# ECONLOCKHATCHEE SANDHILLS CONSERVATION AREA



ST. JOHNS RIVER WATER MANAGEMENT DISTRICT Governing Board Approved November 2009

## Econlockhatchee Sandhills Conservation Area Land Management Plan Summary

Management Area Size: 706 acres Date of Acquisition: December 10, 2008

Date of Plan: November 2009Basin: Middle BasinBasin Planning Unit: Econlockhatchee River

**Location:** Orange County, thirteen miles east of downtown Orlando, north of Lake Pickett Road, bordering both sides of the Econlockhatchee River.

Funding Sources: Florida Forever, Orange County.

**Management Partners:** The District is the lead manager of the property. Orange County will review and comment on land management plans. The previous owner reserved the right to install recreational amenities from a new entrance on the east side of the property.

## **Resource Protection and Management:**

- SECURITY The District will coordinate with Orange County Sheriff's Office and contracted security to patrol the property as needed.
- WATER RESOURCE PROTECTION Water resource protection was accomplished with the purchase of the property, which protects around 2.5 miles of the Econlockhatchee River. The District will manage the habitat to continue to protect water resources flowing into the Econlockhatchee River and its tributaries.
- FLORA AND FAUNA Over 340 gopher tortoise burrows were documented on the property in summer 2009. A plant and animal survey conducted in September 2009 found over 300 species. The District will maintain sandhill habitat to reduce hardwood encroachment to maintain and improve gopher tortoise habitat.
- FOREST MANAGEMENT The property consists of relatively intact sandhill, mesic flatwoods, scrub, and floodplain swamp natural communities. Due to lack of fire, hardwoods have encroached into the sandhill and an area of mesic flatwoods consisting of longleaf pine has become extremely dense with the pine. In order to improve habitat, the District plans to harvest longleaf in fire management unit 3 to allow for a more open mesic flatwoods habitat. Pending funding, the District will remove hardwoods in fire management units 1 and 2 to restore these areas to open sandhill habitat.
- FIRE MANAGEMENT Fire history on the property is unknown. Sandhill and mesic flatwoods are relatively intact natural communities, however, due to fire suppression and fire exclusion, hardwoods have encroached into sandhill habitat. The District will reintroduce prescribed burning on the property to maintain and improve sandhill habitat, to reduce the number of hardwoods, and improve habitat for the gopher tortoise. Fire will also aid in improving and maintaining mesic flatwoods habitat.

- EXOTIC AND INVASIVE SPECIES The District will monitor and treat cogon grass on the property. Bahia grass is also present, but is not typically treated. The District will determine the need for hog removal from the property under the purview of this plan.
- CULTURAL AND ARCHAEOLOGICAL RESOURCES There are no known Florida Master Sites found within the boundary of ESCA. The District will identify and report any sites to the Florida Department of State, Division of Historical Resources.

## Land Use Management

Land Use Management:

- ACCESS The District is currently utilizing an access easement from the previous landowner to enter the property. The District will install a trailhead parking area off Lake Picket Road/CR 420. The District is working to negotiate with the adjacent subdivisions on the western boundary to access the western side of the property for land management purposes. The District will maintain roads on the property as needed.
- RECREATION AND OUTREACH Recreation will be established on the property under the purview of this plan. Conceptual recreation plans include a trailhead parking area, multi-use loop trails, an informational kiosk, portable restroom and a possible Econlockhatchee River canoe landing. Orange County funding commits the District to provide passive public recreation on the property. The sellers reserved the right, at the cost of the sellers, to develop passive recreation on the property and an entry area including trails, picnic areas, towers, nature walks, parking, public water fountains, and bathrooms at locations subject to the District's approval. The seller is responsible for long-term maintenance of restroom facilities or other similar structures.

# Administration Management:

- ACQUISITION The District is looking to exchange property rights with Rybolt's Reserve and acquire property rights through Ashington Park, both subdivisions on the western border. These property rights will allow access to the western border of the property for land management needs. The District has also been contacted to review two mitigation donation parcels bordering the Econlockhatchee River, south of the property. Pending permitting approval, the District plans to accept these parcels and incorporate them into the ESCA land management plan. The District will evaluate the acquisition of any adjacent lands if they become available.
- COOPERATIVE AGREEMENTS, LEASES, EASEMENTS, SPECIAL USE AUTHORIZATIONS, AND CONCESSIONS – The District will terminate the cattle special use authorization by December 10, 2009. The District is willing to explore opportunities to enhance gopher tortoise habitat related to tortoise relocation efforts. Current agreements on the property include:
  - Special Use Authorizations (SUA)

- #577-Cattle. The sellers reserved the right to graze cattle for one year, until December 10, 2009.
- o Purchase Agreement
  - November 11, 2009 The sellers reserved the right, at the cost of the sellers, to develop passive recreation on the property and an entry area including trails, picnic areas, towers, nature walks, parking, public water fountains, and bathrooms at locations subject to the District's approval. The seller is responsible for long-term maintenance of restroom facilities or other similar structures.
- Participation Agreement
  - January 27, 2009, Orange County Orange County purchased an 8.9% undivided interested in the property by contributing \$1,000,000 in funding for the property and reserves the right to review the land management plans as they are developed and revised. The County funding source requires passive recreation to be developed on the property.
- o Easements
  - The sellers granted to the District an access easement across the sellers retained land to ESCA to the eastern power line easement.
  - According to the special warranty deed to the District, signed December 5, 2008, seven easements are reserved on the property. These are related to the Florida Power and Light power line, power line maintenance, drainage easement, and sovereign and submerged lands easement from the Board of Trustees of the Internal Improvement Trust Fund to Florida Power and Light.
- REVENUE There is no revenue generation on the property at this time.

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# **INTRODUCTION**

This Land Management Plan provides guidelines for land management activities to be implemented at Econlockhatchee Sandhills Conservation Area (ESCA or Conservation Area) over the next five years. This is the original Land Management Plan for the Conservation Area.

ESCA comprises 706 acres of land located immediately south of the Seminole County/Orange County line, 13 miles east of downtown Orlando, north of Lake Pickett Road. The property is located in the District's Middle St. Johns River Basin, Econlockhatchee Planning Unit. The property protects around 2.5 miles of floodplain swamp on both sides of the Econlockhatchee River. The property consists of sandhills, mesic flatwoods, and scrubby flatwoods on the eastern half of the property, floodplain swamp on the western half along the Econlockhatchee River, and some patches of mesic flatwoods on the western border.

The property was purchased on December 10, 2008 with Florida Forever funding. On July 22, 2009, the District conveyed an 8.9% undivided interest in the property to Orange County for \$1,000,000. Orange County will review and approve land management plans for the property; the county funding source requires passive public recreation to be provided on the property, per the January 2009 funding participation agreement.

The remainder of the parent tract, adjacent to the east of the property, is undergoing a development of regional impact (DRI). The sellers reserved the right to install public recreation on ESCA for access by residents of the DRI and the public pending permit approval of the DRI. If the DRI is approved, the sellers may create an entrance to ESCA on the east side of the property through a future access road to the DRI. The sellers will coordinate with the District in recreation planning and are responsible for costs and long-term maintenance of the facilities. The District reserves the right to install public recreation on ESCA at any time. The sellers also reserved the right to maintain a cattle lease on the property for one year following closing, until December 10, 2009. The District and the sellers agreed to participate in funding materials for installation of a fence between the parent tract and ESCA. Whereas the cattle lease is set to expire in December 2009, the fence was erected in summer 2009 on the eastern boundary of the property and cattle were removed at that time.

ESCA was acquired by the District for conservation purposes to enhance the protection of the Econlockhatchee River and to add to the corridor of conservation lands including Hal Scott Regional Preserve and Park further south of ESCA, Econlockhatchee Wilderness Area managed by Seminole County to the northwest, to the Little Big Econ and Charles Bronson State Forests further north.



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# LAND MANAGEMENT GOALS

The District's purpose for acquiring property in the Middle St. Johns River Basin is related to the District's goals of protecting important water resources and ecological functions. The land management goals for the Middle St. Johns River Basin and ESCA are as follows:

## Goals:

I.	To improve water quality, maintain the natural hydrological regime, and
	increase flood storage through restoration and/or conservation of
	floodplain communities.

- II. Conserve, protect, and manage natural communities, ecological systems, and species diversity.
- III. Manage and enhance habitat for populations of listed plants and animals occurring on the property.
- IV. Achieve maintenance control of exotic populations present.
- V. Protect cultural resources.
- VI. Provide for public access and recreation to the extent that such activities are consistent with protection of natural resources.

# **CONSERVATION AREA OVERVIEW**

## Regional Significance

ESCA protects around 2.5 miles of floodplain on both sides of the Econlockhatchee River, 11 miles northeast of Orlando. This 706 acres adds to an effort to protect the Econlockhatchee and St. Johns River floodplains, which includes conservation land such as Hal Scott Regional Preserve and Park and a District conservation easement, both further south, Econlockhatchee Wilderness Area to the northwest managed by Seminole County, Little Big Econ State Forest to the north east, Charles H. Bronson State Forest to the east, and Seminole Ranch Conservation Area, also to the east (Figure 2). Table 1 lists the conservation areas regionally significant to the Econlockhatchee corridor, their acreage, and their managing entity. In addition, the area surrounding the property was designated in 2009 by Florida Fish and Wildlife Conservation Commission as a Priority 2 Strategic Habitat Conservation Area. This designation is a system that began in 1994, and was updated in 2009, to identify areas where land protection efforts should be focused to ensure conservation of Florida's wildlife for future generations. Priority 2 is the second highest designation.

The property will also provide outdoor, resourced based recreation opportunities for the public in the Orlando region including hiking, biking, horseback riding, and nature study.

Table 1	. Consei	rvation	Areas	Reg	ionally	y Sig	gnificant	to	<b>ESCA</b>
-					-				

Name	Manager	Acreage
Hal Scott Regional Preserve and Park	SJRWMD	9,387
Econ River Wilderness Area	Seminole County	240
Little Big Econ State Forest	Florida Division of Forestry	10,236
South Central Region Archipelago Parcels	SJRWMD	424
Seminole Ranch Conservation Area	SJRWMD	29,449
Charles H. Bronson State Forest	Florida Division of Forestry	9,124
Total		58,860



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#### Acquisition History

ESCA currently consists of one parcel, the Econ Project Addition-Rybolt parcel, LA # 2008-012 (Figure 3). The parcel was purchased on December 10, 2008 with Florida Forever funding for \$11,247,488. On July 22, 2009, Orange County reimbursed the District for \$1,000,000 and the District conveyed an undivided 8.9% interest in the property to Orange County. The District owns a 91.1% interest in the property. The property protects around 2.5 miles of the Econlockhatchee River with its associated floodplain swamp, sandhill, and mesic flatwoods habitat.

According to the purchase agreement signed November 11, 2008, the sellers retained the right to graze cattle until December 21, 2009. The purchase agreement also stated that at the time the cattle are removed from the property, the District and the sellers would participate in funding the fencing of the eastern border of the property to separate cattle from the ESCA and the sellers' retained land. At this time, cattle have been removed and the fence has been erected. Also according to the purchase agreement, the sellers reserved the right to install recreational facilities such as trails and restrooms off a planned future road along the eastern boundary of the property. This reservation does not preclude the District from installing recreation on the property at any time. According to the participation agreement between the District and Orange County signed January 27, 2009, Orange County requires passive public recreation on the property and reserves the right to review the land management plan for the property.



