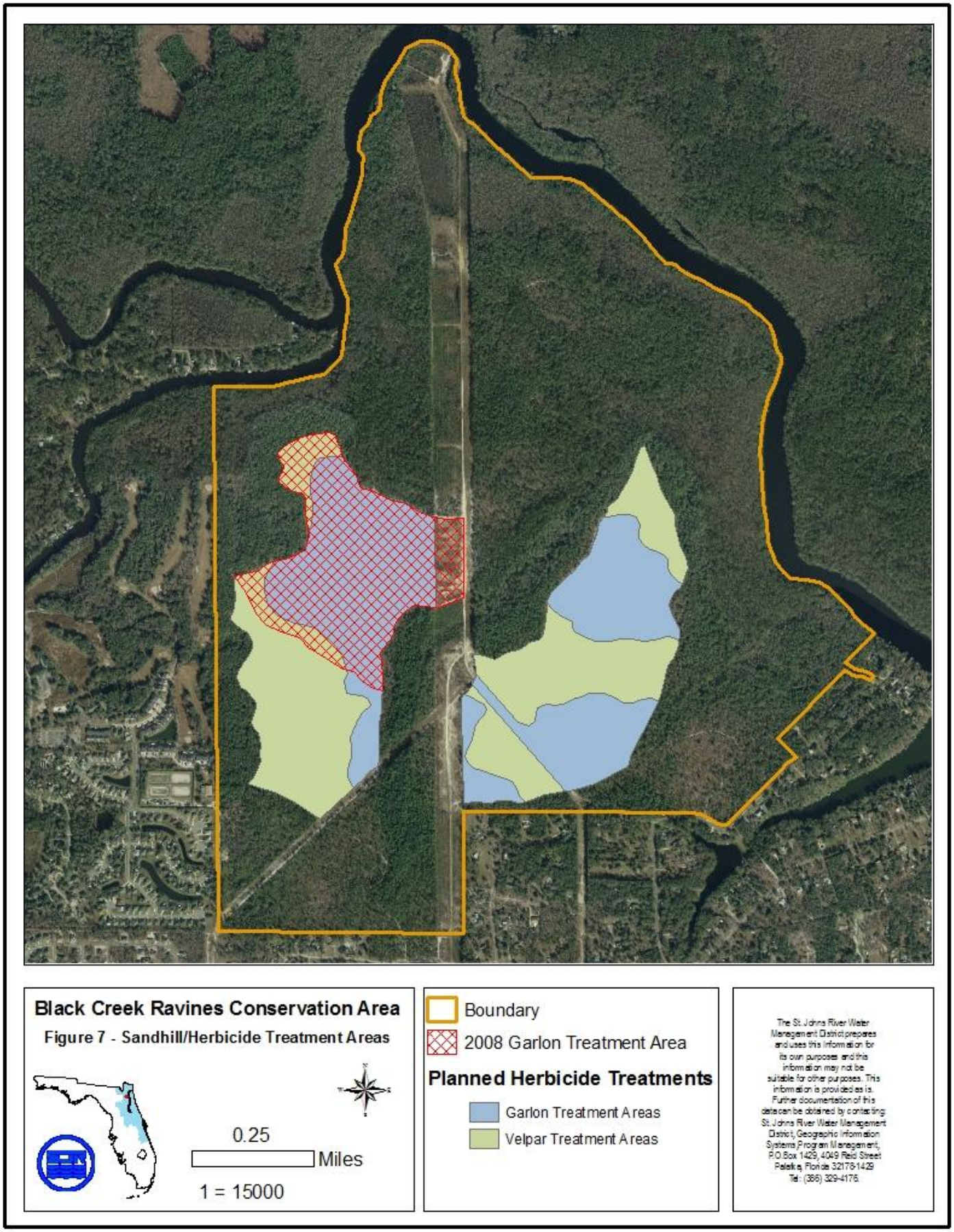
- Conduct diversity surveys and develop species list (Addendum 3).
- Continue to monitor for the presence of listed species.
- Continue to monitor gopher tortoise population dynamics in conjunction with habitat restoration activities.
- Continue to monitor bat boxes and record any activity.

Forest Management and Ecological 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 may require the harvesting or removal of pine and hardwoods. Primary objectives of harvesting on the BCRCA 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.

Prior to public acquisition most of the upland acres within the conservation area were harvested of mature, overstory pine and the property was subsequently used for cattle grazing. Air photo interpretation indicates that portions of the property were logged prior to 1943 and the remaining uplands were logged sometime after. An open landscape of unimproved pasture/native range was maintained through the 1980s via cattle grazing activities and burning. Prolific oak encroachment (primarily laurel and turkey oak) into these areas began after 1984 and continued until the time of acquisition when District staff began sandhill restoration efforts.

In 2008, the District conducted herbicide treatments on approximately 69 acres (Figure 7) of oak encroached sandhill, targeting the removal of sand live oak, laurel oak, water oak, and some large stature turkey oak, using Garlon4. While no baseline monitoring was conducted, anecdotal observations indicated a canopy closure of between 80-95% in the treatment areas. Groundcover was suppressed, with only remnant wiregrass and other species observed.


Black Creek Ravines Conservation Area
Figure 7 - Sandhill/Herbicide Treatment Areas
0.25
Miles
1 = 15000
Boundary
2008 Garlon Treatment Area
Planned Herbicide Treatments
Garlon Treatment Areas
Velpar Treatment Areas
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.

During the scope of this plan, District staff anticipates applying herbicide treatments to approximately 138 acres of oak encroached sandhill (Figure 7 above), including second treatments to the areas treated in 2008. It is expected that Garlon 4 will be used in the retreatment areas as well as in areas where canopy coverage is lower and herbaceous components are higher. Velpar will likely be used in areas of heavy canopy closure with little if any groundcover components remaining.

Forest management activities anticipated during the scope will focus primarily the encouragement of natural pine regeneration through the removal of offsite oaks from the sandhill natural communities and an overall reduction of the oak canopy within these systems. There are no harvests or plantings of pines anticipated during the scope of this plan.

The District will abide by Florida Silviculture Best Management Practices and will target the achievement of appropriate overstory species in proper densities as described in the District Forest Management Plan. 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 plant communities.

Forest Management Strategies

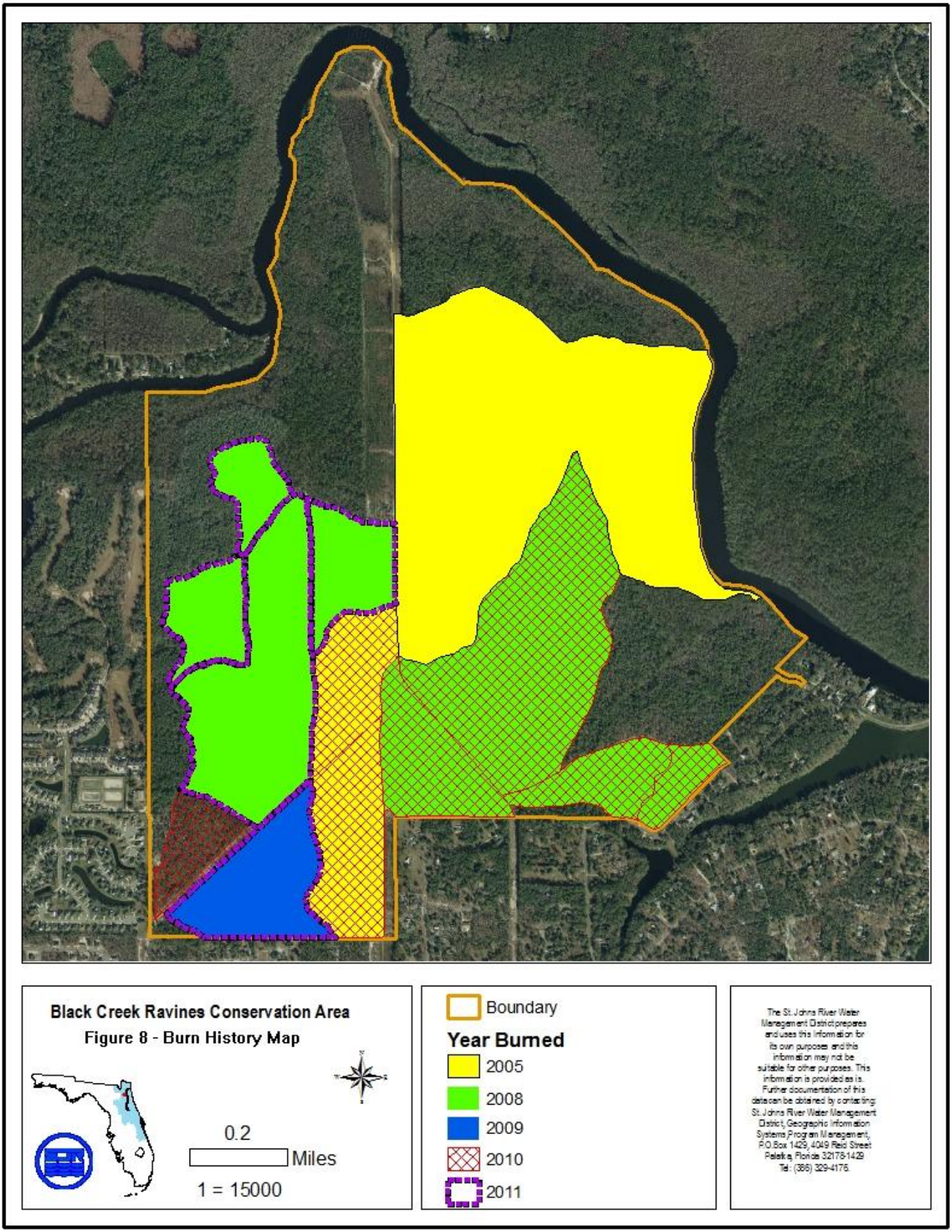
- Conduct groundcover monitoring in sandhill restoration/enhancement areas.
- Implement herbicide treatment in oak encroached sandhills.

Fire Management

Fire is a vital factor in managing the character and composition of vegetation in many of the natural plant communities in Florida. The District's primary use of fire is to mimic natural fire regimes to encourage the proliferation of native pyric plant communities and dependant wildlife. Additionally, the application of fire aids in the reduction of fuels and minimizes the potential for catastrophic and damaging wildfires. Most of the upland natural plant communities at the BCRCA are fire adapted, making prescribed fire an important tool for use in the restoration and maintenance of plant communities within the conservation area. Since 2005, District staff have conducted 11 burns for a total of 1018 acres. Figure 8 illustrates prescribed fire accomplishments since 2005.

Historically, the majority of fires occurring on what is now the BCRCA would have been ignited by lightning during the growing season. The District intends to utilize growing season fires where possible, understanding that constraints in some areas such as high fuel loading 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 include the close proximity to critical smoke sensitive areas including SR 21 (Blanding Blvd), CR 218, Henley Road, the developed areas such as the towns of Middleburg and Lake Asbury, as well as the down drainage effects of Black Creek. Smoke management is vital and any potential burns will be


Black Creek Ravines Conservation Area
Figure 8 - Burn History Map
0.2
Miles
1 = 15000
Boundary
Year Burned
2005
2008
2009
2010
2011
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conducted to minimize off-site impacts by directing smoke plumes away from smoke sensitive areas and by ensuring adequate smoke dispersal. Smoke management concerns and smoke radii for the BCRCA are depicted in Figure 9.

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 Black Creek Ravines Conservation Area Fire Management Plan (Addendum 4), and the annual burn plan for the property.

Fire Management Strategies

- Implement prescribed burning as described in the District's Fire Management Plan.
- Develop annual burn plans.
- Maintain appropriate burn rotations within the sandhills.
- Continue to implement growing season burns within the conservation area.
- Continue to populate the fire management database.

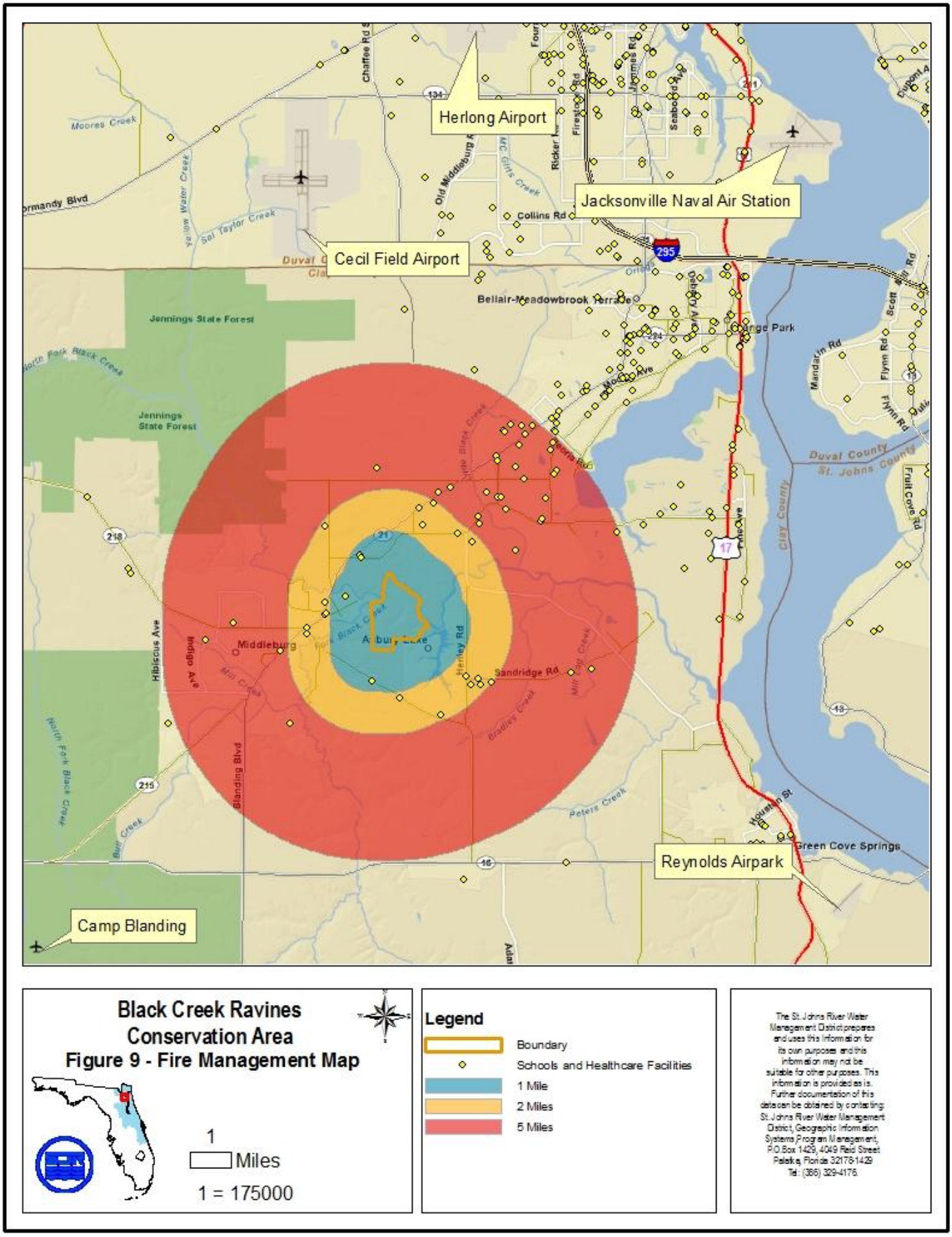
Exotic Species

Several exotic pest plants occur within the conservation area including:

- Japanese climbing fern (*Lygodium japonicum*)
- Chinese tallow (*Sapium sebiferum*)
- Bahia grass (P*aspalum notatum*)
- Mimosa (*Albizia julibrissin*)
- Cogongrass (*Imperata cylindrica*)

The BCRCA 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. At this level, the property is regularly monitored and treated as necessary.

