

HAW CREEK PRESERVE STATE PARK

UNIT MANAGEMENT PLAN

APPROVED

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

FEBRUARY 7, 2003



Department of Environmental Protection

Jeb Bush
Governor

Marjorie Stoneman Douglas Building
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David B. Struhs
Secretary

February 12, 2003

Bryanne White
Office of Park Planning
Division of Recreation & Parks
3900 Commonwealth Blvd., M.S. 525
Tallahassee, Florida 32399-3000

Haw Creek Preserve State Park

Lease # 2991

Dear Ms. White:

On February 7, 2003 Acquisition and Restoration Council recommended approval of the Land Management Plan for Haw Creek Preserve State Park. Therefore, the Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund approves this plan. Pursuant to Section 253.034 and 259.032, Florida Statutes, and Chapter 18-2, Florida Administrative Code the plan's five-year update will be due on February 7, 2008.

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.

Sincerely,

Delmas T. Barber

Delmas T. Barber, OMC Manager
Office of Environmental Services
Division of State Lands

"More Protection, Less Process"

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TABLE OF CONTENTS

INTRODUCTION	1
PURPOSE AND SCOPE OF PLAN	1
MANAGEMENT PROGRAM OVERVIEW	3
Management Authority And Responsibility	3
Park Goals And Objectives	4
Management Coordination	5
Public Participation	5
Other Designations	6
 RESOURCE MANAGEMENT COMPONENT	
INTRODUCTION	7
RESOURCE DESCRIPTION AND ASSESSMENT	7
Natural Resources	7
Cultural Resources	13
RESOURCE MANAGEMENT PROGRAM	14
Special Management Considerations	14
Management Needs And Problems	14
Management Objectives	15
Management Measures For Natural Resources	16
Management Measures For Cultural Resources	19
Research Needs	20
Resource Management Schedule	20
Land Management Review	20

LAND USE COMPONENT

INTRODUCTION	21
EXTERNAL CONDITIONS	21
Existing Use Of Adjacent Lands	21
Planned Use Of Adjacent Lands	22
PROPERTY ANALYSIS	22
Recreation Resource Elements	22
Assessment Of Use	23
CONCEPTUAL LAND USE PLAN	23
Potential Uses And Proposed Facilities	25
Existing Use And Optimum Carrying Capacity	25
Optimum Boundary	27

TABLE

TABLE 1 - Existing Use And Optimum Carrying Capacity	27
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LIST OF ADDENDA

ADDENDUM 1

Acquisition History and Advisory Group Meeting	A 1 - 1
--	---------

ADDENDUM 2

References Cited	A 2 - 1
------------------	---------

ADDENDUM 3

Soil Descriptions	A 3 - 1
-------------------	---------

ADDENDUM 4

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

ADDENDUM 5

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

ADDENDUM 6

Timber Management Analysis	A 6 - 1
----------------------------	---------

ADDENDUM 7

Priority Schedule and Cost Estimates	A 7 - 1
--------------------------------------	---------

MAPS

Vicinity Map	2
Soils Map	8
Natural Communities Map	11
Burn Zone Map	17
Base Map	24
Conceptual Land Use Plan	26
Optimum Boundary Map	28

INTRODUCTION

Haw Creek Preserve State Park is located in Flagler and Volusia Counties (see Vicinity Map) about 10 miles southwest of Bunnell and six miles northeast of Seville. The preserve is comprised of two non-contiguous land parcels. The western parcel includes the mouth of Haw Creek and floodplain areas bordering Crescent Lake and Dead Lake. The smaller eastern parcel contains an upstream reach of Haw Creek at the confluence of Little Haw Creek, and the only uplands in the preserve. There is no public access to the uplands area. The preserve is only accessible by water from two boat ramps in Flagler County. There is a private marina (ramp fee) on Dead Lake in St. Johns Park at the end of County Road 2006. Flagler County maintains a public boat ramp at Russell Landing at the end of County Road 2007. The vicinity map also reflects significant land and water resources existing near the park.

On December 2, 1976, the Board of Trustees of the Internal Improvement Trust Fund (Trustees) obtained title to the property Haw Creek Preserve State Park. The property was donated to the Trustees by the Nature Conservancy. On July 13, 1977, the Trustees received a donation from H. T. and M. M. Cook. The two donations constitute the total area of Haw Creek Preserve State Park. Currently the park contains 3,061.75± acres. For this plan, park acreage has been calculated based on the composition of natural communities, in addition to ruderal and developed areas.

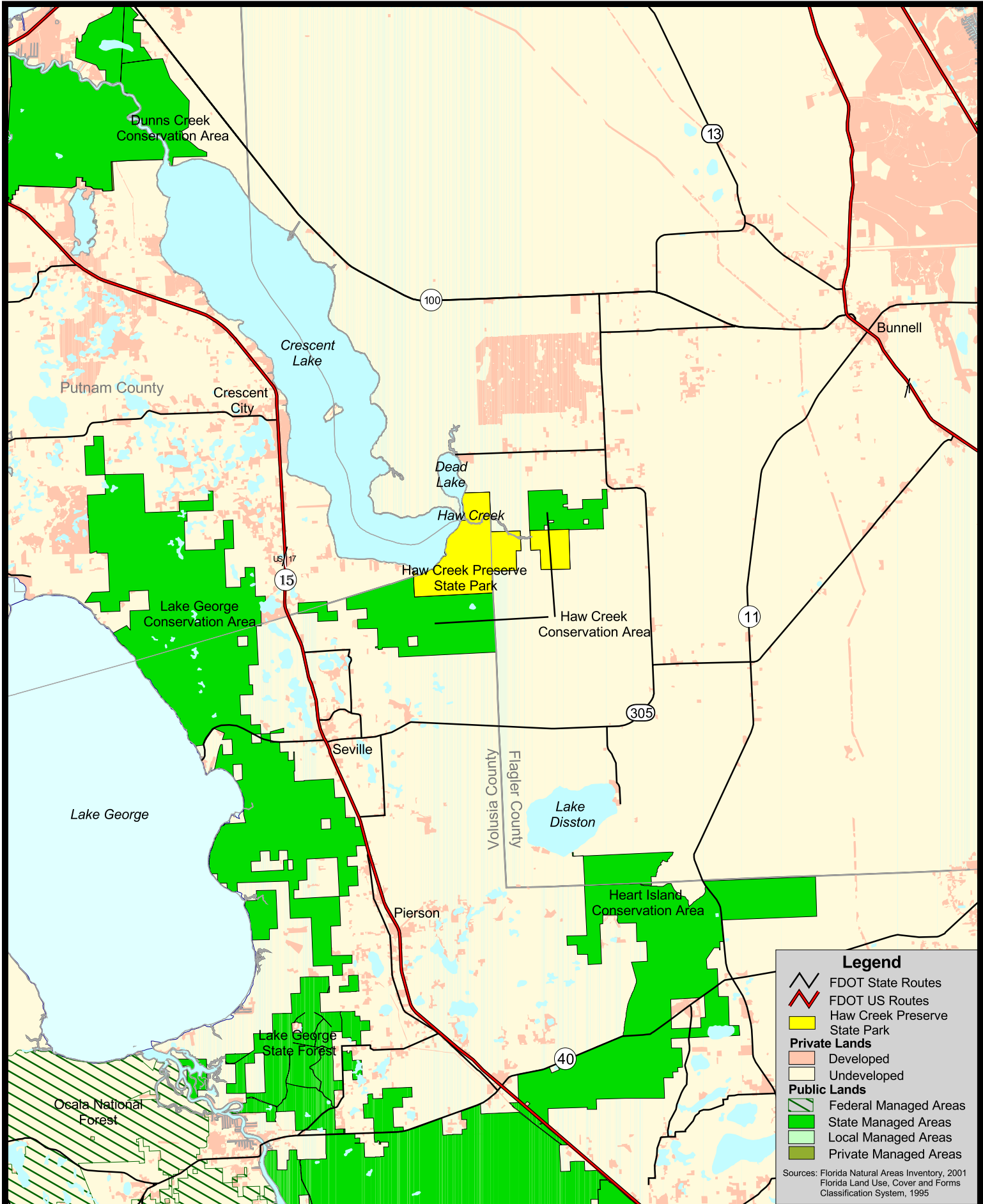
At Haw Creek Preserve State Park, public outdoor recreation and conservation is the designated single use of the property (see Addendum 1). There are no legislative or executive directives that constrain the use of this property.

PURPOSE AND SCOPE OF THE PLAN

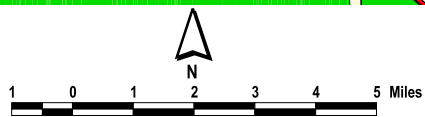
This plan serves as the basic statement of policy and direction for the management of Haw Creek Preserve State Park as a unit of Florida's state park system. It identifies the objectives, criteria and standards that guide each aspect of park administration, and sets forth the specific measures that will be implemented to meet management objectives. The plan is intended to meet the requirements of Sections 253.034 and 259.032, Florida Statutes, Chapter 18-2, Florida Administrative Code, and intended to be consistent with the State Lands Management Plan. With approval, this management plan will supercede and replace the current approved plan of February 19, 1998. 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.



**Haw Creek Preserve State Park
Vicinity Map**



Legend

- FDOT State Routes
- FDOT US Routes
- Haw Creek Preserve State Park
- Private Lands**
 - Developed
 - Undeveloped
- Public Lands**
 - Federal Managed Areas
 - State Managed Areas
 - Local Managed Areas
 - Private Managed Areas

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

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

In the development of this plan, the potential of the park to accommodate secondary management purposes (“multiple uses”) was analyzed. These secondary purposes were considered within the context of the Division’s statutory responsibilities and an analysis of the resource needs and values of the park. This analysis considered the park natural and cultural resources, management needs, aesthetic values, visitation, and visitor experiences. For Haw Creek Preserve State Park, it was determined that timber management activities 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 and should be discouraged.

The potential for generating revenue to enhance management was also analyzed. Visitor fees and charges are the principal source of revenue generated by the park. It was determined that a one-time timber harvest would be appropriate at this park as 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 Procedures Manual** (OPM) 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 Haw Creek Preserve State Park, preservation and enhancement of natural conditions is all important. Resource considerations are given priority over user considerations and development is restricted to the minimum necessary for ensuring its protection and maintenance, limited access, user safety and convenience, and appropriate interpretation. Permitted uses are primarily of a passive nature, related to the aesthetic, educational and recreational enjoyment of the preserve, although other compatible uses are permitted in limited amounts. Program emphasis is placed on interpretation of the natural and cultural attributes of the preserve.

Park Goals and Objectives

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

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

Natural Resources and Cultural Resources

1. Preserve the biological diversity and ecological functions of natural communities, restore disturbed wetland and upland systems, and protect rare and endangered species of plants and animals.
 - A. Restore water quality in Haw Creek to meet FDEP standards for Class III surface waters.
 - B. Implement prescribed burning.
 - C. Implement exotic plant control.
 - D. Develop a pine harvest plan for the restoration of mesic flatwoods.
 - E. Implement feral hog removal.
 - F. Conduct a comprehensive survey of plants and animals.
 - G. Conduct a survey of Limpkins in the preserve.
2. Identify, preserve, interpret and actively manage cultural resources.
 - A. Conduct a reconnaissance level archaeological survey and cultural resource assessment.

Recreation

3. Continue to provide quality resource based outdoor recreational and interpretive programs and facilities that are appropriate to local resource conditions at the state park.
 - A. Maintain water access for boating, canoeing/kayaking and fishing opportunities.
4. Seek funding to expand recreational and interpretive opportunities as outlined in this

management plan.

- A. Coordinate with the St. Johns River Water Management District and Flagler County to provide interpretive information about park resources at adjacent public use areas.

Park Administration/Operations

5. Provide efficient and effective management of park resources and facilities while maintaining a high level of visitor service.
 - A. Assure that appropriate training is provided to all staff in visitor services, park information, and emergency procedures.
 - B. Continue to maintain and promote good working relationships with federal, state, and local agencies.
 - C. Develop partnerships and seek other funding alternatives to the legislative appropriation process.
 - D. Promote volunteer participation to assist with park operations, resource management, and interpretation.
 - E. Support marketing efforts to coordinate nature and heritage based tourism promotion that links Haw Creek Preserve State Park and other regional sites of significance.
 - F. Pursue acquisition and/or management of outparcels and adjacent properties as identified on the optimum boundary map.
 - G. Monitor land use activities outside the park that may impact park resources or the visitor experience, and increase public awareness of the resource management needs of the park.

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 planning and construction activities seaward of the Coastal Construction Line. In addition, the Bureau of Beaches and Coastal Systems aids the staff in the development of erosion control projects. Emphasis is placed on protection of existing resources as well as the promotion of compatible outdoor recreational uses.

Public Participation

During the development of this management plan, the Division sought public input by conducting a series of meetings. A public workshop was held on June 20, 2002. The purpose of this meeting was to present this draft management plan to the public.

A DEP Advisory Group meeting was conducted on June 21, 2002. The purpose of this meeting was to provide the Advisory Group members the opportunity to discuss this draft management plan. See Addendum 1 for the list of advisory group members and the advisory group meeting staff report.

Other Designations

Haw Creek Preserve State Park has not been designated as an Area of Critical State Concern as defined in section 380.05, Florida Statutes. Currently it is not under study for such designation. The park is a component of the Florida Greenways and Trails System.

