SAN FELASCO HAMMOCK PRESERVE

STATE PARK

MANAGEMENT PLAN

APPROVED

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Division of Recreation and Parks

FEBRUARY 11, 2005

Department of Environmental Protection

Jeb Bush
Governor

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard, MS 140
Tallahassee, Florida 32399-3000
Phone: (850) 245-2784 Fax: (850) 245-2786

Colleen Castille
Secretary

February 11, 2005

Ms. BryAnne White
Office of Park Planning
Division of Recreation and Parks
3900 Commonwealth Blvd.; M.S. 525
Tallahassee, Florida 32399

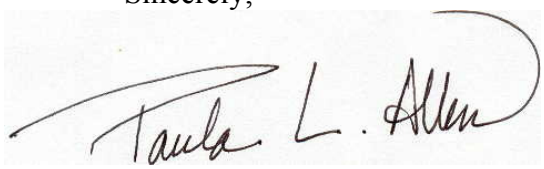
Re: San Felasco Hammock Preserve State Park Lease #2839

Dear Ms. White:

On February 11, 2005, the Acquisition and Restoration Council recommended approval of the San Felasco Hammock Preserve State Park management plan. Therefore, the Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, approved the management plan for the San Felasco Hammock Preserve State Park. Pursuant to Sections 253.034 and 259.032, Florida Statutes, and Chapter 18-2, Florida Administrative Code this plan's ten-year update will be due on February 11, 2015.

Approval of this land management plan does not waive the authority or jurisdiction of any governmental entity that may have an interest in this project. Implementation of any upland activities proposed by this management plan may require a permit or other authorization from federal and state agencies having regulatory jurisdiction over those particular activities. Pursuant to the conditions of your lease, please forward copies of all permits to this office upon issuance.

Sincerely,



Paula L. Allen
Office of Environmental Services
Division of State Lands
Department of Environmental Protection

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INTRODUCTION

San Felasco Hammock Preserve State Park is located in Alachua County, just northwest of the City of Gainesville and south of the City of Alachua (see Vicinity Map). The northern part of the preserve lies within the Alachua city limits. It lies centered around the four corners of Townships 8S and 9S, and Ranges 18E and 19E. The preserve includes all or portions of four Spanish grants, the Sanchez, J.S. Sanchez, Fernandez, and Arredondo grants. Public access to the preserve is via Millhopper Road (State Road 232), about 5.5 miles west of State Road 121 and 7 miles west of U.S. Highway 441. A second entrance is located on Progress Center Boulevard via U.S. Highway 441, about 1.5 miles southeast of State Road 235. The vicinity map also reflects significant land and water resources existing near the park.

Currently the park contains 6,927.58 acres. For this plan, park acreage has been calculated based on the composition of natural communities, in addition to ruderal and developed areas. San Felasco Hammock includes the last large remnant of mesic hammock, the most diverse and complex community in north central Florida, as well as a vast array of other habitat types. The preserve is well known for its unique and dynamic geological formations.

San Felasco Hammock Preserve State Park is designated single-use to provide resource-based public outdoor recreation and other related uses. The park was acquired in 1974 under the EEL Program (see Addendum 1). There are no legislative or executive directives that constrain the use of this property.

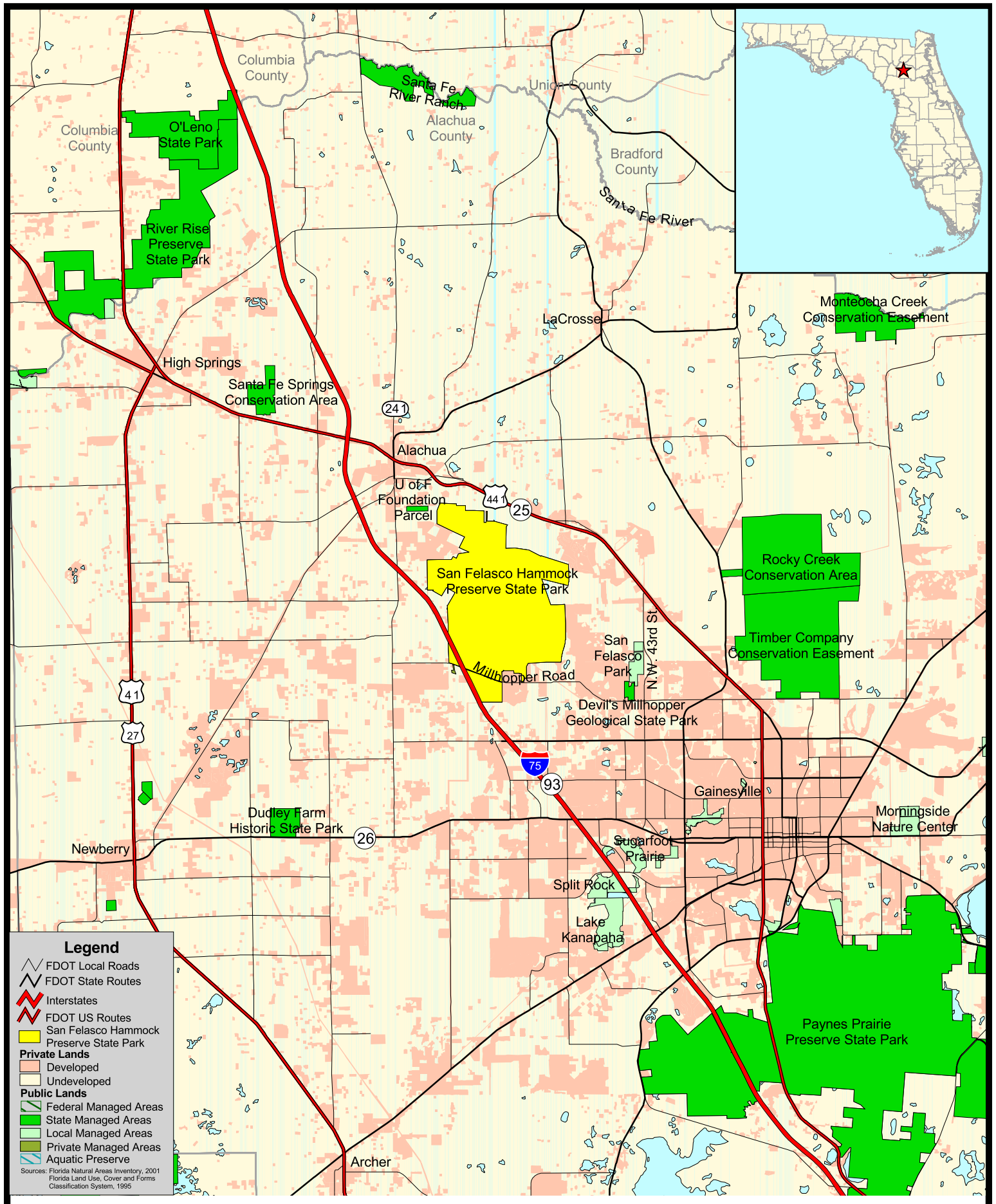
PURPOSE AND SCOPE OF THE PLAN

This plan serves as the basic statement of policy and direction for the management of San Felasco Hammock Preserve State Park as a unit of Florida's state park system. It identifies the objectives, criteria and standards that guide each aspect of park administration, and sets forth the specific measures that will be implemented to meet management objectives. The plan is intended to meet the requirements of Sections 253.034 and 259.032, Florida Statutes, Chapter 18-2, Florida Administrative Code, and intended to be consistent with the State Lands Management Plan. With approval, this management plan will replace the April 27, 1998 approved plan. All development and resource alteration encompassed in this plan is subject to the granting of appropriate permits; easements, licenses, and other required legal instruments. Approval of the management plan does not constitute an exemption from complying with the appropriate local, state, or federal agencies. This plan is also intended to meet the requirements for beach and shore preservation, as defined in Chapter 161, Florida Statutes, and Chapters 62B-33, 62B-36 and 62R-49, Florida Administrative Code.

The plan consists of two interrelated components. Each component corresponds to a particular aspect of the administration of the park. The resource management component provides a detailed inventory and assessment of the natural and cultural resources of the park. Resource management problems and needs are identified, and specific management objectives are established for each resource type. This component provides guidance on the application of such measures as prescribed burning, exotic species removal, and restoration of natural conditions.

The land use component is the recreational resource allocation plan for the unit. Based on considerations such as access, population, and adjacent land uses, an optimum allocation of the physical space of the park is made, locating use areas and proposing types of facilities and volume of use to be provided.

In the development of this plan, the potential of the park to accommodate secondary



SAN FELASCO HAMMOCK PRESERVE STATE PARK

VICINITY MAP

management purposes ("multiple uses") was analyzed. These secondary purposes were considered within the context of the Division's statutory responsibilities and an analysis of the resource needs and values of the park. This analysis considered the park natural and cultural resources, management needs, aesthetic values, visitation, and visitor experiences. For this park, it was determined that timber management for the purposes of natural community restoration and hay production to prevent hardwood encroachment in areas proposed for future upland pine forest restoration could be accommodated in a manner that would be compatible and not interfere with the primary purpose of resource-based outdoor recreation and conservation. These compatible secondary management purposes are addressed in the Resource Management Component of the plan. Uses such as, water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of the park and should be discouraged.

The potential for generating revenue to enhance management was also analyzed. Visitor fees and charges are the principal source of revenue generated by the park. It was determined that timber management for the purposes of natural community restoration and hay production to prevent hardwood encroachment in areas proposed for future upland pine forest restoration would be appropriate at this park as additional sources of revenue for land management since they are compatible with the park's primary purpose of resource-based outdoor recreation and conservation.

The use of private land managers to facilitate restoration and management of this unit was also analyzed. Decisions regarding this type of management (such as outsourcing, contracting with the private sector, use of volunteers, etc.) will be made on a case-by-case basis as necessity dictates.

MANAGEMENT PROGRAM OVERVIEW

Management Authority and Responsibility

In accordance with Chapter 258, Florida Statutes, and Chapter 62D-2, Florida Administrative Code, the Division of Recreation and Parks (Division) is charged with the responsibility of developing and operating Florida's recreation and parks system. These are administered in accordance with the following policy:

> It shall be the policy of the Division of Recreation and Parks to promote the state park system for the use, enjoyment, and benefit of the people of Florida and visitors; to acquire typical portions of the original domain of the state which will be accessible to all of the people, and of such character as to emblemize the state's natural values; conserve these natural values for all time; administer the development, use and maintenance of these lands and render such public service in so doing, in such a manner as to enable the people of Florida and visitors to enjoy these values without depleting them; to contribute materially to the development of a strong mental, moral, and physical fiber in the people; to provide for perpetual preservation of historic sites and memorials of statewide significance and interpretation of their history to the people; to contribute to the tourist appeal of Florida.

The Trustees have also granted management authority of certain sovereign submerged lands to the Division under Management Agreement MA 68-086 (as amended January 19, 1988). The management area includes a 400-foot zone from the edge of mean high water where a park boundary borders sovereign submerged lands fronting beaches, bays, estuarine areas, rivers or streams. Where emergent wetland vegetation exists, the zone extends waterward 400 feet beyond the vegetation. The agreement is intended to provide additional protection to resources of the

park and nearshore areas and to provide authority to manage activities that could adversely impact public recreational uses.

Many operating procedures are standard system wide and are set by policy. These procedures are outlined in the Division's Operations Manual (OM) that covers such areas as personnel management, uniforms and personal appearance, training, signs, communications, fiscal procedures, interpretation, concessions, camping regulations, resource management, law enforcement, protection, safety and maintenance.

In the management of San Felasco Hammock Preserve State Park preservation and enhancement of natural conditions is all important. Resource considerations are given priority over user considerations and development is restricted to the minimum necessary for ensuring its protection and maintenance, limited access, user safety and convenience, and appropriate interpretation. Permitted uses are primarily of a passive nature, related to the aesthetic, educational and recreational enjoyment of the preserve, although other compatible uses are permitted in limited amounts. Program emphasis is placed on interpretation of the natural and cultural attributes of the preserve.

Park Goals and Objectives

The following park goals and objectives express the Division's long-term intent in managing the state park. At the beginning of the process to update this management plan, the Division reviewed the goals and objectives of the previous plan to determine if they remain meaningful and practical and should be included in the updated plan. This process ensures that the goals and objectives for the park remain relevant over time.

Estimates are developed for the funding and staff resources needed to implement the management plan based on these goals, objectives and priority management activities. Funding priorities for all state park management and development activities are reviewed each year as part of the Division's legislative budget process. The Division prepares an annual legislative budget request based on the priorities established for the entire state park system. The Division also aggressively pursues a wide range of other funds and staffing resources, such as grants, volunteers, and partnerships with agencies, local governments and the private sector, for supplementing normal legislative appropriations to address unmet needs. The ability of the Division to implement the specific goals, objectives and priority actions identified in this plan will be determined by the availability of funding resources for these purposes.

Natural Resources

1. Continue restoration of upland natural communities that were converted to pasture.
   A. Non-native grasses will be eradicated from old pasture areas that were formerly upland pine forest as technology and funding permit. Pastures will be replanted with longleaf pine, appropriate hardwood species, and native herbaceous species using a combination of containerized plants and direct seeding techniques. Periodic prescribed fire will also be an essential part of the restoration process. Mowing may be used to reduce invasion by offsite hardwoods and weedy herbaceous species.
   B. Research into upland restoration techniques will continue in the pasture areas. Additional research on restoration of natural communities on pastureland will be encouraged. Current study plots will continue to be monitored.

2. Place a high priority on burning fire-dependent natural communities regularly, re-introduce fire to fire-excluded areas, and if necessary, consider thinning and removal of offsite pines and hardwoods from fire-dependent natural communities.
   A. The prescribed burning program needs to achieve its annual burn plan objectives

consistently if restoration and maintenance of fire-dependent natural communities are to be successful. In order to accomplish difficult burns, top priority must be given to conducting burns whenever windows of opportunity occur.

B. Continue using mechanical and chemical methods to remove offsite hardwood and pine species from fire-dependent natural communities. Explore viability of using commercial timbering operations to thin or remove offsite hardwoods and loblolly pines from sandhills, upland pine forest, and mesic flatwoods natural communities.

C. Staff will pursue funding for a bridge over Turkey Creek to provide reliable access to the northeast portion of the preserve for prescribed burning and other management needs.

3. Restore natural communities in areas clearcut during southern pine beetle outbreak.

A. Restoration of the most severely impacted areas will emphasize reestablishment of the longleaf pine overstory and improvement of the disturbed herbaceous ground cover. The objectives are to restore the natural species composition and natural fuel sources of the upland pine forest, sandhill, and mesic flatwoods sites. Upland mixed forest areas impacted by the cutting of pines will be allowed to regenerate naturally as hardwoods and other non-fire adapted plant species expand into the disturbed areas.

B. Restoration plans for the upland pine forest and mesic flatwoods clearcuts will be developed to provide guidance in the recovery of these natural communities.

4. Continue monitoring the hydrology and water quality of the preserve's major creeks; document any major impacts and take corrective measures where necessary.

A. The current monitoring projects for Blues, Turkey, and Cellon Creeks need be continued indefinitely. This will require close coordination with other divisions within DEP, with other agencies such as the SRWMD, and with the county's Environmental Protection Department. If significant problems are detected, the appropriate agency needs be notified so that corrective measures can be taken.

B. Staff will assess the feasibility of installing continuous stage recorders in Blues, Turkey and Cellon Creeks to monitor flows. Assistance will be sought from other agencies.

C. Staff will pursue funding to determine the degree of hydrological restoration that is needed in the Cellon Creek system, and, if necessary, to develop professional designs for potential restoration projects.

5. Erect adequate boundary fencing.

A. Where necessary, adequate boundary fencing will be installed in those portions of the preserve that were recently re-surveyed or that lack adequate fencing. This fencing is necessary for protection of the preserve's natural and cultural resources. In some areas, the establishment of a clear boundary and boundary road will allow the closure of patrol roads that currently traverse environmentally sensitive areas.

6. Remove invasive exotic plants and animals.

A. Highest priority will be given to the eradication of invasive exotic plants such as cogon grass, tropical soda apple, Chinese tallow, and wild taro. Other noxious exotic plants including skunkvine, Japanese climbing fern, perpetual begonia, mimosa, chinaberry, coral ardisia, and tung tree will also be actively removed. Funding will be sought from the Division budget and from Bureau of Invasive Plant Management grants.

B. The current policy of removing armadillos as opportunity permits will continue. Feral hog removal and adequate fencing to slow the movement of hogs into the preserve will continue to receive the highest priority.

7. Protect adjacent natural areas through outright acquisition, education, and close monitoring of proposed land use changes.

A. To ensure the continued survival of species within the preserve, pursue the purchase of additional natural areas within the preserve’s optimum boundary. Particularly valuable pieces include parcels of wooded upland pine forest to the north and east, and the Fox

Pond property to the southeast.

B. Local residents will be contacted and instructed about the importance of fire in preserving natural communities. Interpretation and education about prescribed fire will be vital to our continued use of it as a management technique on state lands.

C. There will be a continual review of comprehensive plan amendments and land development regulations that may govern proposed land use changes on properties adjacent to or in close proximity to the preserve. Division comments regarding proposed land use changes will be formally presented to appropriate governing bodies and agencies.

8. Remove old interior fencing.

A. As opportunity permits, the many miles of unnecessary old interior fencing will be removed. This type of work may be best accomplished by utilizing volunteers or inmate work crews.

9. Restore damage caused by artificial soil disturbances.

A. Fire plow scars within the preserve will be restored where feasible to the natural contour, especially where drainage patterns have been altered. Drainage ditches will be restored if they are impacting the hydrology of natural areas. Where possible, roadways will be removed, modified, or culverted to avoid impeding natural drainage patterns, especially sheet flow.

10. Minimize the degradation of sensitive natural areas attributable to visitor use.

A. To minimize visitor damage to sensitive natural areas such as ravines and steep slopes a multi-faceted approach is needed, including education of visitors during staff-guided activities, increased use of interpretive signage, and institution of more frequent staff patrols. Most importantly, the core of the preserve north of Millhopper Road is designated a wilderness zone as defined in chapter 15, paragraph 14.1 of the OPM. Visitor uses in the wilderness zone will remain restricted to pedestrian traffic and guided horseback and bicycle tours on designated trails.

11. Continue to monitor designated species within the preserve.

A. Continue to survey and monitor designated animal species.

B. Conduct periodic surveys of certain designated plant species in cooperation with other researchers.

12. Continue to expand plant and animal species lists.

A. Request herbarium and other records for plant taxa not well represented in existing plant species list, particularly bryophytes, algae, lichens, and fungi.

B. Request species lists from existing collections for animal taxa that are underrepresented in existing animal species list, particularly macroinvertebrates.

13. Promote the use of the preserve for research in natural science fields.

A. Generally encourage research in natural science fields such as community ecology, restoration ecology, wildlife ecology, plant ecology, limnology, hydrology, geology, and soils.

Cultural Resources

1. Continue to pursue purchase of properties containing significant archaeological resources.

A. Sites thought to be associated with a Spanish and Indian mission exist just outside the preserve's southeastern corner. Purchase of this property is being pursued in order to protect the site from development or destruction.

2. Continue to protect archaeological sites from vandalism, unauthorized digging or collecting, erosion, or other forms of encroachment in accordance with Florida Statutes.

A. Continue to patrol sites regularly to monitor for unauthorized activities, especially sites with a history of vandalism, natural erosion, hog damage or sites considered significant.

B. Take steps to reduce feral hog populations within the preserve.

C. Monitor segments of horse and bicycle trails currently routed near or through archaeological sites for erosion to ensure that archaeological sites are not damaged by recreational activities. Re-route or close damaging segments of trails.

D. Record unrecorded resources as they are discovered.

3. Stabilize and research the tung depot.

A. Research use and age of the tung depot. Document and if appropriate record the depot building as an historical site.

B. Monitor the depot building for vandalism since visitor activities will be increased in its vicinity.

C. Investigate possibilities for adaptive reuse of the tung depot building.

4. Organize, maintain, and safeguard cultural resource files and implement collections management policies in Chapter 16 OPM.

A. The park will adopt a filing system similar to that recommended by Bureau of Natural and Cultural Resources (BNCR).

B. Maintain duplicate copies at the District Office for recovery in the event of destruction of park records.

C. With the assistance of BNCR, develop a Scope of Collections Statement and a collection management plan that emphasizes a policy of not collecting or only collecting for interpretive purposes.

Recreational Goals

1. Continue to provide quality resource based outdoor recreational and interpretive programs and facilities at the state park.

A. Maintain existing opportunities for picnicking, hiking, mountain biking, horseback riding, special events, interpretive programs and nature study.

B. Continue to improve the trail system.

a. Establish erosion control measures along trails where needed.
b. Provide routine maintenance of trail markers and interpretive materials.
c. Monitor trail use impacts on the natural communities.

2. Seek funding to expand recreational and interpretive opportunities through the improvement of programs and the development of new use areas and facilities, as outlined in this management plan.

A. Update the park's interpretive plan.

B. Develop additional interpretive activities and displays related to the park's interpretive plan.

C. Expand hiking, off-road biking, and equestrian trails outside the wilderness zone.

D. Install trailside picnic areas.

E. Relocate primitive campsite.

Park Administration/Operations

1. Seek sufficient funding to ensure the successful continuation of standard park operations.

A. Assure that the park meets and complies with all applicable state and federal safety guidelines.

B. Continue to provide training to all staff to improve the level of visitor service programs.

C. Monitor activities outside the park that may impact park lands; promote public awareness of outside threats to park resources.

D. Maintain effective park boundaries through fencing and posting; patrol park boundaries to monitor and discourage trespassing and encroachment of private landowner activities on park property.

E. Request additional assistance from the Bureau of Park Patrol to protect park resources and insure public safety.

F. Reconfigure Millhopper Road parking lot to allow additional parking.

2. Modify the composition of the park staff to reflect new operational responsibilities and to facilitate the improvement of interpretive and recreational services.

A. Identify the most efficient utilization of outsourcing funds, and seek additional funds as required.

B. Identify additional staffing, funding and outsourcing needs.

3. Continue to promote the establishment of volunteer support and ensure the effectiveness of the San Felasco Citizens' Support Organization.

A. Work with the San Felasco CSO to increase membership and to encourage active involvement of its members.

B. Ensure that operation of the San Felasco CSO meets, and works within, established guidelines of the Division, State and not-for-profit organizations.

4. Strive to increase local, regional, and national support for the park.

A. Develop and present interpretive programs to local civic organizations.

B. Continue to hold special events and participate in annual local activities, interpreting the importance of the natural and cultural resources of the park, and providing information about the recreational opportunities offered at the park.

C. Continue to encourage tourism in the park through contacts with the media and writers' associations.

Management Coordination

The park is managed in accordance with all applicable Florida Statutes and administrative rules. Agencies having a major or direct role in the management of the park are discussed in this plan.

The Department of Agriculture and Consumer Services, Division of Forestry (DOF), assists Division staff in the development of wildfire emergency plans and provides the authorization required for prescribed burning. The Florida Fish and Wildlife Conservation Commission (FFWCC), assists staff in the enforcement of state laws pertaining to wildlife, freshwater fish and other aquatic life existing within park boundaries. In addition, the FFWCC aids the Division with wildlife management programs, including the development and management of Watchable Wildlife programs. The Department of State, Division of Historical Resources (DHR) assists staff to assure protection of archaeological and historical sites. The Alachua County Department of Environmental Protection assists the park in dealing with development concerns and possible impacts along park boundaries. The Suwannee River Water Management District assists in water and drainage issues. Gainesville Regional Utilities, Clay Electric, and Progress Energy all cooperate with the park in managing power easements running through the preserve. The University of Florida cooperates with park staff in conducting research studies within the preserve.

Public Participation

The Division provided an opportunity for public input by conducting a public workshop and an advisory group meeting. A public workshop was held on February 11, 2004. The purpose of this meeting was to present this draft management plan to the public. A DEP Advisory Group meeting was held on February 12, 2004. The purpose of this meeting was to provide the Advisory Group members the opportunity to discuss this draft management plan.

Other Designations

San Felasco Hammock Preserve State Park is not within an Area of Critical State Concern as defined in section 380.05, Florida Statutes. Currently it is not under study for such designation. The park is a component of the Florida Greenways and Trails System.

All waters within the unit have been designated as Outstanding Florida Waters, pursuant to Chapter 62-302 Florida Administrative Code. Surface waters in this unit are also classified as Class III waters by DEP. This unit is not within or adjacent to an aquatic preserve as designated under the Florida Aquatic Preserve Act of 1975 (section 258.35, Florida Statutes).

RESOURCE MANAGEMENT COMPONENT

INTRODUCTION

The Division of Recreation and Parks has implemented resource management programs for preserving for all time the representative examples of natural and cultural resources of statewide significance under its administration. This component of the unit plan describes the natural and cultural resources of the park and identifies the methods that will be used to manage them. The stated management measures in this plan are consistent with the Department's overall mission in ecosystem management. Cited references are contained in Addendum 2.

The Division's philosophy of resource management is natural systems management. Primary emphasis is on restoring and maintaining, to the degree practicable, the natural processes that shape the structure, function and species composition of Florida's diverse natural communities as they occurred in the original domain. Single species management may be implemented when the recovery or persistence of a species is problematic provided it is compatible with natural systems management.

The management goal of cultural resources is to preserve sites and objects that represent all of Florida's cultural periods as well as significant historic events or persons. This goal may entail active measures to stabilize, reconstruct or restore resources, or to rehabilitate them for appropriate public use.

Because park units are often components of larger ecosystems, their proper management is often affected by conditions and occurrences beyond park boundaries. Ecosystem management is implemented through a resource management evaluation program (to assess resource conditions, evaluate management activities and refine management actions), review of local comprehensive plans and review of permit applications for park/ecosystem impacts.

RESOURCE DESCRIPTION AND ASSESSMENT

Natural Resources

Topography

San Felasco Hammock Preserve State Park is located in the Central Highlands region of the Midpeninsular Physiographic Zone. Within the Alachua County portion of the Central Highlands, three provinces have been identified: a northern upland plateau region, a western plains region and a south-central/southeastern transitional area. San Felasco Hammock Preserve State Park is located at the margin of these regions along the Cody Scarp, an escarpment formed by the erosion of the Hawthorn Group and overlying marine deposits.

Elevations in the preserve range between 70 and 195 feet above msl. The preserve contains numerous features characteristic of karstic topography, including sinkholes, ravines, limestone rock outcrops, seepage streams, and three permanent streams which discharge into the Floridan aquifer at openings along the toe of the escarpment. At higher elevations, the terrain is characterized by gently rolling hills with depressional wetlands interspersed.

Artificial changes in the preserve's topography include drainage swales and borrow pits associated with the construction of Interstate 75, a tramway located in the southeastern portion of the preserve, numerous fire plow scars, roadways, powerline corridors, and hydrologic alterations such as canals, impoundments, and berms in the Cellon Creek system.

Geology

The principal geological structure of the area is called the Ocala uplift, whose arch traverses southwestern Alachua County. Due to folding associated with the uplift, beds of Tertiary Age limestones of the Ocala Group are now at or near the surface along the crest and flank of the arch. The structural forces that produced the arching and folding probably caused additional faulting and fracturing of rock in the area; these are characteristic features of San Felasco Hammock Preserve State Park.

The region of the preserve is underlain by the following deposits, listed in descending order of age: Plio-Pleistocene Terrace Deposits, the Alachua Formation, the Hawthorn Group, Ocala Group, Avon Park Limestone, Lake City Limestone, Oldsmar Limestone and Cedar Key Limestone.

The upper surficial material consists of Recent Age deposits mixed with Pleistocene Age sediments that were laid down as terraces when sea levels fluctuated in response to successive glacial periods. These Pleistocene deposits are mostly fine-grained sands, clayey at the surface, but coarser with increasing depth. Large pebbles of phosphate and quartz are commonly found at the base of the sand. Recent and Pleistocene deposits within the preserve range in thickness from 20 to 45 feet.

The Alachua Formation, of Miocene or Pliocene Age, contains sand and sandy clay beds. It is not as calcareous and phosphatic as similar beds in the younger Hawthorn Group. Silicified pieces of the underlying limestone are generally incorporated into beds near the base of the formation. The Alachua Formation ranges in thickness from 25 to 35 feet.

The Hawthorn Group, of Middle Miocene Age, consists of quartz sand, sandy clay, and clay interbedded with hard phosphatic or dolomitic limestone layers and fine to coarse phosphatic sands. This deposit rests atop the irregular, solution-pitted surface of the Ocala Group. Within the preserve, the Hawthorn may reach 160 to 170 feet in thickness.

The Ocala Group is an Eocene deposit consisting of three limestone formations of similar character. From youngest to oldest, these are the Crystal River, Williston and Inglis Formations. The limestones of the Ocala Group range from a loose coquina composed of large foraminifera and shells to solution-riddled, echinoid-rich limestone that is 98 percent calcium carbonate. The Ocala deposit ranges in thickness from 150 to 250 feet. Commonly, the top of the Ocala limestone has been silicified to form chert. Large outcrops of chert are found in Chert Swamp, located in the Blues Creek floodplain north of Big Otter Ravine.

Avon Park Limestone consists of dark brown dolomite alternating with layers of chalky limestone; both may contain chert and gypsum. Thickness of this formation varies from 170 to 270 feet.

The Lake City Limestone, another Eocene formation, is composed of alternate layers of dark brown dolomite and chalky limestone, both of which may contain chert and gypsum. Gypsum and anhydrite may occur at the base of the formation. The upper part of the deposit may contain carbonaceous material and green clay. The Lake City Limestone attains a thickness of 500 feet.

The last formation of Eocene Age is the Oldsmar Limestone. While the top half of the formation is a very porous, brown limestone with some gypsum and anhydrite, the bottom half consists of a thick zone of dolomite with chert or anhydrite. Oldsmar Limestone ranges between 250 and 350

feet in thickness.

The Cedar Keys Limestone is a Paleocene deposit. Its lower section is dolomitic. Near the middle is a distinct marker bed of clay. The greater part of the formation is a gray, white, or brown color, is dense to porous in consistency, and is comprised of fragmental limestone impregnated with gypsum and anhydrite. Red calcareous clay and pyrite may be present. This formation may be 400 to 450 feet thick.

The modern geology of the preserve is subject to alteration due to natural processes. Sinkhole formation, for example, continues to be a relatively common phenomenon in the preserve. At least four new sinkholes are known to have formed within the past several years. Human activities such as mining, however, apparently have not been a major factor in the geologic history of the preserve.

Soils

Over 35 percent of the soil types recorded in Alachua County by the U.S. Soil Conservation Service (SCS) is present in San Felasco Hammock Preserve State Park (Thomas et al, 1985). This high degree of soil diversity can be attributed to north Florida's climate and to the complex geology and hydrology of the region. The SCS soil survey classifies the preserve's soils in 26 map units consisting of 20 soil series (see Soils Map). In this plan, Addendum 3 contains detailed soil descriptions.

Most soil disturbances identified in various parts of the preserve are the result of past agricultural and silvicultural practices. These practices included the cultivation of citrus and cotton, the production of tung oil and turpentine, and the harvesting of pines for pulpwood and saw logs.

These activities depleted the soil of nutrients and increased the area's susceptibility to erosion.

Limited soil erosion is currently known to occur on site. Several upland areas with steep slopes have been impacted in the past by foot or vehicle traffic. Logging activities during Southern Pine Beetle control efforts have also impacted slopes within the preserve. The banks of Cellon Creek were severely damaged and eroded prior to state acquisition by allowing cattle free access to the streambed and riparian area. Management activities will follow generally accepted best management practices to prevent soil erosion and conserve soil and water resources on site.

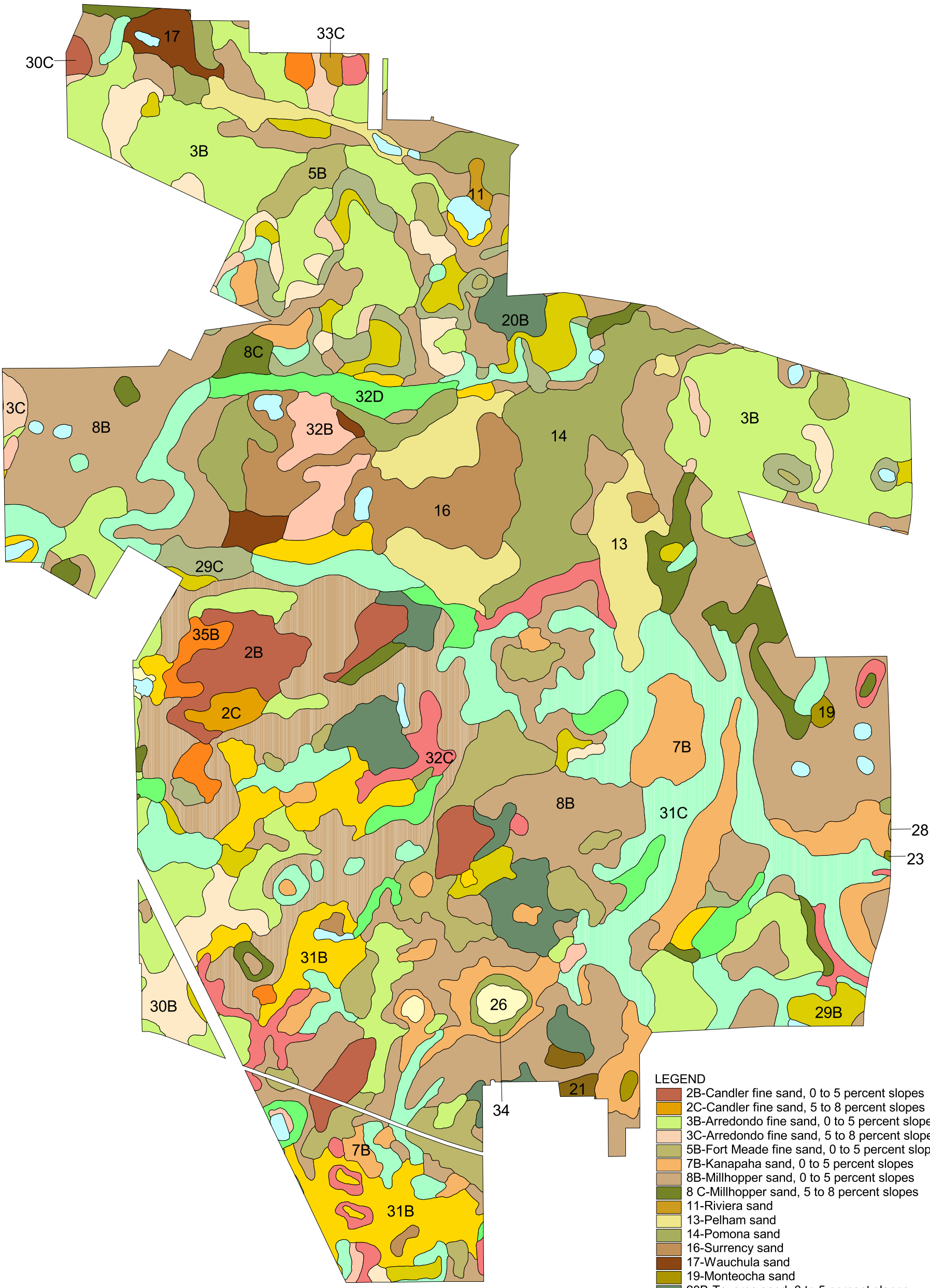
Minerals

Limestone deposits and the Hawthorn Group, which may contain phosphatic ore, underlie much of the preserve. The commercial value of potential deposits in the preserve has not been determined. According to the Bureau of Geology, the economic potential of the area for mineral development or oil and gas production is low.

Hydrology

The karstic topography of San Felasco Hammock Preserve State Park has encouraged the development of a diverse system of wetlands, ponds and streams within the unit. Three of the unit’s blackwater streams, Blues Creek, Cellon Creek and Turkey Creek, originate outside the preserve in separate headwater swamps. These creeks terminate at sinks within the preserve. Such stream-to-sink discharges are characteristic of the area. Moonshine Creek, a fourth blackwater stream, lies entirely within the preserve.

Blues Creek originates in northwest Gainesville in a large swamp dominated by cypress, red maple and swamp black gum. The area around this headwater swamp was developed as a



LEGEND

- 2B-Candler fine sand, 0 to 5 percent slopes
- 2C-Candler fine sand, 5 to 8 percent slopes
- 3B-Arredondo fine sand, 0 to 5 percent slopes
- 3C-Arredondo fine sand, 5 to 8 percent slopes
- 5B-Fort Meade fine sand, 0 to 5 percent slopes
- 7B-Kanapaha sand, 0 to 5 percent slopes
- 8B-Millhopper sand, 0 to 5 percent slopes
- 8 C-Millhopper sand, 5 to 8 percent slopes
- 11-Riviera sand
- 13-Pelham sand
- 14-Pomona sand
- 16-Surrency sand
- 17-Wauchula sand
- 19-Monteocha sand
- 20B-Tavares sand, 0 to 5 percent slopes
- 21-Newnan sand
- 23-Mulat sand
- 26-Samsula muck
- 28-Chipley sand
- 29B-Lochloosa fine sand, 5 to 8 percent slopes
- 29C-Lochloosa fine san, 5 to 8 percent slopes
- 30B-Kendrick sand, 2 to 5 percent slopes
- 30C-Kendrick sand, 5 to 8 percent slopes
- 31B-Blichton sand, 2 to 5 percent slopes
- 31C-Blichton sand, 5 to 8 percent slopes
- 32B-Bivans sand, 2 to 5 percent slopes
- 32C-Bivans sand, 5 to 8 percent slopes
- 32D-Bivans sand, 8 to 12 percent slopes
- 33C-Norfolk loamy fine sand, 5 to 8 percent slopes
- 34-Placid sand, depressional
- 35B-Gainesville sand, 0 to 5 percent slopes
- Water

N

1000 0 1000 2000 Feet

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Office of Park Planning

SAN FELASCO HAMMOCK PRESERVE STATE PARK

SOILS MAP

residential subdivision in the early 1990s. Stormwater control structures from this development now direct flow into the Blues Creek headwater system. The creek flows west for about 1.5 miles, passing through several more subdivisions before entering the preserve at its southeast boundary. It continues through the preserve in a northwesterly direction for about two miles, entering Chert Swamp before discharging directly to the Floridan aquifer at Big Otter Ravine. The total stream length, both within and outside the preserve, is approximately 3.5 miles.

Several programs administered by different agencies are in place to monitor environmental changes in Blues Creek. The U.S. Geological Survey once had a continuous stage recorder on the creek within the preserve near Twin Creeks Road. Although no longer in operation, the station recorded water level data over a ten-year period. At Big Otter Ravine, the Suwannee River Water Management District has a continuous groundwater elevation recorder that measures the potentiometric surface of the Floridan aquifer. Since 1979, personnel from the Alachua County Environmental Protection Department (ACEPD) have periodically monitored water quality at several stations distributed along the entire length of the stream. Finally, the Division of Recreation and Parks (Division) has measured discharge/stage at four stations along the creek.

Cellon Creek originates in three small headwater areas north of the town of Hague. Two of the headwaters are located on the University of Florida's Agriculture Experimental Farm, while the third one is a hardwood swamp located upstream from an industrial complex. Flows from these three systems converge just west of Hague to form the mainstream of Cellon Creek. The creek flows south under U.S. Highway 441 and then west for about one mile, eventually entering a recent addition to the preserve, a tract of land formerly owned by the University of Florida Foundation. The creek meanders on this tract through pastureland and bottomland for almost two miles before draining into the Floridan aquifer at Lee Sink. The total stream length is approximately 4.5 miles.

Within the Cellon Creek drainage way are a number of old berms that were constructed to impound or control water flow. In some areas, the creek has been channeled and rerouted. In addition, the University of Florida Foundation holds easement rights for the development of stormwater treatment and discharge facilities in areas upslope of Cellon Creek. When these facilities are developed the hydrology of Cellon Creek may be further impacted.

A 24-acre parcel located on a hillside south of Cellon Creek contains an abandoned cattle dip vat that was used to control "tick fever" during the 1930s. Dip vats throughout the state have been identified as sources of arsenic and other poisons that have the potential to contaminate groundwater. This particular dip vat site was the subject of a University of Florida research study.

In the 1980s, the Florida Department of Environmental Regulation (DER) discovered that sediments in Cellon Creek were contaminated with heavy metals. When part of the Cellon Creek basin was considered for acquisition by the state in the early 1990s, the DER recommended that future recreational activity along Cellon Creek be severely limited to ensure that the stream sediments would not be re-suspended because of visitor activities. As a condition of their 1987 Development Order, the Progress Center, a research and development park associated with the University of Florida, has been required to monitor the water quality of Cellon Creek annually.

The monitoring has indicated that heavy metals reside in the sediments but are not present in the surface water or groundwater. Furthermore, the metals were determined to be non-toxic in their current state. Very high total organic carbon (TOC) levels were detected in the sediments in

November 1993, however. At that time, the Department of Environmental Protection indicated that if the TOC concentrations in the sediments did not return to more normal levels, a "clean up" of the stream might be required since discharge is direct to the Floridan aquifer.

The main origins of Turkey Creek are in extensive hardwood swamps located west of U.S. Highway 441 between Gainesville and the City of Alachua. There is also some input from areas east of U.S. Highway 441. The creek flows westerly through or near several subdivisions before entering the preserve at its northeast boundary. It then meanders southwest through the preserve for almost two miles before discharging to the Floridan aquifer at a sink known as Split Rock, located on the southern edge of Sanchez Prairie. The total length of the stream is about six miles.

The hydroperiod and water quality of Turkey Creek are influenced by the operation of a fossil-fueled municipal power plant (Gainesville Regional Utilities' Deerhaven Plant) located in the vicinity of the creek's headwaters east of U.S. Highway 441. Monitoring and/or gauging stations, operated by the ACEPD and the Division, are sited on the creek to assess water quality, hydroperiod and power plant discharge. The monitoring program was initiated when it was discovered that the natural hydroperiod of the stream had been altered by the operation of the Deerhaven power plant. Abnormal flooding of Sanchez Prairie occurred in the mid-1970s, causing significant mortality in floodplain hardwoods, especially planer trees (*Planera aquatica*).

Moonshine Creek originates within the preserve at a baygall located just north of Millhopper Road (State Road 232). It flows southward for about one mile, passing beneath Millhopper Road and eventually discharging into an unnamed sink near the south boundary of the preserve. The creek is currently experiencing some erosion from foot traffic. There are also possible impacts associated with stormwater runoff from Millhopper Road.

A number of other streams are located entirely within the bounds of the preserve. These small, unnamed, permanent or intermittent streams are unique in that they originate as seeps, flow for a short distance on the surface and then disappear underground. This phenomenon can be attributed to the local interface between two separate and distinct geologic formations. Both formations are relatively porous/erosive and transmit water rapidly, while the interface itself is relatively non-erosive and non-transmittent. Where this interface is exposed, groundwater from the upper formation may surface to form a seepage stream that flows until a break in the interface is encountered; there the flow reenters the ground through a small sink that perforates the lower geologic formation. The heads of the seeps are usually within ravines. Maple Branch, one of the larger seepage systems within the preserve, is typical of this type of seepage pattern.

The Sanchez Prairie system, located in the northern half of the preserve, is a large, elongate solution basin or karst prairie that captures the flow of Turkey Creek and numerous small seeps. The term "prairie" is somewhat of a misnomer since forests completely cover the basin except for a few open water areas. In one respect, however, prairie might be an appropriate identifier. According to one theory, Sanchez Prairie may represent an early stage in the formation of a basin marsh such as the huge one at Paynes Prairie (Williams, 1977 in Dunn, 1982).

The Blues Creek/Chert Swamp/Big Otter Ravine system appears to be a smaller scale version of the Turkey Creek/Sanchez Pond/Split Rock system. These and other drainage systems within the preserve are complex assemblages of sinks/swallows, floodplain swamps, floodplain forests, and bottomland forests. Smaller creeks within a drainage system typically descend to a lowland area and anastomose. Channeled flow becomes sheet flow when sink(s) that drain the system cannot adequately convey the total discharge of the creeks. Floodplain swamps form when flooding

becomes a regular occurrence. Concentric rings of floodplain forest and bottomland forest usually border such swamps. Low ridges may demarcate separate drainage systems.

Hydric hammock occurs along the lower edge of the south rim of Sanchez Prairie and in isolated basins elsewhere. These wetlands are fed by seepage and, to a lesser extent, floodwaters.

The preserve contains numerous sinkholes, sinkhole lakes, and permanent and semi-permanent ponds of various types, sizes, shapes and successional stages. Depression marshes also occur within the preserve and baygalls have developed around several of the seepage systems. This diversity of wetland types can be attributed to the complex nature of the underlying geology.

