

**BLUE SPRING AND HONTOON ISLAND STATE
PARKS**

UNIT MANAGEMENT PLAN

APPROVED

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

October 14, 2005



Jeb Bush
Governor

Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard, MS 140
Tallahassee, Florida 32399-3000
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Colleen Castille
Secretary

November 7, 2005

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

Re: Blue Spring and Hontoon Island State Parks

Lease # 2622 and 2468

Dear Ms. White:

On October 14, 2005, the Acquisition and Restoration Council recommended approval of the Blue Spring and Hontoon Island State Parks 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 Blue Spring and Hontoon Island State Parks. 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 October 14, 2015.

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

Sincerely,

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

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INTRODUCTION

Blue Spring State Park is located in Volusia County, Hontoon Island State Park is located in both Lake and Volusia Counties (see Vicinity Maps). Blue Spring State Park is approximately two miles to the west of Orange City. Access to the park is from U.S. Highway 17-92 in Orange City and then west on French Avenue just over the railroad overpass. Hontoon Island State Park is about five miles southwest of DeLand. Access to Hontoon Island is by riding the State provided ferry from the mainland parking lot or by private boat (see Reference Map). Both maps also reflect significant land and water resources existing near the park.

Currently, Blue Spring State Park contains 2,643.90 acres and Hontoon Island State Park contains 1,648.16 acres. The parks combined contain 4,292.06 acres.

At Blue Spring and Hontoon Island State Parks, public outdoor recreation and conservation is the designated single use of the parks (see Addendum 1). Acquisition of Blue Spring began in 1972, through the Land Acquisition Trust Fund program. Acquisition of Hontoon Island began in 1960 through a donation. There are no legislative or executive directives that constrain the use of these properties.

PURPOSE AND SCOPE OF THE PLAN

This plan serves as the basic statement of policy and direction for the management of Blue Spring and Hontoon Island State Parks as units 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 June 17, 1999 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.

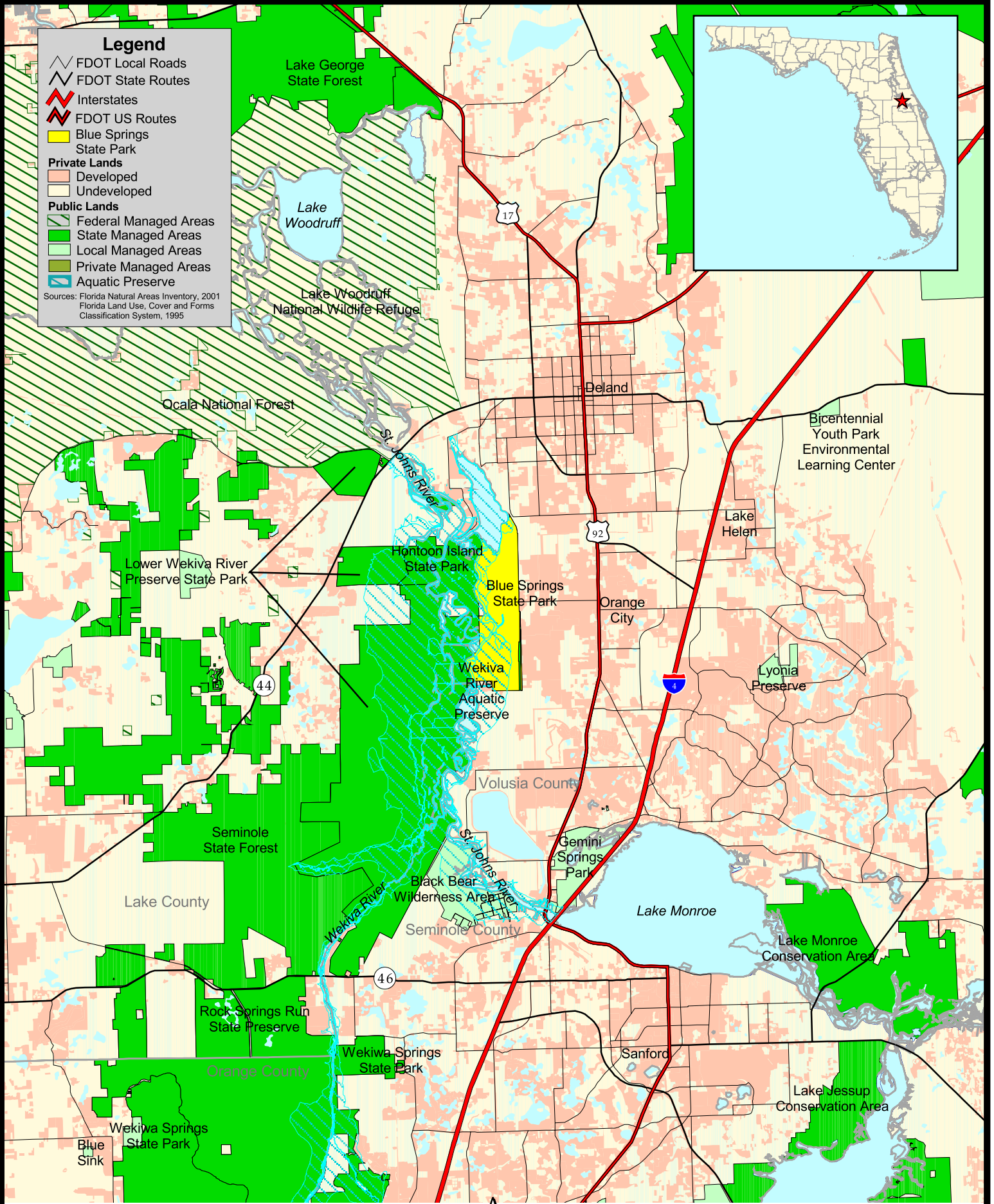
The land use component is the recreational resource allocation plan for the unit. Based on considerations such as access, population and adjacent land uses, an optimum allocation of the physical space of the park is made, locating use areas and proposing types of facilities and volume of use to be provided.

In the development of this plan, the potential of the parks to accommodate secondary management purposes ("multiple uses") were analyzed. These secondary purposes were

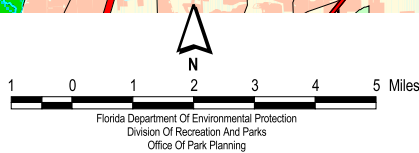
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- FDOT Local Roads
- FDOT State Routes
- Interstates
- FDOT US Routes
- Blue Springs State Park
- Private Lands**
- Developed
- Undeveloped
- Public Lands**
- Federal Managed Areas
- State Managed Areas
- Local Managed Areas
- Private Managed Areas
- Aquatic Preserve

Sources: Florida Natural Areas Inventory, 2001
Florida Land Use, Cover and Forms Classification System, 1995















BLUE SPRING STATE PARK

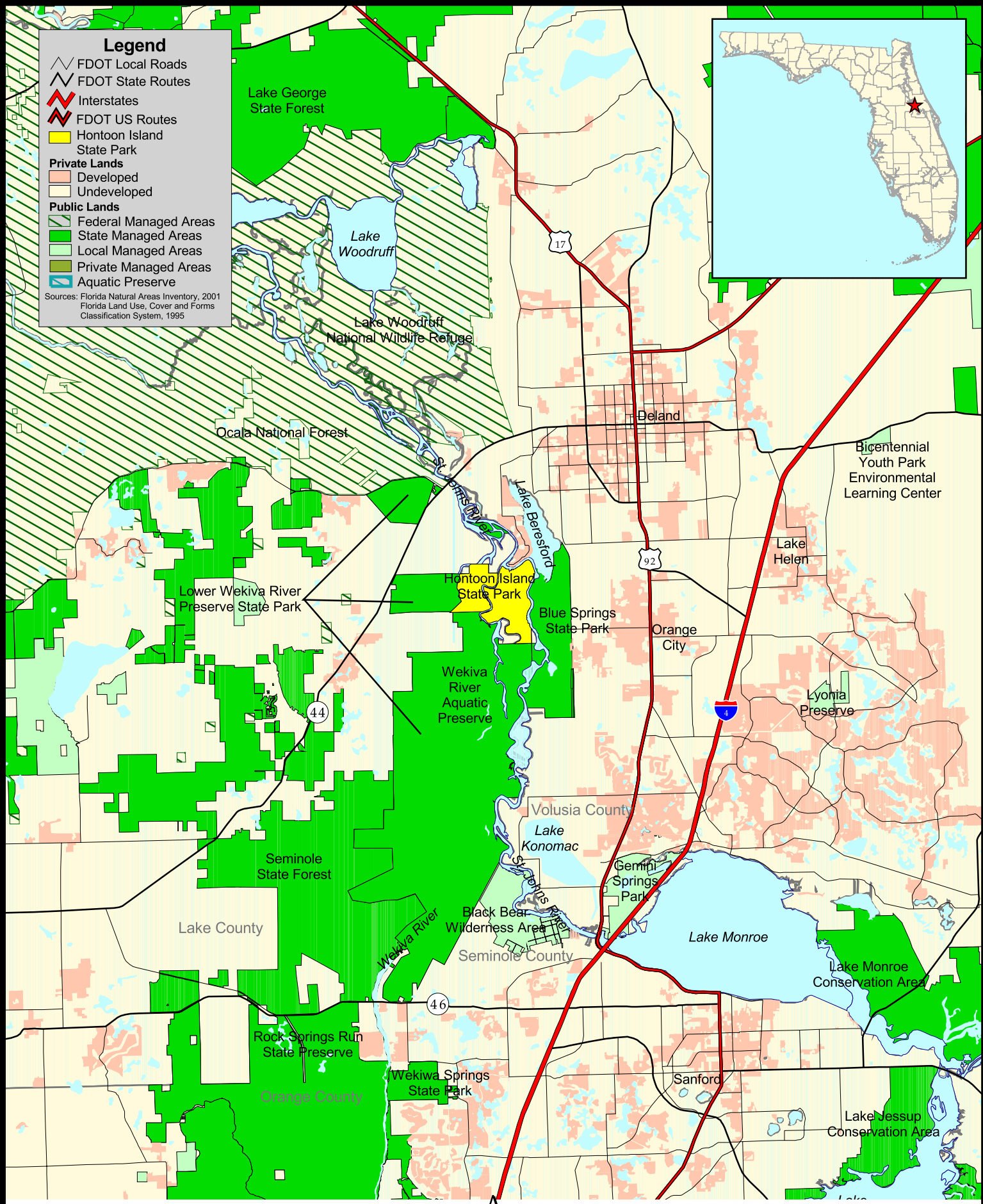


VICINITY MAP

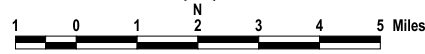
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-  FDOT Local Roads
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Sources: Florida Natural Areas Inventory, 2001
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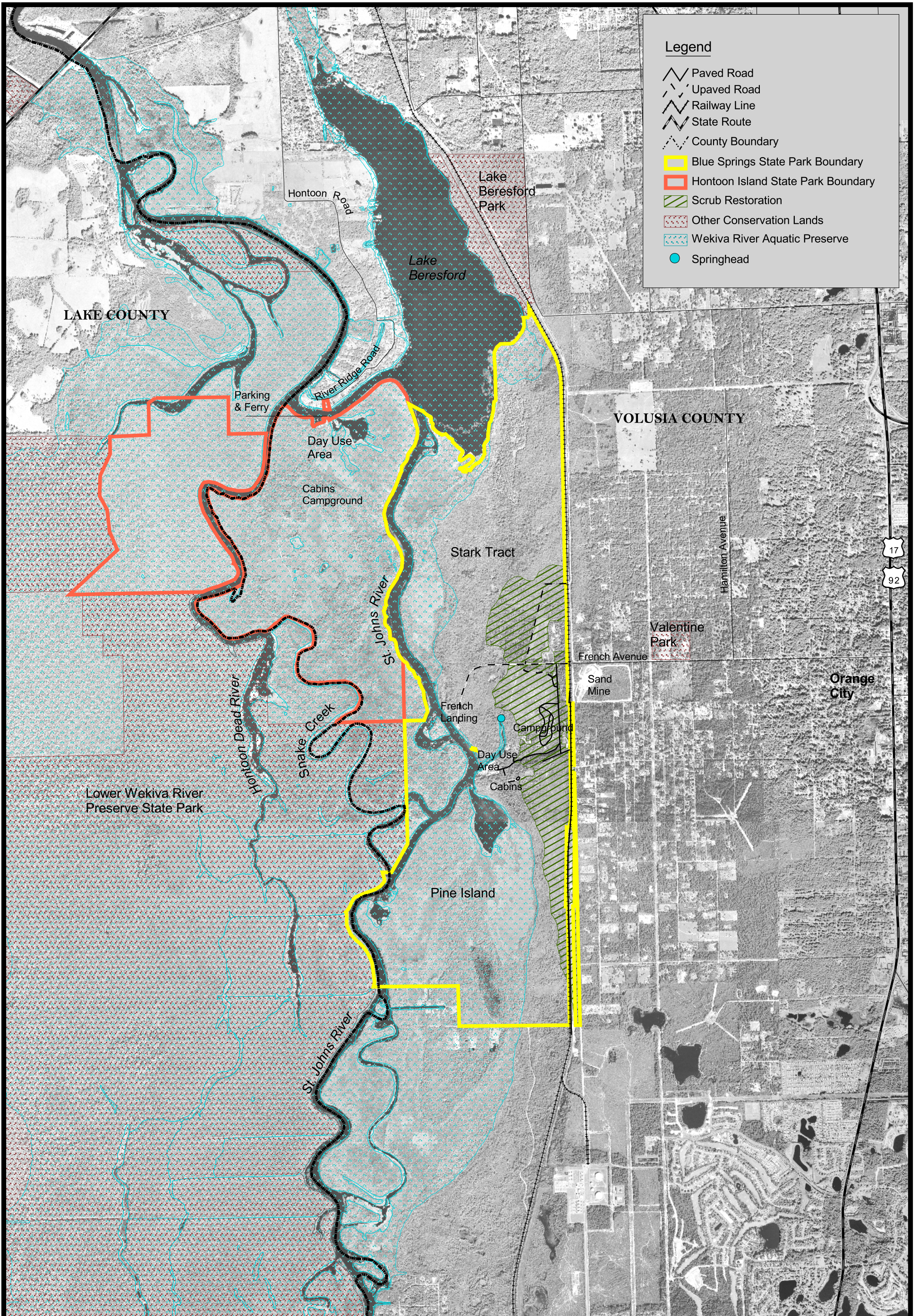


**HONTOON ISLAND
 STATE PARK**



Florida Department Of Environmental Protection
 Division Of Recreation And Parks
 Office Of Park Planning

VICINITY MAP



BLUE SPRING STATE PARK
 HONTOON ISLAND STATE PARK



REFERENCE MAP

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

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 parks natural and cultural resources, management needs, aesthetic values, visitation and visitor experiences. For Blue Spring State Park, it was determined that the removal of certain species within the sand pine scrub, mainly rusty lyonia, (*Lyonia ferruginea*) and mature sand pine, (*Pinus clausa*) could be accommodated in a manner that would be compatible and not interfere with the primary purpose of resource-based outdoor recreation and conservation. This compatible secondary management purpose is addressed in the Resource Management Component of the plan. Uses such as, water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of the park.

For Hontoon Island State 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.

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 restoration harvest of mature sand pine and rusty lyonia would be appropriate at this park as an additional source of revenue for land management since it is compatible with the park's primary purpose of resource-based outdoor recreation and conservation.

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

MANAGEMENT PROGRAM OVERVIEW

Management Authority and Responsibility

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

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

The Trustees have also granted management authority of certain sovereign submerged lands to the Division under Management Agreement MA 68-086 (as amended January 19, 1988). The

management area includes a 400-foot zone from the edge of mean high water where a park boundary borders sovereign submerged lands fronting beaches, bays, estuarine areas, rivers or streams. Where emergent wetland vegetation exists, the zone extends waterward 400 feet beyond the vegetation. The agreement is intended to provide additional protection to resources of the park and nearshore areas and to provide authority to manage activities that could adversely impact public recreational uses.

Many operating procedures are standard system wide and are set by policy. These procedures are outlined in the Division Operations Manual (OM) and cover 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 Blue Spring and Hontoon Island State Parks, a balance is sought between the goals of maintaining and enhancing natural conditions and providing various recreational opportunities. Natural resource management activities are aimed at management of natural systems. Development in the park is directed toward providing public access to and within the park, and to providing recreational facilities, in a reasonable balance, that are both convenient and safe. Program emphasis is on interpretation on the park'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 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. Protect, restore, and maintain natural communities
 - A. Develop and implement an erosion control plan for existing canoe launch and boat beaching areas.
 - B. Continue planting native plants along boardwalks to reduce erosion.
 - C. Conduct a feasibility study to determine if eelgrass can be reintroduced to the spring-run.
 - D. Implement a pictorial survey of the cave system using park staff and local divers.
 - E. Initiate hydrological studies to determine the interconnections between Blue Spring and other sinkholes located within park property.

- F.** Continue scrub restoration and maximize the number of acres in optimal condition for successful breeding by Florida scrub-jays.
 - G.** Develop a scrub-jay management plan and banding census for Blue Spring State Park.
 - H.** Monitor erosion along the banks of the spring head and implement measures to control the impacts.
 - I.** Monitor bank erosion due to the boating traffic along the Hontoon Dead River.
 - J.** Conduct surveys of Hontoon Island for hooded pitcherplants.
 - K.** Continue monitoring natural pine communities and replant, if needed, using the timber assessment supplied by the Division of Forestry as a guide.
- 2.** Design and implement restoration of highly altered communities or areas
 - A.** Determine which natural community existed within the relic orange grove area either scrub or sandhill and restore that area to a more natural community.
 - B.** Develop and implement a restoration plan for the relic orange grove and replant with the appropriate pine species.
 - C.** Reduce French Avenue runoff into wetlands.
 - D.** Enhance borrow pits located within Blue Spring State Park.
 - 3.** Protect, restore, and maintain native plant diversity, and natural relative abundance
 - A.** Continue to develop complete inventory of vascular plants.
 - B.** Continue to develop inventory of bryophytes, algae, lichens and fungi, concentrating on those of primary ecological or conservation significance.
 - C.** Restore and maintain listed species.
 - D.** Investigate the removal of the swordfern located along the Blue Spring run and replacing it with a native species.
 - 4.** Protect, restore, and maintain native animal diversity, and natural relative abundance
 - A.** Develop complete inventory of vertebrates.
 - B.** Continue research and surveys for the Blue Spring Aphaostracon and Blue Spring siltsnail.
 - C.** Continue to develop complete inventory of macroinvertebrates including insects, arachnids, crustaceans, mollusks, corals, annelids, etc.
 - D.** Monitor native animal nuisance problems.
 - E.** Support acquisitions, conservation easements or zoning that provide landscape continuity; primarily wildlife corridors for movement of large mammals.
 - F.** Continue identification and population monitoring of the Florida manatee in conjunction with other agencies per USFWS recovery plans.
 - G.** Continue identification and population monitoring of the Florida scrub-jay in conjunction with other agencies per USFWS recovery plans.
 - H.** Develop a manatee management plan in cooperation with relevant agencies.
 - I.** Conduct macroinvertebrate sampling in the Blue spring-run and in any small low flow tributaries.
 - 5.** Establish and maintain prescribed fire program
 - A.** Establish and maintain prescribed fire intervals for each burn zone.
 - B.** Establish and maintain sufficient firebreaks in appropriate locations.
 - C.** Coordinate with park planning in the location of facilities so they do not unduly impact the ability to burn adjacent or nearby areas.
 - D.** Continue to request additional staff and equipment, both volunteer and full-time employees from other parks for assistance in prescribed fire.
 - E.** Use prescribed burning to stop the encroachment of hammock areas into pine flatwoods areas.

- F. Actively support nearby parks' fire programs.
- G. Develop plans and seek funding for yearly outsourcing of fireline preparation.
- 6. Establish and maintain invasive exotic plant species removal program
 - A. Continue removal of wild taro (*Colocasia esculentum*) within the spring-run and along the banks of the St. Johns River, Snake Creek and the Hontoon Dead River.
 - B. Continue monitoring spring-run, St. Johns River, Snake Creek and Hontoon Dead River for all exotic plant species and coordinate with ACOE for herbicide spraying.
 - C. Coordinate with CSX railroad to identify and eradicate any areas of exotic plant encroachment adjacent to park property.
 - D. Seek funding and volunteers to help with the removal of bamboo stands located on the Starke property.
- 7. Establish and maintain destructive exotic animal species removal program
 - A. Continue to monitor feral hog activity both on the park and on adjacent property.
 - B. Continue to monitor feral domestic animals on the park and remove in accordance with the operations manual.
 - C. Continue to monitor all exotic fish within the spring-run and coordinate with all agencies involved with their removal. Species of major concern are armored catfish (*Pteryogoplichthys disjunctivus*), blue tilapia (*Tilapia auritis*), and grass carp (*Ctenopharengal nitella*).
- 8. Protect, restore, and maintain natural hydrological regimes
 - A. Address restoration and maintenance of the surface hydrology and hydroperiod.
 - B. Establish, restore and maintain minimum flows and levels of rivers, streams and springs.
 - C. Coordinate a maintenance schedule of Snake Creek with the Army Corp of Engineers (ACOE) and the St. Johns River Water Management District (SJRWMD).
- 9. Protect, restore, and maintain water quality conditions
 - A. Coordinate with Volusia County to continue water quality monitoring and receive copies of all data.
 - B. Continue to coordinate with St. Johns River Water Management District and USGS for regular water quality monitoring.
 - C. Continue to work with the DEP lab in their water quality and biological sampling and stream condition program
 - D. Research the possibility of a second major spring discharge located at the confluence of the spring-run and the St. Johns River.
 - E. Coordinate monitoring efforts with the on-going DEP Springs Initiative program.
- 10. Protect park boundaries to improve resource management and avoid encroachment
 - A. Establish and protect the park boundary, remove old fencing and replace.
 - B. Post perimeter of park with State Park boundary signs.
 - C. Continue to investigate optimum boundaries.
- 11. Protect natural resources from impacts caused by park visitors and outside influences
 - A. Avoid, minimize, or eliminate unacceptable resource impacts due to visitor activities
 - B. Review proposals affecting land use and development outside of park boundaries and support efforts that establish or maintain zoning, land use, water use policies, etc. that facilitate appropriate protection of park resources.
 - C. Establish a monitoring system to determine if the activities being conducted at the sand mine east of Blue Spring are negatively impacting the spring water at Blue Spring.
- 12. Protect, restore and maintain cultural resources

- A. Protect and preserve the cultural resources of Blue Spring and Hontoon Island State Parks.
- B. Inventory and assess all documented archaeological and historic sites including archaeological surveys.
- C. Develop and implement a written plan to protect and preserve the recorded archaeological sites from erosion, slumpage, animal burrowing, root damage and tree fall, and vandalism.
- D. Establish monitoring measures to monitor the recorded archaeological sites for erosion, vegetation intrusion, animal burrowing and human disturbance.
- E. Continue the ongoing UF archaeological field school reconnaissance survey of both parks, marking newly identified site locations with GPS technology.
- F. Seek grant funding for research projects to document the prehistory and history of the parks, the St. Johns River and the surrounding area.
- G. Improve public awareness and encourage protection and stewardship of the parks' cultural resources through education, interpretation and enforcement of agency rules and regulations.
- H. Improve Thursby House collections management and determine potential funding sources.
- I. Collections of objects in both parks will be brought under management in accordance with DHR guidelines and Division standards.

Recreational Goals

1. Continue to provide quality resource based outdoor recreational and interpretive programs and maintain facilities.
2. Seek funding to expand recreational facilities, as outlined in this management plan.
 - A. Organize and enhance day use facilities to better accommodate visitors.
 - 1) Construct an observation deck at Hontoon Island State Park.
 - 2) Seek funding to construct an educational/learning center at Blue Springs to provide additional space for displays and educational lectures.
 - 3) Improve playground conditions with an upgrade at Hontoon Island SP and an additional facility at Blue Springs SP.
 - 4) Work with Volusia County to improve conditions at French Landing.
 - 5) Improve Blue Spring entrance area configuration to accommodate seasonally high visitation.
 - B. Expand opportunities for overnight visitation.
 - 1) Seek funding for six additional cabins to be located at Blue Spring State Park.
 - 2) Seek funding for 6 additional primitive cabins for Hontoon Island State Park
 - 3) Explore primitive camping at Blue Spring State Park within the disturbed Starke Tract orange grove.
 - C. Coordinate with Volusia County to connect Blue Spring State Park hiking, biking and equestrian trails with county trails.
 - D. Construct a sign or kiosk to inform the public about Hontoon Island State Park and its relationship to Blue Spring State Park.
3. Seek funding to expand interpretive opportunities through the improvement of programs and the development of new use areas and facilities, as outlined in this management plan.
 - A. Interpret the cultural resources of the parks in their context to educate park visitors about the parks' and area's prehistory and history.
 - 1) Plan and implement interpretive programming at the Thursby House.

- 2) Seek outside professional assistance through grants and volunteers to coordinate interpretation of the Thursby House.
 - 3) Provide informative talks on the Thursby family and house on a limited basis until a volunteer base can be established to expand the available programs.
- B.** Interpret the natural resources of the parks to educate visitors and the community.
- 1) Continue to provide manatee related interpretive programs on and off site.
 - 2) Develop informative camper programs at both Blue Spring and Hontoon Island to provide visitors with an over view of the park history and the plant and animal life.
 - 3) Install kiosk with information on the implications of erosion and subsequent stabilization and restoration.

Park Administration/Operations

1. Improve support facilities at the parks.
 - A. Seek funding to repair and improve Starke Landing (French Avenue landing).
 - B. Develop plans and seek funding for the paving of the parking lot at Hontoon Island State Park.
 - C. Improve shop facilities at Blue Spring and Hontoon.
 - D. Replace two ranger residences.
2. Improve the overall efficiency of the parks' operations.
 - A. Provide additional training opportunities in the areas of maintenance, visitor services, resource management and administration for park personnel.
 - B. Seek additional outsource funding for maintenance/resource management for Blue Spring and Hontoon Island.
3. Improve and increase public awareness of park.
 - A. Provide news releases for park activities, programs, special events.
 - B. Conduct at least one special event per year pertaining to manatees.
 - C. Complete and update web page for both parks and keep current.

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. The DEP, Bureau of Beaches and Wetland Resources aids staff in the development of erosion control projects. The DEP Bureau of Invasive Plant Management provides funding for invasive exotic plant removal projects. The DEP, Division of Law Enforcement assists the enforcement of state laws, park rules and regulations. The United States Army Corp of Engineers (ACOE) sprays the St. Johns River and tributaries with herbicide to control exotic aquatic vegetation.

In addition, the following local, county and private groups assist in management of Blue Springs State Park and Hontoon Island State Park:

Volusia County Health Department (State of Florida)

- Advises the park regarding aquatic and terrestrial health issue concerns
- Performs water quality sampling in designated swimming area as a quality control to the park's monthly testing

Volusia County Environmental Management

Volusia County Land Acquisition

Volusia County Leisure Services

- Coordinates with Blue Spring on issues such as joint venture hiking trail construction, environmental education opportunities, and ECHO Ranger programs

Volusia County Laboratory

- Performs monthly water quality testing in the spring vent and along the spring run

Save the Manatee Club

- Assists with all aspects of Manatee related education given to Blue Spring visitors Attends manatee related meetings and reports important information to the park
- Assists with the manatee festival in January

Sea World—Orlando

- Usually the lead group when a manatee is released after being in captivity or is in need of being captured for various reasons
- Coordinates with the park the dates and times of the manatee releases or captures

Stetson University

- Performs plant and animal research in conjunction with the staff at Blue Spring
- Provides volunteer service in all aspects of park maintenance

Archbold Biological Station

- Assists Blue Spring staff with Scrub jay research

U.S. Fish and Wildlife Service, Sirenia group

- Coordinates with park staff in manatee identification
- Assists with manatee captures, releases and tagging with tracking devices

United States Geological Survey and Florida Geological Survey

- Performs spring research
- Maintains temperature probes and flow meter within the spring run

Public Participation

The Division provided opportunities for public input by conducting a public workshop and an advisory group meeting. The public workshop was held on April 5, 2005. The purpose of this meeting was to present this draft management plan to the public. The DEP Advisory Group meeting was held on April 6, 2005. The purpose of this meeting was to provide the Advisory Group members the opportunity to discuss this draft management plan.

Other Designations

Blue Spring and Hontoon Island State Parks are not within an Area of Critical State Concern as defined in section 380.05, Florida Statutes. Currently they are not under study for such designation. The parks are a component of the Florida Greenways and Trails System. All waters within the units 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 within the Wekiva River 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

Blue Spring and Hontoon Island State Parks are located within the Atlantic Coastal Lowlands physiographic zone, consisting of mainly level marine terraces. The topography is either leveled terraces or karst with the karst occurring only on the highest terraces.

Blue Spring and Hontoon Island can also be divided into two distinct physiographic subzones, the Deland Ridge and the St. Johns River Valley (Brooks 1982). The north, northeast and east sections of Blue Spring are either located within or adjacent to the higher elevations of the Deland Ridge. The DeLand Ridge area consists mainly of deep, well-drained sands that are extremely important to aquifer recharge. The highest elevation within Blue Spring is 80 feet above mean sea level. From these higher elevations along the DeLand Ridge, the land slopes gently westward towards the St. Johns River floodplain, where the elevation at the river is less than 5 feet above mean sea level. The entire area of Hontoon Island is contained within the St. Johns River Valley physiographic subzone, with elevations ranging from 15 feet above mean sea level to less than 5 feet above mean sea level.

The topographic condition of Blue Spring is generally unaltered. There are two borrow pits covering about 18 acres located adjacent to the railroad tracks just to the north and south of French Avenue. These pits have gone unused for a number of years, have thick vegetation of various types, and are utilized by wildlife, mainly white-tailed deer and gopher tortoise.

The topographic condition of Hontoon Island is also generally unaltered. There are five spoil piles from St. Johns dredging projects located on the eastern side of Hontoon Island. These five spoil piles are not as pronounced as in the past, and vegetation has overtaken them making them very difficult to locate.

Geology

The ground surface at Blue Spring and Hontoon Island is covered with sandy marine sediments of Pleistocene to recent age. The broad, nearly level marine terraces, relic shorelines and karst ridges, which characterize the landscape, are of Pleistocene age. The areas adjacent to the St. Johns River are of more recent in geologic origin.

The geologic material can be divided into an upper sequence of unconsolidated or poorly consolidated deposits and a lower sequence of carbonate rocks. The depth to rock on the eastern ridge of the DeLand Ridge is about 65 feet. The thickness of the clastic deposits varies from 50 to 100 feet under the DeLand Ridge because of differences in local relief. The material is mostly sand, especially at the surface, but it contains discontinuous and interfingering lenses and beds of clay and shell. The carbonate rocks of the lower sequence are limestone and dolomite of middle and upper Eocene age. These rocks are also known as the Floridan Aquifer.

The DeLand Ridge is a karst ridge that once formed a shoreline during interglacial periods when the sea level was much higher than it is today. Evidence of this inundation by seawater can be found within the spring-run at Blue Spring. The spring-run contains multitudes of seashells as well as prehistoric oyster beds that were laid down under high sea levels.

The ground surface at Hontoon Island is covered with sandy marine sediments of Pleistocene to recent age. The broad, nearly level marine terraces characterize the landscape of the Pleistocene age. All the areas adjacent to the St. Johns River are of a more recent geological origin.

Soils

There are 15 soil types occurring in Blue Spring State Park and eight soil types in Hontoon Island State Park (see Soil Maps). These soil surveys (Furman et al. 1975 and Baldwin et al. 1980) were 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 soil types found at both units.

Erosion along the spring-run at Blue Spring is minimized because only canoes are allowed to proceed in the refuge area. There are, however, two areas of concern within the confines of the spring-run; the slopes surrounding the headspring and a canoe storage area located closer to the confluence with the St. Johns River. Erosion at the springhead is due in part to natural runoff of rainwater and is compounded by visitors climbing up and down the steep banks in unauthorized locations. The location of the rental canoes is the other source of erosion and bank disturbance. The canoe storage area is at the mouth of the spring-run and gives the visitors renting the canoes easy access to both the spring-run and the St. Johns River. Canoe rental is very popular at Blue Spring and this area is negatively impacted throughout the year.

