

**DE LEON SPRINGS STATE PARK**

**UNIT MANAGEMENT PLAN**

**APPROVED**

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

**JUNE 9, 2006**



# Department of Environmental Protection

Jeb Bush  
Governor

Marjorie Stoneman Douglas Building  
3900 Commonwealth Boulevard, MS 140  
Tallahassee, Florida 32399-3000

Colleen M. Castille  
Secretary

September 13, 2006

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

Re: De Leon Springs State Park

Lease #3262

Dear Ms. White:

On June 9, 2006, the Acquisition and Restoration Council recommended approval of the De Leon Springs 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 De Leon Springs 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 June 9, 2016.

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

*"More Protection, Less Process"*

*Printed on recycled paper.*

## TABLE OF CONTENTS

<b>INTRODUCTION</b> .....	1
<b>PURPOSE AND SCOPE OF PLAN</b> .....	1
<b>MANAGEMENT PROGRAM OVERVIEW</b> .....	4
Management Authority And Responsibility.....	4
Park Goals And Objectives .....	5
Management Coordination .....	6
Public Participation .....	7
Other Designations .....	7

### **RESOURCE MANAGEMENT COMPONENT**

<b>INTRODUCTION</b> .....	9
<b>RESOURCE DESCRIPTION AND ASSESSMENT</b> .....	9
Natural Resources.....	9
Cultural Resources.....	16
<b>RESOURCE MANAGEMENT PROGRAM</b> .....	19
Special Management Considerations .....	19
Management Needs And Problems .....	20
Management Objectives .....	20
Management Measures For Natural Resources .....	20
Management Measures For Cultural Resources.....	23
Research Needs .....	24
Resource Management Schedule.....	24
Land Management Review .....	25

**LAND USE COMPONENT**

**INTRODUCTION**.....27

**EXTERNAL CONDITIONS** .....27

    Existing Use Of Adjacent Lands .....27

    Planned Use Of Adjacent Lands.....28

**PROPERTY ANALYSIS** .....28

    Recreation Resource Elements .....28

    Assessment Of Use.....29

**CONCEPTUAL LAND USE PLAN** .....32

    Potential Uses And Proposed Facilities.....33

    Facilities Development.....36

    Existing Use And Optimum Carrying Capacity .....37

    Optimum Boundary .....38

**TABLE**

**TABLE 1 - Existing Use And Optimum Carrying Capacity** .....37

**LIST OF ADDENDA**

**ADDENDUM 1**

    Acquisition History and Advisory Group Documentation..... A 1 - 1

**ADDENDUM 2**

    References Cited..... A 2 - 1

**ADDENDUM 3**

    Soil Descriptions ..... A 3 - 1

**ADDENDUM 4**

Plant And Animal List..... A 4 - 1

**ADDENDUM 5**

Designated Species List..... A 5 - 1

**ADDENDUM 6**

Priority Schedule and Cost Estimates..... A 6 - 1

**ADDITIONAL INFORMATION**

Descriptions of Natural Communities Developed by FNAI .....1  
DHR Cultural Management Statement.....9

**MAPS**

Vicinity Map .....2  
Reference Map .....3  
Soils Map .....11  
Natural Communities Map.....13  
Burn Zones Map .....22  
Base Map .....30  
Conceptual Land Use Plan.....34  
Optimum Boundary Map .....39



## **INTRODUCTION**

De Leon Springs State Park is located in Volusia County (see Vicinity Map). Access to the park is from either Interstate Highway 4 or Interstate Highway 95 to U.S. Highway 17 (see Reference Map). The vicinity map also reflects significant land and water resources existing near the park. Much of the adjacent property is also in public ownership.

The park contains 606.14 acres and 297.04 acres of this is wetland communities. The uplands, especially those surrounding the springs, have a long history of human habitation. The original parcel, including the springs, was acquired by the state in 1982. It was purchased with funds from the Land Acquisition Trust Fund (see Addendum 1).

At De Leon Springs State Park, public outdoor recreation and conservation is the designated single use of the property. There are no legislative or executive directives that constrain the use of this property.

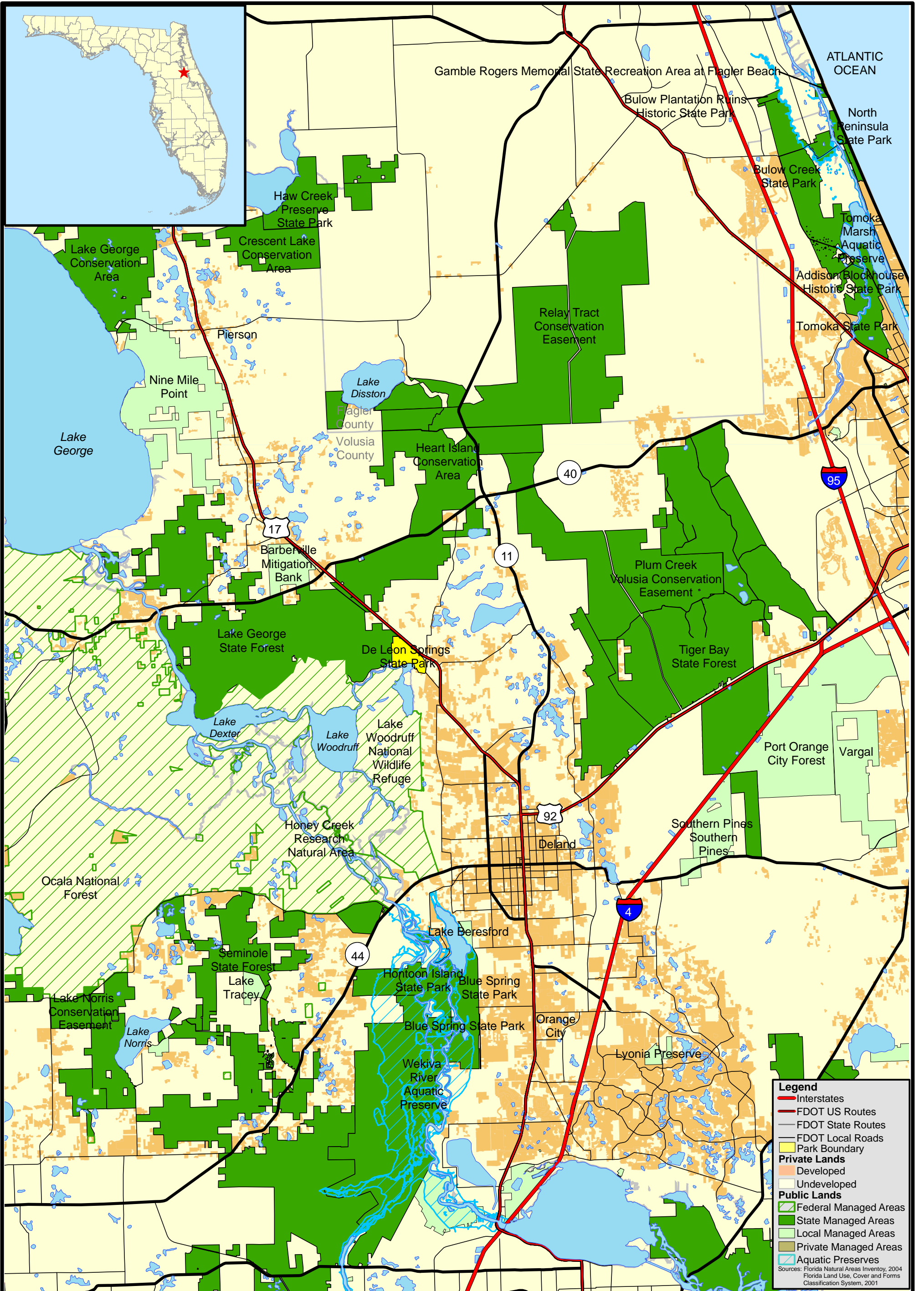
### **PURPOSE AND SCOPE OF THE PLAN**

This plan serves as the basic statement of policy and direction for the management of De Leon Springs 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 January 25, 2001 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 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 no secondary purposes could be accommodated in a manner that would not interfere with the primary purpose of resource-based outdoor recreation and conservation. Uses such as water resource development projects, water supply projects, stormwater

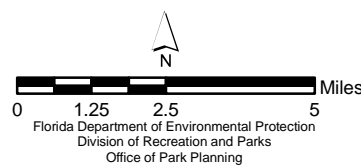


**Legend**

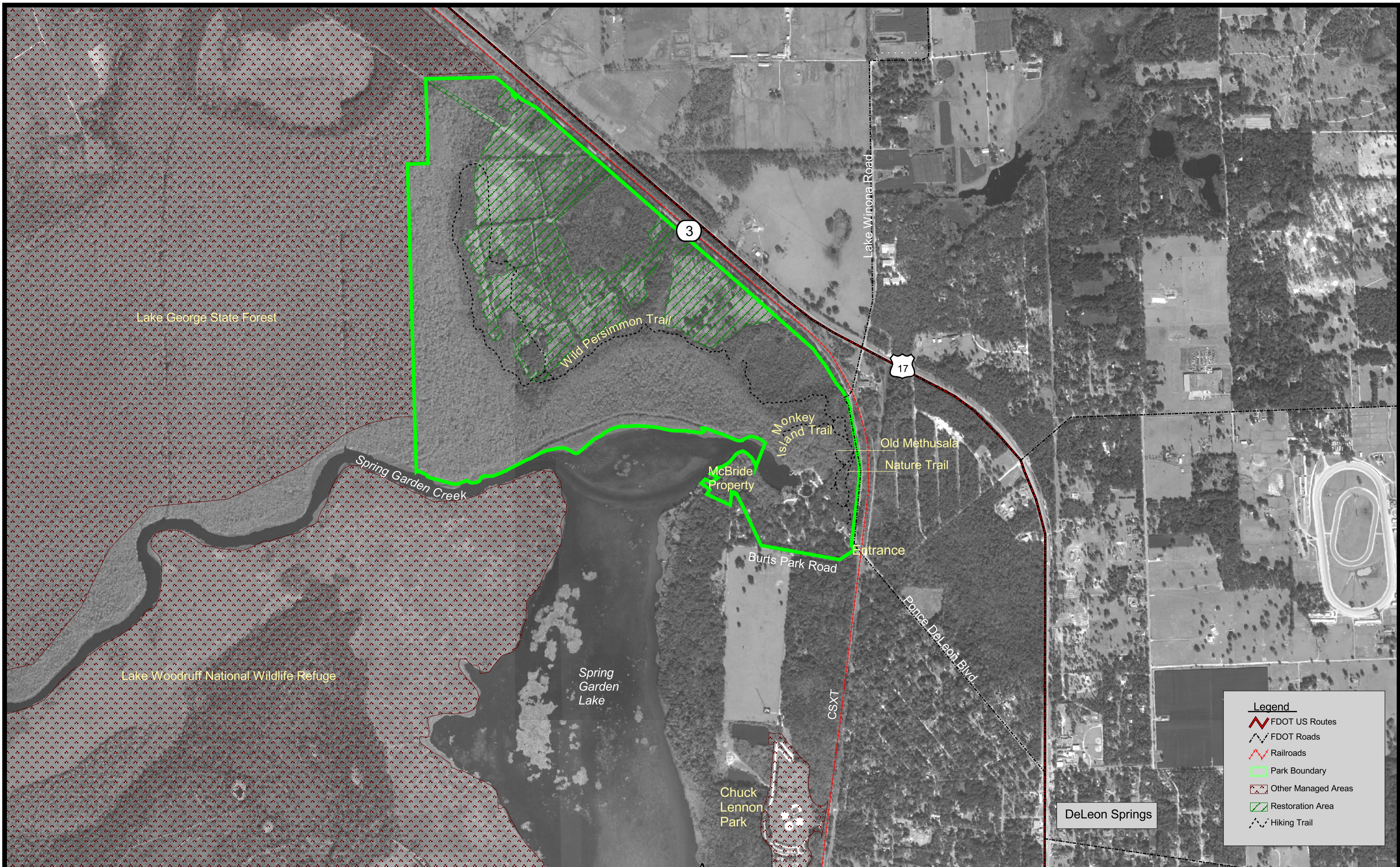
- Interstates
- FDOT US Routes
- FDOT State Routes
- FDOT Local Roads
- Park Boundary
- Private Lands**
- Developed
- Undeveloped
- Public Lands**
- Federal Managed Areas
- State Managed Areas
- Local Managed Areas
- Private Managed Areas
- Aquatic Preserves

Sources: Florida Natural Areas Inventory, 2004  
Florida Land Use, Cover and Forms Classification System, 2001

DE LEON SPRINGS  
STATE PARK



VICINITY  
MAP



**Legend**

- FDOT US Routes
- FDOT Roads
- Railroads
- Park Boundary
- Other Managed Areas
- Restoration Area
- Hiking Trail

DeLeon Springs State Park



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

Reference Map

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.

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 multiple-use management activities would not be appropriate as a means of generating revenues for land management. Instead, techniques such as entrance fees, concessions and similar measures will be employed on a case-by-case basis as a means of supplementing park management funding.

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 De Leon Springs State Park major emphasis is placed on maximizing the recreational potential of the recreation area; however, preservation of resources remains important. Depletion of a resource by any recreational activity is not permitted. In order to realize the unit's recreational potential, development in the park is aimed at providing facilities that are accessible, convenient and safe, as needed to support recreational use or the unit's natural, aesthetic and educational attributes.

### **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 and Cultural Resources**

1. Conserve, protect, and manage natural communities, significant habitat, and ecological systems.
  - A. Prescribe burn on a 3-5 year rotation to perpetuate and restore the unit's natural communities.
  - B. Increase removal of feral hogs.
  - C. Increase removal of invasive exotic plants, such as air potato, bamboo, camphortree, Britton's wild petunia, wild taro, elephant ear, tuberous sword fern, white gingerlily, and tropical soda apple.
  - D. Remove interior fences in burn zones.
  - E. Restore onsite hydrology by developing and implementing strategies to restore old ditches.
  - F. Develop and implement restoration strategies for the remnant pastures.
  - G. Assess the surface hydrological impacts to the hooded pitcherplant population and restore the hydrology to the greatest degree feasible.
2. Maintain, protect and interpret existing archaeological sites and their associated artifactual assemblage.
  - A. Protect sites from vandalism, unauthorized digging or collecting, erosion, and other forms of encroachment.
  - B. Collect oral history from local residents with knowledge of the park's history and past land use.
  - C. Maintain a Cultural Resources Management Plan for the park, using the "Guidelines for Cultural Resource Management Files" established by the Bureau of Natural and Cultural Resources.
  - D. Draft a Scope of Collections Statement; catalog and inventory any permanent collections.

- E. Develop a Collections Management Plan to provide procedures on how the park acquires, catalogs, assesses, and curates its collections.
- F. Coordinate any plans for ground-disturbing activities through the Division of Historical Resources, as required in the DHR/DRP Compliance Review Matrix.

### **Recreation Activities and Programs**

- 3. Provide a variety of resource based outdoor recreation experiences for a cross section of visitors in keeping with the park's purpose and significance.
  - A. Expand trail system to include more loop trails and improve conditions.
  - B. Develop primitive campsites.
  - C. Improve and expand boating facilities.
  - D. Establish day use facilities on McBride parcel.
- 4. Foster positive visitor experiences while minimizing potential conflicts.
- 5. Minimize visitor impacts on natural and cultural resources while providing appropriate levels of public use.
  - A. Construct boardwalks where trails cross protected resources.
- 6. Provide educational and interpretive opportunities to enhance visitor appreciation of the park's natural and cultural heritage and protection of natural and cultural resources.
  - A. Renovate visitor center and displays.
  - B. Install interpretive signs on trails.

### **Park Administration/Operations**

- 7. Provide efficient and effective management of park resources, facilities, and operations.
  - A. Improve park entrance.
  - B. Construct new ranger residence.
- 8. Provide high quality, well-maintained, and safe public facilities.
  - A. Improve access roads to visitor use areas.
  - B. Relocate shop.
- 9. Ensure that staff conducting or providing visitor services, natural and cultural resource management, park operations, interpretation, and emergency procedures are properly trained and supervised.
- 10. Maintain and coordinate volunteer involvement in activities consistent with the parks purpose and significance.
- 11. Increase public awareness of the park.
- 12. Establish and maintain partnerships with federal, state, and local agencies and non-governmental organizations.

### **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 Department of Environmental Protection (DEP), Office of Coastal and Aquatic Managed Areas (CAMA) aids staff in aquatic preserves management programs and the Bureau of Beaches and Wetland

Resources aid the staff in the development of erosion control projects. The DEP, Division of Law Enforcement assists in the enforcement of park rules and regulations, crowd and traffic control. St. Johns Water Management District completes water monitoring for quality and flows. In addition, the U.S. Fish and Wildlife Service, Lake Woodruff National Wildlife Refuge aids in protection of natural and cultural resources.

### **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 January 11, 2006. The purpose of this meeting was to present this draft management plan to the public. An Advisory Group meeting will be held on January 12, 2006. The purpose of this meeting was to provide the Advisory Group members the opportunity to discuss this draft management plan.

### **Other Designations**

De Leon Springs State Park is not within an Area of Critical State Concern as defined in section 380.05, Florida Statutes and 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**

DeLeon Springs State Park is located on the western edge of the DeLand Ridge, along the St. Johns River Offset of the Eastern Valley (Brooks 1981a). This is a very ancient area of the St. Johns River Valley that is partially filled with Pleistocene estuarine deposits. These physiographic areas fall within the Central Lake District of the Atlantic Coastal Lowlands. The park is also situated on the Pamlico Terrace (Healy 1975). Elevations range from 20 feet above mean sea level (MSL) to 2 feet above MSL at the spring run. The condition of the natural topography is generally poor. Evidence of human use is prevalent; tram roads, elevated earthen footpaths, drainage and paddleboat canals, remnants of Indian mounds, construction fill, and converted pastures have altered the topography considerably. A remnant earthen boat dock extends into the spring run from its south shore.

##### **Geology**

DeLeon Springs State Park lies at the western boundary of the DeLand Ridge, a karst formation of older marine terraces (Brooks 1981b). The geologic material that characterizes the DeLeon Springs area can be divided into the two categories summarized below:

**Upper (clastic).** The majority of the overlying landscape is characterized by clastic material formed principally during the Pleistocene age, but ranges from Miocene to Recent ages. These sediments vary in thickness, but are thinnest in the area around the spring. The thickness of the upper confining unit for the Floridan aquifer system in this area is 50 feet (Toth 1999).

**Lower (carbonate rock).** The underlying limestone and dolomite material was formed during the middle and upper Eocene age: this contains the Floridan aquifer. Within the park, the thickness of the Upper Floridan aquifer ranges between 300-400 feet, the Lower Floridan aquifer ranges between 700-800 feet. (Toth 1999). The headspring is a typical solution cavern, consisting of a single chimney connected to the aquifer.

### **Soils**

There are eleven different soil types occurring in DeLeon Springs State Park (see Soils Map) in the Soil Survey of Volusia County (Baldwin et al. 1980). This soil survey was compiled by the U. S. Department of Agriculture, Soil Conservation Service (SCS). Management activities will follow generally accepted best management practices to prevent soil erosion and conserve soil and water resources on site. Addendum 3 contains complete descriptions of the unit's soil types.

