ICHETUCKNEE SPRINGS STATE PARK

APPROVED

UNIT MANAGEMENT PLAN

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

OCTOBER 17, 2000

Department of Environmental Protection

Jeb Bush
Governor

David B. Struhs
Secretary

January 10, 2001

BryAnne White
Office of Park Planning
Division of Recreation and Parks
Mail Station #525

Dear Ms. White:

Re: Ichetucknee Springs State Park, Lease Number 2459

On October 17, 2000, the Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, approved the subject management 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 in October, 2005.

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. Please forward copies of all permits to this office upon issuance.

Sincerely,

Callie DeHaven
Operations and Management Consultant II
Office of Environmental Services
Division of State Lands

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INTRODUCTION

Ichetucknee Springs State Park is located in Suwannee and Columbia Counties (see Location Map) about five miles northwest of Fort White. Access to the park is from County Road 238 at the north entrance or U.S. Highway 27 at the south entrance (see Vicinity Map).

At Ichetucknee Springs State Park, public outdoor recreation 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

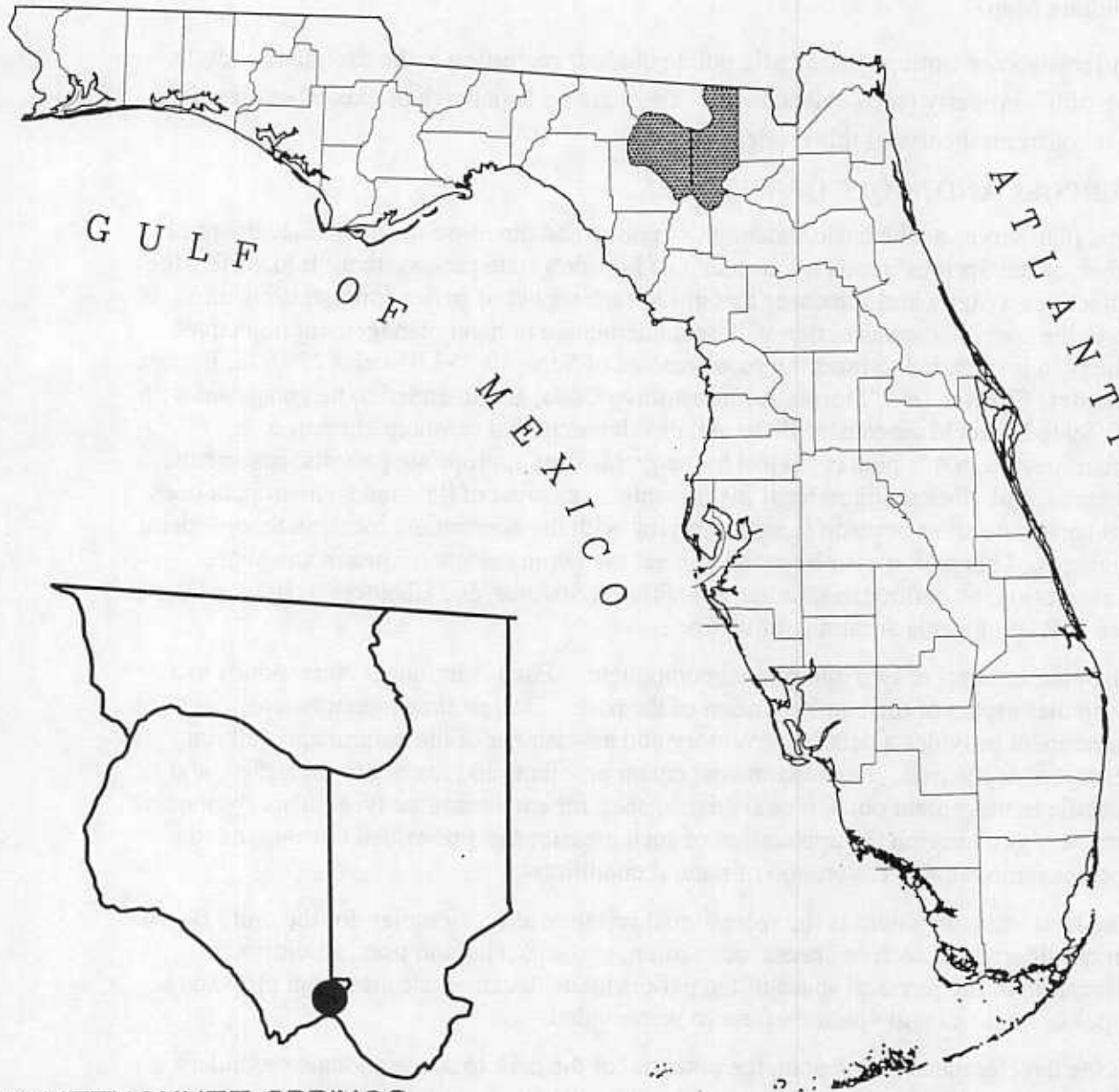
This plan serves as the basic statement of policy and direction for the management of Ichetucknee Springs State Park as a unit of Florida's state park system. It identifies the objectives, criteria and standards that guide each aspect of park administration, and sets forth the specific measures that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