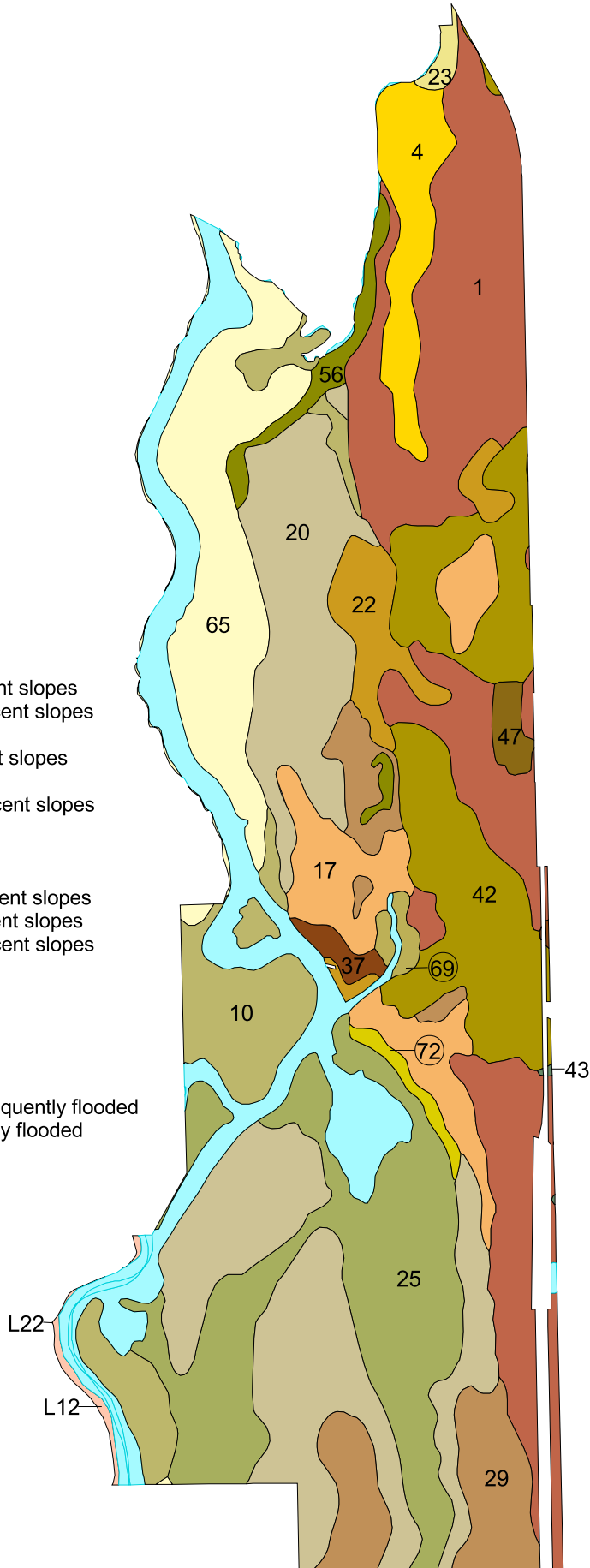
LEGEND

Volusia County

- 1-Apoka fine sand, 0 to 5 percent slopes
- 4-Astatula fine sand, 0 to 8 percent slopes
- 10-Bluff sandy clay loam
- 17-Daytona sand, 0 to 5 percent slopes
- 20-EauGallie fine sand
- 22-Electra fine sand, 0 to 5 percent slopes
- 23-Farmton fine sand
- 25-Gator muck
- 29-Immokalee sand
- 37-Orsino fine sand, 0 to 5 percent slopes
- 42-Paola fine sand, 0 to 8 percent slopes
- 43-Paola fine sand, 8 to 17 percent slopes
- 47-Pits
- 56-Sansula muck
- 65-Terra Ceia muck
- 69-Tuscawillia fine sand
- 72-vaikaria fine sand

Lake County

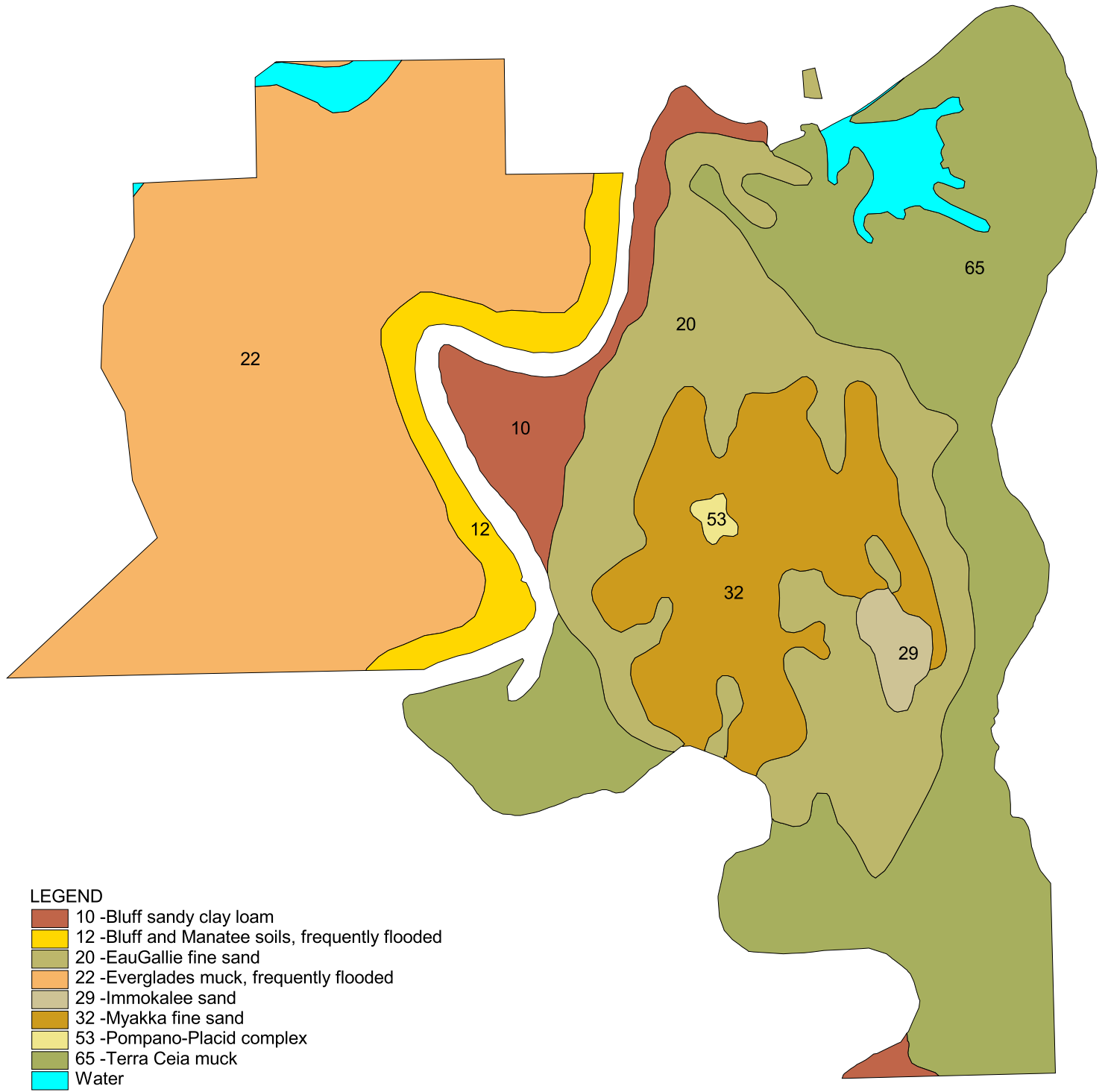
- L12-Bluff and Manatee soils, frequently flooded
- L22-Everglades muck, frequently flooded
- Water



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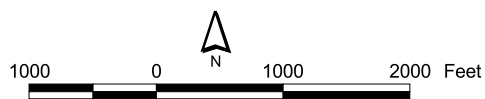
**BLUE SPRINGS
STATE PARK**

SOILS MAP



LEGEND

- 10 -Bluff sandy clay loam
- 12 -Bluff and Manatee soils, frequently flooded
- 20 -EauGallie fine sand
- 22 -Everglades muck, frequently flooded
- 29 -Immokalee sand
- 32 -Myakka fine sand
- 53 -Pompano-Placid complex
- 65 -Terra Ceia muck
- Water



**HONTOON ISLAND
STATE PARK**

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SOILS MAP

Located to the south of the park's boathouse and fishing pier there is an area that is being denuded of vegetation by the beaching of pleasure boats. This area continues to become larger and more impacted as the boat traffic increases.

There is a considerable amount of soil erosion into the St. Johns River at the French Avenue Landing located at the end of French Avenue. The majority of the erosion is caused by runoff of rainwater due to poor drainage off French Avenue.

Soil erosion is not a major concern at Hontoon Island. The ongoing erosion due to boat traffic along the St. Johns River and the Hontoon Dead River is minimal. The slow and idle speed zones in effect along those waterways are the main reasons for this minimal effect.

Minerals

There are no known minerals of commercial value located at Blue Spring or Hontoon Island State Parks.

Hydrology

Blue Spring and Hontoon Island are located in and adjacent to the St. Johns River basin. Hontoon Island is surrounded by waterways. The St. Johns River runs to the east, north and south, and Snake Creek and Hontoon Dead River run to the west. Blue Spring is bounded to the west by the St. Johns River.

Blue Spring has a circular spring pool in a conical depression with a notable boil in the center. The spring pool measures 135 ft. north to south and 105 ft. east to west. The spring has steep sandy banks that rise to approximately 15-20 ft. above water level. The spring run also has steep sandy banks, flows south, and west approximately 1,050 ft. to the St. Johns River through dense hardwood and palm forest (Scott 2004). The spring-run varies from 70 to 100 feet in width and is banded by steep wooded slopes except for the lower southeast bank where the terrain flattens considerably. Flow of the spring is retarded by river backwater during high stages of the St. Johns River, usually highest when rainfall has occurred south of the park. The water discharged from the spring is high in dissolved minerals with sodium and chloride in the highest concentrations.

The level of spring output is of great concern at Blue Spring as it relates to manatees and maintenance of natural systems. A growing number of manatees that inhabit the middle part of the St. Johns River and its tributaries rely on Blue Spring as a winter home for survival. Because the temperature of the St. Johns River can drop into the 400F- 500F range manatees must come into the warmer spring water to survive. Average discharge for years 1932-1974 measured by the United States Geological Survey (USGS) was 162 ft³/s and is classified as "historic flow." Ideally, spring flow should be maintained at least at that historic level in order to minimize cold river water intrusions and to maintain the spring-run as a manatee refuge. Any water withdrawals that would lower spring output will be treated as a threat to manatee survival.

The St. Johns River Water Management District (SJRWMD) is in the process of developing a minimum flow and level determination for Blue Spring. In 1998, the United States Geologic Survey (USGS) in conjunction with SJRWMD established a flow meter in the spring-run to monitor flow rates. In addition, park staffs monitor the upstream location of river water intrusion on a daily basis. The manatee management plan should include emergency provisions to maintain spring flow during critical cold weather events.

Starting in 2001 funding for water quality analysis and biological surveys was made available through the efforts of the DEP Springs Initiative. This monitoring occurs twice a year, and includes macroinvertebrate parameters (SCI), Physical-Chemical data, algae levels and bacteria parameters. The information gathered because of these efforts is vital to the management of the spring and spring-run. In addition to the DEP sampling, Volusia County performs water quality sampling on a monthly basis and makes that information available to all pertinent agencies. Beginning in January 2004, biogeochemical measurements of spring discharge were monitored weekly in a coordinated effort by park biologists and the Cambrian Foundation. Park staff assists DEP and Volusia County with data collection and maintain monitoring records at the park and district offices.

Management will comply with the best management practices to maintain or improve the existing water quality on site and will take measures to prevent soil erosion or other impacts to water resources. Nitrate levels in the water at the spring vent are considered to be in the low to moderate range and should be closely monitored.

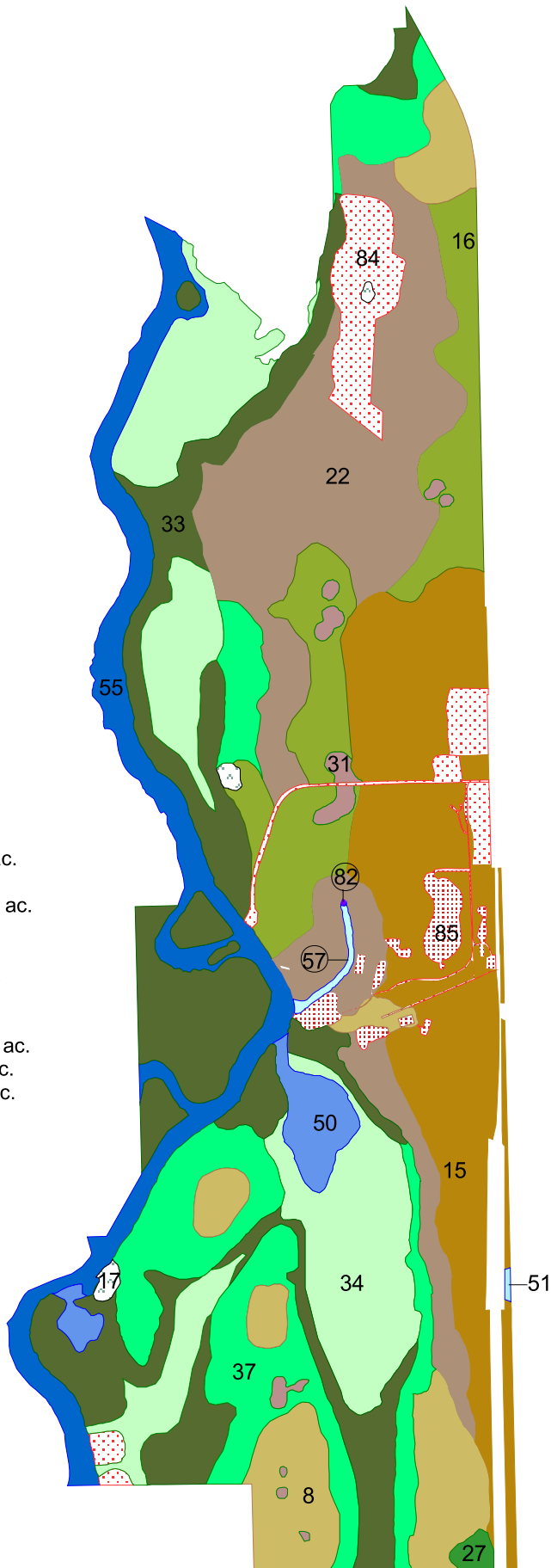
Natural Communities

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

Combined, Blue Spring and Hontoon Island contain 15 distinct natural communities (see Natural Communities Maps) 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 mesic flatwoods at Blue Spring have an overstory of predominantly slash pine (*Pinus elliottii*) in burn zone #1 and pond pine (*Pinus serotina*) in burn zone #2 with an understory consisting mostly of saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), with small areas of wiregrass (*Aristida beyrichiana*) as a ground cover. This natural community is in poor to fair condition with the flatwoods to the south of the park being in better condition than those in the north. The northern portion of this community has not had a regular burn regimen, and it is very overgrown. Oaks have invaded the community, and the community is rapidly succeeding to upland mixed forest. An aggressive fire management program needs to be established to restore the park's flatwoods. In one of the flatwoods areas, there is very old growth slash pine, possibly virgin growth, with a bald eagle (*Haliaeetus leucocephalus*) nest in one of the taller trees. This is a priority area due to the eagle nest and the older trees. Preventative measures will be used to protect these trees from fire damage.

Pine Island is an area of mesic flatwoods found in the southern portion of Blue Spring. This area now occurs in two disjunct pieces, separated by upland mixed forest. Historically, mesic flatwoods probably occupied much of the Pine Island acreage that is now in upland mixed forest. Future restoration needs to target restoring these two pieces to one continuous area of pine



LEGEND

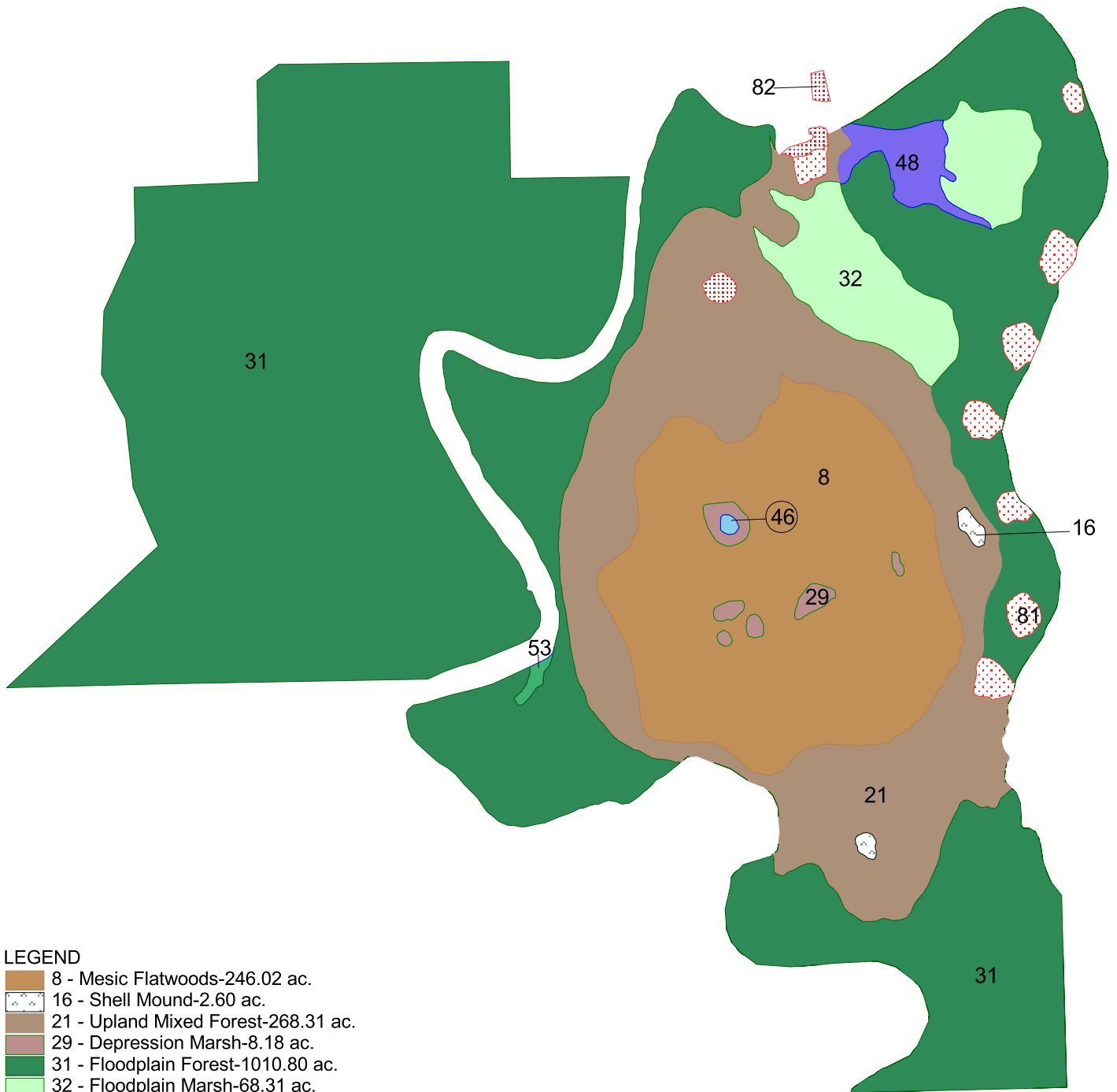
- 8 - Mesic Flatwoods-187.29 ac.
- 15 - Scrub-384.65 ac.
- 16 - Scrubby Flatwoods-204.32 ac.
- 17 - Shell Mound-7.41 ac.
- 22 - Upland Mixed Forest-414.51 ac.
- 27 - Baygall-6.79 ac.
- 31 - Depression Marsh-19.72 ac.
- 33 - Floodplain Forest-425.06 ac.
- 34 - Floodplain marsh-340.11 ac.
- 37 - Hydric Hammock-286.12 ac.
- 50 - River Floodplain Lake-43.40 ac.
- 51 - Sandhill Upland Lake-0.98 ac.
- 55 - Blackwater Stream-188.40 ac.
- 57 - Spring-Run Stream-4.77 ac.
- 82 - Aquatic Cave-0.14 ac.
- 84 - Ruderal-96.70 ac.
- 85 - Developed-33.53 ac.



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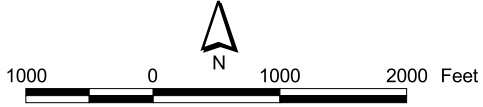
**BLUE SPRINGS
 STATE PARK**

**NATURAL COMMUNITIES
 MAP**



LEGEND

- 8 - Mesic Flatwoods-246.02 ac.
- 16 - Shell Mound-2.60 ac.
- 21 - Upland Mixed Forest-268.31 ac.
- 29 - Depression Marsh-8.18 ac.
- 31 - Floodplain Forest-1010.80 ac.
- 32 - Floodplain Marsh-68.31 ac.
- 46 - Flatwood / Prairie Lake-0.71 ac.
- 48 - River Floodplain Lake-16.08 ac.
- 53 - Blackwater Stream-1.66 ac.
- 81 - Ruderal-20.81 ac.
- 82 - Developed-4.68 ac.



**HONTOON ISLAND
STATE PARK**

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**NATURAL COMMUNITIES
MAP**

flatwoods. Other flatwoods areas can be found in the northeast corner in an area known as the Stark Tract. The pine flatwood area on the Stark Tract was dominated by loblolly pines averaging approximately 100-110 feet tall and in the Fall of 2001 was invaded by southern pine beetles. Because of the location of the infestation, logging could not take place and pine beetle monitoring stations have been established. This area is scheduled to be burned as soon as fire lines are established.

All of the mesic flatwoods located on Hontoon Island occur as a contiguous tract on the higher elevations near the center of the Island. These flatwoods are surrounded by mesic hammock. Pond pines dominate the canopy with scattered stands of both slash and longleaf pine (*Pinus palustris*). The understory is comprised of very dense gallberry, fetterbush (*Lyonia lucida*), rusty lyonia (*Lyonia ferruginea*), tarflower (*Befaria racemosa*) and saw palmetto. Wiregrass is the groundcover in most of the open flatwoods areas. The flatwoods on Hontoon Island are in fair to good condition because of the prescribed burning program. Hontoon's flatwoods have been burned regularly for many decades as the area had, in the past, been used for cattle grazing. Due to the length of the interfire interval, the surrounding hardwoods have encroached into the edges of the mesic flatwoods.

A consistent burn program is needed to restore the flatwoods at both units. Burns should target, but not be limited to, the growing season to maximize the impacts on encroaching hardwoods.

Scrub. Scrub restoration efforts began at Blue Spring in 1989 due to the highly overgrown and senescent nature of the community. Because of the surrounding urban area, fire was not initially used for restoration. Instead, scrub areas were harvested to remove the large standing sand pines (*Pinus clausa*) and then burned. The pilot project in 1989 has been very successful, and similar restoration is being pursued for all of the scrub areas. There are over 400 acres of scrub located on Blue Spring and as of January 2005, over 300 acres have been restored to an earlier stage of maturity.

The scrub at Blue Spring can be separated into four areas, three of which are in good to excellent condition. One area, a narrow strip of scrub covering 60 acres, bounded by the railroad on the east and a service road on the west, contains a scattered stand of mature sand pines with a dense understory of xerophytic oaks, lyonia, olive (*Osmanthus americana*), scrub holly (*Ilex opaca* var. *arenicola*), silkbay (*Persea borbonia* var. *humilis*) and saw palmetto. This area has been logged but not burned. Another area, of 125 acres, located north of the spring boil contains the ranger station, administration office, four ranger residences, shop, 51 campsites and concessionaire's residence. This area has been both logged and burned. A third area of 26 acres, Blue Spring's original pilot project, is located to the north of French Avenue. Both logging and burning have been carried out in this area. All three areas, with continued work, will remain as excellent habitat for the Florida scrub-jays (*Aphelocoma coerulescens*) utilizing them. These areas will be scheduled for burning following the recommended interfire interval of between 7-15 years depending on the overall growth of the vegetation.

The fourth area of 85 acres that was originally part of the pilot project area has had the mature sand pines remove as of January 2005 and is scheduled to be burned in spring 2005 to promote vegetation growth. The rusty lyonia harvest in the aforementioned area was completed in March 2004.

Shell mound. Blue Spring has many known shell mounds scattered along the St. Johns River

and the spring-run ranging in condition from good to poor. Past disturbance from artifact seekers has occurred in at least one of the mounds and a formal survey of all mounds is needed.

There are also numerous known shell mounds on Hontoon Island State Park with all in fair condition. An observation tower was developed on top of a portion of one mound and the majority of that mound was used as fill. The largest mound on Hontoon has a hiking/nature trail leading to and transversing it. The mound is in fair condition but shows signs of past disturbance along with some minimal damage due to the hiking trail. Management activities are discussed in the cultural resources section of this plan.

Upland mixed forest. Upland mixed forest at Blue Spring is in good condition. Since it is a climax community, it tends to be a stable community. The upland mixed forest at Blue Spring has expanded due to fire suppression and a non-aggressive burn program. The largest area of concern is located on the Starke Tract north of French Avenue and west of the scrub restoration area (burn zone 8). This area of mixed upland forest is invading a flatwoods area that is a restoration priority. The Pine Island area provides another good example of where upland mixed forest has replaced mesic flatwoods.

There has been much discussion regarding the areas mapped out as upland mixed forest on Hontoon Island State Park. The upland mixed forest, for the most part, surrounds the mesic flatwoods located in the center of the Island. In the aforementioned case, the mixed upland forest is the transitional zone between the mesic flatwood and the eventual floodplain forest along the Hontoon Dead River to the west, Snake Creek to the west and south and the St. Johns River to the east. With the fire regime currently being enforced, encroachment into the flatwoods has been slowed and in some cases reversed. The areas having the most discussion are the areas currently being used for the campground, residences and shop. These areas were probably a continuation of the mesic flatwoods and more than likely the ecotone between the mesic flatwoods and the floodplain swamp to the northeast and the floodplain forest to the west. Due to the human use of these areas, fire was excluded and the area was left to succession.

Baygall. There is one area of baygall at Blue Spring. This community is considered to be in fair condition as it is really a transitional community between mesic flatwoods and baygall. There are still many pines in the overstory although the area is dominated by bay trees. This community occurs on the southeastern corner of the unit and is bounded by a railroad right of way to the east and an unpaved county road to the south. The railroad right of way appears to have little effect on the baygall community, but the unpaved county road probably interrupts a historic drainage pattern. It is suspected that this area was once mesic flatwoods and through fire exclusion, bays have become established in the area.

Under natural fire conditions, fire would have encroached into the baygall from the surrounding flatwoods community. Weather and fuel conditions dictated how far fire penetrated during any single fire event. In the future, when the adjoining pine flatwoods are burned, fire will be allowed to penetrate into the baygall community.

Depression marsh. There are two areas at Blue Spring classified as depression marsh. One of these occurs in mesic flatwoods and the other in scrub. The depression marshes are in good condition but must be burned frequently to prevent hardwood succession. The depression marsh within the flatwoods area is in need of a burn to prevent hardwood shrubs from becoming established. The marsh located within the scrub at Blue Spring is also in need of fire to prevent

the spread of Carolina willow (*Salix caroliniana*). Because of possible gopher frogs utilizing these marsh areas, animal surveys need to be conducted to determine future restoration efforts.

Hontoon Island has six depressional marshes located mainly within the mesic flatwoods in the center of the island. These areas are in good condition with the main concern being woody species and palmetto buildup along the fringe of the wetland. These areas would benefit with the use of mechanical treatment knocking down the rim vegetation and then sending prescribed fire through the treated area. In addition, with the correct wind direction, a head fire into the wetland might slow down and eventually eradicate the problem of woody species surrounding the wetland.

Floodplain forest. Floodplain forest at Blue Spring occurs along the St. Johns River. At Hontoon Island, floodplain forest is found along the St. Johns and Hontoon Dead Rivers. The dominant trees in these areas are typical and consist of mostly water hickory (*Carya aquatica*), Florida elm (*Ulmus americana*), red maple (*Acer rubrum*), sweetbay (*Magnolia virginiana*), and bald cypress (*Taxodium distichum*). The community is in very good condition; however, the presence of several spoil piles from dredge projects on the St. Johns River has altered the community in both parks.

Floodplain marsh. There are two areas of floodplain marsh at Blue Spring, within two communities and both are in good condition. They are dominated almost entirely by sand cordgrass (*Spartina bakeri*). Woody plants, especially coastal plain willow, buttonbush (*Cephalanthus occidentalis*) and wax myrtle (*Myrica cerifera*), are encroaching along the edge of the floodplain marsh community.

Hontoon Island also has two areas of floodplain marsh containing similar vegetation. All of the marshes at both units require fire to prevent encroachment by woody plants. While both parks have successfully burned the marshes in the past, future burning in conjunction with winter freezes should occur to control the invading willows.

Hydric hammock. Hydric hammock at Blue Spring occurs along the floodplain swamp and marsh communities at the unit and is in good condition. These areas do not have any management needs at present.

There is some debate over whether the upland mixed area that surrounds the mesic flatwoods at Hontoon Island has a hydric hammock community before transitioning into upland mixed.

Flatwood/prairie lake. There is one flatwood lake covering less than an acre at Hontoon Island. The lake has an open water area in the center with floating-leaved plants near the lake's edges. The sides of the lake are vegetated with wax myrtle and saw palmetto. This flatwood lake may have been an old borrow pit that was filled with water and remains hydrated due to drainage from the surrounding flatwoods. It may provide an important breeding area for flatwoods amphibians. Vegetation and animal monitoring should be conducted; otherwise, no other management activities are planned for the lake.

River floodplain lake. The floodplain lake at Blue Spring is in good condition. This area is utilized by the Florida manatee (*Trichechus manatus latirostris*) during times of high water. Aquatic vegetation monitoring should be initiated to determine manatee feeding habits in this area. There is a large open water area where the depth is less than 3 feet normally and contains

very little vegetation. The perimeter vegetation consists mainly of cattail (*Typha* sp.), water hyacinth (*Eichornia crassipes*) and water-lettuce (*Pistia stratiotes*).

At Hontoon, the floodplain lake, commonly called the lagoon, is located near the entrance and boat docks. The appearance and vegetation are similar at both locations with the Hontoon floodplain lake being 5 to 10 feet in depth. Wild taro (*Colocasia esculenta*) is slowly encroaching into both areas and a combination of mechanical and chemical treatments have been initiated in an effort to slow or stop the movement.

Sandhill upland lake. There is one sandhill upland lake at Blue Spring located on the eastern park boundary, isolated from the unit by a railroad right-of-way. While no management plan or activity has been adopted for this area, aquatic plant and animal surveys are planned for the near future.

Blackwater stream. Hontoon Island is surrounded by blackwater streams, including the Hontoon Dead River, St. Johns River and Snake Creek. The overall condition seems to be good and the waters are a favorite feeding ground for the Florida manatee with water hyacinth being the food of choice. Although considered an exotic species, water hyacinth is carefully monitored due to its significance as a food source for manatees. Spraying does not occur from October 15 to April 15 in order to leave this food source. All treatments of water hyacinth are handled by the U. S. Army Corps of Engineers (ACOE). Using a combination of herbicide treatment by the ACOE and mechanical treatment supplied by the Bureau of Invasive Plant Management, Snake Creek has been opened to water traffic and is currently being utilized by canoeists and kayaks. Motor boats frequent Snake Creek with the only restriction being at the intersection of the St. Johns River where the depth of the water is low during times of low rainfall. Snake Creek is also designated as a slow speed zone because of manatee use in the area and for protection for the recreational canoe and kayak users.

Spring-run stream. The 1st magnitude spring and associated spring-run stream at Blue Spring runs approximately 0.4 miles before joining the St. Johns River. This community is in fair to good condition. Tilapia (*Oreochromis aureus*), an exotic fish, is very common in the spring-run stream. They make deep spawning beds in the sand bottom that seem to be undermining the banks in some areas and affecting the reproduction of native fish species. Although the tilapia are present in the spring-run, their numbers seem to have lessened, possibly due to their commercial value to the local fishermen that fish in the St. Johns river. Numerous other exotic fish are making their way into the spring-run including the grasscarp (*Ctenopharyngodon idella*), and pacu (*Colossoma* sp.) and most importantly the armored catfish (*Pterygoplichthys disjunctivus*). The armored catfish appear to be increasing in numbers and their burrowing activities could be detrimental to the shoreline of the spring-run. The spring-run is relatively devoid of vegetation due to manatees eating the available vegetation during the winter months. The edge of the spring boil has some erosion problems due to people climbing up and down the steep banks. The erosion has been lessened through the addition of a boardwalk and plans are being developed to stabilize the banks located at the springhead.

With the help of several agencies performing water quality sampling at the headspring and along the spring-run at Blue Spring, a close watch on the chemical make up is accomplished. DEP, Volusia County, US Geological Survey and the Florida Geological Survey are all involved with water testing to determine if trends can be witnessed. Although numerous parameters are tested, nutrients, mainly nitrogen, and phosphorus, are among the most important due to the

proliferation of vegetation when they are present in great numbers. The level of Nitrate (NO₃ + NO₂ as N) at Blue Spring has increased from .05 mg/l in 1972 to the present .64 mg/l level recorded in 2001. Increasing nitrate concentrations may adversely affect the aquatic ecosystem in the spring and spring run and therefore continued research and monitoring is needed.

Aquatic cave. The aquatic cave opening at Blue Spring covers less than one acre. The cave acts as a discharge for the Floridan aquifer. The cave is a vertical shaft that angles into a room at a depth of 80 to 90 feet. At 120 to 125 feet, the cave constricts. Because of size limitations as well as high water pressure, divers cannot venture past this constriction. The total depth or extent of the cave is unknown. The walls and edges of the cave are covered with algae. The bend in the shaft makes the deeper portions devoid of light. The bottom is covered with gravel and dead tree limbs. The cave is in fair condition, although some divers have defaced the cave with graffiti. Photo documentation is being done at various times of the year. This documentation aids in the detection of defacement and vandalism in the cave. With the help of the Cambrian Foundation a detailed map of the cave is available. This map is distributed to aid those divers who have either cave or cavern certifications. Because of the importance of this 1st magnitude spring, research into the cave system and its' underground connections should be investigated. With detailed information of the cave system comes a better understanding of spring shed protection.

Ruderal and developed. There are two types of ruderal areas at Blue Spring and Hontoon Island. The first is comprised of eight dredge spoil piles. The dredge spoil piles were deposited at both units (seven at Hontoon and one at Blue Spring) by the U. S. Army Corps of Engineers when the St. Johns River channel was dredged. Attempts at removal of the spoil piles, which are now revegetated, could seriously impact the surrounding communities.

The two borrow pits at Blue Spring are of moderate size and depth. Sand and clay have been removed from the pits. Shrubs have invaded the edge of the pits. In the past, these pits have been used as dumps, and there is assorted trash scattered throughout. These borrow pit areas should be subjected to a Phase 1 environmental appraisal.

There are 34 acres of developed areas at Blue Spring State Park. The area around the spring-run and boil receives a great deal of public use, and as such is subject to erosion. This has been reduced by the addition of a boardwalk. High use in both picnic areas has caused the grass under the oak trees to die. Erosion is a problem in the picnic area near the spring-run since it sits on a slope. Rainwater runoff causes soil to wash out of this area. Erosion continues to persist at both the canoe launch, and the area where boats beach south of the boathouse. Both areas need to be addressed. Consideration should be given to moving the canoe launch area to the area that is presently being impacted by beaching boats. The area will also require some stabilization.

The developed areas of Hontoon Island consist of the picnic and day use area located in the northern section of the park, the campground, two employee residences and a shop. The main administration office at Hontoon Island includes restroom facilities, visitor museum and a small store operated by the Friends of Hontoon Island. This area, along with a playground and day use facilities. The campground is comprised of six rustic sleeper cabins, ten tent sites and a restroom facility.

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.

Florida Manatee. The St. Johns River basin is home to a population of Florida manatees (*Trichechus manatus latirostris*) and an ever-increasing number of them are using the spring-run at Blue Spring State Park as their winter home, because the temperature of the St. Johns River becomes too cold for manatees to reside. There they need the warmer water of the spring to survive in the winter months. Spring flow must be maintained to protect this important manatee refuge (see discussion in Hydrology section). The spring-run was recognized as an important habitat by the Manatee Sanctuary Act of 1978, which gave legal protection to manatees at Blue Spring and other refuges. Blue Spring is responsible for important data collection and interpretive efforts. Data collection includes counting and identifying the number of manatees in the spring-run from the time the manatees arrive in winter until their departure in the spring. During the winter season, interpretive programs are given daily to the visiting public and to school parties and information is disseminated to those who request it. There are idle and slow boating speed zones in place along the St. Johns River directly adjacent to the park boundaries for both Blue Spring and Hontoon Island. Starting October 15th and proceeding to April 15th there is a seasonal slow speed zone in effect in this same area. This seasonally slow speed zone requires that boat speeds be reduced to slow speed instead of 25 mph during those winter and manatee season months. These slower speed zones appear to provide some protection to the Florida manatee and should be maintained.