### **Minerals**

There are no known minerals with commercial value at DeLeon Springs State Park. It is uncertain that water from the "Fountain of Youth" was ever bottled commercially as an "Elixir of Life."

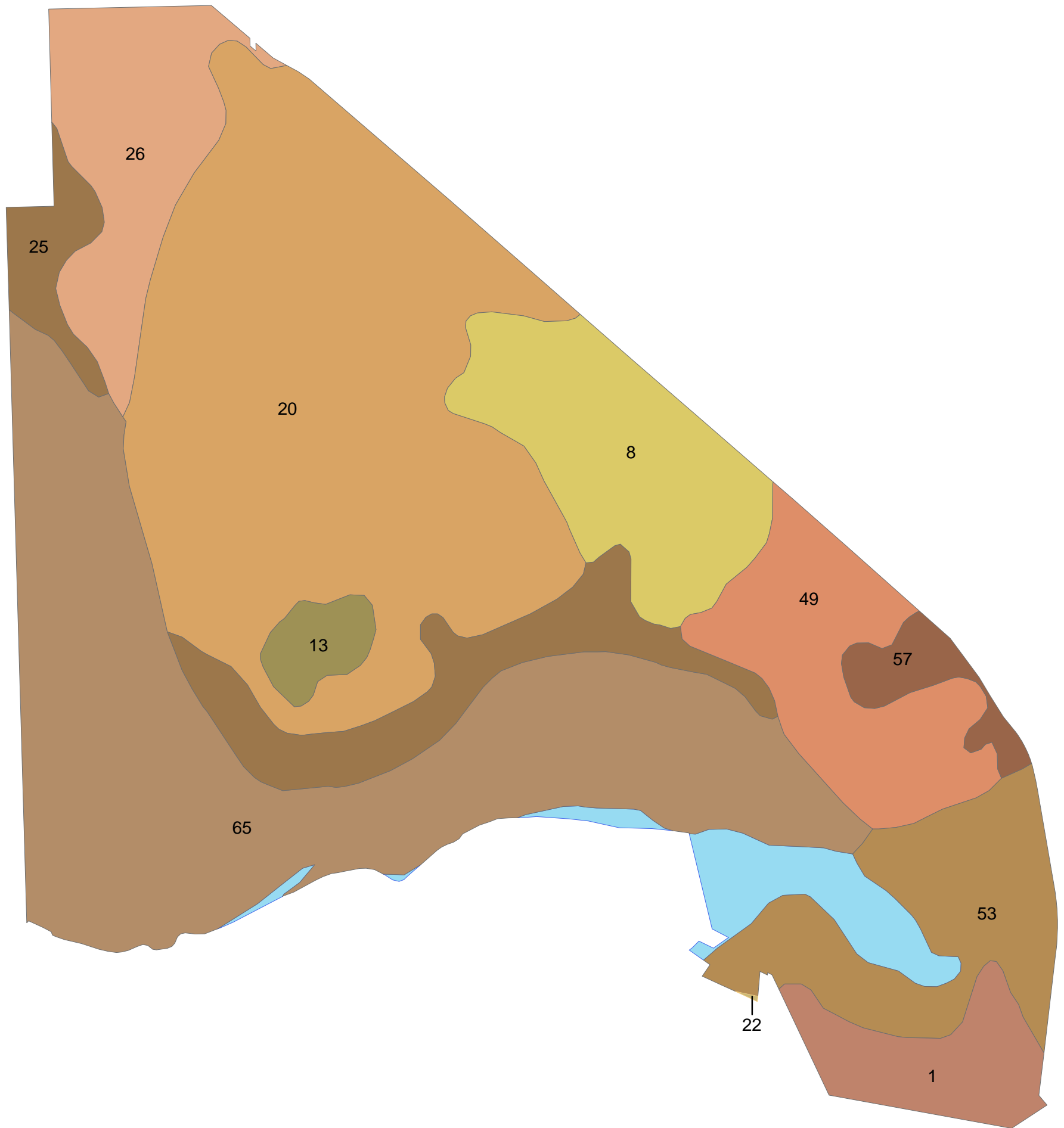
### **Hydrology**

DeLeon Springs State Park is located in the northeastern quadrant of the middle St. Johns River Basin (Kenner et al. 1967). Water in the surficial aquifer is generally unconfined; it is recharged primarily by rainfall. In the area surrounding the park, the amount of recharge to the Floridan aquifer ranges between 0-12 or more inches/year (Toth 1999). The flowing spring discharges from the regional aquifer. Water flows at an average of 21.8 cu. ft./second (14.1 million gallons/day) (Gallagher, pers. comm.) westward through the spring run to Spring Garden Lake, lakes Woodruff and Dexter, and eventually to the St. Johns River.

Local commercial ferneries with deep irrigation wells and small artesian wells may affect the rate of flow at the spring. In May 1998, the total discharge of the spring was 26.9 cu. ft./second (17.4 million gallons/day). A recharge area for the spring lies less than 1000 feet upslope, east of the park (Johnson, pers. comm.).

The general drainage of the park is from the outside perimeter in toward the spring run. Runoff from outside the park boundary, in the northern section along State Road 3A, is the only outside drainage influence. This water is channeled into canals in the northern section, and has little apparent influence on the park or spring run with respect to volume of water; the water quality of this runoff does have an impact on the park and its resources.

Surface water bodies include the spring pool and the part of the spring run located inside the park boundary. Water quality in both bodies of water is generally good, although nitrate levels have increased in the spring since the 1970s. This is most likely due to animal waste from nearby agricultural operations and sewage (Toth 1999). Nitrate-nitrite concentrations were found to be relatively high for spring systems in the state (Bennett 2001). Elevated nitrate-nitrite levels



**LEGEND**

- 1 - Apopka fine sand, 0 to 5 percent slopes
- 8 - Basinger fine sand, depressional
- 13 - Cassia fine sand
- 20 - EauGallie fine sand
- 22 - Electra fine sand, 0 to 5 percent slopes
- 25 - Gator muck
- 26 - Holopaw sand
- 49 - Pomona fine sand
- 53 - Pompano-Placid complex
- 57 - Satellite sand
- 65 - Terra Ceia muck
- Water

within this spring system are related to nitrogen loading in the recharge basin, mostly due to inorganic fertilizers applied to agricultural lands. The algal community was found to be of relatively low quality, with many of the periphyton taxa indicative of eutrophic conditions (Bennett 2001). The water in the spring run mixes somewhat with runoff water from the floodplain forest and swamp.

### **Natural Communities**

The system of classifying natural communities employed in this plan was developed by the Florida Natural Areas Inventory (see Additional Information). 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.

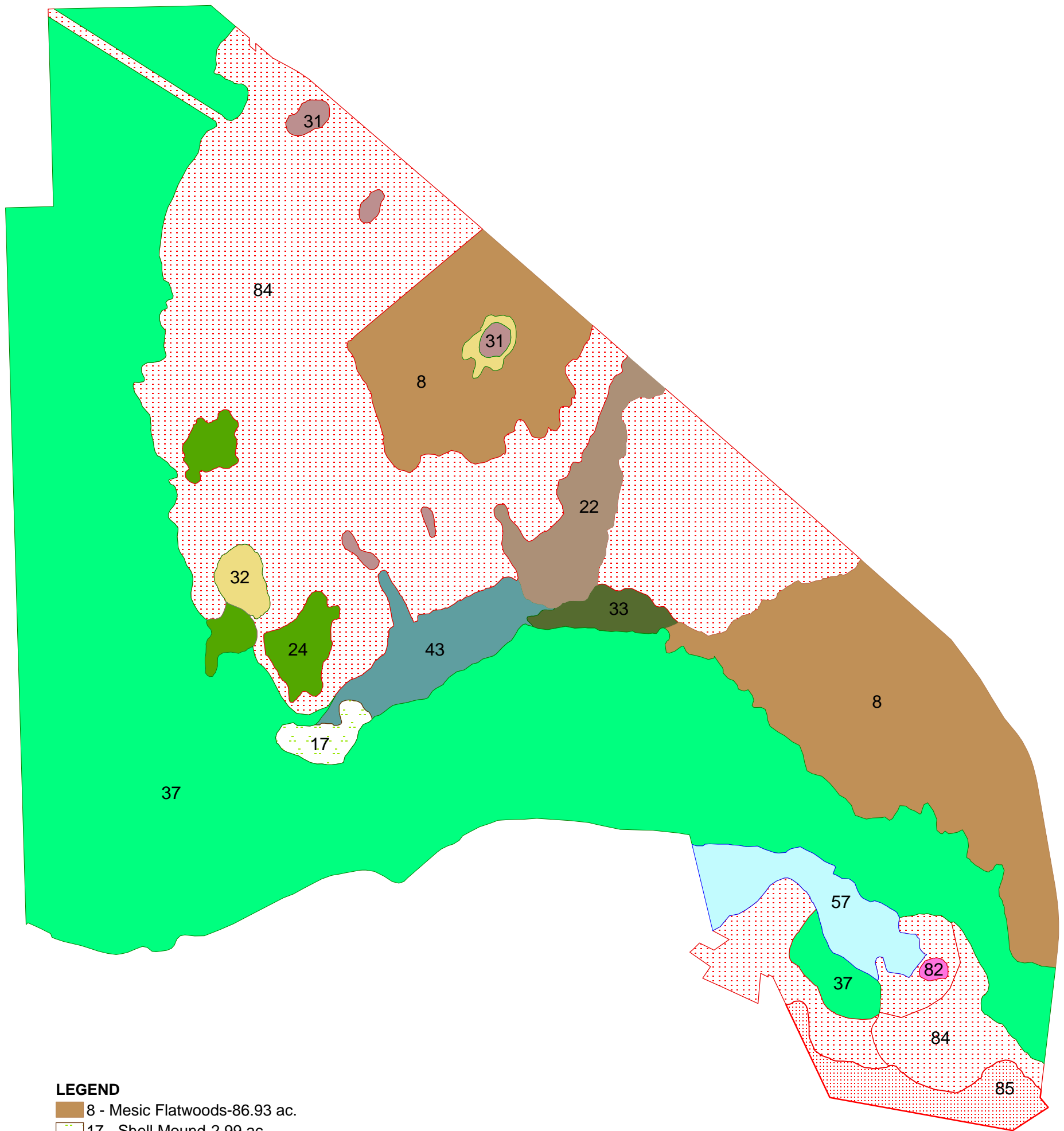
The park contains 11 distinct natural communities (see Natural Communities Map) in addition to ruderal and developed areas. Park specific assessments of the existing natural communities are provided in the narrative below. A list of plants and animals occurring in the unit is contained in Addendum 4.

**Mesic flatwoods.** The majority of the mesic flatwoods in the park was converted to pasture by previous owners, and remains in a ruderal condition. Two relatively small areas of mesic flatwoods remain; one area, along the nature trail, is dominated by large, mature slash pines and dense saw palmetto (*Serenoa repens*). There is an established subcanopy of woody plant species. The other site, in burn zone 3, has many young slash pine with an understory of saw palmetto, wax myrtle (*Myrica cerifera*), and dwarf huckleberry (*Gaylussacia dumosa*); a population of hooded pitcherplants also occurs in this community. Both of these areas are in need of prescribed burning to eliminate hardwood encroachment and enhance the quality of the community. A restoration plan for the pastures is being developed to direct efforts to return these ruderal areas back to mesic flatwoods.

**Shell mound.** This community supports a diverse plant community, with live oak (*Quercus virginiana*), American elm (*Ulmus americana*), cabbage palm (*Sabal palmetto*), southern red cedar (*Juniperus silicicola*), and southern magnolia in the overstory; sugarberry (*Celtis laevigata*), Jack-in-the pulpit (*Arisaema triphyllum*), greendragon, milkvine (*Matelea* sp.), wild petunia (*Ruellia caroliniana*), and smallflower pawpaw (*Asimina parviflora*) can be found in the understory. A large area of this community was mined in the past for road fill, and a hiking trail traverses the area. With the exception of these impacts, the community is in excellent condition.

**Upland mixed forest.** A narrow band of upland mixed forest occurs in burn zones 1 and 2. A ditch, which has undoubtedly altered the hydrology of this community, runs along its east side. Sweetgum, persimmon (*Diospyros virginiana*), and water oak are common in the overstory; in many areas of this community, the understory is sparse.

**Xeric hammock.** Two isolated areas of xeric hammock occur within the park. Both have an overstory of live oak and an understory of saw palmetto. One of the hammocks (in burn zone 11) is surrounded by pasture. The other, in burn zone 9, is surrounded by pasture on three sides and



**LEGEND**

- 8 - Mesic Flatwoods-86.93 ac.
- 17 - Shell Mound-2.99 ac.
- 22 - Upland Mixed Forest-12.60 ac.
- 24 - Xeric Hammock-8.67 ac.
- 31 - Depression Marsh-2.99 ac.
- 32 - Dome-3.70 ac.
- 33 - Floodplain Forest-3.99 ac.
- 37 - Hydric Hammock-262.82 ac.
- 43 - Wet Flatwoods-11.94 ac.
- 57 - Spring-Run Stream-11.89 ac.
- 82 - Aquatic Cave-0.48 ac.
- 84 - Ruderal-188.23 ac.
- 85 - Developed-8.91 ac.

hydric hammock on the other. The latter site contains historical resources and may have been the result of a fire shadow or historic fire exclusion. A few gopher tortoise (*Gopherus polyphemus*) burrows are found on this site.

**Depression marsh.** Several small depression marshes occur in this unit. Most have an understory of maidencane (*Panicum hemitomon*). As a result, of fire exclusion, some woody species (e.g., red maple, wax myrtle and buttonbush (*Cephalanthus occidentalis*)) are invading into these marshes; they should be burned as soon as is feasible.

**Dome swamp.** Dome swamps are restricted to two areas in this unit. One of the dome swamps is surrounded by mesic flatwoods; it has an overstory of scattered swamp tupelo (*Nyssa sylvatica* var. *biflora*) and a dense understory of maidencane. Butterworts (*Pinguicula caerulea*), sphagnum moss (*Sphagnum* sp.), and hooded pitcherplants (*Sarracenia minor*) were found in the understory. This area is in good condition, although there is evidence of feral hog (*Sus scrofa*) activity, and it is in need of prescribed fire. The other dome swamp (in burn zone 10) is surrounded on three sides by pasture and the other side by hydric hammock. It is dominated by bald-cypress (*Taxodium distichum*). It is in good condition.

**Floodplain forest.** This community occupies a narrow band lying between hydric hammock, wet flatwoods and pasture. There is evidence of past logging activities (primarily large bald-cypress stumps). Slash pine (*Pinus elliottii*), loblolly pine (*Pinus taeda*), southern magnolia (*Magnolia grandiflora*), sweetgum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), swamp azalea (*Rhododendron viscosum*), cinnamon fern (*Osmunda cinnamomea*), and false indigobush (*Amorpha fruticosa*) can be found in this community. Overall, it is in excellent condition.

**Hydric hammock.** This natural community comprises the majority of the acreage of this park. It occurs from the northwest boundary of the park, along Spring Garden Lake, and around the spring and spring run. Numerous canals were dredged, and an elevated tram system was constructed through this community before state ownership. Loblolly pine, slash pine, sweetgum, red maple, water hickory (*Carya aquatica*) and water oak (*Quercus nigra*) are common in this community. Greendragon (*Arisaema dracontium*), royal fern (*Osmunda regalis* var. *spectabilis*), and swamp azalea are found in the understory. Ornamental exotic plants, such as azaleas (*Rhododendron* sp.) and various palms were planted along the tram road. In addition, some exotic plant species (i.e., white gingerlily (*Hedychium coronarium*) and wild taro (*Colocasia esculenta*)) have invaded into this community. Overall, however, the community is in excellent condition.

**Wet flatwoods.** Two narrow bands of wet flatwoods remain within this unit. These areas have an overstory of scattered pines (pond pine (*Pinus serotina*) and slash pine) and an understory of saw palmetto. One of the communities, lying between burn zones 1, 2, 8, and 9, has moderate to extensive hardwood encroachment (red maple, loblolly bay (*Gordonia lasianthus*), sweetbay (*Magnolia virginiana*), and sweetgum stemming from fire exclusion. Scattered yellow anisetree (*Illicium parviflorum*) also occurs in this community. Neither of these areas is within an established burn zone; both should be added to adjacent burn zones, placed on a burn rotation and burned as soon as is practicable.

**Spring-run stream.** This community occurs within the main use area of the park and receives moderate recreational use, primarily by canoeists and anglers. Numerous exotic plant species, such as water hyacinth (*Eichhornia crassipes*) and wild taro occur in this community. Overall, it

is in fair to good condition. The spring pool is completely enclosed with concrete bulkheads; the water level in the pool has been artificially raised by the construction of a dam between the spring head and run. The spring pool area receives heavy recreational use.

**Aquatic cave.** The opening of the spring extends from the water surface to a depth of approximately 30 feet. At this point, it narrows to approximately 4 feet in width and turns toward the west-southwest. The cavern slopes slightly downward to a maximum depth of about 41 feet and continues horizontally to a total distance of approximately 170 feet. The cavern intersects the aquifer approximately 40 feet from the terminal end of the cave; metal bars are positioned here to prevent further penetration by SCUBA divers. At least one offset chamber of the cavern is heavily silted and has soft, penetrable walls. Two large boulders lie on the cavern floor, apparently broken off from the ceiling of the cavern. The accessible cavern appears to be generally stable.

**Ruderal and Developed.** The majority of the former mesic and wet flatwoods communities in this unit are presently in bahiagrass (*Paspalum notatum*) pasture. Wax myrtle has spread throughout many of the pastures; management efforts such as roller chopping and prescribed burning have been employed in an effort to reduce its coverage. Many camphor trees (*Cinnamomum camphora*) occur in the pastures, primarily along fencerows. Feral hog activity can occasionally be intense in the pastures. A restoration strategy is being developed to direct management efforts to return these ruderal areas to more representative examples of mesic and wet flatwoods. The McBride tract was heavily disturbed prior to state acquisition, and is in a ruderal state.

The developed areas of this unit are limited to the main visitor use areas, the shop compound and the residences.

### **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.

West Indian manatees (*Trichechus manatus latirostris*) occasionally enter the spring run. Per the Florida Manatee Recovery Plan (U.S. Fish and Wildlife Service 1989), informational signage is posted at the boat ramp and on pilings in the waterway. Members of the park's citizen support organization submit detailed monitoring reports whenever a manatee is sighted. Occasionally, Florida black bear (*Ursus americanus floridanus*) use the park; no additional management measures are needed at this time.

Yellow anise tree occurs in two main populations within the park: one along the nature trail, and another adjacent to burn zones one and two. Overall, the population appears to be in sizable and in good to excellent condition.

This unit supports one of 14 known occurrences of hooded pitcherplants in the state park system (Johnson 2001). At present, the population is small and is restricted to two burn zones (3 and 10). In order to insure the survival of hooded pitcherplants at this unit, a more aggressive burn

schedule needs to be implemented. The potential impacts of any of the ditches in these two zones on the pitcherplant populations should be assessed and hydrological restoration implemented to the greatest degree feasible.

