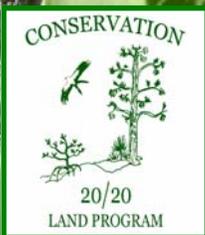


# Wild Turkey Strand Preserve



*Land Stewardship Plan  
2010 Second Edition*



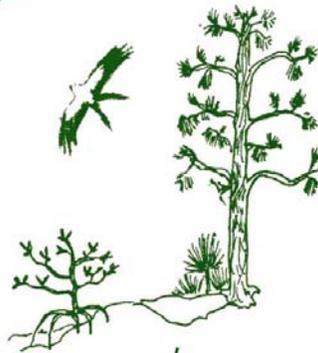
# Wild Turkey Strand Preserve

## Land Stewardship Plan

11901 & 13301 Rod & Gun Club Rd.  
14201 Alico Rd.  
Fort Myers, FL 33913

*Second Edition*

CONSERVATION



20/20

LAND PROGRAM



Prepared by the Land Stewardship Section  
Lee County Department of Parks and Recreation

Approved by the Lee County Board of County Commissioners: August 10, 2010

## **Acknowledgements**

We would like to thank the following for their assistance in the development of this document: Roger Clark, Cathy Olson, and other Lee County staff for carefully reviewing the Wild Turkey Stand Preserve (WTSP) Land Stewardship Plan and providing constructive criticism; Jeff Key for field work and naming many of the wetlands; Peter Repenning for surveying and providing a list of fish species found on the Preserve; Butch Mallett and Mike Weston with Florida Division of Forestry for assistance with melaleuca removal and thinning work; Don DeBerry and Betsie Hiatt from Lee County Public Works; Department of Transportation, for coordination and implementation of various completed on-site projects and potential management of future public mitigation projects; and East County Regional Library for making the plan available for public review and the Veterans Park Recreation Center for providing a meeting space for public comments.

Sherry Furnari  
Lee Waller

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## List of Acronyms

BAAF	Buckingham Army Air Field
BCB	Big Cypress Basin
BOCC	Lee County Board of County Commissioners
C20/20	Conservation 20/20
CLASAC	Conservation Lands Acquisition and Stewardship Advisory Committee
CREW	Corkscrew Regional Ecosystem Watershed
DRGR	Density Reduction Groundwater Resource
ERW	Estero River Watershed
ETMT	Elizabeth & Thomas Morrison Tract
FCT	Florida Communities Trust
FDACS	Florida Department of Agriculture and Consumer Services
FDEP	Florida Department of Environmental Protection
FDOF	Florida Division of Forestry
FDNR	Florida Department of Natural Resources
FGCU	Florida Gulf Coast University
FLEPPC	Florida Exotic Pest Plant Council
FLUCFCS	Florida Land Use Cover and Forms Classification System
FLU	Future Land Use
FMU	Fire Management Unit
FNAI	Florida Natural Areas Inventory
FPL	Florida Power & Light
FRDAP	Florida Recreation Development Assistance Program
FWC	Florida Fish and Wildlife Conservation Commission
IPD	Industrial Planned Development
IRC	Institute for Regional Conservation
LCDCD	Lee County Department of Community Development
LCDCL	Lee County Division of County Lands
LCDNR	Lee County Division of Natural Resources
LCDOT	Lee County Department of Transportation
LCDP	Lee County Division of Planning
LCDPS	Lee County Division of Public Safety
LCPA	Lee County Port Authority
LCPR	Lee County Department of Parks and Recreation
LCU	Lee County Utilities
LSOM	Land Stewardship Operations Manual
MSTBU	Multiple Services Taxing/Benefit Units
MU	Management Unit
NWI	National Wetlands Inventory
ORV	Off-road Vehicle
PARI	Piper Archaeological Research, Inc.
SAC	Suncoast Archaeological Consultants, Inc.

SFWMD	South Florida Water Management District
SR	State Road
STRAP	Section-Township-Range-Area-Block.Lot (Parcel)
SWFIA	Southwest Florida International Airport
USACOE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
WRS	Water Resource Solutions, Inc.
WTSP	Wild Turkey Strand Preserve

## Vision Statement

It is the vision  
of the Lee County Parks  
and Recreation Department and  
the Conservation 20/20 Program to conserve,  
protect, and restore Wild Turkey Strand Preserve to  
a productive, functional, and viable ecosystem. The Preserve  
has the potential to become a tremendous haven for wildlife  
as restoration takes place and will serve as a critical  
component of a wildlife corridor stretching  
from east central Lee County  
into Collier County's  
Corkscrew  
Regional  
Ecosystem  
Watershed.  
The Preserve

will also enhance water quality reaching Estero Bay  
via the interconnected Estero River Watershed  
and provide valuable scenic and ecological  
educational opportunities for visitors.

## **I. EXECUTIVE SUMMARY**

In 2005, Land Stewardship staff completed the first edition of the Wild Turkey Strand Preserve Land Stewardship Plan, which at the time, only included Sites 90 and 200. In 2008, an additional 508 acres were added; necessitating a second edition.

Wild Turkey Strand Preserve (WTSP) is located in east central Lee County, within Sections 10, 11, 14, 15, 22, 23, 26, 27, 28, and 33, Township 45, Range 26 and Sections 4 and 9, Township 46, Range 26. The Preserve is comprised of three Conservation 20/20 acquisitions with portions divided into separate parcels that are physically disconnected, either by a local road or private property. The Preserve includes three nominations; 90, 200 and 345 which were acquired between 2001 and 2008 through the Conservation 20/20 Program for nearly \$18 million. The Conservation 20/20 Program was established in 1996 after Lee County voters approved a referendum that increased property taxes by up to 0.5 mil for the purpose of purchasing and protecting environmentally sensitive lands.

The Preserve is approximately 3,137 acres in size and is the second largest Conservation 20/20 preserve. The Preserve's northern boundary is State Road 82; its southern boundary is Alico Road, about five miles east of I-75. Portions of WTSP have historically been used for agriculture (crops and cattle), outdoor recreation (camping, shooting, hunting and off-road activities) and illegal dumping.

The Gulf of Mexico and Caribbean Sea affect the climate of Lee County and these elements influence WTSP by creating mild, sub-tropical conditions. Average annual rainfall is 66.39 inches; higher than the average rainfall for the entire county during the same period (64.4 inches). The majority of the rain falls between June and September. Natural trends and disturbances influencing plant communities and stewardship at WTSP include hurricanes, flooding, wildfires, occasional freezes and the cycling of wet and dry seasons.

The majority of WTSP lies within the Immokalee Rise physiographic region; however the southern portion, Site 90, extends into the Southwestern Slope. The Immokalee Rise generally has an elevation of around 25 feet and was created during the Pliocene Epoch between 2 million to 10,000 years ago. The principle force in the creation of the geologic formations present in southwest Florida today has been the Ice Age, which occurred between 1.8 million and 10,000 years ago and had four distinct periods of freezing and melting. During the periods of freezing, huge sheets of ice (glaciers) covered the northern and southern latitudes creating substantial drops in sea level.

Lee County is located within the Gulf Coastal Lowlands of Florida that extend around the coastal periphery of the state where elevations are generally less than 100 feet.

The elevations range from 30 feet at the north end and slope in a general southerly direction to 22 feet at the south end of the Preserve along Alico Road.

There are twenty-four different soil types found at the Preserve. The soils within the Preserve have all been identified as having severe limitations; either ponding, wetness or too sandy. Covering just over one-fifth (22.1 percent) of the Preserve, Felda Fine Sand, Depressional is the most common soil type. Oldsmar Sand is the second most common soil type covering 9.8 percent, while the remaining twenty-two soil types cover two-thirds of the lands.

WTSP is within the Big Cypress Basin of the South Florida Water Management District's Lower West Coast Region. The entire Preserve lies within Lee County's Estero River Watershed. Hydrological alterations have been made on and directly adjacent to WTSP that affect the natural sheet flow across the lands. The existing ditches, berms, swales, power line easements, internal roads, cattle wells and borrow ponds all influence the water flow on the site by either interrupting sheet flow or holding water for extended periods in some areas, while excessively draining other areas.

WTSP contains a combination of wetland and upland communities that serve as important habitat for a variety of birds, mammals, reptiles and amphibians. The Preserve consists of twenty-seven distinguishable plant communities described by the Florida Natural Areas Inventory; thirteen communities have undergone extensive human influenced disturbances. While strand swamp, mesic and wet flatwoods are the most common natural plant communities at forty-four percent; disturbed communities combined are nearly thirty percent of the Preserve.

The Preserve has a long history of wide-ranging uses with lasting environmental impacts. Intense logging of slash pine from the late nineteenth century until the 1930s virtually eliminated all old growth stands of the southern mixed forest in south Florida. Agricultural farming attempts began in the 1940s, but were probably interrupted during WWII because of the military's nearby target practice activities designed for the flexible gunnery training operated from the Buckingham Army Air Field (presently the Lee County Mosquito/Hyacinth Control District). Remnant munitions buildings, concrete objects and a gunnery earthen berm are still located at the extreme north end of the Preserve, just south of S.R. 82. An archaeological assessment survey has been performed to determine the historical and cultural resource significance.

In the mid 1950s, the Flint Brothers Cattle Company began grazing cattle throughout this property. Although cattle continue to graze the land, Conservation 20/20 no longer allows cattle to roam freely. Several leases now contractually restrict cattle to only graze within designated fenced areas; primarily pasture or abandoned agricultural fields. These leased areas total to just over 500 acres of the Preserve. During the mid-1960s, the stumps of the logged slash pines were removed from the Preserve to extract turpentine from the wood. After having cleared the stumps,

agricultural farming activities resumed, and expanded into other areas, continuing until operations ceased in 2002, when Lee County acquired the property.

Several easements and recent regional events are either located on or will influence WTSP in the future. In 1972, Florida Power & Light started construction of the power line that runs in a northwest-southeast direction bisecting the Preserve. Then again in 1981, Florida Power & Light began a second power line that bisected the Preserve. Lee County Utilities has several testing wells around the Preserve that are associated with the adjacent Green Meadows Water Treatment Plant. In order to accelerate recovery operations from Hurricane Charley (2004), many tons of mulched vegetation and ash from burned debris were spread over an abandoned row crop field at the southern end of the Preserve, north of Alico Road; the South Florida Water Management District approved this operation. Furthermore, it is quite probable that the future expansion of the Southwest Florida International Airport will affect a portion of the Preserve that is adjacent to a proposed second runway, which will require the relocation of an existing Florida Power & Light power line further south, thus impacting additional wetlands. In addition, there are proposed plans to expand Alico Road, which will affect southern areas of the Preserve. These public infrastructure projects will be required to have mitigation for the associated impacts not necessarily on the Preserve.

In addition to restoring and protecting the resources for wildlife and native plant communities, appropriate resource based public amenities will be created that provide enjoyable opportunities for the public while protecting the Preserve's biologic integrity. A portion of WTSP will be reclassified as a Category 1 Primary Use Preserve (as described in the Land Stewardship Operations Manual). Over 60% of the Preserve is classified as jurisdictional wetlands so a significant portion of the future trail system will require boardwalk sections to protect the restored natural resources, while allowing appropriate public access. Additional amenities will include a parking area, kiosk, observation decks, educational displays, picnic tables, bike racks, composting toilets, and wildlife proof trash receptacles.

The goal of this land stewardship plan is to identify Preserve resources, develop strategies to protect the resources and implement restoration activities to restore WTSP to a productive, functional and viable ecosystem while ensuring that the Preserve will be managed in accordance with Lee County Parks and Recreation's Land Stewardship Operations Manual.

Restoration and management activities at WTSP will focus on maintaining fire dependant ecosystems with prescribed fire, controlling invasive exotic plant and animal species, removing debris, and enhancing hydrologic features and wildlife habitat. A Management Action Plan outlines restoration and stewardship goals. This plan outlines these goals and strategies, explains how the goals will be accomplished, and provides a timetable for completion. This land stewardship plan will be revised in ten years (2020).

## II. INTRODUCTION

The Wild Turkey Strand Preserve (WTSP) was acquired as three parcels; Site 90 acquired on August 8, 2001, Site 200 acquired on January 15, 2003, and Site 345 acquired on July 31, 2008. All three were acquired through the Conservation 20/20 (C20/20) Program for a total cost of over \$17.9 million. Grant funding was provided by the Florida Communities Trust (FCT) to assist with the purchase of this Preserve. Although not all of the parcels are contiguous, there is a conservation easement on the land between the north and south portions that allows a continuous greenway corridor between Site 90 and 200. The Preserve totals 3,137 acres making it the second largest C20/20 property. It is located in southeastern Lee County, specifically east of I-75 and the Southwest Florida International Airport (SWFIA), south of S.R. 82, west of Green Meadows Road, and north of Alico Road.

The major native plant communities on the Preserve include wet flatwoods, cypress strand swamps, dome swamps, mesic pine flatwoods, hydric pine flatwoods, freshwater marsh, and wet prairie. Much of the Preserve consists of plant communities that are disturbed in varying degrees, the major causes for this disturbance were several decades of agricultural (crops and livestock) usage on portions of the property and two Florida Power & Light (FPL) power lines that bisect ecosystems and flow ways. The results of these disturbances, as well as others, have interrupted hydrological flow-way patterns and hydroperiods and allowed the introduction of invasive exotic plants in most areas.

Land stewardship challenges for this Preserve are varied and multifaceted. Several listed species utilize the Preserve, including state and federal endangered species, wood stork (*Mycteria americana*), snail kite (*Rostrhamus sociabilis*) and Florida panther (*Puma concolor coryi*). The quantity and diversity of wildlife species will hopefully increase dramatically as restoration occurs. Hydrologic improvements may include filling drainage canals and ditches and retrofitting FPL roadways. Invasive exotic plant removal work will significantly support three restoration goals: habitat improvement, hydrological restoration, and fire management. The wildlife and overall ecosystem will benefit from enhanced, viable and functioning plant communities through invasive exotic plant removal/control, improved wetland hydroperiods, and restoration of an essential fire return interval with prescribed fire management.

Additional management activities will involve exotic animal control, various monitoring procedures, debris removal, cattle removal, boundary security, environmental testing (monitoring wells), and provide suitable public access and educational opportunities. Public facilities will include a parking area, restroom facility, and a trail system with boardwalk, overlooks, and educational signage that will support the protection of the restored natural resources and historical features of WTSP.

The purpose of this stewardship plan is to define conservation goals for WTSP that will address the above concerns. It will serve as a guide for Lee County's Department of Parks and Recreation (LCPR) to use best management practices to ensure proper stewardship and protection of the Preserve. It also serves as a reference guide because of the extensive field studies and research of scientific literature and historic records conducted by C20/20 Staff that help to explain the Preserves ecosystem functions, its natural history and its influences from human use.

### **III. LOCATION AND SITE DESCRIPTION**

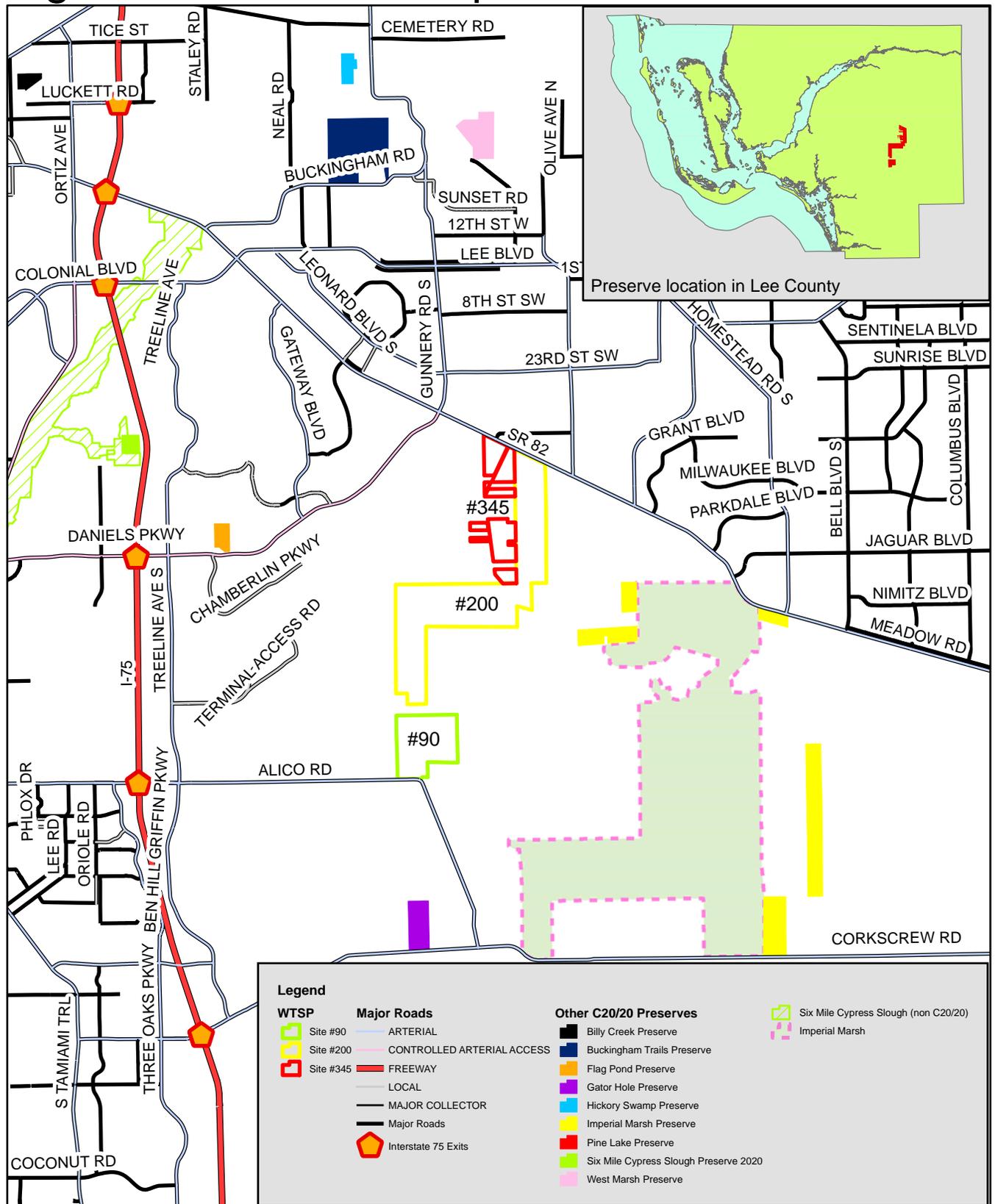
WTSP is located in east central Lee County, within Sections 10, 11, 14, 15, 22, 23, 26, 27, 28, and 33, Township 45, Range 26 and Sections 4 and 9, Township 46, Range 26. WTSP is comprised of three C20/20 nominations with portions divided into separate parcels that are physically disconnected, either by a local road or private property. Nearly all of the addresses for the eight parcels have been assigned by the Lee County Property Appraiser's office as "Access Undetermined." Lee County Division of Public Safety (LCDPS; E-911 Program) will not assign an address to a parcel unless a structure will be placed on site. One smaller southern parcel on Site 345 has an address of 13301 Rod & Gun Club Road, while Site 90 is located at 14201 Alico Road. In October 2009, LCDPS created a new address of 11901 Rod & Gun Club Road, where the future public access will be located.

WTSP is just south of Lehigh Acres, east of the SWFIA and approximately 4-7 miles east of I-75 (Figure 1). State Road 82 (SR 82) runs along the most northern boundary for over one mile, while Alico Road runs along the southern most boundary for about 2000 feet. SR 82 is one of the major transportation corridors for Lehigh Acres, which makes the northern area of the Preserve the most appropriate public access point.

The Preserve is approximately 3,137 acres in size and has historically been used for agriculture (crops and cattle grazing), as a site for outdoor recreation (shooting, hunting and off-road activities) and illegal dumping. The surrounding land is mostly agriculture, airport, other conservation lands, mining operations, and scattered residential housing. A FPL power line easement from Green Meadows Road heads west through private property and then through the Preserve. The Green Meadows Water Treatment Plant and associated ground water wells are located at the southern end of Site 200.

The Preserve consists of twenty-seven plant communities, a mosaic of both human-altered and natural plant communities; dominant areas are strand swamp, mesic flatwoods, wet flatwoods, and pasture – improved. Nearly thirty percent of the Preserve contains disturbed/impacted lands. Figure 2 identifies the boundaries of WTSP from a 2010 aerial photograph.

# Figure 1: Location Map





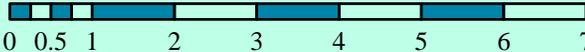
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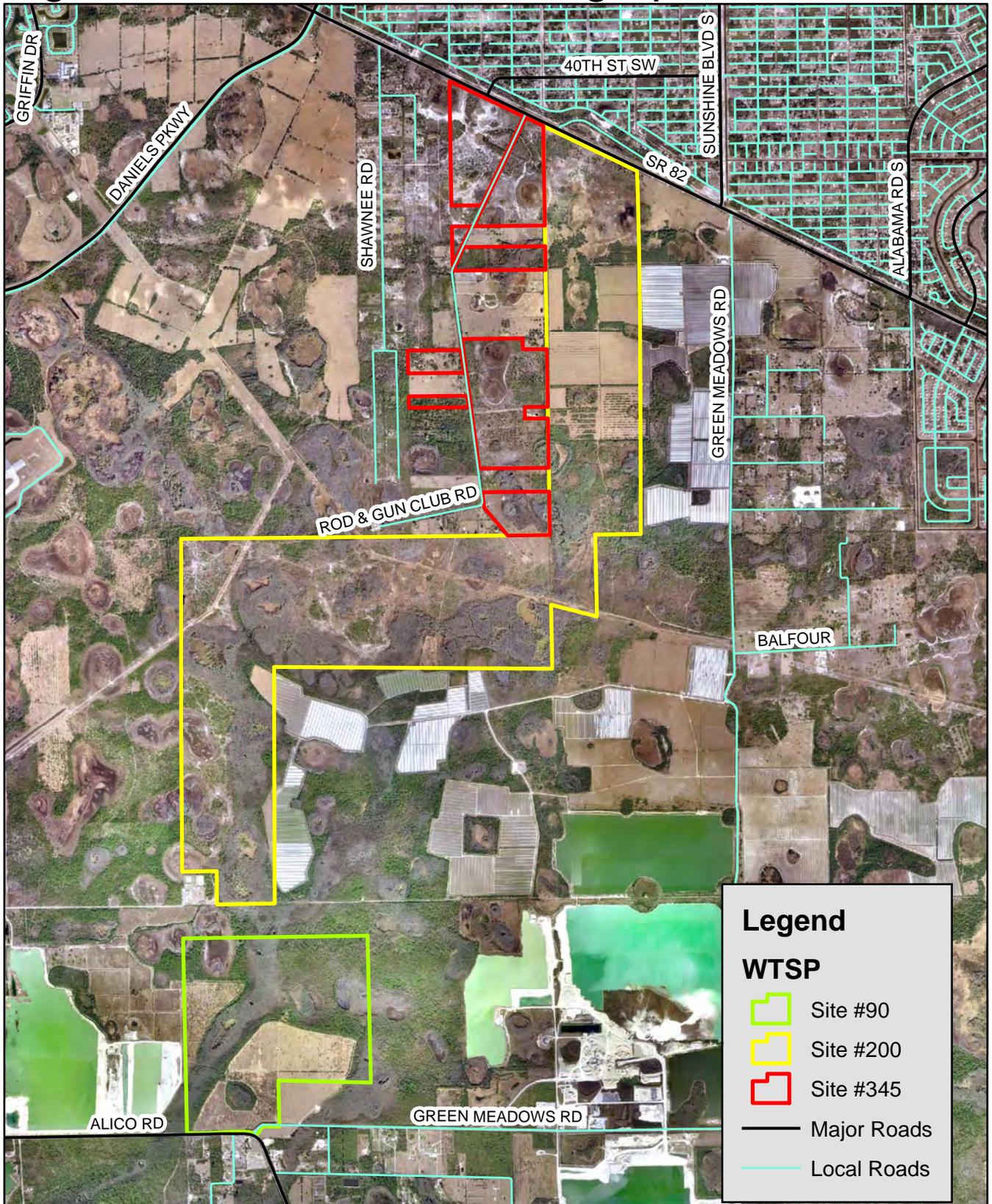
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# Figure 2: 2010 Aerial Photograph



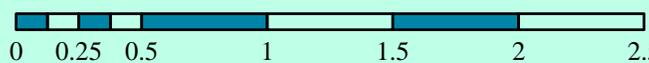


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## IV. NATURAL RESOURCES DESCRIPTION

### A. Physical Resources

#### *i. Climate*

Southwest Florida has a humid, sub-tropical climate due to its maritime influence from the Caribbean Sea and the Gulf of Mexico. The Bermuda high-pressure cell prevents convective clouds from building into thunderstorms in the fall and winter and as the Bermuda High weakens in late spring, thunderstorms occur regularly. Superimposed on the pattern of daily showers and thunderstorms is precipitation resulting from large-scale circulation systems such as tropical storms and hurricanes (Appendix A).

In late fall, winter, and early spring, weather systems (fronts) from northern United States sweep over the area. These fronts can bring significant swings in temperature and humidity, causing the weather to oscillate between maritime tropical and continental winter weather.

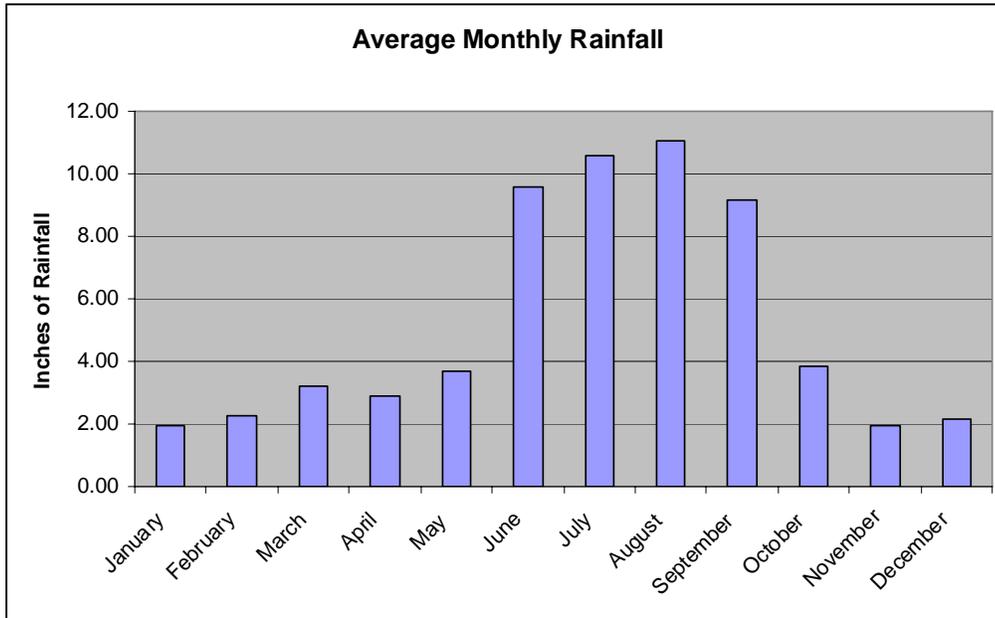
Temperate climate influences are exerted as well, with infrequent but significant freezes occurring in December and January (FCC 2005). These freezes occasionally damage the vegetation and prevent some of the more cold sensitive tropical plants from becoming established. Cold fronts regularly push cool, sometimes moist weather from the southeastern U.S. to southwest Florida during the winter. These cold fronts also encourage migratory birds to utilize the Preserve as either a stop-off point on a longer voyage, or as a winter roosting and feeding area. Table 1 shows the average high and low temperatures for Fort Myers, Florida compiled by the Southeast Regional Climate Center from 1931 to 2008.

**Table 1: Average High/Low Temperatures for Ft. Myers, FL (1931-2008)**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
High temperature (°F)	74.4	75.8	79.7	84.0	88.1	89.9	90.5	90.8	89.2	85.0	79.5	75.4
Low temperature (°F)	53.8	54.7	58.5	62.3	67.3	72.1	73.7	74.1	73.4	68.2	60.4	55.3

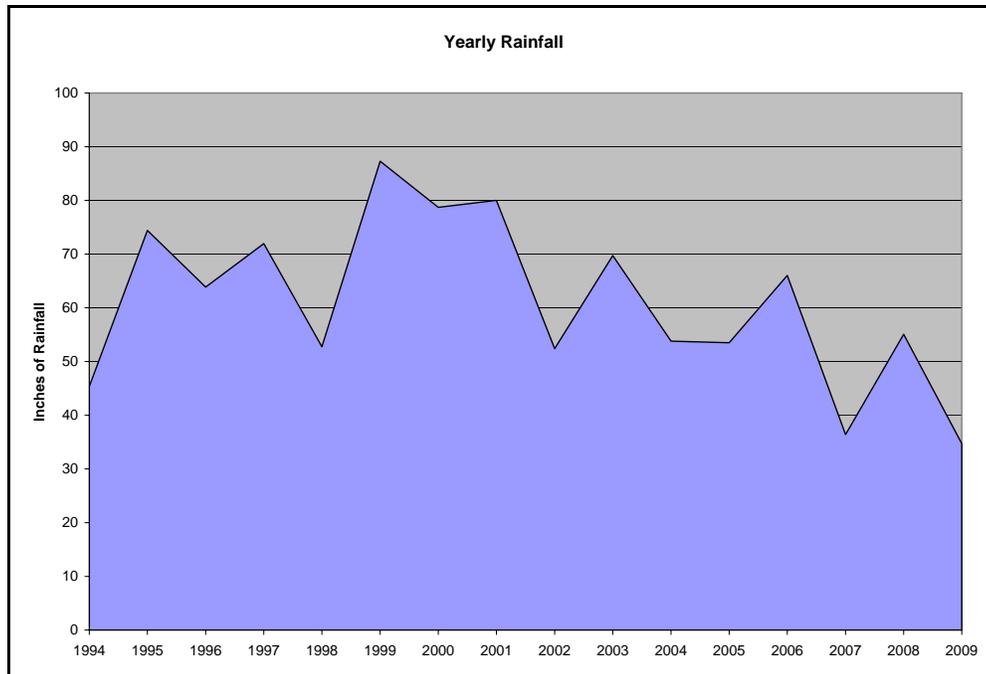
The graph below depicts the rainfall data collected by Lee County Division of Natural Resources (LCDNR) on a daily basis from the Lehigh Utilities rain gauge, located near the Lee Road and Coolidge Avenue intersection in Lehigh Acres, which is less than four miles northeast of the Preserve boundary.

### Lehigh Utilities Average Rain Data 1994-2009



Average annual rainfall between 2004 and 2009 was 49.64 inches compared to the more typical average of 66.39 inches of rainfall between 1994 and 2004. Overall, between 1994 and 2009 the average annual rainfall was 60.99 inches. The graph below illustrates the yearly rainfall that the Lehigh Utilities rain gauge has reported.

### Lehigh Utilities Yearly Rain Data 1994-2009



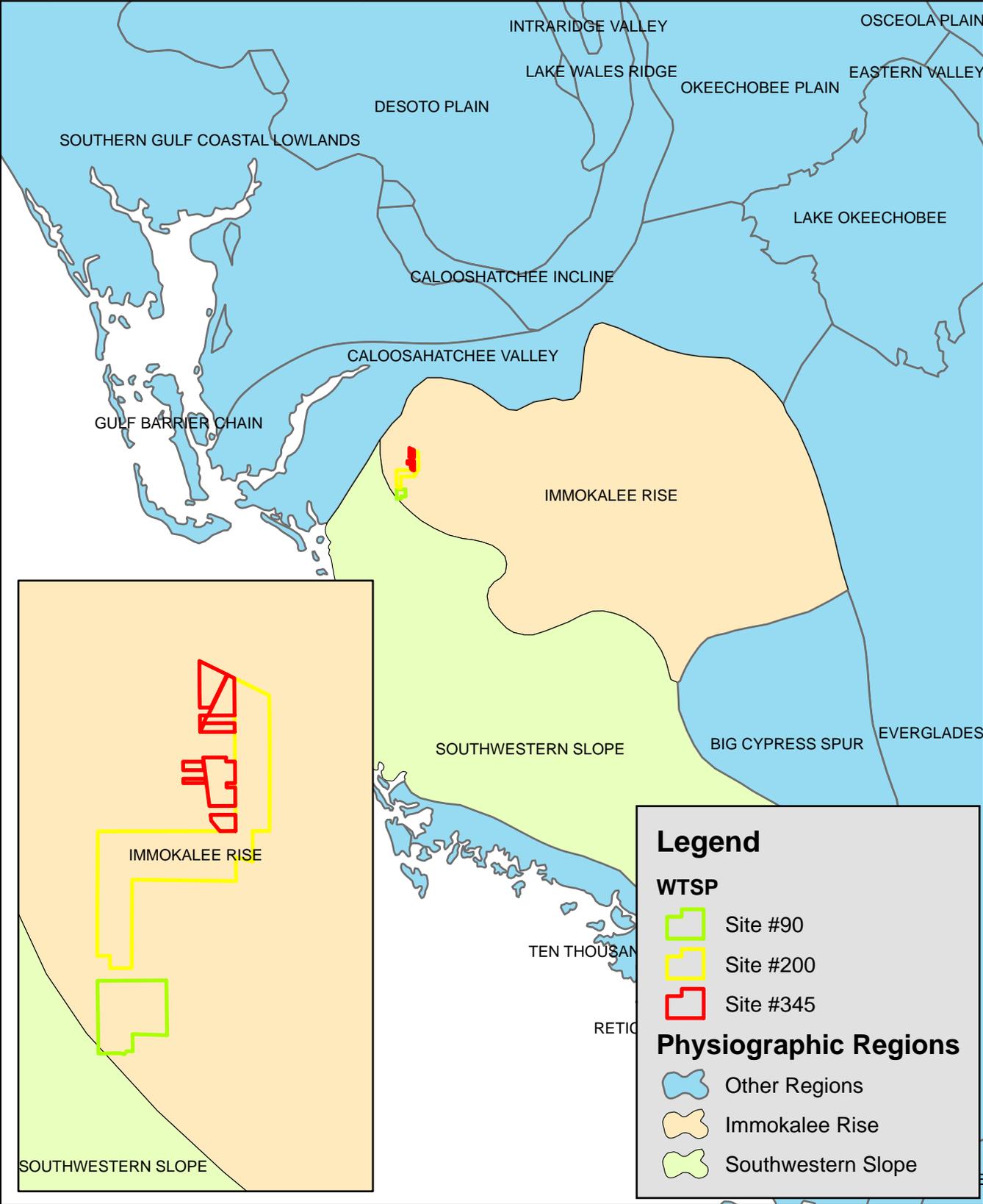
## *ii. Geology*

Southwest Florida can be divided into ten major physiographic provinces, as described in the Southwest Florida Ecological Characterization Atlas (1984). The majority of WTSP lies within the Immokalee Rise (Figure 3); however, the southern portion, Site 90, extends into the Southwestern Slope physiographic region (White 1970). The Immokalee Rise borders the Southwestern Slope to the southwest, the Big Cypress Spur to the south, the Caloosahatchee Valley to the north and functions as a border to the Everglades to the east (SWFRPC 2005). The Immokalee Rise generally sits around 25 feet in elevation and like the Atlantic Coastal Ridge south of West Palm Beach, is a southerly extension of Pamlico marine sand invading the Distal Zone (the southern part) of the Florida Peninsula from the sand dominated Central Zone to the north. However, unlike the Atlantic Coastal Ridge, the Immokalee Rise shows little evidence of a Pamlico shoreline. It seems to have been built as a sub-marine shoal extending south from a mainland cape at the south end of the Desoto Plain much in the same way that the present off-shore shoal extends southward from Cape Romano (White 1970).

The portion of Florida that WTSP is located within was created during the Pleistocene Epoch between 1.8 million to 10,000 years ago. This period is also known as the Ice Age, where huge ice sheets formed across Canada and the northern United States. When these ice sheets were formed, they consumed large quantities of seawater, dropping the current sea level 300 or more feet, which greatly increased the land area of what is now Florida. As the glaciers shrank, sea levels rose, and the Florida peninsula was again flooded. During the peak warm periods, sea level reached 150 feet above the current level. The waves and currents during these high sea level periods reworked the sediments and formed a series of geological units (Caloosahatchee, Ft. Thompson, Anastasia, Miami Limestone and Key Largo Limestone). Each of these geological units is characterized by their unique compositions. The Pleistocene Epoch had four separate freezing and melting periods (Rupert 1989).

Ten lithostratigraphic units have been identified in the state of Florida. Lithostratigraphic units are differentiated by the conditions under which they were formed and when during geologic time they were formed. These lithostratigraphic units are further divided by timing of formation into stratigraphic units. Previously, Lee County was divided into several different geologic units. However, throughout much of Lee County, including the area where WTSP is located, the Caloosahatchee and Fort Thompson units are somewhat indistinct and have been lumped together as undifferentiated Tertiary/Quaternary shell-bearing units (Figure 4). This unit consists of a quartz sand blanket covering limestone and clay. Fossils, including mollusks and corals, are very common and usually in excellent condition (Missimer and Thomas 2001).

# Figure 3: Physiographic Regions Map





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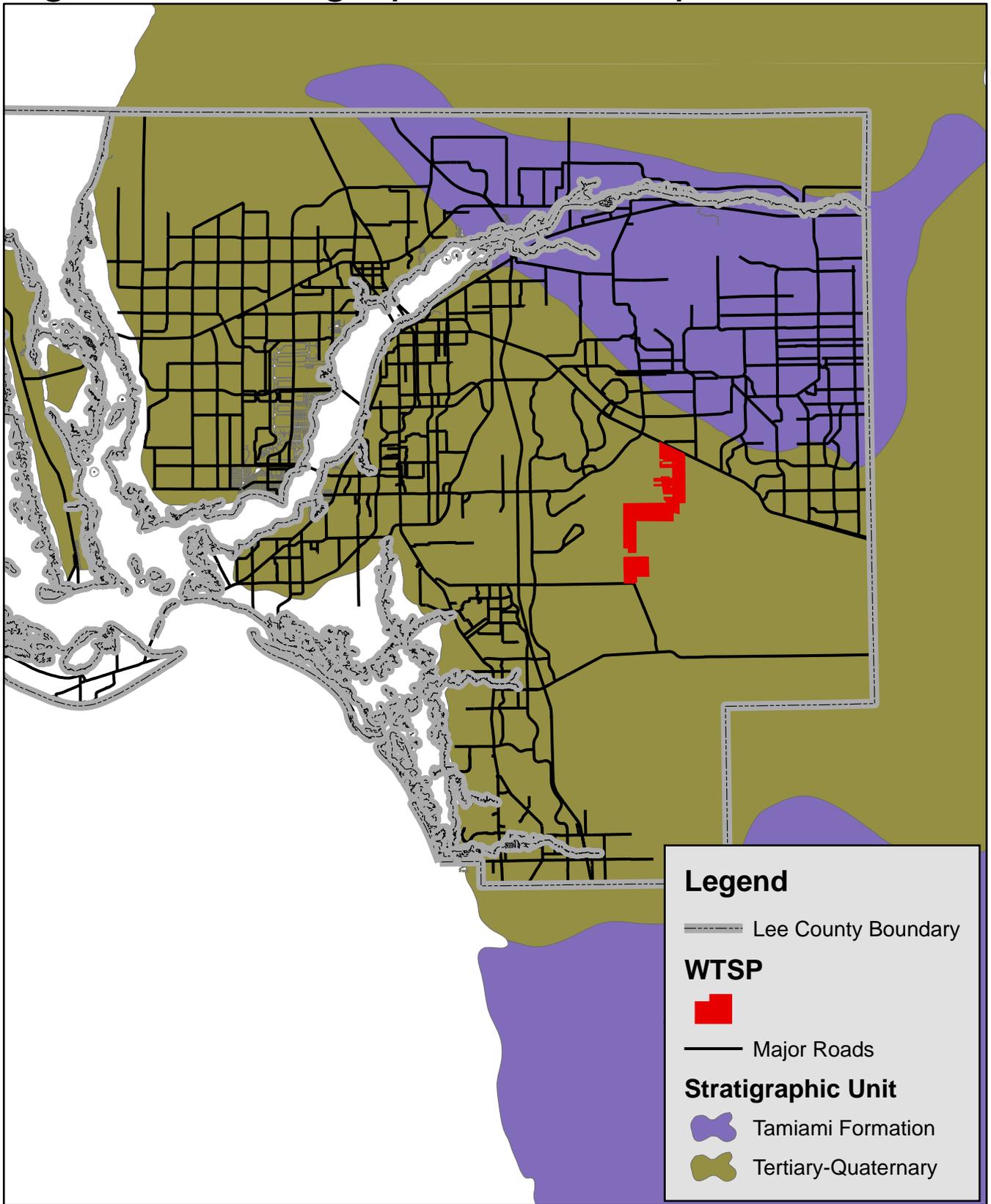
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# Figure 4: Stratigraphic Units Map





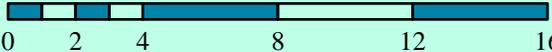
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## Wild Turkey Strand Preserve

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### *iii. Topography*

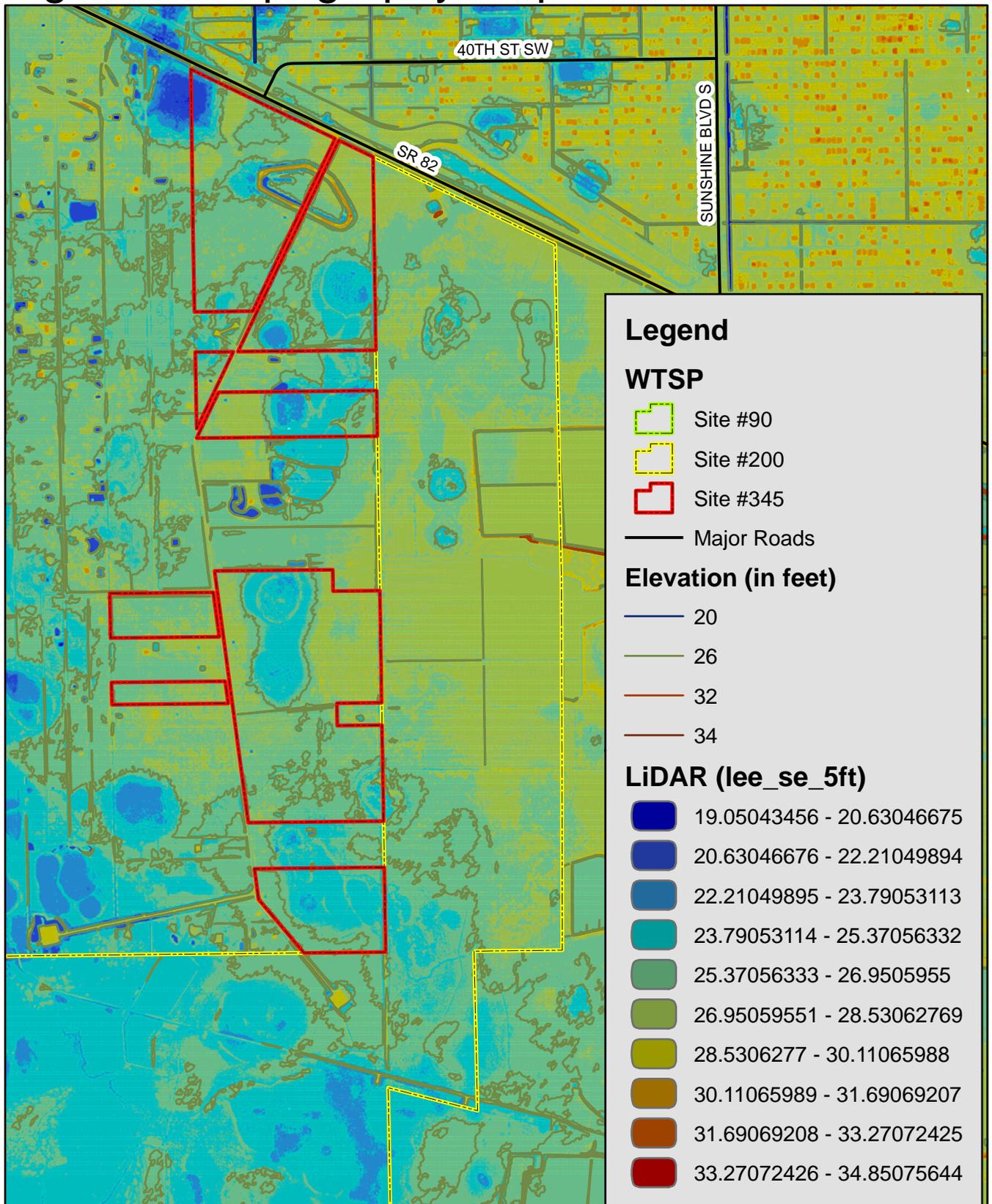
Lee County is located within the Gulf Coastal Lowlands of Florida that extend around the coastal periphery of the state where elevations are generally below 100 feet (Stubbs 1940; Cooke 1945).

Natural elevations at WTSP range from 30' above sea level at the north end and slope in a general southerly direction to 22' at the south end of the Preserve along Alico Road (Figures 5 & 6). Man-made topographic features at the Preserve include ditches and berms associated with the following: historic agricultural activities located mainly in the northern portion of the Preserve as well as a few other smaller areas, an FPL power line easement bisecting the Preserve in a northwest-southeast direction, another power line easement cutting through the western edge of the Preserve, a WWII rifle and air-to-ground target practice range and jeep track, an oil exploration well, and plow lines created by the Florida Division of Forestry. Rod & Gun Club Road, which acts as an elevated berm, runs south from SR 82 through the center of several portions of the Elizabeth and Thomas Morrison Tract (345).

Each of the man-made features described above was constructed at different times spanning a period of 70 years from the 1940s until recently. On the 1966 aerials there is evidence of "stumping" (removal of pine stumps resulting from previous logging activity for the production of turpentine) throughout the Preserve (see Land Use History), which created localized topographic changes that in turn may have caused changes in plant communities and increased microhabitats. Row crop agriculture is first observed on the 1966 Lee County aerial along with the berms and ditches associated with these fields.

The following topographic maps include the standard high & low elevation lines and new LiDAR (light detecting and ranging) data, which is an optical remote sensing technology that measures properties of scattered light to find range and/or other information of a distant target.

# Figure 5: Topography Map - North



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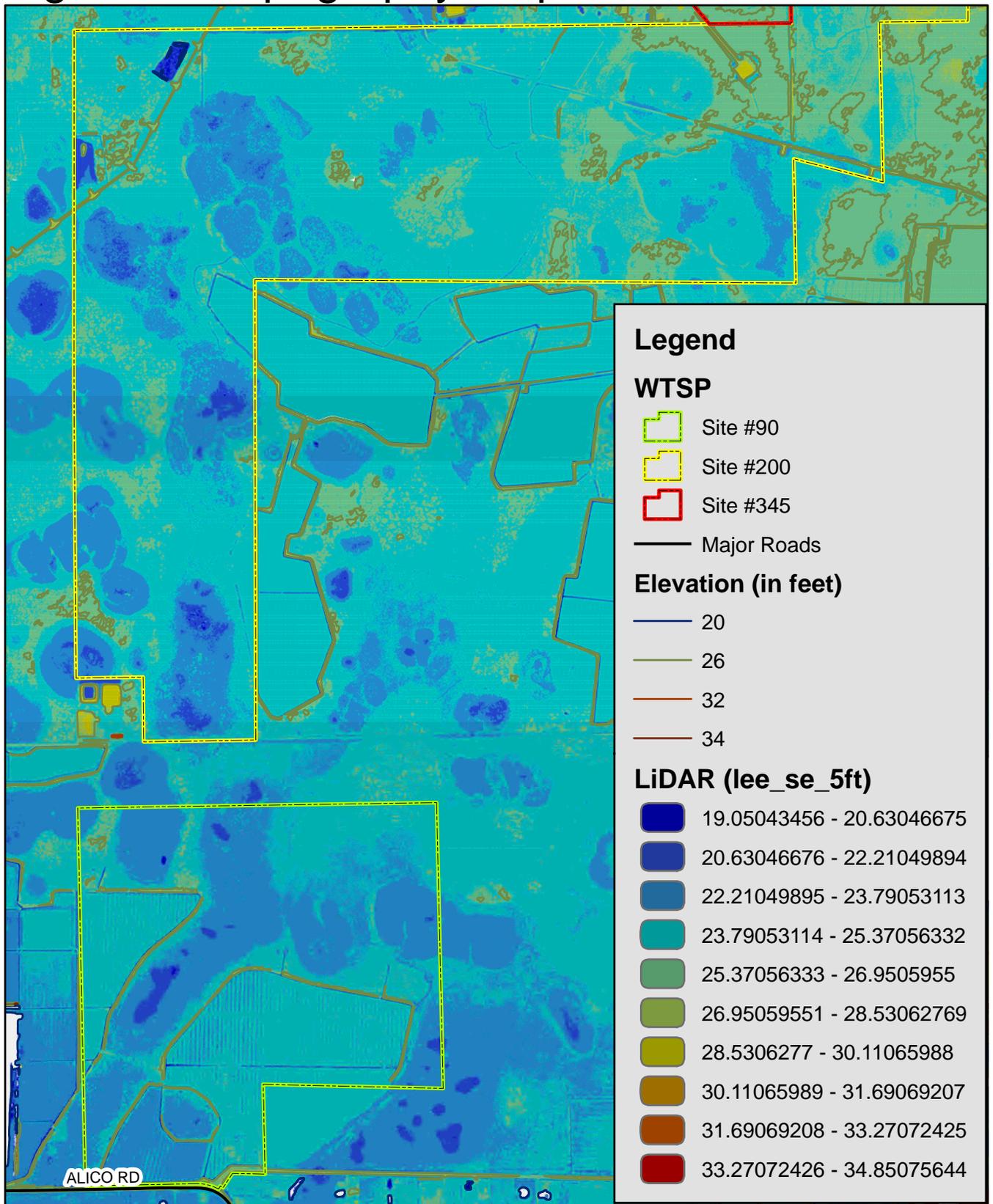
## Wild Turkey Strand Preserve

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Wild Turkey Strand\2nd ed LSP\Topography\_North.mxd  
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# Figure 6: Topography Map - South



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## Wild Turkey Strand Preserve

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#### iv. Soils

The Soil Survey of Lee County, Florida (Henderson 1984) was designed for a diverse group of clients to be able to comprehend soil behavior, physical and chemical properties, land use limitations, potential impacts, and protection of the environment. The soils maps are based on vegetation and landscapes as interpreted from aerial photos, along with fieldwork. Major fieldwork conducted for the Lee County Soil Survey was completed in 1981. Accuracy of soil mapping is often around 70 to 80%, with a typical 3-acre mapping limit (WMI 2005).

Based on this classification, twenty-four different soil types are found at WTSP. Figures 7-8 show the location of these soils. A common relationship for all of these soil types is that their slopes' range from 0-2%. Slope is "the inclination of the land surface from the horizon." Essentially, it has been established that WTSP is fundamentally level. Table 2 summarizes the characteristics of the soils found. These characteristics have been organized in the table to quickly provide land stewards with pertinent soils information for understanding restrictions and/or results regarding future habitat restoration and probable recreational plan limitations and expenses. The descriptions below explain the soil characteristics found in the table.

#### Habitats (Range Sites):

Based on the Soil Survey of Lee County, there are eight generalized range site categories in Lee County and three are found on WTSP. These categories are not Florida Natural Areas Inventory (FNAI) designations and may not correspond with the vegetation that is currently present on site. The ranges identified on the Preserve are:

- South Florida Flatwoods - Nearly level areas with scattered to numerous pine trees (*Pinus* spp.), saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), and other woody plants.
- Slough - Open grassland where nearly level areas act as broad natural drainage courses in the flatwoods. Potential plant community is dominated by blue maidencane (*Amphicarpum muhlenbergianum*), chalky bluestem, and blue joint panicum (*Panicum tenerum*).
- Freshwater marshes and ponds - Open grassland marshes or ponds (depressions) with the potential to produce significant amounts of various grasses, sedges, and rushes. Water fluctuates throughout the year. The areas at WTSP where soil types are designated as marshes or ponds have a cover type of cypress or mixed cypress/pine. Standing water occurs during the wet season.

#### Wetland Classification:

Wetland classifications are used to identify locations that may retain water for an indeterminate amount of time.

- F-Flooding: Soil flooded by moving water from stream overflow, runoff or high tides.
- S-Slough (sheet flow): A broad nearly level, poorly defined drainage way that is subject to sheet-flow during the rainy season.
- P-Ponding: Standing water on soils in closed depressions. The water can be removed only by percolation or evapotranspiration.

Hydrologic Group:

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive precipitation from long-duration storms. There are two hydrologic soil groups found on the Preserve:

- B - Soils having a moderate infiltration rate (low to moderate runoff potential) when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well-drained soils that have moderately fine texture to moderately coarse texture. Moderate rate of water transmission.
- D - Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist mainly of clays that have a high shrink-well potential, soils that have a permanent high water table, soils that have a clay pan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. Very slow rate of water transmission.

Note that some of the soil types are shown as having dual hydrologic groups, such as B/D. A B/D listing means that under natural conditions the soil belongs to D, but by artificial methods the water table can be lowered sufficiently so that the soil fits in B. The Preserve has been impacted by an extensive level of hydrological alterations through a series of berms, ditching, agricultural rows, FPL right-of-way, and borrow pits. Since there are different degrees of drainage or water table control, an onsite evaluation would be needed to determine the exact hydrologic group of the soil at each particular impacted location.

Soil permeability is defined as “the quality of the soil that enables water to move downward through the profile.” Permeability is measured as the number of inches per hour that water moves downward through the soil. The water table columns indicate the amount of time water may be present at specified depth ranges. Terms describing permeability are below:

Very slow	< 0.06 inch
Slow	0.06 – 0.2 inch
Moderately slow	0.2 – 0.6 inch
Moderate	0.6 – 2.0 inches
Moderately rapid	2.0 – 6.0 inches
Rapid	6.0 – 20 inches
Very rapid	> 20 inches

Soils affect the type, quality and quantity of food and cover for wildlife. Wildlife diversity and abundance are also influenced by distribution of food, cover, and water. Wildlife habitat may be created or improved by planting appropriate vegetation, maintaining existing plant communities and promoting the natural establishment of desired vegetation. The soils of Lee County occur in 4 different habitat types:

- Openland: Cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. Wildlife attracted includes bobwhite quail (*Colinus virginianus*), sandhill cranes (*Grus canadensis*), hawks, various birds, and rabbits.
- Woodland: Deciduous plants, coniferous plants, grasses, legumes, and wild herbaceous plants. Wildlife attracted includes wild turkeys (*Meleagris gallopavo*), thrushes, woodpeckers, squirrels, foxes, raccoons (*Procyon lotor*), white-tailed deer (*Odocoileus virginianus*), snakes, frogs, and bobcats (*Lynx rufus*).
- Wetland: Open, marshy or swampy shallow water areas. Wildlife attracted includes ducks, ibis, egrets, herons, shorebirds, snakes, frogs, American alligators (*Alligator mississippiensis*), and otters (*Lutra canadensis*).
- Rangeland: Shrubs and wild herbaceous plants. Wildlife attracted includes deer, quail, Virginia opossums (*Didelphis virginiana*), and various birds.

The potential of the soil for wildlife habitat is rated as:

- Good - Easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected.
- Fair - Established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results.
- Poor - Limitations are severe as habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive.
- Very poor - Restrictions are very severe and unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.
- -- Soil was not rated.

Staff considers soil limitations that affect their suitability for recreational development. Although the Soil Survey of Lee County has other categories under recreation, these are not under consideration for this Preserve. The soils within the Preserve have all been identified as having severe limitations. Severe means “that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.” In particular, paths and trails for “hiking and horseback riding should require little or no cutting and filling” plus “should not be subject to flooding more than once a year during the period of use.” Therefore, as a guideline, the soil types at WTSP are fairly sensitive and restrictive and considerations by the impacts of hiking or management trails are addressed. Moreover, some recreational opportunities that are further discussed in the Public Access and Resource-Based

Recreation section, address the soil limitations and provide recommendations for the creation of appropriate public access.

**Table 2: Wild Turkey Strand Preserve Soil Attributes**

Soil Types	Map Symbol	Total Acres	% of Preserve	Habitats (Range Site)	Physical Attributes							Biological Attributes				Limitations for Recreational Paths & Trails
					Wetland Class (1)	Hydrologic Group (2)	Surface Permeability	Subsurface Permeability	Water Table within 10" of surface	Water Table below 10-40" of surface	% Organic Matter	Potential as habitat for wildlife in - -				
												Openland	Woodland	Wetland	Rangeland	
Anclote Sand, Depressional	40	113.58	3.63	freshwater marshes/ponds	P	B/D *	rapid		> 6 months (ponded)		2-10%	very poor	very poor	good	--	Severe: ponding
Boca Fine Sand	13	67.43	2.15	south Florida flatwoods		B/D	rapid	rapid	2-4 months	6 months	1-3%	fair	poor	fair	good	Severe: wetness, too sandy
Copeland Sandy Loam, Depressional	45	2.91	0.09	freshwater marshes/ponds	P	D *	rapid		3-6 months (ponded)	3-6 months	2-6%	very poor	very poor	good	--	Severe: ponding
EauGallie Sand	9	12.67	0.40	south Florida flatwoods		B/D	rapid	rapid	2-4 months	> 6 months	2-8%	poor	poor	poor	--	Severe: wetness, too sandy
Felda Fine Sand	12	53.32	1.70	slough	S	B/D	rapid	rapid	2-4 months	~ 6 months	1-4%	fair	poor	fair	--	Severe: wetness, too sandy
Felda Fine Sand, Depressional	49	691.86	22.10	freshwater marshes/ponds	P	B/D	rapid	rapid	3-6+ months (ponded)	4-6 months	1-4%	very poor	very poor	good	--	Severe: wetness, too sandy
Floridana Sand, Depressional	51	86.66	2.77	freshwater marshes/ponds	P	D *	rapid	rapid	3-6 months (ponded)	~ 12 months	6-15%	very poor	very poor	good	--	Severe: ponding, too sandy
Gator Muck	19	30.06	0.96	freshwater marshes/ponds	P	D *	rapid	mod rapid	3-6 months	12 months	55-80%	very poor	poor	good	--	Severe: ponding, excess humus
Hallandale Fine Sand	6	3.83	0.12	south Florida flatwoods		B/D	moderate, mod rapid		1-3 months	7 months	2-5%	poor	poor	fair	poor	Severe: wetness, too sandy
Immokalee Sand	28	268.68	8.58	south Florida flatwoods		B/D	rapid	rapid	1-3 months	2-6 months	1-2%	poor	poor	poor	--	Severe: wetness, too sandy
Malabar Fine Sand	34	192.79	6.16	slough	S	B/D	rapid	rapid	2-4 months	> 6 months	1-2%	poor	poor	fair	--	Severe: wetness, too sandy
Malabar Fine Sand, Depressional	44	97.47	3.11	freshwater marshes/ponds	P	B/D *	rapid	rapid	4-6+ months (ponded)	4-6 months	1-2%	very poor	very poor	good	--	Severe: ponding, too sandy
Malabar Fine Sand, High	63	16.65	0.53	south Florida flatwoods		B/D	rapid	rapid		4-6 months	1-2%	fair	poor	fair	fair	Severe: wetness, too sandy
Myakka Fine Sand	11	123.13	3.93	south Florida flatwoods		B/D	rapid	rapid	1-3 months	2-6 months	<2%	fair	poor	poor	--	Severe: wetness, too sandy
Oldsmar Sand	33	305.34	9.75	south Florida flatwoods		B/D	rapid	rapid	1-3 months	> 6 months	1-2%	fair	fair	poor	--	Severe: wetness, too sandy
Pineda Fine Sand	26	248.03	7.92	slough	S	B/D	rapid	rapid	2-4 months	> 6 months	.5-6%	fair	poor	fair	--	Severe: wetness, too sandy
Pineda Fine Sand, Depressional	73	138.86	4.44	freshwater marshes/ponds	P	D *	rapid	rapid	3-6+ months (ponded)	4-6 months	.5-6%	very poor	very poor	good	--	Severe: ponding, too sandy
Pompano Fine Sand	10	177.24	5.66	slough	S	B/D	rapid		2-4 months	6 months	1-5%	poor	poor	fair	--	Severe: wetness, too sandy
Pompano Fine Sand, Depressional	27	207.33	6.62	freshwater marshes/ponds		B/D *	rapid		2-4 months (ponded 3 mo.)	> 5 months	1-5%	very poor	poor	good	--	Severe: ponding, too sandy
Smyrna Fine Sand	67	46.50	1.49	south florida flatwoods		B/D	rapid	moderate, mod rapid	1-3 months	2-6 months	1-5%	fair	fair	fair	--	Severe: wetness, too sandy
Terra Ceia Muck	20	12.83	0.41	freshwater marshes/ponds	P	B/D	rapid		3-6 months	12 months	>60%	poor	poor	good	--	Severe: ponding, excess humus
Valkaria Fine Sand	14	99.04	3.16	slough, edge flatwoods	S	B/D	rapid		1-3 months	6 months	1-4%	poor	poor	good	--	Severe: wetness, too sandy
Valkaria Fine Sand, Depressional	41	120.19	3.84	freshwater marshes/ponds	P	B/D *	rapid		~6 months (ponded 3 mo.)	~12 months	1-4%	very poor	very poor	good	--	Severe: ponding, too sandy
Wabasso Sand	35	13.99	0.45	south Florida flatwoods		B/D	rapid	rapid	2-4 months	> 6 months	1-4%	poor	fair	poor	--	Severe: wetness, too sandy

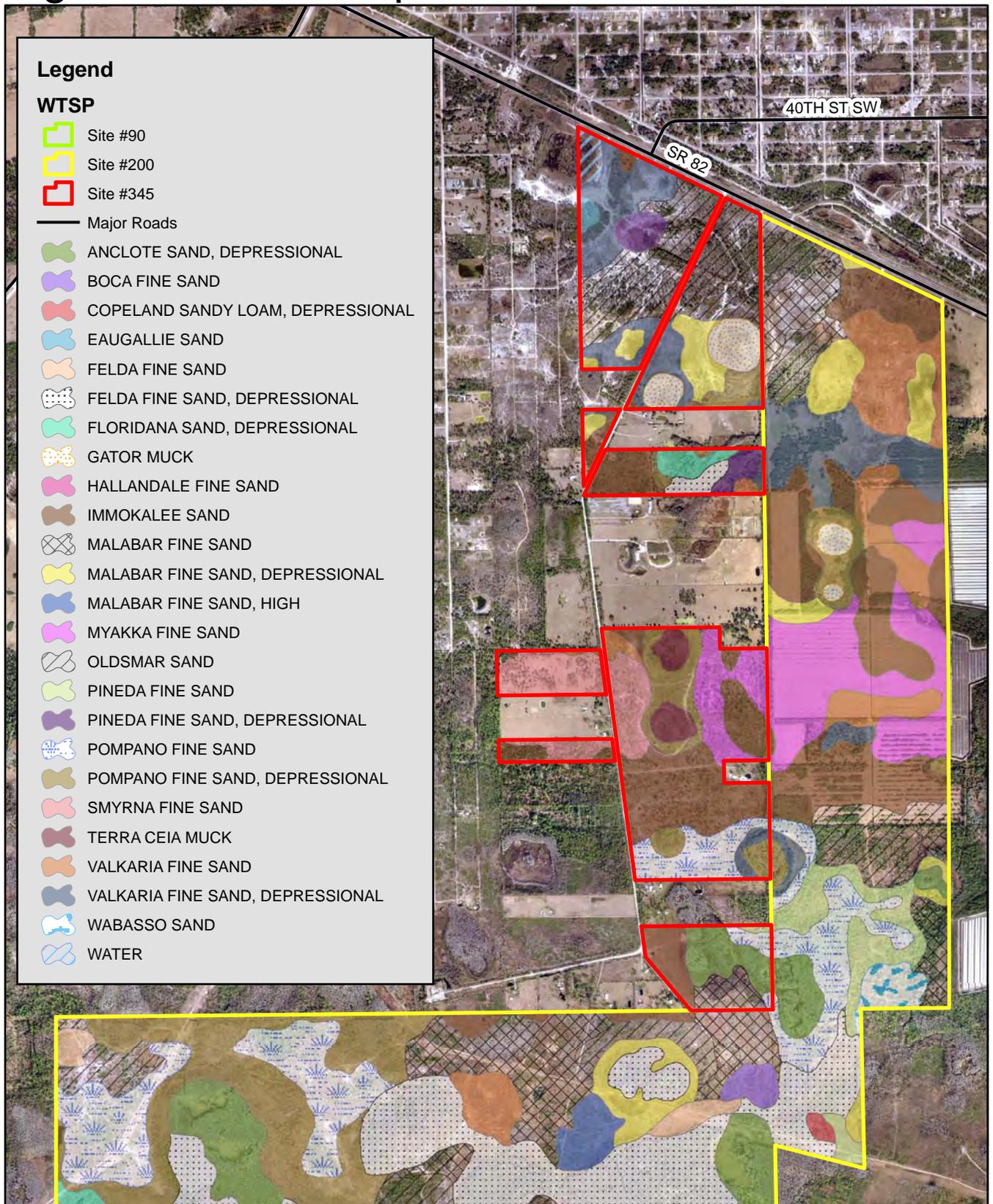
Color Key:

Dry
Wet
Wetter
Wettest
Saturated

- (1) S - Slough (sheet flow): A broad nearly level, poorly defined drainage way that is subject to sheet-flow during the rainy season.  
 P - Ponding: Standing water on soils in closed depressions. The water can be removed only by percolation or evapotranspiration.

- (2) \* Water table is above the surface of soil  
 B - Soils having a moderate infiltration rate (low to moderate runoff potential) when thoroughly wet.  
 D - Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet.

# Figure 7: Soils Map - North





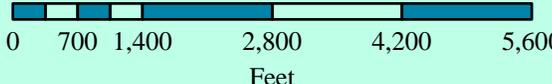
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## Wild Turkey Strand Preserve

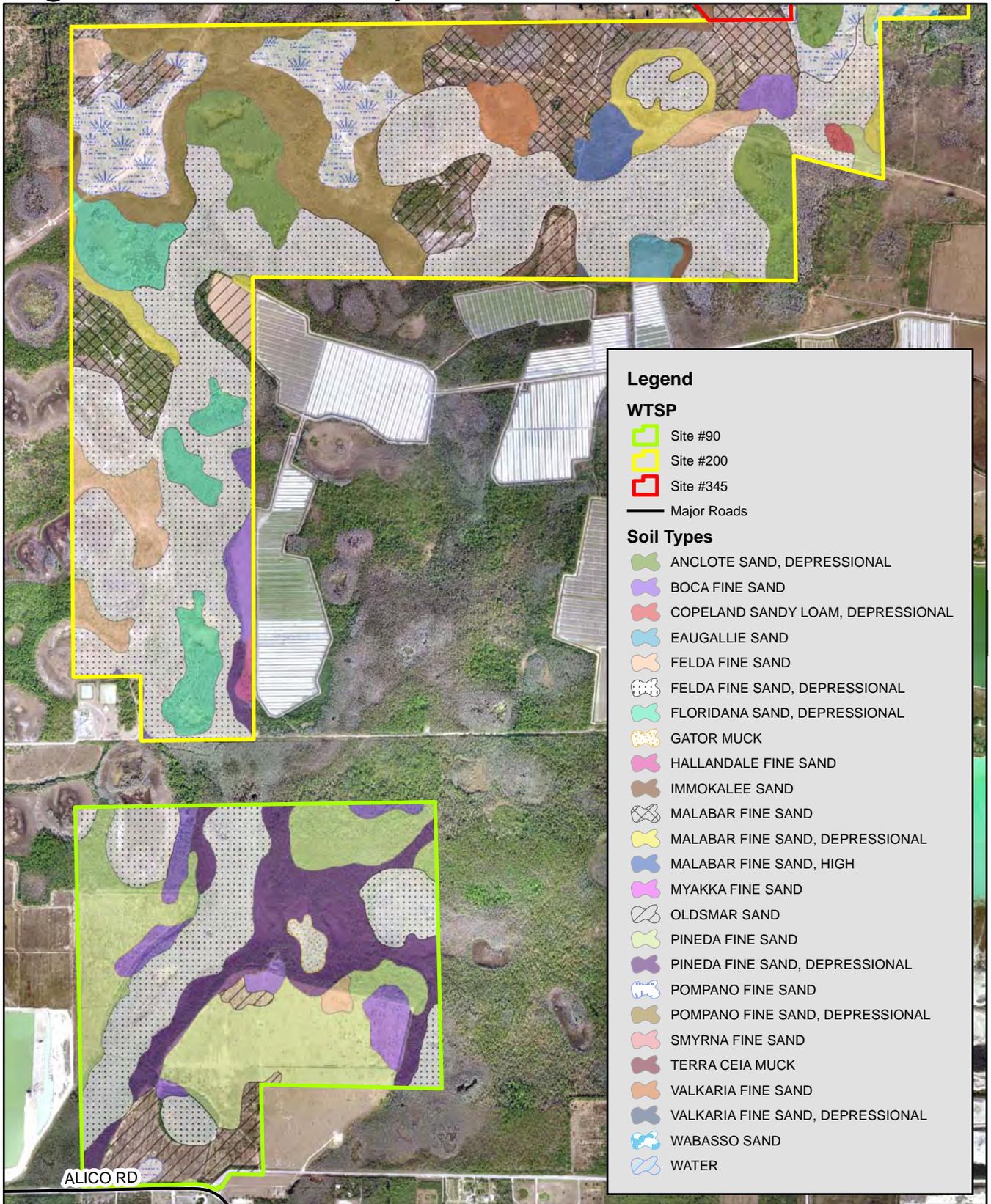
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# Figure 8: Soils Map - South



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#### *v. Hydrologic Components and Watershed*

WTSP is within the Big Cypress Basin (BCB) of the South Florida Water Management District's (SFWMD) Lower West Coast Region. The BCB is further divided into ten watersheds. The Preserve falls entirely in the Estero River Watershed (ERW) (Figure 9). This watershed contains approximately 66 square miles, is approximately 15 miles in length, and averages four miles in width. Rainfall flows from S.R. 82 on the northeast boundary in a general southwest direction to the Estero River and eventually into Estero Bay. The restoration work should assist with the overall health of the watershed and the interconnected Estero Bay.

Lee County's Division of Natural Resources (LCDNR) divides Lee County into 48 different watersheds and also locates all of WTSP within the ERW (Figure 10). Although LCDNR's boundaries of the ERW watershed are similar to SFWMD's, the county's version is approximately 13.5 miles in length and averages five miles in width. The ERW begins at SR 82 and runs south and west through WTSP and into the Estero River which is an important source of water for Estero Bay. This watershed primarily consists of agricultural, wetlands, and single family homes although several mining operations are within the watershed boundaries.

From watersheds to wetlands, the United States Fish and Wildlife Service (USFWS) directed its Office of Biological Services to conduct an inventory of the nation's wetlands in 1974. This National Wetlands Inventory (NWI) became operational in 1977. Wetlands were identified on the aerial photography by vegetation, visible water features and geography, and subsequently classified in general accordance with the Classification of Wetlands and Deep Water Habitats of the United States (Cowardin et al. 1979).

Figures 11-12 examine the variety of palustrine wetlands as identified by NWI (1977). Palustrine systems are all non-tidal wetlands dominated by trees, shrubs, persistent emergent aquatic plants, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.5%. The majority of the palustrine wetlands located on WTSP are either forested or emergent. Forested wetlands are characterized by woody vegetation that is 6 meters (19.6 feet) tall or taller. These areas typically have an overstory of trees, an understory of young trees or shrubs and an herbaceous layer. The dominant species that occurs in the palustrine forested wetlands at WTSP is cypress (*Taxodium spp.*). Emergent wetlands are characterized by erect rooted, herbaceous hydrophytes, excluding mosses and lichens that are present for most of the growing season. A variety of grasses, sedges and small shrubs such as wax myrtle (*Myrica cerifera*) and St. John's wort (*Hypericum spp.*) are typically found in this wetland category at the Preserve. Palustrine scrub-shrub wetlands occur within the northern portions of Sites 200 and 345. These wetlands are dominated by woody vegetation less than 20 feet tall and the unconsolidated bottom wetlands have less than 30%

vegetative cover with a lack of large stable surfaces for plants and animal attachment.

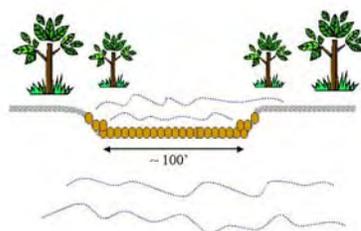
WTSP's freshwater wetlands consist of cypress strands, dome swamps, freshwater marshes, and ponds that vary in size from .27 acres to 29 acres located throughout the Preserve.

Agricultural ditches and berms exist throughout the entire site, which will require restoration to improve the hydroperiod of the affected herbaceous wetlands and improve the overall hydrology of the Preserve (refer to Figures 25–26). All of the Management Units (MUs), except MU 200-10, either have a berm and associated ditch, cow well or furrow.

S.R. 82 borders WTSP on its north side and Alico Road borders the south side while Rod & Gun Club Road bisects the Elizabeth & Thomas Morrison Tract (ETMT) (345) and later borders the western boundary. A raised private driveway in an ETMT (345) easement is located between MU 345-6 and 345-8. Moreover, Site 200 is bisected by two FPL power line easements and by a service road for Green Meadows Water Treatment Plant on the south side of MU 200-11. These features have altered the Preserve's historical water flow patterns by limiting sheet flow across the property and throughout the watershed.

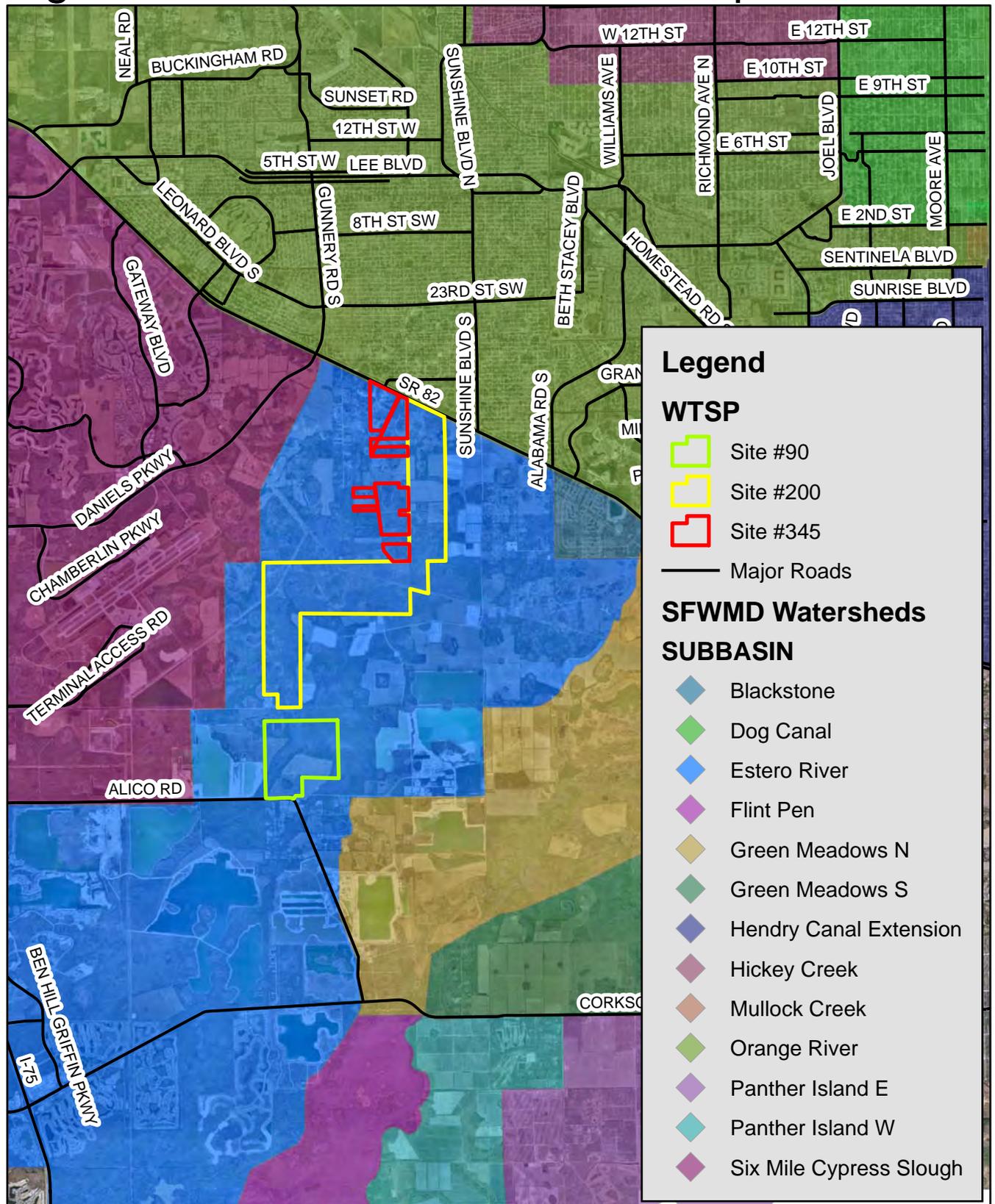
Hydrologic improvements at the Preserve may employ backfilling or plugging drainage ditches and removing melaleuca (*Melaleuca quinquenervia*) to increase wetland hydroperiod (Mazzotti 1998). Possible restoration tactics employed for the various roadways may include installation of additional culverts or replacement of smaller culverts with larger diameter culverts and/or "geo-webbing." Typically, geo-webbing would remove a section (usually 100' length) of existing roadway material to grade level, overlay/install plastic web like material (with openings/holes) over the removed roadway section, then fill the geo-webbed openings with rock/stone material. During the rainy season, the water will be able to flow freely through/over the removed/geo-webbed roadway section without erosion, while still allowing vehicles, and land stewardship management vehicles, to drive over the geo-webbed section without getting stuck. Depending on the area, some roadway locations may become too deep for vehicles to drive through during the rainy season; therefore other methods would need to be employed.

**Geo-web diagram**



An environmental/engineering consultant has been hired to determine the most appropriate methodology for several hydrological restoration projects at the Preserve. The consultant and staff will coordinate with FPL and/or other appropriate agencies representatives for all hydrological restoration matters.

# Figure 9: SFWMD Watersheds Map





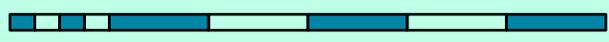
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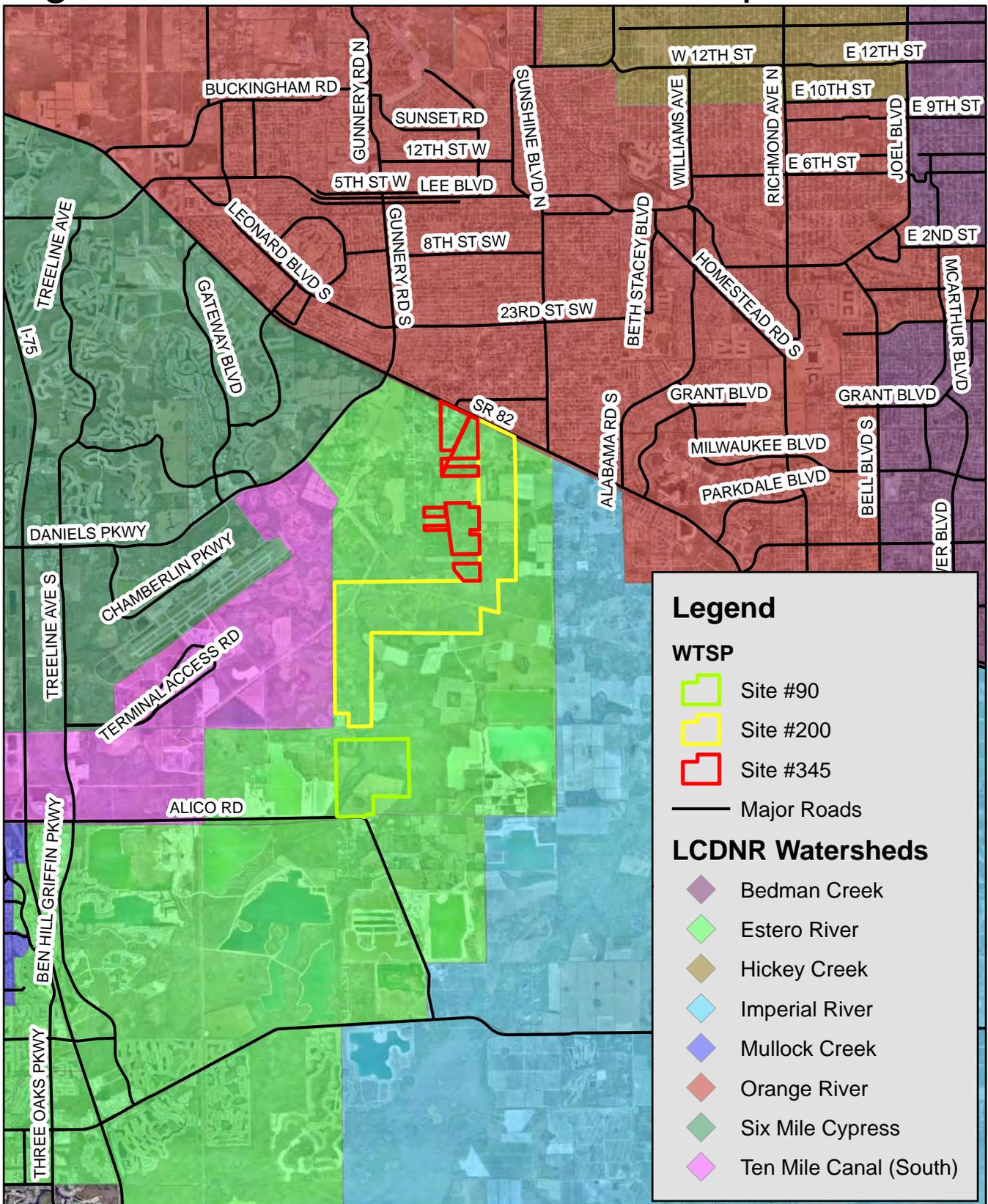
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Map Prepared on: 12/8/09, by jwaller@leegov.com



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# Figure 10: LCDNR Watersheds Map



**Legend**

**WTSP**

- Site #90
- Site #200
- Site #345
- Major Roads

**LCDNR Watersheds**

- Bedman Creek
- Estero River
- Hickey Creek
- Imperial River
- Mullock Creek
- Orange River
- Six Mile Cypress
- Ten Mile Canal (South)



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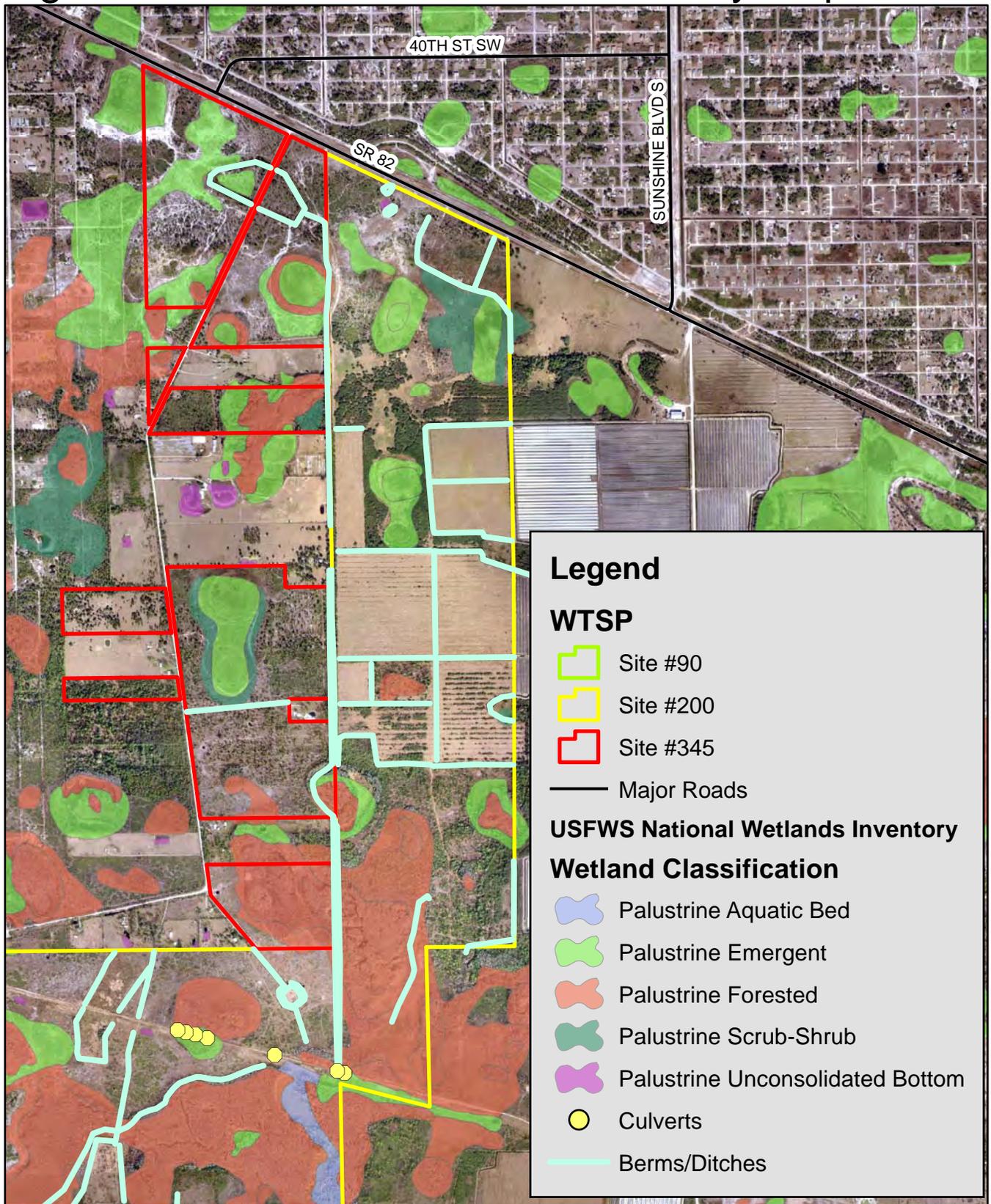
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Figure 11: National Wetlands Inventory Map - North



**Legend**

**WTSP**

- Site #90
- Site #200
- Site #345
- Major Roads

**USFWS National Wetlands Inventory**

**Wetland Classification**

- Palustrine Aquatic Bed
- Palustrine Emergent
- Palustrine Forested
- Palustrine Scrub-Shrub
- Palustrine Unconsolidated Bottom
- Culverts
- Berms/Ditches



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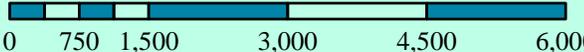


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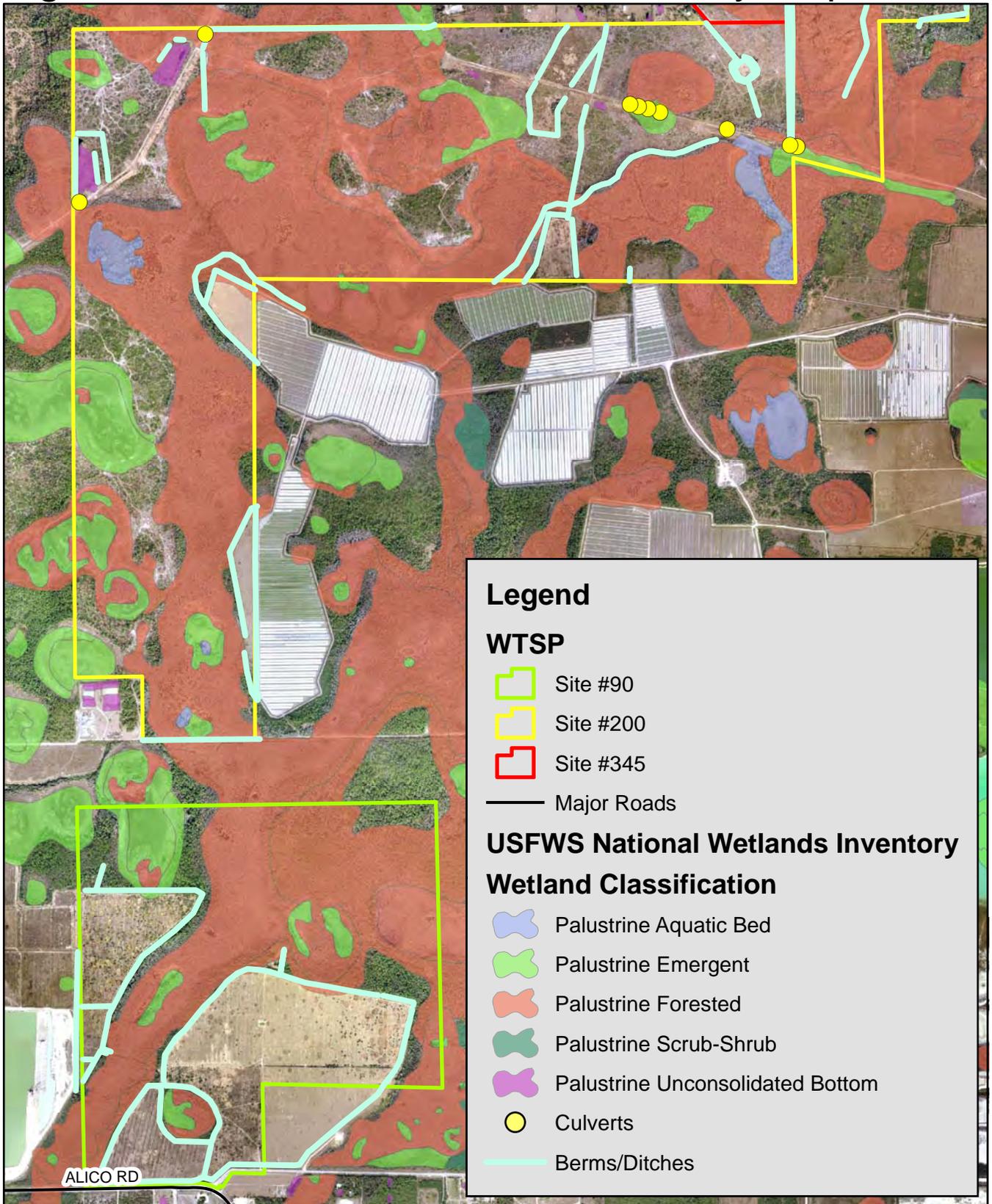
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Figure 12: National Wetlands Inventory Map - South





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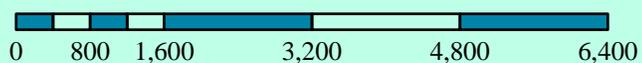


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Feet

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## **B. Biological Resources**

### *i. Ecosystem Function*

WTSP contains a diverse range of wetland and upland plant communities. Pine flatwoods serve as a very important habitat for a variety of birds, small mammals, reptiles and amphibians and some large mammals including white-tailed deer and Florida panther. Many species of birds find shelter in the palmetto understory, nest in the tall pines and forage in the grasses. The oak toad (*Anaxyrus quercicus*) will dig burrows in the sandy soil and hunt for spiders and insects. During a severe flood, the flatwoods serve as a water storage area to help protect adjacent land owners from flooding (Tiner 1998).