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## Local Government Land Use Designation

Orange County has designated land within ESCA as a future land use of conservation and rural. The property is zoned A-2, or Farmland Rural. Under this zoning, single-family homes can be built along with associated buildings and structures, mobile homes, and water and fire towers along with other structures. It is probable that the property will be re-zoned by Orange County to a Conservation designation.

# NATURAL AND CULTURAL RESOURCES OVERVIEW

# Topography and Hydrology

According to the Physiographic Divisions of Florida, ESCA is located mostly within the Eastern Flatwoods District Florida Physiographic Division and the Holopaw Indian Town Ridges and Swales subdivision (Figure 4). The Eastern Flatwoods District originated as a sequence of barrier islands and lagoons during Plio-Pleistocene and Recent time. Gentle slopes and the fine sand result in much of this relief feature being covered by flatwoods with cypress strands in the swales. According to the Physiographic Divisions of Florida, sand pine scrub does occur discontinuously along the eastern margin. The northern portion reaches elevations higher than 90 feet, whereas the southern portion is about 40 feet. It would appear that southward tilting has occurred since the time of depositional formation (Brooks).

The northeast corner of the property is found within the Central Lake District, Casselberry-Oviedo-Geneva-Chuluota Hills subdivision. The Central Lake District consists of uplifted limestones of the Floridan Aquifer, which lie unconformably below surficial sands. This is a sand hill karst with solution basins. It is the region of most active collapsed sink hole development. Because of the xeric hills and the internal drainage, this is the principle recharge area of the Floridan aquifer. The Casselberry-Oviedo-Geneva-Chuluota Hills subdivision is an isolated residual hills all less than 95 feet in elevation separated by terraced flatwoods and river swamps (Brooks).

ESCA elevations are 50 to 55 feet on the eastern border and 40 to 45 feet on the western border (Figure 4). Western and eastern borders slope towards the center of the property where the Econlockhatchee River lies at 25 feet in elevation.

ESCA is located within the Middle St. Johns River Basin, Econlockhatchee River Planning Unit (Figure 5). The Econlockhatchee River runs north through the center of the property. Two tributaries drain into the river through the property from the east. The Econlockhatchee River runs north and then east before it drains into the St. Johns River.

As noted in the Special Warranty Deed Exhibit "C" from the previous owners to the District, signed December 5, 2008, a stormwater drainage easement reserved on the property by the previous landowner will allow stormwater flow from the adjacent land to the east westward through ESCA to the Econlockhatchee River. This drainage easement will accommodate new flow from the east, pending development approval by all

permitting agencies. It will include a future discharge rate that meets all regulatory design storm events, and is subject to permit approval The location of such points of discharge at which stormwater shall be discharged from eastern adjacent land west into ESCA shall be determined at the time of permitting and development of the adjacent land. No stormwater retention pond facilities will be constructed on ESCA as a result of potential development to the east.



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## Soils

According to data produced from the United States Department of Agriculture, Natural Resource Conservation Service, 10 different soil types have been identified within ESCA (Figure 6). Those soils illustrated in beige to green hues are sandy soils; blue hues are muck soils or sandy soils frequently flooded. The United States Department of Agriculture, Soil Conservation Service, was used to gather soil information about the soil types and produce the descriptions of the dominant soil types found on the property. The soil descriptions are located in Appendix A.



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## Natural Communities and Wildlife

Information regarding the historical natural communities within the Conservation Area is derived from 1940's historical aerial imagery analysis and on site ground truthing. The natural communities are mapped according to historical land cover (Figure 7) and current conditions are overlayed on the historical natural communities if conditions have changed. The historical documentation is meant to serve as a target for ultimate restoration goals. 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*.

		Percent
Natural Community	Acres	Cover
Floodplain Swamp	304	43
Sandhill	232	33
Mesic Flatwoods	154	22
Blackwater Stream	16	2
Scrubby Flatwoods	2	Less than 1%
Depression Marsh	1	Less than 1%
Total Acres	709	
Hardwood Encroachment	52	7%

#### Table 2. Natural Communities at ESCA

ESCA historically consisted of floodplain swamp bordering the Econlockhatchee River, a large expanse of sandhill, mesic flatwoods, scrubby flatwoods and dispersed depression marshes. In the 1940s aerial imagery, the sandhills natural communities areas had been logged. In the 2006 aerial imagery, the northeastern portion of the sandhill habitat has been logged of pine along with areas within the north mesic flatwoods. In the 2008 aerial imagery, the remaining sandhill habitat has been logged of pine. Today, these natural communities are relatively intact with around 52 acres of sandhill habitat encroached by hardwoods.

## Floodplain Swamp (304 acres)

Floodplain swamp is a closed-canopy forest of hydrophytic trees occurring on frequently or permanently flooded hydric soils adjacent to stream and river channels and in depressions and oxbows within floodplains. It is located within floodplains of any permanently moving stream or river. This natural community is located along the Econlockhatchee River, a blackwater stream. Portions of the eastern bank of the floodplain swamp are very steep and may constitute a seepage forest as the elevation rises out of the floodplain swamp. Areas classified as seepage forest, but found outside of the panhandle, are now classified by Florida Natural Areas Inventory (2009) as Upland Hardwood Forest. This area will be evaluated and further delineated as part of the next land management plan update.

Flora and fauna of this community type, documented within the Conservation Area, include bald cypress (*Taxodium distichum*), cabbage palm (*Sabal palmetto*), sweet gum (*Liquidambar styraciflua*), loblolly bay (*Gordonia lasianthus*), red maple (*Acer rubrum*), Pickerelweed (*Pontederia cordata*), shore rush (*Juncus marginatus*), cinnamon fern (*Osmunda cinnamomea*), common wild pine (*Tillandsia fasciculata*), and black racer (*Coluber constrictor priapus*).

The maintenance of hydrologic regimes is critical to the health of floodplain swamp and to the downstream systems with which they are connected. Species composition and the functional relationships throughout a river system can be negatively impacted by hydrological alterations such as artificial impoundments, river diversion projects, pesticide use, forest clearcutting, or intensive agriculture.

#### Sandhill (232 acres)

Sandhills are characterized as a forest of widely spaced pine trees with a sparse understory of deciduous oaks and a fairly dense ground cover of grasses and herbs on rolling hills of sand. The most typical associations are dominated by longleaf pine, turkey oak, and wiregrass.

Flora and fauna of this community type, documented within the Conservation Area, include turkey oak (*Quercus laevis*), long leaf pine (*Pinus palustris*), slash pine (*Pinus elliottii*), sand pine (*Pinus clausa*), climbing hempweed (*Mikania scandens*), wire grass (*Aristida stricta beyrichiana*), reindeer moss, southern toad (*Bufo terrestris*), gopher frog (*Rana capito aesopus*), pinewoods tree frog (*Hyla femoralis*), white tailed deer (*Odocoileus virginianus*), eastern fence lizard (*Sceloporus undulatus*), six lined race runner (*Cnemidophorus sexlineatus*), feral hog (*Sus scrofa*), raccoon (*Procyon lotor*), and gopher tortoise (*Gopherus polyphemus*).

Fire is a dominant factor in the management of this community. Sandhill is a fire climax community, being dependent on frequent ground fires to reduce hardwood competition and to perpetuate pines and grasses. The natural fire frequency appears to be every 2 to 5 years. Without frequent fires, sandhills may eventually succeed to xeric hammock. Unburned sandhills may be dominated by turkey oak. This natural community has encroaching hardwoods due to fire suppression and fire exclusion, as shown in black and white crosshatching.

#### *Mesic Flatwoods* (153 acres)

Mesic flatwoods are characterized as an open canopy forest of widely spaced pine trees with little or no understory, but a dense ground cover of herbs and shrubs.

Plants of this community type, documented within the Conservation Area, include longleaf pine (*P. palustris*), slash pine (*P. elliottii*), and saw palmetto (*Serenoa repens*), fetterbush (*Lyonia lucida*), rusty lyonia (*Lyonia ferruginea*), wiregrass (*Aristida stricta*), and numerous other groundcover components.

Important factors to maintaining mesic flatwoods is seasonal hydroperiods and fire. Natural fire return intervals are approximately 1 to 8 years.

### Blackwater Stream (16 acres)

The Econlockhatchee River is a blackwater stream that meanders through the property from south to north. Blackwater Streams are characterized as perennial or intermittent seasonal watercourses originating deep in sandy lowlands where extensive wetlands with organic soils function as reservoirs, collecting rainfall and discharging it slowly to the stream. The tea-colored waters of blackwater streams are laden with tannins, particulates, and dissolved organic matter and iron derived from drainage through swamps and marshes. The dark-colored water reduces light penetration and, thus, inhibits photosynthesis and the growth of submerged aquatic plants.

Fauna found in this community type, documented within the Conservation Area, include great blue heron (*Ardea Herodias*), black racer (*Coluber constrictor priapus*), long nosed gar (*Lepisosteus osseus*), mosquitofish (*Gambusia holbrooki*), sailfin molly (*Poecilia latipinna*), and Everglades pygmy sunfish (*Elassoma evergladei*).

Preservation of these riverine systems includes preventing adjacent forests from being clearcut and limiting runoff from agricultural and industrial effluents.

#### Scrubby Flatwoods (2 acres)

Scrubby flatwoods typically have an open canopy of widely spaced pine trees and a low, shrubby understory dominated by scrub oaks and saw palmetto, often interspersed with areas of barren white sand. At ESCA, scrubby flatwoods are found in the southeast portion of the property. Recent logging has left this area with little to no overstory. The understory consists of dense scrub live oak and sand live oak with wiregrass and other herbaceous components.

Plants of this community type, documented within the Conservation Area, include sand live oak (*Quercus geminata*), sand pine (*P. clausa*), and wiregrass (*Aristida stricta var. beyrichiana*).

Scrubby flatwoods areas are maintained by fire, however fire return intervals vary per regrowth rates. Intervals of more than 5 years and less than 15 years would allow for maximum acron production while preventing the oaks from attaining heights unfavorable to Florida scrub jays (which have not been documented on this property). This area will be burned in conjunction with the more dominant natural community in burn zones 1 and 2, which is sandhill. Sandhill burns on a 2-5 year rotation.

## Depression Marsh (1.15 acre)

Depression marsh is characterized as a shallow, usually rounded depression in sand substrate with herbaceous vegetation often in concentric bands. Depression marshes occurring as isolated wetlands within larger upland ecosystems are of critical importance to many wetland and upland animals. Plants of this community type, documented within the Conservation Area, include maidencane (*Panicum hemitomon*) and other grasses surrounded by a border of saw palmetto and oaks, pond pine (*Pinus serotina*), longleaf pine, and slash pine.

Fire is important to maintaining this community type by restricting invasion of shrubs and trees and the formation of peat. Fire frequency is often greatest around the periphery of the marsh and least toward the center. A severe peat fire can lower the ground surface and create a pond at the center of the marsh. Depression marshes will be burned on a sandhill 2-5 year rotation or mesic flatwoods 1-8 year rotation, depending on the surrounding habitat's burn rotation interval.



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# Cultural Resources

A review of the Department of State, Division of Historical Resources GIS data for Orange County indicates that there are no known registered Florida Master Sites at ESCA. If any sites are located, District staff will document and report the sites to the Division of Historical Resources. District land management and restoration activities that may affect any potential resources will be evaluated and modified to reduce any potential disturbance of identified sites.