All waters within the unit have been designated as Outstanding Florida Waters, pursuant to Chapter 62-302 Florida Administrative Code. Surface waters in this unit are also classified as Class III waters by DEP. This unit is not within an aquatic preserve as designated under provision of 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

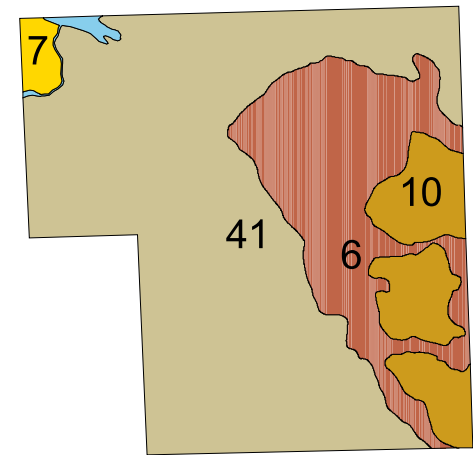
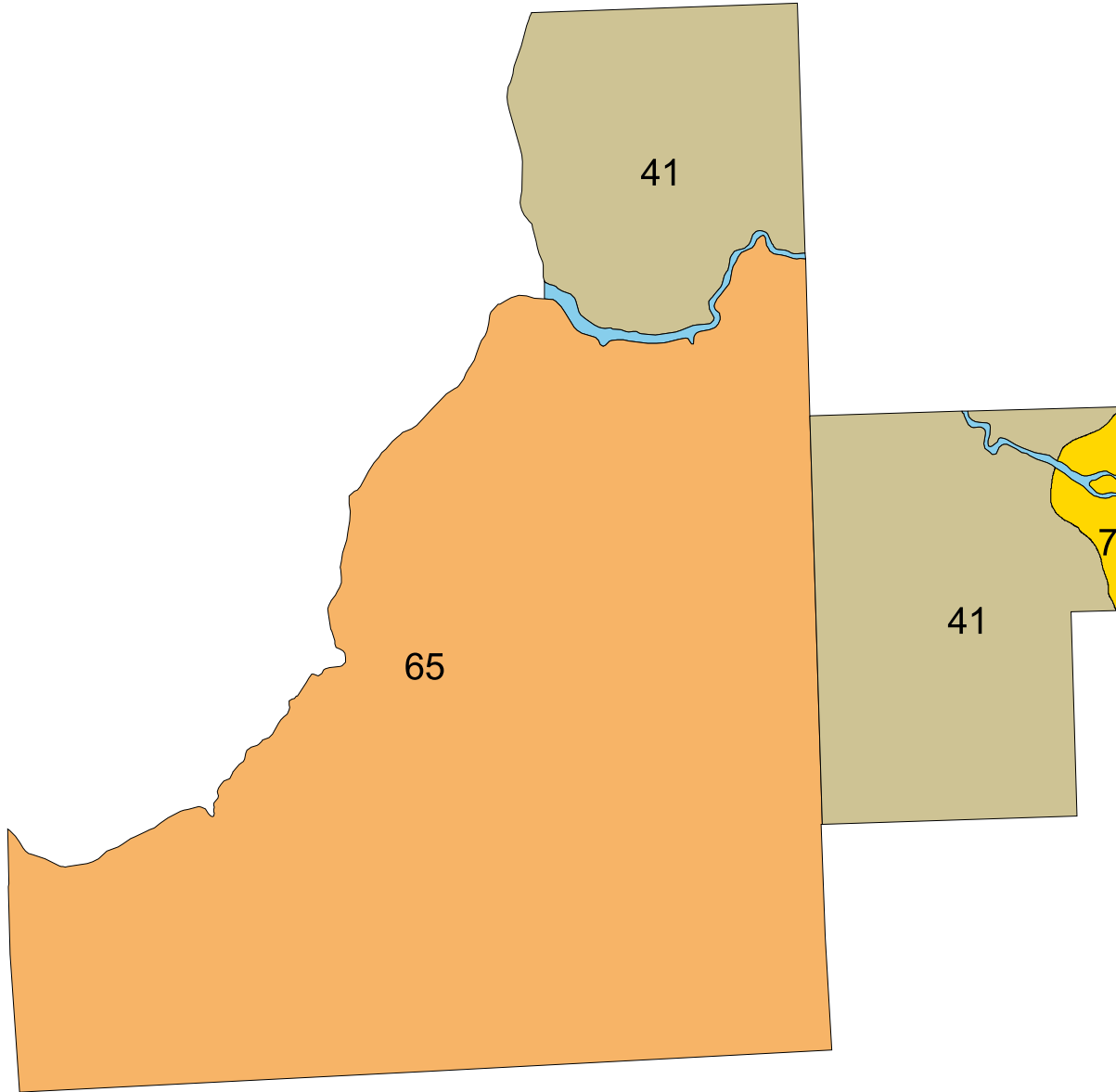
The preserve is located in the Crescent Lake Basin subdivision of the Eastern Flatwoods District (Brooks 1981a). This physiographic region includes the lowlands surrounding Crescent Lake and Haw Creek. The highest elevation in the preserve is 10 feet MSL at the southeastern corner of the eastern parcel. The pine flatwoods, which comprise most of the upland areas in the preserve, are on a gradual topographic slope from about 10 feet MSL to 5 feet MSL. The remainder of the eastern parcel and entire western parcel is in the floodplain of Haw Creek and Little Haw Creek, below the 5-foot elevation contour.

Geology







The lowlands around Crescent Lake and Haw Creek are mapped as Holocene fluvial sediments (Scott 1992). These are geologically recent deposits of river alluvium composed of quartz sands, silt, clay and shelly carbonate sediments. Peat and other organic-rich sediments are also present in this lowland basin. The subsurface strata are undifferentiated beds of sand, clay, and shell sediments that overlie the Eocene limestone formations of the Ocala Group, about 100 feet below mean sea level.

Soils

The Natural Resources Conservation Service (formerly the U.S. Soil Conservation Service) identified four soil types in Haw Creek Preserve State Park (see Soil Map) in the soil surveys of Flagler and Volusia Counties (Readle et al. 1993, Baldwin et al. 1980). Addendum 3 contains detailed descriptions of the soil types in Haw Creek Preserve.



LEGEND

-  06-Favoretta clay
-  07-Favoretta, Chobee, and Winder soils; frequently flooded
-  10-Winder fine sand
-  41-Terra ceia muck, frequently flooded
-  65-Terra ceia muck
-  water

**HAW CREEK
PRESERVE STATE PARK**



SOILS MAP

There are two areas in the preserve where soil erosion is evident. The first is the edge of the floodplain bordering Crescent Lake. Numerous trees along the shoreline have been uprooted by the combined action of waves and high winds. The exposed substrate is washed into the littoral sediments of lake. This erosion appears to be largely a natural process. Although powerboats use the lake, they tend to avoid the shallow littoral where anglers often anchor off the bull-lily beds.

The second source of soil erosion is ground disturbance in the pine flatwoods area of the preserve. The clay soils of the low flatwoods are especially vulnerable to erosion during the wet season. Use of wet roads by heavy equipment, or even service vehicles, may leave deep ruts and holes in the soft clay substrate, which being highly impermeable, will retain ponded water and produce silted runoff during heavy rains.

Minerals

There are no known deposits of commercial value at Haw Creek Preserve State Park.

Hydrology

Haw Creek Preserve State Park is in the Crescent Lake-Haw Creek watershed of the Lower St. Johns River Basin (SJRWMD 1997). The preserve boundaries enclose portions of the lower reaches of Haw Creek between Russell Landing and the outlet of Dead Lake at the southeastern end of Crescent Lake. The eastern parcel includes the confluence of Haw Creek and Little Haw Creek, which flows north from Lake Disston, and the outlet of Gator Slough that flows southeasterly from Mud Lake. The western parcel includes about 1 mile of shoreline on Dead Lake and about 2.5 miles of shoreline along Green Bay, an embayment at the southeast end of Crescent Lake.

Crescent Lake is the ninth largest lake in Florida with a surface area of 26.8 square miles. Dead Lake is 5.7 square miles. The Haw Creek watershed drains a 400 square mile area in western Flagler and north central Volusia County (Rumenik and Grubbs 1996). The basin includes Haw Creek (109-sq. mi.), Middle Haw Creek (165-sq. mi.), Little Haw Creek (93-sq. mi.), Black Branch (15-sq. mi.), and Sweetwater Branch (11-sq. mi.).

Haw Creek, Little Haw Creek, and Crescent Lake are listed as Class III waters by the State of Florida. The portions of Haw Creek and Little Haw Creek within the preserve are Outstanding Florida Waters (OFW), a standard designation for surface waters in state parks and preserves. In January 2000, the Environmental Regulation Commission designated Lake Disston and portions of Little Haw Creek as OFW. This includes the channels and contiguous wetlands of Little Haw Creek between Lake Disston and the confluence of Haw Creek in the preserve. The designation will provide additional regulatory protection for Little Haw Creek, but other tributaries to Haw Creek will also require more protection to improve deteriorating water quality that has been documented in the watershed. The DEP Water Quality Assessment 305 (b) Report of 1996 (Hand et al. 1996) indicated “poor” water quality in lower Haw Creek above the outlet at Crescent Lake, which includes OFW waters in the preserve.

Concentrations of several parameters exceeded FDEP water-quality standards (Chapter 62-302, F.A.C.). A comprehensive assessment, which includes an evaluation of non-point source pollution in the basin among other criteria, describes water quality conditions in lower Haw Creek that would not support the statutory uses for Class III waters that are designated “for recreation, propagation, and maintenance of a healthy, well-balanced population of fish and wildlife (F.A.C. 17-302.400). A 1990 lake study found blue-green algal blooms and high chlorophyll-a concentration in Dead Lake and Crescent Lake; both lakes were described as eutrophic. The discharge of Haw Creek was cited as a significant nutrient input to Crescent Lake, originating from agricultural runoff in the watershed. The Bunnell wastewater plant discharges treated effluent to the Haw Creek watershed. The identified pollutants in Haw

Creek do not include mercury that accumulates in aquatic food chains, particularly top carnivores such as largemouth bass. No public health advisories have been issued at Haw Creek due to mercury contamination.

Several logging canals in the preserve were used to float cut cypress out of the floodplain prior to state ownership. The hydrological impact of the canals has not been evaluated.

Natural Communities

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

Haw Creek Preserve State Park contains seven distinct natural communities (see Natural Communities Map) in addition to ruderal 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.

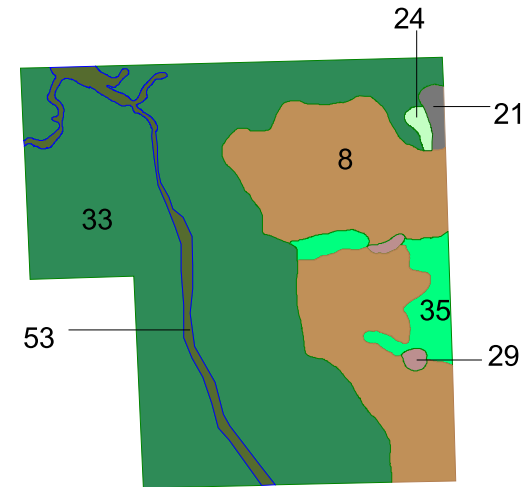
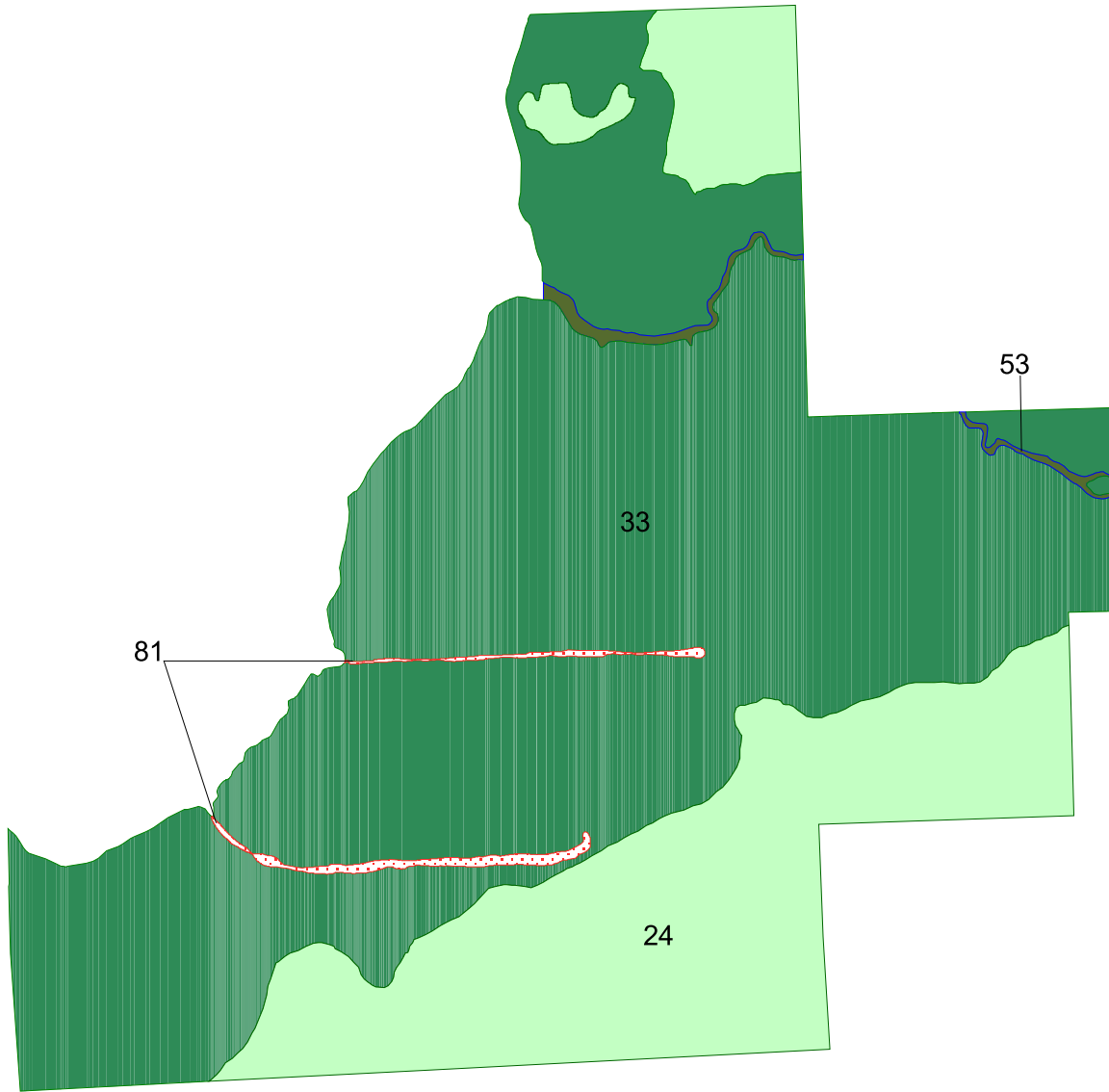
Upland mixed forest. There is a small tract of mesic hammock in the eastern parcel of the preserve. Live oak is dominant in the canopy; the understory is comprised of a variety of trees and shrubs including cabbage palm, red cedar, yaupon, tree sparkleberry, and beauty berry. The upland mixed forest in the preserve is assessed to be in good condition.