Exotic wildlife species known to occur within the conservation area include feral hogs (*Sus scrofa*), and nine-banded armadillos (*Dasypus novemcinctus*). Feral hog damage is minimal within the conservation. Should control measures be required, the District may coordinate such activities through a feral hog agent Special Use Authorization (SUA) or The United States Department of Agriculture may be contracted to assist.


Herlong Airport
Jacksonville Naval Air Station
Cecil Field Airport
Jennings State Forest
Jennings State Forest
Middleburg
Reynolds Airpark
Green Cove Springs
Camp Blanding
Black Creek Ravines Conservation Area
Figure 9 - Fire Management Map
1
Miles
1 = 175000
Legend
Boundary
Schools and Healthcare Facilities
1 Mile
2 Miles
5 Miles
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Laurel wilt, a disease of red bays (*Persea borbonia*) and other trees in the laurel family has been observed in red bay populations in areas near the conservation area. The disease has not been specifically observed within the BCRCA. 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 several species of *Persea*, but are primarily red bay.

Exotic Species Strategies

- Continue exotic plant control.
- Monitor and map treated populations of invasive plants.
- Initiate feral hog control if necessary.

Cultural Resources Protection

A review of the Department of State, Division of Historical Resources (DHR) indicates three documented Florida Master Site File cultural sites within the conservation area. If any additional; sites are located, District staff will document and report sites to the DHR. District land management activities that may affect or impact these resources will be evaluated and modified to reduce the potential for disturbance of the identified sites. Additionally, detrimental activities discovered on these sites will also be reported to the DHR and appropriate law enforcement agencies. Due to District and State policy, the location of the sites is not identified on public maps.

Cultural Resources Strategies

- Identify and report additional sites to the DHR.

LAND USE MANAGEMENT

Access

Two public parking areas are located along the southwestern portions of the property. The parking areas include wood panel fencing, walkthroughs providing for recreational access at the trailhead, and a kiosk with information panels. The northernmost parking area includes a pitcher pump for equestrian water use. A walk-through provides public access form the Lake Asbury neighborhoods.

There are seven gates providing management access to and across the property. These gates are monitored regularly for maintenance and/or repair needs from normal wear and tear and vandalism.

Several roads traverse the conservation area. In order to maintain District roads the main roads at the BCRCA are identified and classified according to anticipated maintenance needs. All roads currently mapped within the conservation area are classified by the District as either "Type C", "Type D", or "Type E". Type C roads are stabilized roads between 12 and 24 feet wide with a surface of native soils or a combination of clay, lime, or coquina rock, sand and grass. These roads will include shoulders and ditches on each side of the road and maintenance will include routine mowing. 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 restricted to mowing to prevent encroachment by vegetation. These roads often serve as recreational trails and some may be harrowed to serve as fire lines. Figure 10 depicts the location of the parking area and roads on the property. Table (3) three details the miles of unique road types within the conservation area.

Table 3– Road Classification Table

Road Classification Type	Miles
Type C	1.8
Type D	.86
Type E	6.8
Total Miles	**9.46**

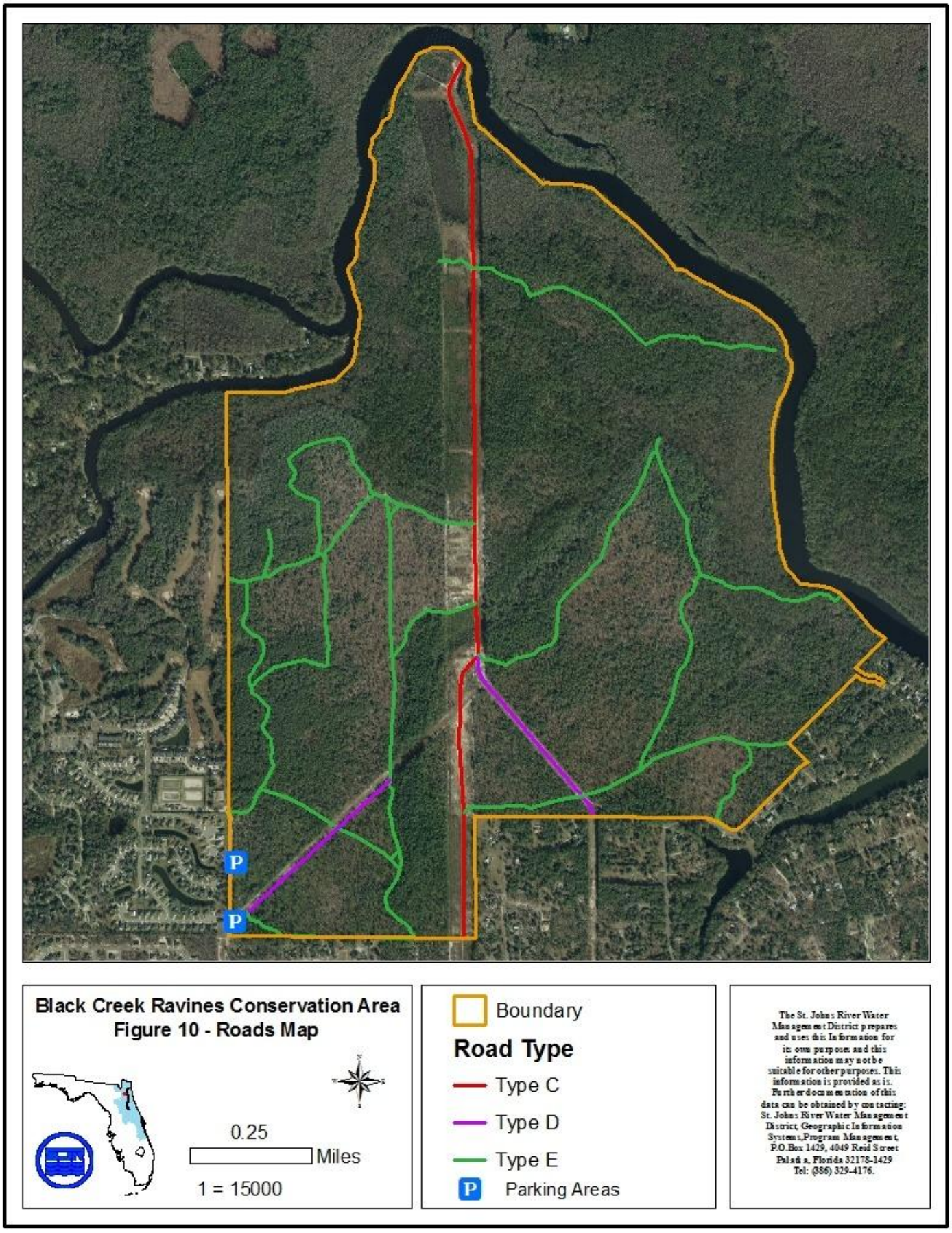
Access Strategies

- Maintain parking areas, 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 to complement what they already have in place by filling an outdoor recreation niche through dispersed recreation opportunities. Dispersed recreation activities generally require large tracts of land with some level of isolation. This type of recreation blends well with District conservation areas, providing numerous opportunities for passive recreation, which also provides solitude and challenge.

Recreational opportunities within the conservation area are geared towards dispersed resource-based activities. The conservation area includes two trailheads with designated parking areas, information kiosks, and access to the land using trails that are primarily interior roads and firelines that are currently maintained for land and water management purposes. The trail system is available for hiking, wildlife viewing, equestrian activities and provides access to the primitive and group campsites.


P
P
Black Creek Ravines Conservation Area
Figure 10 - Roads Map
0.25
Miles
1 = 15000
Boundary
Road Type
Type C
Type D
Type E
P
Parking Areas
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Due to the sensitive nature and erodibility of the ravines and seepage areas, bicycling is not permitted within the conservation area. The group campsite includes a water source, picnic tables, fire ring, and is near the restroom facility. Figure 11 illustrates recreational trails and improvements within the conservation area.

The recreation infrastructure is well established within the BCRCA and is actively maintained. The approximately 8 miles of trails are maintained through a trail maintenance contract. Grassy trails and road edges are mowed four (4) times yearly. The parking areas are maintained by Clay County. Additionally, the trails are blazed and trimmed of overhanging branches as needed.

In 2007, the District installed a portable restroom facility along the white trail near the group campsite. Due to budgetary constraints, the restroom facility may be removed during the scope of this plan.

In 2009, the District re-routed a portion of the trail system to bypass the ravine/seepage area along the power lines. High equestrian traffic was causing erosion problems in this area. Trails and other recreation improvements may be altered, relocated, or closed during forest management activities, road construction/repair, prescribed fire, or during other work or when a safety hazard is present.

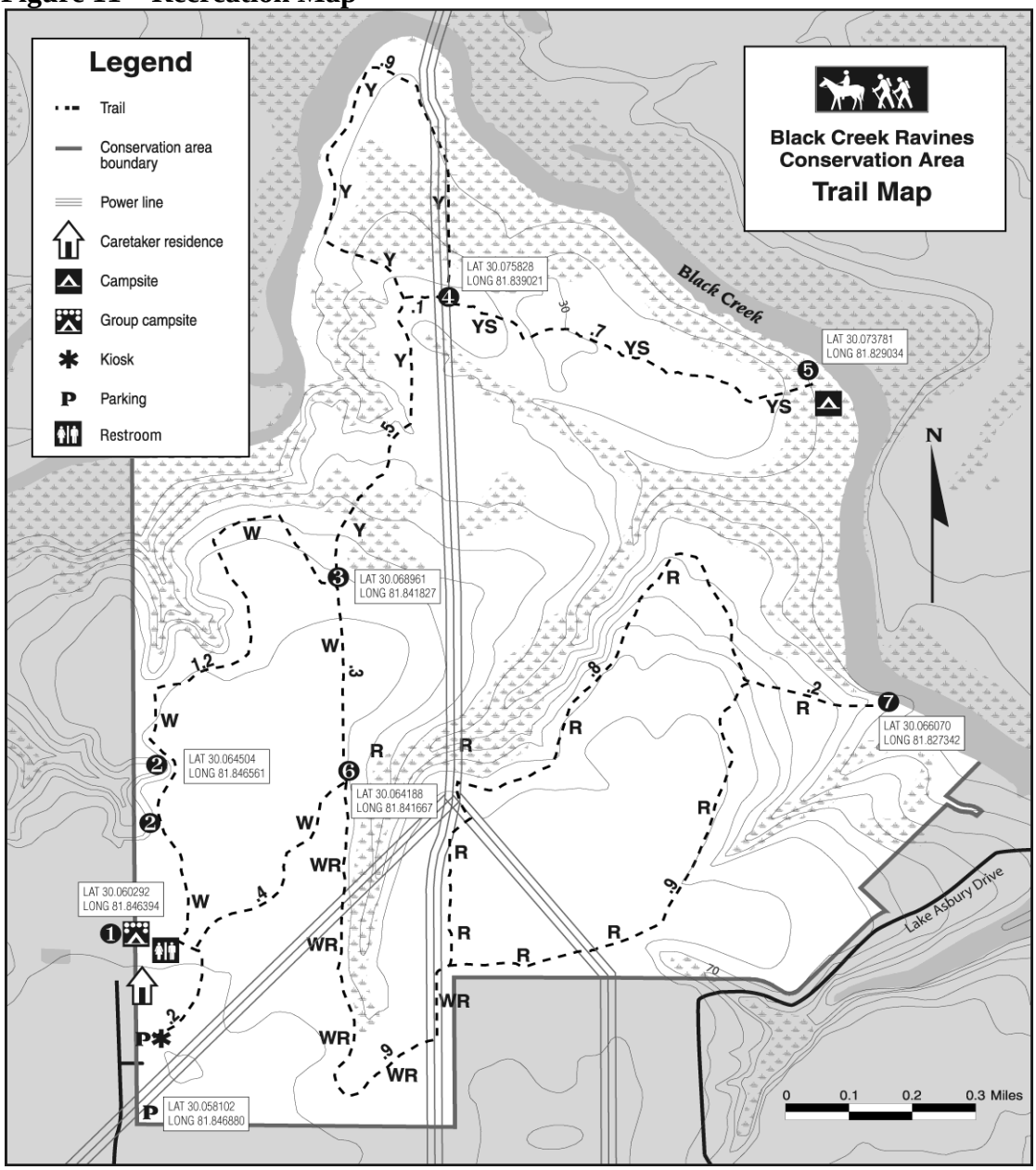
In 2010, District staff identified an unauthorized campsite along the northwestern boundary on Black Creek. The camp is located on a sandy beach and includes improvements, such as a large flagpole and grill. While the trash resulting from this sandbar/campsite occurs on the conservation area, the sandbar is outside the District's boundary.