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

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

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

LOCATION MAP



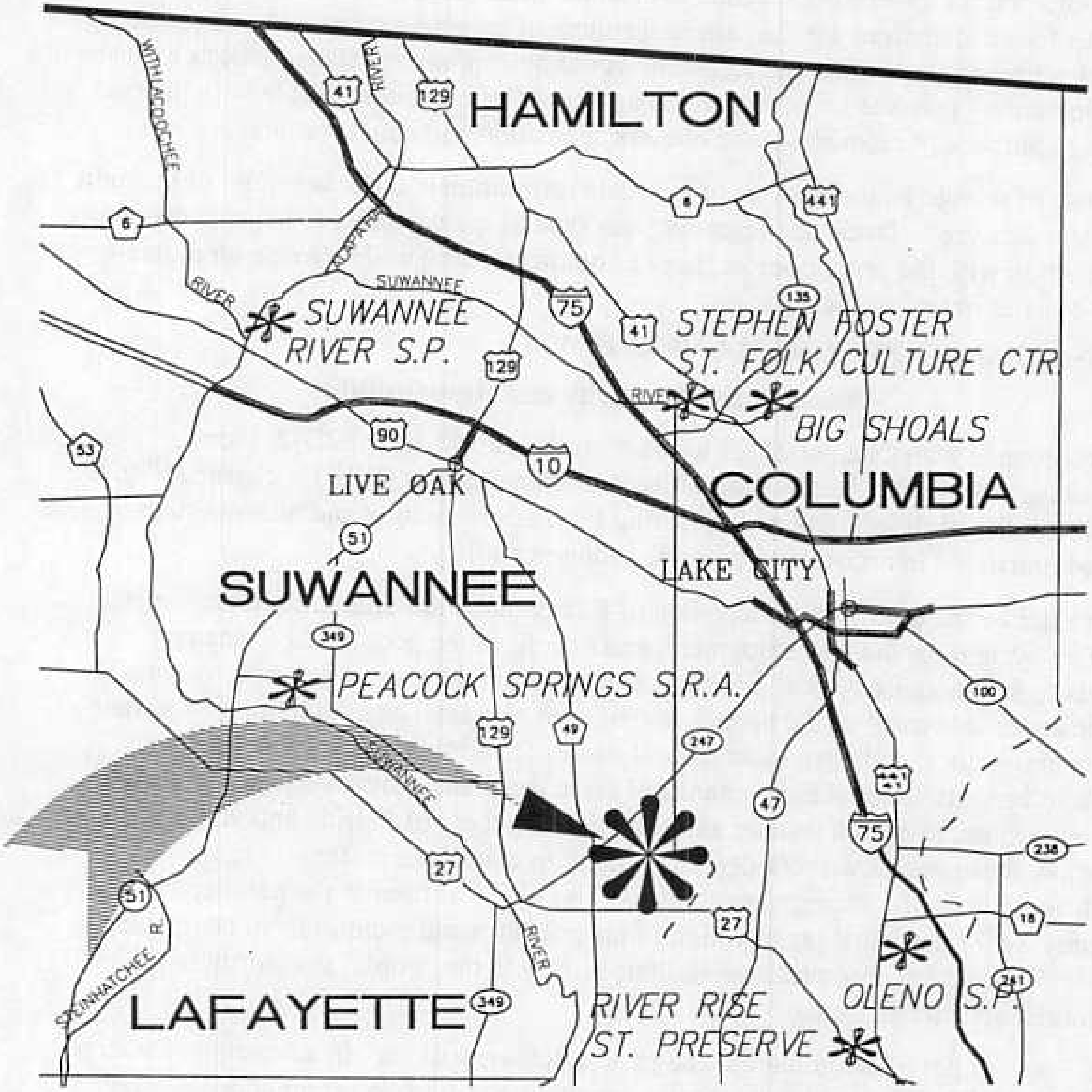
ICHETUCKNEE SPRINGS
STATE PARK

ICHETUCKNEE SPRINGS STATE PARK

COLUMBIA/SUWANEE COUNTIES

NORTH

VICINITY MAP



ICHETUCKNEE SPRINGS STATE PARK

COLUMBIA COUNTY
SUWANEE COUNTY

NORTH

Uses such as, water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of the park and should be discouraged.

The potential for generating revenue to enhance management was also analyzed. Visitor fees and charges are the principal source of revenue generated by the park. It was determined that timber management would be appropriate at this park as a means of supplementing revenue for resource 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 (DRP) 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 DRP 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.

In the management of Ichetucknee Springs State Park, a balance is sought between the goals of maintaining and enhancing natural conditions and providing various recreational opportunities. Natural resource management activities are aimed at management of natural systems. Development in the park is directed toward providing public access to and within the park, and to providing recreational facilities, in a

reasonable balance, that are both convenient and safe. Program emphasis is on interpretation on the park's natural, aesthetic, and educational attributes.

Park Goals and Objectives

1. Identify, preserve, protect, and restore natural resources.

- **A.** Support ongoing efforts to monitor surface and ground waters that are threatened by contaminants; Division and park staff should continue working with the Ichetucknee Springs Water Quality Working Group to seek funding for additional research and dye trace studies to determine the sources of the Ichetucknee River.
- **B.** Continue monitoring aquatic vegetation in the river to document impacts from recreational uses and to measure success of carrying capacity restrictions.
- **C.** Continue to remove 20th century debris that was placed in the Headspring vent; restore natural flow patterns to the extent possible without disturbing the context of archaeological and historical resources.
- **D.** Continue the aggressive prescribed fire program to restore and maintain the fire-adapted natural communities of the park; continue restoration of upland pine forest through mechanical and chemical removal of offsite species.
- **E.** Maintain maps of exotic plant infestations, develop an exotic plant control plan, and seek funding for exotic plant control.

  Abandon and remove unnecessary roads and unauthorized trails; block and revegetate abandoned roads as necessary to reduce erosion along the banks of the river and restore natural communities.
- **F.** Conduct additional research on the flora of the park, fauna, natural communities, water resources, and land use history.
- **G.** Monitor and protect designated species within and adjacent to the park and track visitor use impacts on designated or declining species including gopher tortoises, eastern indigo snakes, southeastern kestrels, Ichetucknee siltsnail, and Bachman's sparrow.
- **H.** Evaluate potential effects on sensitive natural resources when considering locations for future facilities in the park.
- **I.** Pursue adequate funding for resource management activities in the park.