Along with the current and seasonal speed zone restrictions that are in place, there is also an agreement with the Army Corp of Engineers to limit the application of herbicide in known Florida manatee locations adjacent to Blue Spring State Park. This agreement is commonly referred to as the “moratorium for herbicide application,” and it restricts the ACOE from spraying the aquatic vegetation from October 1st through April 1st. At this time it is unsure if this is just a verbal agreement or if an actual written agreement exists. If a written agreement does not exist then efforts should be made to have one in place so all parties involved have a clear understanding of the restrictions.

The St. Johns River Water Management District has the duty of assigning a minimum flow and level (MFL) for Blue Spring. Because of the increasing number of manatee using the spring-run as a warm water refuge in the winter months, this MFL is a concern. If the assigned level is lower, then what is currently coming from the spring then the water from the St. Johns River could proceed into the spring-run and decrease area used by the manatee thus decreasing the actual refuge area.

The population of Blue Spring manatees has increased each year by approximately 7% with the season totals from 2004-2005 being the highest ever recorded. There were 197 individual manatees identified using Blue Spring and a one day total of 131. The near 730F water of the spring is essential for the survival of the manatees that come to Blue Spring in the winter. All efforts should be made to keep the spring flow at current or historic levels to safeguard the manatee.

Blue Spring Aphaostracon. The Blue Spring Aphaostracon (*Aphaostracon asthenes*) and the Blue Spring siltsnail (*Cincinnatia parva*) are the only known species unique to Blue Spring.

These species are confined to Blue Spring, their type locally. The snails are unique among Florida operculate snails because of their size and very fragile shells (Thompson 1984). These snails have only been found in the upper part of the spring run where plants and bottom debris is very sparse (Franz 1982). Any disturbance on the upper area of the spring-run could have a severe impact on the survival of these species. A status survey should be routinely performed and transects established to monitor these fragile species. All management decisions that could negatively impact these species should be preceded by a status survey to determine population levels.

Florida scrub-jay. Blue Spring has an apparently stable population of Florida scrub-jays (*Aphelocoma coerulescens*). To accurately determine the condition of the population, a complete census banding program must be set in place at Blue Spring. Also, a Scrub-Jay Management Plan must be developed to address various topics associated with maintaining the existing scrub so that scrub-jays utilize these areas. Due to the loss of habitat throughout Florida, protection and restoration of scrub is important for the survival of the species. Population studies, along with observation of individual and family interactions, should continue to be monitored on a regular basis. Neighboring scrub-jay populations should also be included in the monitoring efforts along with off-site banding, with land owner permission, to provide dispersal information. Information gathered over the years should be routinely shared with adjacent land owners and all agencies involved with the recovery of the Florida scrub-jay. The scrub habitat within Blue Spring must be managed with a consistent fire regime to maintain premium quality scrub-jay habitat. The Blue Spring Florida scrub-jay population is currently estimated to be 5-7 families and a total estimated bird count of 25-35.

Okeechobee gourd. The Okeechobee gourd (*Curcubita okeechobeensis*) has been found at numerous locations on Blue Spring and Hontoon Island property along the shoreline of the St. Johns River (Minno and Minno 1998). These known locations are inspected on a regular basis by park staff with the information being relayed to interested researchers. Information regarding these locations should also be provided to the ACOE to eliminate the possibility of damage by herbicide spraying.

Hooded pitcherplant. The hooded pitcherplant (*Sarracenia minor*) locations on Hontoon Island were apparently not recorded by earlier observers, and are presently not known. Dr. Ed Hallman (botanist, Daytona Beach Community College) indicated that he had observed the species in the park in the past, although he could not recall the location (Hall 2000, pers. comm.). No pitcherplants could be found during the field inspection after several hours of searching probable habitats. The species is apparently at least threatened with extirpation from the park, and might already be extirpated (Johnson 2001).

Florida mouse. The Florida mouse (*Peromyscus floridanus*) has been found in a single location within the scrub at Blue Spring State Park (Snelling 2003). This occurrence was the result of a survey by graduate students from the University of Central Florida performing a small mammal survey. A more detailed survey needs to be conducted to better understand the population densities and locations.

Bald eagle. The bald eagle (*Haliaeetus leucocephalus*) is routinely seen by employees and visitors of Blue Spring and Hontoon Islands state parks. There is one known nesting location located on Blue Spring property, in a remote area of the park, that is currently active. The area surrounding this known nesting site has been monitored regularly and care has been taken to

limit accessibility to the area. During December 2004, John White with the Florida Fish and Wildlife Conservation Commission, accompanied park staff and visually inspected nest number 59. Although the nest did survive the hurricanes of 2004, the nest was deemed inactive but monitoring should continue.

Florida black bear. Florida black bears (*Ursus americanus floridanus*) are known to frequent both Blue Spring and Hontoon Island state parks. These parks are located within a wildlife corridor that extends from the Ocala National Forest to the Wekiva/Rock Springs area. Campers are educated with pamphlets and handouts along with verbal instructions when they are checked in on how to deal with wildlife, mainly bears. If a black bear is deemed a problem, then the Florida Fish and Wildlife Conservation Commission (FFWCC) is contacted and a strategy is determined. All management actions will follow recovery plans for listed species.

Special Natural Features

In 1980, Blue Spring and the spring-run were recognized as a special natural feature by its registration in the Florida Natural Features Program. The spring-run is 0.4 miles long and is clear allowing observation of its plant and animal life. The banks of the spring-run range from 10 to 15 feet above mean sea level and largely are heavily forested in upland mixed forest.

Cultural Resources

Evaluating the condition of cultural resources is accomplished using a three part evaluative scale, expressed as good, fair, or 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.

According to the Florida Master Site File (FMSF), the present boundaries of Blue Spring State Park encompass fifteen recorded cultural resources, plus two known but unrecorded cultural resources. The present boundaries of Hontoon Island State Park encompass eleven recorded sites, ten in their entirety and portions of an eleventh (8VO35). These eleven sites include eight on the island, two on the mainland in the park's boat landing and parking area, and one submerged site in the water between the island and mainland.

Archaeological investigations to date have identified a number of extensive, potentially related sites at both parks, and revealed the likelihood that both parks contain many more sites than are presently documented. The area's once highly visible shell middens and mounds attracted excavators Jeffries Wymann (1873) and C.B. Moore (1892-1894) in the late 19th century, who documented, excavated, and collected artifacts from many of these sites, recovering valuable information but heavily disturbing the sites in the process. In the second half of the 20th century (1955, 1978 and 1989), activity associated with dredging projects in the St. Johns River exposed additional archaeological resources at Hontoon Island, revealing the existence of intact archaeological deposits both in the river and below grade at sites heretofore believed destroyed. In 1991, State archaeologists with the CARL program revisited four previously recorded sites in Blue Spring State Park, and identified and recorded two new sites on the newly acquired Starke

Tract. In 2000 – 2002, University of Florida archaeologist Dr. Ken Sassaman and field school students tested the Blue Spring Midden B (8VO43) beneath the Thursby House and downslope in the proposed location of a wastewater treatment facility. Their work at Blue Spring State Park demonstrated that intact midden deposits with a substantial pre-ceramic occupation period underlay both locations at greater depths below ground level than expected. In 2002, Pan-American Consultants, Inc. conducted an archaeological survey of 20 acres in Blue Spring State Park slated for cabin construction, locating and recording four more cultural sites.

The greatest contributor to our understanding of the cultural history and archaeological resources of Hontoon Island State Park, however, has been the long-term and on-going academic investigations conducted by archaeologists and field school students from the University of Florida. In the early 1980s, Dr. Barbara Purdy demonstrated that the Hontoon Island Shell Midden (8VO202) extended into the lagoon, containing intact deposits and well-preserved organic material. Twenty years later through additional testing, Dr. Ken Sassaman has demonstrated that this site contains extensive, intact subsurface midden deposits that survived shell mining in the 1930s. Additionally, a reconnaissance survey of the island has revealed the high potential for additional site discovery along the margins of the island. While the park encompasses eleven recorded sites, the recent University of Florida field school investigations suggest that the entire island has the potential to be considered an archaeological district (Sassaman n.d.).

Blue Spring State Park also possesses a collection of museum objects associated with the Thursby House. These objects were acquired through donation by private individuals to the Florida Park Service, and through purchase of antiques by the Florida Park Service to furnish the former historic house museum.

Prehistoric Cultural Resources

The majority of recorded cultural resources in these two parks are pre-contact period aboriginal sites. At Hontoon Island State Park, all eleven recorded cultural resources are prehistoric sites, including shell middens, shell and sand mounds, a lithic scatter, and a submerged site. At Blue Spring State Park, eleven of the fifteen recorded cultural resources, plus one of the two unrecorded resources, are prehistoric sites similar to those at Hontoon Island. Two of these prehistoric shell middens (8VO43 and 8VO7229) also contain historic components associated with the Blue Spring Railroad (8VO5272) and Thursby House (8VO5162). These prehistoric cultural resources represent approximately 6000 years of continuous use by people who deliberately constructed shell structures, and contain significant information about their diet, mortuary traditions, crafts, natural resource use, cultivation, trade, and settlement patterns, among other things.

The condition of almost half the prehistoric cultural resources at each park is unknown (7 of 12 at Blue Spring State Park, 5 of 11 at Hontoon Island State Park). An unknown condition rating indicates that there is no recent condition assessment documented for that site. The reasons for this include that a site was not visited during the 1991 CARL survey or 1993/2003 Cultural Resource Management Evaluations or that it can not be relocated (8VO40 and 8VO216). For some sites with an unknown condition rating, Dr. Ken Sassaman may have pertinent site condition data that has not been incorporated yet into park management records.

The remaining prehistoric cultural resources are in fair (1 at Blue Spring, 3 at Hontoon Island) or poor (4 at Blue Spring, 3 at Hontoon Island) condition. Most of these sites have been adversely

impacted by destructive 19th century excavations; 20th century development, including residential and commercial construction, citrus production, shell mining, river dredging, and park improvements and recreational use; and vandalism in the recent and distant past. All of these sites are also subject to the deteriorating effects of, and impacted to varying degrees by, natural elements such as water, weather, vegetation and animals. Together, these threats gradually or quite suddenly erode or destroy the protective overburden or the shell midden and earthen mound matrix itself, leaving the site even more vulnerable to further deterioration. Despite these disturbances, archaeological testing has uncovered the presence of subsurface deposits still in good condition. Please see the cultural resource inventory below for more details about each site.

Historic Cultural Resources

Blue Spring State Park contains four recorded and one unrecorded historical cultural resources, while Hontoon Island contains none. These historical resources may contain information, of an undetermined significance and amount, about indigo dye production, the citrus industry, river transportation, the Blue Spring Railroad, small-scale agriculture, and African-American farming families. The Thursby House (8VO5162), the park's most visible and accessible historical cultural resource, has been relatively well documented in terms of both architectural evaluation and historical research.

The condition of three of the five historic cultural resources at Blue Spring State Park is presently unknown, as no recent condition assessment is on record. One of the historic cultural resources (8VO5272) is in poor condition due to vegetative growth, erosion, and the impact of park improvements and recreational use of the surrounding area. The Thursby House is presently in fair condition. The problems that have plagued previous preservation treatment projects, and the ways these problems have adversely impacted the historic fabric and characteristics of the structure, are well documented and on file. See the Cultural Resource Inventory below for additional information on each site.

Collections. Blue Spring State Park contains a collection of purchased and donated objects that were acquired to furnish the Thursby House during its use as a historic house museum from 1982 to 1989. From 1989 to 2004, while the Thursby House was closed to the public, the objects were stored in the structure. The objects were in poor condition during this period. Because the structure is now being used to house interpretive displays, the majority of the items are no longer needed. Many of the objects have been moved into temporary storage, and are awaiting final disposition.

Blue Spring State Park Cultural Resource Inventory

Midden A, Lake Beresford (8VO37): Large snail shell midden, St. Johns period; wooden piers, 19th – 20th century. As of the 1991 CARL archaeological survey, the midden was approximately 2 meters high, 300 meters North-South, and 30 meters East-West. The site was vegetated by cabbage palm, cedar, wild coffee, orange and grapefruit. CARL archaeologists observed several vandal pits from past looting activity, midden material on the surface, and site erosion along the banks of the lake. Jeffries Wyman presumably referred to this mound in his 1875 publication, noting that the area had been under cultivation for many years. The partially submerged wooden piers may be the remnants of a steamboat landing associated with citrus production. The site was not visited during the 1993 or 2003 Cultural Resource Management Evaluation (RME); the last documented site visit dates to the 1991 CARL survey. The condition of this mound is presently unknown.

Midden B, Lake Beresford (8VO38): Large snail and mussel shell midden, St. Johns period. As of the 1991 CARL archaeological survey, the midden was an unknown depth, approximately 300 meters North-South, and 30 meters East-West. Site vegetation is similar to Midden A, Lake Beresford (8V038). CARL archaeologists observed midden material on the surface, and minor disturbance associated with past vandalism. This is also presumed to be a mound visited and documented by Jeffries Wyman. The site was not visited during the 1993 or 2003 Cultural RME; the last documented site visit dates to the 1991 CARL survey. The condition of this mound is presently unknown.

Starks' Grove Mound (8VO39): Large sand mound, St. Johns period. As of the 1991 CARL survey, the mound was located in a former citrus grove and topped by a large live oak tree. CARL archaeologists stated that further investigation was needed to determine whether this was a natural or cultural feature. John Goggin reported that C. B. Moore excavated the center of this mound in 1894. The site was not visited during the 1993 or 2003 Cultural RME; the last documented site visit dates to the 1991 CARL survey. The condition of this mound is presently unknown.

Palmetto Shell Midden (8VO40): Small shell mound, unknown cultural affiliation and temporal period. According to Wyman in 1875, the oval-shaped mound was approximately 100 feet long, 80 feet wide, and two feet nine inches high, with a circular grove of palmettos growing on top. During his excavations, Wyman recovered pottery, faunal material, shell and stone artifacts, and human remains. During a brief reconnaissance survey in 2003, Ken Sassaman and the University of Florida archaeology field school could not locate the site. Sassaman suggested that the site may have been destroyed or covered by sediments due to flooding, and recommended subsurface testing to locate and delimit the site. The site was not visited during the 1991 CARL survey, or the 1993 and 2003 Cultural RME. The condition of this mound is presently unknown.

Live Oak Midden or Midden/Mound in Woods Above Blue Springs (8VO41): Large snail and mussel shell midden, preceramic (late Middle Archaic) to St. Johns II period. The site contains a tall, conical mound 5 to 7 meters high at the north end, with a trailing ramp extending south-southeast. The site was heavily vandalized in the 1970s, resulting in numerous looter holes and a dense thicket of cherry laurel saplings on the center of the mound. Wyman excavated numerous human burials from the mound in the 1870s; William Browning conducted limited shovel testing in 1983 to mitigate the construction of a pipeline 70 feet to the south; and CARL archaeologists visually inspected the area in 1991. In 2001, the University of Florida archaeology field school topographically mapped 135 looter pits, and conducted limited excavations of two of these pits. The site appears to have begun as a preceramic midden that was continuously used for the next 5000 years, representing an intentionally constructed mounded feature versus an unintentional accumulation of domestic debris. While no human remains were encountered during the 2001 mapping project, erosion recently exposed human skeletal material in a washout. Park patrol recently apprehended a looter digging for artifacts on the fringes of the site. The site was visited during the 2003 Cultural RME. The site is presently in poor condition.

Blue Springs Midden A (8VO42): Shell mound, unknown cultural affiliation and temporal period. Wyman may have documented the site in 1875. An associated artifact collection and/or human skeletal material may be accessioned at the Wagner Free Institute of Science. As of 1993 Cultural RME, the site was threatened by erosion and had been disturbed by vandalism; the site was not visited during the 2003 Cultural RME. The condition of this site is presently unknown.

Blue Spring Midden B (8VO43): Extensive shell midden, preceramic (Middle Archaic) to Orange to St. Johns period. In the 1870s, Wyman documented the midden near the Thursby House and an associated shell mound at the mouth of Blue Spring Run, which was destroyed by erosion and mining in the early 20th century. An artifact collection and/or human skeletal material associated with this site might be accessioned at the Wagner Free Institute of Science. The Thursby House was constructed on its highest portion in 1874. While the lower 2/3 portion of the site was covered (but not destroyed) by up to a meter of alluvial sands in the late 19th and early 20th century, over one meter of intact shell midden survives intact just beneath the surface under and around the Thursby House on the highest portion of the site. In 2000 and 2001, Ken Sassaman and University of Florida archaeology field school conducted topographic mapping, excavations adjacent to the Thursby House to characterize the underlying midden, coring to determine the boundaries and depth of the site, faunal recovery, and ground penetrating radar survey to detect household features. This testing revealed that the site was much larger than the state realized, and that intact shell midden still existed beneath the surface layers. Erosion presently threatens the riverbank in the vicinity of this site, caused by wave action and heavy recreational use, primarily boat traffic and boat landings in unauthorized areas. Additionally, recreational facilities and use, and preservation treatment to the Thursby House, have disturbed upper levels throughout the site. This site was visited during the 1993 and 2003 Cultural RMEs. The site is presently in fair condition.

Paradise Indigo Vats (8VO2594): 19th century indigo vats and possible wharf remains. The vats appear to extend east to west about 50-75 meters into the woods. The site contains uncollected brick and other building material. This site was not visited during either the 1993 or the 2003 Cultural RME. The condition of this site is presently unknown.

Stark House (8VO3447): Historic house site, 19th century post -Seminole Wars. This site is the former residence of John Stark, an early settler in western Volusia County; vandals burned the structure down in 1962. During the 1991 CARL survey and the 1993 Cultural RME, brick, metal and other building material were observed on the surface. This site was not visited during the 2003 Cultural RME. The condition of this site is presently unknown.

Stark Midden (8VO3448): Snail shell midden, St. Johns period. The extent and depth of the midden is unknown. During the 1991 survey, CARL archaeologists observed exposed shell material and evidence of past vandalism. The site was not visited during the 1993 or 2003 Cultural RME; the last documented site visit dates to the 1991 CARL survey. The condition of this mound is presently unknown.

Thursby House (8VO5162): Historic building, 1872. This building is three-story, frame vernacular with brick piers and gable tin roof. The original, two-story building was built Louis P. Thursby in 1872 on top of a large shell midden (8VO43); a third story was added circa 1890, and a kitchen was added circa 1909. The kitchen foundation is made from tabby, cement and freshwater snail shells, probably from nearby middens. The house was used as a residence from 1872 to 1981, converted into a historic house museum in 1982, closed to the public in 1989, and reopened in 2003 with interpretive exhibits. In the early 1980s, FPS conducted research and completed extensive restoration work on the structure, returning the exterior and interior of the structure to its 1915 appearance. Since 1994, FPS has been actively engaged in continued restoration work in order to stabilize the structure, repair deteriorated elements, and bring preservation work into compliance with DHR recommendations and the Secretary of the Interior's Standards for Historic Preservation Treatment. The condition of the structure has

fluctuated from fair to poor during preservation treatment over the past decade.

A physical structure and old at that, the Thursby House has been subject to the deteriorating effects of natural elements including weather, vegetation growth around the perimeter of the structure, and inhabitation by insects, birds, and rodents. The second story has been used to store old park records, defunct and outdated office supplies and equipment, and the park's museum collections objects. The lack of climate and pest control, improper storage methods, and ongoing repair activities adversely impact the items stored in the structure. According to park staff, trains on a nearby rail line and vehicular traffic on a nearby highway shake the Thursby House and administrative offices. Any adverse impact caused by the vibrations has not been assessed. The house has not been cleaned on a regular or frequent basis, cleaning tasks and appropriate cleaning methods for the structure's various interior and exterior components have not been delineated, and cleaning the structure has not been incorporated as a routine part of park staff's duties. Consequently, the structure's condition is not regularly inspected, and records of maintenance work are not regularly generated. The site was visited during the 2003 Cultural RME. The site is presently in fair condition.

Blue Spring Railroad (8VO5272): Artifact scatter and railroad corridor, 19th – 20th century. The site was identified by PCI during the 2000 survey of proposed cabin and roadway locations via shovel testing and surface inspection. The rails have been removed, but the corridor survives as a cut through the trees, and a surface scatter of historic artifacts. The west end of the corridor, which partially overlaps the West Midden site (8VO7229), contains structural remains, a depression, and possible wellhead, possibly associated with a railroad company structure. PCI recommended that the full length of the railway corridor in the park be identified. The site has been substantially disturbed by construction of roads and cabins in the vicinity. The railway corridor was visited during the 1993 Cultural RME, at which time portions of it were overgrown with vegetation. The site was not visited during the 2003 Cultural RME. The site is presently in poor condition.

West Midden (8VO7229): Small shell midden and lithic scatter, Orange to St. Johns period, plus historic material associated with the Blue Spring Railroad (8VO5272). The site was identified by the 2000 PCI survey via shovel testing and surface inspection. PCI determined that the site was potentially significant, and recommended further testing to investigate its stratigraphic integrity and relationship to nearby East Midden (8VO2730). The northern portion of the site was disturbed by the construction, and later demolition, of a historic early 20th century structure. The site has also been substantially disturbed by construction of roads and cabins in the vicinity. The site was not visited during the 2003 Cultural RME. The site is presently in poor condition.

East Midden (8VO7230): Small shell midden, preceramic period. The site was identified by the 2000 PCI survey via shovel testing and surface inspection. PCI determined that the site was potentially significant, and recommended further testing to investigate its stratigraphic integrity and relationship to nearby West Midden (8VO2729). The western portion of the site appears to be redeposited midden, associated with railroad or cabin construction. The site has also been substantially disturbed by construction of roads and cabins in the vicinity. The site was not visited during the 2003 Cultural RME. The site is presently in poor condition.

Cabin Scatter (8VO7231): Small lithic scatter, preceramic period. The site was identified by the 2000 PCI survey via shovel testing and surface inspection. PCI determined that the site did not appear to be eligible for listing on the National Register of Historic Places based on low artifact

density and diversity, but recommended further testing to determine whether deep shell midden deposits are present. The site has been substantially disturbed by construction of roads and cabins in the vicinity. The site was not visited during the 2003 Cultural RME. The site is presently in poor condition.

Unrecorded Mound: Shell mound, unknown cultural affiliation/temporal period. This site was identified and reported to the Florida Master Site File by Park Biologist Richard Harris; it is unknown whether a number has been assigned to the site yet. Archaeologist Ken Sassaman and the University of Florida field school have proposed to map its entirety and auger its perimeter to determine the basal component. The present condition of this site is unknown.

Unrecorded Farmstead: Historic house site, unknown cultural affiliation/temporal period. This site was identified by Park Biologist Richard Harris, and tentatively called a sharecropper's house. The site consists of the collapsed residential structure and an associated barn or packing house, which were still standing as of 2003.

Collections Objects: Domestic furnishing, household objects, archival material; late 19th – first half of 20th century. This collection was acquired by purchase and donation in order to furnish the Thursby House during its use as a historic house museum from 1982 to 1989. When the museum was closed to the public, the collection objects continued to be stored in the structure, which did not have a controlled climate or pest control. Additionally, the objects were exposed to the elements, piled atop each other and located in foot traffic corridors, which subjected them to breakage, dirt accumulation, and infestation. Because the Thursby House is now used to house interpretive exhibits, the park no longer needs the majority of the collections objects. At the present time, a few collection objects are incorporated into the closed exhibit cases while many of the objects are being temporarily stored at the Orange County Regional History Center until a decision is made about their final disposition. The condition of the collection has not been assessed, nor has the collection been maintained, on a regular basis, cleaning tasks and appropriate cleaning methods for the various types of objects have not been delineated, and collection object maintenance has not been incorporated as a routine part of park staff's duties. Consequently, the collection objects' condition is not regularly inspected, and records of maintenance work are not regularly generated. The objects have been catalogued and numbered. The collection was visited during the 2003 Cultural RME. At that time, its condition was poor; since relocation to temporary storage, their condition has improved to fair although individual items may still be in poor condition.

Hontoon Island State Park Cultural Resource Inventory

Thursby Midden (8VO35): Shell midden mound, Orange and St. Johns IIa & b periods. While basal portions of the midden may still be intact, the majority of the midden was demolished by C.B Moore's excavations in 1892 – 94, and historical shell mining for road construction. An artifact collection and/or human skeletal material associated with this site might be accessioned at the Wagner Free Institute of Science. The site is a large site, partially on privately owned land and partially in the area used by the park for a parking lot and ferry dock. This site is presently in poor condition.

Hontoon Island Mound A (8VO182): Sand and shell mound, St. John I period or later. According to Sassaman (2003), little is known of the mound's cultural affiliation, nature or extent. The majority of the mound has been demolished by excavation and shell mining. Moore recovered artifacts from the mound, and Wyman (1875) recorded the presence of human remains at the site.

An artifact collection and human skeletal material associated with this site might be accessioned at the Wagner Free Institute of Science. University of Florida archaeologist Ken Sassaman visited the site during recent UF archaeological field schools. This site was not visited during either the 1993 or 2003 Cultural RME. This condition of this site is presently unknown.

Hontoon Island Mound B (8VO183): Same as Hontoon Island Mound A, 8VO182.

Hontoon Island Shell Midden (8VO202): Shell midden and mounds, pre-ceramic through St. Johns period. In the late 19th century, Wyman described the site as a massive shell works complex, consisting of two long parallel shell ridges and two conical mounds to the south. These features were extensively mined for shell in 1935, and the remnants later leveled and used as a picnic and recreational area within the park. Archaeological investigations of the site have demonstrated that intact peripheral and extensive subsurface basal portions of the ridge still survive on both high ground and in adjacent lagoons. In 1987, University of Florida archaeologist Barbara Purdy investigated wet deposits at the eastern end of the site, recovering well-preserved organic remains including maize and other cultigens. One of Purdy's excavation units, located in saturated ground on the eastern edge of the site, was never backfilled and is currently fenced off. Recent testing conducted by Ken Sassaman and the University of Florida archaeological field school has revealed expansive, intact, preceramic midden beneath the surface, even in heavily disturbed areas, topped by a smaller area of St. Johns period strata in higher elevations. Wyman, Purdy and Sassaman all observed occasional unarticulated human skeletal remains. According to Sassaman, the western edge of the site and one of the mounds appear to be a mortuary facility dating to the Middle Archaic period (ca. 6000 – 5000 years old), while the central portion and eastern end of the site contain evidence for equally ancient villages. Today many of the park's recreational facilities are located on top of this site. A deteriorated observation tower was removed from the site during the construction of a picnic pavilion in 1999. A particularly threatened portion of the site is its eastern half, where there is unchecked, heavy erosion on the deep trough cuts left by past shell mining. Additionally, armadillo and snapping turtle activity adversely impacts the site. The site was visited during both the 1993 and 2003 Cultural RME. The site is presently in poor condition.

Northernmost Midden, Hontoon Creek (8VO214): Large shell mound, uncertain temporal period. This site was excavated by Wyman in 1875, mapped by the Purdy investigation in the 1980s, and recently bounded by the UF field school. Surface collection and shovel testing have yielded few artifacts, possibly indicating that the mound was built during the preceramic period. The site may contain human burials. The site was visited during the 1993 and 2003 Cultural RMEs. The 1993 RME noted that a large number of cabbage palms grew on the mound, posing an unknown threat to the mound's integrity. The 1993 RME additionally determined that the nature trail which mounts its summit adversely impacted the mound, and recommended that the trail be removed, or (less desirable an option) covered with wood chips. This management task has not been implemented. Visitor use and wear on the nature trail continues to present a threat to the site by contributing to erosion and terracing on the mound over time. Because the park has long term responsibility for the mound, what may seem like minimal impact in the present moment must be considered as a more serious, accumulative risk over the long term. Vegetation on the mound is not currently managed, and the adverse impact of its roots to the mound's integrity has not been assessed. The remnants of Wyman's unfilled excavation units on the mound slopes adjacent to the cypress swamp are subject to erosion, as are the slopes themselves, particularly during heavy rains and flooding. The site is presently in fair condition.

Middle Midden, Huntoon Creek (8VO215): Shallow shell midden deposits, St. Johns I period with a minor Orange period component. Wyman described and excavated the mound in the late 19th century. Sassaman and the UF field school recently established definitive site boundaries. This site was not visited during the 1993 or 2003 Cultural RME. The condition of this site is presently unknown.

Southern Midden, Huntoon Creek (8VO216): Shell midden, uncertain temporal period. Wyman described and excavated the mound in the late 19th century. Both park staff and the University of Florida archaeological field school have been unable to find this site due to the heavy growth of saw palmetto in the area. Staff will investigate the area after the next prescribed burn in an attempt to locate the site. This site was not visited during the 1993 or 2003 Cultural RME. The condition of this site is presently unknown.

Thursby River Site or Channel Marker X Site (8VO238): Submerged peat bed, St. Johns II period. This site may be related to the surrounding sites to the north and south, although the nature of this relationship is unclear. A 1978 archaeological survey associated with a pipeline repair project documented intact cultural deposits and recovered well preserved organic artifacts including two wooden effigies similar to the owl totem recovered in 1955. The site may be the collapsed remains of a charnel house. The submerged anaerobic sediments create ideal conditions for the preservation of organic artifacts. The area is threatened and impacted to an unknown extent by a boat landing, dredging and river widening activity, and large vessel traffic. The site was not visited during either the 1993 or 2003 Cultural RME. The condition of this site is presently unknown.

Thursby Midden (8VO2600): Shell midden, Orange and St. Johns period. The site was leveled by excavation and shell mining, and has served as a parking lot for the park for a long time. In 1989, the site was heavily disturbed during excavation of its center to form a holding pond for dredge material from the adjacent boat basin, exposing human remains and cultural material. The site was visited during the 2003, but not the 1993, Cultural RME. The site is presently in poor condition.

Indian Mound Trail (8VO7493): Shell midden and artifact scatter, possibly Archaic period. The UF field school identified and recorded the site during a reconnaissance survey of the island. The site is characterized by a light artifact scatter in the hammock, and a moderately dense subsurface shell midden deposit at the margin of the hammock and swamp. The site is located in an undeveloped portion of the park. The site was not visited during the 2003 Cultural RME. The site is presently in fair condition.

East Hontoon (8VO7494): Shell midden, Late Archaic Orange with St. Johns I or II components. The UF field school identified and recorded the site during a reconnaissance survey of the island. The site characterized by a diffuse midden scatter. The site is located in an undeveloped portion of the park. The site was not visited during the 2003 Cultural RME. The site is presently in fair condition.

RESOURCE MANAGEMENT PROGRAM

Special Management Considerations

Timber Management Analysis

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

For Blue Spring State Park, it was determined that the removal of certain species within the sand pine scrub, mainly rusty lyonia, (*Lyonia ferruginea*) and mature sand pine, (*Pinus clausa*) could be accommodated in a manner that would be compatible and not interfere with the primary purpose of resource-based outdoor recreation and conservation (see Addendum 6). For Hontoon Island State 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.

Additional Considerations

The parks manage a 400-foot sovereign submerged area along their boundaries. Management of these areas includes exotic plant removal, erosion control, water quality, and boating restrictions related to the Florida manatee. These areas are managed in cooperation with the Wekiva River Aquatic Preserve staff.

Management Needs and Problems

Natural Resources

Because the spring and spring-run is a manatee refuge and sanctuary, the main management focus is to provide protection to the spring-run habitat. Along with protecting the spring and spring-run for the sake of the Florida manatee, the recreational activities must also be managed to insure that no significant harm is taking place within this fragile ecosystem. In the winter months, when the manatee populations increase in the spring-run due to the colder temperatures of the St. Johns River, certain recreational activities are stopped. Canoeing and swimming within the spring-run are restricted and closely monitored so that no unauthorized manatee/man interactions take place.

Currently, the water quality and quantity has been shown to be declining and decreasing. Groundwater nutrient levels are increasing, and the spring collects water from a very large geographic area. Activities in the surrounding uplands can potentially affect the water quality of the spring even if activities occur some distance from the park. The water quantity has been declining with the main reason being the population increase in the central Florida area. With this increase in human population and the need for potable water for consumption there will be challenging management issues. Park staff will continue to participate with working groups and

other agencies to protect the long-term health of Blue Spring.

General management objectives will include the protection of natural features and natural communities from any form of abusive use. Vestiges of man's influence upon the land will be removed whenever possible if they serve no useful management function and lack any cultural significance.

Cultural Resources

Blue Spring and Hontoon Island State Parks contain extensive recorded and undocumented prehistoric and historic remains, plus a historical collection. These are subject to the adverse impacts of gravity, erosion, vegetation, weather, animal activity, and authorized and unauthorized human activity over time. Two primary problems adversely affect the parks' management of their cultural resources –the lack of a written management plan for its earthen mounds, historic structure, and collection objects, and the lack of routine maintenance and monitoring of its resources. The park does respond to immediate concerns, (such as filling in the wash-out on Live Oak Midden that exposed human remains), participates in preservation projects (Thursby House), and facilitates archaeological research (UF field school); it still needs, however, to incorporate routine cultural resource management into staff's daily routine. A more deliberate approach to cultural resource management will enable the park to identify real or potential and imminent or long-term threats, track changes and note deterioration to resources' integrity, take regular and routine protective or maintenance actions, and provide for adequate staff time and training in order to implement such a program.

In addition to the natural gradual decline of cultural resources over time that parks try to ease or stave off through routine maintenance and monitoring, several of the shell and earthen middens and mounds on Blue Spring State Park and Hontoon Island State Park are eroding more rapidly, for which additional measures to are needed in order to preserve. Adjacent bodies of water, recreational use of those bodies of water, past mining activity, animal burrows, foot traffic, vandalism and vegetation have exposed or undermined the integrity of these sites. Versus lose these archaeological resources at an accelerated rate due to inaction, the park can assess their significance and the nature of the threat, and develop remedial stabilization plans for the most seriously impacted sites in consultation with staff at BNCR and DHR.

Collections management in the Florida Park Service is guided by the system-wide Operations Manual as well as park-specific management documents. In addition to the day-to-day care of the objects, the park is also faced with the task of developing the programmatic framework that will guide collection management decisions such as acquisition, loans, and deaccession. While the park is in the process of making decisions about the disposition of its unneeded collections objects, it also should get the Scope of Collection Statement in place that will guide this and future such decisions.

Management Objectives

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

Natural Resources

Blue Spring State Park

- Continue identification and population monitoring of the Florida manatee in conjunction with other agencies per USFWS recovery plans.
- Develop a manatee management plan in cooperation with relevant agencies.
- Develop a Florida scrub-jay management plan to assist with the restoration and maintenance of available scrub utilized by the Florida scrub-jay.
- Develop and implement an erosion control plan for existing canoe launch and boat beaching areas.
- Continue planting native plants along boardwalks to reduce erosion.
- Initiate population survey for the Blue Spring Aphaostracon and Blue Spring siltsnail.
- Conduct a feasibility study to determine if eelgrass can be reintroduced to the spring-run.
- Monitor and remove exotic species from the park.
- Conduct fish surveys of the spring-run and compile a species list.
- Implement a pictorial survey of the cave system using park staff and local divers.
- Initiate hydrological studies to determine the interconnections between Blue Spring and other sinkholes located within park property.
- Conduct macroinvertebrate sampling in the spring-run and in any small low flow tributaries connected to the spring-run.
- Continue scrub restoration and increase number of acres suitable for Florida scrub-jays.
- Restore the relic orange grove area to a natural community.
- Reduce French Avenue runoff into wetlands.
- Perform a Phase 1 environmental audit on Blue Spring borrow pits.
- Increase prescribed burning to reduce backlog of unburned areas.