# **IMPLEMENTATION**

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

# RESOURCE PROTECTION AND MANAGEMENT

# Security

The property has been posted and fenced with five gates installed. The gates bordering property to the east will have District locks included for wildfire and other emergencies. The District will coordinate with the Orange County Sheriff's Office and contracted security when needed to patrol the property. An Orange County emergency management address or GPS point of the conservation area entrance will be facilitated under the purview of this plan.

# Security Strategies

- Coordinate with Orange County Sheriff's Office and contracted security to patrol the property as needed.
- Facilitate Orange County emergency management in obtaining an address or GPS point for the Conservation Area entrance.

# Water Resource Protection

Most of the water resource protection was accomplished with the purchase of the property. The property protects around 2.5 miles of the Econlockhatchee River. The District will work to manage for high quality natural communities through prescribed burning and forest management to continue to protect water resources flowing into the Econlockhatchee River and its tributaries.

Water Resource Protection Strategies

• Manage for high quality natural resources through prescribed burning and timber management to continue to protect water resources flowing into the Econlockhatchee River and its tributaries.

# Flora and Fauna

The sandhills, floodplain swamp, mesic flatwoods and other natural communities on site provide habitat for many species of flora and fauna. Staff site visits on July 14, 2009 and August 5, 2009 along with a land management planning workday on September 3, 2009

that included a plant and animal species survey documented 301 species including 205 plants, 3 mammals, 4 fish, 9 amphibians, 8 reptiles, 3 general insects, 18 butterfly, 15 damselfly, and 43 birds. These species lists are documented in Appendix B. On July 14 and August 5, 342 gopher tortoise burrows were found in a census survey of the property.

Detailed below are the listed or rare species documented within the Conservation Area. The scientific names are hyper-linked for electronic viewing (press ctrl and click to follow the link) of species descriptions including listing status and distribution. This detail is also available at <u>www.fnai.org</u> and <u>http://www.florida.plantatlas.usf.edu/</u>.

# • Gopher tortoise <u>Gopherus polyphemus</u>

## Gopher Tortoise

Gopher tortoises are typically found in dry upland habitats and excavate deep burrows for refuge from predators, weather, and fire (<u>www.fnai.org</u>). Large, undivided tracts of upland habitat should be managed to maintain native vegetative conditions, which generally requires periodic prescribed fire beneath trees to reduce brush and favor growth of grasses and forbs (<u>www.fnai.org</u>). The District will implement a prescribed burning program to maintain and improve habitat for the gopher tortoise and other species that utilize similar habitat. District staff conducted a census survey on the entire property in summer 2009 and found 342 gopher tortoise burrows, mostly within sandhill habitat. The District will work to maintain the sandhill habitat utilizing prescribed burning. Mechanical or chemical means will be utilized if prescribed burning cannot be used or to augment prescribed burning. Encroaching hardwood trees may also be removed to improve additional acres of habitat for the species if funding is available. The District is willing to explore opportunities to enhance gopher tortoise habitat related to tortoise relocation efforts.

## Flora and Fauna Strategies

- Maintain sandhill habitat to maintain gopher tortoise population through prescribed burning or other methods.
- Evaluate conducting overstory management to improve sandhill habitat.
- Continue to conduct species surveys and add to species lists.

# **Forest Management and Restoration**

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 of the parcel." The paragraphs below describe the management of timber resources at ESCA.

The District may remove around 49 acres of hardwoods in sandhill areas within fire management units one and two (Figure 10) if funding is available. Hardwoods removal is an effort to restore sandhill habitat that is reaching a climax community due to fire

suppression and fire exclusion. Most of these trees were not present in the 1940s aerial imagery. Harvesting the oak through logging, utilizing prescribed burning to kill the oaks, or utilizing herbicide will allow for light to penetrate to the ground, promoting the growth of native ground cover, turkey oak, and longleaf pine creating a healthier habitat for wildlife, including the threatened gopher tortoise. A unique xeric hardwood encroached area will not be harvested. This area has little to no ground cover and has a wide expanse of reindeer moss. The area will be managed as a xeric hardwock natural community.

Around 4 acres of naturally regenerated longleaf pine will be thinned under the purview of this plan (Figure 10) within fire management unit two. The area is extremely dense as the pines exceed 90 square feet of basal area. Selectively thinning the pines within this area will open the canopy to sunlight and promote native ground cover regeneration, moving the area towards a more natural mesic flatwoods habitat.

During thinning, the District will abide by Florida Silviculture Best Management Practices. The District will remove trees as needed in the case of insect infestations, disease, and damage from severe weather, wildfire, or other occurrences that could jeopardize the health of natural communities. Site preparation techniques employed prior to replanting in any potential harvested areas in the Conservation Area may include mechanical treatment of vegetation, chemical treatment of vegetation, and prescribed fire. These techniques may be used singularly or in combination. Any potential revenue will be applied toward the District's land management division budget to offset management costs for the property.

Forest Management and Restoration Strategies

- Evaluate the need to remove hardwoods to improve sandhill habitat if finding is available.
- Thin pine within a 4-acre area to manage for mesic flatwoods habitat.



Author.tmashour, Source:X:LandMgmtiGISUsersiPlannersiWestLake NorrisiLake NorrisiL

### **Fire Management**

The District's primary use of fire is to mimic natural fire regimes to encourage the perpetuation and amelioration of native pyric dependent plant communities and associated wildlife. Additionally, the application of fire aids in the reduction of fuels and minimizes the potential for catastrophic and damaging wildfires. Fire management activities are critical to maintaining the natural communities within ESCA as most of the resident communities evolved with fire. Therefore, prescribed fire is an important, and relatively inexpensive, tool for use in the maintenance of natural communities within the Conservation Area.

Historically, the majority of fires occurring on what is now ESCA would have been ignited by lightning during the growing season. Sandhills, mesic flatwoods, scrubby flatwoods, and depression marshes are natural communities on site that have evolved with fire and today are managed through prescribed fire in a controlled setting. The goals of utilizing fire on the property are to reduce hardwood encroachment upon sandhill habitat and maintain natural communities for wildlife habitat and species diversity. The District intends to implement growing season fires where possible, understanding that various constraints, such as potential high fuel loading, or weather conditions, or smokeshed constraints may necessitate the use of dormant season burning. The District has not yet implemented prescribed burns on the property as the property was recently purchased in December 2008. Fire history on the property is unknown. Based on conditions of the property, including hardwood encroachment and height of rough in mesic flatwoods, most of the property is out of its desired burn return interval. A wildfire was documented on the property in March 2009 where around 20 acres of mesic flatwoods were burned in fire management unit 3.

The property is bordered on the south by State Road 420/Lake Pickett Road, on which a very sharp curve is located (Figure 11). State Road 50 is located 1.5 miles south of the property. Two dense developments are located adjacent on the western border. The property is relatively rural to the north and east of the property at this time. Many schools and hospitals are located to the west of the property beginning one mile out and becoming more dense further west in the 10-mile radius zone. East Lake Elementary school is found within one mile southwest of the property and University of Central Florida is located just outside of the two-mile zone, on the western border. Smoke management is of utmost concern and any potential burns will be conducted to minimize off-site impacts by maneuvering smoke plumes away from smoke sensitive areas and by ensuring adequate smoke dispersal.

While prescribed fire is the preferred tool for restoration and maintenance within the Conservation Area, it may be necessary to implement mechanical and or chemical methods of vegetation management. During periods of extended drought 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.

During the next five years, the District aims to utilize prescribed fire at ESCA to perpetuate fire dependent natural communities such as sandhill, mesic flatwoods, scrubby flatwoods, and depression marshes and to assist with restoration on the property. Improving the sandhill habitat will improve habitat for the threatened gopher tortoise and many other species utilizing this habitat. Firelines, both internal and boundary, have been identified, mapped, installed, and will be maintained as needed. All implementation of prescribed fire within the Conservation Area will be conducted in accordance with the District's Fire Management Plan, the Econlockhatchee Sandhills Conservation Area Fire Management Plan (Appendix C), and the annual burn plans for the property.

Fire Management Strategies

- Implement prescribed burning as described in the District's Fire Management Plan and the Econlockhatchee Conservation Area Fire Management Plan.
- Develop annual burn plans.
- Utilize growing season burns where possible.
- Conduct dormant season burns when not feasible in the growing season and in areas of high fuel loading and/or extended fire exclusion.



Author.tmashour, Source:X:LandMgmtiGISUsersiPlannersiWestLake NorrisiLake NorrisiLake 2009 Figure 1. Location Map.mxd, Time:6/24/2009 12:49:46 P.M.

## **Exotic and Invasive Species**

Exotic plants that have been documented at ESCA include cogon grass (*Imperata cylindrical*), Bahia grass (*Paspalum notatum*) and Japanese climbing fern (*Lygodium japonicum*). ESCA will become part of the District's Invasive Plant Management Program. The program will target cogon grass at ESCA and over the next five years will treat and monitor the patch and other invasive plant species as requested by land management staff. Although it is unlikely that the Invasive Plant Management Program will completely eradicate invasive and exotic plant populations in the Conservation Area, management is aimed toward holding populations to a "maintenance control" level. At this level, the property is regularly monitored and herbicide treatments are applied as necessary in order to keep the populations from spreading. Information regarding treatment of cogon grass can be found at <u>http://www.fleppc.org/index.cfm</u>.

Exotic wildlife species known to occur within the Conservation Area include feral hogs (*Sus scrofa*). Other species will be noted through site visits and further species surveys.

Over the next five years, the District will continue to monitor and treat invasive and exotic plant species as needed. If feral hogs are determined to be a problem on the property, the District will utilize volunteer hog removal contracted agents or United States Department of Agriculture to remove feral hogs.

## Exotic Species Strategies

- Continue to monitor and treat invasive and exotic plant species within the property.
- Determine whether hog removal assistance is needed and employ the necessary means to control hogs.

## **Cultural Resources Protection**

According to Chapter 40C-9.220, all archaeological and cultural resources on District Lands are protected. Removal, alteration, or destruction of archaeological or cultural resources is prohibited on all District Lands unless authorized by the District. The District shall consult the Florida Department of State, Division of Historical Resources prior to authorizing the removal, alteration or destruction of any archaeological or cultural resources on District Lands. There are no documented Florida Master Sites found within the boundary of ESCA.

Cultural Resources Protection Strategies

• Identify and report any sites to Florida Department of State, Division of Historical Resources.

# LAND USE MANAGEMENT

## Access

The property is not open to the public at this time as the required infrastructure is not in place. The District currently has access to the property from Lake Pickett Road, through

the adjacent Rybolt property, utilizing an access easement granted from the Rybolt landowner, and to a gate at the District boundary line at the southeastern power line easement entrance. Three additional gates are located on the northeast side of the property for land management access in emergency and wildfire situations. These access the adjacent Rybolt property. A fifth gate is located on the western boundary of the property at the western power line easement and reached by driving through two subdivisions on the west side of the property. The conceptual access and recreation plan (Figure 13) aims to install a public access parking area off Lake Pickett Road as a trailhead to multiuse trails on the property, under the purview of this plan. Additionally, the previous landowner reserved the right to install public access and facilities on ESCA from a conceptual future four-lane road access point on the eastern side of the property. Costs for this access will be at the expense of the neighboring landowner. The date of installation of additional public recreation facilities by the former landowner is unknown at this time.