Florida has more thunderstorm days per year than anywhere else in the country and in turn one of the highest frequencies of lightning strikes of any region in the United States. Fire is an important element affecting the health of pine flatwoods. Fire shapes ecosystem processes in the flatwoods including creation of soil conditions suitable for germination of seeds of some species, turnover of litter, humus and nutrients, reduction of competition from hardwoods and increasing the hardiness of some plant species (Myers and Ewel 1990). Following initial exotic removal, fire will be a very useful stewardship tool at WTSP.

The wetlands of south Florida are important to people and to a variety of wildlife. Wetlands at WTSP provide places for birds to feed and for fish and frogs to live and breed. Additionally, people rely on these marshes to improve water quality and recharge the aquifer. The seasonal changes in southwest Florida profoundly affect the hydrologic components at this Preserve. During the late spring and summer months, the rain begins to fall and the wetlands fill to capacity. Fish populations begin to increase both in number and biomass. In the fall when the rains end, the water recedes and the fish are concentrated in the shallow marshes. The wading birds come in to feast and this aids the remaining fish by decreasing the density and increasing the availability of dissolved oxygen. Most wildlife utilizing these communities have adapted by migrating from one wetland to another as the shallow ones become dry.

The depression marshes are also very important to some species of wading birds for their nesting success. For example, the white ibis (*Eudocimus albus*) chooses nesting sites near marshes that have appropriate drying conditions. Some herons and wood storks need specific falling water conditions over a prolonged four-month nesting season. The faster the marsh dries, the sooner nesting starts. If the water level rises, then nesting success declines (Myers and Ewel 1990). This drying period is not only important to the fauna but also to the flora.

Plants in these areas also benefit from the seasonal wet/dry flux. The plants in these wetlands become completely dry, die, decay and release nutrients that are bound in their tissues. This makes the soils highly productive for the next wet season. Typically, these plants have low nutrient requirements so they stockpile the excess, which is beneficial to herbivores feeding upon them.

Over 35% of WTSP contains cypress wetlands. These forested wetlands are very productive ecosystems, which are generally related to hydrologic conditions. Healthy cypress communities capable of sustainable reproduction occur in depressions with a hydroperiod of approximately 250-290 days and maximum water levels of one to two feet (Duever et al. 1986). The lower hydroperiod and water level ranges produce smaller cypress and the upper ranges produce larger ones. There is some debate in the scientific community whether these two extremes represent two species of cypress: pond cypress (*Taxodium ascendens*) are small and bald cypress (*Taxodium distichum*) are large or whether they represent the same species growing differently under different environmental conditions.

The cypress trees occur in domes and strands throughout the Preserve. The cypress domes, or heads, are depressions in which the largest cypress trees occur in the center and get progressively smaller from the center. Water drains only through the water table. The conditions for growth (long hydroperiod) are much better in the center as opposed to the edges due to more organic soils. The strands are elongated depressions that support cypress systems with a broad, slow movement of water. As with the domes, the larger cypress trees populate the lower areas with longer hydroperiods. In the areas where the water is too deep for cypress, treeless ponds occur in both the domes and the strands supporting a myriad of plants and wildlife.

The surrounding cypress areas provide excellent cover and foraging for woodpeckers, warblers and other migratory song birds. Animals depend on the health and long-term viability of the cypress communities for nesting, breeding and feeding. The Florida cottonmouth (*Agkistrodon piscivorus conanti*) uses mats of debris in the swamp ferns as sunning platforms. Yellow-crowned night herons (*Nyctanassa violacea*) build their nests in the trees and white ibis and great egrets (*Ardea alba*) roost in the canopy. To sustain the health of the cypress communities, water quality and quantity must be protected and improved.

Even disturbed areas of the Preserve, such as the agricultural fields (row crops and cattle operations) and artificial ponds/canals that comprise over 25 percent of the Preserve is habitat for many wildlife species. In the wet summer months standing water creates feeding grounds for many wading birds including snowy egrets (*Egretta thula*) and great blue herons (*Ardea herodias*). The fields and ponds also provide foraging and nesting habitats for sandhill cranes, which was observed in an artificial pond during April 2007. In the fall, these fields provide habitat for resident mottled ducks (*Anas fulvigula*) and migratory blue-winged teal (*Anas discors*).

## ii. Natural Plant Communities

WTSP consists of twenty-seven plant communities, the majority of which are strand swamp, mesic flatwoods, wet flatwoods, and improved pasture. Historically, WTSP contained additional wetland ecosystems that have been dramatically impacted by on-site activities and surrounding land uses and have changed as a result of drier conditions. Today, over 60% of the Preserve contains wetland systems including disturbed areas such as canal/ditch and impoundment/artificial ponds.

Plant communities are defined using the Guide to the Natural Communities of Florida (1990) prepared by FNAI and the Florida Department of Natural Resources (FDNR) and the draft update to the “Guide” (2009) prepared by FNAI and Florida Department of Environmental Protection (FDEP). The natural plant communities’ map was created from baseline Florida Land Use, Cover and Forms Classification System (FLUCFCS) (FDOT 1999) maps generated from several environmental consulting firms: Site 200 - Kevin L. Erwin Consulting Ecologist, Inc., Site 90 – Quest Ecology, Inc. and Site 345 – Passarella & Associates, Inc. Since several locations of the Preserve have undergone recent stewardship activities, Land Stewardship staff has modified the FLUCFCS maps and converted them into updated FNAI definitions. Figures 13-14 show the plant communities found at WTSP.

The following are descriptions of the dominant plants and characteristic animals found within each community. Appendix B contains a complete list of plant species identified on numerous site inspections to WTSP by staff and botanists with the south Florida non-profit organization, Institute for Regional Conservation (IRC). This list will be updated seasonally as new plants are identified.

### **Strand Swamp** – 813.8 acres, 25.9% coverage at WTSP

Strand swamps are shallow, forested, usually elongated depressions or channels dominated by bald cypress. Soils are peat and sand over limestone and normal hydroperiod is 200-300 days with water being the deepest and remaining the longest near the center where the trees are biggest. Strand swamps require fire on a cycle of perhaps 30 to 200 years and are essential for maintenance of this community. The largest trees on the deepest peat towards the center burn least frequently. Cypress are very tolerant of light surface fires, but muck fires can kill the trees, lower the ground surface, and transform a strand into a slough (FNAI 1990).

Additional strand swamp plants found include red maple (*Acer rubrum*), laurel oak (*Quercus laurifolia*), cabbage palm (*Sabal palmetto*), swamp bay (*Persea palustris*), coastal plain willow (*Salix caroliniana*), orchids, wax myrtle, myrsine (*Rapanea punctata*), buttonbush (*Cephalanthus occidentalis*), leather fern, royal fern (*Osmunda regalis*), and floating heart (*Nymphoides aquatica*). Animals noted include Florida cottonmouth, opossum, raccoon, ribbon snake (*Thamnophis sauritus sackenii*), and Florida water snake (*Nerodia fasciata pictiventris*).

### **Mesic Flatwoods** – 445.2 acres, 14.2% coverage at WTSP

The mesic flatwoods community is found within all parcels of the Preserve. Synonyms for this plant community include pine flatwoods and pine savannahs. Mesic flatwoods occur on relatively flat, moderately to poorly drained soils. Standing water is common for brief periods during the rainy season. Mesic flatwoods are characterized as having an open canopy with widely spaced pine trees and a dense ground cover of herbs and shrubs (FNAI 1990). The mesic flatwoods at the Preserve ranged from dense/overstocked to sparse. Ideal ranges for natural areas of south Florida slash pine (*Pinus elliottii* var. *densa*) range from 40-80 square feet of basal area which provides adequate sunlight for herbaceous plants and new pine recruitment as well as sufficient pine needles to carry fire (Weston 2009). During March 2008 – February 2009, pine tree thinning occurred on Sites 200 & 345 as part of a habitat restoration project. Where feasible, dead pine trees were removed from the wildfire area and pines were thinned from other locations.

Typical plants growing in these communities at WTSP include south Florida slash pine, saw palmetto, staggerbush (*Lyonia fruticosa*), yellow-eyed grass, and wax myrtle. Over half of the flatwoods found on the Preserve are disturbed with invasive exotic plants such as melaleuca and Brazilian pepper (*Schinus terebinthifolius*).

Some wildlife encountered in flatwoods at the Preserve consists of black racer (*Coluber constrictor priapus*), dusky pygmy rattlesnake (*Sistrurus miliarius barbouri*), bald eagle (*Haliaeetus leucocephalus*), palm warbler (*Dendroica palmarum*), raccoon, and bobcat.

Historically, natural fire probably burned in these communities every 1-8 years (FNAI 1990). Without frequent fires mesic flatwoods will succeed into hardwood-dominated forests whose closed canopy will gradually eliminate the groundcover of herbs and shrubs. On the other hand, too frequent or too hot fires would eliminate pine recruitment and eventually transform the mesic flatwoods into dry prairie.

### **Wet Flatwoods** – 426.5 acres, 13.6% coverage at WTSP

Wet flatwoods are characterized as relatively open-canopy forests of scattered pine trees or cabbage palms with either thick shrubby understory and very sparse ground cover, or a sparse understory and a dense ground cover of hydrophytic herbs and shrubs. Wet flatwoods occur on relatively flat, poorly drained terrain where water frequently stands on the surface for one or more months of the year. Many plants here are under the stress of water saturation during the wet season and under the stress of dehydration during the dry season (FNAI 1990). In addition to south Florida slash pines, some of the more common plants documented in this community include wax myrtle, coastal plain St. John's-wort (*Hypericum brachyphyllum*), myrtleleaf St. John's-wort, and toothpetal false reinorchid (*Habenaria floribunda*).

Natural fire regimes for this plant community range from every 3-10 years (FNAI 1990). Without a regular fire, wet flatwoods will succeed into hardwood-dominated forests whose closed canopy would gradually eliminate the groundcover herbs and shrubs. Lack of fire will allow pine needle drape and the height of flammable understory shrubs to increase, which will increase the probability of a catastrophic canopy fire.

Animals documented utilizing this plant community include red-shouldered hawk (*Buteo lineatus*), blue-gray gnatcatcher (*Polioptila caerulea*), oak toad, and Big Cypress fox squirrel (*Sciurus niger avicennia*).

#### **Pasture - Improved** – 321.6 acres, 10.2% coverage at WTSP

This altered landscape had been cleared, tilled, reseeded with specific grass and periodically improved with brush control and fertilizer (FNAI 2009). This upland community is dominated by grass and sedge species that include Bahia grass (*Paspalum notatum*), common carpet grass (*Axonopus fissifolius*), crab grass, flat sedges, and dog fennel (*Eupatorium capillifolium*). Several bird species including the Northern harrier (*Circus cyaneus*), sharp-shinned (*Accipiter striatus*) and red-shouldered hawks and rodents have been observed foraging in these open pastures along with cattle.

#### **Abandoned Field** – 144.1 acres, 4.5% coverage at WTSP

Successional fields occur on Sites 90 & 200 which were previously used for row cropping and have been heavily impacted by these activities. The last known crops cultivated at WTSP were tomatoes. Once agricultural operations were abandoned, some of these locations were then used for cattle grazing. While some locations are taking on characteristics of a wet prairie, wet flatwoods or mesic flatwoods communities, staff recommends that additional restoration activities occur so they can become viable communities.

This community is characterized by a mosaic of open areas with thick patches of Brazilian pepper and wax myrtle, usually along disturbed edges. Ground cover includes pasture grasses and sedge species that include Bahia grass, common carpet grass, crab grass, flat sedges, and dog fennel. Additional exotic plant cover in the abandoned fields include torpedo grass (*Panicum repens*), West Indian marsh grass (*Hymenachne amplexicaulis*), caesarweed (*Urena lobata*), and melaleuca.

Animal species such as mice, black racers, Carolina wren (*Thryothorus ludovicianus*), and Eastern phoebe (*Sayornis phoebe*) have been observed utilizing these areas.

### **Depression Marsh** – 116.4 acres, 3.7% coverage at WTSP

Synonyms for this community include isolated wetland, ephemeral pond and seasonal marsh. Depression marsh areas are characterized as shallow, usually rounded depressions in sand substrate which typically consists of open, treeless areas with herbaceous vegetation that is often growing in concentric bands. Depression marshes are very similar to basin marshes, only smaller. Hydrologic conditions vary, with most depression marshes drying in most years. Hydroperiods range widely from as few as 50 days or less to more than 200 days per year (FNAI 1990).

Common depression marsh plants include St. John's wort, spikerush, yellow-eyed grass, maidencane (*Panicum hemitomon*), wax myrtle, blackroot (*Pterocaulon pycnostachyum*), pickerelweed (*Pontederia cordata*), arrowhead, and bladderwort. Depression marshes are considered extremely important in providing breeding or foraging habitat for such species as oak toad, Florida cricket frog (*Acris gryllus dorsalis*), pinewoods treefrog (*Hyla femoralis*), squirrel treefrog (*Hyla squirella*), southern chorus frog (*Pseudacris nigrita*), gopher frog (*Rana capito*), white ibis, wood stork, and sandhill crane. Animals using this community on-site include great egret, great blue heron and pig frog (*Rana grylio*).

Depression marshes are extremely important in providing breeding and foraging habitat for a variety of wildlife including amphibians. Because of their temporary nature, few large predatory fish, which would feed heavily on tadpoles, occur in these wetlands. Since this community typically dries down in most years, the aquatic animals become quite concentrated and are an excellent food source for birds and other wildlife.

Fire is important to maintaining this community by restricting the invasion of shrubs and trees, which would eventually reduce the hydroperiod through increased evapotranspiration and biomass as well as shading out the wetland. A typical burn regime for this plant community would be to burn the surrounding uplands every 1-3 years, allowing fire to actually burn through the wetland every third burn (FNAI 1990).

### **Abandoned Pasture** – 110.1 acres, 3.5% coverage at WTSP

These areas are improved pastures without recent activity (mowing, grazing, burning, fertilizing) to maintain the community as pasture (FNAI 2009). These areas are located at Sites 200 & 345 and include a variety of grasses, small shrubs and scattered Brazilian pepper.

### **Exotic Monoculture** – 95.0 acres, 3.0% coverage at WTSP

Plant communities with exotic coverage greater than 75% have been temporarily placed in this degraded category and are found on all three tracts. Once exotic plant

removal work has been completed, most of these locations will transfer into either strand swamp, wet prairie or wet flatwoods plant communities. The invasive, exotic Brazilian pepper is typically found on heavily disturbed sites; along borrow pits, levees, ditches, roadways, and old farm fields, while monoculture melaleuca trees are generally located in disturbed cypress, prairie and flatwoods communities. Animal species noted using these areas include common ground-dove (*Columbina passerine*) and crablike spiny orb weaver (*Gasteracantha elipsoides*).

### **Hydric Hammock – 93.1 acres, 3.0% coverage at WTSP**

There are scattered pockets of hydric hammock plant communities. It is a well-developed hardwood and cabbage palm forest with a variable understory dominated by palmettos and ferns. Plants found in this community at WTSP include live oak (*Quercus virginiana*), cabbage palm, saw palmetto, dahoon holly (*Ilex cassine*), strangler fig (*Ficus aurea*), and myrsine.

Hydric hammocks are generally saturated, although only inundated for short periods following heavy rains. The normal hydroperiod is seldom over 60 days per year. Because of their generally saturated soils and the sparse herbaceous cover, hydric hammocks rarely burn (FNAI 1990).

Normal hydrological regime must be maintained in hydric hammock. If the water table is lowered, hydric hammocks will gradually change to mesic conditions. If the hammock is flooded, many trees will die and eventually be replaced by more hydrophilic species.

### **Wet Prairie – 88.3 acres, 2.8% coverage at WTSP**

Wet prairies are described as a treeless plain with a ground cover of grasses and herbs (FNAI 1990) including gulf coast spikerush (*Eleocharis cellulosa*), maidencane, beaksedge (*Rhynchospora spp.*), fringed yellow stargrass (*Hypoxis juncea*), pale meadowbeauty (*Rhexia mariana*), and St. John's-wort. Some areas of this community are somewhat disturbed at WTSP through the illegal off-road vehicle (ORV) use that has historically occurred on the site and the infestation of the exotic melaleuca tree.

Wildlife noted in WTSP wet prairies include Florida cricket frog, killdeer (*Charadrius vociferous*) and marsh rabbit (*Sylvilagus palustris*).

Wet prairies are fire dependant communities. Typically these areas will burn every 2-4 years and will become invaded with wax myrtle and other trees and shrubs during longer fire intervals (FNAI 1990).

### **Cultural Hardwood Forest – 84.4 acres, 2.6% coverage at WTSP**

A new FNAI landcover type for altered areas of closed-canopied forest dominated by fast growing hardwoods such as laurel oak and sweetgum (*Liquidambar styraciflua*) often with remnant pines (FNAI 2009). These forests are either invaded natural habitat (i.e., mesic flatwoods, sandhill, upland pine, upland mixed woodland) due to lengthy fire-suppression or old fields that have succeeded to forest. The subcanopy and shrub layers of these forests are often dense and dominated by smaller individuals of the canopy species. Restoration of these forests includes mechanical tree removal and reintroduction of fire. Animals noted include southern toad, palm warbler and gopher tortoise (*Gopherus polyphemus*).

### **Dome Swamp – 61.1 acres, 1.9% coverage at WTSP**

A smaller subset of WTSP cypress locations are identified as dome swamps, which are characterized as shallow, forested, usually circular depressions that generally present a domed profile because smaller trees grow in the shallower waters at the outer edge, while taller trees grow in the center. Dome swamps may function as reservoirs that recharge the aquifer when adjacent water tables drop during drought periods. Normal hydroperiod is usually 200 to 300 days per year, deepest and longest in the center. Normal fire cycle might be as short as 3 to 5 years along the outer edge and as long as 100 to 150 years towards the center (FNAI 1990).

Representative dome swamp plants are cypress, slash pine, red maple, dahoon holly, wild pine, royal fern, maidencane, orchids, wax myrtle, sawgrass (*Cladium jamaicense*), and floating heart. Typical animals include oak toad, cricket frog, pinewoods treefrog (*Hyla femoralis*), little grass frog (*Pseudacris ocularis*), narrowmouth toad (*Gastrophryne carolinensis*), American alligator, striped mud turtle (*Kinosternon baurii*), Florida cottonmouth, wood stork, swallow-tailed kite (*Elanoides forficatus*), barred owl (*Strix varia*), and pileated woodpecker (*Dryocopus pileatus*).

### **Marl Prairie – 56.4 acres, 1.7% coverage at WTSP**

Marl prairies are sparsely vegetated seasonal marshes on flatlands along the interface between deeper wetlands and upland communities where limestone is near the surface. Generally a system of sedges and grasses with widely scattered, stunted cypress trees sometimes called dwarf, toy or hat rack cypress (FNAI 1990). These areas may grade into wet prairies or flatwoods and often occur within strand swamp and basin wetlands. This community type is found on all parcels of the Preserve. Marl prairie normally dries out during the winter and is subject to fires at the end of the dry season; the most acres naturally burn in May. Fires at this time stimulate flowering of the dominant grasses. Herbaceous species recover rapidly from fire and biomass reaches pre-fire levels at the end of two years. For the first two years after fire this community will burn only patchily, if at all (FNAI 2009).

**Basin Swamp** - 50.7 acres, 1.6% coverage at WTSP

All parcels have basin swamp communities which typically continue outside the Preserve boundary. A basin swamp is generally characterized as a relatively large and irregularly shaped basin that is not associated with rivers, but is vegetated with hydrophytic trees and shrubs that can withstand an extended hydroperiod (FNAI 1990). Dominant plants include pond cypress and bald cypress. Other typical plants here include wax myrtle and pickerelweed. Animals found in the basin swamp community include egrets, herons, turtles, fish, frogs, and American alligators.

Basin swamps may act as a reservoir releasing groundwater as adjacent upland water tables drop during drought periods. The typical hydroperiod is approximately 200 to 300 days. If water levels must be artificially manipulated, somewhat deeper than normal water is not likely to do much harm. But extended hydroperiods will limit tree growth and prevent reproduction. Shortened hydroperiods will permit invasion of mesophytic species and change the character of the understory or will allow a devastating fire to enter which would drastically alter the community (FNAI 1990).

Regular fire intervals are essential for the maintenance of cypress dominated basin swamps. Without fire, hardwood invasion and peat accumulation will eventually create a bottomland forest or bog. Typical fire intervals in basin swamps may be anywhere from 5 to 150 years. Cypress are very tolerant of light surface fires, but muck fires burning into the peat can kill the trees, lower the ground surface, and transform a swamp into a pond or lake (FNAI 1990).

**Spoil Area** – 48.4 acres, 1.5% coverage at WTSP

Typically, disturbed spoil areas contain the material dug from borrow areas, ditches, and canals. Spoil areas are found on all tracts and include a roadway to the oil exploratory well and elevated pad, agricultural operations, hurricane debris, and areas associated with the military gunnery range.

**Utility Corridor** – 40.8 acres, 1.2% coverage at WTSP

Two locations at Site 200 were altered for the electric (FPL) right-of-way. Currently, these right-of-ways are maintained by FPL at a width of 200 feet. Dominant plant species include various herbaceous and shrub species, native and exotic. FPL infrequently maintains the vegetation along these corridors, generally only mowing herbaceous plants and not spraying exotic plants.

**Dry Prairie** – 35.5 acres, 1.1 % coverage at WTSP

Areas in which saw palmetto, fetterbush, tar flower, gallberry, wire grasses, broom sedge, running oak (*Quercus pumila*), pawpaw (*Asimina spp.*), and beak rushes were the most noted native vegetation. These treeless areas are usually found on

seldom-flooded dry sand sites. Dry prairie is similar to mesic flatwoods, except that pines and palms are absent or at a density below one tree per acre. The natural fire frequency in this community appears to be every 1 to 4 years (FNAI 1990).

**Canal/Ditch** – 26.2 acres, 0.8% coverage at WTSP

These are artificial drainageways (FNAI 2009). All WTSP tracts have highly disturbed areas that have been placed into this category either because of ditches from past agricultural uses or for stormwater drainage (e.g., vertically orientated between Sites 200 and 345).

Plant species includes broadleaf cattail, torpedo grass, maidencane, alligatorflag (*Thalia geniculata*), Brazilian pepper, and a variety of grasses and sedges. Animal species using these areas of the Preserve include American flagfish (*Jordanella floridae*), brown hoplo (*Hoplosternum littorale*), Florida gar (*Lepisosteus platyrhincus*), American alligator, wading birds, and amphibians.

**Cleared** – 24.3 acres, 0.7% coverage at WTSP

These areas were once cleared for agricultural operations at Site 90 and fence installation at Site 345, which will now be maintained by staff as fire breaks. Plants include a variety of herbaceous grasses and shrubs.

**Pasture – Semi-improved** – 19.7 acres, 0.6% coverage at WTSP

This altered community is dominated by a mix of planted non-native or domesticated native forage species and native groundcover, due to an incomplete conversion to pasture, not regeneration. Semi-improved pastures have been cleared of a significant percentage of their native vegetation and planted, but still retain scattered patches of native vegetation among the pastured areas (FNAI 2009). The planted areas are usually dominated by Bahia grass and can resemble improved pastures.

**Basin Marsh** – 13.6 acres, 0.4% coverage at WTSP

A basin marsh is characterized as an herbaceous or shrubby wetland situated in a relatively large and irregular shaped basin. Basin marshes usually develop in depressions that were formerly shallow lakes as the bottom slowly filled up with sediments from surrounding uplands and soils are usually acidic peats. Hydroperiod is normally 200 days per year and fire maintains the open herbaceous community by restricting shrub invasion, normal fire interval is between 1 to 10 years (FNAI 1990).

Typical basin marsh plants include pennywort, redroot, soft rush, water primrose, arrowhead, coastal plain willow, saltbush (*Baccharis halimifolia*), spikerush, and elderberry (*Sambucus canadensis*). Generally animals expected include Florida water snake (*Nerodia fasciata pictiventris*), great blue heron, great egret, snowy

egret, little blue heron (*Egretta caerulea*), tri-colored heron (*Egretta tricolor*), and Northern harrier.

**Impoundment/Artificial Pond** – 11.2 acres, 0.4% coverage at WTSP

“Stream or watershed impoundment, water retention ponds, cattle ponds, and borrow pits” (FNAI 2009). All parcels of WTSP have this altered community which include the borrow pits at the central NW corner of Site 200 (adjacent to FPL roadway), at the oil exploratory well site, the gunnery range at the northern end and cattle ponds.

Plants include cattail, maidencane, alligator flag, and pickerelweed. Animals noted include sandhill crane, American alligator, Florida gar, catfish, great egret, white ibis, and feral hog (*Sus scrofa*).

**Swamp Lake** – 10.4 acres, 0.3% coverage at WTSP

Synonyms for this community include cypress pond, gum pond, blackwater lake or pond which are generally characterized as shallow open water zones, with or without floating and submerged aquatic plants, that are surrounded by basin swamp or floodplain swamp. They are generally permanent water bodies where water levels fluctuate substantially and may become completely dry during extreme droughts. Swamp lakes are extremely vulnerable to hydrological manipulations which lower the water levels and hasten successional processes (FNAI 2009).

Typical plants include spatterdock, duckweed, coontail, milfoil, bladderwort, and pickerelweed. Several exotic plants also occur at the Preserve’s remaining swamp lake including water lettuce (*Pistia stratiotes*), water spangles (*Salvinia minima*), watersprite (*Ceratopteris thalictroides*), and West Indian marsh grass. Typical animals include mosquito fish, southern leopard frog (*Lithobates sphenoccephalus sphenoccephalus*), banded water snake, northern river otter (*Lutra canadensis*), great egret, and white ibis.

**Mesic Hammock** – 2.3 acres, <0.5% coverage at WTSP

Mesic hammocks are characterized by having an open or closed canopy dominated by live oak with cabbage palm present in the canopy or subcanopy (FNAI 2009). They can have a dense understory of saw palmetto, American beautyberry (*Callicarpa americana*) and wax myrtle with other tropical shrubs mixed in. Mesic hammocks occur on the fringes of rivers, swamps, marshes or lakes. Other plant species that occur in the hammock community at WTSP are south Florida slash pine and swamp fern (*Blechnum serrulatum*). Wildlife species seen here include palm warbler and gray catbird (*Dumetella carolinensis*).

**Road** – 2.3 acres, <0.5% coverage at WTSP

These areas were cleared and filled; and are used as private driveways (unpaved) and a road (paved, Green Meadows) on Sites 345 and 90.

**Prairie Mesic Hammock** - 0.5 acres, <0.5% coverage at WTSP

Isolated patches of mesic hammock occurring within a larger matrix of pyrogenic vegetation, usually dry prairie or mesic flatwoods, but occasionally on higher rises within a basin marsh, wet prairie, or wet flatwoods. These hammocks may experience low intensity fires on a regular basis, leading to a somewhat species-depauperate canopy of cabbage palm, live oak, or a mixture of the two species, with saw palmetto common in the understory (FNAI 2009).

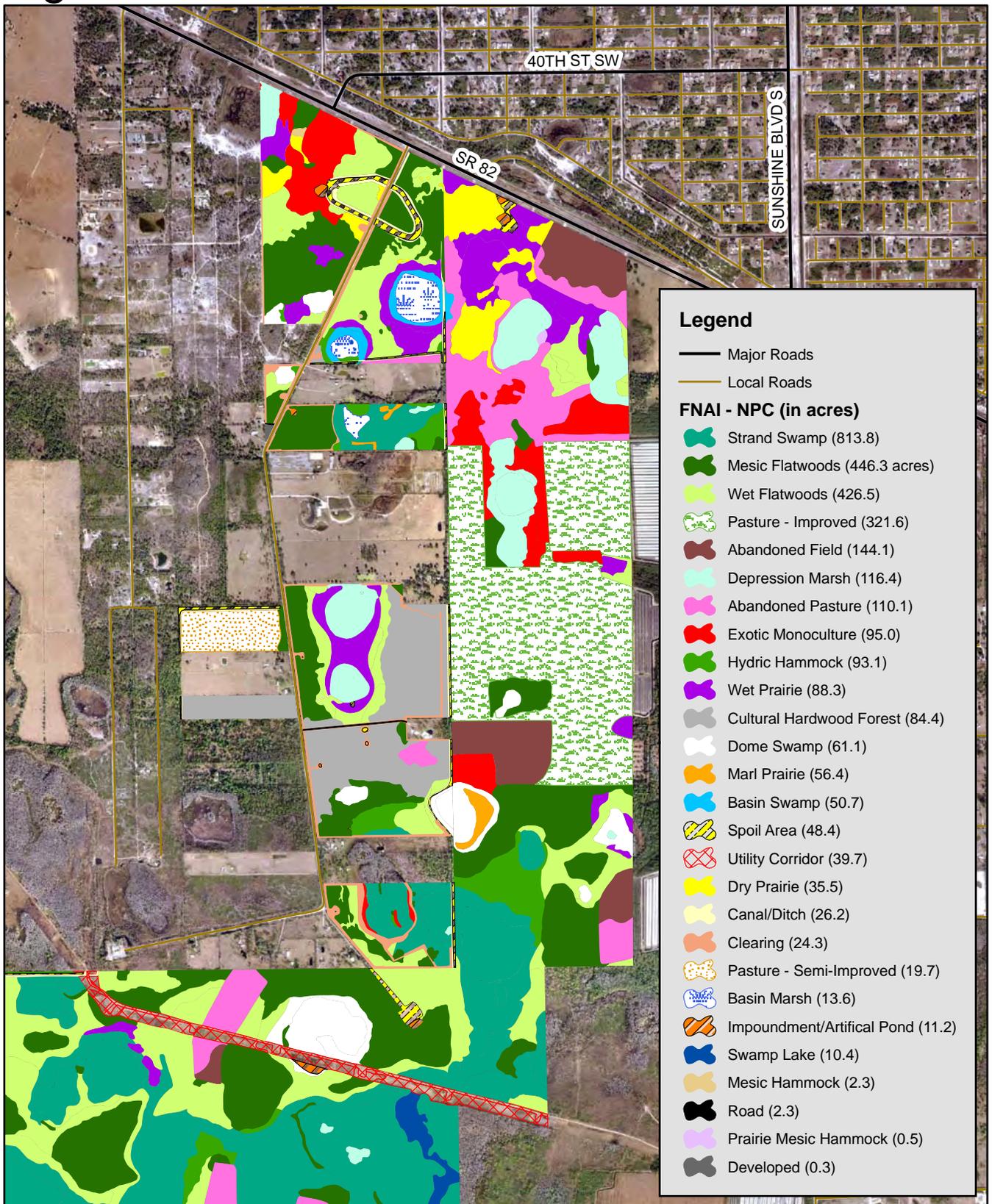
Typical animals found in these hammocks include green anole (*Anolis carolinensis*), common yellowthroat (*Geothlypis trichas*), blue-gray gnatcatcher and cotton mouse (*Peromyscus gossypinus*).

This community can occasionally flood, but is seldom inundated for more than 10-40 days a year. Although this community does not depend on fire, drier sites can occasionally tolerate low ground fires.

**Developed** - 0.3 acres, <0.5% coverage at WTSP

This developed area occurs on Site 345 and is being illegally maintained as a lawn by a neighbor and is adjacent to the unpaved driveway.

# Figure 13: Natural Plant Communities - North



CONSERVATION  
20/20  
LAND PROGRAM

N  
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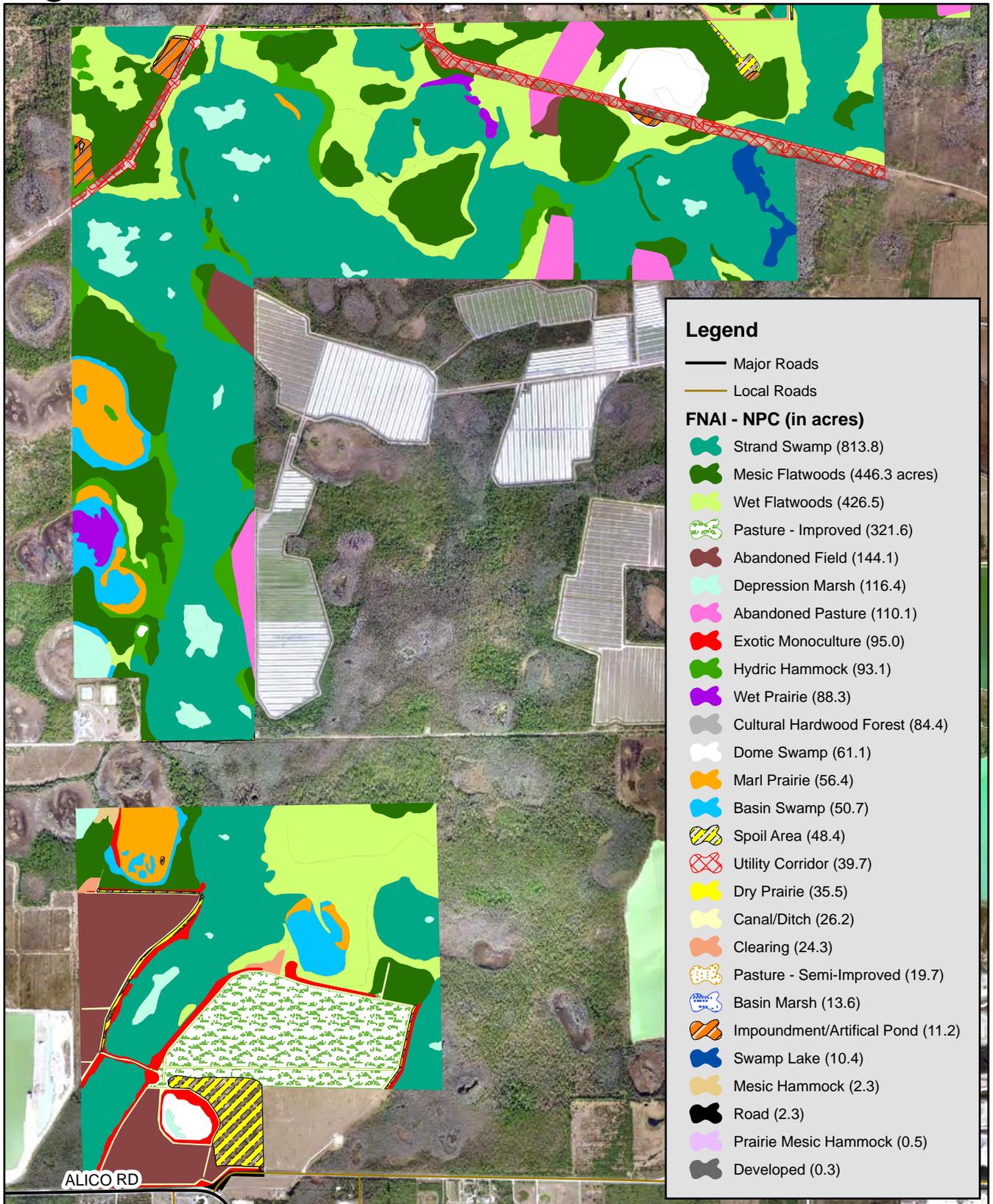
## Wild Turkey Strand Preserve

M:\GISLAYERS\Projects\Parks\_Rec\C2020\Wild Turkey Strand\2nd ed LSPiWTSP\_N\_NPC.mxd  
Map Prepared on: 05/06/10, by sturnari@leegov.com

0 750 1,500 3,000 4,500 6,000  
Feet

This is not a survey. Land Stewardship Staff has prepared this map for informational and planning purposes.

# Figure 14: Natural Plant Communities - South



CONSERVATION  
20/20  
LAND PROGRAM

## Wild Turkey Strand Preserve

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Map Prepared on: 05/06/10, by sfurnari@leegov.com

0 750 1,500 3,000 4,500 6,000  
Feet

This is not a survey. Land Stewardship Staff has prepared this map for informational and planning purposes.

### iii. Fauna

WTSP provides a variety of habitats for wildlife. The wide-range of plant communities supports the high diversity of fauna and a variety of bird species including numerous state and federally listed wildlife seen at the Preserve. Appendix C has the complete list of wildlife documented on the Preserve; as recorded through staff field work and site inspections, field work performed by students' internships, a wildlife disease study performed by representatives from the University of Georgia and National Veterinary Services Laboratory, and Lee County Bird Patrol volunteers.

Bird species observed include; black-bellied whistling duck (*Dendrocygna autumnalis*), Florida sandhill crane (*Grus canadensis pratensis*), wood stork and several herons. A variety of reptiles such as the Florida box turtle (*Terrapene carolina bauri*), American alligator and Florida cottonmouth have been observed along with several different species of mammals including Florida panther, eastern spotted skunk (*Spilogale putorius*), bobcat, and Big Cypress fox squirrel.

Since the creation of the first edition of this Land Stewardship Plan, ten more exotic wildlife species have been documented at the Preserve (Table 3), which now totals fifteen. Of highest concern is the feral hog because of its ability to uproot native vegetation and disturb the natural landscape.

Currently, C20/20 does not have an on-going hog trapping program at the Preserve. As funds become available, trapping at WTSP may become a routine maintenance activity. Additionally, staff will pursue allowing Florida Fish & Wildlife Conservation Commission (FWC) to conduct an annual or semi-annual weekend hunt while closing the Preserve to all other public uses. Since "hunting" conflicts with Parks and Recreation's Ordinance 06-26, public meetings to change the ordinance and final approval by the Lee County Board of County Commissioners (BOCC) will be required.

**Table 3: Exotic Wildlife at Wild Turkey Strand Preserve**

<b><u>Scientific Name</u></b>	<b><u>Common Name</u></b>
<i>Dasypus novemcinctus</i>	nine-banded armadillo
<i>Sus scrofa</i>	feral hog
<i>Cairina moschata</i>	muscovy duck
<i>Anolis sagrei</i>	brown anole
<i>Eleutherodactylus planirostris planirostris</i>	greenhouse frog
<i>Osteopilus septentrionalis</i>	Cuban treefrog
<i>Clarias batrachus</i>	walking catfish
<i>Hoplosternum littorale</i>	brown hoplo
<i>Hypostomus plecostomus</i>	suckermouth catfish
<i>Cichlasoma urophthalmus</i>	Mayan cichlid
<i>Oreochromis aureus</i>	blue tilapia

<i>Boreioglycaspis melaleucae</i>	melaleuca psyllid*
<i>Oxyops vitiosa</i>	melaleuca weevil*
<i>Polygenis gwyni</i>	cotton rat flea
<i>Pomacea insularum</i>	island applesnail

\*beneficial bio-control insects

Stewardship at the Preserve will focus on providing optimal habitat for native wildlife species. Restoration of the disturbed areas, control of invasive exotic plants and animals and application of prescribed fire will be critical restoration components to provide improved habitat for wildlife. WTSP is part of a countywide site inspection program for all C20/20 preserves. These inspections allow staff to monitor for any impacts and/or changes to each preserve and include lists of all animal sightings and new plant species that are found. If, during these inspections, staff finds FNAI listed species, they will be reported using the appropriate forms.

*iv. Designated Species*

There are a variety of designated animal and plant species (Table 4) found at WTSP. Although all native plant and animal species found on the Preserve have some protection due to the preservation of this property, certain species need additional attention. For stewardship purposes, all plants and animals listed by the USFWS, FWC, Florida Department of Agriculture and Consumer Services (FDACS), the IRC and FNAI will be given special consideration.

Typically, designated species will benefit from proper stewardship of the biological communities in which they occur. However, some species may require additional measures to ensure their protection. Practices likely to benefit wildlife and plants at the Preserve include exotic plant control, protecting and restoring water resources, prescribed fire, trash removal, wildlife monitoring, feral and exotic animal control, restricting construction of maintenance trails in certain areas and enforcement of no littering, no weapons (or 'unauthorized weapons,' if changes to the ordinance are made for hunting) and no motorized vehicles regulations.

**Table 4: Listed Species Found at WTSP and Their Designated Status**

Scientific Name	Common Name	USFWS	FWC	FNAI	FDACS	IRC	Occurrence
<b>MAMMALS</b>							
<i>Corynorhinus rafinesquii</i>	southeastern big-eared bat			G3G4/S2			expected
<i>Neofiber alleni</i>	round-tailed muskrat			G3/S3			expected
<i>Sciurus niger avicennia</i>	Big Cypress fox squirrel		T	G5T2/S2			confirmed
<i>Puma concolor coryi</i>	Florida panther	E	E	G5T1/S1			confirmed
<i>Ursus americanus floridanus</i>	Florida black bear		T	G5T2/S2			expected
<b>BIRDS</b>							
<i>Ixobrychus exilis</i>	least bittern			G5/S4			confirmed
<i>Ardea alba</i>	great egret			G5/S4			confirmed
<i>Egretta thula</i>	snowy egret		SSC	G5/S3			confirmed
<i>Egretta caerulea</i>	little blue heron		SSC	G5/S4			confirmed
<i>Egretta tricolor</i>	tricolored heron		SSC	G5/S4			confirmed
<i>Nycticorax nycticorax</i>	black-crowned night heron			G5/S3			confirmed
<i>Nyctanassa violacea</i>	yellow-crowned night heron			G5/S3			confirmed
<i>Aramus guarauna</i>	limpkin		SSC	G5/S3			expected
<i>Eudocimus albus</i>	white ibis		SSC	G5/S4			confirmed
<i>Plegadis falcinellus</i>	glossy ibis			G5/S3			confirmed
<i>Platalea ajaja</i>	roseate spoonbill		SSC	G5/S2			confirmed
<i>Mycteria americana</i>	wood stork	E	E	G4/S2			confirmed
<i>Elanoides forficatus</i>	swallow-tailed kite			G5/S2			confirmed
<i>Rostrhamus sociabilis plumbeus</i>	Everglades snail kite	E	E	G4G5T3Q/S2			confirmed
<i>Buteo brachyurus</i>	short-tailed hawk			G4G5/S1			expected
<i>Haliaeetus leucocephalus</i>	bald eagle		T	G5/S3			confirmed
<i>Accipiter cooperii</i>	Cooper's hawk			G5/S3			confirmed
<i>Caracara cheriway</i>	crested caracara	T	T	G5/S2			expected
<i>Falco sparverius paulus</i>	southeastern American kestrel		T	G5T4/S3			expected
<i>Grus canadensis pratensis</i>	Florida sandhill crane		T	G5T2T3/S2S3			confirmed
<i>Picoides villosus</i>	hairy woodpecker			G5/S3			confirmed
<b>REPTILES</b>							
<i>Alligator mississippiensis</i>	American alligator		SSC	G5/S4			confirmed

Scientific Name	Common Name	USFWS	FWC	FNAI	FDACS	IRC	Occurrence
<i>Gopherus polyphemus</i>	gopher tortoise		T	G3/S3			confirmed
<i>Drymarchon corais couperi</i>	eastern indigo snake	T	T	G4T3/S3			expected
<i>Crotalus adamanteus</i>	eastern diamondback rattlesnake			G4/S3			confirmed
<b>AMPHIBIANS</b>							
<i>Rana capito</i>	gopher frog		SSC	G3G4/S3			expected
<b>PLANTS</b>							
<b>Ferns and their allies</b>							
<i>Azolla caroliniana</i>	mosquito fern					R	confirmed
<i>Woodwardia virginica</i>	Virginia chain fern					R	confirmed
<i>Pteridium aquilinum var. pseudocaudatum</i>	tailed braken fern					R	confirmed
<i>Nephrolepis biserrata</i>	giant sword fern				T	R	confirmed
<i>Osmunda regalis var. spectabilis</i>	royal fern				CE	R	confirmed
<i>Campyloneurum phyllitidis</i>	long strap fern					R	confirmed
<i>Thelypteris interrupta</i>	hottentot fern					R	confirmed
<i>Thelypteris palustris var. pubescens</i>	marsh fern					R	confirmed
<b>Monocots</b>							
<i>Sagittaria graminea</i>	grassy arrowhead					R	confirmed
<i>Sagittaria graminea var. chapmanii</i>	Chapman's arrowhead					R	confirmed
<i>Nothoscordum bivalve</i>	false-garlic, crowpoison					Cl	confirmed
<i>Lemna obscura</i>	little duckweed					R	confirmed
<i>Tillandsia balbisiana</i>	reflexed wild-pine, northern				T		confirmed
<i>Tillandsia fasciculata var. densispica</i>	stiff-leaved wild-pine, cardinal				E		confirmed
<i>Tillandsia utriculata</i>	giant wild-pine, giant airplant				E		confirmed
<i>Burmannia capitata</i>	southern bluethead					R	confirmed
<i>Canna flaccida</i>	bandana-of-the-everglades					R	confirmed
<i>Carex longii</i>	Long's sedge					I	confirmed
<i>Carex verrucosa</i>	warty sedge					Cl	confirmed
<i>Cyperus distinctus</i>	swamp flatsedge					I	confirmed
<i>Cyperus flavescens</i>	yellow flatsedge					R	confirmed
<i>Cyperus retrorsus</i>	pinebarren flatsedge					R	confirmed
<i>Eleocharis baldwinii</i>	Baldwin's spikerush					R	confirmed
<i>Eleocharis flavescens</i>	yellow spikerush					I	confirmed

Scientific Name	Common Name	USFWS	FWC	FNAI	FDACS	IRC	Occurrence
<i>Fimbristylis autumnalis</i>	slender fimbry					R	confirmed
<i>Fimbristylis puberula</i>	hairy fimbry					I	confirmed
<i>Fuirena breviseta</i>	saltmarsh umbrellasedge					R	confirmed
<i>Fuirena scirpoidea</i>	southern umbrellasedge					R	confirmed
<i>Kyllinga odorata</i>	fragrant spikesedge					I	confirmed
<i>Lipocarpa micrantha</i>	smallflower halfchaff sedge					I	confirmed
<i>Rhynchospora fascicularis</i>	fascicled beaksedge					R	confirmed
<i>Rhynchospora fernaldii</i>	Fernald's beaksedge					CI	confirmed
<i>Rhynchospora filifolia</i>	threadleaf beaksedge					I	confirmed
<i>Rhynchospora inundata</i>	narrowfruit horned beaksedge					R	confirmed
<i>Rhynchospora microcarpa</i>	southern beaksedge					R	confirmed
<i>Rhynchospora nitens</i>	shortbeak beaksedge					R	confirmed
<i>Rhynchospora plumose</i>	plumed beaksedge					R	confirmed
<i>Rhynchospora rariflora</i>	fewflower beaksedge					CI	confirmed
<i>Rhynchospora tracyi</i>	Tracy's beaksedge					R	confirmed
<i>Scleria baldwinii</i>	Baldwin's nutrush					I	confirmed
<i>Scleria ciliata</i>	fringed nutrush					R	confirmed
<i>Scleria ciliata</i> var. <i>pauciflora</i>	fewflower nutrush					CI	confirmed
<i>Scleria reticularis</i>	netted nutrush					R	confirmed
<i>Scleria verticillata</i>	low nutrush					R	confirmed
<i>Eriocaulon compressum</i>	flattened pipewort					R	confirmed
<i>Eriocaulon decangulare</i>	tenangle pipewort					R	confirmed
<i>Lachnocaulon anceps</i>	whitehead bogbutton					R	confirmed
<i>Lachnocaulon minus</i>	Small's bogbutton					CI	confirmed
<i>Syngonanthus flavidulus</i>	yellow hatpins					R	confirmed
<i>Najas wrightiana</i>	Wright's waternymph					CI	confirmed
<i>Hypoxis juncea</i>	fringed yellow stargrass					R	confirmed
<i>Sisyrinchium angustifolium</i>	narroleaf blueeyed-grass					R	confirmed
<i>Juncus marginatus</i>	shore rush, grassleaf rush					R	confirmed
<i>Juncus megacephalus</i>	bighead rush					R	confirmed
<i>Lilium catesbaei</i>	Catesby's lily, pine lily				T	I	confirmed
<i>Aletris lutea</i>	yellow colicroot					R	confirmed

Scientific Name	Common Name	USFWS	FWC	FNAI	FDACS	IRC	Occurrence
<i>Bletia purpurea</i>	pinepink				T	R	confirmed
<i>Encyclia tampensis</i>	Florida butterfly orchid				CE		confirmed
<i>Habenaria quinqueseta</i>	longhorn false reinorchid					R	confirmed
<i>Harrisella porrecta</i>	needleroot airplant orchid			G4/S1	T	I	confirmed
<i>Sacoila lanceolata</i>	leafless beaked ladies'-tresses					I	confirmed
<i>Spiranthes laciniata</i>	lcelip lady's-tresses					I	confirmed
<i>Spiranthes longilabris</i>	long-lipped ladies'-tresses				T	I	confirmed
<i>Spiranthes vernalis</i>	spring lady's-tresses					R	confirmed
<i>Amphicarpum muhlenbergianum</i>	blue-maidencane					R	confirmed
<i>Andropogon glomeratus var. glaucopsis</i>	purple bluestem					R	confirmed
<i>Andropogon gyrans</i>	Elliott's bluestem					I	confirmed
<i>Andropogon virginicus</i>	broomsedge bluestem					I	confirmed
<i>Andropogon virginicus var. glaucus</i>	chalky bluestem					R	confirmed
<i>Aristida palustris</i>	longleaf threeawn					I	confirmed
<i>Aristida spiciformis</i>	bottlebrush threeawn					R	confirmed
<i>Axonopus fissifolius</i>	common carpetgrass					R	confirmed
<i>Dichantherium dichotomum</i>	cypress witchgrass					R	confirmed
<i>Dichantherium ensifolium</i>	cypress witchgrass					I	confirmed
<i>Dichantherium ensifolium var. unciphyllum</i>	cypress witchgrass					R	confirmed
<i>Dichantherium leucothrix</i>	rough witchgrass					I	confirmed
<i>Elionurus tripsacoides</i>	Pan-American balsamscale					I	confirmed
<i>Eragrostis virginica</i>	coastal lovegrass					I	confirmed
<i>Gymnopogon brevifolius</i>	shortleaf skeleton grass					CI	confirmed
<i>Leersia hexandra</i>	southern cutgrass					R	confirmed
<i>Leptochloa fusca subsp. Fascicularis</i>	bearded sprangletop					R	confirmed
<i>Panicum dichotomiflorum</i>	fall panic grass					R	confirmed
<i>Panicum hians</i>	gaping panicum					R	confirmed
<i>Panicum tenerum</i>	bluejoint panicum					R	confirmed
<i>Paspalum distichum</i>	knotgrass					R	confirmed
<i>Paspalidium geminatum</i>	Egyptian paspalidium					I	confirmed
<i>Paspalum floridanum</i>	Florida paspalum					I	confirmed

Scientific Name	Common Name	USFWS	FWC	FNAI	FDACS	IRC	Occurrence
<i>Paspalum monostachyum</i>	gulfdune paspalum					R	confirmed
<i>Sacciolepis striata</i>	American cupscale					R	confirmed
<i>Smilax tamnoides</i>	bristly greenbrier					I	confirmed
<i>Xyris ambigua</i>	coastalplain yelloweyed grass					R	confirmed
<i>Xyris brevifolia</i>	shortleaf yelloweyed grass					I	confirmed
<i>Xyris caroliniana</i>	Carolina yelloweyed grass					R	confirmed
<i>Xyris elliotii</i>	Elliott's yelloweyed grass					R	confirmed
<i>Xyris flabelliformis</i>	Savannah yelloweyed grass					I	confirmed
<i>Xyris smalliana</i>	Small's yelloweyed grass					I	confirmed
<b>Dicots</b>							
<i>Dyschoriste oblongifolia</i>	oblongleaf twinflower					I	confirmed
<i>Justicia angusta</i>	narrow-leaved waterwillow					R	confirmed
<i>Stenandrium dulce</i>	pinklet					R	confirmed
<i>Ruellia caroliniensis</i>	Carolina wild petunia					I	confirmed
<i>Eryngium balwinii</i>	Baldwin's eryngo					R	confirmed
<i>Eryngium yuccifolium</i>	button rattlesnakemaster					R	confirmed
<i>Asclepias longifolia</i>	longleaf milkweed					R	confirmed
<i>Asclepias pedicellata</i>	Savannah milkweed					I	confirmed
<i>Hydrocotyle umbellata</i>	manyflower marsh pennywort					R	confirmed
<i>Bigelovia nudata subsp. australis</i>	pineland rayless goldenrod					R	confirmed
<i>Boltonia diffusa</i>	smallhead doll's-daisy					R	confirmed
<i>Carphephorus corymbosus</i>	Florida paintbrush					R	confirmed
<i>Carphephorus odoratissimus var. subtropicanus</i>	pineland purple					I	confirmed
<i>Cirsium nuttallii</i>	Nuttall's thistle					I	confirmed
<i>Coreopsis floridana</i>	Florida tickseed					I	confirmed
<i>Elephantopus elatus</i>	tall elephantsfoot					R	confirmed
<i>Erigeron vernus</i>	early whitetop fleabane					R	confirmed
<i>Eupatorium leptophyllum</i>	falsefennel					R	confirmed
<i>Eupatorium mohrii</i>	Mohr's thoroughwort					R	confirmed
<i>Gamochaeta falcata</i>	narrowleaf purple everlasting					R	confirmed
<i>Helenium pinnatifidum</i>	southeastern sneezeweed					R	confirmed

Scientific Name	Common Name	USFWS	FWC	FNAI	FDACS	IRC	Occurrence
<i>Liatris garberi</i>	Garber's gayfeather					I	confirmed
<i>Liatris gracilis</i>	slender gayfeather					R	confirmed
<i>Lygodesmia aphylla</i>	roserush					R	confirmed
<i>Pseudognaphalium obtusifolium</i>	sweet everlasting					R	confirmed
<i>Rudbeckia hirta</i>	blackeyed Susan					R	confirmed
<i>Solidago fistulosa</i>	pinebarren goldenrod					R	confirmed
<i>Solidago sempervirens</i>	seaside goldenrod					R	confirmed
<i>Solidago tortifolia</i>	twistedleaf goldenrod					I	confirmed
<i>Symphyotrichum carolinianus</i>	climbing aster					R	confirmed
<i>Rorippa teres</i>	southern marsh yellowcress					I	confirmed
<i>Lechea torreyi</i>	piedmont pinweed					R	confirmed
<i>Hypericum brachyphyllum</i>	coastalplain St. John's-wort					R	confirmed
<i>Hypericum fasciculatum</i>	peelbark St. John's-wort					R	confirmed
<i>Hypericum gentianoides</i>	pineweeds, orangegrass					I	confirmed
<i>Hypericum mutilum</i>	dwarf St. John's-wort					I	confirmed
<i>Cornus foemina</i>	swamp dogwood					R	confirmed
<i>Drosera capillaries</i>	pink sundew					R	confirmed
<i>Bejaria racemosa</i>	tarflower					R	confirmed
<i>Gaylussacia dumosa</i>	dwarf huckleberry					R	confirmed
<i>Caperonia castaneifolia</i>	chestnutleaf falsecroton					I	confirmed
<i>Euphorbia inundata</i>	Florida pineland spurge					CI	confirmed
<i>Phyllanthus caroliniensis subsp. Saxicola</i>	rock Carolina leafflower					R	confirmed
<i>Stillingia aquatica</i>	corkwood					R	confirmed
<i>Stillingia sylvatica</i>	queensdelight					R	confirmed
<i>Acacia farnesiana</i>	sweet acacia					R	confirmed
<i>Aeschynomene Americana</i>	shyleaf					R	confirmed
<i>Chamaecrista nictitans</i>	sensitive pea					CI	confirmed
<i>Galactia elliotii</i>	Elliott's milkpea					R	confirmed
<i>Galactia refularis</i>	eastern milkpea					R	confirmed
<i>Tephrosia rugelii</i>	Rugel's hoarypea					I	confirmed
<i>Quercus minima</i>	dwarf live oak					R	confirmed
<i>Bartonia verna</i>	white screwstem					I	confirmed

Scientific Name	Common Name	USFWS	FWC	FNAI	FDACS	IRC	Occurrence
<i>Sabatia bartramii</i>	Bartram's rosegentian					I	confirmed
<i>Sabatia brevifolia</i>	shortleaf rosegentian					I	confirmed
<i>Sabatia grandiflora</i>	largeflower rosegentian					R	confirmed
<i>Proserpinaca palustris</i>	marsh mermaidweed					R	confirmed
<i>Proserpinaca pectinata</i>	combleaf mermaidweed					R	confirmed
<i>Hydrolea corymbosa</i>	skyflower					R	confirmed
<i>Physostegia purpurea</i>	eastern false dragonhead					I	confirmed
<i>Piloblephis rigida</i>	wild pennyroyal					R	confirmed
<i>Pinguicula lutea</i>	yellow butterwort				T	CI	confirmed
<i>Pinguicula pumila</i>	small butterwort					R	confirmed
<i>Utricularia cornuta</i>	horned bladderwort					R	confirmed
<i>Utricularia foliosa</i>	leafy bladderwort					R	confirmed
<i>Utricularia gibba</i>	humped bladderwort					I	confirmed
<i>Utricularia inflata</i>	floating bladderwort					I	confirmed
<i>Utricularia resupinata</i>	small purple bladderwort					I	confirmed
<i>Utricularia simulans</i>	fringed bladderwort					I	confirmed
<i>Utricularia subulata</i>	zigzag bladderwort					R	confirmed
<i>Linum floridanum</i>	Florida yellow flax					I	confirmed
<i>Linum medium var. texanum</i>	stiff yellow flax					R	confirmed
<i>Mitreola sessilifolia</i>	swamp hornpod					R	confirmed
<i>Ammannia latifolia</i>	pink redstem, toothcup					R	confirmed
<i>Rotala ramosior</i>	toothcup, lowland rotala					I	confirmed
<i>Melochia spicata</i>	bretonica peluda					I	confirmed
<i>Rhexia cubensis</i>	West Indian meadowbeauty					I	confirmed
<i>Rhexia mariana</i>	pale meadowbeauty					R	confirmed
<i>Rhexia nuttallii</i>	Nuttall's meadowbeauty					I	confirmed
<i>Rhexia petiolata</i>	fringed meadowbeauty					CI	confirmed
<i>Nymphaea elegans</i>	tropical royalblue waterlily					I	confirmed
<i>Fraxinus caroliniana</i>	pop ash					R	confirmed
<i>Ludwigia curtissii</i>	Curtiss's primrosewillow					R	confirmed
<i>Ludwigia linifolia</i>	southeastern primrosewillow					I	confirmed
<i>Ludwigia maritima</i>	seaside primrosewillow					R	confirmed

Scientific Name	Common Name	USFWS	FWC	FNAI	FDACS	IRC	Occurrence
<i>Ludwigia microcarpa</i>	smallfruit primrosewillow					R	confirmed
<i>Oenothera laciniata</i>	cutleaf eveningprimrose					R	confirmed
<i>Agalinis fasciculata</i>	beach false foxglove					R	confirmed
<i>Agalinis obtusifolia</i>	tenlobe false foxglove					CI	confirmed
<i>Polygala baldwinii</i>	Baldwin's milkwort					R	confirmed
<i>Polygala cruciata</i>	drumheads					I	confirmed
<i>Polygala incarnata</i>	procession flower					R	confirmed
<i>Polygala lutea</i>	orange milkwort					I	confirmed
<i>Polygala nana</i>	candyroot					R	confirmed
<i>Polygala rugelii</i>	big yellow milkwort					I	confirmed
<i>Polygala setacea</i>	coastalplain milkwort					I	confirmed
<i>Polygonum hydropiperoides</i>	swamp smartweed					R	confirmed
<i>Anagallis minima</i>	chaffweed					CI	confirmed
<i>Anagallis pumila</i>	Florida pimpernel					CI	confirmed
<i>Samolus valerandi subsp. parviflorus</i>	pineland pimpernel					R	confirmed
<i>Clematis baldwinii</i>	pine-hyacinth					R	confirmed
<i>Berchemia scandens</i>	rattan vine					I	confirmed
<i>Rubus cuneifolius</i>	sand blackberry					I	confirmed
<i>Rubus trivialis</i>	southern dewberry					R	confirmed
<i>Diodia teres</i>	poor joe, rough buttonweed					R	confirmed
<i>Diodia virginiana</i>	Virginia buttonweed					R	confirmed
<i>Houstonia procumbens</i>	innocence					R	confirmed
<i>Oldenlandia uniflora</i>	clustered mille grains					I	confirmed
<i>Spermacoce prostrate</i>	prostrate false buttonweed					R	confirmed
<i>Sideroxylon reclinatum</i>	Florida bully					R	confirmed
<i>Physalis pubescens</i>	husk tomato					R	confirmed
<i>Gratiola hispida</i>	rough hedgehyssop					I	confirmed
<i>Gratiola ramosa</i>	branched hedgehyssop					R	confirmed
<i>Linaria canadensis</i>	Canada toadflax					R	confirmed
<i>Lindernia grandiflora</i>	Savannah false-pimpernel					I	confirmed
<i>Micranthemum glomeratum</i>	manatee mudflower					I	confirmed
<i>Micranthemum umbrosum</i>	shade mudflower					CI	confirmed

Scientific Name	Common Name	USFWS	FWC	FNAI	FDACS	IRC	Occurrence
<i>Viola lanceolata</i>	bog white violet					I	confirmed
<i>Viola palmata</i>	early blue violet					CI	confirmed

**Key**

**USFWS** - U.S. Fish and Wildlife Service

**FWC** - Florida Fish and Wildlife  
Conservation Commission

**FDACS** - Florida Department of Agriculture and Consumer Services

**E** – Endangered

**T** – Threatened

**CE** - Commercially Exploited

**SSC** - Species of Special Concern

**IRC** - The Institute for Regional Conservation

**CI** - Critically Imperiled

**I** – Imperiled

**R** – Rare

**FNAI** - Florida Natural Areas Inventory

**G** - Global rarity of the species

**S** - State rarity of the species

**T** - Subspecies of special population

**1** - Critically imperiled

**2** - Imperiled

**3** - Rare, restricted or otherwise vulnerable to extinction

**4** - Apparently secure

**5** - Demonstrateably secure

## **Wildlife Species**

The following is a brief summary of each designated wildlife species explaining why they are in decline. Unless stated otherwise, the reasons for the species decline and the management recommendations, if available, were obtained from Hipes et al. (2001).

### **Amphibians and Reptiles**

#### **Gopher Frog**

The gopher frog (*Rana capito*) is becoming increasingly rare throughout its range, primarily due to habitat loss and degradation, as well as the decline of the gopher tortoise, whose burrows often provide homes for this species. Gopher frogs depend on temporary breeding ponds, which rarely support large predatory fish, surrounded by healthy upland ecosystems. They are known to disperse up to a mile from their breeding ponds. In south Florida, gopher frogs may breed year round, but their main breeding season is from October through April when they migrate to ponds during heavy rains.

Although gopher frogs have not been recorded at WTSP, they are likely to occur due to the presence of gopher tortoises and appropriate habitat. Future frog call monitoring may be able to confirm their presence (but not their absence). If their presence is discovered, a 30-meter buffer zone around the wetlands should be established where there is no soil disturbance and herbicides are discontinued during breeding and tadpole development periods, which last 3-5 months (Bailey 2003). Allowing fire to burn through the wetlands late in the dry season will maintain the breeding ponds as open, grassy habitats and prevent shrub encroachment.

#### **American Alligator**

American alligators have recovered dramatically since the 1960s. There are now some populations large enough to support limited harvests. Pollution and destruction of wetlands are currently the main threat to this species. Protecting wetlands from ditching, filling and pollution are the management recommendations for this species.

#### **Gopher Tortoise**

Gopher tortoises are in decline throughout their range due to loss and degradation of habitat. As a species dependant on dry, upland communities much of their habitat has been lost to urban and residential development, agriculture, citrus groves, mining and pine plantations. Additional threats include a highly contagious respiratory disease and human consumption.

Although no formal census has been conducted, gopher tortoises are uncommon at WTSP due to the wetness of the site. They have been seen within three MU (200-4, 345-6 & 345-8) of the Preserve. Exotic plant removal, pine tree thinning, brush

reduction, and prescribed burning will benefit this species. Before restoration activities that utilize heavy equipment take place, staff will conduct burrow surveys in areas where tortoise burrows could be present. Burrows will be flagged and equipment operators will be advised to stay away from the burrows.

### **Eastern Indigo Snake**

The Eastern indigo snake (*Drymarchon corais couperi*) is a large, iridescent black snake with a red, coral, or white throat (record length, 8.6 feet). This species is found in a large spectrum of habitats throughout Florida and southern Georgia, often associated with gopher tortoise burrows. The Eastern indigo is threatened throughout its range due to habitat loss, degradation and fragmentation. Although it is now illegal to possess this animal without the proper permits, the pet trade is another cause for decline of this species. The most common causes of mortality are human caused, either by people afraid of snakes or accidental highway mortality. The indigo snake utilizes a home range of approximately 125-250 acres, and the males are territorial during the breeding season. The indigo snake feeds diurnally on fish, frogs, toads, lizards, snakes, small turtles, birds, and small mammals, often around the edge of wetlands. The eastern indigo snake breeds from November through April, then lays 5-10 eggs in May or June (USFWS 1982).

Eastern indigo snake has not been confirmed utilizing WTSP, but the size of the Preserve, habitats and abundance of prey makes them a likely resident. Additionally, public education about the ecological value of this and other species of snakes will help to protect them from visitors to the Preserve and from adjacent landowners.

### **Eastern Diamondback Rattlesnake**

Although not a listed species, the eastern diamondback rattlesnake (*Crotalus adamanteus*) is commonly thought to be in decline throughout its range. Scientists believe that it requires 10,000 acres or more to sustain long-term viable populations. Additional threats to this species include indiscriminate killing because of fear, as well as for trade and being hit by cars. One was noted in September 2008, traveling from Rod & Gun Club Road to MU 345-1.

### **Wading Birds**

#### **Least Bittern**

During the summer months, least bitterns (*Ixobrychus exilis*) breed throughout eastern and central U.S. and southern Ontario from coastal Maine to Florida, and westward to the eastern Dakotas and central Texas. They are known to be in scattered locations in western United States, in Mexico, Caribbean, and Central and South America. During winter months, least bittern's range from the mid-Atlantic seaboard to south Florida and southward. They prefer freshwater or brackish marshes with tall emergent vegetation and are difficult to survey, so few data are available. Loss of wetland habitat and the encroachment of exotic species of marsh vegetation may pose a threat (CLOa 2003).

### **Little Blue Heron, Tricolored Heron, Snowy Egret**

The little blue heron's (*Egretta caerulea*) and tricolored heron's (*Egretta tricolor*) decline are due to loss of freshwater wetlands and alteration of their natural hydroperiod. There is also some indication that pesticides and heavy metal contamination may affect this heron. Like these herons, the snowy egret (*Egretta thula*) is declining throughout its range, and has been since the 1950s. Scientists believe that the main reason for this decline is the loss and alteration of wetlands where they forage.

### **Limpkin**

The limpkin (*Aramus guarauna*) is a large, long-billed, long-legged wader of swamps and marshes. Its bill is heavy and slightly decurved, allowing easy access to its preferred food, the apple snail (*Pomacea paludosa*). Pollution, hydrological disruptions, and an increase in invasive plants threaten the health of the apple snail population and hence the limpkin.

### **White Ibis, Glossy Ibis, Roseate Spoonbill**

Similar to the herons listed above, the white ibis (*Eudocimus albus*), glossy ibis (*Plegadis falcinellus*) and roseate spoonbills (*Platalea ajaja*) are declining throughout their range, due to the same reasons as the other wading birds, which includes the reduction and degradation of wetlands and human disturbances to their rookeries.

### **Black & Yellow-crowned Night Herons**

Black-crowned night heron (*Nycticorax nycticorax*) and yellow-crowned night heron "populations have probably declined due to illegal shooting, disturbance at breeding colonies, and drainage of wetlands used for foraging. In Florida, the destruction and alteration of more than half of the wetlands, due to the phenomenal increase in population has caused a substantial decline in ardeids. Wetlands have been filled and or impacted by housing developments, agriculture, human activity (i.e. sports, recreation) and the infrastructure that supports these activities" (Rodgers et al. 1996).

### **Wood Stork**

Wood storks (*Mycteria americana*) are very sensitive to water levels in freshwater wetlands, as they require high concentrations of fish in fairly shallow water for foraging. Unnaturally high water levels during nesting seasons and extended droughts are both threats that wood storks face.

### **Florida Sandhill Crane**

Florida sandhill cranes (*Grus canadensis pratensis*) and the migratory greater sandhill crane (*Grus canadensis tabida*) are indistinguishable from each other. There have been crane sightings at the Preserve during the summer (April-September) when the migratory greater sandhill cranes are not present. In April 2007, there was a nest confirmed within a borrow pit. Threats to Florida sandhill cranes include loss and degradation of wetlands, altered water levels during nesting

season, fire suppression, free ranging dogs and cats, and entanglement in fencing (Rodgers et al. 1996).

## **Raptors**

### **Swallow-tailed Kite**

Swallow-tailed kites (*Elanoides forficatus*) migrate to Southwest Florida from South America in late February/early March for their nesting season that lasts through late July/early September. In the early 1900s, swallow-tailed kites were confirmed as nested in 21 states, today they are only found in seven southeastern states. Loss of nesting sites through development and conversion to agriculture are the major threats to this species.

This raptor has not been confirmed as nesting at WTSP, but nesting behavior has been observed. In the future if it is discovered that they are nesting on the property, the nest trees will be protected from disturbance during breeding season and planned management activities that could disturb the nesting pair(s) will be postponed.

### **Everglades Snail Kite**

The Everglades snail kite (*Rostrhamus sociabilis plumbeus*), the subspecies of the snail kite in the United States, is endangered because many of the marshlands that serve as its habitat have been drained for development, which in turn has caused diminishing numbers of the kite's prey species, the apple snail. Success in locating apple snails is further obstructed by the introduction of exotic plants such as water lettuce, which hinders foraging and the potential impact of non-native apple snails. Apple snails have also suffered from agricultural runoff, eutrophication, pesticides and other pollutants.

There were only 65 snail kites known to exist when the Endangered Species Act was passed in 1973. This species has managed a comeback resulting in a 1997 population of 995 birds. On June 19, 2004, a female snail kite was observed by Land Stewardship staff at Surprise Pond in MU 200-7. On July 26, 2004, a male was seen in the Grand Marsh of MU 200-1. Other snail kites have been seen in the vicinity of Green Meadows Road in 2009.

### **Short-Tailed Hawk**

The short-tailed hawk's (*Buteo brachyurus*) Florida population is very small, with about 400 birds concentrated mainly in the southern part of the state. Although this species is found in other tropical lowlands, Florida's population has probably been isolated for hundreds or even thousands of years. Effects of loss of habitat to urbanization and deforestation are poorly known, but studies suggest that development poses a threat. Florida rehabilitators have treated birds for gunshot wounds and collisions with cars. Nesting habitat has been lost to cypress logging as these birds appear to have high fidelity to their breeding sites.

### **Bald Eagle**

Bald eagle (*Haliaeetus leucocephalus*) numbers have steadily increased in Florida after a low of 120 active nests in 1973. Still, loss of habitat and human disturbance due to development is a primary concern for this species. Currently there are no eagle nests on WTSP but eagles have been seen perched in trees and have been observed flying over the Preserve during nesting season.

### **Cooper's Hawk**

Cooper's hawk will "capture a bird with its feet and will squeeze it repeatedly to kill it. It does not bite the prey to kill it in the fashion of falcons, but holds it away from its body until it dies. It has been known to drown its prey, holding a bird under water until it stops moving" (CLOb 2003). During the summer, they breed across southern Canada southward to southern United States and into central Mexico. In the winter, they range throughout the United States and Mexico. They breed in deciduous, mixed, and coniferous forests, although documentation of breeding in south Florida is scant, and are becoming more common in suburban and urban areas.

"Declines of the Cooper's hawk in the late 1940s and 1950s were blamed on DDT and pesticide contamination. Populations started increasing in the late 1960s, but it is still listed as threatened or of special concern in a number of states. The Cooper's hawk appears to be adapting to breeding in urban areas, which may help increase populations" (CLOb 2003).

### **Crested Caracara**

The crested caracara's range has contracted and become more fragmented because their habitat is threatened primarily by residential development and conversion to more intensive agricultural (e.g., citrus) uses. The crested caracara's large habitat requirements makes land acquisition and/or development of incentives (e.g., cooperative agreements, conservation easements, tax breaks) for private landowners to maintain their ranch lands for their long-term security an important task. Although not confirmed on the Preserve, staff has noted crested caracaras in an adjacent farm field off Green Meadows Road.

### **Southeastern American Kestrel**

The southeastern American kestrel (*Falco sparverius paulus*) is found in open pine habitats, woodland edges, prairies, and pastures throughout much of Florida. Nest sites are cavities in tall dead trees or utility poles generally with an unobstructed view of the surroundings. The availability of suitable nesting sites is paramount during breeding season. Open patches of grass or bare ground are needed in flatwoods settings, since thick palmettos prevent detection of prey.

Natural nesting and foraging habitats have declined, as sandhill and open flatwoods habitats are converted to intensive agricultural lands and residential development. Pastures may be used by the breeding species but often lack snags used for nesting sites. A key habitat feature necessary for breeding is a suitable cavity tree. Cavity trees are usually excavated in large pines and, less frequently, oaks by various

woodpeckers. Additional management activities will permit leaving a reasonable number of tree snags to increase nesting opportunities.

### **Hairy Woodpecker**

The hairy woodpecker (*Picoides villosus*) is a “resident from central Alaska to Newfoundland, southward to Florida and Central America, but can also be found in the Bahamas.” They are “found in mature woods, small woodlots, wooded parks, and residential areas with large trees.” Hairy woodpeckers build their nest in cavities of trees or a dead branches and do not put additional materials in the cavity. They are considered “common and widespread, but may be declining in some areas. The hairy woodpecker is attracted to the heavy blows a pileated woodpecker makes when it is excavating a tree. The hairy forages in close association with the larger woodpecker, pecking in the deep excavations and taking insects that the pileated missed” (CLOc 2003).

## **Mammals**

### **Southeastern Big-eared Bat**

The southeastern big-eared bat (*Corynorhinus rafinesquii*) is a medium-sized bat with very long ears that extend to the center of the back when laid down. Its long ears distinguish this species from all other Florida bats. It inhabits forested communities, particularly those associated with floodplains, supporting large, hollow trees used for roosting; also pine flatwoods and mixed oak-pine forests. This bat is known from less than a dozen locations in Florida, at least four of which are on public or private conservation lands.

### **Round-Tailed Muskrat**

The round-tailed muskrat (*Neofiber alleni*) is nocturnal and constructs dens by weaving grasses and other marsh vegetation into domes of varying size. It lives in shallow marshes of variable size and plant species composition. It is distributed in patches across the state and is threatened by isolation of populations resulting from development and wetland drainage.

Occasional fires are needed to maintain the marsh habitat, but because vegetation needed for food and cover grows back more slowly after winter burns, growing-season burns may be preferred.

### **Big Cypress Fox Squirrel**

The Big Cypress fox squirrel (*Sciurus niger avicennia*) is in decline throughout its range primarily due to loss and degradation of habitat. Although the number of this subspecies of fox squirrel in Florida is unknown, “based on the amount of known habitat loss, fox squirrel populations have undoubtedly declined at least 85% from pre-settlement levels” (Humphrey 1992). Much of the fox squirrel’s pine-oak forest has been converted to pine plantations, agriculture and development.

Regular burn regimes of 2-5 years during the growing season (April-July) are critical to maintain their habitat with an open canopy with minimal understory. In 2002, Kevin L. Erwin Consulting Ecologist, Inc. reported sighting fox squirrels in MUs 200-3 and 200-8. In 2004, staff saw fox squirrels in MU 200-4, while during 2008 & 2009, staff saw fox squirrels in MU 200-6.

### **Florida Panther**

The Florida panther (*Puma concolor coryi*) is extirpated from most of its historic range in the southeastern United States, but exists in small populations in south Florida. The Florida panther's decline is due mainly to loss, fragmentation, and degradation of habitat. Other habitat related threats include inbreeding, insufficient numbers of large prey, disease, and mercury and other environmental contaminants. Institutional constraints and negative public perceptions also threaten the future survival of the Florida panther. The large cats require extensive areas of mostly forested communities. Large wetlands that are generally inaccessible to humans are important for diurnal refuge. They will tolerate improved areas in a mosaic of natural communities.

The presence of Florida panthers has been confirmed in recent years at WTSP. The Preserve is a Priority 2 land delineated in the Florida Panther Habitat Preservation Plan issued by the Florida Panther Inter-agency Committee, consisting of four state and federal wildlife agencies (Figure 15). Anecdotal information from residential neighbors indicate the panther's presence here as recently as the spring of 2009 (MU 200-4) and staff noted large feline paw prints along a fire break (MU 200-8). In May 2010, staff received an FWC (Onorato 2010) generated map showing radio-collared panthers on Sites 90 & 200 (Appendix D).

### **Florida Black Bear**

The Florida black bear (*Ursus americanus floridanus*) is in decline due to the loss of core habitat and of corridors capable of handling their large ranges. A wide variety of forested communities are needed to support the varied seasonal diet of black bears. Forested wetlands are particularly important for diurnal cover.

The Florida black bear faces numerous challenges including poaching, road kill mortality, low reproductive rate and most importantly loss of habitat to timber harvesting, development and other uses. "Long-term conservation of the Florida black bear is dependent upon preservation of large contiguous woodlands." Scientists with FWC have found the average home range for female black bears is almost 7,000 acres and males average over 42,000 acres (Humphrey 1992).

Although staff has not confirmed the Florida black bear, its presence is expected due to the size of the Preserve, the mosaic of suitable habitat and the position in a preservation corridor south into Collier County. The Preserve will also serve as a safe corridor for the travel of black bears throughout a larger conservation area. Scientists have found that large scale winter burning reduces the diversity of food available to bears as compared to growing season burns (Humphrey 1992).

Prescribed burns conducted in the late spring would not only be beneficial to bears, but also to several other species listed above. Although bears have not been confirmed on the Preserve, adjacent neighbors have seen them in the area.

## **Plants**

All of the following plant species have been recorded on WTSP either by botanists from IRC or Land Stewardship staff.

### **Tenlobe False Foxglove**

The tenlobe false foxglove (*Agalinis obtusifolia*) is classified by IRC as Critically Imperiled in south Florida because of extreme rarity. It is found in flatwoods habitats (Gann 2002).

### **Chaffweed**

Chaffweed (*Anagallis minima*) has been recognized as Critically Imperiled in south Florida by IRC and is usually found in moist, disturbed soils (Gann 2002).

### **Florida Pimpernel**

In 2002, the Florida pimpernel (*Anagallis pumila*) was a plant not known to be in any conservation area. It is listed by IRC as Critically Imperiled. Habitats that this plant may be located in include mesic flatwoods, pond margins, and riverbanks (Gann 2002). During a plant survey in 2004, this plant was located on the Preserve in mesic flatwoods.

### **Pinepink**

Pinepink (*Bletia purpurea*) is listed as Threatened by the FDACS and has been found in central and south Florida rockland pinelands and scrub habitats (Brown 2002). Neither of these communities occur at this Preserve, although the plant was located on WTSP.

### **Warty Sedge**

The warty sedge (*Carex verrucosa*) has been recognized as Critically Imperiled in south Florida by IRC and only noted in three counties. This perennial terrestrial herb can be found in freshwater swamps and marshes. This is a temperate species at the southern end of its range (Gann 2002).

Fewer than 12 plants were located in MU 200-10, its' major threats are hydrologic modifications and wetland invasive exotic plants.

### **Sensitive-pea**

The sensitive-pea (*Chamaecrista nictitans*) has been recognized as Critically Imperiled in south Florida by IRC and only noted in three counties. This annual terrestrial herb can be found in flatwoods and disturbed sites (Gann 2002).

### **Florida Butterfly Orchid**

Although locally abundant (Brown 2002), the Florida butterfly orchid (*Encyclia tampensis*) is designated as Commercially Exploited by the FDACS. A plant that is designated as “Commercially Exploited” is considered to be threatened by commercial use.

Florida butterfly orchids are scattered in a few areas of WTSP. When creating any trails, consideration will be made to avoid areas where these plants are growing. If the plants will be damaged during restoration activities, a permit will be obtained from FDACS to remove them before work commences. Plants growing on invasive exotic vegetation, to be destroyed, will be relocated on the site if economically feasible.

### **Shortleaf Skeleton Grass**

Shortleaf skeleton grass (*Gymnopogon brevifolius*) has been recognized as Critically Imperiled in south Florida by IRC. This perennial terrestrial herb may be found in mesic flatwoods (Gann 2002).

### **Needleroot Airplant Orchid**

Needleroot airplant orchid (*Harrisella porrecta*) is also known as leafless harrisella and a local common name of “jingle bell orchid,” because the fruits hang in little clusters (Brown 2002). It is listed by FNAI as G4/S1 and by FDACS as Threatened. General habitats found in include hardwood hammocks, sloughs, cypress domes, and old citrus groves.

### **Small’s Bogbutton**

Small’s bogbutton (*Lachnocaulon minus*) has been recognized as Critically Imperiled in south Florida by IRC and found only within a couple of counties. This perennial terrestrial herb can be found in wet flatwoods and wet disturbed sites (Gann 2002).

### **Catesby’s Lily**

Catesby’s (or pine) lily (*Lilium catesbaei*) is listed as Threatened by FDACS. There is concern that the population of this species is decreasing and is likely to become endangered in the near future. This wildflower is found throughout WTSP in moist flatwoods. As a plant found in a fire dependent plant community, it generally benefits from occasional fire (USF 2004).

During exotic plant removal or construction of any public use areas, staff will survey the area before work commences to look for and mark, if necessary, areas to avoid.

### **Shade Mudflower**

The shade mudflower (*Micranthemum umbrosum*) has been recognized as Critically Imperiled in south Florida by IRC and only distributed within three counties. This perennial terrestrial herb can be found in cypress swamps, riverside swamp forests, river banks, and wet disturbed sites (Gann 2002).

### **Wright's Waternymph**

Wright's waternymph (*Najas wrightiana*) has been recognized as Critically Imperiled in South Florida by IRC. This annual aquatic herb has been found in cypress swamps, brackish creeks, and along canals (Gann 2002).

### **Giant Sword Fern**

Giant sword fern (*Nephrolepis biserrata*) is another Threatened species listed by FDACS and is found in swamps and hydric hammocks.

### **Royal Fern**

Royal fern (*Osmunda regalis var. spectabilis*) is listed as Commercially Exploited by FDACS. This plant is distributed throughout Florida and can be found in wet flatwoods, basin swamp and dome swamp communities of the Preserve.

### **Fringed Meadowbeauty**

Fringed meadowbeauty (*Rhexia petiolata*) has been recognized as Critically Imperiled in south Florida by IRC. It is found in wet flatwoods, wet prairies and cypress pond margins (Gann 2002).

### **Fernald's Beaksedge**

Fernald's beaksedge (*Rhynchospora fernaldii*) has been recognized as Critically Imperiled in south Florida by IRC. This perennial terrestrial herb is found in mesic flatwoods and probably dry prairies (Gann 2002).

### **Fewflower Beaksedge**

Fewflower beaksedge (*Rhynchospora rariflora*) has been recognized as Critically Imperiled in south Florida by IRC. This perennial terrestrial herb is found in mesic and wet flatwoods habitats (Gann 2002).

### **Leafless Beaked Ladies'-tresses**

Leafless beaked ladies'-tresses (*Sacoila lanceolata*) is a Threatened species listed by FDACS. It is found in swamps and hydric hammocks.

### **Fewflower Nutrush**

Fewflower nutrush (*Scleria ciliata var. pauciflora*) has been recognized as Critically Imperiled in south Florida by IRC. This perennial terrestrial herb is found in flatwoods habitats (Gann 2002).

### **Long-lipped Ladies'-tresses**

Long-lipped ladies'-tresses (*Spiranthes longilabris*) is a Threatened species listed by FDACS. It is found in moist, grassy roadsides, and pine flatwoods habitats.

### **Northern Needleleaf**

The northern needleleaf (*Tillandsia balbisiana*) is a Threatened species listed by FDACS that is occasionally found in a variety of communities including pinelands, hammocks and mangroves. It has been documented in several scattered areas of

the Preserve. Threats to this species include the exotic Mexican bromeliad weevil (*Metamasius callizana*) and habitat destruction (Save 2004).

Currently, scientists are researching biological control agents for the exotic Mexican bromeliad weevil. Staff will keep current with the research developments and work with scientists in the future if the United States Department of Agriculture (USDA) is in need of release sites.

### **Stiff-leaved Wild-pine**

Stiff-leaved wild pine (*Tillandsia fasciculata* var. *densispica*) is an Endangered species listed by FDACS and is also known as the cardinal airplant. It is found in hammocks, cypress swamps, and pinelands and has been documented in several portions of WTSP. Threats to this plant include illegal collecting, habitat destruction and the Mexican bromeliad weevil (Save 2004).

### **Giant Airplant**

Giant airplant (*Tillandsia utriculata*) is a bromeliad considered to have been quite common in Florida before the arrival of the Mexican bromeliad weevil and is now Endangered by FDACS. Another common name for this bromeliad is giant wild-pine. Typical habitats to find this plant include hammocks and pinelands. In addition to the weevil, illegal collecting and habitat destruction threaten this species (Save 2004).

### **Early Blue Violet**

Early blue violet (*Viola palmata*) has been recognized as Critically Imperiled in south Florida by IRC. This perennial terrestrial herb is found in flatwoods habitats (Gann 2002).

### **Florida Mudmidget**

Florida mudmidget (*Wolffiella gladiata*) is also known as bog-mat and has been recognized as Critically Imperiled in south Florida by IRC. This short-lived aquatic herb is found in cypress swamps and ditches and is often overlooked because of its tiny stature (Gann 2002).

The majority of the designated plant species (see Table 4) were provided by IRC, which is not a regulatory agency. IRC's designation was either obtained from their book Rare Plants of South Florida: Their History, Conservation and Restoration, (Gann 2002) or Internet website

(<http://www.regionalconservation.org/ircs/database/search/QuickSearch.asp>).

Scientists working for this Institute have conducted a tremendous amount of field work and research documenting plants occurring in conservation areas in the 10 southernmost counties of Florida. This initial floristic inventory allowed the IRC to rank plant species to indicate how rare/common these plants are in protected areas. At WTSP, a number of Rare, Imperiled, and Critically Imperiled plants occur. Rare plants are defined as being either very rare and local throughout its range in south Florida (21-100 occurrences, or less than 10,000 individuals), or found locally in a

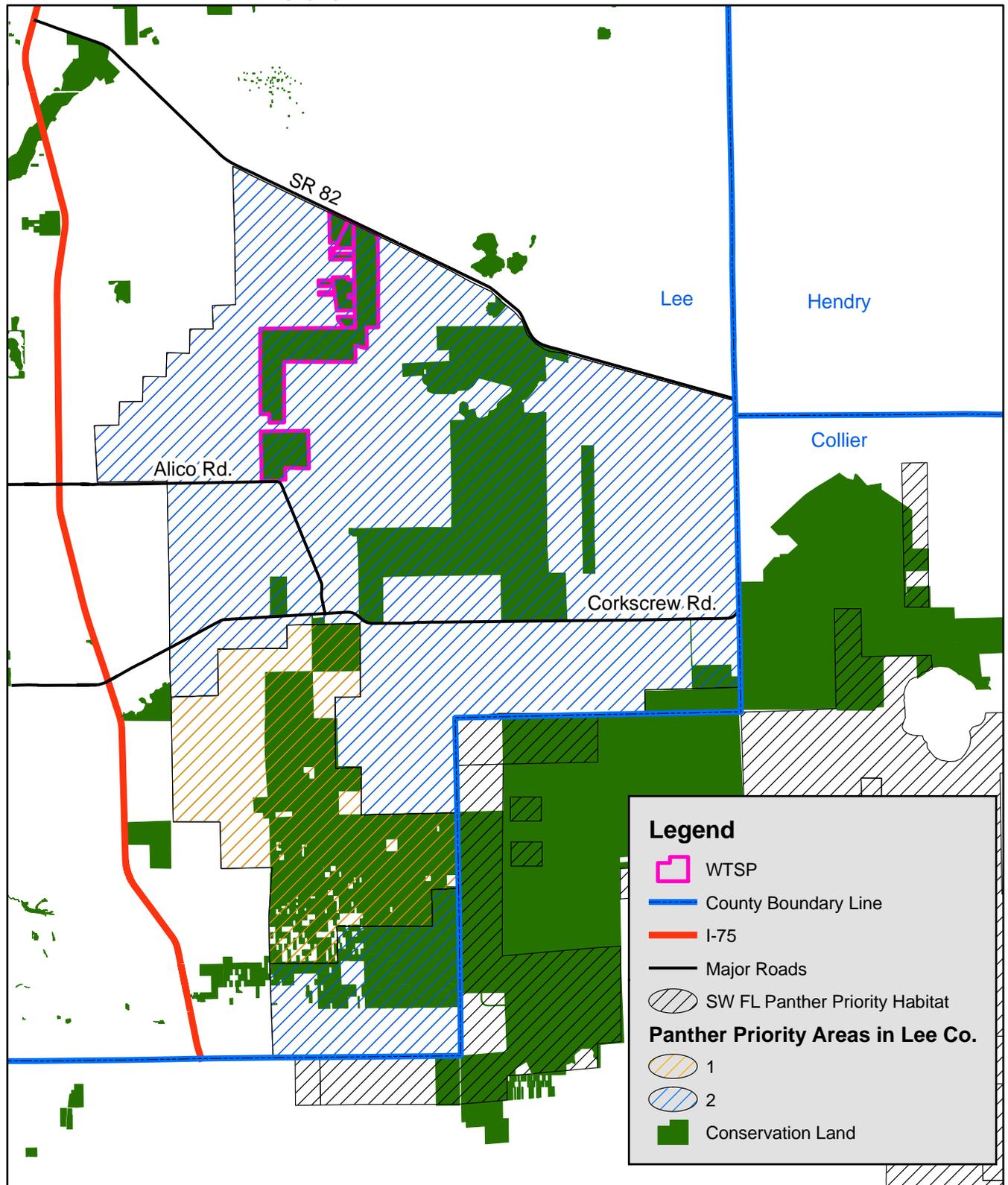
restricted range. IRC only ranks those taxa as rare with fewer than 100,000 individuals. Imperiled plants are those that are imperiled in south Florida because of rarity (6-20 occurrences, or less than 3,000 individuals) or because of vulnerability to extinction due to some natural or human factor. IRC only ranks those taxa as imperiled that have fewer than 10,000 individuals. Critically Imperiled plants are defined as being either extreme rarity (5 or fewer occurrences, or fewer than 1,000 individuals), or because of extreme vulnerability to extinction due to some natural or human factor. IRC only ranks those taxa as critically imperiled with 10,000 or fewer individuals.