Hontoon Island State Park

- Update plant and animal species lists.
- Use prescribed burning to stop the encroachment of hammock areas into pine flatwoods areas.
- Monitor bank erosion due to the boating traffic along the Hontoon Dead River.
- Coordinate with all agencies involved to continue to keep Snake Creek a navigable waterway.
- Continue long-term goal for possible reintroduction, restoration and maintenance of hooded pitcherplants.

Cultural Resources

- Inventory, and record with the Florida Master Site File, prehistoric and historic resources as they discovered.
- Develop and implement a regular, routine maintenance and monitoring program for the parks' historic structure, archaeological sites and collections objects.
- Develop appropriate remedial stabilization plans in conjunction with DHR and BNCR for earthen mounds that are actively eroding at an accelerated rate, including Midden A, Lake Beresford (8VO37), Northernmost Midden, Hontoon Creek (8VO214), Blue Spring Midden B (8VO43), Hontoon Island Shell Midden (8VO202) and Live Oak Midden (8VO41).
- Draft a Scope of Collections Statement to guide the park in the disposition of unneeded collection objects and with future collection management decisions.
- Continue the ongoing UF archaeological field school investigation of both parks, marking

newly identified site locations with GPS technology and incorporating site information into management activities and databases.

- Interpret the cultural resources of the parks in their context to educate park visitors about the parks' and area's prehistory and history through interpretive signs and programs.
- Seek grant funding for research projects to document the prehistory and history of the parks, the St. Johns River and the surrounding area.
- Improve public awareness and encourage protection and stewardship of the parks' cultural resources through education, interpretation and enforcement of agency rules and regulations.
- With professional assistance, identify which sites may be potentially eligible for nomination to the National Register, prioritize which if any to draft a nomination for, and pursue the money to do so.

Management Measures for Natural Resources

Hydrology

The St. Johns River Water Management District is responsible for water control in this area as well as in the surrounding drainage basin. Minimum flows and levels have not been set for Blue Spring. There is great reason to be concerned about the Florida aquifer in the area around Blue Spring as the spring-shed covers a large area that is rapidly being developed. Since the headspring collects water from a large surrounding area, any projects that threaten the quality of the groundwater are of concern to Blue Spring. Because of the potential for polluting the aquifer, and ultimately the spring, divisions that monitor groundwater will be asked to keep Division staff aware of any problems that arise.

In addition to the concern, regarding quality of the water in our aquifer is the equally important issue of quantity. Blue Spring is an extremely important warm water refuge for an ever-increasing number of Florida manatees that come here in the winter months. If the volume of water coming from the spring vent decreases, then the water from the St. Johns River will intrude toward the spring vent. This intrusion could cause the temperature of the spring-run to become colder in the winter months and significantly reduce the area needed by the Florida manatee.

The St. Johns River Water Management District at this time is not only working to establish the MFL for Blue Spring but also to establish an MFL for the middle St. Johns River. The SJRWMD has conducted a soil and vegetative transect line, from the St. Johns River east to an isolated wetland on Blue Spring property. This transect is one of many transects that have been established along the middle St. Johns River to be monitored on a regular basis. With the potential high that the St. Johns River could be used as an alternative potable water supply to augment the groundwater supply, these transects could help detect changes in the natural communities. Park staff, in conjunction with Department staff, will communicate all observed changes in the surrounding wetland and upland natural community types.

Along with the importance of the water quality and quantity of the spring, there is another natural hydrologic system in need of restoration. A wetland is bisected by French Ave. just to the west of the entrance to Blue Spring State Park. Volusia County is responsible for the maintenance of French Ave., routinely deposit fill and then grade the road. This practice has caused silt to deposit into the wetlands that are in dire need of restoration, park staff is continuing to communicate with Volusia County.

Prescribed Burning

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

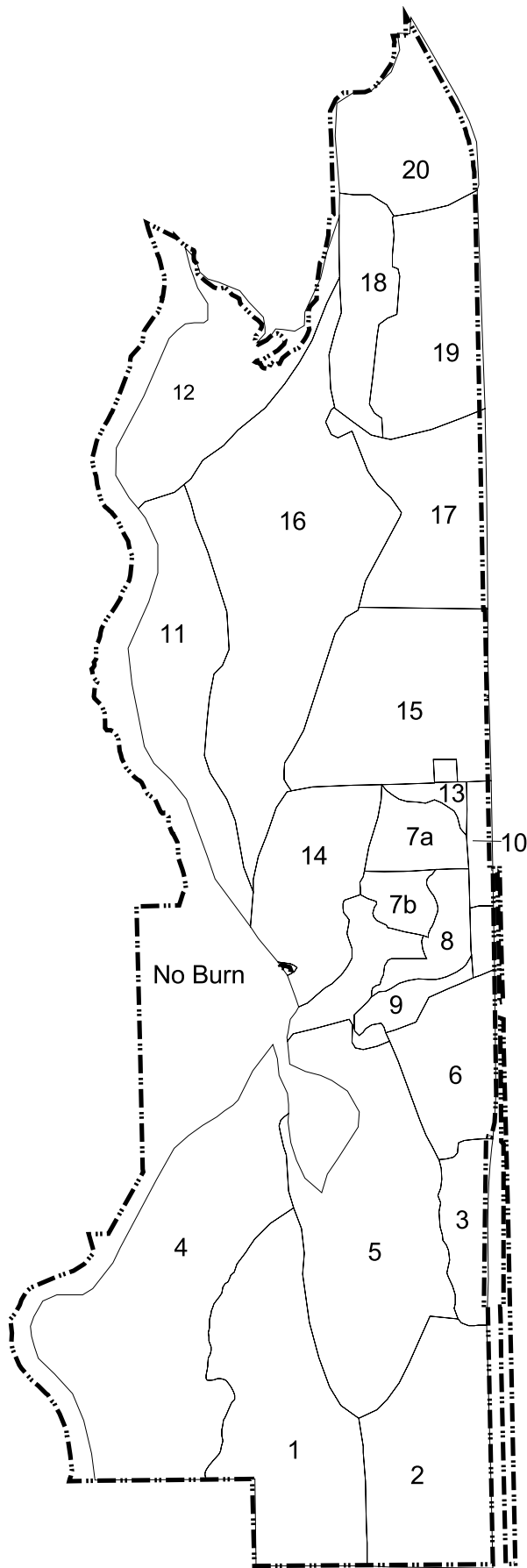
So far, discussion has concentrated on the frequency of burns and not on the actual timing of burns. Obviously, since fires were historically tied to lightning strikes, it is reasonable to assume that natural fire events are related to lightning frequency. Native Americans were also an important means of fire ignitions. However, since limited information is available on their burn regimes, only lightning frequency will be used as a basis for determining seasonal timing of prescribed fires.



Thunderstorms and the accompanying lightning strikes are not constant throughout the year. More storms occur in the summer. The mean number of thunderstorm days per month for the entire state varies from 6.6 days in May to 12 in June to 17 in July to 16 in August to 10 in September (Davis and Sakamoto 1976). The probability of lightning starting a fire varies with the type and dryness of fuels. In north Florida, April and May are usually the driest, because they are between the winter and summer rainfall peaks. The winter rainfall peak declines as you go south in the state with south Florida having only two seasons, wet and dry, with most rain falling between May and October (Jordan 1984). Central Florida is intermediate between north and south Florida.

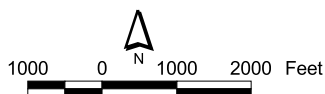
Based on this information, the unit uses two burn seasons: spring/summer and fall/winter. Spring/summer is defined as April-August and fall/winter as December-March. Very little burning is done under a pine tree canopy from September-November due to the greater potential for pine tree mortality.

The mesic flatwoods at Blue Spring have a predominantly slash and pond pine overstory, with an understory of mostly saw palmetto and oaks. The majority of the area covered by mesic flatwoods is to the south of the park with one area occurring to the north in the Stark Tract. The mesic flatwoods burn zones at Hontoon Island occur as a contiguous tract on the higher elevations near the center of the island and are surrounded by upland mixed forest. The area is bisected by a series of service roads that define the boundaries of the burn zones. Pond pine dominates the canopy with scattered stands of both slash and longleaf pine occurring in others. The understory is comprised of very dense gallberry, fetterbush, rusty lyonia, tarflower and saw palmetto. Wiregrass is the groundcover in most of the open areas.

Most of the burning objectives in the past were to reduce fuel with winter backing fires that have not been hot enough to kill back the encroaching laurel and water oaks around the margins of the flatwoods. Over the past 5 years, the oak encroachment has slowly receded, and the flatwoods area is expanding. The fire rotation for flatwoods at both units will be 2 - 4 years that will allow for the control of hardwoods.



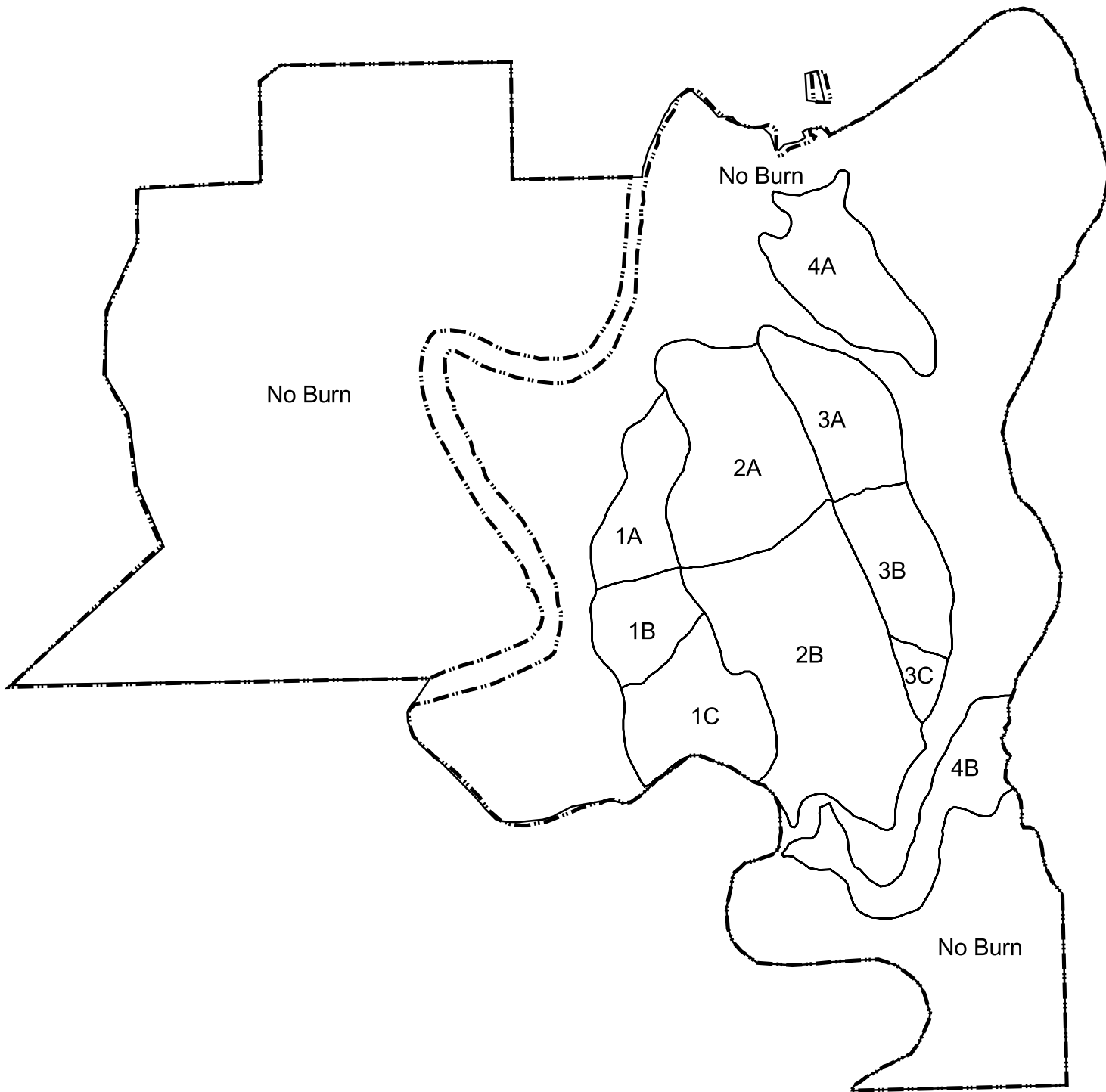
LEGEND
 Park Boundary
 Burn Zones





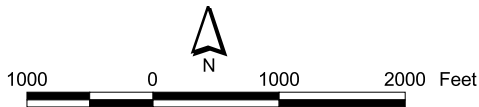
BLUE SPRING
STATE PARK

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

BURN ZONE
MAP



LEGEND
 Park Boundary
 Burn Zones



HONTOON ISLAND
 STATE PARK

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

BURN ZONE MAP

The sand pine scrub at Blue Spring follows a continuous line from north to south along the eastern boundary of the park. The scrub occurs on sand ridges along former shorelines. The scrub community is dependent on fire to prevent the overgrowth of sand pines. Because the scrub is being managed for Florida scrub-jays, the needs of the jays will determine the interfire interval. Vegetation height and density as they relate to jays are monitored. Based on the initial pilot scrub restoration area, fire will be introduced to a fire rotation that could be as little as 2-5 years or 7-15 years. The factor that is most important when choosing a fire interval is whether the scrub is in a restoration phase or if it is in a maintenance phase. Park staff is taking the stand that if the scrub is in the restoration phase then the fire interval needs to be increased and fire should be used more frequently until the scrub is considered prime habitat for scrub-jays. When this is accomplished, then the fire interval can be increased and the scrub would be considered in the maintenance phase. Because of logistical concerns related to control of any prescribed burns set in the scrub community, the interfire interval is set at 7 to 15 years depending on the zone objectives. Zones in restoration phase, therefore, could be burned as often as every 7 years. Following this idea, research has indicated that a patchy prescribed fire in which territories are not burned completely is optimal for scrub-jays (Fitzpatrick et al. 1991, Hipes et al. 2001).

Since the presence or absence of the FSJ is so closely tied to suitable habitat within the scrub and community, it is imperative that staff coordinate and prioritize management activities to achieve maximum results towards bringing all burn zones to complete restoration. In order to achieve optimal vegetative characteristics for these zones, the following targets (desired future condition) may provide park staff guidelines for the management of scrub (Woolfenden and Fitzpatrick 1984, Fitzpatrick et al. 1991).

Concerning each continuous habitat island:

- 1) A minimum of 10-15 percent of the area should be comprised of bare sand or other native herbaceous component following the foraging requirements of FSJ.
- 2) Vegetation characteristics should not exceed 3m in height. Optimal vegetation height is between 1-2m.
- 3) A forest is defined as an area with >65 percent tree cover.
- 4) Scrub islands should be maintained with no more than 10 percent of an area covered by tall trees.

Optimal islands are those which provide >130m distance to the forest edge from its center.

Because Hontoon Island is somewhat isolated, the area is relatively easy to burn without major smoke dispersal concerns. On the other hand, Blue Spring is in an urban area and an easterly wind component is needed for burning. Establishing a more aggressive burn program for Blue Spring is a necessity that should be considered and backlogged areas overdue for burning should be a priority. If it is determined that fire alone cannot achieve desired restoration conditions, mechanical treatments will also be considered.

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. The Division will consult and coordinate with appropriate federal, state and local

agencies for management of designated species.

Prescribed fire used to maintain plant communities would facilitate the conservation of designated species within the fire-type communities. Specific species that will benefit from having prescribed fire are the Florida scrub-jay and the gopher tortoise. See previous section on designated species for specific management measures.

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. Blue Spring and Hontoon Island State Parks are fortunate in that very few exotic species are found within park boundaries. As is the case with all isolated areas, domestic animals are deposited along park roads and if not monitored regularly can become a severe problem. Although house pets do not typically propagate in the wild, their free-ranging activities on park lands can have an affect on native species which would normally not have to contend with these additional pressures.

The exotic animal species at Blue Spring and Hontoon Island are limited to the nine-banded armadillo (*Dasyus novemcinctus*), blue tilapia, armored catfish, feral cats and dogs, and to a lesser degree feral hogs (*Sus scrofa*). Nine-banded armadillos, feral cats and dogs, and feral hogs will be removed discreetly whenever a need presents itself. Attempts were made to remove blue tilapia from the spring-run but the project was relatively unsuccessful, probably due to their occurrence throughout the St. Johns River. While research still needs to be conducted on the tilapia, having a commercial value has helped the situation. A study needs to be initiated to determine if there is any feasible control method for blue tilapia. More importantly, studies to remove the exotic armored catfish need to be initiated. These “armored catfish” have the potential to do great harm not only to the natural community of the spring-run, but also in their interactions with the Florida manatee.

The exotic plants at Blue Spring and Hontoon Island are not the types that form dense monocultures. Instead, they are the re-occurring single to numerous specimens’ type of exotic plants. Initially, removal will concentrate on two species, mimosa (*Albizia julibrissin*) and camphor (*Cinnamomum camphora*). The areas that will receive the most attention will be the main use areas. Wild taro has become a significant problem throughout the entire St. Johns River system. These plants will grow as either floating or rooted vegetation and have the ability to dominate an area if not controlled. In conjunction with the Aquatic Preserve staff and the U. S. Army Corps of Engineers, both parks can benefit from a program designed to eradicate wild taro through spraying and mechanical removal. Torpedograss (*Panicum repens*) occurs along the river’s edge from south of the boathouse into the lagoon at Blue Spring. It needs to be controlled by spraying.

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.

Problem species are very rare at both Blue Spring and Hontoon Island State Parks. Alligators (*Alligator mississippiensis*) are usually not a problem but are abundant. Park staff monitors the waters regularly for signs of an alligator becoming aggressive. If an alligator is deemed aggressive then the FFWCC is called to assist. In the summer of 2003, because of interaction with the campers and their equipment, a black bear, (*Ursus americanus*), was relocated to another location in central Florida but this has been the exception rather than the rule. Feral hogs have been a problem in the past and are removed whenever possible.

Management Measures for Cultural Resources

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

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

The general objective for the management of the cultural resources of Blue Spring and Hontoon Island State Parks is to protect, preserve and interpret the prehistoric and historic resources of the parks. To this end, the park should develop and implement a routine maintenance and monitoring program for all of its cultural resources, including prehistoric and historic archaeological sites, historic structure (Thursby House), and museum collection objects. Routine site, structural and object maintenance has proven an effective means of prolonging the life of cultural resources, and less costly than preservation or conservation treatments required to remedy a problem after the fact. Regular resource monitoring and condition assessments are the means of gathering the data necessary for evaluation of site integrity, adjustment of maintenance programs, and development of stabilization and preservation plans if warranted. The type and degree of maintenance, and the frequency of monitoring required will vary depending on the physical components of the resource, the degree of deterioration and the nature of various threats, and the extent of visitor and park activity in the area. Such a program should be based on a written plan that outlines approved methodologies, and makes provision for adequately training and scheduling staff and volunteers to implement it.

The parks currently have a sufficient number of staff who have been trained and certified as archaeological monitors. As the composition of the parks' staff changes over time, efforts should be made to insure that there is always at least one staff member at each park 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 property requires a collecting permit from the Department of Environmental Protection. Additional permits from the Florida Fish and Wildlife Conservation Commission, the Department of Agriculture and Consumer Services, or the U.S. Fish and Wildlife Service may

also be required.

In cooperation with Stetson University, fish species surveys are currently being conducted and must continue so that any trends can be quickly monitored. Stetson University and its aquatic biology department are spearheading the projects and are considered a valuable resource.

There is a need to continue data collection of water quality in the spring and associated spring-run, in order to establish baseline data and determine impacts to this natural wonder. Current DEP Springs Initiative monitoring includes physical and chemical data, bacteria, algae and macroinvertebrate parameters. In particular, continued monitoring of macroinvertebrate parameters SCI (Stream Condition Index) is needed in an effort to determine potential causes for the “poor” scores currently on record.

Past and ongoing research. Research to monitor and identify Florida manatee that use Blue Spring as a winter home is being conducted. The data set resulting from this research is invaluable and continues to help with the species recovery.

Needed research. General species inventories of both Blue Spring and Hontoon Island need to be continued. Studies are needed to locate and document the species of flora and fauna found within both units.

Cultural Resources

Research is needed on environmental change and prehistoric adaptation, development of prehistoric settled communities and social complexity, and aboriginal cultural history. Research is needed on the Blue Spring and Hontoon Island area of the St. Johns River during the First Spanish Period, the British Period, the Second Spanish Period, the Territorial Period, the Second Seminole War, the Confederacy and Reconstruction. Research is needed for possible evidence or documentation on the farming, ranching, timber, turpentine and early tourism industries, and on the development of the transportation industry on the St. Johns River that made them possible. Research is needed on the history of the acquisition and development of Blue Spring and Hontoon Island State Parks for resource management and recreational use.

Resource Management Schedule

The priority schedule for conducting all management activities based on the purpose for which these lands were acquired, and to enhance the resource value, is contained in Addendum 7. 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.

A land management review of Hontoon Island State Park was conducted on March 23, 2004, and the land management review for Blue Spring State Park was conducted on March 24, 2004.

Addendum 8 contains the review team reports. The review team made the following determinations:

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

LAND USE COMPONENT

INTRODUCTION

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

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

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

EXTERNAL CONDITIONS

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

The Blue Spring Administration consists of Blue Spring State Park and Hontoon Island State Park. Blue Spring is located in Volusia County approximately 2 miles west of Orange City in the north central part of the state. Hontoon Island straddles both Volusia and Lake Counties immediately across the St Johns River from Blue Spring SP but accessed from the north by ferry. The land based parking and ferryboat landing is about five miles southwest of Deland. The population of Volusia and Lake Counties and the adjacent Seminole County has grown 25.76 percent since 1990 and presently stands just over 1 million. Population in these counties is projected to grow an additional 21.12 percent by 2010 (BEBR, University of Florida, 2003). As of 2003, 18.1 percent of residents in these counties were in the 0-14 age group, 38.6 percent in the 15-44 age group, 24.5 percent in the 45-64 age group, and 18.8 percent were aged 65 and over, which reflects the state average for these groupings (BEBR, University of Florida, 2003). Nearly 2.5million people reside within 50 miles of the park, which includes the cities of Daytona Beach, Ocala, Orlando and Kissimmee (U.S. Dept. of Commerce, Census 2000).

Blue Spring State Park recorded 358,837 visitors in 2003-2004 FY year. This represents a net 19.3 percent increase over the last five years. By Division estimates, these visitors contributed \$10,569,270 in direct economic impact and the equivalent of 211 jobs to the local economy (Florida Department of Environmental Protection, 2004). Hontoon Island State Park recorded 41,101 visitors in 2003-2004 FY year. This represents a net 76 percent increase over the last five years. By Division estimates, these visitors contributed \$1,411,357 in direct economic impact

and the equivalent of 28 jobs to the local economy (Florida Department of Environmental Protection, 2004).

Existing Use of Adjacent Lands

Blue Spring State Park (BSSP) and Hontoon Island State Park (HISP) share the St. Johns River as a common border. It is the western border of BSSP. Lake Beresford and county owned Lake Beresford Park form the northern borders and commercial and residential are to the east and south. An active sand mine is adjacent east of the park, south of French Avenue. Valentine Park, an Orange City recreation facility, is located ½ mile east of Blue Spring, north of French Avenue. The CSX railway line runs the length of the eastern boundary.

The approach to Blue Spring is along French Avenue, a two-lane residential street. DOT is planning an extension to Route 15A as an Orange City bypass. It will follow Hamilton Avenue intersecting French Avenue from the north about one mile east of the park entrance. During the park's high season, park traffic congests French Avenue so the Route 15A expansion could affect park visitation.

Hontoon Island State Park (HISP) has the St. Johns River as its northern and eastern border. Snake Creek and the Lower Wekiva River Preserve State Park are to the south and the Hontoon Dead River to the west. The north bank of the St. Johns River, where parking and the ferry landing are located, has both residential and commercial development. Directly across the river from the park is Hontoon Landing Marina, which provides rental boats, overnight accommodations and boat concessions.

Other nearby public lands includes the Wekiva River Basin State Parks, DeLeon Springs State Park, Wekiva River Aquatic Preserve, Lake Woodruff National Wildlife Refuge, Seminole State Forest and the Ocala National Forest. Camping, hiking and horseback riding are available in the State and National Forests, and the Wekiva River Basin parks.

Planned Use of Adjacent Lands

The two parks lie mainly in Volusia County with a small section of Hontoon Island State Park in Lake County. Volusia County Future Land Use designates the property adjacent to Blue Spring SP as Low Impact Urban (2-4 units/acre), Rural (one unit/acre to 1 unit/10 acres with a preferred use of 1unit/5acres), and an Environmental System Corridor (1unit/ 25 acres) (The Volusia County Comprehensive Plan, 2000). The parks are designated Conservation in Volusia and Public Resource Lands in Lake. To the north of Hontoon Island the land is designated Low Impact Urban (Volusia County); and to the south and west it is Rural (1 unit/5 acres) and Public Resource Lands (Future Land Use Plan, Lake County-2005, 1998).

Impacts of future development adjacent to the parks, especially BSSP, are inevitable. Declines in local surface and ground water quantity and quality, changes in historic water flow patterns, an increase in local traffic, difficulty managing the park's prescribed burning program and the introduction of exotic species are some anticipated effects. It is important that the Division and the Department of Environmental Protection continue an active involvement in future local land use planning.

Greenways and Trails. There is an initiative by the Conservation and Recreation Lands (CARL) program to purchase some of the remaining undeveloped land between the northern edge of the Wekiva River Basin parks and the Ocala National Forest. The Wekiva-Ocala Greenway project, which includes both Blue Spring and Hontoon Island State Parks, incorporates most of the forested wetlands along the St. Johns and Wekiva Rivers between Orlando and the Ocala

National Forest. The project's primary management goals are to conserve and protect environmentally unique lands that contain native and relatively unaltered flora and fauna, protect significant habitat for native and endangered species, provide a physical connection for wildlife movement, and provide recreational trails and other natural resource based recreation. The Division strongly encourages this initiative.

Volusia County is working to develop a greenways and trails network throughout the county. Currently, the County has plans to develop a multi-use trail to connect Gemini Springs, a county park, to DeLeon Springs. The "Spring to Spring Trail" includes a connection to Blue Spring State Park. The first phase has been built connecting Gemini Springs to DeBary. The Division of Recreation and Parks will cooperate on efforts to plan and manage the connection of this greenway to the State Park.

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, support 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

Blue Spring State Park and Hontoon Island State Park contain similar natural communities, including scrub, upland mixed forest, baygall, floodplain forest, floodplain marsh, depression marsh, and mesic flatwoods. Boardwalks and nature trails provide access to these various communities for recreation and nature observation purposes.

Water Area

Water related recreation opportunities, such as swimming, paddling, fishing and power boating, abound at both parks. Blue Spring State Park provides access to the St. Johns River and has a focal point at Blue Spring and the spring run. Blue Spring, a first magnitude spring, pumps an average of 104 million gallons of water per day into the St. Johns River. Scuba diving down to 120 feet in the spring boil is permitted in summer when manatees are not as prevalent. Over 10,000 divers use Blue Spring each year for recreation and training purposes. Summer swimming and sunning activities along the spring run are also very popular. In the winter months, manatees seek out the consistent warmth of the spring water and visitors come to observe the manatee in nature.

The St. Johns River and its tributaries, Hontoon Dead River and Snake Creek, surround Hontoon Island. This provides a focus on boating and fishing at Hontoon Island State Park.

Shoreline

The banks of the shoreline around the spring run at Blue Spring State Park range from ten to fifteen feet high, with extremely steep slopes. Before the transfer of the park into state ownership, the shoreline along the spring run was heavily damaged by recreational activity. Now

a boardwalk along the length of the spring run allows visitors to view the spring's natural communities and wildlife with relatively little impact. The exceptions are the canoe rental area and the spring boil. The steep slopes for access to the canoe rentals and the unimproved sand launch are causing erosion and silting of the spring run. The spring boil is accessed from the water however; people scrambling down the steep banks at the boil are causing erosion. At the St. Johns River shoreline boats pulling up onto shore have denuded shoreline and underwater vegetation and caused erosion.

The most accessible portion of Hontoon Island's shoreline is the north side of the park, which contains the boat slips and picnic area. A reinforced bulkhead protects a portion of this shoreline from erosion. In addition to picnicking and nature observation, this shoreline provides fishing opportunities for visitors.

Natural Scenery

Both of these parks have a great diversity of natural communities and abundant wildlife, making the natural scenery outstanding. The most impressive views in Blue Spring State Park are from the boardwalk and observation platforms that line the spring run.

The seasonal wildflower bloom at Hontoon Island State Park provides an exceptional vista. It can be enjoyed from an extensive trail network reaching into some of the more remote and scenic areas of the island.

Significant Wildlife Habitat

Both parks have significant wildlife habitat. Their connection with other public lands to the north and south helps preserve the unique natural communities of this region, supporting a diversity of wildlife. Educational opportunities on the subject abound at both parks.

The most notable wildlife is the endangered Florida Manatee, which inhabits the St. Johns River and the spring run at Blue Spring State Park year-round. They are most numerous from mid-November through March. The spring run's constant 72-degree water temperature provides a winter refuge for the manatees. Visitors get an excellent view of this endangered mammal in the crystal-clear waters of the spring run.

Archaeological and Historical Features

Reminders of past inhabitants are found at both parks. Snails gathered from sandbars were the staple food for the Timucuan Indians. Over the centuries, the discarded shells formed massive mounds throughout both properties.

On Hontoon Island, excavated materials prove the large mounds were the site of an ancient village. One of the submerged archaeological sites yielded a large owl totem and smaller sculptures of an otter and a pelican, carved by the Indians more than 600 years ago. Replicas of these carvings are located near the picnic area.

By the mid-1800s, pioneer settlers had pushed the Indians out of this region of Florida and Blue Spring became a popular destination for steamboats. The Thursby family built a large frame house atop an Indian shell mound in 1872. The house still remains and is open to visitors. In addition to the house, pilings of an old steamboat dock are evidence of this era at Blue Spring.

Assessment of Use

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

Past Uses

The Timucuan Indians were the first human inhabitants of Hontoon Island and Blue Spring State Parks. As previously mentioned, evidence is visible in the large shell middens on both properties. Pioneers arrived in the 1800s, and Blue Spring became a major stopping point for steamboat traffic in the 1860s. The Thursby family farmed and operated a post office and steamboat landing. The first rail line in Volusia County transported materials brought by steamboat to this landing. After the 1930's, the property was marketed for outdoor recreation. When the State purchased the property in the 1972, the public was using the spring run for swimming and related recreational activities. Without proper management, the spring run had been subject to over use and suffered from severe erosion and litter. The natural resources of the spring run have made an outstanding recovery since the transfer of the property to state ownership.

After the Timucuans left the 1,650-acre Hontoon Island, it was used as a pioneer homestead, a boat yard and a center for commercial fishing and cattle ranching. It was purchased by the state in 1967.

Recreational Uses

Recreational activities at Blue Spring and Hontoon Island include camping, cabins, picnicking, fishing, canoeing, hiking, shared-use trails and nature observation. Additionally, Blue Spring offers primitive camping, boat tours, swimming and scuba diving.

Other Uses

Both parks provide exceptional outdoor laboratories for students and scientists because of the seasonal abundance of the Florida Manatee, the wealth of archaeological sites, and the great diversity of natural communities and wildlife.