The District is currently communicating with the western boundary's subdivisions to exchange land in which the northern subdivision, Rybolt's Reserve, has encroached upon District property for land at the western power line for entrance to the property and obtain an access easement or a deed to property from the southern subdivision's, Ashington Park, road to the potential ownership at the western power line (Figure 14). These actions will clear up encroachment issues with Rybolt's Reserve as well as allow for access to the western entrance to the property to conduct prescribed burning and suppress potential wildfire. Once these actions are complete, the District may install hiking trails from the power line entrance on the western side of the property for primary use by the subdivision residents. An easement from Ashington Park is also required to gain access for management purposes from the west.

The District has GPS'd approximately 3 miles of roads on the property and five gates. The roads are classified as Type E roads, or roads with seasonal traffic. Maintenance of these roads will consist of mowing as needed to prevent encroachment of vegetation.

Over the next five years, the District will install a parking area off Lake Pickett Road and incorporate the property roads into the District's mowing contract. The District will work with the western subdivisions to negotiate access from the western power line entrance. The District will maintain communication with eastern neighbor to allow access through three gates on the eastern side of the property in times of emergency and wildfire.

## Access Strategies

- Install and maintain a parking area for public access to the property off Lake Pickett Road.
- Incorporate the property into the District's mowing contract to maintain roads.
- Work with Rybolt's Reserve on the western border of the property to exchange the subdivision's encroached land for land at the western entrance power line.
- Work with Ashington Park on the western border of the property to obtain an access easement or property in full fee for District access to the potential western

exchanged property, which would allow access to the western side of the property through the power line.


Author.tmashour, Source:X:LandMgmtiGISUsersiPlannersiWestLake NorrisiLake NorrisiLake 2009 Figure 1. Location Map.mxd, Time:6/24/2009 12:49:46 P.M.

### **Recreation and Outreach**

According to the District's Recreation Management Plan, the primary objective of the Recreation Management Program is to facilitate resource-based recreational activities on District lands. Resource-based recreation includes those activities dependent on some particular element or combination of elements in the natural environment. District conservation areas are mostly geared toward dispersed resource-based activities. Dispersed recreation is passive outdoor recreation that occurs outside of developed sites where modern facilities and concentrated use typically occurs. The typical District conservation area consists of a trailhead with a designated parking area, an information kiosk, and access to the lands using trails that are primarily interior roads, fire lines, or levees that are maintained for land and water management purposes. The trail system is used predominantly for hiking, off-road bicycling, and/or horseback riding and may access areas for primitive camping, fishing, and wildlife viewing. Based on these guidelines and the Orange County participation agreement signed January 2009 committing the District to require passive public recreation, the paragraphs below describe the conceptual recreation plan for ESCA.

The District has evaluated areas appropriate for multiuse trails, marked a trail system, and mowed the trails, all of which will be opened by January 2010. The property will be open to hiking, biking, horseback riding, fishing, and nature study. Primitive camping will be evaluated as a future use on the property. In order to open the property to public access, the following items will be completed on the property by January 2010:

- 1. Install public parking area and trailhead off Lake Pickett Road complete with a kiosk and property information.
- 2. Develop a trail guide and post the property on the website once the parking area is completed.
- 3. Install the entrance sign marking the opening of the property to public recreation.

There is no hunting planned under the purview of this plan. The District will evaluate the level of use on the property and determine whether a portable restroom is needed under the purview of this plan. The District will also evaluate the need for a canoe landing some point along the Econlockhatchee River.

A portion of the recreation trail crosses the 1957 Florida Power and Light Powerline Easements (OR Book 272 Page 270, OR Book 417 Page 349, OR Book 301 Page 54, Orange County, also found in the District's Land Resources System database). According to the easements, public recreation is silent, however they state that the, "Grantors reserve the right and privilege to use the right of way for agricultural and all other purposes except as herein granted or as might interfere with Grantee's or assigns use and provided that no buildings or structures other than fences will be located or contructed by Grantors on said right of way."

The District is negotiating to secure access to the western border of the property for prescribed burning and wildfire suppression. In the event the District secures an access

easement from the Rybolt's Reserve subdivision and the Ashington Park subdivision (Figure 14), the District may create a trail system entering from the western power line.

According to the purchase agreement with the former owner of the property, the former owner reserved the right to install passive, public recreation that may include a parking area and restrooms from a planned road on the eastern border of the property, pending future development to the east. Recreation installed by the former owner is at the sole cost of the owner, including maintenance of restrooms.

**Recreation Strategies** 

- Install a public parking area off Lake Pickett Road complete with kiosk, information panels, and entrance sign by January 2010.
- Install multiuse trails by January 2010.
- Review and comment on easterly neighbor's plans to install public recreation from a future road on the eastern side of the property once plans are developed.



Author.tmashour, Source:X:LandMgmttGISUsers/Planners/WestLake Norrfs/Lake Norrfs/LMP 2009/Figure 1. Location Map.mxd, Time:6/24/2009 12:49:46 PM

## Administration

## Acquisition

Encroachment issues on the north west side of the property have caused the need for the District to plan to surplus property on the northwestern boundary. In exchange for surplussing property to Rybolt's Reserve Homeowners' Association on the western boundary, the District is working with Rybolt's Reserve Homeowners' Association to acquire an access easement or full fee property at the western power line entrance to the property for land management access.

The District is working with the Ashington Park Homeowners' Association to acquire an access easement or full fee ownership to property from the subdivision's eastern most road to the potentially exchanged access easement or full fee property at the western power line easement entrance to the property. These exchanges will provide access for prescribed fire, land management, wildfire suppression, and potential public recreation access.

The District has been contacted regarding it's willingness to accept two mitigation donation parcels for development impacting wetlands in this region. Both parcels are south of the property and bordering the Econlockhatchee River. The District is interested in acquiring these parcels. Pending acceptance through the Distict regulatory department, the District will incorporate the parcels into the ESCA boundary.

Over the next five years, the District will evaluate lands near the property as they become available.

### Acquisition Strategies

- Negotiate with the northwest subdivision, Rybolt's Reserve, to surplus property along the western boundary and exchange this land for an access easement or full fee property into the western power line easement.
- Negotiate with the southwest subdivision, Ashington Park, to acquire an access easement or full fee land into the western access easement the District hopes to acquire in the exchange mentioned above, and ultimately into the western power line easement access.
- Look to accept mitigation donation parcels, per regulatory review, and incorporate them into the ESCA boundary and land management plan.
- Evaluate any nearby lands as they become available.



Author.tmashour, Source:X:LandMgmtGiSUsersiPlannersiWestLake NorrisLAke NorrisLMP 20091Figure 1. Location Map.mxd, Time:6/24/2009 12:49:46 PM

### **Cooperative Agreements, Leases, Easements, and Special Use Authorizations**

The District is authorized to enter into Cooperative Agreements/Cooperative Management Leases, Leases, Easements and Special Use Authorizations. According to Chapter 373.1391 Florida Statutes, Chapter 40C-9.410, the District is authorized and encouraged to enter into cooperative land management agreements with state agencies or local governments to provide for the coordinated and cost-effective management of lands to which the water management districts, the Board of Trustees of the Internal Improvement Trust Fund, or local governments hold title. According to Chapter 40C-9.370, a person shall apply for a District Lease to use District Land if the use constitutes an agricultural activity or is of such nature as to require a legal interest in the District Land according to guidelines in the aforementioned section. According to Chapter 40C-9.380, the District does not encourage the use of District Lands for utility right-of-way easements or other similar purposes except according to the aforementioned section's criteria. According to Chapter 40C-9.360, a person shall apply for a Special Use Authorization to use District Lands according to guidelines in the aforementioned section.

The following list and Table 1 identify all current agreements at ESCA.

**Special Use Authorization #577- Cattle-**December 10, 2008-December 10, 2009. This Special Use Authorization allows the former landowner to graze cattle for one year following the purchase of the property. The November 2008 Purchase agreement allowed for this right to graze cattle and outlined the sharing of the price of installing a fence on the east side of the property to separate the Rybolt retained property from the District purchased parcel before December 2009 when the seller's cattle are to be removed from the District purchased parcel. The fence was installed by August 1, 2009 and cattle have been removed from the property. This agreement will legally be terminated December 10, 2009.

**Purchase Agreement** November 11, 2008. The Purchase agreement for acquisition of the property, Clause 26b, outlines the right of the seller to develop passive public recreation on the property, at the cost of the sellers, that may include an entry area, trails, picnic areas, towers, nature walks, parking, public water fountains, and bathrooms at locations subject to the District's approval. The seller is responsible for long-term maintenance of restroom facilities or other similar structures. The seller shall comply with applicable laws and regulations. The District will work with seller to review and approve such plans. The purchase agreement does not preclude the District from developing similar passive recreational improvements.

**Participation Agreement Orange County** January 27, 2009. The Orange County participation agreement outlined the cost share for the purchase of the property. Clause 6 outlines the review and approval of the management plan by Orange County, both of which shall not be unreasonably withheld. The management plan shall permit the prior owners to develop passive public recreation and to include an entry area and restrooms. The Orange County Parks Impact fee funded the cost share by the County. This fund requires ESCA to be developed for public recreational use. The County and the District agreed that the use shall be passive recreational use including canoeing, hiking, and fishing. The management plan to be written for the property shall provide the county with the right to mutually participate in the development and implementation of the plans for passive recreation on the property.

## Easements

According to the Special Warranty Deed (Official Records Book 9800, Page 5656) dated December 5, 2008, the property was conveyed to the District subject to:

- 1. A right of way agreement by and between O.H. Tanner and Luvena Tanner to Florida Power and Light Company recorded August 23, 1957 in Orange County Official Records Book 272, Page 270 and 417, Page 349.
- 2. Right of way agreement by and between Donald Rybolt and Eloise Rybolt to Florida Power and Light Company recorded November 15, 1993 in Official Records Book 4652, Page 1596.
- 3. Drainage and Utility Maintenance Easement by and between Eloise Rybolt and Orange County Florida recorded November 15, 1993 in Official Records Book 4652, Page 1596.
- 4. An easement granted in Warranty Deed by and between Eloise Rybolt and El-Ry Corp. recorded March 21, 1994 in Official Records Book 4713, Page 3127 and restated in the Warranty Deed from El-Ry Corp and Maronda Homes recorded February 2, 1998 in Official Records Book 5407, Page 622.
- 5. Drainage and Utility Easement by and between Eloise Rybolt and Orange County recorded February 22, 1995 in Official Records Book 4858, Page 1565.
- 6. Board of Trustees of the Internal Improvement Trust Fund of the State of Florida, Sovereign Submerged Lands Easement granted to Florida Power and Light Company recorded April 12, 1995 in Official Records Book 4878 Page 2538.

Under the purview of this plan, agreements will be administered. The District will formally terminate the cattle SUA before December 10, 2009. Over the next five years, the District will evaluate the need for additional agreements to assist with management of the property, assist with research projects, and assist with other events or projects that could utilize ESCA as a useful site. These include, but are not limited to, the installation of cell towers on disturbed areas within the property, university research, GIS geospatial referencing projects, wildlife management area, cattle leasing, public tours, etc.

Agreement #	Agency/ Individual	Begin	Original Term	Acres	Renewals
SUA Cattle #577	Previous Owner	December 10, 2008	December 10, 2009	706	None
Purchase Agreement	Previous Owner	November 11, 2008	Perpetual	706	Perpetual
Participation Agreement	Orange County	January 27, 2009	Perpetual	706	Perpetual
Easements	Various	Various	Various	Various	Various

Table 3. Leases, Easements, and Agreements

Leases, Special Use Authorizations, and Agreements Strategies

- Terminate cattle special use authorization before December 10, 2009.
- Continue to monitor all agreements and continue to evaluate as they come up for renewal.