### **Special Natural Features**

The most significant natural feature at this unit is the flowing spring and underwater cavern. The cavern is approximately 170 feet in length with a maximum depth of approximately 41 feet. A large bald cypress tree, named "Old Methuselah" grows in the northern area of the park; its d.b.h. measures 108 inches.

### **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 (FMSF) lists six sites within the park.

Two dugout canoes of extraordinary antiquity have been recovered from the spring, each of them the oldest known Florida watercraft at the time of their recovery. The first, found in 1985, was radiocarbon dated as 5140 +/-100 years old (Purdy 1986, Tamers 1986). The second, recovered in 1990, was radiocarbon dated as 6050 +/-60 years old (Blonder 1991, Stipp 1991).

Until 1995, there was only two-recorded archaeological site within the park, 8VO30 and 8VO31. The principal site at the spring boil is 8VO30. Jim Dunbar recorded the site in 1980, describing it as a multi-component site with a shell mound, shell midden and artifact scatters. These features contain evidence of Mount Taylor, Orange and St. Johns I and II habitation. The site contains evidence of an American Territorial period (1821-1845) sugar mill (Denson et al. 1995, Florida Department of State, 8VO30, Payne 2002).

Accounts by longtime local residents describe human burials that were uncovered during the construction of the current residence (Banton pers. comm.). During the 1994-95 archaeological survey of the park by Ellis Archaeology, a shovel test uncovered an articulated human burial (Banton pers. comm., Denson et al. 1995). The site is very likely eligible for National Register status.

8VO30 has been heavily disturbed in the past, before acquisition by the state. The shell midden may have been both reduced and later augmented with spoil (Denson et al. 1995). Several structures have been built around and on the midden, with the current residence being the most recent. The slopes of the midden should be monitored for erosion, animal burrowing, and any erosion channels and burrows should be filled with clean sand. The condition assessment is poor.

Remains of the sugar mill complex consist of a reconstructed water wheel, a kettle row and kettles, and various metal machinery related to the cane grinding operation. These elements located adjacent to the 1920s wood structure that currently operates as a restaurant, are in various states of preservation. The deteriorated water wheel, which was also reconstructed during the 1920s, has been replaced with a new reconstruction. The masonry foundations for the kettle row, which housed five kettles, is disturbed and in poor condition (Payne 2002).

From September 1994 through June 1995, Ellis Archaeology performed an archaeological survey and historic structure study at the park. During the survey, four new sites were identified and recorded, and 8VO30, the principle site at the spring boil, was resurveyed to identify its extent, nature and significance (Denson et al. 1995).

The four newly recorded archaeological sites within the park are 8VO5276, 8VO5277, 8VO5278 and 8VO5279 (Denson et al. 1995, Florida Department of State, 8VO5276, 8VO5277, 8VO5278, and 8VO5279). 8VO5276 is a historic residence site located near the north boundary of the park. According to oral history, this location was the site of the Scarborough House, which was moved earlier this century to the town of DeLeon Springs (Denson et al. 1995, Florida Department of State, 8VO5276). The site is probably not eligible for National Register status. While the site's location provides some protection, the site should be monitored regularly, and any future park development should avoid the site. The condition assessment is poor.

8VO5277 is an unspecified prehistoric site, heavily disturbed by historic and modern land use (Denson et al. 1995, Florida Department of State, 8VO5277). The site is probably not eligible for National Register status. The site should be monitored for erosion, animal burrowing and vandalism. Any future park development should avoid the site. The condition assessment is poor.

8VO5278 is an unspecified prehistoric site, possibly a small temporary campsite affiliated with a shell midden to the south. The site has been disturbed by historic and modern land use (Denson et al. 1995, Florida Department of State, 8VO5278). The site is probably not eligible for National Register status. The site should be monitored for animal burrowing and vandalism. Any future park development should avoid the site. The condition assessment is fair.

8VO5279 is a mined shell midden, the remains of which date to the Orange and St. Johns time periods. The site has been heavily disturbed by historic and modern land use, with most of it having been removed for road fill (Denson et al. 1995, Florida Department of State, 8VO5279). Eligibility for National Register status is unknown at this time. The site should be monitored for erosion, animal burrowing and vandalism. Any future park development should avoid the site. The condition assessment is poor.

In 2002, Ted Payne undertook an archaeological investigation of the 19<sup>th</sup> century sugar boiling facility, the "Sugar Train Ruins" and the adjoining area to the southwest, part of 8VO30 (Payne 2002). The remaining four recorded sites would benefit from further archaeological investigation and analysis to assess their significance.

Legend and local folklore claim that Juan Ponce de Leon, conqueror and former governor of Puerto Rico, sought and discovered the mythical Fountain of Youth at DeLeon Springs. A close reading of the historical record reveals no evidence for the legend (Morison 1974), nor is there any archaeological evidence to support it (Denson et al. 1995).

In 1779, Panton, Leslie and Company, the largest British firm specializing in the Indian trade, applied for a land grant covering 500 acres that included DeLeon Springs. Presumably, the British trading firm wanted the trading concession with a band of Seminoles reported to be living at the spring. In his 1980 survey of the DeLeon Springs site, James Dunbar recorded that 10 years later, in 1789, a band of Creek Indians were living at Spring Garden, as it was called at the time (Denson et al. 1995). It is likely these were the same Indians, Muskogean speaking Lower Creeks who were coalescing into the newly amalgamated Seminole (Milanich and Fairbanks 1980, Milanich 1995).

During the Second Spanish Period (1783-1821), the Spanish Crown made land grants in East and West Florida to British and American citizens as well as to Spanish. The Spanish governor of East Florida recognized and confirmed Panton, Leslie and Company's land grant to Spring Garden (Denson et al. 1995, Gannon 1996).

According to local sources, in 1804 William Williams moved from New Smyrna Beach to settle at Spring Garden, and was the first to raise corn, cotton and sugar there (Denson et al. 1995).

After Florida became a United States territory in 1821, Major Joseph Woodruff bought out Williams' 2,020-acre share of Spring Garden in 1823. Woodruff owned the property until his death in 1828, while returning from a business trip to New York to purchase sugar-making equipment. Major Woodruff's brother George inherited the property, and George's two sons Joseph and Henry lived on the property until 1835, early in the Second Seminole War (Denson et al. 1995).

In 1831, Colonel Orlando Rees also settled a plantation at Spring Garden. John James Audubon visited Rees' plantation the following year and described the spring, the construction of a water powered sugar mill, and the surrounding fields of sugar, corn and cotton (Denson et al. 1995).

In 1835 at the beginning of the Second Seminole War, the Seminoles attacked plantations and settlements in East Florida, including the Rees' plantation at Spring Garden, stealing slaves, destroying the mill and houses. Henry Woodruff having been killed earlier in the Seminoles' raids, his brother Joseph Woodruff led a militia force against the Indians occupying Spring Garden. In the ensuing attack, the Seminoles burned anything left standing and retreated, taking the captured slaves and cattle with them (Denson et al. 1995).

In March 1836, United States troops reached Spring Garden, finding that the Seminoles had just abandoned their camp. After the troops left, the Seminoles returned and occupied Spring Garden for two more years, until General Zachary Taylor seized the spring in 1838. The Second Seminole War ended in August 1842, and in 1845 Florida became the 27<sup>th</sup> state in the union (Denson et al. 1995, Gannon 1996).

Following the aftermath of the Second Seminole War, the Rees plantation at Spring Garden was inherited by Wilson Rees. In 1854, Thomas Starke bought the Rees property, rebuilding and refurbishing the sugar mill, and in 1857 acquired the Woodruff property at Spring Garden (Denson et al. 1995).

During the Civil War, the Starke plantation provided grain and produce to the Confederates. In 1864, several years after Starke's death, Union troops under Colonel Nobel destroyed the plantation and mill (Denson et al. 1995).

In 1872, Major George Norris bought the spring property, and rebuilt the mill in 1878. During the 1880s, a small tourist resort was built at the spring to service the growing Florida tourist travel market. In 1885, the community changed its name from Spring Garden to DeLeon Springs, and the post office was built. The following year the railroad reached the town. Facing a growing tourist market, the resort built a pavilion on top of the shell mound and a bathhouse at the spring (Denson et al. 1995, Payne 2002).

In 1920, the spring was dammed for use as a power source, and later in the 1920s, a hotel and casino were built on the property. The Clyde Beatty Circus also began wintering at DeLeon Springs (Denson et al. 1995).

In 1925, the DeLeon Spring Inn was built on the mound, replacing the pavilion. In 1931, the Daughters of the American Revolution put a plaque on the sugar mill, incorrectly attributing it to the Spanish. Then in 1953, the resort developed an attraction theme, adding gardens, jungle cruises and a water circus complete with an elephant on water skis. After several ownership changes, the State of Florida bought the property in 1982, and has operated the park as a state park since then (Denson et al. 1995).

## **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 and if the lead agency determines that timber management are not in conflict with the primary management objectives of the land.

During the development of this plan, an analysis was made regarding the feasibility of timber management activities for this park. It was then determined that the primary management objectives of the unit could be met without conducting timber management activities for this management plan cycle. Timber management will be reevaluated during the next revision of this management plan.

#### **Additional Considerations**

One of the special natural features of the park is “Old Methuselah,” a very large bald cypress, which occurs along one of the nature trails. An observation platform has been constructed at the end of the nature trail that allows visitors to view the tree without causing erosion and trampling of vegetation.

Agricultural activities prior to state acquisition have had significant impacts on the natural resources of the park. Most of what had originally been mesic and wet flatwoods was converted to pastures and fragmented by drainage ditches. A restoration plan will be developed for these areas with the long-term objective of re-establishing a habitat mosaic of mesic flatwoods, wet flatwoods and depression marsh. Specific recommendations will be included for restoration of the different natural community types found in each burn zone, based on soils and hydrology.

## **Management Needs and Problems**

Management needs and problems have been previously addressed in this component.

### **Management Objectives**

The resources administered by the Division are divided into two principal categories: natural resources and cultural resources. The Division 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.

1. Improve public awareness and encourage stewardship and protection of the natural and cultural resources through education, interpretation and enforcement of agency rules and regulations.
2. Conserve, protect and manage natural communities, significant habitat and ecological systems.
  - A. Prescribe burn on a 3-5 year rotation to perpetuate and restore the unit's natural communities.
  - B. Increase removal of feral hogs.
  - C. Increase removal of invasive exotic plants, such as air potato, bamboo, camphortree, Britton's wild petunia, wild taro, elephant ear, tuberous sword fern, white gingerlily, and tropical soda apple.
  - D. Remove interior fences in burn zones
  - E. Restore hydrology by developing and implementing strategies to restore old ditches.
  - F. Develop and implement restoration strategies for the remnant pastures.
  - G. Assess the surface hydrological impacts to the hooded pitcherplant population and restore the hydrology to the greatest degree feasible.
3. Maintain, protect and interpret existing archaeological sites and their associated artifactual assemblage from vandalism, unauthorized digging or collecting, erosion, and other forms of encroachment.
4. Collect oral history from local residents with knowledge of the park's history and past land use.
5. Maintain a Cultural Resources Management Plan for the park, using the "Guidelines for Cultural Resource Management Files" established by the Bureau of Natural and Cultural Resources
6. Draft a Scope of Collections Statement; catalog and inventory any permanent collections.
7. Develop a Collections Management Plan to provide procedures on how the park acquires catalogs, assesses and curates its collections.
8. Coordinate any plans for ground-disturbing activities through the Division of Historical Resources, as required in the DHR/DRP Compliance Review Matrix.

### **Management Measures for Natural 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 unit is partitioned into burn zones, and burn programs are implemented for each zone. These programs are periodically reviewed and maintained in the

unit's burn plan. All prescribed burns are conducted under permit from the Department of Agriculture and Consumer Services, Division of Forestry (DOF).

DeLeon Springs State Park is divided into 12 burn zones (see Burn Zones Map), which vary in size from six to 45 acres. The zone boundaries are largely laid out to use roads, powerlines and natural firebreaks (forested wetlands).

Although much of the burn acreage is former pasture, some remnant fire-dependent natural communities still occur. These areas, in zones 1, 3, 4, 7 and 10, should receive the highest priority for burning; of these, zone 3 should receive the highest priority. These zones should be burned at least once every 3-5 years to reduce encroaching hardwoods and improve the quality of the natural communities in the respective zones. In order to control hardwoods already present in some of the zones, it may be necessary to have a more frequent interfire interval. There are some remnant pieces of overgrown pine flatwoods community along the edges of a few of the burn zones (primarily zone 1); these remnants should be included in the adjacent burn zone in order to restore that community.

Many of the burn zones that were formerly pasture have had significant wax myrtle encroachment. Recently, the height of the wax myrtle was reduced through roller chopping. After burning in these zones, it may be necessary to repeat roller chopping to reduce the coverage of wax myrtle.

### **Designated Species Protection**

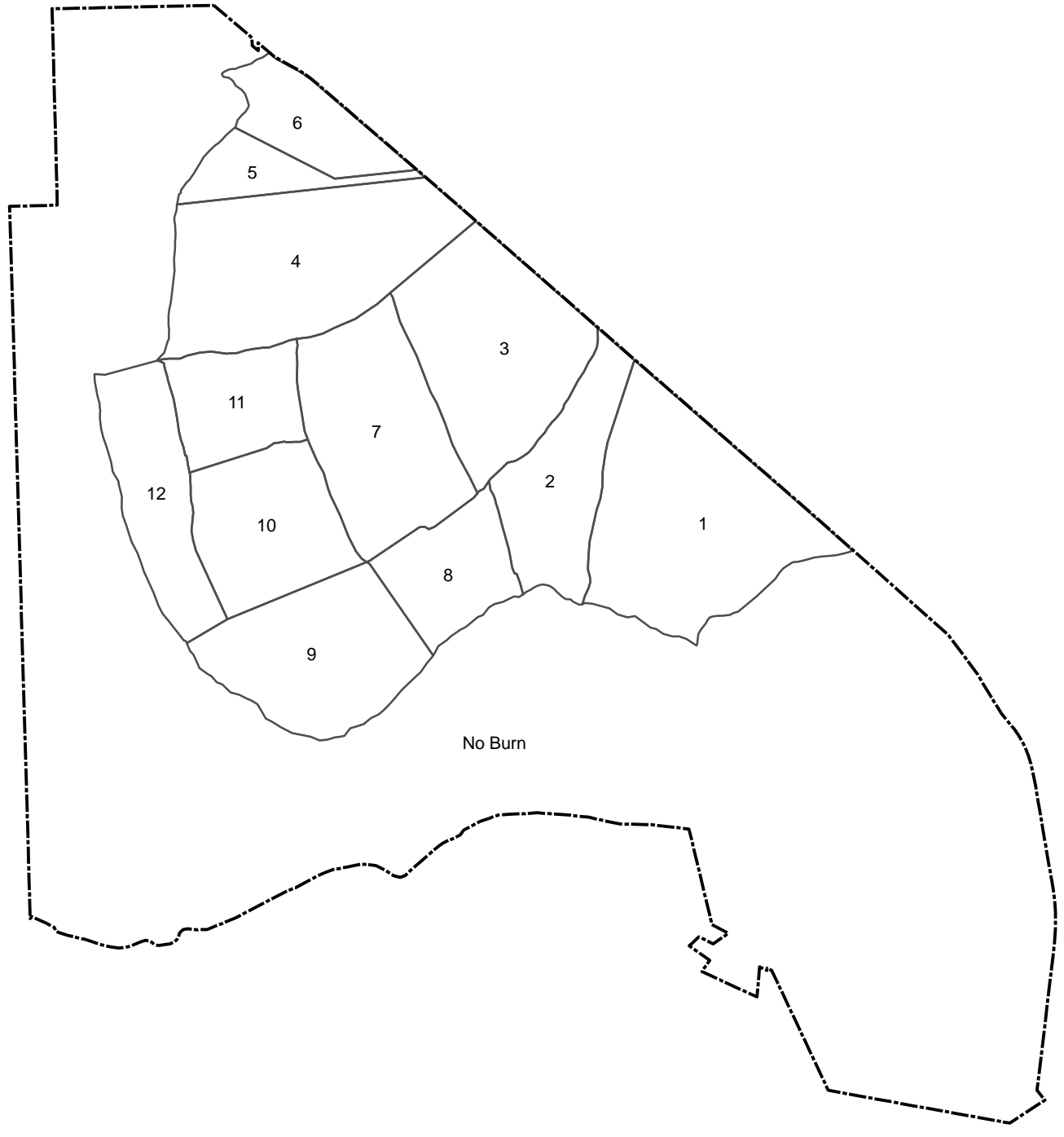
The welfare of designated species is an important concern of the Division. In many cases, these species will benefit most from proper management of their natural communities. At times, however, additional management measures are needed because of the poor condition of some communities, or because of unusual circumstances that aggravate the particular problems of a species. To avoid duplication of efforts and conserve staff resources, the Division will consult and coordinate with appropriate federal, state and local agencies for management of designated species. Specifically, data collected by the FWC and USFWS as part of their ongoing research and monitoring programs will be reviewed periodically to inform management of decisions that may have an impact on designated species at the park.

### **Exotic Species Control**

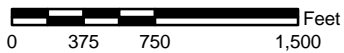
Exotic species are those plants or animals that are not native to Florida, but were introduced because of human-related activities. Exotics have fewer natural enemies and may have a higher survival rate than do native species, as well. They may also harbor diseases or parasites that significantly affect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

**Plants.** All exotic species are a threat to the integrity of the unit's natural communities and are in conflict with the Division goal of preserving and maintaining examples of the natural Florida.

Invasive exotics, including air potato (*Dioscorea bulbifera*), bamboo (*Bambusa* sp.), camphortree, water hyacinth, Britton's wild petunia (*Ruellia brittoniana*), wild taro, elephant ear (*Xanthosoma sagittifolium*), tuberous sword fern (*Nephrolepis cordifolia*) and tropical soda apple (*Solanum viarum*) currently pose the greatest threat to the resources of this unit.



**LEGEND**  
--- Park Boundary  
□ Burn Zones



DE LEON SPRINGS  
STATE PARK

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

BURN ZONE  
MAP

Camphortree primarily occurs along former fencerows in the burn zones. Many of the other exotic plants, including wild taro and white gingerlily, are found in the area of the nature trail. On the McBride tract, small-leaf spiderwort (*Tradescantia fluminense*, leatherleaf fern (*Rumohra adiantiformis*), pothos (*Epipremnum pinnatum*) and common asparagus fern (*Asparagus setaceus*) are found, as well as other exotics such as air potato, elephant ear, and tuberous sword fern. Camellias (*Camellia japonica*), azaleas, and loquat (*Eriobotrya japonica*) grow throughout the main use area Pursuant to the Operations Policy Manual, Chapter 15, paragraph 6.131, selected non-invasive exotic plants such as azaleas and camellias may be planted or maintained; invasive exotics, such as loquat, should be removed as soon as possible. Exotics are removed both chemically (with approved herbicides) and by hand.

**Animals.** Feral hogs pose the greatest threat at this unit. They occur throughout the property and are damaging many areas. Increased removal efforts by staff will be necessary to protect the natural resources of this unit. Since adjacent public lands also support hogs, removal at this unit will need to be ongoing.