The entire conservation area is open to the public for passive recreation and is included in the District's *Recreation Guide to District Lands*, which can be viewed online at www.floridaswater.com.

Recreation Strategies

- Continue trail and facility maintenance.
- 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 11 – Recreation Map



Trail Distances

W — White Trail Loop — 2.3 miles
Y — Yellow Trail Loop — 2.0 miles
(starting from White Trail and returning to White Trail)
YS — Yellow Spur Trail — .7 mile (one way)
R — Red Trail Loop — 2.0 miles
WR — White/Red Connector Trail — .9 mile

Distance from parking area to Black Creek Bluff observation point — 2.5 miles

Distance from trailhead to Black Creek campsite via the shortest route (one way) — 2.2 miles

Points of Interest

1. Group campsite (by reservation)
2. Ravine observation points
3. Yellow Trail/White Trail intersection
4. Yellow Trail/Yellow Spur Trail intersection
5. Black Creek campsite
6. Red Trail/White Trail intersection
7. Black Creek Bluff observation point

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 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. Implementing a Legacy Program for this conservation area will be evaluated.

Environmental Education Strategies
- Continue to offer environmental education opportunities.

Security
The boundaries of the BCRCA were marked and posted soon after the original survey work was complete and it was reposted in 2011. While portions of the boundary were fenced prior to acquisition, some of the conservation area boundary, particularly through the forested wetlands, may remain unfenced.

Security concerns include illegal motorized vehicle access 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. Additionally, Clay County maintains a residence agreement for the purposes of providing additional security on the conservation area.

Security Strategies
- Maintain signage, fencing, gates, and locks.
- Continue coordination with private security firm, FWC local law enforcement, and security resident.

ADMINISTRATION

Acquisition
There are no anticipated surpluses or acquisitions associated with the Black Creek Ravines 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 agreements associated with the BCRCA are detailed in Table (4) four.

An intergovernmental management agreement between the District and Clay County designates the County as the lead managing agency for the BCRCA. Clay County manages the day-to-day activities, which includes parking lot maintenance, and annual trail mowing. The County also administers the security residence agreement. The District performs natural and cultural resource management as well as trail and campsite maintenance. During the scope of this plan, the District and the County will pursue amending the agreement to better reflect management responsibilities within the BCRCA.

Table 4 – Agreements, Easements, and SUA Table

Agreement Number	Agreement Name	Type	Term
748	Garrison, James	Arthropod Research SUA	1-year; expires January 31, 2012
108	Lake Asbury Riding Association	Agreement	Automatic renewal – 3-year increments
101	Clay County	Intergovernmental Management Agreement	Automatic renewal – 5-year increments
585	Southeastern Cooperative Wildlife Disease Study; University of Georgia	Tick and Sand Fly Research SUA	Automatic renewal – Annually, terminating June 21, 2014.

<u>Cooperative Agreements, Leases, Easements, and Special Use Authorization Strategies</u>

- Amend the intergovernmental management agreement with Clay.
- Continue to administer research SUAs.

IMPLEMENTATION CHART

Black Creek Ravines Conservation Area - Management Implementation Chart- 2011

TASK	RESPONSIBLE LEAD	DUE DATE	COOPERATORS
RESOURCE PROTECTION AND MANAGEMENT			
Water Resources			
Regularly inspect roads, ditches, bridges, culverts, crossings, fire lines, and trails for erosion problems.	DLM		
Stabilize erosion problem on road adjacent to creek.			
Continue to maintain the seepage areas that are bisected by roads and utility corridors.	DLM	2012	
Utilities			
Monitor the gas line for regeneration of Bartram's ixia and notify FNAI of any sightings.	DLM	Annually between June and July – especially in the years following fires	FNAI
Flora and Fauna			
Conduct diversity surveys and develop species lists.	DLM	Upon discovery and especially in the years following fires	
Continue to monitor for the presence of listed species.	DLM		
Continue to monitor gopher tortoise population dynamics in conjunction with habitat restoration activities.	DLM	2012, 2014	
Continue to monitor bat boxes and record any activity.	DLM	As they are encountered during other work activities.	
Forest Management			
Conduct groundcover monitoring in sandhill restoration/enhancement areas.	DLM	Annually - Spring/Summer	
Implement herbicide treatment in oak encroached sandhills.	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 1st	
	DLM		

TASK	RESPONSIBLE LEAD	DUE DATE	COOPERATORS
Maintain appropriate burn rotations within sandhills.			
Continue to implement growing season burns within the conservation area.	DLM		
Continue to populate the fire management database.	DLM	As fires occur	
Exotic Species			
Continue exotic plant control	DLM	2011	
Monitor and map treated populations of invasive plants.	DLM	Annually	
Initiate feral hog control if necessary.	DLM		USDA
Cultural Resources			
Identify and report sites to the DHR.	DLM	Upon discovery	DHR
LAND USE MANAGEMENT			
Access			
Maintain parking areas, signs, gates, trails, and roads.	DLM		CC
Recreation			
Continue trail and facility maintenance.	DLM	Monthly or as necessary	CC
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		OC
Environmental Education			
Continue to offer environmental education opportunities.	DLM		OC
Security			
Maintain signage, fencing, gates, and locks.	DLM	As necessary	CC
Continue coordination with private security firm, FWC local law enforcement, and security resident.	DLM	Monthly or as necessary	CC, FWC
ADMINISTRATION			
Acquisition			
○ Evaluate adjacent properties for potential acquisition.	DRS	Annually by September 1	DLM, CC
Cooperative Agreements			
○ Amend the intergovernmental management agreement with Clay County.	DLM	2012	CC
○ Continue to administer research SUAs	DLM		DRS

IMPLEMENTATION CHART KEY

CC Clay County
DLM Division of Land Management
FDHR Florida Div. of Historical Resources
FWC Florida Fish and Wildlife Conservation Commission
OC Office of Communications
DRS Division of Real Estate Services

WORKS CITED

Brooks, H. *Guide to the Physiographic Divisions of Florida.* Institute of Food and Agricultural Sciences, Center for Environmental and Natural Resources Program. Gainesville: University of Florida.

Clay County 2025 Comprehensive Plan - Future Land Use . (n.d.). Retrieved March 29, 2011, from Clay County: http://www.claycountygov.com/Departments/Planning_Zoning/2025%20Comp%20Plan/FLUM%20Map%201%20-%20Future%20Land%20Use%20Map.pdf

(2008). *Draft Black Bear Management Plan for Florida Ursus americanus floridanus.* Florida Fish and Wildlife Conservation Commission, Tallahassee, FL.

(2007). *Gopher Tortoise Management Plan.* Tallahassee, FL: Florida Fish and Wildlife Conservation Commission.

Moler, P. a. (1987). Wildlife values of small, isolated wetlands in the southeastern coastal plain. In K. R. R.R Odum (Ed.), *Proceedings of the third SOutheastern nongame and Endangered Wildlife Symposium* (pp. 234-241). Atlanta, Georgia: Georgia Department of Natural Resources.

Myers, R. L. (1990). *Ecosystems of Florida.* (Myers.Ronald.L., & J. J. Ewel, Eds.) Orlando, Florida, Florida: University of Central Florida Press.

Official Soil Series Descriptions. (March, 05 2009). Retrieved June 2010, from Unite States Department of Agriculture - Natural Resources Conservation Service: http://ortho.ftw.nrcs.usda.gov/cgi-bin/osd/osdname.cgi

Rasmussen, A. K. (2008). *Status of Caddisflies (Insecta: Trichoptera) in Greatest Conservation Need in Florida.*

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.

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.
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 Albany series are very deep, somewhat poorly drained soils that formed in marine and fluviomarine deposits or eolian deposits. Natural vegetation consists of longleaf pine, slash pine, or loblolly pine with hardwood trees and an understory of gallberry, wax myrtle, and scattered palmetto. Heavy wiregrass is characteristic.

The Blanton series consists of very deep, somewhat excessively drained to moderately well drained, moderately to slowly permeable soils on uplands and stream terraces in the Coastal Plain. They formed in sandy and loamy marine or eolian deposits. Natural vegetation consists of slash and longleaf pine, red, blue jack, and live oak with an understory of chinkapin, highland fern, huckleberry, and pineland threeawn, bluestem, panicum, and tickclover.

The Centenary series consists of well drained or somewhat excessively drained soils in marine sediments. The native vegetation includes longleaf and loblolly pine, blackjack, turkey, and post oaks.

The Leon series consists of very deep, poorly and very poorly drained, moderately to moderately slowly permeable soils on upland flats, depressions, stream terraces and tidal areas. They formed in sandy marine sediments of the Atlantic and Gulf Coastal Plain. The natural vegetation consists of longleaf pine, slash pine, water oak, myrtle, with a thick undergrowth of saw palmetto, running oak, fetterbush and other lyionia, inkberry (gallberry), chalky bluestem, creeping bluestem and pineland threeawn (wiregrass). In depressions, the vegetation is dominated by bracken fern, smooth sumac and swamp cyrilla are common.

The Meadowbrook series consists of very deep, poorly drained and very poorly drained, moderately slowly permeable soils on flats and small stream flood plains of the Southern Coastal Plain and the Atlantic and Gulf Coast Flatwoods. They formed in thick beds of sandy and loamy marine sediments. Vegetation includes mixed stands of slash pine, loblolly pine, and longleaf pine with live, laurel, and water oaks, black gum, sweetgum, red maple and cypress in wetter areas. The understory consists dominantly of gallberry, wax myrtle, wiregrass, pitcher plants, and bracken fern.

The Ortega series consists of very deep, moderately well drained soils that formed in a sandy deposit on marine terraces. These soils are on nearly level to strongly sloping upland landscapes. Natural vegetation consists of second growth slash and longleaf pine, turkey and blackjack oak, and scattered saw palmetto with an understory of pineland threeawn, low panicums, and grassleaf goldaster.

The Osier series consists of very deep, poorly drained, rapidly permeable soils on flood plains or low stream terraces. They formed in sandy alluvium. The vegetation consists primarily of sweetgum, blackgum, water oak, red maple, swamp holly, bay, slash pine, and longleaf pine. The understory vegetation is mostly briars, vine, canes, myrtle, and gallberry.

The Penney series consists of very deep, excessively drained, rapidly permeable soils on uplands. They formed in thick beds of sandy eolian or marine deposits. The natural vegetation is dominantly turkey oak, blue jack oak, post oak, scrub live oak, and longleaf pine. The understory is chiefly a sparse growth of pineland threeawn, indiangrass, creeping bluestem, and panicums.

The Plummer series consists of very deep, poorly or very poorly drained soils found in low depressions. Native vegetation consist of mixed stands of slash, loblolly, and longleaf pine with swamp tupelo and bald cypress and an understory of gallberry, wax myrtle, southern bayberry, wiregrass, pitcher plants, and bracken fern.

The Rutlege series consists of very deep, very poorly drained soils in flats, depressions, and floodplains. Native vegetation consists of black gum, Carolina ash, red maple, sweet bay, tulip popular, water oak, pin oak, pond pine, slash pine, and loblolly pine. The understory is huckleberry, wax myrtle, green briar, grasses and sedges. Some ponded areas consist of entirely grasses and sedges.

The Sapelo series consists of very deep, somewhat poorly and poorly drained soils. The native vegetation is longleaf pine, loblolly pine, pond pine, black gum, and water oak. Understory plants are gallberry, saw tooth palmetto, and dwarf huckleberry.

ADDENDUM 3 – Species List

LISTED SPECIES				
Scientific Name	**Common Name**	**FFWCC**	**FDACS**	**FNAI**
INVERTEBRATES				
Crayfish				
Procambarus pictus	Black Creek Crayfish	SSC		
Dragonflies				
Gomphus cavillaris	Sandhill Clubtail			G4
Progomphus alachuensis	Tawny Sanddragon			S3 G3
REPTILES				
Gopherus polyphemus	Gopher Tortoise	T		S3 G3
AVES				
Elanoides forficatus	Swallow-tailed Kite			S2 G5
Passerina ciris	Painted Bunting			S3 G5
MAMMALS				
Ursus americanus floridanus	Florida black bear			S2 G5 T2
PLANTS				
Asclepias curtissii	Curtiss' Milkweed		E	
Asclepias viridula	Southern Milkweed; Green Milkweed		T	S2 G2
Athyrium filix-femina asplenioides	Southern Lady Fern		T	
Balduina atropurpurea	Purpledisk Honeycombhead; Purple Balduina		E	S1 G2
Calydorea caelestina	Bartram's Ixia		E	S2
Carex chapmannii	Chapman's Sedge		T	S3
Centrosema arenicola	Pineland Butterfly Pea; Sand Butterfly Pea		E	S2 G2Q
Ctenium floridanum	Florida Toothachegrass		E	S3 G2
Epidendrum conopseum	Green-Fly Orchid		C	
Garberia heterophylla	Garberia		T	
Gymnopogon chapmanianus	Chapman's Skeletongrass			S3 G3
Habenaria nivea	Snowy Orchid		T	
Hartwrightia floridana	Hartwrightia		T	S2 G2
Helianthus carnosus	Lakeside Sunflower; Flatwoods Sunflower		E	S1S2 G1G2
Lilium catesbaei	Catesby's Lily; Pine Lily		T	
Linum westii	West's Flax		E	S2 G2
Lobelia cardinalis	Cardinalflower		T	
Matelea floridana	Florida Milkvine; Florida Spiny Pod		E	S2 G2