Natural Communities

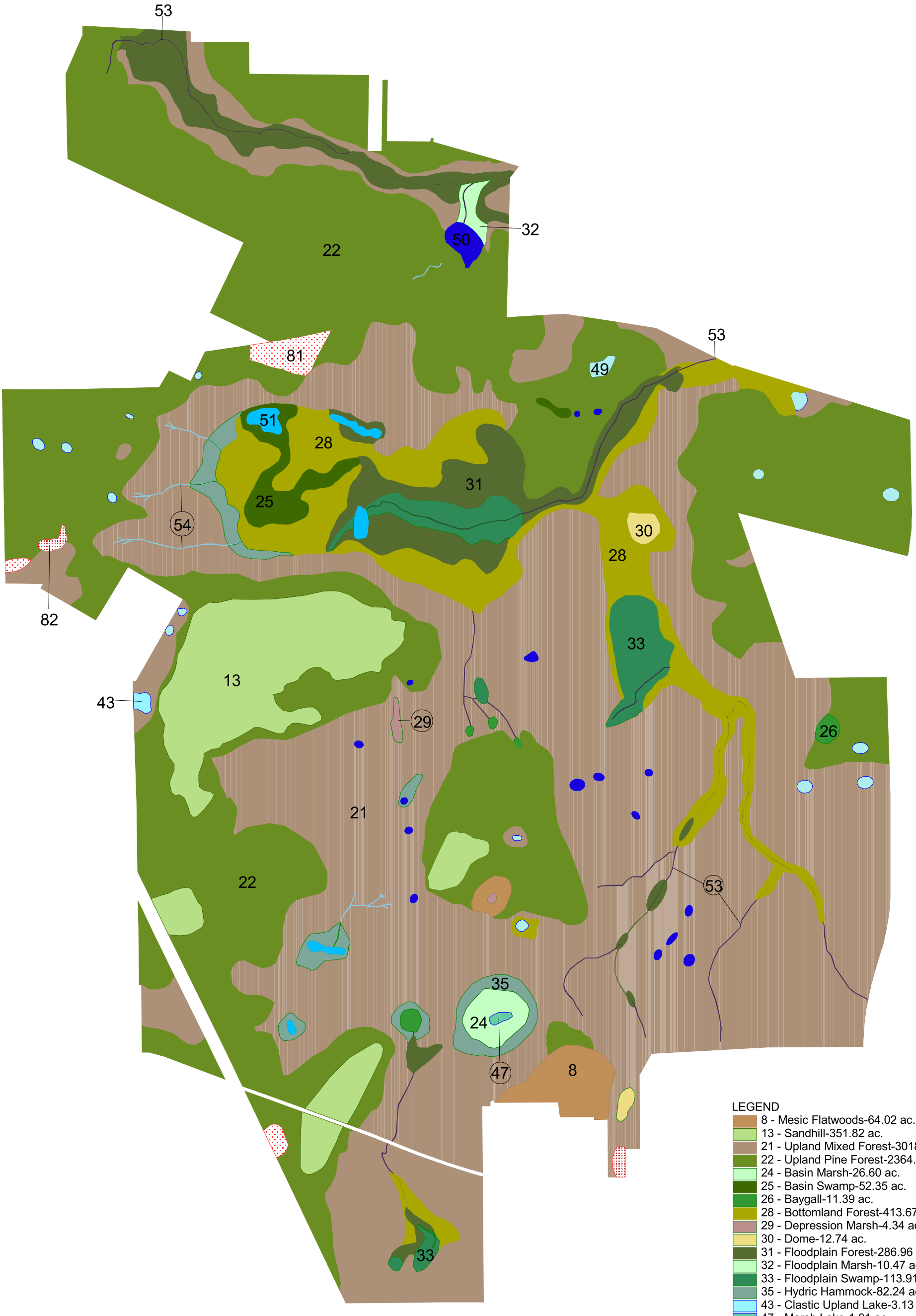
The system of classifying natural communities employed in this plan was developed by the Florida Natural Areas Inventory (FNAI) FNAI Descriptions. The premise of this system is that physical factors, such as climate, geology, soil, hydrology and fire frequency generally determine the species composition of an area, and that areas which are similar with respect to these factors will tend to have natural communities with similar species compositions. Obvious differences in species composition can occur, despite similar physical conditions. In other instances, physical factors are substantially different, yet the species compositions are quite similar. For example, coastal strand and scrub--two communities with similar species compositions--generally have quite different climatic environments, and these necessitate different management programs.

The park contains 24 distinct natural communities (21 mapped and 3 unmapped) in addition to ruderal and developed areas (see Natural Communities Map). Park specific assessments of the existing natural communities are provided in the narrative below. A list of plants and animals occurring in the unit is contained in Addendum 4.

Mesic flatwoods. The most extensive area of mesic flatwoods within the preserve lies north of Millhopper Road adjacent to The Hammock subdivision. Longleaf pine (*Pinus palustris*) originally dominated the flatwoods canopy; however, the southern pine beetle outbreak in 1994-95 decimated the longleaf pine forest on this site. In response to the pine beetle threat, nearly all the standing timber on about 40 acres of the mesic flatwoods was clear-cut, including hardwoods removed in the process of felling the infested pines. Before the beetle infestation, growing season fires had dramatically reduced the density and stature of invasive off-site hardwoods. Now, however, with the loss of the longleaf pines, the major fuel source for growing season fires is absent and this site is at risk of overgrowth by species such as laurel and water oak. Fortunately, the herbaceous layer at this site was in relatively good condition.

Wiregrass (*Aristida beyrichiana*) persists in scattered patches and composites such as blazing star (*Liatris* spp.) are still common. The herbaceous layer is currently characterized by dwarf live oak (*Quercus minima*), bracken fern (*Pteridium aquilinum*), shiny blueberry (*Vaccinium myrsinites*), saw palmetto (*Serenoa repens*), and broomsedges. The initial round of longleaf pine planting occurred in 1999. Unfortunately, recent weather patterns have hampered restoration. El Niño conditions with increased rainfall and subsequent drought conditions have severely restricted prescribed burning in the flatwoods. Consequently, many hardwood sprouts have reached a size that may require mechanical or chemical control before prescribed fire can be successful at the site.

This flatwoods is relatively unique in that it occupies the highest elevations within the preserve. The existence of a flatwoods at this site would seem to indicate the presence of an impermeable layer, or hardpan, in the soil, although Dunn (1982) states that the soils here typically lack such a



LEGEND

- 8 - Mesic Flatwoods-64.02 ac.
- 13 - Sandhill-351.82 ac.
- 21 - Upland Mixed Forest-3018.15 ac.
- 22 - Upland Pine Forest-2364.28 ac.
- 24 - Basin Marsh-26.60 ac.
- 25 - Basin Swamp-52.35 ac.
- 26 - Baygall-11.39 ac.
- 28 - Bottomland Forest-413.67 ac.
- 29 - Depression Marsh-4.34 ac.
- 30 - Dome-12.74 ac.
- 31 - Floodplain Forest-286.96 ac.
- 32 - Floodplain Marsh-10.47 ac.
- 33 - Floodplain Swamp-113.91 ac.
- 35 - Hydric Hammock-82.24 ac.
- 43 - Clastic Upland Lake-3.13 ac.
- 47 - Marsh Lake-1.91 ac.
- 49 - Sandhill Upland Lake-19.53 ac.
- 50 - Sinkhole Lake-20.71 ac.
- 51 - Swamp Lake-17.96 ac.
- 53 - Blackwater Stream-12.53 ac.
- 54 - Seepage Stream-2.42 ac.
- 81 - Ruderal-29.38 ac.
- 82 - Developed-7.07 ac.

N

1000 0 1000 2000 Feet

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SAN FELASCO HAMMOCK PRESERVE STATE PARK

NATURAL COMMUNITIES MAP

layer. North of the flatwoods is a wide transition zone of upland pine forest that grades into an expanse of upland mixed forest. Upland mixed forest is also found to the west of the site, while to the east is a dome community.

Another area of mesic flatwoods is located within an upland pine forest just north of the powerline easement in the center of the preserve. It occurs as a transitional band between a small depressional wetland and the surrounding upland pine forest. Before clear-cutting to control southern pine beetles in 1995, this area had been assumed overgrown upland pine forest or upland mixed forest. Removal of the tree canopy stimulated the growth of many plant species more typical of mesic flatwoods. These include gallberry (*Ilex glabra*), and fetterbush (*Lyonia lucida*). Rarer species that appeared after the disturbance included pine lily (*Lilium catesbaei*) and yellow-fringed orchid (*Platanthera ciliaris*). Restoration of these mesic flatwoods will continue with periodic prescribed fires.

Sandhill. The sandhill community occurs on four sites in the western half of the preserve. It occurs at slightly higher elevations along ridge tops within the upland pine forest. Sandhill is often distinguished from upland pine forest by the presence of turkey oaks (*Quercus laevis*). Both communities are characterized by the presence of longleaf pine and wiregrass. The transition between sandhill and upland pine forest is often subtle, although soil differences, mainly in drainage characteristics, play a role.

Most of the sandhill within the preserve is in very good condition despite harvesting of longleaf pines in the distant past. Several areas were impacted more recently (1994-95 and 2001) by southern pine beetle infestations, however. Longleaf pines and loblolly pines (*Pinus taeda*) infested with beetles were felled. About 23 acres of sandhill were clear-cut. The cutting of clusters of infested pines (group selection harvesting) significantly impacted additional areas. In addition, most of the remaining sandhills in the preserve suffered some level of impact from the felling of scattered pines that were threatened by beetles. Prior to the southern pine beetle outbreak, prescribed fires had succeeded in reducing hardwood encroachment in most areas of sandhill. The suspension of prescribed burning in the preserve during the beetle outbreaks has slowed the restoration of some of these areas. Several sandhill areas are now considered to be only in fair condition due to extensive hardwood invasion and a lack of adequate fire. All of the sandhill areas are expected to improve with the resumption of regular prescribed burning.

Upland mixed forest. The upland mixed forest is the most extensive community within the preserve and is one of the finest examples of its kind in the state. This community has very high species diversity and includes locally uncommon species such as bluff oak (*Quercus sinuata*), shumard oak (*Quercus shumardii*), and spruce pine (*Pinus glabra*). Dominant canopy species include pignut hickory (*Carya glabra*), southern magnolia (*Magnolia grandiflora*), Florida maple (*Acer saccharum* subsp. *floridanum*), and swamp chestnut oak (*Quercus michauxii*). The majority of this community is in excellent condition despite selective logging during the past two centuries. Traces of past timbering have all but disappeared. For example, several areas in the southeastern part of the preserve that were logged prior to 1937 have naturally regenerated to upland mixed forest (Dunn, 1982).

Unfortunately, the loblolly and spruce pines in the upland mixed forest were not spared by the southern pine beetle outbreak. Over 40 acres at several locations within the preserve were cleared of pines. Many of the other areas were impacted by group selection harvesting of pines. Restoration of the upland mixed forest at these sites will proceed naturally as native hardwoods and pines gradually re-colonize the disturbed patches.

Other disturbances of the preserve's upland mixed forest in the past included the conversion of woods to pasture. Such was the fate of an area in the northern part of the preserve west of Turkey Creek. Aerial photographs of this area taken in 1937 show that extensive clearing had already taken place. According to more recent aerial photographs, the cleared areas were apparently converted to improved pasture sometime between 1949 and 1955. The 165-acre site is currently dominated by hardwood saplings interspersed with clearings of bahia grass (*Paspalum notatum*).

Many small household dumpsites can still be found within the upland mixed forest, although they are considered relatively inert. Fire plow scars are also located within the upland mixed forest, primarily near fire-adapted and wetland communities. Two powerline rights-of-way pass through the upland mixed forest within the preserve, one active and one abandoned. The active easement is maintained by Progress Energy (formerly Florida Power Corporation). The abandoned right-of-way is expected to continue its natural succession to upland mixed forest. Additional utility easements within the preserve will be actively discouraged, particularly within upland mixed forest.

The upland mixed forest includes small areas of other natural communities such as sinkholes, blackwater streams and seepage streams. In most cases, the upland mixed forest grades into upland pine forest on the higher elevations. Decades of fire suppression have further blurred the subtle transition zones between these two communities.

Upland pine forest. Upland pine forest is located in several disjunct areas within San Felasco Hammock Preserve State Park. While upland pine forest in this region of the state is often considered a transition zone between upland mixed forest and sandhill, at San Felasco it occurs in relatively broad bands and is considered a distinct natural community. Within the preserve, the upland pine forest occupies an intermediate elevation between the sandhill and upland mixed forest. The upland pine forest soils are probably more fertile and less well drained than those of the sandhill, contributing to the differences in flora. Upland pine forest is defined in part by the presence of southern red oak (*Quercus falcata*) and mockernut hickory (*Carya alba*) and the absence of turkey oak. Other diagnostic plant species include beargrass (*Yucca flaccida*), wiregrass, woodland poppy mallow (*Callirhoe papaver*), white wild indigo (*Baptisia alba*), sassafras (*Sassafras albidum*), sparkleberry (*Vaccinium arboreum*), and slim-leafed paw paw (*Asimina angustifolia*).

The upland pine areas at the preserve can be divided into three separate types based on their current condition and past land use practices. The first type consists of those forested areas, totaling about 1000 acres that remain in relatively good condition despite the past timbering of longleaf pines with subsequent heavy colonization of cutover sites by loblolly pines. Some of these cutover areas were used for pasturing cattle for a period, but the pastures were abandoned before 1949. Scattered longleaf pines remain in the less disturbed areas. Despite a long history of fire suppression in these forested areas, the herbaceous component is relatively intact except where extensive soil disturbances occurred. The implementation of regular prescribed burning has helped restore most of these areas to a good condition. Some isolated areas are still only in fair condition due to insufficient burning, but habitat improvement is expected as the current burn program progresses.

The upland pine forest areas that were heavily colonized by loblolly pines more than 50 years ago served as the epicenter for the southern pine beetle outbreak in 1994-95 and again in 2001. The dense stands of mature loblolly pines provided an ideal site for the southern pine beetle population to expand to epidemic proportions. Once the beetle population reached a certain

threshold, even healthy longleaf pines were susceptible to infestation. As a result, the upland pine forests in the preserve were the areas hardest hit by the clear cutting and group selection harvesting of infested pines of all species. The largest clear cut in 1994-95 encompassed about 80 acres of upland pine forest, but virtually all of the forested upland pine areas were impacted to some degree by pine beetle suppression efforts. Over 300 acres of upland pine forest are estimated to have been cleared of pines during the two outbreaks.

There are two types of significantly degraded upland pine forest within the preserve; both are large areas that were heavily timbered long ago and then converted to Bahia grass pasture. In one of these areas southeast of Turkey Creek, scattered canopy trees were left in the pasture to provide shade. The eastern portion of this particular area was timbered and converted to pasture before 1937, while the western portion appears to have been cut after 1937 and converted to pasture some time after 1949. The center part of this area, which retained a relatively dense canopy, seemed to have been spared any heavy logging. In the pasture areas southeast of Turkey Creek, there has been some natural regeneration of canopy species such as southern red oak and longleaf pine. However, in 2001 about 100 acres of this site were clear-cut to suppress Southern pine beetles. Longleaf pine seedlings have been planted in many of these upland pine areas. The herbaceous component, however, is still overwhelmed by Bahia grass, and only the most persistent native species, such as beargrass, remain. This area as a whole is considered to be in fair to poor condition.

The other large area of highly degraded upland pine forest lies northwest of Turkey Creek; it consists of approximately 980 acres of Bahia grass pastures that are virtually devoid of any upland pine remnants. Much of this area is located in the recent addition to the preserve, although an extensive amount lies within the former preserve boundaries. The majority of these areas were cleared and converted to agricultural fields and pastures prior to 1937; some were cleared perhaps as long ago as the mid-nineteenth century (Buchholz, 1929 in Dunn, 1982). Between 1937 and 1949, much of the western part of this area was converted to tung tree (*Aleurites fordii*) plantations. These plantations were active until the early 1960s. By 1968, most of the plantations had been converted back to pastures (Dunn, 1982). These areas have since been invaded to varying degrees by loblolly pine, sweetgum (*Liquidambar styraciflua*), and sand blackberry (*Rubus cuneifolius*). A more serious threat is the tropical soda apple (*Solanum viarum*) discovered several years ago in most of the pastures on the recent addition of the preserve. This species is able to completely overwhelm open pastures and invade natural areas. It is spread by livestock and wildlife that eat the fruits and disperse the seeds over long distances. Fortunately, eradication efforts have been successful in controlling this species. Gainesville Regional Utilities maintains an active powerline right-of-way that passes through this area.

Basin marsh/marsh lake. A large basin marsh is located in the southern half of the preserve. The marsh is surrounded by upland mixed forest. A woody transition zone, dominated by dahoon holly (*Ilex cassine*) encircles the marsh, hence its name, Dahoon Pond. The small area of open water within the marsh is classified as a marsh lake. This area may be kept open by alligator activity.

Although logging once occurred in the upland mixed forest nearby, the marsh appears to have been little impacted and is considered to be in very good condition. The marsh is suffering, however, from lack of fire and is expected to benefit from future prescribed burns. During the drought conditions of 2001, the marsh lake appeared to have almost completely dried up.

Basin swamp. Basin swamp occurs within the preserve, but is often difficult to distinguish from

floodplain swamp due to a high degree of species overlap. In general, basin swamps are not associated with rivers or streams and do not normally receive channelized flow, though there may be outflow. The majority of the swamp associated with Sanchez Prairie has been classified as floodplain swamp due to the influence of Turkey Creek. The swamp surrounding Rookery Pond located northwest of Split Rock, however, is relatively unaffected by the Turkey Creek system and may be classified as a true basin swamp. The Rookery Pond sub basin is normally hydrologically isolated from the Turkey Creek floodplain swamp to the east by a low ridge of bottomland forest. However, following excessive rainfall events, the capacity of the Split Rock sink can be exceeded, and the entire Sanchez Prairie may flood.

The basin swamp associated with Rookery Pond is considered to be in good condition. It is likely that the area was logged within the last century. No other impacts to this area are currently recognized.

Baygall. Several baygalls occur within the preserve. Baygalls are formed by seepage and are usually found on the edges or bottoms of slopes. The largest baygall in San Felasco Hammock, however, lies on a plateau west of the large basin marsh in the south half of the preserve. Although physically not a typical baygall, it has many of the plant species diagnostic of a baygall. A woody fringe dominated by wax myrtle (*Myrica cerifera*), dahoon holly, black gum (*Nyssa sylvatica*), swamp bay (*Persea palustris*), and other hydrophytic trees, surrounds an inner shrubby zone dominated by buttonbush (*Cephalanthus occidentalis*), two types of fetterbush (*Lyonia lucida* and *Leucothoe racemosa*), and other shrubs typical of a baygall (Dunn, 1982). Although usually flooded, this baygall contains little open water. Moonshine Creek begins at the southern edge of the baygall.

Other baygalls are scattered through the preserve, with several located south of Sanchez Prairie on slopes within the upland mixed forest. These baygalls are associated with small seepage streams that tend to spread out as they cross terraces, forming sheet flows that may result in the creation of additional baygalls downslope. Flow from these baygalls often coalesces again before continuing downslope.

One additional baygall has been identified in the eastern part of the preserve in a transitional zone between upland pine and upland mixed forest upslope from Blues Creek. Although it contains more open water than a typical baygall, it is dominated by shrubby plant species typical of a baygall community.

All of the baygalls within the preserve are considered to be in good condition with no obvious impacts on hydrology. An unimproved roadway that passes along the south boundary of the largest baygall does not appear to be causing negative impacts.

Bottomland forest. Bottomland forest, usually found at a slightly higher elevation than floodplain forest, is not inundated on an annual basis. At San Felasco Hammock bottomland forest is found paralleling stream systems, including Turkey, Blues, and Moonshine Creeks, and on the low flats within Sanchez Prairie and north of Chert Swamp. Thin bands of bottomland forest may also occur in the transition zone between upland communities and isolated wetlands. In many cases, it is difficult to distinguish bottomland forest from the superficially similar hydric hammock. In general, stream flooding heavily influences bottomland forests, while hydric hammocks receive hydrologic inputs from a variety of sources.

The largest area of bottomland forest in the preserve is associated with the Sanchez

Prairie/Turkey Creek drainage. Generally, the bottomland along the creek is a relatively thin strip lying just above the floodplain. At Sanchez Prairie, however, the bottomland forest broadens to occupy a wide flat plain above the floodplain of Turkey Creek. Here the bottomland forest is dominated by laurel oak (*Quercus laurifolia*), live oak (*Quercus virginiana*), sweetgum, and loblolly pine. The herbaceous layer is better developed than in the floodplain and is dominated by greenbriers (*Smilax* spp.). A thin isthmus of bottomland forest connects Sanchez Prairie to the Blues Creek/Chert Swamp drainage, which itself contains a large area of bottomland forest north of Chert Swamp.

The condition of the bottomland forest within the preserve ranges from fair to very good depending on the intensity of past logging activities. Rapid regeneration in these fertile forests has obliterated most traces of logging, but the reduced stature of many of the trees attests to past disturbances. The bottomland forest has also been impacted by Deerhaven power plant discharge, which greatly exaggerated the hydroperiod of Sanchez Prairie during the mid-1970s and affected the plant species composition of several natural communities. More recently, the rooting of feral hogs, particularly within Sanchez Prairie, has impacted the bottomland forests.

Depression marsh. Two depression marshes are located in the center of the preserve near the powerline corridor that runs through the preserve. Both are considered to be in good condition with no impacts known.

Dome. Two domes occur within the preserve. The first dome is located north of Millhopper Road just east of the tract of mesic flatwoods. It is dominated by black gum and sweetgum; cypress is conspicuously absent. Close inspection reveals signs that the cypress component was probably logged out many years ago. Due to the lack of cypress regeneration and disturbance of the adjacent uplands, this dome is considered to be in fair condition. The second dome community lies north of Chert Swamp surrounded by bottomland forest. This area was also logged for cypress, but it has regenerated relatively well. It is considered to be in very good condition.

Floodplain forest. Floodplain forest occurs between the bottomland forest and floodplain swamp along the major stream systems within the preserve. Floodplain forest is distinguished from floodplain swamp by the relative absence of bald cypress (*Taxodium distichum*), partly due to a shorter hydroperiod. However, floodplain forest does flood more frequently than bottomland forest.

Stream/floodplain systems within the preserve are complicated by the active nature of the local geology. The four streams involved (Blues Creek, Turkey Creek, Cellon Creek, and Moonshine Creek) all discharge at a swallow or sink. During periods of high precipitation and increased stream discharge, these sinks cannot accept stream flow quickly enough to prevent overflowing of banks and backing up of water into adjacent floodplain. Sanchez Prairie is the largest of these stream/floodplain systems, while Moonshine Creek is the smallest. These systems are considered by some geologists to represent an early stage in the formation of large wetland depression systems such as Paynes Prairie and Levy Prairie, both located south of Gainesville.

Like the bottomland forest, the rooting of feral hogs has impacted much of the floodplain forest in the preserve.

Floodplain marsh. An area of floodplain marsh occurs along the drainage way between Cellon Creek and the large sinkhole lake located south and upslope of the creek. This area was

manipulated extensively in the past, presumably for drainage or water retention purposes. It is considered to be in poor condition.

Floodplain swamp. Floodplain swamps are found within the preserve associated with the major stream systems described in the preceding section.

The largest area of floodplain swamp is located in the Turkey Creek floodplain where the creek enters Sanchez Prairie and becomes a poorly defined, braided stream before emptying into Sanchez Pond. Portions of this swamp were once dominated by bald cypress and planer-tree. Sulfate-rich discharge from the Deerhaven power plant into Turkey Creek was responsible for the abnormally high mortality of these trees in Sanchez Prairie in the mid-1970s (Simons et al, 1989). These areas are presently considered to be in fair condition, but since the discharge ceased over a decade ago, they are expected to continue their slow recovery. The remainder of the floodplain swamp along Turkey Creek is considered to be in good to very good condition.

The Blues Creek system also has floodplain swamp, which is located upstream from the sink at Big Otter Ravine. The majority of the swamp in this system is located within Chert Swamp, whose flooding occurs primarily when Blues Creek "backs up" from the sink during periods of high discharge. Chert Swamp is recovering from the extensive cutting of cypress over the last century and is now considered to be in good condition. Several large, hollow cypress trunks attest to past logging activity. The floodplain swamp along Blues Creek and in Chert Swamp is one of the southernmost known localities for the sensitive fern (*Onoclea sensibilis*).

The Cellon Creek system also contains some areas of floodplain swamp near the entry point of the creek into the preserve. Finally, the Moonshine Creek stream/floodplain system, which lies wholly within the preserve, also has some floodplain swamp. Moonshine Creek empties into an unnamed sink located south of Millhopper Road. The floodplain swamp is located in a large depression just northeast of the sink and along the creek itself.

The rooting of feral hogs has impacted many of the floodplain swamps in the preserve.

Hydric hammock. Hydric hammocks occur within Sanchez Prairie and in isolated basins elsewhere in the preserve. Hydric hammocks flood infrequently and derive their hydrological inputs from upslope seepage and precipitation, with limited input from stream flooding. Bottomland forests, in contrast, receive most of their hydrological inputs from the flooding of blackwater streams (Vince et al, 1989).

Sanchez Prairie is hydrologically a complex system due to the multiple water sources. Areas that lie above the floodplain of Turkey Creek and that are primarily influenced by stream flooding (non-local water sources) are considered to be bottomland forests. Those portions of Sanchez Prairie lying above the basin swamps and primarily influenced by seepage and precipitation (local water sources) are considered hydric hammocks. The delineation of hydric hammock and bottomland forest is difficult due to similar vegetative characteristics and topography. The distinction between the two is based on the relative contributions of the various hydrological inputs, which can vary both seasonally and annually.

The hydric hammock community within Sanchez Prairie is considered to be in good to very good condition, depending on past logging impacts. As with the bottomland forests, these areas were timbered for live oak and other valuable hardwoods. In most cases, these areas have restored naturally and trees are beginning to approach their former stature. Some portions of the hydric

hammock were also affected by the Deerhaven power plant discharge into Turkey Creek in the 1970s. The discharge caused the death of many hydrophytic tree species (Simons et al, 1989). More recently, feral hogs have impacted portions of the hydric hammock.

Clastic upland lake. Several of the lakes within the preserve can be classified as clastic upland lakes. These lakes tend to have a clay layer underneath and are more irregular in shape than typical sandhill upland lakes. Many of these lakes occur within the upland mixed forest where soils may have higher clay content. In many cases, it is difficult to distinguish clastic upland lakes from sinkhole lakes since the former may have a connection to the aquifer while the latter may be plugged with clay.

The clastic upland lakes within the preserve are considered to be in good to very good condition. One of these lakes straddles the western boundary and is partially on private land. Runoff from the private residence on the site may impact the lake, especially if fertilizers or other pollutants are present.

Sandhill upland lake. Sandhill upland lakes are scattered throughout the sandhill and upland pine forest communities within the preserve. Most of these lakes are in good to excellent condition.

Sinkhole and sinkhole lake. San Felasco Hammock is located in a geologically active karst region. It contains numerous karst depressions, sinkholes, and sinkhole lakes. The majority of these features are not mapped, but are included within the other natural communities. Since many sinkhole lakes periodically drain or dry up, there is often an artificial dichotomy between them and sinkholes.

Four sinkholes within the preserve receive direct flow from blackwater streams and serve as direct inputs to the Floridan aquifer. Split Rock drains the Turkey Creek/Sanchez Prairie system, Big Otter drains the Blues Creek/Chert Swamp system, Lee Sink drains the Cellon Creek system, and an unnamed sink drains the Moonshine Creek system. Many other smaller sinkholes receive input from seepage streams and drain into the Floridan aquifer on a smaller scale. The large sinkhole lake known as Itchy-Bottom Lake is located south of Cellon Creek near the east boundary of the new addition. It is linked to Cellon Creek by way of several manmade dikes and ditches, but it may have served as the main drain for the Cellon Creek system when it was an active sink. Although there is no evidence that it is currently active, it appears physically very similar to other sinkhole lakes that serve as inputs to the Floridan aquifer.

The majority of the sinkholes and sinkhole lakes within the original preserve boundary are in very good to excellent condition. Lee Sink and Itchy-Bottom Lake, however, are the exceptions. They are currently being impacted by cattle ranching activities upstream. Several areas, notably Big Otter Ravine, were severely eroded by foot traffic and off-road motorcycles prior to state acquisition. Big Otter Ravine is currently a restricted zone; erosion continues to occur at low levels, however. Although these areas have recovered from previous abuses, any increase in visitation to sensitive sink areas can be expected to have adverse effects. An additional concern for the static sinkhole lakes is the proliferation of water spangles, an aquatic fern (*Salvinia minima*), which is considered an exotic plant within Florida.

Swamp lake. Several swamp lakes occur within the preserve, some of considerable size. The two largest are Sanchez Pond and Rookery Pond. Both are located within the Sanchez Prairie basin along with numerous other smaller swamp lakes. A series of swamp lakes occurs along

Turkey Creek where it enters the Sanchez Prairie basin. The preserve's only active bald eagle (*Haliaeetus leucocephalus*) nest has been located in this area since 1994. Another swamp lake is located at the mouth of Maple Branch in the southwestern part of the preserve. Like Sanchez Pond this lake was probably formed from a karst depression and may have a direct connection to the Floridan aquifer. Bromeliad Pond is also a swamp lake and is located south of the previous lake. It is named for the luxuriant growth of air plants (*Tillandsia bartramii*) that adorn the planer-trees ringing the pond.

All the swamp lakes are considered to be in good to excellent condition, although Sanchez and Rookery Ponds may have been impacted by the artificially extended hydroperiods caused by the Deerhaven power plant in the mid-1970s. These lakes are expected to receive few or no additional impacts as long as natural hydroperiods are maintained in the surrounding wetlands and streams.

Blackwater stream. Several blackwater streams occur either partially or wholly within the preserve. These include Turkey, Blues, Cellon, and Moonshine Creeks. In general, these streams begin within swamp systems and then flow through well-defined channels. Near the discharge point, the streams often widen and become braided as they enter floodplain swamps before entering the Floridan aquifer via a sink or swallow. More detailed descriptions of the individual stream systems may be found within the *Hydrology* section of this component.

Turkey Creek has a history of impacts from outside the preserve. Between mid-1972 and the early 1980s, the creek received cooling water flow from a power plant located near its headwaters. The artificially lengthened hydroperiod resulted in the death of many acres of trees within Sanchez Prairie. The creek also passes through or near residential areas and may be prone to erosion or contamination as a result. The creek is considered to be in good condition at present.

The water quality and hydroperiod of Blues Creek may be threatened by a number of potential impacts. The U.S. Fish and Wildlife Service facility adjacent to the preserve periodically releases water from fishponds that may negatively affect the creek, especially if the frequency of release increases. The possibility of accidental escape of exotic fish species is also a concern. Blues Creek also passes directly through a residential subdivision; hence, the potential exists for contamination by fertilizers, pesticides, sewage, silt, and other pollutants. Now the creek is in good condition.

Cellon Creek is known to be impacted directly from several sources, including the cattle ranching operation upstream. Portions of the stream bank have been seriously eroded and water quality is very poor in some stretches. The creek passes near industrial facilities and the University of Florida's Agricultural Experimental Farm near its headwaters. The streambed is known to contain heavy metal contamination. The present course of action is to prevent any disturbance of those sediments. Based on all these factors, the creek is considered to be in poor condition.

Moonshine Creek is located entirely within the preserve and is in very good condition. It has been somewhat impacted by erosion from foot traffic along the public trail system. Runoff carrying pollutants from Millhopper Road may become a concern in the future.

Seepage stream. Numerous seepage streams of varying size and length occur within the preserve. Most if not all of the seepage streams are entirely within the preserve and are in good

to excellent condition. Maple Branch is probably the most developed seepage and ravine system in San Felasco Hammock. Many others exist along the south rim of Sanchez Prairie. Several have well-developed baygall communities around the heads of seeps, while others are located completely within upland mixed forest. The west side of San Felasco Hammock has several areas of seepage near Interstate Highway 75 that are originate along the edges of upland pine forest or sandhill. One seepage area south of Millhopper Road near Interstate Highway 75 is above a borrow pit excavated during construction of the interstate. Although it was probably once a natural seepage area, the soil disturbance has altered it severely. That, along with the presence of numerous fire plow scars and clearcutting in the surrounding uplands in 2001 to suppress Southern pine beetles, has downgraded the condition of the latter seeps to poor.

Aquatic and terrestrial cave. The extents of the aquatic and terrestrial caves within the preserve are unknown since the openings to the surface are relatively small and inaccessible to humans. Caves exist in at least two locations where streams go underground. Blues Creek submerges into a series of small openings within the Big Otter Ravine near the center of the preserve. After passing through Sanchez Pond, the flow from Turkey Creek is channeled into a stream that enters the ground at an opening named Split Rock, also known as Moose's Echo. Since these caves are inaccessible to humans, they are likely to be in good to excellent condition.

Ruderal. Two ruderal areas within the preserve are associated with the construction of Interstate Highway 75. One is a water-filled borrow pit south of Millhopper Road. Although appearing like a natural pond, it does not show up on any aerial photos before the construction of the interstate. The pond located along the shop service road in the northwest part of the preserve receives runoff from Interstate Highway 75 and is significantly larger than it was before the construction of the interstate.

Developed. Very little acreage is developed within the preserve. The only developments are a small parking lot on Millhopper Road; a park residence, a small shop and office complex, a pole barn, and horse stable on the west side of the preserve; and a trail-head parking area in the northwest corner for access to the hiking, equestrian and biking trails north of Sanchez Prairie.

Designated Species

Designated species are those that are listed by the Florida Natural Areas Inventory (FNAI), U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FFWCC), and the Florida Department of Agriculture and Consumer Services (FDA) as endangered, threatened or of special concern. Addendum 5 contains a list of the designated species and their designated status for this park. Management measures will be addressed later in this plan.

San Felasco Hammock Preserve State Park, by virtue of its large size and high diversity of pristine natural communities, contains numerous listed plant and animal species. Some of the significant plant species protected within the preserve include the needle palm (*Rhapidophyllum hystrix*) within Big Otter Ravine. Big Otter Ravine is also the only known location for the San Felasco spleenwort (*Asplenium monanthes*) within the state. This species has not been observed since 1983, however, and may be extirpated. In the sandhills and upland pine forests the coontie (*Zamia pumila*) and woodland poppy mallow are locally common. Many other listed plant species, including several orchids and additional ferns, are also found within the preserve.

The Florida black bear (*Ursus americanus floridanus*) historically occurred within the preserve. Many of the other listed vertebrate species are associated with the sandhill and upland pine forest communities. Years of fire suppression have altered much of this habitat statewide, resulting in

the endangerment of a number of species that depend upon these areas. These species include the Sherman's fox squirrel (*Sciurus niger shermani*), Florida mouse (*Podomys floridanus*), gopher tortoise (*Gopherus polyphemus*), eastern indigo snake (*Drymarchon corais couperi*), short-tailed snake (*Stilosoma extenuatum*), pine snake (*Pituophis melanoleucus mugitus*), and southeastern kestrel (*Falco sparverius paulus*). The gopher tortoises and their commensals are concentrated within the sandhills and upland pine forests that remain in good condition. Where fire exclusion and succession have altered these areas the gopher tortoises have commonly moved into power line rights-of-way.

Listed bird species recorded within the park include several species of herons, egrets, and raptors. Wood storks (*Mycteria americana*) are known to roost and forage in the preserve. The little blue heron (*Egretta caerulea*) is known to nest within the preserve in a mixed species rookery within Sanchez Prairie. These populations are probably not seriously threatened at present, although continued habitat loss outside the preserve and human disturbance may ultimately change that situation. A bald eagle nest is located west of the Turkey Creek bridge.

Special Natural Features

The San Felasco Hammock has long been recognized as an outstanding and unique natural resource. The hammock represents our finest and largest remaining example of mature upland mixed forest, Florida's richest, most diverse and complex ecosystem. In addition, the area contains a richness of natural community types exceeded nowhere else in the state, and thus preservation of the area ensures saving samples of nearly every landscape type in North Central Florida. For these reasons, the San Felasco Hammock Preserve State Park was acquired in 1974 as part of the state's Environmentally Endangered Lands Program, with the solid support and assistance of many local citizens, environmentalists, and politicians.

The upland mixed forest in the preserve represents the climax plant association of this part of Florida.

> "Besides harboring most of the larger far-ranging vertebrates of the region, this community has a distinctive fauna of its own, comprising a diverse array of smaller vertebrates and invertebrates that flourish in the filtered light, high humidity, and damped temperature changes that prevail in such woods…. Delicate crane flies that would quickly dry up in the pine woods outside, here dance with impunity."
>
> - Archie F. Carr, 1973

Although much of the forest here has experienced some selective logging, the broken terrain created by the numerous sinks and ravines, creeks, and steep slopes has kept timbering operations out of several large patches of forest, and these remain as virgin stands, almost completely undisturbed.

Sanchez Prairie, a large elongate karstic solution basin, encompasses several lowland communities, interspersed with patches of flowing open water. One of the rarest plant associations in Florida or anywhere, are the stands of planer-tree and pop ash (*Fraxinus caroliniana*) that dominate several hundred acres of the Turkey Creek floodplain in Sanchez Prairie. These majestic planer-trees in turn harbor a myriad of epiphytic plants.

Among the most visually spectacular features of the San Felasco Hammock are the ravines. Big Otter Ravine is the most dramatic, though several other ravine systems share its interesting attributes. Steep ravine slopes are saturated with seepage moisture, and provide a cool, sheltered

habitat, ideal for many rare species of ferns and vascular plants. Large outcrops of exposed limestone are common in these areas. A number of plant species with a more northerly range thrive on these fragile slopes.

Each of the three major streams on the preserve, Blues, Turkey, and Cellon Creeks, directly enters the Floridan aquifer on the unit by entering a swallow or cave system. Each of these injection points is a spectacular example of karstic phenomena. The importance of protecting the surface water quality is emphasized as local groundwater supplies may easily be tainted by the insurgence of pollutants along with these sinking creeks.

Other significant natural features include the diversity of wetland systems: ponds, basin swamps, marshes, as well as the fine examples of rapidly disappearing upland communities such as sandhill, and in particular, the extensive acreage of upland pine forest dominated by longleaf pine and southern red oak. The incredible diversity of natural communities attests to the unique and active geology of the area, which is in part due to the preserve spanning multiple physiographic zones.

Cultural Resources

Evaluating the condition of cultural resources is accomplished using a three part evaluative scale, expressed as good, fair, and poor. These terms describe the present state of affairs, rather than comparing what exists against the ideal, a newly constructed component. Good describes a condition of structural stability and physical wholeness, where no obvious deterioration other than normal occurs. Fair describes a condition in which there is a discernible decline in condition between inspections, and the wholeness or physical integrity is and continues to be threatened by factors other than normal wear. A fair judgment is cause for concern. Poor describe an unstable condition where there is palpable, accelerating decline, and physical integrity is being compromised quickly. A resource in poor condition suffers obvious declines in physical integrity from year to year. A poor condition suggests immediate action to reestablish physical stability.

The Florida Master Site file lists 37 sites within the Preserve (see Addendum 6). Twenty-six sites have only prehistoric cultural remains, five sites are mixed component sites and six sites are historic in nature. The C.A.R.L. Archaeological Survey (Wheeler and Newman 1997) has recently assessed the archaeological resources of the park. Twenty new sites were identified in that survey. Many previously known sites, located in the mid 1950s, were revisited by Wheeler and Newman. Monitoring projects associated with mitigating construction projects within the preserve and other surveys have resulted in the identification of several other sites (Wheeler 1998).

The cultural periods represented by sites within the preserve span all of the major cultural periods except the Seminole Indian period. However, there is documentary evidence suggesting that an early battle of the Second Seminole War occurred in San Felasco Hammock, likely within the preserve (Wheeler and Newman 1997). Recovered artifacts represent times as distant as the Paleo-indian period (10,000 B.C. – 8,000 BC) to the 20th Century. The majority of prehistoric sites in the preserve are artifact scatters and possible habitation sites, some being dominated by lithics, while others include pot sherds. One prehistoric mound is known from within the preserve boundaries (AL3403). This mound site has been looted in the past, however, park staff has noted no recent disturbances. Another site that has been looted in the past is AL461.The banks and bed of Maple Branch, as well as the surrounding uplands, have been vandalized. Currently, looting activities have ceased. At least one prehistoric quarry site is also known (AL155). Many of the prehistoric sites were discovered as early as the 1950s because of human caused disturbance, i.e., roads, firebreaks, or powerline construction. The preserve staff attempt

to keep disturbances in roads and firebreaks to a minimum.

Historic period sites range from artifact scatters to building remains. These sites cover periods from a possible first European contact site through the territorial period to modern farming operations. Located immediately east of the park boundary the Fox Pond site (AL272) is a Potano Indian village site thought to be associated with the mission San Francisco de Potano (Wheeler and Newman 1997:17-19). This site is within the existing optimum boundary. The mission itself has not yet been located and at least one site within the preserve may be associated with this period and mission operations (AL3396). It is possible that other sites within the Preserve will be associated with the mission. Several sites of former homesteads, thought to date from the first Spanish land grants are located within the preserve (AL310, AL3413, AL3417, AL3412, and possibly AL3127). It is thought that these homesteads were associated with a small settlement called Spring Grove. Postal records indicate that Spring Grove existed for about 11 years from about 1829 to 1840. The Spring Grove community was apparently abandoned due to conflicts between settlers and Native Americans (Seminoles). Resettlement of lands within the preserve probably occurred in the late 19th and early 20th Centuries. Remnants of tung nut plantations for the production of tung oil, timbering operations, cattle operations, at least two still sites and other agricultural endeavors can be found throughout the Preserve. Sites from this period include AL3397, AL3421, AL3422, AL3401, AL3411, and AL3398. Most historic period sites are in good condition, although a still site, AL3397, has been heavily collected in the past and site AL310 shows evidence of past looting (Wheeler and Newman 1997).

Undocumented resources undoubtedly occur within the Preserve. Several old roads, whose exact route are yet undocumented including Ray's Trail (Florida Santa Fe Trail), passed through the preserve. Remnants of the Second Seminole War battle fought within the Preserve are likely also present. A wood frame structure known locally as the tung nut building is located in the uplands at the edge of an old field. The structure is composed of a large loading dock/ sorting / storage area and an enclosed room, covered by a gable roof covered in standing seam sheet metal. The structure was apparently used as a transfer depot for tung nuts, although the operations that took place there are not well understood. The tung industry was well established in Alachua County by the mid 1930s (Wheeler and Newman 1997). The tung nut building retains stability and integrity, however some dry rot is present and an added roof segment is in Poor condition. Most of the structure can be considered in fair condition. Park management should monitor and maintain this structure, particularly since visitor use of the area has increased with the opening of multi-use trails in the area.

RESOURCE MANAGEMENT PROGRAM

Special Management Considerations

Timber Management Analysis

Chapters 253 and 259, Florida Statutes, require an assessment of the feasibility of managing timber in land management plans for parcels greater than 1,000 acres if the lead agency determines that timber management is not in conflict with the primary management objectives of the land. The feasibility of harvesting timber at this park during the period covered by this plan was considered in context of the Division's statutory responsibilities, and an analysis of the park's resource needs and values. The long-term management goal for forest communities in the state park system is to maintain or re-establish old-growth characteristics to the degree practicable, with the exception of early successional communities such as sand pine scrub and coastal strand.

Five timber stands within the preserve have been assessed as potential timber harvest sites (see Addendum 7). Most of these stands are in sandhill and upland pine forest natural communities. The goal of the timber harvesting would be to restore park-like stands of longleaf pines with an open understory containing scattered fire-adapted oaks and other woody plant species, and a groundcover dominated by native grasses and forbs. Longleaf pine growth and regeneration will be favored. Timber harvesting will selectively remove offsite loblolly pines and offsite hardwoods to progress towards the long-term goal of restoring a longleaf pine and wiregrass dominated community with old growth characteristics.

A long-term goal of 60-70 ft2/ac basal area per acre (BAA) will favor longleaf growth and regeneration, stimulate herbaceous groundcovers, and provide enough light fuels (needles) to carry fire. Furthermore, restoring these stands to a BAA of 60-70 ft2/ac through thinning will promote forest health and help protect against severe southern pine beetle infestations by removing the more susceptible loblolly pines.

Additional Considerations

Wilderness zone designation and carrying capacities. San Felasco Hammock Preserve State Park was originally proposed for acquisition because it contains not only the largest remnant of high quality upland mixed forest within the region but also a fine example of the rare southern red oak (upland pine) forest. It also harbors an incredible diversity of natural communities and is relatively pristine, considering its close proximity to a major urban area. The initial purchase was through the Environmentally Endangered Lands Program (EEL); the express purpose of the acquisition was to preserve San Felasco Hammock's valuable natural and cultural resources.

San Felasco Hammock is a haven for many plant and animal species that fare poorly outside large, undisturbed tracts of forest. Certain vertebrate species require vast acreages of undisturbed forest to survive and reproduce. Wide-ranging species like the bobcat persist within San Felasco Hammock. Several local bird species are known to require undisturbed, contiguous woodlands for successful reproduction. Noss (1988) showed that hooded warblers, red-eyed vireos, Acadian flycatchers, and wood thrushes all breed in San Felasco Hammock and avoid habitat edges, preferring the more remote areas of the preserve. Research at the Ding Darling National Wildlife Refuge on Sanibel Island, Florida, has shown that human presence can have negative impacts on bird species (Klein, 1993). Even infrequent human disturbance can impact certain animal species, especially during the breeding season.

Unfortunately, the Cities of Gainesville and Alachua have been rapidly expanding toward the preserve and threaten to engulf it with development. As the human population near the preserve has increased, visitor use has also increased correspondingly. Some of the very attributes that make the preserve so unique and invaluable may now be threatened. Even within current restricted areas in the preserve, visitor use impacts are readily apparent. The large expanse of the preserve and the remoteness of many areas make it very difficult to enforce restricted area designations. Restricted areas such as Big Otter Ravine and Split Rock contain several rare or endangered plant species that are relatively cryptic. These areas have been damaged by unauthorized footpaths in the past and have always been vulnerable to erosion on the steep slopes. Many smaller sites, just as fragile as Big Otter Ravine, are scattered throughout the preserve, particularly in seepage areas and steeply sloped ravines.