## **Revenue Generation**

There is no revenue generation at this time.

# **IMPLEMENTATION CHART**

Table 4. ESCA Implementation Chart

TASK	RESPONSIBLE	DUE	PARTNERS
	LEAD	DATE	
<b>RESOURCE PROTEC</b>	ΓΙΟΝ AND MANA	GEMENT	ר
Security			
Coordinate with Orange County Sheriff's	LM	Ongoing	OCSO, contracted
Office and contracted security to patrol the			security
property as needed.			
Facilitate Orange County emergency	LM	November	Orange County
management in obtaining an address or GPS		2014	Emergency
point for the Conservation Area entrance.			Management
Water Resource Protection			
Manage for high quality natural resources	LM	Ongoing	
through prescribed burning and timber			
management to continue to protect water			
resources flowing into the Econlockhatchee			
River and its tributaries.			
Flora and Fauna			
Maintain sandhill habitat to maintain gopher	LM	Ongoing	
tortoise population through prescribed			
burning or other methods.			
Evaluate conducting overstory management	LM	November	
to improve sandhill habitat.		2014	
Continue to conduct species surveys and add	LM	Ongoing	ES
to species lists.			
Forest Management and Restoration			
Evaluate the need to remove hardwoods to	LM	November	
improve sandhill habitat if finding is		2014	
available.			
Thin pine within a 4-acre area to manage for	LM	November	
mesic flatwoods habitat.		2014	
Fire Management			
Implement prescribed burning as described	LM	Ongoing	DOF
in the District's Fire Management Plan and			
the Econlockhatchee Conservation Area Fire			

TASK	RESPONSIBLE	DUE	PARTNERS
	LEAD	DATE	
Management Plan.			
Develop annual burn plans.	LM	Annually	
Utilize growing season burns where	LM	Ongoing	
possible.			
Conduct dormant season burns when not	LM	Ongoing	
feasible in the growing season and in areas			
of high fuel loading and/or extended fire			
exclusion.			
Exotic and Invasive Species			
Continue to monitor and treat invasive and	LM	Ongoing	IPM
exotic plant species within the property.			
Determine whether hog removal assistance	LM	As needed	USDA
is needed and employ the necessary means			
to control hogs.			
Cultural Resources			
Identify and report any sites to Florida	LM	Ongoing	
Department of State, Division of Historical			
Resources.			
LAND USE	MANAGEMENT		
Access			
Install and maintain a parking area for public	LM	January	
access to the property off Lake Pickett Road.		2010	
Incorporate the property into the District's	LM	January	PW
mowing contract to maintain roads.		2010	
Work with Rybolt's Reserve on the western	LM, LA	November 2014	
border of the property to exchange the		2014	
subdivision's encroached land for land at the			
western entrance power line.		NY 1	
Work with Ashington Park on the western	LM, LA	November	
border of the property to obtain an access		2014	
easement or property in full fee for District			
access to the potential western exchanged			
property, which would allow access to the			
western side of the property through the			
power line.			
Recreation and Outreach	IM	T	
Install a public parking area off Lake Pickett	LM	January 2010	
Road complete with kiosk, information		2010	
panels, and entrance sign by January 2010.			
Install multiuse trails.	LM	January 2010	
Review and comment on easterly neighbor's	LM	As	
plans to install public recreation from a		needed.	
future road on the eastern side of the			
property once plans are developed.			

TASK	RESPONSIBLE	DUE	PARTNERS
	LEAD	DATE	
ADMIN	ISTRATION		
Acquisition			
Negotiate with the northwest subdivision,	LM, LA	November	
Rybolt's Reserve, to surplus property along		2014	
the western boundary and exchange this land			
for an access easement or full fee property			
into the western power line easement.			
Negotiate with the southwest subdivision,	LM, LA	November	
Ashington Park, to acquire an access		2014	
easement or full fee land into the western			
access easement the District hopes to acquire			
in the exchange mentioned above, and			
ultimately into the western power line			
easement access.			
Look to accept mitigation donation parcels,	LM, LA	As	
per regulatory review, and incorporate them		Permits	
into the ESCA boundary and land		are	
management plan.		granteu.	
Evaluate any nearby lands as they become	LM, LA	As needed	
available.			
Cooperative Agreements, Leases, Easements, and			
Special Use Authorizations			
Terminate cattle special use authorization	LM	December	
before December 10, 2009.		1, 2009	
Continue to monitor all agreements and	LM	Ongoing	
continue to evaluate as they come up for			
renewal.			

Key:District LM-District Land Management<br/>District ES-District Environmental Sciences<br/>District IPM-District Invasive Plant Management<br/>District-LA-District Division of Land Acquisition<br/>District-PW-District Division of Public Works<br/>IPM-Invasive Plant Management<br/>OCSO-Orange County Sheriff's Office<br/>USDA-United States Department of Agriculture

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- Florida Fish and Wildlife Conservation Commission (FWC) 2008. Gopher Tortoise Permitting Guidelines *Gopherus polyphemus*. Tallahassee, FL.
- Natural Resource Conservation Service Official Soils Series Descriptions, 2006. [Last Accessed April 21, 2006.] <u>http://soils.usda.gov/technical/classification/osd/index.html.</u>
- St. Johns River Water Management District Recreation Management Plan.

## **APPENDIX A. SOILS**

### Archbold

The Archbold series consists of deep, well drained, very rapidly permeable sandy soils that formed in marine or eolian deposits. Archbold soils are on nearly level to gently sloping ridges in the Lower Coastal Plain. Most of this soil is in native scrub forest of sand pine, blue jack oak, saw palmetto, prickly pear cactus and scattered stands of wiregrass.

### Basinger

The Basinger series consists of very deep, poorly drained and very poorly drained, rapidly permeable soils in sloughs, depressions, low flats, and poorly defined drainageways. They formed in sandy marine sediments. The natural vegetation may consist of wax myrtle, St. Johns wort, maidencane, pineland threeawn, cypress, slash pine, longleaf pine, pond pine, and other water tolerant plants.

### Felda

The Felda series consists of very deep, poorly drained and very poorly drained, moderately permeable soils in drainageways, sloughs and depressions, and on flood plains and low flats. They formed in stratified, unconsolidated marine sands and clays. Felda soils are in depressions, poorly defined drainageways, sloughs, flood plains, or low flat. Natural vegetation consists of cypress, waxmyrtle, pond pine, slash pine, cabbage palm, pineland threeawn, and various grasses, vines, and shrubs.

### Immokalee

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

### Samsula-Hontoon-Basinger

This soil complex is an association of depressional soils. The soils are nearly level and poorly drained and are found in freshwater swamps, depressions, sloughs, and broad, poorly defined drainageways. The principal vegetation consists of pond cypress, red maple, sweetgum, cabbage palm, pond pine, and tupelo with understory of cutgrass, maidencane, sawgrass, sedges, ferns, and other water tolerant grasses.

### Sanibel

The Sanibel series consists of very poorly drained sandy soils with organic surfaces. They formed in rapidly permeable marine sediments. The soils occur on broad flats, in depressed areas and in poorly defined drainageways. Principal vegetation consists of sawgrass, melaleuca, and wax myrtle.

### Smyrna

The Smyrna series consists of very deep, poorly to very poorly drained soils formed in thick deposits of sandy marine materials. Smyrna soils are on nearly level flatwoods areas with slope gradients less than 2 percent. Natural vegetation consists of longleaf and slash pines with an undergrowth of saw palmetto, running oak, gallberry, wax myrtle, and wiregrass.

### St. Johns

The St. Johns series consists of very deep, very poorly or poorly drained, moderately permeable soils on broad flats and depressional areas of the lower Coastal Plain. They formed in sandy marine sediments. Principal vegetation of the forested areas is longleaf pine, slash pine, and pond pine with an undergrowth of saw palmetto, gallberry, wax myrtle, huckleberry, and pineland threeawn.

### Tavares

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

### Zolfo

The Zolfo series consists of very deep, somewhat poorly drained soils that formed in thick beds of sandy marine deposits. Zolfo soils are on nearly level to gently sloping low broad landscapes that are slightly higher than the adjacent flatwoods of the Lower Coastal Plain in Central Florida. Native vegetation consists of scattered turkey, laurel, or water oaks; long leaf or slash pine with an undercover of wiregrass, bluestem, lopsided Indiangrass, gallberry, native weeds, and saw palmetto.

# **APPENDIX B. SPECIES LISTS**

Listed Species

Scientific Name	Common Name	Global	State Rank	Federal	State
		INALIK	INDIA	Status	Status
Lithobates capito	Gopher Frog		S3	Clara	SSC
Aimophila aestivalis	Bachman's Sparrow	G3	S3		
Ardea alba	Great Egret	G5	S4		
Egretta caerulea	Little Blue Heron	G5	S4		SSC
Egretta tricolor	Tricolored Heron	G5	S4		SSC
Eudocimus albus	White Ibis	G5	S4		SSC
Haliaeetus	Bald Eagle	G5	S3		
leucocephalus					
Pandion haliaetus	Osprey	G5	S3S4		SSC
Lithobates capito	Gopher Frog		S3		SSC
Centrosema arenicola	Pineland Butterfly Pea;	G2Q	S2		E
	Sand Butterfly Pea				
Osmunda cinnamomea	Cinnamon Fern				С
Pogonia ophioglossoides	Rose Pogonia;				Т
	Snakemouth Orchid				
Sarracenia minor	Hooded Pitcherplant				Т
Gopherus polyphemus	Gopher Tortoise	G3	S3		SSC
Gopherus polyphemus	Gopher Tortoise	G3	S3		SSC
Ardea alba	Great Egret	G5	S4		
Egretta caerulea	Little Blue Heron	G5	S4		SSC
Egretta tricolor	Tricolored Heron	G5	S4		SSC
Ardea alba	Great Egret	G5	S4		
Egretta caerulea	Little Blue Heron	G5	S4		SSC
Egretta tricolor	Tricolored Heron	G5	S4		SSC
Eudocimus albus	White Ibis	G5	S4		SSC

Exotic Species

Scientific Name	Common Name	
Cynodon dactylon	Bermudagrass	
Desmodium triflorum	Threeflower	
	Ticktrefoil	
Imperata cylindrica	Cogongrass	
Lygodium japonicum	Japanese Climbing	

	Fern
Paspalum notatum	Bahiagrass
Sus scrofa	Feral Hog

Plant List - Includes Listed & Exotic Species

Common Name
Red Maple
Bushy Bluestem
Broomsedge Bluestem
Chalky Bluestem
Big Threeawn; Piedmont Threeawn
Arrowfeather Threeawn
Bottlebrush Threeawn
Wiregrass
Coastalplain Honeycombhead
Catbells
Tarflower
DENSETUFT HAIRSEDGE
Sandyfield Hairsedge
Ware's Hairsedge
Southern Bluethread
Florida Scrub Roseling**
Elliott's Sedge
Coastalplain Chaffhead; Florida
Paintbrush
Vanillaleaf
Spadeleaf
Pineland Butterfly Pea; Sand
Butterfly Pea**
Partridge Pea
Slender Woodoats
Longleaf Woodoats
Atlantic Pigeonwings
Tread-Softly; Finger-Rot
Whitemouth Dayflower
CANADIAN HORSEWEED
Rabbitbells
Bermudagrass*
Fragrant Flatsedge
Pinebarren Flatsedge
Threeflower Ticktrefoil*
Needleleaf Witchgrass