Hydric hammock. The hydric hammock is interspersed with open pine flatwoods at Haw Creek. Live oak and cabbage palm are the dominant canopy trees. There are also large red cedars and old slash pines with catfaced trunks from former turpentine operations. Cowart Creek originates in flatwoods depressions in adjacent private property (the creek is named for the property owner) and flows westward through hydric hammock into the floodplain of Little Haw Creek. The hydric hammock is in good condition.

Mesic flatwoods. The open overstory is comprised of a second-growth stand of slash pine. The flatwoods were timbered by Union Camp Corp. before their donation of the land to the state in 1976. Cabbage palms are common in the flatwoods understory with scattered hardwoods including sweetgum, red maple, red cedar, live oak, laurel oak, sweetbay and camphor tree (*Cinnamomum camphora*), a non-native species.

The pine flatwoods in the preserve occur on Favoretta clay and Winder fine sand soils that have poor drainage; the water table is close to ground surface during the wet season. The abundance of cabbage palm, and absence of gallberry and fetterbush, indicates a more alkaline substrate than the acidic sands that are typically associated with pine flatwoods. Mesic flatwoods are a fire-dependent community, which burn about every 3-7 years (Marois 1999). The mesic flatwoods are in fair-good condition.

Basin marsh. Sawgrass Prairie is a large basin marsh in the floodplain at the south end of Crescent Lake. The preserve manages about one third of the 1800-acre basin; most of the marsh lies in Haw Creek Conservation Area (St. Johns River WMD) and some parcels are privately owned.



LEGEND

- 08 - Mesic Flatwoods - 166.06 ac.
- 21 - Upland Mixed Forest - 4.09 ac.
- 24 - Basin Marsh - 701.09 ac.
- 29 - Depression Marsh - 3.01 ac.
- 33 - Floodplain Swamp - 2108.93 ac.
- 35 - Hydric Hammock - 24.07 ac.
- 53 - Blackwater Stream - 37.16 ac.
- 81 - Ruderal - 17.34 ac.

**HAW CREEK
PRESERVE STATE PARK**



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

**NATURAL COMMUNITIES
MAP**

The preserve also includes marshes in the Mud Lake basin east of Dead Lake. There is small basin marsh adjacent to flatwoods in the eastern parcel of the preserve. It is the only basin in the preserve that has had a ground survey of vegetation. The marsh is dominantly comprised of a mixed cover of graminoid (grass-like) species including sawgrass, *Cladium jamaicense*, sand cordgrass, *Spartina bakeri*, soft rush, *Juncus effusus*, and southern wildrice, *Zizaniopsis miliacea*. There is a variety of flowering forbs including blue-flag iris *Iris spp.*, swamp rosemallow, *Hibiscus grandiflorus*, swamp dock, *Rumex verticillatus*, and lance-leaf and grass-leaved arrowhead, *Sagittaria lancifolia* and *S. graminea* respectively. In some areas of the marsh, grass cover has been displaced by the growth of hardwoods, mainly red maple, *Acer rubrum*, water locust, *Gleditsia aquatica*, and bald cypress, *Taxodium distichum*. Cypress and hardwood encroachment is also evident in the Mud Lake basin marsh in the northeast corner of the preserve. Without fire, the basin marshes will succeed to forested wetlands. Sawgrass Prairie has not been surveyed in recent years. It has burned several times in the last two decades (DOF) which should maintain the dominant sawgrass cover. The basin marshes are in fair-good condition

Depression marsh. There are two small wetland depressions in the eastern parcel of the preserve. One of the wetlands is a sawgrass marsh; the other is changing from sawgrass to Carolina willow. Periodic burns are needed to maintain marsh vegetation. The depression marshes are in fair-good condition.

Floodplain swamp. The swamp is comprised of bald cypress and a variety of deciduous hardwoods including blackgum, red maple, pop ash, green ash, Florida elm, sweetgum, water locust, and swamp laurel oak. The understory of the swamp is comprised of cabbage palms, wax myrtle and other vegetation growing on raised hummocks in the floodplain. The ground cover includes patches of swamp fern, *Blechnum serrulatum*, lizard's tail, *Saururus cernuus*, pickerweed, *Pontederia cordata*, and a several species of sedges. Epiphytic plants grow on the trunks and crown branches of floodplain trees. There are three common species of *Tillandsia* bromeliads: Spanish moss, *T. usneoides*, cardinal airplant, *T. fasciculata*, and needle-leaf airplant, *T. setacea*. The floodplain swamps are in good condition.

Blackwater stream. The blackwater stream habitat that is comprised of portions of Haw Creek and Little Haw Creek. The word "haw" comes from a local name for *Viburnum obovatum* (small leaf viburnum), a shrub that flowers prominently along the banks of Haw Creek in early spring. Other shrubs flower in their season at Haw Creek: swamp rose, *Rosa palustris* in spring; buttonbush, *Cephalanthus occidentalis*, in summer; and climbing aster, *Aster carolinianus*, in the fall.

Haw Creek is a typical blackwater creek with dark tannic waters, naturally colored by swamp drainage. Blackwater creeks are acidic (pH < 6) and may have low dissolved oxygen. Although biological diversity is often lower in blackwater creeks than other stream types, Haw Creek supports an active recreational fishery for speckled perch, *Poxomis nigromaculatus*, shellcracker, *Lepomis microlopus*, largemouth bass, *Micropterus salmoides*, and catfish, *Ictalurus spp.* Florida gar, *Lepisosteus platyrhincus*, and mudfish, *Amia calva*, are common in the blackwater creeks of the preserve. The blackwater creeks in the preserve are in fair-good condition.

Ruderal. There are several logging canals in the floodplain bordering Crescent Lake. The canals have elevated spoil banks bordering the excavated channels. The higher banks support pines and other upland species; low banks have cypress and other floodplain trees.

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.

A variety of listed species of birds inhabit Haw Creek Preserve State Park, some seasonally, others as year round residents. The extensive wetlands and aquatic habitats provide habitat for numerous wading birds including Little Blue Heron, *Egretta caerulea*, snowy egret, *Egretta thula*, tricolored heron, *Egretta tricolor*, white ibis, *Eudocimus albus*, great egret, *Ardea alba*, yellow-crowned night heron, *Nyctanassa violacea*, black-crowned night-heron, *Nycticorax nycticorax*, wood stork, *Mycteria americana*, and Limpkins, *Aramus guarauna*.

Bald eagles, *Haliaeetus leucocephalus*, are observed at Dead Lake and Crescent Lake and nest in the preserve. The FFWCC conducts aerial surveys around Crescent Lake and has documented a nesting territory near Sawgrass Prairie, inside the preserve, that has been in active use since 1991. The swallow-tailed kite, *Elanoides forficatus*, is a summer resident. There are no nesting records for the preserve, but the floodplain forests and marshes of Haw Creek are part of a larger habitat area in the lower St. Johns River Basin that K. Meyer and M. Collopy identify as “critically important sites for nesting and roosting Swallow-tailed Kites.” (Meyer and Collopy 1995).

There is a well-known population of the West Indian manatee, *Trichechus manatus manatus*, in the St Johns River. In warm months, manatees are observed in Dunns Creek and Crescent Lake, and occasionally in Haw Creek.

There are undocumented reports of the Florida black bear, *Ursus americanus floridanus*, in the preserve. Black bear use would be expected based on the availability of habitat in the swamps and timberlands of the Haw Creek watershed. There is documentation of black bears dispersing from the Ocala National Forest through the lowlands around Crescent Lake into forested lands in Flagler County (Cox 1994). Haw Creek Preserve State Park lies in this dispersal corridor.

Shortnose Sturgeon, *Acipenser brevirostrum*, is an anadromous species of the Atlantic Coast, with 11 occurrence records in Florida (non-breeding) between 1949 and 1981 in the Lower St Johns River Basin, including Crescent Lake.

Special Natural Features

The Haw Creek basin with blackwater creeks branching through floodplain forests and open marshes has unique scenic qualities in addition to ecological and recreational values.

Cultural Resources

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

East Central Florida has a rich cultural prehistory and history. The area that today is Haw Creek State Preserve saw occupation and/or utilization by a cultural sequence of Paleo Indian,

Archaic, Mount Taylor, Orange, Transitional, St. Johns, First Spanish Period, British Period, Second Spanish Period, Territorial, and Seminole (Milanich and Fairbanks 1980). Currently, there are no recorded archaeological prehistoric or historic sites in the preserve. (Florida Department of State: Florida Master Site Files). This is probably more a reflection of the lack of cultural resource reconnaissance survey than any actual absence of sites, especially as the eastern part of the preserve offers high ground near a year-round water supply.

In 1860, Lord Henry Decie, a British nobleman, purchased the yacht *America*, the winner of the regatta of the Great Exhibition of 1851, the first World's Fair. The *America* won the British Open Cup Race around the Isle of Wight, and began the racing legacy known today as the America's Cup Race (Cardwell 1999). Shortly after the outbreak of the War Between the States in 1861, Confederate agents purchased the yacht, renamed the *Camilla*, for use as a blockade-runner. In early 1862, the *Camilla* was trapped up the St. Johns River when the Union Navy blockaded the river and occupied Jacksonville. Fearing that Union expeditions would locate and take her, the Confederates scuttled the *Camilla* at the mouth of Haw Creek. However, the Union Navy did find, raise and refit the renamed *America* for use in the blockading Fleet (Cardwell 1999, Gannon 1996).

In historic times, the area was timbered. Cypress was harvested and transported from the swamp by several canals that were dredged in the floodplain of Crescent Lake.

Catfaced pines in the flatwoods on the eastern parcel are evidence of the turpentine industry working the property that is now the state preserve (Florida Department of Environmental Protection 1998).

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.

At Haw Creek Preserve State Park, a quantitative stand description of the pine flatwoods tract (see Addendum 6) was submitted by the park biologist to the regional Senior Forester, Bureau of Forest Management. DOF has recommended mechanical thinning of the stand from the present basal area of 146 sq. ft./acre (based on a .1 acre sample plot) to 70 sq. ft. /acre, to reduce wildfire hazard susceptibility to Southern Pine Beetle infestation, and to restore more natural stand conditions with the re-introduction of prescribed burning.

In summer 2001, there was an outbreak of Southern Pine Beetle (SPB) *Dendroctonus frontalis*, and black turpentine beetle, *Dendroctonus terebrans*, in the pine flatwoods at Haw Creek Preserve. The infestation damaged approximately 5 acres of slash pines. The relatively small outbreak at the preserve was part of a regional infestation in the Crescent Lake-Haw Creek watershed in 2000-2001. The GeoPark will continue monitoring SPB activity at Haw Creek and work closely with DOF to develop both direct and indirect measures for SPB control.

Management Needs and Problems

Haw Creek Preserve State Park is 30 miles west of Tomoka Basin GeoPark, the

administrative office that manages the preserve. Because Haw Creek is remote from the daily operations area of the GeoPark, resource management requires advanced planning, coordination of personnel, and cooperative agreements with adjacent landowners. Resource protection efforts by park patrol and other law enforcement agencies (FFWCC) is hampered by lack of access, an irregular boundary which is largely unmarked, and an inholding gap that fragments the preserve into eastern and western parcels. The basic needs and problems of the preserve are summarized below.

1. Survey, clear, and mark boundary lines in the eastern parcel to separate preserve lands from adjacent private holdings.
2. Improve the interior service road in the flatwoods (Union Camp logging road) to provide access for brush trucks and low-impact timber equipment.
3. Provide park patrol with GPS mapping technology to determine boundary locations and resource protection areas.
4. Acquire inholdings and addition parcels for connectivity and optimum management boundaries.

The uplands in the eastern parcel, largely pine flatwoods, are only accessible from private lands; landowner agreements will be needed for timber operations and other resource management actions on the uplands of the state preserve.

Large areas of Sawgrass Prairie and Mud Lake marsh, which require fire management, lie outside the preserve in the Haw Creek Conservation Area (SJRWMD) and on private property.

The Haw Creek drainage basin lies in two counties and involves multiple proprietary and regulatory jurisdictions. Management of water quality and quantity will require the cooperation and coordination of local governments, state agencies, and private landowners.

Management Objectives

The resources administered by the Division of Recreation and Parks 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.

The primary objective for the management of the natural resources of Haw Creek is to protect and preserve the aquatic and wetland communities in the preserve. The pine flatwoods are managed for upland flora and fauna and as a buffer for water quality protection. The preserve has identified specific objectives for natural resource management, listed below, which are discussed in detail under Management Measures.

Restore natural flatwoods conditions in the eastern parcel by prescribed burning, exotics removal, and mechanical thinning.

Control the growth of invasive, non-native wetland plants on lower Haw Creek and the preserve's shoreline on Crescent Lake.

Implement prescribed burning in Sawgrass Prairie and other basin marshes and depression marshes to maintain herbaceous plant cover and prevent encroachment by hardwoods and conifers of forested wetlands.

Improve the water quality of Haw Creek and maintain adequate surface flows and water levels to preserve functional wetlands and biological diversity.

Reduce the impact of feral hogs on natural and cultural resources by implementing a hog removal program.

Assess the impact of logging canals on the surface hydrology of the floodplain swamp

Management Measures for Natural Resources

Hydrology

The water quality problems identified in the 305 (b) Water-Quality Assessment (Hand et al. 1996) need to be monitored in the Haw Creek basin which is under the jurisdiction of St. Johns River WMD (SJRWMD) and DEP. The GeoPark should work with regulatory agencies, local governments and private landowners to develop a watershed management plan to restore water quality in the basin.