In some areas of the preserve, looting of artifacts has occurred, in part due to the few restrictions placed on visitor access. The Maple Branch area includes a significant archaeological site that has been looted repeatedly, with severe erosion resulting in the ravine and stream. Numerous other areas within the preserve's stream systems contain artifacts that can easily be removed or

disturbed.

In order to protect the unit's resources from overuse, it will be necessary to seek a proper balance between recreational use and preservation. Carrying capacities will need to be set for all areas of the preserve. Relatively low carrying capacities should be assigned for the more sensitive portions of the preserve, while activity that is more intensive should be concentrated in the less sensitive areas. Accordingly, the center of the preserve where most of the sensitive areas are located, namely that portion of the preserve located north of Millhopper Road and south of the north rim of Sanchez Prairie, is designated a wilderness zone as defined in chapter 15, paragraph 14.1 of the Division of Recreation and Parks, Operations Policy Manual. San Felasco Hammock meets the criteria for a wilderness zone. The west boundary of the zone parallels Interstate 75, while the east boundary is the current property line at the University of Florida Agricultural Experiment Station.

Visitor use in this core area is controlled through the establishment of carrying capacities based on traditional limits such as parking lot size and number of public access points. Staff-guided tours allow public access to the few areas that have traditionally been restricted. Although the core of the preserve continues to face increased recreational pressure, other less fragile areas of the preserve have been developed for increased recreational access. These areas, encompassing several thousand acres, consist of large expanses of the preserve north and east of Sanchez Prairie, including the University of Florida Foundation tract, as well as the tract south of Millhopper Road. These have been developed to accommodate an increased level of hiking, jogging, and other passive recreational activities. Recreational opportunities within the preserve were expanded in 2001 when equestrian, biking, and hiking trails were opened on the University of Florida Foundation tract and portions of the original preserve north and east of Sanchez Prairie. Because of the steady increase in use of this trail system, staff will closely monitor the trails for soil erosion and watch for any water quality impacts near Cellon Creek. A carrying capacity for these trails will need to be developed and enforced.

Responsible carrying capacities for visitor use in the more sensitive parts of the preserve must be established and enforced to prevent further degradation through increased use by a burgeoning population. The unique, high quality experience that visitors to the preserve have come to expect can only be maintained if appropriate limits are placed on use. The spirit of the public campaign to purchase San Felasco Hammock during the 1970s was to protect and preserve this unique and special place for future generations to enjoy. Keeping a portion of the unit as a wilderness zone will help to ensure that the fragile core of the preserve is properly protected, while more resilient portions of the preserve experience increased public use.

Southern pine beetle outbreaks. A combination of past land use patterns, drought, and other natural stresses created favorable conditions for southern pine beetle outbreaks in Alachua County. Historical removal of longleaf pines in many areas, along with fire exclusion, resulted in a gradual shift from longleaf to loblolly pine as the dominant tree species in much of the upland pine forest. During 1994-1995 and again in 2001, San Felasco Hammock sustained significant losses of its pine tree overstory due to the southern pine beetle infestation. The presence of dense stands of mature loblolly pines on abandoned agricultural fields within the preserve allowed the southern pine beetle outbreak to reach epidemic proportions, especially in 2001. Over 25,000 of the preserve's pines were lost in 1994-1995 alone, with most losses occurring in upland pine forest areas. Approximately 250 acres were clear-cut at that time, and nearly all parts of the preserve were affected to a lesser extent by group selection harvesting of impacted pines and the cutting of pine-free buffer zones around beetle-infested areas. The 2001 southern pine beetle

outbreak resulted in the loss of an additional 15,000 trees covering a total of 175 acres. If the ability to conduct effective prescribed burns on these sites is lost, the areas will be susceptible to invasion by off-site, non-fire adapted plant species.

Upland natural community restoration. San Felasco Hammock faces several challenges in the restoration of its upland natural communities. Large expanses of improved pasture that were once upland pine forest have been cleared of native vegetation and cultivated for up to 150 years. Other sites have been more recently impacted by outbreaks of the southern pine beetle and retain few adult pines. Previous disturbances and fire suppression have left these areas with only scattered patches of native groundcover. Restoration efforts are being directed at the pine beetle clearcuts since these areas retain more native components and are adjacent to undisturbed areas. These disturbed areas require intervention sooner than the less dynamic pasture areas that are unlikely to degrade any further in the short term. One of the initial goals in upland pine restoration is the resumption of a more natural fire regime. Creation of a continuous fuel bed is a critical part of the process.

Restoration of the pine beetle areas emphasize both groundcover and overstory restoration. Longleaf pine tublings have been planted in several of the impacted areas. If necessary, groundcover restoration will be accomplished using plugs of wiregrass in conjunction with direct seeding using seeds harvested from local upland pine or sandhill areas. Preparation of a receptive seed bed usually requires prescribed fire. In many cases this is not possible due to a discontinuous fuel bed. Mechanical raking or light disking of the soil surface can be used to prepare the seed bed where burning is not possible. Previous groundcover restoration efforts in pine beetle clearcuts at O'Leno State Park have proven to be very encouraging. One of the great benefits of direct seeding, in addition to the lower cost, is that the seed mix includes a broad variety of native groundcover species as well as the dominant wiregrass. Control of offsite hardwood species is a critical component in these restoration efforts. Loss of the pine canopy stimulates hardwood growth to the detriment of groundcover species and seedling longleaf pines. Selective herbiciding of hardwoods has been necessary to reduce their dominance in the clearcuts.

Pasture restoration is a more difficult proposition since these areas have been cleared of native vegetation for many years. Past land use practices such as disking, tung nut orchards, fertilization, and livestock ranching may have altered the basic characteristics of the upland pine soils. Removal of the pasture grasses can be accomplished through a combination of repeated disking and herbicides. However this disturbance often stimulates the germination of weed species in the seed bank. It is likely that additional herbicide applications will be required before native groundcover species can be effectively restored. While the replanting of longleaf pines is relatively easy, it is not a high priority since the presence of the pines would make removal of the pasture grasses using heavy machinery difficult. Groundcover restoration will again make use of containerized wiregrass plugs, and direct seeding of a variety of groundcover species using a locally collected seed mix.

Management Needs and Problems

San Felasco Hammock Preserve State Park has many unique resources, the majority of which are still in good condition. This is particularly true for natural resources such as the upland mixed forest, much of the upland pine forest, the floodplain forest, basin swamps, and karst ravines. The preserve does, however, have some resource management needs and problems that should be addressed. The most obvious of these needs and problems are described below:

Natural Resources

1. Upland natural communities have been degraded by conversion to pasture.

A. Including the recent addition to the north, over 1,100 acres of the preserve have been cleared and converted to pasture. These areas are in need of restoration to the upland pine community that once occurred on these sites. Exotic plant species are common in these areas, while native species are few.

B. Additional research is needed into efficient methods of removal of pasture grasses and restoration of native herbaceous species in upland pine forest and other fire-maintained uplands.

2. Upland natural communities have deteriorated due to fire exclusion.

A. Fire had been absent from the majority of the preserve's fire-dependent upland natural communities for many decades prior to state acquisition of the property. After the purchase, an active prescribed burn program was implemented and significant progress toward recovery has been made. There are still some uplands, however, where succession threatens to alter the natural species composition due to offsite pine and hardwood species. These areas may have endured a longer period of fire exclusion prior to acquisition or else are inherently difficult to prescribe burn due to smoke management concerns and recent weather conditions and thus have not yet been restored adequately under DEP management.

B. Access to the northeast portions of the preserve for prescribed burning and other management needs is difficult due to the lack of an adequate bridge over Turkey Creek.

3. Southern pine beetle infestations have caused the loss of mature pines of all species, and beetle control measures have created clearcuts.

A. Restoration of pine overstory and herbaceous layers is needed in upland pine forest and mesic flatwoods areas impacted by southern pine beetles. Upland mixed forest areas were also impacted by southern pine beetle control efforts.

B. Recovery of the upland pine forests and mesic flatwoods communities that were clearcut will require written restoration plans to guide the process.

4. The water quality and hydrology of the creeks in the preserve have been altered by outside influences.

A. Land use and development along Blues, Turkey, and Cellon Creeks have had negative impacts on the creek systems within the preserve with respect to water quality (nutrient loading, introduction of heavy metal contaminants) and hydrology (changes in the hydroperiod of Sanchez Prairie due to artificial increases in creek flow). Each of these creeks is a stream-to-sink system, with all surface discharge within the preserve directly entering the Floridan aquifer. Water quality deterioration in these creeks will result in localized groundwater pollution. Given the rate of development of the northwest Gainesville area, impacts on the creeks' water quality and hydrology are likely to be cumulative.

B. Continuous stage recorders may be needed for Blues, Turkey, and Cellon Creeks to monitor flows.

C. The Cellon Creek system may require extensive hydrological restoration to restore natural flow regimes.

5. The preserve boundary is inadequately protected in some areas due to a lack of fencing.

A. Much of the fencing around the preserve is dilapidated, allowing easy access to dogs and other non-native animals including feral hogs, as well as to human visitors who are avoiding authorized entry points. Some areas of the preserve remain unfenced, particularly on the east side.

6. Natural communities have been disrupted by invasive exotic species.

A. Cogon grass has invaded at least three upland areas and wild taro has colonized the Blues

Creek and Chert Swamp floodplains. Several other exotic plant species abound within the preserve, particularly in the recent acquisition to the north. Tropical soda apple and Chinese tallow tree are some of the more serious threats. Other threats include coral ardisia, mimosa tree, and skunk vine.

B. Armadillos are causing extensive erosion problems and are a significant nest predator of native reptiles. Since 2000, feral hogs have been increasing rapidly throughout the preserve and have impacted rare plant populations in wetland areas.

7. Residential and commercial development near the park may negatively impact park resources.

A. Development adjacent to the park fragments upland habitat and reduces the available habitat adjacent to the preserve.

B. Nearby development inhibits the prescribed burn program by reducing the available options for conducting burns due to smoke management concerns.

C. Development within watersheds and particularly along creeks that enter the preserve will adversely impact water quality and natural hydrology.

8. Interior cross fencing is impeding natural movement patterns of animals.

A. Many miles of interior cross fencing, in place at the time of acquisition of the preserve, remain intact. This interior fencing impedes movement of many animal species, and causes occasional mortality.

9. Artificial soil disturbances have altered natural topography and hydrology.

A. Several areas within the preserve have been scarred by fire plows used during wildfire suppression activities in the past. Changes in the natural drainage patterns have resulted. In some locations, ditching has also altered natural drainage. Certain roads within the preserve may impede sheet flow.

10. Visitor use is causing degradation of certain highly sensitive natural areas.

A. Unchaperoned visitor use has resulted in the creation of unauthorized footpaths into some of the preserve's more sensitive natural areas and ravine systems. These footpaths then expose the areas to additional foot traffic, which can lead to erosion problems and contribute to the loss of rare herbaceous species on sensitive ravine slopes. As the population of northwest Gainesville continues to expand, increases in visitor use of the preserve are inevitable, and impacts associated with visitation are expected to increase proportionately.

11. Designated species within the preserve require periodic monitoring.

A. Periodic surveys of gopher tortoise burrows, Florida mice, and other designated animal species would provide additional measures of success of the habitat restoration efforts within the preserve.

B. Certain designated plant species within the preserve require periodic monitoring to assess population status and detect negative impacts.

12. Certain taxa are underrepresented or lacking in existing animal and plant species lists.

A. Several plant taxa, including bryophytes, algae, lichens and fungi, have likely been collected in the preserve and recorded in various herbaria, but are not listed on the preserve plant species list.

B. Several animal taxa, including macroinvertebrates, have likely been collected in the preserve and recorded in various museum collections, but are not listed on the preserve animal species list.

13. The preserve has traditionally been used as a research site by the University of Florida and other institutions.

A. The preserve should be promoted as a research site for the natural sciences without causing undue impacts to the natural and cultural resources.

Cultural Resources

1. Significant cultural sites are located on land outside the current boundary of the preserve.
2. Archaeological sites have suffered degradation in the past, erosion and newly developed recreational activities on the north addition have the potential to degrade resources.
   - **A.** The aboriginal site along Maple Branch has experienced looting within the past 10 to 20 years. Several other sites have also historically been looted. With the opening of the north end of the preserve, opportunity is increased for destructive activities within archaeological sites.
   - **B.** Newly created bicycle and horse trails traverse areas near several archaeological sites along steep topographical gradients. However, recent inspections indicate that trails are currently having little effect with regard to erosion exposing cultural materials.
   - **C.** Feral hogs within the preserve have rooted within several known archaeological sites accelerating natural erosional processes.
   - **D.** Natural erosional processes continue to affect certain archaeological sites.
3. The tung nut depot is in fair to poor condition and little is known about its past uses.
   - **A.** No documentary evidence exists to indicate the age or use of the tung depot.
   - **B.** A new segment of recreational trail passes by the tung depot building.
   - **C.** There is currently no designated use for the depot building.
4. Although the park cultural resources filing system is fairly complete, it does not yet meet the system recommended by the Bureau of Natural and Cultural Resources (BNCR). The park has no formal collection, nor does the park have a scope of collections statement that would formalize the policy of not collecting artifacts.

Management Objectives

The resources administered by the Division are divided into two principal categories: natural resources and cultural resources. The Division's primary objective in natural resource management is to maintain and restore, to the extent possible, to the conditions that existed before the ecological disruptions caused by man. The objective for managing cultural resources is to protect these resources from human-related and natural threats. This will arrest deterioration and help preserve the cultural resources for future generations to enjoy.

Specific objectives for managing the park's natural and cultural resources are as follows:

Natural Resources

1. Continue restoration of upland natural communities that were converted to pasture.
   - **A.** Non-native grasses will be eradicated from old pasture areas that were formerly upland pine forest as technology and funding permit. Pastures will be replanted with longleaf pine, appropriate hardwood species, and native herbaceous species using a combination of containerized plants and direct seeding techniques. Periodic prescribed fire will also be an essential part of the restoration process. Mowing may be used to reduce invasion by offsite hardwoods and weedy herbaceous species.
   - **B.** Research into upland restoration techniques will continue in the pasture areas. Additional research on restoration of natural communities on pastureland will be encouraged. Current study plots will continue to be monitored.
2. Place a high priority on burning fire-dependent natural communities regularly, re-introduce fire to fire-excluded areas, and if necessary, consider thinning and removal of offsite pines and hardwoods from fire-dependent natural communities.
   - **A.** The prescribed burning program needs to achieve its annual burn plan objectives consistently if restoration and maintenance of fire-dependent natural communities are to be successful. In order to accomplish difficult burns, top priority must be given to

conducting burns whenever windows of opportunity occur.

B. Continue using mechanical and chemical methods to remove offsite hardwood and pine species from fire-dependent natural communities. Explore viability of using commercial timbering operations to thin or remove offsite hardwoods and loblolly pines from sandhills, upland pine forest, and mesic flatwoods natural communities.

C. Staff will pursue funding for a bridge over Turkey Creek to provide reliable access to the northeast portion of the preserve for prescribed burning and other management needs.

3. Restore natural communities in areas clearcut during southern pine beetle outbreak.

A. Restoration of the most severely impacted areas will emphasize reestablishment of the longleaf pine overstory and improvement of the disturbed herbaceous ground cover. The objectives are to restore the natural species composition and natural fuel sources of the upland pine forest, sandhill, and mesic flatwoods sites. Upland mixed forest areas impacted by the cutting of pines will be allowed to regenerate naturally as hardwoods and other non-fire adapted plant species expand into the disturbed areas.

B. Restoration plans for the upland pine forest and mesic flatwoods clearcuts will be developed to provide guidance in the recovery of these natural communities.

4. Continue monitoring the hydrology and water quality of the preserve's major creeks; document any major impacts and take corrective measures where necessary.

A. The current monitoring projects for Blues, Turkey, and Cellon Creeks need be continued indefinitely. This will require close coordination with other divisions within DEP, with other agencies such as the SRWMD, and with the county's Environmental Protection Department. If significant problems are detected, the appropriate agency needs be notified so that corrective measures can be taken.

B. Staff will assess the feasibility of installing continuous stage recorders in Blues, Turkey and Cellon Creeks to monitor flows. Assistance will be sought from other agencies.

C. Staff will pursue funding to determine the degree of hydrological restoration that is needed in the Cellon Creek system, and, if necessary, to develop professional designs for potential restoration projects.

5. Erect adequate boundary fencing.

A. Where necessary, adequate boundary fencing will be installed in those portions of the preserve that were recently re-surveyed or that lack adequate fencing. This fencing is necessary for protection of the preserve's natural and cultural resources. In some areas, the establishment of a clear boundary and boundary road will allow the closure of patrol roads that currently traverse environmentally sensitive areas.

6. Remove invasive exotic plants and animals.

A. Highest priority will be given to the eradication of invasive exotic plants such as cogon grass, tropical soda apple, Chinese tallow, and wild taro. Other noxious exotic plants including skunkvine, Japanese climbing fern, perpetual begonia, mimosa, chinaberry, coral ardisia, and tung tree will also be actively removed. Funding will be sought from the Division budget and from Bureau of Invasive Plant Management grants.

B. The current policy of removing armadillos as opportunity permits will continue. Feral hog removal and adequate fencing to slow the movement of hogs into the preserve will be given the highest priority.

7. Protect adjacent natural areas through outright acquisition, education, and close monitoring of proposed land use changes.

A. To ensure the continued survival of species within the preserve, additional natural areas within the preserve’s Optimum Boundary will be aggressively pursued and acquired before they are subjected to development. Particularly valuable pieces include parcels of wooded upland pine forest to the north and east, and the Fox Pond property to the southeast.

B. Local residents will be contacted and instructed about the importance of fire in preserving natural communities. Interpretation and education about prescribed fire will be vital to our continued use of it as a management technique on state lands.

C. There will be a continual review of comprehensive plan amendments and land development regulations that may govern proposed land use changes on properties adjacent to or in close proximity to the preserve. Division comments regarding proposed land use changes will be formally presented to appropriate governing bodies and agencies.

8. Remove old interior fencing.

A. As opportunity permits, the many miles of unnecessary old interior fencing will be removed. This type of work may be best accomplished by utilizing volunteers or inmate work crews.

9. Restore damage caused by artificial soil disturbances.

A. Fire plow scars within the preserve will be restored where feasible to the natural contour, especially where drainage patterns have been altered. Drainage ditches will be restored if they are impacting the hydrology of natural areas. Where possible, roadways will be removed, modified, or culverted to avoid impeding natural drainage patterns, especially sheet flow.

10. Minimize the degradation of sensitive natural areas attributable to visitor use.

A. To minimize visitor damage to sensitive natural areas such as ravines and steep slopes a multi-faceted approach is needed, including education of visitors during staff-guided activities, increased use of interpretive signage, and institution of more frequent staff patrols. Most importantly, the core of the preserve north of Millhopper Road is designated a wilderness zone as defined in chapter 15, paragraph 14.1 of the Division of Recreation and Parks, Operations Policy Manual. Visitor uses in the wilderness zone will remain restricted to pedestrian traffic and guided horseback and bicycle tours on designated trails.

11. Continue to monitor designated species within the preserve.

A. Continue to survey and monitor designated animal species.

B. Conduct periodic surveys of certain designated plant species in cooperation with other researchers.

12. Continue to expand plant and animal species lists.

A. Request herbarium and other records for plant taxa not well represented in existing plant species list, particularly bryophytes, algae, lichens, and fungi.

B. Request species lists from existing collections for animal taxa that are underrepresented in existing animal species list, particularly macroinvertebrates.

13. Promote the use of the preserve for research in natural science fields.

A. Generally encourage research in natural science fields such as community ecology, restoration ecology, wildlife ecology, plant ecology, limnology, hydrology, geology, and soils.

Cultural Resources

1. Continue to pursue purchase of properties containing significant archaeological resources.

A. Sites thought to be associated with a Spanish and Indian mission exist just outside the preserve's southeastern corner. Purchase of this property is being pursued in order to protect the site from development or destruction.

2. Continue to protect archaeological sites from vandalism, unauthorized digging or collecting, erosion, or other forms of encroachment in accordance with Florida Statutes.

A. Continue to patrol sites regularly to monitor for unauthorized activities, especially sites with a history of vandalism, natural erosion, hog damage or sites considered significant.

B. Take steps to reduce feral hog populations within the preserve.

C. Monitor segments of horse and bicycle trails currently routed near or through archaeological sites for erosion to ensure that archaeological sites are not damaged by

recreational activities. Re-route or close damaging segments of trails.

D. Record unrecorded resources as they are discovered.

3. Stabilize and research the tung depot.

A. Research use and age of the tung depot. Document and if appropriate record the depot building as an historical site.

B. Monitor the depot building for vandalism since visitor activities will be increased in its vicinity.

C. Investigate possibilities for adaptive reuse of the tung depot building.

4. Organize, maintain, and safeguard cultural resource files and implement collections management policies in Chapter 16 OPM.

A. The park will adopt a filing system similar to that recommended by BNCR.

B. Maintain duplicate copies at the District Office for recovery in the event of destruction of park records.

C. With the assistance of BNCR, develop a Scope of Collections Statement and a collection management plan that emphasizes a policy of not collecting or only collecting for interpretive purposes.

Management Measures for Natural Resources

Hydrology

San Felasco Hammock Preserve State Park, by virtue of its location on the escarpment of three distinct topographic regions, is hydrologically unique. The diversity of the surface and subsurface topography, and consequently the hydrology of the region, is a reflection of the cumulative changes through eons of time to the underlying geologic structure, by the effects of sea level rise and fall, by the weathering of rocks, and by the development of soil.

By far, the greatest concern with the hydrology of the preserve involves the streams that originate outside the preserve and discharge to the groundwater supply within the preserve. These streams, Blues, Turkey, and Cellon Creeks, flow through various types of development before entering the preserve. Stormwater runoff from several residential housing developments directly impacts Blues Creek. Periodic discharges from the U.S. Department of the Interior, National Fisheries Research Center also affects Blues Creek. This facility was built on the headwaters of an unnamed tributary of Blues Creek. Turkey Creek is impacted by a municipal power plant located in its headwaters and by drainage from several subdivisions before entering the preserve. During the late 1970s, the power plant discharged large quantities of cooling water into Turkey Creek. This changed the hydroperiod of Sanchez Prairie by creating abnormal flooding conditions for an extended period, resulting in the mortality of the planer-tree/pop ash community adjacent to Sanchez Prairie. In order to correct the situation, the utility built cooling ponds, again in the headwaters to Turkey Creek, to treat the thermal effluent. Cellon Creek receives discharges from light industry, residential development, a large research complex, cattle pasturing, and highways. Significant reaches of the stream bottom sediments are contaminated with heavy metals. In addition, the dredging of canals, creation of berms, and impounding of the flow altered the creek and adjacent wetlands.

Activities outside the preserve have caused changes in the historic hydroperiod and water quality of the stream courses within the preserve. Changes in the biological community structure and functioning of these systems can be expected as stream characteristics are modified. Routine monitoring of water quality, hydroperiod and groundwater dynamics is necessary to determine the effect of these changes on the surface and subterranean ecosystems. Impacts to streams associated with land use changes will continue to intensify as the Cities of Gainesville and Alachua encroach upon the preserve. Efforts should be taken to improve the condition of all

streams entering the preserve since, collectively; they provide significant recharge to the Floridan aquifer.

Within the preserve itself, the aquatic systems appear to be in relatively good condition with minor impacts associated with the operation of the preserve. An exception to this is Cellon Creek. The creek was fouled by cattle wastes and bank erosion from a heifer feedlot operation located on the new addition prior to and just after state acquisition. Alterations made to Cellon Creek in the form of ditch and berm construction, though not a priority will be restored to the original contours if feasible. A few of the roads in the preserve have minor problems with erosion and may cause a certain amount of siltation to streams and sinkholes during heavy storm events. In situations such as Twin Creeks Road, the road has been abandoned, but the former creek crossings may require additional restoration. Stormwater drainage to sinkholes and other depressions will be identified and corrections made. Currently restricted areas, such as Big Otter Ravine, should remain closed, as there has been considerable recovery of eroded areas.

Management will comply with best management practices to maintain or improve the existing water quality on site and will take measures to prevent soil erosion or other impacts to water resources.

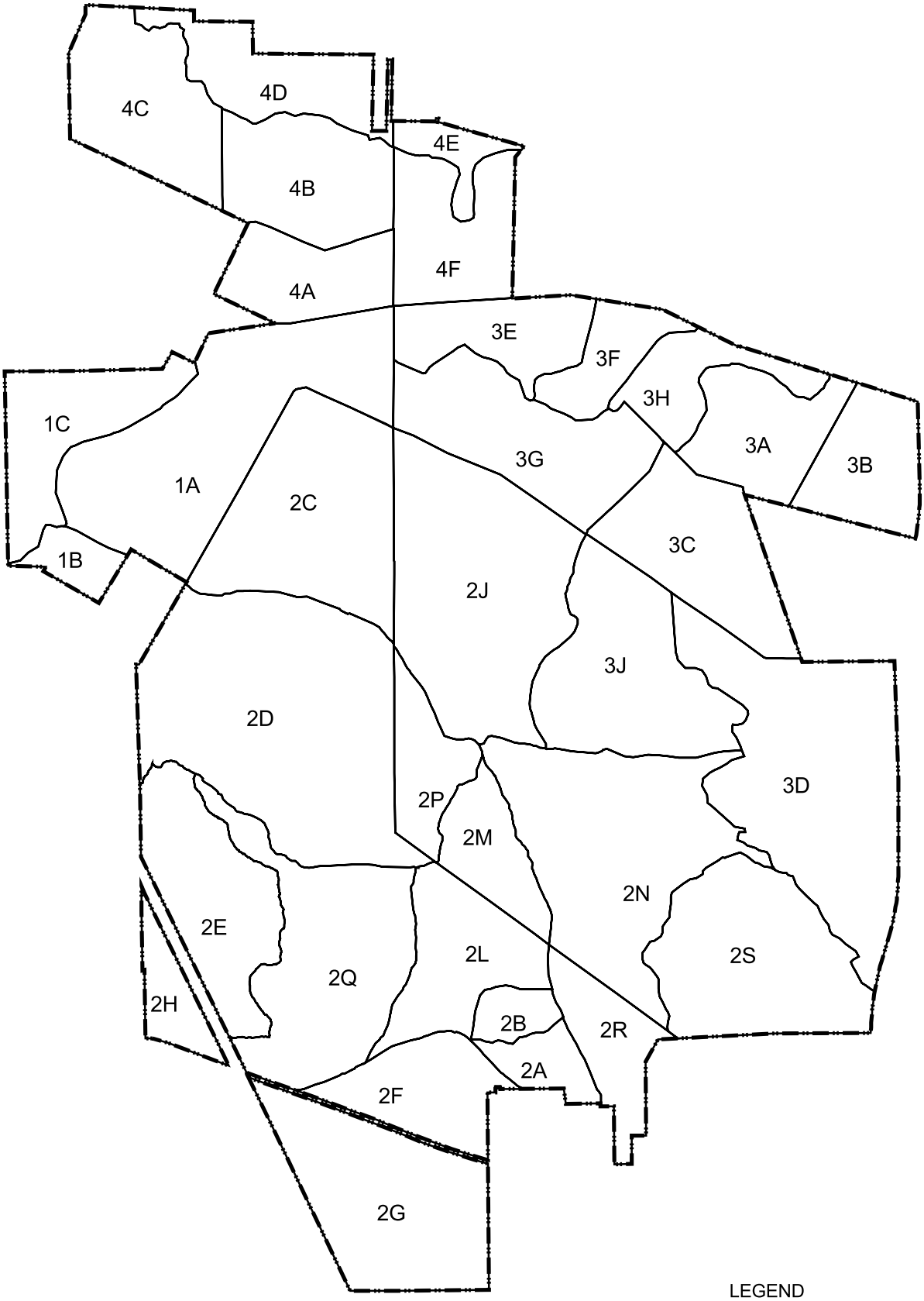
Prescribed Burning

The objectives of prescribed burning are to create those conditions that are most natural for a particular community, and to maintain ecological diversity within the unit's natural communities. To meet these objectives, the park is partitioned into burn zones, and burn prescriptions are implemented for each zone. The park burn plan is updated annually to meet current conditions. All prescribed burns are conducted with authorization from the Department of Agriculture and Consumer Services, Division of Forestry (DOF). Wildfire suppression activities will be coordinated between the Division and the DOF.

San Felasco Hammock Preserve State Park contains a significant amount of burn habitat (see Burn Zones Map). Natural communities within the park that are naturally maintained by fire include upland pine forest, sandhills, mesic flatwoods, and basin and depression marshes. The preserve also includes natural communities, such as domes and basin swamps that are dependent on intermittent fire.

Fire-return intervals follow those generally recommended in the Guide to Florida Natural Communities (FNAI/FDNR 1990). Sandhills and upland pine forests should be burned every 2 to 5 years with upland pine forest burning somewhat less frequently than the sandhills. Mesic flatwoods ideally should be burned every 1 to 8 years, although patchy or low fuel conditions may prevent shorter fire return intervals during the restoration phase. Fire return intervals for marsh systems are quite variable depending on water levels and the frequency of fire in surrounding communities. Natural fires in basin and depression marshes often consumed some of the accumulated peat deposits during drought periods. Such fires are difficult to mimic with prescribed fire due to smoke management concerns.

Most of the 34 zones in the preserve contain significant burn habitat. Firebreaks consist of existing features such as patrol roads, trails, and park boundary lines, as well as natural firebreaks such as mesic woods or watercourses. Construction of additional firebreaks, other than temporary hand or wet lines, is discouraged, and will occur only after a thorough review of all options. Where significant archaeological sites occur, soil disturbance in the preparation of firebreaks will be minimized. Careful planning and execution of prescribed fires is essential due to the proximity of Interstate Highway 75, U.S. Highway 441, and State Road 232, along with



SAN FELASCO HAMMOCK PRESERVE STATE PARK

Prepared by:
Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

BURN ZONE MAP

numerous residential communities.

The zones northwest of Sanchez Prairie are comprised of a combination of old pasture and overgrown upland pine forest. Prescribed fire will be an integral part of the restoration of the extensive old pasture and upland pine forest areas.

Much of the burn habitat is included in the southwestern part of the preserve. This zone includes the sandhills and upland pine forest on the west side, in the center of the unit, and the sandhills, upland pine forest, depression marsh, and mesic flatwoods that occur towards the south of the unit. The majority of this habitat is in fair to good condition. Prior to the outbreaks of southern pine beetles, the main impact on this area was several decades of fire exclusion before the property was acquired. Significant progress towards restoration had been made in most of the zones. The clearcuts and selectively cut over areas that resulted from southern pine beetle control efforts require special fire management to account for logging slash and to prevent invasive hardwoods from expanding into the disturbed areas. Prescribed fire is the most effective restoration tool in most of these impacted areas. However, some of these areas may require other restoration methods such as offsite hardwood removal and thinning of remaining loblolly stands to reduce the threat of southern pine beetles, release longleaf pines, and stimulate herbaceous growth. The most difficult zones to burn are those immediately along Interstate Highway 75. These require a very narrow burn prescription due to smoke management concerns. Prescribed burns cannot be conducted in these tracts during variable or easterly wind conditions. Top priority needs to be given to burning these areas when conditions permit since appropriate burn days are so restricted.

Old pastures and overgrown upland pine forest areas dominate the burn habitat in the northeastern portion of the preserve. Selective cutting of pines for control of southern pine beetles has also affected these areas. Burning in the old pastures is coordinated with re-forestation efforts. The more overgrown forested areas require some non-lightning season burning to reduce fuel levels.

Late winter and early spring burns are often more successful in penetrating overgrown areas when canopy trees have lost their leaves, fuels are drier and burn better since more sunlight reaches the forest floor. The ultimate goal, however, is to restore natural lightning season burns to all zones.

The University of Florida Foundation Addition at the north end of the preserve consists of pastures and upland pine remnants. Prescribed fire and haying of selected areas are used to maintain the pastures free of invasive woody plant species until restoration efforts can begin. Fire is also used in the control and elimination of tropical soda apple. Ultimately, the majority of these pastures will be restored to upland pine forest.

Designated Species Protection

The welfare of designated species is an important concern of the Division. In many cases, these species will benefit most from proper management of their natural communities. At times, however, additional management measures are needed because of the poor condition of some communities, or because of unusual circumstances that aggravate the particular problems of a species.

In most cases, the policy of natural systems management will suffice to protect listed species within lands managed by the Division of Recreation and Parks. The maintenance of natural hydrological regimes and fire cycles is essential in preserving and restoring natural communities,

and as a result, preserving those listed species dependent on those communities. Many of the wetlands within the preserve have suffered from altered hydroperiods due to external manipulations of the streams that ultimately discharge within the preserve. Some of these same areas have suffered from soil erosion due to recent foot traffic and motorcycle traffic in the past. Many of the areas most prone to damage from hydroperiod changes and direct human impact are also the preferred sites of several listed plant species. Big Otter Ravine is a prime example. Increased siltation and discharge within the Blues Creek watershed may have caused the extirpation of the San Felasco spleenwort according to Dr. Daniel Ward of the University of Florida Botany Department. Careful monitoring of the creeks within the preserve, and their headwaters outside the preserve, is essential to detecting and preventing such detrimental events. In addition, sensitive areas like Big Otter Ravine, and other ravine systems and sinks, must be classified as restricted zones within the protected zones of the preserve. Access to these sites must be limited to infrequent ranger-guided tours only.

Rare plants such as the San Felasco spleenwort should be carefully monitored. The guidance of local botanists should be solicited in order to identify and protect fragile populations. Additional surveys for listed species should also be encouraged. The recruitment of researchers from the University of Florida and other institutions is encouraged to provide baseline data on the occurrence and status of species. Assistance from FNAI will also be sought to update the rare plant element occurrence records.

At San Felasco Hammock Preserve State Park, the continuation of an active prescribed fire program will benefit many of the listed species that require large tracts of fire-adapted natural communities. As more sandhills and upland pine forests are restored through fire, species such as gopher tortoises, indigo snakes, short-tailed snakes, Florida mice, and southeastern kestrels are expected to increase. Pastures, which will be restored to upland pine forest, are expected to be recolonized from adjacent natural areas.

A Sherman's fox squirrel reintroduction project was initiated in the fall and spring of 1995. The project was a cooperative venture between the Florida Game and Fresh Water Fish Commission (FGFWFC) and the Division of Recreation and Parks and was funded by the Nongame Wildlife Program. Squirrels were trapped from Alachua or surrounding counties and transported to the preserve where they were placed in large holding cages for several days prior to be being released and radio-tracked. Unfortunately, all of the squirrels released eventually dispersed out of the preserve, and the project was curtailed. Fox squirrels have been sporadically sighted within the preserve in the mesic flatwoods along the south boundary, and in degraded upland pine areas in the northwest section of the preserve.

The heron rookery located at Rookery Pond within Sanchez Prairie must be shielded from human disturbance during the nesting season. Visitation to the site should be restricted during April through July. Visitation near the bald eagle nest located near Turkey Creek will be curtailed year-round. Any trails developed in that area will avoid the eagle nest, by following the north boundary line instead of Turkey Creek Road. All guidelines and regulations promulgated by the FFWCC and the USFWS will be followed.

Exotic Species Control

Exotic species are those plants or animals that are not native to Florida, but were introduced because of human-related activities. Exotics have fewer natural enemies and may have a higher survival rate than do native species, as well. They may also harbor diseases or parasites that significantly affect non-resistant native species. Therefore, the policy of the Division is to remove exotic species from native natural communities.

The exotic grass cogongrass (*Imperata cylindrica*) occurs on at least three upland sites within the preserve. This species is particularly invasive and needs to be high priority for removal. Repetitive chemical treatment is necessary and will be followed up with hand removal.

The escaped ornamental plant wild taro (*Colocasia esculentum*) has invaded remote areas along the Blues Creek floodplain and along the southern edge of Chert Swamp in the preserve. This species is particularly invasive as well, but little is known about eradication. Park and District staff applied for and obtained a DEP Pollution Recovery Trust Fund grant to eradicate the wild taro along Blues Creek within the preserve in the mid 1990s. Additional funding has been secured from the DEP Regional Invasive Plant Working Group. The sites have already been treated several times. Eradication of this species is a very high priority before the plant becomes firmly established all along the floodplain.

A large and widespread infestation of tropical soda apple was discovered on the new addition shortly after acquisition. Spread by cattle and other wildlife that eat the fruits, it represents a serious threat not only to the open pastures, but also to the natural communities within the preserve. An eradication program, which includes physical removal, burning, and herbiciding, is currently underway.

Other exotic plants which are invasive and need to be actively sought out and removed include mimosa (*Albizia julibrissin*), Chinese tallow tree (*Sapium sebiferum*), skunkvine (*Paederia foetida*), chinaberry (*Melia azedarach*), Japanese climbing fern (*Lygodium japonicum*), kudzu vine (*Pueraria montana*), Tung oil tree (*Aleurites fordii*), coral ardisia (*Ardisia crenata*), and wax begonia (*Begonia semperflorens*). These species are scattered throughout the preserve. The exotic floating fern, water spangles, cover many of the sinkhole ponds in the preserve, but may not be practical to control without unduly harming water quality. Water hyacinths (*Eichhornia crassipes*) are presently found in Itchy-Bottom Lake, however, control should be possible since they are contained within the lake.

Several hundred acres in the northwestern part of the unit were once planted with tung trees. Though most of the trees were subsequently cleared for pasture, many have come in secondarily along wooded strands, fencerows, sinkholes, and brushy areas. These exotic trees need to be continually removed as they are detected.

The exotic air potato vine (*Dioscorea bulbifera*) has great potential of invading along the Blues Creek floodplain. A sizable colony of the plant occurs on and over the creek just east of the unit boundary. The possibility of reproductive tubers being carried into the preserve by the creek flow is great. An additional colony occurs next to the Hammock II subdivision just south of Millhopper Road. In addition, present within this area are heavenly-bamboo (*Nandina domestica*) and small-leaf spiderwort (*Tradescantia fluminensis*). This area needs be monitored after treatment since once these become established, they are particularly noxious and difficult to eradicate.

By far the greatest threat to natural communities from exotic animals in the preserve is the presence of feral hogs (*Sus scrofa*). In the past, hogs were virtually extirpated from the preserve. Beginning around 1999 feral hogs began dispersing into the preserve. By 2000, they had spread rapidly throughout the Sanchez and Chert Swamp basins. By the end of 2001, they had expanded into the Moonshine Creek system. The damage caused by their rooting activities is well documented, and many rare plant populations in the preserve will be imperiled if the hogs continue to increase. Although efforts have been made to trap and control hogs, the population

increase over the last several years will require a more concerted effort. The removal of feral hogs remains an urgent priority considering the real threat to the preserve's wetlands and upland mixed forests. Formal trapping agreements are in place to supplement staff efforts. Assistance from the Bureau of Park Patrol will be requested to determine the source of these animals that appear to have been released on private lands outside the preserve, possibly northeast of the preserve. Fencing will be replaced along the northern boundary of the preserve if necessary to prevent further immigration of hogs from adjacent undeveloped lands.

There are relatively few other exotic animals in the preserve. Nine-banded armadillo (*Dasypus novemcinctus*) populations, however, abound in the preserve. Armadillos cause extensive erosional damage along sinkhole and ravine slopes, and are a significant predator on ground nests of native reptiles. Armadillos are so pervasive throughout the preserve that it is doubtful that the species may ever be eradicated. However, the current policy of removal as opportunity permits should continue as this practice may at least keep populations down to a less damaging level. Coyotes (*Canis latrans*) and capybara (*Hydrochoerus hydrochoerus*) have been sighted within the preserve in recent years and are considered an exotic species in Florida. No control measures are recommended for coyotes at this time. Capybaras will be removed from the preserve if possible.

Due to the increasing number of residential areas bordering the preserve, the incidences of free-ranging or feral dogs and cats within the preserve are likely to increase. Dogs and cats will be removed from the preserve according to Division guidelines in cooperation with Alachua County Animal Services.

Problem Species

Problem species are defined as native species whose habits create specific management problems or concerns. Occasionally, problem species are also a designated species, such as alligators. The Division will consult and coordinate with appropriate federal, state and local agencies for management of designated species that are considered a threat or problem.

There are no known problem animal species within the preserve. The low-levels of human activity within a preserve do not normally create problems with potentially dangerous species such as alligators or poisonous snakes. The only real problem plant species are those species that invade fire-adapted communities suffering from fire exclusion. These include, but are not limited to, laurel oak, water oak (*Quercus nigra*), and sweetgum. These species can be controlled through the careful application of prescribed fire. Those individuals too large to be controlled by fire may be girdled or killed with herbicide if necessary.

Management Measures for Cultural Resources

The management of cultural resources is often complicated because these resources are irreplaceable and extremely vulnerable to disturbances. The advice of historical and archaeological experts is required in this effort. Approval from Department of State, Division of Historical Resources (DHR) must be obtained before taking any actions, such as development or site improvements that could affect or disturb the cultural resources on state lands (see DHR Cultural Management Statement).

Actions that require permits or approval from DHR include development, site excavations or surveys, disturbances of sites or structures, disturbances of the substrate, and any other actions that may affect the integrity of the cultural resources. These actions could damage evidence that would someday be useful to researchers attempting to interpret the past.

1. Obtain a DHR compliance review and required Division permits before conducting ground-disturbing activity.
2. Follow the Guidelines for Ground-Disturbing Activities on Park Lands when monitoring ground-disturbing activity; report encountered artifacts immediately to DHR; submit a summary of findings to DHR.
3. Consult with BNCR for assistance with restoration and reconstruction work, and information on appropriate cultural resource management practices.
4. Monitor the condition of archaeological sites and features on a regular basis to measure the impact of visitors and outside influences such as feral hogs and natural erosional processes.
5. Obtain a DHR compliance review and required Division permits before conducting repairs, alterations or renovations to historic structures.
6. Monitor the condition of historic sites and features on a regular basis to measure the impact of visitors and outside influences.
7. With assistance from a historic preservationist at BNCR, implement needed repairs and develop a regular maintenance plan for each historic structure.
8. Account for the absolute need for retaining the integrity of cultural resources when planning and implementing other activities such as resource management, expanding recreational uses, interpretation, or protection.
9. Develop a written maintenance / management routine for each type of identified cultural resource and maintain records about resource conditions.
10. In implementing a filing system similar to that recommended by BNCR, a file about each recorded cultural resource will be kept. In addition to FMSF information, the file shall contain condition assessment documentation, photographs, and other materials pertaining to each resource. Such files shall be considered resource management files and shall not be scheduled for disposal.
11. Park management shall develop and institute a patrol and protection program adequate to monitor activity and changes at each identified cultural resource. If Incident reports are completed for events occurring at recorded resource locations, a copy of each report and such other documentation as may be supplied by law enforcement agencies shall be placed in the appropriate resource file.
12. Park Management and Division of Law Enforcement shall implement protective measures for illegally dug archaeological sites in accordance with recommendations that follow from cooperative studies of the problem in Florida and other jurisdictions.

Research Needs

Natural Resources

Any research or other activity that involves the collection of plant or animal species on park property requires a collecting permit from the Department of Environmental Protection. Additional permits from the Florida Fish and Wildlife Conservation Commission, the Department of Agriculture and Consumer Services, or the U.S. Fish and Wildlife Service may also be required.

Numerous research projects, many resulting in theses and dissertations, have been conducted within San Felasco Hammock Preserve State Park. The preserve is considered one of the last, relatively pristine upland mixed forests of appreciable size in this part of the state. As such, it is an important site for scientific research. The proximity to the University of Florida has also contributed to its popularity. Included in the notable research of the past are a comprehensive floristic study, several avian community studies, a hydrological study of Turkey Creek, and other specific taxonomic and ecological studies.

Additional research needs identified for San Felasco Hammock include the following.

1. Restoration methods for converting cleared pasture back to the original natural community. Including the University of Florida Foundation Tract, over 1100 acres of the preserve have been cleared for pasture and are in various stages of succession. Originally, these areas were primarily upland pine forest. Most of the original natural community components have been extirpated, however, and the areas are now dominated by weedy species and exotics. Additional research is needed to refine practical methods for removal of pasture grasses and suppressing invasive weeds and exotics when re-introducing native herbaceous and woody plants on a large scale. Current research includes study plots that were set up to investigate site preparation techniques and direct seeding trials in pastures.
2. Monitoring of water quality and hydrology. Changes in land use within the watersheds of major creeks that enter the preserve have impacted the natural hydrology and water quality. Continual monitoring of water quantity and quantity is necessary to detect serious problems and institute corrective measures quickly to avoid damage to natural communities along the creeks within the preserve. Groundwater pollution is a major concern, as each of the major creeks in the preserve is a stream-to-sink system with direct discharge to the Floridan aquifer.
3. Inventory of rare and listed plant and animal species. Monitoring and inventory of populations of rare plants and animals are necessary to determine population trends and localized occurrences of listed species. Animals of specific interest for inventory include cave fauna, salamanders, gopher tortoises, fox squirrels, Florida mice, and short-tailed snakes. Specific plant species include the San Felasco spleenwort.
4. Methods of eradicating the invasive exotic plants including wild taro, Japanese climbing fern, and other species. Many species pose a serious threat to natural communities in the preserve, but there is insufficient knowledge about practical methods of eradication for some species, particularly for wild taro. Experimentation with different chemical and physical treatments is necessary in order to eradicate these exotic species from San Felasco effectively.