In their book, (Gann 2002), the authors provide an entire chapter of recommendations to help restore south Florida's rare plant diversity. Several of these recommendations, particularly those that protect plants on the Preserve and relate to stewardship practices, will be followed. More information on the specific techniques used will be discussed in the Management Action Plan. The following list highlights those recommendations by IRC that will be incorporated into the management of WTSP:

- Prohibit recreational activities such as off-road vehicle use to avoid impacts to rare plant populations.
- Prevent illegal poaching of rare plants.
- Prosecute poachers to the fullest extent of the law.
- Implement an ongoing exotic pest plant control program.
- Educate exotic plant control crews about the rare plants to ensure they avoid non-target damage.
- Trap wild hogs, which can completely destroy the above ground vegetation and disturb all the soil in an area where they are feeding.
- Initiate prescribed fire in communities that are fire adapted since fire as a management tool is extremely critical for the protection of many rare plants.
- Divide the site so the entire area is not burned during the same year will also help protect these communities.
- Ensure that management activities do not negatively impact rare plant populations.

If additional listed species are documented on the Preserve, they will be added to the lists in Appendices B or C.

# Figure 15: Panther Strategic Habitat Conservation Areas





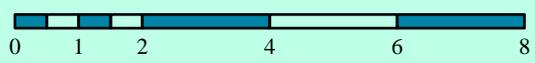
CONSERVATION  
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LAND PROGRAM



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## Wild Turkey Strand Preserve

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Map Prepared on: 10/16/09, by sfurnari@leegov.com



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Miles

This is not a survey. Land Stewardship Staff has prepared this map for informational and planning purposes.

## v. Biological Diversity

There is a high level of biodiversity at WTSP that varies within each of the plant communities. The plant communities range from mesic flatwoods to seasonally influenced depression marshes and cypress domes. Much of the land is disturbed to some extent from previous agricultural uses (crop and cattle grazing), power line easements or storm water drainage. It is likely that biodiversity levels will increase after stewardship activities have been put into practice (i.e. invasive exotic plant removal, agricultural field restoration, hydrological restoration, tree thinning, fuel reduction, brush reduction and prescribed fire).

Although only a 15-20 minute drive from human population centers, the Preserve remains a somewhat remote retreat for animal species that are quickly losing habitat. At over 3,100 acres, the substantial size of WTSP and its proximity to other conservation areas creates an important wildlife corridor. This corridor consists of many tracts of conservation land managed by several governmental agencies and non-governmental organizations (Figure 16). The approximate 632 acre Corkscrew Mitigation Bank is owned by the SFWMD and the approximate 7,000 acre Imperial Marsh Preserve is owned by Lee County and managed by the Lee County Port Authority (LCPA) (from Corkscrew Road extending north to State Road 82 - Imperial Marsh). SFWMD and Lee County manage the Corkscrew Regional Ecosystem Watershed (CREW) which consists of 13,000 acres in Lee County and extends into Collier County totaling 27,500 acres. The CREW lands within Lee County are referred to as the Flint Pen Strand unit (the majority is now owned by SFWMD and approximately 900 acres remain under Lee County ownership). Altogether this corridor, including Corkscrew Swamp Sanctuary (nearly 11,000 acres) and Panther Island Mitigation Bank (about 2,000 acres), totals nearly 50,000 acres of acquired conservation land. Once all parcels are acquired within the Florida Forever's proposed project boundary for CREW, this wildlife corridor will cover nearly 70,000 acres. This corridor provides good habitat for species with large home ranges such as whitetail deer, wild turkey, sandhill crane, wood stork, eastern indigo snake, Florida black bear and Florida panther.

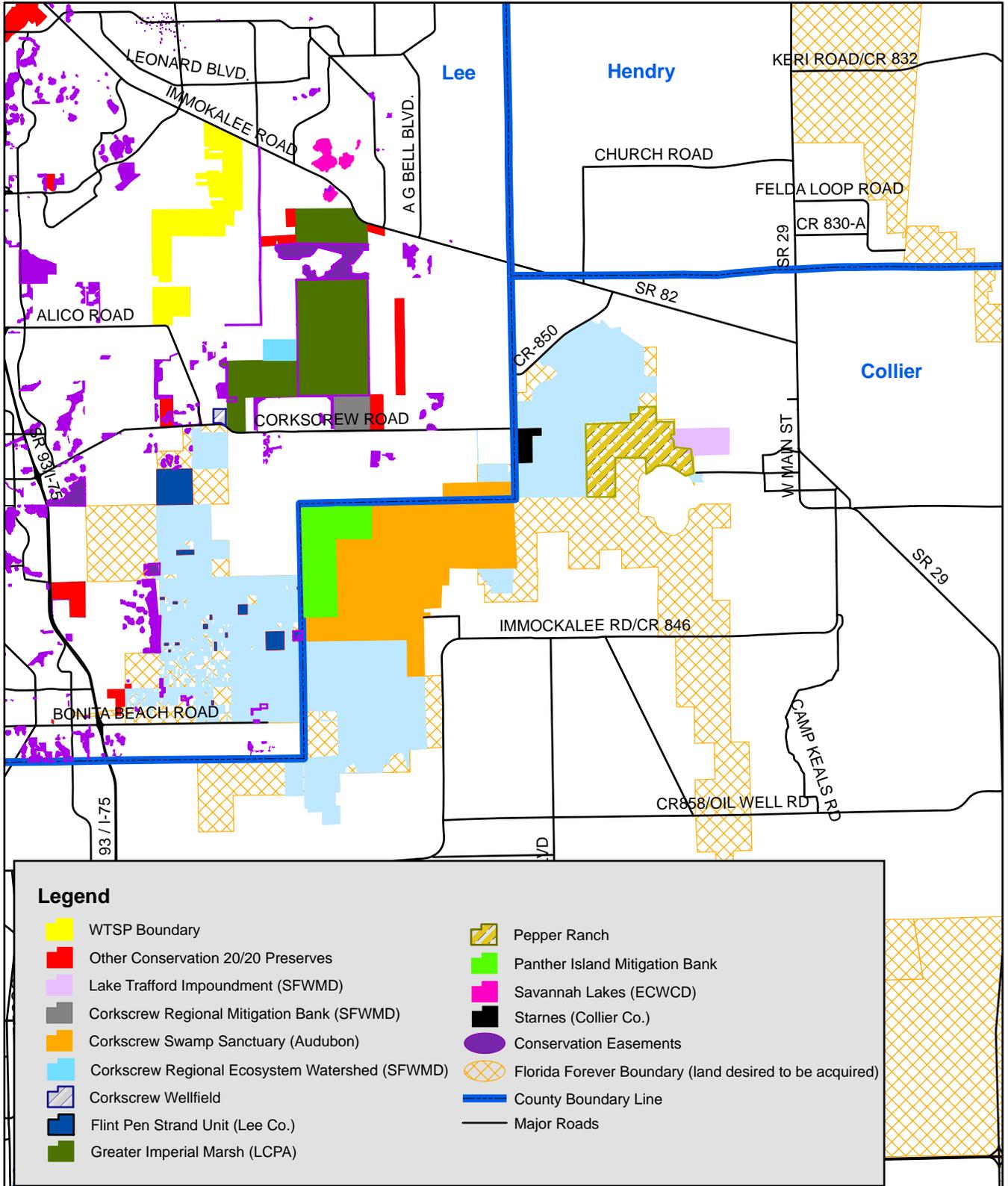
The numerous wetlands surrounded by uplands, are one of the primary reasons that WTSP is so biologically diverse. Oak toads, eastern narrowmouth toads, barking (*Hyla gratiosa*) and squirrel treefrogs spend more time in surrounding uplands, utilizing the wetlands strictly for breeding (Jensen 2003). Additionally, barking treefrogs and oak toads breed almost exclusively in seasonal wetlands. There are a few scattered wetlands that hold water year-round that the majority of wildlife utilizes during the dry season. Because of the short hydroperiod, larger predatory fish like Florida largemouth bass (*Micropterus salmoides floridanus*) and bluegill (*Lepomis macrochirus*) are unable to become established and feed on the developing tadpoles. As these temporary wetlands slowly dry, the fish, tadpoles and aquatic invertebrates become quite concentrated, providing an excellent food source for the numerous birds that utilize the Preserve.

Many species of animals not only inhabit, but also frequently visit the Preserve. Currently, 513 plant species (92 exotic) and 164 animal species (15 exotic) have been documented at the Preserve. Thirty-one of the 92 exotic plant species (33 percent) are on the Florida Exotic Pest Plant Council's 2009 List of Invasive Plant Species (FLEPPC 2009).

The integrity and diversity of WTSP must be protected when and where possible. Land Stewardship staff will perform the following actions in this regard:

- Control of invasive exotic vegetation followed by annual maintenance to provide more suitable habitat for native aquatic and terrestrial species.
- Maintain boundaries with fencing and signs to eliminate illegal access to the Preserve and protect fragile ecosystems.
- Removal of any interior cattle fencing (after leases are terminated), debris and prevention of future dumping on-site.
- Enhance wetlands and borrow ponds to create improved feeding areas for wading birds.
- Enhance hydrologic conditions to improve historic sheet flow and/or hydroperiods within wetland areas by modifying existing man-made features both off-site and on-site.
- Where necessary, install perimeter fire breaks to protect resources on the Preserve and surrounding neighbors.
- Implement a prescribed fire program to closely mimic the natural fire regimes for the different plant communities to increase plant diversity and ensure the canopies remain open.
- Control invasive exotic animal populations to reduce their impacts on the herbaceous plants, native animals and soils.
- Conduct on-going species surveys through volunteers and staff to catalog and monitor the diversity that is present.
- Provide educational opportunities for visitors through nature trails and programs with interpretive signs.
- Use adaptive management if monitoring of restoration techniques indicates a change may be necessary.
- Obtain information from Lee County Utilities regarding wells and monitor for alterations to hydroperiods.
- Protect and preserve historical/cultural resources.

# Figure 16: Conservation Lands and Wildlife Corridor



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## Wild Turkey Strand Preserve

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Map Prepared on: 10/16/09, by sfurnari@leegov.com

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Miles

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## C. Cultural Resources

### *i. Archaeological Features*

In 1987, Piper Archaeological Research, Inc. (PARI) conducted an archaeological site inventory of Lee County. They were able to identify 53 sites increasing the total number of known archaeological sites in Lee County to 204. By 2004, this number has increased to over 2000-recorded archaeological and historical sites and by the end of 2009; the number has grown to over 2,500. In addition, PARI created a site predictive model and archaeological sensitivity map for the county that highlighted potential areas likely to contain additional archaeological sites. Approximately  $\frac{1}{4}$  of WTSP lies within the study's "Sensitivity Level 2" area (Figure 17). The study defines this level as "areas that contain known archaeological sites that have not been assessed for significance and/or conform to the site predictive model in such a way that there is a high likelihood that unrecorded sites of potential significance are present. If these areas are to be impacted, then they should be subjected to a cultural resource assessment survey by a qualified professional archaeologist in order to 1) determine the presence of any archaeological sites in the impact area and/or 2) assess the significance of these sites" (Austin 1987).

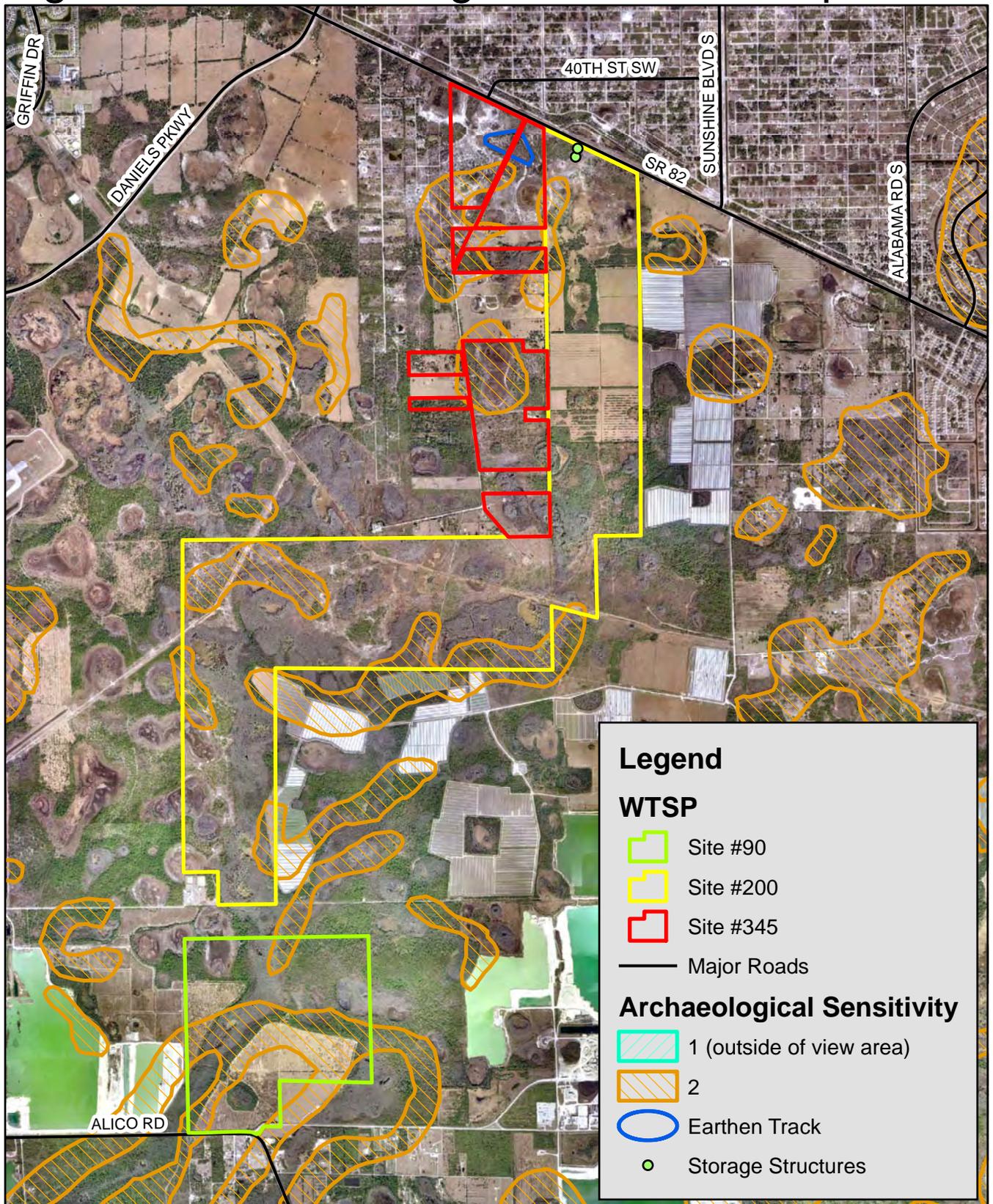
The Environmental Site Assessment Report (WRS 2002) identified a WWII rifle range and small concrete munitions buildings along with several concrete poles and possible concrete machine gun foundations at the northern end of the Preserve. Historical aerials from 1944 (Figure 18), 1953 (Figure 19), and 1958 (Figure 20) clearly delineate the general location of these objects including formations (gunnery ranges) on land along SR 82. These target ranges (Freeman 2004) were part of the military's rifle range and flexible gunnery air-to-ground training school operated from the Buckingham Army Air Field (BAAF) (Gulfcoast 2004<http://www.gulfcoastautocrossers.com/history.html>). Gunnery Road's historic function was as the road from Buckingham Army Air Field to the rifle ranges. This military airfield operated from July 1942 until the end of WWII in 1945 (SAC 2009) and is presently the Lee County Mosquito/Hyacinth Control District. Furthermore, it is quite feasible that these remnant concrete objects, together with the site's military role, would be considered historical and cultural resources from the WWII era. See Appendix E for historical photographs related to BAAF.

In June 2009, C20/20 staff hired Suncoast Archaeological Consultants, Inc. (SAC) to perform a Phase 1 Cultural Resource Survey (SAC 2009) on the northern end of WTSP. The purpose of this survey was to document the existing munitions buildings and earthworks created in association with WWII training and to ensure that the proposed trailhead location and trail routes will not impact any known or unknown archaeological or cultural resources on the Preserve. While no prehistoric sites

were identified during this study, one newly recorded archaeological site, two historic structures, and one previously recorded site where documented within the project boundary. In the opinion of the principle investigator, each of these areas and structures was found to be potentially eligible for listing on the National Register of Historic Places. The newly recorded archaeological site, 8LL2552, consists of two large earthen mounds each located south of a low depressional area. On each of the mounds, which are now approximately 1.5 to 2.5 meters above the surrounding ground surface, is a single square shaped concrete structure (historic structures 8LL2550 and 8LL2551). While the Environmental Site Assessment Report refers to these structures as munitions buildings, the Cultural Resource Survey only mentions that they may have been used as storage facilities. Items also noted in this site include haphazardly deposited concrete pillars and five concrete gun turret bases. The previously recorded site, 8LL2411, is labeled Gunnery Range #5 and is included within the 8LL2406, Buckingham Gunnery Range Resource Group. This range, which is the eastern-most of 5 located along SR 82, is an earthen berm now approximately 1.5 to 2.5 meters above the surrounding ground surface. Ditches inside the berm were created to provide the spoil used in the berm. Numerous 50 caliber bullets, both whole and spent, were found to the south of the earthworks. The Cultural Resource Survey explains that research indicates that these gunnery ranges were used “for guiding retrofitted jeeps that towed large cloth targets” (SAC 2009). Since the concrete tracking can not be found today, it is believed that the tracking has been covered by erosion of the embankment. SAC’s entire survey is located in Appendix F.

Although these WWII associated sites are not within a Lee County historic district, SAC has submitted the application at the request of staff to request that these sites be added to the Florida Master Site File. Additional grant funding (state, local, or private) may be possible to have the sites further developed into a WWII historical resource as an educational interpretive program. The Lee Plan’s (Lee County’s comprehensive plan) definition of historic resource is “Any prehistoric or historic district, site, building, object, or other real or personal property of historical, architectural, or archaeological value. These properties or resources may include, but are not limited to, monuments, memorials, Indian habitations, ceremonial sites, abandoned settlements, sunken or abandoned ships, engineering works, treasure trove, artifacts, or other objects with intrinsic historical or archaeological value, or any part thereof, relating to the history, government, and culture of the state (s.267.021 (3), F.S. 1986)” (LCDCD 2009).

# Figure 17: Archaeological Features Map



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## Wild Turkey Strand Preserve

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Map Prepared on: 11/18/09, by jwaller@leegov.com

0 0.3 0.6 1.2 1.8 2.4  
Miles

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## *ii. Land Use History*

According to aerial photography dating back to 1944 (Figure 18), this property has been used for military training, various agricultural activities, logging, stumping for turpentine, row crop and citrus farming and most recently, cattle grazing.

Intense logging of slash pine from the late nineteenth century until the 1930s virtually eliminated all virgin stands of the southern mixed forest in south Florida. Between 1966 and 1968 the stumps of the logged slash pines were removed from this Preserve. This activity, referred to as “*stumping*,” was conducted to extract turpentine from the wood. Both of these activities have had impacts on the landscape at WTSP. The former activity dramatically reduced slash pine densities and age of the pine flatwoods forest throughout the Preserve, according to the historical aerials. The latter activity has created numerous depressions in the soil, which primarily creates a microhabitat where soil moisture is higher for longer periods than adjacent habitat at grade. For this reason, different plant species are likely to occur in these depressions.

In the 1940s, a WWII training rifle range, earthen berm and jeep-track, and small concrete storage buildings along with several concrete poles and concrete gun turret bases were built at the northern end of the Preserve. The 1953 aerial (Figure 19) shows this feature completed while the 1958 aerial (Figure 20) shows a completed Rod & Gun Club Road and the installed oil well on Site 200.

Row crop farming on the Preserve took place from the 1960s until 2002, according to historical aerials. There are several different abandoned farm fields on the Preserve that were farmed at different times. The most northern farm field (MU 200-1) has been fallow since approximately 1972 and has since, through natural succession, recovered with wax myrtle and numerous species of native grasses. Exotic vegetation does occur in this field but at a low density, less than 25% of all vegetation cover. The farm field located just south of Corkwood Marsh (MU 200-1) was abandoned approximately in 1974 (see the 1980 aerial in Figure 22). Brazilian pepper has spread throughout this entire area at a 100% infestation.

The agricultural fields in MU 200-2 were farmed from 1966 until 1990 (the southern portion) and 1993 (the northern portion). Now the northern field mainly consists of native grasses and very few Brazilian peppers. The southern portion consists of large Brazilian peppers along the berms and some native grasses, dog fennel, dayflower, and caesar weed. In the center of Unit 200-3, there is an older, barely discernable, agricultural field that was farmed for a short period of time in the 1940s. In 1968, the agricultural field in the eastside of Unit 200-3 began to be farmed and then in 1974 farming activity ceased in the part of the field inside the Preserve boundary. In MU 200-4, there is a small area that was cleared for farming in 1970 (Figure 21) and now is mainly native grasses and wax myrtle.

To the southeast of MU 200-6, a field was cleared for agriculture in 1977 (see the 1980 aerial in Figure 22). Around the same time a field in the southeast portion of MU 200-9 and was cleared and farmed up until 2002. Both fields are surrounded by Brazilian pepper and contain mostly grasses and dog fennel. In the eastern portion of MU 200-11 farming occurred from 1968 until 1984 and now it is mainly torpedo grass with Brazilian pepper around the edge. In MUs 90-1 and 90-2, the fields were farmed from 1968 to 1972 and now are mainly grasses, dog fennel and various weeds. When these fields were created, the farmer also dug a ditch around the cypress dome in MU 90-1. This cypress dome is now completely surrounded by thick, large, impenetrable Brazilian peppers.

The Elizabeth and Thomas Morrison Tract, Site 345, has two agricultural fields on it. The agricultural field which makes up MU 345-5 was cleared during the 1970s (Figure 22). The shell of a house that was abandoned during the beginning stages of construction can be seen in this same field in aerial photography taken from 2002 through 2008. This concrete block building shell was removed during the cleanup of the property at the request of Lee County's Division of County Lands (LCDCL). The second agricultural field is a slice of the southern piece of MU 345-2. This field is part of the neighbor's field to the south. Old ditches and berms have been noted on MUs 345-4, 345-6, 345-7 and 345-8. These are likely due to agricultural operations, possibly citrus, although available aerial photography does not indicate when these items were installed.

In the mid 1900s, the Flint Brothers Cattle Company began grazing cattle throughout this property. Grazing continued across the property until it was purchased by C20/20. Land Stewardship staff felt that there should be limited grazing on the Preserve due to the long hydroperiod and sensitivity of the numerous wetlands. Currently, there are a total of six separate cattle leases on the Preserve with additional leases possible. MUs 90-1 & 2, MU 200-2, and 4 MUs within Site 345 (MUs 345-1, 5, 6, 7, and 8) all have active cattle leases. These cattle leases combined add up to 736 acres of the Preserve.

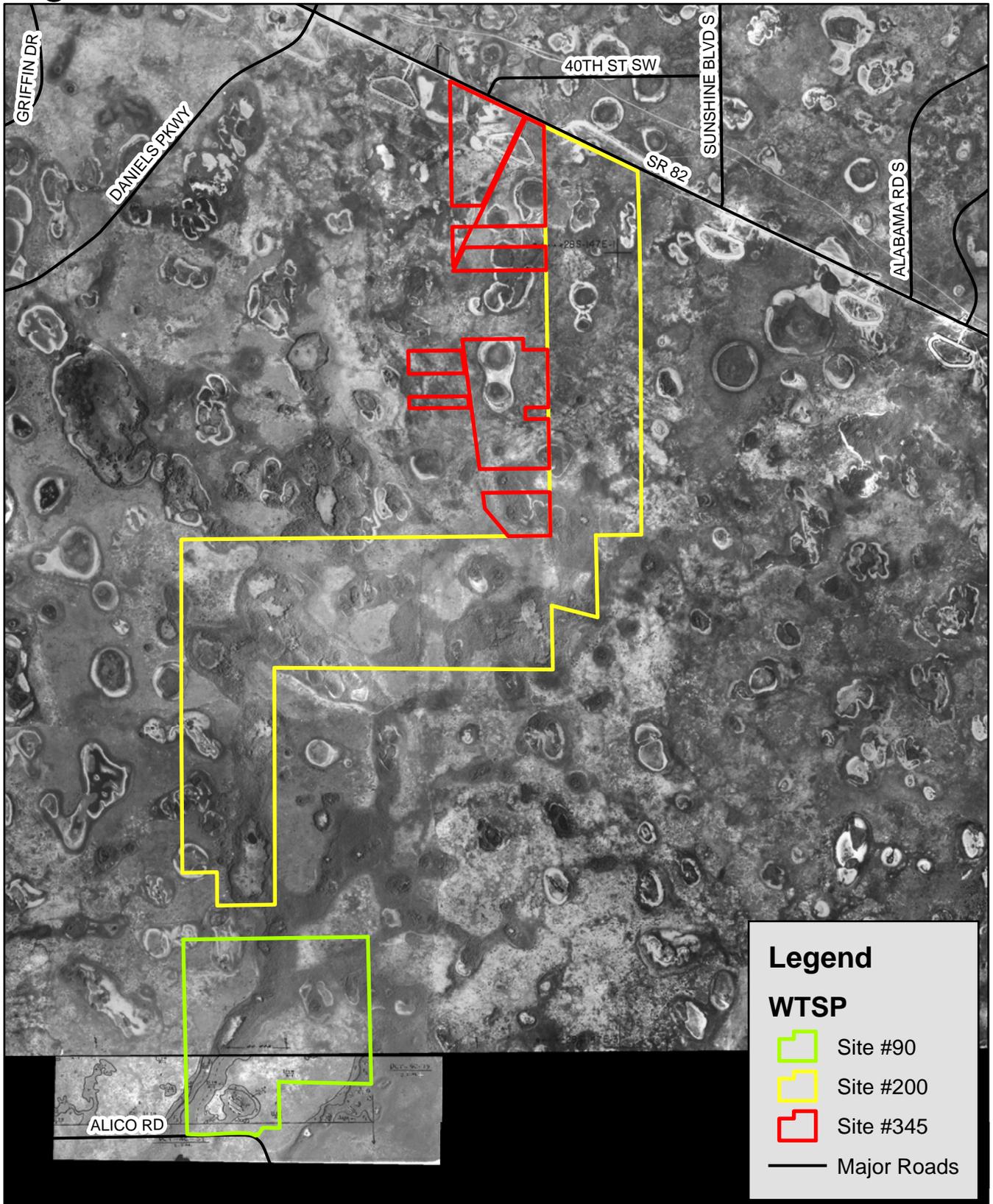
In 1972 (see the 1980 aerial in Figure 22), FPL started construction of the power line that runs in a northwest-southeast direction bisecting the Preserve. Culverts were installed in a few places, but it still affected the hydrology of the Preserve by slowing and redirecting the historic sheet flow. Then in 1981 (see the 1996 aerial in Figure 23), FPL started to construct the second power line on the Preserve. In MU 200-8, two borrow pits were dug for fill to create the northeast-southwest power line.

The Lee County Utilities Division has several testing wells around the Preserve that are associated with the adjacent Green Meadows Water Treatment Plant.

In 2004 (see the 2005 aerial in Figure 24), a part of Site 90 was used as a collection area for debris from Hurricane Charley. Ashes of incinerated debris as well as

mulched horticultural debris were dumped and spread over approximately one acre near the entrance gate.

# Figure 18: 1944 Aerial



**Legend**

**WTSP**

-  Site #90
-  Site #200
-  Site #345
-  Major Roads

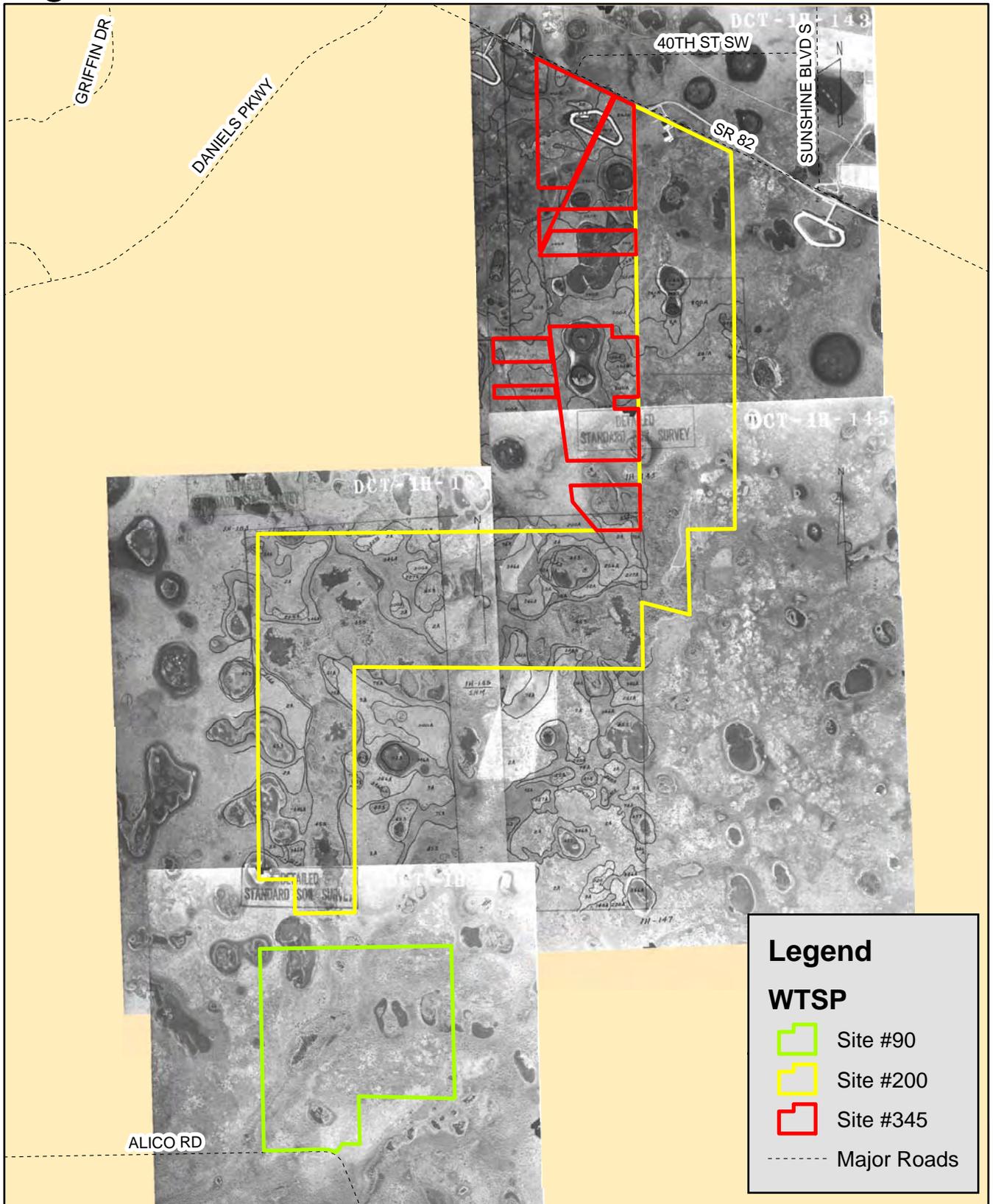
## Wild Turkey Strand Preserve

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 Map Prepared on: 12/9/09, by jwaller@leegov.com

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Miles

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# Figure 19: 1953 Aerial



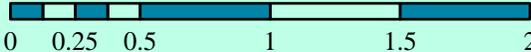
**Legend**

**WTSP**

-  Site #90
-  Site #200
-  Site #345
-  Major Roads

## Wild Turkey Strand Preserve

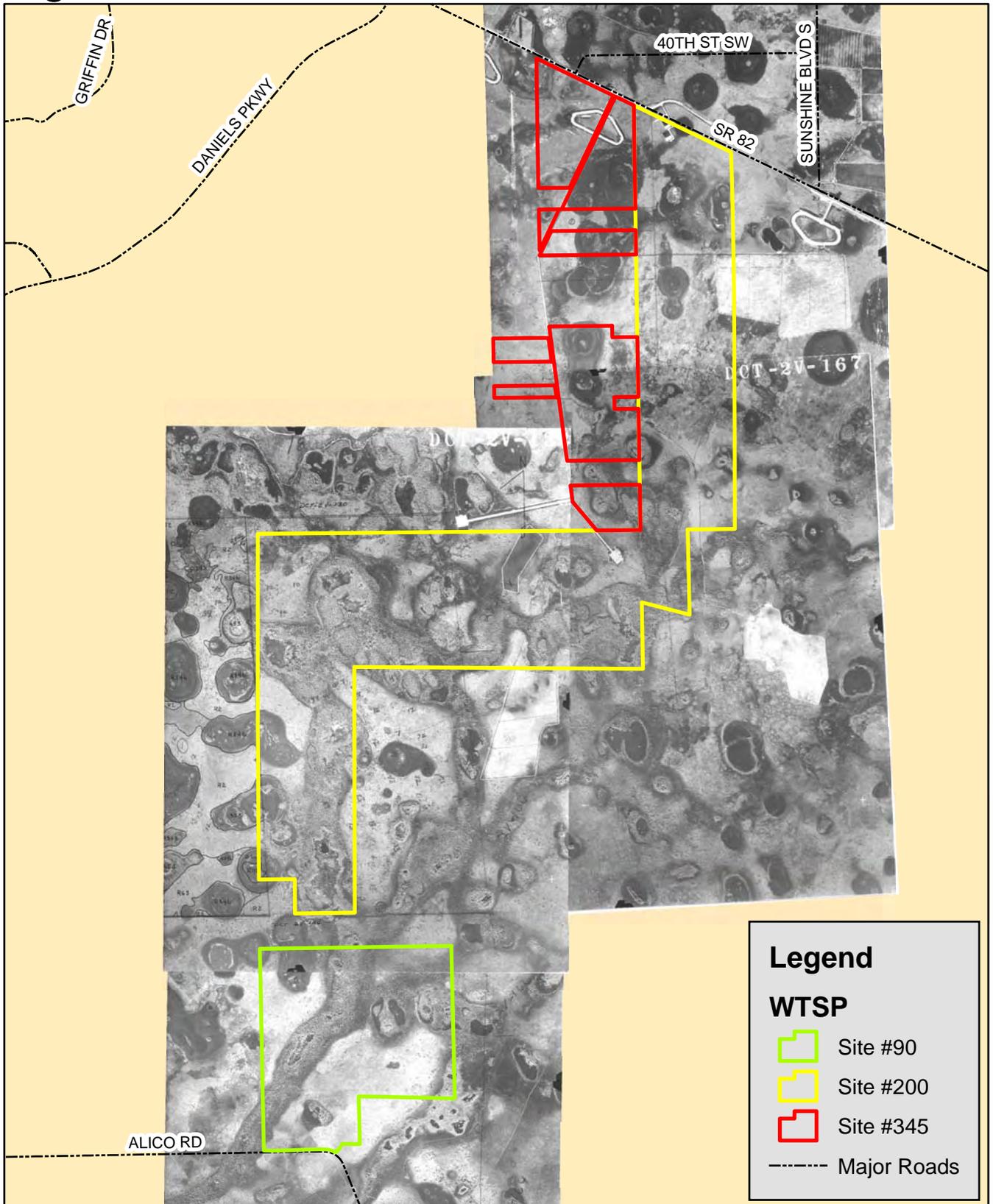
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Map Prepared on: 12/9/09, by jwallier@leegov.com



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# Figure 20: 1958 Aerial



**Legend**

**WTSP**

-  Site #90
-  Site #200
-  Site #345
-  Major Roads

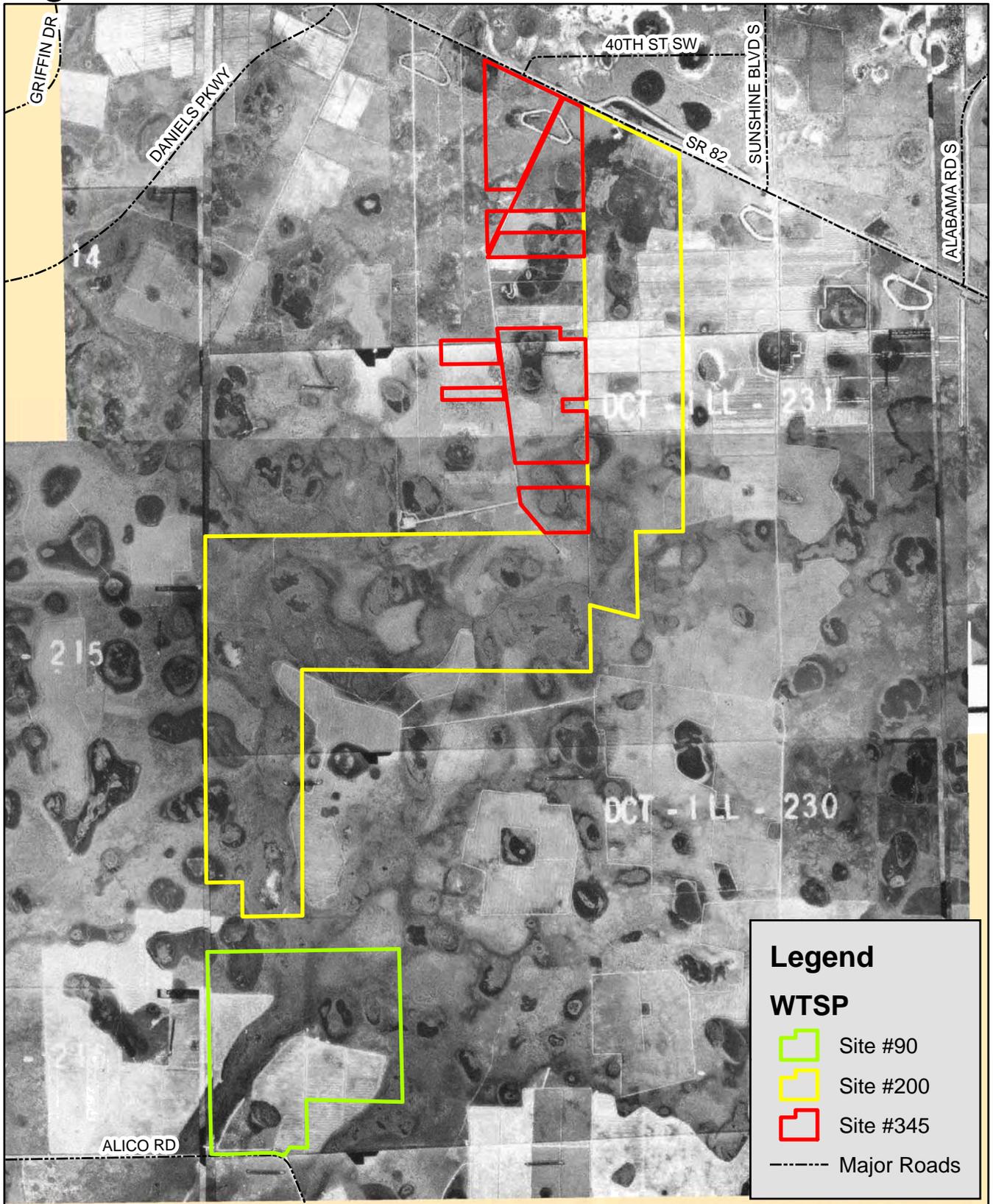
## Wild Turkey Strand Preserve

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Map Prepared on: 12/9/09, by jwall@leegov.com

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# Figure 21: 1970 Aerial

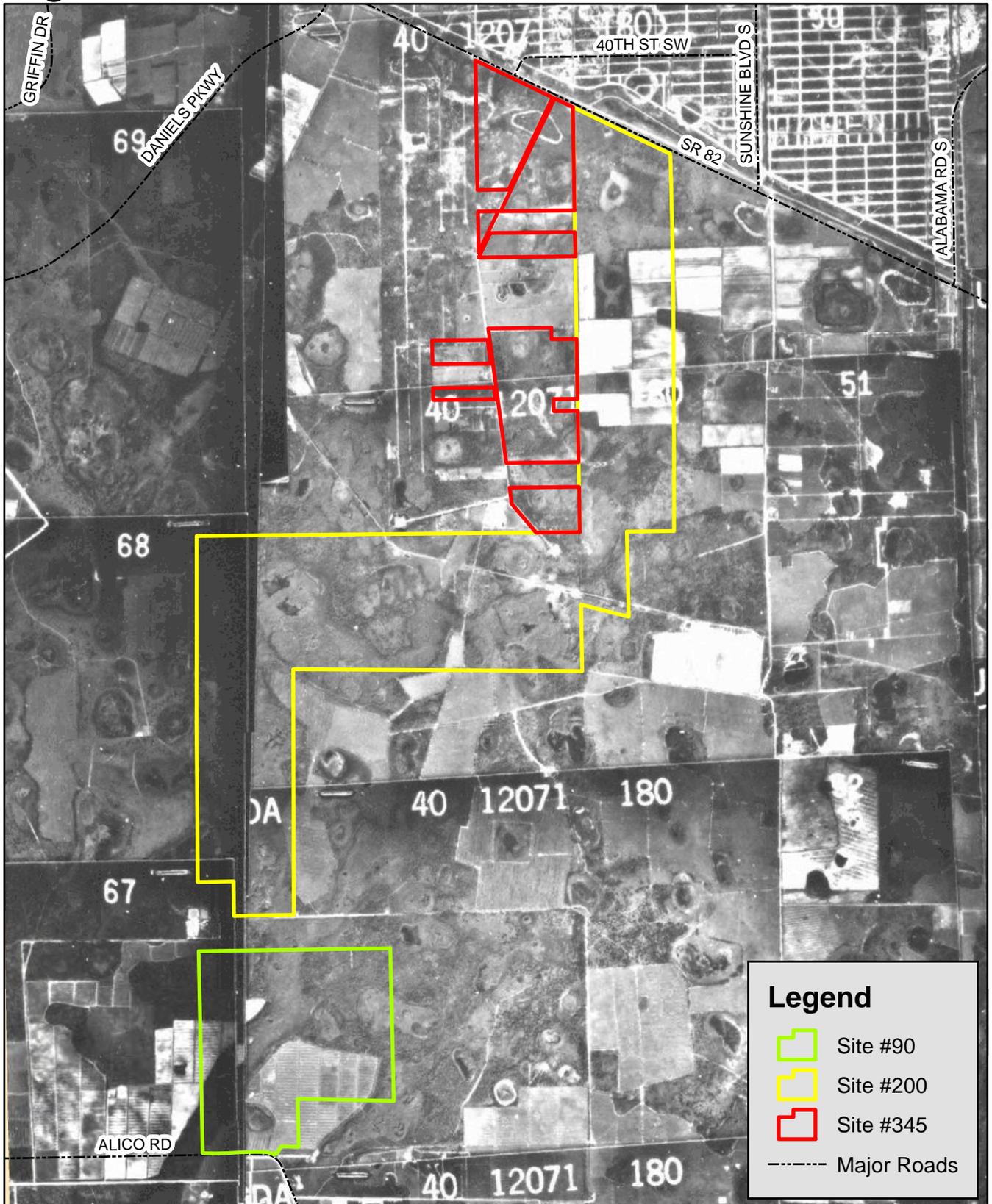


**Legend**

**WTSP**

-  Site #90
-  Site #200
-  Site #345
-  Major Roads

Figure 22: 1980 Aerial



**Legend**

-  Site #90
-  Site #200
-  Site #345
-  Major Roads

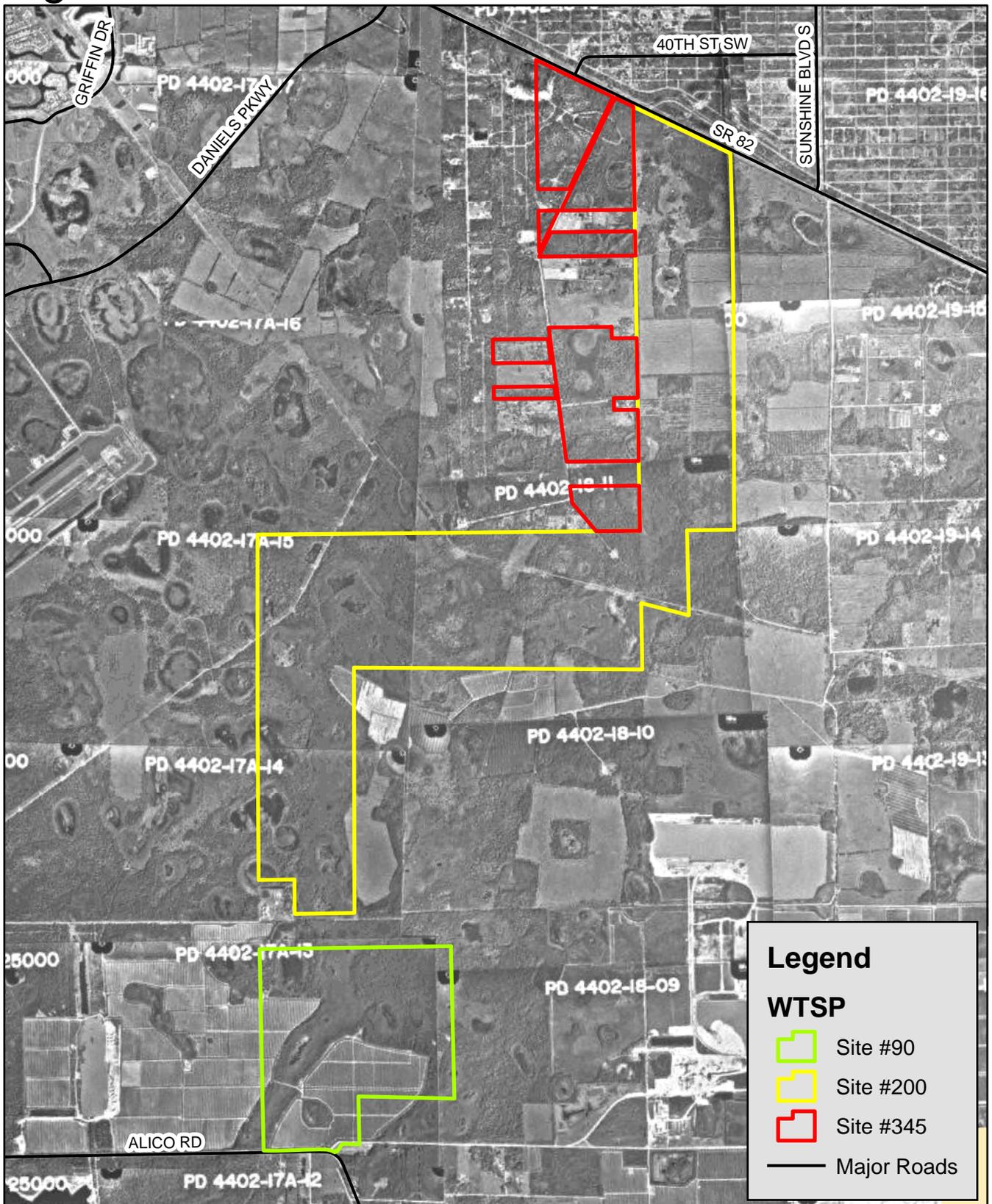
## Wild Turkey Strand Preserve

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Figure 23: 1996 Aerial





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## Wild Turkey Strand Preserve

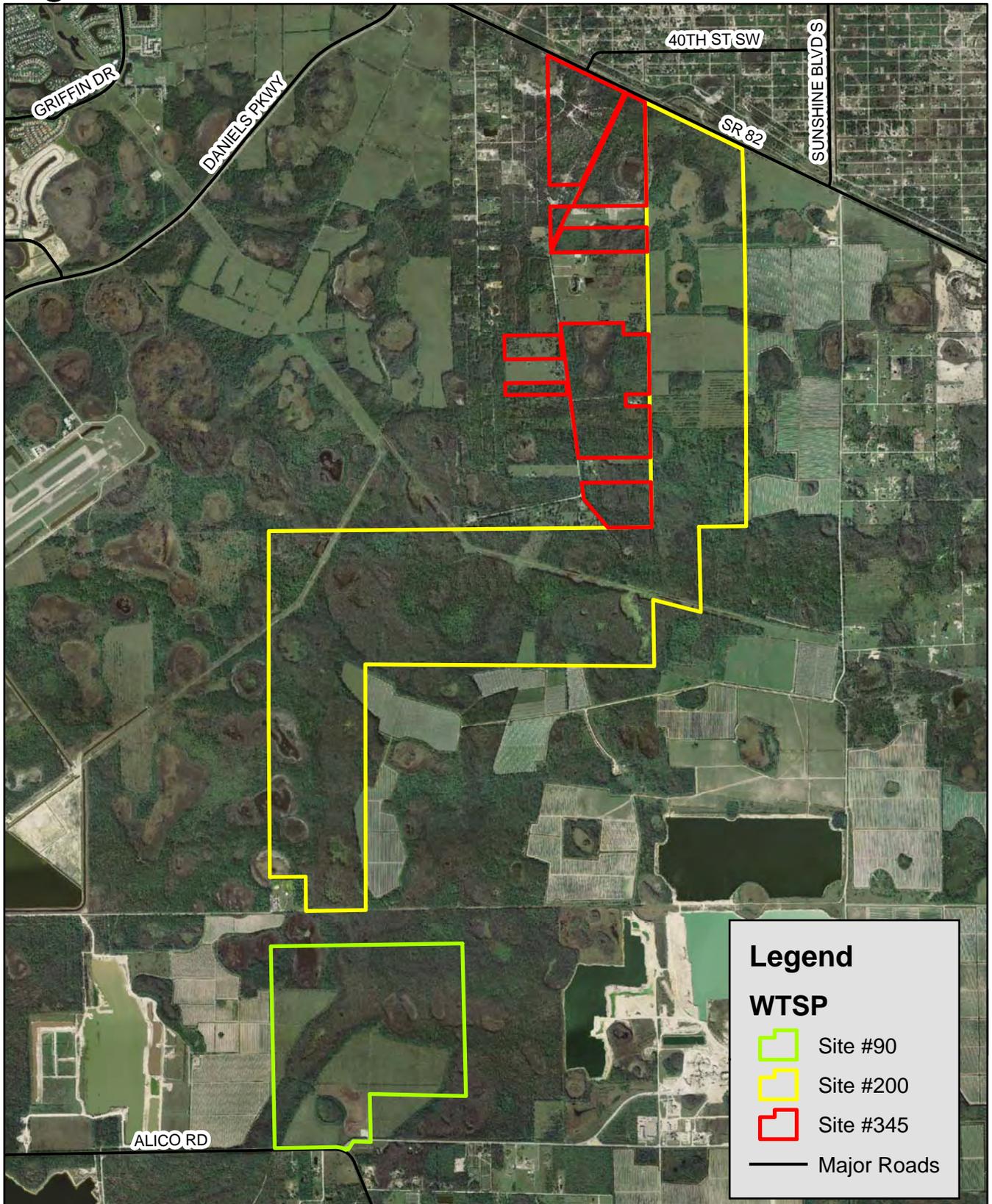
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Map Prepared on: 12/17/09, by jwaller@leegov.com



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Figure 24: 2005 Aerial





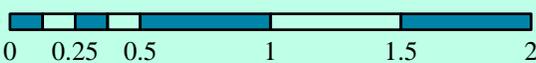
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## Wild Turkey Strand Preserve

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Map Prepared on: 12/10/09, by jwaller@leegov.com



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This is not a survey. Land Stewardship Staff has prepared this map for informational and planning purposes.

### *iii. Public Interest*

WTSP was purchased for the preservation of environmentally sensitive lands, high probability for state and federally listed species, floodplain protection, and its location in the Density Reduction Groundwater Resource (DRGR) area of the county. The purpose of the DRGR lands is to keep residential development lower than other rural areas of Lee County to protect future drinking water supplies (LCDCD 2007).

C20/20 staff has received very few requests from local citizens to access the Preserve. An equestrian boarding business owner requested permission to allow their customers access to ride horses on the Preserve, whereas another individual called for permission to drive all-terrain vehicles on-site with his family and neighbors and someone else wanted to hunt hogs. While these last two activities are not appropriate or permitted on any Lee County Preserves or Parks (LCPR 2006), equestrian riders are restricted to more suitable C20/20 preserve locations.

In March 2004, the Jamerson Farms Operations, LLC requested to lease 160-acres (disturbed row crops and improved pasture) adjacent to their existing farming operations. In exchange they would pay \$16,000/year, agree to leave an equal amount of their land undisturbed (existing wetlands), and potentially provide an opportunity to exchange 183-acres of their property for the acreage Lee County allowed them to farm, if an existing option with another party wasn't exercised by the summer of 2005. Presently, the Jamerson Farm has become the site of the Green Meadows Rock Mine Industrial Planned Development (IPD) rezoning application that was filed with Lee County.

Staff anticipates ongoing field trips with neighboring residents and community groups including the Audubon Society of Southwest Florida, to educate the public on the importance of conservation lands for wildlife and its significance to the Estero River watershed. While the Preserve contains mainly wetland soils and plant communities, there are opportunities for resource based recreational facilities such as a nature trail, boardwalks, and wildlife observation decks planned for the northern section of the Preserve that would service the growing Gateway/Lehigh Acres communities. Refer to the Public Access and Resource-Based Recreation section for addition information.

## **V. FACTORS INFLUENCING MANAGEMENT**

### **A. Natural Trends and Disturbances**

Natural trends and disturbances influencing native communities and stewardship at WTSP include hurricanes, flooding, wildfires, occasional freezes and the pattern of

wet and dry seasons. Implementation of the Management Action Plan will take all of these factors and their influence on projects at the WTSP into consideration. A tropical storm or hurricane could damage large amounts of vegetation, as did a wildfire in April 2007. This human influenced wildfire had devastating impacts to natural areas infested with melaleuca trees. This intense wildfire killed hundreds of pines and cypress trees, which made it necessary to remove the dead pines and provided an opportunity to remove the larger melaleuca trees. The biomass removed from this stewardship activity vastly improved wildlife habitat and public safety from future wildfires.

Construction of public facilities will need to take the possibility of a tropical storm, wildfires and seasonal flooding into consideration. A significant storm could damage the vegetation and it may be necessary to bring in heavy equipment to remove vegetation from trails and fence lines after a storm.

Wildfires caused by lightning strikes are natural occurrences in Florida. The Florida Division of Forestry (FDOF) – Caloosahatchee District - and LCPR staff are developing a wildland firefighting protocol for County preserves. This agreement between FDOF and the county should help to minimize impacts to the Preserve from the utilization of bulldozers, plows and other emergency firefighting equipment creating dozer lines to stop the fires. A Fire Management Plan has been completed for Lee County owned conservation lands to help decrease the impact of catastrophic wildfires on the preserves and neighboring lands. The FDOF has received a copy of this plan and will continue to receive updated maps of newly acquired parcels showing the locations of gates, firebreaks, management units and water sources. Once additional perimeter firebreaks have been created for WTSP, it will not be necessary for FDOF to create additional plow lines to protect property outside the Preserve boundary. Land Stewardship staff will lead periodic site visits for FDOF staff in order to familiarize them with WTSP and current management efforts. Fire lines on the perimeter of the Preserve, as well as those created once burn units are established, will be kept clear of debris and disked or mowed a minimum of once a year during the onset of the dry (wildfire) season.

Stewardship (invasive exotic plant control, prescribed burning, etc.) of WTSP is influenced by seasonal flooding. The Land Stewardship Operations Manual's (LSOM) exotic plant prescription form will be used to define the conditions for control activities. Care shall be taken to prevent herbicide from running off during a typical summer thunderstorm so as not to affect non-target plants. Only herbicides approved for aquatic application will be used for treatment of vegetation in standing water or where flooding may occur. The use of heavy equipment will be limited to the dry season for the majority of the site. The timing of prescribed burns will also be influenced by seasonal rain, weather and wind patterns.

## **B. Internal Influences**

There are numerous human influences that have impacted WTSP (Figures 25-26). Ditches and borrow pits were dug for agricultural drainage and for FPL utility easements, whereas the unwanted soils created roads, berms and mounds of spoil that continue to adversely affect local hydrology. Interior trails and old FDOF plow lines continue to redirect water from the natural flow ways. There are several locations with moderate levels of debris primarily left over from agricultural operations. An abandoned oil exploratory well, several irrigation wells, and remnants of a WWII military firing range exist. There are active cattle leases on portions of the Preserve with cow wells and interior fencing for this purpose. Invasive exotic animals are negatively affecting native animals and habitats. This intrusive level of man-made activities has permitted aggressive invasive exotic plant species to thrive and further disrupt native plant communities. This section will help explain these issues further and specify stewardship measures to reduce or eliminate these problems.

An environmental consultant may be hired to collect hydrological data and provide specific recommendations for restoration protocols on some ditches and berms that may affect water flow to adjacent properties. Permits from SFWMD and United States Army Corps of Engineers (USACOE) will be obtained before on-site restoration work can begin.

There are several locations with moderate levels of debris from military, commercial, agricultural operations, and illegal dumping. Some larger items include broken farm equipment, hunting stands, household items, scrap metal culverts, wood from an abandoned commercial billboard, roofing material, tires, bed of a truck, and discarded cattle fencing. Unnecessary fencing, feeders, and pens from cattle operations will be removed once the leases are terminated or before restoration work begins. The Lee County Solid Waste Division may be able to assist staff with trash removal efforts, if the site is accessible.

In 1953, an oil exploration well was drilled (MU 200-4) with reportedly <150 gallons of oil extracted. Shortly afterwards, this well was plugged. However, this method of plugging does not meet today's standards. Estimates for properly plugging this well to today's standards are approaching one million dollars. During Site 200's Phase II Environmental Site Assessment, the environmental consultant's subcontractor drilled monitoring wells to test for potential saltwater migration and concluded that the water quality parameters (temperature, conductivity, pH, and dissolved chlorides) were within the background levels found in each aquifer (WRS 2003). Several irrigation and/or water supply wells exist throughout areas of the Preserve. Most of the wells have been capped, while water quality monitoring analyses may be performed from others.

The abandoned WWII rifle range with remnant storage buildings, earthen berm and other concrete items are affiliated with the Buckingham Army Air Field and are a

historical and cultural resource. The amount of spent bullets that may lie within the mound of dirt near the storage buildings and firing range is unknown. Many 50 caliber bullets can be found on the surface of the ground to the south of the firing range. Most ammunition used by the military, at least during WWII, was partially composed of lead and it is possible that this contaminant has leached into the soil and potentially in surrounding surface or ground waters. During SAC's Cultural Resource Survey, shovel tests were used to excavate and sample the soil for possible cultural materials at 25 and 50 meter intervals in moderate to high probability areas. Areas with low probability were tested. In total, all 49 shovel tests came back negative for any cultural material.

While some resources state that ground water may be contaminated, others conclude that lead will stay within a couple of inches of the soil and not contaminate the ground water. The LCDNR conducts regular water quality analyses from nearby surface water monitoring stations and significant levels of lead contaminant have not been observed. In 2005, Land Stewardship staff recommended that samples of the surrounding soil and surface waters be tested specifically for this metal contaminant to ensure the safety of residents, wildlife, and the environment. During May 2009, staff hired RMA GeoLogic Consultants, Inc. to perform a soil sampling investigation on areas around the shooting range and storage buildings located in the northern portions of the Preserve. In order to ensure that the soil is not contaminated with lead from spent munitions, twenty soil samples were collected from depth intervals of 0-8 inches. These samples were sent to a laboratory where they were tested for levels of lead and arsenic (a common insecticide). While there was an average lead level of 8 mg/kg in the samples and the highest sample level returned a 190 mg/kg this is still well below the FDEP Residential Soil Cleanup Target Level of 400 mg/kg. Three of the samples returned with a "below detection limit" rating for arsenic while the rest of the samples were completely devoid of arsenic. Figures 25-26 shows the various water monitoring wells located throughout WTSP.

A long-term active cattle lease remains in MU 200-2, which primarily consists of improved pasture and abandoned row crop fields. Other cattle leases are scattered throughout appropriate areas of WTSP. Two additional areas are under consideration including a potential goat lease on MU 345-4. Livestock, including cattle and goats, are used as a form of brush and fuel reduction.

Staff has all but eliminated illegal access from ORV and hunters. Nearly all entry is gained through the FPL access road easements and some of these access points were not maintained with locked gates. Improvements were made to restrict access at problem locations that included signage, gates with locks, fencing and increased law enforcement presence.

Several exotic animals have been noted at WTSP. Feral hogs consume ground-nesting bird eggs and disturb soil and sensitive vegetation during rutting activities, which invites invasive exotic plant growth. A licensed trapper and/or state sponsored hunts organized by FWC are possible methods for hog removal. A Lee

County student intern has placed several 2" PVC pipes as an attractant for frogs and approximately 63% have been utilized by Cuban treefrogs. Supplementary pipes may be installed and periodically checked for exotic frogs and those individuals exterminated when found. Other methods of removal may be considered for problematic invasive exotic animals found on the Preserve.

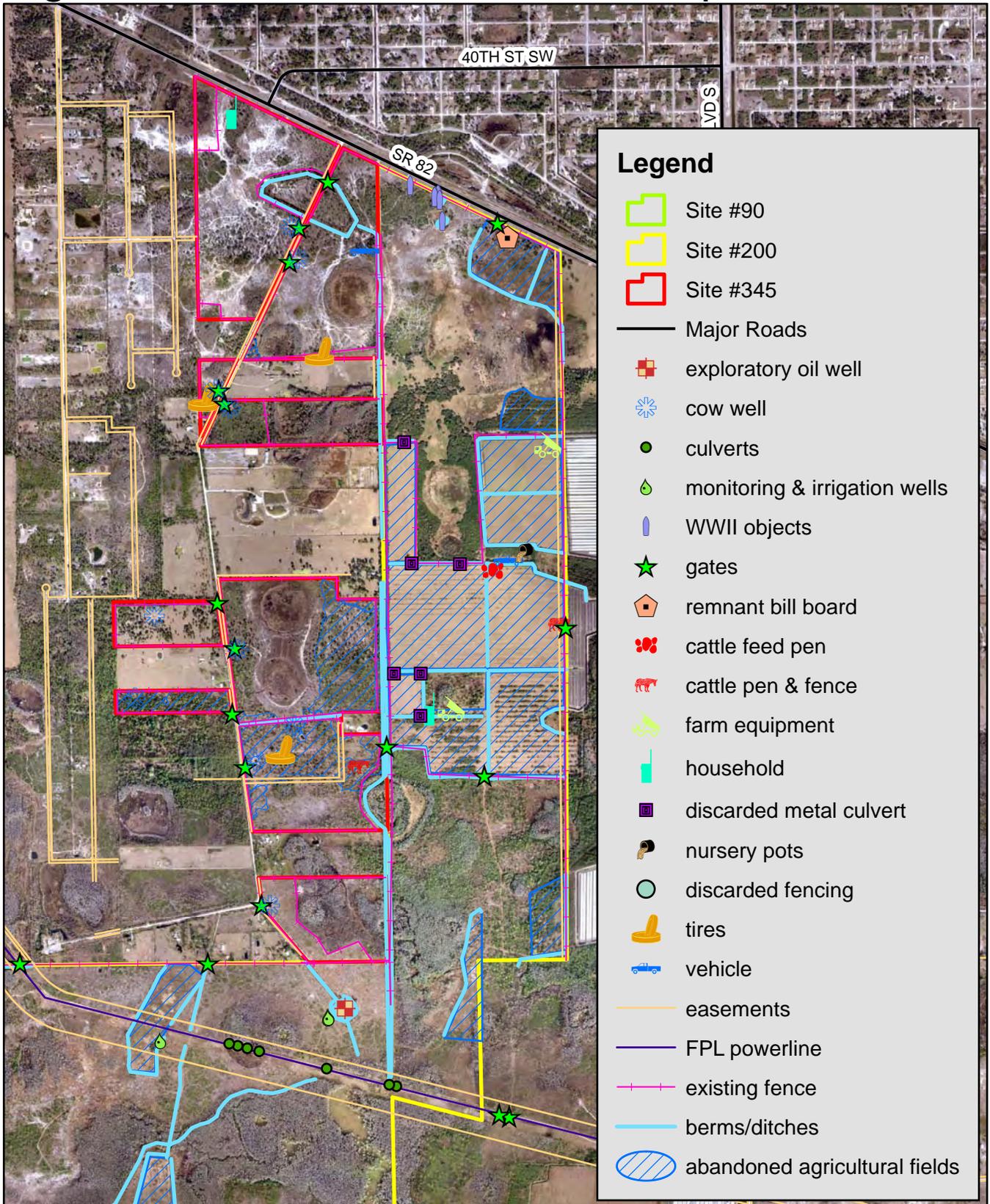
Several upland communities are severely overgrown due to previous fire suppression activities. Old FDOF plow lines were noted at several locations and within different communities. In April of 2007, a large wildfire that started to the northwest of Site 200, roared across WTSP fire lines and through the Preserve on its way south and east. FDOF responded to this fire with drastic plow lines. In total just over 470 Preserve acres burned and FDOF installed 4.8 miles of plow lines.

Once restoration projects are completed in management units that contain fire dependent communities, a prescribed fire management program will be implemented. This will aid conservation measures by inhibiting exotic plant regrowth and return an essential fire regime for all fire dependent plants and animals for long-term sustainability. Implementing an appropriate fire regime within the landscape will help prevent the sometimes-devastating affects of wildfires and possibly avoid the need for FDOF to intervene with bulldozers and plows.

Removal of invasive exotic plant species such as melaleuca is an important part of the restoration of conservation lands. Staff has worked along with FDOF to allow a timber company to remove the larger melaleuca timber from many portions of WTSP at no cost. In addition, a pine tree (*Pinus elliotii*) thinning project took place in 2008 and 2009 on selected portions of the Preserve in order to restore the appropriate historical pine density while increasing biodiversity and encouraging pine regeneration.

Between MUs 345-6 and 345-8, a driveway without an easement runs directly through the C20/20 property connecting the out parcel with a house with Rod & Gun Club Road. The same property has a power line easement from Rod & Gun Club Road running several hundred feet south of the driveway then making a left turn and proceeding north to the house.

# Figure 25: Internal Influences Map - North





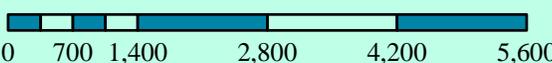
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## Wild Turkey Strand Preserve

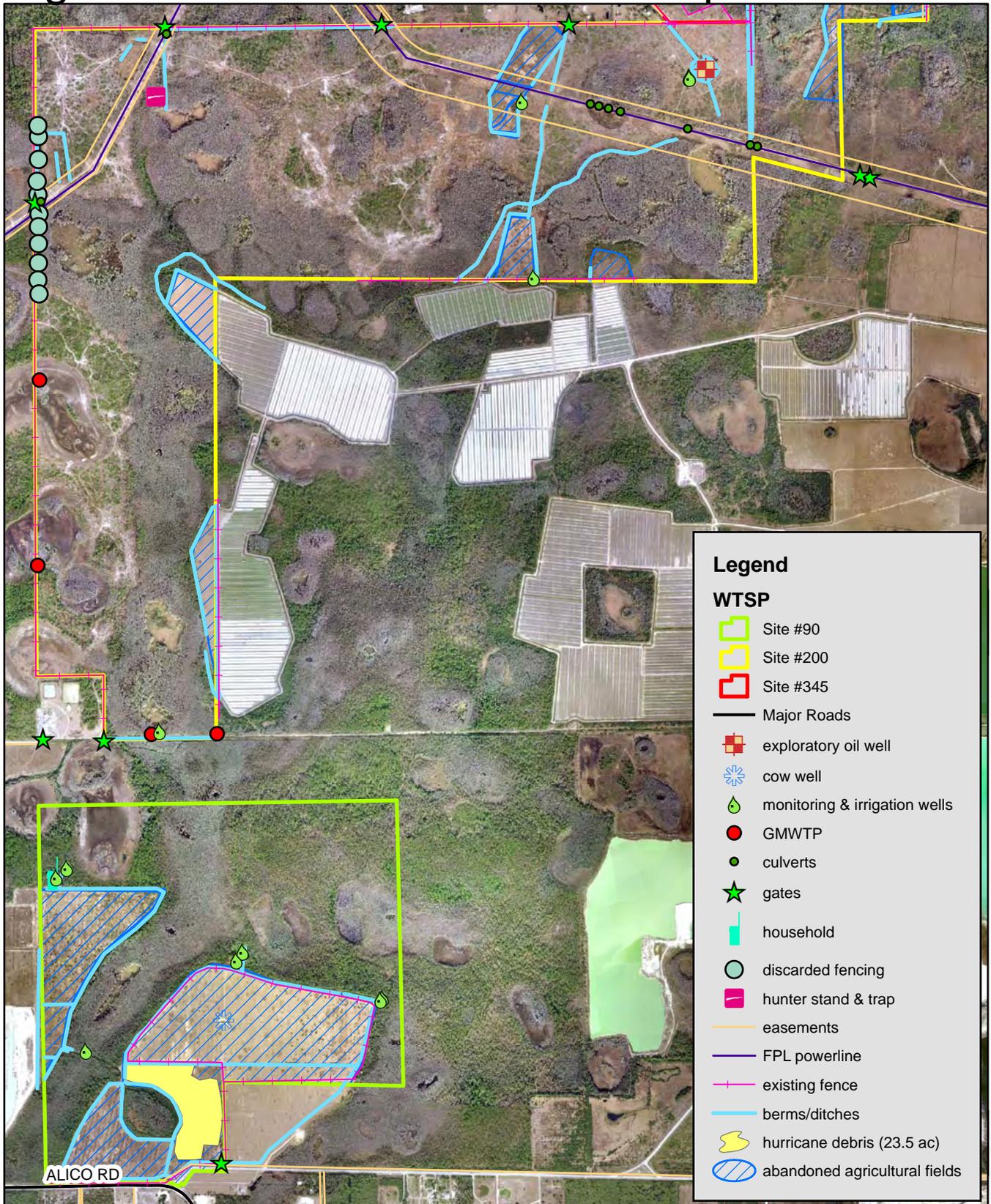
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Wild Turkey Strand\2nd ed LSP\Internal\_North.mxd  
Map Prepared on: 02/03/10, by jwaller@leegov.com



0 700 1,400 2,800 4,200 5,600  
Feet

This is not a survey.  
Land Stewardship Staff has prepared this map  
for informational and planning purposes.

# Figure 26: Internal Influences Map - South



**Legend**

**WTSP**

- Site #90
- Site #200
- Site #345
- Major Roads
- + exploratory oil well
- \* cow well
- \* monitoring & irrigation wells
- GMWTP
- culverts
- ★ gates
- household
- discarded fencing
- hunter stand & trap
- easements
- FPL powerline
- existing fence
- berms/ditches
- hurricane debris (23.5 ac)
- abandoned agricultural fields



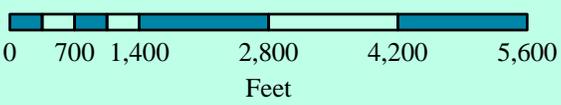
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## Wild Turkey Strand Preserve

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Map Prepared on: 02/03/10, by jwaller@leegov.com



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Feet

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Land Stewardship Staff has prepared this map  
for informational and planning purposes.

## C. External Influences

There are many factors that exist outside the Preserve boundary that can greatly influence the ecosystems within the Preserve and can affect land stewardship actions necessary to protect and maintain the Preserve.

Humans are the source of many of the external influences on the Preserve. As human population increases in the county, greater demand is placed upon the lands surrounding WTSP. Increased population generally increases development that leads to greater traffic volume and many other environmental pressures that can influence the Preserve. More specifically, new development; residential communities, commercial parks and the associated infrastructure (i.e. roads, utilities, public works, airports), impact the local hydrological systems, interrupt wildlife corridors and place increased pressure on the natural ecosystems within the Preserve and the surrounding area. It is the close proximity of these developments that creates yet another influence; neighbors.

The neighborhoods surrounding the Preserve range from small residential communities (single family homes on ¼ to 40 acre parcels) to larger planned developments. These neighbors can have a negative influence on the Preserve through unauthorized access (e.g. vehicles, equestrian riders, pets, poaching) and illegal dumping (e.g. garden waste, tires, trash, poached animal carcasses). However, positive influences can also be present when the neighboring community members take an active interest in the Preserve through the creation of a “friends” group or report information to staff.

WTSP is located within two of the 22 planning communities designated by the Lee County BOCC and defined within the Lee Plan. The majority of the Preserve (92 percent) falls within the Southeast Lee County Community. This is the county’s second largest planning community. “As the name implies, this community is located in the southeast area of Lee County. South of SR 82, north of Bonita Beach Road, east of I-75 (excluding areas in the San Carlos Park/Island Park/Estero Corkscrew Road and Gateway/Southwest Florida International Airport Communities) and west of the county line. With the exception of a few Public Facilities, the entire community is designated as Density Reduction/Groundwater Resource, Conservation Lands (both upland and wetlands), and Wetlands on the Future Land Use Map (see Figure 30). This planning community consists of mining operations, agricultural uses, and very large lot residential home sites. The one exception is the Citrus Park Community. This community is not expected to change in character through the year 2030” (LCDCD 2009).

Smaller, western portions of the Preserve fall within the Gateway/Airport planning community. “This Community is located south of SR 82, generally east of I-75, and north of Alico Road including those portions of the Gateway development that either have not been or are not anticipated to be annexed into the City of Fort Myers, the

Southwest Florida International Airport and the properties the airport expects to use for its expansion, the lands designated as Tradeport, and the land designated as Industrial Development west of I-75 north of Alico Road. In addition to these two land use designations, properties in this community are designated New Community (the Gateway development), Airport, Density Reduction/Groundwater Resource (primarily the anticipated airport expansion areas), Rural, and General Interchange. The road network in this community is planned to change dramatically over time creating access to and from this community to the north, south, and east without relying on I-75" (LCDCD 2009).

There are several adjacent external influences that affect the management and natural resources of the Preserve. Some of these external pressures are not currently present, but if the proposed plans are implemented, they will have long-lasting detrimental environmental impacts. See Figure 27 for a visual representation of these impacts.

The property to the east of the Preserve is owned by Jamerson Farms and is currently being farmed. William McDaniel owns the mineral rights associated with the Jamerson Farms property and currently has applied to Lee County to rezone the area for mining limestone rock. Rezoning the adjacent Jamerson property to IPD would change the original desirability of WTSP, for which the BOCC spent nearly \$18 million to acquire as a preserve with low impact surrounding land use. Staff commented on the proposed mine and determined because of the many conflicts to the Lee Plan and potential detrimental affects to WTSP that if the rezoning should be approved extensive water level monitoring will need to take place prior to any extraction activities (Appendix G) to minimize impacts to the Preserve through buffers and plantings. To that end, the consulting hydrogeologist for Mr. McDaniel has prepared a Water Level Monitoring Plan that has been conceptually approved by Lee County staff and is under review by the Lee County Department of Community Development (LCDCD). C20/20 staff hired consulting ecologist, Kevin L. Erwin, to comment on the proposed mine due to his expertise in the area of mining and possible water resource impacts (Appendix H).

Cattle can have negative influences on wetlands in the Preserve. Cattle from adjacent properties have wandered onto the Preserve. Although the C20/20 property line is not completely fenced it is the responsibility of the adjacent "cattle approving" landowner to keep cattle contained and off WTSP according to Lee County Ordinance #88-49, XII: Prohibiting animals from roaming at-large. "It shall be unlawful for any person owning or having possession, charge, custody or control of any animal: domestic, livestock, farm, wildlife or fowl raised in captivity, to permit or allow the animal to stray, run, go or roam-at-large in or upon any public street, sidewalk, school grounds, beaches, parks or on the private property of other without the consent of the owner of such property." Within the last couple of years, an adjacent property owner has complied with this ordinance and installed fencing to keep his cattle out of sensitive areas on the Preserve.

The Southwest Florida International Airport (SWFIA) has plans to add another airport runway, south of the existing runway. If the LCPA's Airport Layout Plan is approved (by all local, state and federal authorities) and implemented, western regions of the Preserve may be significantly impacted. Land Stewardship staff will coordinate with the LCPA during the planning and design of the infrastructure to understand the public safety constraints and to protect the Preserve. Refer to Appendix I for the SWFIA Map identifying probable affected Preserve locations.

Adjacent to the south-central portion of the Preserve, the Green Meadows Water Treatment Plant is a 9 million gallon per day water facility, in operation for the pre-treatment of consumable water as opposed to post-treatment of wastewater. The plant is supplied by ground water drawn from the surficial and sandstone aquifers from Lee County's Green Meadows Well Fields. Figure 26 identifies existing associated water pipes and monitoring gages, while Figure 27 illustrates the Lee County Utilities' (LCU) well field protection zone. The water is first aerated to remove hydrogen sulfide and to oxidate iron and manganese. Lime is then added to the water, which forms a carbonate hardness, resulting in a lower hardness total and to adjust the final pH. Aluminum is added to enhance color removal and to coagulate particles to aid in the settling of particulate matter. The water is then chlorinated and filtered through 4 mixed media filters (gravel, anthracite and sand). Chlorine disinfects and filtration removes the particulate matter. Before filtration, the addition of ammonia is necessary for long lasting disinfection. From there the water is sent into the distribution system to customers and storage tanks (LCU 2005).

The water treatment ponds adjacent to the Preserve could potentially leach into the wetlands of WTSP. Monitoring wells have been set up strategically around the treatment ponds and are tested annually. An annual water quality report is generated for all LCU facilities and can be accessed via the county website. So far, there is no evidence of discernable adverse affects from the plant to the Preserve, except that water levels may be reduced within the cypress wetlands.

The property, just to the east of MUs 200-5, 9, 10, 11, and 90-2, and between MUs 200-11, 90-1 and 2, is owned by Florida Rock Industries, Inc. Portions of this property are under a conservation easement that was permitted through USACOE on August 1, 2003. In a memorandum dated February 15, 2005, LCU has informed C20/20 staff of their existing easements on Florida Rock's property and of their intention to utilize this easement for the placement of additional surficial and sandstone aquifer groundwater production wells and raw water pipelines to serve the Green Meadows Water Treatment Plant. It is anticipated that this will occur in 5-10 years, if population growth trends warrants the plant's expansion plan.

The property to the west of MU 90-1 was once owned by Florida Gulf Coast University (FGCU), but is now owned and actively mined by a mining company. A monitoring well was installed in August 2008 by an environmental consultant to evaluate any hydrological affects that may occur within the cypress slough by nearby

developments and mines. Water table data from the monitoring well can be viewed in Appendix J.

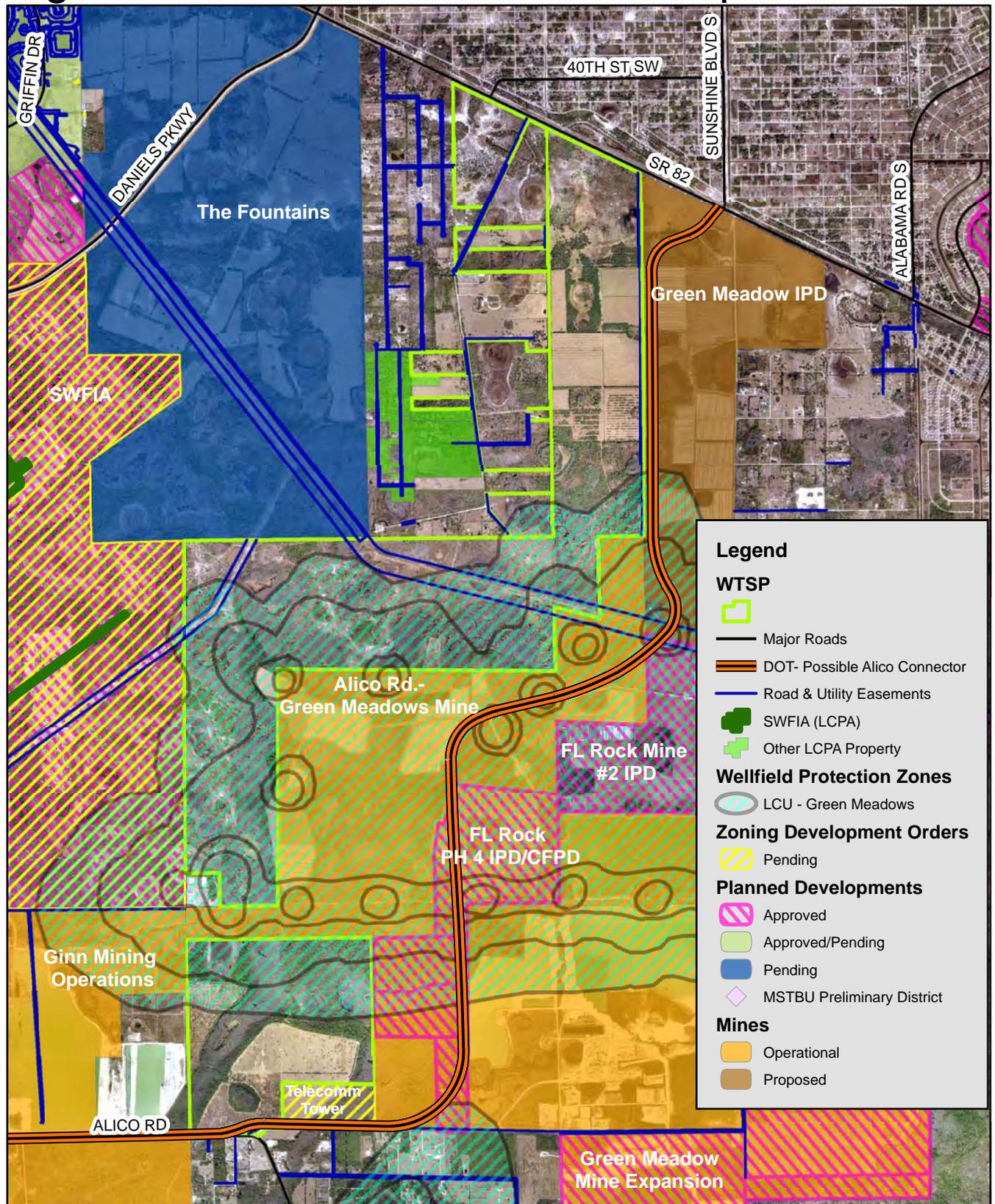
There is a potential for major roadways to be constructed along or near several boundaries of the Preserve. According to a Lee County Department of Transportation (LCDOT) Major Road Improvements map ([http://www3.leegov.com/publicworks/uploads/CIPMap\\_0506.pdf](http://www3.leegov.com/publicworks/uploads/CIPMap_0506.pdf)) a county corridor study is currently underway to examine expanding SR 82 to Hendry County. Currently, SR 82 is an undivided rural two-lane road where the end-of-pavement lies about 75 feet from the Preserve's northern boundary.

Another new roadway project, also under study, has been referred to as either the "airport expressway" or "Alico Road Connector." This new road proposes to connect Alico Road to SR 82 and then to Sunshine Boulevard. This future road will likely be along east areas of the Preserve.

Rod & Gun Club Road, a non-county maintained road, fronts all of Site 345 parcels. This dirt road, owned by the BoCC, has been turned over to LCDOT for maintenance after the sale of another Iroquois owned parcel along SR 82 to LCDOT. It is feasible for the majority of the neighbors along this road to petition the county to create a Multiple Services Taxing/Benefit Units (MSTBU). If a MSTBU is created, then a portion of the C20/20 management budget will need to be used to pay its portion of the tax to build a new paved/county maintained road.

Just to the north of MUs 200-6 and 200-8, over 3,100 acres of undeveloped land was once owned by one person. Unwilling to nominate their land to the C20/20 Program, it (most, if not all) was sold to a developer who proposes to build a 2,769 acre mixed-use development called "The Fountains." Although on hold, this project has already proposed changes to the Lee County Comprehensive Plan (LCDCD 2007).

# Figure 27: External Influences Map



**Legend**

**WTSP**

- Major Roads
- DOT- Possible Alico Connector
- Road & Utility Easements
- SWFIA (LCPA)
- Other LCPA Property

**Wellfield Protection Zones**

- LCU - Green Meadows

**Zoning Development Orders**

- Pending

**Planned Developments**

- Approved
- Approved/Pending
- Pending
- MSTBU Preliminary District

**Mines**

- Operational
- Proposed

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## Wild Turkey Strand Preserve

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Map Prepared on: 05/06/10, by stumari@leegov.com

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Miles

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Land Stewardship Staff has prepared this map  
for informational and planning purposes.

## **D. Legal Obligations and Constraints**

### *i. Permitting*

Land stewardship activities at WTSP will involve obtaining permits from regulatory agencies. Any hydrologic improvements to the site may require obtaining permits from the FDEP, the USACOE and SFWMD. Hydrological and restoration projects requiring heavy equipment or tree removal will require notification to the LCDCD. Burn authorization from the FDOF is required for all prescribed burns conducted on WTSP.

A consultant has been hired to assist with the permitting process for the public use amenities. This process will require permits from FDEP, SFWMD, USACOE, and Lee County, to name a few, in order to build boardwalks, a parking area, a restroom, and observation decks.

### *ii. Other Legal Constraints*

Restoration activities that may pose additional legal constraints include the filling of agricultural ditches and canals, geo-webbing or the installation of additional culverts under FPL roadways, and transformation of pasture/agricultural fields into suitable native plant communities. Some of these activities may improve water quality, sheet flow, and localized water recharge. Staff may be required to coordinate with FPL representatives if hydrological modifications affect their transmission maintenance roadways that bisect the Preserve at two locations.

In June of 2009, staff received the results of a Cultural Resource Survey of the area in which the trailhead and trail system is planned to be installed. This survey was ordered to ensure that these amenities would not have a negative impact on any known or unknown cultural resources. While one known historic feature was documented, three additional historic features were identified and documented (SAC 2009). It is the intent of C20/20 staff that each of these features be protected while they are used to educate others on the historic importance of the site and the area surrounding it.

At the locations that require hydrological restoration measures, C20/20 staff has considered the potential for flooding issues on adjacent properties. In examining the Natural Resources' Flow Ways GIS data layer, it does not appear that neighboring properties would be affected by removing these hydrologically impeding berms, spoil piles, and ditches. In order to be confident of possible hydrological impacts (on- and off-site), an environmental consulting firm should be contracted for these projects. The firm will deliver recommendations for the methodologies on any restoration

work, coordinate with relevant permitting agencies, apply for the appropriate permits, and oversee the contractor(s) performing these restoration efforts on-site.

LCPA manages the adjoining property west of Site 200 that is part of the SWFIA and property adjacent to Site 345. Before acquisition of Site 200, LCPA informed C20/20 representatives of the probable restrictions that may be placed on a triangular portion in the northwest corner of S28/T45S/R26E (229± acres). In a letter dated August 27, 2001, the Port Authority advised C20/20 staff of their future expansion plans. Based on existing airport plans, MU 200-8 may be needed for portions of the Runway Protection Zone (RPZ) for the future south Runway 24L and some of the limitations may include (W. B. Horner, personal communication, August 27, 2001):

- Land use restrictions (Noise Overlay Zone 3).
- Tree height maintenance (to comply with FAR Part 77 safety regulations).
- Periodic tree trimming.
- Possible additional future land acquisition for expansion of airport, including the relocation of existing FPL power lines.

Land Stewardship staff has begun coordinating with LCPA representatives on the specifics concerning the Airport Layout Plan, within a subsequent letter dated February 21, 2005 (Appendix K). If it doesn't appear that they will need to acquire any portion of WTSP. Although, there are no definite plans in place, the western FPL transmission line will likely be relocated. The relocation site is unknown for now. Lee County staff understands that they will need to reimburse FCT 40% of the affected area if conservation land (Site 200, FCT grant) is sold/transferred to LCPA and/or only if FCT feels there was not adequate mitigation for the new easement and remediation for the removal of the old easement.

These changes will dramatically impact the Preserve's functionality as a wildlife refuge and water resource protection area. The LCPA and Land Stewardship staff are in the early drafting stages to create a MOU to restore about 1,000 acres of WTSP (outside SWFIA 10,000' buffer-see Appendix L) and other C20/20 preserves for Airport Project Mitigation. Once finalized, this Mitigation and Management Plan will go to the county attorney and then to Conservation Lands Acquisition and Stewardship Advisory Committee (CLASAC) and BOCC for comment/approval.