Scientific Name	Common Name	FFWCC	FDACS	FNAI
Matelea pubiflora	Trailing Milkvine; Sandhill Spiny Pod		E	
Osmunda cinnamomea	Cinnamon Fern		C	
Osmunda regalis spectabilis	Royal Fern		C	
Pinguicula caerulea	Blueflower Butterwort		T	
Pinguicula lutea	Yellow Butterwort; Yellow-Flowered Butterwort		T	
Platanthera blephariglottis conspicua	White Fringed Orchid		T	
Platanthera ciliaris	Yellow Fringed Orchid		T	
Platanthera cristata	Crested Yellow Orchid; Crested Fringed Orchid		T	
Platanthera flava	Southern Tubercled Orchid; Palegreen Orchid; Gypsy-Spikes		T	
Pogonia bifaria	Fernald's Pogonia		T	
Pogonia ophioglossoides	Rose Pogonia; Snakemouth Orchid		T	
Pteroglossaspis ecristata	Giant Orchid; Non-Crested Eulophia		T	S2 G2G3
Pycnanthemum floridanum	Florida Mountainmint		T	S3 G3
Rhapidophyllum hystrix	Needle Palm		C	
Rhododendron canescens	Sweet Pinxter Azalea; Mountain Azalea		C	
Rhododendron canescens	Sweet Pinxter Azalea; Mountain Azalea		C	
Rudbeckia nitida	Shiny Coneflower; St. John's Susan		E	S2 G3
Sarracenia minor	Hooded Pitcherplant		T	
Schoenolirion croceum	Yellow Sunnybell		E	S2 G4
Sideroxylon lycioides	Buckthorn Bully; Gopherwood Buckthorn		E	S2 G5
Verbesina heterophylla	Diverseleaf Crownbeard			S2 G2
Zephyranthes atamasca treatiae	Treat's Zephyrlily; Treat's Rainlily*		T	

EXOTIC SPECIES		FLEPPC
Broussonetia papyrifera	Paper Mulberry*	Class II
Imperata cylindrica	Cogongrass*	Class I
Panicum repens	TORPEDO GRASS*	Class I
Sapium sebiferum	Popcorntree; Chinese Tallowtree*	Class I
Sesbania punicea	Rattlebox*	Class II
Wisteria sinensis	Chinese Wisteria*	Class II

COMPREHENSIVE SPECIES LIST

Scientific Name	**Common Name**
Acalypha gracilens	Slender Threeseed Mercury
Acanthospermum australe	Paraguay Starburr
Acer rubrum	Red Maple
Aeschynomene viscidula	Sticky Jointvetch
Aesculus pavia	Red Buckeye
Agalinis filifolia	Seminole False Foxglove
Agalinis sp.	
Agarista populifolia	Florida Hobbblebush; Pipestem
Ageratina jucunda	Hammock Snakeroot
Agrostis hyemalis	Ticklegrass; Spring Bentgrass
Aletris lutea	Yellow Colicroot
Aletris obovata	Southern Colicroot
Allium canadense	Meadow Garlic
Alnus serrulata	Hazel Alder
Alysicarpus ovalifolius	False Moneywort; Alyce Clover
Ambrosia artemisiifolia	Common Ragweed
Amorpha fruticosa	Bastard Indigobush; False Indigobush
Amsonia ciliata	Fringed Bluestar
Andropogon brachystachyus	Shortspike Bluestem
Andropogon glomeratus	Bushy Bluestem
Andropogon glomeratus glaucopsis	Purple Bluestem
Andropogon glomeratus pumilus	Bushy Bluestem
Andropogon gyrans	Elliott's Bluestem
Andropogon gyrans stenophyllus	Elliott's Bluestem
Andropogon longiberbis	Hairy Bluestem
Andropogon ternarius	Splitbeard Bluestem
Andropogon virginicus decipiens	Broomsedge Bluestem
Andropogon virginicus glaucus	Chalky Bluestem
Anthaenantia rufa	Purple Silkyscale
Anthaenantia villosa	Green Silkyscale
Apios americana	Groundnut
Apteria aphylla	Nodding Nixie

Aralia spinosa	Devil's Walkingstick
Argemone albiflora	Bluestem Pricklypoppy
Aristida condensata	Big Threeawn; Piedmont Threeawn
Aristida purpurascens tenuispica	Hillsboro Threeawn
Aristida purpurascens virgata	Arrowfeather Threeawn
Aristida simpliciflora	Southern Threeawn; Chapman Threeawn
Aristida spiciformis	Bottlebrush Threeawn
Aristida stricta beyrichiana	Wiregrass
Aristolochia serpentaria	Virginia Snakeroot
Arnoglossum floridanum	Florida Indian Plantain
Arundinaria gigantea	Switchcane
Asclepias cinerea	Carolina Milkweed
Asclepias connivens	Largeflower Milkweed
Asclepias curtissii	Curtiss' Milkweed
Asclepias feayi	Florida Milkweed
Asclepias humistrata	Pinewoods Milkweed
Asclepias lanceolata	Fewflower Milkweed
Asclepias pedicellata	Savannah Milkweed
Asclepias perennis	Swamp Milkweed
Asclepias tomentosa	Velvetleaf Milkweed
Asclepias tuberosa	Butterflyweed; Butterfly Milkweed
Asclepias verticillata	Whorled Milkweed
Asclepias viridula	Southern Milkweed; Green Milkweed
Asimina incana	Woolly Pawpaw; Polecat Bush
Asimina obovata	Bigflower Pawpaw
Asimina parviflora	Smallflower Pawpaw
Asimina pygmea	Dwarf Pawpaw
Asimina sp.	
Asplenium platyneuron	Ebony Spleenwort
Astragalus obcordatus	Florida Milkvetch
Athyrium filix-femina asplenioides	Southern Lady Fern
Aureolaria pedicularia pectinata	Fernleaf Yellow False Foxglove
Aureolaria virginica	Downy Yellow False Foxglove
Axonopus fissifolius	Common Carpetgrass
Axonopus furcatus	Big Carpetgrass
Baccharis glomeruliflora	Silverling
Baccharis halimifolia	GROUNDSEL TREE; SEA MYRTLE
Bacopa caroliniana	Lemon Bacopa; Blue Waterhyssop
Bacopa monnieri	Herb-Of-Grace
Balduina angustifolia	Coastalplain Honeycombhead
Balduina atropurpurea	Purpledisk Honeycombhead; Purple Balduina
Balduina uniflora	Oneflower Honeycombhead
Baptisia lanceolata	Gopherweed

Baptisia lecontei	Pineland Wild Indigo
Bartonia paniculata	Twining Screwstem
Bartonia verna	White Screwstem
Bartonia virginica	Yellow Screwstem
Bejaria racemosa	Tarflower
Berchemia scandens	Alabama Supplejack; Rattan Vine
Berlandiera pumila	Soft Greeneyes
Berlandiera subacaulis	Florida Greeneyes
Bidens alba	Romerillo
Bidens mitis	Smallfruit Beggarticks
Bigelowia nudata	Pineland Rayless Goldenrod
Bignonia capreolata	Crossvine
Boehmeria cylindrica	False Nettle; Bog Hemp
Botrychium biternatum	Southern Grape-Fern
Briza minor	Little Quakinggrass
Broussonetia papyrifera	Paper Mulberry
Buchnera americana	American Bluehearts
Bulbostylis barbata	Watergrass
Bulbostylis ciliatifolia	Capillary Hairsedge
Bulbostylis stenophylla	Sandyfield Hairsedge
Bulbostylis warei	Ware's Hairsedge
Burmannia biflora	Bluethread
Burmannia capitata	Southern Bluethread
Callicarpa americana	American Beautyberry
Callisia graminea	Grassleaf Roseling
Callisia rosea	Piedmont Roseling
Calopogon barbatus	Bearded Grasspink
Calopogon pallidus	Pale Grasspink
Calopogon tuberosus	Tuberous Grasspink
Calydorea caelestina	Bartram's Ixia
Calystegia sepium limnophila	Hedge False Bindweed
Carex atlantica	Atlantic Sedge
Carex atlantica capillacea	Prickly Bog Sedge
Carex bromoides	Bromelike Sedge
Carex chapmannii	Chapman's Sedge
Carex comosa	Longhair Sedge
Carex crebriflora	Coastalplain Sedge
Carex dasycarpa	Sandywoods Sedge
Carex debilis	White-Edge Sedge
Carex digitalis	Slender Woodland Sedge
Carex elliottii	Elliott's Sedge
Carex fissa aristata	Hammock Sedge
Carex glaucescens	Clustered Sedge

Carex godfreyi	Godfrey's Sedge
Carex lonchocarpa	Southern Longsedge
Carex longii	Long's Sedge
Carex lupuliformis	False Hop Sedge
Carex paeninsulae	Peninsula Sedge
Carex stipata	AWLFRUIT SEDGE
Carex striata	Walter's Sedge
Carex styloflexa	Bent Sedge
Carex verrucosa	Warty Sedge
Carphephorus corymbosus	Coastalplain Chaffhead; Florida Paintbrush
Carphephorus odoratissimus	Vanillaleaf
Carphephorus paniculatus	Hairy Chaffhead
Carpinus caroliniana	American Hornbeam; Bluebeech
Carya glabra	Pignut Hickory
Castanea pumila	Chinquapin
Ceanothus microphyllus	Littleleaf Buckbrush
Cenchrus echinatus	Southern Sandbur
Cenchrus spinifex	Coastal Sandbur
Centrosema arenicola	Pineland Butterfly Pea; Sand Butterfly Pea
Centrosema virginianum	Spurred Butterfly Pea
Cephalanthus occidentalis	Common Buttonbush
Cerastium glomeratum	Mouse-Ear Chickweed; Sticky Chickweed
Ceratiola ericoides	Florida Rosemary; Sand Heath
Cercis canadensis	Eastern Redbud
Chamaecrista fasciculata	Partridge Pea
Chamaecrista nictitans aspera	Sensitive Pea
Chamaesyce hirta	Pillpod Sandmat
Chamaesyce hyssopifolia	Hyssopleaf Sandmat
Chamaesyce maculata	Spotted Sandmat
Chapmannia floridana	Florida Alicia
Chaptalia tomentosa	Woolly Sunbonnets; Pineland Daisy
Chasmanthium laxum	Slender Woodoats
Chasmanthium laxum sessiliflorum	Longleaf Woodoats
Chasmanthium nitidum	Shiny Woodoats
Chionanthus virginicus	White Fringetree; Old-Mans's Beard
Chrysopsis gossypina	Cottony Goldenaster
Chrysopsis mariana	Maryland Goldenaster
Chrysopsis scabrella	Coastalplain Goldenaster
Cicuta maculata	Spotted Water Hemlock
Cirsium horridulum	Purple Thistle
Clematis reticulata	Netleaf Leather-Flower
Clitoria mariana	Atlantic Pigeonwings
Cnidoscolus stimulosus	Tread-Softly; Finger-Rot

Commelina erecta	Whitemouth Dayflower
Commelina virginica	Virginia Dayflower
Conyza canadensis	CANADIAN HORSEWEED
Coreopsis gladiata	Coastalplain Tickseed
Cornus asperifolia	Roughleaf Dogwood
Cornus florida	Flowering Dogwood
Cornus foemina	Swamp Dogwood; Stiff Dogwood
Crataegus crus-galli	Cockspur Hawthorn
Crataegus michauxii	Michaux's Hawthorn
Crataegus uniflora	Dwarf Hawthorn
Crataegus viridis	Green Hawthorn
Croptilon divaricatum	Slender Scratchdaisy
Crotalaria lanceolata	Lanceleaf Rattlebox
Crotalaria rotundifolia	Rabbitbells
Crotalaria spectabilis	Showy Rattlebox
Croton argyranthemus	Silver Croton;Healing Croton
Croton capitatus	Woolly Croton; Hogwort
Croton glandulosus	Vente Conmigo
Croton michauxii	Rushfoil; Michaux's Croton
Ctenium aromaticum	Toothachegrass
Ctenium floridanum	Florida Toothachegrass
Cuphea carthagenensis	Colombian Waxweed
Cuscuta compacta	Compact Dodder
Cyclospermum leptophyllum	Marsh Parsley
Cynodon dactylon	Bermudagrass
Cyperus compressus	Poorland Flatsedge
Cyperus croceus	Baldwin's Flatsedge
Cyperus distinctus	Swamp Flatsedge
Cyperus filiculmis	Wiry Flatsedge
Cyperus flavescens	Yellow Flatsedge
Cyperus haspan	Haspan Flatsedge
Cyperus lanceolatus	Epiphytic Flatsedge
Cyperus lecontei	Leconte's Flatsedge
Cyperus odoratus	Fragrant Flatsedge
Cyperus polystachyos	MANYSPIKE FLATSEDGE
Cyperus retrorsus	Pinebarren Flatsedge
Cyperus strigosus	Strawcolored Flatsedge
Cyperus surinamensis	Tropical Flatsedge
Cyperus virens	Green Flatsedge
Cyrilla racemiflora	Titi
Dalea carnea	Whitetassels
Dalea pinnata	Summer Farewell
Decumaria barbara	Cowitch Vine; Climbing Hydrangea; Woodvamp

Descurainia pinnata	Western Tansymustard
Desmodium ciliare	Hairy Small-Leaf Ticktrefoil
Desmodium floridanum	Florida Ticktrefoil
Desmodium incanum	Zarzabacoa Comun
Desmodium marilandicum	Smooth Ticktrefoil
Desmodium paniculatum	Panicled Ticktrefoil
Desmodium strictum	Pinebarren Ticktrefoil
Desmodium tortuosum	Dixie Ticktrefoil
Desmodium triflorum	Threeflower Ticktrefoil
Dichanthelium aciculare	Needleleaf Witchgrass
Dichanthelium acuminatum	Tapered Witchgrass
Dichanthelium commutatum	Variable Witchgrass
Dichanthelium ensifolium unciphyllum	Cypress Witchgrass
Dichanthelium erectifolium	Erectleaf Witchgrass
Dichanthelium laxiflorum	Openflower Witchgrass
Dichanthelium leucothrix	Rough Witchgrass
Dichanthelium ovale	Eggleaf Witchgrass
Dichanthelium portoricense	Hemlock Witchgrass
Dichanthelium scabriusculum	Woolly Witchgrass
Dichanthelium scoparium	Velvet Witchgrass
Dichanthelium sphaerocarpon	Roundseed Witchgrass
Dichanthelium strigosum glabrescens	Roughhair Witchgrass
Dichanthelium strigosum leucoblepharis	Roughhair Witchgrass
Dichondra carolinensis	Carolina Ponysfoot
Digitaria ciliaris	Southern Crabgrass
Digitaria cognata	Carolina Crabgrass
Digitaria filiformis	Slender Crabgrass; Shaggy Crabgrass
Digitaria serotina	Blanket Crabgrass; Dwarf Crabgrass
Diodia teres	Poor Joe; Rough Buttonweed
Diodia virginiana	Virginia Buttonweed
Diospyros virginiana	Common Persimmon
Drosera brevifolia	Dwarf Sundew
Drosera capillaris	Pink Sundew
Dryopteris ludoviciana	Southern Wood Fern
Dyschoriste oblongifolia	Oblongleaf Twinflower; Oblongleaf Snakeherb
Echinochloa walteri	Coast Cockspur
Echinodorus tenellus	Dwarf Burrhead; Mudbabies
Eclipta prostrata	False Daisy
Eleocharis baldwinii	Baldwin's Spikerush; Roadgrass
Eleocharis flavescens	Yellow Spikerush; Pale Spikerush
Eleocharis geniculata	Canada Spikerush
Eleocharis vivipara	Viviparous Spikerush
Elephantopus elatus	Tall Elephantsfoot