Cultural Resources

Additional documentary and physical research about tung nut culture and other agriculture on the preserve should be encouraged. Such research may include measurement and drawing projects that would result in documentation acceptable under standards of the Historic American Buildings Survey (HABS). Should such research be undertaken, the park would require copies of the resulting HABS documentation.

Resource Management Schedule

A priority schedule for conducting all management activities that is based on the purposes for which these lands were acquired, and to enhance the resource values, is contained in Addendum 8. Cost estimates for conducting priority management activities are based on the most cost effective methods and recommendations currently available (see Addendum 8).

Land Management Review

Section 259.036, Florida Statutes, established land management review teams to determine whether conservation, preservation, and recreation lands titled in the name of the Board of Trustees of the Internal Improvement Trust Fund (board) are being managed for the purposes for which they were acquired and in accordance with a land management plan adopted pursuant to s. 259.032, the board of trustees, acting through the Department of Environmental Protection (department). The managing agency shall consider the findings and recommendations of the land management review team in finalizing the required update of its management plan.

San Felasco Hammock Preserve State Park was subject to a land management review on October 10, 2002. The review team made the following determinations:

1. The land is being managed for the purpose for which it was acquired.
2. The actual management practices, including public access, were in compliance with the management plan for this site.

LAND USE COMPONENT

INTRODUCTION

Land use planning and park development decisions for the state park system are based on the dual responsibilities of the Division of Recreation and Parks. These responsibilities are to preserve representative examples of original natural Florida and its cultural resources, and to provide outdoor recreation opportunities for Florida's citizens and visitors.

The general planning and design process begins with an analysis of the natural and cultural resources of the unit, and then proceeds through the creation of a conceptual land use plan that culminates in the actual design and construction of park facilities. Input to the plan is provided by experts in environmental sciences, cultural resources, park operation and management, through public workshops, and environmental groups. With this approach, the Division objective is to provide quality development for resource-based recreation throughout the state with a high level of sensitivity to the natural and cultural resources at each park.

This component of the unit plan includes a brief inventory of the external conditions and the recreational potential of the unit. Existing uses, facilities, special conditions on use, and specific areas within the park that will be given special protection, are identified. The land use component then summarizes the current conceptual land use plan for the park, identifying the existing or proposed activities suited to the resource base of the park. Any new facilities needed to support the proposed activities are described and located in general terms.

EXTERNAL CONDITIONS

An assessment of the conditions that exist beyond the boundaries of the unit can identify any special development problems or opportunities that exist because of the unit's unique setting or environment. This also provides an opportunity to deal systematically with various planning issues such as location, regional demographics, adjacent land uses and park interaction with other facilities.

San Felasco Hammock Preserve State Park is located within Alachua County in the north central part of the state. The populations of Alachua County and the adjacent counties of Columbia, Bradford, Gilchrist, Marion, and Putman have grown 24.8 percent since 1990, and are projected to grow an additional 17.3 percent by 2010 (BEBR, University of Florida, 2000). As of 2000, 17.8 percent of residents in these counties were in the 0-14 age group, 42.2 percent in the 15-44 age group, 22.8 percent in the 45-64 age group, and 17.2 percent were aged 65 and over. This roughly reflects the state average for these groupings (BEBR, University of Florida, 2000). Nearly 832,400 people reside within 50 miles of the park, which includes the cities of Gainesville, Ocala, Alachua, Starke, Palatka and Lake City (Census, 2000).

San Felasco Hammock Preserve State Park recorded 49,850 visitors in 2002-2003 FY year. This represents a net 80 percent increase over the last five years. By Division estimates, these visitors contributed 1,556,804 dollars in direct economic impact and the equivalent of 31.1 jobs to the local economy (Florida Department of Environmental Protection, 2003).

Existing Use of Adjacent Lands

Interstate Highway 75 runs through the southwestern edge of the preserve, with the majority of the property lying to the east of the Interstate. Millhopper Road (State Road 232) bisects the southern end of the property. Residential, agricultural, industrial, and a University of

Florida agricultural experiment station are the current land uses surrounding the state preserve. Most of the agricultural land uses are located to the north and west of the property, the residential to the east and south, the UF property to the east, with some commercial and industrial land uses located immediately to the north. The northern edge of the property abuts the City of Alachua and this small town is growing rapidly.

All the creeks running onto the preserve are variously affected by industrial development, residential development, a large research complex, a municipal power plant, cattle pasturing, or highways located upstream in the local watershed.

Devil's Millhopper Geological State Park is less than two miles southeast of the unit. Also in the vicinity are Paynes Prairie Preserve State Park, O'Leno State Park, River Rise Preserve State Park and Dudley Farm Historic State Park. Gum Root Swamp, Prairie Creek and Lochloosa Conservation Areas, also located in Alachua County, offer hiking, horseback riding, bicycling, camping and boating.

Planned Use of Adjacent Lands

San Felasco Hammock Preserve State Park falls within the unincorporated area of Alachua County and is designated Preservation on the Future Land Use Map (Alachua County Comprehensive Plan 2001-2020). The adjacent future land uses on the eastern and southern boundaries are Low Density Residential (1-4 DU/acre), Estate Residential (one DU/2acres), and Institutional. The Institutional property, directly to the east, is owned by UF/IFAS. The western boundary is Rural/Agriculture and Interstate 75 (Alachua County Comprehensive Plan 2001-2020). The north and northwestern boundaries fall within the City of Alachua. The areas surrounding the park within the City of Alachua are designated Agriculture, Medium Density Residential (8 DU/acre), Industrial, and Commercial (Alachua Future Land Use 2011). The City of Alachua has allowed public access to the park from the north along the ROW extension of Progress Drive.

Alachua County has adopted several environmental protection strategies that apply to San Felasco Hammock Preserve State Park. First, the County has a vegetative buffer overlay district that applies to all preservation lands designated on the County's Future Land Use Map. The overlay district establishes a buffer around public lands, mandating that development approval, including site plan review and plat review, be required for all development activity within the overlay district. Any public agency with management responsibility of preservation lands is notified of development applications. They can provide written comments and recommendations regarding the recommended width of the setback area and the development limitations that should apply within the setback area. This vegetative buffer district requires a minimum setback area of 100 feet, and may establish up to a maximum of 660 feet of buffer to protect essential habitat and water quality. In a second protective strategy, the County Public Works Department reviews and reports to the Development Review Committee on any development with watershed impacts in order to mitigate downstream effects. Growth Management and the Environmental Protection Department review the plans. A third County planning initiative affecting the park is the designation of Millhopper Road as a scenic drive, which establishes additional restrictions on development, road use and tree protection.

There are a number of collaborative land preservation projects in the area. The Santa Fe Land Trust is working to complete land acquisitions or conservation easements north of the park to provide a connection to the Santa Fe River corridor to the north and the Murphree Wellfield to the southeast. Alachua County Forever, San Felasco Additions project targets lands near the park, some overlapping the park's optimum boundary. The city of Alachua is purchasing

land within their boundary adjacent to the park's northern property line. All of these projects provide important wildlife corridors and enhance the health and diversity of the wildlife in the park. Park and district staff will continue to cooperate with these entities.

Apart from these efforts at preservation, the rapid growth in this area will make dramatic impacts on the state preserve. Point and non-point pollution sources within the park's watershed, complication of smoke management during prescribed burning operations, traffic and noise impacts may result from adjacent development in the future.

PROPERTY ANALYSIS

Effective planning requires a thorough understanding of the unit's natural and cultural resources. This section describes the resource characteristics and existing uses of the property. The unit's recreation resource elements are examined to identify the opportunities and constraints they present for recreational development. Past and present uses are assessed for their effects on the property, compatibility with the site, and relation to the unit's classification.

Recreation Resource Elements

This section assesses the unit's recreation resource elements those physical qualities that, either singly or in certain combinations, supports the various resource-based recreation activities. Breaking down the property into such elements provides a means for measuring the property's capability to support individual recreation activities. This process also analyzes the existing spatial factors that either favor or limit the provision of each activity.

Land Area

San Felasco Hammock Preserve State Park has over 6,900 acres of upland and wetland natural communities. The intricate karst geography of the area, combined with a near-pristine quality of the upland mixed forest community and the quality of the sandhill community were the primary incentives for the original 1974 purchase. The addition in 1994 of nearly 900 acres of pastureland north of the original boundary has provided opportunities for more active recreational activities.

Significant Wildlife Habitat

The state preserve provides significant wildlife habitat within a developing suburban land use pattern. Wildlife viewing opportunities add greatly to the outstanding aesthetic qualities and experience. Care should be taken to incorporate these opportunities in the planning and layout of trails and overlook facilities. Equally important to visitor use and enjoyment of the preserve is habitat preservation for continued wildlife health. For this reason, use within the designated Wilderness Zone is closely monitored.

Natural Features

The outstanding geological features of the preserve are Sanchez Prairie, Big Otter Ravine and Split Rock Sink. These features, as well as other sinkholes and creek shorelines are extremely sensitive to impacts from visitor access, and will continue to be accessible only through ranger-guided events.

Archaeological and Historical Features

San Felasco Hammock Preserve State Park has 37 identified prehistoric and historic sites spanning almost all of the major cultural periods. Prehistoric sites include burial mounds, artifact scatters, village sites and a quarry site.

Evidence of the historic period encompass the time period of first European contact through a visible record of local agricultural land uses during the 1800s to mid-1900s. An Indian village site thought to be associated with a Spanish mission, evidence of agricultural endeavors, and homestead sites associated with a small settlement called Spring Grove are some of the documented cultural sites.

Assessment of Use

All legal boundaries, structures, facilities, roads, and trails existing in the unit are delineated on the base map (see Base Map). Specific uses made of the unit are briefly described in the following sections.

Past Uses

The preserve includes all or portions of four Spanish land grants and several homestead sites dating to that period. Just east of the park boundary is a Potano Indian village site thought to be associated with the Spanish mission San Francisco de Potano. Recent historical uses were agriculture, silviculture, moonshine production and hunting. These practices included the cultivation of citrus and cotton, harvesting of pines for pulpwood and saw logs, the production of tung oil and turpentine, and cattle production. Physical evidence is found in the tung nut depot, a calf barn, and an abandoned cattle dip vat used to control "tick fever" during the 1930s. They are located in the northern section of the park.

Recreational Uses

Current recreational facilities at San Felasco Hammock Preserve provide for hiking, off-road biking, horseback riding, horse carriage events, picnicking and nature study. In the last five years, 19 miles of off-road bike trails and 8 miles of horse trails in the northern section of the park have been added. Volunteers from each group of trail users have participated in the planning, building and maintenance of these trails.

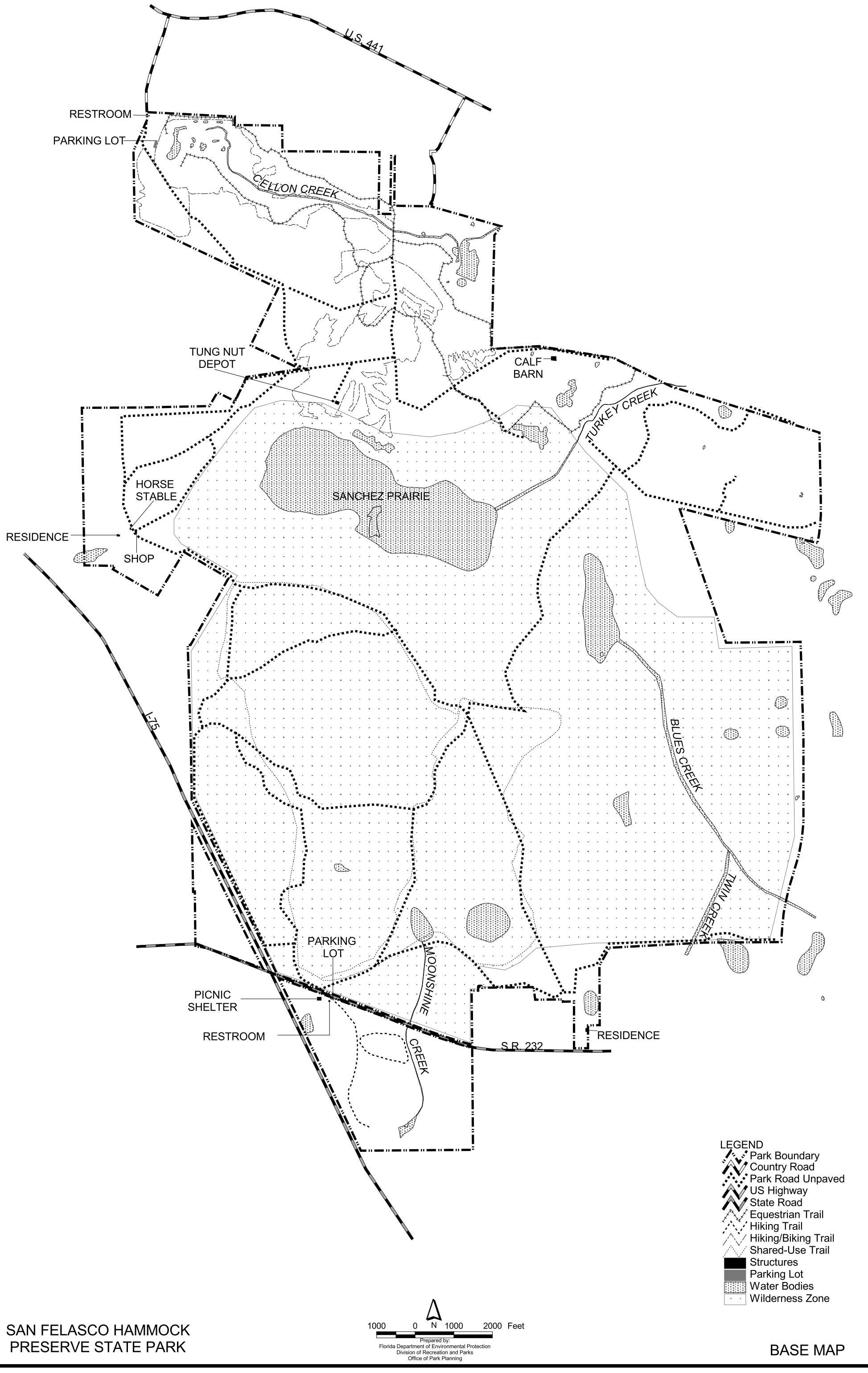
Newly established parking and a restroom at the north entrance support these facilities. A primitive camping area, available for ranger led events, located near Mystery Pond is rarely used and is within a 1500-foot protection zone for a bald eagle's nest.

The southern entrance along Millhopper Road has added picnic facilities, an interpretive kiosk and a composting restroom. These along with parking for 17 cars, support the two existing loop trails (totaling approximately 10 miles) north of Millhopper Road crossing through the Wilderness Zone and the one-mile nature trail south of the road. These are all restricted to hikers.

Wilderness Zone

Under the Division of Recreation and Park policy, a Wilderness Zone is an area that retains its primeval character and is protected and managed to preserve its natural appeal and values. Its characteristics are:

- generally appears to have been shaped by the unaltered forces of nature, with the imprint of human influence substantially unnoticeable
- offers outstanding opportunities for the conditions of solitude and remoteness that are essential for a wilderness experience
- may contain environmental, archaeological, or other kinds of features of scientific, educational, scenic, or historic value.



SAN FELASCO HAMMOCK PRESERVE STATE PARK

BASE MAP

Each Wilderness Zone specifies compatible uses and carrying capacities. Facilities are limited to those considered essential for resource management and for the specified public uses.

All Wilderness Zones management activities are aimed at keeping the site in a natural and pristine condition. Ecological restoration programs are appropriate and only those existing service roads needed for management are retained while unnecessary roads are abandoned. Motorized equipment and motorized boats are normally permitted for patrol and management purposes only.

The Wilderness Zone at San Felasco Hammock Preserve State Park is approximately 4,270 acres in size, or nearly 62 percent of the total land area. It is located north of Millhopper Road, and extends west to I-75 and east to the park boundary. The northern edge is the north rim of Sanchez Prairie. Recommended use in the Wilderness Zone is hiking. The carrying capacity for the Wilderness Zone is 100 persons daily.

Other Uses

There are two powerline easements through the property. Horses used for official state park functions are stabled in the shop area of the park.

Protected Zones

A protected zone is an area of high sensitivity or outstanding character from which most types of development are excluded as a protective measure. Generally, facilities requiring extensive land alteration or resulting in intensive resource use, such as parking lots, camping areas, shops or maintenance areas, are not permitted in protected zones. Facilities with minimal resource impacts, such as trails, interpretive signs and boardwalks are generally allowed. All decisions involving the use of protected zones are made on a case-by-case basis after careful site planning and analysis.

At San Felasco Hammock Preserve State Park the wilderness zone and sandhill, upland pine forest, palustrine, lacustrine, and riverine systems, have been designated as protected zones as delineated on the Conceptual Land Use Plan. Additionally there is a 1500-foot protective buffer around a bald eagle's nest.

Existing Facilities

Recreation Facilities

North Entrance
Trails
- Off-road biking (19 miles)
- Horseback riding and carriage drives (8 miles)

Primitive Camping

Millhopper Road Entrance
Small Picnic Shelter
Hiking Trails (11 miles)

Support Facilities

North Entrance
Parking (not defined)
Restroom

Millhopper Road Entrance
Parking (17 cars)
Composting Restroom

Shop Area	Stable
Office/ Shop building	
Equipment Shelter	Ranger Residences (2)

CONCEPTUAL LAND USE PLAN

The following narrative represents the current conceptual land use proposal for this park. As new information is provided regarding the environment of the park, cultural resources, recreational use, and as new land is acquired, the conceptual land use plan may be amended to address the new conditions (see Conceptual Land Use Plan). A detailed development plan for the park and a site plan for specific facilities will be developed based on this conceptual land use plan, as funding becomes available.

During the development of the unit management plan, the Division assesses potential impacts of proposed uses on the resources of the property. Uses that could result in unacceptable impacts are not included in the conceptual land use plan. Potential impacts are more thoroughly identified and assessed through the site planning process once funding is available for the development project. At that stage, design elements, such as sewage disposal and stormwater management, and design constraints, such as designated species or cultural site locations, are more thoroughly investigated. Advanced wastewater treatment or best available technology systems are applied for on-site sewage disposal. Stormwater management systems are designed to minimize impervious surfaces to the greatest extent feasible, and all facilities are designed and constructed using best management practices to avoid impacts and to mitigate those that cannot be avoided. Federal, state and local permit and regulatory requirements are met by the final design of the projects. This includes the design of all new park facilities consistent with the universal access requirements of the Americans with Disabilities Act (ADA). After new facilities are constructed, the park staff monitors conditions to ensure that impacts remain within acceptable levels.

Potential Uses and Proposed Facilities

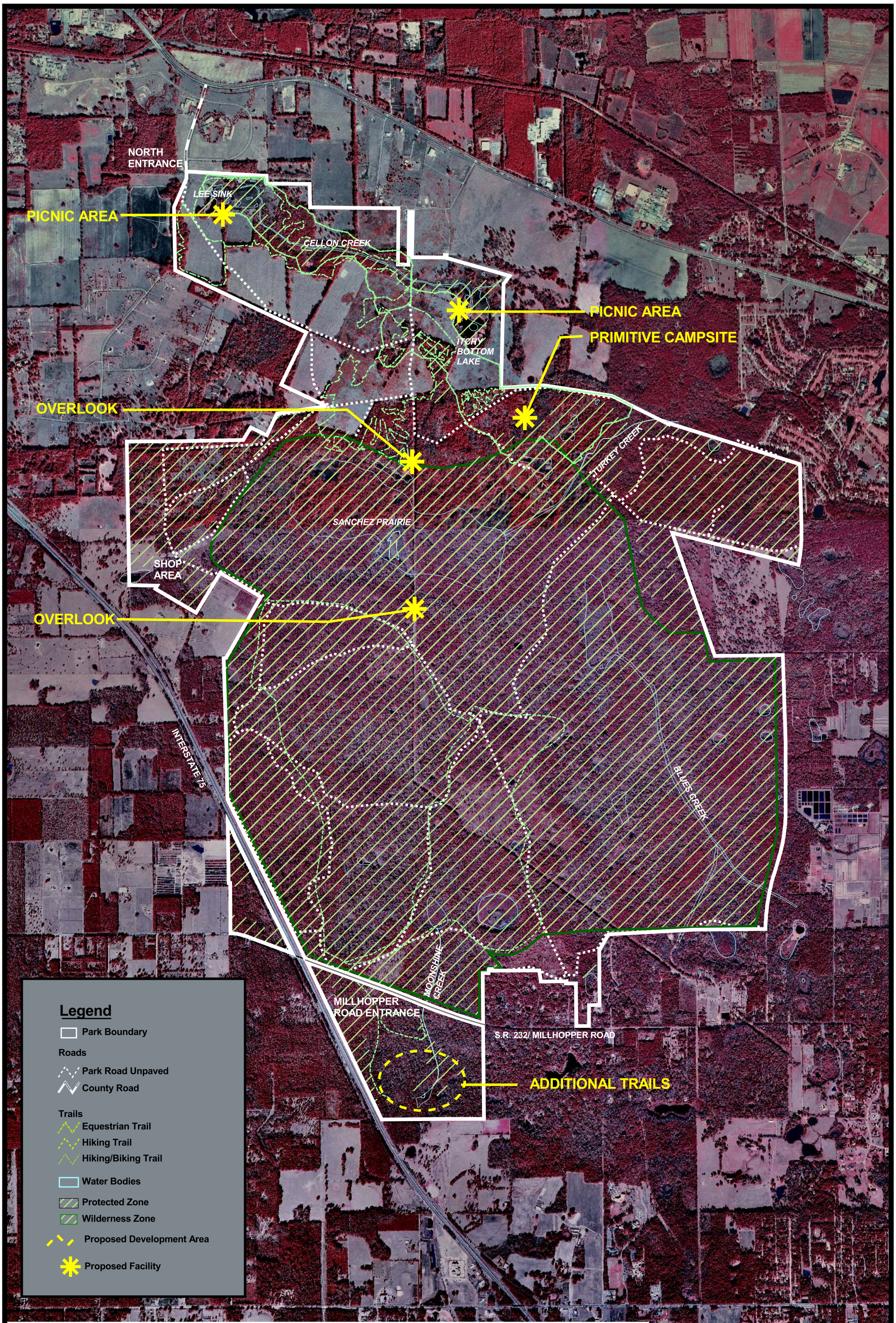
Recreational Facilities

Recreational opportunities at San Felasco Hammock Preserve State Park have greatly increased in the last five years. The development has taken place on approximately 900 acres of disturbed agricultural land added to the park in the 1990s. Future plans include expansion the off-road biking and horseback riding trails. The build-out maximum lengths will be 25 miles for bikes and 20 for horses. All of these trails permit hiking. Trail use impacts will be monitored and sections closed if erosion becomes a problem.

Trailside picnic areas are proposed at Lee Sink and Itchy Bottom Lake. They should include picnic tables, a trash receptacle and interpretive signs. The Lee Sink picnic area may include a pavilion. Sanchez Prairie, a dramatic natural feature, is viewable from the powerline easement at the top of the north rim. An interpretive overlook is recommended at this point.

The existing primitive campsite should be abandoned and if a new one is needed it should be located in an area of upland mixed forest near the calf barn northwest of Mystery Pond. The occasional volunteer groups that stay overnight while doing a service project, camp in an area closer to the shop.

The nature trail south of Millhopper Road explores the major natural communities of the preserve. The existing trail is .9mile and an added trail will double the hiking opportunities. Trails north of Millhopper Road are in the Wilderness Zone. Park staff closely monitors



SAN FELASCO HAMMOCK PRESERVE STATE PARK

Prepared By:
Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

CONCEPTUAL LAND USE PLAN

these trails for impacts to the flora and fauna. Due to the Wilderness Zone carrying capacity, facilities cannot increase greatly. An added spur trail following the powerline easement off the yellow (western) trail would provide an overlook of the southern side of Sanchez Prairie.

A reconfiguration of the parking that services these two areas will allow 25 cars total. This will accommodate the visitor increase to the additional south side trail. Directional signage to the north entrance should be clearly displayed at the parking lot entrance so visitors can use that area when the Millhopper Road parking lot is full. Division staff should seek assistance from the Alachua County Public Works and Sheriffs Departments to prohibit roadside parking. That practice endangers public safety and undermines the Division's efforts toward managing the wilderness zone as intended.

Interpretation enhances visitor experiences and understanding. San Felasco Hammock Preserve, with its diverse natural and cultural features and proximity to a rapidly urbanizing area, could be a source for public education. Themes should focus on the Division's philosophy of ecosystem management, uses of prescribed fire, existing natural communities and restoration efforts (including the experimental groundcover plot), the direct and indirect results of human interaction on natural systems, and historic and prehistoric uses of the site. Existing structures such as the tung nut depot and the calf barn need renovation to stabilize them for interpretive use. All such work will meet the requirements of the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings. Other interpretive stations at locations throughout the trail system will inform the visitor of natural and cultural resources as well as the larger preservation, stewardship and land use themes.

Support Facilities

Development of a staff residence will be needed near the north entrance of the park to provide added security in this greatly expanded recreational use area. In the existing shop area, a two bay extension of the pole barn is necessary to protect equipment. The access road to the office/shop area needs upgrading. The steeper section washes out frequently and stabilizing this would relieve the need for constant maintenance. The north entrance road is also in need of upgrading. It should not be paved but stabilization from the park boundary to the parking area will decrease rutting.

Facilities Development

Preliminary cost estimates for the following list of proposed facilities are provided in Addendum 8. These cost estimates are based on the most cost-effective construction standards available at this time. The preliminary estimates are provided to assist the Division in budgeting future park improvements, and may be revised as more information is collected through the planning and design processes.

Recreation Facilities

North Side
Picnic Areas (2)
Pavilion
Interpretive signs

Millhopper Road
Interpretive signs

Support Facilities

Ranger Residence
Two Bay Pole Barn
Upgrade Road sections

Existing Use and Optimum Carrying Capacity

Carrying capacity is an estimate of the number of users a recreation resource or facility can accommodate and still provide a high quality recreational experience and preserve the natural values of the site. The carrying capacity of a unit is determined by identifying the land and water requirements for each recreation activity at the unit, and then applying these requirements to the unit's land and water base. Next, guidelines are applied which estimate the physical capacity of the unit's natural communities to withstand recreational uses without significant degradation. This analysis identifies a range within which the carrying capacity most appropriate to the specific activity, the activity site and the unit's classification is selected (see Table 1).

The optimum carrying capacity for this park is a preliminary estimate of the number of users the unit could accommodate after the current conceptual development program has been implemented. When developed, the proposed new facilities would approximately increase the unit's carrying capacity as shown in Table 1.

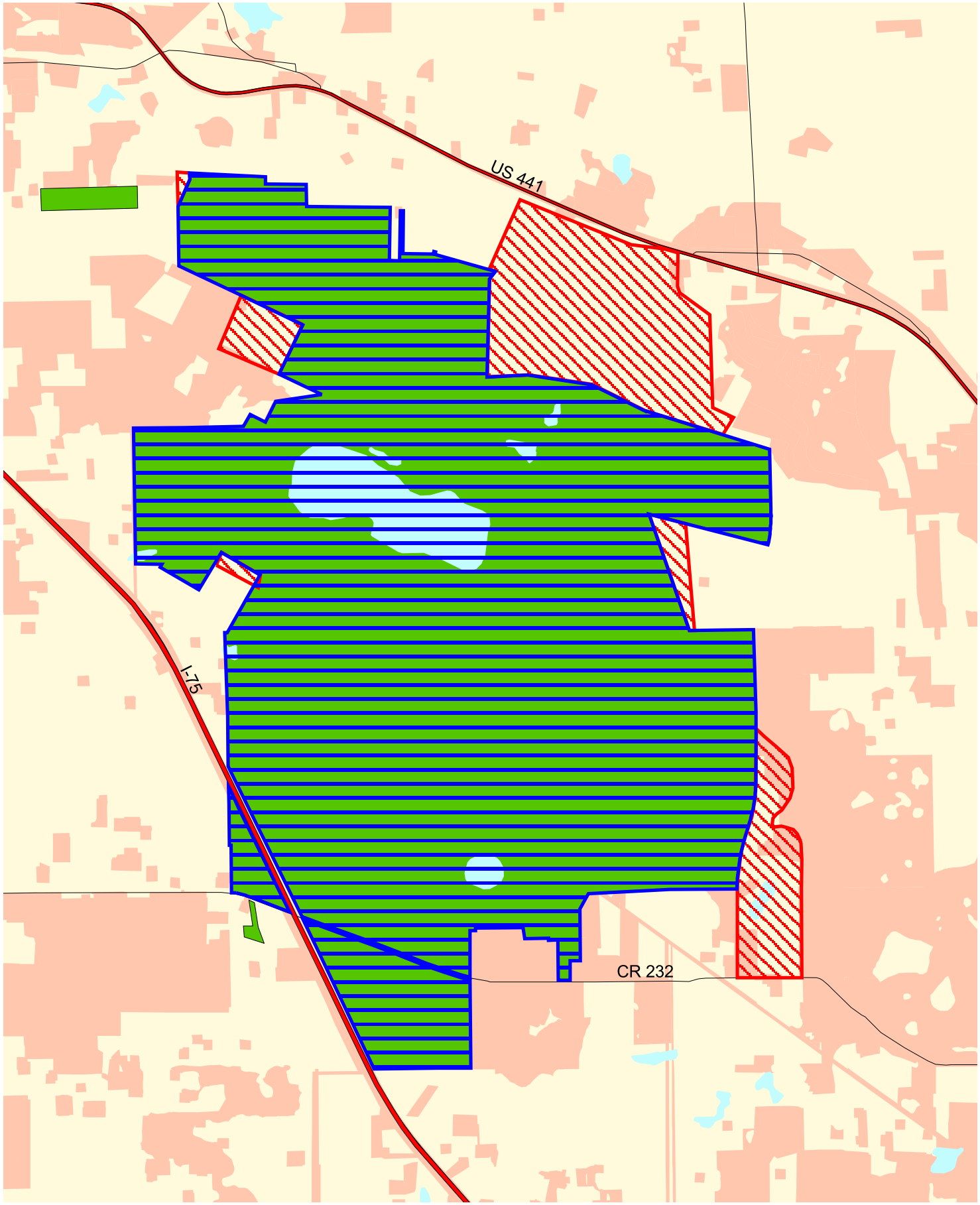
Table 1--Existing Use And Optimum Carrying Capacity

	Existing Capacity		Proposed Additional Capacity		Estimated Optimum Capacity	
Activity/Facility	One Time	Daily	One Time	Daily	One Time	Daily
Trails						
Hiking-Wilderness Zor	25	100			25	100
Hiking	20	80	20	80	40	160
Bicycling	120	480	120	480	240	960
Equestrian	64	128	96	192	160	320
Picnicking	8	16	24	48	32	64
Camping						
Primitive	12	12			12	12
TOTAL	**249**	**816**	**260**	**800**	**509**	**1,616**

Optimum Boundary

As additional needs are identified through park use, development, research, and as adjacent land uses change on private properties, modification of the unit's optimum boundary may occur for the enhancement of natural and cultural resources, recreational values and management efficiency.

Identification of lands on the optimum boundary map is solely for planning purposes and not for regulatory purposes. A property’s identification on the optimum boundary map is not for use by any party or other government body to reduce or restrict the lawful right of private landowners. Identification on the map does not empower or require any government entity to impose additional or more restrictive environmental land use or zoning regulations. Identification is not to be used as the basis for permit denial or the imposition of permit conditions.



SAN FELASCO HAMMOCK
PRESERVE STATE PARK

2000 0 N 2000 4000 Feet

Prepared by:
Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

LEGEND
Park Boundary
Optimum Boundary

OPTIMUM BOUNDARY MAP

The optimum boundary map reflects lands identified for direct management by the Division as part of the park. These parcels may include public as well as privately owned lands that improve the continuity of existing park lands, provide additional natural and cultural resource protection, and/or allow for future expansion of recreational activities. At this time, no lands are considered surplus to the needs of the park.

There are six parcels on the Optimum Boundary Map for San Felasco Hammock Preserve. Three on the western boundary, totaling 95acres, are identified for management, access and protection of resources. The largest parcel (approximately 710 acres) located on the northeast boundary of the preserve, is the major source of drainage from Turkey Creek and Cellon Creek into the park. A smaller triangular parcel of approximately 45 acres east of the preserve contains a portion of a steep bluff system, part of the Blues Creek watershed. The property southeast of the preserve, approximately 250 acres, includes significant archaeological resources and undeveloped upland forest. Both the northeast and southeast sites would be suitable for passive recreational development.

Addendum 1—Acquisition History

Sequence of Acquisition

The State acquired San Felasco Hammock Preserve State Park to conserve, protect and manage the property for outdoor recreation, park historic and related purposes.

On August 31, 1974, the Board of Trustees of the Internal Improvement Trust Fund (Trustees) obtained title to the initial property that became San Felasco Hammock Preserve State Park. The purchase was funded under the EEL Program.

Since the establishment of San Felasco Hammock Preserve State Park in 1974, the Trustees have acquired several individual parcels through different land acquisition programs (such as LATF, EEL, and P2000/CARL) and added them to the park.

Title Interest

The Trustees hold fee simple title to San Felasco Hammock Preserve State Park.

Lease Agreement

On June 2, 1975, the Trustees leased San Felasco Hammock Preserve State Park to the Division of Recreation and Parks (Division) under Lease No. 2839 for a period of ninety-nine (99) years. The lease will expire on June 1, 2074.

According to Lease No. 2839, Division manages the park to develop, operate and maintain the property for outdoor recreational, park, conservation and related purposes.

Special Conditions on Use

San Felasco Hammock Preserve State Park is designated single-use to provide resource-based public outdoor recreation and other related uses. Uses such as, water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of the park.

Outstanding Reservations

There are no outstanding reservations and encumbrances that apply to San Felasco Hammock Preserve State Park.

San Felasco Hammock Preserve State Park

Advisory Group List

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The Advisory Group appointed to review the proposed unit management plan for San Felasco Hammock Preserve State Park met at the CSO building at San Felasco State Park in Alachua, Florida on February 12, 2004. Mr. Ernie Ash represented Mr. Don West, Mr. Peter Ames represented Mr. Scott Flamand, Ms. Amanda Hall represented Ms. Linda Crider, Ms. Karen Garren represented Ms. Linda Pollini and Ms. Lauren Day represented Mr. Michael Castine. The Honorable Bonnie Burgess, The Honorable Rodney Long, Mr. Karl Owens, and Ms. Elizabeth Van Mierop did not attend. All other appointed Advisory Group members were present. Attending staff were Mr. Randall Brown, Mr. Craig Parenteau, Mr. Dan Pearson, Mr. Sam Cole and Ms. Carol Perfit. Two observers attended Mr. Bill Rossley and Mr. Bob Simons.

Ms. Perfit began the meeting by explaining the purpose of the advisory group, reviewing the meeting procedures and providing a brief overview of the Division's planning process. A revision to the Goals and Objectives was distributed. She then asked the Advisory Group members to comment on the plan.

Summary of Advisory Group Comments

Mr. Terry Doonan, representing the Florida Fish and Wildlife Conservation Commission, reported overall approval of the plan. He had some questions on the natural resources. The plan discusses the presence of caves. What types of caves are these, are they connected, and are there evidence of bats in the caves? Dan Pearson explained that the caves are small and may connect to the aquifer through sinks but to the best of existing knowledge are not connected to a larger underground system of caves. The district is issuing permits to cave divers and spelunkers to look at the karst windows and study the fauna and flora. The majority of the caves are submerged so no bats have been found. The Florida mouse has been documented in the area just east of the Millhopper Road entrance on the north side of the road. Mr. Doonan questioned why this area is not included in the Wilderness Zone? Dan Pearson explained that the Wilderness Zone identifies land that has retained essentially its principal character and influence without permanent alteration. That area had been disturbed when the wilderness boundaries were originally drawn. It has been restored and could be surveyed and potentially considered for inclusion now. Mr. Doonan would like to see priority given to the compilation of species list with emphasis on xeric adapted faunal habitat areas.

Ms. Alexis Macauley, representing the Sunshine State Horse Council, questioned the number of equestrian trail miles and the regulation on the hours of use. Randy Brown replied. There are eight useable miles and now that the north entrance trailhead is open the hours are 8am to sunset. Organized rides may still be made from the shop area by special arrangement but the majority of users ride from the north entrance. The conflict of the horse and bike trails was discussed. Randy Brown explained the trail layout includes good views in advance of intersections so the risk of conflict is minimal.

Mr. Peter Ames, representing Alachua Audubon Society, had not had much time to read the plan and will comment later. He was interested in the presence of capybara in the park. Staff explained that the capybara has not been observed for a couple years and it is assumed the coyotes may have hunted them out. Feral hogs pose the largest problem at present.

Mr. Randy Brown, park manager, explained to the Advisory Group that the approved plan

is used as an operational manual by park staff. The information in the plan must accurately reflect the goals of the park.

Mr. Mickey Brenes, **representing adjacent landowners,** stated that the plan is comprehensive and good. He sees a problem in the lack of funding available to implement the plan. The volunteers, in particular the bike riders, can be credited with development of the north entrance and many of the trails. Without their work, recreation on the northern parcel would still occur only by prior arrangement and guided by rangers. Mr. Brenes also sees the presence of feral hogs as the other major problem faced by the park and would like to see funds available for sufficient fencing.

Mr. Brian McAllister, President of the Friends of San Felasco, Inc., reported approval for the proposed plan, which he said is well written. He agrees with Mr. Brenes that the largest problem is the lack of funding. Park staff cannot do what is needed in maintenance and restoration work without more personnel. The expansive list of proposed improvements also need funding. Disappointment was also expressed over the two day per week closure of Devils Millhopper State Park which was brought on by budgetary restraints. Mr. McAllister suggested that the entrance road to the park office/shop area be improved. Volunteers work consistently on maintenance of this road. As president of the Friends of San Felasco, the park CSO, he would like to see input from additional user groups. Equestrian and bicycle users have been the primary members and the bikers provide the greatest number of volunteers. Discussion on how to attract hikers, runners, and bird watchers ensued.

Mr. Ernie Ash, representing the Florida Division of Forestry, said that the plan is well written overall and offered a number of specific comments and clarifications that staff will address. He inquired about the success of natural regeneration in the upland pine forest without replanting loblolly and spruce pine. The biologists reported a success in this particular area with regeneration of pines as well as hardwoods. Mr. Ash questioned whether the grasses study plot is large enough. Dan Pearson said there is a larger study underway at O'Leno State Park and the results will be applied at San Felasco.

The trail build out maximum is determined to be 25 miles of off-road bike and 20 miles of horse trails. Mr. Ash questioned these numbers, stating that more trails could be put in a small area. Randy Brown agreed that more miles may be possible but that cannot be determined until restoration of the open pasture is nearer completion. Mr. Ash would like to see a priority on restoration of the pasture area and planting of pines.

Ms. Karen Garren, representing the Sierra Club, said the importance of the plan is to preserve the mix of habitats existing at San Felasco Hammock Preserve. Many of her questions were answered in last night's public meeting and in today's discussion. Questions still to be addressed concern connectivity, education and archaeological record updating. Ms. Garren inquired why the plan did not address any of the potential wildlife corridors adjacent to the park. Carol Perfit referred to the optimum boundary map and text. Determination of the optimum boundaries takes wildlife corridors into consideration, however, the state must focus on lands the park can utilize and manage effectively. Beyond this, the plan discusses the cooperation with other agencies on land acquisition and management on state, district and park levels. The state does not pursue conservation easements because of the restriction on public access.

Ms. Garren wanted to know how park visitors and adjacent landowners are being educated on threats to the natural resources. Increased education of visitors is one of the proposed goals. This will be accomplished through interpretive kiosks within the park and outreach to the community through interpretive programs. Dan Pearson responded to the question of controlling development near the park. The division does not have any direct control on adjacent land use but Alachua County regulations require any proposed land use change within 100 feet of the park to be reviewed and commented on by park staff.
Ms. Garren inquired as to the cost and methods of updating the archaeological site files. Dan Pearson explained the master site files, the updating process and the checks in place to determine who accesses the files. The files are part of public record. The Bureau of Natural and Cultural Resources will soon begin documentation of the tung nut depot.

Ms. Mandi Hall, representing the Florida Traffic and Bicycle Safety E.P., expressed approval of the plan. She inquired about a time line for trail expansion. Randy Brown explained that trail development is entirely dependent on the work of volunteers. Off-road bike volunteers are more active and therefore the bike trails are developing faster. The maximum build out will occur before the end of the 10-year planning period. Ms. Hall questioned the level of degradation that would necessitate closing a trail and if this should be delineated in the plan. It was explained that the park biologist and park manager determine the resource degradation and whether it can be repaired or the trail closed. Trails are designed in a loop system so one section can be closed without interrupting other areas. Methods and situations vary too much to detail it in the plan. Ms. Hall agreed that a greater variety of users need to be involved and suggested sponsoring a running event.

Ms. Lauren Day, representing the Alachua Conservation Trust, had not had enough time to read the plan and may comment later.

Summary of Public Comment

Mr. Bob Simons, representing the Florida Defenders of the Environment, liked the plan. He has two areas of concern he thinks will be the largest problems the park faces. Prescribed burning must occur for the health of the natural communities. The fire-adapted communities are in worse shape now than ten years ago. The severe drought did play a part but an emphasis on burning is necessary to catch up. The second area of concern is exotic species control; the exotic plants are winning and more effort is needed to control them. Mr. Simons stressed the need for a greater level of staffing to carry out the habitat maintenance that is needed. Craig Parenteau explained the parks' use of money dedicated for exotic species control provided by a legislative budget item. The Bureau of Invasive Plant Management is employing outside consultants through OPS money to assist. However, the park is in need of more staff and assistance. Mr. Simons also expressed the need for acquisition priority on the parcels to the north of the park for wildlife corridor potential and hydrological protection.

Ms. Perfit thanked everyone for participating and adjourned the meeting.

Summary of Submitted Comments

Mr. Peter Ames submitted comments in writing after the meeting. With Gainesville expanding to the northwest, land values in the area between the park and Millhopper Road

may soon render the land inaccessible in price and Mr. Ames would like land acquisition to take the highest priority.

Staff Recommendation

The Advisory Group recommends approval of the proposed San Felasco Hammock Preserve State Park management plan as presented with the following recommendations:

Addition of –

"Upgrade the entrance road from the park boundary to the park shop/office area. The road, especially the steeper section, washes out frequently, requiring constant maintenance."

"Stabilize (not pave) the north entrance road from the park boundary to the parking area. With increased use this road will become rutted and more difficult to maintain."

Investigate the Wilderness Boundary delineation along the north side of Millhopper Road. If the area outside the boundary is determined to fit the wilderness criteria, the boundary should be expanded. The Florida mouse habitat and Moonshine Creek watershed protection are two of the reasons for this change.

Addendum 2—References Cited

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Addendum 3—Soil Descriptions

(2B) Candler fine sand, 0 to 5 percent slopes - This nearly level to gently sloping, excessively drained soil is in the deep, sandy uplands. Slopes are nearly smooth to convex.

Typically, the surface layer is very dark grayish brown fine sand about 6 inches thick. The underlying layers are fine sand to a depth of 82 inches or more. The upper 10 inches is pale brown; the next 12 inches is light yellowish brown; the next 29 inches is yellow; the next 13 inches is very pale brown; and the lowest 12 inches is very pale brown and has thin bands of brownish yellow loamy sand lamellae.

This soil has low available water capacity. Permeability is rapid. Natural fertility of the soil is low. Organic matter content of the surface layer is low to very low. Surface runoff is very slow. The water table is at a depth of more than 72 inches.

(2C) Candler fine sand, 5 to 8 percent slopes - This sloping, excessively drained soil is in small areas on sharp, breaking slopes and in relatively large areas on long, narrow slopes.

Typically, the surface layer is grayish brown fine sand about 5 inches thick. The underlying layers are fine sand to a depth of 82 inches or more. The upper 57 inches is yellow, the lower 23 inches is pale brown. The lowest portions have thin bands of yellowish brown loamy sand lamellae.

This soil has low available water capacity. Permeability is rapid. Natural fertility of the soil is low. Organic matter content of the surface layer is very low. Surface runoff is very slow. The water table is at a depth of more than 72 inches.

(3B) Arrendondo fine sand, 0 to 5 percent slopes - This nearly level to gently sloping, well drained soil is in both small and large areas of uplands. Slopes are smooth to convex.

Typically, the surface layer is dark grayish brown fine sand about 8 inches thick. The subsurface layer is fine sand to a depth of 49 inches. The upper 23 inches is yellowish brown, and the lower 18 inches is brownish yellow. The subsoil extends to a depth of 86 inches or more. The upper 5 inches is yellowish brown loamy sand; the next 10 inches is yellowish brown sandy clay loam; and the lowest 22 inches is dark yellowish brown sandy clay and sandy clay loam.

In this soil the available water capacity is low in the sandy surface and subsurface layers and low to medium in the loamy subsoil. Permeability is rapid in the surface and subsurface layers and moderately slow to moderate in the loamy subsoil. Natural fertility is low in the sandy surface and subsurface layers and medium in the finer textured subsoil. Organic matter content is low. The water table in this soil is at a depth of more than 72 inches. Surface runoff is slow.