USGS gauging stations and SJRWMD monitoring wells provide information on surface flows and aquifer levels in the Haw Creek basin. Water quantity, like water quality, is a significant concern for the management of wetland habitats and preservation of wetland-dependent species in the preserve. The preserve will request SJRWMD to provide an assessment of the impact of logging canals on the surface hydrology of the floodplain swamp.

Haw Creek is not listed by SJRWMD as a priority basin for the establishment of minimum flows and levels.

Prescribed Burning

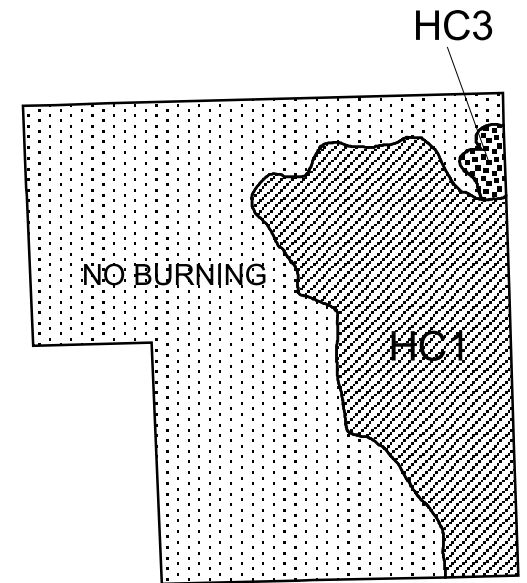
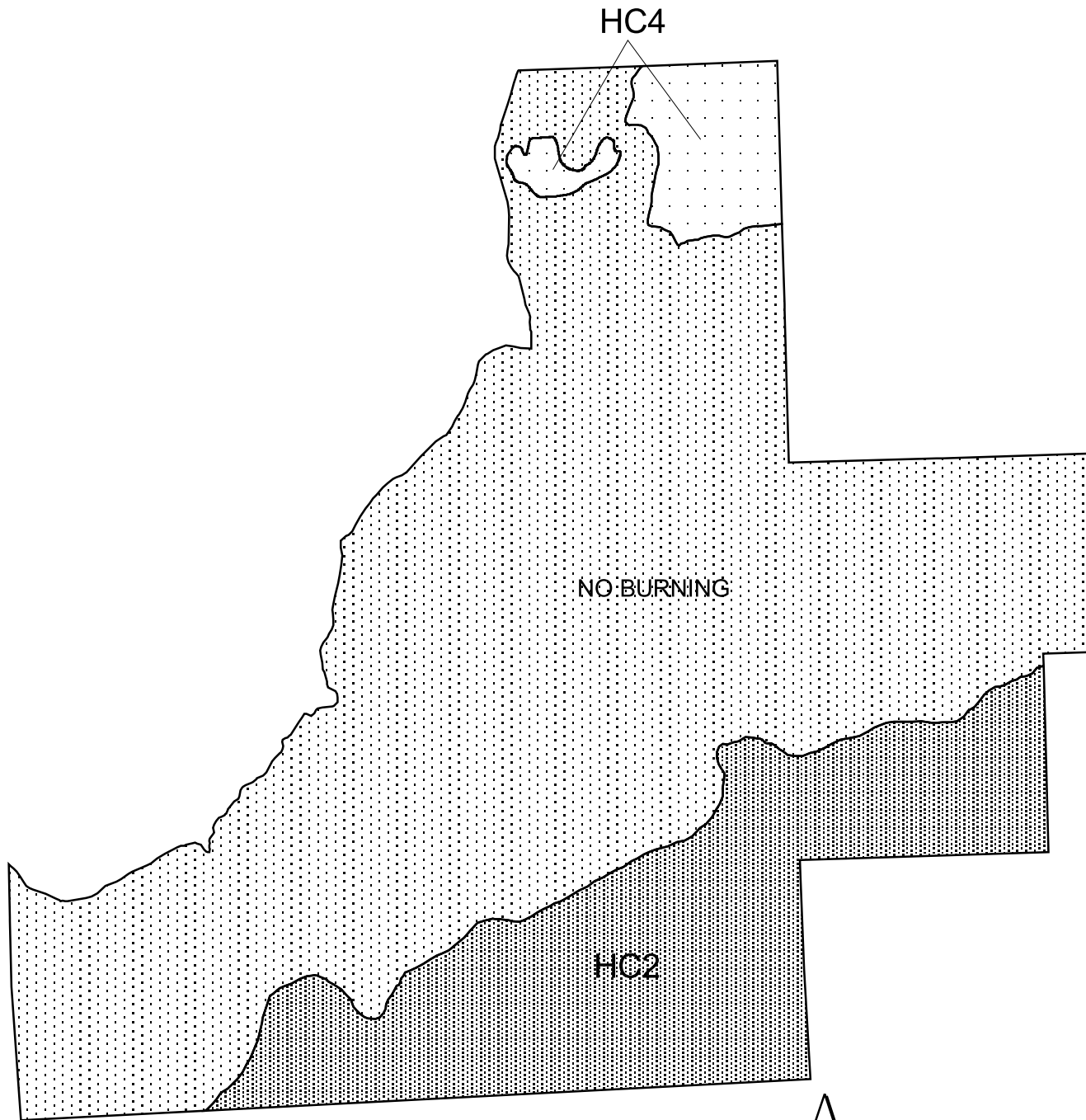
The objectives of prescribed burning are to create those conditions that are most natural for a particular community, and to maintain ecological diversity within the unit's natural communities. To meet these objectives, the park is partitioned into burn zones, and burn prescriptions are implemented for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

Four burn zones are delineated on the Burn Zones Map for Haw Creek Preserve State Park. The Pine Flatwoods, zone HC1, contains two small sawgrass ponds. In August 1999, a wildfire burned 15 acres in zone HC1. Containment actions by DOF prevented the burn from spreading further in the preserve and into timber stands on adjacent private land. The boundary between preserve land and adjoining private ownerships is not well defined in some areas. The boundary needs to be posted, with fire breaks cleared between the preserve flatwoods and contiguous stands of commercial timber. Excepting the 1999 wildfire, there are no records of previous burns in zone HC1. The heavy fuel load and duff accumulations in the flatwoods indicate a long time-interval since the last fire.






Burn Zone HC2 in Sawgrass Prairie or about one-third of this large basin marsh. Zone HC2 and adjacent marsh managed by SJRWMD burned in a wildfire in July 1999 that blackened 940 acres. Previous burns have been observed by private landowners in the basin, but have not been recorded. A fire interval of 3-7 years is recommended for Sawgrass Prairie based on the fire frequency described for basin marsh by FNAI. Because of the different management jurisdictions in the basin, an interagency prescription should be prepared for aerial ignition of Sawgrass Prairie.

Burn Zone HC3 is the smallest basin marsh in the preserve and should be burned every 3-7 years to maintain sawgrass and herbaceous cover and prevent further encroachment by bald cypress and hardwoods from the adjacent floodplain swamp.

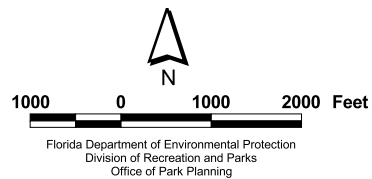
Burn Zone HC4 is the state-owned portion of the Mud Lake marsh. Most of the basin is privately owned. The preserve should coordinate with DOF District 10 and private



LEGEND

-  HC1 - 193.14 ac.
-  HC2 - 588.17 a.c
-  HC3 - 6.71 ac.
-  HC4 - 110.30 ac.
-  NO BURNING - 2163.42 ac.

**HAW CREEK
PRESERVE STATE PARK**



**BURN ZONE
MAP**

landowners to implement prescribed burning in a sawgrass marsh that is succeeding to swamp forest in the absence of fire.

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.

Most of the listed species at Haw Creek use aquatic or wetland habitats. The maintenance of water quality and natural hydrological cycles is essential for habitat preservation and the long-term survival of populations of wading birds, bald eagles, swallow-tailed kites, and other wetland-dependent species. Management measures for water quality were addressed in the hydrology section above.

Illegal hunting, trapping, and unauthorized recreational use in the preserve can impact populations of designated species. Increased law enforcement is a standard recommendation for resource protection. At Haw Creek, however, officers patrolling the waterways (pers.comm.) Florida Park Patrol) have difficulty locating preserve boundaries, and hence, enforcing park rules. The gap in public land ownership between the eastern parcel and western parcel of the preserve is a problem for law enforcement and resource management. The sections of private land between the state-owned parcels are identified on the five-year Plan for Land Acquisition of the St. Johns River Water Management District. Regardless of the present or future configuration, GPS technology could be utilized to determine boundaries and related locations within the preserve.

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 impact non-resistant native species. Thus, the policy of the Division is to remove exotic species from native natural communities.

A comprehensive inventory of plants and animals, including non-native species, has not been completed for the preserve. Several species of invasive exotic plants, listed as Category I or II by Florida Exotic Pest Plant Council (FEPPC 1999) have been documented during field inspections.

There is a patch of rattlebox, *Sesbania punicea* in the small basin marsh in the eastern parcel. Mature shrubs and rattlebox seedlings should be removed to prevent the further spread of this FEPPC Category 2 exotic. Wild Taro, *Colocasia esculenta*, is a highly invasive wetland plant, FEPPC Category 1, which is increasing at Haw Creek. Clumps of *Colocasia* are spreading along the edges of the creek and along the shoreline of Crescent Lake. The glyphosate herbicide Rodeo, permitted for use over water, is recommended for foliar treatments of *Colocasia*. After an initial 100 percent treatment, follow-up applications will be needed at least annually to control *Colocasia* regrowth that reproduces vegetatively from buried stems (corms) and rhizomes.

Rafts of water lettuce, *Pistia stratiotes*, (FEPPC Category I), have been noted in Haw Creek. Water lettuce appears to originate upstream and may be associated with high nutrients in some of the tributaries. The control of water lettuce and other invasive aquatic plants at Haw Creek Preserve State Park may ultimately depend on the management of water quality in the basin.

There are camphor trees, *Cinnamomum camphora*, in the pine flatwoods. Camphor tree is invasive in upland communities (FEPPC Category 1) and should be removed by herbicide treatment.

Feral hogs, *Sus scrofa*, have been observed in the preserve. They should be removed according to current guidelines. Coyotes, *Canis latrans*, have recently been observed on private lands adjacent to the preserve. They are classified as an exotic species and are notoriously difficult to control. If coyotes are a documented threat to listed species in the preserve, they should be removed.

Problem Species

Problem species are defined as native species whose habits create specific management problems or concerns. Occasionally, problem species are also a designated species, such as alligators. The Division will consult and coordinate with appropriate federal, state and local agencies for management of designated species that are considered a threat or problem. Alligators are common in all the waterways, but have never been reported to the preserve as “problem” animals. The blackwater creeks are not conducive to swimming, but are regularly used for fishing, canoeing, and motorized boating. As recreational use increases in the future, contacts between humans and alligators will increase. Any reports of potentially dangerous alligators will be investigated and evaluated for threat to public safety. If needed, removal measures would be implemented according federal and state guidelines.

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 Haw Creek Preserve State Park is to protect, preserve and interpret the prehistoric and historic resources. Since there are no known recorded sites on the preserve, management measures for cultural resources should include drafting a proposal for a cultural resource reconnaissance survey. Any ground disturbing activities should be conducted in accordance with DHR policy. If the recommended cultural resource reconnaissance survey locates and identifies any prehistoric and historic sites, management measures for cultural resources should develop a phased plan for managing the resources in the context of their surroundings. This should include developing a workable written plan for the physical management of the identified resources. The plan should outline approved methodologies for executing the plan and training staff and volunteers in managing the cultural resources of the preserve.

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

Research Needs

Natural Resources

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

A baseline inventory of flora and fauna is needed to describe the biological diversity of natural communities in the preserve, to document the occurrence of designated species and non-native species, and provide information for species lists and other interpretive materials for public distribution. A survey of limpkin populations is needed to assess habitat quality and determine the status of this species in the preserve.

Cultural Resources

There have been no cultural resource research projects at Haw Creek. GeoPark staff, with assistance from BNCR, should draft a proposal for a cultural resource reconnaissance survey to identify, preserve and protect any prehistoric and historic cultural resources at the preserve, including evidence of the timbering and turpentine industries' activities. Research is needed to document the history of the timbering and turpentine industries.

Resource Management Schedule

A priority schedule for conducting all management activities that is based on the purposes for which these lands were acquired, and to enhance the resource values, is contained in Addendum 7. The cost estimates for conducting these priority management activities are based on the most cost-effective methods and recommendations that are currently available (see Addendum 7).

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.

Haw Creek Preserve State Park has not been the subject of a land management review.

LAND USE COMPONENT

INTRODUCTION

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

The general planning and design process begins with an analysis of the natural and cultural resources of the unit, and then proceeds through the creation of a conceptual land use plan that culminates in the actual design and construction of park facilities. Input to the plan is provided by experts in environmental sciences, cultural resources, park operation and management, through public workshops, and environmental groups. With this approach, the Division's 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, adjacent land uses, and the park interaction with other facilities.

The area encompassing Haw Creek Preserve State Park includes the jurisdictions of Flagler County and Volusia County. The Florida Statistical Abstract 2001 reported a 2000 population of over 493,000 for the Daytona Beach Metropolitan Statistical Area (MSA), which includes Flagler and Volusia County and their municipalities. This marks a greater than 23 percent increase since 1990. While Volusia County accounts for nearly 90 percent of the MSA's total population, Flagler has the distinction of being the second fastest growing county in the state. The MSA is projected to grow an additional 21 percent by 2010.

The majority of this area's growth is occurring along the coast, which is somewhat removed from the more rural inland areas surrounding the park. The two nearest incorporated areas are Crescent City (population 1,776), located on the western shore of Crescent Lake in Putnam County, and Bunnell (population 2,122), approximately ten miles northeast in Flagler County.