### **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.

Alligators are the only animals at the park that pose occasional problems. They occur regularly in the spring run within the park boundary. Park visitors are made aware of their presence through signage, and swimming is prohibited in the spring run.

### **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 [Additional Information](#)).

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.

The general objective for the management of the cultural resources of the park is to protect, preserve and interpret the prehistoric and historic resources. Because of the known prehistoric archaeological resources and historic cultural resources in the park, management measures for cultural resources should include monitoring the recorded sites, and performing additional surveys as needed. This is particularly true of the recent acquisition that has not had a formal survey.

Ground disturbing activities will be conducted in accordance with DHR policy and Division procedures, which specifies that such activities will be subjected to review according to the Division's Cultural Resources Matrix and those activities, be submitted for comment to the

Division of Historical Resources in accordance with Chapter 267, Florida Statutes.

Management measures for cultural resources should develop a phased plan for managing the currently identified cultural resources in the context of their surroundings. This should include developing a workable written plan for the physical management of the identified resources. The plan should outline approved methodologies for executing the plan and training staff and volunteers in managing the cultural resources of the park.

The park currently has a sufficient number of staff who have been trained and certified as archaeological monitors. As the composition of park staff changes over time, efforts should be made to insure that there is always at least one staff member who is a certified archaeological monitor.

### **Research Needs**

#### **Natural Resources**

Any research or other activity that involves the collection of plant or animal species on park lands 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.

The park is currently included in an ongoing swallow-tailed kite (*Elanoides forficatus*) study. The need exists for baseline, in-depth surveys of the plants and animals of this unit. In addition, research on the utilization of the spring run by West Indian manatees should be conducted. Considerable opportunities exist for short and long-term research on pasture restoration.

Because of concerns over deteriorating water quality, research needs be conducted which will identify the sources of nitrate/nitrites outside the park boundaries as well as other potential pollutants which may affect the park.

#### **Cultural Resources**

Research is needed on environmental change and prehistoric adaptation, development of prehistoric settled communities and social complexity, and aboriginal cultural history in the DeLeon Springs area.

Research is needed on the Panton, Leslie and Company land grant under the British and the Second Spanish Periods and the presence of Seminoles living around the spring, the Williams, Woodruff and Rees families, the role of the springs site during the Second Seminole War and the Civil War, the agricultural production system of the plantation period, and the tourism resort era at the springs. This would facilitate effective interpretation of the park history to visitors, and support redesigning and upgrading the current exhibits at the park.

Research is needed on the history of the acquisition and development of park property for resource management and recreational use.

### **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 6. Cost estimates for conducting priority management activities are based on the most cost

effective methods and recommendations currently available.

### **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.

This park has not been the subject of a land management review.



## **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.

De Leon Springs State Park is located in Volusia County, about six miles north of Deland in the northwestern part of the state. The populations of Volusia County and the adjacent Flagler, Lake, and Seminole Counties grew 27.4 percent in the ten years from 1990-2000. They are projected to grow an additional 27.3 percent by 2010 (BEER, University of Florida, 2004). As of 2003, the median age in the four counties is 44.2 years, slightly higher than Florida's median age of 39.4 years (BEER, University of Florida, 2004). The median age is projected to rise in both the state and these four counties. Nearly 2,263,000 people reside within 50 miles of the park, which includes the cities of Orlando, Daytona Beach and Ocala (Census, 2000).

De Leon Springs State Park recorded 262,548 visitors in FY 2003-2004. This represents a net increase of 2.7 percent over the last five years. By Division estimates, these visitors contributed \$7,785,934 in direct economic impact and the equivalent of 155 jobs to the local economy (Florida Department of Environmental Protection, 2004).

### **Existing Use of Adjacent Lands**

De Leon Springs State Park is on the western edge of the rural community of De Leon Springs. Much of the property near the park is residential with a small commercial service

area on U.S. Highway 17. Chuck Lennon Park, a Volusia County park, is immediately adjacent to the south. It provides facilities for soccer, baseball, basketball, tennis and mountain bike riding as well as nature trails and picnic pavilions.

Also adjacent to the park's southern boundary are Spring Garden Lake and Lake Woodruff National Wildlife Refuge. This 21,552-acre refuge has public use opportunities for wildlife observation, hiking, bicycling, fishing and hunting. Lake George State Forest is on the western boundary of the park. This 19,610-acre state forest has hiking and equestrian trails, primitive camping, picnicking, fishing and hunting. These properties, along with De Leon Springs State Park, are part of a conservation corridor of ecologically sensitive lands extending from the Wekiva River to Lake George.

The rural character and adjacent conservation lands will help protect the natural communities within the park. One potential negative impact is with spring water pollution. Municipal water and sewer are not available in the spring water recharge area. All residences use well water and septic systems.

### **Planned Use of Adjacent Lands**

The zoning and Future Land Use designation for the park is Conservation, concentrating on preservation with passive uses. The area north of the park is designated an Environmental Systems Corridor, Agricultural, and Conservation. The Environmental Systems Corridor limits residential units to one per 25 acres. South of the park the designation is Rural which allows low density residential and commercial uses (Volusia County, 2002).

There are no significant changes anticipated in the next ten years. U.S. Highway 17 will be widened from U.S. Highway 40 to Ponce De Leon Boulevard. but this will not immediately impact the park.

Volusia County is working to develop a trails network throughout the county. Currently, the County is developing a multi-use trail, "Spring to Spring" trail, connecting Gemini Springs, a county park, to De Leon Springs State Park. The Division will continue to cooperate in planning the connection of this greenway project to state park facilities. Volusia County also has plans to expand Chuck Lennon Park to include new trails and facilities. A potential impact from this expansion is congestion near the entrance.

### **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**

The forested upland landscapes of the park are typical of the St. John's River floodplain and show evidence of continual human intervention. The upland natural communities include upland mixed forest, xeric hammock, mesic flatwoods and shell mound. In addition, there are ruderal and developed areas around the main use area and in the northern section of the park. The latter was pasture land and is being restored to natural conditions.

### **Water Area**

The Ponce De Leon headspring area has been fully enclosed with a concrete bulkhead and is a primary recreational resource of this park. The spring is dammed and the water flows over rocks forming Spring Creek. The spring run is used for water activities such as boating, fishing and boat tours.

### **Shoreline**

The park includes approximately 1.7 miles of shoreline but only 20% (1/3 mile) is accessible from the uplands. The remainder is hydric hammock. This natural community provides wildlife habitats and protective upland buffers but is inaccessible to visitors.

### **Natural Scenery**

The view from the spring area west across the spring and down the spring run is unhindered by extensive development. This spectacular scene of a wilder side of Florida is one that should be enhanced and maintained.

### **Significant Habitats**

Designated animal species at the park include the Florida manatee and Florida black bear. Hooded pitcherplants and Yellow anisetree are among the listed plant species found at the park.

### **Natural Features**

The most significant natural features in the park include the spring and its underwater cavern and the large bald cypress tree named "Old Methuselah," located along one of the nature trails. Both of these features draw visitors to the park.

### **Archaeological and Historical Features**

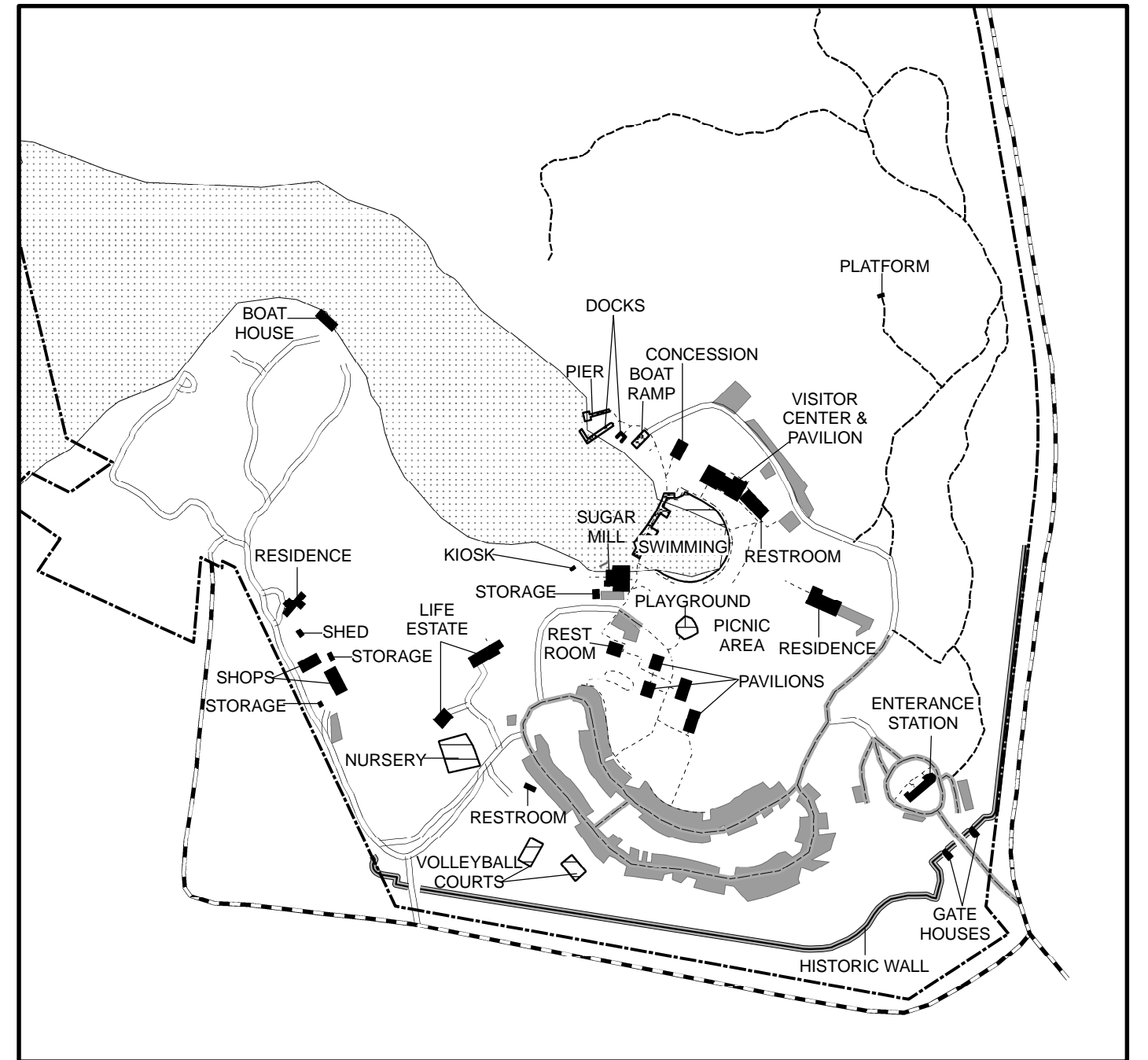
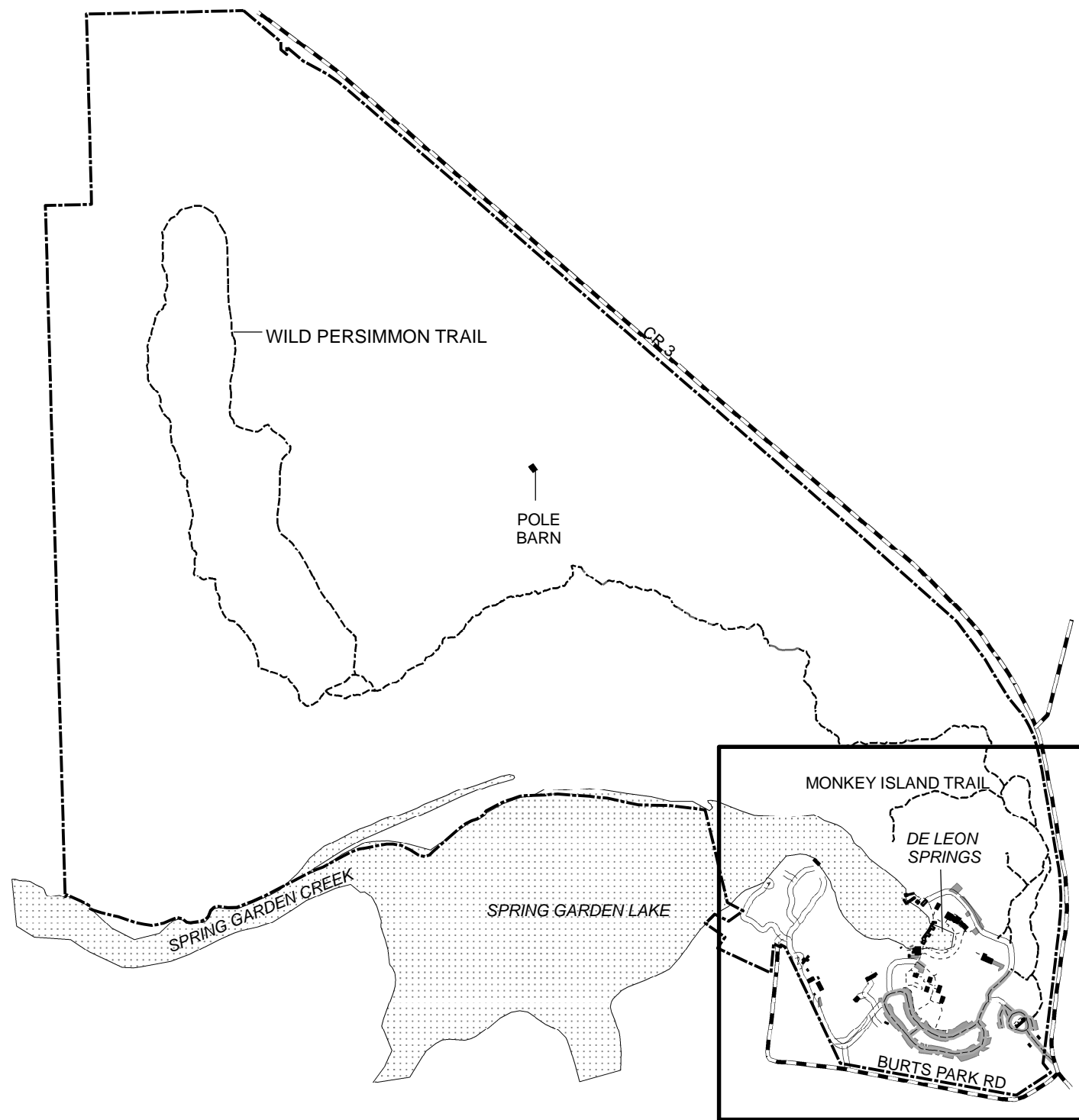
De Leon Springs State Park contains significant historical and archeological sites due to the spring and its connection to the St. John's River. The river has been a productive river and important transportation corridor for centuries. According to the Florida Master Site Files, there are six known archaeological sites within the park.

### **Assessment of Use**

All legal boundaries, significant natural features, 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.

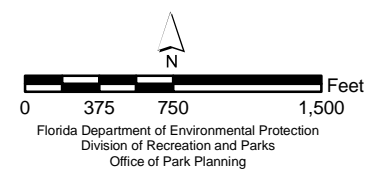
### **Past Uses**

De Leon Springs has seen human occupation from prehistoric times through the historic aboriginal and Euroamerican contact periods to present day. A burial mound and shell middens are evidence of the earliest inhabitants. The late 1770s mark the beginning of



- LEGEND**
- Park Boundary
  - - - County Road
  - == Park Road Paved
  - Park Road Unpaved
  - Hiking Trails
  - Walkways
  - Structures
  - Marine Structures
  - ▨ Water Bodies
  - Parking Lots

DE LEON SPRINGS  
STATE PARK



BASE MAP

continual European occupation with the 500-acre Spanish land grant to Panton, Leslie and Company, and the Williams (later Woodruff), and Rees plantations. During the Second Seminole War, the Seminole Indians held this area for several years, until it was seized by General Zachary Taylor. In the aftermath of the Second Seminole War and Florida's statehood, the Rees and Woodruff plantations were bought, and rebuilt, by Thomas Starke. During the Civil War, the Starke plantation provided grains and produce to the Confederate Army. It was destroyed in 1864 by Union troops.

The late 1870s, when the mill was rebuilt, marks the beginning of the resort period. It was during this period that a pavilion and bathhouse were built at the spring. In the 1920s, the spring was dammed for use as a power source, and several structures were added to the property, including the De Leon Springs Inn. In the early 1950s theme attractions, including gardens, jungle cruises and a water circus were added. After several ownership changes, the State of Florida acquired the property in 1982.

### **Recreational Uses**

Recreational facilities provide for swimming, picnicking, hiking, fishing, paddling, power boating and nature observation. The picnic area has a playground and sand volleyball courts. The old mill was converted into a very popular restaurant, the Old Sugar Mill and Griddle House. A Visitor Center has park history displays.

### **Other Uses**

Under the terms of the original acquisition, Mrs. Erica Thofehn maintains a life estate within the park boundaries. The life estate includes a house, garage, pole barn and nursery.

### **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 De Leon Springs State Park, the shell mound and wetland communities have been designated as protected zones as delineated on the Conceptual Land Use Plan.

### **Existing Facilities**

Recreation focuses on the springs area. The springhead, spring run and the Old Sugar Mill and Griddle House are the main attractions in this area. Swimming in the spring pool, picnicking, bank and dock fishing, canoe rental, boat launching, and tour boat trips are all available. A butterfly garden, located between the parking lot and pavilions, is maintained as part of a community project. ADA access is available to the picnic area, the restaurant and into the spring pool. The restaurant has a long history at the park and draws a large number of visitors.

Trails to the northern part of the park are of varied length and accessibility. A paved, 2/10 mile loop nature trail takes in views of a large bald cypress tree named "Old Methuselah." The Monkey Island Trail is an unpaved trail to the island and back. The longer Wild Persimmon Trail is unpaved as well. It routes the hiker along the edge of the old pasture, presently under

restoration, and loops back to the beginning. It crosses wet areas that need some boardwalk crossings.

A 7.17-acre parcel was added to the park in 2004. The Burts Park parcel, purchased from the McBride family, is west of the spring head and bordered to the north and west by the spring run. It was previously used as a park and most of the facilities remaining are in a state of disrepair. In particular, the concrete retention wall of an old pool needs to be removed. In addition, a concrete cistern needs to be broken and backfilled. The exotics have been cleared.

An archaeological survey and history of the property needs to be completed. The boathouse is in good shape and should be used as an access point for boaters.

A small visitor center near the spring pool is open when volunteers are available to staff it. Exhibits begin to tell the story of the long history of human habitation around the spring but much more could be added. Other displays in the park interpret the springs, the former use of the Sugar Mill and “Old Methuselah.”

### **Recreation Facilities**

#### **Springs Day Use Area**

##### **Sugar Mill**

- Restaurant/ Sugar Mill
- Stabilized parking (6 vehicles)
- Butterfly Garden

##### **Picnic Area**

- Large pavilion (2)
- Medium pavilion (2)
- Volley ball court (2)
- Playground
- Restroom
- Parking (300 vehicles)

##### **Visitor Center**

- Visitor Center / large pavilion (1)
- Restroom
- Boat ramp and dock
- Stabilized parking (6 vehicles)
- Concession

##### **Trails**

- Nature Trail (0.2 mi.)
- Monkey Island Trail (0.5 mi.)
- Wild Persimmon Trail (3 mi.)