(3C) Arredondo fine sand, 5 to 8 percent slopes - This sloping, well drained soil is in small areas on sharp breaking slopes and in large areas on long slopes of uplands. Slopes are smooth to convex.

Typically, the surface layer is dark grayish brown fine sand about 5 inches thick. The subsurface layer is yellowish brown fine sand to a depth of 65 inches. The subsoil extends down to 88 inches and is yellowish brown sandy loam in the upper 6 inches and yellowish brown sandy clay loam below that.

In this soil the available water capacity is low in the sandy surface and subsurface layers and medium in the loamy subsoil. Permeability is rapid in the surface and subsurface layers and moderately slow in the loamy subsoil. Natural fertility is low in the sandy surface and subsurface layers and medium in the finer textured subsoil. Organic matter content is low. The water table in this soil is at a depth of more than 72 inches. Surface runoff is slow.

(5B) Fort Meade fine sand, 0 to 5 percent slopes - The nearly level to gently sloping, well drained soil is in both small and large areas on the gently rolling uplands.

Typically, the surface layer is fine sand about 14 inches thick. The upper 10 inches is very dark brown, and the lower 4 inches is very dark grayish brown. The underlying layer is fine sand to a depth

of 80 inches or more. In sequence from the top, the upper 20 inches is dark brown; the next 9 inches is dark yellowish brown; the next 28 inches is yellowish brown; and lower 14 inches is dark brown.

In this soil, the available water capacity is low to medium. The permeability is rapid. Natural fertility is low. Organic matter content of the surface layer is moderately low to high. Surface runoff is slow. The water table is more than 72 inches below the surface.

(7B) Kanapaha sand, 0 to 5 percent slopes - This nearly level to gently sloping, poorly drained soil is in small to relatively large areas on uplands. Slopes are nearly smooth to slightly convex.

Typically, the surface layer is dark gray sand about 8 inches thick. The subsurface layer is sand about 36 inches thick. The upper 5 inches is light brownish gray, and the lower 31 inches is light gray. The subsoil is sandy clay loam to a depth of 80 inches or more. The upper 6 inches is light brownish gray and the lower 30 inches is gray.

This soil has a water table that is less than 10 inches below the surface for 1 to 3 months during most years. Surface runoff is slow. The available water capacity is very low to low in the sandy surface and subsurface layers, and it is low to medium in the subsoil. Permeability is moderately rapid in the surface and subsurface layers and is slow to moderately slow in the subsoil. Natural fertility is low to medium. Organic matter content of the surface layer ranges from moderately low to moderate.

(8B) Millhopper sand, 0 to 5 percent slopes - This nearly level to gently sloping, moderately well drained soil is in small and large irregularly shaped areas on uplands and on slightly rolling knolls in the broad flatwoods. Slopes are mostly nearly smooth or convex.

Typically, the surface layer is dark grayish brown sand about 9 inches thick. The subsurface layer is sand or fine sand about 49 inches thick. The upper 17 inches is yellowish brown, the next 22 inches is light yellowish brown, and the lower 10 inches is very pale brown. The subsoil extends to a depth of 89 inches. The upper 6 inches is yellowish brown loamy sand that has grayish and brownish mottles; the next 22 inches is light gray, mottled sandy clay loam; and the lower 3 inches is light gray, mottled sandy loam.

This soil has a water table that is at a depth of 40 to 60 inches for 1 to 4 months and at a depth of 60 to 72 inches for 2 to 4 months during most years. The available water capacity is low in the surface and subsurface layers and is low to medium in the subsoil. Permeability is rapid in the surface and subsurface layers, moderately rapid in the upper 6 inches of the subsoil, and slow to moderately slow below this depth. Natural fertility is low. Organic matter content is low to moderately low.

(8C) Millhopper sand, 5 to 8 percent slopes - This sloping, moderately well drained soil is in small areas on narrow breaks and on long slopes of rolling uplands.

Typically, the surface layer is dark grayish brown sand about 7 inches thick. The subsurface layer is sand about 47 inches thick. The upper 37 inches is yellowish brown, and the lower 10 inches is pale brown. Mottles of brown and yellow range from none to common. The subsoil extends to a depth of 80 inches or more. The upper 6 inches is yellowish brown sandy loam that has light gray and strong brown mottles, and the lower 22 inches is light gray sandy clay loam that has gray, strong brown, and very pale brown mottles.

This soil has a water table that is at a depth of 40 to 60 inches for 1 to 2 months and at a depth of 60 to 72 inches for 2 to 3 months during most years. The available water capacity is low in the surface and subsurface layers, and it is low to medium in the subsoil. Permeability is rapid in the surface and subsurface layers. It is moderate in the upper part of the subsoil and slow to moderately slow in the lower part. The natural soil fertility and the organic matter content are low.

(11) Riviera sand - This is a nearly level, poorly drained soil that formed in stratified, unconsolidated sandy and loamy materials. This soil is in the broad flatwoods. Slopes are nearly smooth and are less

than 2 percent. Areas are small and irregularly shaped.

Typically, the surface layer is very dark gray sand about 5 inches thick. The subsurface layer is sand about 27 inches thick. The upper 8 inches is grayish brown, and the lower 19 inches is gray. The subsoil extends to a depth of 53 inches. It is gray sandy clay loam. The upper 10 inches has large streaks of gray sand. Between depths of 53 and 80 inches, the underlying material is gray, mixed sandy loam, loamy sand, and sand.

In this soil, the water table is less than 10 inches below the surface for 2 to 4 months during most years. It is at a depth of 10 to 40 inches for much of the remainder of the year. During dry seasons it may recede to a depth of more than 40 inches. Surface runoff is slow. Available water capacity is low to a depth of about 32 inches, medium from 32 to 55 inches, and low below this depth. Permeability is rapid to a depth of about 32 inches, slow from 32 to 55 inches, and moderate to moderately rapid from 55 to 62 inches. Natural fertility is low in the sandy upper 32 inches and medium below this depth. Organic matter content is low.

(13) Pelham sand - This nearly level, poorly drained soil is in small and large areas in the flatwoods. Slopes are nearly smooth and range from 0 to 2 percent.

Typically, the surface layer is sand about 7 inches thick. The upper 4 inches is very dark gray, and the lower 3 inches is dark gray. The subsurface layer is sand about 22 inches thick. The upper 7 inches is light brownish gray and has gray mottles, and the lower 15 inches is gray. The subsoil extends to a depth of 69 inches. The upper 3 inches is gray sandy loam, and the lower 37 inches is gray, mottled sandy clay loam. Between depths of 69 and 80 inches, the underlying material is gray, mottled sandy loam.

This soil has a water table that is less than 10 inches below the surface for 1 to 4 months during most years. The water table recedes below a depth of 40 inches during dry seasons. Surface runoff is slow. The available water capacity is low in the surface and subsurface layers and medium in the loamy subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the loamy subsoil. Natural fertility is low in the upper 29 inches and medium below 29 inches. The organic matter content is moderately low.

(14) Pomona sand - This nearly level, poorly drained soil is in small and large areas in the flatwoods. Slopes are nearly smooth and range from 0 to 2 percent.

Typically, the surface layer is very dark gray sand about 5 inches thick. The subsurface layer is sand to a depth of 16 inches. The upper 4 inches is gray, and the lower 7 inches is light gray. The upper 4 inches of the subsoil is very dark gray sand in which many sand grains are coated with organic material, and the next 4 inches is dark reddish brown sand. The next 8 inches is pale brown sand that has mottles, and the lower 11 inches is very pale brown sand. Below this, a loamy subsoil extends to a depth of 69 inches. The upper 4 inches is light gray fine sandy loam, and the lower 22 inches is gray, mottled sandy clay loam. Between depths of 69 and 84 inches, the underlying material is light gray, mottled fine sandy loam.

The water table in this soil is within 10 inches of the surface for 1 to 3 months during most years. During dry seasons, the water table recedes to a depth of more than 40 inches. Surface runoff is slow. The available water capacity is low to medium in the surface and subsurface layers, and it ranges from low to high in the subsoil. Permeability is rapid to very rapid in the surface and subsurface layers, moderate to rapid in the upper part of the subsoil, and moderately slow to moderate in the lower part.

(16) Surrency sand - This nearly level, very poorly drained soil is in ponds and depressional areas in the broad flatwoods and in areas of wet prairie on uplands. Slopes are less than 1 percent.

Typically, the surface layer is black sand about 15 inches thick. The subsurface layer is light gray sand to a depth of 28 inches. Between 28 and 80 inches, the subsoil is sandy clay loam. The upper 27

inches is gray, and the lower 25 inches is light gray.

This soil has a water table that is within 10 inches of the surface for about 6 months or more during most years. Water is on the surface for 4 months or more. The available water capacity ranges from low to high in the surface and subsurface layers and from low to medium in the subsoil. Permeability is moderately rapid to rapid in the sandy surface and subsurface layers and slow to moderately slow in the loamy subsoil. Natural fertility is medium in the surface layer and is low in the subsurface layer and subsoil. Organic matter content is high to very high in the surface layer.

(17) Wauchula sand - This nearly level, poorly drained soil is in broad areas of the flatwoods. Slopes are nearly smooth and range from 0 to 2 percent.

Typically, the surface layer is sand about 8 inches thick. The upper 5 inches is black, and lower 3 inches is dark gray. The subsurface layer is light brownish gray sand about 6 inches thick. The upper part of the subsoil is 4 inches of dark reddish brown loamy sand, in which many sand grains have an organic coating, and 5 inches of dark brown sand. Below this is a leached layer of pale brown, mottled fine sand about 5 inches thick. The lower part of the subsoil is a loamy layer that extends to a depth of 62 inches. The upper 9 inches is gray, mottled fine sandy loam; the next 19 inches is light brownish gray, mottled loamy sand; and the lower 6 inches is light gray, mottled fine sandy loam. Between depths of 62 and 80 inches, the underlying material is light gray, mottled sandy clay loam.

The Wauchula soil has a water table that is at a depth of less than 10 inches for 1 to 4 months and is at a depth of 10 to 40 inches for about 6 months. During driest seasons, the water table recedes to a depth of more than 40 inches. The available water capacity is low to medium in the surface layer, very low to low in the subsurface layer, low to high in the upper part of the subsoil, and medium to high in the lower part. Permeability is moderately rapid to rapid in the surface and subsurface layers, moderate to moderately rapid in the upper part of the subsoil, and slow to moderately slow in the lower part. Natural fertility is low in the sandy surface and subsurface layers and low to medium in the subsoil. Organic matter content is low.

(19) Monteocha loamy sand - This nearly level, very poorly drained soil is in wet ponds and shallow depressional areas in the flatwoods. Slopes are less than 2 percent.

Typically, the surface layer is black loamy sand about 12 inches thick. The subsurface layer is light brownish gray sand to a depth of 18 inches. The upper part of the subsoil is brown sand to a depth of 48 inches. Below this, a subsoil of fine sandy loam extends to a depth of 85 inches. The upper 11 inches is grayish brown, and the lower 26 inches is light brownish gray. Between 85 and 94 inches the underlying material is light gray sand.

This soil has a water table that is within 10 inches of the surface for more than 6 months during most years. Most areas are covered with water for more than 4 months. Available water capacity is high to very high in the surface layer and medium in the subsurface layer and subsoil. Permeability is rapid in the surface layer, moderately rapid to rapid in the subsurface layer and upper part of the subsoil, and moderately slow to moderate in the lower part. Natural fertility is medium in the surface layer and low in the subsurface layer and subsoil. Organic matter content is high to very high in the surface layer.

(20B) Tavares sand, 0 to 5 percent slopes - This is a nearly level to gently sloping, moderately well drained soil. This soil is deep and sandy. It is on slightly convex slopes in broad areas of the flatwoods and along gentle slopes of the rolling uplands.

Typically, the surface layer is dark gray sand about 8 inches thick. The underlying layers are sand to a depth of 80 inches or more. The upper 11 inches is pale brown, the next 17 inches is very pale brown, and the lower 44 inches is very pale brown or white and has mottles.

In this soil, the water table is at a depth of 40 to 72 inches for a cumulative period of 6 months or more

during most years. It recedes to more than 72 inches below the surface during droughty periods. Surface runoff is slow. The available water capacity is very low to low. Permeability is rapid to very rapid. Natural fertility is low, and organic matter content is low to moderate in the surface layer.

(21) Newnan sand - This nearly level, somewhat poorly drained soil is in small to relatively large areas in the flatwoods. Slopes are nearly level to slightly convex and range from 0 to 2 percent.

Typically, the surface layer is dark gray sand about 5 inches thick. The subsurface layer is light brownish gray sand to a depth of 12 inches. The upper part of the subsoil is 4 inches of dark brown sand, in which the sand grains are well coated with organic material, and 4 inches of dark brown sand that is mottled. Below this is a leached layer of light gray to white sand to a depth of 56 inches. The lower part of the subsoil is loamy, light gray, and mottled. The upper 3 inches is loamy sand, the next 16 inches is fine sandy loam, and the lower 7 inches is sandy clay loam.

This soil has a water table that is at a depth of 18 to 30 inches for 1 to 2 months during most years and at a depth of 30 to 60 inches for 2 to 5 months. During drier periods, it is at a depth of more than 60 inches. The available water capacity is very low to low to a depth of about 12 inches and low to medium from 12 to 82 inches. Permeability is rapid to a depth of about 12 inches, moderately rapid from 56 to 59 inches, and slow to moderately slow from 59 to 82 inches. Natural fertility is low in the sandy upper 56 inches and medium in the loamy subsoil below. Organic matter content is moderately low.

(23) Mulat sand – This nearly level, poorly drained soil occurs in broad areas in the flatwoods. Slopes are nearly smooth to slightly concave and range from 0 to 2 percent.

Typically, the surface layer is sand about 8 inches thick where the upper 5 inches is very dark gray and the lower three inches are dark gray. The subsurface layer is grayish brown to light gray sand to 26 inches depth below the surface. The subsoil reaches 54 inches depth and is gray with the upper 4 inches being loamy sand, the next 17 inches is sandy loam, and the lowest 7 inches is loamy sand. Below this to 54 inches, the underlying material is light gray loamy sand.

This soil has slow surface runoff and the available water capacity is low to medium. Permeability in the surface and subsurface layers is moderately rapid to rapid and moderately slow in the subsoil. Natural fertility is low and organic matter content is moderate to moderately low.

(26) Samsula muck - This nearly level, very poorly drained organic soil is in large and small swamps, marshes, and ponded areas in the broad flatwoods. Slopes are usually slightly concave and range from 0 to 1 percent.

Typically, the surface layer is muck about 35 inches thick. The upper 8 inches is very dark brown, and the lower 27 inches is very dark gray. Between depths of 35 and 75 inches, the underlying layer is sand. The upper 7 inches is dark gray, the next 11 inches is light brownish gray, and the lower 17 inches is light gray.

This soil has water at or on the surface for more than 6 months during most years. The water table is within 10 inches of the surface for most of the remainder of the year, except during long extended dry periods. The available water capacity is very high in the organic layer. It is very low in the underlying sandy layer. Permeability is rapid. Natural fertility is medium. Organic matter content in the surface layer is very high.

(28) Chipley sand - This nearly level, somewhat poorly drained soil occurs in broad areas in the flatwoods and is in small and large areas in the transition between flatwoods and rolling uplands. Slopes are nearly level to slightly concave and range from 0 to 2 percent.

Typically, the surface layer is sand about 12 inches thick where the upper 6 inches is very dark gray and the lower six inches are dark grayish brown. The underlying layers are sand to more than 81

inches with the upper 13 inches being grayish brown, the next 24 inches is light gray with yellowish red mottles, and the lowest 32 inches is light gray.

This soil has slow surface runoff and the available water capacity is low. Permeability is rapid to 80 inches depth. Natural fertility is low and organic matter content is moderate to moderately low. The water table is 20 to 40 inches deep for 2 to 4 months of the year.

(29B) Lochloosa fine sand, 2 to 5 percent slopes - This gently sloping, somewhat poorly drained soil is in small and large areas on the rolling uplands. Slopes are slightly convex.

Typically, the surface layer is dark gray fine sand about 7 inches thick. The subsurface layer is yellowish brown loamy sand or sand to a depth of 31 inches. It has light gray and yellowish brown mottles below a depth of 21 inches. The subsoil extends to 76 inches. The upper 4 inches is dark gray, mottled fine sandy loam; the next 19 inches is gray sandy loam; and the lower 22 inches is gray sandy clay loam. Between depths of 76 and 83 inches, the underlying material is mixed light gray and greenish gray sandy clay loam.

This soil has a water table that is about 30 to 40 inches below the surface for 1 to 4 months during most years. The water table rises to a depth of 20 to 30 inches for 1 to 3 weeks. Surface runoff is slow. The available water capacity is low to medium in the sandy surface and subsurface layers and medium in the subsoil. Permeability is rapid in the surface and subsurface layers, moderate in the upper part of the subsoil, and slow in the lower part. Natural fertility is low in the sandy surface and subsurface layers and low to medium in the loamy subsoil. Organic matter content is low to moderately low in the surface layer.

(29C) Lochloosa fine sand, 5 to 8 percent slopes - This sloping, somewhat poorly drained soil is in relatively small areas on sharp breaking slopes and along long, narrow slopes of the upland.

Typically, the surface layer is grayish brown fine sand about 5 inches thick. The subsurface layer is light yellowish brown, mottled fine sand to a depth of 25 inches. The subsoil extends to a depth of 67 inches. The upper 5 inches is yellowish brown, mottled sandy loam; the next 5 inches is mottled light yellowish brown and gray sandy clay loam; and the lower 32 inches is gray, mottled sandy clay loam. Between depths of 67 to 80 inches, the underlying material is gray, mottled sandy clay and fine pockets of sandy loam and sandy clay loam.

This soil has a water table that is about 30 to 40 inches below the surface for 1 to 3 months during most years. The water table may be at a depth of 20 to 30 inches for 1 to 3 weeks. Wetness is caused by hillside seepage. Surface runoff is medium on this soil. The available water capacity is low in the sandy surface layer and medium in the subsoil. Permeability is rapid in the surface and subsurface layers, moderate in the upper part of the subsoil, and slow in the lower part. Natural fertility is low in the sandy surface and subsurface layers and low to medium in the loamy subsoil. Organic matter content is low in the surface.

(30B) Kendrick sand, 2 to 5 percent slopes - This gently sloping, well drained soil is in both small and large areas on the gently rolling uplands.

Typically, the surface layer is dark grayish brown sand about 9 inches thick. The subsurface layer is yellowish brown loamy sand to a depth of 26 inches. The subsoil extends to a depth of 90 inches or more. The upper 5 inches is yellowish brown fine sandy loam; the next 20 inches is dark yellowish brown, mottled sandy clay loam; the next 22 inches is dark yellowish brown sandy clay loam; the next 10 inches is yellowish brown, mottled fine sandy loam; and the lowest 7 inches is yellowish brown sandy clay loam.

In this soil, the available water capacity is low in the surface and subsurface layers, medium in the upper 5 inches of the subsoil, and medium to high below this depth. Permeability is rapid in the surface and subsurface layers. Permeability is moderate to moderately rapid in the upper 5 inches of

the subsoil, moderately slow to moderate in the next 42 inches, and slow in the lower 17 inches. Natural fertility is low in the sandy surface layer and medium in the loamy subsoil. Organic matter content is low to moderately low in the surface layer. The water table is more than 72 inches below the surface. Surface runoff is moderately slow.

(30C) Kendrick sand, 5 to 8 percent slopes - This sloping, well drained soil is in elongated areas on long slopes of the uplands.

Typically, the surface layer is grayish brown sand about 6 inches thick. The subsurface layer is yellowish brown sand to a depth of 24 inches. The subsoil extends to a depth of 76 inches or more. The upper 5 inches is yellowish brown, mottled sandy loam. The next 27 inches is strong brown sandy clay loam and the deepest 20 inches is yellowish brown, mottled sandy clay loam.

In this soil, the available water capacity is low in the surface and subsurface layers, medium in the upper 5 inches of the subsoil, and medium to high below this depth. Permeability is rapid in the surface and subsurface layers. Permeability is rapid in the sandy surface and subsurface layers, moderate in the upper subsoil, and slow to moderately slow below this. Natural fertility is low in the sandy surface layer and medium in the loamy subsoil. Organic matter content is low. The water table is more than 72 inches below the surface. Surface runoff is medium.

(31B) Blichton sand, 2 to 5 percent slopes - This gently sloping, poorly drained soil is on gently rolling uplands. Slopes are slightly convex.

Typically, the surface layer is dark grayish brown sand about 6 inches thick. It is about 3 percent nodules of ironstone and fragments and nodules of phosphatic limestone. The subsurface layer extends to a depth of 28 inches. The upper 7 inches is grayish brown sand, and it has about 2 percent nodules of ironstone and fragments of phosphatic limestone. The next 15 inches is light brownish gray loamy sand. The subsoil extends to a depth of 80 inches or more. The upper 6 inches is dark gray sandy clay loam and is about 4 percent nodules of ironstone and fragments of phosphatic limestone. The next 28 inches is dark gray sandy clay loam that is about 10 percent plinthite and about 3 percent nodules of ironstone and weathered phosphatic limestone. The lower 18 inches is gray sandy clay loam that has dark reddish brown mottles.

In this soil, the subsurface layer and upper part of the subsoil are saturated by a perched water table for 1 to 4 months during most years. Surface runoff is medium. The available water capacity is low in the sandy surface and subsurface layers and low to medium in the loamy subsoil. Permeability is rapid in the sandy surface and subsurface layers and slow to moderately slow in the loamy subsoil. Natural fertility is low to medium, and organic matter content is moderately low to moderate.

(31C) Blichton sand, 5 to 8 percent slopes - This sloping, poorly drained soil is on the rolling uplands. The areas are irregular in shape and elongated.

Typically, the surface layer is dark gray sand about 5 inches thick. It is about 2 percent nodules of ironstone and fragments of phosphatic limestone. The subsurface layer is sand to a depth of 31 inches. The upper 21 inches is gray. The lower 5 inches is light gray. It is about 2 percent nodules of ironstone and fragments of phosphatic limestone. The subsoil extends to a depth of 78 inches. The upper 6 inches is light brownish gray sandy loam. It is about 4 percent nodules of ironstone and fragments of phosphatic limestone. The next 12 inches is light brownish gray sandy clay loam and is about 2 percent nodules of ironstone and fragments of phosphatic limestone. It is about 6 percent plinthite, by volume. The next 17 inches is light gray sandy clay loam and is about 1 percent nodules of ironstone and weathered fragments of phosphatic limestone. About 8 percent is plinthite, by volume. The lower 12 inches is light gray sandy clay loam. Between depths of 78 and 80 inches, the underlying material is gray sandy clay loam.

This soil is saturated by a perched water table within 10 inches of the surface for 1 to 4 months during

most years. Wetness is caused by hillside seepage. Surface runoff is rapid. The available water capacity is low in the sandy surface and subsurface layers, and it is low to medium in the loamy subsoil. Permeability is rapid in the sandy surface and subsurface layers. It is slow to moderately slow in the loamy subsoil. Natural fertility is low to medium, and organic matter content is moderately low.

(32B) Bivans sand, 2 to 5 percent slopes - This is a gently sloping, poorly drained soil and occurs in relatively broad flats and at the base of slopes in the rolling uplands. The areas are irregular in shape.

Typically, the surface layer is dark gray sand about 6 inches thick. The subsurface layer is gray sand about 9 inches thick. It has a few nodules of ironstone and fragments of phosphatic limestone. The subsoil extends to a depth of 61 inches. The upper 12 inches is dark gray sandy clay and a few nodules of ironstone and fragments of phosphatic limestone. The next 29 inches is gray, mottled sandy clay. Beneath this for the next 18 inches is gray, mottled sandy clay and below this for 16 inches is gray, mottled sandy clay loam. Between depths of 61 and 81 inches, the underlying material is gray, mottled sandy clay loam.

In this soil, the subsurface layer and upper part of the subsoil are saturated by a perched water table for 1 to 3 months during most years. Wetness is caused mainly by hillside seepage. Surface runoff is moderate. The available water capacity is low to medium. Permeability is moderate to moderately rapid in the surface and subsurface layers. It is very slow to slow in the subsoil. Natural fertility is low to medium, and the organic matter content is moderately low to moderate in the surface layer.

(32C) Bivans sand, 5 to 8 percent slopes - This is a sloping, poorly drained soil on short breaking slopes and along hillsides of the uplands. The areas are irregular and elongated in shape.

Typically, the surface layer is dark gray sand about 5 inches thick. The subsurface layer is light brownish gray sand about 5 inches thick. It has a few nodules of ironstone and fragments of phosphatic limestone. The subsoil extends to a depth of 59 inches. The upper 20 inches is gray sandy clay and a few nodules of ironstone and fragments of phosphatic limestone. The next 29 inches is gray, mottled sandy clay. Between depths of 59 and 80 inches, the underlying material is gray, mottled sandy clay.

In this soil, the subsurface layer and upper part of the subsoil are saturated by a perched water table for 1 to 3 months during most years. Wetness is caused mainly by hillside seepage. Surface runoff is rapid. The available water capacity is low to medium. Permeability is moderate to moderately rapid in the surface and subsurface layers. It is very slow to slow in the subsoil. Natural fertility is low to medium, and the organic matter content is moderately low to moderate in the surface layer.

(32D) Bivans sand, 8 to 12 percent slopes - This strongly sloping, poorly drained soil is on uplands. The areas are on small, sharp-breaking slopes and long, irregularly shaped, seepy hillsides.

Typically, the surface layer is dark gray sand about 5 inches thick. The subsurface layer is dark grayish brown sand about 6 inches thick. Both layers are about 2 percent nodules of ironstone and fragments of phosphatic limestone. The subsoil is gray sandy clay to a depth of 56 inches. It is about 3 percent nodules of ironstone and fragments of phosphatic limestone. Between depths of 56 and 80 inches, the underlying material is light gray, mottled sandy clay.

This soil is saturated with a perched water table caused mainly by hillside seepage. The water table is less than 10 inches below the surface for 1 to 3 months during most years. Surface runoff is rapid. The available water capacity is low to medium. Permeability is moderate to moderately rapid in the sandy surface and subsurface layers. It is very slow to slow in the subsoil. Natural fertility is medium. Organic matter content is moderately low in the surface layer.

(33C) Norfolk loamy fine sand, 5 to 8 percent slopes - This sloping, well drained soil is in irregularly shaped areas on small, sharp-breaking slopes and in irregularly shaped and elongated areas

on the long hillsides of the rolling uplands.

Typically, the surface layer is dark grayish brown loamy sand about 6 inches thick. The subsurface layer is light yellowish brown loamy sand about 5 inches thick. The subsoil extends to a depth of 75 inches or more. The upper 35 inches is yellowish brown sandy clay loam; the next 16 inches is yellowish brown, mottled sandy clay loam; and the lower 13 inches is mottled, yellowish brown and gray sandy clay.

This soil has a water table that is at a depth of 48 to 72 inches for 1 to 2 months during most years. Wetness is caused by hillside seepage. Surface runoff is rapid. The available moisture capacity is low in the sandy surface and subsurface layers and medium to high in the loamy and clayey subsoil. Permeability is rapid in the surface and subsurface layers. It is moderately slow in the upper part of the subsoil and very slow to slow in the lower part. Natural fertility is low in the sandy surface and subsurface layers and medium in the underlying subsoil. Organic matter content is low to moderately low.

(34) Placid sand, depressional - This nearly level, very poorly drained soil is along poorly defined drainageways and in wet depressional areas both in the flatwoods and on sandy ridges. Slopes range from 0 to 2 percent. The areas are circular, elongated, or irregularly shaped.

Typically, the surface layer is sand about 15 inches thick. The upper 8 inches is black, and lower 7 inches is very dark gray. The underlying layers are sand to a depth of more than 82 inches. The upper 6 inches is grayish brown, and next 26 inches is light brownish gray, and the lower 35 inches is light gray.

This soil has a water table that is within 10 inches of the surface for 6 to 12 months of the year. The surface is usually covered with water for 6 months or more. The available water capacity is high to a depth of about 15 inches and low below this depth. Permeability is rapid throughout. Internal drainage is slow because it is impeded by the water table. Natural fertility and organic matter content are high to a depth of about 15 inches and very low below this depth.

(35B) Gainesville sand, 0 to 5 percent slopes - This nearly level to gently sloping, well drained soil has sandy texture to a depth of 80 inches or more. It is in both small and large, irregularly shaped areas on the gently rolling uplands.

Typically, the surface layer is dark grayish brown sand about 7 inches thick. The underlying layer extends to a depth of 82 inches or more. The upper 22 inches is yellowish brown sand, and the lower 53 inches is strong brown loamy sand.

In this soil, the available water capacity is low, and the permeability is rapid. Organic matter content ranges from low to moderately low, and natural fertility is low. Surface runoff is slow. The water table is more than 72 inches below the surface.

Addendum 4—Plant And Animal List

San Felasco Hammock Preserve State Park

Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
	FERNS	
Bicolored spleenwort	*Asplenium heterochroum*	
San Felasco spleenwort	*Asplenium monanthes*	18
Ebony spleenwort	*Asplenium platyneuron*	
Southern lady fern	*Athyrium filix-femina* subsp. *aspleniodes*	21
Carolina mosquito fern	*Azolla caroliniana*	
Southern grape fern	*Botrychium biternatum*	
Rattlesnake fern	*Botrychium virginianum*	
Japanese false spleenwort	*Deparia petersenii* *	
Vegetable fern	*Diplazium esculentum* *	
Southern wood fern	*Dryopteris ludoviciana*	
Japanese climbing fern	*Lygodium japonicum* *	
Sensitive fern	*Onoclea sensibilis*	
Cinnamon fern	*Osmunda cinnamomea*	26
Royal fern	*Osmunda regalis* var. *spectabilis*	31
Resurrection fern	*Pleopeltis polypodioides* var. *michauxiana*	
Christmas fern	*Polystichum acrostichoides*	
Tailed bracken fern	*Pteridium aquilinum* var. *pseudocaudatum*	
Cretan brake	*Pteris cretica*	
Water spangles	*Salvinia minima*	
Downy shield fern	*Thelypteris dentata* *	
Woods fern	*Thelypteris kunthii*	
Netted chain fern	*Woodwardia areolata*	
Virginia chain fern	*Woodwardia virginica*	
	GYMNOSPERMS AND CYCADS	
Southern red cedar	*Juniperus virginiana*	
Slash pine	*Pinus elliottii*	
Spruce pine	*Pinus glabra*	
Longleaf pine	*Pinus palustris*	
Loblolly pine	*Pinus taeda*	
Pond cypress	*Taxodium ascendens*	
Bald cypress	*Taxodium distichum*	
Coontie	*Zamia pumila*	22
	ANGIOSPERMS	
MONOCOTS		
Yellow colic-root	*Aletris lutea*	
Southern colic-root	*Aletris obovata*	
Wild onion	*Allium canadense*	
Big bluestem	*Andropogon gerardii*	
Big chalky bluestem	*Andropogon glomeratus* var. *glaucopsis*	
Bushy beard grass	*Andropogon glomeratus*	
Splitbeard bluestem	*Andropogon ternarius*	
Bluestem	*Andropogon virginicus*	
Green silkyscale	*Anthaenantia villosa*	
Nodding nixie	*Apteria aphylla*	

*** Non-native Species**

San Felasco Hammock Preserve State Park

Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Green dragon	*Arisaema dracontium*	
Jack-in-the-pulpit	*Arisaema triphyllum*	
Big threeawn	*Aristida condensata*	
Chapman threeawn	*Aristida simplicifolia*	
Bottlebrush threeawn	*Aristida spiciformis*	
Wire grass	*Aristida stricta* var. *beyrichiana*	
Switch cane	*Arundinaria gigantea*	
Common carpetgrass	*Axonopus fissifolius*	
Big carpetgrass	*Axonopus furcatus*	
Rescue grass	*Bromus catharticus* *	
Capillary hair sedge	*Bulbostylis ciliatifolia*	
Pale grass-pink orchid	*Calopogon pallidus*	
Bearded sedge	*Carex comosa*	
Waxy sedge	*Carex glaucescens*	
Godfrey's sedge	*Carex godfreyi*	
Greater bladder sedge	*Carex intumescens*	
Long's sedge	*Carex longii*	
Louisiana sedge	*Carex louisianica*	
Hop sedge	*Carex lupulina*	
Stalk-grain sedge	*Carex stipata*	
Spike chasmanthium	*Chasmanthium laxum* var. *laxum*	
Longleaf chasmanthium	*Chasmanthium laxum* var. *sessiliflorum*	
Jamaican swamp sawgrass	*Cladium jamaicense*	
Wild taro	*Colocasia esculenta* *	
Baby dewflower	*Commelina diffusa*	
Erect dayflower	*Commelina erecta*	
Spring coralroot	*Corallorhiza wisteriana*	
Toothache grass	*Ctenium aromaticum*	
Bermuda grass	*Cynodon dactylon* *	
Globe flat sedge	*Cyperus croceus*	
Marshland flat sedge	*Cyperus distinctus*	
Yellow nutgrass	*Cyperus esculentus* *	
Rough flat sedge	*Cyperus plukenetii*	
Many-spike flat sedge	*Cyperus polystachyos*	
Low flat sedge	*Cyperus pumilus* *	
Pine barren flat sedge	*Cyperus retrorsus*	
Straw-colored flat sedge	*Cyperus strigosus*	
Four-angle flat sedge	*Cyperus tetragonus*	
Green flat sedge	*Cyperus virens*	
Durban crowfoot grass	*Dactyloctenium aegyptium* *	
Needleleaf witch grass	*Dicanthelium aciculare*	
Wooly witch grass	*Dicanthelium acuminatum*	
Bosc'switch grass	*Dichanthelium boscii*	
Deertongue witch grass	*Dichanthelium clandestinum*	
Variable witch grass	*Dichanthelium commutatum*	
Small-fruit witch grass	*Dichanthelium ensifolium*	
Egg-leaf witch grass	*Dichanthelium ovale*	
Southern crab grass	*Digitaria ciliaris*	

*** Non-native Species**

San Felasco Hammock Preserve State Park

Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Air potato vine	*Dioscorea bulbifera* *	
Florida yam	*Dioscorea floridana*	
Fourleaf yam	*Dioscorea quaternata*	
Three-way sedge	*Dulichium arundinaceum*	
Large barnyard grass	*Echinochloa crusgalli* *	
Coastal cockspur	*Echinochloa walteri*	
Creeping burhead	*Echinodorus cordifolius*	
Common water-hyacinth	*Eichhornia crassipes* *	
Roadgrass	*Eleocharis baldwinii*	
Knotted spikerush	*Eleocharis equisetoides*	
Clustered spikerush	*Eleocharis geniculata*	
Indian goose grass	*Eleusine indica* *	
Green-fly orchid	*Epidendrum conopseum*	21
Elliott's love grass	*Eragrostis elliottii*	
Bigtop love grass	*Eragrostis hirsuta*	
Purple love grass	*Eragrostis spectabilis*	
Coastal love grass	*Eragrostis virginica*	
Centipede grass	*Eremochloa ophiuroides* *	
Flattened pipewort	*Eriocaulon compressum*	
Ten-angle pipewort	*Eriocaulon decangulare*	
Low oak erythrodes	*Erythrodes querceticola*	
Wild coco	*Eulophia alta*	21
Two-spike finger grass	*Eustachys floridana*	
Pinewoods finger grass	*Eustachys petraea*	
Bearded skeleton grass	*Gymnopogon ambiguus*	
Water-spider false rein orchid	*Habenaria repens*	
Sweet tanglehead	*Heteropogon melanocarpus*	
Spiked crested coralroot orchid	*Hexalectris spicata*	21
Little barley	*Hordeum pusillum*	
Swamp yellowstar-grass	*Hypoxis curtissii*	
Cogon grass	*Imperata cylindrica*	
Leathery rush	*Juncus coriaceus*	
Two-parted rush	*Juncus dichotomus*	
Soft rush	*Juncus effusus* subsp. *solutus*	
Grass-leaved rush	*Juncus marginatus*	
Needle-pod rush	*Juncus scirpoides*	
Carolina redroot	*Lachnanthes caroliniana*	
White-head bog-buttons	*Lachnocaulon anceps*	
Little water duckweed	*Lemna obscura*	
Pine lily	*Lilium catesbaei*	8
Frog's-bit	*Limnobium spongia*	
Southern twayblade orchid	*Listera australis*	21
Italian rye grass	*Lolium perenne* *	
Florida malaxis orchid	*Malaxis spicata*	
Green adder's-mouth orchid	*Malaxis unifolia*	21
Woods grass	*Oplismenus hirtellus*	
Golden club	*Orontium aquaticum*	
Beaked panicum	*Panicum anceps*	

*** Non-native Species**

San Felasco Hammock Preserve State Park

Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Fall panicum	*Panicum dichotomiflorum*	
Maidencane	*Panicum hemitomon*	
Redtop panicum	*Panicum rigidulum*	
Bahia grass	*Paspalum notatum* *	
Torpedo grass	*Paspalum repens* *	
Thin paspalum	*Paspalum setaceum*	
Vasey grass	*Paspalum urvillei* *	
Savannah panicum	*Phanopyrum gymnocarpon*	
Blackseed needle grass	*Piptochaetium avenaceum*	
Yellow fringed orchid	*Platanthera ciliaris*	8
Annual bluegrass	*Poa annua* *	
King Solomon's-seal	*Polygonatum biflorum*	
Pickerelweed	*Pontederia cordata*	
Needle palm	*Rhapidophyllum hystrix*	18
Falling beak sedge	*Rhynchospora caduca*	
Star-rush white-tops	*Rhynchospora colorata*	
Short-bristle horned beaksedge	*Rhynchospora corniculata*	
Small-head bunched beaksedge	*Rhynchospora microcephala*	
Blue-stem palmetto	*Sabal minor*	
Cabbage palm	*Sabal palmetto*	
Silver plumegrass	*Saccharum alopecuroides*	
Narrow plumegrass	*Saccharum baldwinii*	
Sugarcane plumegrass	*Saccharum giganteum*	
American cupscale	*Sacciolepis striata*	
Common arrowhead	*Sagittaria latifolia*	
Crimson false bluestem	*Schizachyrium sanguineum*	
Little false bluestem	*Schizachyrium scoparium*	
Florida feather-shank	*Schoenocaulon dubium*	
Woolgrass	*Scirpus cyperinus*	
Tall nutgrass	*Scleria triglomerata*	
Cultivated rye	*Secale cereale* *	
Saw palmetto	*Serenoa repens*	
Knotroot foxtail	*Setaria parviflora*	
Narrow-leaf blueeyed-grass	*Sisyrinchium angustifolium*	
Nash's blueeyed-grass	*Sisyrinchium nashii*	
Yellow blueeyed-grass	*Sisyrinchium rosulatum* *	
Ear-leaf greenbrier	*Smilax auriculata*	
Saw greenbrier	*Smilax bona-nox*	
Wild sarsaparilla	*Smilax glauca*	
Blue Ridge carrionflower	*Smilax lasioneuron*	
Bamboo-vine	*Smilax laurifolia*	
Sarsaparilla vine	*Smilax pumila*	
Bristly greenbrier	*Smilax tamnoides*	
Coral greenbrier	*Smilax walteri*	
Lopsided Indian grass	*Sorghastrum secundum*	
Grain sorghum	*Sorghum bicolor* *	
Johnson grass	*Sorghum halepense* *	
American bur-reed	*Sparganium americanum*	

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Prairie wedgescale	*Spenopholis obtusata*	
White nodding ladies'-tresses	*Spiranthes cernua*	
Cranichis ladies'-tresses	*Spiranthes cranichoides*	
Oval ladies'-tresses	*Spiranthes ovalis*	21
Giant ladies'-tresses	*Spiranthes praecox*	
Common water-flaxseed	*Spirodela polyrhiza*	
Smutgrass	*Sporobolus indicus* *	
Pineywoods dropseed	*Sporobolus junceus*	
St. Augustine grass	*Stenotaphrum secundatum*	
Bartram's air plant	*Tillandsia bartramii*	
Small ball-moss	*Tillandsia recurvata*	
Spanish-moss	*Tillandsia usneoides*	
Crane-fly orchid	*Tipularia discolor*	21
Small-leaf spiderwort	*Tradescantia fluminensis* *	
Ohio spiderwort	*Tradescantia ohiensis*	
Trillium	*Trillium maculatum*	
Three-bird's orchid	*Triphora trianthophoros*	21
Perennial sand grass	*Triplasis americana*	
Common cattail	*Typha latifolia*	
Columbia water meal	*Wolffia columbiana*	
Sword bogmat	*Wolffiella gladiata*	
Fringed yelloweyed-grass	*Xyris fimbriata*	
Tall yelloweyed-grass	*Xyris platylepis*	
Small's yelloweyed-grass	*Xyris smalliana*	
Spanish bayonet	*Yucca aloifolia* *	
Adam's needle	*Yucca filimentosa*	
DICOTS		
Slender three-seeded mercury	*Acalypha gracilens*	
Florida maple	*Acer saccharum* subsp. *floridanum*	
Box-elder	*Acer negundo*	
Red maple	*Acer rubrum*	
Shyleaf	*Aeschynomene americana*	
Porcupine joint-vetch	*Aeschynomene hystrix* *	
Red buckeye	*Aesculus pavia*	
Large purple false foxglove	*Agalinis fasciculata*	
Hammock thoroughwort	*Ageratina jucunda*	
Incised groovebur	*Agrimonia incisa*	
Small-fruit agrimony	*Agrimonia microcarpa*	
Mimosa tree	*Albizia julibrissin* *	
Tung-oil tree	*Aleurites fordii* *	
False moneywort	*Alysicarpus ovalifolius* *	
Common pigweed	*Amaranthus hybridus* *	
Spiny amaranth	*Amaranthus spinosus* *	
Common ragweed	*Ambrosia artemisiifolia*	
False indigobush	*Amorpha fruticosa*	
Pepper vine	*Ampelopsis arborea*	
American hog peanut	*Amphicarpaea bracteata*	

*** Non-native Species**

San Felasco Hammock Preserve State Park

Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Eastern bluestar	*Amsonia tabernaemontana*	
Groundnut	*Apios americana*	
Indian hemp	*Apocynum cannabinum*	
Devil's walkingstick	*Aralia spinosa*	
Coral ardisia	*Ardisia crenata* *	
Carolina poppy	*Argemone albiflora*	
Mexican prickly poppy	*Argemone mexicana*	
Virginia snakeroot	*Aristolochia serpentaria*	
Florida Indian plantain	*Arnoglossum floridanum*	
Clasping milkweed	*Asclepias amplexicaulis*	
Pinewoods milkweed	*Asclepias humistrata*	
Aquatic milkweed	*Asclepias perennis*	
Butterfly-weed	*Asclepias tuberosa*	
Whorled milkweed	*Asclepias verticillata*	
Slim-leaf pawpaw	*Asimina angustifolia*	
Flag pawpaw	*Asimina incana*	
Small-fruit pawpaw	*Asimina parviflora*	
Netted pawpaw	*Asimina reticulata*	
Climbing aster	*Aster carolinianus*	
Eastern silver aster	*Aster concolor*	
White-topped aster	*Aster tortifolius*	
Wavy-leaf aster	*Aster undulatus*	
Bearded milk vetch	*Astragalus villosus*	
Yellow oakleech	*Aureolaria flava* var. *pectinata*	
Comb oakleach	*Aureolaria pedicularia*	
Saltbush	*Baccharis halimifolia*	
Yellow buttons	*Balduina angustifolia*	
White wild indigo	*Baptisia alba*	
Wax begonia	*Begonia cucullata* *	
Rattan vine	*Berchemia scandens*	
Soft greeneyes	*Berlandiera pumila*	
Florida greeneyes	*Berlandiera subacaulis*	
Beggar ticks	*Bidens alba* var. *radiata*	
Spanish needles	*Bidens bipinnata*	
Marsh marigold	*Bidens discoidea*	
Bur marigold	*Bidens laevis*	
Cross vine	*Bignonia capreolata*	
Small-spike false nettle	*Boehmeria cylindrica*	
Water shield	*Brasenia schreberi*	
Flyr's brickell-bush	*Brickellia cordifolia*	22
Florida brickell bush	*Brickellia eupatorioides*	
American bluehearts	*Buchnera americana*	
American beautyberry	*Callicarpa americana*	
Red poppy-mallow	*Callirhoe papaver*	22
Trumpet creeper	*Campsis radicans*	
Shepherd's purse	*Capsella bursa-pastoris* *	
Hairy bittercress	*Cardamine hirsuta* *	
Quaker bittercress	*Cardamine pensylvanica*	