Dichanthelium dichotomum	Cypress Witchgrass	
Dichanthelium ensifolium	Cypress Witchgrass	
Dichanthelium portoricense	Hemlock Witchgrass	
Diodia teres	Poor Joe; Rough Buttonweed	
Diodia virginiana	Virginia Buttonweed	
Elephantopus nudatus	Smooth Elephantsfoot	
Eragrostis elliottii	Elliott's Lovegrass	
Erechtites hieraciifolius	American Burnweed; Fireweed	
Erigeron vernus	Early Whitetop Fleabane	
Eupatorium album	White Thoroughwort	
Eupatorium capillifolium	Dogfennel	
Eupatorium leptophyllum	Falsefennel	
Eupatorium mohrii	Mohr's Thoroughwort	
Eupatorium rotundifolium	Roundleaf Thoroughwort; False	
	Horehound	
Euphorbia polyphylla	Lesser Florida Spurge**	
Euthamia graminifolia	Flattop Goldentop	
Fimbristylis puberula	Hairy Fimbry	
Fuirena scirpoidea	Southern Umbrellasedge	
Galactia elliottii	Elliott's Milkpea	
Galactia regularis	Eastern Milkpea	
Gelsemium sempervirens	Yellow Jessamine; Carolina	
	Jessamine	
Gordonia lasianthus	Loblolly Bay	
Gratiola hispida	Rough Hedgehyssop	
Gratiola pilosa	Shaggy Hedgehyssop	
Hypericum cistifolium	Roundpod St.John's-Wort	
Hypericum fasciculatum	Sandweed; Peelbark St.John's-Wort	
Hypericum hypericoides	St.Andrew's-Cross	
Hypericum tenuifolium	ATLANTIC ST.JOHN'S-WORT	
Hypericum tetrapetalum	Fourpetal St.John's-Wort	
Hypoxis juncea	Fringed Yellow Stargrass	
Hyptis alata	Clustered Bushmint; Musky Mint	
llex glabra	Inkberry; Gallberry	
Imperata cylindrica	Cogongrass*	
Juncus marginatus	Shore Rush; Grassleaf Rush	
Juncus megacephalus	Bighead Rush	
Lachnocaulon beyrichianum	Southern Bogbutton	
Lespedeza hirta	Hairy Lespedeza	
Liatris tenuifolia	Shortleaf Gayfeather	
Licania michauxii	Gopher Apple	
Liquidambar styraciflua	Sweetgum	
Ludwigia maritima	Seaside Primrosewillow	
Ludwigia repens	Creeping Primrosewillow	

Lupinus diffusus	Skyblue Lupine	
Lygodium japonicum	Japanese Climbing Fern*	
Lyonia ferruginea	Rusty Staggerbush	
Lyonia fruticosa	Coastalplain Staggerbush	
Lyonia ligustrina	Maleberry	
Lyonia ligustrina foliosiflora	Maleberry	
Lyonia lucida	Fetterbush	
Lyonia mariana	Piedmont Staggerbush	
Magnolia grandiflora	Southern Magnolia	
Magnolia virginiana	Sweetbay	
Micranthemum umbrosum	Shade Mudflower	
Mitchella repens	Partridgeberry; Twinberry	
Myrica cerifera	Southern Bayberry; Wax Myrtle	
Oldenlandia uniflora	Clustered Mille Graines	
Opuntia humifusa	Pricklypear	
Osmunda cinnamomea	Cinnamon Fern**	
Osmunda regalis	Royal Fern	
Panicum anceps	Beaked Panicum	
Panicum hemitomon	Maidencane	
Panicum virgatum	Switchgrass	
Paspalum conjugatum	Sour Paspalum; Hilograss	
Paspalum notatum	Bahiagrass*	
Paspalum setaceum	Thin Paspalum	
Phlebodium aureum	Golden Polypody	
Physostegia leptophylla	Slenderleaf False Dragonhead	
Pinus clausa	Sand Pine	
Pinus elliottii	Slash Pine	
Pinus palustris	Longleaf Pine	
Pinus serotina	Pond Pine	
Pityopsis graminifolia	Narrowleaf Silkgrass	
Pluchea baccharis	Rosy Camphorweed	
Pluchea foetida	Stinking Camphorweed	
Pogonia ophioglossoides	Rose Pogonia; Snakemouth Orchid**	
Polygala lutea	Orange Milkwort	
Polygala nana	Candyroot	
Polygala rugelii	Yellow Milkwort**	
Polygala setacea	Coastalplain Milkwort	
Polygonella gracilis	Tall Jointweed	
Polygonella polygama brachystachya	October Flower**	
Polygonum densiflorum	Denseflower Knotweed	
Polygonum hirsutum	Hairy Smartweed	
Polygonum hydropiperoides	Mild Waterpepper; Swamp	
	Smartweed	
Polygonum punctatum	Dotted Smartweed	

Polypremum procumbens	Rustweed; Juniperleaf	
Pontederia cordata	Pickerelweed	
Pteridium aquilinum	Western Brackenfern	
Pterocaulon pycnostachyum	Blackroot	
Quercus chapmanii	Chapman's Oak	
Quercus elliottii	Running Oak	
Quercus geminata	Sand Live Oak	
Quercus incana	Bluejack Oak	
Quercus inopina	Scrub Oak**	
Quercus laevis	Turkey Oak	
Quercus laurifolia	Laurel Oak; Diamond Oak	
Quercus nigra	Water Oak	
Rhexia cubensis	West Indian Meadowbeauty	
Rhexia lutea	Yellow Meadowbeauty	
Rhexia mariana	Pale Meadowbeauty; Maryland	
	Meadowbeauty	
Rhexia nuttallii	Nuttall's Meadowbeauty	
Rhexia petiolata	Fringed Meadowbeauty	
Rhododendron viscosum	Swamp Azalea	
Rhus copallinum	Winged Sumac	
Rhynchosia michauxii	Michaux's Snoutbean	
Rhynchosia reniformis	Dollarleaf	
Rhynchospora fascicularis	Fascicled Beaksedge	
Rhynchospora intermedia	Pinebarren Beaksedge	
Rhynchospora megalocarpa	Sandyfield Beaksedge	
Rhynchospora odorata	Fragrant Beaksedge	
Rhynchospora plumosa	Plumed Beaksedge	
Sabal palmetto	Cabbage Palm	
Sabatia brevifolia	Shortleaf Rosegentian	
Salix caroliniana	Carolina Willow; Coastalplain Willow	
Sarracenia minor	Hooded Pitcherplant**	
Saururus cernuus	Lizard's Tail	
Schizachyrium sanguineum	Crimson Bluestem	
Schizachyrium scoparium	Little Bluestem	
Scirpus cyperinus	Woolgrass	
Scleria ciliata	Fringed Nutrush	
Scleria reticularis	Netted Nutrush	
Scleria triglomerata	Tall Nutgrass; Whip Nutrush	
Scoparia dulcis	Sweetbroom; Licoriceweed	
Scutellaria arenicola	Florida Scrub Skullcap**	
Serenoa repens	Saw Palmetto	
Sericocarpus tortifolius	Whitetop Aster; Dixie Aster	
Smilax bona-nox	Saw Greenbrier	
Smilax glauca	Cat Greenbrier; Wild Sarsaparilla	

Solidago odora	Anisescented Goldenrod; Sweet	
	Goldenrod	
Sporobolus junceus	Pineywoods Dropseed	
Stillingia sylvatica	Queensdelight	
Syngonanthus flavidulus	Yellow Hatpins	
Taxodium distichum	Bald-Cypress	
Tephrosia chrysophylla	Scurf Hoarypea	
Tephrosia florida	Florida Hoarypea	
Thelypteris interrupta	Hottentot Fern; Willdenow's Fern	
Thelypteris kunthii	Widespread Maiden Fern; Southern	
	Shield Fern	
Thelypteris palustris	Meadow Fern	
Tillandsia recurvata	Ballmoss	
Tillandsia setacea	Southern Needleleaf	
Tillandsia usneoides	Spanish Moss	
Toxicodendron radicans	Eastern Poison Ivy	
Typha latifolia	Broadleaf Cattail	
Utricularia cornuta	Horned Bladderwort	
Utricularia subulata	Zigzag Bladderwort	
Vaccinium arboreum	Sparkleberry; Farkleberry	
Vaccinium myrsinites	Shiny Blueberry	
Vernonia angustifolia	Tall Ironweed	
Vitis rotundifolia	Muscadine	
Woodwardia virginica	Virginia Chain Fern	
Xyris ambigua	Coastalplain Yelloweyed Grass	
Xyris brevifolia	Shortleaf Yelloweyed Grass	
Xyris caroliniana	Carolina Yelloweyed Grass	
Xyris fimbriata	Fringed Yelloweyed Grass	
Yucca filamentosa	Adam's Needle	

Butterfly List - Includes Listed & Exotic Species

Scientific Name Common Name					
Agraulis vanillae Gulf Fritillary					
Asbolis capucinus Monk Skipper					
Colias eurytheme	Orange Sulfur				
Danaus gilippus Queen					
Danaus plexippus Monarch					
Eurytides marcellus Zebra Swallowta					
Hermeuptychia sosybius Carolina Satyr					
Limenitis archippus Viceroy					
Papilio cresphontes Giant Swallowtai					
Papilio glaucus Eastern Tiger					

	Swallowtail			
Papilio palamedes Palamedes				
	Swallowtail			
Papilio polyxenes	Black Swallowtail			
Papilio troilus	Spicebush Swallowtail			
Phoebis sennae	Cloudless Sulphur			

Damselflies - Includes Listed & Exotic Species

Scientific Name	Common Name				
Argia fumipennis Variable Dancer					
Enallagma doubledayi	Atlantic Bluet				
Lestes vidua	Carolina Spreadwing				

Dragonflies - Includes Listed & Exotic Species

Scientific Name Common Name					
Anax junius Common Green					
Anax longipes Comet Darner					
Celithemis eponina	Halloween Pennant				
Coryphaeschna ingens Regal Darner					
Epiaeschna heros Swamp Darner					
Erythemis simplicicollis Eastern Pondhawk					
Erythrodiplax minuscula Little Blue Dragonle					
Libellula auripennis Golden-winged Skir					
Pachydiplax longipennis Blue Dasher					
Tramea carolina Carolina saddlebags					

Amphibians List - Includes Listed & Exotic Species

Scientific Name Common Name					
Acris gryllus Southern Cricket					
Anaxyrus terrestris Southern Toad					
Gastrophryne carolinensis Eastern Narrowmou					
	Toad				
Hyla cinerea	Green Treefrog				
Hyla femoralis	Pinewoods Treefrog				
Hyla squirella Squirrel Treefrog					
Lithobates capito Gopher Frog**					
Lithobates sphenocephalus utricularius Southern Leopard Fr					

Reptiles - Includes Listed & Exotic Species

Scientific Name	Common Name			
Agkistrodon piscivorus	Cottonmouth			
Anolis carolinensis	Green Anole			
Aspidoscelis sexlineata	Six-Lined			
	Racerunner			
Coluber constrictor priapus	Southern Black			
	Racer			
Gopherus polyphemus	Gopher Tortoise**			
Pseudemys concinna floridana	Florida Cooter			
Sceloporus undulatus	Eastern Fence			
	Lizard			