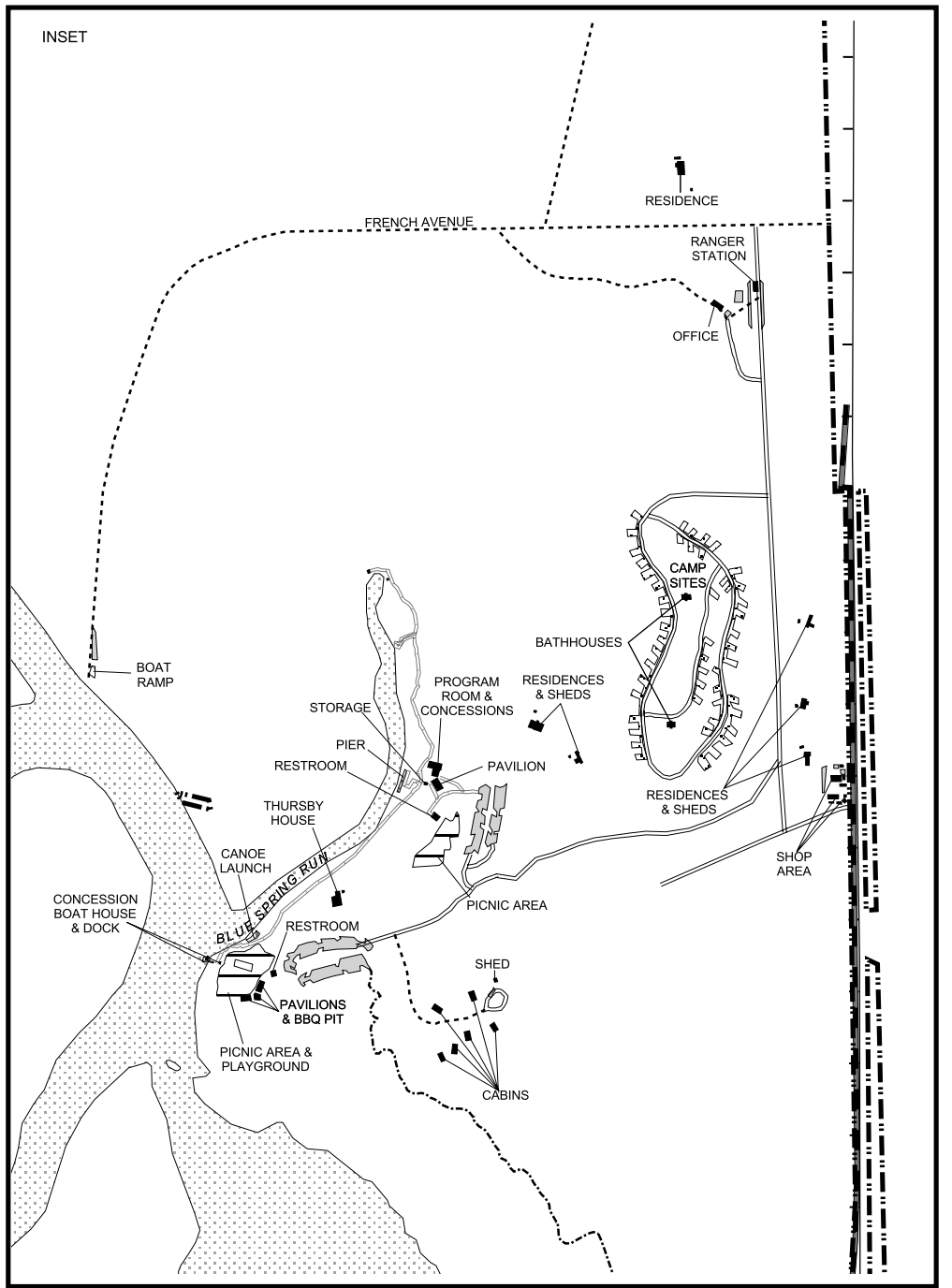
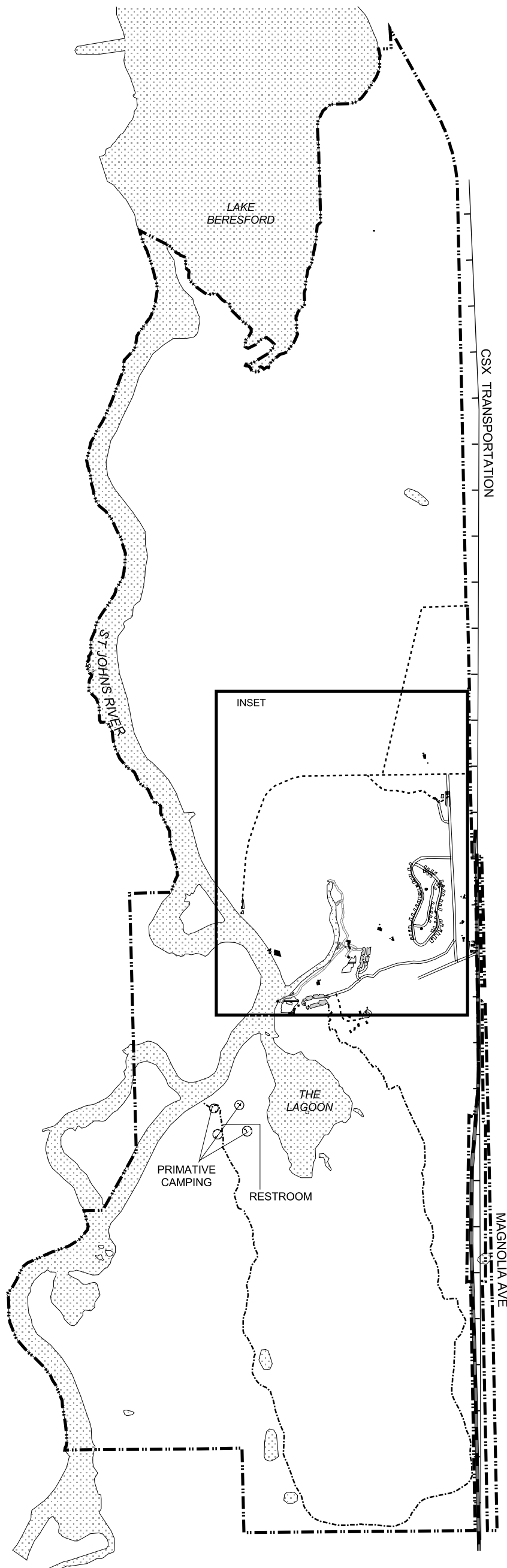
Protected Zones

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 Blue Spring and Hontoon Island State Parks the scrub, shell mound, floodplain forest, floodplain marsh, and all the lacustrine, riverine and subterranean communities, as well as an eagle's nest buffer, have been designated as protected zones as delineated on the Conceptual Land Use Plan.

Existing Facilities

Blue Spring State Park. The primary recreational attraction at Blue Spring is the West Indian manatee and the spring run. During the winter when manatees are in the spring run, the park reaches capacity and the gates close by 10:00am. The summer brings swimmers, sunbathers and divers to the spring run.



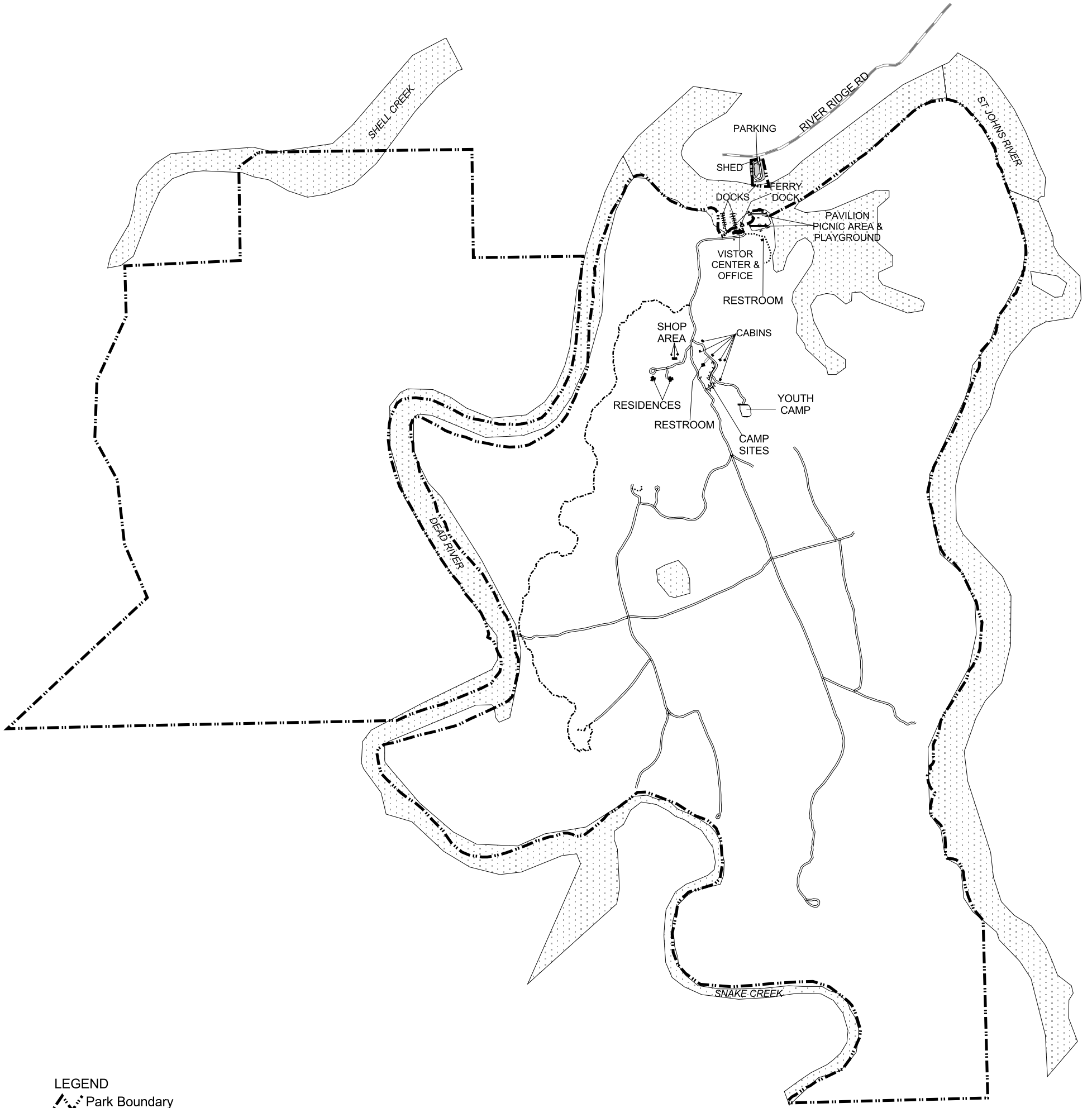
- LEGEND**
- Park Boundary
 - County Road
 - Park Road Paved
 - Park Road Unpaved
 - Boardwalk
 - Hiking Trail
 - Railroad
 - Special Use Areas
 - Water Bodies
 - Structures
 - Camp Sites
 - Parking Lots
 - Marine Structures

BLUE SPRING
STATE PARK



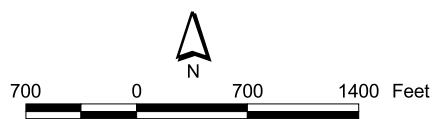
Prepared by:
Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

BASE MAP



LEGEND

-  Park Boundary
-  County Road
-  Park Road Unpaved
-  Hiking Trail
-  Boardwalk
-  Walkway
-  Structures
-  Special Use Area
-  Parking Lots
-  Camp Sites
-  Marine Structures
-  Water Bodies



**HONTOON ISLAND
STATE PARK**

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

BASE MAP

The three-story historic Thursby House is situated on the hill overlooking the spring run and St. Johns River. Renovations on the house are near completion and the long-term plan is to develop a self-guided tour of permanent exhibits in the rooms.

Blue Spring has two separate picnic areas, one near the spring run and the other by the St. Johns River. Together, these picnic areas have over 80 tables and several large pavilions. A mile long boardwalk provides access to the swimming area, picnic areas, boat dock, and headspring, with numerous overlooks and interpretive exhibits along the way. A meeting room/education facility, located next to the swimming area, is used primarily for manatee presentations to school groups. Fishing is allowed from the dock at the river end of the spring run. A private concessionaire offers a two-hour boat tour exploring nature on the St. Johns River.

A boat ramp at the end of French Avenue is available for public use, however, it is in poor shape. Therefore, a majority of boats are launched off the shoreline rather than using the ramp. The unimproved parking lot has no designated boat trailer parking spots, making parking unmanageable. Additionally, there are law enforcement problems at the boat ramp.

There is a canoe rental concession at Blue Spring SP. Paddlers can readily access the St. Johns River and Snake Creek, the southern boundary of Hontoon Island.

Overnight accommodation is available in different forms: six cabins with amenities, a standard campground and primitive hike-in sites. The cabins and campsites are within easy walking distance to the spring and day-use areas.

The facilities in the shop area, in particular the storage buildings and the pole barn, are deteriorating and in need of extensive repairs or replacement. Two ranger residences are 1972 mobile homes.

Recreation Facilities

Overnight Accommodation

Standard Campground (51 sites)
Bathhouse (2)

Cabins (6)
Primitive Campsites (4)

Day Use Areas

Spring Run Area

Restroom
Concession
Picnic Shelters (2)
Program Room

French Avenue Area

Boat ramp

Waterfront

Boat Tour
Fishing
Canoe Rentals

River Area

Restroom
Picnic Shelter (1)
Playground

Trails

Hiking (4 miles)
Nature (1 mile) on boardwalk
Equestrian (4 miles)
Canoe

Support Facilities

Ranger Residence (5)

Shop Area

Storage Buildings (5)

5-Bay Pole Barn

Parking (185 cars and 10 boat trailers)

Office

Entrance Station

Hontoon Island State Park. Hontoon Island is distinctive, as it is accessible only by private boat or passenger ferry service. Vehicle parking is on the mainland at the ferry launch point. Boat docking slips are available on the island. Near this docking area and ferry landing is the day use area with picnic facilities and playground. There are 6 miles of shared-use trails and a 1.5-mile nature trail. The park also has canoes for rent and, on weekends, a food concession available for campers and day-use visitors. A newly opened Visitor Center features the story of the interaction of 2000 years of history and 1,650 acres of nature.

Overnight facilities consist of docking facilities for private boats, as well as rustic cabins, tent sites, and a youth camp.

Recreation Facilities

Overnight Accommodation

Tent sites (12)

Cabins (6) without facilities

Bathhouse

Youth Camp

Boat camping (54 slips)

Trails

Hike/ Bike (6 mi.)

Nature (1.5mi.)

Canoe

Day Use Areas

Picnic Shelter

Restroom

Playground

Waterfront

Fishing

Concession

Canoe Rental (5)

Visitor Center

Support Facilities

Ranger Residence (2)

Dock Master Site

Office

Shop Area

Building with shelter

Flammable storage

Land Base

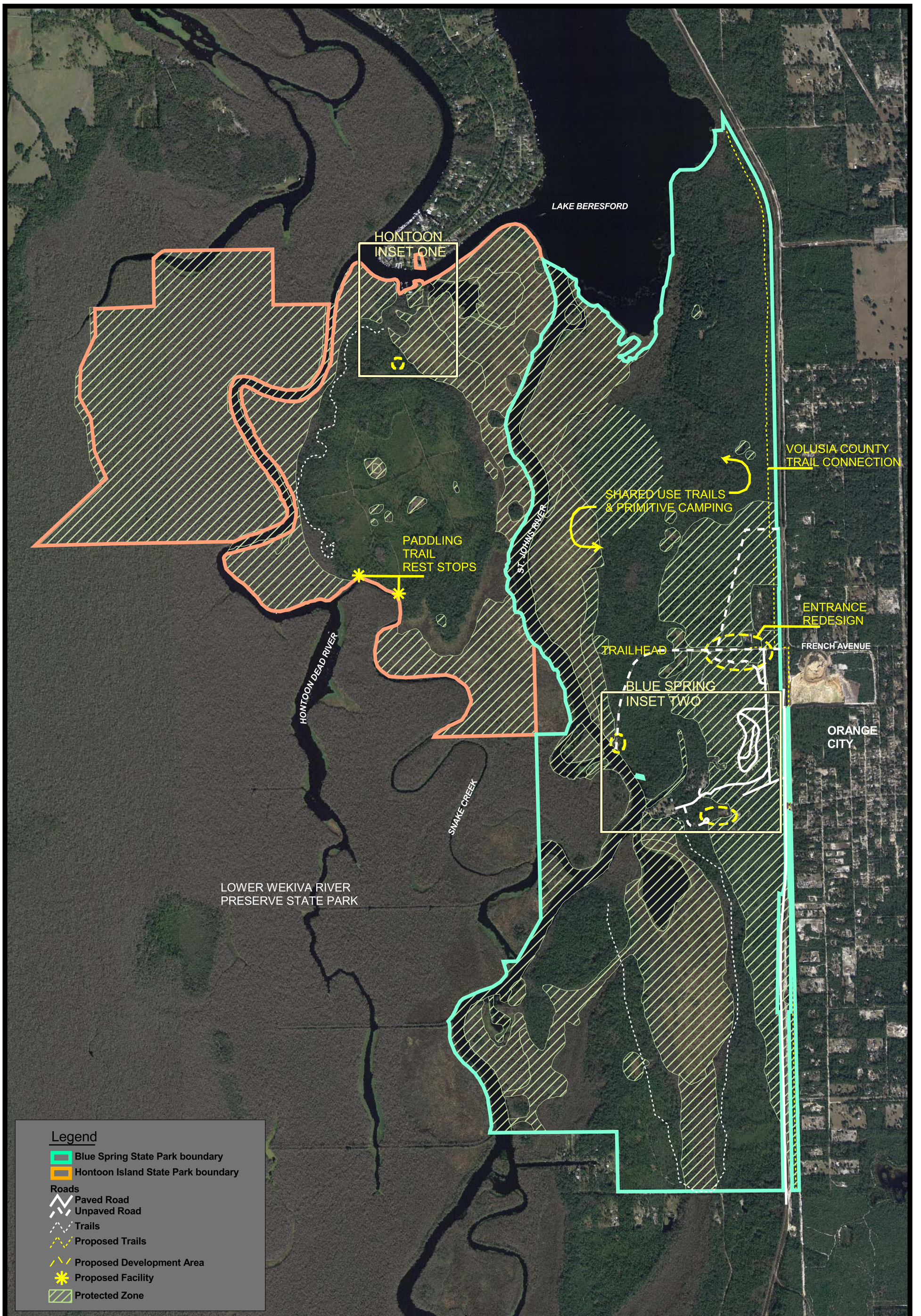
Parking (50-65 cars)

Ferry Boat landing

CONCEPTUAL LAND USE PLAN

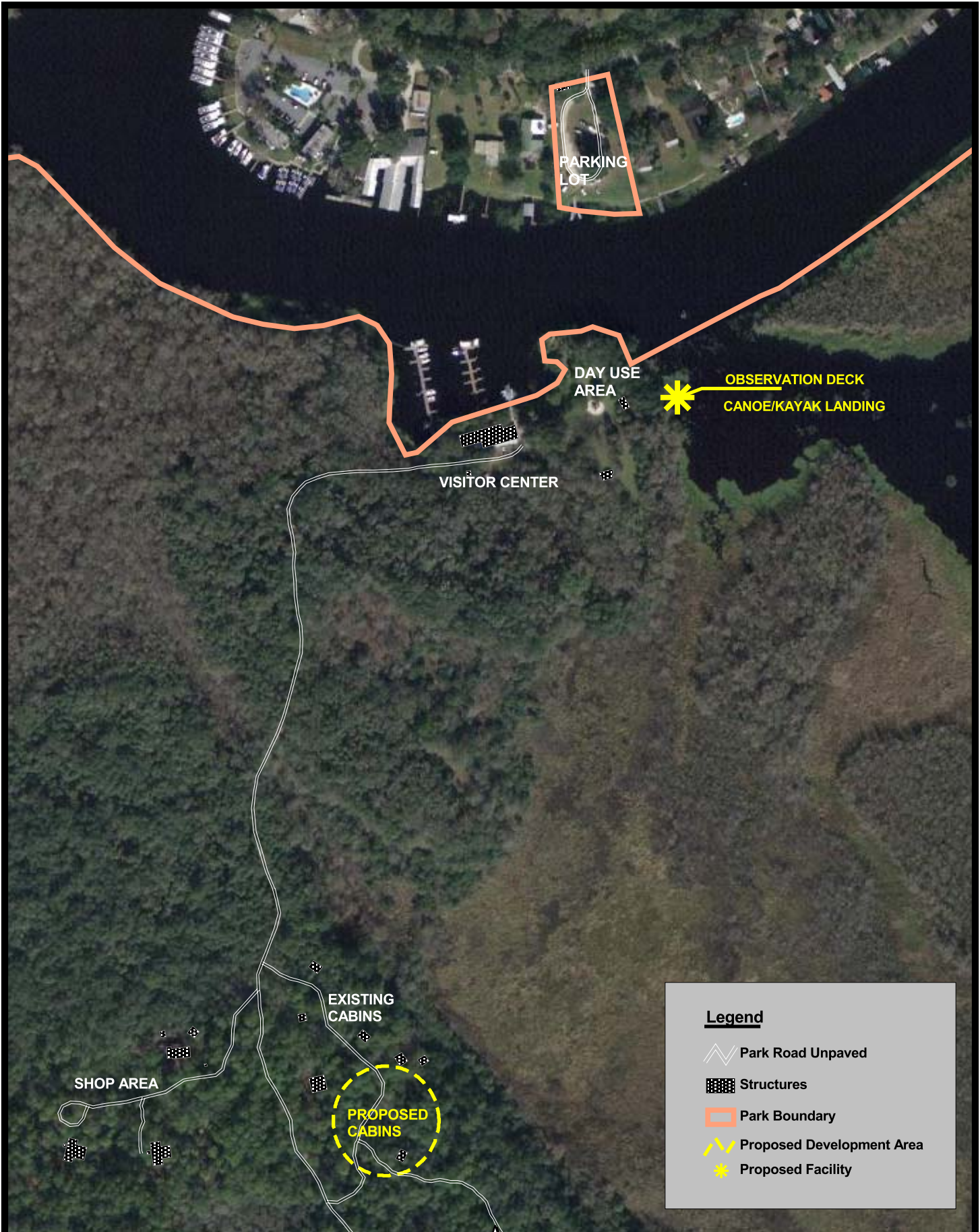
The following narrative represents the current conceptual land use proposal for this park. As new information is provided regarding the environment of the park, cultural resources, recreational use, and as new land is acquired, the conceptual land use plan may be amended to address the new conditions (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



BLUE SPRING STATE PARK & HONTOON ISLAND STATE PARK



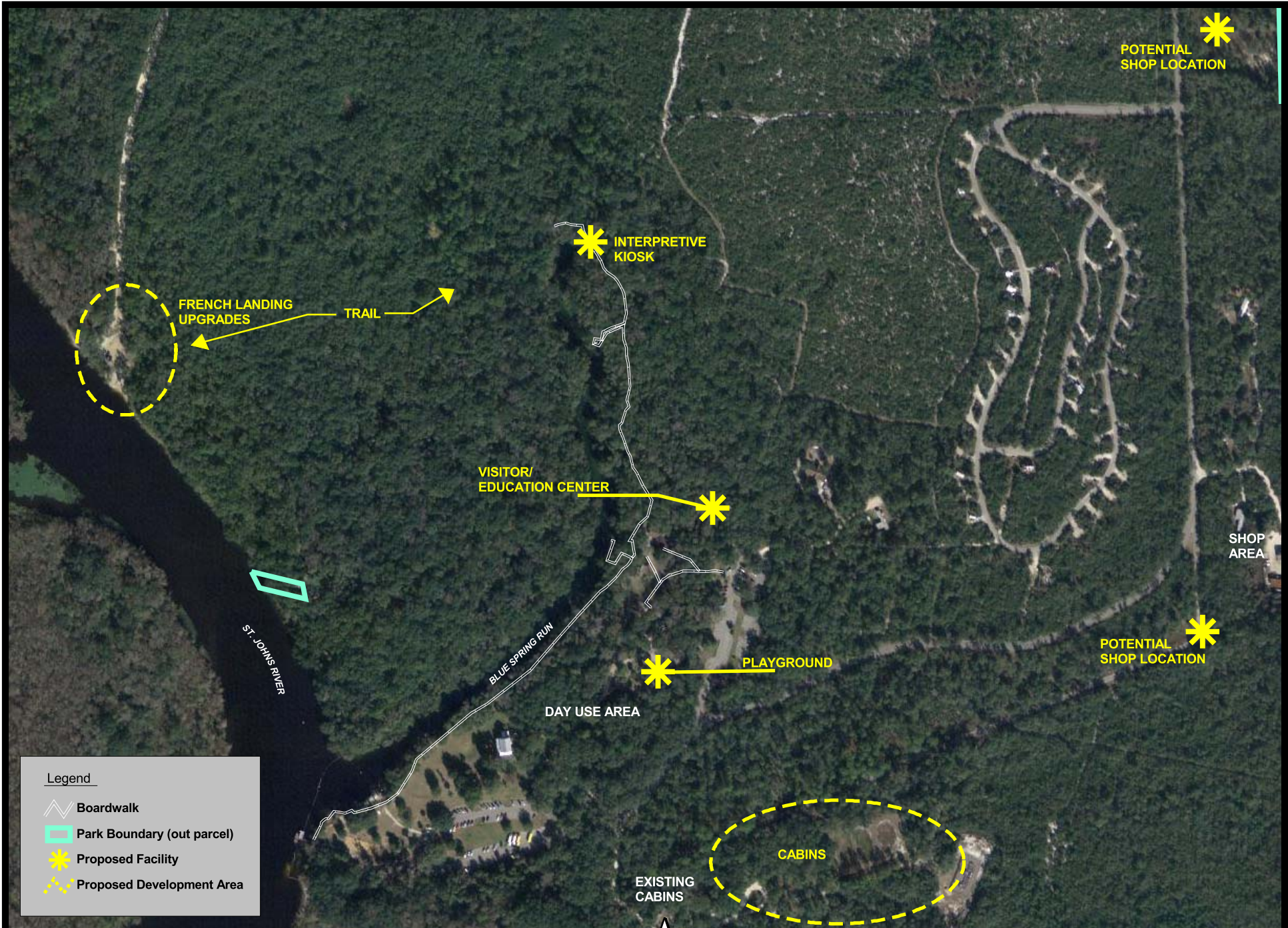


**HONTOON ISLAND
STATE PARK**



**INSET ONE
CONCEPTUAL
LAND USE PLAN**
Page 2 of 3

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Division of Recreation and Parks / Office of Park Planning



**BLUE SPRING
STATE PARK**



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

**INSET TWO
CONCEPTUAL LAND USE PLAN**

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

Blue Spring State Park and Hontoon Island State Park should continue to provide the recreational activities offered at present. These parks are in an area of rapidly expanding urbanization and will continue to be primary destinations for recreational and nature-based travel. Blue Spring will continue to attract visitors in large numbers for the manatee viewing in the winter, and swimming and diving in the summer. Hontoon Island's unique situation of being accessible only by boat will continue to attract visitors to an alternative experience. The development proposed at each park involves upgrades or expansions of existing facilities to enhance the visitor experience and provide more easily managed conditions for park staff.

Recreation Facilities

▪ Day Use Area

Blue Spring State Park. Blue Spring is an important Florida Manatee refuge from mid-November through March. Park staff provides an exemplary education program on the endangered species and they need to accommodate larger groups as well as the casual visitor. Additionally, environmental education on the other diverse resources of the park could be expanded. To accommodate this, a visitor education center with a classroom is proposed (see CLUP page 3). It should be located north of the existing concession/classroom facility. Accessible from the north parking lot or the boardwalk, it would provide a central area for static displays and talks. Because of the large number of casual visitors to this park, information on other state parks in the area should be provided here. The enhancement of the interpretive facilities will better accommodate the large number of visitors to this park, increasing knowledge and stewardship. The additional location would spread uses out, easing the present pedestrian congestion problem.

The area around the springhead is experiencing some erosion. Some of the erosion is caused by illegal human access. The area is being stabilized and restored to natural conditions. To assist with this, an interpretive kiosk should be placed along the boardwalk at the springhead. Information included should cover the causes and negative consequences of erosion and the restoration goals and progress.

The diverse and long human presence in this area also needs interpretation. The recently renovated Thursby House will house displays and be set up for self-guided tours that will describe some of its history.

The existing concession/classroom facility could convert to a larger concession building and

allow that area to be a focus for picnicking and relaxing between the historical aspect of the Thursby House and the natural resource education center. This area is also the hub for swimming, snorkeling and SCUBA diving in the summer months. Swimming with the manatees is not allowed. A playground should be installed in this area.

Hontoon Island State Park. The new visitor center offers the visitor an overview of the island's natural communities and pre-historic and historic uses. With this introduction, the visitors use the hiking trails for a first-hand experience. Interpretive signs should be installed at key points along the trails.

The existing main entrance dock is heavily used by private boaters and the ferryboat shuttles. Another facility is needed strictly for the passive nature observation. A lagoon overlook, an observation deck constructed on a disturbed site would fill this need. This site, once a barge docking facility, is east of the picnic area. Wildlife is plentiful in the lagoon. Additional interpretive signs describing the birds and fish should be installed on the overlook. (See CLUP page 2)

The picnic area playground is old and should be replaced with a safer, more updated version.

▪ **Entrance Area**

Blue Spring State Park. Blue Spring is a popular destination especially in the winter for those wishing to see manatees. The large number of visitors causes traffic to back up along the French Avenue approach. The park often closes by 10:00 am and as many as 200 cars an hour are turned away. Once notified the park is closed, vehicles must be turned around in the small area at the ranger station. Those wishing to proceed to the boat ramp cannot get past traffic blocking the entrance. Pedestrians and bicyclists must maneuver through this congestion. Volusia County's Spring to Spring Trail is under design and will also pass through this area. This area needs redesigning for better traffic control and safer conditions (see CLUP page 1). The Division should cooperate with Orange City and Volusia County to find solutions to Blue Spring entrance problems.

Ideally, if the park were to assume management of the portion of French Avenue west of the park boundary, the entrance could be expanded. A new ranger entrance station could be placed along French Ave. west of the existing entrance road. The main park entrance would then turn south east past the new location to meet the main entrance road. This would allow more stacking room within the park and control the access to both the main use areas and French Landing. Turn-arounds at the new and existing entrances would allow visitors to exit easily when the park is temporarily closed. Signs at US 17/92 and along French Avenue would enable park staff to notify visitors of the temporary closing and potential reopening times. Recommended improvements to this section of French Avenue also include paving it from the entrance of the park to the boat ramp. Frequent maintenance is now required on the unpaved road causing runoff into the nearby wetlands. These communities are degraded from unmanaged stormwater and siltation.

A more immediate solution provides a system of signs near the park boundary informing visitors when the park is temporarily closed. The signs should indicate potential reopening time for visitors return. A turn-around to the side of French Ave just west of the entrance would allow an easier exit. A kiosk with information about Hontoon Island should be located at the turn-around. This would explain the relationship between the two parks and provide an alternative destination for visitors.

▪ **Boating Facilities**

Blue Spring State Park. If the division assumes management of French Avenue within the park, recommended boat ramp area improvements include:

- pave the parking area and provide designated boat trailer parking spaces,
- boat launch repairs,
- a small fishing dock
- interpretive kiosks for manatee education,
- a composting restroom and a few picnic tables,
- hiking trail to the springhead. (See CLUP pg 3)

These improvements would not provide for additional boat traffic, but rather would limit and manage existing boat recreation activities. Monitoring of current use is recommended to determine the limit on parking facilities. In addition, best management practices for stormwater management, including designs that reduce the quantity of impervious surfaces, should be incorporated in the road and parking area. Manatee safety and migration concerns will be the foremost consideration in the location, type and size of a fishing dock. A monofilament recycling receptacle should be placed near the fishing pier. Its use will minimize the possibility of line entanglement for manatees.

Snake Creek is within the Hontoon Island State Park boundaries yet is more accessible from Blue Spring. It should be noted as a destination for those renting canoes from this park. The rental canoe area needs stabilizing to control erosion into the spring run and steps should be added for access from the boardwalk.

Boaters arrive at the park from the St. Johns River, pulling up to the small area south of the tour boat docks. Erosion control options up to and including a floating dock should be studied and implemented to protect this area.

Since Blue Spring State Park is located in a manatee sanctuary/refuge, all boating recreation improvements will be coordinated with county and state environmental and permitting agencies and within the limits of manatee protection measures. The Volusia County Manatee Protection Plan guidelines, once approved, will be followed.

Hontoon Island State Park. The south side of Hontoon Island has two areas of uplands adjacent to Snake Creek. These areas should be designated rest areas for the Snake Creek paddling trail (see CLUP pg 1). Picnic tables would be provided. The areas should be posted as pack in/pack out since the remote location would not be easily cleaned by park staff. Environmental impacts will be monitored and the areas closed, if necessary, for rejuvenation.

As Lake and Volusia Counties encourage more paddling with blueways trails, Hontoon Island may become a popular destination. When boat traffic increases, conflicts may occur between motorized and non-motorized boats. At that time, a canoe/kayak landing should be designated near the overlook in the lagoon.

▪ **Trails**

Blue Spring State Park. The Stark Tract in the northern section of the park has four miles of trails established originally as equestrian trails. These rarely used trails need publicizing for hiking as well as for horseback riding. A small trailhead with a kiosk should be established off

French Avenue (see CLUP page 1). Volusia County owns the land north of the Stark Tract and park staff will work with county staff to coordinate trail access between the two parks. Volusia County and Orange City regard Blue Spring State Park as a destination for local recreational trail initiatives. The Division is supportive of these initiatives and intends to continue coordination efforts to link the local projects to the State Park at appropriate locations. One phase of the Spring to Spring Trail, a multi-use paved trail is actively being planned. This segment will go from French Avenue north to Lake Beresford Park.

As Lake and Volusia County develop the blueways, park staff should work with them to ensure adequate way-finding markers are placed on the paddling trails.

A paved bicycle trail from the entrance of Blue Spring to the northern day use parking area is recommended. This will provide safe passage for pedestrians and bicyclists within the park and provide a connection to the Spring to Spring Trail. If possible, the trail should be separate from the main entrance road.

▪ **Overnight Facilities**

Blue Spring State Park. The cabins at Blue Spring State Park are used consistently and up to six more cabins are recommended. They should be located in the hammock area of the six existing cabins. (See CLUP page 3)

Primitive campsites in the Stark Tract, accessible by the multi-use trail, should be added. The number and exact location should be determined once trailheads and use patterns are established. Primitive campsites will accommodate four to six people with fire rings, picnic tables and stabilized tent sites. (See CLUP page 1)

Hontoon Island State Park. The rustic cabins at Hontoon Island are popular with visitors and the addition of up to six similar cabins is recommended. The cabins should be located in the camping area on existing tent sites, since the demand for cabins far exceeds the demand for tent camping. (See CLUP page 2.) Six sites will remain for those wishing to tent camp.

Support Facilities

Blue Spring State Park. The park should continue to upgrade facilities to meet ADA compliance. The cabin road and French Avenue need paving.

The shop area needs an upgrade. Facilities needed are an open 5-bay equipment shelter to replace the existing one and an enclosed 3-bay shop building. If relocation of the shop facilities is necessitated by the Spring to Spring Trail location, new facilities should be constructed in one or two potential sites: southwest of the existing area or southeast of the entrance area (see CLUP page 3). The site will be determined by district, park, and planning staff pending permitting and compatibility with future Spring to Spring Trail development.

Two of the existing ranger residences are 1972 mobile homes. These need replacing with permanent houses.

Hontoon Island State Park. The visitor parking area on the mainland needs paving. In the interest of using as little impervious surface as possible, the loop-road should be paved and parking spaces left as grass. Pervious paving materials should be considered to minimize retention requirements. A three-bay equipment shelter is needed on the island.

Facilities Development

Preliminary cost estimates for the following list of proposed facilities are provided in Addendum 7. 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

Blue Spring State Park:

Day Use Area

Visitor/Education Center	Playground
Interpretive Displays (Thursby House & Education Center)	

Boating Facilities (French Ave)

Boat Ramp	Fishing Dock
Parking	Stormwater Management
Composting Restroom	Kiosk

Trails

Information Kiosk	Paved Bicycle Trail
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Overnight Facilities

Cabins (6)	Stabilized Tent Sites (6)
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Hontoon Island State Park:

Day Use Area

Playground	Interpretive Signs
Observation Deck	

Overnight Facilities

Primitive Cabins (6)	
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Support Facilities

Blue Spring State Park:

Entrance Area

Park Closure Signs	Ranger Station
Information Kiosk	Road Paving

Overnight Facilities

Pave Cabin Road	
-----------------	--

Shop Area

5-bay equipment shelter	Ranger residences (2)
3-bay shop building	

Hontoon Island State Park:

Entrance Area
Road Paved

Shop Area
3-Bay Equipment Shelter

Existing Use and Optimum Carrying Capacity

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

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

Blue Spring State Park Table 1— Existing Use And Optimum Carrying Capacity

Activity/Facility	Existing Capacity		Proposed Additional Capacity		Estimated Optimum Capacity	
	One Time	Daily	One Time	Daily	One Time	Daily
Trails						
Shared Use	32	64			32	64
Hiking	40	80			40	80
Picnicking	96	192			96	192
Manatee						
Viewing/Swimming	247	494			247	494
Educational Center	20	80	40	160	60	240
Camping						
Standard	204	204			204	204
Primitive	16	16	24	24	40	30
Cabins	36	36	36	36	72	72
Boating						
Canoeing	38	76			38	76
Boat Tours	46	92			46	92
TOTAL	775	1,334	100	220	875	1,544

Note: The fishing facilities are assumed to serve the same recreational user base as the picnic area, therefore, no carrying capacity is determined for them.