2. Identify, preserve, protect, and restore cultural resources.

- **A.** Pursue funding for Level I and Level II cultural resources surveys.
- **B.** Enlist assistance of the CARL Archaeological Survey in protection and survey of cultural resources.
- **C.** Expand the cultural resource information gathering, filing, and retrieval routines; Develop visitation and monitoring routines; document and monitor sites by establishing and use of photopoints.
- **D.** Evaluate potential effects on sensitive cultural resources when considering locations for future facilities in the park and when planning natural community restoration projects.

3. Provide safe, appropriate, quality, outdoor recreational opportunities for park visitors.

- **A.** Design park facilities to more appropriately manage, channel and facilitate visitor use of park property; Ensure enforcement of carrying capacities on the river.
- **B.** Continue the development and implementation of an interpretive sign and exhibits program to improve accessibility; continue to improve on-going interpretative programs.
- **C.** Pursue adequate funding to make renovation, or replacement of aging and deteriorated park facilities possible, in a timely manner.
- **D.** Pursue adequate operational funding to ensure that corrective maintenance, visitor protection, and visitor service are possible.
- **E.** Pursue funding for upgrades to assure compliance with the Americans with Disabilities Act.
- **F.** Conduct routine safety inspections of facilities and public areas and correct deficiencies as needed.
- **G.** Pursue funding for corrective maintenance projects of existing facilities pursue funding of new recreational facilities consistent with this plan.

  Assure compliance with state and federal safety guidelines for: use and disposal of hazardous waste, bloodborne pathogens policy, hazardous communications plans, safety training and development of Park Protection Plans as required by the Florida Park Service Operations Procedures Manual.

4. Monitor activities outside park that may impact parklands and maintain public awareness of park resource management needs.

- **A.** Monitor land use changes and permitting activities within Ichetucknee State Park greenline; staff will review and provide comments when necessary for any SRWMD and FDEP District permit applications that may affect the park; staff will also monitor local county zoning issues to the extent practical; staff will coordinate responses with other branches of FDEP when necessary.
- **B.** Monitor surface and groundwater resources and report unauthorized waste dumping and pollution to appropriate governmental agencies.
- **C.** Maintain an active public relations program to increase public awareness of and support for the resource management objectives of the park.
- **D.** Continue support and participation in the Ichetucknee Springs Water Quality Working Group.

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 park staff in the development of wildfire emergency plans and furnishes permits 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 of Recreation and Parks 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 Coastal Systems 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

An initial public workshop for the park was held on June 10, 1999. A second public workshop conducted on October 18, 1999, at 7:00 p.m. (EDT). The purpose of this meeting was to present the management plan to the public.

A DEP Advisory Group meeting was held on October 19, 1999, at 9:00 a.m. (EDT). The purpose of this meeting was to provide the Advisory Group members a forum in which to discuss the current management plan.

Other Designations

Ichetucknee Springs 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. Ichetucknee Springs is designated as a State Natural Feature Site and a National Natural Landmark.

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 designated as an aquatic preserve under provision of the Florida Aquatic Preserve Act of 1975 (section 258.35, Florida Statutes).

Several other significant land and water resources exist near the preserve. They include: O'Leno State Park, River Rise State Preserve, Sims Sink, Lower Santa Fe Conservation Area, Ratcliffe Tract, Stuarts Landing Conservation Area, Little River Conservation Area, Troy Springs State Recreation Area, Troy Springs Conservation Area, Grady Conservation Area, Hatchbend Conservation Area, Peacock Springs State Recreation Area, Peacock Springs Conservation Area, Davidson Ranch, and Osceola National Forest.

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 greenline program (to delineate areas of park concern in an ecosystem context), a resource management evaluation program (to assess resource conditions, evaluate management activities, and refine management objectives), review of local comprehensive plans, and review of permit applications for

RESOURCE DESCRIPTION AND ASSESSMENT

Natural Resources

Topography

Ichetucknee Springs State Park lies in the physiographic region called the Gulf Coastal Lowlands, which is characterized by karst topography and elevations less than 100 feet above mean sea level (msl). The adjacent Northern Highlands physiographic region occurs north of the Gulf Coastal Lowlands and is typified by karst terrain and elevations higher than 90 to 100 feet above msl. The Ichetucknee Trace occurs north of the Park in the southern portion of the Northern Highlands physiographic region. Elevations within the Trace vary from 35 to 50 feet above msl. The Trace terminates at a topographic break known as the Cody Escarpment, which divides the Northern Highlands from the Gulf Coastal Lowlands (Puri and Vernon 1964). As is true of all erosional escarpments, the Cody Escarpment is migrating backwards, retreating upgradient, as erosion carves through the semi-consolidated materials of the highlands. These topographic features profoundly affect the hydrology of the region. Upon the higher surfaces of the Northern Highlands are well-organized streams and scattered sinkholes. Below the highlands, there are no organized stream patterns, and all drainage

is internal to the karst features.

Elevations within ISSP range from less than 20 feet (msl) along the floodplain to over 60 feet (msl) in the southeastern corner (see Topographic Map). Slopes are gradual in some areas, abrupt in others. Limestone outcrops are common, particularly along the upper edge of the floodplain and much of the riverbank. Noticeable alterations to the landscape include roads, tramways, and multiple phosphate pits and settling ponds.

The phosphate mining operations at Ichetucknee Springs occurred in two phases and had a major effect on the topographic features of the park. In the first phase during the phosphate boom era of the late 1800s and early 1900s, the Dutton Phosphate Company opened the majority of the phosphate pits on the property and extracted hard rock phosphate. Most of the extraction was by hand and the ore was transported to Fort White or High Springs via narrow gauge rail cars on the numerous tram roads that were constructed in the region (Doig 1992). Although Loncala Phosphate, Inc. acquired the property in the 1920s, they did not extract additional phosphate until the 1950s when they reopened the old pits and scraped them to reclaim colloidal phosphate residues. It was at this time that the settling or "slime" ponds were constructed (Doig 1992).