Bird List - Includes Listed Species

Dataset Name:Rapid Assessment (09/03/2009 - 09/03/2009)	Taxon Category:Bird				
Scientific Name	Common Name				
Aimophila aestivalis	Bachman's Sparrow**				
Anas fulvigula	Mottled Duck				
Anhinga anhinga	Anhinga				
Ardea alba Great Egret**					
Ardea herodias Great Blue Hero					
Baeolophus bicolor	Tufted Titmouse				
Buteo lineatus	Red-shouldered				
	Hawk				
Cardinalis cardinalis	Northern Cardinal				
Cathartes aura	Turkey Vulture				
Ceryle alcyon	Belted Kingfisher				
Chaetura pelagica	Chimney Swift				
Chordeiles minor	Common Nighthawk				
Colinus virginianus	Northern Bobwhite				
Coragyps atratus	Black Vulture				
Cyanocitta cristata	Blue Jay				
Dendroica discolor	Prairie Warbler				
Dendroica petechia	Yellow Warbler				
Dendroica pinus	Pine Warbler				
Dryocopus pileatus	Pileated Woodpecker				
Egretta caerulea Little Blue Hero					
Egretta tricolor Tricolored Her					
Eudocimus albus White Ibis**					
Geothlypis trichas	Common				
	Yellowthroat				

Grus canadensis Sandhill Crane						
Haliaeetus leucocephalus     Bald Eagle**						
Hirundo rustica	Barn Swallow					
Melanerpes carolinus	Red-bellied					
	Woodpecker					
Mniotilta varia	Black-and-white					
	Warbler					
Pandion haliaetus	Osprey**					
Parula americana Northern Parula						
Picoides pubescens Downy Woodpe						
Pipilo erythrophthalmus Eastern Towhe						
Polioptila caerulea	Blue-gray					
	Gnatcatcher					
Sialia sialis	Eastern Bluebird					
Strix varia	Barred Owl					
Thryothorus Iudovicianus Carolina Wren						
Turdus migratorius American Robin						
Tyrannus tyrannus	Eastern Kingbird					
Vireo griseus White-eyed Vire						
Vireo olivaceus Red-eyed Vireo						
Zenaida macroura	Mourning Dove					

Mammals - Includes Listed & Exotic Species

Scientific Name	Common Name				
Odocoileus virginianus White-Tailed I					
Procyon lotor	Raccoon				
Sus scrofa	Feral Hog*				

#### FNAI GLOBAL RANK DEFINITIONS

 $\overline{G1}$  = 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.

GH = Of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker).

 $\mathbf{G}\mathbf{X} = \mathbf{B}\mathbf{e}\mathbf{I}\mathbf{i}\mathbf{e}\mathbf{v}\mathbf{e}\mathbf{d}$  to be extinct throughout range.

**GXC** = Extirpated from the wild but still known from captivity or cultivation.

- **G#?** = Tentative rank (e.g., G2?).
- G#G# = Range of rank; insufficient data to assign specific global rank (e.g., G2G3).

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

G#Q = Rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q).

G#T#Q = Same as above, but validity as subspecies or variety is questioned.

GU = Unrankable; due to a lack of information no rank or range can be assigned (e.g., GUT2).

**GNA** = Ranking is not applicable because the element is not a suitable target for conservation (e.g. a hybrid species).

**GNR** = Element not yet ranked (temporary).

**GNRTNR** = Neither the element nor the taxonomic subgroup has yet been ranked.

#### FNAI STATE RANK DEFINITIONS

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.

SH = Of historical occurrence in Florida, possibly extirpated, but may be rediscovered (e.g., ivory-billed woodpecker).

SX = Believed to be extirpated throughout Florida.

**SU** = Unrankable; due to a lack of information no rank or range can be assigned.

**SNA** = State ranking is not applicable because the element is not a suitable target for conservation (e.g. a hybrid species). **SNR** = Element not yet ranked (temporary).

#### FEDERAL LEGAL STATUS

Provided by FNAI for information only.

For official definitions and lists of protected species, consult the relevant federal agency.

Definitions derived from U.S. Endangered Species Act of 1973, Sec. 3. Note that the federal status given by FNAI refers only to Florida populations and that federal status may differ elsewhere.

LE Endangered: species in danger of extinction throughout all or a significant portion of its range.

LT Threatened: species likely to become Endangered within the foreseeable future throughout all or a significant portion of its range.

LT,PDL Species currently listed threatened but has been proposed for delisting.

LT,PE Species currently listed Threatened but has been proposed for listing as Endangered.

**SAT** Treated as threatened due to similarity of appearance to a species which is federally listed such that enforcement personnel have difficulty in attempting to differentiate between the listed and unlisted species.

**PE** Proposed for listing as Endangered species.

**PT** Proposed for listing as Threatened species.

C Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to

support proposing to list the species as Endangered or Threatened.

XN Non-essential experimental population.

**SC** Not currently listed, but considered a "species of concern" to USFWS.

N Not currently listed, nor currently being considered for listing as Endangered or Threatened.

#### STATE LEGAL STATUS

Provided by FNAI for information only.

For official definitions and lists of protected species, consult the relevant state agency.

Animals: Definitions derived from "Florida's Endangered Species and Species of Special Concern, Official Lists" published by Florida Fish and Wildlife Conservation Commission, 1 August 1997, and subsequent updates.

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.

# APPENDIX C. ECONLOCKHATCHEE SANDHILLS CONSERVATION AREA COMPREHENSIVE FIRE MANAGEMENT PLAN

## ECONLOCKHATCHEE SANDHILLS CONSERVATION AREA FIRE MANAGEMENT PLAN



## PREPARED BY

## ST. JOHNS RIVER WATER MANAGEMENT DISTRICT DIVISION OF LAND MANAGEMENT

November 2009

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# Econlockhatchee Sandhills Conservation Area Fire Management Plan Orange 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 Econlockhatchee Sandhills Marsh Conservation Area (ESCA).

# **INTRODUCTION**

ESCA comprises 706 acres of land located immediately south of the Seminole County/Orange County line, 13 miles east of downtown Orlando, north of Lake Pickett Road (Figure 1). The Conservation Area is located in Section, Township, Ranges 1, -22, 31; 6, -22, 32; 12, -22, 31; 7, -22, 32.

The property is located in the District's Middle St. Johns River Basin, Econlockhatchee Planning Unit. The property protects around 2.5 miles of floodplain forest on the border of the Econlockhatchee River. The property consists of sandhills, mesic flatwoods, and scrubby flatwoods on the eastern half of the property and additional mesic flatwoods with floodplain forest on the western half along the Econlockatchee River.

ESCA was acquired by the District for conservation purposes to enhance the protection of the Econlockhatchee River and to add to the cooridor connecting Hal Scott Regional Preserve and Park south of ESCA to the Little Big Econ State Forest to the north. The Conservation Area consists of one large parcel (Figure 2) purchased on December 10, 2009.

The primary use of the property prior to public ownership was timber harvest and cattle grazing. The property has not undergone much improved pasture conversion.

A newly purchased property, fire history at ESCA is unknown. However, natural communities are relatively intact indicating management has most likely occurred recently. Management of the property will entail water resource protection, resource management, and installing and managing for passive public recreation. Sandhill habitat on the east side of the property has begun early succession to xeric hammock in the form of encroaching hardwood trees. The District aims to utilize prescribed burning to improve sandhill, mesic flatwoods, scrubby flatwoods, and depression marsh natural communities, in turn improving habitat for wildlife. Prescribed fire will play an integral role in the improvement and maintenance of the fire dependent natural communities at ESCA.

The following sections summarize the considerations necessary for the safe and effective use of prescribed fire as a land management tool within the Conservation Area.



Author.tmashour, Source:X:LandMgmtiGISUsersiPlannersiWestLake NorrisiLake NorrisiLake 2009 Figure 1. Location Map.mxd, Time:6/24/2009 12:49:46 P.M.



Author.tmashour, Source:X:LandMgmt1GISUsers/Planners/West/Lake Norr/s/Lake Norr/s

# **OBJECTIVES**

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 also 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 ESCA include:

- 1. Conduct dormant season burns to reduce hazardous fuel to decrease potential risk of catastrophic wildfires.
- 2. Re-introduce growing season burns to encourage the perpetuation of native fire adapted ground cover species.
- 3. Improve and maintain natural communities and ecological diversity.
- 4. Maintenance of ecotonal areas.
- 5. Mitigation of smoke management issues.

# FIRE MANAGEMENT UNITS

The achievement of the above listed goals required that the Conservation Area be partitioned into manageable fire management units prior to the application of prescribed fire within those units. Fire management units were established in August 2009. Where possible, unit boundaries were established using existing roads and floodplain forest natural community barrier along the Econlockhatchee River to minimize impacts to the natural resources. Occasionally, several fire management units with similar fire needs will be burned simultaneously and stand lines provide a break in fuels so that staff may burn smaller areas than initially planned if needed. Table 1 lists the fire management units and brief descriptions of each unit including acreage, burn history, fire return interval, fuel model information, condition classing, and vegetation present. The units have been incorporated into a GIS database to describe the condition of the unit, the fuel model, the fire return interval, and the year burned. This database will aid in the burn return interval management of each unit.



Author.tmashour, Source:X:LandMgmt/GISUsers/Planners/West/Lake Norris/Lake Norris/L

				Expected			
			Fire	Return	Fuel	Condition	
Unit	Acreage	Wind	History	Interval	Model	Class	Vegetation
ES 1	134	W, SW	Unknown/Recent	2-5 years- Sandhill, 1-8 years, mesic flatwoods,	1, 2, 7	4-Too far gone to recover without starting over.	Consists of Sandhill, hardwood encroachment, mesic flatwoods, and depression marshes including turkey oak, live oak, longleaf pine, sand pine, saw palmetto, wire grass, sand cord grass, maidencane, gallberry, and rusty lyonia.
ES 2	80	W, SW	Unknown/Recent	2-5 years- Sandhill, 1-8 years - mesic flatwoods and scrubby flatwoods	1, 2, 7, and 4	4-Too far gone to recover without starting over.	Consists of Sandhill, scrubby flatwoods, and mesic flatwoods including scrub oak, sand live oak, turkey oak, live oak, longleaf pine, sand pine, saw palmetto, wire grass, gallberry, and rusty lyonia.
ES 3	58	s, sw	Unknown/Recent	2-5 years- Sandhill, 1-8 years - mesic flatwoods, and scrubby flatwoods.	4, 2	3-More than two intervals since disturbance.	Consists ofsandhill, scrubby flatwoods, and pasture including species such as bahia, cabbage palm, saw palmetto, sand pine, sand live oak, scrub oak, wiregrass, longleaf pine, and live oak. Many gopher tortoise burrows are found here.
ES 4	37	W, SW, NW	Unknown/Recent	1-8 years mesic flatwoods	7	3-More than two intervals since disturbance.	Consists of mesic flatwoods and floodplain forest- longleaf pine, pond pine, cabbage palm, saw palmetto, loblolly

Table 1. Fire Management Unit within ESCA.

							bay, pond pine, dog fennel, sumac, and persimmon.
ES 5	28	W	Unknown	2-5 years- Sandhill, 1-8 years - mesic flatwoods and scrubby flatwoods	7	3-More than two intervals since disturbance.	Consists of mesic flatwoods -slash pine, longleaf pine, pond pine, cabbage palm, saw palmetto, and other ground cover species.
ES 6	6	W, SW	Unknown	1-8 years mesic flatwoods	7	3-More than two intervals since disturbance.	Consists of mesic flatwoods and pasture including bahia, longleaf pine, saw palmetto.