Hontoon Island State Park—Table 1 Existing Use And Optimum Carrying Capacity

Activity/Facility	Existing Capacity		Proposed Additional Capacity		Estimated Optimum Capacity	
	One Time	Daily	One Time	Daily	One Time	Daily
Trails						
Shared Use	120	480			120	480
Hiking	30	120			30	120
Picnicking	100	200			100	200
Visitor Center	10	40			10	40
Camping						
Standard	48	48			24	24
Primitive Youth	30	30			30	30
Cabins	36	36	36	36	72	72
Boat Slips	216	216			216	216
Boating						
Canoeing	10	20			10	20
Observation Pier			10	40	10	40
TOTAL	600	1,190	46	76	622	1,242

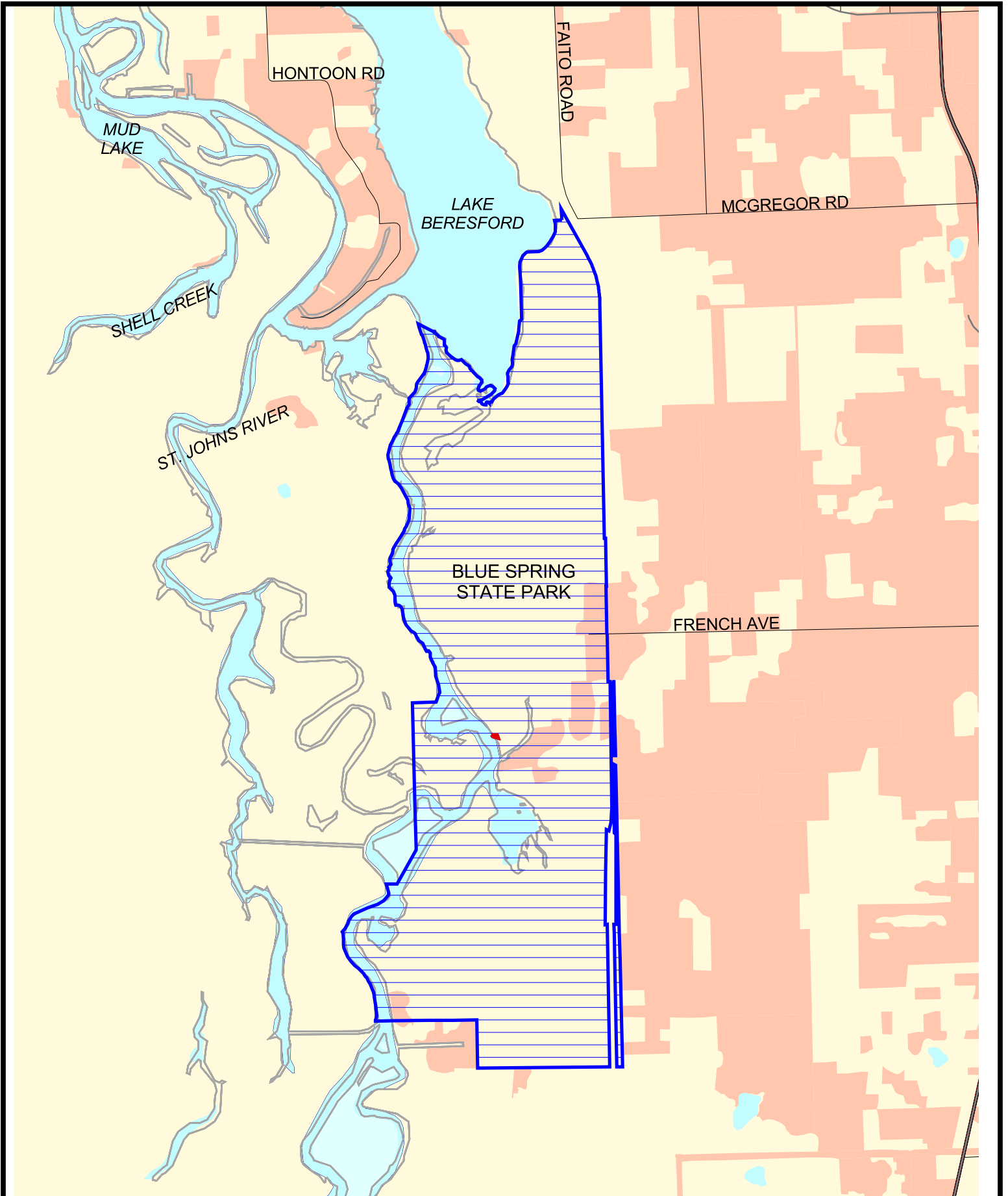
Note: The fishing facilities are assumed to serve the same recreational user base as the picnic area, therefore, no carrying capacity is determined for them.

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 these parks.

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 out-parcel along the St. Johns River, surrounded by Blue Spring State Park, has been identified as optimum boundary. A parcel southeast of Hontoon Island, bordered by the St. Johns River and Lower Wekiva River Preserve State Park, is identified for the optimum boundary. It will give the park system contiguous ownership along this section of the St. Johns River that is important in natural resource protection. Properties to either side of the land-based parking for the Hontoon Island ferry are identified for the optimum boundary. The parking lot is frequently full and the park's potential carrying capacity is not met in daily use. More parking could be added if space were available.





**BLUE SPRING
STATE PARK**

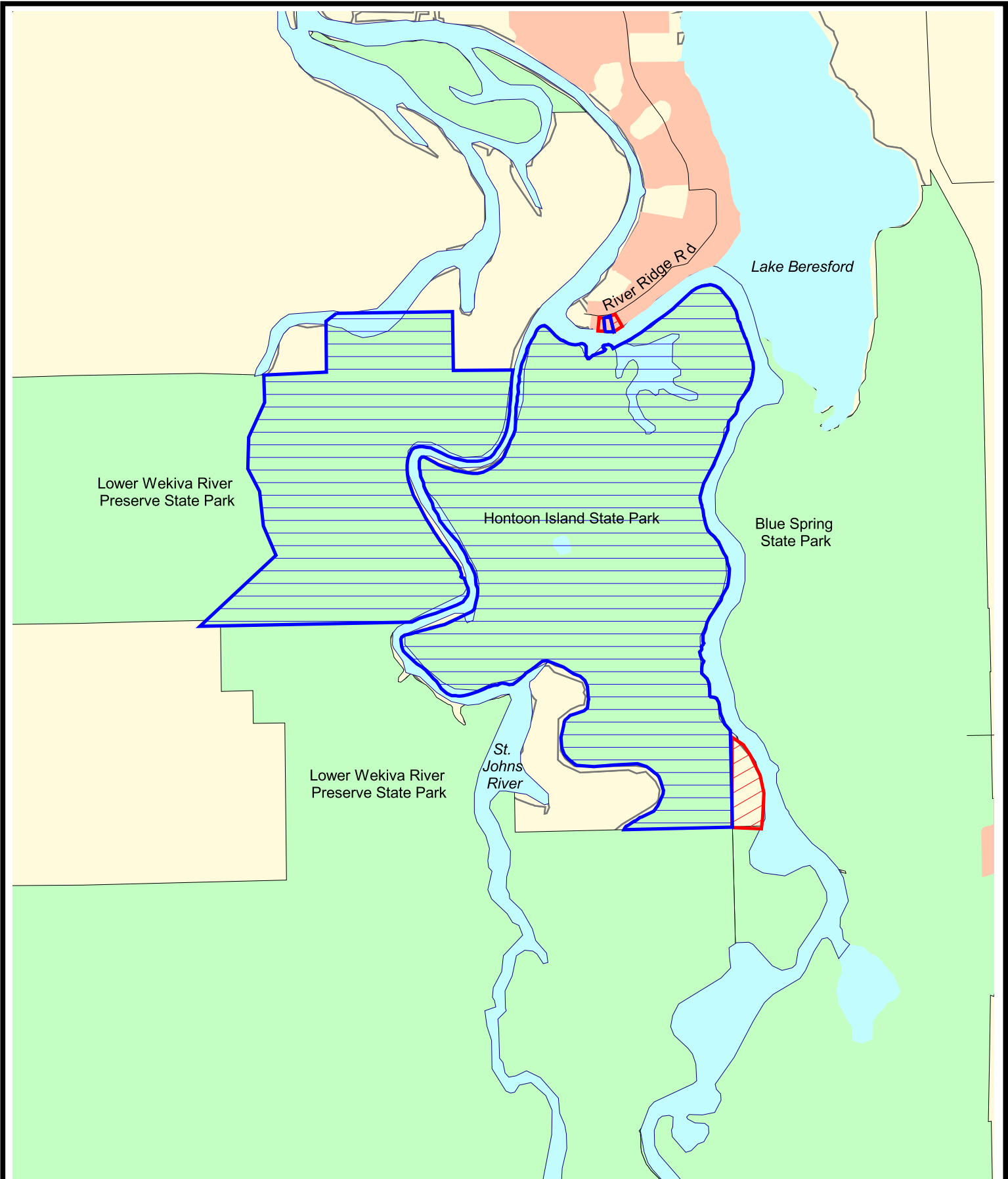


Prepared by:
Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

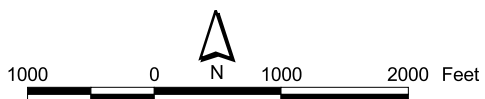
LEGEND

-  Optimum Boundary
-  Park Boundary

OPTIMUM BOUNDARY MAP



**HONTOON ISLAND
STATE PARK**



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

LEGEND

- Park Boundary
- Optimum Boundary

OPTIMUM BOUNDARY MAP

Addendum 1—Acquisition History and Advisory Group Report

Blue Spring State Park

Acquisition History

Sequence of Acquisition

On August 14, 1972, the Board of Trustees of the Internal Improvement Trust Fund (Trustees) obtained title to a 275-acre property that later became Blue Spring State Park. The property was purchased under LATF program. On November 21, 1972, the Trustees conveyed management authority of Blue Spring State Park to the Department of Environmental Protection, Division of Recreation and Parks (Division).

Since the establishment of Blue Spring State Park in 1972, the Trustees have acquired several individual parcels and incorporated them into the park. Funding sources include LATF, Donation and P2000 (Acquisitions and Inholdings).

Title Interest

The Trustees hold fee simple title to Blue Spring State Park, and the Division manages the park under Lease No. 2622 for a period of ninety-nine (99) years. The lease will expire on November 21, 2071.

Outstanding Reservations

The Division's lease agreement from the Trustees 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. Following is a listing of outstanding rights, reservations and encumbrances that apply to Blue Spring State Park.

Instrument: Amended Quit Claim Deed
Instrument Holder: Volusia County
Beginning Date: May 21, 1987
Ending Date: Please see below
Outstanding Rights, Uses, Etc.: The quitclaim deed is subject to the condition that French Avenue and French Avenue boat ramp remain open 24 hours a day at no charge to users until improvement is made to French Avenue and French Avenue boat ramp. Should the state charge for admission and/or reduce hours of operation without improving the French Avenue and French Avenue boat ram, the property would revert to the county of Volusia. Since no improvements have been made to the French Avenue and French Avenue boat ramp, the reverter clause in the deed is still in full effect.

Blue Spring State Park
Acquisition History

Hontoon Island State Park

Acquisition History

Sequence of Acquisition

On May 12, 1967, the Florida Board of Parks and Historic Memorials (FBPHM) obtained title to a 28.84-acre property that later became Hontoon Island State Park. FBPHM acquired the property from the City of DeLand by donation. On September 28, 1967, FBPHM transferred its title to Hontoon Island State Park to the Board of Trustees of the Internal Improvement Trust Fund (Trustees). On January 31, 1968, the Trustees conveyed its management authority of the Park to FBPHM.

Since the establishment of Hontoon Island State Park in 1967, FBPHM and its successor agencies have acquired several individual parcels and added them to the Park. This property was acquired through a donation.

Title Interest

The Trustees hold fee simple title to Hontoon Island State Park, and the Division manages the park. In 1988, the Trustees assigned a new lease number to Hontoon Island State Park without making any changes to the terms and conditions of Lease No. 2324. Hence, the Division presently manages the park under a new Lease No. 2468. The lease will expire on January 23, 2068.

Outstanding Reservations

The Division's lease agreement from the Trustees 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. Following is a listing of outstanding rights, reservations and encumbrances that apply to Hontoon Island State Park.

Instrument:Warranty Deed
Instrument Holder:F. H. Connell and Mary Edna Connell.
Beginning Date:May 24, 1967
Ending DateThere is no specific ending date given.
Outstanding Rights, Uses, Etc.:The subject lands would be used for public recreational purposes only. The Grantee will permit no exploitation of minerals; in the event of transfer of title, mineral interest would revert to the instrument holder.

Hontoon Island State Park

Acquisition History

Instrument: Warranty Deed
Instrument Holder: City of DeLand.
Beginning Date: May 12, 1967
Ending Date: There is no specific ending date given.
Outstanding Rights, Uses, Etc.: The deed is subject to the condition that the property is used only for state park purposes. In the event the property is not used for state park purposes, the title to the property shall revert and become revested in the City of DeLand.

Blue Spring State Park And Hontoon Island State Park

Advisory Group Members List

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Lake County Board of County
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Frank Bruno, Chair
Volusia County Council
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Deland, Florida 32720-4612

Robert Rundle, Park Manager
Blue Spring State Park
Hontoon Island State Park
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Volusia County Leisure Services
202 N. Florida Avenue
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Jimmy Roberts
Division of Forestry
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DeLeon Springs, Florida 32130

Phil Giorno, Administrator
Volusia County Soil and Water
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Jay Holder
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Nels Parson
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500 North Maitland Avenue
Maitland, Florida 32751

Ed Sherman, Treasurer
West Volusia Audubon Society
1325 S. Spring Garden Avenue
DeLand, FL 32720

Richard Harmon, Chair
Halifax-St. Johns Chapter
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Daytona Beach, Fl. 3211-3764

Ann Arnold
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Royal Relyea
Scuba Diving Representative
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Deland, Florida 32721

Arnold Kuenzler
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Orange City, Fla. 32763

Blue Spring State Park And Hontoon Island State Park

Advisory Group Members List

Jeanne Michael
696 E. Old Mill Drive
Debary, Florida 32713

Blue Spring State Park And Hontoon Island State Park

Advisory Group Staff Report

The Advisory Group appointed to review the proposed unit management plan for Blue Spring State Park and Hontoon Island State Park met at the Program Room at Blue Spring State Park in Orange City, Florida on April 5, 2005. Ms. Blanche Hardy represented the Honorable Jennifer Hill, Mr. Andy Kelly represented Mr. Phil Giorno, and Ms. Sherry McGowan-Cody and Ms. Marti Miller, assistant park managers, represented Mr. Danny Paul. Mr. Dave Hankla, the Honorable Frank Bruno, and Ms. Judith Vallee did not attend. All other appointed Advisory Group members were present. In addition to the assistant park managers, attending park staff were Mr. Larry Fooks, Ms. Valinda Subic, Mr. Richard Harris, Mr. Mark Cohen, and Ms. Carol Perfit. Two observers 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. Jeanne Michael, representing adjacent landowners, said the problem the neighbors share with the park is wild hogs and knows the park is working on hog removal. She approves of the plan.

Mr. Fred Bisson, representing the Volusia-Flagler Sierra Club, said he also works as a volunteer running the ferry to Hontoon Island. He approves of the plan and learned a lot in reading it.

Mr. Ed Sherman, representing West Volusia Audubon Society, inquired on where boat beaching will occur if the canoe rental will be moved to the beach area. Carol Perfit explained some space will still be available for beaching but the practice had denuded the vegetation. Alternative boat tie-ups were investigated in 1998. The Bureau of Protected Species Management limited possibilities to a floating dock to be removed in manatee season. This was not practical for the park.

Mr. Nels Parson, representing St. Johns River Water Management District, read comments from J.B. Miller as well as his own. Mr. Miller felt the plan was too specific when stating dates of accomplishment. He also suggested using the term "enhance" instead of "restore" when referring to borrow pits since terracing will probably be used. The mesic flatwood and baygall communities were questioned.

Mr. Parson is pleased with Hontoon Island's progress. The new visitor center displays are excellent but he suggested the interpretive video be more specific to the island's history. The proposed fishing/observation pier is not in a good location for fishing. It will be good for nature study but too shallow for fishing. Mr. Parson suggested a boardwalk be erected over the seawall to accommodate fishermen and help control any erosion problems.

On the overnight facilities at Hontoon Island, he questioned the location of the six additional cabins. The conceptual land use map shows them interfering with the youth camp. Carol Perfit said the cabin location is within the existing campground in unused tent spaces. Mr. Parson also recommended that elevated tent pads be provided as the area is often wet.

Blue Spring State Park And Hontoon Island State Park

Advisory Group Staff Report

Concerning prescribed burning on the island, he said the area would be a great place for burn training as it is surrounded by water and has cabins to house trainees. Marti Miller said the area is used for one-day limited training events. It is not possible to bring heavy equipment so only certain types of ignition processes can be used.

Mr. Parson encouraged the division to look at alternative paving in the parking area at Hontoon Island to avoid the need for retention ponds. He agreed with the entrance improvement needs at Blue Spring and suggested working with DOT to get signs on major roads to notify visitors of temporary park closings. Controlled access of French Landing is needed and entry after hours can be resolved with after hour permits. Erosion concerns along French Avenue need to be resolved by paving the surface.

He is pleased Snake Creek was cleared but suggested a semi-annual clean out, possibly with airboats. The WMD could help. This should be made an official canoe trail with primitive camping or rest sites along it. He inquired if the sword fern at the parks is being removed. Richard Harris replied that it is not at this time.

Mr. Parson agreed that the carrying capacity of the park cannot be increased. Since Blue Spring doesn't have an off season, vegetation cannot regenerate. He doesn't think the addition of more cabins a good idea since it will add to the capacity and change the experience of isolation.

Mr. Dick Harmon, representing Florida Trail Association, reinforced adherence to the carrying capacity. Trails with too much use get worn and eroded resulting in poor hiking conditions.

Ms. Blanche Hardy, representing Lake County Board of County Commissioners, expressed the greatest interest in Hontoon Island. Lake County is preparing to permit blueways. She predicts this will bring increase the number of Lake County residents to the island. She approves of separating the fishing from the canoe and kayak docks for safety issues.

Mr. Bill Apgar, representing Volusia County Leisure Services, reported that Volusia County is also working on a blueways designation. Their trails include signage and a rest area on Snake Creek. He submitted a map of the designated paddling trails. Mr. Apgar noted that the county is excited with the cooperative work with the Division of Recreation and Parks on the Spring to Spring Trail.

Mr. Arnold Kunsler, representing Citizens Support Organization, noted the boat beaching practice is ruining the underwater vegetation through prop washing as well as the vegetation on shore as reported. He agrees Blue Spring carrying capacity is at its maximum.

Mr. Andy Kelly, representing Volusia Soil and Water Conservation District, thought the plan was excellent and brought a lot to light. He questioned if the river minimum flow level has been established by St. Johns WMD. The plan says it still needs to be done and in this case it should be a high priority and tied into the Blue Springs flow. He thought the plan needed more discussion on negative effects of alternative water use on spring flow. Mr. Kelly questioned the presence of a second springs discharge. Richard Harris explained that a deep hole with clear water exists in the spring run near the river but no formal diver survey has been done on site. Mr. Kelly noted the beaching area is popular with active boaters and any regulation on that area will

Blue Spring State Park And Hontoon Island State Park

Advisory Group Staff Report

be considered a take. How much room will the canoe rental take? Carol Perfit responded that the exact area isn't known but it will leave some beach and put a more watchful eye on the area. He also reported that passive boaters intentionally prop wash Hontoon Dead River to clear it out. More policing is needed here. Marti Miller said FWC is policing that area right now but this is not their routine assignment. Park patrol police this river but not as often.

Mr. Kelly expressed concern on the parking lot upgrades recommended at Hontoon Island and the resultant need for retention. Carol Perfit said the minimal amount of paving will be done and the type of paving has not yet been determined. Pervious pavement is an option. Mr. Kelly agrees that the lagoon will not be a good fishing location.

Mr. Royal Relya, representing scuba divers, said the divers are happy with the way the park is presently managed.

Mr. Jimmy Roberts, representing Florida Division of Forestry, questioned if the sand mine west of Blue Spring had been considered for inclusion in the optimum boundary. Carol Perfit replied that it was discussed but the Division of Recreation and Parks does not, as a rule, purchase disturbed land.

Mr. Jay Holder, representing Florida Fish and Wildlife Conservation Commission, agreed with previous comments on the lack of good fishing in the Hontoon Island lagoon area. He questioned the fee structure for boat ramp use at Blue Spring SP if we are to control the access there. Most launches charge extra. Carol Perfit explained that it had been discussed but no decisions made. Mr. Holder inquired if eel grass have been replanted in the spring run. Richard Harris replied that it was planted in the past but manatees ate it. He is investigating the potential of replanting. Mr. Holder wanted to know if we have a handle on exotic fish in the spring run. Richard Harris said we do not but are working on controlling them.

Ms. Ann Arnold, representing Mosquito Lagoon Paddlers, complimented the plan's species inventory. She reported paddlers major concern is safe access to the river. Good marking along paddling trails is also important as many visitors are not familiar with the waters.

Ms. Deborah Shelley, representing Wekiva River Aquatic Preserve, complimented the plan. She inquired on a time frame for implementing the erosion control measures and moving the canoe launch. No time frame has been set. The plan provides for monitoring erosion control. Does this include documentation as well? Richard Harris replied positively. Ms. Shelley asked about the priority for the manatee management plan. Richard Harris replied that it is a top priority but is to be done in-house and requires a lot of time and manpower. She suggested adding the manatee management plan cost to the cost estimate addendum with a time frame and top priority. Ms. Shelley suggested adding language to Existing Use of Adjacent Land stating that the parks will support low density uses surrounding the park in land planning issues. She suggested referencing the Conceptual Land Use maps specifically in the text. She supports the entrance reconfiguration and suggested radio advertising of park closing times and congestion. Sherry McGowan replied that this had been looked into and was expensive. Ms. Shelley supports moving the canoe launch, the French Ave. improvements and suggested pervious pavement. The scrub restoration at Blue Spring looks good and she encourages expanding the restoration area.

Blue Spring State Park And Hontoon Island State Park
Advisory Group Staff Report

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

Staff Recommendation

The Advisory Group approves the proposed Blue Spring and Hontoon Island State Parks Unit Management Plan as presented with the following recommendations:

Overall corrections and updates-

Noted errors, word corrections and additions, and map referencing will be changed.
Changes that have occurred since the drafting of this plan will be corrected.

Resource Management Component

- Consider a regular cleanout of Snake Creek
- Address sword fern removal

Land Use Component –

Trails

- Add two paddling rest areas on Hontoon Island along Snake Creek
- Add discussion on paddling trail marking

Recreation Facilities – Hontoon Island –

- Revisit the use of the observation/fishing pier in the lagoon. Fishing is better on the river side.
- If paddling use increases, add a landing in the lagoon area for canoes & kayaks

Support Facilities – Hontoon Island –

- Add language to investigate pervious paving materials in parking lot

Support Facilities – Blue Spring –

- Investigate alternative location for shop buildings
- Add advance notice sign ideas to entrance area design

Cost Estimate - Resource Management

- Consider outsourcing the manatee management plan

Addendum 2—References Cited

Blue Spring and Hontoon Island State Parks

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Addendum 3—Soils Descriptions

Blue Spring and Hontoon Island State Parks

Soils Descriptions

1 - Apopka fine sand, 0 to 5 % slopes - This is a nearly level to gently sloping well drained soil on intermediate to high sandhills. The water table is below 72 inches, run-off is slow and permeability is rapid in the sandy layers and moderate in the sandy clay loam subsoil. In the southern part of the DeLand ridge, the natural vegetation is a forest of sand live oak, sand pine and laurel oak. The understory consists of common prickly pear cactus, gopher apple and scattered saw palmetto. This soil type occurs at Blue Spring in the majority of the sand pine scrub communities.

4 - Astatula fine sands, 0 to 8 % slopes - This excessively drained nearly level to sloping soil is on sandhills. The water table is always below 80 inches and is usually below 120 inches. The natural vegetation is sand pine, turkey oak, laurel oak and longleaf pine, however sand pine grows best. The understory includes fetterbush, rosemary bush and scattered saw palmetto. At Blue Spring the fallow orange grove on the 'Stark track' covers the location of this soil type.

5 - Astatula fine sand, 8 to 17 % slopes - This excessively drained, sloping to moderately steep soil is found around sinks and depressions, usually oval in shape and less than 20 acres in size. The water table is always below 80 inches and usually below 120 inches with permeability very rapid. The natural vegetation is sand pine, sand live oak, turkey oak, longleaf pine and laurel oak. Sand pine seems to grow the best. The shrubby understory consists of fetterbush, rosemary bush and saw palmetto. This soil type occurs at Blue Spring in the majority of the sand pine scrub communities.

10 - Bluff sandy clay loam - This nearly level, very poorly drained, frequently flooded soil is on low terraces bordering the St. Johns River. Natural vegetation must be water tolerant and includes sedges, pickerelweed, cattail and saw grass. Hammock areas include cabbage palms, live oak and cedar. The floodplain marsh and swamp communities along the St. Johns River are dominated by this soil type.

17 - Daytona sand, 0 to 5 % slopes - This soil is moderately well drained and occurs on gently undulating sandhills or slightly elevated places in flatwoods. In some areas the water table may come within 30 inches of the surface, but normally is within 40 - 50 inches in the wet season and possibly 72 inches in the dry times. Most areas are in natural vegetation of the sand pine-scrub oak type. There is commonly a brushy understory of rosemary, fetterbush and saw palmetto. At Blue Spring this soil type occurs in the developed areas and upland mixed forest.

20 - EauGallie fine sand - This soil is nearly level and poorly drained with a sandy surface layer over a loamy subsoil, usually associated with pine flatwoods. The water table fluctuates within 1-10 inches of the surface for periods of 1-4 months in most years and within 40 inches for more than 6 months. This soil type occurs in the upland mixed and hammock areas in Blue Spring.

22 - Electra fine sand, 0-5% slope - This is a poorly drained, nearly level soil which occurs in slightly elevated places in flatwoods. The water table is at 20-40 inches for about 4 months during most years and recedes to below 40 inches during drier periods. At Blue Spring, upland mixed forest which includes scrub oak, fetterbush, gallberry and an understory of sawpalmetto. This soil is limited to one small area along the eastern bank of the Blue Spring run where it meets the St. Johns River.

23 - Farmton fine sand - This soil is poorly drained, nearly level and is usually contained within

Blue Spring and Hontoon Island State Parks

Soils Descriptions

the pine flatwoods. The water table is within a depth of 10 inches for 1-3 months and within 40 inches for 6 months or more during most years. The natural vegetation is slash pine with an understory of saw palmetto, gallberry, fetterbush, scrubby oaks and wax myrtle. The northernmost point of Blue Spring property along Lake Beresford is the only known location of this soil type.

25 - Gator Muck - This soil is a very poorly drained, nearly level, well decomposed organic soil which occurs in freshwater swamps and marshes and on floodplains of lakes, rivers and creeks. 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. Natural vegetation includes swamp hardwoods with American elm, bald cypress, cabbage palm, red maple, sweet gum and an understory of maidencane, saw grass, cord grass and wax myrtle. This soil is a good wetland wildlife habitat and underlies the floodplain marsh and swamp communities at Blue Spring.

Im - Iberia and Manatee soils - This soil is very poorly drained and is found within the floodplains of the St. Johns and Wekiva Rivers. These soils are flooded for more than 2 months during most years. They are the first to flood during periods of high water and the last to dry out as the water recedes. The vegetation of this mapping unit is dense swamp vegetation consisting of wetland hardwoods, cypress, cabbage palms and numerous kinds of shrubs, vines, and grasses. These soils are found to the west of the Hontoon Dead River in Lake County on Hontoon Island State Park property.

29 - Immokalee sand - This nearly level, poorly drained sandy soil generally occurs in pine flatwoods, between sand ridges, or in slightly elevated areas between ponds and sloughs. The water table is within 10 inches of the surface for 1 to 2 months in most years and between 10 to 40 inches for more than half the year. Occasionally in very wet seasons it rises above the surface for extended periods of time. The natural vegetation is an open forest of slash pine and longleaf pine and an understory of saw palmetto and scrubby oaks. Immokalee sand is associated with mesic flatwoods, which include pond pine, and also underlies areas of baygall and upland mixed forest at Blue Spring.

Md - Montverde muck - This is a nearly level, very poorly drained soil that is about 95 percent organic material and about 5 percent mineral material. The water table is at the surface, and the soil is covered with shallow water except during extended dry periods when the water table is at a depth of no more than 10 inches. Most areas that have not been developed are covered with marshland vegetation of sawgrass, waterlilies, pickerelweed, and sedges. Montverde muck is located as a band of soil to the west of Hontoon Island and paralleling the Hontoon Dead River in Lake County.

32 - Myakka fine sand - this nearly level poorly drained soil is found in the flatwoods. Run off is slow to very slow. The water table is within 12 inches of the surface from June to November and commonly within 40 inches of the surface the rest of the year except during extended droughts. The natural vegetation is the pine-palmetto type typical of the flatwoods, Slash and longleaf pine are the overstory and saw palmetto dominates the understory. At Hontoon Island this soil occurs in the mesic flatwood communities.

37 - Orsino fine sand, 0 to 5 % slopes - This moderately well drained, nearly level and gently sloping sandy soil occurs on low flat ridges and low side slopes of sandhills. The water table is

Blue Spring and Hontoon Island State Parks

Soils Descriptions

40 to 60 inches below the soil surface in wet seasons and below 60 inches in the dry seasons. The natural vegetation is a forest of sand pine and an understory of scattered saw palmetto. This soil underlies the upland mixed forest community to the west of the spring run up to and including the French Avenue landing.

42 - Paola fine sand , 0 to 8 % slopes - This excessively drained, nearly level sandy soil occurs on high, broad sandhills. The water table is below a depth of 72 inches. The available water capacity, the organic matter content and the natural fertility are very low. Permeability is very rapid. The natural vegetation is a sand pine - scrub oak forest with an understory of rosemary and scattered saw palmetto. This soil type underlies portions of the scrub community at Blue Spring and areas to the north and east adjacent to the park property.

43 - Paola fine sand, 8 to 17 % slopes - This excessively drained, strongly sloping sandy soil occurs in small areas of side slopes of sand ridges, around sinks and along streams that have high banks. The water table is below a depth of 72 inches. The natural vegetation is a sand pine - scrub oak forest with an understory of rosemary. This soil underlies a small area of sand pine scrub on the eastern boundary of Blue spring along the railroad track.

47 - Pits - Pits are excavations from which soil and geologic material have been removed for use in road construction or foundations. The two Blue Spring pits which occur on the northeast boundary north and south of French Avenue have been abandoned. Exotic plants and grasses have invaded these areas however there has been natural recruitment of slash, longleaf, and sand pines. Gopher tortoise use is extensive in these areas.

53 - Pompano-placid complex - soils consist of nearly level, poorly drained Pompano soils and very poorly drained Placid soils in depressions in the flatwoods. These soils are so intermingled on the landscape that they are extremely difficult to map separate. The Pompano soil has a water table less than 6 inches above the surface or is saturated within 10 inches of the surface in summer and fall. Frequently this sand is covered with standing water during the wet seasons. The 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 seasons. The natural vegetation is swamp hardwoods- bald cypress, sweetgum, sourwood and red maple- with slash pine and cabbage palm. The understory consists of wax myrtle, fetterbush and gallberry with sawgrass, smooth cordgrass, maidencane, chalky bluestem and broomsedge bluestem. This soil type occurs in only one small area within the mesic flatwoods on Hontoon Island.

56 - Samsula muck - This is a very poorly drained, nearly level organic soil occurring in broad low flats, small depressions, freshwater marshes and swamps. The water table is at or above the soil surface except during extended dry periods. There are two areas of Samsula muck at Blue Spring one is associated with the floodplain marsh community along the St. Johns River the other is associated with a small wetland area which is bisected by French Avenue.

65 - Terra Ceia - This is very poorly drained soil formed in organic material. It occurs in swamps, freshwater marshes and small depressions. The water table is as much as 2 feet above the surface at times during the rainy season. Water is at or above the surface for 6 to 9 months in most years and is seldom below a depth of 10 inches except in extended dry periods. Almost all areas of this soil type are marshes or swamps. This soil occurs in association with floodplain

Blue Spring and Hontoon Island State Parks

Soils Descriptions

swamp and marsh at Blue Spring and is quite extensive especially north of French Landing.

69 - Tusawilla fine sand - This is a nearly level, poorly drained soil in broad hammock areas. Undisturbed areas are characterized by micro-relief of fairly closely spaced, low broad rises or mounds which are a few feet to more than 100 feet across, irregular in shape, and about 4 to 6 inches above the general level of the surrounding area. The water table is within a depth of 10 inches for 2 to 6 months in most years. There are two small areas of this soil type at Blue Spring underlying the upland mixed forest of the eastern and western side of the spring run.

72 - Valkaria fine sand - This fine sand is a nearly level, poorly drained, sandy soil occurring in broad, poorly defined drainage ways and areas bordering swamps. The water is at or near the surface for as much as 6 months in most years. This soil type underlies a portion of the floodplain marsh and hydric hammock along the eastern edge of the lagoon at Blue Spring.