Existing Use of Adjacent Lands

Although this region of Florida has undergone rapid urbanization over the past few decades, the land directly adjacent to the preserve has remained undeveloped due to the extensive presence of wetlands. Adjacent lands are primarily designated Agricultural or, in the case of adjacent public lands, Recreation and Open Space. Some of the uplands in the surrounding area support residential and agricultural land uses. Cattle grazing occurs near the eastern side of the preserve which has a slightly higher elevation than the rest of the site. The adjacent Haw Creek Conservation Area is comprised of two distinct parcels. The largest includes 4,529

acres south of the park managed by the St. Johns River Water Management District (see Vicinity Map). The District maintains hiking trails in this area and has plans for a primitive group camp and outdoor classroom at the site of an old hunting camp. There is no public access linking the park to the conservation area. Another 1,000-acre parcel, known as Haw Creek Preserve, is located adjacent to the park on the north side of Haw Creek (see Vicinity Map). This parcel is jointly managed by the District and Flagler County. The County maintains a boat launch (Russell Landing), picnicking, hiking, fishing and primitive camping facilities and a meeting facility available for reservation (Pellicer Community Center), at the end of CR 2007. A short boat ride (.7 miles) west from Russell Landing provides access to Haw Creek Preserve State Park.

Planned Use of Adjacent Lands

No significant land use changes are anticipated adjacent to the preserve. Additional protection may be afforded to some adjacent lands in the near future that have been identified for acquisition by the SJRWMD. Minor residential development is expected on surrounding lands with higher elevations. Potential negative impacts of additional residential development around the preserve could include increased stormwater run off, and the introduction of exotic ornamental plants.

PROPERTY ANALYSIS

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

Recreation Resource Elements

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

Land Area

Nearly all of the preserve consists of poorly drained natural communities, with water present at or above ground level throughout a most of the year. Developable uplands are limited to a four-acre portion of upland mixed forest along the western boundary of the preserve.

At this time, there is no public upland access to the preserve. As previously mentioned, the closest public access to the unit is at Russell Landing within the Haw Creek Preserve. A private marina also maintains a boat ramp on the north side of Dead Lake at the end of CR 2006.

Water Area

The preserve contains nearly three miles of shoreline on Dead and Crescent Lakes. Haw Creek and Little Haw Creek combine for slightly less than three miles of blackwater stream within preserve boundaries, and roughly two miles of old logging canals exist on the western side, connected to Crescent Lake. These lakes, streams and canals are the primary areas that receive visitor use through boating and canoeing/kayaking.

Natural Scenery

Blackwater streams meandering through floodplain forests and open marshes have a high

scenic quality.

Significant Wildlife Habitat

Haw Creek supports an active recreational fishery, and extensive wetlands and open water provide habitat for numerous wading birds including the endangered wood stork. The preserve supports nesting bald eagles and swallow-tailed kites visit the area's nest in floodplain forests and marshes. The surrounding forests provide suitable habitat for the Florida black bear and manatees are seen occasionally in Haw Creek.

Archaeological and Historical Features

The hydric hammock of the preserve contains slash pines with catfaced trunks that indicate turpentine operations were active in the area.

Assessment of Use

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

Past Uses

Previous timbering of the unit removed most of the bald cypress trees along Crescent Lake, and the flatwoods were timbered by Union Camp Corp. before their donation to the state in 1976. The historic logging canals on the western side of the preserve, leading into Crescent Lake, were dug to aid in the removal of timber. The pine flatwoods also supported turpentine production.

Recreational Uses

Most of the recreational use in the preserve occurs on the creeks and the logging canals. Boating, canoeing/kayaking, and fishing are the primary recreational activities on these remote waterways. During peak seasons, numerous fishermen use the creeks and adjacent lakes. The preserve also offers excellent opportunities for viewing wildlife in a natural setting. Due to the low elevation of the majority of the preserve, generally less than five feet above MSL, there is very little land-based recreation potential.

Other Uses

Illegal hunting in the preserve poses the biggest threat to the unit's abundant wildlife. The preserve's remote setting and lack of upland access make routine patrolling and inspections difficult.

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.

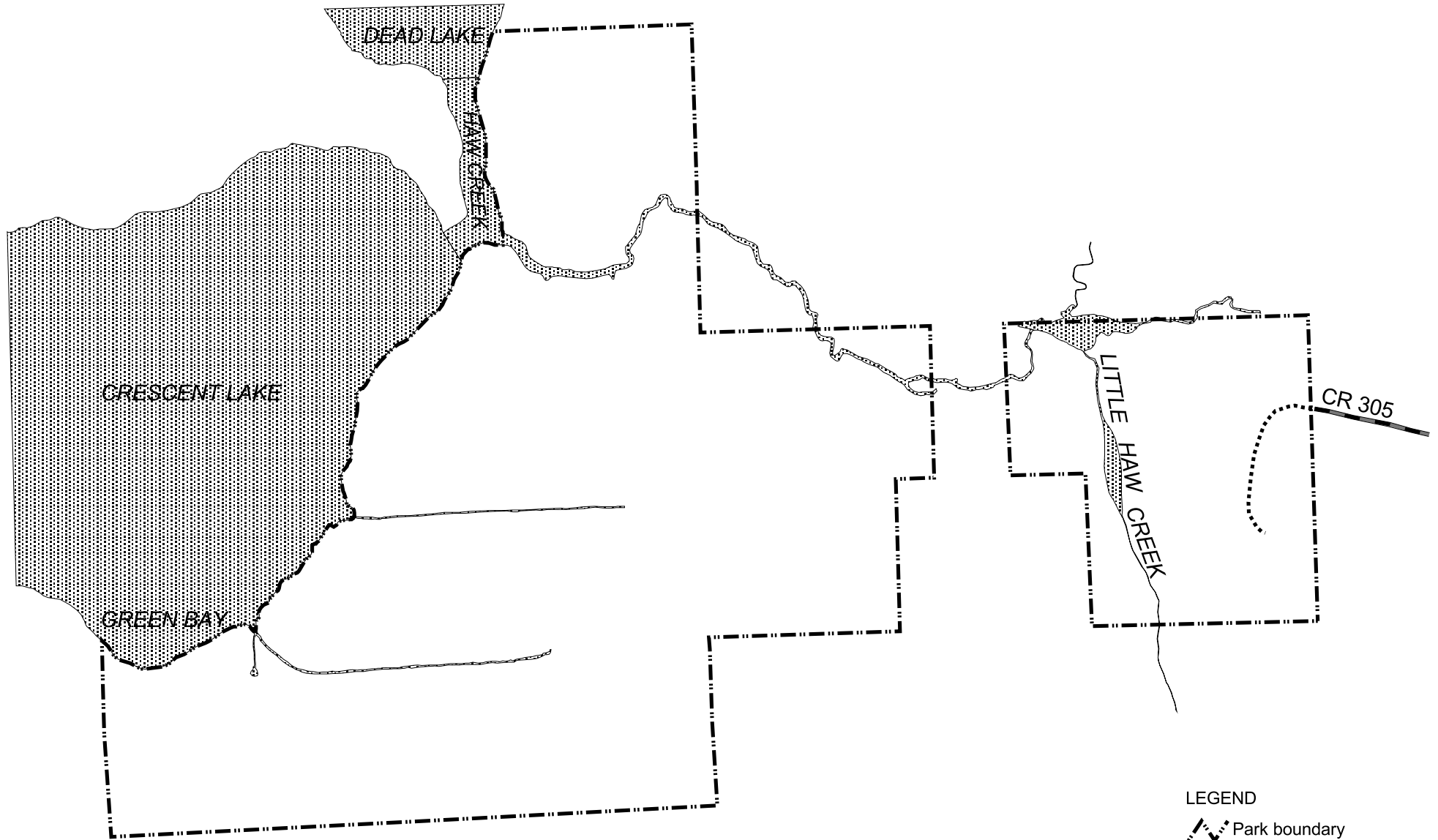
At Haw Creek Preserve State Park, the entire site has been designated as a protected zone due to the sensitivity of the natural resources.

Existing Facilities

At this time, there are no facilities or developed use areas in the preserve.

CONCEPTUAL LAND USE PLAN

The following narrative represents the current conceptual land use proposal for this park. As








**HAW CREEK PRESERVE
STATE PARK**



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

LEGEND

-  Park boundary
-  Park Roads
-  COUNTY ROAD
-  PARK ROAD UNPAVED
-  Water bodies

BASE MAP

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. A detailed development plan for the park and a site plan for specific facilities will be developed based on this conceptual land use plan, as funding becomes available.

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

Potential Uses and Proposed Facilities

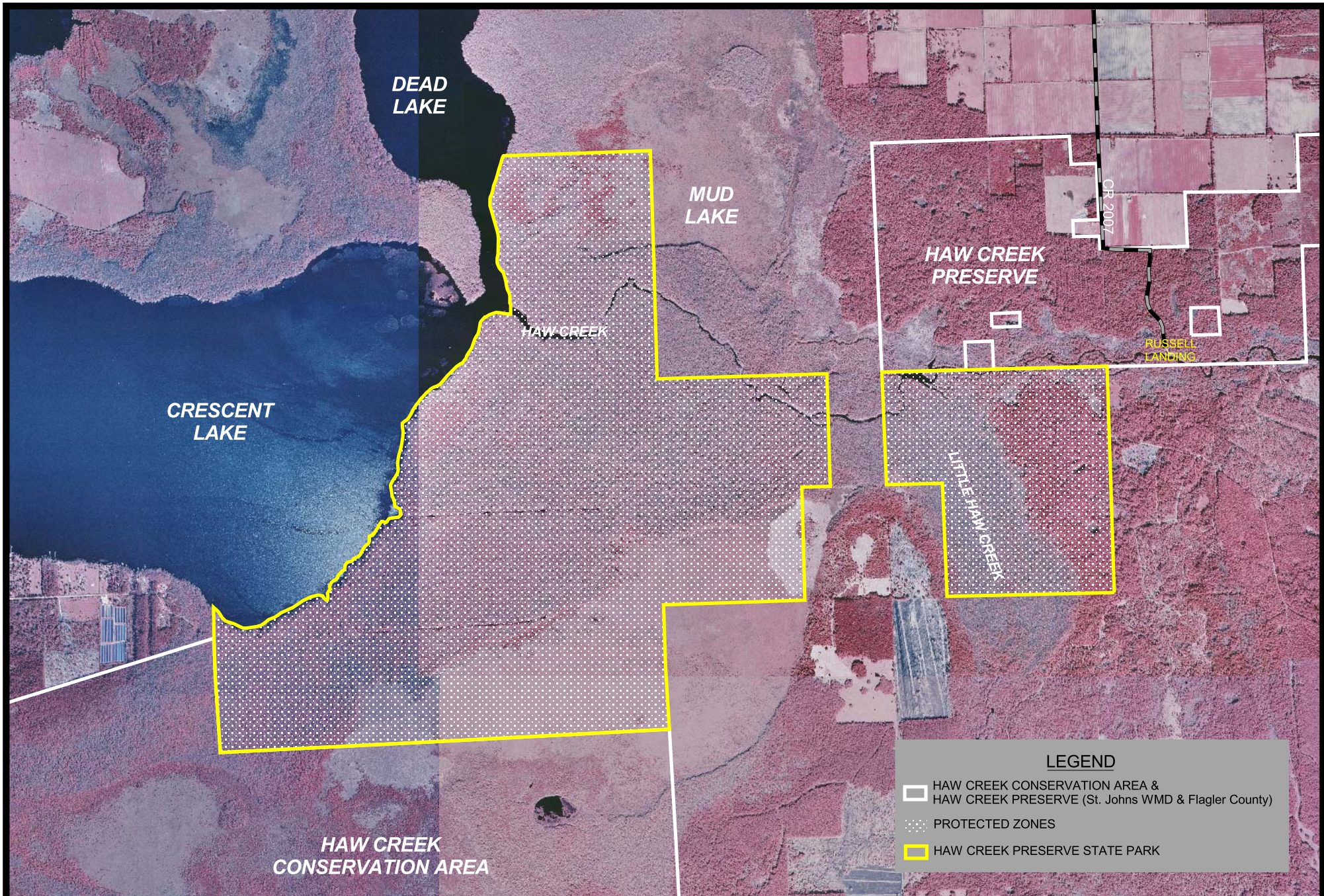
As a preserve, the primary emphasis is placed on protection of the resources of the site. Potential recreational uses should be primarily low-impact, and must be compatible with resource preservation objectives. The existing low-level boating and fishing activities in the preserve are appropriate and should continue.

Although there is some limited potential to expand recreational opportunities at the preserve, the remote location, lack of upland access and presence of recreational facilities on adjacent public lands precludes the necessity of developing new facilities at this time. Until a suitable upland access to the preserve can be established, and a long-term commitment to funding and staffing are made, no new activities or facilities are recommended.

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.