# FIRE RETURN INTERVAL

The general frequency to which fire returns to a community type is termed its' fire return interval. Some communities require frequent pyric disturbances to perpetuate themselves while others are not fire adapted and subsequently do not require fire to maintain their characteristics. 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
Sandhill	2-5 years
Mesic Flatwoods	1-8 years
Scrubby Flatwoods	5-15 years
Depression Marsh	1-8 years in conjunction with associated
	flatwoods and depending on composition
	of edge species
Floodplain Swamp	These areas along the Econlockhatchee
	River will be utilized as a fireline. The
	area will be burned along with the adjacent
	fire management units at the associated fire
	return interval of that unit.

 Table 2. ESCA Natural Communities Fire Return Intervals

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 found throughout the property. Grasses and herbs will carry fire in these areas as ground cover is mostly in tact in fire management units 1 and 2 and wiregrass is highly contiguous in areas of fire management unit 3. Sand pine is regenerating in the sandhill areas, which will cause greater fire intensity. Fire management units 1 and 2 were recently logged and have logging slash present.

Mesic flatwoods are found in patches in fire management units 1 and 2 and is the majority of the natural community type in fire management unit 4. Palmetto, grasses, and herbs will carry fire in these areas as the ground cover and shrub layers are diverse and abundant and fuels for carrying fire are in tact.

Scrubby flatwoods is found in the southeast corner of fire management unit 3 and in the south eastern portion of fire management unit 2, just north of the southern tributary on the eastern boundary of the unit. Scrub oak is the dominant vegetation along with leaf litter.

Depression marsh is a fire-adapted community. Though fire may not carry entirely through each depression marsh during every burn, it is an important factor in the maintenance of the edge habitats surrounding them. The natural fire regime would burn approximately every 1-8 years. Depression marshes are embedded within in the upland areas at the Conservation Area and within wet prairie and pasture areas and are located in a mosaic pattern throughout the western side of the property. In general, depression marsh fires are carried through the herbaceous layer. They occupy an important niche in providing habitat for numerous species of wildlife. Fire will be applied to these marshes any time surrounding natural communities are burned.

The floodplain swamp natural community has not been assigned a fire management unit. The unit will have fire applied in conjunction with its use as a fire break between fire management units 5 and 1-4 due to its wet nature associated with the Econlockhatchee River.

# FIRE BEHAVIOR FUEL MODELS

Fire management units within the Conservation Area are categorized into four of several fuel model descriptions. The thirteen standard fuel models (as described in *Fire Behavior Field Reference Guide*, A Publication of the National Wildfire Coordinating Group) were used as a basis for this categorization. The factors considered in determining each fuel model 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. Each fuel model within a fire management unit will be utilized in the planning process to assist in the prediction of fire behavior and rates of spread. District staff anticipate 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 ESCA and associated natural communities. A detailed description of each individual fire management unit and its associated objectives will be included in the individual prescriptions. Table 2 lists multiple models within one fire management unit for several of the units that were described. Fire management units are typically delineated by community type along with the logical place for a firebreak. Therefore, one fire management unit may include multiple natural community types and associated fuel models. In this instance, the designated fuel model is the one representative of dominant coverage. Figure 4 illustrates the fuel model associated with the individual fire management units.

### Fuel Model 1

Found in ESCA fire management units 1 and 2. This category includes fire management units within the Conservation Area that include areas of wiregrass monoculture and depression marsh maidencane and other grasses. Fire spread is governed by the fine herbaceous fuels that have cured or nearly cured. Fires move rapidly through cured grass and associated material. Very little shrub or timber is present, generally less than onethird of the area.

## Fuel Model 2

Found within ESCA fire management units 1, 2, and 3. This category includes fire management units within the Conservation Area that include areas of sandhill with turkey oak, longleaf pine, live oak encroachment, sand pine, runner oak, logging slash, and ground cover components of wiregrass and other herbaceous species. Fire spread is primarily through the fine herbaceous fuels, either curing or dead. These are surface fires where the herbaceous material, besides litter and dead-down stemwood from the open shrub or timber overstory, contribute to the fire intensity.

### Fuel Model 4

Found within ESCA fire management units 2 and 3. This category includes fire management units within the Conservation Area that includes areas of scrubby flatwoods with scrub oak, sand live oak and leaf litter. Fire intensity and fast-spreading fires involve the foliage and live and dead fine woody material in the crowns of a nearly continuous secondary overstory. Besides flammable foliage, there is dead woody material in the stand that significantly contributes to the fire intensity. There may be also a deep litter layer that confounds suppression efforts.

## Fuel Model 7

Found within ESCA fire management units 1, 2, 4, 5, and 6. This category includes fire management units within the Conservation Area that includes areas of mesic flatwoods with long leaf and slash pine and understory components of saw palmetto, wiregrass, galberry, fetterbush, and other ground cover components. Fires burn through the surface and shrub strata with equal ease and can occur at higher dead fuel moisture contents because of the flammable nature of live foliage and other live material. Stands of shrubs are generally between 2 and 6 feet high.


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# SEASONALITY AND TYPE OF FIRE

Historically, most fires in Florida occurred in what is commonly referred to as the "growing season." The growing season usually spans from mid March through July. Fires during the spring and early summer months generally have significant ecological benefits 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 end of February, are less intense than growing season burns and are a desirable alternative when igniting fire in young pine plantations. Additionally, dormant season burns help to reduce fuel loads resulting in fewer safety and smoke management issues. Fuel loads are not exceptionally high in most areas of the Conservation Area, therefore the prescribed fire application efforts can be directed towards a growing season rotation. District staff anticipate growing season burns to occur if weather conditions permit the safe application of fire and the ability to conduct smoke management.

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 unfeasible, highly time consuming, or impossible and may pose a safety issue. An aerial burn safety plan (Exhibit 1) will accompany the individual burn prescriptions and be onsite and on the ground the day of any aerial burn. ESCA is a smaller property compared with other District parcels where aerial burning is utilized and most fire management units are easily accessible, however the property may be burned in conjunction with other nearby aerial burns in which a helicopter may be sent to the conservation area after another burn has finished to complete additional burning under one helicopter work order.

# 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 for suppression measures, 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, fuel models, 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. While the ESCA has an acceptable smoke shed on the eastern and northern boundaries in which to place a smoke column from a prescribed fire, State Road 420/Lake Picket Road to the south, highly dense subdivisions to the west adjacent to the property, East Lake Elementary School just to the west, and University of Central Florida just over 2 miles west provide for high smoke management concern. Figure 5 illustrates smoke sensitive areas in relation ESCA. As development increases in the area, fire management will become more difficult.

The majority of fire dependent areas at the ESCA fall within fuel models 1, 2, 4, and 7, or a combination thereof. Depending on the arrangement and composition of fuels, fire spread will be through grasses, shrubs, and/or needle litter. Areas within the Conservation area having heavier shrub and midstory fuel accumulation or needle and leaf litter in muck soils can burn for long periods of time causing additional smoke management issues.

A smoke screening process will be completed with each prescription, before an authorization is obtained from the Florida Division of Forestry (FLDOF). 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 to the north, east, or northeast. Smoke can then mix and loft into the atmosphere over uninhabited or rural land adequately enough to minimize off-site impacts.

On burn day, the ability of smoke to mix and disperse into the atmosphere should be good. Dispersion indices should be above 35. Dispersions of greater than 69 will only be selected if other weather and/or site conditions allow for the mitigation of potential extreme fire behavior. Forecast mixing heights should be above 1700ft. Transport winds should be at least 9 mph to effectively minimize residual smoke. Lower transport wind speeds can be utilized if dispersion index and mixing heights are above average. Burns will be conducted with a carefully plotted wind direction to limit and/or eliminate negative impacts from smoke to neighbors and urbanized areas.



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#### Mechanical Treatments

Short and long term weather conditions and wildland-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.

#### 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 State Statute 590.026 are protected from liability for damage or injury caused by fire or resulting smoke, unless negligence is proven.

# ANNUAL BURN PLANS

The South Central Regional Land Manager will work with the District Fire Management Plan and the ESCA Fire Management Plan in implementing prescribed burns on the property. Annual burn plans will be written yearly to guide yearly goals for acres burned. To guide annual plans, the property has been evaluated for condition classing and treatment status (Figure 6). Except for a wildfire in Fire Management Unit 4 in March 2009, fire history on the property is unknown for all Fire Management Units. Therefore the entire property is designated as Third Treatment Priority-Fire History Unknown (Figure 6). As of September 2009, Fire Management Units 1 and 2 are classified as Condition Class 4, or too far gone to recover without starting over, Fire Managements 3-6 are classified as 3 or More than two intervals since disturbance. These condition classes are garnered from evaluating the condition of the property since fire history is unknown. In evaluating annual burn plans, the data in Figure 6 can be utilized as guidance to prioritize burning. For example, Fire Management Units 1 and 2 may need to be prioritized first as they are in a poorer condition class.

# REFERENCES

*Fire Behavior Field Reference Guide*, A Publication of the National Wildfire Coordinating Group.



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### Exhibit 1 Aerial Burn Safety Plan Econlockhatchee Sandhills Marsh Conservation Area

MEDICAL PLAN	1. Incident Name		2. Date Prepare d	3. Ti	me Prepa	ared	4. Operational Period					
5. Incident Medical Aid Station												
Medical Aid Stations	Location				Paramedics Yes No							
Orange County Fire ar 86	Wedgefield, 3202 Babbitt Ave.				x							
			6. Transpo	ortation								
			A. Ambulance	Service	s		1					
Name	Address				hone	Paramedics Yes No		0				
Orange County Fire an Rescue, Station 82	500 Story Partin Rd., Orlando 407-568-216 (Bithlo)				07-568-2165	x						
OCFR, Station 84	1221 N. Fort Christmas Rd. 407-5				07-568-0720	x						
OCFR, Station 85		13801 Townsend Dr., Orlando 407-207-757 (Avalon Park)				07-207-7577	x					
		•	B. Incident An	nbulance	S		-					
Name		Location					Paramedics Yes No					
			7									
	1		7. Hosp	Itals								
Name	Address		Travel Time Air Ground		Phone	Helipad Yes No	D	Burn Cente Yes	Center Yes No			
Parrish Medical Center	951 North Washington Ave.		3'	15'	321- 268- 6111	x			x			
Holmes Regional Trauma Center- Life Flight	Melbourne		20'	60'	321- 434- 7296	X			x			

Orlando Regional Medical Center, Burn Unit	Orlando	30'	60'	407- 237- 6398	x		х		
Orlando Regional Medical Center, Air services	Orlando	30'	60'	407- 843- 5783	x		x		
8. Medical Emergency Procedures									
<ul> <li>CRASH RESCUE PLAN In the even of an accident involving the helicopter the following procedures will be followed. </li> <li><u>INCIDENT COMMANDER or BURN BOSS</u> <ol> <li>Notify Orange County Fire and Rescue (407-737-2444), Orange County Sheriff (407-737-2400), or 911.</li> <li>Assume responsibility of the Rescue Operation.</li> <li>Notify NTSB (305-957-4610 OR 404-462-1666)</li> <li>Delegate fire control to the second in command or the most qualified.</li> </ol> </li> </ul>									
SECOND IN COMMAND									
<ol> <li>Assume responsibility of the burn.</li> <li>Assist the IC or Burn Boss with resource and personnel needs for the rescue operation.</li> <li>If the IC is in the helicopter, second in command will assume rescue operation responsibilities and assign the most qualified to fire control.</li> </ol> Prepared by (Medical Unit Leader) 10. Reviewed by (Safety Officer)									
		. er rænewou		., enior					