#### **Burts Park Property**

- Boathouse

### **Support Facilities**

- Water plant and lift station
- Park road (0.3 mi.)
- Service roads (0.2 mi.)

##### **Entrance**

- Ranger station / administration office
- Gatehouse (2)
- Ranger residence
- Utility shed

##### **Shop**

- 3-bay equipment shelter
- Storage shed
- Utility shed
- Pole Barn
- Ranger residence

##### **Life Estate**

- Residence
- Pole Barn

## **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**

De Leon Springs State Park is a popular day use park in close proximity to a rapidly expanding population. The existing recreational activities are appropriate and should be maintained. A first priority is to make improvements to ease entrance congestion and to better organize parking near and access to the boat ramp. Additional improvements would expand facilities, spreading uses out and allowing for better interpretation opportunities.

### **Recreation Facilities**

**Entrance Area.** On any given weekend, the park will be full, with visitors waiting to get into the park. Due to the present configuration of the entrance, this backup is a traffic hazard. A re-alignment of the entrance is needed to accommodate stacking for about 40-50 cars. Vehicles should enter off Burts Park Road just south of the park entrance. A turning lane off the county road and a curved entrance back to the existing gates would provide this stacking room. Clear directional signage should be posted and advance warning given in the event the park is temporarily closed. This re-alignment should also include a separate entrance for pedestrians and bicyclists who presently use the roadway. Consideration should be given to the future alignment of Volusia County's Spring to Spring Trail which will terminate at the park.

**Springs Day Use Area.** This is the main use area and the facilities are well organized to handle the large number of visitors. One exception is the waterfront parking behind the visitor center. A paved access road and parking area were part of the original plan but never completed. The area needs designated parking for boat trailers as well as limited space for cars. Cold paving should be used where possible to minimize the need for retention. The parking next to the Sugar Mill also needs paving. This area, however, will be under construction during the Sugar Mill chimney stabilization. Once this is complete, the immediate area should be planned for limited H/C parking and deliveries. Storm water drainage issues will have to be considered in all areas of new paving. The concept of an addition to the Sugar Mill should be explored. It may include accessible restrooms, a small



**Legend**

-  Park Boundary
-  Proposed Facility
-  Proposed Trail
-  Existing Trail
-  Road Improvements
-  Proposed Development Area
-  Protected Zone



expansion to restaurant seating, and exhibit space for historical displays of the mill and sugar train.

The visitor center should provide a central resource for interpretive and environmental programs. Themes should focus on the park's long history of human habitation, natural communities and the spring connection to the Floridan aquifer. Passive interpretation of the more inaccessible park facilities such as the burial mound, plantation fields and wet areas should also be included. The existing displays, in the small center room of the visitor center building, were developed by the Citizens Support Organization. To complete the interpretive themes more space and displays are needed. Interior renovation of the visitor center room or relocation to a larger space should be considered. At the same time, expansion of the interpretive programs and signage throughout the park is proposed.

When the life estate comes into park ownership, the location of the residence on this property is best suited for a park manager's residence. Therefore, the park manager should be moved to the new location. The existing manager's residence, once vacated, could be renovated as a visitor center or other appropriate use. If the structure is rendered unusable, it should be removed. In the event this happens, no more construction will take place on the residence site.

The waterfront adjacent to the visitor center has a boat ramp, boat dock and fishing dock. To complete this use area, the boat ramp needs to be repaired, a courtesy dock added and a canoe dock constructed. These facilities would alleviate congestion and safety concerns. This expansion of facilities should not take place until the previously discussed improvements have been made to the access drive and parking.

**Burts Park Property.** This newly added parcel will be developed as an expansion to the day use area. The seven acres slope gently to the waters edge with excellent views throughout. Access will be an important consideration. A large hydric hammock community lies between this property and the spring's day use area. Upland access is limited to the strip of land where the shop is located. For this reason, water access should be encouraged. The existing boathouse and a new dock would provide tie up locations. Those renting canoes or paddle boats at the boat ramp could make the new parcel a destination. A boardwalk connection along the spring run, through the hydric hammock would provide a convenient access with opportunities for interpretation on the manatee. An increasing number of manatees are using the spring run and are usually found on this side of the run.

Day use facilities recommended for the Burts Park parcel are a medium pavilion, scattered picnic tables, two small fishing docks and small restroom. Interpretation signage would focus on the aquatic communities and the fish, manatees, and waterfowl using them.

**Trails.** The existing trail system could be expanded to include more loop trails like the Nature Trail. A way finding map in front of the Sugar Mill detailing the different trails (length, surface, and interpretive focus) would inform visitors of alternative activities at the park. It is not unusual for people to wait 1-2 hours for seating at the restaurant. Suggested themed trails are a history walk, wetlands walk, and spring run walk. The history walk would highlight the archaeological sites and the visitor center. Connecting the Monkey Island trail to the main day use area would provide a longer walk through the wetlands. The boardwalk connection to the Burts Park property and back through the uplands would provide a loop from the spring water

source along the spring run. Development of each of these trails should include interpretive signage.

A primitive campsite, with up to eight sites, is proposed for the northern section of the Wild Persimmon Trail. Wetland crossings and trailside picnic and rest areas are also recommended at appropriate locations along that longer trail.

### **Support Facilities**

The assistant ranger residence is a 1972 trailer. A permanent residence should be built as close as feasible to the back entrance on the Burts Park parcel. This would provide security to this side of the park. The existing trailer site could then be used for the restroom for the Burts Park property. The existing septic system could be expanded to accommodate the increased use of a small restroom.

Once facilities are established on the Burts Park property and the life estate is under park ownership, the shop should be moved to immediately behind the life estate residence. An existing pole barn in this location will become part of the shop facilities. Correctly situating the buildings would allow a vegetative buffer to remain. This would allow the uplands to become a visitor friendly passage to the Burts Park property.

It is recommended that bear-resistant trash containers be used if black bears rummaging through garbage become an issue at the park.

### **Facilities Development**

Preliminary cost estimates for the following list of proposed facilities are provided in Addendum 6. 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**

#### **Springs Day Use Area**

##### **Sugar Mill**

- Paved parking and access road
- Kiosk (wayfinding)

##### **Waterfront**

- Paved parking and access road
- Courtesy dock at boat ramp
- Canoe dock
- Visitor Center interior renovations

##### **Trails**

- Boardwalk to Burts Park property
- Connect Monkey Island Trail to main day use area
- Interpretive signs
- Primitive campsite

#### **Burts Park Property**

- Medium Pavilion
- Fishing docks (2)

- Boat dock
- Small restroom

**Support Facilities**

**Entrance**

Entrance re-configuration

**Shop**

Ranger residence

3-bay equipment shelter

Storage shed

Utility shed

**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).

<b>Table 1--Existing Use And Optimum Carrying Capacity</b>						
	<b>Existing Capacity</b>		<b>Proposed Additional Capacity</b>		<b>Estimated Optimum Capacity</b>	
<b>Activity/Facility</b>	<b>One Time</b>	<b>Daily</b>	<b>One Time</b>	<b>Daily</b>	<b>One Time</b>	<b>Daily</b>
<b>Trails</b>						
Nature	8	24	16	62	24	86
Primitive	21	42			21	42
<b>Picnicking</b>	428	856	40	80	468	936
<b>Swimming</b>	300	600			300	600
<b>Restaurant</b>	72	350			72	350
<b>Fishing</b>						
Shoreline	7	14			7	14
Dock			16	32	16	32
<b>Boating</b>						
Launching	32	64			32	64
Docking	16	32			16	32
Tour Boat	34	38			34	68
<b>Visitor Center</b>			25	100	25	100
<b>Camping</b>			32	32	32	32
<b>TOTAL</b>	<b>918</b>	<b>2,020</b>	<b>129</b>	<b>306</b>	<b>1,047</b>	<b>2,356</b>

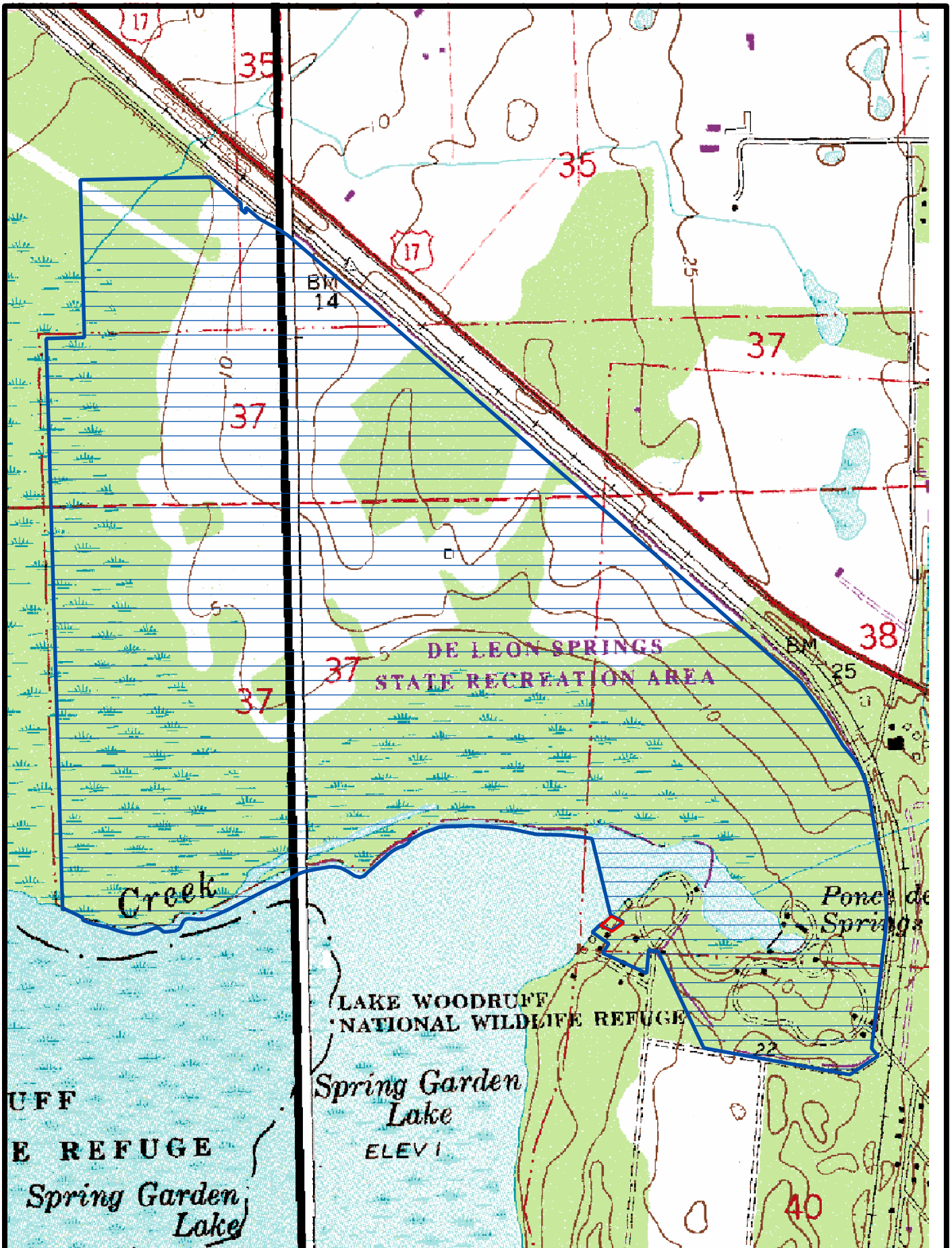
The optimum carrying capacity for this park is a preliminary estimate of the number of users the unit could accommodate after the current conceptual development program has been implemented. When developed, the proposed new facilities would approximately increase the unit's carrying capacity as shown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

### **Optimum Boundary**

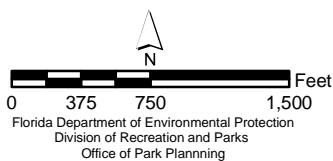
As additional needs are identified through park use, development, research, and as adjacent land uses change on private properties, modification of the unit's optimum boundary may occur for the enhancement of natural and cultural resources, recreational values and management efficiency. At this time, no lands are considered surplus to the needs of the park.

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. 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.



The outparcel, surrounded on three sides by the Burts Park property, is identified on the optimum boundary. Natural resource management would be easier with this parcel and its existing access to Spring Creek could potentially be utilized as a canoe launch.



DE LEON SPRINGS  
STATE PARK



**LEGEND**

-  Park Boundary
-  Optimum Boundary

**OPTIMUM BOUNDARY MAP**



**Addendum 1—Acquisition History and Advisory Group Documentation**



## **De Leon Springs State Park Acquisition History**

---

### **Purpose of Acquisition**

The Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (Trustees) acquired De Leon Springs State Park to manage the property in such a way as to protect and restore the natural and cultural values of the property and provide the greatest benefit to the citizens of the state.

### **Sequence of Acquisition**

On July 28, 1982, the Trustees acquired a 71.18-acre property, constituting the initial area of De Leon Springs State Park. The Trustees purchased the property from Volusia County for \$500,000. The purchase was funded under the LATF program. Since this initial acquisition, the Trustees have purchased several individual parcels using LATF and Florida Forever funds and added them to the De Leon Springs State Park.

### **Lease Agreement**

On January 26, 1983, the Trustees leased De Leon Springs State Park to the Division of Recreation and Parks (Division) under Lease No. 3262. This lease is for a period of fifty years (50), which will expire on January 25, 2033. According to the lease, the Division manages De Leon Springs State Park to develop, conserve, and protect the natural and cultural resources of the park and to use the property for resource-based public outdoor recreation.

### **Title Interest**

The Trustees hold fee simple title to De Leon Springs State Park.

### **Special Conditions on Use**

De Leon Springs State Park is designated single-use to provide resource-based public outdoor recreation and other park related uses. The Division's lease stipulates that all the property be utilized for public outdoor recreation and related purposes. 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**

The following is a list of outstanding rights, reservations and encumbrances that apply to De Leon Springs State Park.

## De Leon Springs State Park Acquisition History

---

**Instrument:** .....Warranty Deed  
**Instrument Holder:** .....Gale McBride  
**Beginning Date:** .....March 4, 2004  
**Ending Date:** .....Perpetual.  
**Outstanding Rights, Uses, Etc.:** .....The easement allows Progress Energy Florida, Inc. to install, operate, control, modify and maintain facilities necessary to provide electric energy within specific portion of the park. The deed is also subject to a non-exclusive perpetual access easement in favor of Vincent A. Carper and Addie Opal Carper.

**Instrument:** .....Well Monitoring License Agreement  
**Instrument Holder:** .....Trustees  
**Beginning Date:** .....June 28, 1993  
**Ending Date:** .....Upon termination by either party or June 27, 2023  
**Outstanding Rights, Uses, Etc.:** .....The agreement allows the St. Johns River Water Management District to use a portion of the park for the purposes of constructing, operating and maintaining scientific equipment to be used for collecting hydrological and other scientific data.

**Instrument:** .....County Deed, dated March 3, 1989, which grants an easement to FPandL Company as recorded in Deed Book 199, Page 251, Volusia County  
**Instrument Holder:** .....Volusia County  
**Beginning Date:** .....March 3, 1989  
**Ending Date:** .....Not given  
**Outstanding Rights, Uses, Etc.:** .....The easement allows the FPandL to install and operate an electric transmission line.

**Instrument:** .....County Deed  
**Instrument Holder:** .....Volusia County  
**Beginning Date:** .....July 28, 1982  
**Ending Date:** .....No specific date is given.  
**Outstanding Rights, Uses, Etc.:** .....The deed is subject to a number of conditions listed in Exhibit "B" of the document, which include easements, agreements and reservation of rights and privileges in favor of George and Erika Thofehrn.

## De Leon Springs State Park Advisory Group List

---

Joie Alexander, Vice Chair  
Volusia County Council  
123 West Indiana Avenue  
Deland, Florida 32720-4612

Steve Banton, Park Manager  
DeLeon Springs State Recreation Area  
P.O. Box 1338  
De Leon Springs, Florida 32130

Jay Holder  
Florida Fish and Wildlife Conservation  
Commission  
Lower St. Johns River Fisheries Office  
5450 N. US Highway 17  
DeLeon Springs, Florida 32130

Phil Giorno, Administrator  
Volusia County Soil and Water  
Conservation District  
1342-E S. Woodland Blvd.  
Deland, Florida 32720

Cathy Lowenstein  
Division of Forestry  
5458 N. US Highway 17  
DeLeon Springs, Florida 32130

Harold Morrow, Refuge Manager  
Lake Woodruff National Wildlife Refuge  
US Fish and Wildlife Service  
2045 Mud Lake Road  
DeLeon Springs, Florida 32130

Bill Apgar, Director  
Volusia County Leisure Services  
202 N. Florida Avenue  
Deland, Florida 32720

Suzanne Inman  
George Johnson  
Patty Schwarze

Karen Russi  
Friends of DeLeon Springs  
1409 Manor Way  
Deland, Florida 32720

Wilfred (Fred) Bisson  
The Volusia – Flagler Sierra Club  
1057 Shady Hollow Drive  
DeLand, Florida 32724

Ms. Arnett Sherman, President  
West Volusia Audubon Society  
1325 S. Spring Garden Ave.  
Deland, Florida 32720

Bill Dreggors  
West Volusia Historical Society  
27 Jasmine Drive  
Debary, Florida 32713

Candy Hill, Chair  
Halifax-St. Johns Chapter  
Florida Trail Association  
1390 Lodge Terrace  
Deltona, Florida 32738

Bruce Kelsey, Commodore  
Florida Sport Paddling Club  
87 Lake Otis Road  
Winter Haven, Florida 33884

Mr. Kevin Gonzalez, President  
Scuba DIVERsions  
600 N. Highway 17-92 #110  
Longwood, Florida 32750

Thomas and Cynthia MacKenzie  
5635 Burts Park Road  
P.O. Box 400  
DeLeon Springs, Florida 32130

## De Leon Springs State Park Advisory Group List

---

## **De Leon Springs State Park Advisory Group Staff Report**

---

The Advisory Group appointed to review the proposed unit management plan for De Leon Springs State Park met at the Visitor Center at De Leon Springs State Park in De Leon Springs, Florida on January 12, 2006. Mr. George Johnson represented Phil Giorno, Ms. Suzanne Inman represented Bill Apgar, and Ms. Marjorie Byron represented Fred Bisson. Mr. Kevin Gonzalez and Mr. Bruce Kelsey did not attend. Mr. Kelsey sent e-mail comments in advance of the meeting. All other appointed Advisory Group members were present. Attending staff were Mr. Larry Fooks, Ms. Valinda Subic, Mr. Steve Banton, Mr. Brian Polk, Ms. Alice Bard, Mr. Norman Edwards, Mr. Roger Reynolds, and Ms. Carol Perfit. One observer attended.

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. She then asked the Advisory Group members to comment on the plan.