Elephantopus nudatus	Smooth Elephantsfoot
Eleusine indica	Indian Goosegrass
Epidendrum conopseum	Green-Fly Orchid
Eragrostis spectabilis	Purple Lovegrass
Eragrostis virginica	Coastal Lovegrass
Erechtites hieraciifolius	American Burnweed; Fireweed
Eremochloa ophiuroides	Centipedegrass
Erigeron strigosus	Prairie Fleabane
Erigeron vernus	Early Whitetop Fleabane
Eriocaulon compressum	Flattened Pipewort
Eriocaulon decangulare	Tenangle Pipewort
Eriocaulon lineare	Narrow Pipewort
Eriocaulon ravenelii	Ravenel's Pipewort
Eriochloa michauxii	Michaux's Cupgrass
Eriogonum tomentosum	Dogtongue Wild Buckwheat
Eryngium aromaticum	Fragrant Eryngo
Eryngium baldwinii	Baldwin's Eryngo
Eryngium prostratum	Creeping Eryngo
Eryngium yuccifolium	Button Rattlesnakemaster; Button Eryngo
Erythrina herbacea	Coralbean; Cherokee Bean
Euonymus americanus	American Strawberrybush
Eupatorium album	White Thoroughwort
Eupatorium compositifolium	Yankeeweed
Eupatorium leptophyllum	Falsefennel
Eupatorium leucolepis	Justiceweed
Eupatorium linearifolium	Waxy Thoroughwort
Eupatorium mohrii	Mohr's Thoroughwort
Eupatorium perfoliatum	Common Boneset
Eupatorium pilosum	Rough Boneset
Eupatorium rotundifolium	Roundleaf Thoroughwort; False Horehound
Eupatorium serotinum	Lateflowering Thoroughwort
Euphorbia curtisii	Curtis' Spurge
Euphorbia exserta	Coastal Sand Spurge
Euphorbia inundata	Florida Pineland Spurge
Eustachys petraea	Pinewoods Fingergrass
Euthamia caroliniana	Slender Flattop Goldenrod
Fimbristylis autumnalis	Slender Fimbry
Fimbristylis caroliniana	Carolina Fimbry
Fimbristylis puberula	Hairy Fimbry
Fimbristylis schoenoides	Ditch Fimbry
Fraxinus caroliniana	Carolina Ash; Water Ash; Pop Ash
Froelichia floridana	Cottonweed; Plains Snakecotton
Fuirena breviseta	Saltmarsh Umbrellasedge

Fuirena pumila	Dwarf Umbrellasedge
Fuirena scirpoidea	Southern Umbrellasedge
Gaillardia aestivalis	Lanceleaf Blanketflower
Galactia elliottii	Elliott's Milkpea
Galactia erecta	Erect Milkpea
Galactia mollis	Soft Milkpea
Galactia regularis	Eastern Milkpea
Galactia volubilis	Downy Milkpea
Galium hispidulum	Coastal Bedstraw
Galium pilosum	Hairy Bedstraw
Galium tinctorium	Stiff Marsh Bedstraw
Gamochaeta purpurea	SPOONLEAF PURPLE EVERLASTING; SPOONLEAF CUDWEED
Garberia heterophylla	Garberia
Gaura angustifolia	Southern Beeblossom
Gaylussacia dumosa	Dwarf Huckleberry
Gaylussacia frondosa tomentosa	Blue Huckleberry
Gelsemium sempervirens	Yellow Jessamine; Carolina Jessamine
Geranium carolinianum	Carolina Cranesbill
Gomphrena serrata	PROSTRATE GLOBE AMARANTH; ARRASA CON TODO
Gordonia lasianthus	Loblolly Bay
Gratiola hispida	Rough Hedgehyssop
Gratiola pilosa	Shaggy Hedgehyssop
Gratiola ramosa	Branched Hedgehyssop
Gymnopogon brevifolius	Shortleaf Skeletongrass
Gymnopogon chapmanianus	Chapman's Skeletongrass
Habenaria floribunda	Toothpetal False Reinorchid; Mignonette Orchid
Habenaria nivea	Snowy Orchid
Habenaria quinqueseta	Longhorn False Reinorchid; Michaux's Orchid
Habenaria repens	Waterspider False Reinorchid
Hamamelis virginiana	American Witchhazel
Hartwrightia floridana	Hartwrightia
Helenium amarum	Spanish Daisy; Bitterweed
Helenium flexuosum	Purplehead Sneezeweed
Helenium pinnatifidum	Southeastern Sneezeweed
Helianthemum corymbosum	Pinebarren Frostweed
Helianthemum georgianum	Georgia Frostweed
Helianthus angustifolius	Narrowleaf Sunflower; Swamp Sunflower
Helianthus carnosus	Lakeside Sunflower; Flatwoods Sunflower
Helianthus floridanus	Florida Sunflower
Helianthus radula	Stiff Sunflower
Helianthus strumosus	Paleleaf Woodland Sunflower
Heteropogon melanocarpus	Sweet Tanglehead
Heterotheca subaxillaris	Camphorweed

Hibiscus aculeatus	Comfortroot
Hibiscus coccineus	Scarlet Rosemallow
Hibiscus grandiflorus	Swamp Rosemallow
Hibiscus moscheutos	Crimsoneyed Rosemallow
Hieracium gronovii	Queen-Devil
Houstonia procumbens	Innocence; Roundleaf Bluet
Hydrocotyle bonariensis	Largeleaf Marshpennywort
Hydrocotyle umbellata	Manyflower Marshpennywort
Hypericum brachyphyllum	Coastalplain St.John's-Wort
Hypericum canadense	Lesser Canadian St.John's-Wort
Hypericum cistifolium	Roundpod St.John's-Wort
Hypericum crux-andreae	St.Peter's-Wort
Hypericum fasciculatum	Sandweed; Peelbark St.John's-Wort
Hypericum gentianoides	Pineweeds; Orangegrass
Hypericum hypericoides	St.Andrew's-Cross
Hypericum mutilum	Dwarf St.John's-Wort
Hypericum myrtifolium	Myrtleleaf St.John's-Wort
Hypericum setosum	Hairy St.John's-Wort
Hypericum suffruticosum	Pineland St.John's-Wort
Hypericum tenuifolium	ATLANTIC ST.JOHN'S-WORT
Hypericum tetrapetalum	Fourpetal St.John's-Wort
Hypoxis curtissii	Common Yellow Stargrass
Hypoxis juncea	Fringed Yellow Stargrass
Hypoxis wrightii	Bristleseed Yellow Stargrass
Hyptis alata	Clustered Bushmint; Musky Mint
Hyptis mutabilis	Tropical Bushmint
Ilex ambigua	Carolina Holly; Sand Holly
Ilex cassine	Dahoon
Ilex cassine myrtifolia	Myrtle Dahoon
Ilex coriacea	Large Gallberry; Sweet Gallberry
Ilex glabra	Inkberry; Gallberry
Ilex opaca	American Holly
Ilex opaca arenicola	Scrub Holly
Ilex vomitoria	Yaupon
Imperata cylindrica	Cogongrass
Indigofera hirsuta	Hairy Indigo
Indigofera spicata	Trailing Indigo
Ipomoea cordatotriloba	Tievine
Ipomopsis rubra	Standingcypress; Spanish Larkspur
Iris hexagona	Dixie Iris; Prairie Iris
Iris virginica	VIRGINIA IRIS; BLUE FLAG IRIS
Itea virginica	Virginia Willow; Virginia Sweetspire
Iva microcephala	Piedmont Marshelder

Juncus acuminatus	Tapertip Rush
Juncus bufonius	Toad Rush
Juncus canadensis	Canadian Rush
Juncus coriaceus	Leathery Rush
Juncus dichotomus	Forked Rush
Juncus effusus solutus	Soft Rush
Juncus elliottii	Bog Rush; Elliott's Rush
Juncus marginatus	Shore Rush; Grassleaf Rush
Juncus megacephalus	Bighead Rush
Juncus repens	Lesser Creeping Rush
Juncus scirpoides	Needlepod Rush
Juncus validus	Roundhead Rush
Justicia ovata	Looseflower Waterwillow
Kalmia hirsuta	Wicky; Hairy Laurel
Kosteletzkya pentacarpos	VIRGINIA SALTMARSH MALLOW
Krigia virginica	Virginia Dwarfdandelion
Kummerowia striata	Japanese Clover
Kyllinga brevifolia	Shortleaf Spikesedge
Kyllinga pumila	Low Spikesedge
Kyllinga squamulata	Asian Spikesedge
Lachnanthes caroliana	Carolina Redroot
Lachnocaulon anceps	Whitehead Bogbutton
Lachnocaulon minus	Small's Bogbutton
Lactuca floridana	Woodland Lettuce
Lactuca graminifolia	Grassleaf Lettuce
Lechea deckertii	Deckert's Pinweed
Lechea mucronata	Hairy Pinweed
Lechea sessiliflora	Pineland Pinweed
Leersia hexandra	Southern Cutgrass
Lepidium virginicum	Virginia Pepperweed
Lespedeza angustifolia	Narrowleaf Lespedeza
Lespedeza hirta	Hairy Lespedeza
Leucothoe axillaris	Coastal Doghobble
Leucothoe racemosa	Swamp Doghobble
Liatris elegans	Pinkscale Gayfeather
Liatris gracilis	Slender Gayfeather
Liatris pauciflora	Fewflower Gayfeather
Liatris spicata	Dense Gayfeather
Liatris tenuifolia	Shortleaf Gayfeather
Licania michauxii	Gopher Apple
Lilium catesbaei	Catesby's Lily; Pine Lily
Linaria canadensis	Canadian Toadflax
Linaria floridana	Apalachicola Toadflax

Lindernia crustacea	Malaysian False Pimpernel
Linum floridanum	Florida Yellow Flax
Linum westii	West's Flax
Liquidambar styraciflua	Sweetgum
Liriodendron tulipifera	Tuliptree; Yellow Poplar
Lobelia cardinalis	Cardinalflower
Lobelia glandulosa	Glade Lobelia
Lobelia paludosa	White Lobelia
Lobelia puberula	Downy Lobelia
Lolium perenne	Italian Ryegrass
Lonicera sempervirens	Coral Honeysuckle; Trumpet Honeysuckle
Ludwigia decurrens	Wingleaf Primrosewillow
Ludwigia grandiflora	Largeflower Primrosewillow
Ludwigia leptocarpa	Anglestem Primrosewillow
Ludwigia linearis	Narrowleaf Primrosewillow
Ludwigia maritima	Seaside Primrosewillow
Ludwigia microcarpa	Smallfruit Primrosewillow
Ludwigia octovalvis	Mexican Primrosewillow
Ludwigia palustris	Marsh Seedbox
Ludwigia peruviana	Peruvian Primrosewillow
Ludwigia pilosa	Hairy Primrosewillow
Ludwigia repens	Creeping Primrosewillow
Ludwigia suffruticosa	Shrubby Primrosewillow
Ludwigia virgata	Savannah Primrosewillow
Lupinus diffusus	Skyblue Lupine
Lupinus perennis	Sundial Lupine
Lupinus villosus	Lady Lupine
Lycopodiella alopecuroides	Foxtail Club-Moss
Lycopodiella appressa	Southern Club-Moss; Southern Bog Club-Moss
Lycopodiella caroliniana	Slender Club-Moss
Lycopodiella prostrata	Feather-Stem Club-Moss; Harper's Club-Moss
Lycopus amplectens	Clasping Waterhorehound
Lycopus rubellus	Taperleaf Waterhorehound
Lygodesmia aphylla	Rose-Rush
Lyonia ferruginea	Rusty Staggerbush
Lyonia fruticosa	Coastalplain Staggerbush
Lyonia ligustrina foliosiflora	Maleberry
Lyonia lucida	Fetterbush
Lyonia mariana	Piedmont Staggerbush
Magnolia grandiflora	Southern Magnolia
Magnolia virginiana	Sweetbay
Marshallia graminifolia	GRASSLEAF BARBARA'S BUTTONS
Matelea floridana	Florida Milkvine; Florida Spiny Pod