**HAW CREEK PRESERVE STATE PARK
CONCEPTUAL LAND USE PLAN**

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

Table 1—Existing Use and Optimum Carrying Capacity

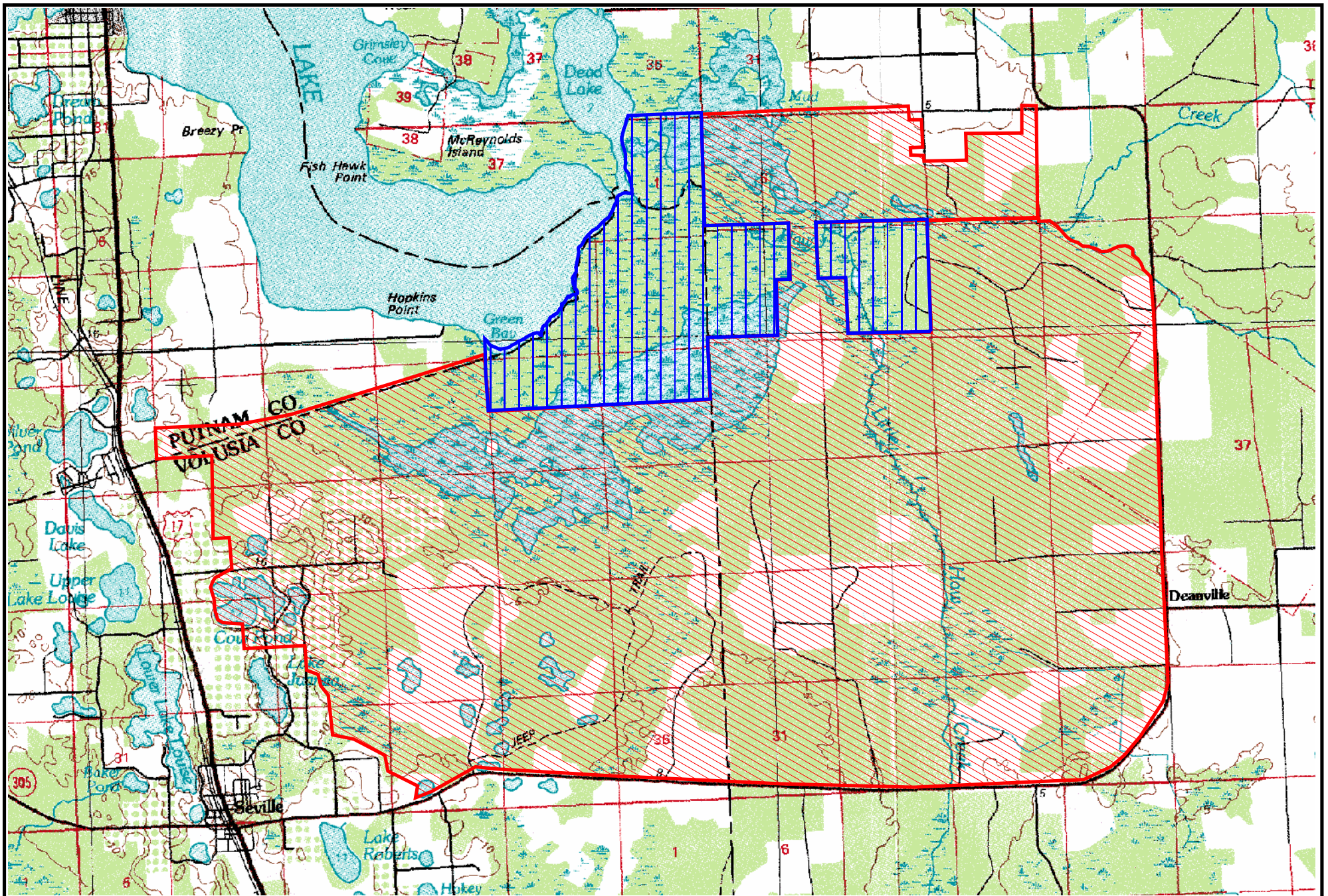
Activity/Facility	Existing Capacity		Proposed Additional Capacity		Estimated Optimum Capacity	
	One Time	Daily	One Time	Daily	One Time	Daily
Boating	36	72			36	72
Canoeing/Kayaking	32	64			32	64
TOTALS	68	136			68	136

Optimum Boundary

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



Identification of lands on the optimum boundary map is solely for planning purposes and not for regulatory purposes. A property's identification on the optimum boundary map is not meant to be used 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 meant to be used as the basis for permit denial or the imposition of permit conditions.

The optimum boundary map reflects lands identified for direct management by the Division as part of the park. These parcels may include public as well as privately owned lands that improve the continuity of existing park lands, provide additional natural and cultural resource protection, and/or allow for future expansion of recreational activities. Over 22,000 acres have been identified for potential acquisition for the purposes of protecting Haw Creek, Little Haw Creek and associated uplands, and to provide suitable upland access for recreational development and resource management. The Division will be working with the St. Johns River Water Management District to refine this boundary and create an acquisition project for these purposes.



HAW CREEK PRESERVE STATE PARK
OPTIMUM BOUNDARY MAP



-  POE Boundary
-  Optimum Boundary

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

Addendum 1—Acquisition History

Haw Creek Preserve State Park

Acquisition History

Sequence of Acquisition

On December 2, 1976, the Board of Trustees of the Internal Improvement Trust Fund (Trustees) obtained title to the property Haw Creek Preserve State Park . The property was donated to the Trustees by the Nature Conservancy. On July 13, 1977, the Trustees received a donation from H. T. and M. M. Cook. The two donations constitute the current total area of Haw Creek Preserve State Park.

In August 1977, the Trustees conveyed management authority of Haw Creek Preserve State Park to the Department of Environmental Protection (DEP), Division of Recreation and Parks (Division), under Lease No. 2991. The lease expires on August 14, 2003.

Title Interest

The Trustees hold fee simple title to Haw Creek Preserve State Park. On August 15, 1977, the Trustees conveyed management authority to the Division.

Special Conditions on Use

In accordance with Division's lease agreement with the Trustees, the property must be utilized for public outdoor recreation and related purposes. The park is designated single-use to provide resource-based public outdoor recreation and other related uses. Uses such as, water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of the park.

Outstanding Reservations

The following is a listing of outstanding rights, reservations, and encumbrances which apply to Haw Creek Preserve State Park .

Instrument:	Deed
Instrument Holder:	The Nature Conservancy.
Beginning Date:	December 2, 1976
Ending Date:	There is no specific ending date given.
Outstanding Rights, Uses, Etc.:	(1) As part consideration for this conveyance, Division agrees to erect and maintain a permanent plaque or other appropriate marker at a prominent location on the property bearing the following statement: "This area was acquired with the assistance of the Nature Conservancy." (2) The Nature Conservancy conveyed the property to Division on the condition that the Division uses the property to preserve, maintain, and enhance the integrity and character of the ecosystems for use as wildlife and waterfowl area. However, the Division can use the property for compatible non-consumptive recreational use and nature appreciation purposes.

Haw Creek Preserve State Park

Advisory Group List

The Honorable Carl Persis
Mayor
City of Ormond Beach
22 South Beach Street
Ormond Beach, FL 32175

The Honorable Jim Darby
Chair
Flagler County Board of County
Commissioners
1200 East Moody Boulevard, # 1
Bunnell, Florida 32110

Dwight Lewis, Chair
Volusia County Council
Thomas C. Kelly Administration Center
123 West Indiana Avenue
DeLand, FL 32720

Benny Woodham, Park Manager
Tomoka GeoPark
2099 North Beach Street
Ormond Beach, FL 32174

Mike Abbot, Regional Biologist
Florida Fish and Wildlife Conservation
Commission
Northeast Region
1239 Southwest 10th Street
Ocala, FL 34474-2797

Bill Apgar, Director
Volusia County Leisure Services
202 North Florida Avenue
Deland, FL 32720

Mike Kuypers, District Manager
Florida Division of Forestry, Bunnell District
Office
Route 1, Box 20F
Bunnell, FL 32110

Paul Haydt, Program, Manager
Northern Coastal Basins Program
St. Johns River Water Management District
4049 Reid Street
Palatka, FL 32177

Richard Truitt, Chair
Volusia County Soil and Water Conservation
District
115 County Club Drive
Ormond Beach, FL 32176

Stanford Robinson, Chair
Flagler County Soil and Water Conservation
District
137 Water Oak Road
Bunnell, FL 32110

Deborah Shelley, Preserve Manager
Tomoka Marsh Aquatic Preserve
8300 West State Road 46
Sanford, FL 32771

Mr. Jay Bushnell
Volusia Archaeological Society
155 Pinto Lane
Ormond Beach, FL 32174

Mr. Don Bostrum
Ormond Beach Historical Trust, Inc.
38 East Granada Boulevard
Ormond Beach, FL 32176

Larry Marsh, Executive Committee Chair
Volusia/Flagler Sierra Club
4009 Calusa Lane
Ormond Beach, FL 32174-9322

David Hartgrove, Conservation Committee
Chair
Halifax River Audubon Society
113 Centennial Lane
Daytona Beach, FL 32119

Dick E. Morris, Executive Director
Flagler County Chamber of Commerce
1200 East Moody Boulevard, # 1
Bunnell, FL 32110

Sharon Mock, Executive Director
Daytona Beach Area Convention and Visitors
Bureau
126 East Orange Avenue
Daytona Beach, FL 32112-0910

Larry Staley, President
Daytona Bicycle Club
48 Nicholas Court
Ormond Beach, FL 32176

Charles Leffler, President
Friends of Tomoka Basin GeoPark
11 Cliffview Lane
Ormond Beach, FL 32174

Haw Creek Preserve State Park

Advisory Group List

Mr. Parker Mynchenberg
1729 Ridgewood Avenue
Holly Hill, FL 32177

Mr. Dave Robinson
27 Sycamore Circle
Ormond Beach, FL 32174

Mary Lou Deeley, Bulow Trailmaster
105 Jamestown Drive
Ormond Beach, Florida 32176

Ms. Loreen Kornel
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Bunnell, Florida 32110

Ms. Cathy Lowenstein
Florida Division of Forestry
5458 North Highway 17
DeLeon Springs, Florida 32130

Mr. John Carr
359 Brookline Carr
Daytona Beach, Florida 32119

Brian Zeilenski, Wildlife Biologist
Florida Fish and Wildlife Conservation
Commission
1326 Hazen Road
DeLand, Florida 32702

Haw Creek Preserve State Park

Advisory Group Staff Report

The Advisory Group appointed to review the proposed land management plans for the Tomoka Basin State Parks (Bulow Creek State Park, Bulow Plantation Ruins Historic State Park, Addison Blockhouse Historic State Park, and Tomoka State Park) and Haw Creek Preserve State Park met at 9:00 am, June 21, 2002 at the Ormond Beach Senior Center. Mr. Brian Zeilinski represented Mr. Mike Abbot, Mr. John Carr represented Mr. David Hartgrove, Ms. Cathy Lowenstein represented Mr. Mike Kuypers, and Ms. Loreen Kornel represented The Honorable Jim Darby. The Honorable Dwight Lewis, Mr. Richard Truitt, Mr. Stanford Robinson, Mr. Dick Morris, and Mr. Parker Mynchenberg did not attend. All other appointed advisory group members were present. Attending staff were Mr. Larry Fooks, Mr. Benny Woodham, Mr. Larry Gavagni, Mr. Charles DuToit, and Mr. Michael Kinnison.

Mr. Kinnison began the meeting by explaining the purpose of the advisory group, reviewing the meeting agenda and format, providing an overview of the Division's planning process and discussing the main topics of the previous evening's workshop. The meeting was then opened for the advisory group to comment on the proposed management plan.

Summary Of Advisory Group Comments

Don Bostrum gave a status report on efforts to acquire the Three Chimneys property in Ormond Beach.

Larry Marsh indicated his support for the plan, particularly resource management activities related to prescribed burning and natural community restoration. He was also supportive of establishing equestrian use at Bulow Creek State Park. He recommended removing the concept of boat slips associated with the proposed cabins due to concerns about potential conflicts between motorized boat traffic and manatees. He did not object to building cabins at the park and indicated that the area chosen (dredge spoil site) was appropriate. **Mr. Kinnison** explained that the Division had elicited comments from the Fish and Wildlife Conservation Commission on this concept and that staff would be reviewing and providing a recommendation in the staff report. **Deborah Shelley** agreed with Mr. Marsh about removing boat slips from plan and stated that she was pleased to see that the number of cabins proposed had been reduced from earlier drafts of the plan. She asked about existing boat traffic around Helicopter Island. **Mr. Woodham** responded that boats are prohibited from the canals of the island, and explained that the development of the cabins would not open the area to general boat use (i.e., the boat docks would be for use by cabin occupants only).

Ms. Shelley expressed concern about sand deposition in Bulow Creek and suggested that the county mosquito control may be able to help address this problem. She stated her interest in coordinating management activities with park staff. She was supportive of equestrian use on Pumphouse Road at Bulow Creek State Park and recommended signage to encourage safety among multiple users. She stated that the Florida Inland Navigation District (FIND) had purchased property near the end of Pumphouse Road. **Mr. Woodham** explained that the park maintains the road within the park boundary, with private landowners responsible for the remainder.

Paul Haydt complemented park management and efforts at cooperating with the St. Johns Water Management District. He discussed FIND plans for dredging and maintaining the Intracoastal in this area and potential opportunities for mitigation. He recommended locating a copy of the FIND management plan to coordinate future resource management activity in this area. He emphasized the need for monitoring in water resource management and the WMD's interest in additional support in this area. He commended park staff on cultural resource interpretation efforts and suggested development of a facility to focus interpretive efforts. **Mr. Kinnison** discussed the proposed renovation of the museum and how this would serve to boost interpretation at Tomoka State Park. **Mr. Haydt** encouraged holding special events at the park, such as Tomokafest. **Mr. Woodham** explained that Tomokafest was discontinued due to its size and impacts on park resources. He indicated that the park now has smaller, more frequent events. **Mr. Haydt** stated that he would like to see canoe trails

Haw Creek Preserve State Park

Advisory Group Staff Report

with primitive camping established on the waterways of Haw Creek.

Cathy Lowenstein complemented staff on their management of park resources during the drought and pine beetle outbreaks. She supports timber harvesting at the parks where appropriate and asked about the timing of restoring areas of planted pines. **Mr. DuToit** indicated that the park was planning to begin tree removal and restoration of eight different areas with planted pines within the next five years. He explained that park staff have recently met with DOF to discuss the plans. **Ms. Lowenstein** asked about loblolly stand management since it was not discussed in the plan. **Mr. DuToit** explained that these stands were recently discovered and are dispersed within the hammock community. He indicated that they were remote, difficult to access for harvesting and not significant enough to mention in the timber management analysis. **Ms. Lowenstein** asked for clarification on burn intervals and fire management objectives at Bulow Creek. **Mr. DuToit** stated that burn intervals and conditions within burn zones were recently updated at the District level. **Mr. Kinnison** explained that Division management plans do not include burn plans that are developed at individual state parks. **Ms. Lowenstein** suggested including a reference in the plan to the existence of park burn plans.

Mayor Persis discussed the important roles state parks play in environmental protection and providing opportunities to educate children about the environment. He emphasized the importance in hearing the public's perspective on park management and development. He expressed his ongoing support to park staff and encouraged communication with his office regarding needs of the park. He was supportive of the concept of expanding interpretation to reach more children, particularly at the elementary grade levels. **Mr. DuToit** discussed the OASIS program, which brings local school children into the parks.