*** Non-native Species**

San Felasco Hammock Preserve State Park

Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Florida paintbrush	*Carphephorus corymbosus*	
Vanilla plant	*Carphephorus odoratissimus*	
American hornbeam	*Carpinus caroliniana*	
Mockernut hickory	*Carya alba*	
Pignut hickory	*Carya glabra*	
Pecan	*Carya illinoinensis* *	
Chinquapin	*Castanea pumila*	
New Jersey tea	*Ceanothus americanus*	
Little-leaf buckbrush	*Ceanothus microphyllus*	
Sugarberry	*Celtis laevigata*	
Hackberry	*Celtis occidentalis*	
Coinwort	*Centella asiatica*	
Spurred butterfly pea	*Centrosema virginianum*	
Common buttonbush	*Cephalanthus occidentalis*	
Sticky chickweed	*Cerastium glomeratum*	
Eastern redbud	*Cercis canadensis*	
Wild chervil	*Chaerophyllum tainturieri*	
Partridge pea	*Chamaecrista fasciculata*	
Wild sensitive pea	*Chamaecrista nictitans*	
Heartleaf sandmat	*Chamaesyce cordifolia*	
Hairy spurge	*Chamaesyce hirta*	
Eyebane	*Chamaesyce hyssopifolia*	
Milk purslane	*Chamaesyce maculata*	
Lamb's-quarters	*Chenopodium album*	
Mexican-tea	*Chenopodium ambrosioides* *	
White fringe tree	*Chionanthus virginicus*	
Cottony goldenaster	*Chrysopsis gossypina*	
Spotted water hemlock	*Cicuta maculata*	
Camphor tree	*Cinnamomum camphora* *	
Purple thistle	*Cirsium horridulum*	
Nuttall's thistle	*Circium nuttallii*	
Watermelon	*Citrullus lanatus* *	
Key lime	*Citrus aurantifolia* *	
Netleaf leatherflower	*Clematis reticulata*	
Virgin's bower	*Clematis virginiana*	
Atlantic pigeon wings	*Clitoria mariana*	
Tread-softly	*Cnidoscolus stimulosus*	
Carolina moonseed	*Cocculus carolinus*	
American squawroot	*Conopholis americana*	
Dwarf horseweed	*Conyza canadensis* var. *pusilla*	
Eastern flowering dogwood	*Cornus florida*	
Swamp dogwood	*Cornus foemina*	
Slender fumewort	*Corydalis micrantha* subsp. *australis*	
Sulphur cosmos	*Cosmos sulphureus* *	
May haw	*Crataegus aestivalis*	
Cockspur haw	*Crataegus crus-galli*	
Yellow hawthorn	*Crataegus flava*	
Parsley hawthorn	*Crataegus marshallii*	

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Summer haw	*Crataegus michauxii*	
Dwarf hawthorn	*Crataegus uniflora*	
Green hawthorn	*Crataegus viridis*	
Slender scratch daisy	*Croptilon divaricatum*	
Lance-leaf rattlebox	*Crotalaria lanceolata* *	
Rabbit bells	*Crotalaria rotundifolia*	
Showy rattlebox	*Crotalaria spectabilis* *	
Silver croton	*Croton argyranthemus*	
Wooly croton	*Croton capitatus*	
Tropical croton	*Croton glandulosus*	
Columbian waxweed	*Cuphea carthagenensis* *	
Compact dodder	*Cuscuta compacta*	
Scaldweed	*Cuscuta gronovii*	
Marsh parsley	*Cyclospermum leptophyllum* *	
Titi	*Cyrilla racemiflora*	
Whitetassels	*Dalea carnea* var. *albida*	
Summer farewell	*Dalea pinnata*	
Jimson weed	*Datura stramonium*	
American wild carrot	*Daucus pusillus*	
Hairy swamp loosestrife	*Decodon verticillatus*	
Climbing-hydrangea	*Decumaria barbara*	
Western tansy-mustard	*Descurainia pinnata*	
Hairy small-leaf tick-trefoil	*Desmodium ciliare*	
Pointed-leaf tick-trefoil	*Desmodium glutinosum*	
Creeping beggar-lice	*Desmodium incanum*	
Smooth tick-trefoil	*Desmodium laevigatum*	
Sand tick-trefoil	*Desmodium lineatum*	
Naked-flower tick-trefoil	*Desmodium nudiflorum*	
Panicled-leaf tick-trefoil	*Desmodium paniculatum*	
Stiff tick-trefoil	*Desmodium strictum*	
Velvet-leaf tick-trefoil	*Desmodium viridiflorum*	
Carolina pony-foot	*Dichondra carolinensis*	
Rough buttonweed	*Diodia teres*	
Virginia buttonweed	*Diodia virginiana*	
Common persimmon	*Diospyros virginiana*	
Pink sundew	*Drosera capillaris*	
West Indian chickweed	*Drymaria cordata*	
Mock strawberry	*Duchesnea indica* *	
Oblong-leaf twinflower	*Dyschoriste oblongifolia*	
False daisy	*Eclipta prostrata*	
Carolina elephant's foot	*Elephantopus carolinianus*	
Florida elephant's foot	*Elephantopus elatus*	
Carolina scaly-stem	*Elytraria caroliniensis*	
Fireweed	*Erechtites hieracifolia*	
Southern fleabane	*Erigeron quercifolius*	
Daisy fleabane	*Erigeron strigosus*	
Dog-tongue wild buckwheat	*Eriogonum tomentosum*	
Fragrant eryngo	*Eryngium aromaticum*	

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Blue button snakeroot	*Eryngium baldwinii*	
Creeping eryngo	*Eryngium prostratum*	
Button rattlesnake-master	*Eryngium yuccifolium*	
Cherokee bean	*Erythrina herbacea*	
American strawberry bush	*Euonymus americanus*	
White thoroughwort	*Eupatorium album*	
Dog-fennel	*Eupatorium capillifolium*	
Yankeeweed	*Eupatorium compositifolium*	
Common boneset	*Eupatorium perfoliatum*	
Slender grass-leaf goldenrod	*Euthamia caroliniana*	
Ageratum	*Fleischmannia incarnata*	
Eastern swamp privet	*Forestiera acuminata*	
White ash	*Fraxinus americana*	
Pop ash	*Fraxinus caroliniana*	
Cottonweed	*Froelichia floridana*	
Indian blanket	*Gaillardia aestivalis*	
Elliott's milk pea	*Galactia elliottii*	
Soft milk pea	*Galactia mollis*	
Florida milk pea	*Galactia regularis*	
Downy milk pea	*Galactia volubilis*	
Spring cleavers	*Galium aparine*	
Coastal bedstraw	*Galium hispidulum*	
Hairy bedstraw	*Galium pilosum*	
Stiff marsh bedstraw	*Galium tinctorium*	
Southern gaura	*Gaura angustifolia*	
Slender-stalk beeblossom	*Gaura filipes*	
Dwarf huckleberry	*Gaylussacia dumosa*	
Dangleberry	*Gaylussacia frondosa* var. *tomentosa*	
Yellow jessamine	*Gelsemium sempervirens*	
Carolina cranesbill	*Geranium carolinianum*	
Rose mock-vervain	*Glandularia canadensis*	
Rabbit tobacco	*Gnaphalium obtusifolium*	
Pennsylvania everlasting	*Gnaphalium pensylvanicum*	
Loblolly-bay	*Gordonia lasianthus*	
Rough hedge-hyssop	*Gratiola hispida*	
Shaggy hedge-hyssop	*Gratiola pilosa*	
Round-fruit hedge-hyssop	*Gratiola virginiana*	
American witch hazel	*Hamamelis virginiana*	
Purple-head sneezeweed	*Helenium flexuosum*	
Pine barren rock rose	*Helianthemum corymbosum*	
Narrow-leaved sunflower	*Helianthus angustifolius*	
Swollen sunflower	*Helianthus strumosus*	
Scorpion tail	*Heliotropium amplexicaule* *	
Camphorweed	*Heterotheca subaxillaris*	
Hawkweed	*Hieracium gronovii*	
Innocence	*Houstonia procumbens*	
Many-flower marsh pennywort	*Hydrocotyle umbellata*	
Whorled marsh pennywort	*Hydrocotyle verticillata*	

* **Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Waterpod	*Hydrolea quadrivalvis*	
Old plainsman	*Hymenopappus scabiosaeus*	
Round-pod St. John's-wort	*Hypericum cistifolium*	
St. Andrew's-cross	*Hypericum crux-andreae*	
Pineweeds	*Hypericum gentianoides*	
St. Andrew's-cross	*Hypericum hypericoides*	
Dwarf St. John's-wort	*Hypericum mutilum*	
Atlantic St. John's-wort	*Hypericum reductum*	
Four-petaled St. John's-wort	*Hypericum tetrapetalum*	
Musky mint	*Hyptis alata*	
Bitter mint	*Hyptis mutabilis* *	
Carolina holly	*Ilex ambigua*	
Dahoon	*Ilex cassine*	
Large gallberry	*Ilex coriacea*	
Possum-haw	*Ilex decidua*	
Gallberry	*Ilex glabra*	
American holly	*Ilex opaca*	
Yaupon holly	*Ilex vomitoria*	
Carolina indigo	*Indigofera caroliniana*	
Rough hairy indigo	*Indigofera hirsuta* *	
Tie-vine	*Ipomoea cordatotriloba*	
Man-of-the-earth	*Ipomoea pandurata*	
Cypress-vine	*Ipomoea quamoclit* *	
Blood-leaf	*Iresine rhizomatosa*	
Virginia sweetspire	*Itea virginica*	
Hairy clustervine	*Jacquemontia tamnifolia*	
Virginia dwarf dandelion	*Krigia virginica*	
Japanese clover	*Kummerowia striata* *	
Woodland lettuce	*Lactuca floridana*	
Grass-leaf lettuce	*Lactuca graminifolia*	
Henbit deadnettle	*Lamium amplexicaule* *	
Shrub vebena	*Lantana camara* *	
Hairy pinweed	*Lechea mucronata*	
Pineland pinweed	*Lechea sessiliflora*	
Lion's-ear	*Leonotis nepetifolia* *	
Poorman's pepperwort	*Lepidium virginicum*	
Hairy bush-clover	*Lespedeza hirta*	
Tall bush-clover	*Lespedeza stuevei*	
Swamp dog-hobble	*Leucothoe racemosa*	
Blazing star	*Liatris aspera*	
Pink-scale blazing star	*Liatris elegans*	
Slender blazing star	*Liatris gracilis*	
Short-leaf blazing star	*Liatris tenuifolia*	
Gopher-apple	*Licania michauxii*	
Blue toadflax	*Linaria canadensis*	
Florida toadflax	*Linaria floridana*	
Yellowseed false-pimpernel	*Lindernia dubia* var. *angallidea*	
Malaysian false-pimpernel	*Lindernia crustacea* *	

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Sweetgum	*Liquidambar styraciflua*	
Puccoon	*Lithospermum tuberosum*	
Cardinal flower	*Lobelia cardinalis*	33
Glade lobelia	*Lobelia glandulosa*	
Downy lobelia	*Lobelia puberula*	
Japanese honeysuckle	*Lonicera japonica* *	
Coral honeysuckle	*Lonicera sempervirens*	
River primrose-willow	*Ludwigia leptocarpa*	
Seaside primrose-willow	*Ludwigia maritima*	
Mexican primrose-willow	*Ludwigia octovalvis*	
Marsh primrose-willow	*Ludwigia palustris*	
Peruvian primrose-willow	*Ludwigia peruviana*	
Shrubby primrose-willow	*Ludwigia suffruticosa*	
Lady lupine	*Lupinus villosus*	
Taper-leaf water-hound	*Lycopus rubellus*	
Roserush	*Lygodesmia aphylla*	
Rusty lyonia	*Lyonia ferruginea*	
Coastal plain staggerbush	*Lyonia fruticosa*	
Fetterbush	*Lyonia lucida*	
Southern magnolia	*Magnolia grandiflora*	
Sweet bay	*Magnolia virginiana*	
Southern crabapple	*Malus angustifolia*	21
Manihoot	*Manihoot grahamii* *	
Florida milkvine	*Matelea floridana*	21
Trailing milkvine	*Matelea pubiflora*	
Purple axil-flower	*Mecardonia acuminata*	
Black medick	*Medicago lupulina* *	
Snow squarestem	*Melanthera nivea*	
Chinaberry tree	*Melia azedarach* *	
White sweet-clover	*Melilotus albus* *	
Creeping cucumber	*Melothria pendula*	
Climbing hempvine	*Mikania scandens*	
Sensitive brier	*Mimosa quadrivalvis*	
American partridge berry	*Mitchella repens*	
Carolina bristle-mallow	*Modiola caroliniana*	
Green carpetweed	*Mollugo verticillata* *	
Horse mint	*Monarda punctata*	
One-flower Indian pipe	*Monotropa uniflora*	
Red mulberry	*Morus rubra*	
Wax-myrtle	*Myrica cerifera*	
Heavenly bamboo	*Nandina domestica* *	
Spatter-dock	*Nuphar lutea* subsp. *advena*	
Sweet-scented white waterlily	*Nymphaea odorata*	
Big floating hearts	*Nymphoides aquatica*	
Swamp black gum	*Nyssa sylvatica* var. *biflora*	
Black gum	*Nyssa sylvatica*	
Weedy evening-primrose	*Oenothera biennis*	
Cut-leaved evening-primrose	*Oenothera laciniata*	

*** Non-native Species**

San Felasco Hammock Preserve State Park

Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Flat-top bluet	*Oldenlandia corymbosa* *	
Clustered bluet	*Oldenlandia uniflora*	
False gromwell	*Onosmodium virginianum*	
Prickly-pear cactus	*Opuntia humifusa*	
Piedmont scurf pea	*Orbexilum lupinellus*	
Wild olive	*Osmanthus americanus*	
Eastern hophornbeam	*Ostrya virginiana*	
Common yellow wood-sorrel	*Oxalis corniculata*	
Skunkvine	*Paederia foetida* *	
Coastal plain palafox	*Palafoxia integrifolia*	
Baldwin's nailwort	*Paronychia baldwinii*	
Virginia creeper	*Parthenocissus quinquefolia*	
Purple passionflower	*Passiflora incarnata*	
Yellow passionflower	*Passiflora lutea*	
Scurf pea	*Pediomelum canescens*	
Pink beardtongue	*Penstemon australis*	
Many-flower beardtongue	*Penstemon multiflorus*	
Redbay	*Persea borbonia*	
Swampbay	*Persea palustris*	
Annual garden phlox	*Phlox drummondii* *	
Downy phlox	*Phlox pilosa*	
Oak mistletoe	*Phoradendron leucarpum*	
Red chokeberry	*Photinia pyrifolia*	
Carpetweed	*Phyla nodiflora*	
Mascarene Islands leaf-flower	*Phyllanthus tenellus* *	
Chamber-bitter	*Phyllanthus urinaria* *	
Cypress-head ground-cherry	*Physalis arenicola*	
Carpenter’s ground-cherry	*Physalis carpenteri*	
Pokeberry	*Phytolacca americana*	
Yellow butterwort	*Pinguicula lutea*	8
Small butterwort	*Pinguicula pumila*	
Carolina stripeseed	*Piriqueta cistoides* subsp. *caroliniana*	
Coastal plain silk-grass	*Pityopsis graminifolia*	
Planer tree	*Planera aquatica*	
Southern plantain	*Plantago virginica*	
Marsh camphorweed	*Pluchea camphorata*	
Shrubby camphorweed	*Pluchea odorata*	
Fiddler's spurge	*Poinsettia heterophylla*	
Showy milkwort	*Polygala grandiflora*	
Orange milkwort	*Polygala lutea*	
Dwarf milkwort	*Polygala nana*	
Dense-flower knotweed	*Polygonum densiflorum*	
Hairy smartweed	*Polygonum hirsutum*	
Mild water-pepper	*Polygonum hydropiperoides*	
Dotted smartweed	*Polygonum punctatum*	
Rustweed	*Polypremum procumbens*	
Trifoliate orange	*Poncirus trifoliata* *	
Marsh mermaid weed	*Proserpinaca palustris*	

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
American plum	*Prunus americana*	
Chickasaw plum	*Prunus angustifolia*	
Carolina laurel cherry	*Prunus caroliniana*	
Black cherry	*Prunus serotina*	
Hog plum	*Prunus umbellata*	
Wafer-ash	*Ptelea trifoliata*	
Coastal blackroot	*Pterocaulon pycnostachyum*	
Hairlike mock bishop's-weed	*Ptilimnium capillaceum*	
Kudzu vine	*Pueraria montana* var. *lobata* *	
Florida mountain mint	*Pycnanthemum floridanum*	22
Carolina false dandelion	*Pyrrhopappus carolinianus*	
Southern red oak	*Quercus falcata*	
Sand live oak	*Quercus geminata*	
Bluejack oak	*Quercus incana*	
Turkey oak	*Quercus laevis*	
Laurel oak	*Quercus laurifolia*	
Sand post oak	*Quercus margaretta*	
Swamp chestnut oak	*Quercus michauxii*	
Dwarf live oak	*Quercus minima*	
Water oak	*Quercus nigra*	
Shumard's oak	*Quercus shumardii*	
Bluff oak	*Quercus sinuata*	
Post oak	*Quercus stellata*	
Virginia live oak	*Quercus virginiana*	
Lesser spearwort	*Ranunculus pusillus*	
Wild radish	*Raphanus raphanistrum* *	
Carolina buckthorn	*Rhamnus caroliniana*	
Pale meadow beauty	*Rhexia mariana*	
Nash's meadow beauty	*Rhexia nashii*	
Winged sumac	*Rhus copallinum*	
Dollarleaf	*Rhynchosia reniformis*	
Twining snout bean	*Rhynchosia tomentosa*	
Tropical Mexican-clover	*Richardia brasiliensis* *	
Rough Mexican-clover	*Richardia scabra* *	
Bloodberry	*Rivina humilis*	
Southern marsh yellowcress	*Rorippa teres*	
Swamp rose	*Rosa palustris*	
Highbush blackberry	*Rubus argutus*	
Sand blackberry	*Rubus cuneifolius*	
Southern dewberry	*Rubus trivialis*	
Blackeyed Susan	*Rudbeckia hirta*	
Carolina wild petunia	*Ruellia caroliniensis*	
Hastate-leaved dock	*Rumex hastatulus*	
Tropicaldock	*Rumex obovatus*	
Short-leaf white rose-gentain	*Sabatia brevifolia*	
Coastal rose-gentian	*Sabatia calycina*	
Coastal plain willow	*Salix caroliniana*	
Herbaceous blue sage	*Salvia azurea*	

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Lyre-leaved sage	*Salvia lyrata*	
Nettle-leaf sage	*Salvia urticifolia*	21
Elderberry	*Sambucus nigra* subsp. *canadensis*	
Pineland pimpernel	*Samolus valerandi* subsp. *parviflorus*	
Canadian black snakeroot	*Sanicula canadensis*	
Maryland black snakeroot	*Sanicula marilandica*	
Chinese tallow tree	*Sapium sebiferum* *	
Sassafras	*Sassafras albidum*	
Lizard's tail	*Saururus cernuus*	
Sweet broom	*Scoparia dulcis*	
Small's skullcap	*Scutellaria multigladulosa*	
Sicklepod	*Senna obtusifolia* *	
Coffee senna	*Senna occidentalis*	
Danglepod	*Sesbania herbacea* *	
Rattlebox	*Sesbania punicea* *	
Bladderpod	*Sesbania vesicaria*	
Senna seymeria	*Seymeria cassioides*	
Piedmont seymeria	*Seymeria pectinata*	
Indian hemp	*Sida rhombifolia*	
Gum bully	*Sideroxylon lanuginosum*	
Florida bully	*Sideroxylon reclinatum*	
Buckthorn	*Sideroxylon reclinatum* subsp. *rufotomentosum*	
Kidney-leaf rosinweed	*Silphium compositum*	
Bear's-foot	*Smallanthus uvedalia*	
Common nightshade	*Solanum americanum*	
Cockroach berry	*Solanum capsicoides*	
Western horsenettle	*Solanum dimidiatum*	
Tropical soda apple	*Solanum viarum* *	
Pine barren goldenrod	*Solidago fistulosa*	
Sweet goldenrod	*Solidago odora* var. *chpmanii*	
Downy ragged goldenrod	*Solidago petiolaris*	
Field burweed	*Soliva sessilis* *	
Spiny-leaved sow-thistle	*Sonchus asper* *	
Prostrate false buttonweed	*Spermacoce prostrata*	
Rough-fruit scaleseed	*Spermolepis divaricata*	
Florida hedge-nettle	*Stachys floridana*	
Common chickweed	*Stellaria media* *	
Queen's delight	*Stillingia sylvatica*	
Sand bean	*Strophostyles helvula*	
Coastal plain dawnflower	*Stylisma patens*	
Carolina false vervain	*Stylodon carneum*	
Side-beak pencilflower	*Stylosanthes biflora*	
Common sweetleaf	*Symplocos tinctoria*	
Scurf hoary pea	*Tephrosia chrysophylla*	
Spiked hoary pea	*Tephrosia spicata*	
Pineland ginseng	*Tetragonotheca helianthoides*	
Wood sage	*Teucrium canadense*	
Carolina basswood	*Tilia americana* var. *caroliniana*	

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Eastern poison-oak	*Toxicodendron pubescens*	
Eastern poison-ivy	*Toxicodendron radicans*	
Climbing dogbane	*Trachelospermum difforme*	
Virginia marsh St. John's-wort	*Triadenum virginicum*	
Greater marsh St. John's-wort	*Triadenum walteri*	
Forked blue-curls	*Trichostema dichotomum*	
White lawn clover	*Trifolium repens* *	
Clasping Venus' looking-glass	*Triodanis perfoliata*	
Winged elm	*Ulmus alata*	
American elm	*Ulmus americana*	
Caesar weed	*Urena lobata* *	
Heartleaf stinging nettle	*Urtica chamaedryoides*	
Cone-spur bladderwort	*Utricularia gibba*	
Floating bladderwort	*Utricularia inflata*	
Eastern purple bladderwort	*Utricularia purpurea*	
Tiny bladderwort	*Utricularia subulata*	
Tree sparkleberry	*Vaccinium arboreum*	
Highbush blueberry	*Vaccinium corymbosum*	
Shiny blueberry	*Vaccinium myrsinites*	
Deerberry	*Vaccinium stamineum*	
Florida valerian	*Valeriana scandens*	
Wooly mullein	*Verbascum thaspus* *	
Wand mullein	*Verbascum virgatum* *	
Brazilian vervain	*Verbena brasiliensis* *	
Texas vervain	*Verbena officinalis* subsp. *halei*	
Harsh verbena	*Verbena scabra*	
Coastal plain crownbeard	*Verbesina aristata*	
Tall ironweed	*Vernonia angustifolia*	
Giant ironweed	*Vernonia gigantea*	
Corn speedwell	*Veronica arvensis* *	
Southern arrowwood	*Viburnum dentatum*	
Possum haw	*Viburnum nudum*	
Walter’s viburnum	*Viburnum obovatum*	
Rusty black haw	*Viburnum rufidulum*	
Four-leaf vetch	*Vicia acutifolia*	
Bog white violet	*Viola lanceolata*	
Southern coastal violet	*Viola palmata*	
Swamp white violet	*Viola primulifolia*	
Florida violet	*Viola sororia*	
Carolina violet	*Viola villosa*	
Prostrate blue violet	*Viola walteri*	
Summer grape	*Vitis aestivalis*	
Muscadine	*Vitus rotundifolia*	
Southern rockbell	*Wahlenbergia marginata* *	
Chinese wisteria	*Wisteria sinensis* *	
Cocklebur	*Xanthium strumarium* *	
Oriental false hawk's-beard	*Youngia japonica* *	
Hercules-club	*Zanthoxylum clava-herculis*	

*** Non-native Species**

San Felasco Hammock Preserve State Park

Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
	FISHES	
Bowfin	*Amia calva*	51
Redfin pickerel	*Esox americanus*	43
Golden topminnow	*Fundulus chrysotus*	53
Eastern mosquitofish	*Gambusia affinis holbrooki*	53
Least killifish	*Heterandria formosa*	53
Yellow catfish	*Ictalurus natalis*	51
Brown bullhead	*Ictalurus n. marmaroratus*	51
Florida gar	*Lepisosteus platyrhincus*	51
Redbreast sunfish	*Lepomis auritus*	51
Warmouth	*Lepomis gulosus*	51
Bluegill	*Lepomis macrochirus mystacalius*	51
Redear sunfish	*Lepomis microlophus*	51
Spotted sunfish	*Lepomis punctatus*	51
Largemouth bass	*Micropterus salmoides floridanus*	51
Tadpole madtom	*Noturus gyrinus*	43
Sailfin molly	*Poecilia latipinna*	53
Black crappie	*Pomoxis nigromaculatus*	51
	AMPHIBIANS	
SALAMANDERS		
Mole salamander	*Ambystoma talpoideum*	8
Eastern tiger salamander	*Ambystoma tigrinum tigrinum*	25
Two-toed amphiuma	*Amphiuma means*	51
Southern dusky salamander	*Desmognathus auriculatus*	17
Striped newt	*Notophthalmus perstriatus*	50
Central newt	*Notophthalmus viridescens louisianensis*	50
Southeastern slimy salamander	*Plethodon grobmani*	21
ANURANS		
Florida cricket frog	*Acris gryllus dorsalis*	29
Oak toad	*Bufo quercicus*	8
Southern toad	*Bufo terrestris*	13
Greenhouse frog	*Eleutherodactylus planirostris* *	21
Eastern narrow-mouth toad	*Gastrophryne carolinensis*	22
Eastern gray treefrog	*Hyla chrysoscelis*	35
Green treefrog	*Hyla cinerea*	21
Southern spring peeper	*Hyla crucifer bartramiana*	24
Pinewoods treefrog	*Hyla femoralis*	8
Barking treefrog	*Hyla gratiosa*	13
Squirrel treefrog	*Hyla squirella*	22
Little grass frog	*Limnaoedus ocularis*	8
Ornate chorus frog	*Pseudacdris ornata*	31
Southern chorus frog	*Pseudacris nigrita nigrita*	35
Florida gopher frog	*Rana capito aesopus*	13
Bullfrog	*Rana catesbeiana*	51
Bronze frog	*Rana clamitans clamitans*	25
Pig frog	*Rana grylio*	51
River frog	*Rana hecksheri*	33

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Southern leopard frog	*Rana sphenocephala*	33
Eastern spadefoot toad	*Scaphiopus holbrooki*	22
	REPTILES	
ALLIGATORS, CROCODILES		
American alligator	*Alligator mississippiensis*	50
TURTLES		
Florida snapping turtle	*Chelydra serpentina osceola*	51
Chicken turtle	*Deirochelys reticularia*	50
Gopher tortoise	*Gopherus polyphemus*	22
Florida mud turtle	*Kinosternon subrubrum steindachneri*	51
Peninsula cooter	*Pseudemys floridana peninsularis*	43
Stinkpot	*Sternotherus odoratus*	43
Yellow-bellied turtle	*Trachemys scripta*	50
LIZARDS		
Green anole	*Anolis carolinensis*	22
Six-lined racerunner	*Cnemidophorus sexlineatus*	13
Northern mole skink	*Eumeces egregius similis*	22
Southeastern five-lined skink	*Eumeces inexpectatus*	21
Broadhead skink	*Eumeces laticeps*	21
Eastern slender glass lizard	*Ophisaurus attentuatus*	13
Worm lizard	*Rhineura floridana*	21
Southern fence lizard	*Sceloporus undulatus longicaudis*	22
Ground skink	*Scincella lateralis*	21
SNAKES		
Florida cottonmouth	*Agkistrodon piscivorous conanati*	53
Northern scarlet snake	*Cemophora coccinea copei*	8
Southern black racer	*Coluber constrictor priapus*	13
Eastern diamondback rattlesnake	*Crotalus adamanteus*	22
Southern ringneck snake	*Diadophis punctatus punctatus*	8
Eastern indigo snake	*Drymarchon corais couperi*	13
Corn snake	*Elaphe guttata guttata*	13
Yellow rat snake	*Elaphe obsoleta quadrivittata*	21
Eastern mud snake	*Farancia a. abacura*	33
Eastern hognose snake	*Heterodon platyrhinos*	13
Southern hognose sn**ake**	*Heterodon simus*	13
Scarlet kingsnake	*Lampropeltis triangulum elapsoides*	22
Eastern coachwhip	*Masticophis flagellum flagellum*	22
Eastern coral snake	*Micurus fulvius fulvius*	21
Florida water snake	*Nerodia fasciata pictiventris*	33
Florida green water snake	*Nerodia floridana*	33
Rough green snake	*Opheodrys aestivus*	31
Florida pine snake	*Pituophis melanoleucus mugitus*	13
Pinewoods snake	*Rhadinaea flavilata*	8
North Florida swamp snake	*Seminatrix pygaea pygaea*	25
Dusky pigmy rattlesnake	*Sistrurus miliarius barbouri*	8
Short-tailed snake	*Stilosoma extenuatum*	22
Florida brown snake	*Storeria dekayi victa*	21

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Florida redbelly snake	*Storeria occipitomaculata obscura*	21
Central Florida crowned snake	*Tantilla relicta neilli*	13
Eastern garter snake	*Thamnophis sirtalis sirtalis*	21
Peninsula ribbon snake	*Thamnophis sauritus sackenii*	25
Rough earth snake	*Virginia striatula*	21
	BIRDS	
GREBES		
Pied-billed Grebe	*Podilymbus podiceps*	51
CORMORANTS, **ANHINGAS**		
Double-crested Cormorant	*Phalacrocorax auritus*	51
Anhinga	*Anhinga anhinga*	51
HERONS, EGRETS, BITTERNS		
Great Egret	*Ardea alba*	51
Great Blue heron	*Ardea herodias*	51
Cattle Egret	*Bubulcus ibis* *	Pastures
Green Heron	*Butorides virescens*	50
Little Blue Heron	*Egretta caerulea*	51
Snowy Egret	*Egretta thula*	51
Tricolored Heron	*Egretta tricolor*	43
Yellow-crowned Night Heron	*Nyctanassa violacea*	33
Black-crowned Night Heron	*Nycticorax nycticorax*	51
STORKS, IBISES		
Wood Stork	*Mycteria americana*	51
White Ibis	*Eudocimus albus*	51
DUCKS, GEESE, ETC.		
American Wigeon	*Anas americana*	51
Green-winged Teal	*Anas crecca*	51
Blue-winged Teal	*Anas discors*	51
Mallard	*Anas platyrhynchos*	51
Americak Black Duck	*Anas rubripes*	51
Gadwall	*Anas strepera*	51
Wood Duck	*Aix sponsa*	33
Lesser Scaup	*Aythya affinis*	51
Redhead	*Aythya americana*	51
Ring-necked Duck	*Aythya collaris*	51
Snow Goose	*Chen caerulescens*	51
Black-bellied Whistling Duck	*Dendrocygna autumnalis*	51
Hooded Merganser	*Lophodytes cucullatus*	50
Ruddy Duck	*Oxyura jamaicensis*	51
NEW WORLD VULTURES		
Turkey Vulture	*Cathartes aura*	Throughout
Black Vulture	*Coragyps atratus*	Throughout
HAWKS, EAGLES, KITES		
Cooper's Hawk	*Accipiter cooperi*	21
Sharp-shinned Hawk	*Accipiter striatus*	21
Red-tailed Hawk	*Buteo jamaicensis*	13
Red-shouldered Hawk	*Buteo lineatus*	21

*** Non-native Species**

San Felasco Hammock Preserve State Park

Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Broad-winged Hawk	*Buteo platypterus*	21
Northern Harrier	*Circus cyaneus*	24
Swallow-tailed Kite	*Elanoides forficatus*	33
Bald Eagle	*Haliaeetus leucocephalus*	33
Mississippi Kite	*Ictinia mississippiensis*	21
OSPREYS		
Osprey	*Pandion haliaetus*	51
FALCONS		
Southeastern American Kestrel	*Falco sparverius paulus*	13
American Kestrel	*Falco sparverius sparverius*	Pastures
QUAIL, TURKEYS		
Northern Bobwhite	*Colinus virginianus*	22
Wild Turkey	*Meleagris gallopavo*	22
CRANES		
Florida Sandhill Crane	*Grus canadensis pratensis*	Pastures
Sandhill Crane	*Grus canadensis*	Pastures
RAILS, ETC.		
Common Moorhen	*Gallinula chloropus*	33
American Coot	*Fulica americana*	51
SANDPIPERS, ETC.		
Killdeer	*Charadrius vociferus*	Pastures
Least Sandpiper	*Calidris mutilla*	43
American Woodcock	*Scolopax minor*	21
Common Snipe	*Gallinago gallinago*	29
Lesser Yellowlegs	*Tringa flavipes*	29
Greater Yellowlegs	*Tringa melanoleuca*	29
Solitary Sandpiper	*Tringa solitaria*	50
GULLS, TERNS		
Ring-billed Gull	*Larus argentatus*	51
DOVES		
Rock Dove	*Columba livia*	
Common Ground Dove	*Columbina passerina*	13
Mourning Dove	*Zenaida macroura*	Throughout
CUCKOOS		
Yellow-billed Cuckoo	*Coccyzus americanus*	21
Black-billed Cuckoo	*Coccyzus erythropthalmus*	21
OWLS		
Great Horned Owl	*Bubo virginianus*	21
Eastern Screech Owl	*Otus asio*	21
Barred Owl	*Strix varia*	28
Barn Owl	*Tyto alba*	Pastures
GOATSUCKERS		
Chuck-Will's-widow	*Caprimulgus carolinensis*	22
Whip-poor-will	*Caprimulgus vociferus*	21
Common nighthawk	*Chordeiles minor*	13
SWIFTS		
Chimney Swift	*Chaetura pelagica*	Throughout
HUMMINGBIRDS		

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Ruby-throated Hummingbird	*Archilochus colubris*	21
KINGFISHERS		
Belted Kingfisher	*Ceryle alcyon*	33
WOODPECKERS		
Northern Flicker	*Colaptes auratus*	13
Pileated Woodpecker	*Dryocopus pileatus*	21
Red-bellied Woodpecker	*Melanerpes carolinus*	21
Red-headed Woodpecker	*Melanerpes erythrocephalus*	13
Downy Woodpecker	*Picoides pubescens*	22
Hairy Woodpecker	*Picoides villosus*	22
Yellow-bellied Sapsucker	*Sphyrapicus varius*	21
FLYCATCHERS		
Eastern Wood-pewee	*Contopus virens*	21
Yellow-bellied Flycatcher	*Empidonax flaviventris*	21
Acadian Flycatcher	*Empidonax virescens*	21
Great-crested Flycatcher	*Myiarchus crinitus*	21
Eastern Phoebe	*Sayornis phoebe*	13
Eastern Kingbird	*Tyrannus tyrannus*	13
SWALLOWS		
Barn Swallow	*Hirundo rustica*	Pastures
Tree Swallow	*Tachycineta bicolor*	Throughout
Purple Martin	*Progne subis*	Throughout
JAYS, CROWS		
American Crow	*Corvus brachyrhynchos*	Throughout
Fish Crow	*Corvus ossifragus*	Throughout
Blue Jay	*Cyanocitta cristata*	21
TITMICE, CHICKADEES		
Tufted Titmouse	*Baeolophus bicolor*	21
Carolina Chickadee	*Poecile carolinensis*	21
NUTHATCHES		
Brown-headed Nuthatch	*Sitta pusilla*	22
CREEPERS		
Brown Creeper	*Certhia familiaris*	21
WRENS		
Marsh Wren	*Cistothorus palustris*	24
Sedge Wren	*Cistothorus platensis*	24
Carolina Wren	*Thryothorus ludovicianus*	21
House Wren	*Troglodytes aedon*	21
MIMIC THRUSHES		
Gray Catbird	*Dumetella carolinensis*	21
Northern Mockingbird	*Mimus polyglottos*	Throughout
Brown Thrasher	*Toxostoma rufum*	21
THRUSHES		
Veery	*Catharus fuscescens*	21
Hermit Thrush	*Catharus guttatus*	21
Gray-cheeked Thrush	*Catharus minimus*	21
Wood Thrush	*Catharus mustelinus*	21
Swainson's Thrush	*Catharus ustulatus*	21

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Eastern Bluebird	*Sialia sialis*	13
American Robin	*Turdus migratorius*	21
KINGLETS, ETC.		
Blue-gray Gnatcatcher	*Polioptila caerulea*	21
Ruby-crowned Kinglet	*Regulus calendula*	21
Golden-crowned Kinglet	*Regulus satrapa*	21
WAXWINGS		
Cedar waxwing	*Bombycilla cedrorum*	Throughout
SHRIKES		
Loggerhead shrike	*Lanius ludovicianus*	13
STARLINGS		
European starling	*Sturnus vulgaris* *	Pastures
VIREOS		
Black-whiskered vireo	*Vireo altiloquus*	21
White-eyed vireo	*Vireo griseus*	21
Yellow-throated vireo	*Vireo flavifrons*	21
Red-eyed vireo	*Vireo olivaceus*	21
Blue-headed vireo	*Vireo solitarius*	21
WARBLERS		
Black-throated blue warbler	*Dendroica caerulescens*	21
Bay-breasted warbler	*Dendroica castanea*	21
Cerulean warbler	*Dendroica cerulea*	21
Yellow-rumped warbler	*Dendroica coronata*	Throughout
Prairie warbler	*Dendroica discolor*	13
Yellow-throated warbler	*Dendroica dominica*	21
Blackburnian warbler	*Dendroica fusca*	21
Magnolia warbler	*Dendroica magnolia*	21
Palm warbler	*Dendroica palmarum*	13
Chestnut-sided warbler	*Dendroica pensylanica*	21
Yellow warbler	*Dendroica petechia*	21
Pine warbler	*Dendroica pinus*	22
Blackpoll warbler	*Dendroica striata*	21
Cape May warbler	*Dendroica tigrina*	21
Black-throated green warbler	*Dendroica virens*	21
Common yellowthroat	*Geothlypis trichas*	33
Worm-eating warbler	*Helmitheros vermivorus*	21
Swainson's warbler	*Limnothlypis swainsonii*	21
Black-and-white warbler	*Mniotilta varia*	21
Connecticut warbler	*Oporornis agilis*	21
Kentucky warbler	*Oporornis formosus*	21
Northern parula warbler	*Parula americana*	21
Prothonotary warbler	*Protonotaria citrea*	31
Ovenbird	*Seiurus aurocapillus*	21
Louisiana waterthrush	*Seiurus motacilla*	33
Northern waterthrush	*Seiurus noveboracensis*	33
American redstart	*Setophaga ruticilla*	21
Orange-crowned warbler	*Vermivora celata*	21
Golden-winged warbler	*Vermivora chrysoptera*	21

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Tennessee warbler	*Vermivora peregrina*	21
Blue-winged warbler	*Vermivora pinus*	22
Canada warbler	*Wilsonia canadensis*	21
Hooded warbler	*Wilsonia citrina*	21
BLACKBIRDS, ETC.		
Red-winged blackbird	*Agelaius phoeniceus*	Throughout
Bobolink	*Dolichonyx orzivorus*	Pastures
Rusty blackbird	*Euphagus carolinus*	Pastures
Brewer's blackbird	*Euphagus cyanocephalus*	Pastures
Baltimore oriole	*Icterus galbula*	22
Orchard oriole	*Icterus spurius*	22
Brown-headed cowbird	*Molothrus ater*	Throughout
Boat-tailed grackle	*Quiscalus major*	33
Common grackle	*Quiscalus quiscula*	Throughout
Eastern meadowlark	*Sturnella magna*	Pastures
TANAGERS		
Scarlet tanager	*Piranga olivacea*	21
Summer tanager	*Prianga rubra*	22
FINCHES, ETC.		
Bachman's sparrow	*Aimophila aestivalis*	13
Grasshopper sparrow	*Ammodramus savannarum*	Pastures
Le Conte's sparrow	*Ammodramus leconteii*	Pastures
Northern cardinal	*Cardinalis cardinalis*	21
Pine siskin	*Carduelis pinus*	22
American goldfinch	*Carduelis tristis*	21
Purple finch	*Carpodacus purpurea*	22
Blue grosbeak	*Guiraca caerulea*	Pastures
Dark-eyed junco	*Junco hyemalis*	21
Swamp sparrow	*Melospiza georgiana*	29
Song sparrow	*Melospiza melodia*	13
Savannah sparrow	*Passerculus sandwichensis*	Pastures
Fox sparrow	*Passerella iliaca*	Pastures
Indigo bunting	*Passerina cyanea*	13
Rose-breasted grosbeak	*Pheucticus ludovicianus*	22
Eastern towhee	*Pipilo erythrophthalmus*	22
Vesper sparrow	*Pooecetes gramineus*	Pastures
Chipping sparrow	*Spizella passerina*	13
Field sparrow	*Spizella pusilla*	13
White-throated sparrow	*Zonotrichia albicollis*	21
White-crowned sparrow	*Zonotrichia leucophrys*	22
	MAMMALS	
MARSUPIALS		
Virginia Opossum	*Didelphis virginiana*	Throughout
INSECTIVORES		
Southern short-tailed shrew	*Blarina carolinensis*	21
Least shrew	*Cryptotis parva*	13
Southeastern shrew	*Sorex longirostris*	21

*** Non-native Species**

San Felasco Hammock Preserve State Park

Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Eastern mole	*Scalopus aquaticus*	21
BATS		
Eastern pipistrelle	*Pipistrellus subflavus*	80
Red bat	*Lasiurus borialis*	21
Yellow bat	*Lasiurus intermedius*	21
Seminole bat	*Lasiurus seminolus*	21
Evening bat	*Nycticeius humeralis*	21
ARMADILLOS		
Nine-banded armadillo	*Dasypus novemcinctus* *	Throughout
RABBITS		
Eastern cottontail	*Sylvilagus floridanus*	13
Marsh rabbit	*Sylvilagus palustris*	31
SQUIRRELS		
Southern flying squirrel	*Glaucomys volans*	22
Grey squirrel	*Sciurus carolinensis*	Throughout
Sherman's fox squirrel	*Sciurus niger shermani*	22
RODENTS		
Southeastern pocket gopher	*Geomys pinetis*	13
Eastern harvest mouse	*Reithrodontomys humilis*	21
Golden mouse	*Ochrotomys nuttalli*	21
Cotton mouse	*Peromyscus gossypinus*	21
Florida mouse	*Podomys floridanus*	13
Hispid cotton rat	*Sigmodon hispidus*	22
Eastern woodrat	*Neotoma floridana*	8
Pine vole	*Microtus pinetorum*	22
House mouse	*Mus musculus* *	82
CANINES		
Domestic dog	*Canis familiaris* *	Throughout
Coyote	*Canis latrans* *	Throughout
Gray fox	*Urocyon cineoargentus*	22
Red fox	*Vulpes vulpes*	21
FELINES		
Domestic cat	*Felis domesticus* *	Throughout
Bobcat	*Felis rufus*	Throughout
RACCOONS		
Raccoon	*Procyon lotor*	Throughout
WEASELS, SKUNKS		
Long-tailed weasel	*Mustela frenata*	22
Striped skunk	*Mephitis mephitis*	Throughout
River otter	*Lutra canadensis*	53
BEARS		
Florida black bear	*Ursus americanus floridanus*	28
PIGS		
Feral hog	*Sus scrofa* *	21
DEER		
White-tailed deer	*Odocoileus virginianus*	Throughout

*** Non-native Species**

Habitat Codes

TERRESTRIAL

1. Beach Dune
2. Bluff
3. Coastal Berm
4. Coastal Rock Barren
5. Coastal Strand
6. Dry Prairie
7. Maritime Hammock
8. Mesic Flatwoods
9. Coastal Grasslands
10. Pine Rockland
11. Prairie Hammock
12. Rockland Hammock
13. Sandhill
14. Scrub
15. Scrubby Flatwoods
16. Shell Mound
17. Sinkhole
18. Slope Forest
19. Upland Glade
20. Upland Hardwood Forest
21. Upland Mixed Forest
22. Upland Pine Forest
23. Xeric Hammock

PALUSTRINE

24. Basin Marsh
25. Basin Swamp
26. Baygall
27. Bog
28. Bottomland Forest
29. Depression Marsh
30. Dome
31. Floodplain Forest
32. Floodplain Marsh
33. Floodplain Swamp
34. Freshwater Tidal Swamp
35. Hydric Hammock
36. Marl Prairie
37. Seepage Slope
38. Slough
39. Strand Swamp
40. Swale
41. Wet Flatwoods
42. Wet Prairie

LACUSTRINE

43. Clastic Upland Lake
44. Coastal Dune Lake
45. Coastal Rockland Lake
46. Flatwood/Prairie Lake
47. Marsh Lake

LACUSTRINE—Continued

48. River Floodplain Lake
49. Sandhill Upland Lake
50. Sinkhole Lake
51. Swamp Lake

RIVERINE

52. Alluvial Stream
53. Blackwater Stream
54. Seepage Stream
55. Spring-Run Stream

ESTUARINE

56. Estuarine Composite Substrate
57. Estuarine Consolidated Substrate
58. Estuarine Coral Reef
59. Estuarine Grass Bed
60. Estuarine Mollusk Reef
61. Estuarine Octocoral Bed
62. Estuarine Sponge Bed
63. Estuarine Tidal Marsh
64. Estuarine Tidal Swamp
65. Estuarine Unconsolidated Substrate
66. Estuarine Worm Reef

MARINE

67. Marine Algal Bed
68. Marine Composite Substrate
69. Marine Consolidated Substrate
70. Marine Coral Reef
71. Marine Grass Bed
72. Marine Mollusk Reef
73. Marine Octocoral Bed
74. Marine Sponge Bed
75. Marine Tidal Marsh
76. Marine Tidal Swamp
77. Marine Unconsolidated Substrate
78. Marine Worm Reef

SUBTERRANEAN

79. Aquatic Cave
80. Terrestral Cave

MISCELLANEOUS

81. Ruderal
82. Developed

MTC Many Types Of Communities

OF Overflying

Addendum 5—Designated Species List

Rank Explanations
For FNAI Global Rank, FNAI State Rank,
Federal Status And State Status

The Nature Conservancy and the Natural Heritage Program Network (of which FNAI is a part) define an element as any exemplary or rare component of the natural environment,such as a species,natural community,bird rookery,spring,sinkhole,cave,or other ecological feature. An element occurrence (EO) is a single extant habitat that sustains or otherwise contributes to the survival of a population or a distinct,self-sustaining example of a particular element.