Geology

Geological formations are divided into both lithologic and hydrologic units in the Florida carbonate platform because aquifers cut across formational boundaries. The limestone that is exposed in the park is the Ocala Group Limestone of Eocene age. This formation is approximately 40 million years old. Regionally, three other formations of Eocene age lie beneath the Ocala Group. From youngest to oldest, these are the Avon Park Limestone, Lake City Limestone and Oldsmar Limestone. A Paleocene deposit, the Cedar Keys Limestone, occurs below those Eocene formations.

Ordinarily, formations more recent than the Ocala Group such as Suwannee Limestone of Oligocene age and the Hawthorn Formation of Miocene age would overlie the Ocala Group, but these were either never deposited here or have completely eroded over time. Miocene deposits are carbonate, with minor siliciclastics, while younger formations are largely siliciclastics with minor discontinuous carbonate lenses. Miocene-aged siliciclastic rocks make up the Hawthorn Formation, which acts as the confining unit for the Floridan aquifer. The Miocene and younger sediments have been removed by erosion from much of the western half of north central Florida, and thus in that portion of the state the Floridan aquifer is unconfined. The erosional edge of the Hawthorn Formation, also known as the Cody Escarpment, is near the Ichetucknee River. The Cody Escarpment is a major influence on the geology of the region and represents the boundary between the confined and unconfined Floridan aquifer.

The Ichetucknee Trace occurs within the Northern Highlands and is an area of active

LEGEND

Topographic Line

Park boundary

50 50 50 40 45 50 25 50 50 50 50 45 25 50 40 25 45 35

1000 0 1000 2000 Feet

Prepared by:
Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning
Date: September 5, 2000-BJB
Printed: April 27, 2001
Approved Plan

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ICHETUCKNEE SPRINGS STATE PARK

TOPOGRAPHIC MAP

karst solution. Within the Trace, multiple creeks flow underground in the form of confluent insurgence. These sinking points convey carbon dioxide enriched waters through conduits into the top layers of the Ocala Group Limestone. A meandering surface feature, the Trace runs north-northeast from the Headspring area to the Rose Creek Sink. The Ichetucknee Trace may represent the path of the underground flow that feeds the Ichetucknee River. The Trace may also delineate a previous surface flow of the Ichetucknee before the time the river began to flow underground. It is also possible that the Trace represents a deep conduit system that has collapsed. Regardless of its geomorphology, the Trace is a zone of increased permeability, and carries a high vulnerability and high recharge classification.

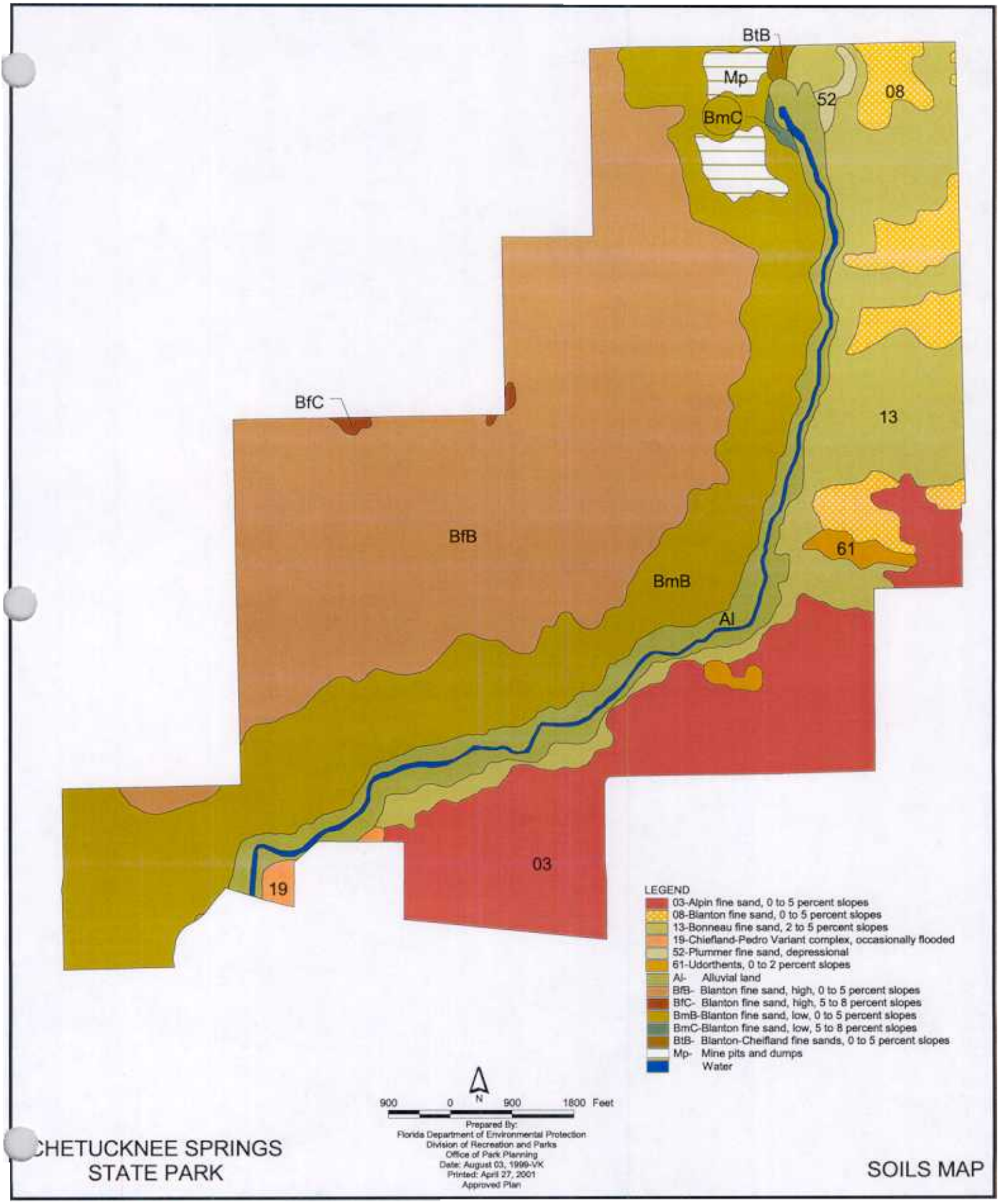
The only major disturbance of the geological formations of the park was the extraction of phosphate. Just outside the park, there is active limestone mining. Three miles west of the park is a quarry that may become the site of a cement manufacturing facility. Although current levels of limestone extraction at this quarry are not likely to impact resources at the park, increased mining to supply the proposed cement manufacturing facility may impact regional ground water. Also of concern is a mining operation located north of the park in the Ichetucknee Trace. Although no significant reduction in the water quality of the springs has yet been seen, mining operations in the Trace risk severing a major conduit system, which could have a devastating effect on the water clarity of springs associated with that conduit system.