An active cattle lease remains in MU 200-2, which primarily consists of improved pasture and abandoned row crop fields. Three cattle leases are on MUs 345-1, 345-5 through 8 and two others on MUs 90-1 & 90-2 (Appendix M). Other areas currently under consideration include leases on MUs 345-4 and 345-9 while the potential for a goat lease is being considered for MU 345-4. Grazing may be considered on all MUs.

Boundary surveys were conducted for each parcel which identified several recorded easements. For Site 90, there is a roadway and public utility easement along the southern boundary of the property, adjacent to Alico Road. For Site 200 there are

easements for FPL power lines, a few wells, a right-of-way easement (western boundary of Section 33, above Green Meadows Water Treatment), and a “utility, motor vehicle and pedestrian ingress egress” easement along the eastern boundary of Sections 14 and 23. There are also two easements that involve a home on the out parcel between MUs 345-6 and 345-8. One easement is for power lines and the other is for ingress/egress to and from the property and Rod & Gun Club Road.

In 2007, the “Alico Road Connector” LCDOT project was brought to staff’s attention (refer to Figure 27). Several roadway alignments were discussed with various county departments and other interested parties. The alignment, with the least amount of impact to natural areas on the Preserve, was brought to CLASAC and it was approved in August 2009. Negotiations are on-going between LCDOT, C20/20 and an adjacent land owner to purchase or swap parcels. The map (Appendix N) identifies acreages and parcels involved in the transaction. The current plan would remove parcels B, E, F, A-4 and A-5 (totaling 31.899 acres, primarily disturbed lands) from WTSP and possibly receive parcel C (30.109 acres of cypress).

Other legal constraints and/or obligations include grants such as the Florida Communities Trust (FCT). This grant requires the County to build recreational amenities following certain guidelines and requires completion within a specific time period to allow the site and amenities to be available to the public.

Lee County’s Wellfield Protection Ordinance 95-01 establishes protection for the “existing public potable water supply wells from the potentially irreversible and adverse effects of bacterial and chemical contamination from abandoned wells and to control the storage, handling and use of hazardous or toxins substances within certain distance from wellfields.” This ordinance applies to all abandoned wells and areas surrounding a wellfield and designated as wellfield protection zones. All three WTSP sites are included in the Wellfield Protection Zone with the exception of the northern portions of 200 and 345 and the southern portion of Site 90 (see Figure 27). Section 14-213 of Ordinance 95-01 delineates the specific regulated substances that are only to be used in limited quantities, if at all, in these protection zones and cannot be stored within these zones. It is unlikely that any of these chemicals (restricted use pesticides, petroleum-based products, etc.) would be used for stewardship activities at the Preserve. However, the Ordinance does provide a special exemption for the application of herbicides in recreation and aquatic weed control activities as long as certain guidelines (Section 14-209b) are followed. Contractors will be advised of the protection zone and will not be allowed to store any regulated substances (which includes petroleum based products) in the area.

### *iii. Relationship to Other Plans*

The Lee Plan, Lee County’s comprehensive plan, is written to depict Lee County as it will appear in the year 2020. Several themes have been identified as having “great

importance as Lee County approaches the planning horizon” (LCDCD 2009). These themes are:

- The growth patterns of the county will continue to be dictated by the Future Land Use map.
- The continued protection of the county’s natural resource base.
- The diversification of the county’s traditional economic base.
- The expansion of cultural, educational and recreational opportunities.
- A significant expansion in the county’s physical and social infrastructure.

The entire Lee Plan can be found on the Internet at:

<http://www3.leegov.com/dcd/Leeplan/Leeplan.pdf>. The five chapters that affect the management of WTSP are **Chapter II – Future Land Use, Chapter IV – Community Facilities and Services, Chapter V – Parks, Recreation and Open Space, Chapter VII – Conservation and Coastal Management, and Chapter IX – Historic Preservation.**

**Chapter II, Policy 1.4.6** states that Conservation Lands includes uplands and wetlands that are owned and used for long range conservation purposes. Upland and wetland conservation lands will be shown as separate categories on the FLUM. Upland conservation lands will be subject to the provisions of this policy. Wetland conservation lands will be subject to the provisions of both the Wetlands category described in Objective 1.5 and the Conservation Lands category described in this policy. The most stringent provisions of either category will apply to wetland conservation lands. Conservation lands will include all public lands required to be used for conservation purposes by some type of legal mechanism such as statutory requirements, funding and/or grant conditions, and mitigation preserve areas required for land development approvals. Conservation Lands may include such uses as wildlife preserves; wetland and upland mitigation areas and banks; natural resource based parks; ancillary uses for environmental research and education, historic and cultural preservation, and natural resource based parks (such as signage, parking facilities, caretaker quarters, interpretive kiosks, research centers, and quarters and other associated support services); and water conservation lands such as aquifer recharge areas, flow ways, flood prone areas, and well fields. 2020 lands designated as conservation are also subject to more stringent use provisions of the 2020 Program or the 2020 ordinances. (Added by Ordinance No. 98-09, Amended by Ordinance No. 02-02).

**Chapter IV, Policy 59.1.6** provides that the county will, through appropriate regulations, continue to provide standards for construction of artificial drainage ways compatible with natural flow ways and otherwise provide for the reduction of the risk of flood damage to new development. (Amended by Ordinance No. 94-30, 00-22).

**Chapter IV, Policy 60.1.4** provides that the county will examine steps necessary to restore principal flow-way systems, if feasible, to assure the continued

environmental function, value, and use of natural surface water flow-ways and associated wetland systems. (Amended by Ordinance No. 00-22).

**Chapter V** provides that Land Stewardship staff will ensure that any public use facilities and recreational opportunities will comply with **Goal 85: PARK PLANNING AND DESIGN**, which requires that parks and recreation sites are planned, designed, and constructed to comply with the best professional standards of design, landscaping, planning, and environmental concern. Staff will also work to meet **Goal 86: ENVIRONMENTAL AND HISTORICAL PROGRAMS, Objective 86.1** to provide information and education programs regarding its cultural history and its environment at appropriate facilities. (Amended by Ordinance No. 94-30, 00-22).

**Chapter VII, Objective 77.10, Policies 77.10.1 and 77.10.2 WOOD STORK** provides that Land Stewardship staff will continue to document wood stork utilization of the Preserve and ensure that the WTSP management plan follows United States Fish and Wildlife Service's (USFWS) "Habitat Management Guidelines for the Wood Stork in the Southeast Region."

**Chapter VII, Objective 77.11, Policies 77.11.1, 77.11.4 and 77.11.6 FLORIDA PANTHER AND BLACK BEAR** provides that Land Stewardship staff will maintain and update data on sightings and habitat for the black bear and Florida panther. Where appropriate, WTSP's habitat restoration projects will include plant species that provide forage for the prey of the Florida panther and forage for the black bear due presence of these species in the area of the Preserve.

**Chapter VII, Objective 84.1 WETLANDS** provides that Land Stewardship staff is directed to protect and conserve the natural function of wetlands and wetland systems through the enforcement of the county's wetland protection regulations and the goals, objectives, and policies in this plan. "Wetlands" include all of those lands, whether shown on the Future Land Use Map or not, that are identified as wetlands in accordance with F.S. 373.019(17) through the use of the unified state delineation methodology described in FAC Chapter 17-340, as ratified and amended by F.S. 373.4211 (Amended by Ordinance No. 94-30, 00-22).

**Chapter VII, Objective 104.1: ENVIRONMENTALLY CRITICAL AREAS** provides that within the coastal planning area, the county will manage and regulate, on an ongoing basis, environmentally critical areas to conserve and enhance their natural functions. Environmentally critical areas include wetlands (as defined in Goal 114) and Rare and Unique upland habitats. Rare and Unique upland habitats include, but are not limited to: sand scrub (320); coastal scrub (322); those pine flatwoods (411) which can be categorized as "mature" due to the absence of severe impacts caused by logging, drainage, and exotic infestation; slash pine/midstory oak (412); tropical hardwood (426); live oak hammock (427); and cabbage palm hammock (428). The numbered references are to the FLUCFCS Level III (FDOT, 1985). (See also Policy 113.1.4.) The digitization of the 1989 baseline coastal vegetation mapping

(including wetlands and rare and unique uplands, as defined above) will be completed by 1996. (Amended by Ordinance No. 94-30, 00-22).

**Chapter VII, Goal 107: RESOURCE PROTECTION** provides to manage the county's wetland and upland ecosystems so as to maintain and enhance native habitats, floral and faunal species diversity, water quality, and natural surface water characteristics. **Objective 107.1: RESOURCE MANAGEMENT PLAN** provides the county will continue to implement a resource management program that ensures the long-term protection and enhancement of the natural upland and wetland habitats through the retention of interconnected, functioning, and maintainable hydroecological systems where the remaining wetlands and uplands function as a productive unit resembling the original landscape. (Amended by Ordinance No. 94-30, 00-22) Under **Policy 107.1.1.4e** the county (or other appropriate agency) will prepare a management plan for each acquired site for the long-term maintenance and enhancement of its health and environmental integrity.

**Chapter VII, Objective 107.3: WILDLIFE** provides the county will maintain and enhance the fish and wildlife diversity and distribution within Lee County for the benefit of a balanced ecological system. (Amended by Ordinance No. 94-30) **Policy 107.3.1:** encourages upland preservation in and around preserved wetlands to provide habitat diversity, enhance edge effect, and promote wildlife conservation. Initiating a prescribed fire regime and removing invasive exotics will follow this policy.

**Chapter VII, Objective 107.4: ENDANGERED AND THREATENED SPECIES IN GENERAL** provides Lee County will continue to protect habitats of endangered and threatened species and species of special concern in order to maintain or enhance existing population numbers and distributions of listed species. **Policy 107.4.1** states to identify, inventory, and protect flora and fauna indicated as endangered, threatened, or species of special concern in the "Official Lists of Endangered and Potentially Endangered Fauna and Flora of Florida," FWC, as periodically updated. Lee County's Protected Species regulations will be enforced to protect habitat of those listed species found in Lee County that are vulnerable to development.

**Chapter VII, Objective 107.8: GOPHER TORTOISES** provides that the county will protect gopher tortoises through the enforcement of the protected species regulations and by operating and maintaining, in coordination with the FWC, the Hickey's Creek Mitigation Park. (Amended by Ordinance No. 94-30) **Policy 107.8.1** provides that the county policy is to protect gopher tortoise burrows wherever they are found. However, if unavoidable conflicts make on-site protection infeasible, then off-site relocation may be provided in accordance with FWC requirements. (Amended by Ordinance No. 94-30).

**Chapter IX, Objective 143.4: PUBLICLY OWNED SITES.** Lee County will continue to preserve and protect the historic and archaeological resources owned, acquired, or disposed of by Lee County by designating them under the Lee County Historic

Preservation Ordinance if feasible. Lee County will continue the program to preserve and protect those historic and archaeological resources owned, acquired or disposed of by Lee County which do not qualify for designation under the Lee County Historic Preservation Ordinance. (Amended by Ordinance No. 94-30, 00-22, 07-12) **POLICY 143.4.1:** Lee County will inventory and prepare a preservation plan for all county-owned historic resources. (Amended by Ordinance No. 00-22) **POLICY 143.4.2:** Lee County will consider the acquisition of historic and archaeological resources, where necessary, and in so doing will follow the Standards for Acquisition established by the U.S. Department of the Interior. (Amended by Ordinance No. 00-22) **POLICY 143.4.3:** In disposing of county-owned historic and archaeological resources, Lee County will attach a preservation easement or protective covenants to said property. (Amended by Ordinance No. 94-30, 00-22).

## **E. Management Constraints**

The principle management constraints for this Preserve are limited funding, the brief dry season for conducting land stewardship activities, access issues, easement constraints and impacts, increasing urbanization pressures and adjacent land uses to the Preserve. WTSP received a grant from the Florida Communities Trust to reimburse half of the cost of acquisition for the Preserve. The remaining fund (\$2.5 million) is being used to help with the design and construction of public use facilities as well as with restoration activities. Efforts to obtain additional funding through grants and/or monies budgeted for mitigation of public infrastructure projects have been successful and will continue to be pursued. These funds will be used to supplement the operations budget to meet the restoration goals in a timely manner.

WTSP is very wet most of the year; over half of the Preserve is classified as wetlands which include strand & basin swamps, cypress domes, depression & basin marshes, wet flatwoods, and wet prairies communities. The remaining plant communities at WTSP are typically driest between January and April, so most stewardship activities will be conducted during these months. If access is necessary for stewardship activities when water levels are high, vehicles such as an all-terrain vehicle may be used; otherwise staff will travel on foot.

In several areas of the Preserve staff have vehicular access challenges for stewardship activities. Culverts are needed along the roadway to access smaller detached parcels (345-5 & 7) and over the large storm water drainage ditch leading from one nomination (345-8) to another (200-2). Since the southern region of MU 200-3 is a wetland with scattered levels of cypress and the existing jeep/cattle trail isn't on county owned property, staff can not legally access MU 200-2 or 3 during wet or dry seasons.

Urbanization pressures increasingly affect stewardship activities and boundary security. Fire management is a vital tool used to keep fuel loads down, to ensure

biological diversity, and to maintain functional habitat value for wildlife. Smoke management will be one of the greatest factors in planning prescribed fires. Prescribed fire parameters become more restrictive with expanding residential and commercial development and increased traffic on nearby roadways. The part of the Preserve that borders the SWFIA and the neighborhood off Rod & Gun Club Road will present the most challenges with urban interface. Mechanical work in these areas to reduce fuel loads before burning may be necessary.

When restoration activities and prescribed burns are in progress that could be dangerous to visitors, signs will be installed at the entrance and on the trail near the management activity to warn the public that the area is temporarily closed. It is anticipated that most habitat restoration activities will be completed before the site's public amenities are complete.

The adjacent land uses pose some obstacles to stewardship of conservation land. Current and future land uses include agriculture, rural residential, pending rock mining activities, and an expanded airport runway and roadway systems (SR 82 and proposed airport expressway). Any of these adjacent land uses may alter hydrologic conditions at WTSP. Potential development scenarios will be monitored and recommendations will be provided. Coordination with other County departments and other governmental agencies that may conduct mitigation projects at the Preserve will also be an important part of managing the Preserve.

## **F. Public Access and Resource-Based Recreation**

Historically, a marginal amount of recreational activity has occurred at WTSP, although most has been from unlawful trespassers. In recent decades, the Preserve was utilized for row crops, citrus and cattle ranching and the associated fencing prevented most of the general public from entering. Since Lee County has purchased the Preserve, evidence of both hunting and ORVs use has been documented. The Parks and Recreation Ordinance, 06-26 (<http://www.lee-county.com/gov/bocc/ordinances/Ordinances/06-26.pdf>) prohibits both of these activities.

Land Stewardship staff is researching the possibility of partnering with FWC to conduct a periodic feral hog hunt, while closing the Preserve to all other public uses, during such special hunting events. With that possible exception, any other hunting activities would not be compatible with the protection of the Preserve or with the safety of its visitors. Lee County ordinance(s) would need to be changed to allow hunting on county lands. C20/20 staff will address coordination of that item at a future date.

Presently, there is no designated public access point or parking for visitors. Since the Preserve is mostly wetlands with susceptible soils, staff doesn't recommend any additional recreational activities beyond hiking, bird watching, nature photography

and nature study that are allowed at all Conservation 20/20 preserves. The future trail system will necessitate creating several substantial boardwalk sections to assist in the protection of the restored natural resources, while allowing appropriate public access. Equestrian use is not recommended to be allowed at WTSP due to the property's wet nature and fragile ecosystems.

In accordance with the LSOM, WTSP is currently classified as a Category 4 Resource Protection & Restoration Preserve. Since the Preserve is sizeable, has undergone extensive disturbance and is within a region of the county with little recreational opportunities, staff proposed and received grant funding to allow additional recreational activities beyond the usual hiking, bird watching, nature photography and nature study that are allowed at all C20/20 preserves. Some northern areas of the Preserve will become a Category 1 Primary Use Preserve, while the remaining areas retain their Category 4 classification. While a portion of this Preserve will be elevated to Category 1, daily staff may not be present due to budgetary constraints and staffing limitations.

Public use facilities and resource-based recreation at WTSP will be concentrated at the extreme north end for several reasons:

- ✓ Closer to S.R. 82, most suitable public access point.
- ✓ The majority of the trail system will be within previously disturbed areas (past uses: military, agricultural, and invasive exotic plants).
- ✓ A diverse level of communities (natural and restored) will be viewed.
- ✓ Allow visitors access to several different restoration projects and their particular methodologies.
- ✓ Boardwalk sections will be limited to previously disturbed wetland systems.
- ✓ Prevents liability by not allowing the trail to cross through the FPL utility easement.
- ✓ Leaves central and southern areas remote with natural wetland areas strictly reserved as wildlife habitat.

Future public recreational opportunities will include an entrance kiosk that introduces visitors to WTSP and illustrates the different plant communities, location of wildlife observation decks/blinds, the mileage of the nature trails and their connected boardwalk sections. Restoration signs will be posted along the trails to educate visitors about land stewardship activities that have occurred to assist restoration of the ecosystem. Along the trail, a cultural resource display and/or signage will be created near the WWII structures to discuss the site's regional historical connection with the former Buckingham Army Air Field.

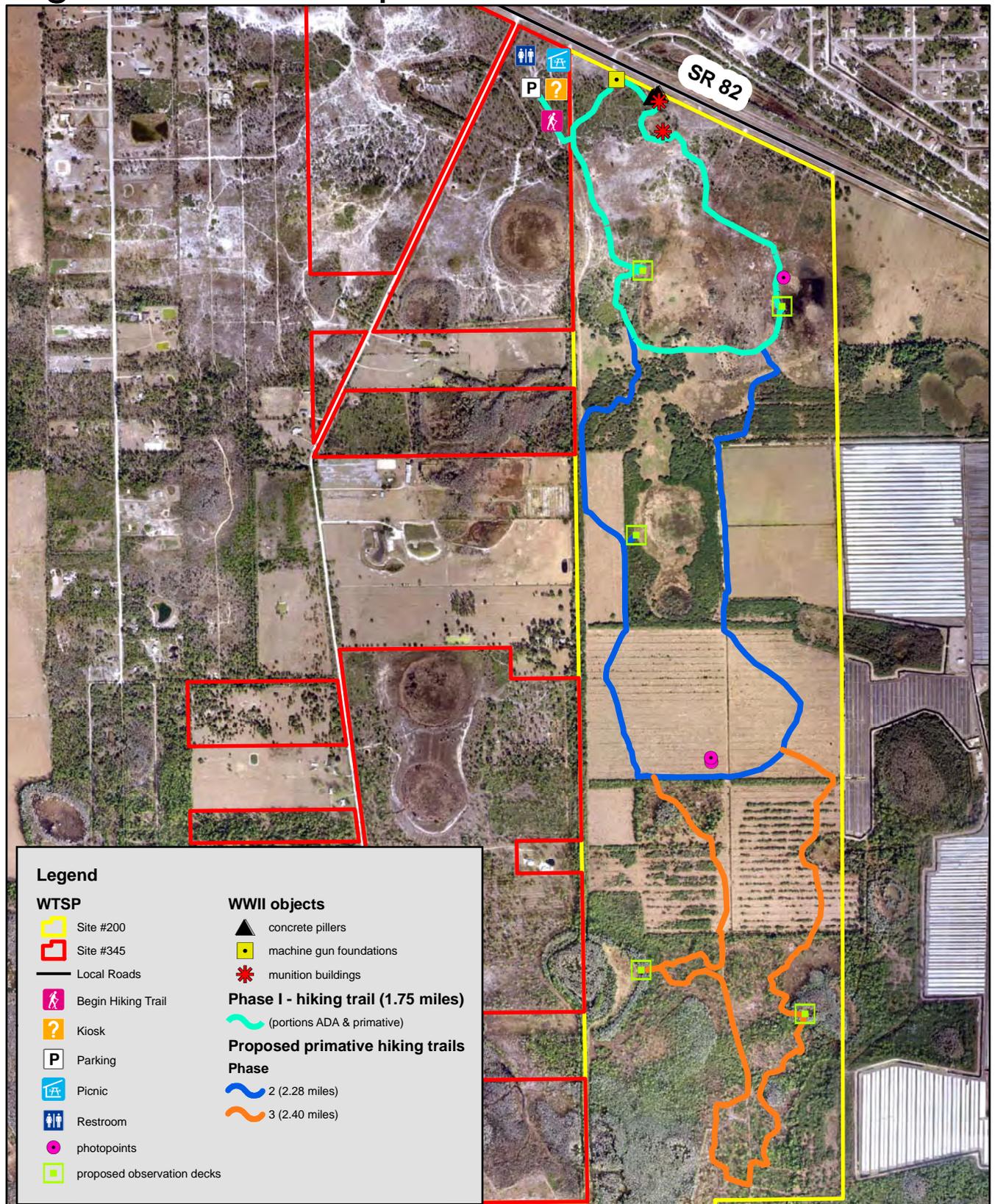
It is likely that the trail system may be created in three phases, most consisting of two (2) observation decks and appropriate boardwalk sections in wetland locations, if required. The separate phases will be necessary for two reasons: the financial expense involved with building boardwalks and observation decks in wetland areas and timing involved with keeping visitors out of areas undergoing active habitat and/or hydrological restoration projects. Each phase would bring a new experience

for visitors. The Phase I would begin at the parking area and consist of ~ 1.75 miles of trail. Phase II adds ~ 2.3 miles, while Phase III would complete the nature trail system with an additional ~ 2.4 miles for a total of nearly 6.5 miles of trails. While Phase I will occur in the near future, the other two Phases will depend on increased public usage requiring the expansion of the Preserve's trail system and obtaining the necessary funding.

Wildlife blinds may be constructed at some wetland observation decks, which would allow visitors to get a better view of the wildlife while minimizing the disturbance to their activities. Figure 28 shows the Conceptual Master Site Plan. Additional amenities such as picnic tables, a bike rack, a Clivus Multrum composting toilet, and wildlife proof trash receptacles will be located in the vicinity of the entrance parking area.

As finances and/or staff time permits, other interpretive panels will be designed and constructed and environmental education programs could be developed. Staff will attempt to provide for the needs of the public, keeping in consideration the lack of daily staff to protect and maintain public use amenities. A strong volunteer group will be critical to assist staff with facilities and/or trail maintenance, wildlife monitoring and other land stewardship projects, such as writing grants for funding.

# Figure 28: Conceptual Master Site Plan



Legend	
<b>WTSP</b>	<b>WWII objects</b>
Site #200	concrete pillars
Site #345	machine gun foundations
Local Roads	munition buildings
Begin Hiking Trail	<b>Phase I - hiking trail (1.75 miles)</b>
Kiosk	(portions ADA & primitive)
Parking	<b>Proposed primitive hiking trails</b>
Picnic	<b>Phase</b>
Restroom	2 (2.28 miles)
photopoints	3 (2.40 miles)
proposed observation decks	

## Wild Turkey Strand Preserve

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 Map Prepared on: 05/06/10, by sturnari@leegov.com

Miles

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## G. Acquisition

WTSP was acquired over a period of seven years as three parcels, through the C20/20 Program for a total cost of almost \$18 million. The first, nomination 90, consists of 588 acres and was first nominated to the Program in July 1997 and was purchased at the beginning of August 2001 for \$3,100,000. The second 2,041-acre nomination, 200, was purchased for \$6,246,130 in January 2003 after being nominated to the Program in July 2001. The third, nomination 345, consists of 508 acres and was previously owned by Iroquois of Lee County, Inc. It was nominated to the Program in November 2006 and purchased in July 2008. The president of the corporation, Elizabeth M. Muraro, requested that this addition be named the “Elizabeth and Thomas Morrison Tract” of the WTSP through the Legacy Program. The Morrison’s were her parents who purchased this land in 1959. Additional Iroquois parcels adjacent to the purchased C20/20 parcels where either sold to LCDOT (33.8 acres adjacent to SR 82) or quit claimed to the county (Rod & Gun Club Road). Legal descriptions for acquired parcels are located in Appendix O.

Relevant acquisition information on the three successfully acquired WTSP nominations is located in Table 5.

**Table 5: Wild Turkey Strand Preserve Acquisition Information**

Site #	Boundary Survey (Acres)	C20/20 Acquisition \$	Date Acquired	Original STRAP#	Current STRAP#
90	588.1	\$3,100,000	8/8/2001	04-46-26-00-00001.0000; 09-46-26-00-00001.0170.	04-46-26-00-00001.0000; 09-46-26-00-00001.0170.
200	2040.5	\$6,246,130	1/15/2003	11-45-26-00-00001.0000; 14-45-26-00-00002.0000; 23-45-26-00-00002.0000; 26-45-26-00-00002.0000; 27-45-26-00-00001.0000; 28-45-26-00-00001.0000; 33-45-26-00-00001.0000.	28-45-26-00-00001.0000; * 23-45-26-00-00002.0000.
345	507.9	\$8,632,730	7/31/2008	10-45-26-00-00001.2010; 10-45-26-00-00001.2020; 15-45-26-00-00001.0080; 15-45-26-00-00001.0090; 15-45-26-00-00001.0110; 15-45-26-00-00001.0120; 22-45-26-00-00001.1950; 22-45-26-00-00001.1960.	10-45-26-00-00001.2010; 15-45-26-00-00001.0100; 22-45-26-00-00001.1930; 22-45-26-00-00001.1940.
<b>TOTALS</b>	<b>3136.5</b>	<b>\$17,978,860</b>			
* = This STRAP combines several parcels of 200 & 345.					

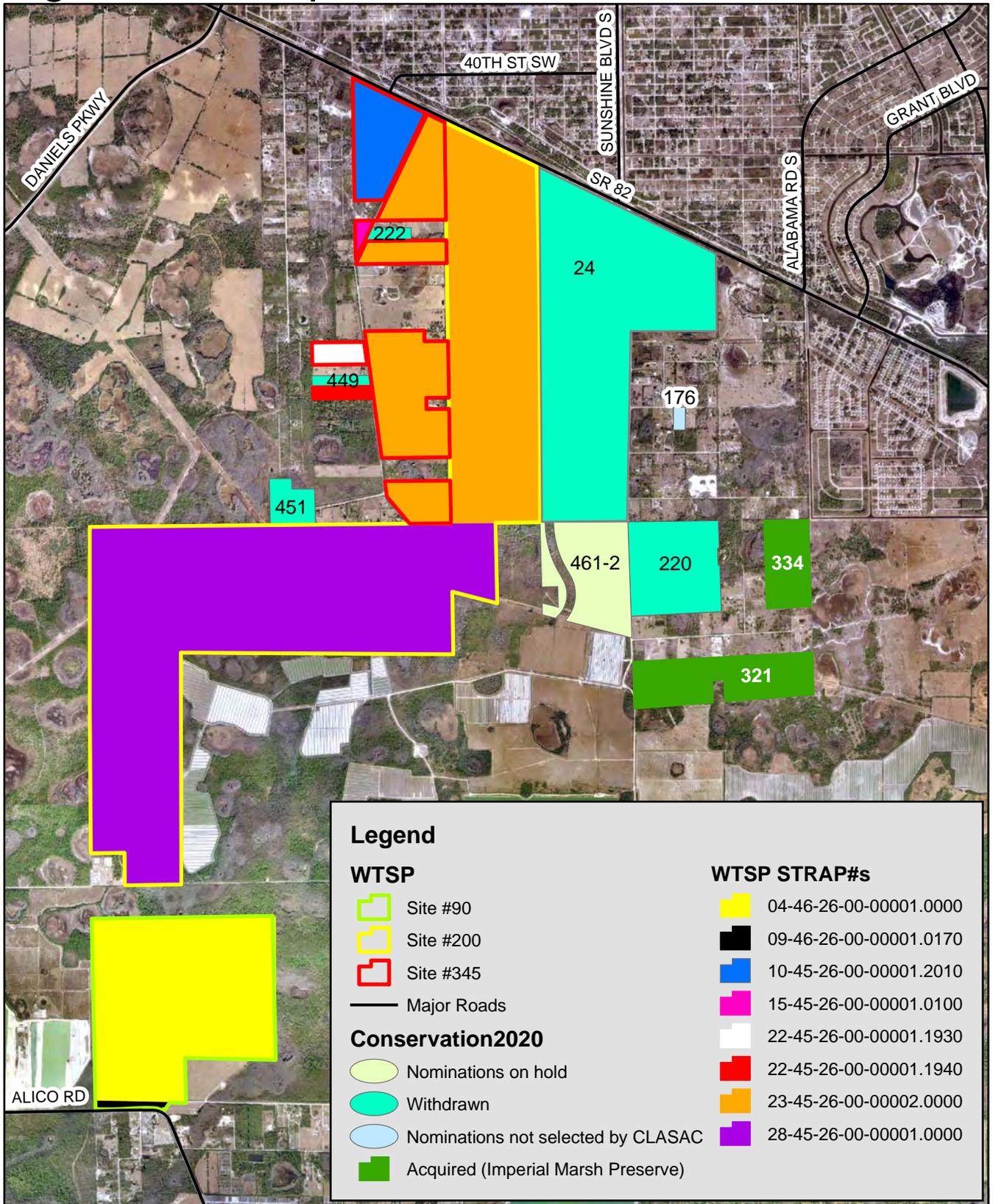
Figure 29 illustrates the acquired and nominated parcels by the C20/20 Program. Seven additional properties have been nominated in close proximity to WTSP.

Nomination 24, a 970-acre parcel, was nominated on July 2, 1997. The BOCC approved the CLASAC's recommendation to pursue it for acquisition. It was sold to Jamerson Farms Enterprises, LLC before the County could buy it. Nomination 176, a 5-acre tract, was nominated on November 30, 2000. CLASAC did not select it to be pursued for acquisition. Nomination 220, a 160-acre tract, was nominated February 19, 2002. The BOCC approved the CLASAC recommendation to pursue it for acquisition; unfortunately, it was sold to another party before Lee County could buy it. A smaller portion of 24 was renominated to the Program as 461 in January 2009. This 183-acre parcel was on hold due to limited acquisition funds. In March 2010, it was renominated again (461-2), only now as two parcels, when combined total 157 acres. It has been bisected for a planned future road (Alico Road Connector). Additional nominated parcels that were either withdrawn or not selected by CLASAC include 222, a 10-acre tract, nominated in March 2002; 449, 15 acres nominated in November 2008 and 451, 28 acres nominated in March 2009.

The Preserve has four Future Land Use (FLU) categories shown on Figure 30. While Sites 90 and 200 have already been changed to "Conservation Lands," further sub-categorized as 1,293 acres of "Uplands" and 1,321 acres of "Wetlands," the newer parcel, Site 345, is still listed as either "Wetlands" or "DRGR." Staff has coordinated with Lee County Department of Community Development, Division of Planning (LCDP) to change the FLU to "Conservation Lands." The DRGR land use category was created in 1991 in an agreement between the Florida Department of Community Affairs and Lee County in an effort to protect the recharge capabilities of the surficial and ground water aquifers. This land use restricts development to 1 unit per 10 acres.

Currently, all of WTSP is zoned as agriculture "AG-2" (Figure 31). Land Stewardship staff is in the process of coordinating with LCDP to change the zoning to "Environmentally Critical."

# Figure 29: Acquisitions & Nominations



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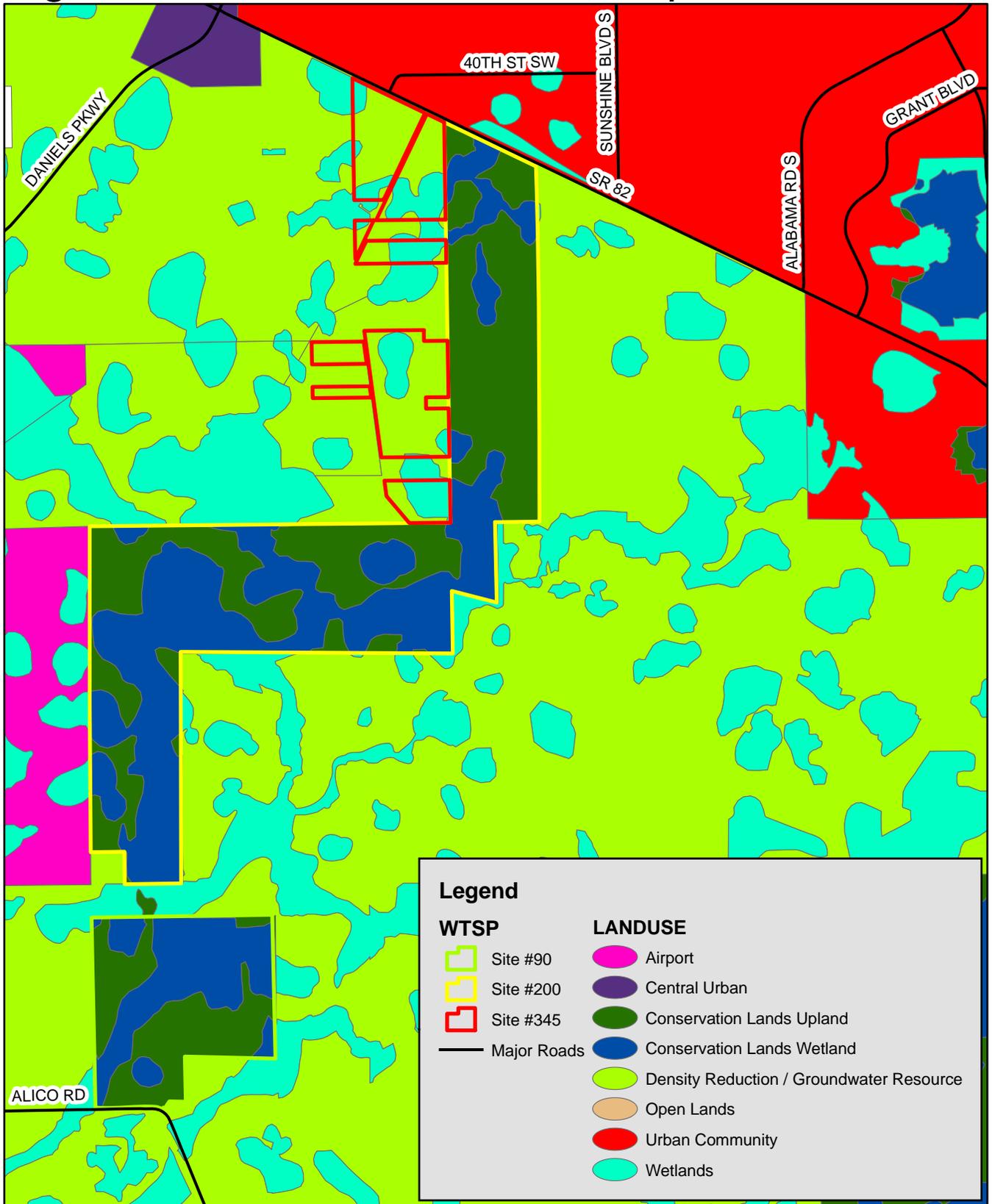
## Wild Turkey Strand Preserve

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Map Prepared on: 05/07/10, by sfurnari@leegov.com

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# Figure 30: Future Land Use Map



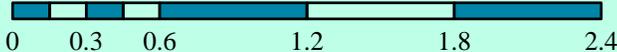


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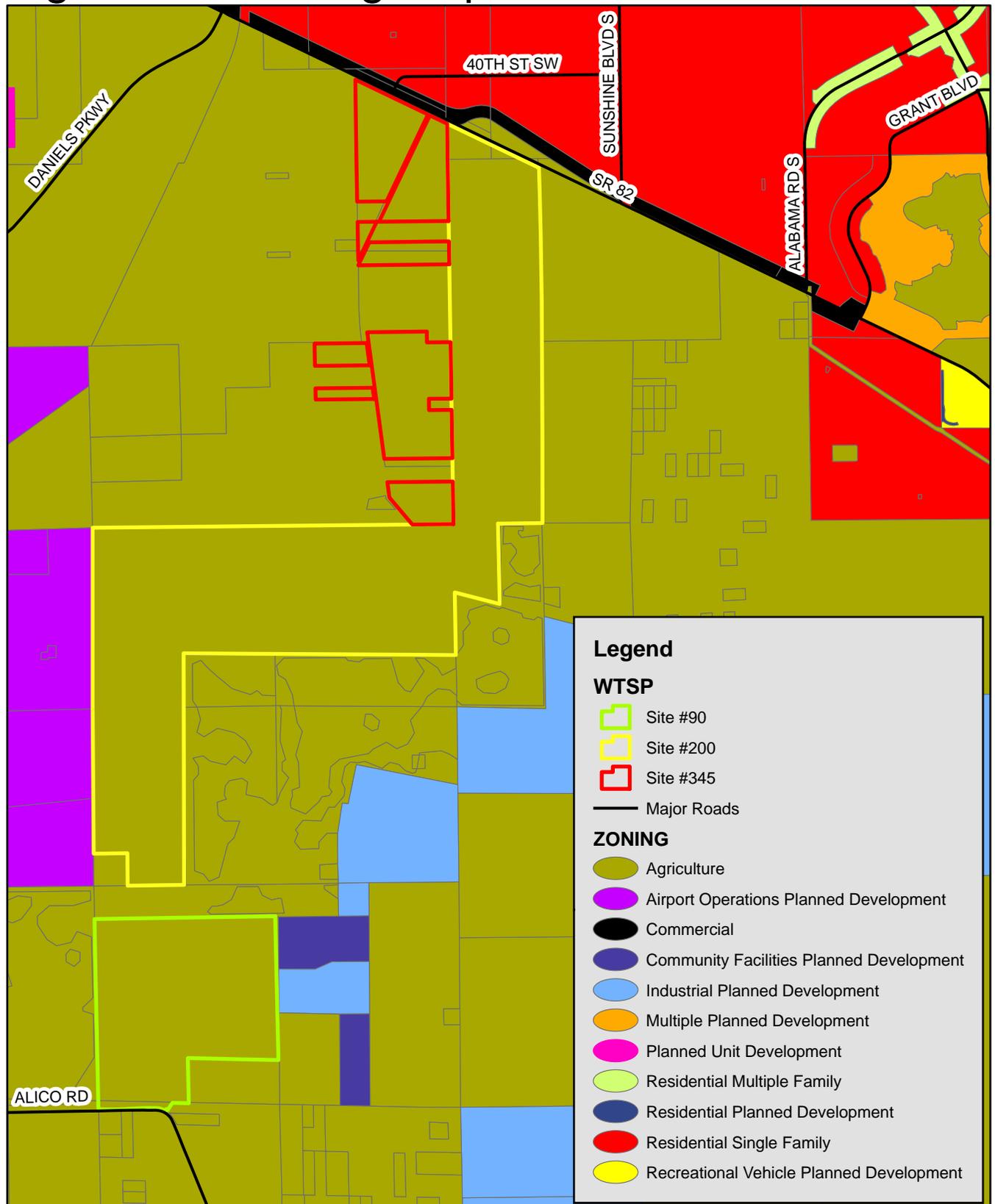


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# Figure 31: Zoning Map





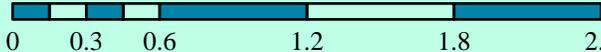
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## VI. MANAGEMENT ACTION PLAN

### A. Management Unit Descriptions

Site 200 has been divided into eleven management units (MUs), while the southern portion, Site 90, was divided into two MUs, and the newest addition, Site 345, has been divided into nine MUs to better organize and achieve management goals. Figure 32 delineates the units that were created based on existing trails, power line easements, ditches, and plant communities types. Figure 33 shows the location of the named wetlands within the MUs.

- MU 90-1 (335.9 acres) is bordered to the north by Florida Rock Industries, Inc., to the east by MU 200-13, to the west by land owned by FGCU and leased to Pacifica Tomato Growers, and to the south by Alico Road. MU 90-1 has various communities of cypress, pine flatwoods, wet prairie, mixed hardwoods-shrubs, and row crops with some level of disturbance in all habitats. This MU contains Farmer's Marsh (2.1 acres), named because it is surrounded on 3-sides by farm fields, Deer Marsh (15.5 acres), named for the White-tailed deer seen drinking from the marsh, Pond Apple Marsh (2.8 acres), named for the several pond apples (*Annona glabra*) noted, Black Hole Pond (.2 acres), so named because the aerial view looks like a black hole with tall cypress on the edges, and Survivor's Wetland (4.9 acres) named for its miraculous struggle to survive after being totally enclosed by an agricultural ditch and berm.
- MU 90-2 (252.1 acres) is bordered to the north, east, and south by Florida Rock Industries, Inc. and to the west by MU 90-1. MU 90-2's habitats include row crops, freshwater marsh, cypress, pine flatwoods, mixed hardwoods-shrubs, melaleuca, and wet prairie with various levels of disturbance. The MU contains Bladderwort Marsh (4.9 acres), named for the many floating bladderworts (*Utricularia inflata*), Poco Pond (.4 acres), the Italian translation for "small," and On-the-edge Pond (.6 acres), named for its close proximity to the boundary's edge.
- MU 200-1 (244.5 acres) boundaries are SR 82 to the north, row crop and improved pasture land associated with Jamerson Farms on Green Meadows Road to the east, MU 200-2 to the south, and MUs 345-2 and 345-4 and one parcel of private property to the west. This MU is dominated by four freshwater marshes. A WWII rifle range and small concrete munitions buildings along with several concrete poles and possible concrete machine gun foundations are located at the northern end of the Preserve. The marshes are Grand Marsh (18.0 acres), named because of its large size, Corkwood Marsh (9.75 acres), named for its large population of corkwood (*Stillingia aquatica*), Foot Vise Marsh (15.6 acres), named for an experience

in which staff became temporarily stuck during initial exploration, and Second Chance Marsh (1.0 acres), named for its small size and because after viewing aerials, staff could not find it on the first pass and then found it on the second one. There is an additional very small marsh on the northern border adjacent to SR 82 called Stonehenge Marsh (0.2 Acres), named for the collection of concrete pillars that have been deposited there. Just south of Stonehenge Marsh, there is a small borrow mound named Mount Turkey, because it is the highest point in the WTSP. There is an agricultural berm running along the northern border of Corkwood Marsh to the northeast corner of Grand Marsh and then turning north to SR 82.

- MU 200-2 (259.8 acres) is south of MU 200-1 with the same east and west boundary features. Its southern border is MU 200-3. Fallow fields and improved pasture dominate this MU. There are three disturbed wetland locations: Pickerelweed Wetland (3.3 acres), named for a few remaining native pickerelweeds, Key Hole Wetland (1.8 acres), named because it is shaped like a key hole and Strugglin' Wetlands (1.6 acres), named for its great effort to survive from exotic plants and hydrological impacts.
- MU 200-3 (233.8 acres) is south of MU 200-2 with the same east boundary feature. It is bordered to the south by FPL power line easement and to the west by private property and MUs 200-4, 345-8, and 345-9. MU 200-3 contains the Crescent Marsh (3.7 acres), named for its crescent shaped wet prairie and Echo Pond (0.1 acres), named for the echo one can hear while vocalizing inside its cypress edge. There is a berm running in a north-south direction through the center of this unit and extensive pine flatwoods.
- MU 200-4 (156.8 acres) is bordered to the north by private property associated with Rod & Gun Club Road and MU 345-9, to the east by MU 200-3, and to the south and west by the FPL power line easement and MUs 200-5 and 200-6. It contains the abandoned oil exploratory well and access road to the northwest, Snake Skin Pond (.3 acres), named for the cottonmouth skin found there on initial exploration, improved pasture and some disturbed pine flatwoods.
- MU 200-5 (163.5 acres) is bordered to the north by the FPL power line easement and MU 200-4, to the east and south by Florida Rock Industries Incorporation property and to the west by a narrow dirt road leading to an improved pasture. MU 200-5 is dominated by disturbed cypress with some pine flatwoods areas. It contains the cypress edged Majestic Pond (8.13 acres), named for its large scale allure, Hidden Beauty Pond (3.9 acres), named for being a stunning natural feature visually eclipsed by Majestic Pond when viewed from the FPL easement, Hidden Gator Pond (1.2 acres), named for a secretive American alligator that surprised staff on initial exploration, and Forlorn Pond (0.3 acres), named for the multiple invasive exotic plants found

within.

- MU 200-6 (311.1 acres) is bordered to the north by private property, to the east by MU 200-5, to the south by property owned by Florida Rock and to the west by another FPL power line easement and the transition from pine flatwoods to cypress communities, marking the boundary of MU 200-7. MU 200-6 is dominated by hydric and mesic pine flatwoods.
- MU 200-7 (128.5 acres) is bordered to the north and east by MU 200-6, to the south by property owned by Florida Rock and to the west by a narrow band of mesic pine flatwoods and the FPL easement. MU 200-7 is dominated by cypress and contains Surprise Pond (4.2 acres), named for an encounter between staff and a fleeing sow and piglets on initial exploration, Green Treefrog Pond (2.7 acres), named for the chorus of green treefrogs greeting exploring staff, Little Dude Pond (0.1 acres), named for its small size and Dragonfly Love Pond (1.0 acres), named for its mating dragonflies.
- MU 200-8 (70.4 acres) is bordered to the north by private property, to the east and south by the FPL power line easement, and to the west by Lee County Port Authority property. MU 200-8 is dominated by disturbed pine flatwoods and contains two borrow ponds, Leo Pond (3.3 acres), named for a common cat name and the rumored presence of Florida Panthers in the Preserve, and Fox Squirrel Wetland, (4 acres), named for a report of Big Cypress fox squirrels in the vicinity.
- MU 200-9 (131.2 acres) is bordered to the northwest by the FPL power line easement, to the northwest by MU 200-7, to the east by property owned by Florida Rock, to the south by a transition from cypress to pine flatwoods continuing due east to the property line, and to the west by LCPA property. MU 200-9 is dominated by cypress with some pine flatwoods and a fallow field. It contains Roost Pond (10.3 acres), named for a roosting and nesting area of great egrets, and Whisk Fern and Alligator Flag Ponds (both .42 acres), named after native vegetation noted in the wetland areas.
- MU 200-10 (131.1 acres) is bordered to the north by MU 200-9, to the east by property owned by Florida Rock, to the south by a transition from freshwater marsh to pine flatwoods continuing due east to the property line, and to the west by property owned by the LCP Authority. MU 200-10 contains cypress, pine flatwoods and freshwater marsh. It contains Saddlebags Wetland (29.0 acres), named for its numerous Carolina saddlebags dragonflies (*Tamea carolina*), and Zorro Pond (1.8 acres), named for the sideways Z shape of the pond in the aerials.
- MU 200-11 (209.7 acres) is bordered to the north by MU 200-10, to the east and south by property owned by Florida Rock, to the southwest by the Green Meadows Water Treatment Plant, and to the west by LCPA property. MU

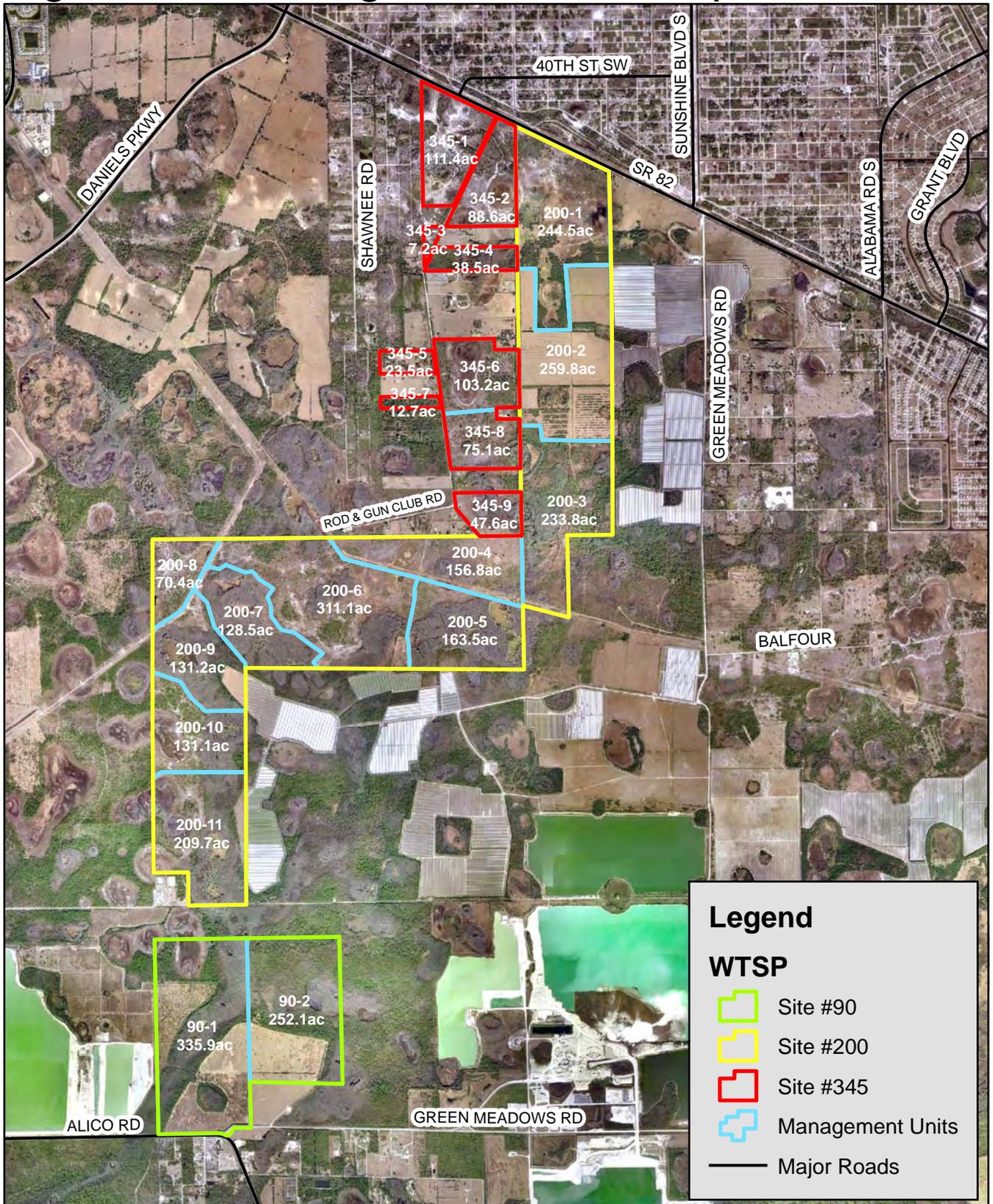
200-11 has various communities of cypress, pine flatwoods, wet prairie, freshwater marsh and fallow field. It contains Bartram's Marsh South (11.0 acres) and Bartram's Marsh North (16.7 acres), named after William Bartram, noted Florida naturalist (1739-1823) and the presence of the wildflower named after him, Bartram's rosegeantian (*Sabatia bartramii*). The unit also contains Green Meadows' Marsh (7.5 acres), named for the adjacent water treatment plant, Willow Pond (7.6 acres), named for a concentration of coastal plain willows in its center, and Snake Eyes Pond (2.4 acres), named for the observation of two cottonmouth snakes upon initial exploration.

- MU 345-1 (111.4 acres) is bordered to the north by SR 82, to the east by Rod & Gun Club Road, and to the south and west by private property. The primary feature in this MU is a ditch and berm system that makes up the western half of the WWII training shooting range/Jeep track. This MU is home to a total of four wetland features named Wide Open Wetland (4.6 acres), Gunnery Marsh (21.7 acres), Ammo Wetland (2.5 acres), and Sliced Cypress (1.4 acres). Other than these wetland features, this MU largely contains pine flatwoods.
- MU 345-2 (88.6 acres) is bordered to the north by State Road 82, to the east by MU 200-1, to the south by private property, and to the west by Rod & Gun Club Road. The eastern half of the ditch and berm system that creates the WWII training shooting range/Jeep track. There are three wetland features in this MU, Gunnery Marsh (21.7 acres), Lil' Squirrel Marsh (8.9 acres), named for the young squirrel noted here during initial field work and Tower Lookout Wetland (5.8 acres), named for the cellular phone tower visible from this location.
- MU 345-3 (7.2 acres) is a triangular shaped MU bordered to the north by private property, to the east by Rod & Gun Club Road, and to the west by private property. One cypress dome wetland, named Deers' Den Wetland (1.5 acres), is located within this MU.
- MU 345-4 (38.5 acres) is bordered to the north and south by private property, to the east by MU 200-1, and to the west by Rod & Gun Club Road. The western portion of this MU is a disturbed pine flatwoods while the eastern 2/3rds is comprised of a cypress wetland called Webs Wetland (16.9 acres), which is named for the spider webs encountered during initial field work.
- MU 345-5 (23.5 acres) is bordered to the north by a truck trail being used as a shortcut and private property, to the east by Rod & Gun Club Road, to the south and west by private property. This MU is a woodland pasture.
- MU 345-6 (103.2 acres) is bordered to the north by private property, to the east by MU 200-2, to the south by private property and MU 345-8, and to the west by Rod & Gun Club Road. Two large and open wetlands named Lefty

(10.8 acres), due to its location when viewed from Rod & Gun Club Road, and Burnover Marsh (5.8 acres), which had a wildfire burn across the entire wetland, are both located in this MU.

- MU 345-7 (12.7 acres) is bordered to the north, south, and west by private property and to the east by Rod & Gun Club Road. This MU consists of a densely overgrown woodland pasture.
- MU 345-8 (75.1 acres) is bordered to the north by private property and MU 345-6, to the east by private property and MU 200-2 and 200-3, to the south by private property, and to the west by Rod & Gun Club Road. One wetland called Crescent Marsh (7.2 acres), named for its crescent shaped wet prairie is partially located on this MU and the remaining portion on MU 200-3. A second, smaller wetland, named Hidden Wetland (2.5 acres) due to its location surrounded by a thick forest, is also within this MU.
- MU 345-9 (47.6 acres) is bordered on the north by private property, on the east and south by MU 200-3 and 200-4, and on the west by private property and Rod & Gun Club Road. The single wetland on this MU is called Disturbia Wetland (17.9 acres) due to the plow lines running through (disturbing) the native cypress.

# Figure 32: Management Units Map



**Legend**

**WTSP**

- Site #90
- Site #200
- Site #345
- Management Units
- Major Roads

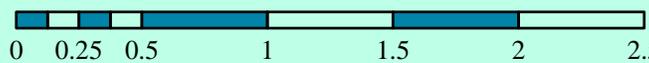


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## Wild Turkey Strand Preserve

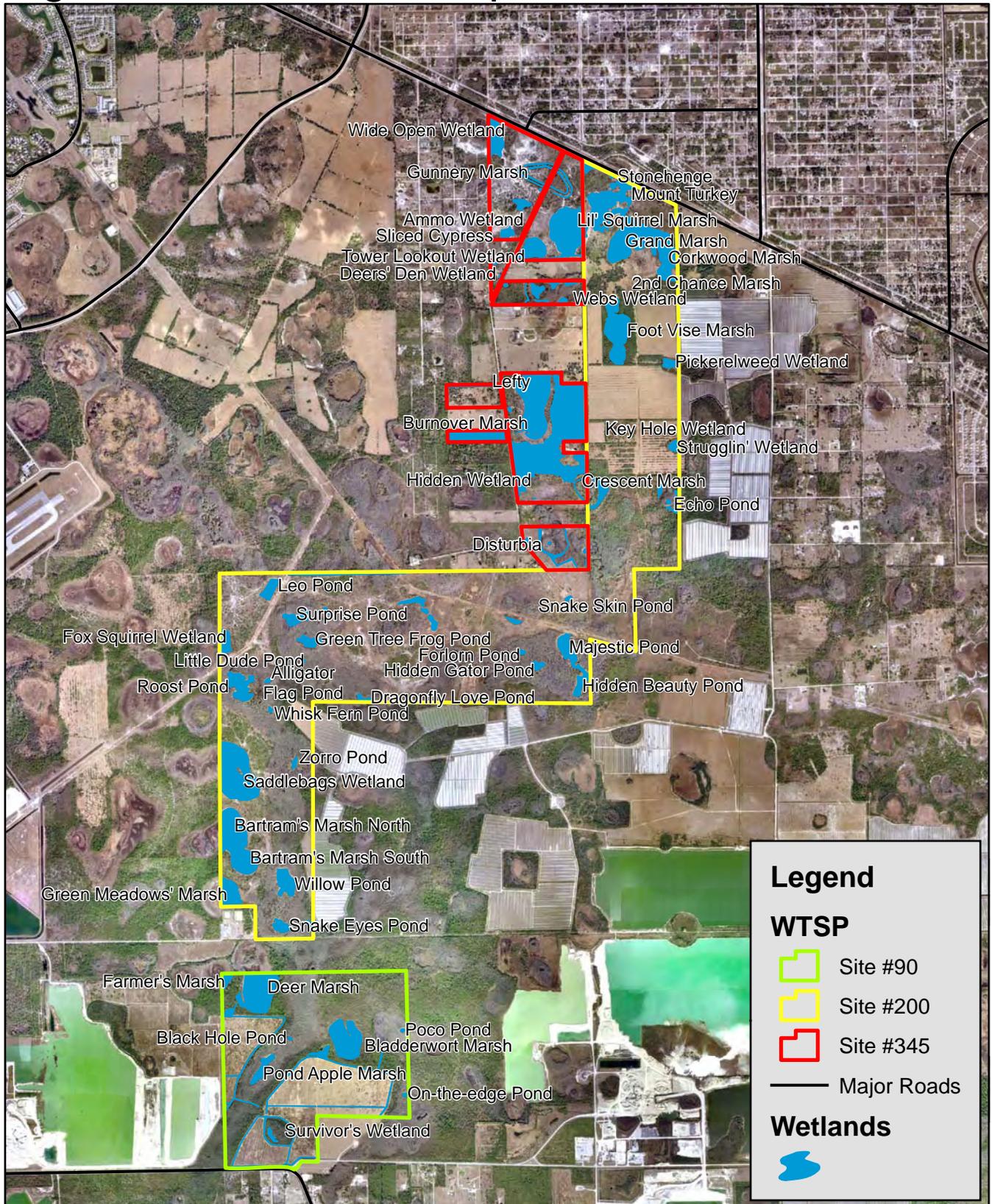


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Map Prepared on: 12/17/09, by jwaller@leegov.com

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# Figure 33: Wetland Map



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## Wild Turkey Strand Preserve

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## **B. Goals and Strategies**

The long-term goals for the Preserve follow, but funding is currently not available to conduct all of these activities. Grants and/or monies budgeted to mitigate public infrastructure projects will be used to supplement the operations budget to meet our goals in a timely manner.

### **Natural Resource Management**

- ✓ Exotic plant control/maintenance
- ✓ Hydrologic restoration
- ✓ Restoration of pastures and abandoned fields
- ✓ Prescribed fire management
- ✓ Mechanical brush reduction
- ✓ Monitoring well testing & recap oil well
- ✓ Monitor and protect listed species
- ✓ Photo point monitoring
- ✓ Water quality testing
- ✓ Exotic and feral animal removal
- ✓ Annual Stewardship Report for FCT grant award

### **Outside Consultants**

- ✓ Environmental/engineering
- ✓ Facilities design

### **Overall Protection**

- ✓ Debris removal and prevent dumping
- ✓ Install/Maintain fire breaks
- ✓ Boundary fence installation, interior fence removal and access
- ✓ Boundary sign maintenance
- ✓ Assess cattle leases
- ✓ Change Zoning and Future Land Use categories

### **Public Use**

- ✓ Facilities construction
- ✓ Educational sign installation

### **Volunteers**

- ✓ Assist volunteer group(s)

The following is a description of how each of these goals will be carried out, the success criteria used to measure accomplishment of each goal and a projected timetable outlining which units each activity will take place in and when.

## **Natural Resource Management**

### **Exotic plant control and maintenance**

The most current Florida Exotic Pest Plant Council's (FLEPPC) List of Invasive Species will be consulted in determining the invasive exotic plants to be controlled in each management unit. The goal is to remove/control these exotic species, followed with treatments as needed of resprouts and new seedlings. This goal will bring the entire Preserve to a maintenance level, defined as less than 5% invasive exotic plant coverage.

Prior to each invasive exotic plant control project at WTSP, a Prescription Form (located in the LSOM) will be filled out by Land Stewardship staff, reviewed by the contractor(s) and filed appropriately. All contractors involved in these projects will be required to fill out the Daily Report Control Form (located in the LSOM) and filed appropriately by staff.

- Uplands with light to moderate infestations:

In areas where invasive plants are sporadic and below 50% of the vegetation cover, hand removal will be utilized for control. Specific methodology will depend on stem size, plant type and season, but generally the stem will be cut near the ground and the stump will be sprayed with appropriate herbicide, or a foliar application will be applied to the entire plant. Hand pulling will be utilized when possible with appropriate species in order to minimize herbicide use. Basal bark treatment may be used at some locations. Cut stems may be piled to facilitate future potential burning, chipping or removal from site. No replanting will be needed due to significant presence of native vegetation and the native seed bank.

- Uplands with moderate to heavy infestations:

In areas where the exotics occur as monotypic stands or are higher than 50% of the vegetation cover, the use of heavy equipment will be utilized in appropriate communities and during suitable season. Heavy equipment will be chosen so that soil disturbance and compaction are minimized. In areas along ditches where the hydric soils may not be conducive for heavy equipment, hand crews will be used to cut down and remove these plants. Tree debris will then either be pile burned or mulched. Mulching equipment such as a Brontosaurus or Gyrotrak may be used. Follow-up treatment of these areas will include an application of an appropriate herbicide mixture to the foliage of any resprouts or seedlings. Land Stewardship staff will evaluate replanting areas with no trees on a case-by-case basis.

- Wetlands with moderate to heavy infestations:

At suitable locations such as seasonal ponds, lightweight equipment may be utilized during dry, winter periods or hand crews will need to hike in on foot and either foliar, girdle, basal bark, or cut-stump the exotics with the appropriate herbicide. Follow-up treatments will need to be conducted on at least an annual basis and may eventually decrease to every two years. Where feasible or necessary, biomass may be removed from sites to be piled and burned and/or mulched.

- Wetlands with light to moderate infestations:

Hand crews will need to hike in and foliar, girdle, basal bark, or cut-stump treat the exotics with the appropriate herbicide. Follow-up treatments will need to be done on an annual basis and may eventually decrease to every two years. Where feasible or necessary, biomass may be removed from wetland sites to be piled and burned and/or mulched.

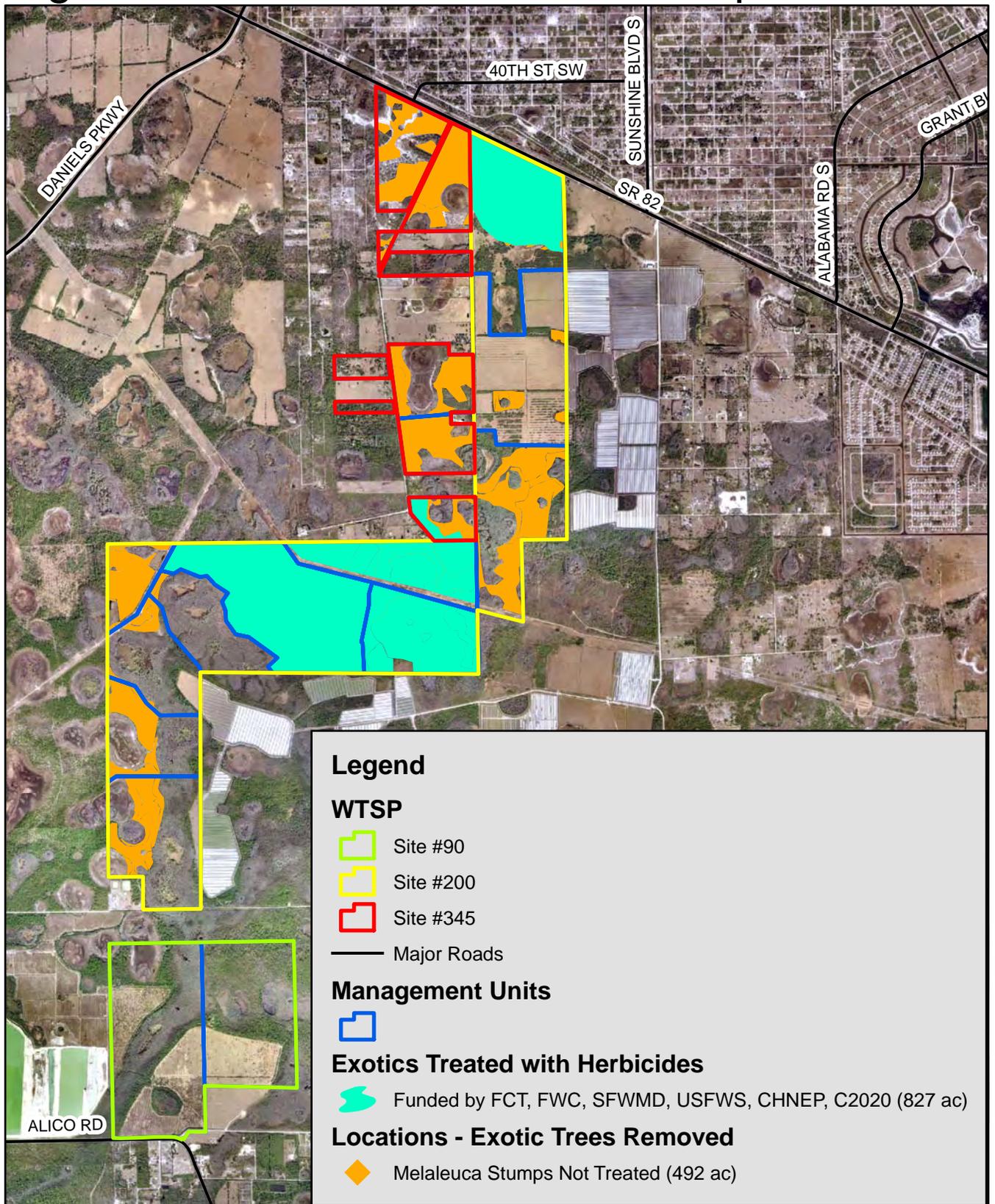
Since 2008, nearly \$350,000 has been spent on initial exotic plant removal work on approximately 830 acres (Sites 200 and 345). The exotic plant control efforts were funded by a combination of various grants (FCT, USFWS, FWC, SFWMD, and CHNEP), pine thinning funds and the C20/20 management budget. Figure 34 is the corresponding map illustrating areas completed, where melaleuca trees were removed and have yet to receive follow-up herbicide treatment, and areas without initial exotic plant removal work (not highlighted).

### **Hydrologic restoration**

For specific locations at Site 200, an engineering consultant has been hired to provide specific recommendations for restoration methods on agricultural ditches and FPL power line and GMWTP roadways that affect sheet flow. A restoration proposal will be presented to SFWMD and USACOE to determine the feasibility of the project and decide which permits will be required.

In general, to accomplish this work, exotic vegetation would be removed from the berms along the ditches. This will be accomplished with a combination of hand crews and mechanical equipment using the appropriate herbicide. This work must be completed when the water table height is low enough to minimize rutting by heavy equipment. The backfill shall not include vegetation particularly in the bottom of the ditch to prevent "piping." Replanting with native species will be evaluated after ample time has been given for native recruitment. Additional culverts or other methods may be used for the roadways. Refer to Figures 25-26 to view hydrologic related impediments.

# Figure 34: Exotic Plant Control Map



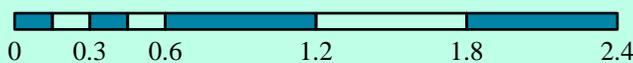


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## Wild Turkey Strand Preserve



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## **Restoration of pastures and abandoned fields**

To add community diversity to the Preserve, nearly 600 acres of abandoned fields and pastures will be restored to native plant communities. Restoration of these areas will require several months of data collection to make informed decisions on which plant community would be most successful. Deep soil samples will be taken and analyzed in several portions of the pasture. A rain gauge and additional monitoring wells will be set up in strategic areas to monitor water levels over an entire rainy season and a portion of the dry season. Once the data are analyzed, appropriate plans for native plantings will be developed that could include using seeds and/or plants. To prepare the pasture for plantings it will be necessary to eliminate the pasture grasses. This will be accomplished by repeated disking followed by treating the exotic pasture grasses with an appropriate herbicide. Once the exotic plants are under control, the established planting plan will be executed.

## **Prescribed fire management**

A prescribed fire program will be implemented that closely mimics the natural fire regimes for the different plant communities to increase plant diversity and ensure tree canopies remain open. Once restoration projects are completed in management units that contain fire dependent communities, prescribed burns will be performed after the creation of appropriate fire lines/breaks. The timing of prescribed burning will be influenced by seasonal rain, staff and equipment availability, listed species requirements and wind patterns. The C20/20 Burn Team Coordinator has coordinated with the FDOF and finalized the C20/20-wide Fire Management Plan that applies to all Preserves.

Prescribed fire may be utilized for exotic plant control of seedling/sapling melaleuca in areas previously treated.

C20/20 staff will coordinate prescribed burn efforts at the Preserve with the managers of adjacent conservation lands, SWFIA and inform adjacent neighbors of imminent burn plans.

## **Mechanical brush reduction**

Before a prescribed fire is conducted in pine flatwoods or other fire dependent communities of the Preserve, fuel loads may need to be reduced. Slash pines, saw palmettos and/or invading oaks may need to be thinned mechanically in overgrown areas to achieve desired results and to prevent crown fires or intense fires from occurring.

In April 2007, the BOCC approved the Partnership Agreement between FDOF and Lee County to selectively remove native pine trees from densely populated stands that will achieve these ecological and/or safety goals (Appendix P). On April 29,

2007, a human caused wildfire (refer to Figure 36) burned 337 acres of Site 200 and 69 acres of Site 345 (before acquisition). FDOF and staff began salvage operations efforts to remove pines killed by fire and/or the subsequent pine beetle infestation. In March 2008, work began to salvage dead pines, thin dense pine tree stands and remove large melaleuca trees from portions of Site 200. Site 345 was acquired by the county in July 2008 and work began in the fall of 2008. Figure 35 identifies areas where pines were thinned and melaleuca trees removed from this restoration project. Additional heavy equipment work will involve roller-chopping at locations with dense saw palmetto and other shrubbery.

### **Monitor and protect listed species**

There are several listed species that have been documented on the Preserve including Big Cypress fox squirrel, Florida panther, wood stork, snail kite, and both giant and cardinal airplants. These species will benefit from exotic plant control, prescribed burns and hydrological restoration activities. During stewardship activities, efforts will be made to minimize negative impacts to listed species.

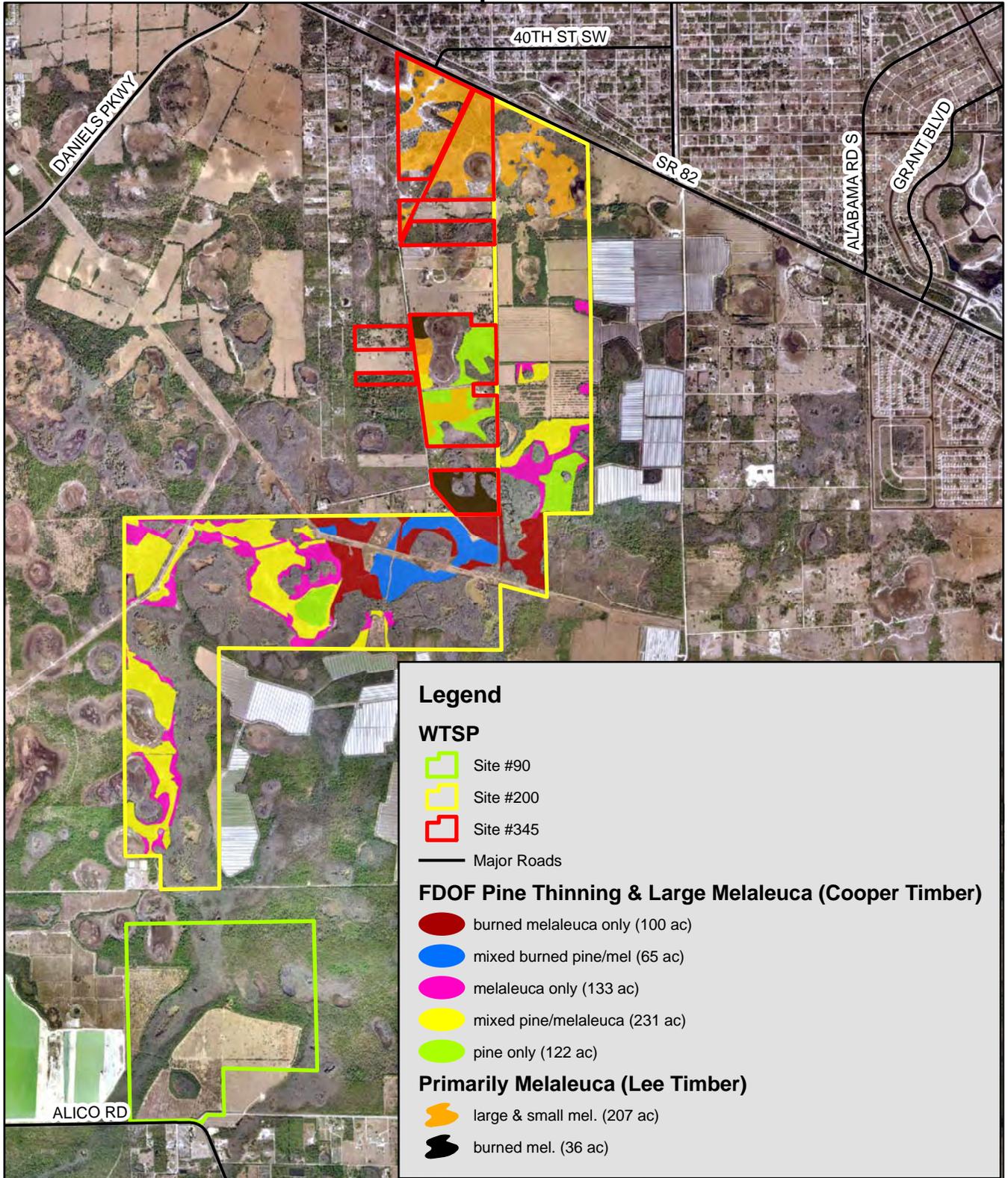
WTSP is part of a countywide quarterly site inspection program conducted for all C20/20 preserves. A copy of the site inspection form is available in the LSOM. These inspections allow staff to monitor for impacts and/or changes to each preserve and includes lists of all animal sightings and new plant species that are found. If, during these inspections, staff finds FNAI listed species, they will be reported using the appropriate forms.

### **Photo point monitoring**

During 2007, four photo point stations were installed at future restoration project sites, before work began. Pre-restoration photos have been taken, followed by post restoration photos. Additional follow up restoration photos will be taken during the growing season for 5 years from completion of the project to document transformations, with photos taken as needed from then on.

- ✓ Unit 200-1 – Environmental education.
- ✓ Unit 200-2 – Improved pasture and hydrological restoration.
- ✓ Unit 200-9 – Within a cypress strand area: for exotic plant removal & hydrological restoration efforts.
- ✓ Unit 90-1 – Incorporates four monitoring objectives: Improved pasture restoration, hydrological restoration & exotic plant removal work surrounding a detached cypress area, and mulched vegetation debris from Hurricane Charley.

# Figure 35: Pine Thinning & Large Melaleuca Removal Map



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## **Monitoring well testing & Recap oil well**

Water Resource Solutions, Inc. (WRS) completed a Phase II investigation of Site 200 in December of 2002. This investigation was designed to assess if saltwater from deep aquifers has migrated to shallower aquifers through the abandoned oil exploration well identified on the Preserve. This well was capped in 1953. At the time no problems were found, but WRS suggested that the wells be tested annually (WRS 2003). In the spring of 2008, LCDNR began an effort to cap flowing wells throughout the county to save water. Through their investigation, they believe that this oil well is affecting water quality/quantify and that it needs to be recapped to today's standards. This project is expected to cost approximately \$1,000,000.

In April 2010, FDEP's Oil & Gas Division staff contacted Land Stewardship staff to review the capped oil well and locate another on nearby private property. He indicated that the state may have funds to assist in this endeavor.

## **Water quality testing**

Land Stewardship staff will coordinate with staff at the Lee County Green Meadows Water Treatment Plant to conduct yearly water quality testing. Several test wells have been installed on the Preserve to insure that no leaching has occurred from the adjacent water treatment plant. Staff receives the annual water quality results from the LCU website.

## **Exotic and feral animal removal**

Fifteen exotic animal species have been recorded on WTSP. Although melaleuca psyllids and weevils are non-native animals, they are beneficial biological control agents targeting the invasive melaleuca tree. The exotic animal species Land Stewardship staff is primarily concerned with is the feral hog. Currently, the only acceptable method of hog removal on C20/20 preserves is trapping. Removing all hogs is an unreasonable goal; therefore a control program will need to be continuous on a long-term basis. If practical, a methodology will be established and implemented against other unwanted exotic animal species.

Although not noted at WTSP, this Preserve, like other C20/20 preserves, does not contain nor will it support feral cat colonies. FWC's Feral and Free Ranging Cats policy is *"To protect native wildlife from predation, disease, and other impacts presented by feral and free-ranging cats"* (FWC 2003). Any feral cats will be trapped and taken to Lee County Animal Services.

## **Annual Stewardship Report**

As part of complying with the Florida Communities Trust grant contract for WTSP (Appendix Q), Land Stewardship staff will be responsible for preparing an Annual Stewardship Report, due on March 31<sup>st</sup> of each year, which evaluates the

implementation of the Land Management Plan. Land Stewardship staff will seek FCT's approval for any proposed modification to the Land Management Plan and/or prior to undertaking any site alterations or physical improvements that are not addressed in this approved Land Management Plan.

### **Outside Consultants**

#### **Environmental/engineering**

Environmental and/or engineering contractors will need to be hired to perform all or most aspects for the hydrological and pasture restoration projects. The consultant will also be responsible with coordinating and obtaining appropriate environmental permits before restoration efforts begin.

#### **Facilities design**

A firm to develop environmental/engineering design plans and apply for appropriate permits has been hired. Either this consultant or another will be hired to oversee construction of public facilities and installation of additional items listed within the Public Access and Resource-Based Recreation section.

### **Overall Protection**

#### **Debris removal and Prevent dumping**

WTSP has debris scattered throughout portions of the Preserve. Staff anticipates that during restoration activities, the debris will be removed. However, several workdays may be required to remove the trash that has accumulated through the years (prior to acquisition) of illegal dumping or recreational use and will include the removal of unwanted interior fencing. In January 2010, over ten tons of tires were removed from Site 345, with more remaining. During quarterly site inspections, any additional smaller objects that are encountered will be removed. C20/20 Rangers will also assist with removing small items when they are on patrol at the Preserve.

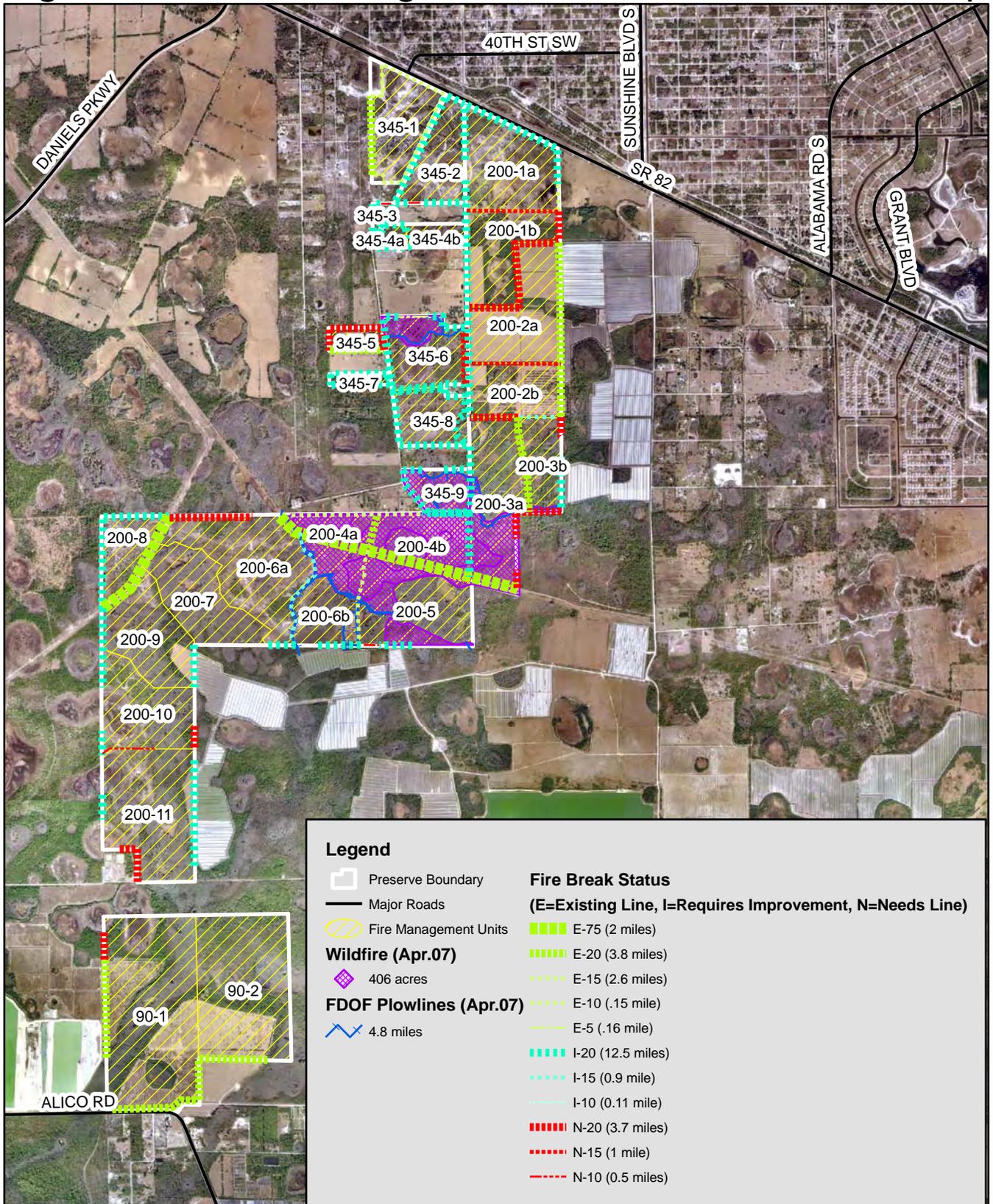
Land Stewardship staff recognizes that new debris may be dumped in the Preserve periodically and it will be dealt with depending on the nature of this debris.

#### **Install/Maintain fire breaks**

Perimeter and internal fire breaks will be created, where needed, to reduce the potential damage to areas outside the Preserve from a wildfire or prescribed fire. Once Land Stewardship staff has coordinated the installation of necessary fire breaks, staff will maintain these breaks on a yearly basis by either mowing or disking. See Figure 36 for map of areas with existing and recommended fire breaks

as well as anticipated fire management units (FMUs). As restoration work continues, these FMUs may be modified.

Figure 36: Fire Management Units & Fire Breaks Map



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## **Boundary fence installation, interior fence removal and access**

Currently, most of the Preserve is fenced to prevent activities such as dumping and use of motorized vehicles on the Preserve. Additional boundary fencing and signage will be added as necessary to further protect the Preserve. Some of the existing fencing is in disrepair and will be repaired on a priority schedule and when time permits. As restoration takes place, fence repairs will be made. Any interior fences that are currently used for existing cattle licenses will be removed once the leases are terminated.

There are management access issues at several locations. LCDOT has already assisted staff gaining maintenance access from SR 82. Two parcels from Site 345 need culverts and driveways to cross over the ditch from Rod & Gun Club Rd. in order to perform stewardship activities. Staff has been working on another project with LCDOT to obtain permits to cross over the large storm water conveyance ditch (runs N-S) to get from 345-8 to 200-2 because there is no legal access to 200-3 from the south and it's too wet coming from the north in wet season.

## **Boundary sign maintenance**

Boundary signs have been installed along the nearly 28 mile perimeter boundary line to further protect the Preserve. Missing or damaged signs will be replaced. C20/20 Rangers or staff will check for boundary signs during the patrols and replace them immediately if possible or report the problem to the C20/20 Senior Supervisor. Boundary signs will be placed every 500 feet.

## **Assess cattle leases**

Staff will evaluate the cattle leases during site inspections to determine if the cattle are having any negative effects on the natural plant communities, soils or water quality. The leased sections have a long history of cattle grazing and there is very little disturbance to the natural plant communities. If Land Stewardship staff determines the cattle are negatively impacting the Preserve, staff will meet with the Licensee to determine methods to lessen the impacts of cattle and determine if the lease should be continued or terminated. Staff is considering leasing additional appropriate areas to cattle and/or goats due to delays on public mitigation projects and lack of management funds. Appendix M contains a map that identifies areas currently under lease.

## **Change Zoning and Future Land Use categories**

Staff will coordinate with LCDP staff to change the zoning and future land use categories for WTSP. All zoning designations will be changed to "Environmentally Critical" from "Agriculture" and future land use designations will be modified to either "Conservation Lands – Uplands" or Conservation Lands - Wetlands."

## **Public Use**

### **Facilities construction**

Facilities will include parking, hiking trails, boardwalks, observation decks, kiosk, and additional amenities such as picnic tables, bike racks, composting toilet, and wildlife proof trash receptacles will be located in the vicinity of the entrance parking area.

### **Educational sign installation**

At the entrance to the public use facilities, a Preserve sign (minimum size of 4' x 6') will be installed that welcomes visitors to the Preserve, shows the shape of the Preserve, a trail map, some of the plants and animals found on the Preserve and lists the general rules of the Preserve. Additionally, the sign will identify Florida Communities Trust as a partner in the funding of the project (including the FCT logo), and the acquisition year, per FCT requirement.

Habitat restoration signs will be posted along the trails to educate visitors about land stewardship activities that have occurred to assist restoration of the ecosystem. A photo point "model" was installed along the hiking trail within view of a wetland pond's observation deck. Unit 200-1's photo point is expected to be incorporated into an environmental education interpretive program to allow visitors a view of the area "before" exotic plant removal work was performed with the current "after" view as what the area has been restored to. This may potentially enlist volunteers interested in performing some tasks for the land stewardship staff. In addition, a potential cultural resource display may be created near the remnant munitions buildings, as it is historically or culturally important to our regional area.

## **Volunteers**

### **Assist volunteer group(s)**

The LSOM identifies the Land Stewardship Volunteer Program's mission statement as:

*To aid in the management and preservation of Lee County resource-based public parks and preserves and to provide volunteers with rewarding experiences in nature.*

In 2004, the Lee County Bird Patrol volunteer group began performing bird monitoring surveys at Site 200, although their surveys ended in 2006 because of difficulty accessing the site. Once public amenities have been built, they may be interested in performing this service again.

If there is interest from the community to form a volunteer group, staff will work with them to assist with the many diverse stewardship activities that will be associated with this Preserve, such as trail maintenance, wildlife monitoring and other land stewardship projects.

The following “Prioritized Projected Timetable for Implementation” is based on obtaining necessary funding for numerous land stewardship projects. Implementation of these goals may be delayed due to changes in staff, extreme weather conditions or a change in priorities on properties managed by Lee County.

**VII. PROJECTED TIMETABLE FOR IMPLEMENTATION**

Management Activity	Mar-10	Jun-10	Sep-10	Dec-10	Mar-11	Jun-11	Sep-11	Dec-11	Mar-12	Jun-12	Sep-12	Dec-12	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14	Jun-14	Sep-14	Dec-14 or later
<b>Natural Resource Management</b>																				
<b>Exotic Plants</b>																				
Initial Exotic Plant Control				200-7			200-9		200-10, 11				345-1, 2, 3, 4, 5, 6, 7, 8, 9	200-2, 3			200-8		90-1, 2	
Supplemental Plantings			200-4																	
<b>Hydrology</b>																				
Hydrologic Restoration - FPL Roads								East ROW										West ROW		
Hydrologic Restoration - Other Ditches & Berms						200-4,6,11								200-2, 3			200-5	200-7, 8, 9	90-1, 2	345-1, 2, 3, 4, 5, 6, 7, 8, 9
Recap Oil Well																	200-4			
<b>Pasture Restoration</b>																				
Improved Pasture Restoration – Data Collection										200						90				
Improved Pasture Restoration - Grass Removal																200		90		
Improved Pasture Restoration – Plantings																		200		90
<b>Fire</b>																				
Prescribed Fire Management		On-going	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Create fire breaks	200, 345				200,345															90
Mechanical Brush Reduction								200-3, 345-6, 7												90
<b>Maintenance (On-going/Annual)</b>																				
Follow Up exotic plant treatment			200-1, 5	200-4, 6				200-7			200-9		200-10, 11				345-1, 2, 3, 4, 5, 6, 7, 8, 9	200-2, 3		200-8, 90-1, 2
Exotic animal removal								X	→	→	→	→	→							
Monitoring well testing				200-4				200-4				200-4				200-4				200-4
Water quality testing			200-10, 11				200-10, 11				200-10, 11				200-10, 11					200-10, 11
Quarterly site inspections	345-1, 2, 3, 4, 5, 6, 7, 8, 9	200-1, 2, 3, 4	200-5, 6, 7, 8, 9, 10, 11	90-1, 2	345-1, 2, 3, 4, 5, 6, 7, 8, 9	200-1, 2, 3, 4	200-5, 6, 7, 8, 9, 10, 11	90-1, 2	345-1, 2, 3, 4, 5, 6, 7, 8, 9	200-1, 2, 3, 4	200-5, 6, 7, 8, 9, 10, 11	90-1, 2	345-1, 2, 3, 4, 5, 6, 7, 8, 9	200-1, 2, 3, 4	200-5, 6, 7, 8, 9, 10, 11	90-1, 2	345-1, 2, 3, 4, 5, 6, 7, 8, 9	200-1, 2, 3, 4	200-5, 6, 7, 8, 9, 10, 11	X
Monitor and Protect Listed Species	On-going	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Photo point monitoring surveys		200-1, 2	200-9	90-1																
FCT Annual Stewardship Report	X				X				X				X				X			→

Management Activity	Mar-10	Jun-10	Sep-10	Dec-10	Mar-11	Jun-11	Sep-11	Dec-11	Mar-12	Jun-12	Sep-12	Dec-12	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14	Jun-14	Sep-14	Dec-14 or later
<b>Outside Consultants</b>																				
Environmental/Engineering	Hire for Hydro									Hire for Pasture		Hire for Hydro								
Facilities design	On-going	→	→	→	→															
<b>Overall Protection</b>																				
Debris removal and dumping prevention	On-going	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Install/maintain fire breaks		→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Boundary fence installation/interior fence removal	Install	→		Remove	→															
Boundary sign maintenance	On-going	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Assess cattle leases			X				X				X				X				X	X
Change zoning and future land use categories	FLUM								Zoning											
<b>Public Use</b>																				
Facilities Construction				X	→															
Educational sign installation						X														
<b>Volunteers</b>																				
Assist volunteer group(s)							X													

Numbers correspond to Management Units and details on each management activity are found in the Management Action Plan.