Matelea pubiflora	Trailing Milkvine; Sandhill Spiny Pod
Mecardonia acuminata	Axilflower
Medicago lupulina	Black Medick
Melanthera nivea	Snow Squarestem
Melica mutica	Twoflower Melicgrass
Melilotus albus	White Sweetclover
Melinis repens	ROSE NATALGRASS
Melothria pendula	Creeping Cucumber
Micranthemum glomeratum	Manatee Mudflower
Micranthemum umbrosum	Shade Mudflower
Micromeria brownei pilosiuscula	Browne's Savory
Mikania scandens	Climbing Hempvine
Mimosa quadrivalvis angustata	Sensitive Brier
Mimosa quadrivalvis floridana	Florida Sensitive Brier
Mimosa strigillosa	Powderpuff
Mitchella repens	Partridgeberry; Twinberry
Mitreola petiolata	Lax Hornpod
Mitreola sessilifolia	Swamp Hornpod
Monarda punctata	Spotted Beebalm
Monotropa uniflora	Indianpipe
Muhlenbergia capillaris trichopodes	Cutover Muhly
Murdannia nudiflora	Nakedstem Dewflower
Myrica caroliniensis	Evergreen Bayberry; Northern Bayberry
Myrica cerifera	Southern Bayberry; Wax Myrtle
Myriophyllum aquaticum	Parrot Feather Watermilfoil
Nasturtium officinale	European Watercress
Neptunia pubescens	Tropical Puff
Nothoscordum bivalve	Crowpoison; False Garlic
Nuphar advena	Spatterdock; Yellow Pondlily
Nymphaea odorata	American White Waterlily
Nymphoides aquatica	Big Floatingheart
Nyssa ogeche	Ogeechee Tupelo
Nyssa sylvatica	Blackgum
Nyssa sylvatica biflora	Swamp Tupelo
Oclemena reticulata	Whitetop Aster; Pinebarren Aster
Oenothera biennis	Common Eveningprimrose
Oenothera fruticosa	Sundrops; Narrowleaf Eveningprimrose
Oenothera laciniata	Cutleaf Eveningprimrose
Oldenlandia uniflora	Clustered Mille Graines
Onosmodium virginianum	False Gromwell; Wild Job's Tears
Ophioglossum petiolatum	Stalked Adder's Tongue
Opuntia humifusa	Pricklypear
Orobanche minor	Hellroot

Orontium aquaticum	Goldenclub; Neverwet
Osmanthus americanus	Wild Olive; American Devilwood
Osmunda cinnamomea	Cinnamon Fern
Osmunda regalis spectabilis	Royal Fern
Oxalis corniculata	Common Yellow Woodsorrel; Creeping Woodsorrel
Oxalis violacea	Violet Woodsorrel
Oxypolis filiformis	Water Cowbane
Palafoxia integrifolia	Coastalplain Palafox
Panicum anceps	Beaked Panicum
Panicum dichotomiflorum	Fall Panicgrass
Panicum hemitomon	Maidencane
Panicum hians	Gaping Panicum
Panicum longifolium	Long-Leaved Panic Grass
Panicum repens	TORPEDO GRASS
Panicum rigidulum	Redtop Panicum
Panicum verrucosum	Warty Panicgrass
Panicum virgatum	Switchgrass
Paronychia baldwinii	Baldwin's Nailwort
Paronychia herniarioides	Coastalplain Nailwort
Paronychia patula	Pineland Nailwort
Parthenocissus quinquefolia	Virginia Creeper; Woodbine
Paspalum conjugatum	Sour Paspalum; Hilograss
Paspalum floridanum	Florida Paspalum
Paspalum laeve	Field Paspalum
Paspalum nicorae	Brunswickgrass
Paspalum notatum saurae	Bahiagrass
Paspalum plicatulum	Brownseed Paspalum
Paspalum setaceum	Thin Paspalum
Paspalum urvillei	Vaseygrass
Passiflora lutea	Yellow Passionflower
Pectis prostrata	Spreading Cinchweed
Pedicularis canadensis	Canadian Lousewort
Pediomelum canescens	Buckroot
Peltandra sagittifolia	White Arrow Arum; Spoonflower
Peltandra virginica	Green Arrow Arum
Penstemon multiflorus	Manyflower Beardtongue
Persea borbonia	Red Bay
Persea palustris	Swamp Bay
Phalaris angusta	Timothy Canarygrass
Phalaris canariensis	Common Canarygrass
Phalaris caroliniana	Carolina Canarygrass
Phlox amoena	Hairy Phlox
Phlox drummondii	Annual Phlox

Phoebanthus grandiflorus	Florida False Sunflower
Phoradendron leucarpum	Oak Mistletoe
Photinia pyrifolia	Red Chokeberry
Phyla nodiflora	Turkey Tangle Fogfruit; Capeweed
Phyllanthus urinaria	Chamber Bitter
Physalis arenicola	Cypresshead Groundcherry
Physalis pubescens	Husk Tomato
Physalis walteri	Walter's Groundcherry
Physostegia purpurea	Eastern False Dragonhead
Phytolacca americana	American Pokeweed
Pinguicula caerulea	Blueflower Butterwort
Pinguicula lutea	Yellow Butterwort; Yellow-Flowered Butterwort
Pinguicula pumila	Small Butterwort
Pinus clausa	Sand Pine
Pinus elliottii	Slash Pine
Pinus palustris	Longleaf Pine
Pinus serotina	Pond Pine
Pinus taeda	Loblolly Pine
Piptochaetium avenaceum	Blackseed Needlegrass
Piptochaetium avenacioides	Florida Needlegrass
Piriqueta cistoides caroliniana	Pitted Stripeseed
Pityopsis graminifolia	Narrowleaf Silkgrass
Plantago lanceolata	English Plantain; Narrowleaf Plantain
Plantago sparsiflora	Pineland Plantain
Plantago virginica	Virginia Plantain; Southern Plantain
Platanthera blephariglottis conspicua	White Fringed Orchid
Platanthera chapmanii	Chapman's Fringed Orchid
Platanthera ciliaris	Yellow Fringed Orchid
Platanthera cristata	Crested Yellow Orchid; Crested Fringed Orchid
Platanthera flava	Southern Tubercled Orchid; Palegreen Orchid; Gypsy-Spikes
Pleopeltis polypodioides michauxiana	Resurrection Fern
Pluchea baccharis	Rosy Camphorweed
Pluchea foetida	Stinking Camphorweed
Pluchea longifolia	Longleaf Camphorweed
Pluchea odorata	Sweetscent
Pogonia bifaria	Fernald's Pogonia
Pogonia divaricata	Rosebud Orchid; Spreading Pogonia
Pogonia ophioglossoides	Rose Pogonia; Snakemouth Orchid
Poinsettia cyathophora	Paintedleaf; Fire-On-The-Mountain
Polanisia tenuifolia	Slenderleaf Clammyweed
Polygala cruciata	Drumheads
Polygala cymosa	Tall Pinebarren Milkwort
Polygala incarnata	Procession Flower

Polygala lutea	Orange Milkwort
Polygala mariana	Maryland Milkwort
Polygala nana	Candyroot
Polygala ramosa	Low Pinebarren Milkwort
Polygala setacea	Coastalplain Milkwort
Polygala violacea	SHOWY MILKWORT
Polygonella gracilis	Tall Jointweed
Polygonum hydropiperoides	Mild Waterpepper; Swamp Smartweed
Polygonum punctatum	Dotted Smartweed
Polygonum setaceum	Bog Smartweed
Polypogon monspeliensis	Rabbitsfootgrass
Polypremum procumbens	Rustweed; Juniperleaf
Polystichum acrostichoides	Christmas Fern
Pontederia cordata	Pickerelweed
Portulaca oleracea	Little Hogweed
Proserpinaca palustris	Marsh Mermaidweed
Proserpinaca pectinata	Combleaf Mermaidweed
Prunus americana	American Plum
Prunus caroliniana	Carolina Laurelcherry
Prunus serotina	Black Cherry
Prunus umbellata	Flatwoods Plum; Hog Plum
Pseudognaphalium obtusifolium	Sweet Everlasting; Rabbit Tobacco
Pteridium aquilinum pseudocaudatum	Tailed Bracken
Pterocaulon pycnostachyum	Blackroot
Pteroglossaspis ecristata	Giant Orchid; Non-Crested Eulophia
Ptilimnium capillaceum	Mock Bishopsweed; Herbwilliam
Pycnanthemum floridanum	Florida Mountainmint
Pycnanthemum nudum	Coastalplain Mountainmint
Pyrrhopappus carolinianus	Carolina Desertchicory
Quercus chapmanii	Chapman's Oak
Quercus geminata	Sand Live Oak
Quercus incana	Bluejack Oak
Quercus laevis	Turkey Oak
Quercus laurifolia	Laurel Oak; Diamond Oak
Quercus margaretta	Sand Post Oak
Quercus michauxii	Basket Oak; Swamp Chestnut Oak
Quercus minima	Dwarf Live Oak
Quercus myrtifolia	Myrtle Oak
Quercus nigra	Water Oak
Quercus virginiana	Live Oak
Rhapidophyllum hystrix	Needle Palm
Rhexia alifanus	Savannah Meadowbeauty
Rhexia lutea	Yellow Meadowbeauty

Rhexia mariana	Pale Meadowbeauty; Maryland Meadowbeauty
Rhexia nashii	Maid Marian
Rhexia nuttallii	Nuttall's Meadowbeauty
Rhexia petiolata	Fringed Meadowbeauty
Rhododendron canescens	Sweet Pinxter Azalea; Mountain Azalea
Rhododendron viscosum	Swamp Azalea
Rhus copallinum	Winged Sumac
Rhynchosia cinerea	Brownhair Snoutbean
Rhynchosia difformis	Doubleform Snoutbean
Rhynchosia michauxii	Michaux's Snoutbean
Rhynchosia reniformis	Dollarleaf
Rhynchospora baldwinii	Baldwin's Beaksedge
Rhynchospora caduca	Anglestem Beaksedge
Rhynchospora cephalantha	Bunched Beaksedge
Rhynchospora ciliaris	Fringed Beaksedge
Rhynchospora colorata	Starrush Whitetop
Rhynchospora fascicularis	Fascicled Beaksedge
Rhynchospora filifolia	Threadleaf Beaksedge
Rhynchospora gracilenta	Slender Beaksedge
Rhynchospora grayi	Gray's Beaksedge
Rhynchospora inexpansa	Nodding Beaksedge
Rhynchospora latifolia	Giant Whitetop; Sandswamp Whitetop
Rhynchospora megalocarpa	Sandyfield Beaksedge
Rhynchospora microcarpa	Southern Beaksedge
Rhynchospora microcephala	Bunched Beaksedge
Rhynchospora miliacea	Millet Beaksedge
Rhynchospora mixta	Mingled Beaksedge
Rhynchospora odorata	Fragrant Beaksedge
Rhynchospora oligantha	Featherbristle Beaksedge
Rhynchospora perplexa	Pineland Beaksedge
Rhynchospora plumosa	Plumed Beaksedge
Rhynchospora pusilla	Fairy Beaksedge
Rhynchospora rariflora	Fewflower Beaksedge
Rhynchospora tracyi	Tracy's Beaksedge
Rhynchospora wrightiana	Wright's Beaksedge
Richardia brasiliensis	Tropical Mexican Clover
Rosa bracteata	Macartney Rose
Rosa carolina	Carolina Rose
Rubus argutus	Sawtooth Blackberry
Rubus cuneifolius	Sand Blackberry
Rubus sp.	
Rudbeckia hirta	Blackeyed Susan
Rudbeckia mollis	Softhair Coneflower

Rudbeckia nitida	Shiny Coneflower; St. John's Susan
Ruellia caroliniensis	Carolina Wild Petunia
Rumex crispus	Curly Dock
Rumex hastatulus	Heartwing Dock; Hastateleaf Dock
Rumex verticillatus	Swamp Dock
Sabal minor	Dwarf Palmetto; Bluestem Palm
Sabal palmetto	Cabbage Palm
Sabatia brevifolia	Shortleaf Rosegentian
Sabatia calycina	Coastal Rosegentian
Sabatia campanulata	Slender Rosegentian
Sabatia decandra	BARTRAM'S ROSEGENTIAN
Sabatia difformis	Lanceleaf Rosegentian
Sabatia gentianoides	Pinewoods Rosegentian
Sabatia grandiflora	Largeflower Rosegentian
Sabatia macrophylla	Largeleaf Rosegentian
Saccharum ravennae	Ravennagrass
Sacciolepis indica	Indian Cupscale
Sacciolepis striata	American Cupscale
Sagittaria graminea	Grassy Arrowhead
Sagittaria lancifolia	Bulltongue Arrowhead
Salix caroliniana	Carolina Willow; Coastalplain Willow
Salvia azurea	Azure Blue Sage
Salvia coccinea	Tropical Sage; Blood Sage
Salvia lyrata	Lyreleaf Sage
Sambucus nigra canadensis	American Elder; Elderberry
Sanicula canadensis	Canadian Blacksnakeroot
Sapium sebiferum	Popcorntree; Chinese Tallowtree
Sarracenia minor	Hooded Pitcherplant
Sassafras albidum	Sassafras
Saururus cernuus	Lizard's Tail
Schizachyrium scoparium	Little Bluestem
Schoenolirion croceum	Yellow Sunnybell
Scleria baldwinii	Baldwin's Nutrush
Scleria ciliata	Fringed Nutrush
Scleria distans	Riverswamp Nutrush
Scleria georgiana	Slenderfruit Nutrush
Scleria reticularis	Netted Nutrush
Scleria triglomerata	Tall Nutgrass; Whip Nutrush
Scleria verticillata	Low Nutrush
Scoparia dulcis	Sweetbroom; Licoriceweed
Scutellaria arenicola	Florida Scrub Skullcap
Scutellaria integrifolia	Helmet Skullcap
Scutellaria multiglandulosa	Small's Skullcap

Sebastiania fruticosa	Gulf Sebastian-Bush
Selaginella apoda ludoviciana	Gulf Spike-Moss
Selaginella arenicola	Sand Spike-Moss
Senna obtusifolia	Coffeeweed; Sicklepod
Senna occidentalis	Septicweed
Serenoa repens	Saw Palmetto
Sericocarpus tortifolius	Whitetop Aster; Dixie Aster
Sesbania herbacea	Danglepod
Sesbania punicea	Rattlebox
Sesbania vesicaria	Bladderpod; Bagpod
Setaria parviflora	Yellow Bristlegrass; Knotroot Foxtail
Setaria pumila	Yellow Bristlegrass; Yellow Foxtail
Seymeria pectinata	Piedmont Blacksenna
Sida rhombifolia	Cuban Jute; Indian Hemp
Sida ulmifolia	COMMON WIREWEED; COMMON FANPETALS
Sideroxylon lycioides	Buckthorn Bully; Gopherwood Buckthorn
Sideroxylon tenax	Tough Bully
Silene antirrhina	Sleepy Catchfly
Silphium compositum	Kidneyleaf Rosinweed
Sisyrinchium angustifolium	Narrowleaf Blue-Eyed Grass
Sisyrinchium nashii	Nash's Blue-Eyed Grass
Sisyrinchium xerophyllum	Jeweled Blue-Eyed Grass
Smilax auriculata	Earleaf Greenbrier
Smilax bona-nox	Saw Greenbrier
Smilax bona-nox	Saw Greenbrier
Smilax glauca	Cat Greenbrier; Wild Sarsaparilla
Smilax laurifolia	Laurel Greenbrier; Bamboo Vine
Smilax pumila	Sarsaparilla Vine
Smilax rotundifolia	Bullbrier; Roundleaf Greenbrier
Solanum americanum	American Black Nightshade
Solanum capsicoides	Soda Apple; Cockroachberry
Solanum carolinense	Carolina Horsenettle
Solanum carolinense floridanum	Florida Horsenettle
Solidago fistulosa	Pinebarren Goldenrod
Solidago odora	Anisescented Goldenrod; Sweet Goldenrod
Solidago odora chapmanii	Chapman's Goldenrod
Solidago stricta	Wand Goldenrod
Sorghastrum secundum	Lopsided Indiangrass
Spermolepis divaricata	Roughfruit Scaleseed
Sphenopholis filiformis	Longleaf Wedgescale
Sphenopholis obtusata	Prairie Wedgescale
Sphenopholis pensylvanica	Swamp Wedgescale
Spiranthes sp	