Soils

Nine soil types are mapped within the Columbia County portion of the park (Howell 1984) and six types are mapped within the Suwannee County portion (Houston 1965). Although the soils on either side of the county line are mapped using slightly different names, they are in fact the same soil types (see Soils Map). Soils range from excessively well-drained sands in the sandhills to poorly drained alluvial soils in the floodplain and mine tailings adjacent to phosphate pits. Detailed soil descriptions are contained in Addendum 3.

Historical soil disturbances at the park are primarily restricted to the phosphate mining areas and include many deep mine pits and several elevated tram roads.

More recently, foot traffic from recreational users has impacted the park. Many of the park limestone bluffs, particularly those at the river's edge, have been elaborately sculptured by flowing water and upland runoff. Many of these bluffs, such as Devil's Den, are attractive resting areas for recreational users of the river. Unfortunately, the resulting foot traffic causes increased erosion of the bluffs and may damage the delicate limestone formations. Foot traffic also damages the vegetation that clings to the calcareous soils of the unstable bluffs. Management activities will follow generally accepted best management practices to prevent further soil erosion and conserve soil and water resources on site.


BtB
Mp
52
08
BmC
BfC
13
BfB
61
BmB
Al
03
19
LEGEND
03-Alpin fine sand, 0 to 5 percent slopes
08-Blanton fine sand, 0 to 5 percent slopes
13-Bonneau fine sand, 2 to 5 percent slopes
19-Chiefland-Pedro Variant complex, occasionally flooded
52-Plummer fine sand, depressional
61-Udorthents, 0 to 2 percent slopes
Al- Alluvial land
BfB- Blanton fine sand, high, 0 to 5 percent slopes
BfC- Blanton fine sand, high, 5 to 8 percent slopes
BmB-Blanton fine sand, low, 0 to 5 percent slopes
BmC-Blanton fine sand, low, 5 to 8 percent slopes
BtB- Blanton-Cheifland fine sands, 0 to 5 percent slopes
Mp- Mine pits and dumps
Water
N
900 0 900 1800 Feet
Prepared By:
Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning
Date: August 03, 1999-VK
Printed: April 27, 2001
Approved Plan
CHETUCKNEE SPRINGS
STATE PARK
SOILS MAP

Minerals

Phosphate mining occurred on uplands along the Ichetucknee River prior to the property's acquisition by the state in 1970. Hard rock phosphate was extracted during the phosphate boom era of the late 1800s. Subsequent phosphate operations in the area reprocessed some of the residues from the original operations. It is likely that phosphate deposits still remain within the park, but the economic value of the deposits is unknown.

Hydrology

The Ichetucknee River groundwater basin covers an estimated 620 square miles in north central Florida, with Lake City at its center (Hunn and Slack 1983). Many small cypress and bay dominated wetlands exist at 98 to 190 feet (30 to 58 m) above mean sea level (msl) in the northeast region of the basin, which contains the Osceola National Forest. These wetlands are drained to the west by tributaries of the Suwannee River and to the south by sinking streams that disappear in sinkholes. The underground streams thus formed eventually resurface northwest of Fort White, where more than 15 named and unnamed springs combine to produce the base flow of the Ichetucknee River. The park encompasses about 3.5 miles of the Ichetucknee River, which is about half its total length before it empties into the Santa Fe River near its confluence with the Suwannee River.

There are eight named springs or spring groupings and numerous other smaller, unnamed seeps and boils within the park. In order of appearance along the river, the named springs include: the Ichetucknee Spring or the Headspring, Cedar Head Spring, Blue Hole Spring, Mission Springs Group, Devil's Eye, Grassy Hole Spring, Mill Pond Spring, and Coffee Spring.

The Ichetucknee Headspring forms a 75 feet (22.9 m) by 105 feet (32m) pool. Depth of the pool was increased from 14 feet to about 30 feet between 1996 and 1999 due to restoration efforts that have removed 46 cubic yards of concrete, rubble, and scrap metals debris; 1,596 five-gallon buckets of sand, gravel and other sediments; and 266 gallons of trash that had been deposited in the spring prior to state purchase of the site.

Cedar Head Spring, located approximately 1000 feet (305 m) southeast of the Ichetucknee Headspring, forms a pool 30 feet (9.1 m) by 60 feet (18.3 m) in size. It discharges to the south through an 1100 foot run that flows into the Blue Hole Spring.

Blue Hole Spring, also known as Jug Spring, joins the river on the east side about 1800 feet below the Headspring. It forms a pool about 85 feet by 125 feet in size, and has a powerfully flowing vent that opens at a depth of about seven feet. The vent continues down to a depth of 32 feet, where it extends horizontally into a cavern and cave system. Mission Springs Group encompasses a series of springs that include Roaring and Singing Springs; these are located about 1500 feet below Blue Hole Spring on the east side of the river. These springs discharge from the bases of rock ledges located east of

the river as far as 250 feet. Flows pass through two short spring runs that join the mainstream, encircling a rocky island enroute. An additional vent included in this group is located slightly to the south and discharges from the river channel floor.