## **VIII. FINANCIAL CONSIDERATIONS**

There is a management fund established in perpetuity for all C20/20 preserves. Monies from this fund primarily serve to meet the operational needs of the Management section of the C20/20 Program, but a certain amount of this fund will be set aside for planned restoration projects on C20/20 purchased parcels. Monies from this fund may be available for some aspects of designing and constructing the public use facilities. FCT funds will be utilized for habitat restoration activities and efforts related to building public amenities. Lee County Capital Improvement Project funds may be utilized and/or grants from the Florida Recreation Development Assistance Program (FRDAP) or other entities could be sought for the public use facilities.

The C20/20 Management budget will be supplemented by pursuing appropriate grants for exotic plant removal and restoration projects through grants from agencies such as SFWMD, FWC Invasive Plant Management and USFWS or include future public mitigation opportunities. Expenditures to date and projected costs and funding sources are listed in Appendix R.

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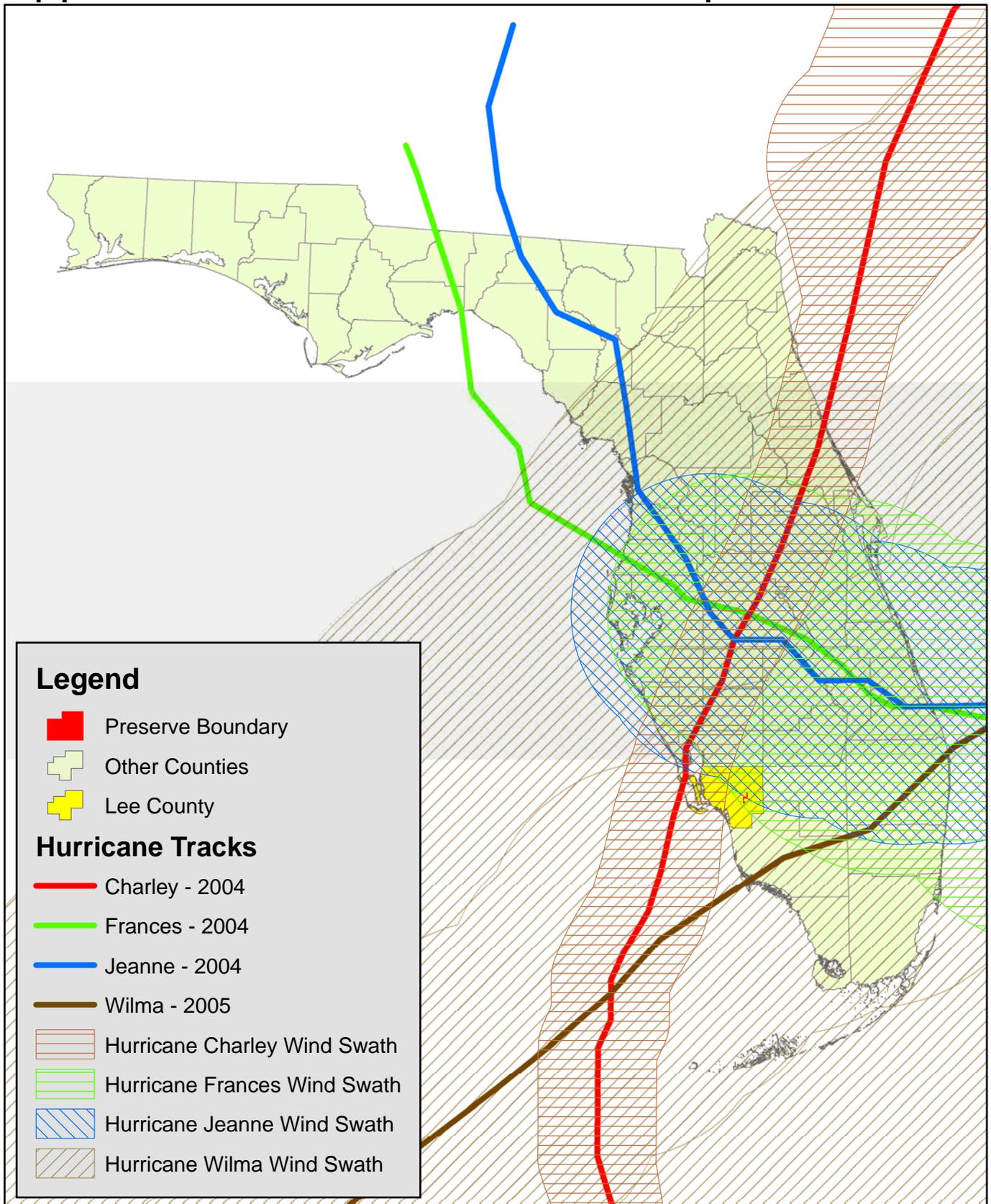
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## **X. APPENDICES**

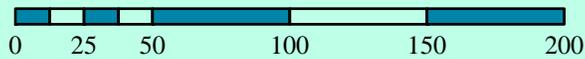
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## Appendix A – Hurricane Winds Map

# Appendix A: Hurricane Winds Map



## Wild Turkey Strand Preserve



Miles

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Wild Turkey Strand\2nd ed LSP\Hurricane\_Map.mxd  
Map Prepared on: 05/07/10, by jwaller@leegov.com

This is not a survey.  
Land Stewardship Staff has prepared this map  
for informational and planning purposes.

## Appendix B -- Plant Species List

## Appendix B: Plant Species List for Wild Turkey Strand Preserve

Common and scientific names for this list were obtained from Wunderlin and Hansen, 2003.

Scientific Name	Common Name	Native/ Exotic	FDACS	FNAI	IRC	FL EPPC
<b>Family: Azollaceae (mosquito fern)</b>						
<i>Azolla caroliniana</i>	mosquito fern	native			R	
<b>Family: Blechnaceae (midsorus)</b>						
<i>Blechnum serrulatum</i>	swamp fern	native				
<i>Woodwardia virginica</i>	Virginia chain fern				R	
<b>Family: Dennstaedtiaceae (cuplet fern)</b>						
<i>Pteridium aquilinum</i> var. <i>caudatum</i>	lacy braken fern	native				
<i>Pteridium aquilinum</i> var. <i>pseudocaudatum</i>	tailed braken fern	native			R	
<b>Family: Nephrolepis (sword fern)</b>						
<i>Nephrolepis biserrata</i>	giant sword fern	native	T		R	
<i>Nephrolepis exaltata</i>	wild Boston fern	native				
<i>Nephrolepis multiflora</i>	Asian sword fern	exotic				I
<b>Family: Ophioglossaceae (adder's-tongue)</b>						
<i>Ophioglossum petiolatum</i>	stalked adder's tongue	native				
<b>Family: Osmundaceae (royal fern)</b>						
<i>Osmunda regalis</i> var. <i>spectabilis</i>	royal fern	native	CE		R	
<b>Family: Polypodiaceae (polypody)</b>						
<i>Campyloneurum phyllitidis</i>	long strap fern	native			R	
<i>Phlebodium aureum</i>	golden polypody	native				
<i>Pleopeltis polypodioides</i> var. <i>michauxiana</i>	resurrection fern	native				
<b>Family: Psilotaceae (whisk-fern)</b>						
<i>Psilotum nudum</i>	whisk-fern	native				
<b>Family: Pteridaceae (brake fern)</b>						
<i>Ceratopteris thalictroides</i>	watersprite	exotic				
<i>Pteris bahamensis</i>	Bahama ladder brake	native				
<i>Pteris vittata</i>	China ladder brake	exotic				II
<b>Family: Salviniaceae (floating fern)</b>						
<i>Salvinia minima</i>	water spangles	exotic				
<b>Family: Schizaeaceae (curly-grass fern)</b>						
<i>Lygodium microphyllum</i>	Old World climbing fern	exotic				I
<b>Family: Thelypteridaceae (marsh fern)</b>						
<i>Thelypteris interrupta</i>	hottentot fern	native			R	
<i>Thelypteris kunthii</i>	southern shield fern	native				
<i>Thelypteris palustris</i> var. <i>pubescens</i>	marsh fern	native			R	
<b>Family: Vittariaceae (shoestring fern)</b>						
<i>Vittaria lineata</i>	shoestring fern	native				
<b>Family: Cupressaceae (cedar)</b>						
<i>Taxodium ascendens</i>	pond cypress	native				
<b>Family: Pinaceae (pine)</b>						
<i>Pinus elliotii</i> var. <i>densa</i>	south Florida slash pine	native				
<b>Family: Agavaceae (agave)</b>						
<i>Agave sisalana</i>	sisal hemp	exotic				II
<b>Family: Alismataceae (water plantain)</b>						
<i>Sagittaria graminea</i>	grassy arrowhead	native			R	

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Scientific Name	Common Name	Native/ Exotic	FDACS	FNAI	IRC	FL EPPC
<i>Sagittaria graminea</i> var. <i>chapmanii</i>	Chapman's arrowhead	native			I	
<i>Sagittaria lancifolia</i>	bulltongue arrowhead	native				
<b>Family: Alliaceae (garlic)</b>						
<i>Nothoscordum bivalve</i>	false-garlic, crowpoison	native			CI	
<b>Family: Amaryllidaceae (amaryllis)</b>						
<i>Crinum americanum</i>	string-lily	native				
<b>Family Araceae (arum)</b>						
<i>Lemna obscura</i>	little duckweed	native			R	
<i>Lemna valdiviana</i>	valdivia duckweed	native				
<i>Pistia stratiotes</i>	water lettuce	exotic				I
<i>Spirodela polyrhiza</i>	common duckweed	native				
<i>Wolffiella gladiata</i>	Florida mudmidget	native				
<b>Family: Arecaceae (palm)</b>						
<i>Sabal palmetto</i>	cabbage palm	native				
<i>Serenoa repens</i>	saw palmetto	native				
<b>Family: Bromeliaceae (pineapple)</b>						
<i>Tillandsia balbisiana</i>	northern needleleaf	native	T			
<i>Tillandsia fasciculata</i> var. <i>densispica</i>	cardinal airplant	native	E			
<i>Tillandsia paucifolia</i>	potbelly airplant	native				
<i>Tillandsia recurvata</i>	ballmoss	native				
<i>Tillandsia setacea</i>	southern needleleaf	native				
<i>Tillandsia usneoides</i>	Spanish moss	native				
<i>Tillandsia utriculata</i>	giant wild-pine, giant airplant	native	E			
<b>Family: Burmanniaceae (burmannia)</b>						
<i>Burmannia capitata</i>	southern bluethread	native			R	
<b>Family: Cannaceae (canna)</b>						
<i>Canna flaccida</i>	bandana-of-the-everglades	native			R	
<b>Family: Commelinaceae (spiderwort)</b>						
<i>Commelina diffusa</i>	common dayflower	exotic				
<i>Commelina gambiæ</i>	Gambian dayflower	exotic				
<i>Murdannia nudiflora</i>	nakedstem dewflower	exotic				
<i>Murdannia spirata</i>	Asiatic dewflower	exotic				
<b>Family: Cyperaceae (sedge)</b>						
<i>Carex longii</i>	Long's sedge	native			I	
<i>Carex verrucosa</i>	warty sedge	native			CI	
<i>Cladium jamaicense</i>	Jamaica swamp sawgrass	native				
<i>Cyperus compressus</i>	poorland flatsedge	native				
<i>Cyperus croceus</i>	Baldwin's flatsedge	native				
<i>Cyperus distinctus</i>	swamp flatsedge	native			I	
<i>Cyperus esculentus</i>	yellow nutgrass	exotic				
<i>Cyperus flavescens</i>	yellow flatsedge	native			R	
<i>Cyperus haspan</i>	haspan flatsedge	native				
<i>Cyperus iria</i>	ricefield flatsedge	exotic				
<i>Cyperus ligularis</i>	swamp flatsedge	native				

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Scientific Name	Common Name	Native/ Exotic	FDACS	FNAI	IRC	FL EPPC
<i>Cyperus odoratus</i>	fragrant flatsedge	native				
<i>Cyperus polystachyos</i>	manyspike flatsedge	native				
<i>Cyperus pumilus</i>	low flatsedge	exotic				
<i>Cyperus retrorsus</i>	pinebarren flatsedge	native			R	
<i>Cyperus rotundus</i>	nut-grass	exotic				
<i>Cyperus surinamensis</i>	tropical flatsedge	native				
<i>Eleocharis acutangula</i>	narrow-angled spikerush	exotic				
<i>Eleocharis baldwinii</i>	Baldwin's spikerush	native			R	
<i>Eleocharis cellulosa</i>	Gulf Coast spikerush	native				
<i>Eleocharis elongata</i>	slim spikerush	native				
<i>Eleocharis flavescens</i>	yellow spikerush	native			I	
<i>Eleocharis geniculata</i>	Canada spikerush	native				
<i>Eleocharis interstincta</i>	knotted spikerush	native				
<i>Fimbristylis autumnalis</i>	slender fimbry	native			R	
<i>Fimbristylis cymosa</i>	hurricanegrass	native				
<i>Fimbristylis puberula</i>	hairy fimbry	native			I	
<i>Fimbristylis schoenoides</i>	ditch fimbry	exotic				
<i>Fuirena breviseta</i>	saltmarsh umbrellasedge	native			R	
<i>Fuirena scirpoidea</i>	southern umbrellasedge	native			R	
<i>Kyllinga brevifolia</i>	shortleaf spikesedge	exotic				
<i>Kyllinga odorata</i>	fragrant spikesedge	native			I	
<i>Kyllinga pumila</i>	low spikesedge	native				
<i>Lipocarpa aristulata</i>	awned halfchaff sedge	exotic				
<i>Lipocarpa micrantha</i>	smallflower halfchaff sedge	native			I	
<i>Rhynchospora colorata</i>	starrush whitetop	native				
<i>Rhynchospora divergens</i>	spreading beaksedge	native				
<i>Rhynchospora fascicularis</i>	fascicled Beaksedge	native			R	
<i>Rhynchospora fernaldii</i>	Fernald's beaksedge	native			CI	
<i>Rhynchospora filifolia</i>	threadleaf beaksedge	native			I	
<i>Rhynchospora inundata</i>	narrowfruit horned beaksedge	native			R	
<i>Rhynchospora microcarpa</i>	southern beaksedge	native			R	
<i>Rhynchospora nitens</i>	shortbeak beaksedge	native			R	
<i>Rhynchospora plumosa</i>	plumed beaksedge	native			R	
<i>Rhynchospora rariflora</i>	fewflower beaksedge	native			CI	
<i>Rhynchospora tracyi</i>	Tracy's beaksedge	native			R	
<i>Scleria baldwinii</i>	Baldwin's nutrush	native			I	
<i>Scleria ciliata</i>	fringed nutrush	native			R	
<i>Scleria ciliata var. pauciflora</i>	fewflower nutrush	native			CI	
<i>Scleria hirtella</i>	riverswamp nutrush	native				
<i>Scleria lacustris</i>	Wright's nutrush	exotic				II
<i>Scleria reticularis</i>	netted nutrush	native			R	
<i>Scleria verticillata</i>	low nutrush	native			R	
<b>Family: Eriocaulaceae (pipewort)</b>						
<i>Eriocaulon compressum</i>	flattened pipewort	native			R	
<i>Eriocaulon decangulare</i>	tenangle pipewort	native			R	

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<i>Lachnocaulon anceps</i>	whitehead bogbutton	native			R	
<i>Lachnocaulon minus</i>	Small's bogbutton	native				
<i>Syngonanthus flavidulus</i>	yellow hatpins	native			R	
<b>Family: Haemodoraceae (bloodwort)</b>						
<i>Lachnanthes carolina</i>	Carolina redroot	native				
<b>Family: Hydrocharitaceae (frog's-bit)</b>						
<i>Najas wrightiana</i>	Wright's waternymph	native				
<b>Family: Hypoxidaceae (yellow stargrass)</b>						
<i>Hypoxis juncea</i>	fringed yellow stargrass	native			R	
<b>Family: Iridaceae (iris)</b>						
<i>Sisyrinchium angustifolium</i>	narroleaf blueeyed-grass	native			R	
<b>Family: Juncaceae (rush)</b>						
<i>Juncus marginatus</i>	shore rush, grassleaf rush	native			R	
<i>Juncus megacephalus</i>	bighead rush	native			R	
<b>Family: Liliaceae (lily)</b>						
<i>Lilium catesbaei</i>	Catesby's lily, pine lily	native	T		I	
<b>Family: Marantaceae (arrowroot)</b>						
<i>Thalia geniculata</i>	alligatorflag, fireflag	native				
<b>Family: Nartheciaceae (bob asphodel)</b>						
<i>Aletris lutea</i>	yellow colicroot	native			R	
<b>Family: Orchidaceae (orchid)</b>						
<i>Bletia purpurea</i>	pinepink	native	T		R	
<i>Encyclia tampensis</i>	Florida butterfly orchid	native	CE			
<i>Eulophia alta</i>	wild coco	native				
<i>Habenaria floribunda</i>	toothpetal false reinorchid	native				
<i>Habenaria quinqueseta</i>	longhorn false reinorchid	native			R	
<i>Harrisella porrecta</i>	needleroot airplant orchid	native	T		I	
<i>Oeceoclades maculata</i>	monk orchid	exotic				II
<i>Sacoila lanceolata</i>	leafless beaked ladiesstresses	native			I	
<i>Spiranthes laciniata</i>	lacelip lady's-tresses	native			I	
<i>Spiranthes longilabris</i>	longlip lady's-tresses	native	T		I	
<i>Spiranthes odorata</i>	fragrant lady's-tresses	native				
<i>Spiranthes vernalis</i>	spring lady's-tresses	native			R	
<b>Family: Poaceae (grass)</b>						
<i>Amphicarpum muhlenbergianum</i>	blue-maidencane	native			R	
<i>Andropogon glomeratus var. glaucopsis</i>	purple bluestem	native			R	
<i>Andropogon glomeratus var. pumilus</i>	common bushy bluestem	native				
<i>Andropogon gyrans</i>	Elliott's bluestem	native			I	
<i>Andropogon ternarius</i>	splitbeard bluestem	native				
<i>Andropogon virginicus</i>	broomsedge bluestem	native			I	
<i>Andropogon virginicus var. glaucus</i>	chalky bluestem	native			R	
<i>Aristida beyrichiana</i>	southern wiregrass	native				
<i>Aristida palustris</i>	longleaf threeawn	native			I	
<i>Aristida purpurascens</i>	arrowfeather threeawn	native				

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Scientific Name	Common Name	Native/ Exotic	FDACS	FNAI	IRC	FL EPPC
<i>Aristida spiciformis</i>	bottlebrush threeawn	native			R	
<i>Axonopus fissifolius</i>	common carpetgrass	native			R	
<i>Axonopus furcatus</i>	big carpetgrass	native				
<i>Bothriochloa pertusa</i>	pitted beardgrass	exotic				
<i>Cenchrus spinifex</i>	coastal sandbur	native				
<i>Cynodon dactylon</i>	Bermudagrass	exotic				
<i>Dactyloctenium aegyptium</i>	durban crowfootgrass	exotic				
<i>Dichanthelium aciculare</i>	needleleaf witch grass	native				
<i>Dichanthelium dichotomum</i>	cypress witchgrass	native			R	
<i>Dichanthelium ensifolium</i>	cypress witchgrass	native			I	
<i>Dichanthelium ensifolium var. unciphyllum</i>	cypress witchgrass	native			R	
<i>Dichanthelium leucothrix</i>	rough witchgrass	native			I	
<i>Dichanthelium portoricense</i>	hemlock witchgrass	native				
<i>Dichanthelium strigosum var. glabrescens</i>	glabrescent roughhair witchgrass	native				
<i>Digitaria bicornis</i>	Asia crabgrass	exotic				
<i>Digitaria ciliaris</i>	southern crabgrass	native				
<i>Digitaria longiflora</i>	Indian crabgrass	exotic				
<i>Digitaria serotina</i>	blanket crabgrass	native				
<i>Echinochloa colona</i>	jungle-rice	exotic				
<i>Echinochloa crus-galli</i>	barnyardgrass	exotic				
<i>Echinochloa walteri</i>	coast cockspur	native				
<i>Eleusine indica</i>	Indian goosegrass	exotic				
<i>Elionurus tripsacoides</i>	Pan-American balsamscale	native			I	
<i>Eragrostis atrovirens</i>	thalia lovegrass	exotic				
<i>Eragrostis ciliaris</i>	gophertail lovegrass	exotic				
<i>Eragrostis elliotii</i>	Elliott's lovegrass	native				
<i>Eragrostis virginica</i>	coastal lovegrass	native			I	
<i>Eustachys glauca</i>	saltmarsh fingergrass	native				
<i>Eustachys petraea</i>	pinewoods fingergrass	native				
<i>Gymnopogon brevifolius</i>	shortleaf skeleton grass	native			CI	
<i>Hemarthria altissima</i>	limpgrass	exotic				II
<i>Hymenachne amplexicaulis</i>	West Indian marsh grass	exotic				I
<i>Imperata brasiliensis</i>	Brazilian satintail	native				
<i>Imperata cylindrica</i>	cogongrass	exotic				I
<i>Leersia hexandra</i>	southern cutgrass	native			R	
<i>Leptochloa fusca subsp. fascicularis</i>	bearded sprangletop	native			R	
<i>Luziola fluitans</i>	southern watergrass	native				
<i>Muhlenbergia capillaris</i>	hairawn muhly	native				
<i>Panicum dichotomiflorum</i>	fall panic grass	native			R	
<i>Panicum dichotomiflorum var. bartowense</i>	hairy fall panic grass	native				
<i>Panicum hemitomon</i>	maidencane	native				
<i>Panicum hians</i>	gaping panicum	native			R	
<i>Panicum maximum</i>	guineagrass	exotic				II
<i>Panicum repens</i>	torpedo grass	exotic				I

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Scientific Name	Common Name	Native/ Exotic	FDACS	FNAI	IRC	FL EPPC
<i>Panicum rigidulum</i>	redtop panicum	native				
<i>Panicum tenerum</i>	bluejoint panicum	native			R	
<i>Panicum virgatum</i>	switchgrass	native				
<i>Paspalum distichum</i>	knotgrass	native			R	
<i>Paspalidium geminatum</i>	Egyptian paspalidium	native			I	
<i>Paspalum conjugatum</i>	sour paspalum, hilograss	native				
<i>Paspalum dissectum</i>	mudbank crowngrass	native				
<i>Paspalum floridanum</i>	Florida paspalum	native			I	
<i>Paspalum laeve</i>	field paspalum	native				
<i>Paspalum monostachyum</i>	gulfdune paspalum	native			R	
<i>Paspalum notatum</i>	bahiagrass	exotic				
<i>Paspalum praecox</i>	early paspalum	native				
<i>Paspalum repens</i>	water paspalum	native				
<i>Paspalum setaceum</i>	thin paspalum	native				
<i>Paspalum urvillei</i>	vasey grass	exotic				
<i>Paspalum vaginatum</i>	seashore paspalum	native				
<i>Rhynchelytrum repens</i>	rose Natalgrass	exotic				I
<i>Saccharum giganteum</i>	sugarcane plumegrass	native				
<i>Sacciolepis indica</i>	Indian cupscale	exotic				
<i>Sacciolepis striata</i>	American cupscale	native			R	
<i>Schizachyrium rhizomatum</i>	rhizomatous bluestem	native				
<i>Setaria parviflora</i>	knotroot foxtail	native				
<i>Sorghastrum secundum</i>	lopsided Indian grass	native				
<i>Sorghum bicolor</i>	grain sorghum	exotic				
<i>Spartina bakeri</i>	sand cordgrass	native				
<i>Sporobolus indicus</i>	smut grass	exotic				
<i>Sporobolus indicus var. pyramidalis</i>	West Indian dropseed	exotic				
<i>Sporobolus junceus</i>	pineywoods dropseed	native				
<i>Urochloa distachya</i>	tropical signalgrass	exotic				
<i>Urochloa mutica</i>	paragrass	exotic				I
<i>Zizaniopsis miliacea</i>	southern wild-rice	native				
<i>Zoysia tenuifolia</i>	mascarene templegrass	exotic				
<b>Family: Pontederiaceae (pickerelweed)</b>						
<i>Pontederia cordata</i>	pickerelweed	native				
<b>Family: Smilacaceae (smilax)</b>						
<i>Smilax auriculata</i>	earleaf greenbrier	native				
<i>Smilax laurifolia</i>	laurel greenbrier, bamboo vine	native				
<i>Smilax tamnoides</i>	bristly greenbrier, hogbrier	native			I	
<b>Family: Typhaceae (cattail)</b>						
<i>Typha domingensis</i>	southern cattail	native				
<b>Family: Xyridaceae (yelloweyed grass)</b>						
<i>Xyris ambigua</i>	coastalplain yelloweyed grass	native			R	
<i>Xyris brevifolia</i>	shortleaf yelloweyed grass	native			I	
<i>Xyris caroliniana</i>	Carolina yelloweyed grass	native			R	

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<i>Xyris difformis</i> var. <i>floridana</i>	Florida yelloweyed grass	native				
<i>Xyris elliotii</i>	Elliott's yelloweyed grass	native			R	
<i>Xyris flabelliformis</i>	Savannah yelloweyed grass	native			I	
<i>Xyris jupicai</i>	Richard's yelloweyed grass	exotic				
<i>Xyris smalliana</i>	Small's yelloweyed grass	native			I	
<b>Family: Acanthaceae (acanthus)</b>						
<i>Dyschoriste oblongifolia</i>	oblongleaf twinflower	native			I	
<i>Justicia angusta</i>	narrow-leaved waterwillow	native			R	
<i>Stenandrium dulce</i>	pinklet	native			R	
<i>Ruellia caroliniensis</i>	Carolina wild petunia	native			I	
<b>Family: Adoxaceae (moschael)</b>						
<i>Sambucus canadensis</i>	elderberry, American elder	native				
<b>Family: Amaranthaceae (amaranth)</b>						
<i>Alternanthera philoxeroides</i>	alligatorweed	exotic				II
<i>Alternanthera sessilis</i>	sessile joyweed	exotic				
<i>Amaranthus viridis</i>	slender amaranth	exotic				
<i>Chenopodium album</i>	lamb's-quarters	exotic				
<i>Chenopodium ambrosioides</i>	Mexican tea	exotic				
<i>Gomphrena serrata</i>	globe amaranth	native				
<i>Iresine diffusa</i>	Juba's bush	native				
<b>Family: Anacardiaceae (cashew)</b>						
<i>Rhus copallinum</i>	winged sumac	native				
<i>Schinus terebinthifolius</i>	Brazilian pepper	exotic				I
<b>Family: Annonaceae (custard-apple)</b>						
<i>Annona glabra</i>	pond-apple	native				
<i>Asimina reticulata</i>	netted pawpaw	native				
<b>Family: Apiaceae (carrot)</b>						
<i>Eryngium baldwinii</i>	Baldwin's eryngo	native			R	
<i>Eryngium yuccifolium</i>	button rattlenakemaster	native			R	
<i>Oxypolis filiformis</i>	water cowbane	native				
<i>Ptilimnium capillaceum</i>	mock bishopsweed	native				
<b>Family: Apocynaceae (dogbane)</b>						
<i>Asclepias longifolia</i>	longleaf milkweed	native			R	
<i>Asclepias pedicellata</i>	Savannah milkweed	native			I	
<i>Sarcostemma clausum</i>	white twinevine	native				
<b>Family: Aquifoliaceae (holly)</b>						
<i>Ilex cassine</i>	dahoon	native				
<i>Ilex glabra</i>	gallberry, inkberry	native				
<b>Family: Araliaceae (ginseng)</b>						
<i>Centella asiatica</i>	spadeleaf	native				
<i>Hydrocotyle umbellata</i>	manyflower marshpennywort	native			R	
<b>Family: Asteraceae (aster)</b>						
<i>Ambrosia artemisiifolia</i>	common ragweed	native				
<i>Baccharis glomeruliflora</i>	silverling	native				

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<i>Baccharis halimifolia</i>	groundsel tree	native				
<i>Bidens alba</i> var. <i>radiata</i>	beggarticks	native				
<i>Bigelovia nudata</i> subsp. <i>australis</i>	pineland rayless goldenrod	native			R	
<i>Boltonia diffusa</i>	smallhead doll's-daisy	native			I	
<i>Carphephorus corymbosus</i>	Florida paintbrush	native			R	
<i>Carphephorus odoratissimus</i> var. <i>subtropicanus</i>	pineland purple	native			I	
<i>Chaptalia tomentosa</i>	pineland daisy	native				
<i>Cirsium horridulum</i>	purple thistle	native				
<i>Cirsium nuttallii</i>	Nuttall's thistle	native			I	
<i>Conoclinium coelestinum</i>	blue mistflower	native				
<i>Conyza canadensis</i> var. <i>pusilla</i>	dwarf Canadian horseweed	native				
<i>Coreopsis floridana</i>	Florida tickseed	native			I	
<i>Coreopsis leavenworthii</i>	Leavenworth's tickseed	native				
<i>Cyanthillium cinereum</i>	little ironweed	exotic				
<i>Eclipta prostrata</i>	false-daisy	native				
<i>Elephantopus elatus</i>	tall elephant's-foot	native			R	
<i>Emilia fosbergii</i>	Florida tasselflower	exotic				
<i>Erechtites hieraciifolius</i>	American burnweed	native				
<i>Erigeron quercifolius</i>	oakleaf fleabane	native				
<i>Erigeron vernus</i>	early whitetop fleabane	native			R	
<i>Eupatorium capillifolium</i>	dogfennel	native				
<i>Eupatorium leptophyllum</i>	falsefennel	native			R	
<i>Eupatorium mohrii</i>	Mohr's thoroughwort	native			R	
<i>Euthamia caroliniana</i>	slender goldenrod	native				
<i>Gamochaeta falcata</i>	narrowleaf purple everlasting	native			R	
<i>Helenium pinnatifidum</i>	southeastern sneezeweed	native			R	
<i>Heterotheca subaxillaris</i>	camphorweed	native				
<i>Hieracium megacephalon</i>	coastalplain hawkweed	native				
<i>Iva microcephala</i>	Piedmont marshelder	native				
<i>Liatris garberi</i>	Garber's gayfeather	native			I	
<i>Liatris gracilis</i>	slender gayfeather	native			R	
<i>Lygodesmia aphylla</i>	roserush	native			R	
<i>Mikania scandens</i>	climbing hempvine	native				
<i>Pectis prostrata</i>	spreading cinchweed	native				
<i>Pityopsis graminifolia</i>	narrowleaf silkgrass	native				
<i>Pluchea odorata</i>	sweetscent	native				
<i>Pluchea rosea</i>	rosy camphorweed	native				
<i>Pseudognaphalium obtusifolium</i>	rabbit tobacco	native			R	
<i>Pterocaulon pycnostachyum</i>	blackroot	native				
<i>Rudbeckia hirta</i>	blackeyed susan	native			R	
<i>Solidago fistulosa</i>	pinebarren goldenrod	native			R	
<i>Solidago gigantea</i>	giant goldenrod	native				
<i>Solidago sempervirens</i>	seaside goldenrod	native			R	

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<i>Solidago stricta</i>	wand goldenrod	native				
<i>Solidago tortifolia</i>	twistedleaf goldenrod	native			I	
<i>Symphyotrichum adnatum</i>	scaleaf aster	native				
<i>Symphyotrichum carolinianum</i>	climbing aster	native			R	
<i>Symphyotrichum dumosum</i>	rice button aster	native				
<i>Symphyotrichum elliotii</i>	Elliott's aster	native				
<i>Symphyotrichum subulatum</i>	annual saltmarsh aster	native				
<i>Tridax procumbens</i>	brittleweed, coatbuttons	exotic				
<b>Family: Boraginaceae (borage)</b>						
<i>Heliotropium polyphyllum</i>	pineland heliotrope	native				
<b>Family: Brassicaceae (mustard)</b>						
<i>Rorippa teres</i>	southern marsh yellowcress	native			I	
<b>Family: Cactaceae (cactus)</b>						
<i>Opuntia ficus-indica</i>	spineless cactus	exotic				
<b>Family: Campanulaceae (bellflower)</b>						
<i>Lobelia glandulosa</i>	glade lobelia	native				
<b>Family: Caryophyllaceae (pink)</b>						
<i>Drymaria cordata</i>	West Indian chickweed	native				
<b>Family: Chrysobalanaceae (coco plum)</b>						
<i>Chrysobalanus icaco</i>	coco-plum	native				
<i>Licania michauxii</i>	gopher apple	native				
<b>Family: Cistaceae (rockrose)</b>						
<i>Lechea torreyi</i>	Piedmont pinweed	native			R	
<b>Family: Clusiaceae (mangosteen)</b>						
<i>Hypericum brachyphyllum</i>	coastalplain St. John's-wort	native			R	
<i>Hypericum cistifolium</i>	roundpod St. John's-wort	native				
<i>Hypericum fasciculatum</i>	peelbark St. John's-wort	native			R	
<i>Hypericum gentianoides</i>	pineweeds, orangegrass	native			I	
<i>Hypericum hypericoides</i>	St. Andrew's-cross	native				
<i>Hypericum mutilum</i>	dwarf St. John's-wort	native			I	
<i>Hypericum reductum</i>	Atlantic St. John's-wort	native				
<i>Hypericum tetrapetalum</i>	fourpetal St. John's-wort	native				
<b>Family: Convolvulaceae (morning-glory)</b>						
<i>Evolvulus sericeus</i>	silver dwarf morningglory	native				
<i>Ipomoea indica</i> var. <i>acuminata</i>	ocean-blue morningglory	native				
<i>Ipomoea sagittata</i>	Everglades morningglory	native				
<b>Family: Cornaceae (dogwood)</b>						
<i>Cornus foemina</i>	swamp dogwood	native			R	
<b>Family: Cucurbitaceae (gourd)</b>						
<i>Cucumis sativus</i>	garden cucumber	exotic				
<i>Melothria pendula</i>	creeping cucumber	native				
<b>Family: Droseraceae (sundew)</b>						
<i>Drosera capillaris</i>	pink sundew	native			R	
<b>Family: Ericaceae (heath)</b>						

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<i>Bejaria racemosa</i>	tarflower	native			R	
<i>Gaylussacia dumosa</i>	dwarf huckleberry	native			R	
<i>Lyonia fruticosa</i>	coastalplain staggerbush	native				
<i>Vaccinium myrsinites</i>	shiny blueberry	native				
<b>Family: Euphorbiaceae (spurge)</b>						
<i>Caperonia castaneifolia</i>	chestnutleaf falsecroton	native			I	
<i>Caperonia palustris</i>	sacatrapo	exotic				
<i>Chamaesyce hirta</i>	pillpod sandmat	native				
<i>Chamaesyce hypericifolia</i>	graceful sandmat	native				
<i>Chamaesyce hyssopifolia</i>	hyssopleaf sandmat	native				
<i>Cnidoscolus stimulosus</i>	tread-softly, finger-rot	native				
<i>Euphorbia inundata</i>	Florida pineland spurge	native			CI	
<i>Euphorbia polyphylla</i>	lesser Florida spurge	native				
<i>Phyllanthus caroliniensis subsp. saxicola</i>	rock Carolina leafflower	native			R	
<i>Phyllanthus urinaria</i>	chamber bitter	native				
<i>Sapium sebiferum</i>	Chinese tallowtree	exotic				I
<i>Stillingia aquatica</i>	corkwood, water toothleaf	native			R	
<i>Stillingia sylvatica</i>	queensdelight	native			R	
<b>Family: Fabaceae (pea)</b>						
<i>Abrus precatorius</i>	rosary pea	exotic				I
<i>Acacia auriculiformis</i>	earleaf acacia	exotic				I
<i>Acacia farnesiana</i>	sweet acacia	native			R	
<i>Aeschynomene americana</i>	shyleaf	native			R	
<i>Aeschynomene indica</i>	Indian joint-vetch	exotic				
<i>Alysicarpus ovalifolius</i>	false moneywort	exotic				
<i>Centrosema virginianum</i>	spurred butterfly-pea	native				
<i>Chamaecrista nictitans</i>	sensitive-pea	native			CI	
<i>Chamaecrista nictitans var. aspera</i>	hairy partridge-pea	native				
<i>Crotalaria lanceolata</i>	lanceleaf rattlebox	exotic				
<i>Crotalaria pallida var. obovata</i>	smooth rattlebox	exotic				
<i>Crotalaria rotundifolia</i>	rabbitbells	native				
<i>Crotalaria spectabilis</i>	showy rattlebox	exotic				
<i>Desmodium incanum</i>	beggar's-ticks	native				
<i>Desmodium triflorum</i>	threeflower ticktrefoil	exotic				
<i>Galactia elliotii</i>	Elliott's milkpea	native			R	
<i>Galactia regularis</i>	eastern milkpea	native			R	
<i>Indigofera hirsuta</i>	hairy indigo	exotic				
<i>Macroptilium lathyroides</i>	wild bushbean	exotic				
<i>Medicago lupulina</i>	black medic	exotic				
<i>Melilotus albus</i>	white sweetclover	exotic				
<i>Senna pendula var. glabrata</i>	valamuerto	exotic				I
<i>Sesbania herbacea</i>	danglepod	native				
<i>Tephrosia rugelii</i>	Rugel's hoarypea	native			I	
<i>Vicia acutifolia</i>	fourleaf vetch	native				
<i>Vigna luteola</i>	hairypod cowpea	native				

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<b>Family: Fagaceae (beech)</b>						
<i>Quercus laurifolia</i>	laurel oak, Diamond oak	native				
<i>Quercus minima</i>	dwarf live oak	native			R	
<i>Quercus virginiana</i>	Virginia live oak	native				
<b>Family: Gentianaceae (gentian)</b>						
<i>Bartonia verna</i>	white screwstem	native			I	
<i>Sabatia bartramii</i>	Bartram's rosegentian	native			I	
<i>Sabatia brevifolia</i>	shortleaf rosegentian	native			I	
<i>Sabatia grandiflora</i>	largeflower rosegentian	native			R	
<i>Sabatia stellaris</i>	rose-of-plymouth	native				
<b>Family: Haloragaceae (watermilfoil)</b>						
<i>Proserpinaca palustris</i>	marsh mermaidweed	native			R	
<i>Proserpinaca pectinata</i>	combleaf mermaidweed	native			R	
<b>Family: Hydroleaceae (false fiddleleaf)</b>						
<i>Hydrolea corymbosa</i>	skyflower	native			R	
<b>Family: Lamiaceae (mint)</b>						
<i>Callicarpa americana</i>	American beautyberry	native				
<i>Hyptis alata</i>	musky mint, clustered bushmint	native				
<i>Hyptis pectinata</i>	comb bushmint	native				
<i>Hyptis spicigera</i>	marubio	exotic				
<i>Hyptis verticillata</i>	John Charles	native				
<i>Lycopus rubellus</i>	taperleaf waterhoarhound	native				
<i>Physostegia purpurea</i>	eastern false dragonhead	native			I	
<i>Piloblephis rigida</i>	wild pennyroyal	native			R	
<b>Family: Lauraceae (laurel)</b>						
<i>Cassytha filiformis</i>	love vine	native				
<i>Persea palustris</i>	swamp bay	native				
<b>Family: Lentibulariaceae (bladderwort)</b>						
<i>Pinguicula lutea</i>	yellow butterwort	native	T		CI	
<i>Pinguicula pumila</i>	small butterwort	native			R	
<i>Utricularia cornuta</i>	horned bladderwort	native			R	
<i>Utricularia foliosa</i>	leafy bladderwort	native			R	
<i>Utricularia gibba</i>	humped bladderwort	native			I	
<i>Utricularia inflata</i>	floating bladderwort	native			I	
<i>Utricularia purpurea</i>	eastern purple bladderwort	native				
<i>Utricularia resupinata</i>	small purple bladderwort	native			I	
<i>Utricularia simulans</i>	fringed bladderwort	native			I	
<i>Utricularia subulata</i>	zigzag bladderwort	native			R	
<b>Family: Linaceae (flax)</b>						
<i>Linum floridanum</i>	Florida yellow flax	native			I	
<i>Linum medium var. texanum</i>	stiff yellow flax	native			R	
<b>Family: Loganaceae (logania)</b>						
<i>Mitreola petiolata</i>	lax hornpod	native				
<i>Mitreola sessilifolia</i>	swamp hornpod	native			R	

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<b>Family: Lythraceae (loosestrife)</b>						
<i>Ammannia latifolia</i>	pink redstem, toothcup	native			R	
<i>Cuphea carthagenensis</i>	Colombian waxweed	exotic				
<i>Rotala ramosior</i>	toothcup, lowland rotala	native			I	
<b>Family: Malvaceae (mallow)</b>						
<i>Hibiscus acetosella</i>	African rosemallow	exotic				
<i>Melochia corchorifolia</i>	chocolateweed	exotic				
<i>Melochia spicata</i>	bretonica peluda	native			I	
<i>Sida acuta</i>	common wireweed	native				
<i>Sida rhombifolia</i>	Cuban jute, Indian hemp	native				
<i>Urena lobata</i>	caesarweed	exotic				II
<i>Waltheria indica</i>	sleepy morning	native				
<b>Family: Melastomataceae (melastome)</b>						
<i>Rhexia cubensis</i>	West Indian meadowbeauty	native			I	
<i>Rhexia mariana</i>	pale meadowbeauty	native			R	
<i>Rhexia nuttallii</i>	Nuttall's meadowbeauty	native			I	
<i>Rhexia petiolata</i>	fringed meadowbeauty	native			CI	
<b>Family: Menyanthaceae (bogbean)</b>						
<i>Nymphoides aquatica</i>	big floatingheart	native				
<b>Family: Moraceae (mulberry)</b>						
<i>Ficus aurea</i>	strangler fig, golden fig	native				
<i>Ficus microcarpa</i>	Laurel fig, Indian laurel	exotic				I
<b>Family: Myricaceae (bayberry)</b>						
<i>Myrica cerifera</i>	wax myrtle	native				
<b>Family: Myrsinaceae (myrsine)</b>						
<i>Rapanea punctata</i>	myrsine, colicwood	native				
<b>Family: Myrtaceae (myrtle)</b>						
<i>Eucalyptus torrelliana</i>	Torrell's eucalyptus	exotic				
<i>Melaleuca quinquenervia</i>	punktree	exotic				I
<i>Psidium guajava</i>	guava	exotic				I
<i>Rhodomyrtus tomentosa</i>	rose myrtle	exotic				I
<i>Syzygium cumini</i>	Java plum	exotic				I
<b>Family: Nymphaeaceae (waterlily)</b>						
<i>Nymphaea elegans</i>	tropical royalblue waterlily	native			I	
<b>Family: Olaceae (olive)</b>						
<i>Fraxinus caroliniana</i>	pop ash	native			R	
<b>Family: Onagraceae (eveningprimrose)</b>						
<i>Gaura angustifolia</i>	southern beeblossom	native				
<i>Ludwigia curtissii</i>	Curtiss's primrosewillow	native			R	
<i>Ludwigia linifolia</i>	southeastern primrosewillow	native			I	
<i>Ludwigia maritima</i>	seaside primrosewillow	native			R	
<i>Ludwigia microcarpa</i>	smallfruit primrosewillow	native			R	
<i>Ludwigia octovalvis</i>	Mexican primrosewillow	native				
<i>Ludwigia peruviana</i>	Peruvian primrosewillow	exotic				

## Appendix B: Plant Species List for Wild Turkey Strand Preserve

Common and scientific names for this list were obtained from Wunderlin and Hansen, 2003.

Scientific Name	Common Name	Native/ Exotic	FDACS	FNAI	IRC	FL EPPC
<i>Ludwigia repens</i>	creeping primrosewillow	native				
<i>Oenothera laciniata</i>	cutleaf eveningprimrose	native			R	
<b>Family: Orobanchaceae (broomrape)</b>						
<i>Agalinis fasciculata</i>	beach false foxglove	native			R	
<i>Agalinis obtusifolia</i>	tenlobe false foxglove	native			CI	
<i>Buchnera americana</i>	American bluehearts	native				
<b>Family Oxalidaceae (woodsorrel)</b>						
<i>Oxalis corniculata</i>	common yellow woodsorrel	native				
<b>Family: Passifloraceae (passionflower)</b>						
<i>Passiflora suberosa</i>	corkystem passionflower	native				
<b>Family: Phytolaccaceae (pokeweed)</b>						
<i>Phytolacca americana</i>	American pokeweed	native				
<b>Family: Polygalaceae (milkwort)</b>						
<i>Polygala baldwinii</i>	Baldwin's milkwort	native			R	
<i>Polygala cruciata</i>	drumheads	native			I	
<i>Polygala cymosa</i>	tall pinebarren milkwort	native				
<i>Polygala grandiflora</i>	showy milkwort	native				
<i>Polygala incarnata</i>	procession flower	native			R	
<i>Polygala lutea</i>	orange milkwort	native			I	
<i>Polygala nana</i>	candyroot	native			R	
<i>Polygala rugelii</i>	big yellow milkwort	native			I	
<i>Polygala setacea</i>	coastalplain milkwort	native			I	
<b>Family: Polygonaceae (buckwheat)</b>						
<i>Polygonum densiflorum</i>	denseflower knotweed	native				
<i>Polygonum hydropiperoides</i>	swamp smartweed	native			R	
<i>Polygonum pennsylvanicum</i>	Pennsylvania smartweed	native				
<i>Polygonum punctatum</i>	dotted smartweed	native				
<b>Family: Portulacaceae (purslane)</b>						
<i>Portulaca oleracea</i>	little hogweed	native				
<b>Family: Primulaceae (primrose)</b>						
<i>Anagallis minima</i>	chaffweed	native			CI	
<i>Anagallis pumila</i>	Florida pimpernel	native			CI	
<i>Samolus valerandi</i> subsp. <i>parviflorus</i>	pineland pimpernel	native			R	
<b>Family: Ranunculaceae (buttercup)</b>						
<i>Clematis baldwinii</i>	pine-hyacinth	native			R	
<b>Family: Rhamnaceae (buckthorn)</b>						
<i>Berchemia scandens</i>	rattan vine	native			I	
<b>Family: Rosaceae (rose)</b>						
<i>Rubus cuneifolius</i>	sand blackberry	native			I	
<i>Rubus trivialis</i>	southern dewberry	native			R	
<b>Family: Rubiaceae (madder)</b>						
<i>Cephalanthus occidentalis</i>	common buttonbush	native				
<i>Diodia teres</i>	poor joe, rough buttonweed	native			R	
<i>Diodia virginiana</i>	Virginia buttonweed	native			R	

## Appendix B: Plant Species List for Wild Turkey Strand Preserve

Common and scientific names for this list were obtained from Wunderlin and Hansen, 2003.

Scientific Name	Common Name	Native/ Exotic	FDACS	FNAI	IRC	FL EPPC
<i>Galium hispidulum</i>	coastal beadstraw	native				
<i>Houstonia procumbens</i>	innocense	native			R	
<i>Oldenlandia corymbosa</i>	flattop mille grains	native				
<i>Oldenlandia uniflora</i>	clustered mille grains	native			I	
<i>Richardia scabra</i>	rough Mexican clover	exotic				
<i>Spermacoce assurgens</i>	woodland false buttonweed	native				
<i>Spermacoce prostrata</i>	prostrate false buttonweed	native			R	
<i>Spermacoce verticillata</i>	shrubby false buttonweed	exotic				
<b>Family: Salicaceae (willow)</b>						
<i>Salix caroliniana</i>	Carolina willow	native				
<b>Family: Sapindaceae (soapberry)</b>						
<i>Acer rubrum</i>	red maple	native				
<b>Family: Sapotaceae (sapodilla)</b>						
<i>Sideroxylon reclinatatum</i>	Florida bully	native			R	
<b>Family: Solanaceae (nightshade)</b>						
<i>Lycopersicon esculentum</i>	garden tomato	exotic				
<i>Physalis pubescens</i>	husk tomato	native			R	
<i>Physalis walteri</i>	Walter's groundcherry	native				
<i>Solanum americanum</i>	American black nightshade	native				
<i>Solanum tampicense</i>	aquatic soda-apple	exotic				I
<b>Family: Tetrachondraceae (tetrachondra)</b>						
<i>Polyprenum procumbens</i>	rustweed, juniperleaf	native				
<b>Family: Turneraceae (turnera)</b>						
<i>Piriqueta caroliniana</i>	pitted stripeseed	native				
<b>Family: Urticaceae (nettle)</b>						
<i>Boehmeria cylindrica</i>	false nettle	native				
<b>Family Verbenaceae (vervain)</b>						
<i>Lantana camara</i>	shrubverbena	exotic				I
<i>Phyla nodiflora</i>	turkey tangle fogfruit	native				
<b>Family: Veronicaceae (speedwell)</b>						
<i>Bacopa caroliniana</i>	lemon bacopa	native				
<i>Bacopa monnieri</i>	herb-of-grace	native				
<i>Gratiola hispida</i>	rough hedgehyssop	native			I	
<i>Gratiola ramosa</i>	branched hedgehyssop	native			R	
<i>Linaria canadensis</i>	Canada toadflax	native			R	
<i>Lindernia crustacea</i>	Malaysian false-pimpernel	exotic				
<i>Lindernia dubia var. anagallidea</i>	yellowseed false-pimpernel	native				
<i>Lindernia grandiflora</i>	Savannah false-pimpernel	native			I	
<i>Mecardonia acuminata subsp. peninsularis</i>	axilflower	native				
<i>Micranthemum glomeratum</i>	manatee mudflower	native			I	
<i>Micranthemum umbrosum</i>	shade mudflower	native			CI	
<i>Scoparia dulcis</i>	sweetbroom, licoriceweed					
<i>Torenia fournieri</i>	bluewings	exotic				
<b>Family: Violaceae (violet)</b>						

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Common and scientific names for this list were obtained from Wunderlin and Hansen, 2003.

Scientific Name	Common Name	Native/ Exotic	FDACS	FNAI	IRC	FL EPPC
<i>Viola lanceolata</i>	bog white violet	native			I	
<i>Viola palmata</i>	early blue violet	native			CI	
<b>Family: Vitaceae (grape)</b>						
<i>Parthenocissus quinquefolia</i>	Virginia-creeper	native				
<i>Vitis rotundifolia</i>	muscadine	native				

## **Key**

### **Florida EPPC Status**

I = species that are invading and disrupting native plant communities

II = species that have shown a potential to disrupt native plant communities

### **FDACS (Florida Department of Agriculture and Consumer Services)**

E = Endangered

T = Threatened

CE = Commercially Exploited

### **IRC (Institute for Regional Conservation)**

CI = Critically Imperiled

I = Imperiled

R = Rare

### **FNAI (Florida Natural Areas Inventory)**

G= Global Status

T= Threatened

CE= Commercially Exploited

1= Critically imperiled 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.

2= Imperiled 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.

3= Either very rare and local throughout its range (21-200 occurrences or less than 10,000 individuals)  
or found locally in a restricted range or vulnerable to extinction from other factors.

4= Apparently secure

5= Demonstrably secure

## Appendix C -- Wildlife Species List

## Appendix C: Wildlife Species List for Wild Turkey Strand Preserve

Scientific Name	Common Name	Designated Status		
		FWC	FWS	FNAI
<b>MAMMALS</b>				
<b>Family: Didelphidae (opossums)</b>				
<i>Didelphis virginiana</i>	Virginia opossum			
<b>Family: Dasypodidae (armadillos)</b>				
<i>Dasypus novemcinctus</i>	nine-banded armadillo *			
<b>Family: Sciuridae (squirrels and their allies)</b>				
<i>Sciurus niger avicennia</i>	Big Cypress fox squirrel	T		G5T2/S2
<b>Family: Muridae (mice and rats)</b>				
<i>Peromyscus gossypinus</i>	cotton mouse			
<i>Sigmodon hispidus</i>	hispid cotton rat			
<b>Family: Leporidae (rabbits and hares)</b>				
<i>Sylvilagus floridanus</i>	eastern cottontail			
<b>Family: Felidae (cats)</b>				
<i>Puma concolor coryi</i>	Florida panther	E	E	G5T1/S1
<i>Lynx rufus</i>	bobcat			
<b>Family: Procyonidae (raccoons)</b>				
<i>Procyon lotor</i>	raccoon			
<b>Family: Mephitidae (skunks)</b>				
<i>Spilogale putorius</i>	eastern spotted skunk			
<b>Family: Mustelidae (weasels, otters and relatives)</b>				
<i>Lutra canadensis</i>	northern river otter			
<b>Family: Suidae (old world swine)</b>				
<i>Sus scrofa</i>	feral hog *			
<b>Family: Cervidae (deer)</b>				
<i>Odocoileus virginianus</i>	white-tailed deer			
<b>BIRDS</b>				
<b>Family: Anatidae (swans, geese and ducks)</b>				
<b>Subfamily: Anatinae (dabbling ducks)</b>				
<i>Dendrocygna autumnalis</i>	black-bellied whistling duck			
<i>Cairina moschata</i>	muscovy duck *			
<i>Anas fulvigula</i>	mottled duck			
<i>Anas discors</i>	blue-winged teal			
<b>Subfamily: Merginae (mergansers)</b>				
<i>Lophodytes cucullatus</i>	hooded merganser			
<b>Family: Phasianidae (pheasant, grouse, turkeys and their allies)</b>				
<b>Subfamily: Meleagridinae (turkeys)</b>				
<i>Meleagris gallopavo</i>	wild turkey			
<b>Family: Podicipedidae (grebes)</b>				
<i>Podilymbus podiceps</i>	pie-billed grebe			
<b>Family: Anhingidae (anhingas)</b>				
<i>Anhinga anhinga</i>	anhinga			
<b>Family: Ardeidae (herons, egrets, bitterns)</b>				
<i>Ixobrychus exilis</i>	least bittern			G5/S4
<i>Ardea herodias</i>	great blue heron			
<i>Ardea alba</i>	great egret			G5/S4
<i>Egretta thula</i>	snowy egret	SSC		G5/S3
<i>Egretta caerulea</i>	little blue heron	SSC		G5/S4
<i>Egretta tricolor</i>	tricolored heron	SSC		G5/S4
<i>Bubulcus ibis</i>	cattle egret			
<i>Butorides virescens</i>	green heron			
<i>Nycticorax nycticorax</i>	black-crowned night heron			G5/S3
<i>Nyctanassa violacea</i>	yellow-crowned night heron			G5/S3

## Appendix C: Wildlife Species List for Wild Turkey Strand Preserve

Scientific Name	Common Name	Designated Status		
		FWC	FWS	FNAI
<b>Family: Threskiornithidae (ibises and spoonbills)</b>				
<i>Eudocimus albus</i>	white ibis	SSC		G5/S4
<i>Plegadis falcinellus</i>	glossy ibis			G5/S3
<i>Platalea ajaja</i>	roseate spoonbill	SSC		G5/S2
<b>Family: Ciconiidae (storks)</b>				
<i>Mycteria americana</i>	wood stork	E	E	G4/S2
<b>Family: Cathartidae (new world vultures)</b>				
<i>Coragyps atratus</i>	black vulture			
<i>Cathartes aura</i>	turkey vulture			
<b>Family: Accipitridae (hawks, kites, accipiters, harriers, eagles)</b>				
<b>Subfamily: Elaninae and Milvinae (kites)</b>				
<i>Elanoides forficatus</i>	swallow-tailed kite			G5/S2
<i>Rostrhamus sociabilis plumbeus</i>	Everglades snail kite	E	E	G4G5T3Q/S2
<b>Subfamily: Buteoninae (buzzard hawks and eagles)</b>				
<i>Haliaeetus leucocephalus</i>	bald eagle	T		G5/S3
<b>Subfamily: Circinae (harriers)</b>				
<i>Circus cyaneus</i>	northern harrier			
<b>Subfamily: Accipitrinae (bird hawks)</b>				
<i>Accipiter striatus</i>	sharp-shinned hawk			
<i>Accipiter cooperii</i>	Cooper's hawk			G5/S3
<b>Subfamily: Buteoninae (buzzard hawks and eagles)</b>				
<i>Buteo lineatus</i>	red-shouldered hawk			
<i>Buteo jamaicensis</i>	red-tailed hawk			
<b>Family: Falconidae (falcons)</b>				
<b>Subfamily: Falconinae (falcons)</b>				
<i>Falco sparverius</i>	American kestrel			
<b>Family: Rallidae (coots and gallinules)</b>				
<i>Gallinula chloropus</i>	common moorhen			
<i>Fulica americana</i>	American coot			
<b>Family: Gruidae (cranes)</b>				
<i>Grus canadensis pratensis</i>	Florida sandhill crane	T		G5T2T3/S2S3
<b>Family: Charadriidae (plovers)</b>				
<i>Charadrius vociferus</i>	killdeer			
<b>Family: Scolopacidae (sandpipers and phalaropes)</b>				
<i>Gallinago delicata</i>	Wilson's snipe			
<b>Family: Columbidae (pigeons and doves)</b>				
<i>Zenaidura macroura</i>	mourning dove			
<i>Columbina passerina</i>	common ground-dove			
<b>Family: Cuculidae (cuckoos and their allies)</b>				
<i>Coccyzus americanus</i>	yellow-billed cuckoo			
<b>Family: Strigidae (true owls)</b>				
<i>Strix varia</i>	barred owl			
<b>Family: Caprimulgidae (goatsuckers)</b>				
<i>Chordeiles minor</i>	common nighthawk			
<b>Family: Alcedinidae (kingfishers)</b>				
<i>Ceryle alcyon</i>	belted kingfisher			
<b>Family: Picidae (woodpeckers)</b>				
<i>Melanerpes carolinus</i>	red-bellied woodpecker			
<i>Picoides pubescens</i>	downy woodpecker			
<i>Picoides villosus</i>	hairy woodpecker			G5/S3
<i>Colaptes auratus</i>	northern flicker			
<i>Dryocopus pileatus</i>	pileated woodpecker			
<b>Family: Tyrannidae (tyrant flycatchers)</b>				
<i>Sayornis phoebe</i>	eastern phoebe			
<i>Myiarchus cinerascens</i>	great-crested flycatcher			

## Appendix C: Wildlife Species List for Wild Turkey Strand Preserve

Scientific Name	Common Name	Designated Status		
		FWC	FWS	FNAI
<b>Family: Vireonidae (vireos)</b>				
<i>Vireo griseus</i>	white-eyed vireo			
<b>Family: Corvidae (crows, jays, etc.)</b>				
<i>Cyanocitta cristata</i>	blue jay			
<i>Corvus brachyrhynchos</i>	American crow			
<b>Family: Hirundinidae (swallows)</b>				
<i>Tachycineta bicolor</i>	tree swallow			
<i>Hirundo rustica</i>	barn swallow			
<b>Family: Paridae (chickadees and titmice)</b>				
<i>Baeolophus bicolor</i>	tufted titmouse			
<b>Family: Troglodytidae (wrens)</b>				
<i>Thryothorus ludovicianus</i>	Carolina wren			
<b>Family: Sylviidae (gnatcatchers)</b>				
<i>Polioptila caerulea</i>	blue-gray gnatcatcher			
<b>Family: Turdidae (thrushes)</b>				
<i>Turdus migratorius</i>	American robin			
<b>Family: Mimidae (mockingbirds and thrashers)</b>				
<i>Dumetella carolinensis</i>	gray catbird			
<i>Mimus polyglottos</i>	northern mockingbird			
<b>Family: Parulidae (wood-warblers)</b>				
<i>Dendroica magnolia</i>	magnolia warbler			
<i>Dendroica coronata</i>	yellow-rumped warbler			
<i>Dendroica pinus</i>	pine warbler			
<i>Dendroica discolor</i>	prairie warbler			
<i>Dendroica palmarum</i>	palm warbler			
<i>Setophaga ruticilla</i>	American redstart			
<i>Geothlypis tristis</i>	common yellowthroat			
<b>Family: Emberizine (sparrows and their allies)</b>				
<i>Pipilo erythrophthalmus</i>	eastern towhee			
<b>Family: Cardinalidae (cardinals, some grosbeaks, new world buntings, etc.)</b>				
<i>Cardinalis cardinalis</i>	northern cardinal			
<i>Passerina cyanea</i>	indigo bunting			
<b>Family: Icteridae (blackbirds, orioles, etc.)</b>				
<i>Agelaius phoeniceus</i>	red-winged blackbird			
<i>Sturnella magna</i>	eastern meadowlark			
<i>Quiscalus quiscula</i>	common grackle			
<i>Quiscalus major</i>	boat-tailed grackle			
<b>REPTILES</b>				
<b>Family: Alligatoridae (alligator and caiman)</b>				
<i>Alligator mississippiensis</i>	American alligator	SSC		G5/S4
<b>Family: Emydidae (box and water turtles)</b>				
<i>Deirochelys reticularia chrysea</i>	Florida chicken turtle			
<i>Pseudemys peninsularis</i>	peninsula cooter			
<i>Pseudemys nelsoni</i>	Florida redbelly turtle			
<i>Terrapene carolina bauri</i>	Florida box turtle			
<b>Family: Kinosternidae (musk and mud turtles)</b>				
<i>Kinosternon baurii</i>	striped mud turtle			
<b>Family: Testudinidae (gopher tortoises)</b>				
<i>Gopherus polyphemus</i>	gopher tortoise	T		G3/S3
<b>Family: Trionychidae (softshell turtles)</b>				
<i>Apalone ferox</i>	Florida softshell			
<b>Family: Anguillidae (glass and alligator lizards)</b>				
<i>Ophisaurus ventralis</i>	eastern glass lizard			

## Appendix C: Wildlife Species List for Wild Turkey Strand Preserve

Scientific Name	Common Name	Designated Status		
		FWC	FWS	FNAI
<b>Family: Polychridae (anoles)</b>				
<i>Anolis carolinensis</i>	green anole			
<i>Anolis sagrei</i>	brown anole *			
<b>Family: Colubridae (harmless egg-laying snakes)</b>				
<i>Coluber constrictor priapus</i>	southern black racer			
<b>Family: Crotalidae (pitvipers)</b>				
<i>Agkistrodon piscivorus conanti</i>	Florida cottonmouth			
<i>Crotalus adamanteus</i>	eastern diamondback rattlesnake			G4/S3
<i>Sistrurus miliarius barbouri</i>	dusky pygmy rattlesnake			
<b>Family Natricidae (harmless live-bearing snakes)</b>				
<i>Nerodia fasciata pictiventris</i>	Florida water snake			
<i>Thamnophis sauritus sackenii</i>	peninsula ribbon snake			
<b>AMPHIBIANS</b>				
<b>Family: Bufonidae (toads)</b>				
<i>Anaxyrus quercicus</i>	oak toad			
<i>Anaxyrus terrestris</i>	southern toad			
<b>Family: Eleutherodactylidae (free-toed frogs)</b>				
<i>Eleutherodactylus planirostris</i>	greenhouse frog *			
<b>Family: Hylidae (treefrogs and their allies)</b>				
<i>Acris gryllus dorsalis</i>	Florida cricket frog			
<i>Hyla cinerea</i>	green treefrog			
<i>Hyla femoralis</i>	pine woods treefrog			
<i>Hyla gratiosa</i>	barking treefrog			
<i>Hyla squirella</i>	squirrel treefrog			
<i>Osteopilus septentrionalis</i>	Cuban treefrog *			
<b>Family: Microhylidae (narrowmouth toads)</b>				
<i>Gastrophryne carolinensis</i>	eastern narrowmouth toad			
<b>Family: Ranidae (true frogs)</b>				
<i>Lithobates grylio</i>	pig frog			
<i>Lithobates sphenoccephalus sphenoccephalus</i>	Florida leopard frog			
<b>FISHES</b>				
<b>Family: Lepisosteidae (gar fish)</b>				
<i>Lepisosteus platyrhincus</i>	Florida gar			
<b>Family: Cyprinidae (minnows)</b>				
<i>Notemigonus crysoleucas</i>	golden shiner			
<b>Family: Ictaluridae (North American freshwater catfishes)</b>				
<i>Ameiurus nebulosus</i>	brown bullhead			
<b>Family: Clariidae (labyrinth catfishes)</b>				
<i>Clarias batrachus</i>	walking catfish *			
<b>Family: Callichthyidae (callichthyid armored catfishes)</b>				
<i>Hoplosternum littorale</i>	brown hoplo *			
<b>Family: Loricariidae (suckermouth armored catfishes)</b>				
<i>Hypostomus spp.</i>	suckermouth catfish*			
<b>Family: Fundulidae (topminnows and killifishes)</b>				
<i>Fundulus chrysotus</i>	golden topminnow			
<i>Lucania goodei</i>	bluefin killifish			
<b>Family: Cyprinodontidae (pupfishes)</b>				
<i>Jordanella floridae</i>	American flagfish			
<b>Family: Poeciliidae (livebearers)</b>				
<i>Gambusia spp.</i>	mosquitofish			
<i>Heterandria formosa</i>	least killifish, dwarf livebearer			
<b>Family: Centrarchidae (sunfishes and basses)</b>				
<i>Lepomis gulosus</i>	warmouth			
<i>Lepomis macrochirus</i>	bluegill			
<i>Lepomis marginatus</i>	dollar sunfish			

## Appendix C: Wildlife Species List for Wild Turkey Strand Preserve

Scientific Name	Common Name	Designated Status		
		FWC	FWS	FNAI
<b>Family: Cichlidae (cichlids)</b>				
<i>Cichlasoma urophthalmus</i>	Mayan cichlid *			
<i>Oreochromis aureus</i>	blue tilapia *			
<b>INSECTS</b>				
<b>Family: Libellulidae (skimmer dragonflies)</b>				
<i>Celithemis eponina</i>	Halloween pennants			
<i>Crocothemis servilia</i>	scarlet skimmer			
<i>Tramea carolina</i>	Carolina saddlebags			
<b>Family: Acrididae (grasshoppers)</b>				
<i>Romalea microptera</i>	eastern lubber grasshopper			
<b>Family: Psyllidae (psyllids)</b>				
<i>Boreioglycaspis melaleucae</i>	melaleuca psyllid *			
<b>Family: Bibionidae (march flies)</b>				
<i>Plecia nearctica</i>	love bug			
<b>Family: Silphidae (carrion beetles)</b>				
<i>Necrophila americana</i>	American carrion beetle			
<b>Family: Curculionidae (true weevils)</b>				
<i>Oxyops vitiosa</i>	melaleuca weevil *			
<b>Family: Nymphalidae (brushfoots)</b>				
<b>Subfamily: Heliconiinae (longwings)</b>				
<i>Agraulis vanillae</i>	gulf fritillary			
<i>Heliconius charitonius</i>	zebra			
<b>Subfamily: Nymphalinae (brushfoots)</b>				
<i>Junonia coenia</i>	common buckeye			
<i>Anartia jatrophae</i>	white peacock			
<b>Subfamily: Limenitidinae (admirals)</b>				
<i>Limenitis archippus</i>	viceroys			
<b>Family: Glycyphagidae (mites)</b>				
<i>Marsupialichus brasiliensis</i>	opposum den mite			
<b>Family: Myobiidae (mites)</b>				
<i>Archemyobia inexpectata</i>	opossum fur mite			
<b>Family: Laelapidae (mites)</b>				
<i>Pseudoparasitus stigmaticus</i>	predator mite			
<b>Family: Atopomelidae (fur mites)</b>				
<i>Didelphilicus serrifer</i>	marsupial fur mite			
<b>Family: Trichodectidae (lice)</b>				
<i>Neotrichodectes osborni</i>	spotted skunk chewing lice			
<i>Stachiella octomaculatus</i>	raccoon chewing lice			
<b>Family: Pulicida (fleas)</b>				
<i>Ctenocephalides felis</i>	cat flea			
<b>Family: Rhopalopsyllidae (marsupial and rodent fleas)</b>				
<i>Polygenis gwyni</i>	cotton rat flea *			
<b>Family: Macronyssidae (mites)</b>				
<i>Ornithonyssus wernecki</i>	marsupial mite			
<b>Family: Ixodidae (hard ticks)</b>				
<i>Amblyomma auricularium</i>	armadillo tick			
<i>Dermacentor variabilis</i>	American dog tick			
<i>Ixodes cookei</i>	eastern small mammal tick			
<i>Ixodes scapularis</i>	black-legged tick			
<b>CRUSTACEANS</b>				
<b>Family: Palaemonidae (freshwater shrimp)</b>				
<i>Palaemonetes vulgaris</i>	grass shrimp			
<b>Family: Cambaridae (crayfish)</b>				
<i>Cambaridae camburus</i>	crayfish			

## Appendix C: Wildlife Species List for Wild Turkey Strand Preserve

Scientific Name	Common Name	Designated Status		
		FWC	FWS	FNAI
<b>GASTROPODS</b>				
<i>Family: Ampullariidae (apple snails)</i>				
<i>Pomaceae insularum</i>	island apple snail *			
<i>Pomaceae paludosa</i>	Florida apple snail			

**KEY:**

**FWC = Florida Fish & Wildlife Conservation Commission**

**FWS = U.S. Fish & Wildlife Service**

E - Endangered

T - Threatened

SSC - Species of Special Concern

**FNAI = Florida Natural Areas Inventory**

G - Global rarity of the species

S - State rarity of the species

T - Subspecies of special population

1 - Critically imperiled

2 - Imperiled

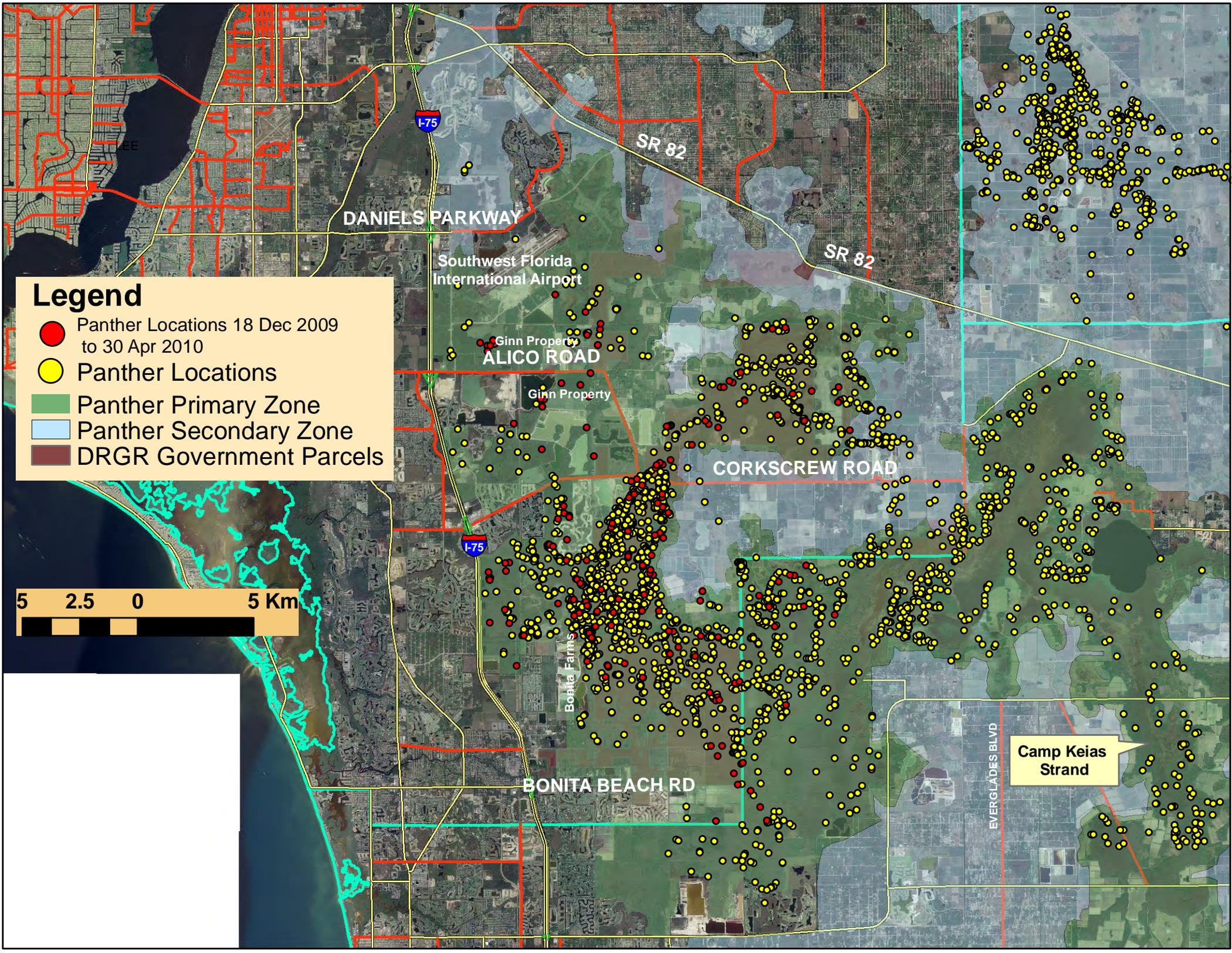
3 - Rare, restricted or otherwise vulnerable to extinction

4 - Apparently secure

5 - Demonstrably secure

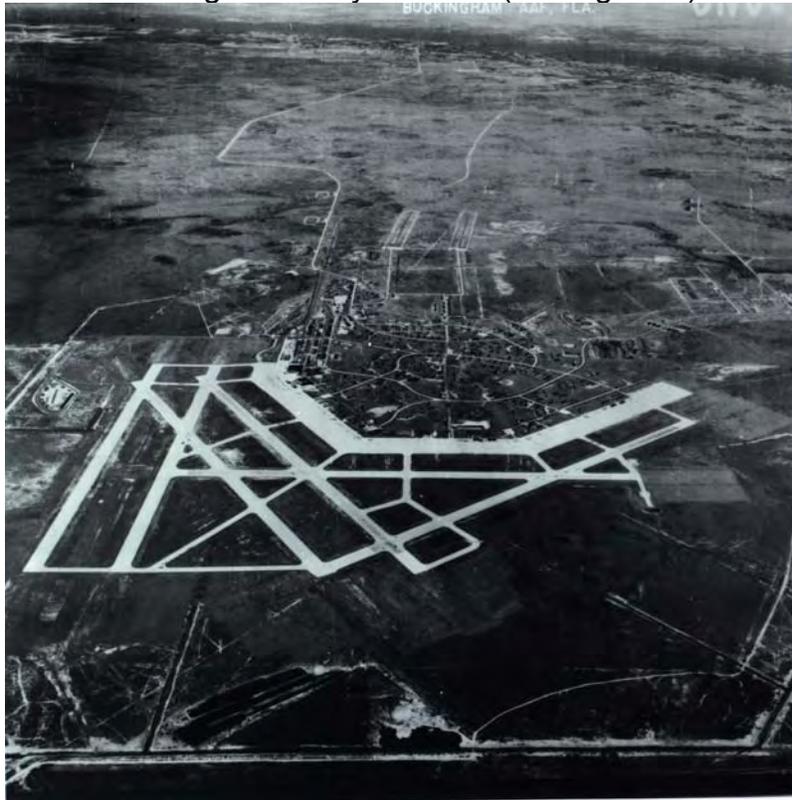
**\* = Non-native**

## Appendix D -- Florida Panther Telemetry Data in DRGR Map



## Appendix E -- Local Historical WWII Military Photographs

Buckingham Army Air Field (looking west)

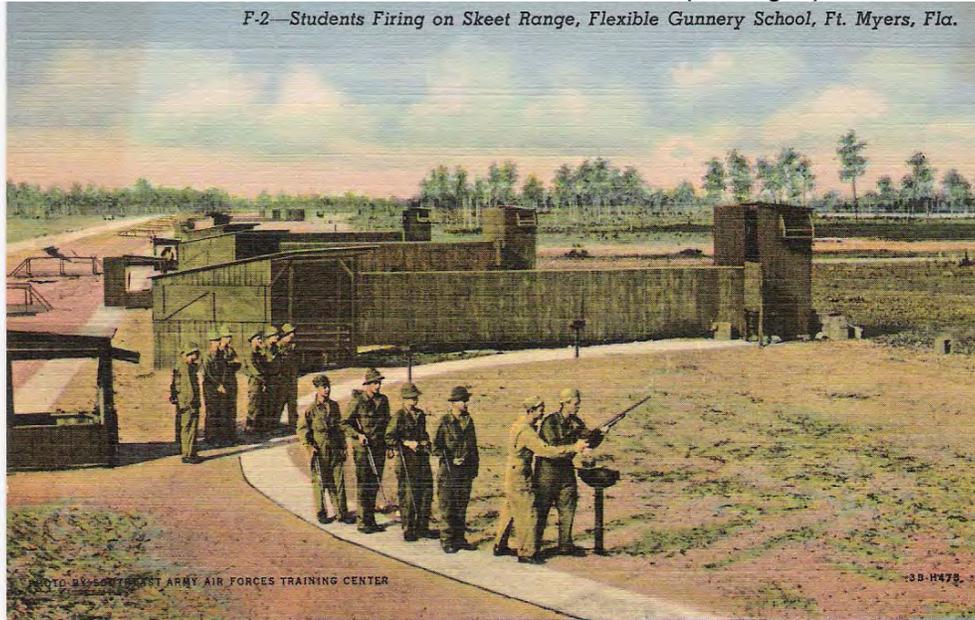


The Flexible Gunnery School was said to be one of the largest gunnery schools in the country and all types of aerial gunnery were taught there, using the most modern methods of instruction.

B-24 BAAF, 1944



An illustration of the military skeet range and objects that once existed at these off-site facilities. Most are still visible from 2002 Aerial photographs.



Military personnel training with a rifle, 30 & 50 caliber machine guns, and a make shift aircraft turret.



Women, from all over the country, served under the Women's Army Corps (WACS) and supported various base operation activities at BAAF during WWII.



All photographs are courtesy of the Southwest Florida Museum of History.

The above photographs are connected to locally stationed WWII military personnel and the training operations that occurred at the Buckingham Army Air Field (currently the Lee County Mosquito/Hyacinth Control District) and off-site target practice ranges. The recent photograph below is one of an existing WWII munitions building at the northern end of the Preserve being hidden by Brazilian pepper shrubs.



Appendix F -- Phase 1 Cultural Resource Survey by Suncoast Archeological  
Consultants, Inc.

**Phase 1 Cultural Resource Survey of the  
Wild Turkey Strand Preserve  
Trailhead and Trail System,  
Lee County, Florida**



**Phase 1 Cultural Resource Survey for the  
Wild Turkey Strand Preserve  
Trailhead and Trail System,  
Lee County, Florida**

**Prepared for:  
Lee County Parks & Recreation  
Fort Myers, Florida**

**Prepared by:  
Matthew P. White, M.A., RPA**

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**May 2009**

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## **INTRODUCTION**

Suncoast Archaeological Consultants, Inc. completed a Phase 1 archaeological and historical survey for the proposed Wild Turkey Preserve trailhead and trail system located to the south of SR 82 in the vicinity of its intersection with Rod & Gun Club Road (Figure 1). This project was conducted for Lee County Parks and Recreation's Conservation 20/20 program with the purpose of assessing the impact of trail and trailhead construction and use on and in the vicinity of previously recorded site 8LL2411 and any possible unrecorded cultural resources. As part of this project, site 8LL2411, as well as any additional archaeological or historical resources identified within the project area, will be assessed as to their eligibility for listing on the National Register of Historic Places (NRHP). Suggestions will also be made regarding appropriate measures for preservation of historic cultural resources within the project area, while incorporating public access to these sites.

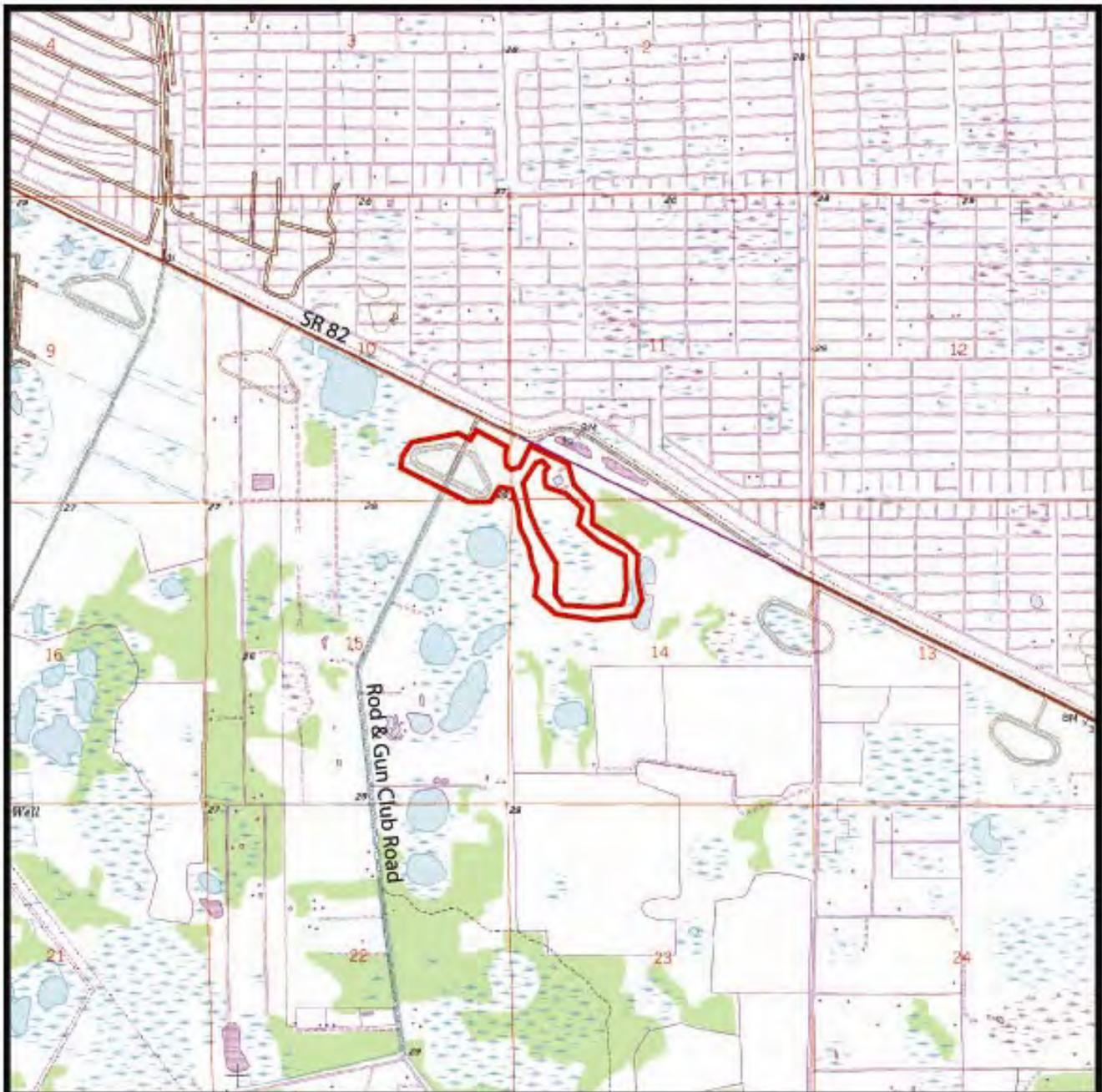
The Principal Investigator for this project is listed on the Register of Professional Archaeologists (RPA) and meets the qualifications put forth within the Secretary of the Interior's "Standards and Guidelines for Archaeological and Historic Preservation (36 CFR Part 61). This survey was conducted in accordance with the provisions of Chapter 267 and 373, Florida Statutes, Florida's Coastal Management Program and Chapter 1A-46, *Florida Administrative Code*.

## **PROJECT AREA DESCRIPTION**

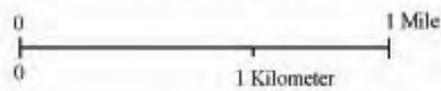
The project area is located to the south of SR 82 within portions of Sections 10, 11, 14 and 15 of Township 45 South, Range 26 East. The study area contains approximately 80 acres which includes the proposed trailhead location and the proposed trail system.

One of the more distinctive features within the project area is the location of a large, somewhat oval shaped, earthen embankment. This embankment is part of previously recorded site 8LL2411, also known as the Gunnery Range #5 site, which functioned as a World War II training facility associated with the Buckingham Army Airfield Flexible Gunnery School. This site will be discussed in detail later in this report.

The proposed trailhead is located to the northeast of the embankment feature and the proposed trail system includes an approximately 1.6 mile corridor that forms a loop to the east and southeast of the earthwork. The summit of the embankment itself may be utilized as a possible pedestrian and equestrian trail; therefore, the entire earthen embankment was included in the project area.



**Figure 1.**  
**Project Location on a 1987 USGS Quadrangle Map**



 Project Boundary

A large portion of the project area evidenced a moderate amount of upper horizon subsurface disturbance resulting from the recent removal of melaleuca trees (Figure 2). Melaleuca is an invasive plant species in South Florida; prior to removal, large forests of melaleuca grew within and surrounding the project area.

Rod and Gun Club Road, which intersects SR 82 directly north of the project area runs south through the western portion of the subject property, bisecting the 8LL2411 earthen embankment. The land surrounding the project area to the south, west and east consists primarily of either pastureland or undeveloped flatwoods. To the north (north of SR 82) is relatively dense residential development associated with the planned community of Lehigh Acres.

## Environment

The project area is located along the western end of a physiographic providence known as the Immokalee Rise. This providence consists of a low sandy rise that separates the lowlands of the Caloosahatchee Valley to the north and the Big Cypress and Corkscrew Swamps to the south. While the providence has a maximum elevation of nearly 40 feet above mean sea level (amsl), its topography is relatively flat. Prior to modern land-clearing the terrain was dominated by slash pine flatwoods and dry prairies which were interspersed by numerous wet prairies, solution ponds and cypress sloughs. Drainage within the providence was generally slow resulting from its near featureless landscape, with small sloughs and underground percolation moving runoff water toward the lower terrain of neighboring providences to the north, south and east.



Figure 2. Melaleuca removal within the project area.

Prior to the more recent dominance of invasive species the environment within the project area was likely typical of that found within much of the Immokalee Rise providence. The northern portion of the project area and much of the proposed loop trail were likely located within a slash pine flatwoods environment. The trail follows a ring of flatwoods that surrounds a small wet prairie. Soils within the flatwood portion of the project area consist of poorly drained Oldsmar, Valkaria, Immokalee and Malabar fine sands (USDA 1984). Slash pine flatwoods are commonly dominated by slash pine, dense saw palmetto, staggerbush, gallberry, ground oak and wire grass. This environment is maintained by frequent fire episodes, which prevents the growth and eventual dominance of hardwood tree species.

The wet prairie within the center of the trail loop likely overflowed to the south, cutting through the southern segment of the proposed trail. Within this portion of the project area soils are listed as very poorly drained, consisting of Valkaria and Malabar depressional sands (USDA 1984). Wet Prairies are typically characterized by treeless expanses supporting a dense growth of water tolerant grass and rushes, such as beaksedges, spikerush, starrush whitetop and muhlygrass. This environment is commonly covered in a thin (1 to 4 inches) layer of standing water for between 3 to 6 months of the year.

Directly west of the proposed trail loop and south of the 8LL2411 earthworks is a moderate size solution hole that is bounded by bald cypress. Solution holes are found throughout this region. They are formed in relatively low areas where hundreds of years of water collection have slowly eroded the shallow limestone horizon that covers much of eastern Lee County. This erosion forms a bowl-shaped depression that fills with water from subsurface percolation and from run-off . Vegetation surrounding the solution holes consists of water tolerant species such as bald cypress, red maple, water hickory, red bay and an assortment of succulent wetland plants.

More recently, much of the natural vegetation of the project area and surrounding region has been replaced by invasive non-native species such as meleleauca and Brazilian pepper. Not long before the field visit for this project, a large meleleauca forest which dominated the northern and eastern portions of the proposed loop trail were cut back. Brazilian pepper growth was observed along disturbed soils within the northern half of the subject property and adjacent to the wetland prairie in the southern segment of the proposed trail loop.

As with much of the region, elevations across the property are relatively flat, with natural variations generally between 1 and 3 feet between the low wet prairie and the more elevated slash pine flatwoods. Generally these elevations ranged between 27 and 30 feet amsl.

## **REGIONAL PREHISTORY AND HISTORY**

### **Prehistory**

The project area is located within a prehistoric culture area known as the Caloosahatchee region (Milanich 1994; Milanich and Fairbanks 1980). The Caloosahatchee region is defined through a distinct post 500 B.C. ceramic tradition as compared to neighboring regions. This ceramic tradition has primarily been recorded within sites along the coast, near the mouth of the Caloosahatchee River in San Carlos Bay, Pine Island Sound, and Estero Bay. Inland portions of this region have experienced more cultural mixing with neighboring culture area traditions. These include influences from cultural developments within the Circum-Glades and Okeechobee Basin culture areas.

It should be noted before proceeding to a brief summary of all three culture areas, that while these regions have been recently defined as distinct in regard to ceramic traditions and thus inferences of separate cultural trajectories have been made, it is becoming increasingly clear that populations within all three culture areas were intricately connected within a complex economic and possible political system throughout much of prehistory. Other similarities may have existed including social frameworks and belief systems. Despite their differences in settlement patterns due to environmental adaptations and slight differences in material culture, all three groups together are distinct from central and north Florida native populations, appearing more similar to each other.

A brief summary of the prehistory in the region is presented below, including a look at native populations prior to 500 B.C. within the Paleoindian and Archaic periods.

#### **Paleoindian Period (12000 to 8000 B.C.)**

Evidence of human occupation of the Florida peninsula began during the Paleoindian period around 10,000 to 12,000 B.C. Lower sea levels due to expansive polar ice caps would have produced a much dryer environment than is seen today across much of the region (Milliman and Emery 1968). The Everglades and Big Cypress areas would have been a relatively dry inland savannah landscape, with the Pleistocene shoreline being located nearly 100 miles out from the modern day Gulf Coast shoreline.