Using a ranking system developed by The Nature Conservancy and the Natural Heritage Program Network,the Florida Natural Areas Inventory assigns two ranks to each element. The global rank is based on an element's worldwide status; the state rank is based on the status of the element in Florida. Element ranks are based on many factors,the most important ones being estimated number of Element occurrences,estimated abundance (number of individuals for species; area for natural communities),range,estimated adequately protected EOs,relative threat of destruction,and ecological fragility.

Federal and State status information is from the U.S. Fish and Wildlife Service; and the Florida Game and Freshwater Fish Commission (animals),and the Florida Department of Agriculture and Consumer Services (plants),respectively.

FNAI GLOBAL RANK DEFINITIONS

G1	=	Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
G2	=	Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
G3	=	Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.
G4	=	apparently secure globally (may be rare in parts of range)
G5	=	demonstrably secure globally
GH	=	of historical occurrence throughout its range,may be rediscovered (e.g.,ivory-billed woodpecker)
GX	=	believed to be extinct throughout range
GXC	=	extirpated from the wild but still known from captivity or cultivation
G#?	=	tentative rank (e.g.,G2?)
G#G#	=	range of rank; insufficient data to assign specific global rank (e.g.,G2G3)
G#T#	=	rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g.,G3T1)
G#Q	=	rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g.,G2Q)
G#T#Q	=	same as above,but validity as subspecies or variety is questioned.
GU	=	due to lack of information,no rank or range can be assigned (e.g.,GUT2).
G?	=	not yet ranked (temporary)
S1	=	Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
S2	=	Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
S3	=	Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.
S4	=	apparently secure in Florida (may be rare in parts of range)
S5	=	demonstrably secure in Florida
SH	=	of historical occurrence throughout its range,may be rediscovered (e.g.,ivory-billed woodpecker)
SX	=	believed to be extinct throughout range
SA	=	accidental in Florida,i.e.,not part of the established biota
SE	=	an exotic species established in Florida may be native elsewhere in North America
SN	=	regularly occurring,but widely and unreliably distributed; sites for conservation hard to determine
SU	=	due to lack of information,no rank or range can be assigned (e.g.,SUT2).
S?	=	not yet ranked (temporary)

Rank Explanations
For FNAI Global Rank, FNAI State Rank,
Federal Status And State Status

LEGAL STATUS

N = Not currently listed,nor currently being considered for listing,by state or federal agencies.

FEDERAL **(Listed by the U. S. Fish and Wildlife Service - USFWS)**

LE = Listed as Endangered Species in the List of Endangered and Threatened Wildlife and Plants under the provisions of the Endangered Species Act. Defined as any species that is in danger of extinction throughout all or a significant portion of its range.

PE = Proposed for addition to the List of Endangered and Threatened Wildlife and Plants as Endangered Species.

LT = Listed as Threatened Species. Defined as any species that is likely to become an endangered species within the near future throughout all or a significant portion of its range.

PT = Proposed for listing as Threatened Species.

C = Candidate Species for addition to the list of Endangered and Threatened Wildlife and Plants. Defined as those species for which the USFWS currently has on file sufficient information on biological vulnerability and threats to support proposing to list the species as endangered or threatened.

E(S/A) = Endangered due to similarity of appearance.

T(S/A) = Threatened due to similarity of appearance.

STATE

Animals **(Listed by the Florida Fish and Wildlife Conservation Commission - FFWCC)**

LE = Listed as Endangered Species by the FFWCC. Defined as a species,subspecies,or isolated population which is so rare or depleted in number or so restricted in range of habitat due to any man-made or natural factors that it is in immediate danger of extinction or extirpation from the state,or which may attain such a status within the immediate future.

LT = Listed as Threatened Species by the FFWCC. Defined as a species,subspecies,or isolated population which is acutely vulnerable to environmental alteration,declining in number at a rapid rate,or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.

LS = Listed as Species of Special Concern by the FFWCC. Defined as a population which warrants special protection,recognition,or consideration because it has an inherent significant vulnerability to habitat modification,environmental alteration,human disturbance,or substantial human exploitation which,in the foreseeable future,may result in its becoming a threatened species.

Plants **(Listed by the Florida Department of Agriculture and Consumer Services - FDACS)**

LE = Listed as Endangered Plants in the Preservation of Native Flora of Florida Act. Defined as species of plants native to the state that are in imminent danger of extinction within the state,the survival of which is unlikely if the causes of a decline in the number of plants continue,and includes all species determined to be endangered or threatened pursuant to the Federal Endangered Species Act of 1973,as amended.

LT = Listed as Threatened Plants in the Preservation of Native Flora of Florida Act. Defined as species native to the state that are in rapid decline in the number of plants within the state,but which have not so decreased in such number as to cause them to be endangered.

San Felasco Hammock Preserve State Park

Designated Species

Plants

Common Name/ *Scientific Name*	**Designated Species Status** FDA	USFWS	FNAI
San Felasco spleenwort *Asplenium monanthes*	E	E	G4,S1
Southern lady fern *Athyrium felix-femina asplenioides*	T		
Cinnamon fern *Osmunda cinnamomea*	CE		
Royal fern *Osmunda regalis* var. *spectabilis*	CE		
Coontie *Zamia pumila*	CE		
Greenfly orchid *Epidendrum conopseum*	CE		
Wild coco *Eulophia alta*	T		
Crested coralroot *Hexalectris spicata*	E		
Pine lily *Lilium catesbaei*	T		
Southern twayblade orchid *Listera australis*	T		
Green adder's-mouth orchid *Malaxis unifolia*	E		G5,S3
Yellow fringed orchid *Platanthera ciliaris*	T		
Needle palm *Rhapidophyllum hystrix*	CE		
Oval ladies'-tresses *Spiranthes ovalis*	E		
Crane-fly orchid *Tipularia discolor*	T		
Three-birds orchid *Triphora trianthophora*	T		
Flyr's brickell-bush *Brickellia cordifolia*	E		G2G3,S2
Red poppy mallow *Callirhoe papaver*	E		G5,S2
Cardinal flower *Lobelia cardinalis*	T		
Southern crabapple *Malus angustifolia*	T		
Florida milkvine *Matelea floridana*	E	MC	G2,S2
Yellow butterwort *Pinguicula lutea*	T		
Florida mountain mint *Pycnanthemum floridanum*	T	MC	G3,S3
Sage *Salvia urticifolia*	E		G5,S1

San Felasco Hammock Preserve State Park

Designated Species

Animals

Common Name/ *Scientific Name*	Designated Species Status FFWCC	USFWS	FNAI
AMPHIBIANS			
Eastern tiger salamander *Ambystoma tigrinum*			G5,S3
Striped newt *Notophthalmus perstriatus*			G2G3,S2S3
Florida gopher frog *Rana capito*	SSC		G4,S3
REPTILES			
American alligator *Alligator mississippiensis*	SSC	T(S/A)	G5,S4
Eastern diamondback rattlesnake *Crotalus adamanteus*			G5,S3
Eastern indigo snake *Drymarchon corais couperi*	T	T	G4T3,S3
Gopher tortoise *Gopherus polyphemus*	SSC		G3,S3
Southern hognose snake *Heterodon simus*			G2,S?
Green water snake *Nerodia cyclopion*			G5,S1
Florida pine snake *Pituophis melanoleucus mugitus*	SSC		G5T3?,S3
Short-tailed snake *Stilosoma extenuatum*	T		G3,S3
BIRDS			
Bachman's Sparrow *Aimophila aestivalis*			G3,S3
Grasshopper Sparrow *Ammodramus savannarum floridanus*	E	E	G5T1,S1
Great egret *Ardea alba*			G5,S4
Little blue heron *Egretta caerulea*	SSC		G5,S4
Snowy egret *Egretta thula*	SSC		G5,S4
Tricolored heron *Egretta tricolor*	SSC		G5,S4
Swallow-tailed kite *Elanoides forficatus*			G4,S2S3
White ibis *Eudocimus albus*	SSC		G5,S4
Southeastern American kestrel *Falco sparverius paulus*	T		G5T3T4,S3?
Florida sandhill crane *Grus canadensis pratensis*	T		G5T2T3,S2S3
Bald eagle *Haliaeetus leucocephalus*	T	T	G4,S3

San Felasco Hammock Preserve State Park

Designated Species

Animals

Common Name/ *Scientific Name*	**Designated Species Status** FFWCC	USFWS	FNAI
Wood stork			
Mycteria americana	E	E	G4,S2
Yellow-crowned night heron			
Nyctanassa violacea			G5,S3?
Black-crowned night heron			
Nycticorax nycticorax			G5,S3?
Osprey			
Pandion haliaetus	SSC		G5,S3S4
Hairy woodpecker			
Picoides villosus			G5,S3?
MAMMALS			
Florida mouse			
Podomys floridanus	SSC		G3,S3
Sherman's fox squirrel			
Sciurus niger shermani	SSC		G5T2,S2
Florida black bear			
Ursus americanus floridanus	T	C	G5T2,S2

Addendum 6—Florida Master Site File List Of Cultural Sites

San Felasco Hammock Preserve State Park

Florida Master Site File Listed Cultural Sites

FMSF #	Site Name	Culture	Site Type
AL 137	Cellon Fence Line	Prehistoric	Artifact Scatter
AL 155	Flint Sink	Prehistoic	Artifact Scatter, Quarry
AL 288	NN	Prehistoric, Cades Pond	Habitation, Artifact Scatter
AL 304	Old Road	Alachua	Artifact Scatter
AL 305	Sandhill Cutoff	Alachua, Middle Archaic, Weeden Island	Habitation, Artifact Scatter
AL 306	Chert Swamp	Archaic	Artifact Scatter
AL 307	NN	Archaic	Habitation, Artifact Scatter
AL 309	NN	Alachua, Cades Pond, Deptford	Habitation, Artifact Scatter
AL 310	Colding	Alachua, Deptford, Hickory Pond, Weeden Island II, American Acquisition/Territorial Development	Habitation, Homestead, Artifact Scatter
AL 446	Hargraves	Archaic, Deptford, Transitional	Artifact Scatter
AL 447	Cellon	Archaic, Deptford	Habitation, Artifact Scatter
AL 448	NN	Paleoindian, Early Archaic	Artifact Scatter
AL 449	NN	Middle Archaic	Artifact Scatter
AL 461	San Felasco Hammock	Paleoindian, Early Archaic, Middle Archaic	Habitation, Artifact Scatter
AL 2472	Cellon Creek	Deptford?	Artifact Scatter
AL 3127	Sandhill	Prehistoric, 19th Century?	Artifact Scatter, Refuse
AL 3128	Mesic Hammock	Prehistoric	Artifact Scatter
AL 3393	Itchy Bottom	Prehistoric	Habitation, Artifact Scatter
AL 3394	West Cut	Prehistoric	Artifact Scatter
AL 3395	Sanchez Pond	Prehistoric	Habitation, Artifact Scatter
AL 3396	Culvert	Prehistoric, First Spanish	Artifact Scatter
AL 3397	Moonshine Creek Still	20th Century	Artifact Scatter
AL 3398	Bucket	20th Century	Farmstead, Building Remains, Refuse
AL 3399	Depot	Prehistoric	Habitation, Artifact Scatter
AL 3400	North Prairie	Paleoindian, Early Archaic	Artifact Scatter
AL 3401	Commune	Prehistoric, 19th Century, 20th Century	Artifact Scatter, building remains, Habitation, Homestead
AL 3402	Inholding Road	Prehistoric	Artifact Scatter
AL 3403	Big Oak Mound	Prehistoric	Mound

San Felasco Hammock Preserve State Park

Florida Master Site File Listed Cultural Sites

FMSF #	Site Name	Culture	Site Type
AL 3411	Dairy Barn	20th Century	Building Remains, Farm, Homestead
AL 3412	J. M. Sanchez Place	Prehistoric, American Acquisition/Territorial Development	Habitation, Homestead, Artifact Scatter
AL 3413	Headquarters	Prehistoric, American Acquisition/Territorial Development	Artifact Scatter
AL 3414	Big Magnolia	Alachua	Artifact Scatter, Habitation
AL 3415	Blues Creek Road	Prehistoric	Artifact Scatter
AL 3416	Turkey Creek	Prehistoric	Artifact Scatter
AL 3417	F. R. Sanchez	American Acquisition/Territorial Development	Homestead, Artifact Scatter
AL 3421	Blues Creek Still	20th Century	Artifact Scatter
AL3422	Old Tractor	20th Century	Artifact Scatter
AL 3519	South Side	Archaic	Artifact Scatter

Addendum 7—Timber Management Analysis

This timber assessment required by Chapters 253 and 259, Florida Statutes, was conducted by Allison Mead**.**

Statement Of Management Goals

The management goal of San Felasco Hammock Preserve State Park in the following stands is to enhance the sandhill and upland pine forest communities, to restore the park-like stands of longleaf pines with a relatively open understory containing few other woody plant species, and to promote a groundcover dominated by native grasses and forbs. Protection of cultural resources and other natural communities within the park remains a priority. All stands to be harvested will be subjected to a compliance review with the Department of State, Division of Historical Resources to minimize impacts to known or unknown cultural resources.

In these stands longleaf pine growth and regeneration will be favored. Timber harvesting will selectively remove offsite loblolly pines and offsite hardwoods to progress towards the long-term goal of restoring a longleaf pine and wire grass dominated community with old growth characteristics. Platt and Rathbun (1993) describe the structure of the Wade Tract, one of the few remaining stands of old growth longleaf pine, as uneven-aged with a wide range of sizes. The age distribution of an old growth stand is best represented as a reverse J-shaped curve. At the Wade Tract two-thirds of the longleaf were less than 50 years old, one-third were 50-250 years old with scattered trees in the 3 to 5 century range. Old growth stands are characterized by many cohorts of varying age and size that enter the population at least once per decade (Platt and Rathbun 1993).

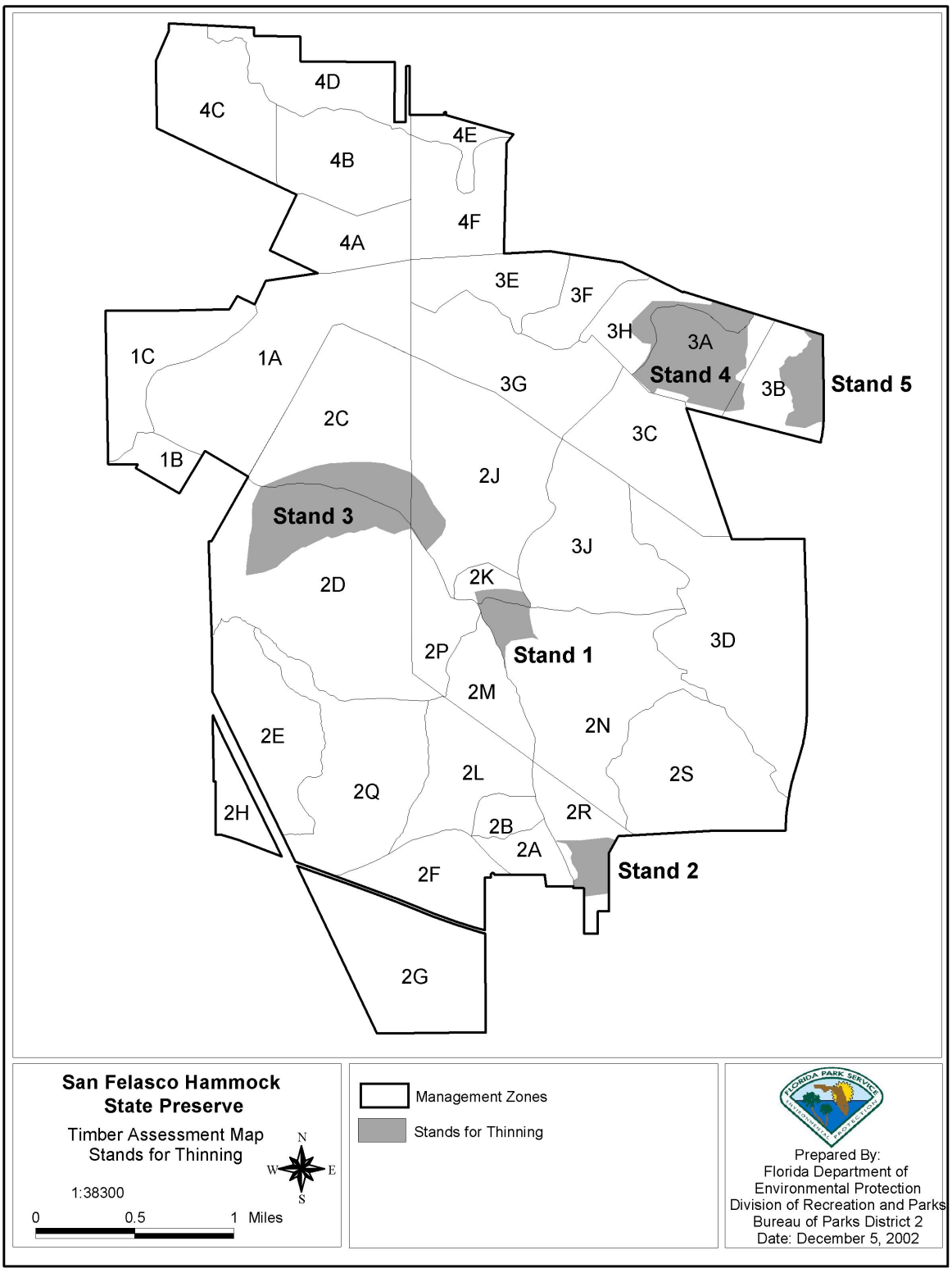
A long-term goal of 60-70 ft^2/ac basal area per acre (BAA) will favor longleaf growth and regeneration, stimulate herbaceous groundcovers, and provide enough light fuels (needles) to carry fire. Furthermore, restoring these stands to a BAA of 60-70 ft^2/ac through thinning will promote forest health and help protect against severe southern pine beetle infestations. Thinning will not only reduce competition among trees but will also remove the loblolly pines which are more susceptible to southern pine beetles and will promote the growth of the more resistant longleaf pines. Increased sunlight penetration will favor grasses and forbs and increase species diversity.

Longleaf pine develops in close association with periodic surface fires. Fire is a dominant factor in the ecology of longleaf pine communities because it reduces hardwood encroachment and facilitates pine and wiregrass reproduction. Without fire, longleaf pine seedlings will not establish, and oaks and other hardwoods become more numerous, shading out young pines and associated groundcover species. Implementation of an appropriate management strategy can successfully restore this ecosystem in areas where fire has been suppressed, and where succession has proceeded toward a community dominated by loblolly pines and hardwoods. Prescribed burning will be an integral component in the restoration of the sandhill and upland pine forest natural communities. Once restored, these longleaf pine forests will need to be maintained by burning in the lightning season at 2-5 year intervals.

Stand 1

Stand description. Stand 1 is a degraded sandhill community that is approximately 40 acres in size (see Timber Assessment Map). This stand includes part of burn zone 2K and the north portion of burn zone 2N continuing south to the beetle cut of 1995. Blues Creek Road is the division between burn zone 2K to the north and 2N to the south. The stand consists of naturally seeded loblolly pines with interspersed longleaf. Although no longleaf were sampled in any plots, they are present in the stand. The stand consists of loblolly pine, longleaf pine, southern red oak, turkey oak, wiregrass, winged sumac, wax myrtle, and sweetgum. Most pines are sawtimber sized, with some chip-n-saw and pulpwood sized trees (Figure 1). The stand is currently overstocked with a BAA of 90 ft^2/ac with little regeneration, as shown in Figure 1.

Stand history. Historically this stand seems to be minimally disturbed. After examining aerial photography from 1937, 1955, 1961, and 1994, it appears that this stand has slowly been encroached upon by loblolly pines due to fire exclusion. Fire has been reintroduced into zone 2K. Prescribed fires



were conducted in March 1990, 1991 and February 1993. Zone 2N was burned in January 1989, March 1990, 1991, 1994; and April 1996, 2000.

Cultural resources in or near the stand. An archaeological site, AL3415, lies near the northeast end

of the stand. Although this site is recorded as a diffuse lithic scatter, no subsurface testing has occurred on this site (Wheeler and Newman 1997). Ground disturbance in the vicinity of this site will have to be kept to a minimum.

Wetlands in or near the stand. Several baygalls occur on the northern edge of the upland pine forest within zone 2K near the transition from upland pine forest to upland mixed forest.

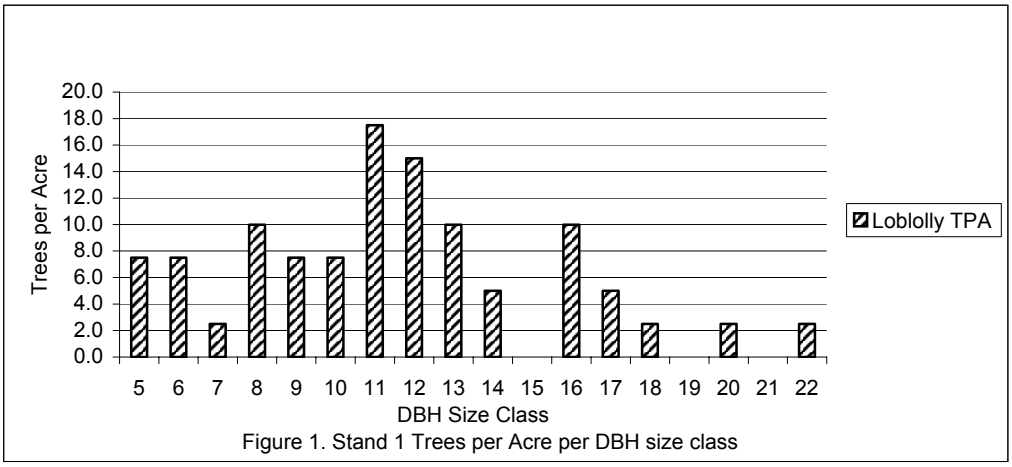


Figure 1. Stand 1 Trees per Acre per DBH size class

Access to the stand. The stand is accessible by Blues Creek Road.

Management recommendations. A shelterwood/group-shelterwood cut is the recommended treatment for this stand. A shelterwood cut is appropriate for longleaf pine because it closely parallels examples of successful regeneration in nature. Also, due to the large number of loblolly pines and fewer longleaf pines, this method is best for removal of the offsite loblolly pines and offsite hardwoods and will encourage optimum seed production by longleafs. Logging slash should be distributed evenly throughout the site rather than piling it.

During thinning, the basal area to be removed will consist entirely of loblolly pines and any offsite hardwoods that are too large to be suppressed by fire leaving an ideal BAA of 30-40 ft^2/ac of dominant healthy longleaf pines. Some loblolly pines may be left in certain areas to provide fuel if the density of longleaf pines is too low. Seed production per hectare reaches a peak at stand densities between 30 to 40 ft²/acre of basal area, assuming that the stand is comprised of dominant-codominant trees of cone bearing size. Dispersal range is limited, with 71 percent of sound seeds falling within a distance of 66 ft of the base of parent trees (Boyer 1990). In the 2 years following the cut it is recommended that a prescribed burn be conducted to reduce logging slash and create a receptive seedbed. Although a cool winter fire will do less damage to regeneration that is already on the site, a winter burn will reduce some of the seedbed receptiveness due to the regrowth of herbaceous vegetation. A late summer or early fall burn before seed fall may provide a seedbed for 2 crops of seed. However, spring burns will produce higher mortality of oaks (Platt et al 1991). Scheduling of a fuel-reduction and seedbed preparation burn will be based on conditions of the post-harvest fuel bed and the ability of the fuel bed to carry fire, as well as the amount of existing bare soil and the need for suppression of oak resprouts and saplings. Monitoring of significant seed crops will be required to allow seedling establishment. Increased cone production should result in the third growing season after the cut. Growing season prescribed fires need to be administered to this stand at an appropriate fire-return interval based on the stage of restoration or maintenance of the natural communities on site. Prescribed fires will be withheld following an initial seedling recruitment event to allow seedlings to reach a critical size before being burned. The stand should be burned when seedlings have a root collar diameter greater than 0.3 inches, and thereafter as needed about every 2 to 5 years to help control offsite hardwood/loblolly encroachment and to maintain fire-tolerant groundcover species.

Estimated stumpage price for Stand 1 based on current (2002) Division of Forestry stumpage prices

	Per Acre	Stand Total
Thinning	$2,355	$94,237

Stand 2

Stand description. Stand 2 is an old field that has been colonized by loblolly pines intermixed with a few longleaf pines. This stand is approximately 33 acres in size size (see Timber Assessment Map). This stand is contained within burn zone 2R and lies just east of a 34-acre southern pine beetle clearcut that was harvested in 1994-95. The stand consists of naturally seeded loblolly pines with longleaf interspersed. The understory fuels consist of Bahia grass and pine needles. Most pine trees are chip-n-saw and pulpwood sized trees, with some sawtimber (Figure 2). The stand has a current stocking BAA of 42 ft^2/ac. An inverse exponential-shaped histogram like the one shown in Figure 2 is typical of young stands with higher amounts of regeneration and fewer older trees.

Stand history. This stand occupies a site that was historically a field dating from at least 1937 until the land was purchased as San Felasco Hammock in August 1975. This stand has slowly been succeeded by loblolly pines over the past 27 years. Fire was reintroduced into zone 2R with prescribed fires conducted in June 1991 and April 1994.

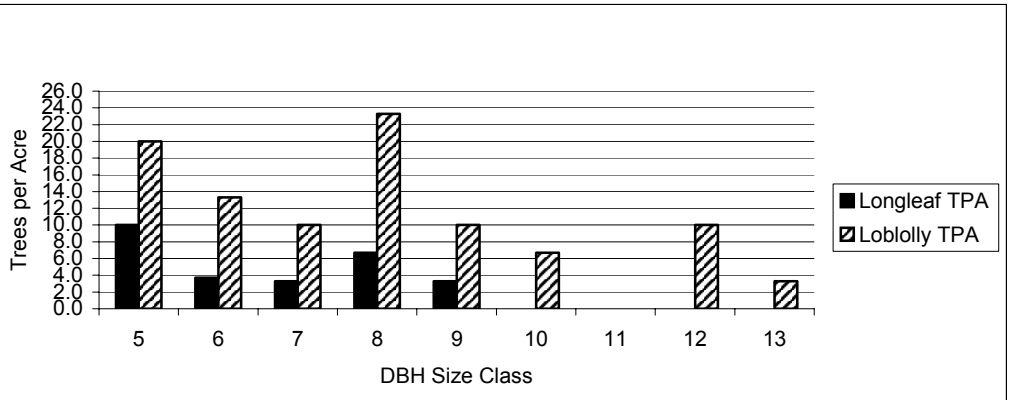


Figure 2: Stand 2 TPA per DBH size class

Cultural resources in or near the stand. There are no known cultural resources in or near the stand.

Wetlands in or near the stand. A dome swamp dominated by gum trees is located to the south and east of the stand.

Access to the stand. This stand is accessible through interior service roads.

Management recommendations. The recommended treatment for this stand is to remove all of the loblolly pines and offsite hardwoods that are too large to control with fire. A prescribed burn is recommended in the year after the cut to reduce logging slash. Restoration efforts will take place following the harvest in an attempt to restore native groundcover to this stand. Funds gained though the thinning can offset the cost of groundcover restoration. Efforts will be concentrated on the control of the Bahia grass and reseeding with native groundcover species through a combination of herbicide and mechanical methods (Violi 2000; Walker 1999). It is not recommended to continue burning after the initial post-logging burn until the Bahia grass is under control. Bahia grass is a fire-adapted species and will resprout from rhizomes following a burn. Restoration efforts should be thoroughly planned before harvesting begins to ensure the best results of restoration efforts. Whether slash should be piled or distributed depends upon which method is best for the groundcover restoration.

Estimated stumpage price for Stand 2 based on current (2002) Division of Forestry stumpage prices

	Per Acre	Stand Total
Thinning	$676	$22,307

Stand 3

Stand description. Stand 3 is degraded sandhill community that is being invaded by loblolly pines due to fire exclusion. This stand is approximately 218 acres in size size (see Timber Assessment Map). This stand is contained within burn zones 2C, 2J, and the north portion of burn zone 2D. The stand consists of naturally seeded longleaf and loblolly pines. The stand also includes southern red oak, turkey oak, wiregrass, winged sumac, wax myrtle, and sweetgum. Most trees are sawtimber sized, with chip-n-saw and pulpwood as well (Figure 3). The stand is overstocked with a current BAA of 84 ft^2/ac. The histogram (Figure 3) shows that the loblolly is becoming more abundant than the longleaf and that the loblolly has greater successful regeneration in this stand.

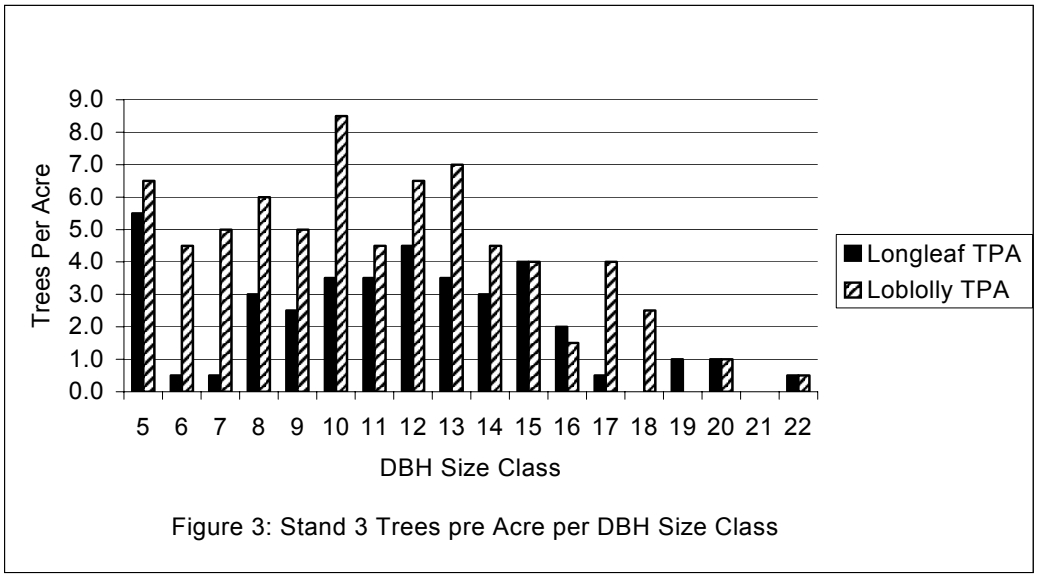


Figure 3: Stand 3 Trees pre Acre per DBH Size Class

Stand history. Historically this stand seems to have been minimally disturbed. After examining aerial photography from 1937, 1955, 1961, and 1994, it appears that this stand has slowly been encroached upon by loblolly pines due to fire exclusion. Fire was reintroduced into zone 2C in January 1977. Prescribed burns were subsequently conducted in January 1979, 1981; March, 1983; October 1987; March 1988; April 1990; March 1992, May 1994; and April 1998. Zone 2J has been burned in March 1990, 1992; April 1993; May 1994 and July 1999. Zone 2 D was burned in January 1977, 1979, 1981; March 1988; April 1990; June 1993; March 1994; and April 1998.

Cultural resources in or near the stand. There are no known cultural resources in or near the stand.

Wetlands in or near the stand. There are no wetlands in or near the stand, but Sanchez Prairie lies to the north. Adequate buffers will be necessary to prevent erosion on or near the slopes of Sanchez Prairie.

Access to the stand. This stand is accessible through internal service roads and lies on either side of the Main Road.

Management recommendations. A shelterwood or group-shelterwood cut is the recommended treatment for this stand. Shelterwood cuts are appropriate for longleaf pine because they closely parallel examples of successful regeneration in nature. Also, due to the large number of loblolly pines and few longleaf pines, this method is best for removal of the offsite loblolly pines and offsite hardwoods, and will encourage optimum seed production by the longleaf pines. All of the loblolly pines and all of the offsite hardwoods that are too large to be suppressed by fire should be removed in

one cut. This will leave the stand with a BAA of 32 ft^2/ac. In the 2 years following the cut it is recommended that a prescribed burn be conducted to reduce logging slash and create a receptive seedbed. Although a cool winter fire will do less damage to regeneration that has already occurred on the site, a winter burn will reduce some of the seedbed receptiveness due to the regrowth of herbaceous vegetation. A late summer or early fall burn before seed fall may provide a seedbed for 2 crops of seed. However, spring burns will produce higher mortality of oaks (Platt et al 1991). Scheduling of a fuel-reduction and seedbed preparation burn will be based on conditions of the post-harvest fuel bed and the ability of the fuel bed to carry fire, as well as the amount of existing bare soil and the need for suppression of oak resprouts and saplings. Increased cone production should be apparent in the third growing season after the seed cut. A growing season, prescribed burning regime should begin when seedlings have reached a size greater than 0.3 inches in root collar diameter, and continue thereafter as needed about every 2 to 5 years to help control offsite hardwood/loblolly encroachment and to maintain fire tolerant groundcover species.

Estimated stumpage price Stand 3 based on current (2002) Division of Forestry stumpage prices

	Per Acre	Stand Total
Thinning	$2,033	$443,150

Stand 4 and 5

Stand history. Historically these stands were cleared between 1949 and 1955 and Bahia grass was planted, leaving scattered longleaf pines and southern red oaks. This stand has slowly succeeded to loblolly pines over the past 27 years. Prescribed fire was reintroduced into zone 3B in January 1988 and January 1992. Zone 3A was burned in January 1988, June 1991 and February 1992.

Stand description. Stands 4 and 5 are in old pastures that have been invaded by loblolly pines intermixed with a few longleaf pines. Stand 4 is approximately 165 acres in size, while stand 5 is approximately 47 acres in size size (see Timber Assessment Map). Stand 4 includes portions of burn zone 3A and the eastern portion of zone 3H. It lies just west of an 81-acre southern pine beetle infestation site that was harvested in 2001. Stand 5 is contained within burn zone 3B and lies just east of the harvested southern pine beetle infestation site. These stands consist of naturally seeded loblolly pines with longleaf interspersed. The understory fuels consist of Bahia grass and pine needles. In stands 4 and 5 most trees are chip-n-saw and sawtimber sized, with some pulpwood (Figures 4 and 5). Stand 4 has a current stocking BAA of 80.3 ft^2/ac, while stand 5 is 93.8 ft^2/ac.

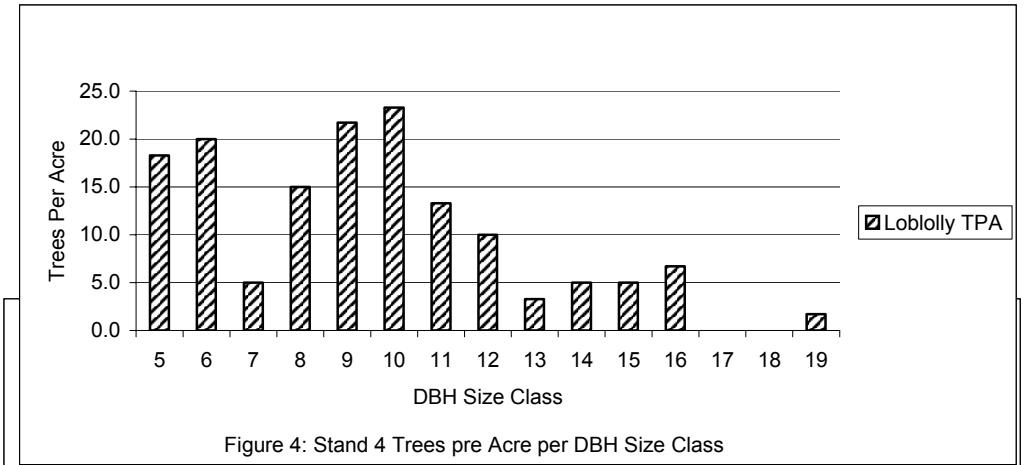


Figure 4: Stand 4 Trees pre Acre per DBH Size Class

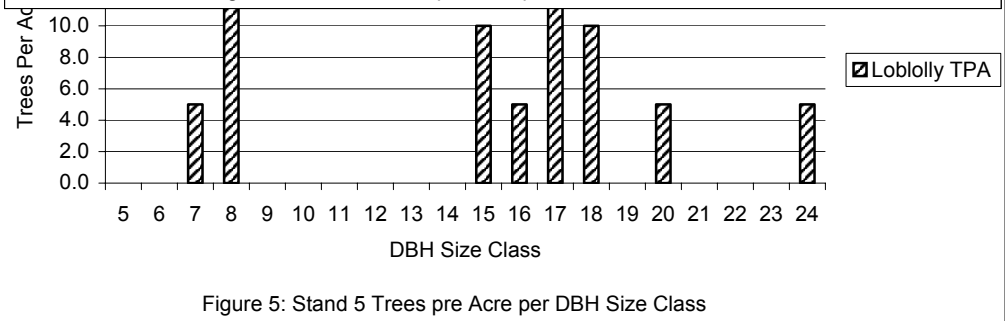


Figure 5: Stand 5 Trees pre Acre per DBH Size Class

Cultural resources in or near the stand. There are no known cultural resources in or near stand 5. Stand 4 includes part of an archaeological site, AL3416, which lies near the southwest end of the stand. Although this site is recorded as a diffuse lithic scatter, no subsurface testing has occurred on this site (Wheeler and Newman 1997). Ground disturbance in the vicinity of this site will have to be kept to a minimum.

Wetlands in or near the stand. Several small lakes occur within stands 4 and 5. The northern end of stand 4 slopes down towards the floodplain of Turkey Creek. Adequate buffer zones around wetlands and near slopes must be maintained during any harvest operations.

Access to the stand. These stands are accessible through internal service roads.

Management recommendations. The recommended treatment for these stands is to remove all of the loblolly pines and the offsite hardwoods that are too large to control with fire. Due to the stands' low BAA they do not need a preparatory cut. A prescribed burn is recommended in the year after the cut to reduce logging slash. Restoration efforts will take place following the burn in an attempt to restore native groundcover to these stands. Funds gained though the thinning can offset the cost of groundcover restoration. Efforts will concentrate on the control of the Bahia grass and reseeding with native groundcover species through a combination of herbicide and mechanical methods (Violi 2000; Walker 1999). It is not recommended to continue burning after the initial post-logging burn until the Bahia grass is under control. This is a fire-adapted species and will resprout from rhizomes following a prescribed burn.

Estimated stumpage price for Stand 4 based on current (2002) Division of Forestry stumpage prices

	Per Acre	Stand Total
Thinning	$2,169	$357,924

Estimated stumpage price for Stand 5 based on current (2002) Division of Forestry stumpage prices

	Per Acre	Stand Total
Thinning	$3,831	$180,043

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Prepared by: Allison Mead

Addendum 8—Priority Schedule And Cost Estimates

Estimates are developed for the funding and staff resources needed to implement the management plan based on goals, objectives and priority management activities. Funding priorities for all state park management and development activities are reviewed each year as part of the Division's legislative budget process. The Division prepares an annual legislative budget request based on the priorities established for the entire state park system. The Division also aggressively pursues a wide range of other funds and staffing resources, such as grants, volunteers, and partnerships with agencies, local governments and the private sector for supplementing normal legislative appropriations to address unmet needs. The ability of the Division to implement the specific goals, objectives and priority actions identified in this plan will be determined by the availability of funding resources for these purposes.

Resource Management

Natural Resources

1. Continue restoration of upland natural communities that were converted to pasture. Initiate pilot project for removal of pasture grasses and conversion to upland pine forest species. 0-10 years. **Estimated Cost: $75,000.**
2. Continue active prescribed burning program averaging 6-10 burns (750 - 1250 acres) per year. 0-10 years. Average of $13,500/year for personnel and $5,500/year for equipment. **Estimated Cost: $190,000.**
3. Continue use of mechanical and chemical methods to remove offsite hardwood and pine species from fire-dependent natural communities. Explore viability of using commercial timbering operations to thin or remove offsite species. 0-10 years. **Estimated Cost: $75,000.**
4. Pursue funding for bridge over Turkey Creek to provide access for prescribed burning and other management needs. 0-5 years. **Estimated Cost: $35,000.**
5. Restore natural communities in southern pine beetle clearcuts. 0-10 years. **Estimated Cost: $95,000.**
6. Continue monitoring hydrology and water quality. Pursue funding to determine restoration needs in Cellon Creek system. 0-10 years. **Estimated Cost: $25,000.**
7. Erect adequate boundary fencing. 0-5 years. **Estimated Cost: $60,000.**
8. Remove invasive exotic plants and animals. 0-10 years. **Estimated Cost: $175,000.**
9. Remove old interior fencing. 0-5 years. **Estimated Cost: $10,000.**
10. Restore damage from soil disturbances such as fire plow scars, ditches, and roadways. 0-10 years. **Estimated Cost: $25,000.**
11. Expand education and interpretive programs on the importance of protecting sensitive natural areas and the use of prescribed fire in management of natural areas. 0-10 years. **Estimated Cost: $20,000.**
12. Continue to expand plant and animal species lists and encourage use of the preserve for research in natural science fields. 0-10 years. **Estimated Cost: $7,500.**

Natural Resources Total: $792,500.

*** Categories of the uniform cost accounting system not reflected in this addendum, have no schedule or cost associated with them.**

Cultural Resources

1. Pursue purchase of properties containing significant archaeological resources. 0-10 years. **(Costs funded through Additions & Inholdings program).**
2. Continue to protect archaeological sites from vandalism, unauthorized digging or collecting, erosion, or other forms of encroachment. 0-10 years. **Estimated Cost: $20,000.**Stabilize and research the tung depot. 0-5 years. **Estimated Cost: $20,000.**
3. Organize, maintain, and safeguard cultural resource files and implement collections management policies in Chapter 16 OPM. 0-10 years. **Estimated Cost: $7,500.**

Cultural Resources Total: $47,500

*** Categories of the uniform cost accounting system not reflected in this addendum, have no schedule or cost associated with them.**

Capital Improvements

Development Area or Facility	Cost
Recreation Facilities - North Side	$16,000.00
Recreation Facilties - Millhopper Road	2,000.00
Support Facilities - North Side	305,000.00
Support Facilities - Shop Area	136,000.00
Total with Contingency	**$550,800.00**

NOTE: These preliminary cost estimates, based on Divisions standards, do not include costs for site-specific elements not evident at the conceptual level of planning. Additional costs should be investigated before finalizing budget estimates. All items fall in the new facility construction category © of the uniform cost accounting system required by ch. 259.037 F.S.

NOTE: These preliminary cost estimates, based on Divisions standards, do not include costs for site-specific elements not evident at the conceptual level of planning. Additional costs should be investigated before finalizing budget estimates. All items fall in the new facility construction category © of the uniform cost accounting system required by ch. 259.037 F.S.

Addendum 9—Additional Information

FNAI Descriptions

DHR Cultural Management Statement

2002 Land Management Review

Descriptions Of Natural Communities Developed By FNAI

This summary presents the hierarchical classification and brief descriptions of 82 Natural Communities developed by Florida Natural Areas Inventory and identified as collectively constituting the original, natural biological associations of Florida.

A Natural Community is defined as a distinct and recurring assemblage of populations of plants, animals, fungi and microorganisms naturally associated with each other and their physical environment. For more complete descriptions, see Guide to the Natural Communities of Florida, available from Florida Department of Natural Resources.

The levels of the hierarchy are:

Natural Community Category - defined by hydrology and vegetation.

Natural Community Groups - defined by landform, substrate, and vegetation.

Natural Community Type - defined by landform and substrate; soil moisture condition; climate; fire; and characteristic vegetation.

TERRESTRIAL - Upland habitats dominated by plants which are not adapted to anaerobic soil conditions imposed by saturation or inundation for more than 10% of the growing season.

XERIC UPLANDS - very dry, deep, well-drained hills of sand with xeric-adapted vegetation.

Sandhill - upland with deep sand substrate; xeric; temperate; frequent fire (2-5 years); longleaf pine and/or turkey oak with wiregrass understory.

Scrub - old dune with deep fine sand substrate; xeric; temperate or subtropical; occasional or rare fire (20 - 80 years); sand pine and/or scrub oaks and/or rosemary and lichens.

Xeric Hammock - upland with deep sand substrate; xeric-mesic; temperate or subtropical; rare or no fire; live oak and/or sand live oak and/or laurel oak and/or other oaks, sparkleberry, saw palmetto.

COASTAL UPLANDS - substrate and vegetation influenced primarily by such coastal (maritime) processes as erosion, deposition, salt spray, and storms.

Beach Dune - active coastal dune with sand substrate; xeric; temperate or subtropical; occasional or rare fire; sea oats and/or mixed salt-spray tolerant grasses and herbs.

Coastal Berm - old bar or storm debris with sand/shell substrate; xeric-mesic; subtropical or temperate; rare or no fire; buttonwood, mangroves, and/or mixed halophytic herbs and/or shrubs and trees.

Coastal Grassland - coastal flatland with sand substrate; xeric-mesic; subtropical or temperate; occasional fire; grasses, herbs, and shrubs with or without slash pine and/or cabbage palm.

Coastal Rock Barren - flatland with exposed limestone substrate; xeric; subtropical; no fire; algae, mixed halophytic herbs and grasses, and/or cacti and stunted shrubs and trees.