Devil's Eye Spring, also called Boiling Spring, is located about 850 feet south of the Mission Springs Group on the west side of the river. It consists of a 60 feet by 120 feet head pool, with a 30 foot run to the river. Grassy Hole Spring is located 1350 feet downstream from Devil's Eye Spring on the east side of the river. It emerges from several small, shallow vents and then flows about 120 feet into the Grassy Flats area of the river.

Located about 800 feet downstream from Grassy Hole on the east side of the river, Mill Pond Spring vents into a shallow pool about 50 feet by 100 feet in size. Its discharge flows southwestward along a 500 foot run to the river.

The last named, significant spring on the river, Coffee Spring, is located about one mile downstream from Mill Pond Spring on the west side of the river. It discharges from the base of a rock outcrop situated about 30 to 50 feet from the river and trickles over a rock ledge directly into the river. Minor springs and seeps along the river bottom contribute approximately 19 percent of the total river flow (Skiles et al. 1991).

Water monitoring. State and federal agencies have collected water quality data and water level data for surface water and groundwater resources of the Ichetucknee River since 1917 (Rosenau et al., 1977). Until the 1990s, most of these data were collected at infrequent intervals and rarely published. From 1917 to the 1980s, the U.S. Geological Survey (USGS) collected the river stage data at the Highway 27 bridge over the Ichetucknee River. Since the 1980s, river stage data have been collected by the SRWMD and sporadic USGS surveys. The minimum recorded flow was 240 ft3/sec (6.8 m3/sec) on January 28, 1958, and the maximum was 579 ft3/sec (16 m3/sec) on April 29, 1948. Flows which greatly exceeded the 364 ft3/sec (10.3 m3/sec) average flow (n=400) were caused by back-flooding from the Suwannee and Santa Fe Rivers.

The Ichetucknee River is perhaps the pristine waterway in the United States. Although the alkaline, highly buffered water in the Ichetucknee River is typical of many of Florida's spring fed streams (Bass and Cox 1985, Canfield and Hoyer 1988), the extent to which the river has been unimpacted by pollutants is unusual. While many of the springs on the nearby Suwannee River have experienced alarming increases in nutrient concentrations, particularly nitrates, there has been little change in the high quality of water emerging from springs in the Ichetucknee River. Water quality measurements were first collected on the Ichetucknee in the 1940s.

The color of water in an aquatic system is important because it can reduce light penetration and limit the primary productivity and maximum depth of colonization of aquatic plants. Water color ranges from zero platinum cobalt units in the clearest springs to 500 units in extensive swamps (Kaufman 1975). Increased color is generally associated with decayed organic matter in the watershed. Very few springs match the

clarity of the Ichetucknee River, which owes its color value to a direct connection with the extensive Floridan aquifer.

In 1995, concern about the future quality of the Ichetucknee's spring water led to formation of the Ichetucknee Springs Water Quality Working Group. The working group is composed of federal, state, regional, and local agencies that have responsibilities in, or knowledge about, the Ichetucknee Basin. Other member stakeholders include local citizens, private landowners, educators, businesses, and conservation organizations. The working group has been gathering information about the springs and about the Ichetucknee Trace from past studies, new research and interviews to help discover the origins of the spring waters and to recognize and define threats to water quality.The working group has been instrumental in coordinating dye and geochemical tracing studies that have proven that Rose Sink, located six miles north of the park, is hydrologically connected to the springs at Ichetucknee (Hirth 1995; Skiles and Butt 1998, personal communication). The waters of ten-mile-long Rose Creek, which discharges into Rose Sink reappear in the Ichetucknee springs. The working group believes that the waters of Alligator Lake, Cannon Creek, and Clayhole Creek, which drain into sinkholes, also flow through a complex subterranean cave/conduit system that connects with the Ichetucknee. These creeks receive untreated stormwater run-off from urban and agricultural areas in the basin. Untreated stormwater run-off is often contaminated with fertilizers, pesticides, coliform bacteria, gasoline, sediments, and other pollutants. The sources of these pollutants include lawns, highways, septic tanks, gasoline tanks, pastures, croplands, and golf courses. Park staff in conjunction with the Ichetucknee Springs Water Quality Working Group have initiated an extensive public education program to inform residents throughout the Ichetucknee Trace of the importance of protecting the creeks and sinkholes from dumping. Actions taken have included meetings with landowners, informational mailings, and cleanup events in area sinkholes.

The working group and the Office of Ecosystem Management combined to initiate a program for monitoring water, sediments, and fish tissue from springs and sinkholes in the basin. Contaminants that the FDEP investigates include nitrates in the spring water, pesticides in the fish in the river, hydrocarbons in the sediments in sinkholes, and coliform bacteria in creeks. Results of these studies indicate that the aquatic environments in the park are still in excellent condition (FDEP 1996).

Macroinvertebrate communities in the Ichetucknee River, when compared with those found in other undisturbed Floridan aquifer-fed streams, indicate that healthy conditions currently prevail. Data suggest that human activities in the recharge area of the springs have not negatively affected invertebrate communities (FDEP 1997). Likewise, the decrease in physical disruption of aquatic habitat, resulting from the establishment of daily limits on the number of recreational users of the river, may have had a beneficial effect on the invertebrate community since the park was acquired by the state in 1970.