Sporobolus curtissii	Curtiss' Dropseed
Sporobolus floridanus	Florida Dropseed
Sporobolus indicus	Smutgrass
Sporobolus junceus	Pineywoods Dropseed
Stachys floridana	Florida Hedgenettle; Florida Betony
Stenanthium densum	Crowpoison; Osceola's Plume
Stenotaphrum secundatum	ST. AUGUSTINE GRASS
Stillingia sylvatica	Queensdelight
Stipulicida setacea	Pineland Scalypink
Strophostyles umbellata	Pink Fuzzybean
Stylisma patens	Coastalplain Dawnflower
Stylodon carneum	Carolina False Vervain
Stylosanthes biflora	Sidebeak Pencilflower
Styrax americanus	American Snowbell
Symphyotrichum bahamense	BAHAMAN ASTER
Symphyotrichum carolinianum	Climbing Aster
Symphyotrichum concolor	Eastern Silver Aster
Symphyotrichum dumosum	Rice Button Aster
Symphyotrichum lateriflorum	Calico Aster
Symphyotrichum undulatum	Wavyleaf Aster
Symplocos tinctoria	Common Sweetleaf; Horse Sugar
Syngonanthus flavidulus	Yellow Hatpins
Taxodium ascendens	Pond-Cypress
Taxodium distichum	Bald-Cypress
Tephrosia chrysophylla	Scurf Hoarypea
Tephrosia florida	Florida Hoarypea
Tephrosia hispidula	Sprawling Hoarypea
Tephrosia spicata	Spiked Hoarypea
Tephrosia virginiana	Goat's Rue
Teucrium canadense	Woodsage; Canadian Germander
Thalia geniculata	Alligatorflag; Fireflag
Thelypteris hispidula versicolor	Hairy Maiden Fern
Thelypteris kunthii	Widespread Maiden Fern; Southern Shield Fern
Tillandsia recurvata	Ballmoss
Tillandsia usneoides	Spanish Moss
Tillandsia usneoides	Spanish Moss
Toxicodendron radicans	Eastern Poison Ivy
Toxicodendron vernix	Poison Sumac
Tradescantia roseolens	Longleaf Spiderwort
Tragia urens	Wavyleaf Noseburn
Triadenum walteri	Greater Marsh St.John's-Wort
Trichostema dichotomum	Forked Bluecurls
Trichostema setaceum	Narrowleaf Bluecurls

Tridens ambiguus	Pinebarren Fluffgrass
Trifolium campestre	Field Clover; Hop Clover
Triodanis perfoliata	CLASPING VENUS' LOOKING-GLASS
Triplasis americana	Perennial Sandgrass
Tripsacum dactyloides	Eastern Gamagrass; Fakahatcheegrass
Typha domingensis	Southern Cattail
Typha latifolia	Broadleaf Cattail
Urochloa texana	Texas Signalgrass; Texas Millet
Utricularia subulata	Zigzag Bladderwort
Vaccinium arboreum	Sparkleberry; Farkleberry
Vaccinium arboreum	Sparkleberry; Farkleberry
Vaccinium corymbosum	Highbush Blueberry
Vaccinium corymbosum	Highbush Blueberry
Vaccinium darrowii	Darrow's Blueberry
Vaccinium myrsinites	Shiny Blueberry
Vaccinium stamineum	Deerberry
Verbena bonariensis	Purpletop Vervain
Verbena officinalis halei	Texas Vervain
Verbena scabra	Sandpaper Vervain; Harsh Vervain
Verbesina heterophylla	Diverseleaf Crownbeard
Verbesina virginica	White Crownbeard; Frostweed
Vernonia angustifolia	Tall Ironweed
Vernonia gigantea	Giant Ironweed
Vernonia noveboracensis	New York Ironweed
Viburnum dentatum	Southern Arrowwood
Viburnum nudum	Possumhaw
Viburnum obovatum	Walter's Viburnum; Small-Leaf Viburnum
Vicia floridana	Florida Vetch
Vigna luteola	Hairypod Cowpea
Viola lanceolata	Bog White Violet
Viola palmata	Early Blue Violet
Viola primulifolia	Primroseleaf Violet
Viola sororia	Common Blue Violet
Viola villosa	CAROLINA VIOLET
Vitis aestivalis	Summer Grape
Vitis cinerea floridana	Florida Grape
Vitis rotundifolia	Muscadine
Vittaria lineata	Shoestring Fern
Vulpia octoflora	Sixweeks Fescue
Wahlenbergia marginata	Southern Rockbell
Wisteria frutescens	American Wisteria
Wisteria sinensis	Chinese Wisteria
Woodwardia areolata	Netted Chain Fern

Xyris sp	
Yucca filamentosa	Adam's Needle
Yucca filamentosa	Adam's Needle
Zanthoxylum clava-herculis	Hercules'-Club
Zephyranthes atamasca treatiae	Treat's Zephyrlily; Treat's Rainlily

Invertebrates

Butterflies/Moths

Calycopis cecrops	Red-banded Hairstreak
Eurytides marcellus	Zebra Swallowtail
Hermeuptychia sosybius	Carolina Satyr
Junonia coenia	Common Buckeye
Megisto viola	Viola's Wood Satyr
Orgyia leucostigma	White-marked tussock moth
Papilio glaucus	Eastern Tiger Swallowtail
Papilio palamedes	Palamedes Swallowtail
Phoebis sennae	Cloudless Sulphur
Vanessa atalanta	Red Admiral

Centipedes

Hemiscolopendra marginata	Florida Blue Centipede

Crayfish

Procambarus alleni	Everglades Crayfish
Procambarus pictus	Black Creek Crayfish

Dragonflies

Erythrodiplax minuscula	Little Blue Dragonlet
Gomphus cavillaris	Sandhill Clubtail
Libellula vibrans	Great Blue Skimmer
Progomphus alachuensis	Tawny Sanddragon
Tramea carolina	Carolina saddlebags

Amphibians

Acris gryllus	Southern Cricket Frog
Anaxyrus quercicus	Oak Toad
Anaxyrus terrestris	Southern Toad
Gastrophryne carolinensis	Eastern Narrowmouth Toad
Hyla femoralis	Pinewoods Treefrog
Hyla gratiosa	Barking Treefrog
Plethodon grobmani	Southeastern slimy salamander
Scaphiopus holbrookii	Eastern Spadefoot

Reptiles

Anolis carolinensis	Green Anole
Anolis sagrei	Brown Anole
Coluber constrictor	Eastern Racer
Gopherus polyphemus	Gopher Tortoise
Micrurus fulvius fulvius	Coral Snake
Opheodrys aestivus	Rough Green Snake
Opheodrys aestivus	Rough Green Snake
Plestiodon laticeps	Broadhead Skink
Sceloporus undulatus	Eastern Fence Lizard
Tantilla relicta	Florida crowned snake

Aves

Archilochus colubris	Ruby-throated Hummingbird
Baeolophus bicolor	Tufted Titmouse
Baeolophus bicolor	Tufted Titmouse
Buteo jamaicensis	Red-tailed Hawk
Buteo lineatus	Red-shouldered Hawk
Cardinalis cardinalis	Northern Cardinal
Cathartes aura	Turkey Vulture
Colinus virginianus	Northern Bobwhite
Corvus brachyrhynchos	American Crow
Cyanocitta cristata	Blue Jay
Dendroica discolor	Prairie Warbler
Dendroica dominica	Yellow-throated Warbler
Dendroica pinus	Pine Warbler
Dryocopus pileatus	Pileated Woodpecker
Elanoides forficatus	Swallow-tailed Kite
Geothlypis trichas	Common Yellowthroat
Melanerpes carolinus	Red-bellied Woodpecker
Meleagris gallopavo	Wild Turkey
Mimus polyglottos	Northern Mockingbird
Molothrus ater	Brown-headed Cowbird
Myiarchus crinitus	Great Crested Flycatcher
Parula americana	Northern Parula
Passerina ciris	Painted Bunting
Picoides pubescens	Downy Woodpecker
Pipilo erythrophthalmus	Eastern Towhee
Piranga rubra	Summer Tanager
Poecile carolinensis	Carolina Chickadee
Polioptila caerulea	Blue-gray Gnatcatcher
Quiscalus quiscula	Common Grackle
Sialia sialis	Eastern Bluebird

Thryothorus ludovicianus	Carolina Wren
Vermivora celata	Orange-crowned Warbler
Vireo flavifrons	Yellow-throated Vireo
Vireo griseus	White-eyed Vireo
Vireo olivaceus	Red-eyed Vireo
Vireo solitarius	Blue-headed Vireo
Zenaida macroura	Mourning Dove

Mammals

Canis latrans	Coyote
Dasypus novemcinctus	Nine-Banded Armadillo
Didelphis virginiana	Virginia Opossum
Ochrotomys nuttalli	Golden Mouse
Odocoileus virginianus	White-Tailed Deer
Procyon lotor	Raccoon
Sciurus carolinensis	Eastern gray squirrel
Sigmodon hispidus	Hispid cotton rat
Ursus americanus floridanus	Florida black bear

ADDENDUM 4 – Fire Management Plan

Black Creek Ravines Conservation Area

FIRE MANAGEMENT PLAN

PREPARED BY

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
DIVISION OF LAND MANAGEMENT

Black Creek Ravines Conservation Area
Fire Management Plan
Clay 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 Black Creek Ravines Conservation Area (BCRCA).

Introduction and Objectives

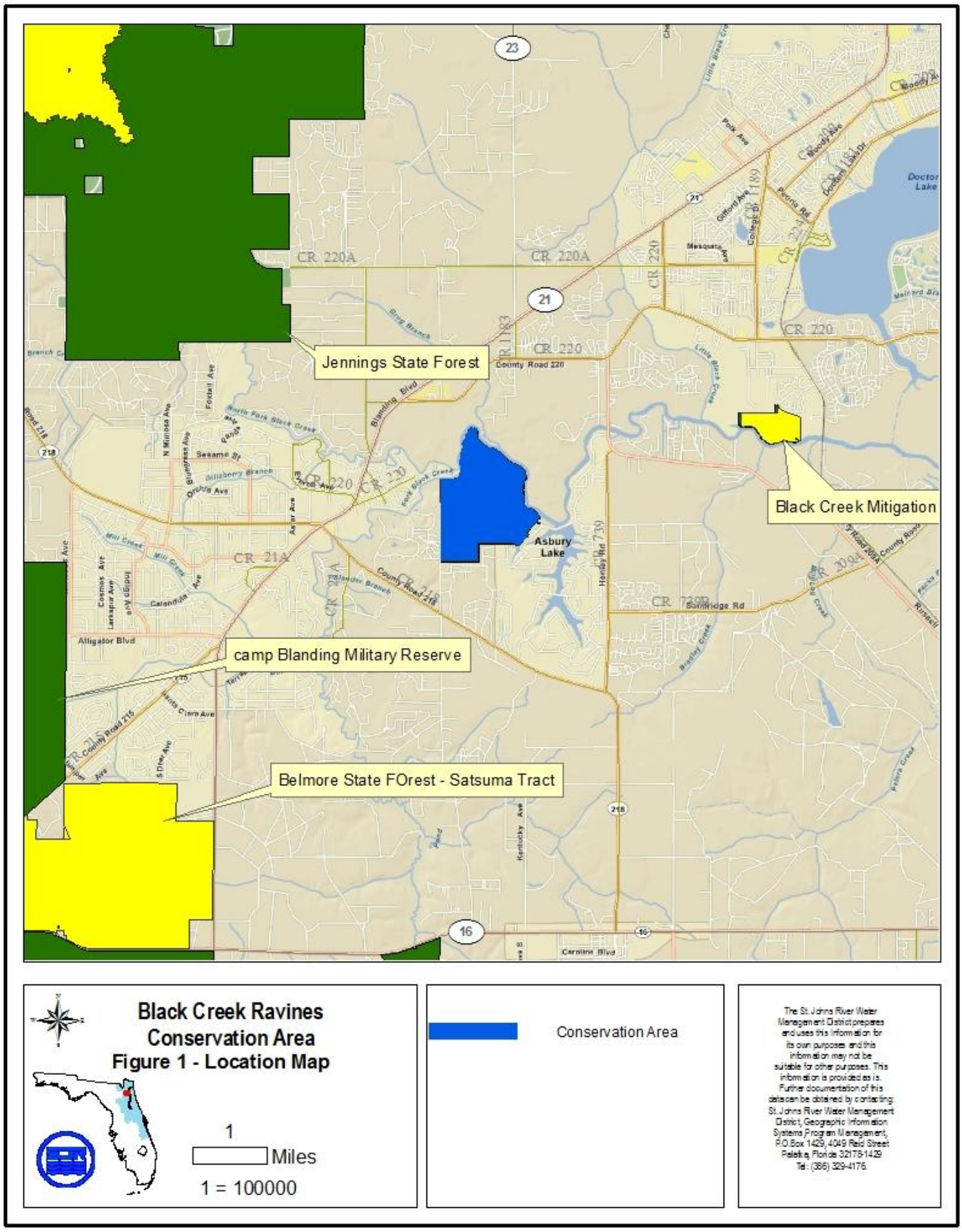
The BCRCA covers approximately 964 acres in Clay County along Black Creek. This conservation area is located in numerous sections of Townships 5 South and Range 25 East.