Addendum 4—Plant and Animal List

Blue Spring and Hontoon Island State Parks

Plants

COMMON NAME	<i>Scientific Name</i>	Habitat Code Listed Species
Box-elder	<i>Acer negundo</i>	
Southern red maple	<i>Acer rubrum</i>	
Silver maple	<i>Acer saccharinum</i>	
Southern sugar maple	<i>Acer saccharum floridanum</i>	
Silk tree, mimosa *	<i>Albizia julibrissin</i>	
Alligator-weed	<i>Alternanthera philoxeroides</i>	
Giant ragweed	<i>Ambrosia trifida</i>	
Bastard indigo, false indigo	<i>Amorpha fruticosa</i>	
Pepper vine	<i>Ampelopsis arborea</i>	
Bluestem	<i>Andropogon sp.</i>	
Groundnut	<i>Apios americana</i>	
Devil's-walkingstick	<i>Aralia spinosa</i>	
Coral ardisia *	<i>Ardisia crenata</i>	
White Milkweed	<i>Asclepias sp.</i>	
Flag pawpaw	<i>Asimina obovata</i>	
Small-fruited pawpaw	<i>Asimina parviflora</i>	
Pawpaw	<i>Asimina reticulata</i>	
White-top aster	<i>Aster reticulatus</i>	
Salt myrtle/Sea myrtle	<i>Baccharis halimifolia</i>	
-----	<i>Bacopa monnieri</i>	
Tar flower	<i>Befaria racemosa</i>	
Greeneyes	<i>Berlandiera subacaulis</i>	
Begger-ticks	<i>Bidens alba</i>	
Blueheart	<i>Buchnera americana</i>	
Gum bumelia	<i>Bumelia lanuginosa</i>	
Tough bumelia	<i>Bumelia tenax</i>	
Beautyberry	<i>Callicarpa americana</i>	
Grass-pink	<i>Calopogon sp.</i>	
Hedge bindweed	<i>Calystegia sepium</i>	
Trumpet-vine	<i>Campsis radicans</i>	
-----	<i>Carex sp.</i>	
Deer tongue	<i>Carphephorus corymbosus</i>	
Vanilla plant	<i>Carphephorus odoratissimus</i>	
Water hickory	<i>Carya aquatica</i>	
Scrub hickory	<i>Carya floridana</i>	
Pignut hickory	<i>Carya glabra</i>	
Pecan *	<i>Carya illinoensis</i>	
-----	<i>Carya spp</i>	
Mockernut hickory	<i>Carya tomentosa</i>	
Catalpa	<i>Catalpa bignonioides</i>	
Hackberry	<i>Celtis laevigata</i>	
Coast sandspur	<i>Cenchrus incertus</i>	
Butterfly-pea	<i>Centrosema virginianum</i>	
Buttonbush	<i>Cephalanthus occidentalis</i>	

Blue Spring and Hontoon Island State Parks

Plants

Florida rosemary	<i>Ceratiola ericoides</i>	
Hornwort	<i>Ceratophyllum demersum</i>	
Partridge pea	<i>Chamaecrista fasciculata</i>	
Stonewort, Muskgrass	<i>Chara sp.</i>	
Camphor-tree *	<i>Cinnamomum camphora</i>	
Purple Thistle	<i>Cirsium sp.</i>	
Citrus *	<i>Citrus sp.</i>	
Virgin's bower	<i>Clematis virginiana</i>	
Tread softly	<i>Cnidoscolus stimulosus</i>	
Day-flower	<i>Commelina erecta</i>	
Mistflower	<i>Conoclinium coelestinum</i>	
Squawroot, Cancerroot	<i>Conopholis americana</i>	
-----	<i>Coreopsis gladiata</i>	
Flowering dogwood	<i>Cornus florida</i>	
Stiff cornel, Swamp dogwood	<i>Cornus foemina</i>	
String-lily, Swamp lily	<i>Crinum americanum</i>	
Rabbit-bells	<i>Crotalaria rotundifolia</i>	
----- *	<i>Crotalaria spectabilis</i>	
Okeechobee gourd, Indian pumpkin	<i>Cucurbita okeechobeensis</i>	32
-----	<i>Cuscuta sp.</i>	
Roseling	<i>Cuthbertia graminea</i>	
Crowfootgrass *	<i>Dactyloctenium aegyptium</i>	
Beggar's ticks	<i>Desmodium sp.</i>	
Giant white-top sedge	<i>Dichromena latifolia</i>	
Persimmon	<i>Diospyros virginiana</i>	
Sundew	<i>Drosera sp.</i>	
Water hyacinth *	<i>Eichhornia crassipes</i>	
Elephant's-foot	<i>Elephantopus carolinianus</i>	
Florida Elephant's-foot	<i>Elephantopus elatus</i>	
Green-fly orchid	<i>Epidendrum conopseum</i>	35
Southern fleabane	<i>Erigeron quercifolius</i>	
Loquat, Japanese plum *	<i>Eriobotrya japonica</i>	
Pipewort	<i>Eriocaulon compressum</i>	
-----	<i>Eryngium prostratum</i>	
Coralbean	<i>Erythrina herbacea</i>	
Strawberry bush	<i>Euonymus americanus</i>	
Dog fennel	<i>Eupatorium capillifolium</i>	
Poinsettia	<i>Euphorbia pulcherrima</i>	
Water ash; Pop ash	<i>Fraxinus caroliniana</i>	
Milk pea	<i>Galactia elliotii</i>	
Garberia	<i>Garberia heterophylla</i>	14
Southern gaura	<i>Gaura angustifolia</i>	
Dwarf huckleberry	<i>Gaylussacia dumosa</i>	
Dangleberry	<i>Gaylussacia frondosa var. tomentosa</i>	
Yellow jessamine	<i>Gelsemium sempervirens</i>	
Cranesbill	<i>Geranium carolinianum</i>	
Loblolly bay	<i>Gordonia lasianthus</i>	

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Plants

Long-spur orchid	<i>Habenaria odontopetala</i>	
Innocence	<i>Hedyotis procumbens</i>	
-----	<i>Helianthemum carolinianum</i>	
Camphorweed	<i>Heterotheca subaxillaris</i>	
Red hibiscus	<i>Hibiscus coccineus</i>	
-----	<i>Hydrocotyle ranunculoides</i>	
Marsh pennywort	<i>Hydrocotyle umbellata</i>	
-----	<i>Hypericum crux-andraea</i>	
Sandweed	<i>Hypericum fasciculatum</i>	
-----	<i>Hypericum sp.</i>	
Yellow star grass	<i>Hypoxis sp.</i>	
Carolina holly; Sand holly	<i>Ilex ambigua</i>	
Dahoon holly	<i>Ilex cassine</i>	
Inkberry, Gallberry	<i>Ilex glabra</i>	
American Holly	<i>Ilex opaca</i>	
Scrub holly	<i>Ilex opaca var. arenicola</i>	14
Yaupon holly	<i>Ilex vomitoria</i>	
Hairy indigo *	<i>Indigofera hirsuta</i>	
Common morning-glory	<i>Ipomoea purpurea</i>	
Morning-glory	<i>Ipomoea trichocarpa</i>	
Blue-flag	<i>Iris virginica</i>	
Southern red cedar	<i>Juniperus virginiana</i>	
Saltmarsh mallow	<i>Kosteletzkya virginica</i>	
Bloodroot	<i>Lachnanthes caroliniana</i>	
Bog-buttons	<i>Lachnocaulon anceps</i>	
Wild lettuce	<i>Lactuca floridana</i>	
Crape myrtle *	<i>Lagerstroemia indica</i>	
Common lantana *	<i>Lantana camara</i>	
Poorman's pepper	<i>Lepidium virginicum</i>	
Blazing star	<i>Liatris sp.</i>	
Gopher apple	<i>Licania michauxii</i>	
Chinese privet *	<i>Ligustrum sinense</i>	
Blue toadflax	<i>Linaria canadensis</i>	
Sweetgum	<i>Liquidambar styraciflua</i>	
Blue lobelia	<i>Lobelia sp</i>	
False loosestrife	<i>Ludwigia repens</i>	
Rusty lyonia	<i>Lyonia ferruginea</i>	
Staggerbush	<i>Lyonia fruticosa</i>	
Fetterbush	<i>Lyonia lucida</i>	
Staggerbush	<i>Lyonia mariana</i>	
Southern magnolia	<i>Magnolia grandiflora</i>	
Morning glory	<i>Merremia sp</i>	
Partridge berry; Twinberry	<i>Mitchella repens</i>	
Red mulberry	<i>Morus rubra</i>	
Wax myrtle	<i>Myrica cerifera</i>	
Bushy pondweed; Naiad	<i>Najas guadalupensis var. floridana</i>	
Boston fern	<i>Nephrolepis exaltata</i>	
Spatter-dock	<i>Nuphar lutea var. macrophyllum</i>	

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Plants

Yellow waterlily	<i>Nymphaea mexicana</i>	
Swamp tupelo	<i>Nyssa sylvatica</i> var. <i>biflora</i>	
Prickly-pear cactus	<i>Opuntia humifusa</i>	
Wild olive	<i>Osmanthus americana</i>	
Cinnamon fern	<i>Osmunda cinnamomea</i>	31, 35
Royal fern	<i>Osmunda regalis</i>	31, 35
Yellow wood sorrel	<i>Oxalis stricta</i>	
Violet wood sorrel	<i>Oxalis violacea</i>	
Maidencane	<i>Panicum hemitomom</i>	
Guineagrass	<i>Panicum maximum</i>	
Virginia creeper	<i>Parthenocissus quinquefolia</i>	
Maypop; Passion flower	<i>Passiflora incarnata</i>	
Spoonflower	<i>Peltandra sagittifolia</i>	
Redbay	<i>Persea borbonia</i>	
Silkbay	<i>Persea borbonia</i> var. <i>humilis</i>	14
Swampbay	<i>Persea palustris</i>	
Annual garden phlox *	<i>Phlox drummondii</i>	
Mistletoe	<i>Phoradendron serotinum</i>	
-----	<i>Physalis</i> sp.	
Small butterwort	<i>Pinguicula pumila</i>	
Sand pine	<i>Pinus clausa</i>	
Slash pine	<i>Pinus elliottii</i>	
Longleaf pine	<i>Pinus palustris</i>	
Pond pine	<i>Pinus serotina</i>	
Loblolly pine	<i>Pinus taeda</i>	
Water-lettuce	<i>Pistia stratiotes</i>	
Planer tree	<i>Planera aquatica</i>	
Fiddler's spurge	<i>Poinsettia heterophylla</i>	
Wild bachelor's button	<i>Polygala nana</i>	
Tall yellow bachelor button	<i>Polygala</i> sp.	
Resurrection fern	<i>Polypodium polypodioides</i> var. <i>michauxianum</i>	
Pickerelweed	<i>Pontederia cordata</i>	
Pink purslane	<i>Portulaca pilosa</i>	
Pondweed	<i>Potamogeton diversifolius</i>	
Pondweed	<i>Potamogeton illinoensis</i>	
Fennel-leaved pondweed	<i>Potamogeton pectinatus</i>	
Carolina laurel cherry	<i>Prunus caroliniana</i>	
Wild cherry	<i>Prunus serotina</i>	
Wild coffee	<i>Psychotria nervosa</i>	
Bracken fern	<i>Pteridium aquilinum</i>	
Blackroot	<i>Pterocaulon virgatum</i>	
False dandelion	<i>Pyrrhopappus carolinianus</i>	
Red chokeberry	<i>Pyrus arbutifolia</i>	
Chapman's oak	<i>Quercus chapmanii</i>	
Sand live oak	<i>Quercus geminata</i>	
Laurel oak; Diamond oak	<i>Quercus laurifolia</i>	
Myrtle oak	<i>Quercus myrtifolia</i>	

Blue Spring and Hontoon Island State Parks

Plants

Water oak	<i>Quercus nigra</i>	
Live oak	<i>Quercus virginiana</i>	
Meadow beauty	<i>Rhexia sp.</i>	
Winged sumac	<i>Rhus copallina</i>	
----- *	<i>Richardia scabra</i>	
Blackberry	<i>Rubus sp.</i>	
Southern dewberry	<i>Rubus trivialis</i>	
Wild-petunia	<i>Ruellia caroliniensis</i>	
Dock	<i>Rumex sp</i>	
Cabbage palm	<i>Sabal palmetto</i>	
-----	<i>Sabatia angularis</i>	
White sabatia	<i>Sabatia brevifolia</i>	
Wapato; Common arrowhead	<i>Sagittaria latifolia</i>	
Carolina willow	<i>Salix caroliniana</i>	
Lyre-leaved sage	<i>Salvia lyrata</i>	
Water spangles	<i>Salvinia minima</i>	
Elderberry	<i>Sambucus canadensis</i>	
Pineland pimpernel	<i>Samolus valerandi var. parviflorus</i>	
Soapberry	<i>Sapindus saponaria</i>	
Lizard's-tail	<i>Saururus cernuus</i>	
Saw palmetto	<i>Serenoa repens</i>	
Blue-eyed grass	<i>Sisyrinchium atlanticum</i>	
Blue-eyed grass	<i>Sisyrinchium sp.</i>	
Greenbrier; Catbrier	<i>Smilax auriculata</i>	
Greenbrier; Catbrier	<i>Smilax bona-nox</i>	
Wild sarsaparilla	<i>Smilax glauca</i>	
Catbrier	<i>Smilax laurifolia</i>	
Sarsaparilla vine	<i>Smilax pumila</i>	
-----	<i>Smilax sp.</i>	
Sand cordgrass	<i>Spartina bakeri</i>	
Ladies'-tresses	<i>Spiranthes vernalis</i>	
Duckweed	<i>Spirodela polyrhiza</i>	
Hedge nettle	<i>Stachys floridana</i>	
Chickweed	<i>Stellaria sp</i>	
-----	<i>Strophostyles sp.</i>	
Pond cypress	<i>Taxodium ascendens</i>	
Bald cypress	<i>Taxodium distichum</i>	
Alligator flag	<i>Thalia geniculata</i>	
Wild pine; Air plant	<i>Tillandsia fasciculata</i>	35
Spanish moss	<i>Tillandsia usneoides</i>	
Poison ivy	<i>Toxicodendron radicans</i>	
Spiderwort	<i>Tradescantia ohiensis</i>	
Spiderwort	<i>Tradescantia roseolens</i>	
Venus looking-glass	<i>Triodanis perfoliata</i>	
Cattail	<i>Typha sp.</i>	
American elm	<i>Ulmus americana</i>	
Caesar-weed *	<i>Urena lobata</i>	
-----	<i>Utricularia sp.</i>	

Blue Spring and Hontoon Island State Parks

Plants

Sparkleberry	<i>Vaccinium arboreum</i>	
Shiny blueberry	<i>Vaccinium myrsinites</i>	
Deerberry	<i>Vaccinium stamineum</i>	
Tape-grass	<i>Vallisneria americana</i>	
-----	<i>Verbena sp.</i>	
Frostweed	<i>Verbesina virginica</i>	
Ironweed	<i>Vernonia angustifolia</i>	
Small viburnum	<i>Viburnum obovatum</i>	
Vetch	<i>Vicia sp.</i>	
-----	<i>Vigna luteola</i>	
Primrose-leaved violet	<i>Viola primulifolia</i>	
Common blue violet	<i>Viola soraria</i>	
Summer grape	<i>Vitis aestivalis</i>	
Muscadine grape	<i>Vitis rotundifolia</i>	
Shoestring fern	<i>Vittaria lineata</i>	
Chinese wisteria *	<i>Wisteria sinensis</i>	
Netted chain fern	<i>Woodwardia areolata</i>	
Yellow-eyed grass	<i>Xyris sp.</i>	
Spanish dagger *	<i>Yucca aloifolia</i>	
Adam's needle	<i>Yucca filamentosa</i>	
Coontie	<i>Zamia pumila</i>	8, 21
Box-elder	<i>Acer negundo</i>	
Southern red maple	<i>Acer rubrum</i>	
Silver maple	<i>Acer saccharinum</i>	
Southern sugar maple	<i>Acer saccharum floridanum</i>	
Silk tree, mimosa *	<i>Albizia julibrissin</i>	
Alligator-weed	<i>Alternanthera philoxeroides</i>	
Giant ragweed	<i>Ambrosia trifida</i>	
Bastard indigo, false indigo	<i>Amorpha fruticosa</i>	
Pepper vine	<i>Ampelopsis arborea</i>	
Bluestem	<i>Andropogon sp.</i>	
Groundnut	<i>Apios americana</i>	
Devil's-walkingstick	<i>Aralia spinosa</i>	
Coral ardisia *	<i>Ardisia crenata</i>	
White Milkweed	<i>Asclepias sp.</i>	
Flag pawpaw	<i>Asimina obovata</i>	
Small-fruited pawpaw	<i>Asimina parviflora</i>	
Pawpaw	<i>Asimina reticulata</i>	
White-top aster	<i>Aster reticulatus</i>	
Salt myrtle/Sea myrtle	<i>Baccharis halimifolia</i>	
-----	<i>Bacopa monnieri</i>	
Tar flower	<i>Befaria racemosa</i>	

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Animals

COMMON NAME	<i>Scientific Name</i>	Habitat Code All Species
INVERTEBRATES		
Mollusks		
Blue Spring hydrobe	<i>Aphaostracon asthenes</i>	55
Blue Spring siltsnail	<i>Cincinnatia parva</i>	55
Arachnids		
Brown daddy-long-legs	<i>Phalangium opilio</i>	
Colleoptera		
	<i>Stenotrachelus approximaria</i>	
Hymenoptera		
Carpenter ant	<i>Camponotus socius</i>	
Lepidoptera		
	<i>Amorbia humerosanna</i>	
	<i>Caripeta aretaria</i>	
	<i>Dasychira spp</i>	
	<i>Disclisioprocta stellata</i>	
	<i>Eupaphe miserulata</i>	
	<i>Glenoides texaniaria</i>	
	<i>Heterocampa astarte</i>	
	<i>Panthea furcilla</i>	
	<i>Semiothisa punctolineata</i>	
	<i>Semiothisa sandfordi</i>	
	<i>Semiothisa spp</i>	
	<i>Tolype notialis</i>	
	<i>Zale squamularis</i>	
FISH		
Spotted gar	<i>Lepisosteus oculatus</i>	53,55
Longnose gar	<i>Lepisosteus osseus</i>	53,55
Florida gar	<i>Lepisosteus platyrhincus</i>	53,55
Ladyfish	<i>Elops saurus</i>	53,55
Tarpon	<i>Megalops atlanticus</i>	53,55
Coastal shiner	<i>Notropis petersoni</i>	53,55
Ironcolor	<i>Notropis chaslybaeus</i>	53,55

* Non-Native Species

Blue Spring and Hontoon Island State Parks

Animals

COMMON NAME	<i>Scientific Name</i>	Habitat Code All Species
American eel	<i>Anguilla rostrata</i>	53,55
Hickory shad	<i>Alosa mediocris</i>	53,55
Gizzard shad	<i>Dorosoma cepedianum</i>	53,55
Threadfin shad	<i>Dorosoma petenense</i>	53,55
Golden shiner	<i>Notemigonus crysoleucas</i>	53,55
Lake chubsucker	<i>Erimyzon sucetta</i>	53,55
White catfish	<i>Ameiurus catus</i>	53,55
Yellow bullhead	<i>Ameiurus natalis</i>	53,55
Brown bullhead	<i>Ameiurus nebulosus</i>	53,55
Blue catfish	<i>Ictalurus furcatus</i>	53,55
Channel catfish	<i>Ictalurus punctatus</i>	53,55
Pirate perch	<i>Aphredoderus sayanus</i>	53,55
Needlefish	<i>Strongylura spp</i>	53,55
Seminole killifish	<i>Fundulus seminolis</i>	53,55
Golden topminnow	<i>Fundulus chrysotus</i>	53,55
Rainwater killifish	<i>Lucania parva</i>	53,55
Bluefin killifish	<i>Lucania goodei</i>	53,55
Western mosquitofish	<i>Gambusia affinis</i>	53,55
Eastern mosquitofish	<i>Gambusia holbrooki</i>	53,55
Least killifish	<i>Heterandria formosa</i>	53,55
Flagfish	<i>Jordanella floridae</i>	53,55
Sailfin molly	<i>Poecilia latipinna</i>	53,55
Bluespotted sunfish	<i>Enneacanthus gloriosus</i>	53,55
Redbreast sunfish	<i>Lepomis auritus</i>	53,55
Warmouth	<i>Lepomis gulosus</i>	53,55
Bluegill	<i>Lepomis macrochirus</i>	53,55
Longear sunfish	<i>Lepomis megalotis</i>	53,55
Redear sunfish	<i>Lepomis microlophus</i>	53,55
Spotted sunfish	<i>Lepomis punctatus</i>	53,55
Largemouth bass	<i>Micropterus salmoides</i>	53,55
Black crappie	<i>Pomoxis nigromaculatus</i>	53,55
Blue tilapia*	<i>Tilapia aurea</i>	53,55
Suckermouth catfish*	<i>Pterygoplichthys disjunctivus</i>	53,55
Brown hoplo*	<i>Hoplosternum littorale</i>	53,55
Striped mullet	<i>Mugil cephalus</i>	53,55
White mullet	<i>Mugil cyrema</i>	53,55
Inland silverside	<i>Menidia beryllina</i>	53,55
AMPHIBIANS		
Two-toed amphiuma	<i>Aphiuma means</i>	53,55
Greater siren	<i>Siren lacertina</i>	53,55
Oak toad	<i>Bufo quercicus</i>	8,21
Southern toad	<i>Bufo terrestris</i>	14,8,21

* Non-Native Species

Blue Spring and Hontoon Island State Parks

Animals

COMMON NAME	<i>Scientific Name</i>	Habitat Code All Species
Green treefrog	<i>Hyla cinerea</i>	32,29,31,46,48,4 9,53,55
Squirrel treefrog	<i>Hyla squirella</i>	32,29,31,46,48,4 9,53,55
Florida gopher frog	<i>Rana capito aesopus</i>	29,48,8,31,32,46
Bullfrog	<i>Rana catesbeiana</i>	32,29,31,46,48,4 9,53,55
Pig frog	<i>Rana grylio</i>	32,29,31,46,48,4 9,53,55
River frog	<i>Rana heckscheri</i>	32,48,53,55
Florida leopard frog	<i>Rana utricularia sphenoccephala</i>	32,29,31,46,48,4 9,53,55
REPTILES		
Florida snapping turtle	<i>Chelydra serpentina osceola</i>	53,32,55
Striped mud turtle	<i>Kinosternon bauri</i>	53,32,55
Florida mud turtle	<i>Kinosternon subrubrum steindachneri</i>	53,32,55
Loggerhead musk turtle	<i>Sternotherus minor minor</i>	53,32,55
Common musk turtle	<i>Sternotherus odoratus</i>	53,32,55
Eastern chicken turtle	<i>Deirochelys reticularia reticularia</i>	53,32,55
Florida cooter	<i>Pseudemys floridana floridana</i>	53,32,55
Peninsula cooter	<i>Pseudemys floridana peninsularis</i>	53,32,55
Florida redbelly turtle	<i>Pseudemys nelsoni</i>	53,32,55
Florida box turtle	<i>Terrapene carolina bauri</i>	53,32,55
Gopher tortoise	<i>Gopherus polyphemus</i>	14,8
Florida softshell	<i>Apalone ferox</i>	55,32,53
American alligator	<i>Alligator mississippiensis</i>	55,32,53
Green anole	<i>Anolis carolinensis carolinensis</i>	8,14,21,26,29,31 ,32,35
Southern fence lizard	<i>Sceloporus undulatus undulatus</i>	14,8
Eastern slender glass lizard	<i>Ophisaurus attenuatus longicaudus</i>	14,8
Eastern glass lizard	<i>Ophisaurus ventralis</i>	8,21,14,35
Six-lined racerunner	<i>Cnemidophorus sexlineatus sexlineatus</i>	8,21,14,35
Five-lined skink	<i>Eumeces fasciatus</i>	8,21,14,35
Southeastern five-lined skink	<i>Eumeces inexpectatus</i>	8,21,14,35
Broad-headed skink	<i>Eumeces laticeps</i>	8,21,14,35
Ground skink	<i>Scincella lateralis</i>	8,21,14,35
Florida scarlet snake	<i>Cemophora coccinea coccinea</i>	8,21,14,35
Southern black racer	<i>Coluber constrictor priapus</i>	8,21,14,35
Southern ringneck snake	<i>Diadophis punctatus punctatus</i>	8,21,14,35
Eastern indigo snake	<i>Drymarchon corais couperi</i>	8,14
Corn snake	<i>Elaphe guttata guttata</i>	14,21,8

Blue Spring and Hontoon Island State Parks

Animals

COMMON NAME	<i>Scientific Name</i>	Habitat Code All Species
Yellow rat snake	<i>Elaphe obsoleta quadrivittata</i>	14,21,8
Eastern hognose snake	<i>Heterodon platyrhinos</i>	14,21,8
Scarlet kingsnake	<i>Lampropeltis triangulum elapsoides</i>	14,21,8
Eastern coachwhip	<i>Masticophis flagellum flagellum</i>	14,21,8
Mississippi green water snake	<i>Nerodia cyclopion</i>	53,55,8,26,29,31 ,32,35,46,48,49
Banded water snake	<i>Nerodia fasciata fasciata</i>	53,55,8,26,29,31 ,32,35,46,48,49
Florida water snake	<i>Nerodia fasciata pictiventris</i>	53,55,8,26,29,31 ,32,35,46,48,49
Florida green water snake	<i>Nerodia floridana</i>	53,55,8,26,29,31 ,32,35,46,48,49
Brown water snake	<i>Nerodia taxispilota</i>	53,55,8,26,29,31 ,32,35,46,48,49
Rough green snake	<i>Opheodrys aestivus</i>	21,8,14,35
Florida pine snake	<i>Pituophis melanoleucus mugitus</i>	21,8,14,35
Pine woods snake	<i>Rhadinaea flavilata</i>	21,8,14,35
North Florida swamp snake	<i>Seminatrix pygaea pygaea</i>	21,8,14,35
Central Florida crowned snake	<i>Tantilla relicta neilli</i>	21,8,14,35
Eastern garter snake	<i>Thamnophis sirtalis sirtalis</i>	21,8,14,35
Eastern coral snake	<i>Micrurus fulvius fulvius</i>	21,8,14,35
Florida cottonmouth	<i>Agkistrodon piscivorus conanti</i>	53,55
Eastern diamondback rattlesnake	<i>Crotalus adamanteus</i>	21,8,14,35
Dusky pigmy rattlesnake	<i>Sistrurus miliarius barbouri</i>	21,8,14,35
BIRDS		
Pied-billed Grebe	<i>Podilymbus podiceps</i>	32,29,31,46,48,5 3,55
Horned Grebe	<i>Podiceps auritus</i>	32,53,55
American White Pelican	<i>Pelecanus erythrorhynchos</i>	32,53,55
Brown Pelican	<i>Pelecanus occidentalis</i>	32,53,55
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	32,53,55
Anhinga	<i>Anhinga anhinga</i>	32,53,55
American Bittern	<i>Botaurus lentiginosus</i>	32,53,55
Great Blue Heron	<i>Ardea herodias</i>	32,53,55
Great Egret	<i>Ardea alba</i>	32,53,55
Snowy Egret	<i>Egretta thula</i>	32,53,55
Little Blue Heron	<i>Egretta caerulea</i>	32,53,55
Tricolored Heron	<i>Egretta tricolor</i>	32,53,55
Cattle Egret	<i>Bubulcus ibis</i>	32,53,55
Green Heron	<i>Butorides virescens</i>	32,53,55

Blue Spring and Hontoon Island State Parks

Animals

COMMON NAME	<i>Scientific Name</i>	Habitat Code All Species
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	32,53,55
Yellow-crowned Night-Heron	<i>Nyctanassa violacea</i>	32,53,55
White Ibis	<i>Eudocimus albus</i>	32,53,55
Glossy Ibis	<i>Plegadis falcinellus</i>	32,53,55
Wood Stork	<i>Mycteria americana</i>	32,53,55
Black Vulture	<i>Coragyps atratus</i>	All
Turkey Vulture	<i>Cathartes aura</i>	All
Muscovy Duck	<i>Cairina moschata</i>	32,53,55
Wood Duck	<i>Aix sponsa</i>	32,53,55
Mottled Duck	<i>Anas fulvigula</i>	32,53,55
Mallard	<i>Anas platyrhynchos</i>	32,53,55
Blue-winged Teal	<i>Anas discors</i>	32,53,55
Northern Shoveler	<i>Anas clypeata</i>	32,53,55
American Wigeon	<i>Anas americana</i>	32,53,55
Lesser Scaup	<i>Aythya affinis</i>	32,53,55
Hooded Merganser	<i>Lophodytes cucullatus</i>	32,53,55
Red-breasted Merganser	<i>Mergus serrator</i>	32,53,55
Osprey	<i>Pandion haliaetus</i>	32,53,55
Swallow-tailed Kite	<i>Elanoides forficatus</i>	32,53,55
Bald Eagle	<i>Haliaeetus leucocephalus</i>	8,32,29,31,48,53,55
Northern Harrier	<i>Circus cyaneus</i>	8,32,29,31,48,53,55
Sharp-shinned Hawk	<i>Accipiter striatus</i>	8,32,29,31,48,53,55
Cooper's Hawk	<i>Accipiter cooperii</i>	8,32,29,31,48,53,55
Red-shouldered Hawk	<i>Buteo lineatus</i>	8,32,29,31,48,53,55
Broad-winged Hawk	<i>Buteo platypterus</i>	8,32,29,31,48,53,55
Red-tailed Hawk	<i>Buteo jamaicensis</i>	8,32,29,31,48,53,55
American Kestrel	<i>Falco sparverius</i>	8,31
Eastern American Kestrel	<i>Falco sparverius sparverius</i>	8,31
Wild Turkey	<i>Meleagris gallopavo</i>	8,32,29,31,48
Northern Bobwhite	<i>Colinus virginianus</i>	8,32,29,31
King Rail	<i>Rallus elegans</i>	31,53
Virginia Rail	<i>Rallus limicola</i>	31,53
Sora	<i>Porzana carolina</i>	31,53
Purple Gallinule	<i>Porphyryla martinica</i>	32,29,31,48,53,55
Common Moorhen	<i>Gallinula chloropus</i>	32,29,31,48,53,55

Blue Spring and Hontoon Island State Parks

Animals

COMMON NAME	Scientific Name	Habitat Code All Species
		5
American Coot	<i>Fulica americana</i>	32,29,31,48,53,5 5
Limpkin	<i>Aramus guarauna</i>	32,29,31,48,53,5 5
Florida Sandhill Crane	<i>Grus canadensis pratensis</i>	29,32
Killdeer	<i>Charadrius vociferus</i>	32,29,31,48,53,5 5
Solitary Sandpiper	<i>Tringa solitaria</i>	32,29,31,48,53,5 5
Spotted Sandpiper	<i>Actitis macularia</i>	32,29,31,48,53,5 5
Common Snipe	<i>Gallinago gallinago</i>	32,29,31,48,53,5 5
American Woodcock	<i>Scolopax minor</i>	8,32,29,31
Ring-billed Gull	<i>Larus delawarensis</i>	32,29,31,48,53,5 5
Herring Gull	<i>Larus argentatus</i>	32,29,31,48,53,5 5
Caspian Tern	<i>Sterna caspia</i>	32,29,31,48,53,5 5
Forster's Tern	<i>Sterna forsteri</i>	32,29,31,48,53,5 5
Mourning Dove	<i>Zenaida macroura</i>	8,32,29,31,48
Common Ground-Dove	<i>Columbina passerina</i>	8,14
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	8,32,31
Barn Owl	<i>Tyto alba</i>	8,32,29,31
Eastern Screech-Owl	<i>Otus asio</i>	21,8,14,35
Great Horned Owl	<i>Bubo virginianus</i>	21,8,14,35
Barred Owl	<i>Strix varia</i>	21,8,14,35
Common Nighthawk	<i>Chordeiles minor</i>	21,8,14,35
Chuck-will's-widow	<i>Caprimulgus carolinensis</i>	21,8,14,35
Whip-poor-will	<i>Caprimulgus vociferus</i>	21,8,14,35
Chimney Swift	<i>Chaetura pelagica</i>	21,8,14,35
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	21,8,14,35
Belted Kingfisher	<i>Ceryle alcyon</i>	31,29,49,53,55
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	21,8,14,35
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	21,8,14,35
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	21,8,14,35
Downy Woodpecker	<i>Picoides pubescens</i>	21,8,14,35
Hairy Woodpecker	<i>Picoides villosus</i>	21,8,14,35
Northern Flicker	<i>Colaptes auratus</i>	21,8,14,35
Pileated Woodpecker	<i>Dryocopus pileatus</i>	21,8,14,35

Blue Spring and Hontoon Island State Parks

Animals

COMMON NAME	<i>Scientific Name</i>	Habitat Code All Species
Eastern Phoebe	<i>Sayornis phoebe</i>	21,8,14,35
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	8,21,14
Eastern Kingbird	<i>Tyrannus tyrannus</i>	21,8,14,35
Purple Martin	<i>Progne subis</i>	21,8,14,35
Tree Swallow	<i>Tachycineta bicolor</i>	21,8,14,35
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	21,8,14,35
Barn Swallow	<i>Hirundo rustica</i>	21,8,14,35
Blue Jay	<i>Cyanocitta cristata</i>	21,8,14,26,29,31,32,35
Florida Scrub-Jay	<i>Aphelocoma coerulescens</i>	14
American Crow	<i>Corvus brachyrhynchos</i>	21,8,14,35
Fish Crow	<i>Corvus ossifragus</i>	31,35,53,55
Tufted Titmouse	<i>Baeolophus bicolor</i>	21,8,14,35
Carolina Wren	<i>Thryothorus ludovicianus</i>	21,8,14,35
House Wren	<i>Troglodytes aedon</i>	21,8,14,35
Winter Wren	<i>Troglodytes troglodytes</i>	21,8,14,35
Marsh Wren	<i>Cistothorus palustris</i>	29,31,35
Ruby-crowned Kinglet	<i>Regulus calendula</i>	21,8,14,35
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	21,8,14,35
Eastern Bluebird	<i>Sialia sialis</i>	21,8,14,35
Veery	<i>Catharus fuscescens</i>	21,8,14,35
Hermit Thrush	<i>Catharus guttatus</i>	21,8,14,35
American Robin	<i>Turdus migratorius</i>	21,8,14,35
Gray Catbird	<i>Dumetella carolinensis</i>	21,8,14,35
Northern Mockingbird	<i>Mimus polyglottos</i>	21,8,14,35
Brown Thrasher	<i>Toxostoma rufum</i>	21,8,14,35
Cedar Waxwing	<i>Bombycilla cedrorum</i>	21,8,14,35
Loggerhead Shrike	<i>Lanius ludovicianus</i>	21,8,14,35
European Starling *	<i>Sturnus vulgaris</i>	21,8,14,35
White-eyed Vireo	<i>Vireo griseus</i>	21,8,14,35
Blue-headed Vireo	<i>Vireo solitarius</i>	21,8,14,35
Yellow-throated Vireo	<i>Vireo flavifrons</i>	21,8,14,35
Red-eyed Vireo	<i>Vireo olivaceus</i>	21,8,14,35
Orange-crowned Warbler	<i>Vermivora celata</i>	21,8,14,35
Northern Parula	<i>Parula americana</i>	21,8,14,35
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	21,8,14,35
Yellow-rumped Warbler	<i>Dendroica coronata</i>	21,8,14,35
Yellow-throated Warbler	<i>Dendroica dominica</i>	21,8,14,35
Pine Warbler	<i>Dendroica pinus</i>	21,8,14,35
Prairie Warbler	<i>Dendroica discolor</i>	21,8,14,35
Florida Prairie Warbler	<i>Dendroica discolor paludicola</i>	21,8,14,35
Palm Warbler	<i>Dendroica palmarum</i>	21,8,14,35

* Non-Native Species

Blue Spring and Hontoon Island State Parks

Animals

COMMON NAME	<i>Scientific Name</i>	Habitat Code All Species
Blackpoll Warbler	<i>Dendroica striata</i>	21,8,14,35
Black-and-white Warbler	<i>Mniotilta varia</i>	21,8,14,35
American Redstart	<i>Setophaga ruticilla</i>	21,8,14,35
Prothonotary Warbler	<i>Protonotaria citrea</i>	21,8,14,35
Worm-eating Warbler	<i>Helmitheros vermivorus</i>	21,8,14,35
Swainson's Warbler	<i>Limnothlypis swainsonii</i>	21,8,14,35
Ovenbird	<i>Seiurus aurocapillus</i>	21,8,14,35
Louisiana Waterthrush	<i>Seiurus motacilla</i>	32,55,29,48,53
Common Yellowthroat	<i>Geothlypis trichas</i>	21,8,14,35
Hooded Warbler	<i>Wilsonia citrina</i>	21,8,14,35
Summer Tanager	<i>Piranga rubra</i>	21,8,14,35
Northern Cardinal	<i>Cardinalis cardinalis</i>	21,8,14,35
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	21,8,14,35
Blue Grosbeak	<i>Guiraca caerulea</i>	21,8,14,35
Indigo Bunting	<i>Passerina cyanea</i>	21,8,14,35
Painted Bunting	<i>Passerina ciris</i>	21,8,14,35
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	21,8,14
Bachman's Sparrow	<i>Aimophila aestivalis</i>	21,8,14
Chipping Sparrow	<i>Spizella passerina</i>	21,8,14
Field Sparrow	<i>Spizella pusilla</i>	21,8,14
Vesper Sparrow	<i>Pooecetes gramineus</i>	21,8,14
Savannah Sparrow	<i>Passerculus sandwichensis</i>	21,8,14
Song Sparrow	<i>Melospiza melodia</i>	21,8,14,35
Swamp Sparrow	<i>Melospiza georgiana</i>	21,8,14,35
White-throated Sparrow	<i>Zonotrichia albicollis</i>	21,8,14,35
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	32,29,53
Eastern Meadowlark	<i>Sturnella magna</i>	21,8,14,35
Boat-tailed Grackle	<i>Quiscalus major</i>	32,29,53,55
Common Grackle	<i>Quiscalus quiscula</i>	32,29,53,55
Brown-headed Cowbird	<i>Molothrus ater</i>	21,8,14,35
Orchard Oriole	<i>Icterus spurius</i>	21,8,14,35
American Goldfinch	<i>Carduelis tristis</i>	21,8,14,35
House Sparrow *	<i>Passer domesticus</i>	21,8,14,35
MAMMALS		
Virginia opossum	<i>Didelphis virginiana</i>	21,8,14,35
Eastern mole	<i>Scalopus aquaticus</i>	21,8,14,35
Eastern pipistrelle	<i>Pipistrellus subflavus</i>	21,8,14,35
Big brown bat	<i>Eptesicus fuscus</i>	21,8,14,35
Nine-banded armadillo *	<i>Dasypus novemcinctus</i>	21,8,14,35
Marsh rabbit	<i>Sylvilagus palustris</i>	21,8,35
Eastern cottontail	<i>Sylvilagus floridanus</i>	21,8,14,35
Gray squirrel	<i>Sciurus carolinensis</i>	21,8,14,35

* Non-Native Species

Blue Spring and Hontoon Island State Parks

Animals

COMMON NAME	<i>Scientific Name</i>	Habitat Code All Species
Fox squirrel	<i>Sciurus niger</i>	21,8,14,35
Southern flying squirrel	<i>Glaucomys volans</i>	21,8,14,35
Southeastern pocket gopher	<i>Geomys pinetis</i>	21,8,14,35
Marsh rice rat	<i>Oryzomys palustris</i>	21,8,14,35
Cotton mouse	<i>Peromyscus gossypinus gossypinus</i>	21,8,14,35
Golden mouse	<i>Ochrotomys nuttalli</i>	21,8,14,35
Hispid cotton rat	<i>Sigmodon hispidus</i>	21,8,14,35
Eastern woodrat	<i>Neotoma floridana</i>	21,8,14,35
Round-tailed muskrat	<i>Neofiber alleni</i>	21,8,14,35
Black rat *	<i>Rattus rattus</i>	21,8,14,35
Red fox	<i>Vulpes vulpes</i>	21,8,14,35
Gray fox	<i>Urocyon cinereoargenteus</i>	21,8,14,35
Florida black bear	<i>Ursus americanus floridanus</i>	21,8,14,35
Raccoon	<i>Procyon lotor</i>	21,8,14,35
River otter	<i>Lutra canadensis</i>	53,55,48
Striped skunk	<i>Mephitis mephitis</i>	21,8,14,35
Bobcat	<i>Felis rufus</i>	21,8,14,35
Florida manatee	<i>Trichechus manatus latirostris</i>	53,55
Wild pig *	<i>Sus scrofa</i>	21,8,14,35
White-tailed deer	<i>Odocoileus virginianus</i>	21,8,14,35
Feral cat *	<i>Felis catus</i>	21,8,14,35

Blue Spring and Hontoon Island State Parks
Animals

Natural Community 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

Natural Community 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 which 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 which is likely to become an endangered species within the foreseeable 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.