Ichetucknee River Discharge Measurements (Skiles et al 1991)

Location	Ft3 / Sec.	Gal./Min.	Mil.Gal./Day
Headspring	42	18,867	27
Cedar Head	10	4,566	6
Blue Hole *	59	26,668	38
Trestle Point	111	50,102	72
(cumulative total of above three springs)			
Mission Group *	91	41,025	59
Below Mission	202	91,128	131
Devil's Eye	40	18,019	26
Grassy Hole	3	1,488	2
Mill Pond	20	9,035	13
Springs Subtotal	266	119,672	172
River at 27 Bridge	327	147,117	211
Other Flows *	61	27,445	39

*** Calculated**

Water Quality Parameters Measured In The Ichetucknee River

Date of Collection	May 17[1]	April 2[1]	May[2]	April 18[3]
Nutrient (mg/L)	**1946**	**1975**	**1985**	**1996**
Nitrate+Nitrite	1.0	0.37	0.43	0.68
Total Phosphorous	--	0.05	0.04	0.03
Calcium (Ca)	58	52	--	--
Sulfate (SO_4)	8.4	6.9	--	--
Color (platinum cobalt unit)	0	1	0	--
Suspended Solids	--	0	0.1	--
pH	7.7	7.6	7.9	--

1 (Rosenau et al. 1977), **2** (Canfield and Hoyer 1988)

3 (FDEP 1996)

Daily limits on the number of recreational users, also known as carrying capacities, are have not negatively affected invertebrate communities (FDEP 1997). Likewise, the decrease in physical disruption of aquatic habitat, resulting from the establishment of daily limits on the number of recreational users of the river, may have had a beneficial effect on the invertebrate community since the park was acquired by the state in 1970.

Daily limits on the number of recreational users, also known as carrying capacities, are set at 750 for the Upper tube launch, and 2250 for the Midpoint tube launch; an unlimited number of tubers may enter the river at the Dampier's Landing tube launch. These limits were established on the basis of studies which evaluated the kinds and amounts of damage that swimming, canoeing, diving, and tubing had on the aquatic

communities (DuToit 1979)(MacLaren and Younker 1989). As part of an ongoing monitoring program, Park Service biologists measure aquatic vegetative cover in the Ichetucknee River before (spring) and after (fall) the intensive visitor use season. Initially, in 1989, fifteen permanent transects were established between Ichetucknee Spring and the lower take-out point. Another transect was added in 1992, but three were lost between 1994 and 1998 due to tree falls. In 1999 four transects were added bringing the total to 17. The current distribution of the transects is as follows: five in the river's upper section from the Ichetucknee Headspring to Midpoint; five in the middle section from Midpoint to Dampier's Landing; and seven downstream of Dampier's Landing. River carrying capacities are judged adequate if vegetation coverage at the various transects remains at approximately the same level each year. Data show that between 1989 and 1997, visitor use did not exceed the ability of the vegetation in the river to recover following each season of heavy use. For the upper, middle, and lower sections, vegetation coverage has ranged between 37 percent and 68 percent, depending on the location, without drastic fluctuations from year to year.

Seasonal trends on the river have been well-documented, but long-term trends have also become apparent as the river transect study enters its second decade. Since 1989, the vegetation cover data show that water milfoil (*Myriophyllum heterophyllum*) has dramatically decreased in the middle and lower reaches of the river. The causes of this trend are unknown, but continued monitoring may provide additional information.

Extreme climatic conditions should warrant temporary adjustment to the carrying capacities. Tuber damage to submersed plants is acute during years with extreme low water levels. To avoid accelerated damage during such years, it may be necessary to reduce carrying capacities in the shallow portion of the river from the Headspring to midpoint.

The following year after extreme flood events, coverage of emergent aquatic vegetation is reduced in the grassy flats area. When this happens, the deep channel is difficult to locate, and tubers are often unable to remain within the deeper portions of the river. Extensive amounts of sediment may be released into the water column as tubers walk through shallow areas to return to the channel. Under these conditions, it may be necessary for park staff to install temporary markers so that the deep channel is easily located.

Natural Communities

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

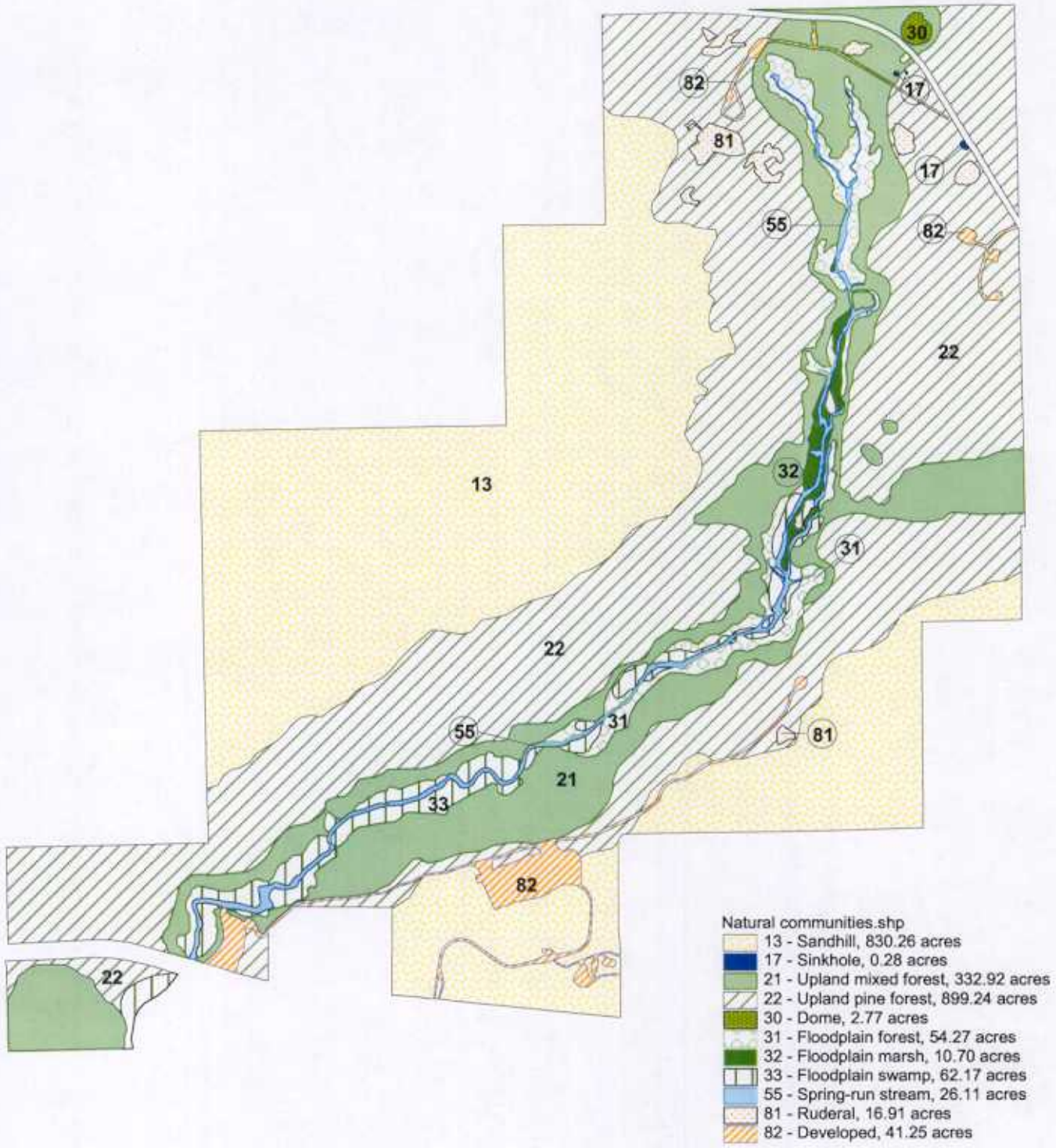
environments, and these necessitate different management programs.