### **Summary of Advisory Group Comments**

---

Ms. Candy Hill, representing Florida Trail Association, referred to the management coordination list of government agencies that cooperate with the park. She would like to have a list of volunteer agencies that cooperate with the park included. The FTA maintains the Wild Persimmon Trail. The trail is wet in places and the group will help with bridging where needed. She approves of the proposed primitive campsites and suggested they be fee based, available only by reservation. Ms. Hill suggested rewording Goal 1.E. to clear the confusion in the wording "restore old ditches."

Ms. Arnette Sherman, representing the West Volusia Audubon Society, expressed approval for the plan and did not have any specific comments.

Mr. Bill Dreggars, representing West Volusia Historical Society, reported on work being completed by the West Volusia County Historical Society that might interest park staff and visitors.

Ms. Cathy Lowenstein, representing the Florida Division of Forestry, did not have any specific comments. DOF is willing to assist on the pasture restoration.

Commissioner Joie Alexander, representing Volusia County Board of County Commissioner, expressed approval for the planning process. After hearing comments at the public workshop the previous evening, she noted the entrance and signage on her drive to the park this morning. She will bring these issues to the attention of county staff.

Ms. Suzanne Inman, representing Volusia County Leisure Services, reported that the phase of the Spring to Spring Trail that will come to DeLeon Springs is in the planning stage. She requested that the trail connection be kept in mind as we realign the entrance. County staff will include park staff in the conceptual design meetings.

Ms. Marjorie Byron, representing Volusia-Flagler Sierra Club, suggested a bike lane be added to the new entrance design. She also expressed concern for safe bicycle storage within the park. Locking bikes near use areas where there's surveillance is safer. Bike racks near the swimming area and the entrance station would be good.

Mr. Harold Morrow, representing Lake Woodruff National Wildlife Refuge (NWR), noted the

## **De Leon Springs State Park Advisory Group Staff Report**

---

NWR cooperates in managing natural resources and this is beneficial to both agencies. They are going through the plan approval process now and are concerned about the carrying capacity in light of increasing popularity of natural areas.

Mr. Jay Holder, representing Florida Fish and Wildlife Conservation Commission, said most of his concerns have been previously discussed. He noted the boat ramp is difficult to access and is pleased to see this addressed in the plan. His other concern is public awareness of the park. There is not adequate signage and many people stop at DOF and FWC offices seeking directions. Steve Banton replied that DOT is in charge of highway signs and they have not responded to requests for more evident signage. Visitors should let DOT know of the need.

Mr. George Johnson, representing Volusia County Soil and Water Conservation District, has not had time to thoroughly review the plan. He offered partnership as a federal agency in resource concerns on conservation practices and pasture restoration.

Ms. Karen Russi, representing Friends of DeLeon Springs, is pleased to hear the support expressed by all those in attendance. The Friends of DeLeon Springs works hard in support of the park and are happy to have more resources. She discussed the history of park acquisition and noted that Addendum 1 doesn't have the complete details. Carol Perfit explained that the complete information is available but not included in the plan. For many parks the details of purchase history would be too lengthy.

Mr. Tom MacKenzie, representing adjacent landowners, was interested in the exotic species list in the plan. He suggested it be made available to park neighbors so they can avoid planting invasive exotics. Mr. MacKenzie questioned what is happening along the fence line to visually block neighboring properties from users on the upland trail to the McBride (Burts Park) property. His request is that the trail not be located along the fence line. Carol Perfit explained that if the shop is moved the trail can be located away from the fence line. He also requested that the restroom be sensitively located and screened. The discussion on signage at the public workshop greatly interested him and he typed some suggestions and passed out copies to advisory group members. It included suggestions for a park location sign that would identify Chuck Lennon Park, DeLeon Springs State Park and Burts Park within the state park. Other issues covered the confusion of local street signage.

### **Summary of Observers Comments**

---

Ms. Patty Schwarze, the visitor services provider, said the restaurant often has long waits. She suggested the Burts Park property be used for an enclosed pavilion with a catering kitchen. This could be an extension of the restaurant and box lunches could be prepared as well as catered events. Such a facility could also be used for meetings. She also suggested a boat ramp be built at Burts Park and possibly have the tour boat arrive there. Brian Polk stated that park staff had discussed enclosing the pavilion at the Visitor Center and creating a catering kitchen there. Ms. Schwarze thought this would concentrate uses and this area is crowded already. Carol Perfit noted that parking would be a problem at the Burts Park property if high intensity uses were provided. Also we cannot put in another septic system so close to the water. A canoe launch from the property has been discussed in the past and decided the parcel in the optimum boundary, if purchased, would be the best location.

Ms Schwarze inquired about monitoring the carrying capacity of the spring swimming area.

## De Leon Springs State Park Advisory Group Staff Report

---

Steve Banton reported that regulation has been enforced by limiting the number of vehicles allowed in the park. Brian Polk said he will look into this during the high activity season. Water quality around the spring is monitored by the DEP.

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

### Summary of Submitted Comments

---

Mr. Bruce Kelsey, representing the Florida Sport Paddling Club, is pleased that the proposed plan includes a canoe launch. Paddlers are interested in canoe trips of 3-5 hours in wilderness areas and would like to find trails from the park to the St. Johns River. The paddling club members would also be interested in hiking trails. He questioned the inclusion of canoe facilities in Goal 3.C. noting improvement and expansion of boating facilities.

### Staff Recommendations

---

The Advisory Group approves the proposed De Leon Springs State Park Unit Management Plan as presented with the following recommendations:

**Overall corrections and updates.** The name McBride property will be changed to Burts Park property throughout the plan.

#### Introduction

Goal 1.E. will be clarified.

Add a list of volunteer agencies cooperating in park management.

#### Land Use Component

**Recreation Facilities (McBride/Burts Park property).** Emphasize boating access to the site

**Entrance.** Consider bicycle access in reconfiguring the park entrance

**Support Facilities.** Explore the concept of an addition to the Sugar Mill to include ADA accessible restrooms, expanded seating, and exhibit space for historical materials on the sugar train and mill.

## De Leon Springs State Park Advisory Group Staff Report

---

## **Addendum 2—References Cited**



## De Leon Springs State Park References Cited

---

- American Ornithologists' Union. 1983. Checklist of North American Birds. American Ornithologists' Union, Allen Press, Lawrence, KS.
- \_\_\_\_\_. 1977. Forty-first supplement to the American Ornithologists' Union Checklist of North American Birds. Auk 114:542-552.
- Baldwin, R., C. Bush, R. Hinton, H. Huckle, P. Nichols, F. Watts, and J. Wolfe. 1980. Soil Survey of Volusia County, Florida. U.S. Dept. of Agric., Soil Cons. Serv. in cooperation with Univ. of Florida, Agric. Exper. Stations. Florida. 207 pp.
- Banton, S. 1999. Pers. comm. Florida Department of Environmental Protection.
- Bennett, A. 2001. EcoSummary of De Leon Springs.
- Blonder, B. 1990. Memo on file. Florida Department of Natural Resources.
- Borror, D.J. and R.E. White. 1970. A field guide to the insects of America north of Mexico. Houghton Mifflin Co., Boston. 404 pp.
- Brooks, H.K. 1981a. Physiographic divisions of Florida. FL Coop. Ext. Serv., Inst. Food Agric. Sci., Univ. of Florida, Gainesville, FL. 12 pp.
- Brooks, H.K. 1981b. Geologic map of Florida. FL Coop. Ext. Serv., Inst. Food Agric. Sci., Univ. of Florida, Gainesville, FL.
- Bureau of Economic and Business Research (BEBR), University of Florida. 2004. Florida Statistical Abstract 2004. Gainesville, Florida.
- Denson, R.L., G.D. Ellis and R.D. Russell. 1995. Archaeological survey of De Leon Springs State Recreation Area. Ms. on file, Florida Department of Environmental Protection, Tallahassee.
- Florida Department of Environmental Protection. 2004. Florida State Park System Economic Impact Assessment for Fiscal Year 2003/2004. Tallahassee, Florida.
- Florida Department of State. Florida Master Site Files: 8VO30, 8VO5276, 8VO5277, 8VO5278, and 8VO5279.
- Gallagher, A. 1999. Pers. comm. U.S. Geological Survey.
- Gannon, M. 1996. The new history of Florida. Gainesville, Florida. University Press of Florida. 480pp.
- Gerberg, E.J. and R.H. Arnett, Jr. 1989. Florida butterflies. Natural Science Publications, Inc. Baltimore. 90 pp.
- Healy, H.G. 1975. Terraces and shorelines of Florida. Map Series No. 71. U.S. Geological Survey in cooperation with the Bureau of Water Resources Management, FL Dept. of Environmental Regulation, and Bureau of Geology, FL Dept. of Natural Resources, Tallahassee, FL.
- Johnson, E.D. 2001. Pp. 71-72 in Pitcherplants and their habitats in the Florida State Park system, resource conditions, trends, and management needs. Resource Management Evaluation Report. Florida Department of Environmental Protection, Division of Recreation and Parks, Tallahassee, Florida.
- Jones, Jr., J.K., D.C. Carter, H.H. Genoways, R.S. Hoffmann, D.W. Rice, and C. Jones. 1986. Revised checklist of North American mammals north of Mexico, 1986. Occasional papers of the Museum, Texas Tech University. No. 107. 22 pp.
- Kenner, W.E., R.W. Pride, and C.S. Conover. 1967. Drainage basins in Florida. Map Series No. 28. U.S. Geological Survey in cooperation with the Division of Geology, Florida Board of Conservation, Tallahassee, FL.
- Milanich, J.T. and C.H. Fairbanks. 1980. Florida archaeology. New York, New York. Academic Press, Inc. 290pp.
- Milanich, J.T. 1994. Archaeology of Precolumbian Florida. Gainesville, Florida. University Press of Florida. 476pp.
- Milanich, J.T. 1995. Florida Indians and the invasion from Europe. Gainesville, Florida. University Press of Florida. 290pp.
- Morison, S.E. 1974. The European discovery of America: the southern voyages, 1492-1616. New York, New York. Oxford University Press. 758pp.
- Payne, T.M. and P.C. Griffin. 2002. Archaeological Investigations at the Nineteenth Century Sugar Boiling Facility and the Immediate Area in De Leon Springs State Park, De Leon Springs, Florida. Report on file. Florida Department of Environmental Protection. Tallahassee, Florida.

## De Leon Springs State Park References Cited

---

- Purdy, B.A. 1986. Memo on file, De Leon Springs State Recreation Area.
- Stanton, W. 2001. Memo on file. Florida Department of Environmental Protection, Tallahassee, Florida.
- Stipp, J.J. 1991. Memo and Radiocarbon Dating Analysis on file, De Leon Springs State Recreation Area.
- Tamers, M. 1986. Memo and Radiocarbon Dating Analysis on file, De Leon Springs State Recreation Area.
- Toth, D.J. 1999. Water quality and isotope concentrations from selected springs in the St. Johns River Water Management District. Technical Publication SJ99-2. Palatka, FL. 67 pp.
- U. S. Department of Commerce, Bureau of the Census. 2000. U. S. Census 2000.
- U.S. Fish and Wildlife Service. 1989. Florida Manatee (*Trichechus manatus latirostris*) Recovery Plan. Prepared by the Florida Manatee Recovery Team for the U.S. Fish and Wildlife Service, Atlanta, Georgia. 98 pp.
- Volusia County. 2002. Volusia County Comprehensive Plan 2002. Volusia County, Florida.
- Wunderlin, R.P. 1998. Guide to the vascular plants of Florida. University Press of Florida, Gainesville. 806 pp.

### **Addendum 3—Soils Descriptions**



## De Leon Springs State Park Soil Descriptions

---

**(1) Apopka fine sand, 0 to 5 percent slopes** - This nearly level to gently sloping, well-drained soil is on intermediate to high sand hills. Typically, the surface layer is very dark grayish brown fine sand about 6 inches thick. The subsurface layer is fine sand to a depth of 62 inches. The subsoil is brownish yellow sandy clay loam mottled with pale brown to more than 18 inches. The water table is below 72 inches. Permeability is rapid in the sandy layers and moderate in the sandy clay loam subsoil. Runoff is slow. The available water capacity is very low; and the organic matter content is low.

**(8) Basinger fine sand, depressional** - This poorly drained, nearly level sandy soil occurs mainly in depressions and in a few poorly defined drainageways in flatwoods and sandhills. Typically, the surface layer is gray fine sand about 5 inches thick. The underlying layers are sand to a depth of more than 80 inches. The upper 15 inches is light gray generally streaked with gray of dark gray, the next 5 inches is dark brown with brown fragments, and the lower layers are grayish brown, very pale brown, or light gray. The water table is above the surface for several months in most years. The rest of the time it is within 30 inches except during periods of drought. The available water capacity is very low, and permeability is very rapid throughout. The organic matter content is low.

**(13) Cassia fine sand** - This is a nearly level to gently sloping, somewhat poorly drained sandy soil in slightly elevated positions in the flatwoods or in lower positions in the sandhills. Typically, the surface layer is gray fine sand about 3 inches thick. The subsurface layer is white fine sand about 25 inches thick. The subsoil is 4 inches of black fine sand over 4 inches of brown fine sand mottled with dark reddish brown. The sand grains are coated with organic matter. The substratum is fine sand to a depth of 80 inches or more. The upper 11 inches is brown, the next 7 inches is pale brown, and the lower 27 inches is light gray. The water table is between depths of 15 and 40 inches for about 6 months during most years; it recedes to below 40 inches in dry seasons. Permeability is moderately rapid in the subsoil but very rapid in the other horizons. The organic matter content is very low.

**(20) EauGallie fine sand** - This nearly level, poorly drained soil has a sandy surface layer over a loamy subsoil; it is typically found in flatwoods. The surface soil layer is typically 9 inches thick. The upper 4 inches is black fine sand, and the lower 5 inches is very dark gray fine sand. The subsurface layer is gray fine sand about 12 inches thick. The subsoil begins at a depth of about 21 inches. The upper 6 inches is black fine sand, the next 8 inches is dark reddish brown fine sand, and the next 4 inches is dark brown fine sand. To a depth of 52 inches is brown fine sand, and to 61 inches is a layer of gray sandy loam. Below this to 65 inches is pale brown fine sand. The water table fluctuates within 10 inches of the surface for periods of 1 to 4 months in most years and is within 40 inches for more than 6 months. The available water capacity is low. Permeability is rapid in the surface layer and moderately rapid in the subsoil. The organic matter content is low.

**(22) Electra fine sand, 0 to 5 percent slopes** - This somewhat poorly drained, nearly level soil occurs in slightly elevated places in flatwoods. Typically, the surface layer is dark gray fine sand about 2 inches thick. The subsurface layer is fine sand that is light gray in the upper 6 inches and white in the lower 27 inches. The subsoil is between depths of 35 and 78 inches. In sequence downward, it is 6 inches of dark reddish brown fine sand, 11 inches of dark brown to brown fine sand, 5 inches of very pale brown fine sand, 13 inches of light brownish gray sandy clay loam, and 8 inches of light brownish gray sandy loam. Below the subsoil to 92 inches is gray loamy

## De Leon Springs State Park Soil Descriptions

---

fine sand. The water table is at a depth of 20 to 40 inches for about 4 months during most years and recedes to below 40 inches during drier periods. The available water capacity is low. Permeability is rapid to a depth of about 35 inches, moderate between depths of 35 and 41 inches, rapid between 41 and 57 inches, moderately slow between 57 and 78 inches, and rapid below. Internal drainage is slow under natural conditions but rapid where artificial drainage has been provided. The organic matter content is very low.

**(25) Gator muck** - This very poorly drained, nearly level, well decomposed organic soil occurs in freshwater swamps and marshes and on floodplains of lakes, rivers, and creeks. Typically, the surface is black muck about 34 inches thick. Below this is 12 inches of very dark gray sandy clay loam and 6 inches of dark grayish brown stratified loamy fine sand, fine sandy loam, and fine sand. Below this is 6 inches of light gray fine sand. The water table is at or above the soil surface in spring, summer, and fall and is within 10 inches of the soil surface in winter. The available water capacity is high. Internal drainage is slow. It is impeded by the high water table. If artificial drainage is provided, however, it is rapid in the organic layer and moderate in the subsoil. The organic matter content is very high.

**(26) Holopaw sand** - This nearly level, poorly drained soil has a seasonal high water table at or near the surface. It occurs in broad, low flatwoods, especially in the slightly lower areas that are associated with lakes, and in areas bordering the floodplain of the St. Johns River. Typically, thick sandy surface layers overlie a subsoil of sandy clay loam. The surface layer is 11 inches thick. The top 5 inches is black, and the next 6 inches is dark gray. The subsurface layer is 44 inches thick. The upper part is grayish brown mottled in shades of yellow and brown, and it grades to gray in the lower part. The subsoil is gray sandy clay loam to a depth of 63 inches. Below this to 70 inches is layered gray sand, loamy sand, and sandy loam. Runoff is slow to very slow in nearly level areas. Ponding occurs in the included depressional areas. The water table is within 10 inches of the soil surface for 2 to 6 months in most years. Permeability is rapid in the surface layer and moderate in the subsoil, but under natural conditions the movement of air and water is impeded by the high water table.

**(49) Pomona fine sand** - this poorly drained, nearly level soil occurs in low, broad areas within the flatwoods. Typically, the surface layer is fine sand about 13 inches thick. The upper 5 inches is black and the lower 8 inches is dark gray. The subsoil and underlying material are fine sand and fine sandy loam to a depth of 70 inches. In sequence downward, 5 inches is gray fine sand; 12 inches is black fine sand coated with organic matter; 3 inches is reddish brown fine sand; 12 inches is dark brown fine sand; 5 inches is light gray fine sand; 10 inches is gray sandy loam; and the lower 10 inches is gray fine sand. The water table is within a depth of 10 inches for 1 to 3 months and within 40 inches for about 6 months during most years. The available water capacity is medium. Permeability is rapid to about 18 inches, moderate from 18 to 33 inches, rapid from 33 to 50 inches, and moderately slow from 50 to 60 inches. Internal drainage is slow, and organic matter content is low.

**(53) Pompano-Placid complex** - This unit consists of nearly level, poorly drained Pompano soils and very poorly drained Placid soils in depressions in the flatwoods. These soils are so intermingled in the landscape that they could not be shown separately at the scale of mapping selected for the soil survey. Pompano fine sand makes up about 55% of each mapped area. Typically, the surface layer is dark gray fine sand about 7 inches thick. The underlying material is fine sand to a depth of 80 inches or more. The upper 26 inches is gray, and the lower 47 inches

## De Leon Springs State Park Soil Descriptions

---

is light gray. Pompano soil has a water table less than 6 inches above the soil surface or is saturated within 10 inches of the surface in summer and fall. Frequently, this soil is covered with standing water during the wet seasons. The available water capacity is very low throughout, and the organic matter content is low. Placid fine sand generally makes up about 25% of the unit. Typically, the surface layer is 11 inches of black fine sand and 4 inches of very dark gray fine sand. The underlying material is fine sand that extends to 80 inches or more. The upper 28 inches is gray; the next 24 inches is grayish brown, and the lower part is light brownish gray. Placid soil has a water table less than 6 inches above the soil surface and is saturated within 10 inches of the surface in summer, fall, and winter. Frequently, it is covered with standing water during the wet season. Permeability is rapid, and the available water capacity is high to a depth of 20 inches and low below. Organic matter content is moderate; soil reaction ranges from extremely acid to strongly acid throughout.