The property is located east of the town of Middleburg. State Highway 21/Blanding Boulevard is approximately one mile to the north and west. Black Creek forms a large portion of the north and east boundaries of the property. 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:

- Continued implementation 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 BCRCA.


Jennings State Forest
Black Creek Mitigation
camp Blanding Military Reserve
Belmore State FOrest - Satsuma Tract
Asbury Lake
CR 220A
CR 220
CR 218
Alligator Blvd
Blanding Blvd
Sandridge Rd
Black Creek Ravines
Conservation Area
Figure 1 - Location Map
1
Miles
1 = 100000
Conservation Area
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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 on 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 is not a fire-adapted community.
Upland Hardwood Forest	This is not a fire-adapted community – Edges may burn with adjacent communities.
Wet Flatwoods (shrubby)	5-7 years with the lower intervals along edges.
Mesic Flatwoods	2-10 years.
Scrubby Flatwoods	5-15 years.
Sandhill	1-3 years.
Xeric Hammock	Variable.

*Stated FNAI fire return intervals are based on regional differences in communities and fuel loading. The District will target the lowest interval possible that will effectively carry fire.

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.

Sandhill is the most prevalent fire adapted natural community found within the BCRCA. The sandhills within the conservation area vary in level of disturbance. Disturbances including the removal of pine and prolonged fire exclusion have cause some areas to be dominated by a dense canopy of oaks (laurel, sand live, water, and turkey). In these areas, restoration driven management techniques will include herbicide treatments and prescribed burning. Since groundcover is sparse in these locations, leaf litter will be the primary carrier of fire for initial burns implemented in these areas. In areas where the canopy is more open and groundcover more abundant, grasses will be the primary carrier of fire.

Mesic, scrubby, and wet flatwoods natural community types are found within the BCRCA. Shrub components are intact and include a moderate coverage of saw palmetto and various ericaceous plants. Groundcover, abundant in some areas, includes wiregrass and numerous sedges and forbs. In most areas of mesic and wet flatwoods, the shrub layer will be the primary carrier of fire

Xeric hammocks occur throughout the conservation area and are likely advanced successional stages of sandhill natural plant communities. Fire management within this plant community will be in conjunction with the associated/adjacent sandhill communities. These natural plant communities will burn as site conditions permit during the implementation of controlled burns in adjacent plant communities. Additionally,

these areas will not be excluded from fire activities unless warranted by safety or smoke management issues.

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 August. Fires during the spring and early summer months generally have significant ecological benefits as most fire-adapted flora is perpetuated by fire. Mimicking lightning ignited natural fires by implementing prescribed fire during the growing season provides benefits to natural systems by controlling shrub layers and encouraging diversity in groundcover species.

Dormant season burns, conducted from mid November through the mid March, are less intense than growing season burns and are a desirable alternative when igniting fire in areas of heavy fuel accumulation or in areas of heavy pine regeneration. Additionally, dormant season burns help to reduce fuel loads resulting in fewer safety and smoke management issues. Fuel loads in the westernmost portions of the property, in the area of the conservation easement, are high. Fuel loads are low/moderate moderate across the conservation area. The sandhill communities are within the targeted fire return interval. Heavy duff/peat and leaf litter accumulation in the seepage areas 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.

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 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 2005, District staff have conducted 11burns totaling 1018 acres on the BCRCA. Fuel accumulation (dead and live) across the conservation area is low to moderate. Heavier accumulations of fuels have 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 BCRCA 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

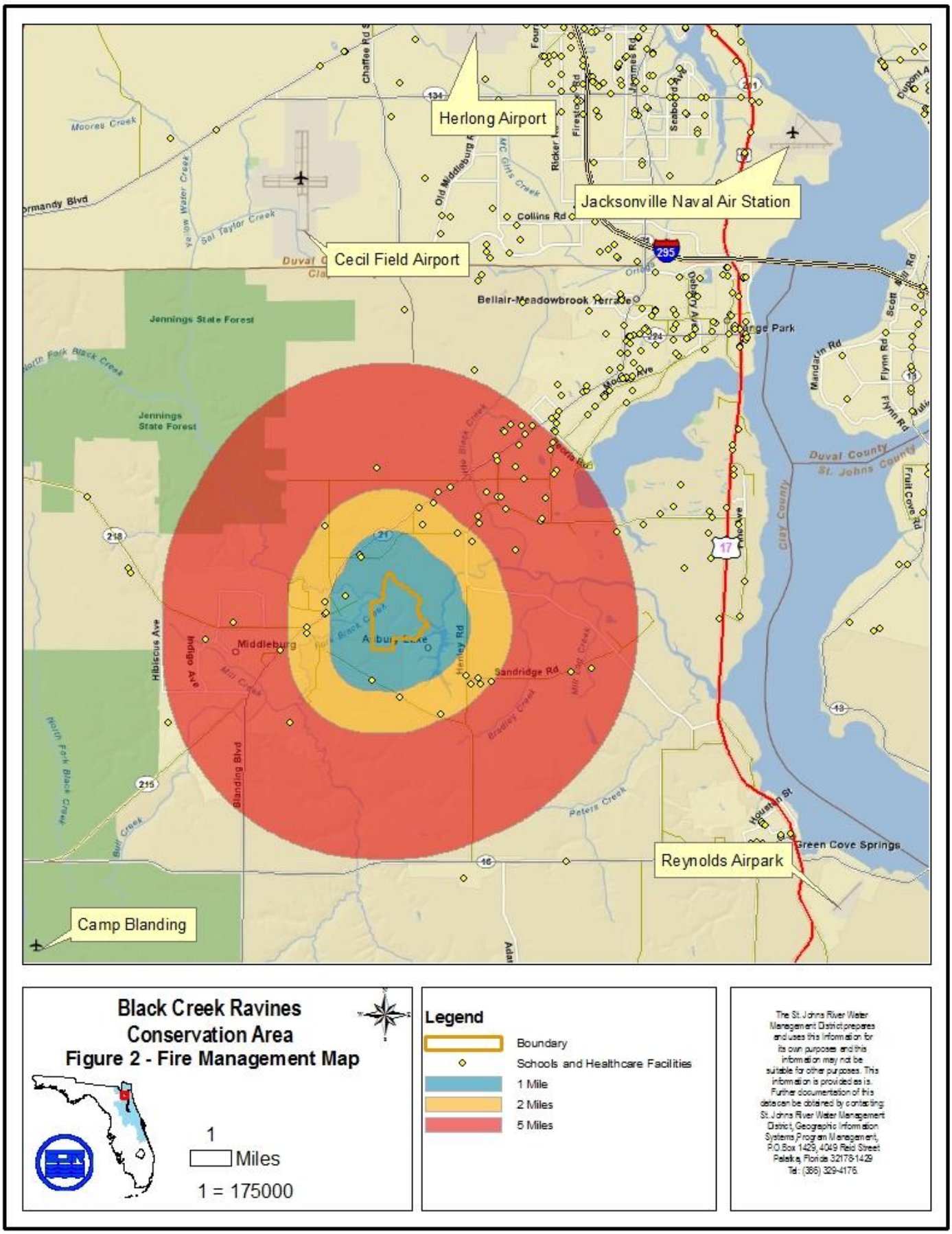
may affect the smoke management of each burn unit. Smoke management is a limiting factor in the application of prescribed fire within the conservation area. Figure 2 illustrates smoke sensitive areas in relation to the BCRCA. As development increases in the area, fire management will become more difficult. Increasing daily traffic on SR 21, CR 218, Henley Road, 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.

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 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 mitigate the potential for extreme fire behavior. Forecast mixing heights should be above 1700 ft. 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.


Herlong Airport
Jacksonville Naval Air Station
Cecil Field Airport
Reynolds Airpark
Camp Blanding
Jennings State Forest
Middleburg
Green Cove Springs
Duval County
St. Johns County
Clay County
Black Creek Ravines
Conservation Area
Figure 2 - Fire Management Map
1
Miles
1 = 175000
Legend
Boundary
Schools and Healthcare Facilities
1 Mile
2 Miles
5 Miles
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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

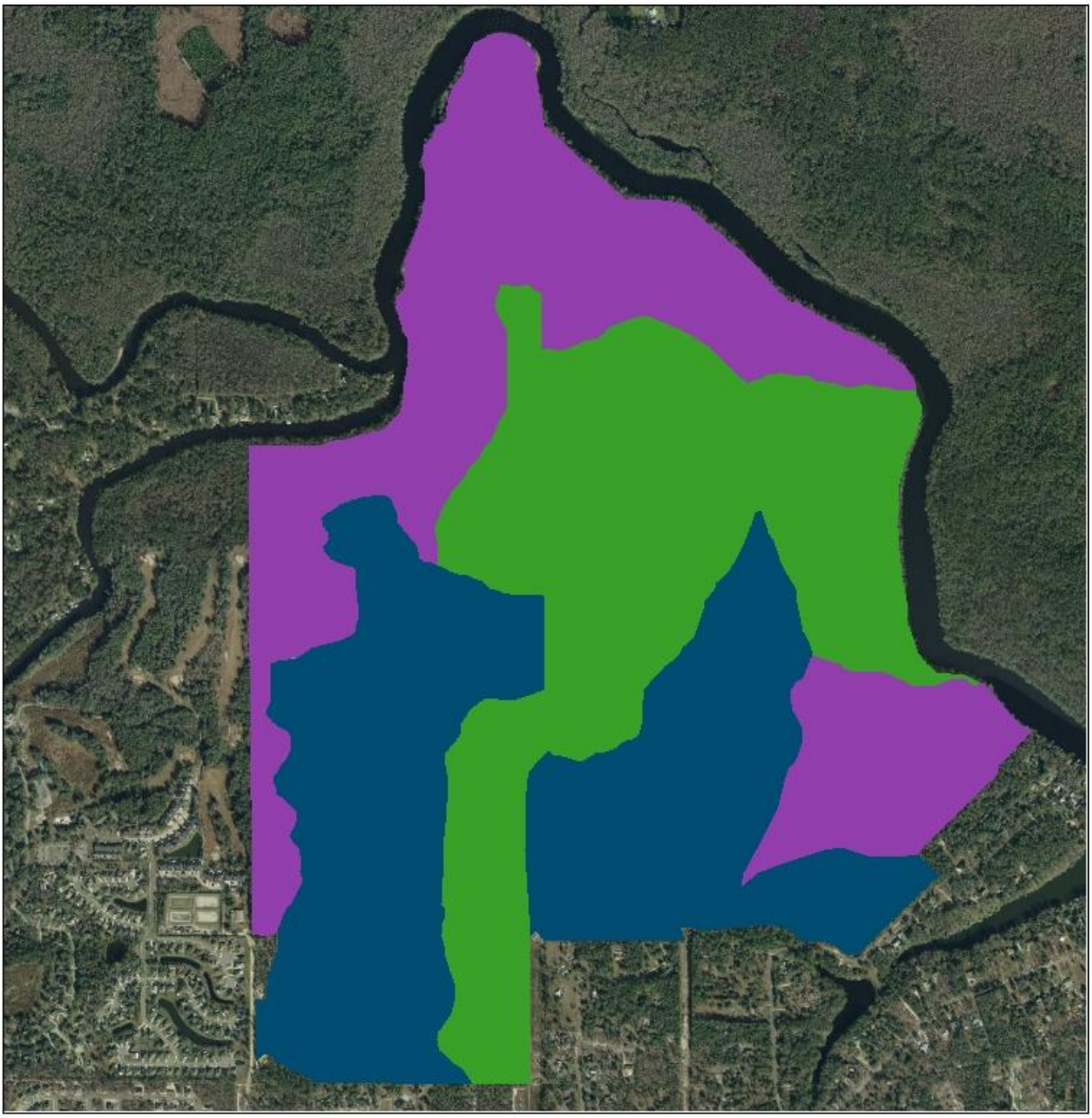
Only burn managers certified by FDOF will approve the unit prescriptions and must be on site while the burn is being conducted. Certified burn managers adhering to the requirements of F.S. 590.026 are protected from liability for damage or injury caused by fire or resulting smoke, unless gross negligence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

Fire Management Units

Fire management units (FMUs) have been delineated on the conservation area. FMUs will be delineated and finalized within the easement area during the scope of this plan. Where logical, the District used (or will use) existing roads and trails, and natural breaks such as wetlands and water bodies to delineate fire management units. Occasionally, multiple fire management units with similar fire needs will be burned simultaneously and these delineations provide a break in fuels so that staff may burn smaller areas than initially planned if needed.

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 FMUs currently delineated and the 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 3 illustrates the FM associated with individual fire management units.


Black Creek Ravines Conservation Area
Figure 3 - Fuel Model Map
0.25
Miles
1 = 15000
Fuel Model
2
7
8
9
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Fuel Model 2
This category includes fire management units that are best described as sandhill. Fire in these fuel types is spread through herbaceous layer. These areas have a discontinuous overstory of longleaf and slash pine and include a coverage (heavy in some areas) of laurel oak, water oak, sand live oak, and turkey oak. Given appropriate wind speeds and fuel moisture conditions, fire can spread rapidly. The optimal fire return interval in this fuel model is approximately every 1-3 years with growing season burns being preferred.

Fuel Model 7
This category includes fire management units that are best described as flatwoods. 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 most of the units. The herbaceous layer includes wiregrass.

Fuel Model 8
This category includes fire management units that are best described as xeric hammock also include the areas of floodplain swamp and upland hardwood forest, which are not fire adapted. Fire in these fuel types are typically slow burning ground fires carried primarily through leaf litter.

Exhibit 1
Aerial Burn Safety Plan
Black Creek Ravines 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 Clay County Fire Rescue 904- 284-7703
3. Notify Clay County Sheriff's Office 904- 264-6512
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 Jacksonville- 904-244-0411
2. Shands - Gainesville 352-265-8000

DIVISION OF FORESTRY

1. Jacksonville Dispatch 904-266-5001

NTSB

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