Mr. Woodham thanked the community and agency representatives for their support. He explained the important role each plays in meeting park needs given the limitations of current funding. He discussed the need to add a Historic Preservationist position to the Tomoka Basin parks staff to spearhead cultural resource management. **Larry Marsh** expressed his support for the additional staff position. He asked for support in educating the public to the importance of prescribed burning, and expressed his commitment to continue working on park restoration needs.

Bill Apgar stated that Volusia County has a good working relationship with the parks and that he was glad to participate in management planning process. He discussed the importance of improving bicycle and pedestrian safety and access and Volusia County's vision for a network of trails that would link existing public lands. He was glad to see the King's Highway Heritage Trail concept in the plan. He expressed his support for providing playgrounds at state parks and was pleased to see additional playground equipment proposed in the plan. He closed by discussing the potential to form linkages between the county and the parks to enhance the resources available for management.

Mr. Bostrum stated that Plantation Road at Bulow Plantation Ruins was too narrow for the Historic Society tour busses to access the site. He encouraged consideration to widen the historic road. **Mr. Woodham** discussed the balance of trying to maintain a historic road with the need for public access.

Charles Leffler complemented staff and expressed the CSO's commitment to supporting the parks.

Jay Bushnell stressed the importance of additional staff to assist with cultural resource management. He encouraged the Division to combine the separate units of the Tomoka Basin Parks within one boundary to reflect that they are part of the same cultural landscape, and to simplify identification with the public. He would like to see the Tomoka Basin parks registered as a National Historic District as opposed to a collection of individual National Register sites. He urged the state to acquire the property surrounding the McCrae Sugar Mill that is adjacent to the Addison Blockhouse site and to consider adding the Bunch House (across from Dummet site) to the optimum boundary. **Mr. DuToit** clarified that the optimum boundary map currently includes the Bunch House. **Mr. Bushnell** encouraged maintaining stabilization of historic sites as a management priority. He supported park plans to thin

Haw Creek Preserve State Park

Advisory Group Staff Report

areas with dense stands of cabbage palms and to continue with hog removal efforts. He stressed the importance of interpretive signage to educate people when they visit one of the parks' historic sites. He explained that state parks were currently not eligible for funding through the county ECHO program, and encouraged the Division to join in his efforts to change the eligibility rules.

Sharon Mock indicated her support for the plan. She offered the Convention and Visitors Bureau's support in promoting use of park facilities, and was supportive of the plan's proposals to expand trails and provide cabins. She discussed the marketing advantage of combining the park's into a single park name. She encouraged pursuing corporate sponsorship for to help with funding needs at the museum and for interpretive materials. She asked about concession operations at the park and how they would relate to cabin development. **Mr. Kinnison** discussed the concession operator's role with the existing statewide cabin initiative. **Mr. Woodham** discussed the park's existing concession operation, and indicated that he would prefer a concessionaire operate the cabins given staffing constraints. **Ms. Mock** reiterated her interest in helping promote the parks but with attention to the need to protect the many sensitive historic sites.

John Carr indicated that he believed the burn program has increased wildlife at the parks. He was concerned that the proposed primitive campsites at Bulow Creek State Park may lead to expanded use in a sensitive area. **Mr. Woodham** explained that no facilities were proposed at these sites and that low levels of use were anticipated that could be managed properly.

Dave Robinson questioned the value of spending additional funds on restoring the Legend of Tomokie statue. He encouraged park staff to monitor timber harvesting closely to avoid serious environmental impacts. He supported the concept of boat slips at the cabins if they were kept to a small scale. He stated that a website was needed that could serve as an educational clearinghouse on the areas diverse cultural resources. He expressed his support for the use of prison labor to assist park staff. **Mr. Woodham** explained that contracts were written very thoroughly to make sure timber harvesting is conducted as sensitively as possible. He clarified that small individual docks were envisioned for the cabins. **Mr. Bushnell** explained that the Volusia Anthropological Society was working on establishing a website that will be linked to VISIT FL.

Larry Staley complemented staff on an excellent plan and commended staff on their management of the parks. He expressed his belief that multiple users can coexist on the same trails and was supportive of opening up Pumphouse Road as a multiple use trail. He would also like to see canoe trails established at Haw Creek. He discussed his positive experiences with visiting cabins at other state park and was pleased to see them proposed for Tomoka State Park. He would like to see canoe/kayak facilities instead of boat docks at the cabins. He encouraged linkages among existing websites to promote an understanding of park amenities and resources. He discussed the importance of getting children into the parks and to develop an appreciation of natural and cultural resources. He asked for an update on planned facilities at North Peninsula State Park. **Mr. Fooks** discussed plans for pavilions, parking and beach access near Highbridge. **Mr. Staley** would prefer some type of shuttle as opposed to widening historic plantation road. He discussed his use of the Bulow Creek trail and was pleased that it was not open to bicyclists. **Mr. Woodham** expressed his interest in partnering with the biking community in the future to develop trails.

Lauren Kornel expressed her appreciation for all the work and effort that went into the plans.

Mary Lou Deeley indicated her support for sharing trails with other users. She indicated that the high use on Bulow Creek Trail helps garner support for maintaining it. She encouraged park staff to let citizens know how they can help to guard against encroachments along park boundaries and thanked them for their stewardship of park lands.

Nels Parson with the WMD urged use of a constructed facility for boat access at the cabins to protect the shoreline. He echoed the need for a Historic Preservationist at the Tomoka Basin parks. He

Haw Creek Preserve State Park

Advisory Group Staff Report

believed that the current number of cabin units proposed would better preserve the visitor experience than what appeared in earlier drafts. He discussed existing facilities and the cooperative management by Flagler County and the WMD on lands adjacent to the Haw Creek Preserve State Park. He expressed interest in designating Haw Creek as a state canoe trail. **Mr. Kinnison** stated that he would explore this with the Office of Greenways and Trails. **Mr. Parson** encouraged management cooperation to meet law enforcement and prescribed burning needs on the property. He also requested information about the Division's carrying capacity standards.

Deborah Shelley discussed permitting criteria within waters of the aquatic preserve, and explained that manmade canals, such as those at Helicopter Island, are excluded from some criteria. **Mr. Woodham** discussed the impacts to the shoreline in the campground where visitors want to have access to the water but no facilities are available. He explained that cabin boat docks would provide water access while protecting the shore from erosion.

Written Comments

The following is a summary of substantive comments submitted by Brian Zielinski of the Fish and Wildlife Conservation Commission. These comments will be addressed in the final version of the management plans.

Haw Creek Preserve State Park

- Consider being more descriptive about timing (season) of burns, along with specific burn goals for each Zone. Consider establishing burn frequencies for marsh vegetation since other habitat types have one listed.
- Clarify the Division's process for exotic animal removal, including personnel involved, and timing.
- Clarify plans for a comprehensive plant/animal survey and the need for a baseline inventory. It is not clear as to the relationship between the two as currently discussed in the plan.
- Consider the potential for additional soil disturbance from one-time timber harvest to generate revenue for land management and/or mechanical thinning.
- Will improving the interior service road for brush truck and timber equipment access, also allow for increased upland recreation opportunity and improve enforcement ability?

Bulow Plantation Ruins Historic State Park:

- Clarify the Division's process for exotic animal removal, including personnel involved, and timing. Do you anticipate having a feral cat problem due to the future development of the mobile home units, north of the Ruins?

Advisory Group Vote

The advisory group members were asked if they approved the draft unit management plan for the Tomoka Basin State Parks and Haw Creek Preserve State Park. With the exception of Mr. Marsh and Mr. Carr, all members present agreed that the draft plan for the Tomoka Basin State Parks was appropriate and should be approved. Mr. Marsh and Mr. Carr objected to the concept of boat docks at the proposed cabins. They indicated that they would vote in support of the plan if boat docks were removed.

All members present agreed that the draft plan for Haw Creek Preserve State Park was appropriate and should be approved.

The meeting was then adjourned.

Staff Recommendations

Staff recommends approval of the proposed management plans for the Tomoka Basin State Parks and Haw Creek Preserve State Park as presented with the following changes.

Haw Creek Preserve State Park

Advisory Group Staff Report

- Issue: Boat Docks at Tomoka State Park Cabin Development

Recommendation: The Division is committed to supporting manatee protection efforts within the Halifax and Tomoka River basin and is sensitive to impacts that proposed facilities may have on this endangered species. Due to concerns regarding the potential for increased boat traffic associated with the proposed cabin development, the concept of boat docks will be replaced with fishing platforms and a central canoe/kayak launch in this area.

- Issue: Plantation Road at Bulow Plantation Historic State Park

Recommendation: As discussed in the plan's Resource Management Component, Plantation Road is a significant historical feature that also serves as the park entrance drive. As such, an approach to road maintenance requires special consideration to preserve the integrity of this important historic roadway. The Division feels that the road provides a sufficient level of public access in its current state and does not recommend widening the road to accommodate tour buses.

- Issue: Haw Creek State Canoe Trail Designation

Recommendation: The Division supports a state canoe trail designation for the waterways of Haw Creek. However, the state park boundaries include less than two linear miles of Haw Creek and less than one mile of Little Haw Creek. In addition, the park provides no upland access for the establishment of parking and water access facilities. As such, the Division believes it is more appropriate for other land managers with upland access to take the lead on pursuing this designation.

Addendum 2—References Cited

Haw Creek Preserve State Park

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Addendum 3—Soils Descriptions

Haw Creek Preserve State Park

Soil Descriptions

(6) Favoretta Clay - This is a nearly level, poorly drained clay soil found in flatwoods near streams and floodplains. The surface layer, about 12 inches thick, is very dark gray clay. The subsoil contains clay to a depth of 80 inches or more. The seasonal high water table is within a depth of 12 inches for 4 to 6 months during most years. Permeability is very slow and the organic content is low.

(7) Favoretta, Chobee, and Winder soils, frequently flooded - This map unit consists of nearly level, poorly drained and very poorly drained soils in drainageways and on floodplains along major streams on the flatwoods. This composite unit consists of several series, including Favoretta clay soils, and sandy-loamy Winder soils and Chobee soils. In most years, areas of this map unit are flooded for 1 month or more during periods of high rainfall. The seasonal high water table is at a depth of 0 to 6 inches for 6 months or more. These soils are often associated with Floodplain Swamp

(10) Winder fine soil – This is a nearly level, poorly drained soil. It occurs in broad, low flats with slopes less than 2 percent. Typically, the surface layer is dark gray fine sand about 7 inches thick overlying a loamy subsoil. The water table is within a depth of 6 inches for 2 to 6 months. Permeability is slow or very slow.

(41, 65) Terra Ceia muck – This is a very deep, very poorly drained, nearly level soil on broad or narrow floodplains along Haw Creek and Crescent Lake. The surface is more than 80 inches thick consisting of brown and black muck. The water table is as much as 2 feet above the surface at times during the rainy season. Terra Ceia muck soils are associated with Floodplain Swamp and Basin Marsh.

Addendum 4—Plant And Animal List

Haw Creek Preserve State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Southern red maple	<i>Acer rubrum</i>	
Alligator-weed	<i>Alternanthera philoxeroides</i>	
Pepper vine	<i>Ampelopsis arborea</i>	
Groundnut	<i>Apios americana</i>	
Wiregrass	<i>Aristida stricta</i>	
Switch cane	<i>Arundinaria gigantea</i>	
Lance-leaved milkweed	<i>Asclepias lanceolata</i>	
Swamp milkweed	<i>Asclepias perennis</i>	
Climbing aster	<i>Aster carolinianus</i>	
Swamp fern	<i>Blechnum serrulatum</i>	
False nettle	<i>Boehmeria cylindrica</i>	
Beautyberry	<i>Callicarpa americana</i>	
Trumpet-vine	<i>Campsis radicans</i>	
Ironwood	<i>Carpinus caroliniana</i>	
Sugarberry	<i>Celtis laevigata</i>	
Buttonbush	<i>Cephalanthus occidentalis</i>	
Camphor-tree *	<i>Cinnamomum camphora</i>	
Sweet orange *	<i>Citrus sinensis</i>	
Grapefruit *	<i>Citrus X paradisi</i>	
Sawgrass	<i>Cladium jamaicense</i>	
Wild taro *	<i>Colocasia esculentum</i>	
Swamp dogwood	<i>Cornus foemina</i>	
String-lily, Swamp lily	<i>Crinum americanum</i>	
Common persimmon	<i>Diospyros virginiana</i>	
Water hyacinth *	<i>Eichhornia crassipes</i>	
Butterfly orchid	<i>Encyclia tampensis</i>	
Green-fly orchid	<i>Epidendrum conopseym</i>	
Water ash; Pop ash	<i>Fraxinus caroliniana</i>	
Green ash	<i>Fraxinus pennsylvanica</i>	
Water locust	<i>Gleditsia aquatica</i>	
Red hibiscus	<i>Hibiscus coccineus</i>	
Swamp rosemallow	<i>Hibiscus grandiflorus</i>	
Spider lily	<i>Hymenocallis crassifolia</i>	
Dahoon	<i>Ilex cassine</i>	
Yaupon holly	<i>Ilex vomitoria</i>	
Soft rush	<i>Juncus effusus</i>	
Red cedar	<i>Juniperus virginiana</i>	
Sweetgum	<i>Liquidambar styraciflua</i>	
Southern magnolia	<i>Magnolia grandiflora</i>	
Sweet bay	<i>Magnolia virginiana</i>	
Wax myrtle	<i>Myrica cerifera</i>	
White waterlily	<i>Nymphaea odorata</i>	
Swamp tupelo	<i>Nyssa sylvatica var. biflora</i>	
Royal fern	<i>Osmunda regalis</i>	33
Redbay	<i>Persea borbonia</i>	
Golden polypody	<i>Phlebodium aureum</i>	
Mistletoe	<i>Phoradendron serotinum</i>	
Slash pine	<i>Pinus elliotii</i>	