**(57) Satellite sand** - This nearly level, somewhat poorly drained sandy soil formed in thick beds of sandy marine sediment. It is mainly on low and moderately high sandhills in the flatwoods. Typically, the surface layer is very dark gray sand about 4 inches thick. The underlying material is sand that has streaks and mottles of gray, dark gray, grayish brown, and reddish brown to a depth of 80 inches or more. The upper 47 inches is light gray sand, the next 14 inches is light brownish gray sand, and below a depth of 66 inches is gray sand. In most years, the water table is 10 to 40 inches below the surface for 2 to 6 months and within 60 inches for more than 9 months. The available water capacity and organic matter content are very low. Permeability is very rapid.

**(65) Terra Ceia muck** - This very poorly drained soil formed in organic material. It occurs in swamps, freshwater marshes, and small depressions. Typically, the soil is black muck to a depth of about 64 inches or more. The water table is as much as 2 feet above the surface at times during the rainy season. It is at or above the surface for 6 to 9 months in most years and is seldom below a depth of 10 inches except during extended dry periods. Permeability is rapid throughout, but the internal drainage is impeded by the high water table. The available water capacity is high, as is the organic matter content.



**Addendum 4—Plant And Animal List**



# De Leon Springs State Park

## Plants

Common Name	Scientific Name	Primary Habitat (For Designated Species)
-------------	-----------------	---

### LICHENS

Christmas lichen.....	<i>Cryptothecia rubrocincta</i>	
Old-man's beard.....	<i>Usnea</i> sp.	

### VASCULAR PLANTS

Boxelder.....	<i>Acer negundo</i>	
Red maple.....	<i>Acer rubrum</i>	
Brittle maidenhair.....	<i>Adiantum tenerum</i>	
Garlic.....	<i>Allium</i> sp.	
Alligatorweed*.....	<i>Alternanthera philoxeroides</i>	
Bastard indigobush.....	<i>Amorpha fruticosa</i>	
Peppervine.....	<i>Ampelopsis arborea</i>	
Chalky bluestem.....	<i>Andropogon virginicus</i> var. <i>glaucus</i>	
Broomsedge bluestem.....	<i>Andropogon virginicus</i> var. <i>virginicus</i>	
Devil's walkingstick.....	<i>Aralia spinosa</i>	
Scratchthroat*.....	<i>Ardisia crenata</i>	
Greendragon.....	<i>Arisaema dracontium</i>	
Jack-in-the-pulpit.....	<i>Arisaema triphyllum</i>	
Wiregrass.....	<i>Aristida beyrichiana</i>	
Switchcane.....	<i>Arundinaria gigantea</i>	
Smallflower pawpaw.....	<i>Asimina parviflora</i>	
Netted pawpaw.....	<i>Asimina reticulata</i>	
Common asparagus-fern.....	<i>Asparagus setaceus</i>	
Ebony spleenwort.....	<i>Asplenium platyneuron</i>	
Carolina mosquito fern.....	<i>Azolla caroliniana</i>	
Groundsel tree.....	<i>Baccharis halimifolia</i>	
Lemon bacopa.....	<i>Bacopa caroliniana</i>	
Bamboo*.....	<i>Bambusa</i> sp.	
Alabama supplejack.....	<i>Berchemia scandens</i>	
Beggarticks.....	<i>Bidens alba</i>	
Smallfruit beggarticks.....	<i>Bidens mitis</i>	
Toothed midsorus fern.....	<i>Blechnum serrulatum</i>	
False nettle.....	<i>Boehmeria cylindrica</i>	
Pindo palm*.....	<i>Butia capitata</i>	
American beautyberry.....	<i>Callicarpa americana</i>	
Common camellia*.....	<i>Camellia japonica</i>	
Trumpet creeper.....	<i>Campsis radicans</i>	
American hornbeam.....	<i>Carpinus caroliniana</i>	
Mockernut hickory.....	<i>Carya alba</i>	
Water hickory.....	<i>Carya aquatica</i>	
Pignut hickory.....	<i>Carya glabra</i>	
Pecan*.....	<i>Carya illinoensis</i>	

\* Non-native Species

## De Leon Springs State Park

### Plants

Common Name	Scientific Name	Primary Habitat (For Designated Species)
Australian-pine*	<i>Casuarina equisetifolia</i>	
Southern catalpa	<i>Catalpa bignonioides</i>	
Madagascar periwinkle*	<i>Catharanthus roseus</i>	
Sugarberry	<i>Celtis laevigata</i>	
Sandbur	<i>Cenchrus</i> sp.	
Spadeleaf	<i>Centella asiatica</i>	
Common buttonbush	<i>Cephalanthus occidentalis</i>	
Woodoats	<i>Chasmanthium</i> sp.	
Camphortree*	<i>Cinnamomum camphora</i>	
Thistle	<i>Cirsium</i> sp.	
Calamondin orange*	<i>Citrus</i> sp.	
Citrus*	<i>Citrus</i> spp.	
Jamaica swamp sawgrass	<i>Cladium jamaicense</i>	
Wild taro*	<i>Colocasia esculenta</i>	
Whitemouth dayflower	<i>Commelina erecta</i>	
American squawroot	<i>Conopholis americana</i>	
Spring coralroot	<i>Corallorhiza wisteriana</i>	
Leavenworth's tickseed	<i>Coreopsis leavenworthii</i>	
Swamp dogwood	<i>Cornus foemina</i>	
Hawthorn	<i>Crataegus</i> sp.	
Bermudagrass*	<i>Cynodon dactylon</i>	
Flatsedge	<i>Cyperus</i> sp.	
Witchgrass	<i>Dichanthelium</i> sp.	
Air-potato*	<i>Dioscorea bulbifera</i>	
Common persimmon	<i>Diospyros virginiana</i>	
Southern wood fern	<i>Dryopteris ludoviciana</i>	
Brazilian waterweed*	<i>Egeria densa</i>	
Common water-hyacinth*	<i>Eichhornia crassipes</i>	
Elephantsfoot	<i>Elephantopus</i> sp.	
Florida butterfly orchid	<i>Encyclia tampensis</i>	
Greenfly orchid	<i>Epidendrum conopseum</i>	
American burnweed	<i>Erechtites hieracifolia</i>	
Fleabane	<i>Erigeron</i> sp.	
Loquat*	<i>Eriobotrya japonica</i>	
Button rattlesnakemaster	<i>Eryngium yuccifolium</i>	
Coralbean	<i>Erythrina herbacea</i>	
Joepyeweed	<i>Eupatorium fistulosum</i>	
Thoroughwort	<i>Eupatorium</i> sp.	
Flattop goldenrod	<i>Euthamia graminifolia</i> var. <i>hirtipes</i>	
Carolina ash	<i>Fraxinus caroliniana</i>	
Eastern milkpea	<i>Galactia regularis</i>	
Downy milkpea	<i>Galactia volubilis</i>	
Bedstraw	<i>Galium</i> sp.	
Blue huckleberry	<i>Gaylussacia frondosa</i> var. <i>tomentosa</i>	

\* Non-native Species

De Leon Springs State Park

Plants

Common Name	Scientific Name	Primary Habitat (For Designated Species)
Yellow jessamine	<i>Gelsemium sempervirens</i>	
Sweet everlasting	<i>Gnaphalium obtusifolium</i>	
Loblolly bay	<i>Gordonia lasianthus</i>	
Toothpetal false reinorchid	<i>Habenaria floribunda</i>	
White gingerlily*	<i>Hedychium coronarium</i>	
Scarlet rosemallow	<i>Hibiscus coccineus</i>	
Swamp rosemallow	<i>Hibiscus grandiflorus</i>	
Marshpennywort	<i>Hydrocotyle</i> sp.	
Coastalplain spiderlily	<i>Hymenocallis crassifolia</i>	
St. John's-wort	<i>Hypericum</i> sp.	
Dahoon holly	<i>Ilex cassine</i>	
Inkberry	<i>Ilex glabra</i>	
Yellow anisetree	<i>Illicium parviflorum</i>	31,41
Jasmine*	<i>Jasminum</i> sp.	
Soft rush	<i>Juncus effusus</i>	
Red cedar	<i>Juniperus virginiana</i>	
Duckweed	<i>Lemna</i> sp.	
Virginia pepperweed	<i>Lepidium virginicum</i>	
Doghobble	<i>Leucothoe</i> sp.	
Canada toadflax	<i>Linaria canadensis</i>	
Glossy privet*	<i>Ligustrum lucidum</i>	
Sweetgum	<i>Liquidambar styraciflua</i>	
Marianna maiden fern	<i>Macrothelypteris torresiana</i>	
Southern magnolia	<i>Magnolia grandiflora</i>	
Sweetbay	<i>Magnolia virginiana</i>	
Texas waxmallow*	<i>Malvaviscus arboreus</i>	
Florida milkvine	<i>Matalea floridana</i>	
Creeping cucumber	<i>Melothria pendula</i>	
Climbing hempvine	<i>Mikania scandens</i>	
Partridgeberry	<i>Mitchella repens</i>	
Southern bayberry	<i>Myrica cerifera</i>	
Tuberous sword fern*	<i>Nephrolepis cordifolia</i>	
Sword fern	<i>Nephrolepis exaltata</i>	
Oleander*	<i>Nerium oleander</i>	
Pondlily	<i>Nuphar lutea</i>	
Swamp tupelo	<i>Nyssa sylvatica</i> var. <i>biflora</i>	
Woodsgrass	<i>Oplismenus hirtellus</i>	
Pricklypear	<i>Opuntia humifusa</i>	
Cinnamon fern	<i>Osmunda cinnamomea</i>	
Royal fern	<i>Osmunda regalis</i> var. <i>spectabilis</i>	
Maidencane	<i>Panicum hemitomon</i>	
Panic grass	<i>Panicum</i> spp.	
Virginia creeper	<i>Parthenocissus quinquefolia</i>	
Purple passionflower	<i>Passiflora incarnata</i>	

\* Non-native Species

# De Leon Springs State Park

## Plants

Common Name	Scientific Name	Primary Habitat (For Designated Species)
Bahiagrass*	<i>Paspalum notatum</i>	
Swamp bay	<i>Persea palustris</i>	
Date palm*	<i>Phoenix dactylifera</i>	
Fogfruit	<i>Phyla nodiflora</i>	
Artillery plant	<i>Pilea microphylla</i>	
Blueflower butterwort	<i>Pinguicula caerulea</i>	
Slash pine	<i>Pinus elliottii</i>	
Loblolly pine	<i>Pinus taeda</i>	
Blackseed needlegrass	<i>Piptochaetium avenacium</i>	
Water-lettuce*	<i>Pistia stratiotes</i>	
Crested yellow orchid	<i>Platanthera cristata</i>	
Resurrection fern	<i>Pleopeltis polypodioides</i> var. <i>michauxiana</i>	
Yew podocarpus*	<i>Podocarpus macrophyllus</i>	
Paintedleaf	<i>Poinsettia cyathophora</i>	
Orange milkwort	<i>Polygala lutea</i>	
Smartweed	<i>Polygonum</i> sp.	
Hairy leafcup	<i>Polymnia uvedalia</i>	
Pickeralweed	<i>Pontederia cordata</i>	
American plum	<i>Prunus americana</i>	
Carolina laurelcherry	<i>Prunus caroliniana</i>	
Bracken fern	<i>Pteridium aquilinum</i>	
Blackroot	<i>Pterocaulon pycnostachyum</i>	
Turkey oak	<i>Quercus laevis</i>	
Laurel oak	<i>Quercus laurifolia</i>	
Water oak	<i>Quercus nigra</i>	
Virginia live oak	<i>Quercus virginiana</i>	
Pale meadowbeauty	<i>Rhexia mariana</i>	
Azalea*	<i>Rhododendron</i> sp.	
Swamp azalea	<i>Rhododendron viscosum</i>	
Winged sumac	<i>Rhus copallinum</i>	
Beaksedge	<i>Rhynchospora</i> sp.	
Sawtooth blackberry	<i>Rubus argutus</i>	
Blackberry	<i>Rubus</i> sp.	
Britton's wild petunia*	<i>Ruellia brittoniana</i>	
Carolina wild petunia	<i>Ruellia caroliniensis</i>	
Leatherleaf fern*	<i>Rumohra adiantiformis</i>	
Cabbage palm	<i>Sabal palmetto</i>	
Carolina willow	<i>Salix caroliniana</i>	
Lyreleaf sage	<i>Salvia lyrata</i>	
Water spangles	<i>Salvinia minima</i>	
Hooded pitcherplant	<i>Sarracenia minor</i>	
Lizard's tail	<i>Saururus cernuus</i>	
Bulrush	<i>Scirpus</i> sp.	
Narrowleaf silkgrass	<i>Pityopsis graminifolia</i>	

\* Non-native Species

## De Leon Springs State Park

### Plants

Common Name	<i>Scientific Name</i>	Primary Habitat (For Designated Species)
Saw palmetto.....	<i>Serenoa repens</i>	
Rattlebox* .....	<i>Sesbania punicea</i>	
Bladderpod .....	<i>Sesbania vesicaria</i>	
Saw greenbrier .....	<i>Smilax bona-nox</i>	
Sarsaparilla vine.....	<i>Smilax pumila</i>	
Greenbrier .....	<i>Smilax</i> spp.	
Carolina horsenettle .....	<i>Solanum carolinense</i>	
Tropical soda apple* .....	<i>Solanum viarum</i>	
Goldenrod .....	<i>Solidago</i> sp.	
Sand cordgrass .....	<i>Spartina bakeri</i>	
Sphagnum .....	<i>Sphagnum</i> sp.	
Ladiestresses .....	<i>Spiranthes</i> sp.	
Florida hedgenettle.....	<i>Stachys floridana</i>	
Common chickweed*.....	<i>Stellaria media</i>	
St. Augustinegrass*.....	<i>Stenotaphrum secundatum</i>	
Smutgrass.....	<i>Sporobolus indicus</i>	
Queen palm* .....	<i>Syagrus romanzoffiana</i>	
Common dandelion* .....	<i>Taraxacum officinale</i>	
Pond-cypress .....	<i>Taxodium ascendens</i>	
Bald-cypress.....	<i>Taxodium distichum</i>	
Marsh fern.....	<i>Thelypteris palustris</i> var. <i>pubescens</i>	
Airplant .....	<i>Tillandsia</i> spp.	
Spanish moss.....	<i>Tillandsia usneoides</i>	
Eastern poison ivy.....	<i>Toxicodendron radicans</i>	
Small-leaf spiderwort* .....	<i>Tradescantia fluminensis</i>	
Bluejacket .....	<i>Tradescantia ohiensis</i>	
Clasping Venus's lookingglass.....	<i>Triodanis perfoliata</i>	
Cattail.....	<i>Typha</i> sp.	
American elm.....	<i>Ulmus americana</i>	
Caesarweed .....	<i>Urena lobata</i>	
Sparkleberry .....	<i>Vaccinium arboreum</i>	
Darrow's blueberry .....	<i>Vaccinium darrowii</i>	
Shiny blueberry .....	<i>Vaccinium myrsinites</i>	
Deerberry .....	<i>Vaccinium stamineum</i>	
Tapegrass .....	<i>Vallisneria americana</i>	
Crownbeard.....	<i>Verbesina</i> sp.	
Giant ironweed.....	<i>Vernonia gigantea</i>	
Bog white violet.....	<i>Viola lanceolata</i>	
Common blue violet.....	<i>Viola sororia</i>	
Summer grape .....	<i>Vitis aestivalis</i>	
Muscadine.....	<i>Vitis rotundifolia</i>	
Grape.....	<i>Vitis</i> sp.	
Shoestring fern .....	<i>Vittaria lineata</i>	
Netted chain fern.....	<i>Woodwardia areolata</i>	

\* Non-native Species

De Leon Springs State Park

Plants

<b>Common Name</b>	<b><i>Scientific Name</i></b>	<b>Primary Habitat (For Designated Species)</b>
Oriental false hawksbeard*	<i>Youngia japonica</i>	
Florida arrowroot	<i>Zamia pumila</i>	

\* Non-native Species

**De Leon Springs State Park**

**Animals**

Common Name	<i>Scientific Name</i>	Primary Habitat (For All Species)
-------------	------------------------	--------------------------------------

**INVERTEBRATES**

**TICKS**

Lone star tick.....	<i>Amblyomma americanum</i>	MTC
---------------------	-----------------------------	-----

**GRASSHOPPERS**

Eastern lubber .....	<i>Romalea microptera</i>	81,82
----------------------	---------------------------	-------

**DRAGONFLIES**

Eastern pondhawk.....	<i>Erythemis simplicicollis</i>	35
-----------------------	---------------------------------	----

**MOTHS**

Luna moth .....	<i>Actias luna</i>	81,82
-----------------	--------------------	-------

**BUTTERFLIES**

Giant swallowtail .....	<i>Papilio cresphontes</i>	35,81
Eastern tiger swallowtail.....	<i>Papilio glaucus australis</i>	35,81
Black swallowtail.....	<i>Papilio polyxenes</i>	35, 81
Spicebush swallowtail.....	<i>Papilio troilus</i>	35, 81
Zebra long wing .....	<i>Heliconius charitonius tuckeri</i>	23,35,81
Red admiral.....	<i>Vanessa atalanta rubria</i>	35,81

**AMPHIBIANS**

Oak toad.....	<i>Bufo quercicus</i>	23,30
Southern toad .....	<i>Bufo terrestris</i>	31
Eastern spadefoot.....	<i>Scaphiopus holbrooki holbrooki</i>	23
Florida chorus frog.....	<i>Pseudacris nigrita verrucosa</i>	29,30
Bullfrog.....	<i>Rana catesbeiana</i>	55
Pig frog.....	<i>Rana grylio</i>	55
Florida leopard frog .....	<i>Rana utricularia sphenoccephala</i>	30, 55
Green treefrog .....	<i>Hyla cinerea</i>	30,31
Squirrel treefrog.....	<i>Hyla squirella</i>	29,30

**REPTILES**

Florida snapping turtle .....	<i>Chelydra serpentina osceola</i>	55
Striped mud turtle .....	<i>Kinosternon bauri</i>	30
Loggerhead musk turtle .....	<i>Sternotherus minor minor</i>	55