There is evidence that now extinct megafauna once roamed the state. While it is believed that the earliest inhabitants of Florida likely hunted such extinct beasts, there is yet any evidence that such activities occurred south of Lake Okeechobee. In fact, not one confirmed Paleoindian site has been discovered in the region, with the closest of such being discovered in Sarasota and St. Lucie Counties.

The lack of archaeological evidence for Paleoindian occupation in south Florida may be a result of rising sea levels since Pleistocene Era. During this period, the majority of the freshwater sources were likely located within lower terrain closer to the historic

shoreline. It is possible that potential Paleoindian sites in south Florida have been flooded by these rising water levels.

### **Archaic Period (8,000 to 500 B.C.)**

The end of the Paleoindian period is marked by rather elevated environmental and climatic changes, with warmer seasons and less arid conditions a wider variety of environmental habitats began to emerge. The megafauna of the previous period began to move closer to extinction and human populations reacted to these changes by shifting their subsistence strategies (Milanich 1994). Early Archaic people began to exploit more diverse resources including small game, marine and freshwater resources. People began to live in larger groups, to use a greater diversity of tools, and to inhabit more of peninsular Florida.

A staple of the Archaic tool-kit, and the most common find at Archaic period sites throughout much of the Florida peninsula is the chert biface and chert biface production debitage. However, in south Florida only a few chert tools have been encountered. This is likely due to the absence of natural sources of this raw material in the region. The few examples of human modified chert were found as completed tools with no associated production material. It is therefore, surmised that such objects were not produced in south Florida but instead were brought into the region from the north. Instead, the south Florida Archaic utilized marine shell and bone materials for many of the functions their contemporaries to the north used chert (Carr 1981).

As with the rest of the state, the Archaic period in south Florida was characterized by an increased reliance on shellfish and marine resources on the coast and smaller game such as turtles, snakes, and rabbits in the interior. The discovery of fish vertebra and bone fish hooks at both coastal and interior wetland sites indicates the heavy reliance on the exploitation of fish resources.

Some of the most noted Archaic sites in this region come from the western portion of south Florida. These include the West Bay site in Collier County and the Brighton Complex in eastern Glades County. Numerous Archaic period sites have also been discovered within Brevard County.

During the latter portion of the Archaic period ceramic technology was devised and the production of fiber tempered ceramic vessels became a fairly frequent activity for populations across peninsular Florida. There are examples of early fiber tempered ceramics in south Florida, but thus far such evidence is sparse with the majority of such finds coming from Marco Island located along coastal Collier County. The only evidence of fiber tempered ceramics from the eastern portion of the south Florida region have been found at the Honey Hill and the 202<sup>nd</sup> Street sites in Dade County and the Markham Park site in Broward County (Carr 2002).

## **Post 500 B.C. South Florida Prehistory (500 B.C. to A.D. 1750)**

### *Caloosahatchee Culture Area (Coastal Calusa)*

The Caloosahatchee River bisects this region as it extends from just south of where the Peace River empties into Charlotte Harbor south to the Naples area and east up the river valley. The vast majority of information regarding the Caloosahatchee region comes from excavations along the coast. Such excavations have been centered on the extensive shell middens and shell mounds that are located on most every coastal and barrier island (Marquardt 1992). Spanish explorers to this region recorded a large chiefdom society with a capital believed to be located at Mound Key in Estero Bay.

This coastal environment is one of the richest inland marine environments in Florida with numerous oyster beds and plentiful marine and waterfowl life. Marine resource extraction and coastal shell midden sites also extend up the Caloosahatchee River into its tidally influenced lower portion to approximately Beautiful Island, near the present day crossing of Interstate 75.

Caloosahatchee ceramics consist of mainly sand-tempered plain and laminated sand-tempered wares. By approximately A.D. 700 there is a dramatic increase in the occurrence of Belle Glade Plain pottery (Widmer 1988). During later periods, a few hundred years prior to European contact, St. Johns Plain and St. Johns Check-Stamped ceramics make their first appearance in the area. St. John associated ceramics appear in numerous assemblages during late prehistory, not only across south Florida but throughout the Florida peninsula. Safety Harbor ceramics also appear within coastal Caloosahatchee region sites at this time.

Generally, the Caloosahatchee culture area is defined through a human coastal adaptation. It is likely, that with additional research the geographic definition of the Caloosahatchee region will be reduced to the coast, with middle and upper portions of the Caloosahatchee River being placed within the Okeechobee Basin culture area, associated with the Belle Glade tradition. More to this point and a discussion of the Belle Glade culture is presented below.

### *Glades Culture Area (Circum-Glades Tradition)*

The Glades region is relatively large and environmentally diverse, including most of south Florida from the Ten Thousand Islands to the coast of Palm Beach, south to Homestead and the Florida Bay and north to sawgrass regions of Hendry and Palm Beach Counties. This area includes the Everglades, Big Cypress, northern Keys, and Atlantic Coastal Ridge. Populations within the Glades region are considered to have continued many of the lifeways common during the Archaic period, based on similarities in their artifact assemblages and settlement patterns (Goggin 1949).

Glades populations commonly settled along the coastline, adjacent to coastal marshes and creek and river mouths. Such sites consist of large shell middens with a variety of marine

life remains including bivalves such as oyster, whelk, and scallop shells also inshore fish and marine turtle species; all of which were important parts of the coastal Glades subsistence base (Milanich 1994). The abundance of possible subsistence resources between the marine and inshore ecosystems would have provided the means to support a rather large population base along these coastal locations.

Settlements in the Glades region have also been identified within interior locations in the Everglades and Big Cypress areas. Numerous sites have been identified on small, slightly elevated tree islands within these regions (Milanich 1994). Tree islands represent one of the few year round dry areas within this vast wet ecosystem. Archaeologically, such sites are typically identified through dense deposits of freshwater turtle, snake, and fish remains. The contents of these middens demonstrate a heavy reliance on aquatic resources and a successful adaptation to wetland environments. Because of the general inundated nature of the entire Glades region, canoe travel would have been an extremely important mode of transportation.

Ceramics associated with early populations within the Glades region typically consists of sand-tempered plain wares with minor amounts of Sanibel Incised, Cane Patch Incised, Fort Drum Incised, and Fort Drum Punctated. Through time more none local ceramics appear in the region including St. Johns Check-Stamped and Safety Harbor ceramics. However, generally, the sand-tempered plain wares remain the most dominate type throughout the nearly 2000 years of the Glades Tradition.

#### *Okeechobee Basin Culture Area (Belle Glade Tradition)*

The Okeechobee Basin culture area includes the land within the Kissimmee River drainage and the region surrounding Lake Okeechobee. This includes the Kissimmee Valley, Lake Istokpoga region, Fisheating Creek drainage area, and lake side areas in Hendry, Palm Beach, and St. Lucie Counties. Belle Glade tradition is marked by the appearance of Belle Glade Plain. Like Glades Plain, Belle Glade Plain is a sand-tempered ceramic, however, it is distinguished through numerous horizontal scrape marks on its exterior surface created by the smoothing of the nearly dry paste which drags exposed sand temper particles across the exterior.

Belle Glade sites are most commonly found along major river or creek courses or within more elevated (better soil drainage) areas adjacent to major lakes such as Lake Okeechobee, Lake Kissimmee, or Lake Istokpoga. None ceramic material found at these sites are very similar to that found within interior Glades tradition sites to the south, including dense freshwater fish and turtle middens.

The region is famous for the unique earthworks associated with Belle Glade occupation. Such earthworks include ponds, canals, linear and annular embankments, and raised geometric shaped mounds (Milanich 1994). Some of the larger sites associated with this tradition are the Fort Center site located along Fisheating Creek in eastern Glades County, the Ortona site to the north of the Caloosahatchee River, and Belle Glade site along the southeastern shore of Lake Okeechobee.

Many researchers have identified the Belle Glade tradition as an inland manifestation of the Caloosahatchee culture area and the coastal Calusa that extended along the upper portion of the Caloosahatchee River and up the Kissimmee Valley. Similarities in the two regions cultural chronology and the appearance of Belle Glade ceramics within later (post A.D. 700) coastal Caloosahatchee sites suggest these close ties (Widmer 1988).

## **History**

The first official European visit to Florida was by Ponce de Leon in 1513. His arrival heralded in numerous other Spanish explorers all with an eye for wealth as opposed to settlement. Spain desired to control the harbors off the mouth of the Caloosahatchee River and within the Charlotte Harbor region. However, a strong native population in this coastal providence was already well established. In 1521 Ponce de Leon returned to Florida and attempted to establish a colony on Pine Island, but faced stiff native resistance and was fatally wounded in the attempt. The colony failed as a result. During the late 1560s Hernando Menendez entered the Charlotte Harbor region and met with the Calusa Indians under Chief Carlos. He established a garrison at San Anton on Mound Key south of the Caloosahatchee River mouth. However, disturbances to the shaky alliance between Carlos and the Spanish erupted and the garrison was disbanded. After Ponce de Leon and Hernando Menendez there is no evidence that any Spanish or other European expeditions were ever led into the Charlotte Harbor region with ideas of the establishment of military forts or civilian settlements during the 17<sup>th</sup> century.

During the 18<sup>th</sup> century Cuban fishermen made their way to the coastal area and established commercial fishing outposts. These outposts employed native populations. Mullet, grouper, whelks, and a variety of other marine resources were shipped to Cuban markets from Charlotte Harbor.

The Seminoles prospered in the central and north Florida interiors raising cattle and growing their traditional crops of beans, squash, and tobacco (Fairbanks 1973). The Spanish and Seminole generally maintained good relations, mainly through separation. When the British acquired Florida in 1763 a complex trade relationship was established between the Seminole and the new European governance. The Seminole provided animal pelts for shipment back to Europe and produce, livestock and game for the subsistence of British settlements along the coasts. The British in turn provided the Seminole with non-local goods such as metal and iron pots, hatchets, blankets, guns, and a variety of other common European articles. At this time most of the Florida Seminole population was residing from north/central Florida north, with southwest Florida being used as seasonal hunting grounds.

After the American Revolutionary War in 1783, the Spanish regained control of Florida. They continued to permit British trading agencies to operate in the region and encouraged British settlers to remain. However, the second Spanish claim over Florida was weak, as political and financial troubles in Europe left little interest or ability in aiding the small Spanish settlements.

During the War of 1812, the British were accused of fighting a proxy engagement against the newly established American government via Creek Indians in Alabama and Georgia. The arms, ammunition, and encouragement for these Creek assaults were believed to be supplied by British trading companies in Florida. Andrew Jackson, the general of southern military operations in America, led numerous raids into the north Florida panhandle and peninsula, destroying British trading posts and Seminole and Creek settlements and driving the native populations further south into the north/central portion of the Florida peninsula.

Due to Spain's lack of control over Florida's borders and their preoccupation with combating the Napoleonic War in Europe, they ceded Florida to the United States in 1819 with the official turnover occurring in 1821. With the acquisition of Florida, American southern planters flooded into the northern portion of the state to take advantage of free land claims and unspoiled farmlands. With this new influx of white settlers into the interior regions of Florida hostilities between the new arrivals and the Seminole began to occur. The Americans had no interest in trading with the Seminole as the British did, but instead simply wanted the best lands, which until then were occupied by the native populations.

As hostilities grew, the United States Army was deployed to protect American citizens and to hunt down aggressive Seminole warriors. Over time, the Seminole populations were pushed further south into their former hunting ground in the central and southern Florida. In 1823 a treaty (the Treaty of Moultrie Creek) was signed which set up a reservation land south of Ocala, which Seminoles could occupy unhindered by white encroachment. However, many white settlers saw this reservation boundary as soft and moved into Seminole lands. Equally, poor agricultural lands within the reservation hindered the subsistence capabilities of the natives and starvation was rampant. Because of these circumstances, tensions again began to mount. Aggressions by the Seminoles and counter actions by the American Military began what was to be known as the Second Seminole War. The war lasted between 1835 and 1842, with the military constructing numerous forts and roads across the peninsula. It was during this period that Col. Persifer F. Smith led a military regiment southwest from Fort Basinger (located on the Kissimmee River) to the mouth of the Caloosahatchee River. Col. Smith established three small fortifications in the region that were used as bases for raids into the Big Cypress and Everglades to capture or kill Seminoles.

At the close of the war the U.S. military action had removed many Seminole to reservation lands in what was to become Oklahoma or had pushed the remaining populations deep into the Big Cypress and Everglades regions of south Florida.

In an attempt to establish more American settlement within peninsular Florida, the Armed Occupation Act of 1842 enabled any male 18 or older to claim title to 160 acres of land by erecting a habitable building, cultivating at least five acres of land, and living on it for five years (Covington 1961). This initiative had more of an effect within north and central Florida as opposed to the southwestern coast. The threat of native hostility

was still high in this region. Non-native settlements were generally composed of isolated Cuban fishing hamlets scattered along the numerous islands within Charlotte Harbor and its estuaries. There are no recorded non-military American settlements within interior southwest Florida at this time.

During the 1850s an effort was made to survey lands within the Big Cypress and Everglades. Because isolated pockets of Seminole populations were still present in the region these survey crews were accompanied by US military. In 1855, a survey crew and military escort encountered a small farm owned by one of the paramount Seminole elders of the period, Billy Bowlegs. The American expedition maliciously destroyed much of Bowlegs' banana crop. In retaliation Bowlegs and forty Seminole warriors attacked a small US military patrol lead by First Lieutenant George Hartsuff. Other Seminole also responded, including isolated attacks along the Caloosahatchee River and east along the Miami River. Attacks even occurred as far north as the Sarasota and Tampa region. The US Military quickly organized to counter these aggressions and placed bounties on all male Seminoles. Bounty hunters and militia men flooded the southwest Florida region searching the swamps and hammocks for Seminole villages. By March 15, 1858 Billy Bowlegs band and numerous other Seminole groups surrendered to the United States and agreed to be relocated to western reservations.

With the easing of Seminole tensions the cattle industry in west/central and southwestern Florida was able to flourish. Cattle were herded up twice a year and run to Punta Rassa, located just south of the Caloosahatchee River mouth. There they were loaded on schooners and shipped to Cuba. In 1860, one of the largest cattle barons of Florida, Jacob Summerlin, partnered with cattle shipper James McKay to build a cattle loading dock to the north of the Caloosahatchee, in the vicinity of Key Point. The following year Florida seceded from the United States following South Carolina and Mississippi, resulting in the Civil War.

During the war few actions ever came to the interior regions of central and south Florida. However, the economy of these regions was severely hindered as the Federal Navy imposed blockades of the Florida coast including the mouth of Boca Grande Pass and the southern entrance to San Carlos Bay. These blockades hindered cattle shipments. Summerlin and McKay moved their docking operations from Key Point to Charlotte Harbor Town, located on the north side of the Peace River mouth well out of sight of the federal boats. However, Cuba was not the only market for cattle during this time. The Confederate Army was writing contracts paying eight dollars a head for cattle delivered to north/central Florida. Between supplying the Confederate Army and the rising beef prices in Cuba, the Civil War period sustained a healthy cattle industry in southwestern Florida.

Even with the vibrancy of the cattle industry, very few settlers made the Lee County region their home. In fact, it was not until the 1880s that the region's population began to grow significantly. During this period the state of Florida was facing financial crisis. As a result the state began shopping around for buyers to purchase large tracts of state owned land. One such buyer was Hamilton Disston, a wealthy industrialist from Pennsylvania.

In 1881 Disston purchased 4 million acres in south Florida for 25 cents an acre and entered into a land reclamation contract which provided him ownership of half of all the swampland outside of his purchase that he drained and made arable. Much of the land within present day Lee County was part of the Disston contract. The initial dredging of the Caloosahatchee River began as a Disston operation.

Disston formed the Disston Land Company and began selling off much of his Florida holdings by the middle part of the 1880s. Many of these buyers were northern land speculators who purchased large amount of land in the Lee County region and began an aggressive advertising campaign in northern cities promoting the region as a paradise and began publicizing the healing effects of its warm climate. Such promotions were highly effective, even drawing Henry Ford and Thomas Edison to construct winter retreats in the Fort Myers area.

In 1885, Fort Myers was officially incorporated and recorded a population of 349, most of which, however, were likely seasonal residents. In 1887, Lee County was formed out of a portion of Monroe County and named for the Civil War general Robert E. Lee. While many new inhabitants moved to the growing Fort Myers area, the county as a whole remained relatively sparsely populated. The primary economic driver consisted of agriculture, particularly citrus and cattle.

Until the early 1920s the only efficient way to get to Lee County or Fort Myers was via boat (Figure 3), equally, this was the only way to transport agricultural goods produced in the region to northern markets. A rail line was constructed to Punta Gorda in 1886, however, roads between this Peace River town and Fort Myers were poor. This all changed in 1926 when the Seaboard Air Line extended a line from Tampa to Fort Myers and the following year the Atlantic Coast Line extended from its termination in Punta Gorda to the Caloosahatchee region. With the railroad established farmers were able to quickly and less expensively get their products to northern markets and individuals curious about the “paradise” of Fort Myers could more easily visit. Thus, began the tourist industry in Lee County.

While the railroad was important for providing easy access to the region, it paled in comparison when compared to the construction of the Tamiami Trail in 1928. The road is currently known as US 41. This roadway connected Tampa with Miami via Fort Myers. With the growing

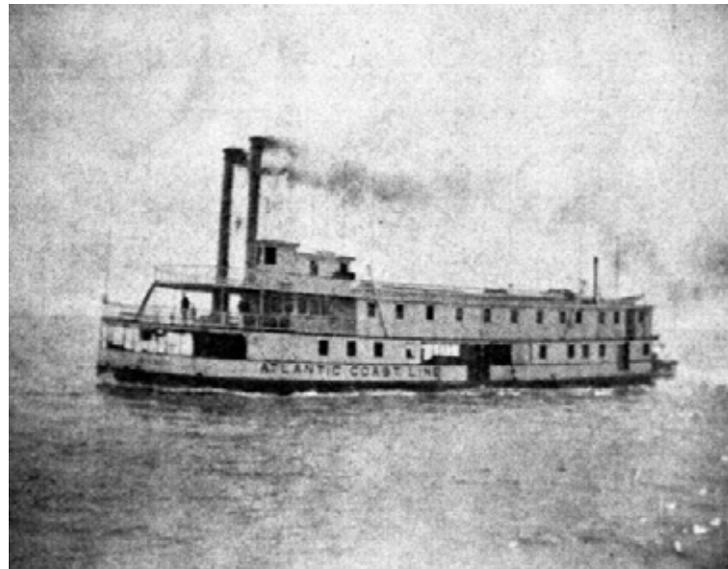


Figure 3. ACL steamship in San Carlos Bay, 1906

popularity of the car in the first part of the 20<sup>th</sup> century families were able to visit Lee County for as little as a long weekend. It was during this time that construction began on hotels along Fort Myers Beach.

During the first part of the 20<sup>th</sup> century much of the development within the Fort Myers area oriented toward the growing tourist industry and the even larger phenomena of the seasonal resident. This all changed at the beginning of the 1940s with the outbreak of World War II. The federal government, with aid and assistance from local and state authorities, acquired the small Fort Myers airport (Paige Field) and large tracks of land within the interior of Lee County which became Buckingham Army Air Field (Figure 4). During the war more than 70,000 servicemen and their families were stationed in the Fort Myers area. With this influx of population came a rapid expansion of city and county infrastructure and commerce. After the war, many of the servicemen stationed in the region remained, making Lee County their home.

Throughout the second half of the 20<sup>th</sup> century Lee County has grown rapidly with much of its development geared toward seasonal residents and tourism. The recreational fishing industry within Charlotte Harbor and Pine Island Sound has also played a key role in the region's tourism appeal.



Figure 4. Buckingham Army Air Field, aerial from 1945.

By the end of the 20<sup>th</sup> century there were just under a half million residents of Lee County. Throughout much of the past century populations in the county were concentrated within the Fort Myers area with areas away from the Caloosahatchee River being dominated by agriculture and undrained wetlands. However, within the last 20 years residential development has rapidly increased in these outlying locations, with one of the largest examples being Lehigh Acres located within the eastern portion of the county. This rapid growth within Lee County has been interrupted in the past year as a result of a depressed housing market and a global economic recession, however, it is likely that the future of the region is still bright for the same reasons that spurred its initial growth.

## **History of the Buckingham Flexible Gunnery Training School**

In the spring of 1942 the City of Fort Myers and Lee County allocated public lands and acquired private lands for lease to the Federal Government for use as a wartime base. Initially the offering consisted of 6,500 acres, which was leased for 1 dollar a year. At the time, the lease acreage consisted primarily of pastureland and pine flatwoods interspersed with wetlands. While on paper the lease agreement appears to be a windfall for the Federal Government, the resulting economic benefits of the base to Fort Myers (then a town of 10,000) and Lee County were immeasurable (Grismer 1982).

In early May of 1942 a temporary base headquarters office was established in a storefront in downtown Fort Myers, base construction began toward the end of the month. The first Base Commander was Colonel Delmar T. Spivey, a former Commandant of the Air War College at the Maxwell Air Force Base in Alabama (Thole 1996). The new base was named the Buckingham Army Air Field. Subsequent negotiations with local and state officials expanded the base lease acreage and established three auxiliary sites, including crash boat stations at Fort Myers and Marco Island and a submarine base in Naples.

Col. Spivey was issued 10 million dollars to build a flexible gunnery training school as part of the Buckingham base. The gunnery school was to be used to train enlisted personnel to man the 30 and 50 caliber gun turrets of the B-24 and B-17 bombers. During the early stages of World War II U.S. fighter planes were not fitted with large enough fuel tanks to provide the escort range the bombers required to enter deep into Europe on bombing runs; therefore, the bombers only defense against enemy fighters were their gun turrets located within the nose, tail, belly, top, and sides of the planes. At the start of the war the military had only a handful of individuals trained in the operation of electric turrets and there was no established training schedule or combat curriculum for such operations. Therefore, each base was given latitude to make their own training regimen and to develop a curriculum for flexible gunnery tactics.

Base construction was a hurried affair, with just under 3,000 servicemen and private contractors working 10 hour days 7 days a week. It was never the intention of the military to develop Buckingham Army Air Field into a permanent base, but instead, its use-life was only planned for the length of the war (Freeman 2006). Therefore, many of the buildings and other construction projects associated with the base were not built to stand the test of time. Many structures were simple wood frames covered by tarpaper. Formal base activation was on July 5, 1942, although base construction projects continued until November of that year. The flexible gunnery training began on September 5, 1942 with the first class completing their training in mid-October (Thole 1996).

Col. Spivey requested transfers for some of the few trained aerial gunnery servicemen who at the time were based at Tyndall Field in Panama City, Florida. This group became Spivey's first group of flexible gunnery instructors. Together, Spivey and his team developed a training schedule and operational curriculum for the development of

experienced flexible gunnery cadets. The Spivey training schedule consisted of a five week course.

The first week consisted of classroom education on the functional properties of the 30 and 50 caliber machine guns. Each student was expected to master the assembly and disassembly of these weapons and was taught how to troubleshoot possible weapon malfunctions (Figure 5). The students were also taught the art of leading a target using 12 gauge shotguns to shoot clay pigeons on the trap and skeet ranges (Thole 1996).



Figure 5. 1945 photo of trainees learning 50 caliber repair and maintenance at a Buckingham Air Field firing range.

In the second week of training the trainee was instructed in the art of determining the range and speed of moving objects while observing from a non-stationary position and the effect this movement had on targeting. This was accomplished by having trainees shoot 12 gauge shotguns at clay pigeons from the back of a moving jeep. The trainee was also instructed in the identification of enemy planes and tips for quickly distinguishing enemy planes from ally planes (Thole 1996).

During the third week of training trainees were expected to improve on their targeting skills by shooting 22 caliber rifles at moving plane shaped targets placed on a conveyor belt. Instruction was also provided in the operation and maintenance of electric turrets. The trainee was also expected to master the identification of both enemy and ally ships and submarines from aerial images (Thole 1996).

During the fourth week trainees were given the opportunity to fire the 30 and 50 caliber machine guns. They fired at large targets towed by jeeps while operating the guns from either the waist gun position or from within electric turrets while moving at 25 to 30 miles per hour in the back of a jeep or truck (Figure 6). The trainees were also taught how to use the blinker code that allowed bombers to communicate while maintaining radio silence (Thole 1996).



Figure 6. Gun turrets mounted to the backs of trucks, 1945 photo from the Buckingham Air Field.

The fifth and final week of training included actually flight time, with the trainee boarding B-17s for from which they would get live practice at targeting a large windsock towed by a target plane. Each trainee's bullet tips were marked in different color paint so the hits could be scored (Thole 1996).

This original training schedule went through numerous modifications as more funding and newer technology was developed. One of the most significant of these changes was the inclusion of simulator training. Through a system of movie projections and electric

sensors the trainee was able to practice targeting moving aircraft in a more real world setting. The Buckingham field is known to have had at least two such simulators on base by the end of the war.

In 1943 the Army Air Force established a Central Instructors School at Buckingham Field. The school was headed by Lt. Colonel Daniel W. Jenkins a graduate of the British Royal Air Force's gunnery training course and a highly experienced gunner from some of the early bomber activity on the European front. The Central Instructors School consisted of a four week course that focused primarily on instruction tactics for training flexible gunners (Thule 1996). All instructors for the U.S. Army's six flexible gunnery schools across the nation had to complete the Buckingham Central Instructor's School four week course.

At the beginning of the war the Buckingham Flexible Gunnery School suffered from a general lack of experienced instructors and a lack of funding and training equipment. This was also the period when the demand for trained flexible gunners was at its highest point. The survival rate for a gunner at the beginning of the war was just over 50%. Because of its dangerous nature, enlistment into the flexible gunnery program was on a volunteer basis. During its initial years large numbers of non-specialist servicemen signed up, including Army cooks, radio operators and mechanics. As the war went on and ally forces won control over the European skies the demand for additional flexible gunners waned and the Army Air Force lifted its volunteer requirement and began training all aviation specialists in flexible gunnery.

At the close of the war in 1945 the Buckingham Flexible Gunnery School had graduated over 50,000 gunners (Thule 1996). As intended, the close of the war also meant the deactivation of the Buckingham Army Air Field. The facilities at the base served as temporary classrooms for Edison College until 1947, at which point the federal government initiated the complete dismantling of the base with buildings, utility infrastructure and all other base components being auctioned off to the public and removed from the property (Grismer 1982).

Today the runways of the base are used as a private airstrip known as Buckingham Field. Outside of these features, very little remains of the original base. A few concrete foundations and earthen features are all that remain. Residential development associated with East Fort Myers and Lehigh Acres has been built over much of the former base location.

## **BACKGROUND RESEARCH**

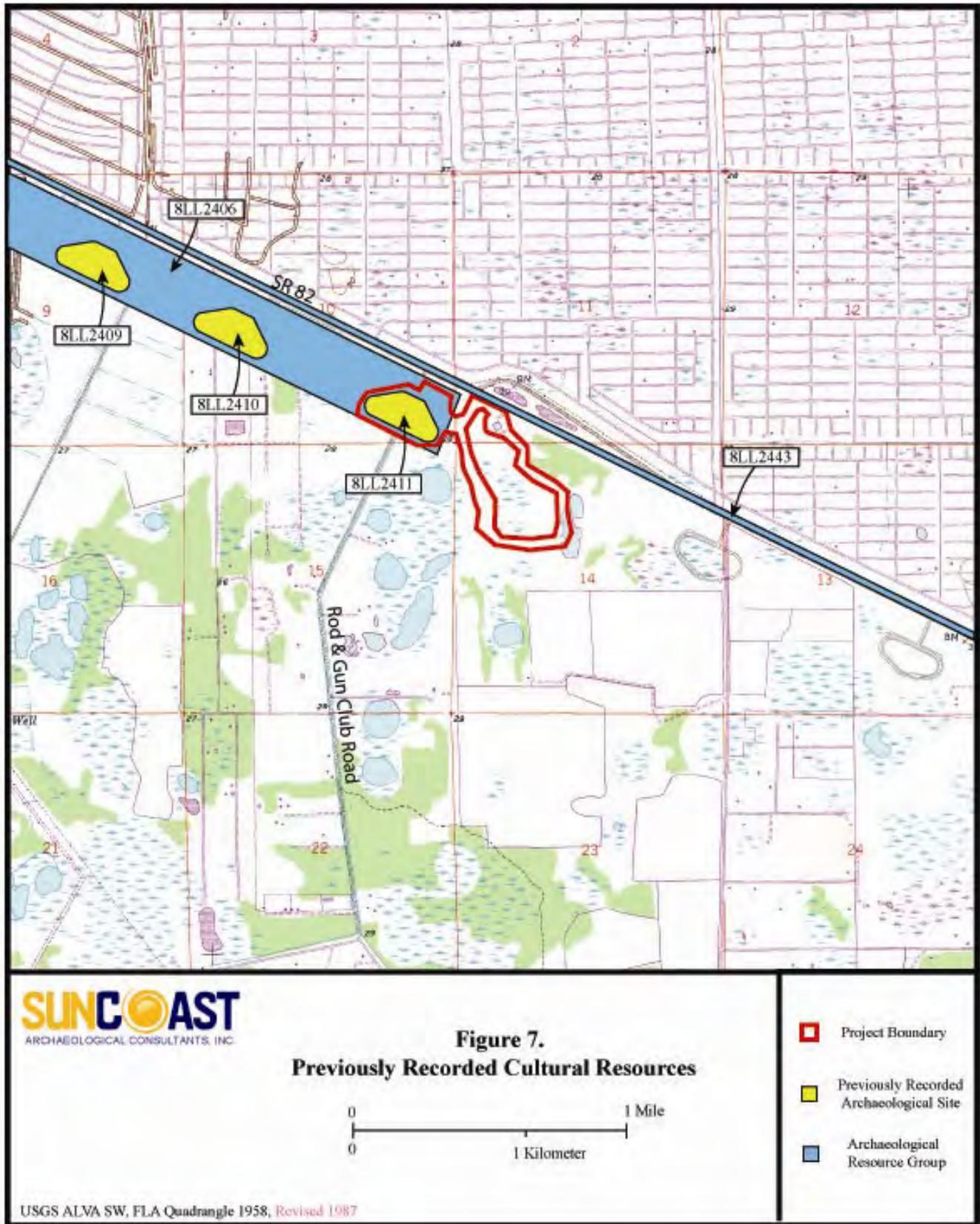
### **Previously Recorded Resources**

#### *8LL2406, Buckingham Gunnery Range Resource Group*

Located within the northeastern portion of the project area is the Gunnery Range #5 site (8LL2411). This site was individually recorded in November of 2006 as one of five gunnery range sites (8LL2407 to 8LL2411) associated with Buckingham Army Air Field, located to the south of SR 82 (Janus 2006). These five gunnery ranges were together recorded as the Buckingham Gunnery Range historic resource group (8LL2406), of the ranges, the Gunnery Range #5 site is the eastern most (Figure 7).

All five individual gunnery ranges were recorded through the location of earthen embankments, shaped in plan-view almost as coat-hangers with the long end base located along their southwestern side and the short end to the northeast. These embankments were recorded as measuring almost 2 to 6 feet high and 10 to 15 feet wide (Janus 2006). These ranges were used for training Buckingham flexible gunnery trainees in the operation of 30 and 50 caliber machine guns when firing on moving targets.

The gunnery range sites were recorded during a Phase 1 survey of the 2,880 acre Bennett property (Survey #s 12431 and 13639), which is located to the south of SR 82 along both the east and west sides of Daniels Road. Only three of the five ranges are located within the Bennett property, with Gunnery Ranges #4 and #5 located to the east. While all five ranges were individually recorded with the FMSF during the 2006 survey, only Gunnery Ranges #1 to #3 were physically inspected, while ranges #4 and #5 were observed from public right-of-ways since they were located outside of the Survey 12431 and 13639 project areas.



All ranges recorded during the 2006 project were identified as consisting of relatively uniform size and construction. All were identified as being built through earthen fill that was excavated from the inside and outside portions of the embankment to create a raised platform nearly 6 feet high. Occasionally, a concrete slab track with a raised central curb was observed running parallel to the outside edge of the southern embankment. Historical evidence indicates that these tracks were used as a guide for specially modified jeeps towing firing range targets. The jeep itself would be safely hidden behind the earthen embankment while the target would be elevated above the embankment (Figure 8).



Figure 8. Target jeep on a concrete track behind an earthen embankment, photo taken at Buckingham Army Air Field in 1945.

The State Historic Preservation Officer (SHPO) has evaluated all five individual gunnery ranges (8LL2407 to 8LL2411) as well as the Buckingham Gunnery Range resource group (8LL2406) as being potentially eligible for listing on the NRHP. However, it was determined that through Survey #13639 enough information regarding the gunnery ranges was recorded to “effectively mitigate against any adverse effect” development of the Bennett property may have on the ranges (DHR Letter Dec. 19, 2006 [2006-4055B]).

#### *8LL2443, SR 82 Resource Group*

The SR 82 corridor was first established in 1942 as a military road to access the Buckingham Army Air Field gunnery ranges. At this time, the road was restricted to military use only. The road served its military function until 1945 when the air field was officially decommissioned. In 1950 the State of Florida took over the maintenance of the road and opened it up to the public. Shortly after the state took control of the road a project began to extend the corridor to Immokalee. This road corridor has been recorded as a historic transportation resource group (8LL2443) due to its association with the Buckingham Army Air Field. The SHPO has determined that 8LL2443 is not eligible for listing on the NRHP.

### *Additional Cultural Resources*

Outside of the Buckingham Gunnery Ranges, no additional archaeological or historical resources have been recorded within a 2.5 mile radius of the project area. This absence of cultural resources in the region is not due to a lack of professional archaeological and historical surveys. In fact, over the past 20 years a number of large acreage properties have been surveyed in this portion of Lee County, including the 2,880 acre Bennett property, the 600 acre Alico Estates property (Survey #5237), the 4,280 acre Gateway DRI property (Survey #1018), and the 2,940 acre Mirror Lakes Development property (Survey #2257). Of these four surveys, covering over 10,000 acres in this portion of Lee County, only one prehistoric archaeological site was recorded (8LL743) and the Buckingham Gunnery Ranges are the only historic resources identified.

This absence of prehistoric and historic cultural resources in this portion of the county is expected. In fact, the almost non-existent historic occupation of this region is specifically why it was chosen as an ideal location for the construction of a military base in the first half of the 20<sup>th</sup> century. Equally, it has been concluded by many archaeologists that prehistoric habitation in southwest Florida was typically centered around the resource rich coastal estuaries, major river courses, and the large wetland systems associated with the Big Cypress and Everglades. The pine flatwoods are believed to have been sparsely inhabited.

## **Historic Map Review**

An 1873 General Land Office (GLO) survey map for Township 45 South, Range 26 East was reviewed for evidence of historic land use during the later half of the 19<sup>th</sup> century (Figure 9). This map shows a road crossing through the Township from the northwest corner and exiting along the edge of Section 15 in the east. The road is labeled “Southeast Road from Ft. Myers”. The map indicates that the road likely crossed through the northern portion of the project area, likely bisecting the current location of the Gunnery Range #5 earthworks and crossing through portions of the northern segment of the proposed loop trail.

This road is the main route connecting Fort Myers with the Big Cypress Seminole War forts. The earliest of these forts was Fort Keais, established in 1838, located near Lake Trafford in the Immokalee region. Later, during the 1850 other forts were added to the Big Cypress area, including Fort Doane, Fort Simon Drum and Fort Shackelford. The road was likely first plotted and used during the early 1850s when a heavy military presence moved into the area during the Third Seminole War. Prior to this time, Fort Keais was likely accessed via a road heading south from Fort Denaud, which was located along the Caloosahatchee River. While called a road on the 1873 map, this route was possibly no more than a well established trail, wide enough to accommodate a horse drawn carriage.

This road, as well as the entire Third Seminole War military road and fort network is also shown on the 1859 Monroe County Surveyor General Map (Figure 10).

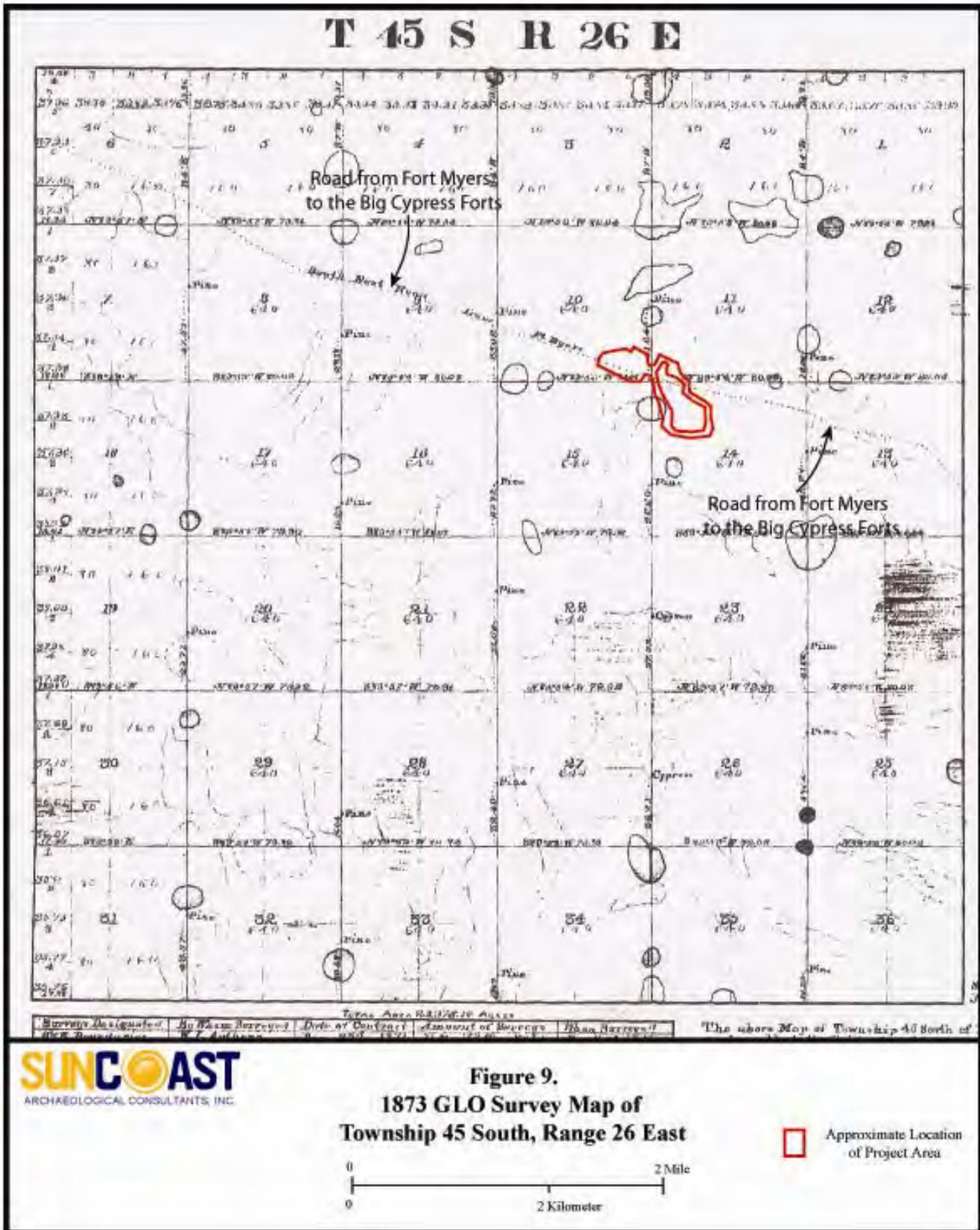




Figure 10. 1859 Surveyor General Map of a portion of Monroe County.

Additional maps of the region were also reviewed, including the 1863 Johnson & Ward map, an 1874 Columbus Drew map, 1893 George F. Crum map, the 1900 Mast, Crowell & Kirkpatrick map, the 1910 Hammond map, the 1920 US Railroad Administration map, and the 1932 USGS map. Outside of the military road that crosses through the project area (the latest map this road is shown on is the 1873 GLO) no other cultural features are depicted on any historic maps of the region within or in the vicinity of the project area. In fact, the late 19<sup>th</sup> and early 20<sup>th</sup> century maps indicate that the eastern portion of Lee County was generally uninhabited throughout this period. It is not until the construction of the Buckingham Army Air Field in 1942 that significant human activity in this area is evidenced.

## Historic Aerial Review

Historic aerial photographs of the project area dating to 1944, 1953, 1958 and 1970 were reviewed. The 1944 aerial shows the Buckingham gunnery ranges during their peak operational period (Figure 11). The aerial profile of these ranges signature as coat-hanger shaped embankments spaced approximately a quarter mile apart along the south side of what is now SR 82. During this time the SR 82 corridor was not a public road; instead it was maintained and utilized strictly by Buckingham Army Air Field. A short access road leads to each embankment from the main road corridor. All five embankments which

make up the Buckingham Gunnery Range resource group appear to be of the exact same dimensions and design.

The 1944 aerial also shows five additional embankments to the east of the one located within the project area. Their shape, however, appears to be inversed from those associated with 8LL2406, with the base of the coat-hanger shape along the north side, closer to the current SR 82 corridor, and the diagonal sides and rounded apex to the south.

Within the project area, in addition to the embankment and its associated access road, the 1944 aerial shows a small spur road leading into the project area along the northern end of the proposed loop tail. At this location the former military road corridor of SR 82 curves north before turning back to its original southeast/northwest route. At this curve the spur road runs south-southeast. The spur road is not long, terminating perhaps a couple hundred meters from the main military road. At its termination there appear to be two small cleared areas where the natural vegetation has been removed. Additionally, a small road leads west-southwest from the central portion of the spur, also terminating within a short distance.

Outside of the earthen gunnery range embankment and associated access road and the small spur road and associated clearings, no additional cultural features are depicted within the project area on the 1944 aerial. The natural landscape of the rest of the property appears to be typical of southwest Florida flatwoods, with sparse pine growth and what appears to be a dense understory vegetation surrounding numerous oval and circular shaped wetland depressions. The small depressional wetland currently located within the center of the proposed loop trail route appears to have contained a rather dense tree stand, perhaps consisting of cypress.

The 1953 aerial show no new additions to the existing cultural features observed on the 1944 aerial; however, the 1958 aerial shows the addition of Rod & Gun Club Road, which utilized the existing gunnery range access road and continued south-southwest bisecting the gunnery range earthworks (Figure 12). This evidence indicates that Rod & Gun Club Road was constructed sometime between 1953 and 1958.

The 1953 and 1958 aerials provide some additional clues as to the nature of the spur road and associated cleared areas observed on the 1944 aerial. These aerials show the spur road leading to the back side of what appear to be two rectangular shaped cleared areas. Both cleared areas are located directly southeast of a corresponding square shaped flooded depression, both obviously man-made. No structures were observed on these aerials in association with these features.

The 1970 aerial of the region shows that by this time SR 82 had been slightly realigned and improved (Figure 13). The curve of the former military road adjacent to the spur road leading into the project area had been straightened, cutting through the middle of the spur road and cutting through the northern half of the northern most square depressional pond. Additionally, this aerial shows a linear corridor running from the eastern edge of



**SUNCOAST**  
ARCHAEOLOGICAL CONSULTANTS, INC.

**Figure 11.**  
**Aerial Photograph from 1944**

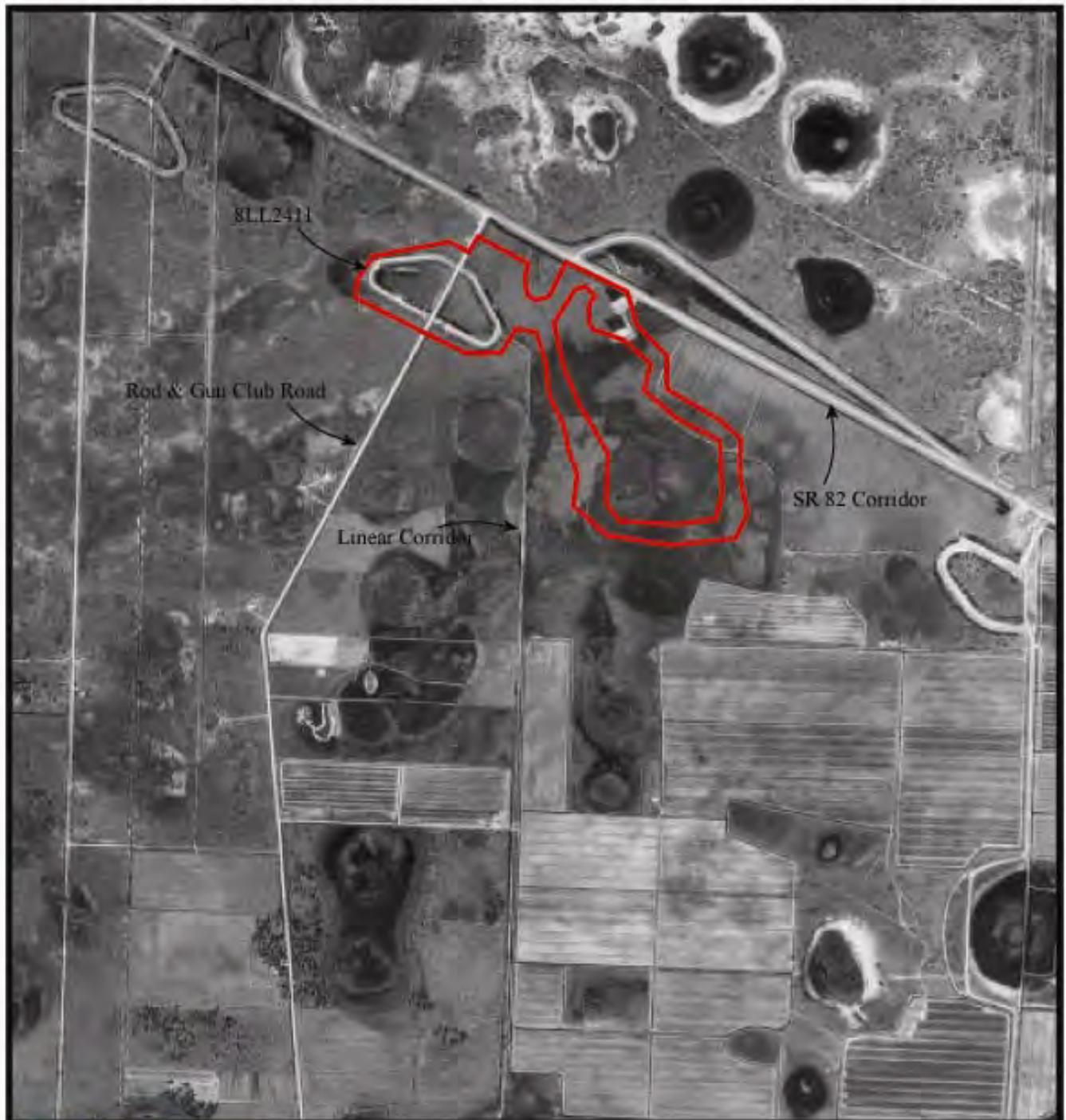
 Approximate  
Project Boundary



**SUNCOAST**  
ARCHAEOLOGICAL CONSULTANTS, INC.

**Figure 12.**  
**Aerial Photograph from 1958**

 Approximate Project Boundary



**SUNCOAST**  
ARCHAEOLOGICAL CONSULTANTS, INC.

**Figure 13.**  
**Aerial Photograph from 1970**

 Approximate Project Boundary

the 8LL2411 gunnery range embankment and heading south into a large wetland almost 1.5 miles south of the southern edge of the project area. During the field survey it was discovered that this linear feature is an agricultural drainage ditch. It is not historic.

## **Informant Interview**

Both the Southwest Florida Museum of History and the Lee County Public Library were contacted regarding possible local informants who may have been involved with the Buckingham Flexible Gunnery Training School. While both organizations provided a wealth of second-hand information and directed Suncoast to numerous historic archives regarding the Buckingham Army Air Field, no firsthand informants were identified. Victor Zarick, historian at the Southwest Florida Museum of History, was particularly helpful in sharing his knowledge of the Buckingham Flexible Gunnery Training School.

## **METHODOLOGY AND PROJECT EXPECTATIONS**

The purpose of this project was to assist Lee County Parks & Recreation's Conservation 20/20 program in identifying a trailhead location and trail routes that will afford the least impact to the contextual integrity of previously recorded site 8LL2411 and any other possible unrecorded cultural resources within the project area. Both background research and field investigation was used to accomplish this task.

Background research included a review of historic and modern maps, documents and technical reports associated with the project area and surrounding region. This research also included a search of the Florida Master Site File database for information on sites that have been recorded within and in the vicinity of the subject property and to assess the results of previous cultural resource surveys in the region. Background research included a historical review of the Buckingham Army Air Field and specifically the Buckingham Flexible Gunnery Training School.

The field survey employed a systematic subsurface testing program of all non-inundated portions of the project area. Shovel tests were excavated at 25 and 50 meter intervals within areas of moderate to high probability for containing archaeological sites and judgmentally within low probability areas. An extensive surface survey of the property was also conducted in an effort to identify any above ground cultural features or possible surface artifacts. The location of all features associated with the previously recorded gunnery range (8LL2411) and any additional above ground features were plotted using handheld GPS units.

Through background research and a study of prehistoric and early historic settlement patterns within inland locations in southwest Florida, it was found that almost exclusively these site types are located adjacent to creek and river systems. Because of the absence of such geographic features within or adjacent to the subject property it was determined that the Wild Turkey Strand Preserve property has a low probability of supporting prehistoric or early historic habitation sites.

If prehistoric archaeological sites are present within the project area it is likely that they would be associated with either temporary hunting camps or isolated butchery sites. Early historic period sites would likely be associated with southwest Florida's wilderness trades, such as timber operations or free range cattle ranching. Also of consideration during this project is the location of the Third Seminole War military road depicted on historic maps of the region as crossing through or very near the project area. It is doubtful that the actual road corridor still remains; however, it is possible that historic features or archaeological sites associated with this 19<sup>th</sup> century transportation route may be present within the study area.

Background research indicates that the primary historic cultural association of this portion of Lee County occurred during the World War II period, in connection with the Buckingham Army Air Field. A previously recorded gunnery range associated with the period is located within the project area; there is a high likelihood that additional features outside of the 8LL2411 earthworks are also located within the project area.

## **Laboratory Methods and Curation**

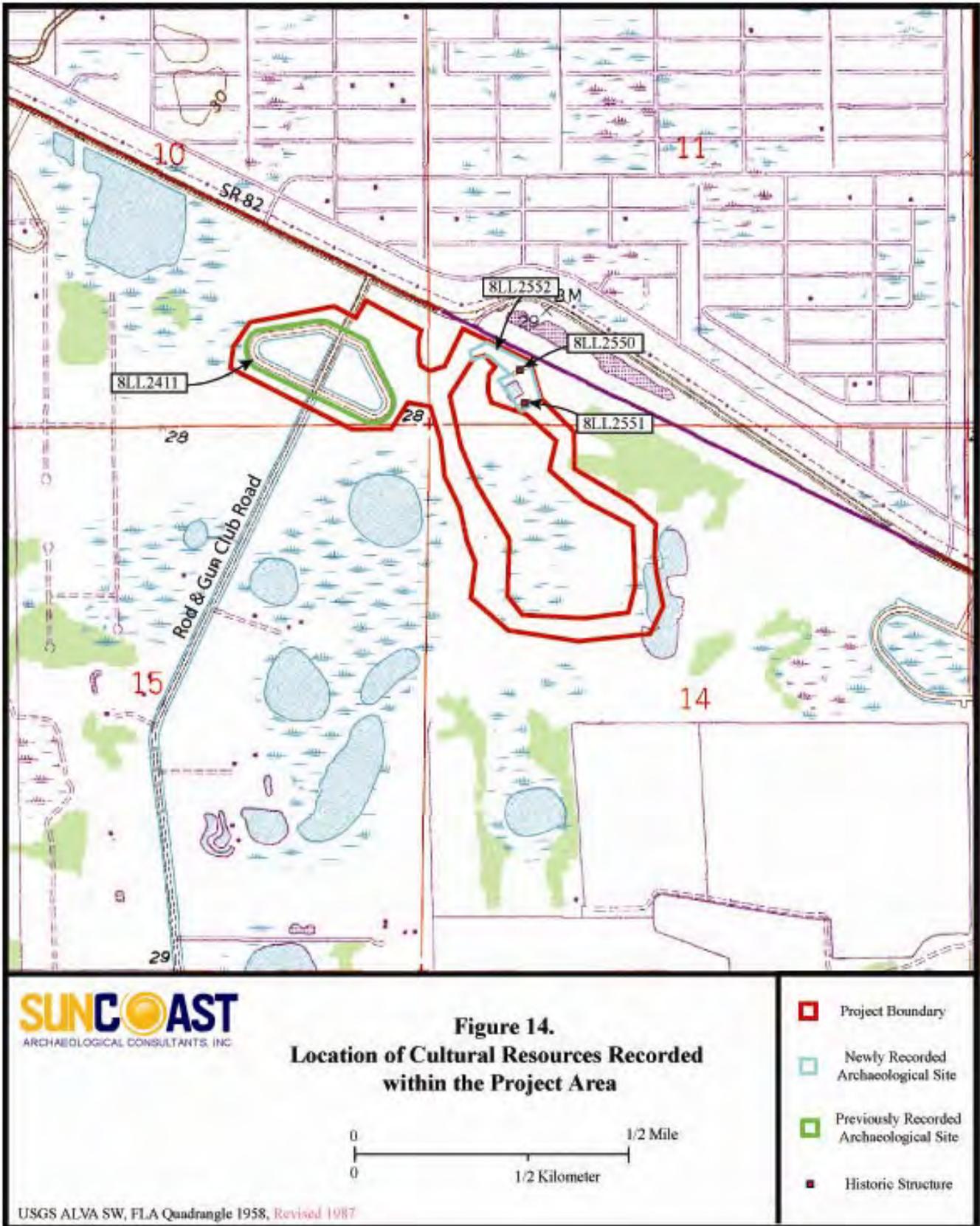
All artifacts recovered during this survey were cleaned, washed, and sorted by artifact class and provenance. Historic period artifacts were sorted by material class and where possible historic artifact catalogs and manufacture records were utilized to identify and date historic artifacts. All material was quantified and weighed.

All artifacts will be kept at the Suncoast facilities for analysis and will be returned to the property owner pending completion of the project. All project documentation will remain curated at the Suncoast offices.

## **RESULTS**

### **Field Survey**

The field investigation of the Wild Turkey Strand Preserve project area included the excavation of 46 shovel tests and an intensive surface survey of the entire project area. As a result of this survey one new archaeological site was recorded along the north edge of the proposed loop trail (Figure 14). The site consists of historic earthworks, historic dumping, and the location of the spur road observed during project background research, all of which are associated with World War II period activity in the region. Within this newly recorded site, and associated with it, are two historic structures; each of which were recorded separately from the archaeological site.



Previously recorded site 8LL2411 was also assessed as a result of this survey. No prehistoric archaeological sites were identified during the survey.

Shovel tests within the northern and central portions of the project area encountered a soil profile consisting of a gray sandy upper horizon extending to between 10 and 30 cmbs, followed typically by a light gray sandy horizon to test termination at 100 cmbs. Within the eastern side of the proposed loop trail tests occasionally encountered a sandy tan horizon below the upper gray layer instead of the light gray sandy horizon. Within the southern portion of the project area, where Valkaria depressional fine sands are found, soil profiles consisted of gray and dark gray sands with a shallow dark brown hardpan at approximately 30 to 50 cmbs. This portion of the project area is likely flooded during periods of heavy rainfall.

### **8LL2552, Buckingham Wild Turkey Site**

The Buckingham Wild Turkey site (8LL2552) was first identified during a review of historic aerial photographs of the project area. These photographs show a short spur road running south-southeast from the main military gunnery range road. The gunnery range road generally follows the present day SR 82 corridor, however, the spur road intersected the main road along an area where the main road curves northeast slightly, heading north of the current SR 82 corridor. The aerials showed what appeared to be two square shaped ponds with a cleared sandy area directly south of each pond. The spur road connected with each sandy area (Figure 15).

During the field survey two relatively large earthen mounds were discovered, each located to the south of a low depressional area. On each mound was a single square shaped structure. These mounds are almost certainly composed of fill dirt which was extracted from each mound's adjacent excavated depression. At the time of this field visit neither depression contained any standing water, however, it was obvious from vegetation and the appearance of the soil that both areas are typically flooded for much of the year. Shovel tests within the site failed to identify a subsurface component.

Each mound measures approximately 1.5 to 2.5 meters above the surround ground surface and each depression measures 1 to 1.5 meters below the surrounding ground level (Figures 16 and 17). It is likely that the height and depth of these features has been moderated through time by natural erosion. A portion of the northern mound and the northern depression have been destroyed through construction of the SR82 right-of-way.

It is unclear what purpose these earthen mounds may have served. A historic aerial review of locations outside of the project area in the vicinity of the current SR 82 corridor failed to identify any similar feature signatures as those formed by the earthworks and spur road. Because the road and earthworks are an isolated occurrence in the region, they is not believed to be functionally associated with 8LL2411 (which is located approximately 300 meters to the west) or any of the other gunnery ranges south of SR 82.

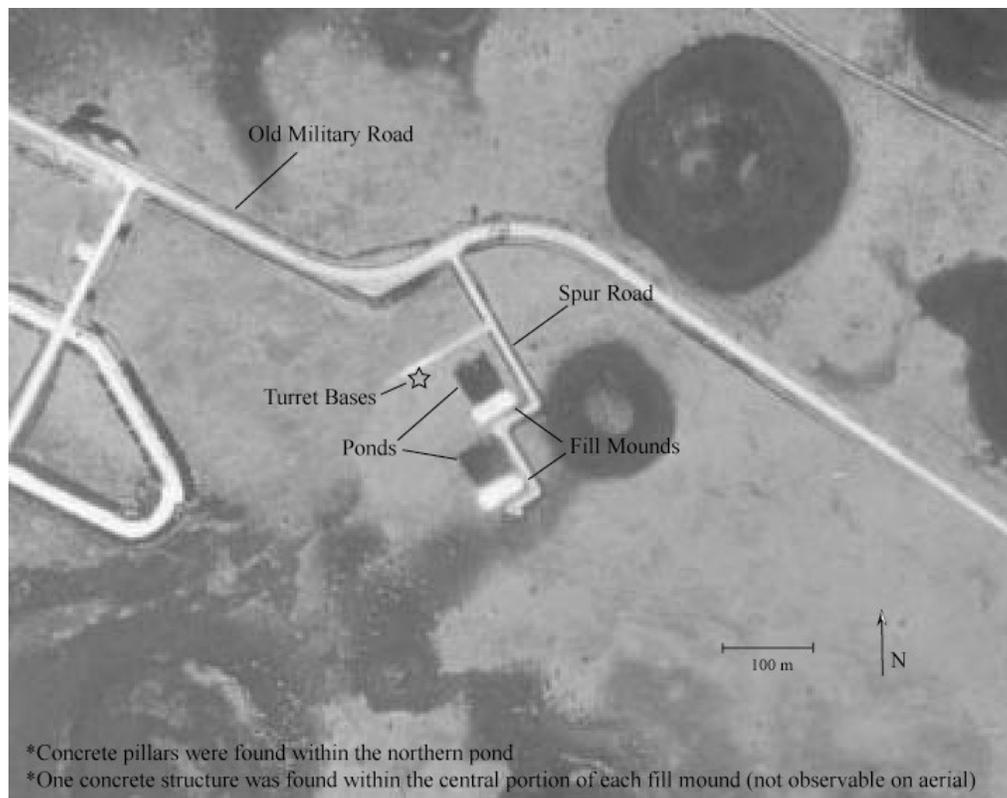


Figure 15. 1958 aerial of 8LL2552 showing the location of site features.



Figure 16. Photo shows the southern edge of the northern depression within 8LL2552 with the northern fill mound and concrete structure in background.



Figure 17. Photo shows the southern depression area within 8LL2552 with the southern earthen mound in background.



Figure 18. Concrete gun turret bases located adjacent to the limerock road within 8LL2552.

While the mounds are the most dominate visual feature within 8LL2552, it is possible that they were not the intent of the excavation, but instead it was the depression. Square shaped “ditch ponds” are known to have been excavated in the vicinity of the main Buckingham Army Air Field facility location to the north. These ponds were used for airmen and gunners to practice open water ditching procedures. Lou Thole in his book *Forgotten Fields of America* documents one such “ditch pond” associated with the Buckingham Army Air Field that is of approximately the same size and shape as the depressions observed within the project area (Thole 1996). However, evidence against this idea is found on the 1944 aerial photograph of the region where the depressions appear not to be filled with water, although, the 1953, 1958 and 1970 aerials all show these features as being filled with water forming a square shaped pond similar to the ditching pond recorded by Thole.

Also observed during the field survey in this area were four concrete pillars that had been deposited within the bottom of the northernmost depression and five concrete gun turret bases located approximately 40 meters west of the northernmost depression. Both the pillars and the turret bases appear to have been deposited haphazardly.

The concrete pillars are approximately 5 meters long and 50 x 50 cm wide. All appear to have been constructed by a course concrete mixture that was allowed to set within a single mold. All pillars had six bolt ends protruding from one side that were arranged in sets of two, a set of two on each end and a set of two in the middle. Nuts and washers were still attached to each bolt. The placement of the pillars along their sides at the base of the northern depression area suggests that they were likely dumped in their current location. It is unclear what purpose these pillars may have served.

The five gun turret bases were identified directly adjacent to a former limerock road (Figure 18). The road, which is currently covered by a thin layer of grass and soil, is the short road that extended west-southwest from the central portion of the spur road. The turret bases are located along the south side of the road. Each base is constructed of the same course concrete mixture as the pillars also through a single pour mold. The turret bases are all 1.8 meters square. Their height appears to vary greatly; however, it is difficult to determine how much variation because some appear to have settled or possibly been partially buried below the ground surface. The tallest turret base has 1.2 meters exposed above the ground surface and another has its top nearly level with the ground. Each turret base has a circular hole along its top and two holes along its sides connecting with the cavity created by the circular hole. Around the top edge of the circular hole are eight bolt ends, which likely functioned to attach the turret to the bases.

Like the concrete pillars, the turret bases are haphazardly deposited. It is likely that they were placed here at the side of the limerock road when not in use or dumped here after they were no longer of use. However, as with the pillars, due to their size and weight it is possible that these items were utilized not far from their current location, possibly in association with the gunnery ranges.

The 8LL2552 earthworks and concrete implements are all connected in their association with the spur road observed on historic aerials. The road itself is evidenced through a solid limerock base covered by a thin layer of soil. Presently, the road itself has been overgrown by vegetation.

Due to the site's association with the World War II era Buckingham Army Air Field and the unique nature of this collection of features when compared to similar sites in the region dating to this period, it is the opinion of the Principal Investigator that site 8LL2552 is potentially eligible for listing on the NRHP. However, it is our opinion that the information documented in this report has provided sufficient mitigation to any adverse future effect to the site.

### **8LL2550, Wild Turkey Building #1**

Building 8LL2550 is located at the summit of the northernmost earthen mound within the Buckingham Wild Turkey site (Figure 19). The structure is rectangle in shape with a long side measuring 4 meters and the short side measuring 2.5 meters. The building's roof is located 2.5 meters above the ground surface. The structure was formed from solid poured concrete walls and a solid poured concrete roof. The structure has been placed on a concrete slab foundation. Two small screened over holes are located along the front wall, one on the upper half and one on the lower half. These appear to have been used for ventilation. The imprints of wood grain were observed along the interior and exterior of all walls and the concrete roof. This wood grain is evidence for the use of wood framed molds to form the poured concrete walls and roof.



Figure 19. Wild Turkey Building #1, photo facing west.

The front of the building, defined by the door location, faces south-southeast. This orientation is precisely the same as the spur road and the square excavated depression as shown on historic aerials of the property. No historic material was identified within or surrounding the structure. A single shovel test was placed directly outside of the structure entrance; however, no cultural material was encountered. There is no direct evidence as to the function of the building; however, due to the buildings size and construction method it is likely that it may have served as a storage facility possibly associated with the Buckingham Army Airfield.

Few structures associated with Buckingham Army Air Field remain standing. While 8LL2550 has a relatively common design and its function was most likely as a simple storage building, its association with the air field makes this building unique and possibly a candidate for a historic district incorporating all existing Buckingham Army Air Field structures. Therefore, it is the opinion of the Principal Investigator that 8LL2550 is potentially eligible for listing on the NRHP.

### **8LL2551, Wild Turkey Building #2**

Building 8LL2551 is located along the south slope of the southern earthen mound within the Buckingham Wild Turkey site (Figure 20). This building is of the exact same design and size as Wild Turkey Building #1. Its also oriented exactly the same, with the front of the structure facing south-southeast. The only difference between this structure and 8LL2550 is its position on the southern earthen mound. Wild Turkey Building #1 is located along the summit of the northern earthen mound, while Wild Turkey Building #2 is partially buried by erosion of the southern earthen mound's south slope.



Figure 20. Wild Turkey Building #2, photo facing north.

A single shovel test was excavated just south of the entrance to 8LL2551; however, no cultural material was encountered. In the vicinity of this structure a large amount of limerock and what appear to be dug up concrete footers are strewn about. This material appears to be either part of the mounds fill or dumped here after the mound was formed. Like 8LL2550, this building appears to have functioned as a storage building associated with the Buckingham Army Air Field.

As with Wild Turkey Building #1, 8LL2551 has been determined to be potentially eligible for listing on the NRHP due to its association with the Buckingham Army Air Field and its potential for future inclusion into an historic district.

### **8LL2411, Gunnery Range #5**

The Gunnery Range #5 site was relocated during this survey. This earthwork was easily identified from the ground due to the relatively high central embankment and the low ditches on either side (Figures 21 and 22). The embankment rises approximately 1.5 to 2.5 meters above the mean ground surface level and on either side of the embankment are ditches that are approximately 1 meter below the surround ground level. The plan-view dimensions of the 8LL2411 earthwork measures approximately 240 meters from northeast to southwest and 500 meters from southeast to northwest.

The interior and exterior ditching surrounding the embankment appears to have been excavated by backhoe, with the excavated fill used to form the central embankment. The ditching along the interior and exterior of the southern embankment and along the exterior of the northern embankment are continuous. However, the ditching along the interior of the northern embankment was dug in pockets, leaving narrow earthen bridge like features connecting the summit of the embankment with the natural ground surface within the central portion of the earthworks.

Disturbances to the site include the destruction of a segment within its central portion of the earthwork through which Rod & Gun Club Road passes and heavy erosion along the northeastern portion of the embankment's summit due to its use as a vehicle access road into the Wild Turkey Strand Preserve property. Throughout the rest of the site the only disturbance observed consisted of natural erosion and slumping of the embankment into the adjacent interior and exterior ditches.

A surface survey of the site and surrounding area identified numerous 50 caliber bullets to the south of the 8LL2411 earthworks and along the northeast side of the southwestern embankment (Figure 23). Many of the bullets were compressed and distorted evidencing impact. No bullets were identified to the north of the 8LL2411 embankment, indicating that the direction of fire at the range was from northeast to southwest. The 50 caliber bullet was the primary ordinance use during World War II for air to air combat; it was most commonly fired from a 50 caliber Browning Machine Gun.



Figure 21. Northwestern edge of 8LL2411 showing ditch and embankment.



Figure 22. Southern edge of 8LL2411 showing ditch and embankment.



Figure 23. 50 caliber bullets found along the southern portion of the project area.



Figure 24. Concrete curbing located along the summit of the northern portion of the embankment.

A search was made to the south of the southwestern embankment for possible concrete tracking that background research indicates were used for guiding retrofitted jeeps that towed large cloth targets. From historic photos and from previous research on similar site types, it was concluded that such tracking was most likely located within the base of the outside ditch adjacent to the southeastern embankment. However, a surface survey of this location failed to find any evidence of concrete tracking. At other gunnery range sites within the Buckingham Army Air Field Gunnery Range resource group it was observed that erosion of the embankment into the adjacent ditch has covered the concrete track, this is likely the case with 8LL2411.

Concrete curbing was identified along the summit of the western portion of the northeastern embankment (Figure 24). This curbing was likely used as a guide for jeeps and trucks carrying trainees engaged in target practice.

Two shovel tests were placed within the central portion of the earthworks and one was placed just south of the southern embankment, no cultural material was identified within any of these tests. Tests were not placed within the earthworks themselves or the associated ditching since the interest of the client for this project is preservation of the resource. No historic structure or structure foundations were identified within or in the direct vicinity of 8LL2411.

The Gunnery Range #5 site is in fairly good condition despite man-made and natural disturbances to its original context. A SHPO evaluation of the site in 2006 determined that it is potentially eligible for listing on the NRHP (DHR Letter Dec. 19, 2006 [2006-4055B]). However, as a result of documentation on all five gunnery range sites within the 8LL2406 resource group, it was determined that enough information had been documented about the sites to mitigate any adverse effect as a result of site contextual disturbance. Through the results of this survey the Principal Investigator for this project concurs with this assessment, and believes the information regarding 8LL2411 within this report only adds to the information currently on file with the FMSF regarding the Buckingham Army Air Field Gunnery Ranges.

### **Seminole War Road**

Historic background research for this project identified a 19<sup>th</sup> century road that historic maps indicate ran through or very near the project area. During the field survey an attempt was made to relocate this corridor within the project area, however, no possible routes were identified. It is likely that this road was simply a dirt trail, wide enough to support horse drawn wagons. Thus, without constant use, a resource of this type is likely overgrown and has disappeared into the landscape. No historic archaeological sites or historic features that may be associated with a 19<sup>th</sup> century road were identified within the project area.

## **RECOMMENDATIONS FOR PRESERVATION**

The potential effect of contextual disturbances to the Buckingham Wild Turkey site and the previously recorded Gunnery Range #5 site are believed to have been mitigated with the information documented in this report. However, the Lee County Conservation 20/20 program has expressed interest in preserving both archaeological sites and the historic structures within the project area so that they may be incorporated within the proposed trail system as historic points of interest. Therefore, the following recommendations will focus on how best to incorporate the proposed Wild Turkey Strand Preserve trail system and trailhead with recorded cultural resources in the project area while minimizing the impact to the recorded historic features.

The proposed trailhead location is to the northeast of 8LL2411. Shovel tests and surface reconnaissance in this location found no cultural resources. However, due to the proximity of the proposed trailhead location to the northern edge of 8LL2411 it is recommended that during trailhead construction all machine operators be made aware of the location of 8LL2411 so that they may make every effort to avoid disturbing the resource. Also, during construction of the trailhead it is advised that a silt fence be placed between the construction zone and the northern exterior ditch adjacent to 8LL2411 in order to control possible soil erosion into this feature. It is recommended that water runoff issues be addressed in the trailhead design stage, as to prevent excessive flooding of the 8LL2411 ditches.

Proposed trail construction within the preserve is to consist of boardwalks, shell lined and natural ground trails. It is recommended that in all areas where the trail is to ascend or descend the earthworks associated with either 8LL2552 or 8LL2411 that a boardwalk step system be constructed to help minimize the erosional effects of pedestrian trail use. Trails located along the summits of these earthworks should be shell lined to prevent wear and erosion of the natural surface of these features. Signage should also be placed at the head of all trail systems advising users to stay on the designated trail system.

In the interest of preventing erosion of the property's historic earthworks, it is suggested that equestrian trails not cross onto the earthen mounds or embankments associated with 8LL2552 or 8LL2411.

It should also be considered that the historic features identified within the project area are all associated with World War II ordinance training. While none were discovered during the field survey, it is possible that unexploded ordinances (UXOs) may be located within the project area. The Lee County Conservation 20/20 program should consult with the United States Army Environmental Command (USAEC) regarding procedures for dealing with public access to areas where UXOs could possibly be located.

## CONCLUSION

A phase 1 cultural resource survey was conducted by Suncoast Archaeological Consultants, Inc. of the 80 acre Wild Turkey Strand Preserve project area located to the south of SR 82, in the vicinity of its intersection with Rod & Gun Club Road. This survey was conducted in advance of construction of a trail system and associated trailhead. The survey resulted in the discovery of one newly recorded archaeological site (8LL2552) and two newly recorded historic structures (8LL2550 and 8LL2551). The survey also updated and reassessed one previously recorded archaeological site (8LL2411).

Site 8LL2552 consists of World War II earthworks and concrete implements located in association with a spur road that leads south from the former main military gunnery road. Due to the site's association with Buckingham Army Air Field and its unique nature when compared to similar sites in the region dating to this era, it was determined to be potentially eligible for listing on the NRHP. However, it is our opinion that information about the site documented in this report has proved sufficient to mitigate any adverse effect as a result of any future site contextual disturbance.

The two historic structures identified during this survey are both associated with archaeological site 8LL2552. Wild Turkey Buildings #1 and #2 are both constructed of poured concrete, and likely functioned as military storage facilities. Few historic structures connected with the Buckingham Army Air Field remain standing today, as a result, both 8LL2550 and 8LL2551 have been determined to be potentially eligible for listing on the NRHP. We recommend preservation of these structures; if preservation is not possible than additional historic architectural documentation should be conducted to help mitigate any adverse impact to these resources.

The previously recorded Gunnery Range #5 site was assessed during this survey. As recorded, the site was found to consist of a coat hanger shaped earthen embankment with excavated ditches lining either side. This site served as a gunnery range for the Buckingham Flexible Gunnery Training School. The remains of numerous 50 caliber bullets were found along the south end of the site. SHPO has assessed this site as being potentially eligible for listing on the NRHP, however, they have also stated that information previously documented regarding the site has sufficiently mitigated against any future impact to the site's contextual integrity. The Principal Investigator for this project concurs with this assessment.

Outside of the resources listed above, no additional archaeological sites or historic structures were identified within the project area.

The client for this project, Lee County's Conservation 20/20 program has presented an interest in preserving all World War II era cultural features within the project area. These resources will be incorporated into the proposed trail system with possible educational signage informing the public about of the significant role the World War II era played in the development of Lee County. As a result, we included in this report some suggestions

for how to incorporate public access to these sites through a pedestrian trail system while inflicting a minimal amount of impact to the contextual integrity of the resources.

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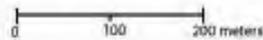
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**Appendix A:**  
**Shovel Test Map**



### Shovel Test Map for the Wild Turkey Strand Preserve



-  Project Boundary
-  Negative Shovel Test
-  Archaeological Site
-  Historic Structure

**Appendix B:**  
**Unanticipated Discoveries Statement**

## **Unanticipated Discoveries Statement**

Even with a thorough investigation of a particular property by a professional archaeologist, there is still the possibility that unrecorded cultural resources were not discovered on the said property. Therefore, a procedure has been developed for the treatment of any unexpected discoveries that may occur during the development phase. Below are steps that should be taken by the property owner or development firm upon discovery of such resources.

- 1) If unexpected cultural remains (particularly those consisting of human burials) are encountered, the location of the discovery should be avoided in order to minimize further impact.
- 2) A qualified professional archaeologist should be contacted immediately and informed of the discovery.

A mitigation plan will then be developed in conjunction with the State Historic Preservation Officer (SHPO) so that further adverse impact on the resource can be avoided.

Human remains are protected by state law as stipulated in Chapter 872.05 of the Florida Statutes. Below are portions of Chapter 872.05 that apply to landowners and developers.

*(3) NOTIFICATION.--*

- (a) Any person who knows or has reason to know that an unmarked human burial is being unlawfully disturbed, destroyed, defaced, mutilated, removed, excavated, or exposed shall immediately notify the local law enforcement agency with jurisdiction in the area where the unmarked human burial is located.
- (b) Any law enforcement agency that finds evidence that an unmarked human burial has been unlawfully disturbed shall notify the district medical examiner pursuant to subsection (4).

*(4) DISCOVERY OF AN UNMARKED HUMAN BURIAL OTHER THAN DURING AN ARCHAEOLOGICAL EXCAVATION.--*When an unmarked human burial is discovered other than during an archaeological excavation authorized by the state or an educational institution, all activity that may disturb the unmarked human burial shall cease immediately, and the district medical examiner shall be notified. Such activity shall not resume unless specifically authorized by the district medical examiner or the State Archaeologist.

- (a) If the district medical examiner finds that the unmarked human burial may be involved in a legal investigation or represents the burial of an individual who has been dead less than 75 years, the district medical examiner shall assume jurisdiction over and responsibility for such unmarked human burial, and no other provisions of this section shall apply. The district medical examiner shall have 30 days after notification of the unmarked human burial to determine if he or she shall maintain jurisdiction or refer the matter to the State Archaeologist.

- (b) If the district medical examiner finds that the unmarked human burial is not involved in a legal investigation and represents the burial of an individual who has been dead 75 years or more, he or she shall notify the State Archaeologist, and the division may assume jurisdiction over and responsibility for the unmarked human burial pursuant to subsection (6).
- (c) When the division assumes jurisdiction over an unmarked human burial, the State Archaeologist shall consult a human skeletal analyst who shall report within 15 days as to the cultural and biological characteristics of the human skeletal remains and where such burial or remains should be held prior to a final disposition.

(10) VIOLATION AND PENALTIES.--

- (a) Any person who willfully and knowingly disturbs, destroys, removes, vandalizes, or damages an unmarked human burial is guilty of a felony of the third degree, punishable as provided in s. 775.082, s. 775.083, or s. 775.084.
- (b) Any person who has knowledge that an unmarked human burial is being disturbed, vandalized, or damaged and fails to notify the local law enforcement agency with jurisdiction in the area where the unmarked human burial is located is guilty of a misdemeanor of the second degree, punishable as provided in s. 775.082 or s. 775.083.
- (c) This subsection shall not apply to any person acting under the direction or authority of the division or to any person otherwise authorized by law to disturb, destroy, or remove an unmarked human burial.

- (11) RULES.--The Department of State may prescribe by rule procedures for reporting an unmarked human burial and for determining jurisdiction over the burial.

If human remains are discovered during the development phase of a project the SHPO should be contacted immediately. Contact information is listed below.

Fred Gaske (SHPO)  
Florida Division of Historical Resources  
R.A. Gray Building  
500 South Bronough St.  
Tallahassee, Florida 32399-0250  
P: 850-245-6333

**Appendix C:**  
**FMSF Survey Log and Site Files**

## Appendix G -- Staff Comments on Proposed Mine

## **Land Stewardship Staff Comments**

### **Green Meadow IPD Project**

**7-6-04**

Lee County purchased nomination #200 (now known as Wild Turkey Strand Preserve, WTSP) because it met all of the criteria listed in Section 4, items G. and H., paraphrased below, of Ordinance 96-12, provided as addendum A. The land has critical and sensitive conservation value in regards to size, unique/rare habitat, contributes positively to surface water management, water supply wildlife habitat and appropriate public use. The land is consistent with the Lee County Comprehensive Plan as being appropriate for conservation of natural resources and public recreation.

The Board of County Commissioners (BOCC) appointed committee, known as CLASAC, is responsible for reviewing and recommending to BOCC nominations suitable for acquisition. Recommendations are made based on Secondary Review Criteria approved by the BOCC in Resolution 01-01-35. Criteria D.3. Land Manageability, provided as part of aforementioned Resolution as addendum B, looks at surrounding Future Land Use to determine whether a nomination is suitable for acquisition as a preserve. At the time nomination #200 was reviewed and recommended for acquisition greater than 75% of the lands surrounding #200 were of low impact, which is defined in aforementioned Resolution; surrounding Future Land Uses consisted of Wetlands and Density Reduction/Groundwater Resource. Rezoning the adjacent Jaimerson property to IPD would change the original desirability of nomination #200, now WTSP, for which the BOCC spent over \$6.3M to acquire as a preserve with low impact surrounding land use.

There are several conflicts with the proposed mine to The Lee Plan in regards to WTSP.

**Policy 7.1.2:** Industrial developments requiring rezoning and meeting Development of County Impact (DCI) thresholds must be developed as Planned Developments designed to arrange uses as an integrated and cohesive unit in order to:

- Promote compatibility and screening;
- Reduce dependence on the automobile;
- Promote pedestrian movement within the development;
- Utilize joint parking, access and loading facilities;
- Avoid negative impacts on surrounding land uses and traffic circulation;
- Protect natural resources; and
- Provide necessary facilities and services where they are inadequate to serve the propose use. (Amended by Ordinance No. 94-30, 98-09, 00-22)

In regard to “promote compatibility and screening”, the proposed berm (B-B) is insufficient for screening. The northern portion of WTSP is planned to be the trailhead and parking area for the future public access at the Preserve. This is the only possible access point for visitors since this north boundary is adjacent to a main road. Although the height of berm B-B is not specified, it

appears from exhibit 6-C to be significantly lower than the 10' berm A-A. A visitor to a conservation area would not be viewing "compatible" development, nor would their view be screened from this development.

Concession: Land Stewardship staff requests at least the minimum buffer zone between WTSP and the berm/mining operation using the usual county standards, as long as they are not less than 322 feet from the freshwater marshes and 550 feet from cypress swamp, hammock and flatwood plant communities located on WTSP. These standards were established by the Southwest Florida Water Management District in their SWIM Ordinance Model Project (addendum C). A map that illustrates the location of these plant communities at WTSP is also attached (addendum D).

In regard to "avoid negative impacts on surrounding land uses" and "protect natural resources", the Green Meadow IPD application states in exhibit 6-I that "The request will not adversely affect environmentally critical areas...". However, there have not been any studies conducted to the impacts of the proposed mine project on WTSP. Blasting, which is proposed for this mine, could have detrimental effects on wildlife at WTSP, which exhibits numerous listed species:

- American alligator (*Alligator mississippiensis*)
  - USFWS- Threatened Due to Similarity of Appearance
  - FWC- Species of Special Concern
- gopher tortoise (*Gopherus polyphemus*)
  - FWC- Species of Special Concern
- snowy egret (*Egretta thula*)
  - FWC- Species of Special Concern
- little blue heron (*Egretta caerulea*)
  - FWC- Species of Special Concern
- tricolored heron (*Egretta tricolor*)
  - FWC- Species of Special Concern
- white ibis (*Eudocimus albus*)
  - FWC- Species of Special Concern
- roseate spoonbill (*Ajaia ajaja*)
  - FWC- Species of Special Concern
- wood stork (*Mycteria americana*)
  - USFWS- Endangered
  - FWC- Endangered
- snail kite (*Rostrhamus sociabilis plumbeus*)
  - USFWS- Endangered
  - FWC- Endangered
- Florida sandhill crane (*Grus canadensis pratensis*)
  - FWC- Threatened
- Big Cypress fox squirrel (*Sciurus niger avicennia*)
  - FWC- Threatened

This is likely not a complete indication of all the listed species utilizing WTSP. The above list was compiled from cursory observations during quarterly site inspections and a Property Evaluation Report conducted by Kevin L. Erwin Consulting Ecologist, Inc. (addendum E). The majority of these listed species depend on healthy wetland habitats, often with very specific hydroperiods, for their survival.

Concession: Land Stewardship staff requests an environmental impact study of WTSP on the impact of the Green Meadow IPD project that would be conducted by an independent biologist that is not an employee or affiliate of a company engaged in construction materials mining activity. The findings of the study would then be reviewed by County Staff as well as wildlife experts from the United States Fish and Wildlife Service and the Florida Fish and Wildlife Conservation Commission. The findings from this study and recommendations of the reviewers would be included in the final permits for the project.

**Goal 10: Natural Resource Extraction:** To protect areas containing identified natural resources from incompatible urban development, while insuring that natural resource extraction operations minimize or eliminate adverse effects on surrounding land use and natural resources. (Amended by Ordinance No. 02-02)

**Objective 10.1:** Designate through the rezoning process sufficient lands suitable for providing fill material, limerock and other natural resource extraction materials to meet the county's needs and to export to other communities, while providing adequate protection for the county's natural resources." that do not appear to adhere to the goal. (Amended by Ordinance No. 02-02)

**Policy 10.1.1** Natural resource extraction operations intending to with draw groundwater for any purpose must provide a monitoring system to measure groundwater impacts. (Amended by Ordinance No. 02-02)

Based upon the groundtruthing conducted during the Property Evaluation Report (addendum E) approximately 63.1% of WTSP is likely to be considered jurisdictional wetlands by the COE and/or SFWMD with an additional 11.4 acres of jurisdictional surface waters. These areas are highlighted on the WTSP plant community map (addendum D).

Concession: Land Stewardship staff requests the monitoring system to include the wetlands at WTSP within a set distance, yet to be determined, of the Green Meadow IPD. The mining company would pay for the monitoring, that would be overseen by an independent person that is not an employee or affiliate of a company engaged in construction materials mining activities. If impacts are discovered, the mining activities will immediately stop until a cause is discovered and can be mitigated.

**Policy 10.1.2:** Applications for natural resource extraction permits for new or expanding areas must include an environmental assessment. The assessment will include (but not be limited to) consideration of air emissions, impact on environmental and natural resources, effect on nearby land uses, degradation of water quality, depletion of water quantity, drainage, fire, safety, noise, odor, visual impacts transportation, sewage disposal and solid waste disposal. (Amended by Ordinance No. 00-22, 02-02)

Of primary concern with WTSP is the air emissions, impact on environmental and natural resources, effect on nearby land uses, degradation of water quality, depletion of water quantity, drainage, noise, odor, transportation and visual impacts. No considerations on the effects the Green Meadow IPD to WTSP were listed in their application. The environmentally critical habitats of the preserve and numerous listed species documented all have potential for being disturbed by this proposal. Additionally, the proposed public use of this Preserve will be highly affected in the areas of noise, odor, transportation, visual impacts and air emissions. The dust, as well as the noise from both blasting and the 324 truck trips passing by the Preserve every day, will have a tremendous impact on visitors to the Preserve. This project plans on having all processing located adjacent to SR82, which is where the only possible parking for the Preserve is located. Although we do not know how many visitors WTSP will have, Six Mile Cypress Slough Preserve, located less than 10 miles away in a growing residential neighborhood, with wildlife viewing opportunities and off a main road has over 80,000 visitors per year. Although the Preserve is currently not providing parking and other amenities, it certainly will be a well-established recreational area within a few years, and considering projected growth in the area, will have considerable visitation. The activities of the mine are proposed for the next 25 years, which will conflict with the visitors experience to visiting a nature preserve.

Concession: In addition to the environmental and water monitoring systems listed above, staff requests an assessment from an expert in the field of acoustics and noise control to determine if the buffer zones listed above would be adequate to shield visitors from the noise of the blasting and heavy truck traffic, or if additional buffering is required. Once again, this will be an independent expert that is not an employee or affiliate of a company engaged in construction materials mining activities. The findings of this study must be followed if additional buffering is required.

**Policy 10.1.4:** Natural resource extraction activities (and industrial uses which are ancillary to natural resource extraction) may be permitted in areas indicated on the Future Land Use Map as Rural, Open Lands, and Density Reduction/Groundwater Resources, provided they have adequate fire protection, transportation facilities, wastewater treatment and water supply, and provided further that they have no significant adverse effects such as dust and noise on surrounding land uses and natural resources...

The Land Use category of WTSP is “Conservation Lands”. As mentioned in the previous pages, no studies have been conducted to determine the effects of the proposed mine on the wildlife-including several listed species, health of the ecosystem, impacts to the wetlands and experience for the visitors to the preserve.

**Objective 52.3:** New developments must use innovative open space design to preserve existing native vegetation, provide visual relief, and buffer adjacent uses and proposed and/or existing rights-of-way. This objective and subsequent policies are to be implemented through the zoning process. (Added by Ordinance No. 02-02)

The clearing and installing berm B-B on the property line between the proposed mine and WTSP does not meet this objective. This is an additional reason why staff is requesting the planted buffer zone between the Preserve and the mining activities.

**POLICY 77.2.2:** Continue to provide regulations and incentives to prevent incompatible development in and around environmentally sensitive lands (as defined in Policy 77.1.1.4.b.). (Amended by Ordinance No. 94-30)

Wild Turkey Strand Preserve was bought through the Conservation 20/20 Program because it was determined environmentally sensitive land, land use category “Conservation Land”, and is directly adjacent to the proposed mine site. Land Stewardship staff is concerned that the Green Meadow IPD Project is an incompatible development due to the impacts that will occur to the preserve, its wildlife and visitors caused by the dust, noise, lighting, traffic, and groundwater pollution.

**POLICY 77.2.3:** Prevent water management and development projects from altering or disrupting the natural function of significant natural systems.

This mine could cause alteration and disruption of the natural function of the wetlands on Wild Turkey Strand Preserve. “Extensive premature decline and death of pond-cypress trees in central Florida have been attributed to hydroperiod alterations due to excessive withdrawals of ground water from the Florida aquifer”, (addendum F). Fractures in the ground could cause the wetlands on the preserve to be drained and alter the hydroperiod, which could cause the cypress to die.

Concession: the mining company needs to pay to have a ground penetrating radar test to determine if there are any fractures in the ground that could result in drainage to the wetlands at WTSP. These results must be compiled by an independent company and/or person that is not an employee or affiliate of a company engaged in construction materials mining activities and be reviewed by Lee County staff. If it is found that the mining activities would disrupt the natural function of WTSP’s wetlands it will not be permitted.

**POLICY 77.2.10:** Development adjacent to aquatic and other nature preserves, wildlife refuges, and recreation areas must protect the natural character and public benefit of these areas including, but not limited to, scenic values for the benefit of future generations. (Amended by Ordinance No. 00-22)

The Green Meadow IPD project will severely decrease the scenic value of WTSP. With no setback buffer, the noise and dust will carry over onto the preserve and the traffic from the trucks could pose a safety problem for visitors entering and leaving the access area off of State Road 82. The project is proposing to actively mine for 25 years, thus affecting the scenic value for future generations (addendum G). Of particular concern is the area adjacent to south boundary of the preserve area in Phase 3. There is a slight thickening of the berm B-B where the plant community is “Wet Prairie” and “Melaleuca Wetlands”. Adjacent to this area on WTSP is a stunning cypress pond. Although the Preserve has numerous cypress ponds spread throughout it, this is the only one in the northern section of the Preserve. The master site plan for WTSP has not been written at this point, but the trail system would certainly take in this feature to give

visitors a small glimpse of this type of plant community. Clearing, berming and blasting the area next to this cypress pond (addendum G) would destroy the natural character of that area.