* Non-native Species

Haw Creek Preserve State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Pond pine	<i>Pinus serotina</i>	
Orange milkwort	<i>Polygala lutea</i>	
Resurrection fern	<i>Polypodium polypodioides</i>	
Pickeralweed	<i>Pontederia cordata</i>	
Laurel oak; Diamond oak	<i>Quercus laurifolia</i>	
Water oak	<i>Quercus nigra</i>	
Live oak	<i>Quercus virginiana</i>	
Swamp rose	<i>Rosa palustris</i>	
Swamp dock	<i>Rumex verticillatus</i>	
Dwarf palmetto	<i>Sabal minor</i>	
Cabbage palm	<i>Sabal palmetto</i>	
Grass-leaved arrowhead	<i>Sagittaria graminea</i>	
Lance-leaf arrowhead	<i>Sagittaria lancifolia</i>	
Carolina willow	<i>Salix caroliniana</i>	
Lyreleaf sage	<i>Salvia lyrata</i>	
Water spangles	<i>Salvinia minima</i>	
Lizard's-tail	<i>Saururus cernuus</i>	
Saw palmetto	<i>Serenoa repens</i>	
Purple sesban *	<i>Sesbania punicea</i>	
Sand cordgrass	<i>Spartina bakeri</i>	
St. Augustine grass *	<i>Stenotaphrum secundatum</i>	
Queensdelight	<i>Stillingia sylvatica</i>	
Bald cypress	<i>Taxodium distichum</i>	
Cardinal airplant	<i>Tillandsia fasciculata</i>	
Southern needleleaf	<i>Tillandsia setacea</i>	
Spanish moss	<i>Tillandsia usneoides</i>	
Eastern poison ivy	<i>Toxicodendron radicans</i>	
Common cattail	<i>Typha latifolia</i>	
American elm	<i>Ulmus americana</i>	
Sparkleberry	<i>Vaccinium arboreum</i>	
Small viburnum or Black-haw	<i>Viburnum obovatum</i>	
Shoestring fern	<i>Vittaria lineata</i>	

* Non-native Species

Haw Creek Preserve State Park

Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
FISH		
Shortnose Sturgeon	<i>Acipenser brevirostrum</i>	53
Mudfish	<i>Amia calva</i>	53
Florida gar	<i>Lepisosteus platyrhincus</i>	53
Shellcracker	<i>Lepomis microlopus</i>	53
Largemouth bass	<i>Micropterus salmoides</i>	53
Speckled perch	<i>Poxomis nigromaculatus</i>	53
AMPHIBIANS		
Green Tree Frog	<i>Hyla cinerea</i>	24, 29
Florida Leopard Frog	<i>Rana utricularia sphenoccephala</i>	8, 33
REPTILES		
American Alligator	<i>Alligator mississippiensis</i>	24, 33, 53
Green Anole	<i>Anolis carolinensis carolinensis</i>	33
BIRDS		
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	33
Great egret	<i>Ardea alba</i>	24, 33
Great Blue Heron	<i>Ardea herodias</i>	24, 33
Little Blue Heron	<i>Egretta caerulea</i>	24, 33
Snowy egret	<i>Egretta thula</i>	24, 33
Tricolored heron	<i>Egretta tricolor</i>	24, 33
Yellow-crowned night heron	<i>Nyctanassa violacea</i>	24, 33
Black-crowned night heron	<i>Nycticorax nycticorax</i>	24, 33
White ibis	<i>Eudocimus albus</i>	24, 33
Wood stork	<i>Mycteria americana</i>	24, 33
Black Vulture	<i>Coragyps atratus</i>	All
Osprey	<i>Pandion haliaetus</i>	24, 33, 53
Swallow-tailed Kite	<i>Elanoides forficatus</i>	24, 33
Bald Eagle	<i>Haliaeetus leucocephalus</i>	All
Red-shouldered Hawk	<i>Buteo lineatus</i>	8, 24, 33
Limpkin	<i>Aramus guarauna</i>	33, 53
Mourning Dove	<i>Zenaida macroura</i>	8, 33
Barred Owl	<i>Strix varia</i>	8, 33
Belted Kingfisher	<i>Ceryle alcyon</i>	24, 53
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	8, 33
Pileated Woodpecker	<i>Dryocopus pileatus</i>	8, 33
Tree Swallow	<i>Tachycineta bicolor</i>	Flyover
Tufted Titmouse	<i>Parus bicolor</i>	8
Carolina Wren	<i>Thryothorus ludovicianus</i>	8, 33
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	8, 33
White-eyed Vireo	<i>Vireo griseus</i>	8, 33
Yellow-throated Vireo	<i>Vireo flavifrons</i>	33
Northern Parula	<i>Parula americana</i>	8, 33
Pine Warbler	<i>Dendroica pinus</i>	8
Common Yellowthroat	<i>Geothlypis trichas</i>	8, 24, 33

* Non-native Species

Haw Creek Preserve State Park

Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Summer Tanager	<i>Piranga rubra</i>	8
Northern Cardinal	<i>Cardinalis cardinalis</i>	8, 24, 33

MAMMALS

Gray Squirrel	<i>Sciurus carolinensis</i>	8, 33
West Indian Manatee	<i>Trichechus manatus latirostris</i>	53
Wild Pig *	<i>Sus scrofa</i>	8, 33
White-tailed Deer	<i>Odocoileus virginianus</i>	8, 24, 33

Habitat Codes

Terrestrial

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

Palustrine

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

Lacustrine

43. Clastic Upland Lake
44. Coastal Dune Lake
45. Coastal Rockland Lake

Lacustrine—Continued

46. Flatwood/Prairie Lake
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

Addendum 5—Designated Species List

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

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

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

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

FNAI GLOBAL RANK DEFINITIONS

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

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

LEGAL STATUS

- N = Not currently listed, nor currently being considered for listing, by state or federal agencies.
FEDERAL (Listed by the U. S. Fish and Wildlife Service - USFWS)
- LE = Listed as Endangered Species in the List of Endangered and Threatened Wildlife and Plants under the provisions of the Endangered Species Act. Defined as any species that is in danger of extinction throughout all or a significant portion of its range.
- PE = Proposed for addition to the List of Endangered and Threatened Wildlife and Plants as Endangered Species.
- LT = Listed as Threatened Species. Defined as any species that is likely to become an endangered species within the near future throughout all or a significant portion of its range.
- PT = Proposed for listing as Threatened Species.
- C = Candidate Species for addition to the list of Endangered and Threatened Wildlife and Plants. Defined as those species for which the USFWS currently has on file sufficient information on biological vulnerability and threats to support proposing to list the species as endangered or threatened.
- E(S/A) = Endangered due to similarity of appearance.
T(S/A) = Threatened due to similarity of appearance.

STATE

Animals

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

- LE = Listed as Endangered Species by the FFWCC. Defined as a species, subspecies, or isolated population which is so rare or depleted in number or so restricted in range of habitat due to any man-made or natural factors that it is in immediate danger of extinction or extirpation from the state, or which may attain such a status within the immediate future.
- LT = Listed as Threatened Species by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.
- LS = Listed as Species of Special Concern by the FFWCC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species.

Plants

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

- LE = Listed as Endangered Plants in the Preservation of Native Flora of Florida Act. Defined as species of plants native to the state that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue, and includes all species determined to be endangered or threatened pursuant to the Federal Endangered Species Act of 1973, as amended.
- LT = Listed as Threatened Plants in the Preservation of Native Flora of Florida Act. Defined as species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in such number as to cause them to be endangered.

Haw Creek Preserve State Park

Designated Species

Plants

Common Name/ <i>Scientific Name</i>	<u>Designated Species Status</u>		
	FDA	USFWS	FNAI
Butterfly orchid <i>Encyclia tampensis</i>	CE		
Royal Fern <i>Osmunda regalis</i>	CE		

Haw Creek Preserve State Park

Designated Species

Animals

Common Name/ <i>Scientific Name</i>	Designated Species Status		
	FFWCC	USFWS	FNAI

FISH

Shortnose Sturgeon <i>Acipenser brevirostrum</i>	LE	LE	S1
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REPTILES

American alligator <i>Alligator mississippiensis</i>	LS	LT(S/A)	S4
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BIRDS

Limpkin <i>Aramus guarana</i>	LS		S3
Great egret <i>Ardea alba</i>			S4
Little blue heron <i>Egretta caerulea</i>	LS		S4
Tricolored heron <i>Egretta tricolor</i>	LS		S4
Snowy egret <i>Egretta thula</i>	LS		S4
Swallow-tailed Kite <i>Elanoides forficatus</i>			S2S3
White ibis <i>Eudocimus albus</i>	LS		S4
Bald eagle <i>Haliaeetus leucocephalus</i>	LT	LT	S3
Yellow-crowned night heron <i>Nyctanassa violacea</i>			S3?
Black-crowned night heron <i>Nycticorax nycticorax</i>			S3?
Wood stork <i>Mycteria americana</i>	LE	LE	S2
Osprey <i>Pandion haliaetus</i>			S3S4

MAMMALS

West Indian manatee <i>Trichechus manatus manatus</i>	LE	LE	S2?
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Addendum 6—Timber Management Analysis

Haw Creek Preserve State Park

Timber Management Analysis

The timber assessment required by Chapters 253 and 259, Florida Statutes, was conducted by Charles DuToit, Park Biologist, Tomoka Basin GeoPark in cooperation with staff from DOF District 10

Pine Flatwoods Tract at Haw Creek State Preserve

There are 160 acres of pine flatwoods at Haw Creek State Preserve with a 30-year-old stand of slash pines. The existing pines regenerated by natural seeding from surrounding tracts of commercial timber following a clear-cut harvest by Union Camp Corp. in the early 1970s. Standard quantitative methods were used to assess stand structure and composition in a representative sample plot, 20 m (65.6 ft.) x 20 m (62.6 ft.) on 2 Feb. 2000.

The average stand density is about 350 trees per acre. Trunk diameters range from 5 inches to 12 inches dbh. The average diameter is 8-9 inches dbh. Tree heights are 70-75 feet. The flatwoods understory is comprised of cabbage palms (crowns 10-15 ft.); some pole-size pines (2-4 inches dbh) and scattered hardwoods, including sweetgum, red maple, live oak, laurel oak and an occasional camphor-tree, a non-native species. The ground cover is saw palmetto and low cabbage palms with open patches comprised of scattered grasses and forbs, hardwood root sprouts, and pine litter. There were only a few pine seedlings in the sample plot.

The flatwoods soils at Haw Creek are comprised of Favoretta clay and Winder fine sand (USDA). Both soils have high water tables in the wet season and generally poor drainage year round due to the low permeability of clay layers in the upper soil layers. Favoretta and Winder soils are less acidic than the typical sandy spodosols of mesic flatwoods.

These soil properties will influence stand growth and composition and place constraints on the season of harvest operations. The mean site index* for slash pine on Winder soils is 90 on a 50-year site curve (USDA), indicative of relatively high productivity compared to stand growth on other flatwoods soils. The existing size classes in the pine stand at Haw Creek could be harvested for chip n' saw lumber and pulpwood.

Access to the pine flatwoods tract at Haw Creek is from an adjacent private landowner's property on County Road 305. An old logging road provides access to the interior of the stand. It was recently re-opened by DOF.

Park management will be assisted by the DOF regional Senior Forester (OSL) in the development of a harvest plan for the pine flatwoods tract. At Haw Creek, the harvest plan must support the use designation for a state preserve: A state preserve is designed to preserve and protect representative samples, of viable size, of natural conditions characteristic of Florida. In this sense, the objective for a timber harvest, and succeeding management actions, is to restore natural community structure and composition.

*USDA defines site index as "a designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age." For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet (USDA Soil Survey of Flagler County)

Prepared by: Charles DuToit, Park Biologist, Tomoka Basin GeoPark (M.S. Botany University of Florida 1979).

Addendum 7—Priority Schedule And Cost Estimates

Haw Creek Preserve State Park
Priority Schedule And Cost Estimates

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

Priorities for Natural Resource Management, Research, and Interpretation

1. Management needs in the mesic flatwoods tract of the eastern parcel. 1. Survey, clear, and fence upland boundary line adjacent to private landowners. Estimated Cost: \$30,000. 2. Improve interior service road (old logging road) by placement of fill-and-culverts and grading. Estimated Cost: \$20,000.
2. Develop a timber harvest plan. Estimated Cost: \$5,000.
3. Implement prescribed burning in pine flatwoods and basin marshes. \$10,000/year. TOTAL ESTIMATED COST: \$50,000.
4. Removal of exotic plants in the wetlands of the preserve. Treatment of wild taro along lower Haw Creek and the shoreline of Crescent Lake. 1st year treatment. Estimated Cost \$40,000. 2nd year follow-up treatment. Estimated Cost. \$10,000. Annual maintenance treatments for 3 years. Estimated Cost: \$2,000/year. TOTAL ESTIMATED COST: \$56,000.
5. Removal of exotic plants in the uplands of the preserve. Initial treatment of camphor trees in the mesic flatwoods. Estimated Cost: \$5,000. Follow-up treatment. Estimated Cost \$1500. TOTAL ESTIMATED COST \$6,500.
6. Inventory vertebrate animals and vascular plants in the preserve. Contract a university zoologist to conduct live trapping and a botanist to catalogue and voucher plant specimens in a permanent herbarium collection. Estimated Cost: \$15,000 for animal survey, \$15,000 for plant collection. TOTAL ESTIMATED COST \$30,000.
7. Limpkin study. Contract a university ornithologist to conduct a habitat assessment and population survey of limpkins in the preserve. TOTAL ESTIMATED COST \$20,000.
8. Public Information. Contract a graphic design company to prepare an interpretive brochure and waterway map of Haw Creek and the Crescent Lake-Dead Lake recreational area. TOTAL ESTIMATED COST \$15,000.

Priorities for Cultural Resources Survey and Interpretation

9. Conduct a reconnaissance level archaeological level survey and cultural resource assessment of the preserve using GPS technology. TOTAL ESTIMATED COST \$12,000.
10. Develop interpretive materials on the cultural resources of the preserve, including signs along the creek. TOTAL ESTIMATED COST \$15,000.