\* Non-native Species

## De Leon Springs State Park

### Animals

Common Name	Scientific Name	Primary Habitat (For All Species)
Florida cooter .....	<i>Pseudemys floridana floridana</i>	55
Peninsula cooter .....	<i>Pseudemys floridana peninsularis</i>	55
Florida redbelly turtle .....	<i>Pseudemys nelsoni</i>	55
Florida box turtle.....	<i>Terrepenne carolina bauri</i>	8,21
Florida softshell .....	<i>Apalone ferox</i>	55
Gopher tortoise.....	<i>Gopherus polyphemus</i>	8,23,81
American alligator .....	<i>Alligator mississippiensis</i>	55
Green anole .....	<i>Anolis carolinensis carolinensis</i>	21,23
Brown anole* .....	<i>Anolis sagrei</i>	81,82
Ground skink.....	<i>Scincella laterale</i>	21,23,35
Eastern glass lizard .....	<i>Ophisaurus ventralis</i>	31
Six-lined racerunner.....	<i>Cnemidophorus sexlineatus sexlineatus</i>	23
Southeastern five-lined skink.....	<i>Eumeces inexpectatus</i>	8,23,30
Broad-headed skink .....	<i>Eumeces laticeps</i>	21,30,31
Northern scarlet snake.....	<i>Cemophora coccinea copei</i>	8,23
Southern black racer .....	<i>Coluber constrictor priapus</i>	8,21,31
Eastern indigo snake .....	<i>Drymarchon corais couperi</i>	8,23
Corn snake .....	<i>Elaphe guttata guttata</i>	8,21,23
Yellow rat snake .....	<i>Elaphe obsoleta quadrivittata</i>	8,23,41
Scarlet kingsnake .....	<i>Lampropeltis triangulum elapsoides</i>	8,21
Banded water snake .....	<i>Nerodia fasciata fasciata</i>	31,55
Florida water snake.....	<i>Nerodia fasciata pictiventris</i>	31,55
Brown water snake.....	<i>Nerodia taxispilota</i>	31,55
Rough green snake.....	<i>Opheodrys aestivus</i>	21,30,35
Striped crayfish snake.....	<i>Regina alleni</i>	31,55
Central Florida crowned snake .....	<i>Tantilla relicta neilli</i>	23
Peninsula ribbon snake .....	<i>Thamnophis sauritus sackeni</i>	29,30
Eastern garter snake .....	<i>Thamnophis sirtalis sirtalis</i>	29,30
Eastern coral snake .....	<i>Micrurus fulvius fulvius</i>	21,23,35
Eastern cottonmouth .....	<i>Agkistrodon piscivorus piscivorus</i>	30,31,35
Eastern diamondback rattlesnake .....	<i>Crotalus adamanteus</i>	8,23,41
Dusky pigmy rattlesnake.....	<i>Sistrurus miliarius barbouri</i>	8,23,41

### BIRDS

Common loon.....	<i>Gavia immer</i>	55
Double-crested cormorant.....	<i>Phalacrocorax auritus</i>	55
Anhinga.....	<i>Anhinga anhinga</i>	55
American bittern .....	<i>Botaurus lentiginosus</i>	55
Great egret.....	<i>Ardea alba</i>	55
Snowy egret .....	<i>Egretta thula</i>	55
Little blue heron.....	<i>Egretta caerulea</i>	55
Reddish egret .....	<i>Egretta rufescens</i>	55

\* Non-native Species

## De Leon Springs State Park

### Animals

Common Name	Scientific Name	Primary Habitat (For All Species)
Cattle egret*	<i>Bubulcus ibis</i>	81,82
Green heron	<i>Butorides virescens</i>	55
Black-crowned night-heron	<i>Nycticorax nycticorax</i>	55
White ibis	<i>Eudocimus albus</i>	55
Wood stork	<i>Mycteria americana</i>	55
Black vulture	<i>Coragyps atratus</i>	Flyover
Turkey vulture	<i>Cathartes aura</i>	Flyover
Wood duck	<i>Aix sponsa</i>	31,55
American wigeon	<i>Anas americana</i>	55
Ring-necked duck	<i>Aythya collaris</i>	55
Lesser scaup	<i>Aythya affinis</i>	55
Red-breasted merganser	<i>Mergus serrator</i>	55
Osprey	<i>Pandion haliaetus</i>	31, Flyover
Swallow-tailed kite	<i>Elanoides forficatus</i>	30,41, Flyover
Bald eagle	<i>Haliaeetus leucocephalus</i>	Flyover
Sharp-shinned hawk	<i>Accipiter striatus</i>	8,20,21,35,41
Red-shouldered hawk	<i>Buteo lineatus</i>	8,20,21,35,41
Red-tailed hawk	<i>Buteo jamaicensis</i>	8,41,81
American kestrel	<i>Falco sparverius</i>	81
Merlin	<i>Falco columbarius</i>	8,41,81
Wild turkey	<i>Melagris gallopavo</i>	8,21,35,41
Northern bobwhite	<i>Colinus virginianus</i>	8,41,81
Common moorhen	<i>Gallinula chloropus</i>	55
American coot	<i>Fulica americana</i>	55
Limpkin	<i>Aramus guarana</i>	55
Sandhill crane	<i>Grus canadensis</i>	81
Killdeer	<i>Charadrius vociferus</i>	81
Laughing gull	<i>Larus atricilla</i>	Flyover
Ring-billed gull	<i>Larus delawarensis</i>	Flyover
Mourning dove	<i>Zenaida macroura</i>	8,21,41,81
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	31
Eastern screech-owl	<i>Otus asia</i>	8,21,41
Great horned owl	<i>Bubo virginianus</i>	8,21,41
Barred owl	<i>Strix varia</i>	21
Common nighthawk	<i>Chordeiles minor</i>	8,41,81, Flyover
Chuck-will's-widow	<i>Caprimulgus carolinensis</i>	8,41
Chimney swift	<i>Chaetura pelagica</i>	Flyover
Ruby-throated hummingbird	<i>Archilochus colubris</i>	21,82
Belted kingfisher	<i>Ceryle alcyon</i>	55
Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	8,41,81
Red-bellied woodpecker	<i>Melanerpes carolinus</i>	8,21,31,35,41,81,82
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>	21,31,35
Downy woodpecker	<i>Picoides pubescens</i>	8,21,31,35,41
Northern flicker	<i>Colaptes auratus</i>	8,41,81

\* Non-native Species

## De Leon Springs State Park

### Animals

Common Name	Scientific Name	Primary Habitat (For All Species)
Pileated woodpecker .....	<i>Dryocopus pileatus</i>	8,21,30,31,41
Eastern phoebe .....	<i>Sayornis phoebe</i>	8,29,41,55
Great crested flycatcher .....	<i>Myiarchus crinitus</i>	8,21,41
Purple martin.....	<i>Progne subis</i>	Flyover
Tree swallow.....	<i>Tachycineta bicolor</i>	Flyover
Barn swallow .....	<i>Hirundo rustica</i>	Flyover
Blue jay .....	<i>Cyanocitta cristata</i>	8,21,41,81
Fish crow.....	<i>Corvus ossifragus</i>	55,82
Tufted titmouse.....	<i>Baeolophus bicolor</i>	8,21,41,82
Carolina wren.....	<i>Thryothorus ludovicianus</i>	8,21,41,81,82
House wren .....	<i>Troglodytes aedon</i>	8,41,81
Marsh wren .....	<i>Cistothorus palustris</i>	29,30
Ruby-crowned kinglet.....	<i>Regulus calendula</i>	8,21,35,41
Blue-gray gnatcatcher .....	<i>Polioptila caerulea</i>	8,21,35,41
Swainson's thrush.....	<i>Catharus ustulatus</i>	21,35
Hermit thrush .....	<i>Catharus guttatus</i>	21,35
American robin .....	<i>Turdus migratorius</i>	21,35
Gray catbird .....	<i>Dumetella carolinensis</i>	8,21,35
Northern mockingbird.....	<i>Mimus polyglottos</i>	81,82
Brown thrasher.....	<i>Toxostoma rufum</i>	21
Cedar waxwing .....	<i>Bombycilla cedrorum</i>	Flyover
Loggerhead shrike.....	<i>Lanius ludovicianus</i>	81
European starling* .....	<i>Sturnus vulgaris</i>	81\
White-eyed vireo.....	<i>Vireo griseus</i>	8,21,41
Blue-headed vireo .....	<i>Vireo solitarius</i>	21,35
Yellow-throated vireo .....	<i>Vireo flavifrons</i>	8,41
Red-eyed vireo.....	<i>Vireo olivaceus</i>	21,35
Northern parula .....	<i>Parula americana</i>	8,21,41
Yellow-rumped warbler.....	<i>Dendroica coronata</i>	8,21,29,81
Yellow-throated warbler .....	<i>Dendroica dominica</i>	8,21,41
Pine warbler .....	<i>Dendroica pinus</i>	8,41
Prairie warbler.....	<i>Dendroica discolor</i>	8,41
Palm warbler .....	<i>Dendroica palmarum</i>	8,21,29,41,81
Black-and-white warbler.....	<i>Mniotilta varia</i>	8,21,35,41
American redstart.....	<i>Setophaga ruticilla</i>	21,31,35
Ovenbird .....	<i>Seiurus aurocapillus</i>	21,35
Northern waterthrush .....	<i>Seiurus noveboracensis</i>	35,55
Common yellowthroat .....	<i>Geothlypis trichas</i>	29,81
Summer tanager .....	<i>Piranga rubra</i>	8,41
Northern cardinal .....	<i>Cardinalis cardinalis</i>	8,21,35,41,81,82
Blue grosbeak.....	<i>Guiraca caerulea</i>	8,81
Indigo bunting.....	<i>Passerina cyanea</i>	8,81
Red-winged blackbird.....	<i>Agelaius phoeniceus</i>	8,41,55,81,82
Boat-tailed grackle .....	<i>Quiscalus major</i>	55,82

\* Non-native Species

## De Leon Springs State Park

### Animals

Common Name	<i>Scientific Name</i>	Primary Habitat (For All Species)
Common grackle.....	<i>Quiscalus quiscula</i>	8,41,55,81,82
American goldfinch .....	<i>Carduelis tristis</i>	8,41

### MAMMALS

Virginia opossum.....	<i>Didelphis virginiana</i>	23,31,41
Eastern pipistrelle.....	<i>Pipistrellus subflavus</i>	21,31
Nine-banded armadillo*.....	<i>Dasyurus novemcinctus</i>	21,23,31
Eastern cottontail .....	<i>Sylvilagus floridanus</i>	21,23,31
Gray squirrel .....	<i>Sciurus carolinensis</i>	21,23,81
Sherman's fox squirrel.....	<i>Sciurus niger shermani</i>	23,81
Southern flying squirrel .....	<i>Glaucomys volans</i>	21,23,31
Coyote*.....	<i>Canis latrans</i>	23,81
Red fox.....	<i>Vulpes vulpes</i>	23,81
Gray fox .....	<i>Urocyon cinereoargenteus</i>	8,21,23
Raccoon.....	<i>Procyon lotor</i>	8,31,41
River otter .....	<i>Lutra canadensis</i>	31,55
Bobcat .....	<i>Felis rufus</i>	8,31,41
Florida black bear .....	<i>Ursus americanus floridanus</i>	21,23,31
West Indian manatee.....	<i>Trichechus manatus latirostris</i>	55
Wild pig* .....	<i>Sus scrofa</i>	8,29,81
White-tailed deer.....	<i>Odocoileus virginianus</i>	8,21,41

\* Non-native Species

# De Leon Springs State Park

## Animals

<b>Common Name</b>	<i>Scientific Name</i>	<b>Primary Habitat (For All Species)</b>
--------------------	------------------------	--

---

## 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

### **Lacustrine—Continued**

47. Marsh Lake
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. Terrestrial Cave

### **Miscellaneous**

81. Ruderal
82. Developed

**MTC** Many Types Of Communities  
**OF** Overflying

## Habitat Codes

---

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

## **Rank Explanations— For FNAI Global Rank, FNAI State Rank, Federal Status And State Status**

### **LEGAL STATUS**

#### **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.

De Leon Springs State Park  
Designated Species—Plants

Common Name/ <i>Scientific Name</i>	FDACS	Designated Species Status	
		USFWS	FNAI
Yellow anisetree <i>Illicium parviflorum</i>	LE		G2, S2

De Leon Springs State Park

Designated Species—Plants

<b>Common Name/ <i>Scientific Name</i></b>	<b>FDACS</b>	<b><u>Designated Species Status</u></b>		<b>FNAI</b>
		<b>USFWS</b>		

---

**De Leon Springs State Park**  
**Designated Species—Animals**

Common Name/ Scientific Name	Designated Species Status		
	FFWCC	USFWS	FNAI
<b>REPTILES</b>			
Gopher tortoise <i>Gopherus polyphemus</i>	LS		G3, S3
American alligator <i>Alligator mississippiensis</i>	LS	T(S/A)	G5, S4
Eastern diamondback rattlesnake <i>Crotalus adamanteus</i>			G4, S3
Eastern indigo snake <i>Drymarchon corais cooperi</i>	LT	LT	G4T3, S3
<b>BIRDS</b>			
Limpkin <i>Aramus guarauna</i>	LS		G5, S3
Great egret <i>Ardea alba</i>			G5, S4
Little blue heron <i>Egretta caerulea</i>	LS		G5, S4
Reddish egret <i>Egretta rufescens</i>	LS		G4, S2
Snowy egret <i>Egretta thula</i>	LS		G5, S4
Tricolored heron <i>Egretta tricolor</i>	LS		G5, S4
Swallow-tailed kite <i>Elanoides forficatus</i>			G4, S2S3
Merlin <i>Falco columbarius</i>			G5, S2
Florida sandhill crane <i>Grus canadensis pratensis</i>	LT		G5T2T3, S2S3
Southern bald eagle <i>Haliaeetus leucocephalus</i>	LT	LT	G4, S3
Wood stork <i>Mycteria americana</i>	LE	LE	G4, S2
Osprey <i>Pandion haliaetus</i>			G5, S3S4
American redstart <i>Setophaga ruticilla</i>			G5, S2
<b>MAMMALS</b>			
Sherman's fox squirrel <i>Sciurus niger shermani</i>	LS		G5T2, S2
Florida black bear <i>Ursus americanus floridanus</i>	LT		G5T2, S2

**De Leon Springs State Park**  
**Designated Species—Animals**

<b>Common Name/ <i>Scientific Name</i></b>	<b><u>Designated Species Status</u></b>		
	<b>FFWCC</b>	<b>USFWS</b>	<b>FNAI</b>
Florida manatee <i>Trichechus manatus</i>	LE	LE	G2, S2

**Addendum 6—Priority Schedule And Cost Estimates**



## **De Leon Springs State Park 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. Conserve, protect, and manage natural communities, significant habitat, and ecological systems.
  - A. Prescribe burn on A 3-5 year rotation to perpetuate and restore the unit's natural communities. 0-10 Years. Estimated Cost: \$2,000 Plus \$2,000 Reoccurring.
  - B. Increase removal of feral hogs. 0-10 years. Estimated cost: \$1,000 plus \$1,000 reoccurring.
  - C. Increase removal of invasive exotic plants, such as air potato, bamboo, camphortree, britton's wild petunia, wild taro, elephant ear, tuberous sword fern, white gingerlily, and tropical soda apple. 0-10 years. Estimated cost: \$3,000 plus \$500 reoccurring.
  - D. Remove interior fences in burn zones. 0-5 years. Estimated cost: \$2,500.
  - E. Restore hydrology by developing and implementing strategies to restore old ditches. 0-10 years. Estimated cost: \$20,000.
  - F. Develop and implement restoration strategies for the remnant pastures. 0-10 years. Estimated cost: \$68,000, plus \$5,000 in reoccurring costs.
  - G. Assess the surface hydrological impacts to the hooded pitcherplant population and restore the hydrology to the greatest degree feasible. 0-10 years. Estimated cost: unknown.

#### **Cultural Resources**

1. Maintain, protect and interpret existing archaeological sites and their associated artifactual assemblage from vandalism, unauthorized digging or collecting, erosion, and other forms of encroachment. 0-10 years. Estimated Cost: \$2,000/year in reoccurring costs.
2. Collect oral history from local residents with knowledge of the park's history and past land use. 1-3 years. Estimated Cost: \$1,500/year in reoccurring costs.
3. Maintain a Cultural Resources Management Plan for the park, using the Guidelines for Cultural Resource Management Files established by the Bureau of Natural and Cultural Resources. 1-10 years. Estimated Cost: \$500/year in reoccurring costs.
4. Draft a Scope of Collections Statement; catalog and inventory any permanent collections. 0-1 year. Estimated Cost: \$1,000.
5. Develop a Collections Management Plan to provide procedures on how the park acquires, catalogs, assesses, and curates its collections. 0-2 years. Estimated Cost: \$1,000.
6. Coordinate any plans for ground-disturbing activities through the Division of Historical Resources, as required in the DHR/DRP Compliance Review Matrix. 0-10 years. Estimated Cost: \$100/year in reoccurring costs.

**Total Estimated Cost:** \$66,500 plus \$75,500/year in recurring costs.

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

**De Leon Springs State Park Priority Schedule And Cost Estimates**

---

**Capital Improvements**

<u>Development Area or Facility</u>	<u>Cost</u>
Burts Park .....	\$369,000.00
Entrance .....	\$38,000.00
Shop .....	\$290,000.00
Sugar Mill .....	\$290,000.00
Trails .....	\$144,500.00
Waterfront .....	<u>\$122,000.00</u>
<b>Total w/ contingency .....</b>	<b>\$1,270,560.00</b>

**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.

**Additional Information**

**FNAI Descriptions**

**DHR Cultural Management Statement**



## 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 COMMUNITIES

XERIC UPLANDS  
COASTAL UPLANDS  
MESIC UPLANDS  
ROCKLANDS  
MESIC FLATLANDS

### PALUSTRINE COMMUNITIES

WET FLATLANDS  
SEEPAGE WETLANDS  
FLOODPLAIN WETLANDS  
BASIN WETLANDS

### LACUSTRINE COMMUNITIES

### RIVERINE COMMUNITIES

### SUBTERRANEAN COMMUNITIES

### MARINE/ESTUARINE COMMUNITIES

### Definitions of Terms Used in Natural Community Descriptions

---

**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.

## Descriptions Of Natural Communities Developed By FNAI

---

**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.

## Descriptions Of Natural Communities Developed By FNAI

---

**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.

## Descriptions Of Natural Communities Developed By FNAI

---

**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

## Descriptions Of Natural Communities Developed By FNAI

---

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 troglonec, trogliphilic, and troglitic organisms.

**Aquatic Cave** - cavernicolous area permanently or periodically submerged; often characterized by troglitic 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 Of Natural Communities Developed By FNAI

---

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., coralgall, 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 sparse, 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 Scleractinia (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 virginiana*  
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 elliotii*  
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 tulipifera*  
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*

**Management Procedures For Archaeological And Historical Sites And Properties  
On State-Owned Or Controlled Lands (Revised August, 1995)**

---

**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:

**Management Procedures For Archaeological And Historical Sites And Properties  
On State-Owned Or Controlled Lands (Revised August, 1995)**

---

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.

**Management Procedures For Archaeological And Historical Sites And Properties  
On State-Owned Or Controlled Lands (Revised August, 1995)**

---

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

**Management Procedures For Archaeological And Historical Sites And Properties  
On State-Owned Or Controlled Lands (Revised August, 1995)**

---

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

**Management Procedures For Archaeological And Historical Sites And Properties  
On State-Owned Or Controlled Lands (Revised August, 1995)**

---

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

**Management Procedures For Archaeological And Historical Sites And Properties  
On State-Owned Or Controlled Lands (Revised August, 1995)**

---

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]).

The Division 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.).

**Management Procedures For Archaeological And Historical Sites And Properties  
On State-Owned Or Controlled Lands (Revised August, 1995)**

---

- (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

**Management Procedures For Archaeological And Historical Sites And Properties  
On State-Owned Or Controlled Lands (Revised August, 1995)**

---