Concession: Land Stewardship staff requests at least the minimum buffer zone between WTSP and the berm/mining operation using the usual county standards, as long as they are not less than 322 feet from the freshwater marshes and 550 feet from cypress swamp, hammock and flatwood plant communities located on WTSP. These standards were established by the Southwest Florida Water Management District in their SWIM Ordinance Model Project (addendum C). In the case that the buffer includes row crops, it will need to be replanted with plants that are present in the adjacent plant community at WTSP. The plants should include trees (a minimum of 60% should be over 6 feet), shrubs, and herbaceous groundcover. Both the plant list and location of plants must be approved by Land Stewardship staff and planted randomly to simulate a natural plant community. Some of the adjacent plant communities are fallow farm fields and pastures. In those cases, the company will restore their fields with the same restoration methods that will be established with the WTSP Land Stewardship Plan. A map that illustrates these plant communities at WTSP is also attached (addendum D). Additionally, staff requests that the Preserve area in phase 3 be extended to include the pine flatwoods, wet prairie and cypress plant communities.

**OBJECTIVE 77.4: ENDANGERED AND THREATENED SPECIES IN GENERAL.** Lee County will continue to protect habitats of endangered and threatened species and species of special concern in order to maintain or enhance existing population numbers and distributions of listed species.

Land Stewardship staff has concerns with the Green Meadow IPD project adversely affecting many listed species that utilize this area for foraging and breeding.

In 1993, the Florida Panther Interagency Committee issued the Habitat Preservation Plan (HPP) identifying 1,253,000 acres of panther habitat on private land deemed essential for maintaining a self-sustainable population of panthers in south Florida. WTSP and the Green Meadow IPD project areas were ranked as Priority 2 (less frequently used or lower quality habitat) area and were recommended for acquisition and protection (addendum H). In 1999, USFWS confirmed the importance of the HPP's findings and formed a subcommittee called the Multi-Species/Ecosystem Recovery Implementation Team (MERIT) to implement a recovery plan. In 2001, MERIT Panther Subteam approved a map of primary and secondary panther habitat. WTSP and the Green Meadow IPD project areas were in both the primary and secondary habitat zones (addendum I). USFWS has found that permitting of inappropriate development projects adjacent to lands used by the panther degrades their habitat. Thus, even if there is no significant physical alteration of a habitat area, nearby human activity including roads and mines can render a protected area useless to the panther. By permitting this type of a project, Lee County could be in violation of the Endangered Species Act Section 7 and 9 (addendum J). Although Florida panthers have not been confirmed utilizing WTSP, a scat sample was collected in December of 2003 and staff is currently in search of an expert to evaluate the possibility of it coming from a Florida panther.

Wood storks and other wading birds are other listed species that have been recorded using WTSP. Any land use change in or around these nesting and foraging areas will have direct effects on the health of these bird population and the wetland ecosystems on which they depend. Wood storks use open, shallow wetlands (2-15 inches deep), which tend to be open marshes, cypress ponds and sloughs, shallow man-made ponds, or ditches (addendum K). The 45-foot deep lakes proposed by the Green Meadow IPD project do not fit this criteria. See map (addendum L) that shows foraging areas for wading birds and woodstorks. The Green Meadow IPD project is within woodstork and wading birds forage areas.

Land Stewardship staff has water quantity and quality concerns with the proposed up to 45 foot deep mine directly adjacent to healthy cypress dome and cypress strand communities. Changes in overall hydroperiod and introduction of pollutants into the system could have a deleterious chain reaction on the system beginning with the aquatic invertebrates on up the food chain. For example: Apple snails (*Pomacea paludosa*), as aquatic macro invertebrates make good wetland health indicator species because they live in the water for all or most of their life, stay in areas suitable for their survival, and they differ in their tolerance to amount and types of pollution. These snails are currently abundant in the cypress communities of the Preserve and represent at least 90% of the food source for Snail Kites. A decrease in apple snail densities would certainly impact snail kites using the Preserve.

Concession: Refer to the concession on page 3 (Environmental Impact Study).

**POLICY 77.4.3:** Require detailed inventories and assessments of the impacts of development where it threatens habitat of endangered and threatened species and species of special concern.

As explained under POLICY 7.1.2, we feel that the mining company should conduct an environmental impact study of WTSP on the impact of the Green Meadow IPD project, reviewed by County Staff as well as wildlife experts from the United States Fish and Wildlife Service and the Florida Fish and Wildlife Conservation Commission. The findings and recommendations from this study would be included in the final permits for the project.

Appendix H -- Kevin L. Erwin Comments on Proposed Mine

To: Anik Smith

From: Kevin Erwin

Date: October 22, 2004

Re: DC12003 – 0076 Green Meadows IPD, Comments on Application Information  
KLECE Project #LEEWT102

I have now completed a review of the application including the Supplemental Information submitted by the applicant on October 8, 2004. The following comments are provided to give an overview of those areas where the applicant has not demonstrated the reasonable assurances necessary to protect and maintain the quality of the Wild Turkey Strand Preserve (WTSP)

### **Hydrogeologic Report**

There are significant concerns regarding the immediate and long-term hydrological impacts the proposed mine will have on water levels and hydroperiods within those wetlands on the WTSP. The report prepared by ECT (Sept. 04) reviewed existing site-specific data as well as published information concerning the geology of the immediate area. The information presented in this report has little relevance to developing an understanding of the surface (wetland) hydrology on the site and within the WTSP. There is no mention of the response of wetland water levels in these areas to the proposed mining. The proposed Groundwater Monitoring Plan (Appendix C) does not address monitoring baseline, mining or post mining conditions within the onsite and offsite wetland preserve areas. Surface water and shallow groundwater levels should be monitored bi-monthly in response to rainfall for a minimum of one year. Piezometers should be installed along transects within and adjacent to wetlands on the project site and the WTSP to establish baseline conditions.

## **Planning/Environmental**

Specific and comprehensive conditions will need to be placed in the IPD to require the applicant restore, monitor, and perpetually manage the onsite preserve areas. It would be far better to require the applicant to modify the application and provide these details now prior to the scheduled hearing. For instance the proposed B-B setbacks should be increased to 500 ft. with native habitat restoration within the entire buffer. Future monitoring may establish the need for more or less buffer to protect the WTSP wetlands. The restoration details to be provided by applicant must reflect current restorations standards and techniques. For instance, trees and shrubs should be planted on 9 ft. centers (exclusive), watered-in, and irrigated as necessary to insure survival. The detailed plan should cover use of topsoil, management and monitoring conditions and success criteria (e.g. 10 years of > 80% survival and acceptable growth for each mine phase).

The potential post-mining residential development issue should be addressed. Appropriate conservation easements or title transfer on all preserve areas should be required at a minimum and a funding mechanism for restoration and perpetual management provided prior to approval of the application. Consideration should be given to transferring ownership of all lands and lakes to the public after mining is completed. Properly designed lakes and restored natural features, as discussed below, would have significant public recreational value.

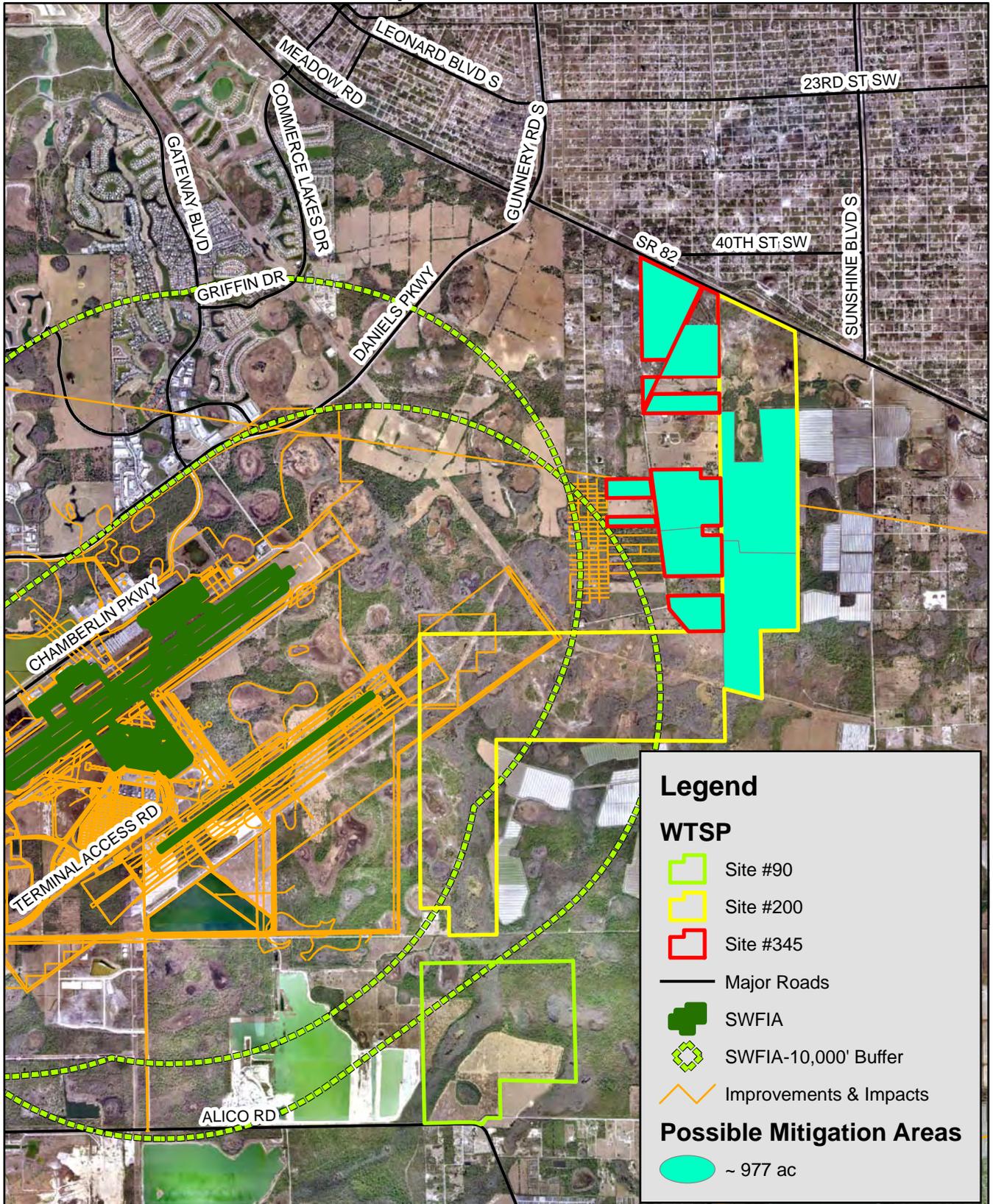
The currently proposed mine reclamation plan is not sufficient to provide acceptable post-mining water quality, fish and wildlife habitat. A detailed reclamation plan should be provided that includes 100 ft. wide littoral shelves utilizing properly stockpiled native topsoil (A and B horizon). Littoral shelves should be planted on 3 ft. centers with appropriate species of wetland plants, shrubs, and trees. Only native species of vegetation should be used for stabilization purposes at the completion of each mining phase. This plan should include appropriate monitoring and success criteria and require that these criteria be met prior to commencing the next phase of mining activity.

Accurate Level III FLUCFCS mapping should be provided that follows the methodology utilized in mapping the WTSP. This information should be overlaid on surveyed topography extending 500 feet offsite.

The proposed \$10,000.00 lump sum payment to the Land Stewardship Program is not adequate to monitor the mine's long term impacts on the WTSP. An appropriate amount should be placed in escrow to cover the cost of baseline, construction, and post-construction monitoring of ground and surface water levels, wetland hydrological conditions, exotic and problematic plant species and wildlife impacts. Bonding should be considered to cover the cost of mitigating future problems that may be identified as a result of this long term monitoring.

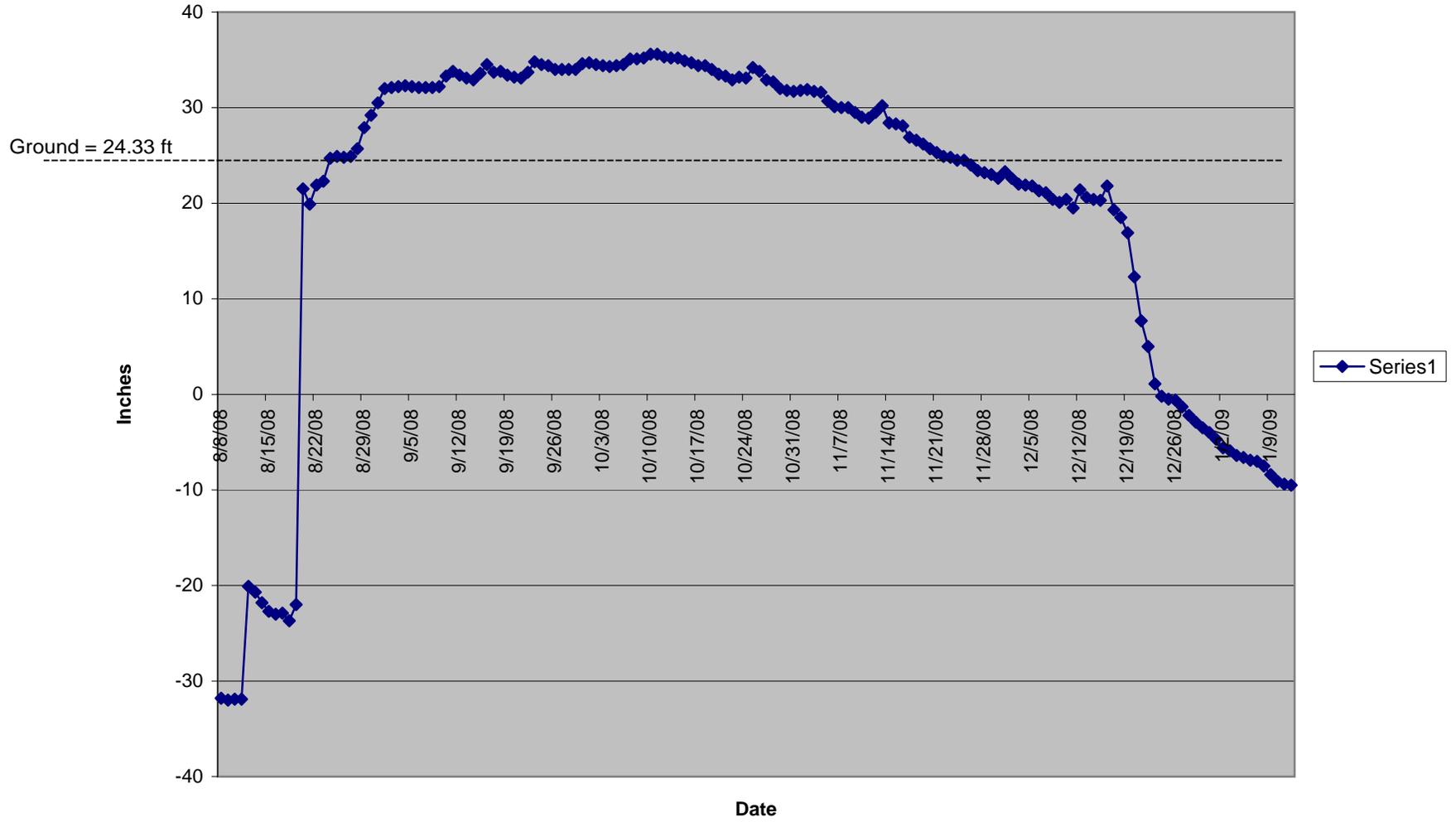
Appendix I -- Projected SWFIA Expansion & Mitigation Areas Map

# Appendix I: Projected SWFIA Expansion & Mitigation Areas Map



Appendix J -- Site 90 Water Table Data

Water Level - CM-12 Monitoring Well



Appendix K -- LCPA Letter



Direct Dial: (239) 768-4377

Fax: (239) 768-4912

February 21, 2005

ROBERT M. BALL, A.A.E.  
Executive Director

JAMES G. YAEGER  
Port Authority Attorney

BOARD OF  
PORT COMMISSIONERS

JOHN E. ALBION

ANDREW W. COY

BOB JAMES

RAY JUDAH

DOUGLAS R. ST. CERNY

Anik Smith  
Land Stewardship Supervisor  
Lee County Parks & Recreation  
Conservation 20/20  
3410 Palm Beach Blvd.  
Ft. Myers, FL 33916

Dear Ms. Smith,

Thank you for coordinating with the Port Authority on your grant application and land management plan for Wild Turkey Strand Preserve. After staff review of your draft impact map, we have determined that the land designated for future acquisition on our current Airport Layout Plan (ALP) that impacts Wild Turkey Strand Preserve should be omitted from the future land acquisition area. Therefore, your grant submittal should include these areas for reimbursement and your impact map for Southwest Florida International Airport (SWFIA) should not be necessary. We will coordinate with FAA and FDOT to update the ALP for SWFIA to show the changes described above.

We appreciate your ongoing coordination with adjacent properties as we undergo future development at the airport. If you need any addition information please, don't hesitate to contact me.

Thank you again,

LEE COUNTY PORT AUTHORITY

Sarah B. Jamieson  
Senior Manager

SJ/sbj

Appendix L -- LCPA MOU with Exhibits

**MEMORANDUM OF UNDERSTANDING  
BETWEEN LEE COUNTY, FLORIDA  
AND THE  
LEE COUNTY PORT AUTHORITY  
FOR THE USE OF CONSERVATION 20/20 PRESERVES  
FOR AIRPORT PROJECT MITIGATION**

This agreement is made this \_\_\_\_ day of \_\_\_\_\_, 2009, by and between **LEE COUNTY**, a political subdivision of the State of Florida, and **LEE COUNTY PORT AUTHORITY (LCPA)**, a special district and political subdivision of the State of Florida.

WHEREAS, the Lee County Board of County Commissioners holds title to all Lee County Lands, including designated Conservation 20/20 Preserves, the Southwest Florida International Airport and Page Field.

WHEREAS, the LCPA is responsible for managing Lee County airport lands in accordance with airline and other agreements, as well as Federal Aviation Administration (FAA), Florida Department of Transportation (FDOT), and other federal and state regulatory requirements.

WHEREAS, the Lee County Conservation 20/20 Land Program was established in 1996 through Lee County Ordinance 96-12 and provides a local program for the "acquisition and management of environmentally critical or sensitive lands for the protection of natural flood plains, marshes or estuaries, for surface water management and water supply, for the restoration of altered ecosystems; and to provide wildlife management areas and recreation opportunities; and the conservation of said natural resources."

WHEREAS, the goal of Lee County to restore purchased Conservation 20/20 Preserves to a more natural condition is in the best interest of the public.

WHEREAS, since the acquisition, restoration, mitigation and management costs for Conservation 20/20 lands are paid for by Lee County property taxes and are greatly dependent on annual budget appropriations, other funding alternatives serve to maximize the benefits to the program and the environment.

WHEREAS, the LCPA is responsible for providing aviation transportation infrastructure which is essential to the economic prosperity of southwest Florida, and airport projects are anticipated to require environmental mitigation to offset project impacts.

WHEREAS, the use of Conservation 20/20 Lands for LCPA airport projects mitigation will reduce costs to Lee County taxpayers to restore and enhance 20/20 Preserves, will

reduce project costs for the LCPA and their partner airlines, and will serve to provide a more pristine environment for southwest Florida.

NOW, THEREFORE, Lee County and the LCPA mutually agree to the following:

- A. The LCPA may utilize Conservation 20/20 Preserves for airport project mitigation to offset airport project impacts in accordance with the Lee County Conservation 20/20 Program, Florida Communities Trust grant conditions (if applicable), FAA and FDOT compliance restrictions, airline agreements, and South Florida Water Management District, US Army Corps of Engineers and other regulatory permit requirements.
- B. The LCPA shall submit an "Airport Project 20/20 Mitigation Request" to Lee County Conservation 20/20 staff for each airport project mitigation proposal. Each "Airport Project 20/20 Mitigation Request" shall serve as a placeholder on the designated Lee County 20/20 Preserves for a period of time as outlined in the request. Each request shall be approved by the appropriate Lee County and LCPA committees and Boards, currently the Management Subcommittee (MSC), Conservation Lands Acquisition and Stewardship Committee (CLASAC), the Airports Special Management Committee (ASMC), the Board of Port Commissioners and the Board of County Commissioners.
- C. Once an "Airport Project 20/20 Mitigation Request" is approved, the LCPA will work with Lee County Conservation 20/20 staff and the regulatory permitting agencies to develop an "Airport Project 20/20 Mitigation and Management Plan" that will more specifically outline the Conservation 20/20 Preserves needed based on permit conditions, outline the restoration/mitigation to be performed, permit conditions, use and access of property, maintenance plans, endowments, the responsibilities of Lee County and the LCPA, etc. Each "Airport Project Mitigation and Management Plan" shall be in accordance with the Conservation 20/20 Land Stewardship Plan and in accordance with FAA regulations, and other jurisdictional agencies, including restrictions regarding the creation or enhancement of wildlife attractants near airports. Each "Airport Project Mitigation and Management Plan" shall also be approved by the appropriate Lee County and LCPA committees and Boards.
- D. All enhancement, restoration, and mitigation work on Conservation 20/20 lands will be paid for and performed by the LCPA. There is no cost to the LCPA associated with the use of the land.
- E. Any Conservation 20/20 Preserves used for airport projects mitigation (preservation, restoration, enhancement, mitigation, water quality, water quantity, wildlife, etc.) shall be designated as "Airport Project Mitigation" on county maps that show Conservation 20/20 Lands.
- F. Compliance with all airport project permit conditions within the "Airport Project Mitigation" areas shall be the responsibility of the LCPA.
- G. Recreational and other uses of "Airport Project Mitigation" areas shall be in accordance with regulatory permits.
- H. Nothing in this memorandum shall obligate Lee County to use Conservation 20/20 Preserves for airport project mitigation and nothing in this memorandum shall prevent the LCPA from utilizing other mitigation options to satisfy permit requirements.

IN WITNESS WHEREOF, the parties hereto, by their duly authorized representatives, have executed this agreement on the date first above written.

APPROVED AS TO FORM:

\_\_\_\_\_  
Lee County Attorney's Office

LEE COUNTY

By: \_\_\_\_\_  
Chairman, Board of County Commissioners

ATTEST:  
CHARLIE GREEN, CLERK  
By: \_\_\_\_\_  
Deputy Clerk

APPROVED AS TO FORM:

\_\_\_\_\_  
Port Authority Attorney's Office

LEE COUNTY PORT AUTHORITY

By: \_\_\_\_\_  
Chairman, Board of Port Commissioners

ATTEST:  
CHARLIE GREEN, CLERK  
By: \_\_\_\_\_  
Deputy Clerk

**AIRPORT PROJECT MITIGATION REQUEST  
#1  
SOUTHWEST FLORIDA INTERNATIONAL AIRPORT  
PARALLEL RUNWAY 6R-24L PROGRAM**

In accordance with the Memorandum of Understanding between Lee County and the Lee County Port Authority dated \_\_\_\_\_ regarding the use of Conservation 20/20 Preserves for Airport Project Mitigation, the following Airport Project 20/20 Mitigation Request is submitted for consideration:

**Background:**

The Southwest Florida International Airport (RSW) is a medium hub commercial service airport serving Southwest Florida. RSW provides intermodal transportation facilities to accommodate nearly 8 million passengers per year with over 30 airlines, direct international service to Canada and Germany, and provides over \$3.6 billion of economic impact to the region each year and supports over 64,000 jobs, with 4,000 people currently working at the airport.

The RSW Parallel Runway was first shown and adopted by the Port Authority, FDOT and FAA as part of the 1986 RSW Airport Master Plan. A significant amount of planning and environmental work has been accomplished. The most recent project description is contained within the April 14, 2004 FAA approved RSW Airport Master Plan and is contained in the approved Lee County Comprehensive Plan. The current Parallel Runway project is envisioned to consist of a 9,100' x 150' parallel runway, a 9,100' x 75' parallel taxiway, additional crossover taxiways connecting the new runway to the existing airfield ramp and taxiway system, the relocation or enhancement of the Air Traffic Control Tower, construction of a new primary Aircraft Rescue and Fire Fighting emergency response station, and other supporting project components.

**Requested Use of Conservation 20/20 Preserves:**

The LCPA has assessed several Lee County Conservation 20/20 (C20/20) parcels as potential mitigation for the RSW Parallel Runway project. Portions of two C20/20 parcels have been identified that potentially meet the mitigation requirements for the RSW Parallel Runway. These two parcels, identified as C20/20 Parcel Nos. 200 and 345 and more specifically Management Units (MU) 200-2, 200-3, and 345-1 through 345-9, ([excluding Section 10 within MU 345-2](#)), are part of the Wild Turkey Strand Preserve. An aerial delineating the potential mitigation parcels is attached as Exhibit A.

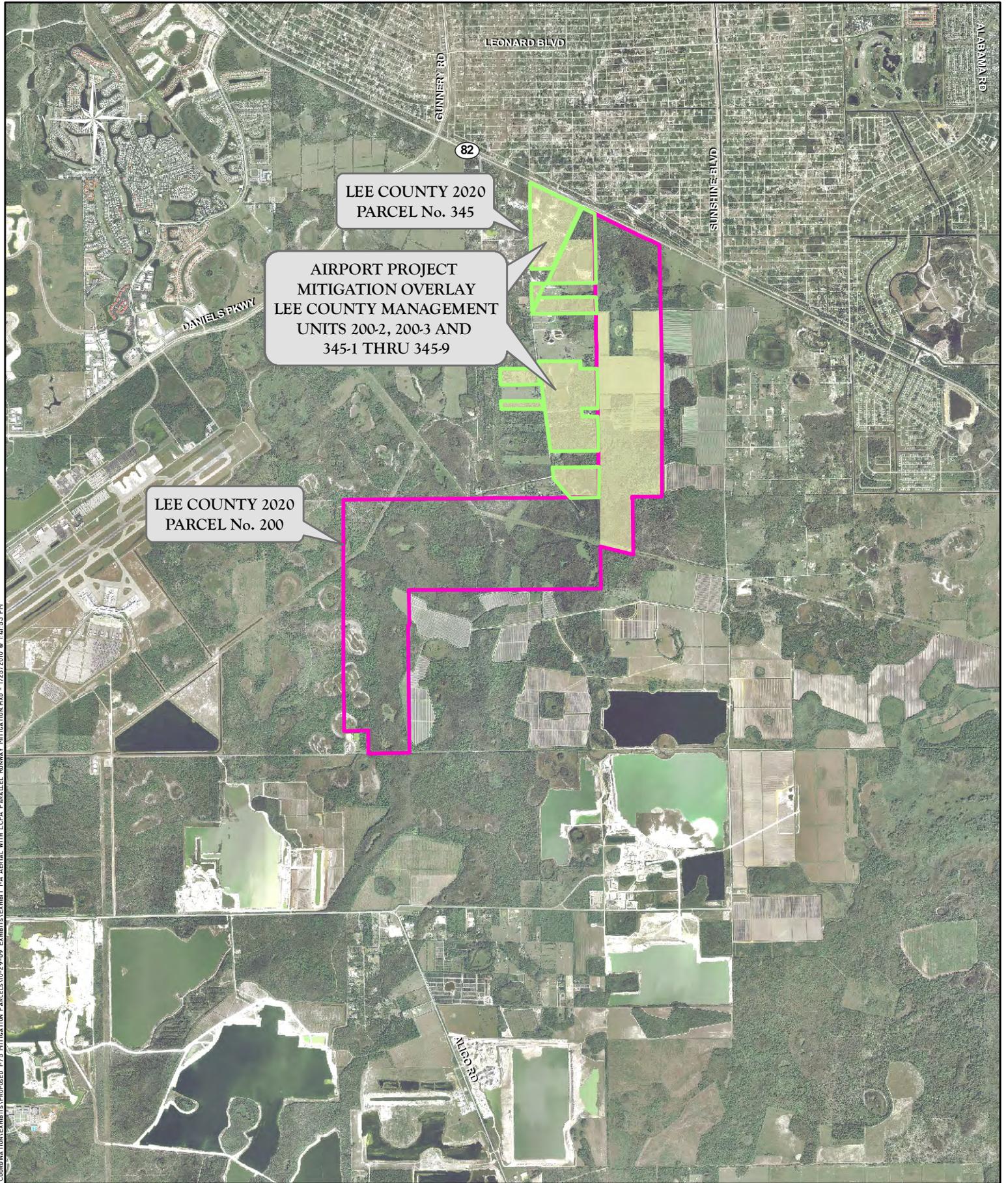
**C20/20 Parcel Nos. and Acreages for SWFLA RSW Parallel Runway Mitigation**

Lee County 20/20 Parcel No.	Acreage
Parcel No. 200 (MU 200-2 and 200-3)	493.12
Parcel No. 345 (MU 345-1 through 345-9)*	<a href="#">484.10</a> <span style="color: red;">507.56</span>
<b>Total</b>	<a href="#">977.22</a> <span style="color: red;">1,000.68</span>

The primary emphasis of the proposed mitigation plan for the two parcels will be the eradication and maintenance of exotic and nuisance species in accordance with the future permit requirements. Hydrological restoration will take place, as well as planting of native vegetation may be installed in areas where dense stands of exotics have been removed. A prescribed burn plan will be implemented targeting ecological objectives after the initial treatment and removal of exotic and nuisance plant species has been completed. The prescribed burn plan for mitigation areas will be a program that mimics the natural fire cycle for the various habitat types identified. Clearing, earthwork, and planting of native vegetation will be installed to restore existing farm fields. Maintenance, monitoring, and management will be the responsibility of the LCPA until the mitigation areas have met the success criteria identified in the permits, after which time the responsibility for the maintenance and management of these lands will shift to Lee County. The overall mitigation plan will adhere to the goals identified in the respective Land Stewardship Plans.

**Placeholder Period:** The Lee County Conservation 20/20 Preserves shown in Exhibit 1-A shall be designated as Airport Project Mitigation and reserved for this use from the date of final approval of this request by the Board of Port Commissioners and Board of County Commissioners for a period until an Airport Project 20/20 Mitigation and Management Plan is approved by the Board of Port Commissioners and Board of County Commissioners or January 1, 2015, whichever occurs first. This request may be extended, modified or cancelled at any time as mutually agreed and approved.

INSERT EXHIBIT 1-A



J:\2007\07\01\GIS\2009\2020 COORDINATION\EXHIBITS\PROPOSED\_L75 MITIGATION PARCELS\10-29-09 EXHIBITS\EXHIBIT 1-A AERIAL WITH LCPA PARALLEL RUNWAY MITIGATION.MXD - 1/25/2010 @ 1:41:53 PM



EXHIBIT 1-A  
 SOUTHWEST FLORIDA INTERNATIONAL AIRPORT  
 PARALLEL RUNWAY 6R-24L PROGRAM  
 AIRPORT PROJECT MITIGATION

DRAFT

**AIRPORT PROJECT MITIGATION REQUEST**  
**#2**  
**SOUTHWEST FLORIDA INTERNATIONAL AIRPORT**  
**I-75 ACCESS ROADWAY SYSTEM**

In accordance with the Memorandum of Understanding between Lee County and the Lee County Port Authority dated \_\_\_\_\_ regarding the use of Conservation 20/20 Preserves for Airport Project Mitigation, the following Airport Project 20/20 Mitigation Request is submitted for consideration:

**Background:**

The Southwest Florida International Airport (RSW) is a medium hub commercial service airport serving Southwest Florida. RSW provides intermodal transportation facilities to accommodate nearly 8 million passengers per year with over 30 airlines, direct international service to Canada and Germany, and provides over \$3.6 billion of economic impact to the region each year and supports over 64,000 jobs, with 4,000 people currently working at the airport.

As the two largest and significant transportation facilities in southwest Florida, a more direct connection between I-75 and the Southwest Florida International Airport (RSW) is needed. Ben Hill Griffin Parkway/Treeline Avenue currently serves as the primary entrance roadway serving RSW. With the projected growth of the surrounding area and FGCU, the current and projected congestion on I-75, and the project passenger growth of RSW, Ben Hill Griffin Parkway/Treeline Avenue is expected to experience congestion in the near future.

The project is currently under design and is programmed for construction by FDOT.

**Requested Use of Conservation 20/20 Preserves:**

The LCPA has assessed several Lee County Conservation 20/20 (C20/20) parcels as potential mitigation for the RSW Interstate 75 (I-75) CD Access Project. The proposed project is to construct a new interchange and east/west alignment to provide direct access to and from the RSW Terminal Access Road to I-75. Three C20/20 parcels have been identified that potentially meet the mitigation requirements for the SWFIA I-75 CD Access Project. Two of the parcels, identified as Nos. 321 and 334, are part of the overall Imperial Marsh Preserve and abut the LCPA’s Mitigation Park. The third parcel is part of the Six Mile Cypress Slough Preserve and is identified as No. 239. An aerial delineating the potential mitigation parcels is attached as Exhibit 2-A.

**C20/20 Parcel Nos. and Acreages for SWFIA I-75 CD Access Project**

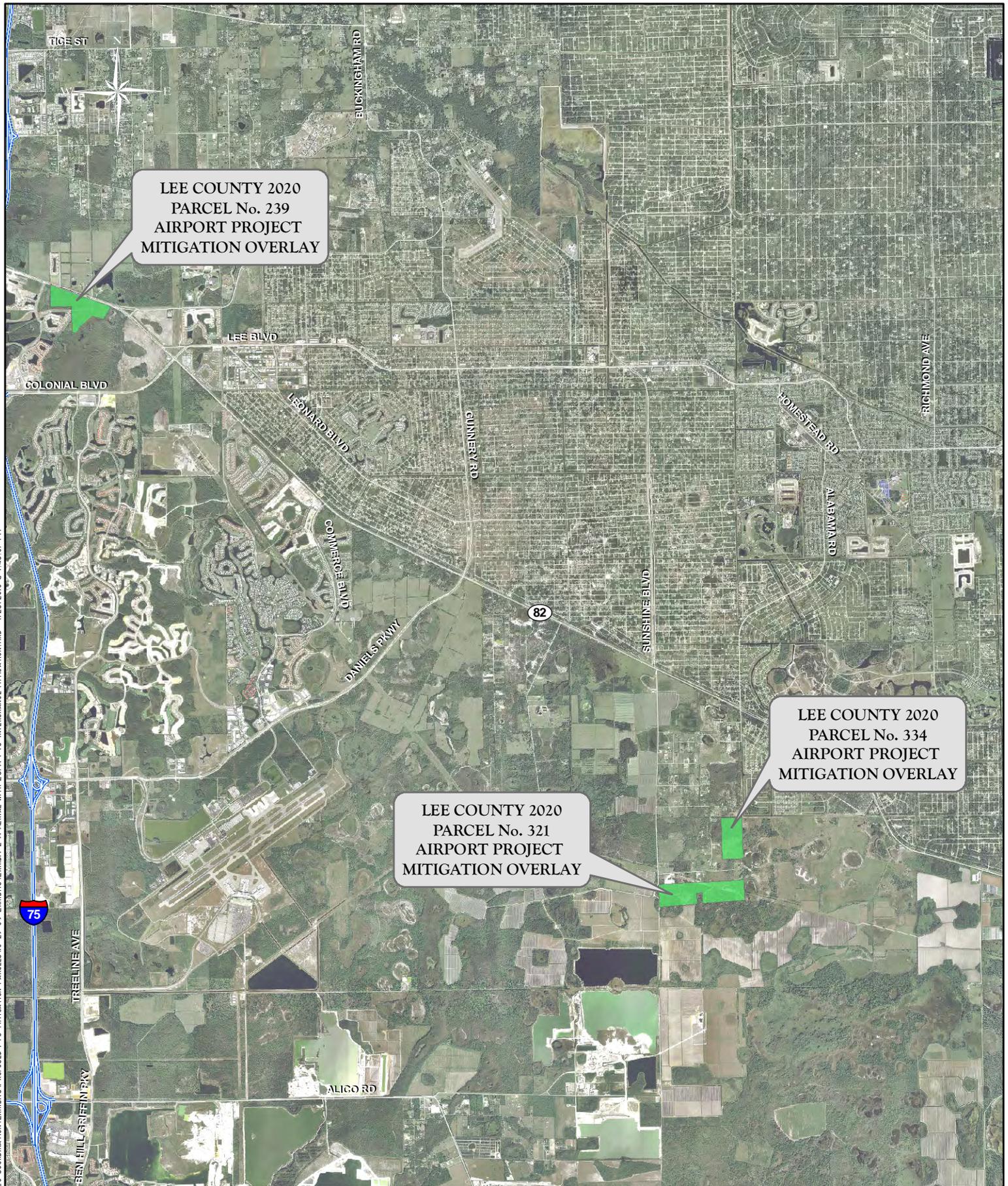
Lee County 20/20 Parcel No.	Acreage
Parcel No. 321	155.45
Parcel No. 334	78.18
Parcel No. 239	105.64
<b>Total</b>	<b>339.27</b>

The primary emphasis of the proposed mitigation plan for the three parcels will be the eradication and maintenance of exotic and nuisance species in accordance with the future permit requirements. Hydrological restoration will take place, as well as planting of native vegetation may be installed in areas where dense stands of exotics have been removed. A prescribed burn plan will be implemented targeting ecological objectives after the initial treatment and removal of exotic and nuisance plant species has been completed. The prescribed burn plan for mitigation areas will be a program that mimics the natural fire cycle for the various habitat types identified. Portions of the fallow farm fields on Parcel Nos. 321 and 334 may be restored to historic habitat types or utilized for wetland creation. Maintenance, monitoring, and management will be the responsibility of the LCPA until the mitigation areas have met the success criteria identified in the permits, after which time the responsibility for the maintenance and management of these lands will shift to Lee County. The overall mitigation plan will adhere to the goals identified in the respective Land Stewardship Plans.

**Placeholder Period:** The Lee County Conservation 20/20 Preserves shown in Exhibit A shall be designated as Airport Project Mitigation and reserved for this use from the date of final approval of this request by the Board of Port Commissioners and Board of County Commissioners for a period until an Airport Project 20/20 Mitigation and Management Plan is approved by the Board of Port Commissioners and Board of County Commissioners or January 1, 2015, whichever occurs first. This request may be extended, modified or cancelled at any time as mutually agreed and approved.

**INSERT EXHIBIT 2-A**

J:\2007\07DK\J710\GIS\2009\2020 COORDINATION\EXHIBITS\PROPOSED 1-75 MITIGATION PARCELS 10-29-09 EXHIBITS\EXHIBIT 2-A AERIAL WITH LCFA 1-75 INTERCHANGE MITIGATION.MXD - 1/25/2010 @ 1:45:07 PM



LEE COUNTY 2020  
PARCEL No. 239  
AIRPORT PROJECT  
MITIGATION OVERLAY

LEE COUNTY 2020  
PARCEL No. 321  
AIRPORT PROJECT  
MITIGATION OVERLAY

LEE COUNTY 2020  
PARCEL No. 334  
AIRPORT PROJECT  
MITIGATION OVERLAY



EXHIBIT 2-A  
SOUTHWEST FLORIDA INTERNATIONAL AIRPORT  
I-75 ACCESS ROADWAY SYSTEM  
AIRPORT PROJECT MITIGATION

DRAFT

Appendix M -- Cattle Leases & Map

## LICENSE FOR CATTLE GRAZING

This Agreement made this 16 day of September, 2008 by and between LEE COUNTY, a political subdivision and charter county of the State of Florida, c/o Director of Parks and Recreation, 3410 Palm Beach Boulevard, Fort Myers, FL 33916, telephone (239) 533-7275, hereinafter referred to as "Licensor," and Lana Flint, an individual, whose address is 4535 Kirby Thompson Rd., Labelle, Florida 33935, telephone 239-849-3272, hereinafter referred to as "Licensee":

### WITNESSETH

Licensor, in consideration of the fees paid, the covenants and agreements herein to be kept and performed by the Licensee, does hereby grant to the Licensee a license solely for the grazing of cattle on Licensor's lands as described as follows, to wit:

SEE EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF.

In further consideration of this Agreement, the parties agree as follows:

1. Licensee agrees to pay Licensor the total sum of \$82.50, due by September 15<sup>th</sup> each year for the term of this license to use the described property solely for cattle grazing.
2. This License is not assignable to any other party.
3. This License shall extend for an initial term of three years, which at the expiration of such term may be renewable upon the concurrence of both parties for one additional year, and/or may be revocable by the Licensor by giving the Licensee 30 days written notice to remove the cattle from the premises.
4. Licensee will not use the described lands for any other purpose other than cattle grazing.
5. Licensee will maintain the existing four strand barbed wire fence around the perimeter of the property with the exception of the road frontage. Road frontage fence will be maintained with five strand barbed wire during the term of this License. The fence shall remain the property of the Licensor.
6. Licensee agrees to keep the fence in an excellent state of repair at all times during the term of this Agreement.

7. It is mutually agreed that this Agreement may be canceled upon 48 hours written notice to the Licensee if any of Licensee's cattle are not kept within the confines of the property described in Exhibit "A."
8. Licensee covenants and agrees to file an annual personal property tax return with the County of Lee, State of Florida, as required by law.
9. All section corners, quarter corners, and other survey monuments lying in the premises will be properly flagged by the Licensor. Licensee agrees to bear any survey costs for the resetting of these monuments in the event they are disturbed by the Licensee in any way.
10. Licensee hereby indemnifies and releases the Licensor from any and all claims for damages to both persons and property as the result of the cattle grazing, and will hold Licensor harmless from all such damages during the term of this Agreement to include all reasonable fees, costs and expenses from any resulting litigation in any forum as the result of such damage as claimed or brought by third parties.
11. Licensee must obtain written approval from Conservation 20/20 Land Stewardship Supervisor prior to performing any land clearing, controlled burns, fertilizing, exotic removal, chopping, chemical spraying, or other land management activities.
12. Licensee shall not exceed 20 head of Cattle at any time.

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Signed and sealed the date above written.

LICENSEE

Lana Flint

By: \_\_\_\_\_

Title: \_\_\_\_\_

*Lana Flint*

STATE OF FLORIDA ) ss:

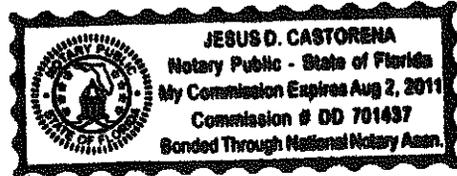
COUNTY OF LEE )

The foregoing instrument was acknowledged before me this 14<sup>th</sup> day of Sept, 2008, by Lana Flint, an individual, who is personally known to me or has produced FL DL as identification and did (did not) take an oath.

*Jesus D. Castorena*  
Notary Public

Jesus D. Castorena  
(Print Name)

My commission expires: Aug. 2, 2011



LICENSOR

LEE COUNTY PARKS AND RECREATION

By: \_\_\_\_\_

Director

*Barbara Manzo*

STATE OF FLORIDA ) ss:

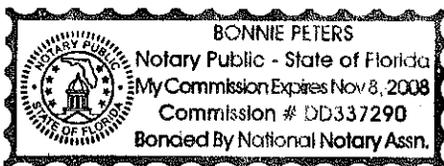
COUNTY OF LEE )

The foregoing instrument was acknowledged before me this 16<sup>th</sup> day of Sept, 2008, by Barbara Manzo, an individual, who is personally known to me or has produced \_\_\_\_\_ as identification and did (did not) take an oath.

*Bonnie Peters*  
Notary Public

Bonnie Peters  
(Print Name)

My commission expires:



Approved as to Form

By: \_\_\_\_\_

Lee County Attorney's Office

*Melinda Isner*

Exhibit "A" site #345 Wild Turkey Strand Pres.

PARCEL G:

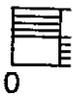
Elizabeth and Thomas Morrison Tract

A TRACT OR PARCEL OF LAND LYING IN SECTION 15 AND 22, TOWNSHIP 45 SOUTH, RANGE 26 EAST, LEE COUNTY, FLORIDA BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:  
BEGINNING AT THE NORTHEAST CORNER OF SAID SECTION 22, RUN S00°55'31"E ALONG THE EAST LINE OF SAID SECTION 1,650.03 FEET TO AN INTERSECTION WITH THE NORTH LINE OF LANDS DESCRIBED IN O.R. BOOK 1523 BEGINNING AT PAGE 1021 OF THE LEE COUNTY RECORDS; THENCE RUN S89°24'33"W ALONG THE NORTH LINE OF SAID PARCEL FOR 660.01 FEET; THENCE RUN S00°55'31"E ALONG THE WEST LINE OF SAID PARCEL FOR 330.01 FEET; THENCE RUN N89°24'33"E ALONG THE SOUTH LINE OF SAID PARCEL FOR 660.01 FEET TO AN INTERSECTION WITH THE EAST LINE OF SAID SECTION 22, THENCE RUN S00°55'31"E ALONG SAID EAST LINE FOR 680.73 FEET TO THE SOUTHEAST CORNER OR THE NORTHEAST QUARTER (NE ¼) OF SAID SECTION 22; THENCE RUN S00°56'37"E ALONG THE EAST LINE OF THE SOUTHEAST QUARTER (SE ¼) OF SAID SECTION 22 FOR 732.78 FEET TO AN INTERSECTION WITH THE NORTH LINE OF LANDS DESCRIBED IN O.R. BOOK 1477 BEGINNING AT PAGE 620 OF THE LEE COUNTY RECORDS; THENCE RUN S89°24'10"W ALONG SAID NORTH LINE FOR 1,994.12 FEET TO AN INTERSECTION WITH THE EAST LINE OF ROD AND GUN CLUB ROAD (60 FEET WIDE); THENCE RUN N07°38'12"W ALONG SAID EAST LINE FOR 3,737.07 FEET TO AN INTERSECTION WITH THE SOUTH LINE OF LANDS DESCRIBED IN O.R. BOOK 888, PAGE 773, LEE COUNTY RECORDS; THENCE RUN N89°23'41"E ALONG SAID SOUTH LINE FOR 1,740.64 FEET TO AN INTERSECTION WITH THE WEST LINE OF LANDS DESCRIBED IN O.R. BOOK 1490 BEGINNING AT PAGE 2274 OF SAID RECORDS; THENCE RUN S00°55'20"E ALONG SAID WEST LINE FOR 315.59 FEET TO AN INTERSECTION WITH THE NORTH LINE OF SAID SECTION 22; THENCE RUN N89°24'33"E ALONG SAID NORTH LINE FOR 690.01 FEET TO THE POINT OF BEGINNING.

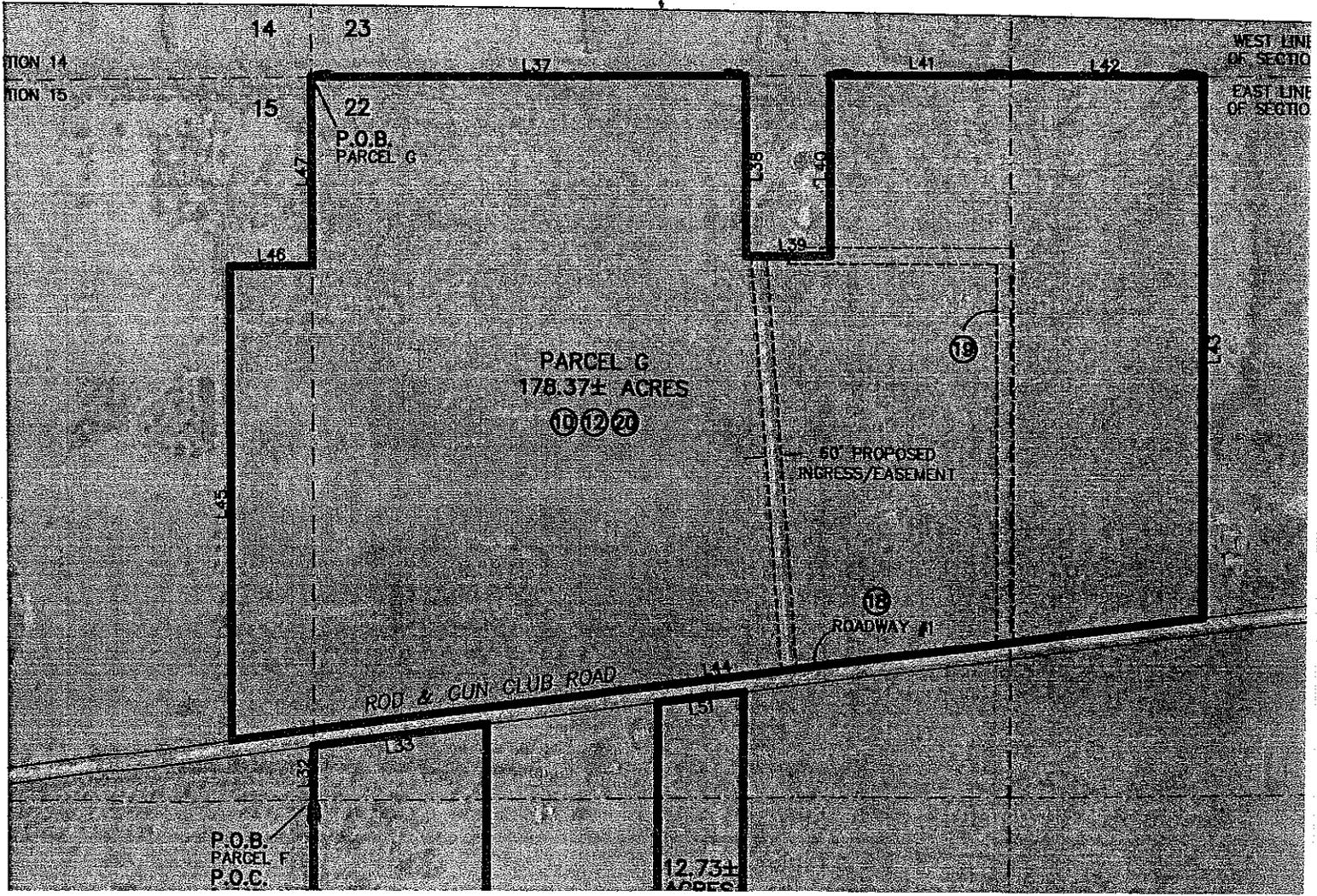
BEARINGS HEREIN ABOVE MENTIONED ARE PLANE COORDINATE FOR THE FLORIDA WEST ZONE N.A.D. 1983 (1990 ADJUSTMENT) WITH THE NORTH LINE OF SAID SECTION 22 TO BEAR N89°24'33"E.

# Y PLAT

EL LYING IN  
IP 45 SOUTH, RANGE 26 EAST,  
Y, FLORIDA



SEE SHEET 4



## LICENSE AGREEMENT FOR CATTLE GRAZING

This AGREEMENT made this 3 day of Dec, 2008, by and between LEE COUNTY, a political subdivision and charter county of the State of Florida, c/o Director of Parks and Recreation, 3410 Palm Beach Boulevard, Fort Myers, Florida 33916, telephone 239-533-7275, hereinafter referred to as "Licensor," and Jeffrey Flint, an individual, whose address is P.O. Box 627, Lehigh Acres, FL 33970, telephone (239) 229-3447, hereinafter referred to as "Licensee":

### WITNESSETH

Licensor, in consideration of the fees paid, the covenants and agreements herein to be kept and performed by the Licensee, does hereby grant to the Licensee a license solely for the grazing of cattle on Licensor's lands as described as follows, to wit:

SEE EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF.

**WHEREAS**, Licensor has acquired the property with partial funding from the Florida Communities Trust (FCT), and the Property is subject to certain limitations provided in the FCT Grant Award Agreement (as recorded in OR Book 4758, page 2451 in Lee County), the "Agreement"; and

**WHEREAS**, as part and condition of the FCT funding, the County provided and FCT approved a Management Plan for the project site, and together with the Agreement, the terms of which are hereby incorporated herein by reference; and

**WHEREAS**, Licensor intends that the conservation and recreation values of the Property be preserved and enhanced in accordance with the Management Plan, as it may be amended from time to time only after review and approval by FCT; and

**WHEREAS**, all activities by the Licensor and Licensee shall be consistent with the Agreement and Management Plan.

In further consideration of this Agreement, the parties agree as follows:

1. The remaining funds from the Terminated Lease with Flint Brothers Cattle Partnership LLC will be applied to this approximate 10 month License Agreement. If Licensee renews this License Agreement next year, Licensee agrees to pay Licensor the total sum of Two Hundred Fifty Dollars (\$250.00), due by September 15<sup>th</sup> each year for the term of this license to use the described property solely for cattle grazing.
2. This License is not assignable to any other party.

3. This License shall extend for an initial term of three years, which at the expiration of such term may be renewable upon the concurrence of both parties for one additional year, and/or may be revocable by the Licensor by giving the Licensee 30 days written notice to remove the cattle from the premises.
4. Licensee will not use the described lands for any other purpose other than cattle grazing.
5. Licensee will maintain the existing four strand barbed wire fence around the perimeter of the property with the exception of the road frontage. Road frontage fence will be maintained with five strand barbed wire during the term of this license. The fence shall remain the property of the Licensor.
6. Licensee agrees to keep the fence in an excellent state of repair at all times during the term of this Agreement.
7. It is mutually agreed that this Agreement may be canceled upon 48 hours written notice to the Licensee if any of Licensee's cattle are not kept within the confines of the property described in Exhibit "A."
8. Licensee covenants and agrees to file an annual personal property tax return with the County of Lee, State of Florida, as required by law.
9. All section corners, quarter corners, and other survey monuments lying in the premises will be properly flagged by the Licensor. Licensee agrees to bear any survey costs for the resetting of these monuments in the event they are disturbed by the Licensee in any way.
10. Licensee hereby indemnifies and releases the Licensor from any and all claims for damages to both persons and property as the result of the cattle grazing, and will hold Licensor harmless from all such damages during the term of this Agreement to include all reasonable fees, costs and expenses from any resulting litigation in any forum as the result of such damage as claimed or brought by third parties.
11. Licensee must obtain written approval from Conservation 20/20 Land Stewardship Supervisor prior to performing any land clearing, controlled burns, fertilizing, exotic removal, chopping, chemical spraying, or other land management activities.
12. Licensee shall not exceed 250 head of Cattle at any time.

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Signed and sealed the date above written.

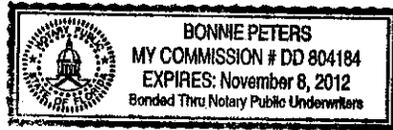
LICENSEE

By: Jeffery Flint  
Title: Jeffery Flint

STATE OF FLORIDA ) ss:  
COUNTY OF LEE )

The foregoing instrument was acknowledged before me this 3<sup>rd</sup> day of Dec., 2008, by Jeffery Flint, an individual, who is personally known to me or has produced Driver License as identification and did (did not) take an oath.

Bonnie Peters  
Notary Public  
BONNIE PETERS  
(Print Name)  
My commission expires:



LICENSOR  
LEE COUNTY PARKS AND RECREATION

By: Barbara Mang  
Director

STATE OF FLORIDA ) ss:  
COUNTY OF LEE )

The foregoing instrument was acknowledged before me this \_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, by \_\_\_\_\_, an individual, who is personally known to me or has produced \_\_\_\_\_ as identification and did (did not) take an oath.

\_\_\_\_\_  
Notary Public  
\_\_\_\_\_  
(Print Name)  
My commission expires:

Approved as to Form

By: William J. Baker  
Lee County Attorney's Office

*Site #200 Wild Turkey Preserve*

DESCRIPTION:

THAT PART OF THE WEST HALF OF SECTION 11 LYING SOUTH OF STATE ROAD NO. 82:

THAT PART OF THE WEST HALF OF SECTION 14 LYING SOUTH OF STATE ROAD NO. 82:

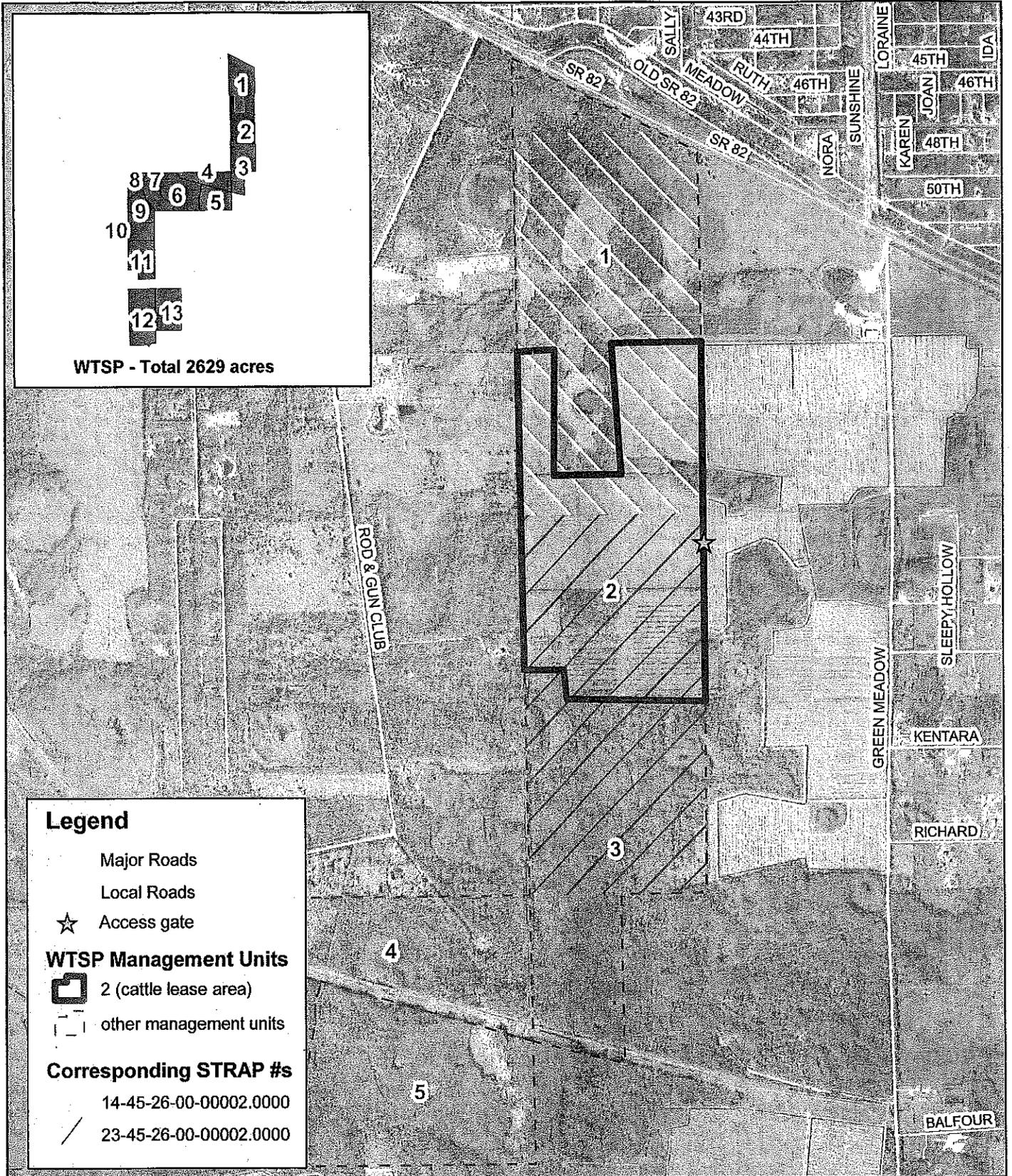
THE WEST HALF OF SECTION 23 AND

THE WEST HALF OF SECTION 26, ALL OF SECTION 27, ALL OF SECTION 28 AND ALL OF SECTION 33 EXCEPT THE SOUTH 950.00 FEET OF THE WEST 989.00 FEET THEREOF, EXCEPT THE PORTION OF THE FOLLOWING DESCRIBED PARCEL WHICH LIES WITHIN SAID TRACTS:

FROM THE CONCRETE MONUMENT MARKING THE SOUTHWEST CORNER OF SAID SECTION 33 RUN NORTH 89 DEGREES 08'12" EAST ALONG THE SOUTH LINE OF SAID SECTION FOR 2,640.36 FEET TO A 3/4" STEEL PIPE AND THE POINT OF BEGINNING OF THE HEREIN DESCRIBED PARCEL; THENCE CONTINUE NORTH 89 DEGREES 08'12" EAST ALONG THE SOUTH LINE OF SAID SECTION FOR 2,640.36 FEET TO A CONCRETE POST MARKING THE SOUTHEAST CORNER OF SAID SECTION; THENCE RUN NORTH 89 DEGREES 30'38" EAST ALONG THE SOUTH LINE OF SAID SECTION 34 FOR 2,639.04 FEET TO A CONCRETE POST; THENCE RUN NORTH 88 DEGREES 31'53" EAST ALONG SAID SOUTH LINE FOR 2,641.60 FEET TO A CONCRETE POST MARKING THE SOUTHEAST CORNER OF SAID SECTION 34; THENCE RUN NORTH 00 DEGREES 50'11" EAST ALONG THE EASTERLY LINE OF SAID SECTION FOR 2,547.72 FEET TO A CONCRETE POST MARKING THE QUARTER SECTION CORNER; THENCE RUN NORTH 00 DEGREES 27'43" EAST ALONG THE EAST LINE OF SAID SECTION FOR 2,544.32 FEET TO A CONCRETE POST MARKING THE NORTHEAST CORNER OF SAID SECTION 34; THENCE RUN SOUTH 88 DEGREES 39'21" EAST ALONG THE SOUTH LINE OF SAID SECTION 26 FOR 2,648.38 FEET TO A CONCRETE POST MARKING THE QUARTER SECTION CORNER; THENCE RUN NORTH 01 DEGREES 30'04" WEST ALONG THE QUARTER SECTION LINE FOR 5,416.83 FEET TO A CONCRETE POST MARKING THE QUARTER SECTION CORNER ON THE NORTH LINE OF SAID SECTION 26; THENCE RUN SOUTH 89 DEGREES 22'14" WEST ALONG SAID NORTH LINE FOR 1,300.94 FEET TO A 3/4" PIPE MARKING THE QUARTER-QUARTER SECTION CORNER; THENCE RUN SOUTH 01 DEGREES 16'08" EAST ALONG THE QUARTER-QUARTER SECTION LINE FOR 2,349.53 FEET TO A 2" STEEL PIPE MARKING THE INTERSECTION WITH THE SOUTHWESTERLY LINE OF THE FLORIDA POWER & LIGHT COMPANY TRANSMISSION LINE EASEMENT; THENCE RUN NORTH 75 DEGREES 33'59" WEST ALONG SAID SOUTHWESTERLY LINE FOR 1,359.84 FEET TO A CONCRETE POST MARKING THE INTERSECTION WITH THE WEST LINE OF SAID SECTION 26; THENCE RUN SOUTH 01 DEGREES 01'58" EAST PASSING THROUGH A CONCRETE POST MARKING THE QUARTER SECTION CORNER AT 666.24 FEET FOR 1,829.09 FEET TO A 3/4" STEEL PIPE AT A POINT BEARING NORTH 01 DEGREES 01'58" WEST A DISTANCE OF 1,500.00 FEET FROM THE SOUTHEAST CORNER OF SAID SECTION 27; THENCE RUN NORTH 89 DEGREES 38'57" WEST FOR 7,965.76 FEET TO A CONCRETE POST BEARING NORTH 00 DEGREES 07'43" WEST FROM THE POINT OF BEGINNING; THENCE RUN SOUTH 00 DEGREES 07'43" EAST PASSING THROUGH A CONCRETE POST AT 1,500.00 FEET FOR 6,770.27 FEET TO THE POINT OF BEGINNING.

ALL IN TOWNSHIP 45 SOUTH, RANGE 26 EAST, IN LEE COUNTY, FLORIDA.

# Cattle Lease Area - Management Unit 2 (~259 acres)



WTSP - Total 2629 acres

## Legend

Major Roads

Local Roads

☆ Access gate

## WTSP Management Units

2 (cattle lease area)

other management units

## Corresponding STRAP #s

14-45-26-00-00002.0000

23-45-26-00-00002.0000



## Wild Turkey Strand Preserve

0 950 1,900 3,800 5,700 Feet



S:\esri\C2020 ArcView\Wild Turkey Strand\cattle\_map.mxd

Map Prepared On: 06/23/06 by sfurnari@leegov.com

This is not a survey. Land Stewardship Staff has prepared this map for informational and planning purposes.

## LICENSE FOR CATTLE GRAZING

This Agreement made this 1<sup>st</sup> day of July, 2008, by and between LEE COUNTY, a political subdivision and Charter county of the State of Florida, c/o Director of Parks and Recreation, 3410 Palm Beach Blvd. Fort Myers, Florida 33916, Telephone 239-533-7275, hereinafter called the Licensor, and LARRY HOWARD and MARY HOWARD, husband and wife, whose address is 13100 Rod and Gun Club Road, Fort Myers, FL33913, Telephone 239-369-1365, hereinafter called the Licensee:

### WITNESSETH:

Licensor, in consideration of the fees paid, the covenants and agreements herein to be kept and performed by the Licensee, does hereby grant to the Licensee a license solely for the grazing of cattle on licensors lands as described as follows, to wit:

SEE EXHIBIT A ATTACHED HERETO AND MADE A PART HEREOF.

In further consideration of this Agreement, the parties agree as follows:

1. Licensee agrees to pay Licensor the total sum of one dollar per acre per year (\$36.24 per year) for the term of this license to use the described property solely for cattle and/or horse grazing.
2. This License is not assignable to any other party.
3. This License shall extend for an initial term of one (1) year, which at the expiration of such term may be renewable upon the concurrence of both parties, and/or may be revocable by the Licensor by giving the Licensee thirty (30) days written notice to remove the cattle and/or horses from the premises.
4. Licensee will not use the described lands for any other purpose other than cattle and/or horse grazing.
5. Licensee will maintain the existing four (4)-strand barbed wire fence around the perimeter of the property with the exception of the paved road frontage, fence there will be maintained with five (5) strand barbed wire during the term of this license. The fence will remain the property of the Licensor.

6. Licensee agrees to keep the fence in an excellent state of repair at all times during the term of this Agreement.
7. It is mutually agreed that this Agreement may be canceled upon forty-eight (48) hours verbal notice to the Licensee if any of licensees cattle and/or horses are not kept within the confines of the property described in Exhibit A.
8. Licensee covenants and agrees to file an annual personal property tax return with the County of Lee, State of Florida, as required by law.
9. All section corners, quarter corners, and other survey monuments lying in the premises will be properly flagged by the Licensor. Licensee agrees to bear any survey costs for the resetting of these monuments in the event they are disturbed in any way.
10. Licensee hereby indemnifies and releases the Licensor from any and all claims for damages to both persons and property as the result of the cattle and/or horse grazing, and will hold Licensor harmless from all such damages during the term of this Agreement to include all reasonable fees, costs and expenses from any resulting litigation in any forum as the result of such damage as claimed or brought by third parties.
11. Licensee must obtain written approval from the Conservation 2020 Land Stewardship Supervisor, prior to performing any land clearing, controlled burns, fertilizing, exotic removal, chopping, chemical spraying, or other land management activities.
12. Licensee shall not exceed thirty (30) head of Cattle at any time.

Signed and sealed the date above written.

**LICENSOR:**  
LEE COUNTY BOARD OF  
COUNTY COMMISSIONERS

Cynthia C. Mitar

Witness

Cynthia C. Mitar

Printed Name

Daisy Cardona

Witness

DAISY CARDONA

Printed Name

By: John Yarbrough  
John Yarbrough, Director  
Parks and Recreation

APPROVED AS TO FORM BY:

Melof A. Barber  
Office of the County Attorney

**LICENSEE:**

Nicole Williams

Witness

Nicole Williams

Printed Name

Darla J. Stuart

Witness

Darla J. Stuart

Printed Name

Christine Grubel

Witness

Christine Grubel

Printed Name

David A. Sonoby

Witness

DAVID A. SONOBY

Printed Name

Larry Howard  
Larry Howard

Mary Howard  
Mary Howard

STATE OF FLORIDA)            ss:  
COUNTY OF LEE    )

The foregoing instrument was acknowledged before me this 1st day of July 2008, by Larry Howard and Mary Howard who  are personally known to me or  have produced \_\_\_\_\_ as identification and did (did not) take an oath.

NOTARY PUBLIC-STATE OF FLORIDA  
Mickey L. Boyer  
Commission # DD546820  
Expires: MAY 21, 2010  
Bonded Thru Atlantic Bonding Co., Inc

Mickey L Boyer  
Notary Public

Mickey L Boyer  
(Print Name)

My Commission Expires: May 21, 2010

## EXHIBIT A

### Parcel F (23.51 acres)

A TRACT OR PARCEL OF LAND LYING IN SECTION 22, TOWNSHIP 45 SOUTH, RANGE 28 EAST, LEE COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF THE NORTHWEST QUARTER (NW1/4) OF SAID SECTION 22 RUN N89°24'33"E ALONG THE NORTH LINE OF SAID SECTION 22 FOR 199.43 FEET TO AN INTERSECTION WITH THE WESTERLY LINE OF ROD AND GUN CLUB ROAD (60 FEET WIDE); THENCE RUN S07°38'12"E ALONG SAID WEST LINE FOR 660.00 FEET TO AN INTERSECTION WITH THE NORTH LINE OF LANDS DESCRIBED IN O.R. BOOK 906, PAGE 535 OF THE LEE COUNTY RECORDS; THENCE RUN S89°24'33"W ALONG SAID NORTH LINE FOR 1,600.63 FEET TO AN INTERSECTION WITH THE WEST LINE OF THE EAST HALF (E1/2) OF THE NORTHWEST QUARTER (NW1/4) OF SAID SECTION 22; THENCE RUN N01°09'19"W ALONG SAID WEST LINE FOR 655.05 FEET TO AN INTERSECTION WITH THE NORTH LINE OF SAID SECTION 22; THENCE RUN N89°24'33"E ALONG SAID NORTH LINE FOR 1,326.70 FEET TO THE POINT OF BEGINNING.

CONTAINING 23.51 ACRES, MORE OR LESS.

BEARINGS HEREINABOVE MENTIONED ARE PLANE COORDINATE FOR THE FLORIDA WEST ZONE N.A.D. 1983 (1990 ADJUSTMENT) WITH THE NORTH LINE OF SAID SECTION 22 TO BEAR N89°24'33"E.

### Parcel H (12.73 acres)

A TRACT OR PARCEL OF LAND LYING IN SECTION 22, TOWNSHIP 45 SOUTH, RANGE 26 EAST, LEE COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

FROM THE NORTHEAST CORNER OF THE NORTHWEST QUARTER (NW1/4) OF SAID SECTION 22 RUN S89°24'33"W ALONG THE NORTH LINE OF SAID SECTION 22 FOR 1,326.70 FEET TO AN INTERSECTION WITH THE WEST LINE OF THE EAST HALF (E1/2) OF THE NORTHWEST QUARTER (NW1/4) OF SAID SECTION 22; THENCE RUN S01°09'19"E ALONG SAID WEST LINE FOR 1,310.03 FEET TO THE SOUTH LINE OF LANDS DESCRIBED IN O.R. BOOK 28, PAGE 140 OF THE LEE COUNTY RECORDS AND THE POINT OF BEGINNING.

FROM SAID POINT OF BEGINNING RUN N89°24'33"E ALONG SAID SOUTH LINE FOR 1,675.13 FEET TO AN INTERSECTION WITH THE WEST LINE OF ROD AND GUN CLUB ROAD (60 FEET WIDE); THENCE RUN S07°38'12"E ALONG SAID WEST LINE FOR 329.98 FEET TO THE NORTH LINE OF LANDS DESCRIBED IN O.R. BOOK 628, PAGE 148 OF THE LEE COUNTY RECORDS; THENCE, RUN S89°24'33"W ALONG SAID NORTH LINE FOR 1,712.38 FEET TO AN INTERSECTION WITH THE WEST LINE OF THE EAST HALF (E1/2) OF THE NORTHWEST QUARTER (NW1/4) OF SAID SECTION 22; THENCE RUN N01°09'19"W ALONG SAID WEST LINE FOR 327.51 FEET TO THE POINT OF BEGINNING.

CONTAINING 12.73 ACRES, MORE OR LESS.

BEARINGS HEREINABOVE MENTIONED ARE PLANE COORDINATE FOR THE FLORIDA WEST ZONE N.A.D. 1983 (1990 ADJUSTMENT) WITH THE NORTH LINE OF SAID SECTION 22 TO BEAR N89°24'33"E.

## LICENSE FOR CATTLE GRAZING

This Agreement made this 25<sup>th</sup> day of June, 2009 by and between LEE COUNTY, a political subdivision and charter county of the State of Florida, c/o Director of Parks and Recreation, 3410 Palm Beach Boulevard, Fort Myers, FL 33916, telephone (239) 533-7275, hereinafter referred to as "Licensor," and Larry Howard and Mary Howard, husband and wife, whose address is 13100 Rod and Gun Club Rd., telephone (239) 369-1365, hereinafter referred to as "Licensee":

### WITNESSETH

Licensor, in consideration of the fees paid, the covenants and agreements herein to be kept and performed by the Licensee, does hereby grant to the Licensee a license solely for the grazing of cattle on Licensor's lands as described as follows, to wit:

SEE EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF.

In further consideration of this Agreement, the parties agree as follows:

1. Licensee agrees to pay Licensor the total sum of \$43.88, due by September 15<sup>th</sup> each year for the term of this license to use the described property solely for cattle grazing.
2. This License is not assignable to any other party.
3. This License shall extend for an initial term of 15 months, which at the expiration of such term may be renewable upon the concurrence of both parties for one additional year, and/or may be revocable by either party by giving the other party 30 days written notice to remove the cattle from the premises.
4. Licensee will not use the described lands for any other purpose other than cattle grazing.
5. Licensee will maintain the existing four strand barbed wire fence around the perimeter of the property with the exception of the road frontage. Road frontage fence will be maintained with five strand barbed wire during the term of this License. The fence shall remain the property of the Licensor.
6. Licensee agrees to keep the fence in an excellent state of repair at all times during the term of this Agreement.

7. It is mutually agreed that this Agreement may be canceled upon 48 hours written notice to the Licensee if any of Licensee's cattle are not kept within the confines of the property described in Exhibit "A."
8. Licensee covenants and agrees to file an annual personal property tax return with the County of Lee, State of Florida, as required by law.
9. All section corners, quarter corners, and other survey monuments lying in the premises will be properly flagged by the Licensor. Licensee agrees to bear any survey costs for the resetting of these monuments in the event they are disturbed by the Licensee in any way.
10. Licensee hereby indemnifies and releases the Licensor from any and all claims for damages to both persons and property as the result of the cattle grazing, and will hold Licensor harmless from all such damages during the term of this Agreement to include all reasonable fees, costs and expenses from any resulting litigation in any forum as the result of such damage as claimed or brought by third parties.
11. Licensee must obtain written approval from Conservation 20/20 Land Stewardship Supervisor prior to performing any land clearing, controlled burns, fertilizing, exotic removal, chopping, chemical spraying, or other land management activities.
12. Licensee shall not exceed 30 head of Cattle at any time.
13. In the event License is revoked or cancelled by either party, no fees paid in accordance with Item No. 1 above are refundable.

(Balance of Page Intentionally Left Blank)

## EXHIBIT A

### Parcel F (23.51 acres)

A TRACT OR PARCEL OF LAND LYING IN SECTION 22, TOWNSHIP 45 SOUTH, RANGE 28 EAST, LEE COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF THE NORTHWEST QUARTER (NW1/4) OF SAID SECTION 22 RUN N89°24'33"E ALONG THE NORTH LINE OF SAID SECTION 22 FOR 199.43 FEET TO AN INTERSECTION WITH THE WESTERLY LINE OF ROD AND GUN CLUB ROAD (60 FEET WIDE); THENCE RUN S07°38'12"E ALONG SAID WEST LINE FOR 660.00 FEET TO AN INTERSECTION WITH THE NORTH LINE OF LANDS DESCRIBED IN O.R. BOOK 906, PAGE 535 OF THE LEE COUNTY RECORDS; THENCE RUN S89°24'33"W ALONG SAID NORTH LINE FOR 1,600.63 FEET TO AN INTERSECTION WITH THE WEST LINE OF THE EAST HALF (E1/2) OF THE NORTHWEST QUARTER (NW1/4) OF SAID SECTION 22; THENCE RUN N01°09'19"W ALONG SAID WEST LINE FOR 655.05 FEET TO AN INTERSECTION WITH THE NORTH LINE OF SAID SECTION 22; THENCE RUN N89°24'33"E ALONG SAID NORTH LINE FOR 1,326.70 FEET TO THE POINT OF BEGINNING.

CONTAINING 23.51 ACRES, MORE OR LESS.

BEARINGS HEREINABOVE MENTIONED ARE PLANE COORDINATE FOR THE FLORIDA WEST ZONE N.A.D. 1983 (1990 ADJUSTMENT) WITH THE NORTH LINE OF SAID SECTION 22 TO BEAR N89°24'33"E.

### Parcel H (12.73 acres)

A TRACT OR PARCEL OF LAND LYING IN SECTION 22, TOWNSHIP 45 SOUTH, RANGE 26 EAST, LEE COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

FROM THE NORTHEAST CORNER OF THE NORTHWEST QUARTER (NW1/4) OF SAID SECTION 22 RUN S89°24'33"W ALONG THE NORTH LINE OF SAID SECTION FOR 1,326.70 FEET TO AN INTERSECTION WITH THE WEST LINE OF THE EAST HALF (E1/2) OF THE NORTHWEST QUARTER (NW1/4) OF SAID SECTION 22; THENCE RUN S01°09'19"E ALONG SAID WEST LINE FOR 1,310.03 FEET TO THE SOUTH LINE OF LANDS DESCRIBED IN O.R. BOOK 28, PAGE 140 OF THE LEE COUNTY RECORDS AND THE POINT OF BEGINNING.

FROM SAID POINT OF BEGINNING RUN N89°24'33"E ALONG SAID SOUTH LINE FOR 1,675.13 FEET TO AN INTERSECTION WITH THE WEST LINE OF ROD AND GUN CLUB ROAD (60 FEET WIDE); THENCE RUN S07°38'12"E ALONG SAID WEST LINE FOR 329.98 FEET TO THE NORTH LINE OF LANDS DESCRIBED IN O.R. BOOK 628, PAGE 148 OF THE LEE COUNTY RECORDS; THENCE, RUN S89°24'33"W ALONG SAID NORTH LINE FOR 1,712.38 FEET TO AN INTERSECTION WITH THE WEST LINE OF THE EAST HALF (E1/2) OF THE NORTHWEST QUARTER (NW1/4) OF SAID SECTION 22; THENCE RUN N01°09'19"W ALONG SAID WEST LINE FOR 327.51 FEET TO THE POINT OF BEGINNING.

CONTAINING 12.73 ACRES, MORE OR LESS.

BEARINGS HEREINABOVE MENTIONED ARE PLANE COORDINATE FOR THE FLORIDA WEST ZONE N.A.D. 1983 (1990 ADJUSTMENT) WITH THE NORTH LINE OF SAID SECTION 22 TO BEAR N89°24'33"E.

Signed and sealed the date above written.

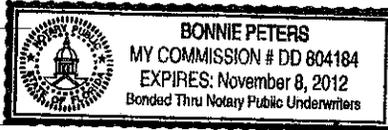
LICENSEE

By: Larry Howard Mary Howard  
Title: Larry Howard and Mary Howard

STATE OF FLORIDA ) ss:  
COUNTY OF LEE )

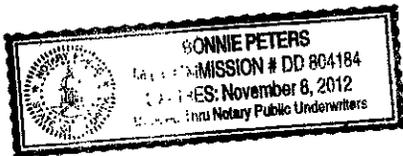
The foregoing instrument was acknowledged before me this 25<sup>th</sup> day of June, 2009, by Larry Howard Mary Howard, an individual, who is personally known to me or has produced Driving License as identification and did (did not) take an oath.

Bonnie Peters  
Notary Public  
BONNIE PETERS  
(Print Name)  
My commission expires:



LICENSOR  
LEE COUNTY PARKS AND RECREATION

By: D.W. H. II  
Director



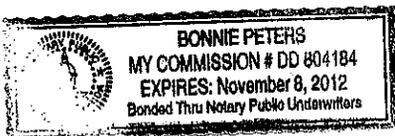
STATE OF FLORIDA ) ss:  
COUNTY OF LEE )

The foregoing instrument was acknowledged before me this 25<sup>th</sup> day of June, 2009, by David W. Haines II, an individual, who is personally known to me or has produced \_\_\_\_\_ as identification and did (did not) take an oath.

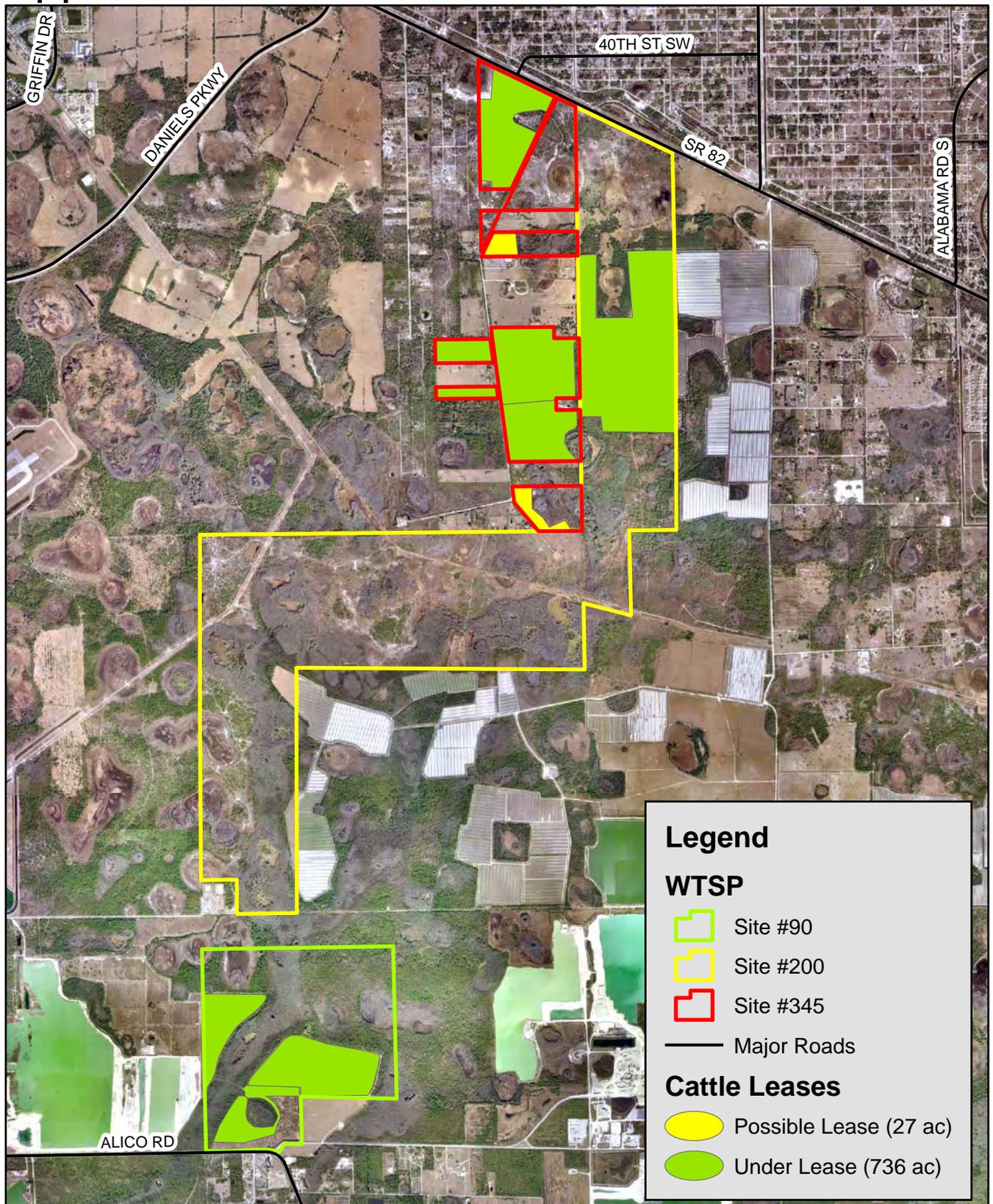
Bonnie Peters  
Notary Public  
BONNIE PETERS  
(Print Name)  
My commission expires:

Approved as to Form

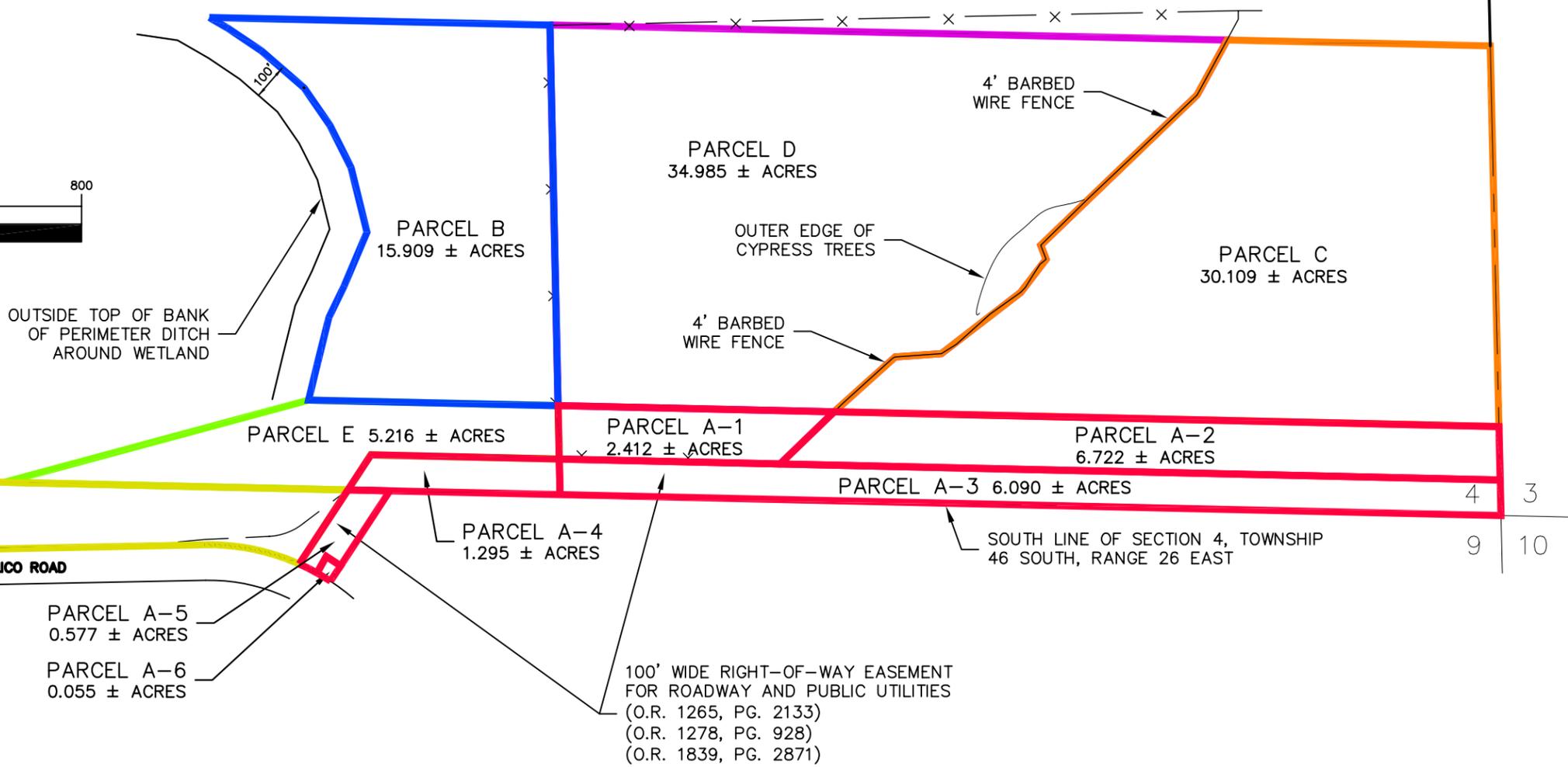
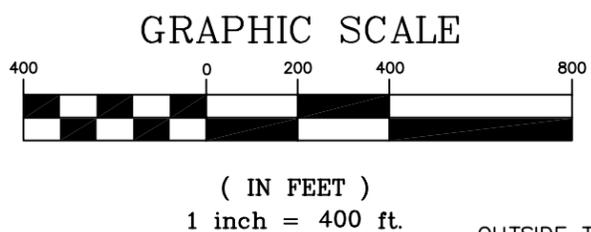
By: Walt of the ...  
Lee County Attorney's Office



# Appendix M: Cattle Leases



Appendix N – Alico Road Connector – Parcel Exchange Map



THIS SKETCH OF VARIOUS PARCEL ACREAGES WAS PREPARED FOR LEE COUNTY DEPARTMENT OF PUBLIC WORKS. THIS IS NOT A SURVEY.

PREPARED BY: \_\_\_\_\_  
ELIZABETH F. GAINES, P.S.M FL LIC. NO. 4576 DATE SIGNED \_\_\_\_\_  
NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

**E.F.Gaines Surveying Services, Inc.**  
5235 Ramsey Way, Suite 10  
Fort Myers, Florida 33907  
Phone: (239) 418-0126 Fax: (239) 418-0127  
Web: www.EFGaines.com

FOR: LEE COUNTY DEPT OF PUBLIC WORKS  
DATE OF DRAWING: 02/25/2009  
DATE OF LAST FIELD WORK: N/A  
SCALE: 1"=400'  
DRAWN BY: EFG  
FILE NAME: 0324-003

## Appendix O – Legal Descriptions



EXHIBIT "A"

A PARCEL OF LAND  
LYING IN  
SECTIONS 4&9, TOWNSHIP 46 SOUTH, RANGE 26 EAST,  
LEE COUNTY, FLORIDA

PARCEL NUMBER 1:

ALL OF SECTION 4, TOWNSHIP 46 SOUTH, RANGE 26 EAST, EXCEPTING THE NORTH 959.405 FEET OF SAID SECTION 4, AND THE SOUTH 1,319.318 FEET OF THE SOUTHEAST QUARTER OF SAID SECTION 4.