Blue Spring and Hontoon Island State Parks

Designated Species

Plants

DESIGNATED SPECIES STATUS

Common Name	Scientific Name	FDACS	USFWS	FNAI
Okeechobee gourd, Indian pumpkin	<i>Cucurbita okeechobeensis</i>	E	E	S1
Green-fly orchid	<i>Epidendrum conopseum</i>	CE		
Garberia	<i>Garberia heterophylla</i>	T		
Scrub holly	<i>Ilex opaca var. arenicola</i>			S3
Cinnamon fern	<i>Osmunda cinnamomea</i>	CE		
Royal fern	<i>Osmunda regalis</i>	CE		
Silkbay	<i>Persea borbonia var. humilis</i>			S3
Wild pine; Air plant	<i>Tillandsia fasciculata</i>	E		
Coontie	<i>Zamia pumila</i>	CE		

Blue Spring and Hontoon Island State Parks

Designated Species

Plants

DESIGNATED SPECIES STATUS

Blue Spring and Hontoon Island State Parks

Designated Species

Animals

DESIGNATED SPECIES STATUS

Common Name	<i>Scientific Name</i>	FFWCC	USFWS	FNAI
Invertebrates				
Blue Spring hydrobe	<i>Aphaostracon asthenes</i>			G1 S1
Blue Spring siltsnail	<i>Cincinnatia parva</i>			G1 S1
Reptiles				
Gopher tortoise	<i>Gopherus polyphemus</i>	SSC		S3
American alligator	<i>Alligator mississippiensis</i>	SSC	T(S/A)	S4
Eastern indigo snake	<i>Drymarchon corais couperi</i>	T	T	S3
Mississippi green water snake	<i>Nerodia cyclopion</i>			S1
Florida pine snake	<i>Pituophis melanoleucus mugitus</i>	SSC	S3	
Birds				
Great Egret	<i>Ardea alba</i>			S4
Snowy Egret	<i>Egretta thula</i>	SSC		S4
Little Blue Heron	<i>Egretta caerulea</i>	SSC		S4
Tricolored Heron	<i>Egretta tricolor</i>	SSC		S4
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>			S3?
Yellow-crowned Night-Heron	<i>Nyctanassa violacea</i>			S3?
White Ibis	<i>Eudocimus albus</i>	SSC		S4
Glossy Ibis	<i>Plegadis falcinellus</i>			S2
Wood Stork	<i>Mycteria americana</i>	E	E	S2
Osprey	<i>Pandion haliaetus</i>			S3,S4
Swallow-tailed Kite	<i>Elanoides forficatus</i>			S2,S3
Bald Eagle	<i>Haliaeetus leucocephalus</i>	T	T	S3
Cooper's Hawk	<i>Accipiter cooperii</i>			S3?
Limpkin	<i>Aramus guarauna</i>	SSC		S3
Caspian Tern	<i>Sterna caspia</i>			S2?
Hairy Woodpecker	<i>Picoides villosus</i>			S3?
Florida Scrub-Jay	<i>Aphelocoma coerulescens</i>	T	T	S3

Blue Spring and Hontoon Island State Parks

Designated Species

Animals

DESIGNATED SPECIES STATUS

Common Name	Scientific Name	FFWCC	USFWS	FNAI
American Redstart	<i>Setophaga ruticilla</i>			S3
Louisiana Waterthrush	<i>Seiurus motacilla</i>			S3
Bachman's Sparrow	<i>Aimophila aestivalis</i>			S3
Mammals				
Round-tailed muskrat	<i>Neofiber alleni</i>			S3
Florida black bear	<i>Ursus americanus floridanus</i>		T	S2
Florida Manatee	<i>Trichechus manatus latirostris</i>	E	E	S2?

Addendum 6—Timber Management Analysis

Blue Spring and Hontoon Island State Parks

Timber Management Analysis

The timber assessment required by Chapters 253 and 259, Florida Statutes, was conducted by Jimmy Roberts of the Division of Forestry and partially based upon information obtained and compiled by Mike Penn of the Division of Forestry and Richard Harris, Sherry McGowan and Marti Miller of the Division of Recreation and Parks.

Since Blue Spring State Park and Hontoon Island State Park are separated only by the St. Johns River, they have similar past uses. Both areas served as pioneer homesteads and were farmed. Remains from an old citrus grove are still present on the northern parts of BSSP. An orange packing facility, boatyard and cattle operation have occupied Hontoon Island in the past. Some evidence of past pine logging can be seen on parts of BSSP along the eastern boundary. Most of the cypress was cut in this part of the state in the late 1800's and early 1900's. Since the State took ownership of these properties, prescribed fire has been the primary tool for natural resource management. Burning has become more refined over the years and in the last decade there has been a significant increase in growing season burns.

Since the only access to Hontoon Island State Park is by boat, timber harvesting would not be economically feasible at this time due to the product composition and the logistical concerns of moving the timber from the island to a processing facility.

Goals and Objectives Related to Timber Management

There are two areas located on Blue Spring State Park property that could and have benefited from a silviculture operation. The first being the sand pine scrub which is earmarked to be restored to an early successional age to benefit the Florida scrub-jay. Another area of concern is the 100 acre fallow orange grove where the orange trees have been replaced by laurel oaks. Plans to remove these oaks and restore the area back to either scrub or sand hill are being investigated.

In under stocked areas, longleaf pine (*Pinus palustris*) can be planted if sites are suitable. This species is more adapted to fire and is longer lived than the other southern pines. A "rule of thumb" is that if palmetto is dominant, longleaf can be planted. If gallberry (*Ilex glabra*) dominates the community then it is probably too wet for longleaf and slash pine, (*Pinus elliottii*) should be planted.

Sand Pine Scrub

There are approximately 461 acres of scrub located on Blue Spring State Park. Hontoon Island State Park has none. The scrub component, for the most part, is in excellent ecological condition. The scrub areas on BSSP are variable with regard to ecological condition with the majority in the early successional stages. This is due mostly to restoration efforts by park managers to increase scrub jay habitat in the last several years. Restoration efforts utilized timber harvests to remove the mature sand pine so prescribed fire could be introduced safely. If allowed to grow unburned these areas will grow into mature stands of sand pine in 40-50 years. If fire is used, these areas will remain in early successional stages. Silviculture, as a management tool, was first used for scrub restoration on BSSP in 1989. Approximately 25 acres of sand pine was harvested to move the area back to an early successional stage. Early successional scrub is more suitable for scrub-jay habitat and managers felt that due to the surrounding urban areas, some type of mechanical treatment was needed before prescribed fire was used.

Blue Spring and Hontoon Island State Parks

Timber Management Analysis

As more of the scrub areas on Blue Spring State Park are being managed or converted to an early successional stage for scrub-jays and other scrub species, managers must explore maintenance options to keep the scrub in this desired state. Burning and/or mowing have been the best options in the past. Commercial harvesting of one of the scrub species is becoming more common. The stems of rusty lyonia, (*Lyonia ferruginea*), sometimes called “crooked wood” or “dragon wood”, is used in the making of artificial plants. Harvesting of the lyonia has been done as a restoration step prior to timber harvesting as well as in the maintenance of the scrub areas. A contract for Lyonia harvesting is currently in place at BSSP.

Fallow Orange Grove

Located to the north approximately 2 miles from French Ave. and to the east of Lake Beresford is a fallow orange grove. This grove is about 100 acres in size and where the orange trees once stood are laurel oak trees. This area is in need of restoration to a more natural community and removal of the oak trees would probably be the initial treatment. Existing soils indicate either sandhill or scrub was the natural community before establishment of an orange grove. Restoration efforts should continue in this area and should be included in the management plan.

Timber harvests will be conducted so as to minimize soil disturbance and road damage. Harvesting will be curtailed during wet weather to avoid rutting and damage to soil profiles and local topography.

Gopher tortoise burrows will be surveyed and marked, and a buffer established before harvesting commences. Timber harvests should be conducted during the dormant season to minimize impacts to gopher tortoises.

Due to the access limitations of Hontoon Island State Park, timber harvesting for revenue generation would not be an effective management tool at this time.

Summary prepared by: Richard Harris of the Division of Recreation and Parks.

Addendum 7—Priority Schedule And Cost Estimates

Blue Spring and Hontoon Island State Parks 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

1. Increase prescribed burning program to 5-10 burns (100-500 acres) per year. 0-10 years. Average of \$12,800/year for personnel and \$5,500/year for equipment. **Estimated Cost: \$80,000.**
2. Design and implement erosion control measures. Includes restrictive barriers and drainage correction for the wetlands bisected by French Ave. 0-10 years. **Estimated Cost: \$120,000.**
3. Target additional forested areas for restoration which includes scrub and pine flatwood communities. Increase girdling and or removal of hardwoods in overgrown scrub and flatwood areas. Ten or more acres/year 0-10 years. **Estimated Cost: \$25,000.**
4. Continue the exotics control program within the parks. Conduct follow-up treatments of exotics subsequent to their initial treatment via contract. Continue to monitor the parks for new infestations of exotic plants. Map and treat infestations as needed. 0-10 years. Includes equipment, herbicide and staff. **Estimated Cost: \$50,000.**
5. Continue to monitor designated species within the park. Includes continued mapping of rare plant species, and monitoring of other designated species. Implement protective measures as needed. 0-10 years. **Estimated Cost: \$30,000.**
6. Enhance resource protection by securing boundaries of the parks. Includes survey of the park boundaries and fencing where needed. 0-10 years. **Estimated Cost: \$75,000.**
7. Record as yet unrecorded cultural resources within the parks. Includes beginning phase of architectural and archaeological surveys. 0-10 years. **Estimated Cost: \$100,000.**
8. Preserve and protect archaeological sites. Includes professionally locating sites, and other protective measures. 0-10 years. **Estimated Cost: \$25,000.**
9. Develop a formal Scope of Collections Statement for each unit, inventory and catalog collections, provide for periodic assessment of collections conditions. 0-10 years. **Estimated Cost \$12,000.**
10. Restore natural flow of wetlands bisected by French Ave. 0-5 years. **Estimated Cost \$75,000.**
11. Construct and maintain fire breaks for burn zones requiring them. 0-5 years. **Estimated Cost \$35,000.**
12. Continue and increase fire type community restoration with emphasis on growing season burns and mechanical and herbicide treatments. 0-10 years. **Estimated Cost \$50,000.**

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

**Blue Spring and Hontoon Island State Parks
Priority Schedule and Cost Estimates**

13. Improve public awareness and encourage protection and stewardship of the parks' cultural resources through education, interpretation, and enforcement of agency rules and regulations. 1-10 years. **Estimated Cost: \$5,000, plus \$2,000/year in reoccurring costs.**
14. Seek grant funding for research projects to document the prehistory and history of the parks, the St. Johns River, and the surrounding area. 1-5 years. **Estimated Cost: \$10,000.**
15. Interpret the cultural resources of the parks in their context to educate park visitors about the parks' and area's prehistory and history through interpretive signs and programs. 2-10 years. **Estimated Cost: \$35,000, plus \$5,000/year in reoccurring costs.**
16. Continue the ongoing UF archaeological field school reconnaissance survey of both park, marking newly identified site locations with GPS technology. 2-5 years. **Estimated Cost: \$7,500.**
17. Establish monitoring measures to monitor the recorded archaeological sites for erosion, vegetation intrusion, animal burrowing, and human disturbance. 1-5 years. **Estimated Cost: \$3,000, plus \$2,000/year in reoccurring costs.**
18. Develop and implement a written plan to protect and preserve the recorded archaeological sites from erosion, slumpage, animal burrowing, root damage and tree fall, and vandalism. 3-5 years. **Estimated Cost: \$10,000.**
19. Protect and preserve the cultural resources of Blue Spring and Hontoon State Parks. 0-10 years. **Estimated Cost: \$5,000, plus \$2,000/year in reoccurring costs.**

TOTAL ESTIMATED COST: \$752,500. plus \$11,000/year reoccurring costs

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

**Blue Spring and Hontoon Island State Parks
Priority Schedule and Cost Estimates**

Blue Spring State Park—Capital Improvements	
Development Area or Facilities	Estimated Cost
Boating Facilities (French Avenue)	310,000.00
Day Use Area	595,000.00
Entrance Area	353,000.00
Overnight Facilities	813,000.00
Support Facilities	721,000.00
Trails	212,000.00
Total w/contingency	\$3,604,800.00

Hontoon Island State Park—Capital Improvements	
Development Area or Facilities	Estimated Cost
Day Use Area	56,000.00
Overnight Facilities	240,000.00
Support Facilities	195,500.00
Total w/contingency	\$589,800.00

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

**Blue Spring and Hontoon Island State Parks
Priority Schedule and Cost Estimates**

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

Addendum 8—Additional Information

[FNAI Descriptions](#)

[DHR Cultural Management Statement](#)

And

[2004 Land Management Review Reports](#)

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.

Coastal Grassland - coastal flatland with sand substrate; xeric-mesic; subtropical or temperate;

Descriptions Of Natural Communities Developed By FNAI

occasional fire; grasses, herbs, and shrubs with or without slash pine and/or cabbage palm.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Mesic Flatwoods - flatland with sand substrate; mesic; subtropical or temperate; frequent fire; slash pine and/or longleaf pine with saw palmetto, gallberry and/or wiregrass or cutthroat grass understory.

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

Descriptions Of Natural Communities Developed By FNAI

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Descriptions Of Natural Communities Developed By FNAI

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Marsh lake - generally shallow, open water area within wide expanses of freshwater marsh; still water

Descriptions Of Natural Communities Developed By FNAI

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, troglophilic, and troglotic organisms.

Aquatic Cave - cavernicolous area permanently or periodically submerged; often characterized by troglotic 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.

Descriptions Of Natural Communities Developed By FNAI

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

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

Unconsolidated Substrate - expansive subtidal, intertidal and supratidal area composed primarily of loose mineral matter (e.g., 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 Zoantharia (e.g., stony corals and black corals); includes deepwater bank reefs, fringing barrier reefs, outer bank reefs and patch reefs, some of which may contain distinct zones of assorted macrophytes, octocorals, & sponges.

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

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

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

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

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

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

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

DEFINITIONS OF TERMS Terrestrial and Palustrine Natural Communities

Physiography

Upland - high area in region with significant topographic relief; generally undulating

Lowland - low area in region with or without significant topographic relief; generally flat to gently sloping

Flatland - generally level area in region without significant topographic relief; flat to gently sloping

Basin - large, relatively level lowland with slopes confined to the perimeter or isolated interior locations

Depression - small depression with sloping sides, deepest in center and progressively shallower towards the perimeter

Floodplain - lowland adjacent to a stream; topography influenced by recent fluvial processes

Bottomland - lowland not on active floodplain; sand/clay/organic substrate

Hydrology

occasionally inundated - surface water present only after heavy rains and/or during flood stages

seasonally inundated - surface water present during wet season and flood periods

usually inundated - surface water present except during droughts

Climatic Affinity of the Flora

tropical - community generally occurs in practically frost-free areas

subtropical - community generally occurs in areas that experience occasional frost, but where freezing temperatures are not frequent enough to cause true winter dormancy

temperate - community generally occurs in areas that freeze often enough that vegetation goes into winter dormancy

Fire

annual fire - burns about every 1-2 years

frequent fire - burns about every 3-7 years

occasional fire - burns about every 8-25 years

rare fire - burns about every 26-100 years

no fire - community develops only when site goes more than 100 years without burning

Descriptions Of Natural Communities Developed By FNAI

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
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A. GENERAL DISCUSSION

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

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

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

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

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

B. STATUTORY AUTHORITY

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

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

1. Provide leadership in the preservation of the state's historic resources; [and]

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2. Administer state-owned or state-controlled historic resources in a spirit of stewardship and trusteeship;...

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

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

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

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

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

5. Each state agency of the executive branch, in seeking to acquire additional space through new construction or lease, shall give preference to the acquisition or use of historic properties when such acquisition or use is determined to be feasible and prudent compared with available alternatives. The acquisition or use of historic properties is considered feasible and prudent if the cost of purchase or lease, the cost of rehabilitation, remodeling, or altering the building to meet compliance standards and the agency's needs, and the projected costs of maintaining the building and providing utilities and other services is less than or equal to the same costs for available alternatives. The agency shall request the division to assist in determining if the acquisition or use of a historic property is feasible and prudent. Within 60 days after making a determination that additional space is needed, the agency shall request the division to assist in identifying buildings within the appropriate geographic area that are historic properties suitable for acquisition or lease by the agency, whether or not such properties are in need of repair, alteration, or addition.
6. Consistent with the agency's mission and authority, all state agencies of the executive branch shall carry out agency programs and projects, including those under which any state assistance is provided, in a manner which is generally sensitive to the preservation of historic properties and shall give consideration to programs and projects which will further the purposes of this section.

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

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

C. MANAGEMENT POLICY

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

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

It should be noted that while many archaeological and historical sites are already recorded within state--owned or controlled--lands, the majority of the uplands areas and nearly all of the inundated areas have not been surveyed to locate and assess the significance of such resources. The known sites are, thus,

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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

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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

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characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

- 10.** New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired. (see Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings [Revised 1990]).

Divisions of Historical Resources staff are available for technical assistance for any of the above listed topics. It is encouraged that such assistance be sought as early as possible in the project planning.

D. MANAGEMENT IMPLEMENTATION

As noted earlier, 253.034(4), F.S., states that "all management plans, whether for single-use or multiple-use properties, shall specifically describe how the managing agency plans to identify, locate, protect and preserve, or otherwise use fragile non-renewable resources, such as archaeological and historic sites..." The following guidelines should help to fulfill that requirement.

- 1.** All land managing agencies should contact the Division and send U.S.G.S. 7.5 minute quadrangle maps outlining the boundaries of their various properties.
- 2.** The Division will in turn identify site locations on those maps and provide descriptions for known archaeological and historical sites to the managing agency.
- 3.** Further, the Division may also identify on the maps areas of high archaeological and historic site location probability within the subject tract. These are only probability zones, and sites may be found outside of these areas. Therefore, actual ground inspections of project areas may still be necessary.
- 4.** The Division will send archaeological field recording forms and historic structure field recording forms to representatives of the agency to facilitate the recording of information on such resources.
- 5.** Land managers will update information on recorded sites and properties.
- 6.** Land managers will supply the Division with new information as it becomes available on previously unrecorded sites that their staff locate. The following details the kind of information the Division wishes to obtain for any new sites or structures that the land managers may report:

A. Historic Sites

- (1)** Type of structure (dwelling, church, factory, etc.).
- (2)** Known or estimated age or construction date for each structure and addition.
- (3)** Location of building (identify location on a map of the property, and building placement, i.e., detached, row, etc.).
- (4)** General Characteristics: (include photographs if possible) overall shape of plan (rectangle, "L" "T" "H" "U", etc.); number of stories; number of vertical divisions of bays; construction materials (brick, frame, stone, etc.); wall finish (kind of bond, coursing, shingle, etc.); roof shape.
- (5)** Specific features including location, number and appearance of:
 - (a)** Important decorative elements;
 - (b)** Interior features contributing to the character of the building;
 - (c)** Number, type, and location of outbuildings, as well as date(s) of construction;
 - (d)** Notation if property has been moved;
 - (e)** Notation of known alterations to building.

B. Archaeological Sites

- (1)** Site location (written narrative and mapped location).
- (2)** Cultural affiliation and period.
- (3)** Site type (midden, burial mound, artifact scatter, building rubble, etc.).

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- (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)**

Land Management Review of Blue Springs State Park
(Lease No.3976), March 24, 2004

Prepared by Division of State Lands Staff

William Howell, OMC Manager
Sarah Hall, Administrative Assistant

For
Blue Springs State Park Review Team

FINAL June 16, 2004

Land Manager:	DRP
Area:	2,625 acres
County:	Volusia
Mngt. Plan Revised:	06/17/1999
Mngt. Plan Update Due:	06/17/2009

Management Review Team Members

Agency Represented	Team member Appointed	Team member In attendance
DOF	Bill Korn	Jimmy Roberts
DEP District	Brenda Borgiet	Brenda Borgiet
DRP District	Charlie Dutoit	Charlie Dutoit
FWCC	Tom Shupe	Tom Shupe
Private Land Manager	Joe Benedict	
Soil and Water Cons. Dist.	Phil Giorno	Blanche Smith
County	Steven Kintner	
Environmental Org.	Arnette Sherman	Arnette Sherman

Process for Implementing Regional Management Review Teams

Legislative Intent and Guidance:

Chapter 259.036, F. S. was enacted in 1997 to determine whether conservation, preservation, and recreation lands owned by the state Board of Trustees of the Internal Improvement Trust Fund (Board) are being managed properly. It directs the Department of Environmental Protection (DEP) to establish land management review teams to evaluate the extent to which the existing management plan provides sufficient protection to threatened or endangered species, unique or important natural or physical features, geological or hydrological functions, and archaeological features. The teams also evaluate the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices, including public access, are in compliance with the adopted management plan. If a land management plan has not been adopted, the review shall consider the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices are in compliance with the management policy statement and management prospectus for that property. If the land management review team determines that reviewed lands are not being managed for the purposes for which they were acquired or in compliance with the adopted land management plan, management policy statement, or management prospectus, DEP shall provide the review findings to the Board, and the managing agency must report to the Board its reasons for managing the lands as it has. A report of the review findings are given to the managing agency under review, the Acquisition and Restoration Council, and to the Division of State Lands. Also, DEP shall report the annual review findings of its land management review teams to the Board no later than the second board meeting in October of each year.

Review Site

The management review of Blue Springs State Park considered approximately 2,625 acres in Volusia County that are managed by the Division of Recreation and Parks (DRP). The team evaluated the extent to which current management actions are sufficient, whether the land is being managed for the purpose for which it was acquired, and whether actual management practices, including public access, are in compliance with the management plan. The DRP management plan was approved on June 17, 1999, and the management plan update is due on June 17, 2009.

Review Team Determination

1. Is the land being managed for the purpose for which it was acquired?

All team members agreed that Blue Springs is being managed for the purpose for which it was acquired.

2. Are actual management practices, including public access, in compliance with the management plan?

All team members agreed that actual management practices, including public access, were in compliance with the management plan for this site.

Commendations to the Managing Agency

The Team commends the manager and staff for the restoration of the scrub community, and for the outstanding prescribed burning of the flatwoods at the south end of the park.

The team commends the manager and staff for their outstanding management of the spring run to protect the manatees, while facilitating public recreation at this park.

Exceptional Management Actions

The following items received high scores on the review team which indicates that management actions exceeded expectations

Exceptional management actions:

1. Management and protection of the Mesic Flatwoods, Shell Mound, Upland Mixed Forest, Depression Marsh, Floodplain Forest/Marsh, Hydric Hammock, River Floodplain Lake, Blackwater Stream, Sandhill Upland Lake, Spring Run Stream, Aquatic Cave, and Scrub communities.
2. Protection and preservation of listed animals and plants.
3. Protection, survey and preservation of cultural sites.
4. Excellent area, frequency and quality of the prescribed burns.
5. Excellent invasive plant and animal removal program.
6. Excellent monitoring of ground and surface water, and restoration of ditches.
7. Exceptional boundary surveys, gates and fences, and signage.
8. Exceptional law enforcement presence.
9. Excellent awareness of impacts from expanding development outside the park.
10. Exceptional roads, parking and recreational opportunities.
11. Excellent environmental education/outreach programs.
12. Exceptional waste disposal program and equipment for maintaining the park.

Recommendations and Checklist Findings

Recommendations

The following recommendations resulted from a discussion and vote of review team members.

1. The team recommends that the soil erosion around the spring boil, where the canoes are located on the spring run, and at the boat launch area and wetlands along French Avenue.

Manager's Response: Agree. This is being addressed in unit management plan revisions.

2. The team recommends that the DRP determine the habitat requirements of the endemic snail and determine population status and whether or not protection or more monitoring is needed.

Manager's Response: Agree. The snails were resurveyed in 2003, and we are awaiting management recommendations and a final report.

3. The team recommends that DRP evaluate whether the armored catfish and tilapia are negatively impacting the spring run ecosystem.

Manager's Response: Disagree. These two exotic species are now unfortunately widespread and the park and Division do not have the ability to accomplish this recommendation. It is probable that they are

negatively impacting some native species, but eradication efforts would very likely be futile. However, we are seeking outside research interest.

Checklist findings

The following items received low scores on the review team checklist that indicates that management actions, in the field, were insufficient (f) or that the issue was not sufficiently addressed in the management plan (p). These items need to be further addressed in the management plan update.

1. Discussion in the management plan of monitoring needs for both surface and ground water (p).

Manager's Response: Agree. The updated plan discusses these items.

2. Discussion in the management plan of the need for improved roads and culverts (f).

Manager's Response: Agree. The revised plan discusses the need for improvements along French Avenue and impacts to associated wetlands.

3. Discussion in the management plan of the need for acquisition of in-holdings f).

Manager's Response: Agree. This will be discussed in the revised plan.

4. Discussion in the management plan of the need for improved sanitary facilities, buildings, and funding (f).

Manager's Response: Disagree. State Park land use plans are developed by professional planning staff through a public process and are approved by the Acquisition and Restoration Council. It is beyond the scope of the review team's responsibilities to plan facilities or development on state lands.

Division funding is determined annually by the Florida Legislature. It is unclear what funding needs this recommendation refers to. It should be noted that all state parks would benefit from additional funding.

Land Management Review of Hontoon Island State Park
(Lease No.3976), March 23, 2004

Prepared by Division of State Lands Staff

William Howell, OMC Manager
Sarah Hall, Administrative Assistant.

For
Hontoon Island State Park Review Team

FINAL June 16, 2004

Land Manager:	DRP
Area:	1,700 acres
County:	Volusia
Mngt. Plan Revised:	<u>06/17/1999</u>
Mngt. Plan Update Due:	<u>06/17/2009</u>

Management Review Team Members

Agency Represented	Team member Appointed	Team member In attendance
DOF	Bill Korn	Bill Korn
DEP District	Brian West	Brian West
DRP District	Alice Bard	Alice Bard
FWCC	Tom Shupe	Tom Shupe
Private Land Manager	Joe Benedict	
Soil and Water Cons. Dist.	Phil Giorno	Blanche Smith
County	Steven Kintner	
Environmental Org.	Arnette Sherman	Arnette Sherman

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Review Site

The management review of Hontoon Island State Park considered approximately 1,700 acres in Volusia County that are managed by the Division of Recreation and Parks (DEP). The team evaluated the extent to which current management actions are sufficient, whether the land is being managed for the purpose for which it was acquired, and whether actual management practices, including public access, are in compliance with the management plan. The DRP management plan was approved on June 17, 1999, and the management plan update is due on June 17, 2009.

Review Team Determination

1. Is the land being managed for the purpose for which it was acquired?

All team members agreed that Hontoon Island State Park is being managed for the purpose for which it was acquired.

2. Are actual management practices, including public access, in compliance with the management plan?

All team members agreed that actual management practices, including public access, were in compliance with the management plan for this site.

Commendations to the Managing Agency

1. The Team commends the DRP for their coordination efforts with other agencies, accomplishing the removal of vegetation blocking the Snake Creek.
2. The team commends the Citizen Support Organization for their participation in accomplishing the exceptional visitor center on Hontoon Island.
3. The team commends the Assistant Park Manager for her outstanding efforts coordinating the volunteer program at Hontoon Island.

Exceptional Management Actions

The following items received high scores on the review team which indicates that management actions exceeded expectations

Exceptional management actions:

1. Management and protection of the Mesic Flatwoods, Shell mound, Upland Mixed Forest, Floodplain Forest, Flatwoods/Prairie Lake, River Floodplain Lake, and Blackwater Stream communities.
2. Protection and preservation of listed animals and plants.
3. Survey and preservation of cultural sites.
4. Excellent area, frequency, and quality of the prescribed burns.
5. Excellent cleanup of the dump site and vegetation removal on Snake Creek.
6. Excellent control of invasive plants and animals.
7. Excellent roads and culverts.
8. Exceptional boundary surveys, gates, and fencing.
9. Exceptional law enforcement presence.
10. Exceptional success in acquiring inholdings and additions.
11. Exceptional roads, parking and recreational opportunities.
12. Exceptional ferry boat service and marina.
13. Exceptional interpretive facilities and signs, environmental education.
14. Excellent waste disposal program.
15. Excellent equipment to maintain the park.

Recommendations and Checklist Findings

Recommendations

The following recommendations resulted from a discussion and vote of review team members.

1. The team recommends that if additional cabins are approved, that they be primitive cabins similar to the ones that are currently at this park.

Manager's Response: Disagree. State park land use plans are developed through a public process and are approved by the Acquisition and Restoration Council. It is beyond the scope of the review team's responsibilities to plan facilities use or development on state lands.

Checklist findings

The following items received low scores on the review team checklist which indicates that management actions, in the field, were insufficient (f) or that the issue was not sufficiently addressed in the management plan (p). These items need to be further addressed in the management plan update.

1. Discussion in the management plan of management and identification (mapping) of the Upland Mixed Forest.(p)

Manager's Response: Agree. Upland Mixed Forest is mapped and discussed in more detail in the revised unit plan.

2. Discussion in the management plan of law enforcement needs. (p)

Manager's Response: Disagree. The Division does not know of any significant management issues in these areas.

3. Discussion in the management plan of management issues relating to roads, culverts, and ditches. (p)

Manager's Response: Disagree. The Division does not know of any significant management issues these areas.

4. Discussion in the management plan of boundary surveys, gates, fencing and signage.(p)

Manager's Response: Disagree. Hontoon Island receives adequate Law Enforcement coverage.

5. Discussion in the management plan the need for additional staff.(f)

Manager's Response: Agree. If it is determined that additional staff are needed at the time of the next unit management plan revision, it will be included in the plan. However, no new staff can be assigned to this or any other park unit unless they are appropriated by the Legislature or reassigned from other units. Additional staff is needed by a majority of parks statewide, which is why we regularly seek positions, volunteers, and partners. Funding is determined annually by the Florida Legislature.