Coastal Strand - stabilized coastal dune with sand substrate; xeric; subtropical or temperate; occasional or rare fire; dense saw palmetto and/or seagrape and/or mixed stunted shrubs, yucca, and cacti.

Maritime Hammock - stabilized coastal dune with sand substrate; xeric-mesic; subtropical or temperate; rare or no fire; mixed hardwoods and/or live oak.

Shell Mound - Indian midden with shell substrate; xeric-mesic; subtropical or temperate; rare or no fire; mixed hardwoods.

MESIC UPLANDS - dry to moist hills of sand with varying amounts of clay, silt or organic material; diverse mixture of broadleaved and needleleaved temperate woody species.

Bluff - steep slope with rock, sand, and/or clay substrate; hydric-xeric; temperate; sparse grasses, herbs and shrubs.

Slope Forest - steep slope on bluff or in sheltered ravine; sand/clay substrate; mesic-hydric; temperate; rare or no fire; magnolia, beech, spruce pine, Shumard oak, Florida maple, mixed hardwoods.

Upland Glade - upland with calcareous rock and/or clay substrate; hydric-xeric; temperate; sparse mixed grasses and herbs with occasional stunted trees and shrubs, e.g., eastern red cedar.

Upland Hardwood Forest - upland with sand/clay and/or calcareous substrate; mesic; temperate; rare or no fire; spruce pine, magnolia, beech, pignut hickory, white oak, and mixed hardwoods.

Upland Mixed Forest - upland with sand/clay substrate; mesic; temperate; rare or no fire; loblolly pine and/or shortleaf pine and/or laurel oak and/or magnolia and spruce pine and/or mixed hardwoods.

Upland Pine Forest - upland with sand/clay substrate; mesic-xeric; temperate; frequent or occasional fire; longleaf pine and/or loblolly pine and/or shortleaf pine, southern red oak, wiregrass.

ROCKLANDS - low, generally flat limestone outcrops with tropical vegetation; or limestone exposed through karst activities with tropical or temperate vegetation.

Pine Rockland - flatland with exposed limestone substrate; mesic-xeric; subtropical; frequent fire; south Florida slash pine, palms and/or hardwoods, and mixed grasses and herbs.

Rockland Hammock - flatland with limestone substrate; mesic; subtropical; rare or no fire; mixed tropical hardwoods, often with live oak.

Sinkhole - karst feature with steep limestone walls; mesic-hydric; subtropical or temperate; no fire; ferns, herbs, shrubs, and hardwoods.

MESIC FLATLANDS - flat, moderately well-drained sandy substrates with admixture of organic material, often with a hard pan.

Dry Prairie - flatland with sand substrate; mesic-xeric; subtropical or temperate; annual or frequent fire; wiregrass, saw palmetto, and mixed grasses and herbs.

Mesic Flatwoods - flatland with sand substrate; mesic; subtropical or temperate; frequent fire; slash

pine and/or longleaf pine with saw palmetto, gallberry and/or wiregrass or cutthroat grass understory.

Prairie Hammock - flatland with sand/organic soil over marl or limestone substrate; mesic; subtropical; occasional or rare fire; live oak and/or cabbage palm.

Scrubby Flatwoods - flatland with sand substrate; xeric-mesic; subtropical or temperate; occasional fire; longleaf pine or slash pine with scrub oaks and wiregrass understory.

PALUSTRINE - Wetlands dominated by plants adapted to anaerobic substrate conditions imposed by substrate saturation or inundation during 10% or more of the growing season. Includes non-tidal wetlands; tidal wetlands with ocean derived salinities less than 0.5 ppt and dominance by salt-intolerant species; small (less than 8 ha), shallow (less than 2 m deep at low water) water bodies without wave-formed or bedrock shoreline; and inland brackish or saline wetlands.

WET FLATLANDS - flat, poorly drained sand, marl or limestone substrates.

Hydric Hammock - lowland with sand/clay/organic soil, often over limestone; mesic-hydric; subtropical or temperate; rare or no fire; water oak, cabbage palm, red cedar, red maple, bays, hackberry, hornbeam, blackgum, needle palm, and mixed hardwoods.

Marl Prairie - flatland with marl over limestone substrate; seasonally inundated; tropical; frequent to no fire; sawgrass, spikerush, and/or mixed grasses, sometimes with dwarf cypress.

Wet Flatwoods - flatland with sand substrate; seasonally inundated; subtropical or temperate; frequent fire; vegetation characterized by slash pine or pond pine and/or cabbage palm with mixed grasses and herbs.

Wet Prairie - flatland with sand substrate; seasonally inundated; subtropical or temperate; annual or frequent fire; maidencane, beakrush, spikerush, wiregrass, pitcher plants, St. John's wort, mixed herbs.

SEEPAGE WETLANDS - sloped or flat sands or peat with high moisture levels maintained by downslope seepage; wetland and mesic woody and/or herbaceous vegetation.

Baygall - wetland with peat substrate at base of slope; maintained by downslope seepage, usually saturated and occasionally inundated; subtropical or temperate; rare or no fire; bays and/or dahoon holly and/or red maple and/or mixed hardwoods.

Seepage Slope - wetland on or at base of slope with organic/sand substrate; maintained by downslope seepage, usually saturated but rarely inundated; subtropical or temperate; frequent or occasional fire; sphagnum moss, mixed grasses and herbs or mixed hydrophytic shrubs.

FLOODPLAIN WETLANDS - flat, alluvial sand or peat substrates associated with flowing water courses and subjected to flooding but not permanent inundation; wetland or mesic woody and herbaceous vegetation.

Bottomland Forest - flatland with sand/clay/organic substrate; occasionally inundated; temperate; rare or no fire; water oak, red maple, beech, magnolia, tuliptree, sweetgum, bays, cabbage palm, and mixed hardwoods.

Floodplain Forest - floodplain with alluvial substrate of sand, silt, clay or organic soil; seasonally inundated; temperate; rare or no fire; diamondleaf oak, overcup oak, water oak, swamp chestnut oak, blue palmetto, cane, and mixed hardwoods.

Floodplain Marsh - floodplain with organic/sand/alluvial substrate; seasonally inundated; subtropical; frequent or occasional fire; maidencane, pickerelweed, sagittaria spp., buttonbush, and mixed emergents.

Floodplain Swamp - floodplain with organic/alluvial substrate; usually inundated; subtropical or temperate; rare or no fire; vegetation characterized by cypress, tupelo, black gum, and/or pop ash.

Freshwater Tidal Swamp - river mouth wetland, organic soil with extensive root mat; inundated with freshwater in response to tidal cycles; rare or no fire; cypress, bays, cabbage palm, gums and/or cedars.

Slough - broad, shallow channel with peat over mineral substrate; seasonally inundated, flowing water; subtropical; occasional or rare fire; pop ash and/or pond apple or water lily.

Strand Swamp - broad, shallow channel with peat over mineral substrate; seasonally inundated, flowing water; subtropical; occasional or rare fire; cypress and/or willow.

Swale - broad, shallow channel with sand/peat substrate; seasonally inundated, flowing water; subtropical or temperate; frequent or occasional fire; sawgrass, maidencane, pickerelweed, and/or mixed emergents.

BASIN WETLANDS - shallow, closed basin with outlet usually only in time of high water; peat or sand substrate, usually inundated; wetland woody and/or herbaceous vegetation.

Basin Marsh - large basin with peat substrate; seasonally inundated; temperate or subtropical; frequent fire; sawgrass and/or cattail and/or buttonbush and/or mixed emergents.

Basin Swamp - large basin with peat substrate; seasonally inundated, still water; subtropical or temperate; occasional or rare fire; vegetation characterized by cypress, blackgum, bays and/or mixed hardwoods.

Bog - wetland on deep peat substrate; moisture held by sphagnum mosses, soil usually saturated, occasionally inundated; subtropical or temperate; rare fire; sphagnum moss and titi and/or bays and/or dahoon holly, and/or mixed hydrophytic shrubs.

Coastal Interdunal Swale - long narrow depression wetlands in sand/peat-sand substrate; seasonally inundated, fresh to brackish, still water; temperate; rare fire; graminoids and mixed wetland forbs.

Depression Marsh - small rounded depression in sand substrate with peat accumulating toward center; seasonally inundated, still water; subtropical or temperate; frequent or occasional fire; maidencane, fire flag, pickerelweed, and mixed emergents, may be in concentric bands.

Dome Swamp - rounded depression in sand/limestone substrate with peat accumulating toward center; seasonally inundated, still water; subtropical or temperate; occasional or rare fire; cypress, blackgum, or bays, often tallest in center.

LACUSTRINE - Non-flowing wetlands of natural depressions lacking persistent emergent vegetation except around the perimeter.

Clastic Upland Lake - generally irregular basin in clay uplands; predominantly with inflows, frequently without surface outflow; clay or organic substrate; colored, acidic, soft water with low mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

Coastal Dune Lake - basin or lagoon influenced by recent coastal processes; predominantly sand substrate with some organic matter; salinity variable among and within lakes, and subject to saltwater intrusion and storm surges; slightly acidic, hard water with high mineral content (sodium, chloride).

Coastal Rockland Lake - shallow basin influence by recent coastal processes; predominantly barren oolitic or Miami limestone substrate; salinity variable among and within lakes, and subject to saltwater intrusion, storm surges and evaporation (because of shallowness); slightly alkaline, hard water with

high mineral content (sodium, chloride).

Flatwoods/Prairie Lake - generally shallow basin in flatlands with high water table; frequently with a broad littoral zone; still water or flow-through; sand or peat substrate; variable water chemistry, but characteristically colored to clear, acidic to slightly alkaline, soft to moderately hard water with moderate mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

Marsh lake - generally shallow, open water area within wide expanses of freshwater marsh; still water or flow-through; peat, sand or clay substrate; occurs in most physiographic regions; variable water chemistry, but characteristically highly colored, acidic, soft water with moderate mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

River Floodplain Lake - meander scar, backwater, or larger flow-through body within major river floodplains; sand, alluvial or organic substrate; colored, alkaline or slightly acidic, hard or moderately hard water with high mineral content (sulfate, sodium, chloride, calcium, magnesium); mesotrophic to eutrophic.

Sandhill Upland Lake - generally rounded solution depression in deep sandy uplands or sandy uplands shallowly underlain by limestone; predominantly without surface inflows/outflows; typically sand substrate with organic accumulations toward middle; clear, acidic moderately soft water with varying mineral content; ultra-oligotrophic to mesotrophic.

Sinkhole Lake - typically deep, funnel-shaped depression in limestone base; occurs in most physiographic regions; predominantly without surface inflows/outflows, but frequently with connection to the aquifer; clear, alkaline, hard water with high mineral content (calcium, bicarbonate, magnesium).

Swamp Lake - generally shallow, open water area within basin swamps; still water or flow-through; peat, sand or clay substrate; occurs in most physiographic regions; variable water chemistry, but characteristically highly colored, acidic, soft water with moderate mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

RIVERINE - Natural, flowing waters from their source to the downstream limits of tidal influence and bounded by channel banks.

Alluvial Stream - lower perennial or intermittent/seasonal watercourse characterized by turbid water with suspended silt, clay, sand and small gravel; generally with a distinct, sediment-derived (alluvial) floodplain and a sandy, elevated natural levee just inland from the bank.

Blackwater Stream - perennial or intermittent/seasonal watercourse characterized by tea-colored water with a high content of particulate and dissolved organic matter derived from drainage through swamps and marshes; generally lacking an alluvial floodplain.

Seepage Stream - upper perennial or intermittent/seasonal watercourse characterized by clear to lightly colored water derived from shallow groundwater seepage.

Spring-run Stream - perennial watercourse with deep aquifer headwaters and characterized by clear water, circumneutral pH and, frequently, a solid limestone bottom.

SUBTERRANEAN - Twilight, middle and deep zones of natural chambers overlain by the earth's crust and characterized by climatic stability and assemblages of trogloxenic, troglophilic, and troglobitic organisms.

Aquatic Cave - cavernicolous area permanently or periodically submerged; often characterized by troglobitic crustaceans and salamanders; includes high energy systems which receive large quantities

of organic detritus and low energy systems.

Terrestrial Cave - cavernicolous area lacking standing water; often characterized by bats, such as Myotis spp., and other terrestrial vertebrates and invertebrates; includes interstitial areas above standing water such as fissures in the ceiling of caves.

MARINE/ESTUARINE (The distinction between the Marine and Estuarine Natural Communities is often subtle, and the natural communities types found under these two community categories have the same descriptions. For these reasons they have been grouped together.) - Subtidal, intertidal and supratidal zones of the sea, landward to the point at which seawater becomes significantly diluted with freshwater inflow from the land.

Consolidated Substrate - expansive subtidal, intertidal and supratidal area composed primarily of nonliving compacted or coherent and relatively hard, naturally formed mass of mineral matter (e.g., coquina limerock and relic reefs); octocorals, sponges, stony corals, nondrift macrophytic algae, blue-green mat-forming algae and seagrasses sparse, if present.

Unconsolidated Substrate - expansive subtidal, intertidal and supratidal area composed primarily of loose mineral matter (e.g., coralgal, gravel, marl, mud, sand and shell); octocorals, sponges, stony corals, nondrift macrophytic algae, blue-green mat-forming algae and seagrasses sparse, if present.

Octocoral Bed - expansive subtidal area occupied primarily by living sessile organisms of the Class Anthozoa, Subclass Octocorallia (e.g., soft corals, horny corals, sea fans, sea whips, and sea pens); sponges, stony corals, nondrift macrophytic algae and seagrasses spares, if present.

Sponge Bed - expansive subtidal area occupied primarily by living sessile organisms of the Phylum Porifera (e.g., sheepswool sponge, Florida loggerhead sponge and branching candle sponge); octocorals, stony corals, nondrift macrophytic algae and seagrasses sparse, if present.

Coral Reef - expansive subtidal area with elevational gradient or relief and occupied primarily by living sessile organisms of the Class Hydrozoa (e.g., fire corals and hydrocorals) and Class Anthozoa, Subclass Zoantharia (e.g., stony corals and black corals); includes deepwater bank reefs, fringing barrier reefs, outer bank reefs and patch reefs, some of which may contain distinct zones of assorted macrophytes, octocorals, & sponges.

Mollusk Reef - substantial subtidal or intertidal area with relief from concentrations of sessile organisms of the Phylum Mollusca, Class Bivalvia (e.g., molluscs, oysters, & worm shells); octocorals, sponges, stony corals, macrophytic algae and seagrasses sparse, if present.

Worm Reef - substantial subtidal or intertidal area with relief from concentrations of sessile, tubicolous organisms of the Phylum Annelida, Class Polychaeta (e.g., chaetopterids and sabellarids); octocorals, sponges, stony corals, macrophytic algae and seagrasses sparse, if present.

Algal Bed - expansive subtidal, intertidal or supratidal area, occupied primarily by attached thallophytic or mat-forming prokaryotic algae (e.g, halimeda, blue-green algae); octocorals, sponges, stony corals and seagrasses sparse, if present.

Grass Bed - expansive subtidal or intertidal area, occupied primarily by rooted vascular macrophytes, (e.g., shoal grass, halophila, widgeon grass, manatee grass and turtle grass); may include various epiphytes and epifauna; octocorals, sponges, stony corals, and attached macrophytic algae sparse, if present.

Composite Substrate - expansive subtidal, intertidal, or supratidal area, occupied primarily by Natural Community elements from more than one Natural Community category (e.g., Grass Bed and Algal Bed species; Octocoral and Algal Bed species); includes both patchy and evenly distributed occurrences.

Tidal Marsh - expansive intertidal or supratidal area occupied primarily by rooted, emergent vascular macrophytes (e.g., cord grass, needlerush, saw grass, saltwort, saltgrass and glasswort); may include various epiphytes and epifauna.

Tidal Swamp - expansive intertidal and supratidal area occupied primarily by woody vascular macrophytes (e.g., black mangrove, buttonwood, red mangrove, and white mangrove); may include various epiphytes and epifauna.

DEFINITIONS OF TERMS Terrestrial and Palustrine Natural Communities

Physiography

Upland - high area in region with significant topographic relief; generally undulating
Lowland - low area in region with or without significant topographic relief; generally flat to gently sloping
Flatland - generally level area in region without significant topographic relief; flat to gently sloping
Basin - large, relatively level lowland with slopes confined to the perimeter or isolated interior locations
Depression - small depression with sloping sides, deepest in center and progressively shallower towards the perimeter
Floodplain - lowland adjacent to a stream; topography influenced by recent fluvial processes
Bottomland - lowland not on active floodplain; sand/clay/organic substrate

Hydrology

occasionally inundated - surface water present only after heavy rains and/or during flood stages
seasonally inundated - surface water present during wet season and flood periods
usually inundated - surface water present except during droughts

Climatic Affinity of the Flora

tropical - community generally occurs in practically frost-free areas
subtropical - community generally occurs in areas that experience occasional frost, but where freezing temperatures are not frequent enough to cause true winter dormancy
temperate - community generally occurs in areas that freeze often enough that vegetation goes into winter dormancy

Fire

annual fire - burns about every 1-2 years
frequent fire - burns about every 3-7 years
occasional fire - burns about every 8-25 years
rare fire - burns about every 26-100 years
no fire - community develops only when site goes more than 100 years without burning

LATIN NAMES OF PLANTS MENTIONED IN NATURAL COMMUNITY DESCRIPTIONS

anise - *Illicium floridanum*
bays:
- swamp bay -*Persea palustris*
- gordonia -*Gordonia lasianthus*
- sweetbay -*Magnolia virgiana*

beakrush - *Rhynchospora* spp.
beech - *Fagus grandifolia*
blackgum - *Nyssa biflora*
blue palmetto - *Sabal minor*
bluestem - *Andropogon* spp.
buttonbush - *Cephalanthus occidentalis*
cabbage palm - *Sabal palmetto*
cacti - *Opuntia* and *Harrisia* spp., predominantly *stricta* and *pentagonus*
cane - *Arundinaria gigantea* or *A. tecta*
cattail - *Typha* spp.
cedars:
- red cedar - *Juniperus silicicola*
- white cedar - *Chamaecyparis thyoides* or *C. henryi*

cladonia - *Cladonia* spp.
cypress - *Taxodium distichum*
dahoon holly - *Ilex cassine*
diamondleaf oak - *Quercus laurifolia*
fire flag - *Thalia geniculata*
Florida maple - *Acer barbatum*
gallberry - *Ilex glabra*
gums:
- tupelo - *Nyssa aquatica*
- blackgum - *Nyssa biflora*
- Ogeechee gum - *Nyssa ogeche*

hackberry - *Celtis laevigata*
hornbeam - *Carpinus caroliniana*
laurel oak - *Quercus hemisphaerica*
live oak - *Quercus virginiana*
loblolly pine - *Pinus taeda*
longleaf pine - *Pinus palustris*
magnolia - *Magnolia grandiflora*
maidencane - *Panicum hemitomon*
needle palm - *Rhapidophyllum hystrix*
overcup oak - *Quercus lyrata*
pickerel weed - *Pontederia cordata* or *P. lanceolata*
pignut hickory - *Carya glabra*
pop ash - *Fraxinus caroliniana*
pond apple - *Annona glabra*
pond pine - *Pinus serotina*
pyramid magnolia - *Magnolia pyramidata*
railroad vine - *Ipomoea pes-caprae*
red cedar - *Juniperus silicicola*
red maple - *Acer rubrum*
red oak - *Quercus falcata*
rosemary - *Ceratiola ericoides*
sagittaria - *Sagittaria lancifolia*
sand pine - *Pinus clausa*
saw palmetto - *Serenoa repens*
sawgrass - *Cladium jamaicensis*
scrub oaks - *Quercus geminata, Q. chapmanii, Q. myrtifolia,Q. inopina*
sea oats - *Uniola paniculata*
seagrape - *Coccoloba uvifera*
shortleaf pine - *Pinus echinata*
Shumard oak - *Quercus shumardii*
slash pine - *Pinus elliottii*
sphagnum moss - *Sphagnum* spp.
spikerush - *Eleocharis* spp.
spruce pine - *Pinus glabra*
St. John's wort - *Hypericum* spp.
swamp chestnut oak - *Quercus prinus*
sweetgum - *Liquidambar styraciflua*
titi - *Cyrilla racemiflora*, and *Cliftonia monophylla*
tuliptree - *Liriodendron tulipfera*
tupelo - *Nyssa aquatica*
turkey oak - *Quercus laevis*
water oak - *Quercus nigra*
waterlily - *Nymphaea odorata*
white cedar - *Chamaecyparis thyoides*
white oak - *Quercus alba*
willow - *Salix caroliniana*
yucca - *Yucca aloifolia*

A. GENERAL DISCUSSION

Archaeological and historic sites are defined collectively in 267.021(3), F.S., as "historic properties" or "historic resources." They have several essential characteristics that must be recognized in a management program.

First of all, they are a finite and non-renewable resource. Once destroyed, presently existing resources, including buildings, other structures, shipwreck remains, archaeological sites and other objects of antiquity, cannot be renewed or revived. Today, sites in the State of Florida are being destroyed by all kinds of land development, inappropriate land management practices, erosion, looting, and to a minor extent even by well-intentioned professional scientific research (e.g., archaeological excavation). Measures must be taken to ensure that some of these resources will be preserved for future study and appreciation.

Secondly, sites are unique because individually they represent the tangible remains of events that occurred at a specific time and place.

Thirdly, while sites uniquely reflect localized events, these events and the origin of particular sites are related to conditions and events in other times and places. Sites can be understood properly only in relation to their natural surroundings and the activities of inhabitants of other sites. Managers must be aware of this "systemic" character of historic and archaeological sites. Also, it should be recognized that archaeological sites are time capsules for more than cultural history; they preserve traces of past biotic communities, climate, and other elements of the environment that may be of interest to other scientific disciplines.

Finally, the significance of sites, particularly archaeological ones, derives not only from the individual artifacts within them, but equally from the spatial arrangement of those artifacts in both horizontal and vertical planes. When archaeologists excavate, they recover, not merely objects, but also a record of the positions of these objects in relation to one another and their containing matrix (e.g., soil strata). Much information is sacrificed if the so-called "context" of archaeological objects is destroyed or not recovered, and this is what archaeologists are most concerned about when a site is threatened with destruction or damage. The artifacts themselves can be recovered even after a site is heavily disturbed, but the context -- the vertical and horizontal relationships -- cannot. Historic structures also contain a wealth of cultural (socio-economic) data that can be lost if historically sensitive maintenance, restoration or rehabilitation procedures are not implemented, or if they are demolished or extensively altered without appropriate documentation. Lastly, it should not be forgotten that historic structures often have associated potentially significant historic archaeological features that must be considered in land management decisions.

B. STATUTORY AUTHORITY

Chapter 253, Florida Statutes ("State Lands") directs the preparation of "single-use" or "multiple-use" land management plans for all state-owned lands and state-owned sovereignty submerged lands. In this document, 253.034(4), F.S., specifically requires that "all management plans, whether for single-use or multiple-use properties, shall specifically describe how the managing agency plans to identify, locate, protect and preserve, or otherwise use fragile non-renewable resources, such as archaeological and historic sites, as well as other fragile resources..."

Chapter 267, Florida Statutes is the primary historic preservation authority of the state. The importance of protecting and interpreting archaeological and historic sites is recognized in 267.061(1)(a), F.S.:The rich and unique heritage of historic properties in this state, representing more than 10,000 years of human presence, is an important legacy to be valued and conserved for present and future generations. The destruction of these nonrenewable historic resources will engender a significant loss to the state's quality of life, economy, and cultural environment. It is therefore declared to be state policy to:

1. Provide leadership in the preservation of the state's historic resources; [and]
2. Administer state-owned or state-controlled historic resources in a spirit of stewardship and trusteeship;...

Responsibilities of the Division of Historical Resources in the Department of State pursuant to 267.061(3), F.S., include the following:

1. Cooperate with federal and state agencies, local Governments, and private organizations and individuals to direct and conduct a comprehensive statewide survey of historic resources and to maintain an inventory of such responses.
2. Develop a comprehensive statewide historic preservation plan.
3. Identify and nominate eligible properties to the National Register of Historic Places and otherwise administer applications for listing properties in the National Register of Historic Places.
4. Cooperate with federal and state agencies, local governments, and organizations and individuals to ensure that historic resources are taken into consideration at all levels of planning and development.
5. Advise and assist, as appropriate, federal and state agencies and local governments in carrying out their historic preservation responsibilities and programs.
6. Carry out on behalf of the state the programs of the National Historic Preservation Act of 1966, as amended, and to establish, maintain, and administer a state historic preservation program meeting the requirements of an approved program and fulfilling the responsibilities of state historic preservation programs as provided in subsection 101(b) of that act.
7. Take such other actions necessary or appropriate to locate, acquire, protect, preserve, operate, interpret, and promote the location, acquisition, protection, preservation, operation, and interpretation of historic resources to foster an appreciation of Florida history and culture. Prior to the acquisition, preservation, interpretation, or operation of a historic property by a state agency, the Division shall be provided a reasonable opportunity to review and comment on the proposed undertaking and shall determine that there exists historic authenticity and a feasible means of providing for the preservation, interpretation and operation of such property.
8. Establish professional standards for the preservation, exclusive of acquisition, of historic resources in state ownership or control.
9. Establish guidelines for state agency responsibilities under subsection (2).

Responsibilities of other state agencies of the executive branch, pursuant to 267.061(2), F.S., include:

1. Each state agency of the executive branch having direct or indirect jurisdiction over a proposed state or state-assisted undertaking shall, in accordance with state policy and prior to the approval of expenditure of any state funds on the undertaking, consider the effect of the undertaking on any historic property that is included in, or eligible for inclusion in, the National Register of Historic Places. Each such agency shall afford the division a reasonable opportunity to comment with regard to such an undertaking.
2. Each state agency of the executive branch shall initiate measures in consultation with the division to assure that where, as a result of state action or assistance carried out by such agency, a historic property is to be demolished or substantially altered in a way that adversely affects the character, form, integrity, or other qualities that contribute to [the] historical, architectural, or archaeological value of the property, timely steps are taken to determine that no feasible and prudent alternative to the proposed demolition or alteration exists, and, where no such alternative is determined to exist, to assure that timely steps are taken either to avoid or mitigate the adverse effects, or to undertake an appropriate archaeological salvage excavation or other recovery action to document the property as it existed prior to demolition or alteration.
3. In consultation with the division [of Historical Resources], each state agency of the executive branch shall establish a program to locate, inventory, and evaluate all historic properties under the agency's ownership or control that appear to qualify for the National Register. Each such agency shall exercise caution to assure that any such historic property is not inadvertently

transferred, sold, demolished, substantially altered, or allowed to deteriorate significantly.

4. Each state agency of the executive branch shall assume responsibility for the preservation of historic resources that are owned or controlled by such agency. Prior to acquiring, constructing, or leasing buildings for the purpose of carrying out agency responsibilities, the agency shall use, to the maximum extent feasible, historic properties available to the agency. Each agency shall undertake, consistent with preservation of such properties, the mission of the agency, and the professional standards established pursuant to paragraph (3)(k), any preservation actions necessary to carry out the intent of this paragraph.

5. Each state agency of the executive branch, in seeking to acquire additional space through new construction or lease, shall give preference to the acquisition or use of historic properties when such acquisition or use is determined to be feasible and prudent compared with available alternatives. The acquisition or use of historic properties is considered feasible and prudent if the cost of purchase or lease, the cost of rehabilitation, remodeling, or altering the building to meet compliance standards and the agency's needs, and the projected costs of maintaining the building and providing utilities and other services is less than or equal to the same costs for available alternatives. The agency shall request the division to assist in determining if the acquisition or use of a historic property is feasible and prudent. Within 60 days after making a determination that additional space is needed, the agency shall request the division to assist in identifying buildings within the appropriate geographic area that are historic properties suitable for acquisition or lease by the agency, whether or not such properties are in need of repair, alteration, or addition.

6. Consistent with the agency's mission and authority, all state agencies of the executive branch shall carry out agency programs and projects, including those under which any state assistance is provided, in a manner which is generally sensitive to the preservation of historic properties and shall give consideration to programs and projects which will further the purposes of this section.

Section 267.12 authorizes the Division to establish procedures for the granting of research permits for archaeological and historic site survey or excavation on state-owned or controlled lands, while Section 267.13 establishes penalties for the conduct of such work without first obtaining written permission from the Division of Historical Resources. The Rules of the Department of State, Division of Historical Resources, for research permits for archaeological sites of significance are contained in Chapter 1A-32, F.A.C.

Another Florida Statute affecting land management decisions is Chapter 872, F.S. Section 872.02, F.S., pertains to marked grave sites, regardless of age. Many state-owned properties contain old family and other cemeteries with tombstones, crypts, etc. Section 872.05, F.S., pertains to unmarked human burial sites, including prehistoric and historic Indian burial sites. Unauthorized disturbance of both marked and unmarked human burial site is a felony.

C. MANAGEMENT POLICY

The choice of a management policy for archaeological and historic sites within state-owned or controlled land obviously depends upon a detailed evaluation of the characteristics and conditions of the individual sites and groups of sites within those tracts. This includes an interpretation of the significance (or potential significance) of these sites, in terms of social and political factors, as well as environmental factors. Furthermore, for historic structures architectural significance must be considered, as well as any associated historic landscapes.

Sites on privately owned lands are especially vulnerable to destruction, since often times the economic incentives for preservation are low compared to other uses of the land areas involved. Hence, sites in public ownership have a magnified importance, since they are the ones with the best chance of survival over the long run. This is particularly true of sites that are state-owned or controlled, where the basis of management is to provide for land uses that are minimally destructive of resource values.

It should be noted that while many archaeological and historical sites are already recorded within state--owned or controlled--lands, the majority of the uplands areas and nearly all of the inundated areas have not been surveyed to locate and assess the significance of such resources. The known sites are, thus, only an incomplete sample of the actual resources - i.e., the number, density, distribution, age, character and condition of archaeological and historic sites - on these tracts. Unfortunately, the lack of specific knowledge of the actual resources prevents formulation of any sort of detailed management or use plan involving decisions about the relative historic value of individual sites. For this reason, a generalized policy of conservation is recommended until the resources have been better addressed.

The generalized management policy recommended by the Division of Historical Resources includes the following:

1. State land managers shall coordinate all planned activities involving known archaeological or historic sites or potential site areas closely with the Division of Historical Resources in order to prevent any kind of disturbance to significant archaeological or historic sites that may exist on the tract. Under 267.061(1)(b), F.S., the Division of Historical Resources is vested with title to archaeological and historic resources abandoned on state lands and is responsible for administration and protection of such resources. The Division will cooperate with the land manager in the management of these resources. Furthermore, provisions of 267.061(2) and 267.13, F.S., combined with those in 267.061(3) and 253.034(4), F.S., require that other managing (or permitting) agencies coordinate their plans with the Division of Historical Resources at a sufficiently early stage to preclude inadvertent damage or destruction to known or potentially occurring, presently unknown archaeological and historic sites. The provisions pertaining to human burial sites must also be followed by state land managers when such remains are known or suspected to be present (see 872.02 and 872.05, F.S., and 1A-44, F.A.C.)

2. Since the actual resources are so poorly known, the potential impact of the managing agency's activities on historic archaeological sites may not be immediately apparent. Special field survey for such sites may be required to identify the potential endangerment as a result of particular management or permitting activities. The Division may perform surveys, as its resources permit, to aid the planning of other state agencies in their management activities, but outside archaeological consultants may have to be retained by the managing agency. This would be especially necessary in the cases of activities contemplating ground disturbance over large areas and unexpected occurrences. It should be noted, however, that in most instances Division staff's knowledge of known and expected site distribution is such that actual field surveys may not be necessary, and the project may be reviewed by submitting a project location map (preferably a 7.5 minute U.S.G.S. Quadrangle map or portion thereof) and project descriptive data, including detailed construction plans. To avoid delays, Division staff should be contacted to discuss specific project documentation review needs.

3. In the case of known significant sites, which may be affected by proposed project activities, the managing agency will generally be expected to alter proposed management or development plans, as necessary, or else make special provisions to minimize or mitigate damage to such sites.

4. If in the course of management activities, or as a result of development or the permitting of dredge activities (see 403.918(2)(6)a, F.S.), it is determined that valuable historic or archaeological sites will be damaged or destroyed, the Division reserves the right, pursuant to 267.061(1)(b), F.S., to require salvage measures to mitigate the destructive impact of such activities to such sites. Such salvage measures would be accomplished before the Division would grant permission for destruction of the affected site areas. The funding needed to implement salvage measures would be the responsibility of the managing agency planning the site destructive activity. Mitigation of historic structures at a minimum involves the preparation of measured drawings and documentary photographs. Mitigation of archaeological resources involves the excavation, analysis and reporting of the project findings and must be planned to

occur sufficiently in advance to avoid project construction delays. If these services are to be contracted by the state agency, the selected consultant will need to obtain an Archaeological Research Permit from the Division of Historical Resources, Bureau of Archaeological Research (see 267.12, F.S. and Rules 1A-32 and 1A-46 F.A.C.).

5. For the near future, excavation of non-endangered (i.e., sites not being lost to erosion or development) archaeological site is discouraged. There are many endangered sites in Florida (on both private and public lands) in need of excavation because of the threat of development or other factors. Those within state-owned or controlled lands should be left undisturbed for the present - with particular attention devoted to preventing site looting by "treasure hunters". On the other hand, the archaeological and historic survey of these tracts is encouraged in order to build an inventory of the resources present, and to assess their scientific research potential and historic or architectural significance.

6. The cooperation of land managers in reporting sites to the Division that their field personnel may discover is encouraged. The Division will help inform field personnel from other resource managing agencies about the characteristics and appearance of sites. The Division has initiated a cultural resource management training program to help accomplish this. Upon request the Division will also provide to other agencies archaeological and historical summaries of the known and potentially occurring resources so that information may be incorporated into management plans and public awareness programs (See Management Implementation).

7. Any discovery of instances of looting or unauthorized destruction of sites must be reported to the agent for the Board of Trustees of the Internal Improvement Trust Fund and the Division so that appropriate action may be initiated. When human burial sites are involved, the provisions of 872.02 and 872.05, F. S. and Rule 1A-44, F.A.C., as applicable, must also be followed. Any state agent with law enforcement authority observing individuals or groups clearly and incontrovertibly vandalizing, looting or destroying archaeological or historic sites within state-owned or controlled lands without demonstrable permission from the Division will make arrests and detain those individuals or groups under the provisions of 267.13, 901.15, and 901.21, F.S., and related statutory authority pertaining to such illegal activities on state-owned or controlled lands. County Sheriffs' officers are urged to assist in efforts to stop and/or prevent site looting and destruction.

In addition to the above management policy for archaeological and historic sites on state-owned land, special attention shall be given to those properties listed in the National Register of Historic Places and other significant buildings. The Division recommends that the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (Revised 1990) be followed for such sites.

The following general standards apply to all treatments undertaken on historically significant properties.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.

2. The historic character of a property shall be retained and preserved. The removal of historic materials or alterations of features and spaces that characterize a property shall be avoided.

3. Each property shall be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.

4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.

5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.

6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of

missing features shall be substantiated by documentary, physical, or pictorial evidence.

7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

8. Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

9. New additions, exterior alterations, or related new construction shall not destroy materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired. (see Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings [Revised 1990]).

Divisions of Historical Resources staff are available for technical assistance for any of the above listed topics. It is encouraged that such assistance be sought as early as possible in the project planning.

D. MANAGEMENT IMPLEMENTATION

As noted earlier, 253.034(4), F.S., states that "all management plans, whether for single-use or multiple-use properties, shall specifically describe how the managing agency plans to identify, locate, protect and preserve, or otherwise use fragile non-renewable resources, such as archaeological and historic sites..." The following guidelines should help to fulfill that requirement.

1. All land managing agencies should contact the Division and send U.S.G.S. 7.5 minute quadrangle maps outlining the boundaries of their various properties.

2. The Division will in turn identify site locations on those maps and provide descriptions for known archaeological and historical sites to the managing agency.

3. Further, the Division may also identify on the maps areas of high archaeological and historic site location probability within the subject tract. These are only probability zones, and sites may be found outside of these areas. Therefore, actual ground inspections of project areas may still be necessary.

4. The Division will send archaeological field recording forms and historic structure field recording forms to representatives of the agency to facilitate the recording of information on such resources.

5. Land managers will update information on recorded sites and properties.

6. Land managers will supply the Division with new information as it becomes available on previously unrecorded sites that their staff locate. The following details the kind of information the Division wishes to obtain for any new sites or structures that the land managers may report:

A. Historic Sites

(1) Type of structure (dwelling, church, factory, etc.).

(2) Known or estimated age or construction date for each structure and addition.

(3) Location of building (identify location on a map of the property, and building placement, i.e., detached, row, etc.).

(4) General Characteristics: (include photographs if possible) overall shape of plan (rectangle, "L" "T" "H" "U", etc.); number of stories; number of vertical divisions of bays; construction materials (brick, frame, stone, etc.); wall finish (kind of bond, coursing, shingle, etc.); roof shape.

(5) Specific features including location, number and appearance of:
(a) Important decorative elements;
(b) Interior features contributing to the character of the building;

(c) Number, type, and location of outbuildings, as well as date(s) of construction;
(d) Notation if property has been moved;
(e) Notation of known alterations to building.

B. Archaeological Sites

(1) Site location (written narrative and mapped location).
(2) Cultural affiliation and period.
(3) Site type (midden, burial mound, artifact scatter, building rubble, etc.).
(4) Threats to site (deterioration, vandalism, etc.).
(5) Site size (acreage, square meters, etc.).
(6) Artifacts observed on ground surface (pottery, bone, glass, etc.).
(7) Description of surrounding environment.

7. No land disturbing activities should be undertaken in areas of known archaeological or historic sites or areas of high site probability without prior review by the Division early in the project planning.

8. Ground disturbing activities may proceed elsewhere but land managers should stop disturbance in the immediate vicinity of artifact finds and notifies the Division if previously unknown archaeological or historic remains are uncovered. The provisions of Chapter 872, F.S., must be followed when human remains are encountered.

9. Excavation and collection of archaeological and historic sites on state lands without a permit from the Division are a violation of state law and shall be reported to a law enforcement officer. The use of metal detectors to search for historic artifacts shall be prohibited on state lands except when authorized in a 1A-32, F.A.C., research permit from the Division.

10. Interpretation and visitation which will increase public understanding and enjoyment of archaeological and historic sites without site destruction or vandalism is strongly encouraged.

11. Development of interpretive programs including trails, signage, kiosks, and exhibits is encouraged and should be coordinated with the Division.

12. Artifacts found or collected on state lands are by law the property of the Division. Land managers shall contact the Division whenever such material is found so that arrangements may be made for recording and conservation. This material, if taken to Tallahassee, can be returned for public display on a long term loan.

E. ADMINISTERING AGENCY

Questions relating to the treatment of archaeological and historic resources on state lands may be directed to:

Compliance Review Section
Bureau of Historic Preservation
Division of Historical Resources
R.A. Gray Building
500 South Bronough Street
Tallahassee, Florida 32399-0250

Contact Person: **Susan M. Harp**
Historic Preservation Planner
Telephone (850) 245-6333
Suncom 205-6333
FAX (850) 245-6437

Land Management Review of San Felasco Hammock Preserve State Park
Alachua County (Lease No. 2839): October 10, 2002

Prepared by Division of State Lands Staff

William Howell, OMC Manager
Ginny Morris, Administrative Assistant

For
San Felasco Hammock State Park Review Team

Final: December 31, 2002

Land Manager:	DRP
Area:	6,916 Acres
County:	Alachua County
Mngt. Plan Revised:	4/27/1998
Mngt. Plan Update Due:	4/27/2003

Management Review Team Members

Agency Represented	Team member Appointed	Team member In attendance
DEP/DRP	Dan Pearson	Dan Pearson
DEP South Florida District	Don Jensen	Don Jensen
DACS/DOF	Bill Korn	Bill Korn
FWCC	Vic Doig	Vic Doig
Soil and Water Conservation	Ken Morgan	
County Commission	Michael Buono	Tim Harris
Conservation Organization	Laura Butterfield	Laura Butterfield
Private Land Manager	Russ Weber	

Process for Implementing Regional Management Review Teams

Legislative Intent and Guidance:

Chapter 259.036, F. S. was enacted in 1997 to determine whether conservation, preservation, and recreation lands owned by the state Board of Trustees of the Internal Improvement Trust Fund (Board) are being managed properly. It directs the Department of Environmental Protection (DEP) to establish land management review teams to evaluate the extent to which the existing management plan provides sufficient protection to threatened or endangered species, unique or important natural or physical features, geological or hydrological functions, and archaeological features. The teams also evaluate the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices, including public access, are in compliance with the adopted management plan. If a land management plan has not been adopted, the review shall consider the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices are in compliance with the management policy statement and management prospectus for that property. If the land management review team determines that reviewed lands are not being managed for the purposes for which they were acquired or in compliance with the adopted land management plan, management policy statement, or management prospectus, DEP shall provide the review findings to the Board, and the managing agency must report to the Board its reasons for managing the lands as it has. A report of the review findings are given to the managing agency under review, the Acquisition and Restoration Council, and to the Division of State Lands. Also, DEP shall report the annual review findings of its land management review teams to the Board no later than the second board meeting in October of each year.

Review Site

The management review of San Felasco Preserve State Park considered approximately 6,916 acres in Alachua County that are managed by the Division of Recreation and Parks. The team evaluated the extent to which current management actions are sufficient, whether the land is being managed for the purpose for which it was acquired, and whether actual management practices, including public access, are in compliance with the management plan. The DRP revised the management plan on April 27, 1998, and the management plan update is due on April 27, 2003.

Review Team Determination

Is the land being managed for the purpose for which it was acquired?

After completing the checklist, team members were asked to answer “yes” or “no” to this question. All team members agreed that San Felasco State Park is being managed for the purpose for which it was acquired.

Are actual management practices, including public access, in compliance with the management plan?

After completing the checklist, team members were asked to answer “yes” or “no” to this question. All team members agreed that actual management practices, including public access, were in compliance with the management plan for this site.

Commendations to the Managing Agency

1. The team commends the DRP for the excellent passive recreational opportunities and infrastructure to support it, and for the protection of the core of the preserve as a wilderness area. (Vote: 6+, 0-)

Exceptional Management Actions

The following items received high scores on the review team checklist (see attachment 1), which indicates that management actions exceeded expectations

Exceptional management actions

The following items received high scores on the review team checklist (see Attachment 1), which indicates that management actions exceeded expectations.

- Management and protection the upland mixed forest, basin swamp, baygall, bottomland forest, floodplain forest, hydric hammock, marsh lake, sinkhole lake, swamp lake, and blackwater stream communities.
- Protection and preservation of listed animals and plants.
- Protection, preservation and survey of the cultural resources.
- Excellent control of non-native plants.
- Ground and surface water quantity and quality monitoring.
- Exceptional success with acquiring in holdings.
- Haying program.
- Parking and recreational opportunities.
- Environmental education/outreach and informational materials.
- Exceptional, equipment and sanitary facilities.

Recommendations and Checklist Findings

The management plan must include responses to the recommendations and checklist items that are identified below.

Recommendations

The following recommendations resulted from a discussion and vote of review team members.

1. The team recommends that DRP request that FNAI assist the park biologist in updating the park listed plants inventory for the park. (VOTE: 6+, 0 -)
Manager's Response:
Agree. This will be included in the next revised unit management plan.

2. The team recommends that the DRP take a more aggressive approach to feral hog removal. (VOTE: 6+, 0-)
Manager's Response:
Agree. Additional trapping efforts have already been initiated. The next revised unit management plan will include updated information on the feral hog problems and control measures.

Checklist findings

The following items received low scores on the review team checklist (see Attachment 1), which indicates that management actions, in the field, were insufficient (f) or that the issue was not sufficiently addressed in the management plan (p). These items need to be further addressed in the management plan update.

1. Discussion in the management plan of the frequency of controlled burns (p)(f).
Manager's Response:
Agree. This will be included in the next revised unit management plan.

2. Discussion in the management plan of the need for additional law enforcement presence (p)(f).
Manager's Response:
Agree. This will be included in the next revised unit management plan.

3**. Discussion in the management plan of haying and timber management (p).**
Manager's Response:
Agree. This will be included in the next revised unit management plan.

4**. Discussion in the management plan of the need for a bridge over Turkey Creek (p)(f).**
Manager's Response:
Agree. The need for new structures such as bridges is always considered and determined as a part of the park planning process. In this case we are currently proposing to include a service bridge across the creek in the next revised UMP. This would allow the park access to better manage natural resources and the bridge would also be available for trail use.

5. Discussion in the management plan of environmental education/outreach and informational materials (p).
Manager's Response:
Agree. This will be included in the next revised unit management plan.

6. Discussion in the management plan of gate and fencing needs (f).
Manager's Response:
Agree. This will be included in the next revised unit management plan.

7. Discussion in the management plan of need for additional buildings, staffing and funding (f).
Manager's Response:
Agree. The need for and decision to include new buildings or request additional staff is always considered and decided in the park planning process. We are proposing to expand the pole barn for equipment storage and to request staff needed to better manage the natural and cultural resources as a part of the next revised UMP.
Funding for construction of buildings and other needs is contingent on DRP and DEP budget resources and priorities and also on legislative action. Although additional staff is needed, no new staff can be assigned to this or any park unit unless the new positions are appropriated by the Legislature or reassigned from other units. Additional staff is needed by many of our parks, which is why we regularly seek positions, volunteers, and partners to help us overcome staff deficiencies.