PARCEL NUMBER 2:

THAT PART OF SECTION 9, TOWNSHIP 46 SOUTH, RANGE 26 EAST, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF SECTION 9, TOWNSHIP 46 SOUTH, RANGE 26 EAST, RUN SOUTH 01°12'44" EAST ALONG THE WEST LINE OF SAID SECTION, 232.62 FEET TO THE NORTHERLY RIGHT-OF-WAY LINE OF ALICO ROAD; THENCE RUN NORTH 88°44'26" EAST ALONG THE NORTHERLY RIGHT-OF-WAY LINE OF SAID ROAD 1646.41 FEET TO THE POINT OF CURVATURE OF A CURVE TO THE RIGHT, SAID CURVE LYING CONCAVE SOUTHWESTERLY; THENCE FOLLOWING ALONG THE ARC OF SAID CURVE (SAID CURVE HAVING A RADIUS OF 621.78 FEET; AN ARC OF 374.19 FEET; A CHORD OF 368.57 FEET; A CHORD BEARING OF SOUTH 74°01'09" EAST) 374.19 FEET; THENCE NORTH 33°13'16" EAST 303.87 FEET TO THE NORTH LINE OF SAID SECTION, SAID POINT LYING ON THE NORTH LINE OF SAID SECTION AND 480.10 FEET NORTH 88°50'55" WEST FROM THE NORTH QUARTER CORNER OF SAID SECTION; THENCE NORTH 88°50'55" WEST ALONG THE NORTH LINE OF SAID SECTION, 2172.18 FEET TO THE NORTHWEST CORNER OF SAID SECTION AND THE POINT OF BEGINNING.

TOGETHER WITH THE 20 FOOT WATERLINE EASEMENT RECORDED IN THE DEED TO FLORIDA ROCK INDUSTRIES, INC., RECORDED IN OFFICIAL RECORDS BOOK 1699, PAGE 4416, PUBLIC RECORDS OF LEE COUNTY, FLORIDA.

EXCEPT THE FOLLOWING:

A TRACT OR PARCEL OF LAND SITUATED IN THE STATE OF FLORIDA, COUNTY OF LEE, BEING PART OF SECTION 9, TOWNSHIP 46 SOUTH, RANGE 26 EAST, BEING FURTHER BOUNDED AND DESCRIBED AS FOLLOWS:

STARTING AT THE NORTHWEST CORNER OF SAID SECTION 9; THENCE S01°12'44"E ALONG THE WEST LINE OF SAID SECTION FOR 232.62 FEET TO THE NORTHERLY RIGHT-OF-WAY LINE OF ALICO ROAD; THENCE N88°44'26"E ALONG SAID NORTHERLY RIGHT-OF-WAY LINE FOR 1646.41 FEET TO THE BEGINNING OF A CURVE CONCAVE TO THE SOUTHWEST HAVING A RADIUS OF 621.78 FEET; THENCE SOUTHEASTERLY ALONG SAID CURVE AND ALONG SAID NORTHERLY RIGHT-OF-WAY LINE THROUGH A CENTRAL ANGLE OF 34°28'51" FOR 374.19 FEET, SAID CURVE HAVING A CHORD BEARING OF S74°01'09"E AND A CHORD DISTANCE OF 368.57 FEET TO A CONCRETE MONUMENT AND THE POINT OF BEGINNING OF THE HEREIN DESCRIBED PARCEL; THENCE NORTHWESTERLY ALONG THE AFOREDESCRIBED CURVE CONCAVE TO THE SOUTHWEST HAVING A RADIUS OF 621.78 FEET AND ALONG SAID NORTHERLY RIGHT-OF-WAY LINE OF ALICO ROAD THROUGH A CENTRAL ANGLE OF 04°04'57" FOR 44.30 FEET, SAID CURVE HAVING A CHORD BEARING OF N58°41'58"W AND A CHORD DISTANCE OF 44.30 FEET TO A SET IRON ROD; THENCE N29°15'33"E ALONG AN EXTENSION OF A RADIAL LINE TO SAID CURVE FOR 53.27 FEET TO A SET IRON ROD; THENCE S56°39'29"E FOR 48.06 FEET TO A SET IRON ROD; THENCE S33°13'16"W FOR 51.55 FEET TO THE POINT OF BEGINNING.

TOGETHER WITH THE EXISTING RIGHT-OF-WAY EASEMENT FOR A ROADWAY AND PUBLIC UTILITIES AS RECORDED IN OFFICIAL RECORD BOOK 1265, PAGE 2123, OFFICIAL RECORD BOOK 1278, PAGE 928, AND OFFICIAL RECORD BOOK 1839, PAGE 2871.

BEARINGS SHOWN HEREON ARE BASED ON THE WEST LINE OF SAID SECTION 9 AS BEARING S01°12'44"E.



DOC TAX \$ 41,537.30  
RECORD \$ 10.50

INSTR # 5684001  
DR BK 03823 PG 4222  
RECORDED 01/15/2003 03:00:09 PM  
CHARLIE GREEN, CLERK OF COURT  
LEE COUNTY  
RECORDING FEE 15.00  
DEED DOC 41,537.30  
DEPUTY CLERK M Bernard

Prepared by and return to:  
James L. Ritchey, Esq.  
Williams, Parker, Harrison, Dietz & Getzen  
200 South Orange Avenue  
Sarasota, FL 34236  
(941) 366-4800

**DEED**

**THIS INDENTURE** made January 15, 2003, by and between LOUISE SCHEWE, individually and as Successor Trustee under the provisions of a certain DECLARATION OF TRUST KNOWN AS THE KARL H. SCHEWE AUGUST 1990 TRUST, and under deed recorded in Official Records Book 2569, Page 1573, Public Records of Lee County, Florida, hereinafter referred to as Grantor, whose post office address is 2222 Augusta Dr., Springfield, IL 62704, and LEE COUNTY, a political subdivision of the State of Florida, hereinafter referred to as Grantee, whose post office address is P. O. Box 398, Fort Myers, FL 33902.

**WITNESSETH:** Grantor, in consideration of the sum of ten dollars and other valuable considerations to him in hand paid by Grantee, receipt of which is hereby acknowledged, does hereby grant, bargain, sell and convey to Grantee, his heirs and assigns forever, the following described property situate in Lee County Florida:

See Exhibit "A" attached hereto and made a part hereof as if fully set forth herein.

Subject to restrictions, reservations, and easements of record; applicable governmental regulations; and taxes for the current year.

Grantor certifies, warrants and covenants to Grantee that neither Grantor nor any of her family reside on the above property or any property adjacent thereto; the above described property does not constitute any part of Grantor's homestead under the laws of the State of Florida.

together with all appurtenances, privileges, rights, interests, dower, reversions, remainders and easements thereunto appertaining. Grantor warrants against only the lawful claims of all persons claiming by, through or under Grantor. As used herein, the terms "Grantor" and "Grantee" shall include their respective heirs, devisees, personal representatives, successors and assigns; any gender shall include all genders, the plural number the singular and the singular, the plural.

**IN WITNESS WHEREOF,** Grantor has signed and sealed this deed the date above written.

Lois Frazee  
Witness Name: LOIS FRAZEE

Louise Schewe  
Louise Schewe  
Individually and as Successor Trustee aforesaid

Barbara Gillock  
Witness Name: Barbara Gillock

STATE OF ILLINOIS  
COUNTY OF SANGAMON

The foregoing instrument was acknowledged before me this 10<sup>th</sup> day of January 2003 by Louise Schewe, individually and as successor trustee aforesaid, who is personally known to me or who has produced \_\_\_\_\_ as identification. If no type of identification is indicated, the above-named person is personally known to me.

Barbara Gillock  
Signature of Notary Public

STATE OF ILLINOIS  
COUNTY OF SANGAMON

The foregoing instrument was acknowledged before me this 10th day of January 2003 by Louise Schewe, individually and as successor trustee aforesaid, who is personally known to me or who has produced \_\_\_\_\_ as identification. If no type of identification is indicated, the above-named person is personally known to me.

(Notary Seal)



Barbara Gillock

Signature of Notary Public

Barbara Gillock

Print Name of Notary Public

I am a Notary Public of the State of Illinois,  
and my commission expires on 3-9-2005.

Acquisition approved by the Lee County Board  
of Commissioners action on 9-03-2002  
and accepted on behalf of the board by \_\_\_\_\_  
Wesley J. Mann on 1-15-2003  
in accordance with BLUESHEET No. 20020878

ITEM A6A

## Exhibit "A"

That part of the West half of Section 11 lying South of State Road No. 82:

That part of the West half of Section 14 lying South of State Road No. 82:

The West half of Section 23 and

The West half of Section 26, all of Section 27, all of Section 28 and all of Section 33 except the South 950.00 feet of the West 989.00 feet thereof, except the portion of the following described parcel which lies within said tracts:

From the concrete monument marking the Southwest corner of said Section 33 run North 89 degrees 08'12" East along the South line of said section for 2,640.36 feet to a 3/4" steel pipe and the Point of Beginning of the herein described parcel; thence continue North 89 degrees 08'12" East along the South line of said section for 2,640.36 feet to a concrete post marking the Southeast corner of said section; thence run North 89 degrees 30'38" East along the South line of Section 34 for 2,639.04 feet to a concrete post; thence run North 88 degrees 31'53" East along said South line for 2,641.60 feet to a concrete post marking the Southeast corner of said Section 34; thence run North 00 degrees 50'11" East along the Easterly line of said section for 2,547.72 feet to a concrete post marking the quarter section corner; thence run North 00 degrees 27'43" East along the East line of said section for 2,544.32 feet to a concrete post marking the Northeast corner of said Section 34; thence run South 88 degrees 39'21" East along the South line of said Section 26 for 2,648.38 feet to a concrete post marking the quarter section corner; thence run North 01 degrees 30'04" West along the quarter section line for 5,416.83 feet to a concrete post marking the quarter section corner on the North line of said Section 26; thence run South 89 degrees 22'14" West along said North line for 1,300.94 feet to a 3/4" pipe marking the quarter-quarter section corner; thence run South 01 degrees 16'08" East along the quarter-quarter section line for 2,349.53 feet to a 2" steel pipe marking the intersection with the Southwesterly line of the Florida Power & Light Company transmission line easement; thence run North 75 degrees 33'59" West along said Southwesterly line for 1,359.84 feet to a concrete post marking the intersection with the West line of said Section 26; thence run South 01 degrees 01'58" East passing through a concrete post marking the quarter section corner at 666.24 feet for 1,829.09 feet to a 3/4" steel pipe at a point bearing North 01 degrees 01'58" West a distance of 1,500.00 feet from the Southeast corner of said Section 27; thence run North 89 degrees 38'57" West for 7,965.76 feet to a concrete post bearing North 00 degrees 07'43" West from the Point of Beginning; thence run South 00 degrees 07'43" East passing through a concrete post at 1,500.00 feet for 6,770.27 feet to the Point of Beginning.

All in Township 45 South, Range 26 East in Lee County, Florida.

Prepared by and return to:  
George L. Consoer, Jr., Esq.  
Knott, Consoer, Ebelini, Hart & Swett, P.A.  
1625 Hendry Street Suite 300  
Fort Myers, FL 33901  
239-334-2722  
File Number: 9614.000  
Will Call No.: 39

[Space Above This Line For Recording Data]

## Warranty Deed

This Warranty Deed made this 30<sup>th</sup> day of MAY, 2008 between Iroquois of Lee County, Inc., a Florida Corporation, fka, Iroquois Builders, Inc, whose post office address is 528 Hardee Road, Coral Gables, FL 33146, grantor, and Lee County, a political subdivision of the State of Florida whose post office address is PO Box 398, Fort Myers, FL 33901, grantee:

(Whenever used herein the terms "grantor" and "grantee" include all the parties to this instrument and the heirs, legal representatives, and assigns of individuals, and the successors and assigns of corporations, trusts and trustees)

Witnesseth, that said grantor, for and in consideration of the sum of TEN AND NO/100 DOLLARS (\$10.00) and other good and valuable considerations to said grantor in hand paid by said grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said grantee, and grantee's heirs and assigns forever, the following described land, situate, lying and being in Lee County, Florida to-wit:

See Exhibit "A" attached hereto and made a part hereof as if fully set forth herein.

Parcel Identification Number: 10-45-26-00-00001.0010, et. al.

THIS CONVEYANCE IS SUBJECT TO:

1. Taxes for the current and subsequent years.
2. Conditions, easements, reservations and restrictions of record.
3. Zoning ordinances and other restrictions and prohibitions imposed by applicable governmental authorities.

Together with all the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining.

Reserving all ownership, title and interest now held by Grantor with respect to oil, gas and mineral rights ancillary and appurtenant thereto, subject to the provisions of the Release of Surface Entry Rights with respect to Oil, Gas, and Mineral Interest of even date herewith.

To Have and to Hold, the same in fee simple forever.

And the grantor hereby covenants with said grantee that the grantor is lawfully seized of said land in fee simple; that the grantor has good right and lawful authority to sell and convey said land; that the grantor hereby fully warrants the title to said land and will defend the same against the lawful claims of all persons whomsoever; and that said land is free of all encumbrances, except taxes accruing subsequent to December 31, 2007.

DoubleTimes

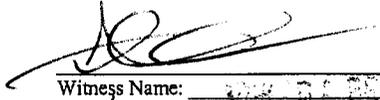
Acquisition approved by the Lee County Board  
of Commissioners action on 3-11-08

and accepted on behalf of the board by  
Richard D. Bell on 7-31-08

in accordance with BS 20080160

In Witness Whereof, grantor has hereunto set grantor's hand and seal the day and year first above written.

Signed, sealed and delivered in our presence:

  
Witness Name: \_\_\_\_\_  
  
Witness Name: NASMIN FLEY

Iroquois of Lee County, Inc., a Florida Corporation

By: Elizabeth M Muraro-Dunaj  
Elizabeth M Muraro-Dunaj, President

(Corporate Seal)

State of Florida  
County of Manatee

The foregoing instrument was acknowledged before me this 30 day of May, 2008 by Elizabeth M Muraro-Dunaj, President of Iroquois of Lee County, Inc., on behalf of the corporation. He/she  is personally known to me or  has produced a driver's license as identification.

[Notary Seal]

  
Notary Public

Printed Name: \_\_\_\_\_

My Commission Expires: \_\_\_\_\_



**ARNOLD A. BROWN**  
MY COMMISSION # DD 333220  
EXPIRES: October 27, 2008  
Bonded Thru Budget Notary Services

EXHIBIT "A"

PARCEL B:

A TRACT OR PARCEL OF LAND LYING IN SECTIONS 10 AND 15, TOWNSHIP 45 SOUTH, RANGE 26 EAST, LEE COUNTY, FLORIDA, WHICH TRACT OR PARCEL IS DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER (SE ¼) OF SAID SECTION 10; THENCE RUN N.00°45'20"W. ALONG THE WEST LINE OF SAID SOUTHEAST QUARTER (SE ¼) FOR A DISTANCE OF 2,380.32 FEET TO AN INTERSECTION WITH THE SOUTHWESTERLY LINE OF IMMOKALEE ROAD (STATE ROAD NO. 82) 200 FEET WIDE; THENCE RUN S.64°20'53"E. ALONG SAID RIGHT-OF-WAY FOR A DISTANCE OF 2,356.36 FEET TO AN INTERSECTION WITH THE WESTERLY RIGHT-OF-WAY LINE OF ROD AND GUN CLUB ROAD; THENCE S.25°32'09"W. ALONG SAID RIGHT-OF-WAY FOR A DISTANCE OF 2,813.96 FEET; THENCE S.89°23'41"W. LEAVING SAID RIGHT-OF-WAY FOR A DISTANCE OF 857.44 FEET TO AN INTERSECTION WITH THE WEST LINE OF THE SOUTHEAST QUARTER (SE ¼) OF SECTION 15, TOWNSHIP 45 SOUTH, RANGE 26 EAST; THENCE N.01°04'31"W. ALONG SAID WEST LINE FOR A DISTANCE OF 1,188.31 FEET TO THE POINT OF BEGINNING.

BEARINGS HEREIN ABOVE MENTIONED ARE PLANE COORDINATE FOR THE FLORIDA WEST ZONE N.A.D. 1983 (1990 ADJUSTMENT) WITH THE WEST LINE OF THE SOUTHEAST QUARTER (SE ¼) OF SAID SECTION 10 TO BEAR N00°45'20"W.

PARCEL C:

A TRACT OR PARCEL OF LAND LYING IN SECTIONS 10 AND 15, TOWNSHIP 45 SOUTH, RANGE 26 EAST, LEE COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF SAID SECTION 15 RUN S00°55'38"E ALONG THE EAST LINE OF SAID SECTION FOR 1,782.48 FEET TO AN INTERSECTION WITH THE NORTH LINE OF LANDS DESCRIBED IN O.R. BOOK 454, PAGE 503 OF THE LEE COUNTY RECORDS; THENCE RUN S89°23'41"W ALONG SAID NORTH LINE FOR 2,035.00 FEET TO AN INTERSECTION WITH THE SOUTHEASTERLY LINE OF ROD AND GUN CLUB ROAD (60 FEET WIDE); THENCE RUN N25°32'09"E ALONG SAID SOUTHEASTERLY LINE FOR 3,446.28 FEET TO AN INTERSECTION WITH THE SOUTHWESTERLY LINE OF IMMOKALEE ROAD (STATE ROAD NO.82) (200 FEET WIDE), THENCE RUN S64°20'53"E ALONG SAID SOUTHWESTERLY LINE FOR 562.87 FEET TO AN INTERSECTION WITH THE EAST LINE OF SAID SECTION 10 THENCE RUN S00°42'14"E ALONG SAID EAST LINE FOR 1,062.29 FEET TO THE POINT OF BEGINNING.

BEARINGS HEREIN ABOVE MENTIONED ARE PLANE COORDINATE FOR THE FLORIDA WEST ZONE N.A.D. 1983 (1990 ADJUSTMENT) WITH THE EAST LINE OF THE SOUTHEAST QUARTER (SE ¼) OF SAID SECTION 10 TO BEAR S00°42'54"E.

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PARCEL D:

A TRACT OR PARCEL OF LAND LYING IN SECTION 15, TOWNSHIP 45 SOUTH, RANGE 26 EAST, LEE COUNTY, FLORIDA BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

FROM THE NORTHWEST CORNER OF THE NORTHEAST QUARTER (NE ¼) OF SAID SECTION 15 RUN S01°04'31"E FOR 1,782.51 FEET TO AN INTERSECTION WITH THE SOUTH LINE OF LANDS DESCRIBED IN O.R. BOOK 629, PAGE 301 OF THE LEE COUNTY RECORDS AND THE POINT OF BEGINNING.

FROM SAID POINT OF BEGINNING RUN N89°23'41"E ALONG SAID SOUTH LINE FOR 560.95 FEET TO AN INTERSECTION WITH THE NORTHWESTERLY LINE OF ROD AND GUN CLUB ROAD (60 FEET WIDE); THENCE RUN S25°32'09"W ALONG SAID NORTHWESTERLY LINE FOR 1,252.26 FEET TO AN INTERSECTION WITH THE WEST LINE OF THE EAST HALF (E ½) OF SAID SECTION 15; THENCE RUN N01°04'31"W ALONG SAID WEST LINE FOR 1,124.20 FEET TO THE POINT OF BEGINNING.

BEARINGS HEREIN ABOVE MENTIONED ARE PLANE COORDINATE FOR THE FLORIDA WEST ZONE N.A.D. 1983 (1990 ADJUSTMENT) WITH THE WEST LINE OF THE EAST HALF (E ½) OF SAID SECTION 15 TO BEAR S01°04'31"E.

PARCEL E:

A TRACT OR PARCEL OF LAND LYING IN SECTION 15, TOWNSHIP 45 SOUTH, RANGE 26 EAST, LEE COUNTY, FLORIDA BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF THE SOUTHEAST QUARTER (SE ¼) OF SAID SECTION 15 RUN S00°55'20"E FOR 386.69 FEET TO AN INTERSECTION WITH THE NORTH LINE OF LANDS DESCRIBED IN O.R. BOOK 1100, PAGE 863 OF THE LEE COUNTY RECORDS; THENCE RUN S89°23'45"W ALONG SAID NORTH LINE FOR 2,661.38 FEET TO AN INTERSECTION WITH THE EASTERLY LINE OF ROD AND GUN CLUB ROAD (60 FEET WIDE); THENCE RUN N07°38'12"W ALONG SAID EAST LINE FOR 2.75 FEET; THENCE RUN N25°32'09"E ALONG THE SOUTHEASTERLY LINE OF SAID ROD AND GUN CLUB ROAD FOR 744.55 FEET TO AN INTERSECTION WITH THE SOUTH LINE OF LANDS DESCRIBED IN O.R. BOOK 454, PAGE 603, OF THE LEE COUNTY RECORDS; THENCE RUN N89°23'41"E ALONG SAID SOUTH LINE FOR 2,329.94 FEET TO AN INTERSECTION WITH THE EAST LINE OF THE NORTHEAST QUARTER (NE ¼) OF SAID SECTION 15; THENCE RUN S00°55'38"E ALONG SAID EAST LINE FOR 284.49 FEET TO THE POINT OF BEGINNING.

BEARINGS HEREIN ABOVE MENTIONED ARE PLANE COORDINATE FOR THE FLORIDA WEST ZONE N.A.D. 1983 (1990 ADJUSTMENT) WITH THE EAST LINE OF THE SOUTHEAST QUARTER (SE ¼) OF SAID SECTION 15 TO BEAR S00°55'20"E.

PARCEL F:

A TRACT OR PARCEL OF LAND LYING IN SECTION 22, TOWNSHIP 45 SOUTH, RANGE 26 EAST, LEE COUNTY, FLORIDA BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF THE NORTHWEST QUARTER (NW  $\frac{1}{4}$ ) OF SAID SECTION 22 RUN N89°24'33"E ALONG THE NORTH LINE OF SAID SECTION 22 FOR 199.43 FEET TO AN INTERSECTION WITH THE WESTERLY LINE OF ROD AND GUN CLUB ROAD (60 FEET WIDE); THENCE RUN S07°38'12"E ALONG SAID WEST LINE FOR 660.00 FEET TO AN INTERSECTION WITH THE NORTH LINE OF LANDS DESCRIBED IN O.R. BOOK 906, PAGE 535 OF THE LEE COUNTY RECORDS; THENCE RUN S89°24'33"W ALONG SAID NORTH LINE FOR 1,600.63 FEET TO AN INTERSECTION WITH THE WEST LINE OF THE EAST HALF (E  $\frac{1}{2}$ ) OF THE NORTHWEST QUARTER (NW  $\frac{1}{4}$ ) OF SAID SECTION 22; THENCE RUN N01°09'19"W ALONG SAID WEST LINE 655.05 FEET TO AN INTERSECTION WITH THE NORTH LINE OF SAID SECTION 22; THENCE RUN N89°24'33"E ALONG SAID NORTH LINE FOR 1,326.70 FEET TO THE POINT OF BEGINNING.

BEARINGS HEREIN ABOVE MENTIONED ARE PLANE COORDINATE FOR THE FLORIDA WEST ZONE N.A.D. 1983 (1990 ADJUSTMENT) WITH THE NORTH LINE OF SAID SECTION 22 TO BEAR N89°24'33"E.

PARCEL G:

A TRACT OR PARCEL OF LAND LYING IN SECTION 15 AND 22, TOWNSHIP 45 SOUTH, RANGE 26 EAST, LEE COUNTY, FLORIDA BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF SAID SECTION 22, RUN S00°55'31"E ALONG THE EAST LINE OF SAID SECTION 1,650.03 FEET TO AN INTERSECTION WITH THE NORTH LINE OF LANDS DESCRIBED IN O.R. BOOK 1523 BEGINNING AT PAGE 1021 OF THE LEE COUNTY RECORDS; THENCE RUN S89°24'33"W ALONG THE NORTH LINE OF SAID PARCEL FOR 660.01 FEET; THENCE RUN S00°55'31"E ALONG THE WEST LINE OF SAID PARCEL FOR 330.01 FEET; THENCE RUN N89°24'33"E ALONG THE SOUTH LINE OF SAID PARCEL FOR 660.01 FEET TO AN INTERSECTION WITH THE EAST LINE OF SAID SECTION 22, THENCE RUN S00°55'31"E ALONG SAID EAST LINE FOR 680.73 FEET TO THE SOUTHEAST CORNER OR THE NORTHEAST QUARTER (NE  $\frac{1}{4}$ ) OF SAID SECTION 22; THENCE RUN S00°56'37"E ALONG THE EAST LINE OF THE SOUTHEAST QUARTER (SE  $\frac{1}{4}$ ) OF SAID SECTION 22 FOR 732.78 FEET TO AN INTERSECTION WITH THE NORTH LINE OF LANDS DESCRIBED IN O.R. BOOK 1477 BEGINNING AT PAGE 620 OF THE LEE COUNTY RECORDS; THENCE RUN S89°24'10"W ALONG SAID NORTH LINE FOR 1,994.12 FEET TO AN INTERSECTION WITH THE EAST LINE OF ROD AND GUN CLUB ROAD (60 FEET WIDE); THENCE RUN N07°38'12"W ALONG SAID EAST LINE FOR 3,737.07 FEET TO AN INTERSECTION WITH THE SOUTH LINE OF LANDS DESCRIBED IN O.R. BOOK 888, PAGE 773, LEE COUNTY RECORDS; THENCE RUN N89°23'41"E ALONG SAID SOUTH LINE FOR 1,740.64 FEET TO AN INTERSECTION WITH THE WEST LINE OF LANDS DESCRIBED IN O.R. BOOK 1490 BEGINNING AT PAGE 2274 OF SAID RECORDS;

THENCE RUN S00°55'20"E ALONG SAID WEST LINE FOR 315.59 FEET TO AN INTERSECTION WITH THE NORTH LINE OF SAID SECTION 22; THENCE RUN N89°24'33"E ALONG SAID NORTH LINE FOR 690.01 FEET TO THE POINT OF BEGINNING.

BEARINGS HEREIN ABOVE MENTIONED ARE PLANE COORDINATE FOR THE FLORIDA WEST ZONE N.A.D. 1983 (1990 ADJUSTMENT) WITH THE NORTH LINE OF SAID SECTION 22 TO BEAR N89°24'33"E.

PARCEL H:

A TRACT OR PARCEL OF LAND LYING IN SECTION 22, TOWNSHIP 45 SOUTH, RANGE 26 EAST, LEE COUNTY, FLORIDA BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

FROM THE NORTHEAST CORNER OF THE NORTHWEST QUARTER (NW ¼) OF SAID SECTION 22 RUN S89°24'33"W ALONG THE NORTH LINE OF SAID SECTION FOR 1,326.70 FEET TO AN INTERSECTION WITH THE WEST LINE OF THE EAST HALF (E ½) OF THE NORTHWEST QUARTER (NW ¼) OF SAID SECTION 22; THENCE RUN S01°09'19"E ALONG SAID WEST LINE FOR 1,310.03 FEET TO THE SOUTH LINE OF LANDS DESCRIBED IN O.R. BOOK 28, PAGE 140 OF THE LEE COUNTY RECORDS AT THE POINT OF BEGINNING.

FROM SAID POINT OF BEGINNING RUN N89°24'33"E ALONG SAID SOUTH LINE FOR 1,675.13 FEET TO AN INTERSECTION WITH THE WEST LINE OF ROD AND GUN CLUB ROAD (60 FEET WIDE); THENCE RUN S07°38'12"E ALONG SAID WEST LINE FOR 329.98 FEET TO THE NORTH LINE OF LANDS DESCRIBED IN O.R. BOOK 628, PAGE 148 OF THE LEE COUNTY RECORDS; THENCE RUN S89°24'33"W ALONG SAID NORTH LINE FOR 1,712.38 FEET TO AN INTERSECTION WITH THE WEST LINE OF THE EAST HALF (E ½) OF THE NORTHWEST QUARTER (NW ¼) OF SAID SECTION 22; THENCE RUN N01°09'19"W ALONG SAID WEST LINE FOR 327.51 FEET TO THE POINT OF BEGINNING.

BEARINGS HEREIN ABOVE MENTIONED ARE PLANE COORDINATE FOR THE FLORIDA WEST ZONE N.A.D. 1983 (1990 ADJUSTMENT) WITH THE NORTH LINE OF SAID SECTION 22 TO BEAR N89°24'33"E.

PARCEL I:

A TRACT OR PARCEL OF LAND LYING IN SECTION 22, TOWNSHIP 45 SOUTH, RANGE 26 EAST, LEE COUNTY, FLORIDA WHICH TRACT OR PARCEL IS DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF SAID SECTION 22 RUN S89°25'12"W ALONG THE SOUTH LINE OF SAID SECTION FOR 1,204.41 FEET TO AN INTERSECTION WITH THE NORTHEASTERLY LINE OF ROD AND GUN CLUB ROAD (60 FEET WIDE); THENCE RUN N40°19'12"W ALONG SAID NORTHEASTERLY LINE FOR 1,035.38 FEET; THENCE RUN N07°38'12"W ALONG THE EAST LINE OF SAID ROD AND GUN CLUB ROAD FOR 453.93 FEET TO AN INTERSECTION WITH THE SOUTH LINE OF LANDS

DESCRIBED IN O.R. BOOK 285 BEGINNING AT PAGE 514 OF THE LEE COUNTY RECORDS THENCE RUN N89°24'10"E ALONG SAID SOUTH LINE FOR 1,914.18 FEET TO AN INTERSECTION WITH THE EAST LINE OF THE SOUTHEAST QUARTER (SE ¼) OF SAID SECTION 22; THENCE RUN S00°56'37"E ALONG SAID EAST LINE FOR 1,247.25 FEET TO THE POINT OF BEGINNING.

BEARINGS HEREIN ABOVE MENTIONED ARE PLANE COORDINATE FOR THE FLORIDA WEST ZONE N.A.D. 1983 (1990 ADJUSTMENT) WITH THE SOUTH LINE OF SAID SECTION 22 TO BEAR S89°25'12"W.

Appendix P -- Partnership Agreement with FDOF

**Lee County Board Of County Commissioners  
Agenda Item Summary**

**Blue Sheet No. 20070545**

**1. ACTION REQUESTED/PURPOSE:** Approve and execute Partnership Agreement between Lee County and Florida Department of Agriculture and Consumer Services, Division of Forestry (DOF) for restoration activities to include thinning of slash pine trees and prescribed burning to improve the quality of wildlife habitat and return Conservation 20/20 preserves to historic conditions.

**2. FUNDING SOURCE:** No funds required. <sup>DEH</sup>

**3. WHAT ACTION ACCOMPLISHES:** Partnership agreement will allow restoration thinning of select pine stands on Conservation 20/20 preserves in accordance with approved Land Stewardship Plans.

**4. MANAGEMENT RECOMMENDATION: APPROVE**

**5. Departmental Category:** 11 **CLIB** **6. Meeting Date:** 04.17.07

<b>7. Agenda:</b>		<b>8. Requirement/Purpose: (specify)</b>		<b>9. Request Initiated:</b>	
<input checked="" type="checkbox"/> Consent	<input type="checkbox"/> Statute			Commissioner	
<input type="checkbox"/> Administrative	<input type="checkbox"/> Ordinance			Department: Parks & Recreation	
<input type="checkbox"/> Appeals	<input type="checkbox"/> Admin. Code			Division	
<input type="checkbox"/> Public	<input checked="" type="checkbox"/> Other			By: John Yarbrough, Director of Parks and Recreation	
<input type="checkbox"/> Walk-On				<i>John Yarbrough</i>	

**10. Background:** Each Conservation 20/20 preserve has (or will have) a Board of County Commissioners approved Land Stewardship Plan. Site restoration projects, including exotic species removal, wildlife habitat enhancement, pine tree thinning etc. are identified within the Land Stewardship Plan. This partnership agreement permits the Division of Forestry to plan, administer and supervise the harvest of pine trees on Conservation 20/20 preserves where it is needed as a part of the site restoration identified within the approved Land Stewardship Plan. The Division of Forestry will be paid the greater of (a) 10% of the total sales revenue or (b) the actual cost of sale preparation plus 3% of the total sales revenue for an administration fee. The balance of the revenue raised in this restoration pine sale will be placed into the Conservation 20/20 management fund for exotic plant removal or other restoration projects.

**11. Review for Scheduling:**

Department Director	Purchasing or Contracts	Human Resources	Other	County Attorney	Budget Services				County Manager/P. W. Director
					Analyst	Risk	Grants	Mgr.	
<i>4/3/07</i>				<i>W. C. ...</i>	<i>DEH 4/4/07</i>	<i>4/4/07</i>	<i>4/4/07</i>	<i>4/4/07</i>	<i>[Signature]</i>

**12. Commission Action:**

- Approved
- Deferred
- Denied
- Other

RECEIVED BY COUNTY ADMIN: <i>P.</i>
<i>4/4</i>
COUNTY ADMIN FORWARDED TO: <i>P.</i>
<i>4/4</i>
<i>4:30pm</i>

Rec. by CoAtty
Date: <i>4/3/07</i>
Time: <i>3:00pm</i>
Forwarded To:
<i>CAD 3:52pm</i>

**Partnership Agreement between  
Lee County and State of Florida  
Department of Agriculture and Consumer Services  
Division of Forestry**

This Partnership Agreement is made and entered into this \_\_\_\_ day of \_\_\_\_\_, 2007, between Lee County, a political subdivision and Charter County of the State of Florida, hereinafter referred to as the COUNTY, and the State of Florida Department of Agriculture and Consumer Services, Division of Forestry, hereinafter referred to as the DOF.

**WITNESSETH**

WHEREAS, certain lands are owned by the COUNTY and managed through the COUNTY's Department of Parks and Recreation through the Conservation 20/20 program (C20/20); and

WHEREAS, certain lands acquired through C20/20 were acquired using funds provided through Florida Forever and grant partnerships with Florida Communities Trust (FCT); and

WHEREAS, these lands acquired through the COUNTY's C20/20 program are to be utilized for conservation and stewardship of the natural resources, outdoor nature based recreation, environmental education and related public purposes; and

WHEREAS, in the land stewardship plan for these lands, provisions are made to provide for maintenance of the sites in a natural state and/or to restore sites to enhance natural resource values; and

WHEREAS, several of these preserves require restoration activities to include thinning of slash pine trees and prescribed burning to improve the quality of wildlife habitat and return these communities to historic conditions; and

WHEREAS, the DOF has the expertise required to perform the services identified under this Agreement and desires to assist the COUNTY in administering logging activities at selected properties for restoration purposes.

NOW, THEREFORE, the parties hereto, for and in consideration of the mutual covenants and agreements contained herein agree as follows:

1. The DOF shall plan, administer, and supervise the harvest of timber on COUNTY lands in accordance with ATTACHMENT A, Scope of Services, attached hereto and made a part hereof.
2. The DOF shall receive revenues from all timber sales it administers on behalf of the COUNTY pursuant to this Agreement. DOF will be paid the greater of: (a) ten percent (10%) of the total sales revenue or (b) the actual cost of sale preparation plus 3% of the total sales revenue for an administrative fee. Funds retained by DOF for sale preparation shall cover the cost of field consultation with COUNTY staff, field reconnaissance to

prepare the sale, necessary timber cruising or marking, purchase of expendable field supplies, and preparation of the sale package. The sale preparation and administrative fee retained by the DOF shall cover the cost of solicitation and receipt of bids, execution of contract, and supervision of the sale while in progress. Once each sale is completed, DOF will subsequently remit to the COUNTY the total sales revenue accrued from these sales, minus DOF's fee for sale preparation and administration. If DOF hires a private contractor to perform any of the above listed activities, DOF will pay the contractor's fee from their share of the revenues.

3. The COUNTY shall complete any road repairs necessary to access and remove timber from the sites above and beyond those road repairs the timber harvest contractor would be responsible for under the timber harvest contract.
4. The COUNTY shall also assist DOF with field administration of timber sales. Such assistance will be mutually agreed upon in advance and include activities such as site visits and truck tallies.
5. It is understood by both parties that the COUNTY lands shall be managed in a manner consistent with the approved County land stewardship plan.
6. The COUNTY's Project Manager is:

Cathy Olson  
Conservation 20/20 Senior Supervisor  
Department of Parks and Recreation  
3410 Palm Beach Boulevard  
Fort Myers, Florida 33916  
telephone (239) 461-7455

The DOF's Project Manager is:

Butch Mallett  
Senior Forester  
Florida Division of Forestry  
Other State Lands  
15019 Broad Street  
Brooksville, FL 34601-4201  
telephone (352) 797-5755

The DOF's local contact is:  
Michael Weston  
CFA Senior Forester  
Florida Division of Forestry  
10941 Palm Beach Boulevard  
Fort Myers, Florida  
telephone (239) 690-3500 Ext. 118

All project matters shall be directed to the Project Managers for appropriate action or disposition.

7. The COUNTY represents that it has the right to agree to resource management activities necessary to facilitate the sale of forest products on COUNTY lands by the DOF.
8. The COUNTY, or its duly authorized agents, shall have the right to inspect the COUNTY timber project areas and the works and operations thereon of the DOF in any matter pertaining to this Agreement.
9. This Agreement and any rights and privileges contained herein are for the sole use of the DOF and shall not be assigned or transferred to another party without prior written approval of the COUNTY. The DOF shall have the right to enter and occupy COUNTY lands for the purposes necessary to meet its designated responsibilities, including protection of those lands. The DOF's agents and employees shall take all reasonable measures to provide security against damage, degradation and unauthorized uses of the COUNTY lands and natural resources.
10. The DOF shall submit a report at a minimum of twice every calendar year to the COUNTY on items related to its timber management activities on the COUNTY lands during the year.
11. The COUNTY and DOF agree that this Agreement shall confer upon the DOF the right to implement silvicultural treatments necessary to facilitate the sale of timber on the COUNTY lands. The DOF shall investigate any and all claims of injury or damage either for or against the COUNTY or the DOF pertaining to forest resource management activities conducted on the COUNTY lands by the DOF and shall notify the COUNTY regarding the legal action deemed appropriate to remedy such damages or claims.
12. The COUNTY and DOF hereto agree that each party shall be solely responsible for the negligent or wrongful acts of its employees and agents during the course of normal working conditions. However, nothing contained herein shall be construed as an indemnity or constitute a waiver by either party of its sovereign immunity or the provisions of Section

768.28, Florida Statutes, as amended from time to time, or any other law providing limitations on claims.

13. This Agreement shall be effective upon execution by both parties, and shall remain in full force and effect until terminated as provided herein. Either party may terminate this Agreement for cause or convenience by giving sixty (60) days notice in writing to the other party of its intent to do so.
14. Upon such termination invoked by either the DOF or the COUNTY, and upon cessation of timber operations on said COUNTY lands, by the DOF, the DOF agrees to remove any improvements placed or made by the DOF at DOF's sole cost and expense.
15. To the extent required by law, the DOF will be self-insured against, or will secure and maintain during the life of this Agreement, Worker's Compensation Insurance for all of its employees connected with the work of this project. Such self-insurance coverage shall comply fully with the Florida Worker's Compensation law. In case any class of employees engaged in hazardous work under this Agreement is not protected under Worker's Compensation statutes, the DOF shall provide adequate insurance satisfactory to the COUNTY, for the protection of its employees not otherwise protected.
16. The DOF warrants and represents that it is self-funded for liability insurance, appropriate and allowable under Florida law, and that such self-insurance offers protection applicable to the DOF's officers, employees, servants and agents while acting within the scope of their employment with the DOF.
17. This Agreement represents the entire agreement of the parties. Any alterations, variations, changes, modifications, waivers of provisions of this Agreement shall only be valid when they have been reduced to writing, duly signed by each of the parties hereto, and attached to the original of this Agreement, unless otherwise provided herein.

IN WITNESS WHEREOF, the Florida Department of Agriculture and Consumer Services, Division of Forestry, and Lee County Department of Parks and Recreation have caused this Agreement to be duly executed and effective as of the date last written below.

WITNESSES

Christa A. Register  
Chandler A. Baker

STATE OF FLORIDA  
DEPARTMENT OF AGRICULTURE AND  
CONSUMER SERVICES,  
CHARLES BRONSON, COMMISSIONER

BY: Mike Gresham  
MIKE GRESHAM, DIRECTOR  
DIVISION OF ADMINISTRATION

STATE OF FLORIDA  
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 13th day of March, 2007, by Mike Gresham, as Director, Division of Administration, Department of Agriculture and Consumer Services, who is personally known to me and who did take an oath.



Karen A. Meyer  
Notary Public  
My Commission Expires: 10/20/2008

WITNESSES

\_\_\_\_\_  
\_\_\_\_\_

LEE COUNTY, FLORIDA  
BOARD OF COUNTY COMMISSIONERS

BY: \_\_\_\_\_  
BOB JANES, CHAIR

AS APPROVED BY THE BOARD ON  
\_\_\_\_\_

## **ATTACHMENT A**

### **Scope of Services**

Lee County is desirous of managing timber on selected Conservation 20/20 lands for the purposes of maintenance or restoration. These lands include flatwoods ecosystems, as well as disturbed community types. The goal of restoration is to return these communities to historic conditions, and to improve the quality of wildlife habitat.

Within the restoration areas, slash pine trees will be thinned to a density appropriate for the management goals of the timber unit. Typically, healthy, dominant slash pine trees will remain as a seed source for pine regeneration.

The DOF agrees to perform the tasks stated below.

The identified tasks are as follows:

1. Provide assistance to COUNTY staff in marking the timber that is to be removed for restoration purposes. In natural stands, the leave trees shall consist of healthy, mature slash pine. Where surrounding stands do not provide large den trees,, leave the old flat-topped slash pines, large overtopped slash, (>10 in. d.b.h.) and any cat-faced pines within the sale areas. Pines will be selectively removed to allow enough room in between clusters of trees for future roller chopping or other brush reduction activities. Timber harvesting, combined with brush reduction and a prescribed burning program, will be the quickest way to increase biodiversity and return these stands to a more historical condition.
2. Any environmentally sensitive areas, such as wetlands, that are encountered while marking the timber must be recorded and documented. Do not mark any timber in such areas that could potentially damage or destroy the area. Areas of concern include, but are not limited to, seasonal ponds, cypress strands, wet prairies, archaeological sites, cultural sites, and threatened or endangered plant or animal habitations (e.g. inactive or active bald eagle nest trees, fox squirrel nests, gopher tortoise burrows). A 30-50 foot buffer zone may be marked around these sensitive wetland habitats and will be marked around cultural, archaeological and listed species habitats that the equipment must stay out of. In addition, tree thinning activities will only take place during the dry season. In areas where saw palmetto is the dominant ground cover, timber harvesting skid trails will be scattered over the general harvest area to disperse the impacts to a broader area of saw palmetto. Slash piles will be spread in piles no higher than 18" or near remaining trees. No slash will be left on roads or trails after work is completed. Remaining tree stumps shall be no higher than 8". All timber sales operations must be conducted in accordance with the most current Florida Silviculture Best Management Practices Manual.

3. The DOF agrees at a minimum to assist and administer the needed timber sales within the COUNTY during the term of this Agreement. These sales would include reducing merchantable pine basal area.
4. The DOF will prepare timber sale packages, mail the packages to prospective bidders, and be responsible for overseeing the harvesting operations. Timber revenues will be received by the DOF and revenues (less the 10% administrative fee) returned to the COUNTY at the end of each sale. In the event the actual cost of the sale preparation plus 3% of the total sales revenue exceeds 10% of timber sale revenues, the County will pay the actual cost of the sale preparation plus 3% of the total sales revenue.
5. The DOF will obtain COUNTY approval prior to initiating any timber sale. This will include COUNTY approval of the entire timber sale bid package, including the timber sale agreement, prior to mailing to prospective bidders.
6. The DOF agrees that all applicable Federal, State and COUNTY laws and regulations will be adhered to. The County regulations include but are not limited to:
  - a. Management of the lands shall be for conservation of the natural resources and to provide environmental education and passive recreation opportunities. Damage to non-harvested trees shall be limited as much as possible. Root systems of leave trees are to be impacted as little as possible. Only double marked trees may be removed, leaving the lowest mark on the tree for verification, unless for a particular sale, a decision is made to double mark the leave trees.
  - b. Logging slash will be spread around the site. All ramps and loading decks shall be re-graded to natural soil level.
  - c. No off-road motorized vehicles are allowed, except for authorized land management activities.
  - d. No hunting is allowed.
  - e. No collecting of plants or animals (dead or alive), for any purposes is allowed, except by special permit or agreement issued by the Lee County Parks and Recreation staff.
  - f. No pets are allowed.
  - g. No illegal activities are allowed.
  - h. No trash from the contractor or DOF personnel shall be left on site at the end of each work day.
  - i. A hydraulic spill containment kit shall be on-site during all harvesting work and be used for all hydraulic fluid spills.

Healthy flatwoods communities are characterized by open, uneven-aged pine stands that allow a considerable amount of sunlight to reach the forest floor. Ground cover consists of a diverse mixture of grasses, herbaceous plants and dried pine needles that foster frequent lightning season fires. Saw palmettos are scattered and low growing. Unfortunately, some of the pine flatwoods stands in Lee County Preserves have become overgrown due to years of fire suppression and previous land use practices. Some of the stands are very dense and filled with thick, skinny pines with few other plants, beyond some weedy and exotic species (Figure A). Other flatwoods stands have larger pines, surrounded by extremely high, thick palmetto bushes (Figure B).

### **Ecological benefits of thinning pine trees**

- Many wildlife species benefit from healthy flatwoods for the diversity of plants, and open midstory to watch for predators. This includes listed species such as gopher tortoises, eastern indigo snakes, Sherman's and Big Cypress fox squirrels and red-cockaded woodpeckers.
- Remove weak and diseased trees before the health problem spreads throughout the stand.
- Create openings which allow new seedlings to get established to ensure an uneven aged stand of trees. Slash pines typically only live 100 years, and so it is important to have young trees growing up to replace the old ones.
- Control the midstory growth of palmettos and other shrubs to allow young pines to grow.
- Reduce heavy fuel loads for prescribed burning and to prevent catastrophic wildfires.
- Provide room for fuel reduction through mowing, roller chopping, etc where prescribed burning is not feasible (small urban sites).
- Diminish the possibility of crown fire, which have a high risk of spotting over into adjacent areas, during a wildfire or prescribed fire. Crown fires also typically kill the pine trees, leaving an enormous amount of potentially dangerous snags (Figure C).
- Promote rare plant species such as beautiful paw paw and Simpson's zephyrlily that only grow in open flatwoods with periodic fires.
- Prevent significant forest die offs from pine beetles and other insects that attack trees that are stressed, such as those growing in dense pine stands.
- Allow staff to reduce fuels in urban-interface areas where the risk of high-intensity wildfires that could endanger people and property.
- Improve the habitat for future Lee County gopher tortoise relocation needs.

In each stand, Land Stewardship staff has calculated the Basal Area (BA). This measurement is calculated by using a prism that measures both the number of trees and their diameter, per acre, in a stand. Ideal flatwoods conditions are between 40-60 square feet of BA, which provides enough needles to carry a fire and enough sunlight for native grasses and other plants to thrive. Then with the assistance of Division of

Forestry staff, trees are carefully selected to achieve the goal of creating a healthy pine flatwoods community (Figures D & E).

Figure A: Pop Ash Creek Preserve



Figure B: Gator Hole Preserve



Figure C: Snags from a wildfire in an overly thick pine forest (not in Lee County)



Figure D: Gator Hole Preserve



Figure E: Charlotte Harbor Buffer Preserve



Appendix Q -- FCT Grant Contract

FCT Contract Number \_\_-CT-\_\_\_\_\_  
FLORIDA COMMUNITIES TRUST  
04-031-FF4  
WILD TURKEY STRAND PRESERVE  
CSFA # 52002

### **GRANT CONTRACT**

THIS AGREEMENT is entered into by and between the FLORIDA COMMUNITIES TRUST (“FCT”), a non-regulatory agency within the State of Florida Department of Community Affairs, and LEE COUNTY, a local government of the State of Florida (“Recipient”).

THIS AGREEMENT IS ENTERED INTO BASED ON THE FOLLOWING FACTS:

WHEREAS, the intent of this Agreement is to impose terms and conditions on the use of the proceeds of certain bonds, hereinafter described, and the lands acquired with such proceeds (“Project Site”), that are necessary to ensure compliance with applicable Florida law and federal income tax law and to otherwise implement the provisions of Sections 259.105, 259.1051 and Chapter 380, Part III, Florida Statutes;

WHEREAS, Chapter 380, Part III, Fla. Stat., the Florida Communities Trust Act, creates a non-regulatory agency within the Department of Community Affairs (“Department”) which will assist local governments in bringing into compliance and implementing the conservation, recreation and open space, and coastal elements of their comprehensive plans or in conserving natural resources and resolving land use conflicts by providing financial assistance to local governments and nonprofit environmental organizations to carry out projects and activities authorized by the Florida Communities Trust Act;

WHEREAS, FCT is funded through either Section 259.105(3)(c), Fla. Stat. of the Florida Forever Act, which provides for the distribution of twenty-two percent (22%), less certain reductions, of the net Florida Forever Revenue Bond proceeds to the Department, or any other revenue source designated by the Florida Legislature to provide land acquisition grants to local governments and nonprofit environmental organizations for the acquisition of community-based projects, urban open spaces, parks and greenways to implement local comprehensive plans;

WHEREAS, the Florida Forever Revenue Bonds are issued as tax-exempt bonds, meaning the interest on the bonds is excluded from the gross income of bondholders for federal income tax purposes;

WHEREAS, Rule Chapter 9K-7, Florida Administrative Code (“F.A.C.”) sets forth the procedures for the evaluation and selection of lands proposed for acquisition and Rule Chapter 9K-8, F.A.C. sets forth the acquisition procedures;

WHEREAS, on September 1, 2004 the FCT Governing Board scored, ranked and selected projects to receive approval for funding;

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November 1, 2004  
Pre-acquisition

WHEREAS, the Recipient's project, described in an application submitted for evaluation, was selected for funding in accordance with Rule Chapter 9K-7, F.A.C., and by executing this Agreement the Recipient reaffirms the representations made in its application;

WHEREAS, Rule 9K-7.009(1), F.A.C. authorizes FCT to impose conditions for funding on those FCT applicants whose projects have been selected for funding;

WHEREAS, Rule 9K-7.003(5) F.A.C., recognizes real property owned by the Recipient and included in the application as part of the Project Site as an eligible source of Match, provided that the real property owned was acquired by the Recipient within 24 months prior to the application deadline for which the application was made. The date of this application deadline was **MAY 5, 2004**;

WHEREAS, the Recipient acquired fee simple title to the entire Project Site on \_\_\_\_\_ (Insert date[s]) from \_\_\_\_\_ (Insert Seller name[s]);

WHEREAS, the Recipient will request disbursement of FCT Florida Forever Bond proceeds for the reimbursement of Project Costs expended by the Recipient for the acquisition of the Project Site; and

WHEREAS, the purpose of this Agreement is to set forth the conditions that must be satisfied by the Recipient prior to the disbursement of any FCT Florida Forever funds awarded, as well as the restrictions that are imposed on the Project Site subsequent to reimbursing the Recipient for Project Costs.

NOW THEREFORE, FCT and the Recipient mutually agree as follows:

## **I. PERIOD OF AGREEMENT**

1. This Agreement shall begin upon the Recipient's project being selected for funding and shall end **MARCH 1, 2005** ("Expiration Date"), unless extended as set forth below or unless terminated earlier in accordance with the provisions of Article XIII of this Agreement.

2. FCT may extend this Agreement beyond the Expiration Date if the Recipient demonstrates that significant progress is being made toward Project Plan approval or that extenuating circumstances warrant an extension of time. A request for an extension shall fully explain the reason for the delay and why the extension is necessary and shall be provided to FCT in accordance with paragraph V.1. prior to the Expiration Date. If the Recipient does not request an extension, or if a requested extension is not granted by FCT, the Recipient's award shall be rescinded and this Agreement shall terminate.

## **II. MODIFICATION OF AGREEMENT**

1. Either party may request modification of the provisions of this Agreement at any time. Changes which are mutually agreed upon shall be valid only when reduced to writing and duly signed by each of the parties hereto. Such amendments shall be incorporated into this Agreement.

## **III. DEADLINES**

1. At least two original copies of this Agreement shall be executed by the Recipient and returned to the FCT office at 2555 Shumard Oak Boulevard, Tallahassee, FL 32399-2100, as soon as possible and before **DECEMBER 1, 2004**. If the Recipient requires more than one original document, the Recipient shall photocopy the number of additional copies needed and then execute each as an original document. Upon receipt of the signed Agreements, FCT shall execute the Agreements, retain one original copy and return all other copies that have been executed to the Recipient.

2. The Recipient and its representatives shall know of and adhere to all project deadlines and devise a method of monitoring the project. Deadlines stated in this Agreement, as well as deadlines associated with any FCT activity relating to the project, shall be strictly enforced. Failure to adhere to deadlines may result in delays in the project, allocation of time or resources to other recipients that respond timely or the termination of this Agreement by FCT.

3. The Recipient shall submit the documentation required by this Agreement to FCT as soon as possible so that the Project Costs may be reimbursed in an expeditious manner.

4. The Recipient shall provide a monthly status report to FCT of its progress towards reimbursement of the Project Costs.

5. The Recipient shall provide the appraisal(s) required by 9K-8.007, F.A.C. to FCT for review by a date not to exceed ninety (90) days after the Recipient's project is selected for funding. The appraisals shall be reviewed and, upon approval, the Maximum Approved Purchase Price ("MAPP"), as provided in Rule 9K-8.007(5) and (6), F.A.C., shall be determined.

## **IV. FUNDING PROVISIONS**

1. The FCT Florida Forever award granted to the Recipient ("FCT Award") will in no event exceed the lesser of Forty Percent (40%) of the final Project Costs, as defined in Rule 9K-7.002(29), F.A.C., or Two Million Five Hundred Thirty Thousand Eight Hundred Four Dollars And Ninety Eight Cents (\$2,530,804.98), unless FCT approves a different amount after determination of the MAPP, which shall be reflected in an addendum to this Agreement.

The FCT Award is based on the Recipient's estimate of final Project Costs in its application, as well as the Limitation of Award provided in Rule 9K-7.003(3), F.A.C. and advertised in the Notice of Application. When disbursing the FCT Award, FCT shall recognize only those Project Costs consistent with the definition in Rule 9K-7.002(29), F.A.C. FCT shall participate in the land cost at

either the actual purchase price or the MAPP, whichever is less, multiplied by the percent stated in the above paragraph.

2. The FCT Governing Board selected the Recipient's application for funding in order to acquire the entire Project Site identified in the Application. FCT reserves the right to withdraw or adjust the FCT Award if the acreage that comprises the Project Site is reduced or the project design is changed so that the objectives of the acquisition cannot be achieved. FCT shall consider any request for Project Site boundary modification in accordance with the procedures set forth in Rule 9K-7.010, F.A.C.

3. The FCT Award shall be delivered either in the form of Project Costs prepaid by FCT to vendors or in the form of a State of Florida warrant to the Recipient. The FCT Award shall only be delivered after FCT approval of the Project Plan and Project Site acquisition terms. FCT shall prepare a grant reconciliation statement prior to the reimbursement that evidences the amount of Match provided by the Recipient, if any is required, and the amount of the FCT Award. Funds expended by FCT for Project Costs shall be recognized as part of FCT Award on the grant reconciliation statement.

4. If a Match is required, it shall be delivered in an approved form as provided in Rule 9K-7.002(22), F.A.C. If the value of Pre-acquired land, as defined by Rule 9K-7.002(28), or donated land is the source of the Match, the MAPP shall determine the value of the Match. Funds expended by the Recipient for Project Costs shall be recognized as part of the Match on the grant reconciliation statement.

5. By executing this Agreement, the Recipient affirms that it is ready, willing and able to provide a Match, if any is required.

6. FCT's performance and obligation to pay under this Agreement is contingent upon an annual appropriation by the Florida Legislature, and is subject to any modification in accordance with Chapter 216, Fla. Stat. or the Florida Constitution.

## **V. NOTICE AND CONTACT**

1. All notices provided under or pursuant to this Agreement shall be in writing and delivered either by hand delivery or first class, certified mail, return receipt requested, to:

Florida Communities Trust  
2555 Shumard Oak Boulevard  
Tallahassee, FL 32399-2100

2. All contact and correspondence from FCT to the Recipient shall be through the key contact. Recipient hereby notifies FCT that the following administrator, officer or employee is the authorized key contact on behalf of the Recipient for purposes of coordinating project activities for the duration of the project:

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

E-mail: \_\_\_\_\_

3. The Recipient authorizes the administrator, employee, officer or representative named in this paragraph to execute all documents in connection with this project on behalf of the Recipient, including, but not limited to, the Grant Contract or any addenda thereto, grant reconciliation statement, statements submitted as a part of the Project Plan and Declaration of Restrictive Covenants.

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Email: \_\_\_\_\_

4. In the event that different representatives or addresses are designated for either paragraph 2. or 3. above after execution of this Agreement, notice of the changes shall be rendered to FCT as provided in paragraph 1. above.

5. The Recipient hereby notifies FCT that the Recipient's Federal Employer Identification Number(s) is \_\_\_\_\_.

## **VI. PROJECT PLAN APPROVAL; PRE-CLOSING REQUIREMENTS**

1. Prior to the final disbursement of the FCT Award, the Recipient shall submit to FCT and have approved a Project Plan that complies with Rule 9K-8.011, F.A.C. The Project Plan shall

not be considered by FCT unless it is organized with a table of contents and includes all of the following documents to ensure that the interest of the State of Florida will be protected:

- a. Closing documents associated with the parcel(s):
  - (1) A copy of the Purchase Agreement(s) for sale and purchase of the parcel(s) between the Recipient and \_\_\_\_\_  
(Insert name[s] of Seller[s]).
  - (2) A copy of closing statements from Buyer(s) and Seller(s) for the purchase of the parcel(s).
  - (3) A copy of the recorded deed(s) evidencing conveyance of title to the parcel(s) to the Recipient.
  - (4) Certified survey(s) of the parcel(s) that meets the requirements of Rule 9K-8.006, F.A.C., and is dated within ninety (90) days of the date of acquisition of the parcel(s) by the Recipient.
  - (5) A copy of the title insurance policy(s) evidencing marketable title in Recipient to the parcel(s) and effective the date of acquisition of the parcel(s) by the Recipient, including a statement from the title insurer as to the minimum promulgated rate if premium was paid by Recipient, and all documents referenced in the title policy(s).
  - (6) Environmental site assessment(s) of the parcel(s) certified to the Recipient, which meets the standards and requirements of ASTM Practice E 1527, and with a date of certification within ninety (90) days of the date of acquisition of the parcel(s) by Recipient, together with the statement required by Rule 9K-8.012(4), F.A.C.
- b. A letter from FCT indicating approval of the Management Plan written in accordance with Rule 9K-7.011, F.A.C., and as described in Article VII below.
- c. A statement of the Project Costs.
- d. A statement of the amount of the award being requested from FCT.
- e. Supporting documentation that the conditions imposed as part of this Agreement have been satisfied.

- f. A signed statement by the Recipient that the Recipient is not aware of any pending criminal, civil or regulatory violations imposed on the Project Site by any governmental agency or body.
- g. A signed statement by the Recipient that all activities under this Agreement comply will all applicable local, state, regional and federal laws and regulations, including zoning ordinances and the applicable adopted and approved comprehensive plan.
- h. Additional documentation as may be requested by FCT to provide Reasonable Assurance, as set forth in paragraph VII.4. below.

2. FCT shall approve the terms under which the interest in land is acquired pursuant to Section 380.510(3), Fla. Stat. Such approval is deemed given when FCT approves the Project Plan containing a copy of the document(s) vesting title to the Project Site in the Recipient.

**3. All real property shall be obtained through a Voluntarily-Negotiated Transaction, as defined in Rule 9K-7.002(41). The use of or threat of condemnation is not considered a Voluntarily-Negotiated Transaction.**

4. All invoices for Project Costs, with proof of payment, shall be submitted to FCT and be in a detail sufficient for a proper audit thereof.

5. The Recipient may, and is strongly encouraged to, request a courtesy review of its Project Plan prior to its submission for approval.

6. Reimbursement for Project Costs shall not occur until after FCT approval of the Project Plan.

## **VII. MANAGEMENT PLAN; ANNUAL STEWARDSHIP REPORT**

1. Prior to approval of the Project Plan and final disbursement of the FCT Award, the Recipient shall submit to FCT and have approved a Management Plan that complies with Rule 9K-7.011, F.A.C. and addresses the criteria and conditions set forth in Articles VII, VIII, IX, X, and XI herein.

2. The Management Plan explains how the Project Site will be managed to further the purposes of the project and meet the terms and conditions of this Agreement. The Management Plan shall include the following:

- a. An introduction containing the project name, location and other background information relevant to management.
- b. The stated purpose for acquiring the Project Site as proposed in the application and a prioritized list of management objectives.

- c. The identification of known natural resources including natural communities, listed plant and animal species, soil types, and surface and groundwater characteristics.
- d. A detailed description of all proposed uses including existing and proposed physical improvements and the impact on natural resources.
- e. A detailed description of proposed restoration or enhancement activities, if any, including the objective of the effort and the techniques to be used.
- f. A scaled site plan drawing showing the project site boundary, existing and proposed physical improvements and any natural resource restoration or enhancement areas.
- g. The identification and protection of known cultural or historical resources and a commitment to conduct surveys prior to any ground disturbing activity, if applicable.
- h. A description of proposed educational displays and programs to be offered, if applicable.
- i. A description of how the management will be coordinated with other agencies and public lands, if applicable.
- j. A schedule for implementing the development and management activities of the Management Plan.
- k. Cost estimates and funding sources to implement the Management Plan.

3. If the Recipient is not the proposed managing entity, the Management Plan shall include a signed agreement between the Recipient and the managing entity stating the managing entity's willingness to manage the site, the manner in which the site will be managed to further the purpose(s) of the project and the identification of the source of funding for management.

In the event that the Recipient is a partnership, the Recipient shall also provide FCT with the interlocal agreement that sets forth the relationship among the partners and the fiscal and management responsibilities and obligations incurred by each partner for the Project Site as a part of its Project Plan.

4. To ensure that future management funds will be available for the management of the site in perpetuity pursuant to Section 259.105 and Chapter 380, Part III, Fla. Stat., the Recipient(s) shall be required to provide FCT with Reasonable Assurance, pursuant to Rule 9K-7.002(32), F.A.C., that it has the financial resources, background, qualifications and competence to manage the Project Site in perpetuity in a reasonable and professional manner. Where the Recipient does not

include at least one Local Government, FCT may require the Recipient to do one, or more, of the following: post a performance or other bond in an amount sufficient to ensure that the Project Site shall be reasonably and professionally managed in perpetuity; establish an endowment or other fund in an amount sufficient to ensure performance; provide a guaranty or pledge by the Local Government, in whose jurisdiction the Project Site is located, which shall require the Local Government to take over the responsibility for management of the Project Site in the event the Recipient is unable to, and may require the Local Government to be a named co-signer on the Declaration of Restrictive Covenants; or provide such other assurances as the Governing Board may deem necessary to adequately protect the public interest.

5. The Recipient shall, through its agents and employees, prevent the unauthorized use of the Project Site or any use thereof not in conformity with the Management Plan approved by FCT.

6. All buildings, structures, improvements and signs shall require the prior written approval of FCT as to purpose. Further, tree removal, other than non-native species, and major land alterations shall require the written approval of FCT. The approvals required from FCT shall not be unreasonably withheld upon sufficient demonstration that the proposed structures, buildings, improvements, signs, vegetation removal or land alterations will not adversely impact the natural resources of the Project Site. FCT's approval of the Recipient's Management Plan addressing the items mentioned herein shall be considered written approval from FCT.

7. As required by Rule 9K-7.013, F.A.C., each year after FCT reimbursement of Project Costs the Recipient shall prepare and submit to FCT an annual stewardship report that documents the progress made on implementing the Management Plan.

## **VIII. SPECIAL MANAGEMENT CONDITIONS**

In addition to the Management Plan conditions already described in this Agreement, which apply to all sites acquired with FCT funds, the Management Plan shall address the following conditions that are particular to the Project Site and result from either commitments made in the application that received scoring points or observations made by FCT staff during the site visit described in Rule 9K-7.009(1), F.A.C.:

1. Two or more resource-based outdoor recreational facilities including a nature trail and wildlife observation platform shall be provided. The facilities shall be developed in a manner that allows the general public reasonable access for observation and appreciation of the natural resources on the project site without causing harm to those resources.

2. A permanent recognition sign, a minimum size of 4' x 6', shall be maintained in the entrance area of the project site. The sign shall acknowledge that the project site was purchased with funds from the Florida Communities Trust Florida Forever Program and Lee County.

3. Interpretive signage shall be provided to educate visitors about the natural resources on the Project Site.

4. A survey of the natural communities and plant species on the project site shall be conducted prior to the development of the project site. The survey shall be used during development of the site to ensure the protection, restoration, and preservation of the natural communities on the project site.

5. The natural communities that occur on the project site shall be preserved and appropriately managed to ensure the long-term viability of these communities.

6. The project site shall be managed in a manner that protects and enhances habitat for listed wildlife species that utilize or could potentially utilize the project site, including the Florida Panther and red cockaded woodpecker. The development of the management plan shall be coordinated with the Fish and Wildlife Conservation Commission's Office of Environmental Services to ensure the preservation and viability of listed and non-listed native wildlife species and their habitat. Periodic surveys shall be conducted of listed species using the project site.

7. A vegetation analysis of the project site shall be performed to determine which areas of the project site need a prescribed burning regime implemented to maintain natural fire-dependent vegetative communities. The development of the prescribed burn program shall be coordinated with the Division of Forestry and the Florida Fish and Wildlife Conservation Commission.

8. The water quality of the on-site wetlands shall be protected and the natural hydrology of the project site shall be restored to a more natural function and shall include the restoration of areas impacted by agricultural activities. The development of the restoration plan shall be coordinated with the South Florida Water Management District.

9. A comprehensive landscaping plan will be developed for the project site. The landscaping plan will make significant use of native plants.

10. Approximately 20 percent of the project site or 400 acres of disturbed wetlands shall be restored to a natural condition in terms of biological composition and ecological function. Invasive exotic vegetation will be removed, cattle grazing will be eliminated, drainage ditches will be modified to restore a more natural flow and hydroperiod, and the area replanted with native vegetation.

11. An ongoing monitoring and control program for invasive vegetation including exotic (non-native) and nuisance native plant species shall be implemented at the project site. The objective of the control program shall be the elimination of invasive exotic plant species and the maintenance of a diverse association of native vegetation. The management plan shall reference the Exotic Pest Plant Council's List of Florida's Most Invasive Species to assist in identifying invasive exotics on the project site.

12. A feral animal removal program shall be developed and implemented for dogs, cats, hogs, and other non-native wildlife that may be found on the project site.

13. Prior to the commencement of any proposed development activities, measures will be

taken to determine the presence of any archaeological sites. All planned activities involving known archaeological sites or potential site areas shall be closely coordinated with the Department of State, Division of Historic Resources in order to prevent the disturbance of significant sites.

14. The location and design of the parking facility, boardwalk, and wetland observation deck shall be designed to have minimal impacts on natural resources. The parking area shall incorporate pervious material wherever feasible.

15. The project site shall be protected and managed as part of linked conservation lands and wildlife corridor.

16. The requirements imposed by other grant program funds that may be sought for activities associated with the project site shall not conflict with the terms and conditions of this award.

**IX. DECLARATION OF RESTRICTIVE COVENANTS REQUIREMENTS IMPOSED BY CHAPTER 259 AND CHAPTER 380, PART III, FLA. STAT.**

1. Each parcel in the Project Site to which the Recipient acquires title shall be subject to a Declaration of Restrictive Covenants describing the parcel and containing such covenants and restrictions as are, at a minimum, sufficient to ensure that the use of the Project Site at all times complies with Sections 375.051 and 380.510, Fla. Stat.; Section 11(e), Article VII of the Florida Constitution; the applicable bond indenture under which the Bonds were issued; and any provision of the Internal Revenue Code or the regulations promulgated thereunder that pertain to tax exempt bonds. The Declaration of Restrictive Covenants shall contain clauses providing for the conveyance of title to the Project Site to the Board of Trustees of the Internal Improvement Trust Fund (“Trustees”), or a nonprofit environmental organization or government entity, upon failure to comply with any of the covenants and restrictions, as further described in paragraph 3. below.

2. The Declaration of Restrictive Covenants shall also restate the conditions that were placed on the Project Site at the time of project selection and initial grant approval. The Declaration of Restrictive Covenants shall be executed by FCT and the Recipient at the time of reimbursement of Project Costs and shall be recorded by the Recipient in the county(s) in which the Project Site is located.

3. If any essential term or condition of the Declaration of Restrictive Covenants is violated by the Recipient or by some third party with the knowledge of the Recipient, the Recipient shall be notified of the violation by written notice given by personal delivery, registered mail or registered expedited service. The recipient shall diligently commence to cure the violation or complete curing activities within thirty (30) days after receipt of notice of the violation. If the curing activities can not be reasonably completed within the specified thirty (30) day time frame, the Recipient shall submit a timely written request to the FCT Program Manager that includes the status of the current activity, the reasons for the delay and a time frame for the completion of the curing activities. FCT shall submit a written response within thirty (30) days of receipt of the request and approval shall not be unreasonably withheld. It is FCT’s position that all curing activities shall be completed within one hundred twenty (120) days of the Recipient’s notification of the violation.

However, if the Recipient can demonstrate extenuating circumstances exist to justify a greater extension of time to complete the activities, FCT shall give the request due consideration. If the Recipient fails to correct the violation within either (a) the initial thirty (30) day time frame or (b) the time frame approved by FCT pursuant to the Recipient's request, fee simple title to all interest in the Project Site shall be conveyed to the Trustees unless FCT negotiates an agreement with another local government, nonprofit environmental organization, the Florida Division of Forestry, the Florida Fish and Wildlife Conservation Commission, the Department of Environmental Protection or a Water Management District, who agrees to accept title and manage the Project Site. FCT shall treat such property in accordance with Section 380.508(4)(e), Fla. Stat.

## **X. GENERAL OBLIGATIONS OF THE RECIPIENT AS A CONDITION OF PROJECT FUNDING**

1. The interest acquired by the Recipient in the Project Site shall not serve as security for any debt of the Recipient.

2. If the existence of the Recipient terminates for any reason, title to the Project Site shall be conveyed to the Trustees unless FCT negotiates an agreement with another local government, nonprofit environmental organization, the Florida Division of Forestry, the Florida Fish and Wildlife Conservation Commission, the Department of Environmental Protection or a Water Management District who agrees to accept title and manage the Project Site.

3. Following the reimbursement of Project Costs, the Recipient shall ensure that the future land use designation assigned to the Project Site is for a category dedicated to open space, conservation or outdoor recreation uses, as appropriate. If an amendment to the applicable comprehensive plan is required, the amendment shall be proposed at the next comprehensive plan amendment cycle available to the Recipient subsequent to the reimbursement of Project Costs.

4. FCT staff or its duly authorized representatives shall have the right at any time to inspect the Project Site and the operations of the Recipient at the Project Site.

5. The Project Site shall permanently contain one sign, provided by FCT, recognizing FCT's role in the acquisition of the Project Site. The cost of shipping the sign shall be deducted from the FCT Award, as reflected on the grant reconciliation statement. For a Project Site where the FCT Award is divided into more than one closing, the cost of the sign shall be deducted from the grant reconciliation statement containing the first parcel to close. The sign shall be displayed at the Project Site within ninety (90) days of the final disbursement of the FCT award. A photograph of the sign installed at the Project Site shall be provided to FCT within the same ninety (90) day timeframe.

## **XI. OBLIGATIONS OF THE RECIPIENT RELATING TO THE USE OF BOND PROCEEDS**

1. FCT is authorized by Section 380.510, Fla. Stat. to impose conditions for funding on the Recipient in order to ensure that the project complies with the requirements for the use of Florida

Forever Bond proceeds including, without limitation, the provisions of the Internal Revenue Code and the regulations promulgated thereunder as the same pertain to tax exempt bonds.

2. The Recipient agrees and acknowledges that the below listed transactions, events, and circumstances, collectively referred to as the "disallowable activities," may be disallowed on the Project Site as they may have negative legal and tax consequences under Florida law and federal income tax law. The Recipient further agrees and acknowledges that these disallowable activities may be allowed up to a certain extent based on guidelines or tests outlined in the Federal Private Activity regulations of the Internal Revenue Service:

- a. any sale or lease of any interest in the Project Site to a non-governmental person or organization;
- b. the operation of any concession on the Project Site by a non-governmental person or organization;
- c. any sales contract or option to buy or sell things attached to the Project Site to be severed from the Project Site with a non-governmental person or organization;
- d. any use of the Project Site by a non-governmental person other than in such person's capacity as a member of the general public;
- e. any change in the character or use of the Project Site from that use expected at the date of the issuance of any series of Bonds from which the disbursement is to be made;
- f. a management contract for the Project Site with a non-governmental person or organization; or
- g. such other activity or interest as may be specified from time to time in writing by FCT to the Recipient.

3. If the Project Site, after its acquisition by the Recipient and/or the Trustees, is to remain subject to any of the disallowable activities, the Recipient shall provide notice to FCT, as provided for in paragraph V.1., at least sixty (60) calendar days in advance of any such transactions, events or circumstances, and shall provide to FCT such information as FCT reasonably requests in order to evaluate for approval the legal and tax consequences of such disallowable activities.

4. In the event that FCT determines at any time that the Recipient is engaging, or allowing others to engage, in disallowable activities on the Project Site, the Recipient shall immediately cease or cause the cessation of the disallowable activities upon receipt of written notice from FCT. In addition to all other rights and remedies at law or in equity, FCT shall have the right to seek temporary and permanent injunctions against the Recipient for any disallowable activities on the Project Site.

DELEGATIONS AND CONTRACTUAL ARRANGEMENTS BETWEEN THE RECIPIENT AND OTHER GOVERNMENTAL BODIES, NONPROFIT ENTITIES OR NON GOVERNMENTAL PERSONS FOR USE OR MANAGEMENT OF THE PROJECT SITE WILL IN NO WAY RELIEVE THE RECIPIENT OF THE RESPONSIBILITY TO ENSURE THAT THE CONDITIONS IMPOSED HEREIN ON THE PROJECT SITE AS A RESULT OF UTILIZING BOND PROCEEDS TO ACQUIRE THE PROJECT SITE ARE FULLY COMPLIED WITH BY THE CONTRACTING PARTY.

## **XII. RECORDKEEPING; AUDIT REQUIREMENTS**

1. The Recipient shall maintain financial procedures and support documents, in accordance with generally accepted accounting principles, to account for the receipt and expenditure of funds under this Agreement. These records shall be available at all reasonable times for inspection, review or audit by state personnel, FCT and other personnel duly authorized by FCT. "Reasonable" shall be construed according to the circumstances, but ordinarily shall mean the normal business hours of 8:00 a.m. to 5:00 p.m., local time, Monday through Friday.

2. If the Recipient expends a total amount of State financial assistance equal to or in excess of \$500,000 in any fiscal year of such Recipient, the Recipient must have a State single or project-specific audit for such fiscal year in accordance with Section 215.97, Fla. Stat., the applicable rules of the Executive Office of the Governor and the Comptroller and Chapter 10.550 (local government entities) or Chapter 10.650 (nonprofit organizations), Rules of the Auditor General. In determining the State financial assistance expended in its fiscal year, the Recipient shall consider all sources of State financial assistance, including State funds received from FCT, other state agencies and other non-state entities. State financial assistance does not include Federal direct or pass-through awards and resources received by a non-state entity for Federal program matching requirements. The funding for this Agreement was received by FCT as a grant appropriation.

In connection with the audit requirements addressed above, the Recipient shall ensure that the audit complies with the requirements of Section 215.97(7), Fla. Stat. This includes submission of a reporting package as defined by Section 215.97(2)(d), Fla. Stat. and Chapter 10.550 (local government entities) or 10.650 (nonprofit organizations), Rules of the Auditor General.

3. If the Recipient expends less than \$500,000 in State financial assistance in its fiscal year, an audit conducted in accordance with the provisions of Section 215.97, Fla. Stat. is not required. If the Recipient elects to have an audit conducted in accordance with the provisions of Section 215.97, Fla. Stat., the cost of the audit must be paid from non-State funds (i.e., the cost of such an audit must be paid from Recipient funds not obtained from a State entity).

4. The annual financial audit report shall include all management letters, the Recipient's response to all findings, including corrective actions to be taken, and a schedule of financial assistance specifically identifying all Agreement and other revenue by sponsoring agency and agreement number. Copies of financial reporting packages required under this Article shall be submitted by or on behalf of the Recipient directly to each of the following:

Department of Community Affairs (at each of the following addresses):  
Office of Audit Services  
2555 Shumard Oak Boulevard  
Tallahassee, Florida 32399-2100

and

Florida Communities Trust  
2555 Shumard Oak Boulevard  
Tallahassee, Florida 32399-2100

State of Florida Auditor General at the following address:  
Auditor General's Office  
Room 401, Claude Pepper Building  
111 West Madison Street  
Tallahassee, Florida 32302-1450

5. If the audit shows that any portion of the funds disbursed hereunder were not spent in accordance with the conditions of this Agreement, the Recipient shall be held liable for reimbursement to FCT of all funds not spent in accordance with the applicable regulations and Agreement provisions within thirty (30) days after FCT has notified the Recipient of such non-compliance.

6. The Recipient shall retain all financial records, supporting documents, statistical records and any other documents pertinent to this Agreement for a period of five years after the date of submission of the final expenditures report. However, if litigation or an audit has been initiated prior to the expiration of the five-year period, the records shall be retained until the litigation or audit findings have been resolved.

7. The Recipient shall have all audits completed in accordance with Section 215.97, Fla. Stat. performed by an independent certified public accountant ("IPA") who shall either be a certified public accountant or a public accountant licensed under Chapter 473, Fla. Stat. The IPA shall state that the audit complied with the applicable provisions noted above.

### **XIII. DEFAULT; REMEDIES; TERMINATION**

1. If the necessary funds are not available to fund this Agreement as a result of action by the Florida Legislature or the Office of the Comptroller, or if any of the events below occur ("Events of Default"), all obligations on the part of FCT to make any further payment of funds hereunder shall, if FCT so elects, terminate and FCT may, at its option, exercise any of its remedies set forth herein, but FCT may make any payments or parts of payments after the happening of any Events of Default without thereby waiving the right to exercise such remedies, and without becoming liable to make any further payment. The following constitute Events of Default:

- a. If any warrant or representation made by the Recipient in this Agreement, any previous agreement with FCT or in any document provided to FCT shall at any time be false or misleading in any respect, or if the Recipient shall fail to keep, observe or perform any of the terms or covenants contained in this Agreement or any previous agreement with FCT and has not cured such in timely fashion, or is unable or unwilling to meet its obligations thereunder;
- b. If any material adverse change shall occur in the financial condition of the Recipient at any time during the term of this Agreement from the financial condition revealed in any reports filed or to be filed with FCT, and the Recipient fails to cure said material adverse change within thirty (30) days from the date written notice is sent to the Recipient by FCT;
- c. If any reports or documents required by this Agreement have not been timely submitted to FCT or have been submitted with incorrect, incomplete or insufficient information.
- d. If the Recipient fails to perform and complete in timely fashion any of its obligations under this Agreement.

2. Upon the happening of an Event of Default, FCT may, at its option, upon thirty (30) calendar days from the date written notice is sent to the Recipient by FCT and upon the Recipient's failure to timely cure, exercise any one or more of the following remedies, either concurrently or consecutively, and the pursuit of any one of the following remedies shall not preclude FCT from pursuing any other remedies contained herein or otherwise provided at law or in equity:

- a. Terminate this Agreement, provided the Recipient is given at least thirty (30) days prior written notice of such termination. The notice shall be effective when placed in the United States mail, first class mail, postage prepaid, by registered or certified mail-return receipt requested, to the address set forth in paragraph V.2. herein;
- b. Commence an appropriate legal or equitable action to enforce performance of this Agreement;
- c. Withhold or suspend payment of all or any part of the FCT Award;
- d. Exercise any corrective or remedial actions, including, but not limited to, requesting additional information from the Recipient to determine the reasons for or the extent of non-compliance or lack of performance or issuing a written warning to advise that more serious measures may be taken if the situation is not corrected; or
- e. Exercise any other rights or remedies which may be otherwise available under law, including, but not limited to, those described in paragraph IX.3.

3. FCT may terminate this Agreement for cause upon written notice to the Recipient. Cause shall include, but is not limited to: fraud; lack of compliance with applicable rules, laws and regulations; failure to perform in a timely manner; failure to make significant progress toward Project Plan and Management Plan approval; and refusal by the Recipient to permit public access to any document, paper, letter, or other material subject to disclosure under Chapter 119, Fla.Stat., as amended. Appraisals, and any other reports relating to value, offers and counteroffers are not available for public disclosure or inspection and are exempt from the provisions of Section 119.07(1), Fla. Stat. until a Purchase Agreement is executed by the Owner(s) and Recipient and conditionally accepted by FCT, or if no Purchase Agreement is executed, then as provided for in Sections 125.355(1)(a) and 166.045(1)(a), Fla. Stat.

4. FCT may terminate this Agreement when it determines, in its sole discretion, that the continuation of the Agreement would not produce beneficial results commensurate with the further expenditure of funds by providing the Recipient with thirty (30) calendar days prior written notice.

5. The Recipient may request termination of this Agreement before its Expiration Date by a written request fully describing the circumstances that compel the Recipient to terminate the project. A request for termination shall be provided to FCT in a manner described in paragraph V.1.

#### **XIV. LEGAL AUTHORIZATION**

1. The Recipient certifies with respect to this Agreement that it possesses the legal authority to receive funds to be provided under this Agreement and that, if applicable, its governing body has authorized, by resolution or otherwise, the execution and acceptance of this Agreement with all covenants and assurances contained herein. The Recipient also certifies that the undersigned possesses the authority to legally execute and bind the Recipient to the terms of this Agreement.

#### **XV. STANDARD CONDITIONS**

1. This Agreement shall be construed under the laws of the State of Florida, and venue for any actions arising out of this Agreement shall lie in Leon County. If any provision hereof is in conflict with any applicable statute or rule, or is otherwise unenforceable, then such provision shall be deemed null and void to the extent of such conflict and shall be severable, but shall not invalidate any other provision of this Agreement.

2. No waiver by FCT of any right or remedy granted hereunder or failure to insist on strict performance by the Recipient shall affect or extend or act as a waiver of any other right or remedy of FCT hereunder, or affect the subsequent exercise of the same right or remedy by FCT for any further or subsequent default by the Recipient. Any power of approval or disapproval granted to FCT under the terms of this Agreement shall survive the terms and life of this Agreement as a whole.

3. The Recipient agrees to comply with the Americans With Disabilities Act (Public Law 101-336, 42 U.S.C. Section 12101 et seq.), if applicable, which prohibits discrimination by public and private entities on the basis of disability in the areas of employment, public accommodations, transportation, State and local government services, and in telecommunications.

4. A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime or on the discriminatory vendor list may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit lease bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with a public entity, and may not transact business with any public entity in excess of Category Two for a period of thirty-six (36) months from the date of being placed on the convicted vendor list or on the discriminatory vendor list.

5. No funds or other resources received from FCT in connection with this Agreement may be used directly or indirectly to influence legislation or any other official action by the Florida Legislature or any state agency.

This Agreement embodies the entire agreement between the parties.

IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement.

LEE COUNTY

FLORIDA COMMUNITIES TRUST

By: \_\_\_\_\_

By: \_\_\_\_\_

Print Name: \_\_\_\_\_

Janice Browning

Title: \_\_\_\_\_

Division Director of Housing &  
Community Development

Date: \_\_\_\_\_

Date: \_\_\_\_\_

Approved as to Form and Legality:

Approved as to Form and Legality:

By: \_\_\_\_\_

By: \_\_\_\_\_

Print Name: \_\_\_\_\_

Kelly A. Martinson  
Trust Counsel

## Appendix R -- Expended and Projected Costs and Funding Sources

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### EXPENDED \$

#### Structures and Improvements

<b>Phase 1 (continue)</b>		
Item	Funding Source	Costs
Hire Consultant for Design and Permitting of Facilities	FCT	\$117,225
Mark Phase I, II & III Trails	C20/20 & volunteers	\$225
<b>total</b>		<b>\$117,450</b>

#### Resource Enhancement and Protection

Item	Funding Source	Costs
Exotic Plant Control	Pine Thinning (200-4/5)	\$60,063
	Pine Thinning (345-9)	\$4,443
	SFWMD (& CHNEP)	\$71,400
	USFWS	\$10,000
	FDEP IPM	\$156,150
	FCT	\$38,282
	C20/20 & DOC	\$11,292
IRC Plant Survey	C20/20	\$17,048
Hydrological Restoration	SFWMD	\$64,201
Remove 10.6 tons of tires	C20/20	\$1,800
FDOF Pine Tree Thinning & Melaleuca removal (road repair)	C20/20	\$700
FDOF Emergency Fireline Rehab & Planting	C20/20	\$11,347
Culvert permits-access fm RGCR	LDOT	\$2,500
Restoration permitting & design	LDOT Mitigation (90)	\$150,000
Access (maintenance) from SR 82	LDOT	\$2,000
<b>total</b>		<b>\$601,226</b>

#### Overall Protection

Item	Funding Source	Costs
Consultant - Jamerson Excavation	C20/20	\$23,000
Fence replacement/repair	County Insurance (wildfire)	\$30,700
	C20/20 (MU 200-4)	\$1,250
	FCT	\$43,970
	C20/20	\$15,800
Remove interior fence	C20/20 & volunteers	in-house
Install new gates	C20/20	\$1,350
Boundary signs (~28 miles)	C20/20	\$3,500
Archaeological/Cultural Resource Survey	FCT	\$4,300
Phase II Soil Sampling	FCT	\$1,960
Resurvey/mark 3-miles of boundary	FCT	\$16,000
<b>total</b>		<b>\$141,830</b>

**TOTAL COST TO DATE**

**\$860,506**

## PROJECTED \$

### Structures & Improvements

Phase 1 (continue)		
Item	Possible Funding Sources	Costs
Pave ~ 500' of RGCR	C20/20 & LDOT	\$20,000
Post and rail fence		\$4,500
Automatic gates		\$10,000
Parking lot & driveway		\$50,000
2 Wildlife observation areas		\$35,000
Picnic tables & shelter		\$15,000
Clearing for 1.4 miles of trails		in-house
1 mile of boardwalk	FCT, C20/20, LC CIP,	\$1,500,000
Crushed shell along trail	FL Recreation Development	\$45,000
Restroom (Clivus Multrum)	Assistance Program (FRDAP),	\$23,000
Wildlife proof trash bins	and other appropriate grants.	\$2,000
Bike rack		\$1,500
Information kiosk and other educational signs		\$20,000
Trail markers		\$1,500
Entrance & FCT signs		\$3,500
Closed trail signs		\$500
<b>total</b>		<b>\$1,731,500</b>

Phase 2		
Item	Possible Funding Sources	Costs
1 Wildlife observation area	FCT, Conservation 20/20,	\$20,000
Clearing for 2.3 miles of trails	LC CIP, FRDAP,	in house
0.5 miles of boardwalk	and other appropriate grants.	\$625,000
<b>total</b>		<b>\$645,000</b>

Phase 3		
Item	Possible Funding Sources	Costs
2 Wildlife observation areas	FCT, Conservation 20/20,	\$40,000
Clearing for 2.4 miles of trails	LC CIP, FRDAP,	in house
0.5 miles of boardwalk	and other appropriate grants.	\$625,000
<b>total</b>		<b>\$665,000</b>
<b>GRAND TOTAL</b>		<b>\$3,041,500</b>

### Resource Enhancement and Protection

Item	Possible Funding Sources	Site 90	Site 200	Site 345
Initial invasive exotic plant removal of natural areas	C20/20, IPM, SFWMD, USFWS, LCPA, LDOT	\$2,000,000	\$1,300,000	\$625,000
Improved pasture restoration	SFWMD, C20/20, LCPA,	\$1,750,000	\$2,250,000	\$4,500
Hydrological restoration	LDOT, future mitigation	\$2,250,000	\$2,750,000	\$500,000
Mechanical brush reduction		\$3,000	\$8,500	\$2,500
Regrade cow wells & plant		\$2,000	\$0	\$7,500
Fence repairs	C20/20	\$250	\$5,500	\$2,500
Fence installation		\$6,000	\$25,000	\$9,000
Removal of large trash		\$500	\$4,500	\$2,500
Removal of interior fencing		\$500	\$1,500	\$1,000
Recap oil well		LCU, LC CIP, LCNR, C20/20	\$0	\$1,000,000
Exotic animal removal	C20/20	\$7,500	\$15,000	\$4,500
Fire break construction	FDOF, C20/20	\$5,000	\$13,000	\$9,500
<b>total</b>		<b>\$6,024,750</b>	<b>\$7,373,000</b>	<b>\$1,168,500</b>

### Overall Protection

Item	Possible Funding Sources	Site 90	Site 200	Site 345
Fence repairs & removal	C20/20, future mitigation	\$500	\$4,500	\$15,000
Fence installation		\$6,000	\$12,000	\$58,000
<b>total</b>		<b>\$6,500</b>	<b>\$16,500</b>	<b>\$73,000</b>

**TOTAL COST ESTIMATE** \$6,031,250 \$7,389,500 \$1,241,500

**GRAND TOTAL** **\$14,662,250**

### Site Management and Maintenance

Item	Possible Funding Sources	Site 90	Site 200	Site 345
Exotic plant control	C20/20, IPM	\$45,000	\$140,000	\$35,000
Prescribed fire regime	C20/20, FDOF, LCPR	in house	in house	in house
Trail maintenance		in house	in house	\$10,000
Fence repairs	C20/20, LCPR	\$500	\$500	\$500
Repairs from vandalism of facilities		\$0	\$1,000	\$3,000

**Yearly Maintenance Estimate** \$45,500 \$141,500 \$48,500

**GRAND TOTAL** **\$235,500**