The park contains 11 distinct natural communities (see Natural Communities Map) in addition to ruderal and developed areas. The acreage for each natural community is reflected on the Natural Communities Map. Park specific assessments of the existing natural communities are provided. FNAI descriptions of these natural communities are contained in Addendum 4. A list of plants and animals occurring in the park is contained in Addendum 5.

Sandhill. The sandhill community occurs on the higher elevations in the park on the deepest and most well-drained soils. Like much of the surrounding region, the sandhills were heavily logged during the early 1900s or before. The majority of the longleaf pines were removed at that time. Regeneration of longleaf pines that occurred afterwards was mostly natural. Unlike surrounding areas, however, the sandhills at Ichetucknee Springs were not converted to intensive agricultural uses, and the native groundcover remains intact. A period of fire suppression followed the removal of the original longleaf pines over much of the area, resulting in an increase in hardwood densities. The park was acquired from the Loncala Phosphate Company in 1970. Park staff began to prescribe burn the sandhills in 1973 and later began replanting understocked areas with longleaf pines.The sandhills west of the Ichetucknee River represent one of the finest examples of sandhill natural communities in the region, if not the entire state. These sandhills are relatively rich and groundcover diversity is high. The large expanse of habitat available within the park has allowed many sandhill animal species to persist on site. Species such as Bachman's sparrow, Sherman's fox squirrel and eastern indigo snakes, which are often extirpated in isolated sandhill patches, remain relatively common at Ichetucknee.

The sandhills to the east of the river are not in as pristine a condition as those to the west. Some of these areas may have been more impacted by phosphate mining operations and low intensity agriculture or grazing. At least one area was cleared and planted with watermelons in the 1950s. This area, in the southern part of the park, was subsequently converted into a slash pine plantation. The site was heavily thinned by park management around 1977 and has since been replanted with longleaf pines. Although disturbed, this area retains scattered clumps of wiregrass (*Aristida beyrichiana*) and other characteristic sandhill groundcover species.

Other limited areas of sandhill were disturbed to a much greater extent. A tract of about ten acres along the western boundary was converted to agricultural use sometime before 1949. The northern fringe of this tract formerly contained an old residence. The general area is in relatively poor condition due to a lack of native groundcover and canopy species. A second area of about 26 acres, located further south along the western boundary, was not disturbed as severely. This area was cleared of longleaf pines and other canopy species between 1957 and 1963; however, the groundcover was not completely removed. Longleaf pine regeneration is now underway as the result of trees being planted some 20 years ago. Patches of native groundcover occur, as do



ICHETUCKNEE SPRINGS STATE PARK

Prepared By:
Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning
Date: August 03, 1999
Printed: April 27, 2001
Approved Plan

NATURAL COMMUNITIES MAP

scattered hardwoods that are typical of the community.

Sinkhole and sinkhole lake. Due to the karst geology of the region, sinkholes are scattered throughout the park. Solution depressions of differing size and shape are particularly found in the areas above and around the major springs. Some sinks remain dry the entire year, while others contain water either permanently or seasonally. Most of these sinkholes are too small to map at this time. Two small sinkhole depressions, which often retain water, are mapped in the northeast portion of the park. In most cases, the sinkholes within the park are relatively undisturbed. Vegetation varies from floating or emergent aquatics to herbaceous or woody terrestrial species. At least one sinkhole in the park was used as a trash dump in the past. It is possible that some may have been converted into phosphate pits in the last century, and as such would now be included with the ruderal areas.

Upland mixed forest. The upland mixed forest within the park has expanded greatly due to fire suppression in the past century. Historical aerials show a relatively thin band of hardwoods of varying width located upslope of the floodplain along the Ichetucknee River. In the absence of fire, the upland mixed forest species expanded into the adjacent upland pine forest areas that had been disturbed during timbering operations in the early 1900s. Invasive woody species such as laurel oaks, water oaks, and sweetgums are typical of these upland pine forest areas that have "succeeded" to upland mixed forest. These species are usually prevented from invading upland pine forest by periodic growing season fires.

The boundary between the upland mixed forest and upland pine forest is naturally dynamic and determined by local fire regimes and other disturbances such as windstorms. In the case of Ichetucknee Springs this natural flux has been overshadowed by extensive logging operations, two periods of phosphate mining, fire suppression, and other anthropogenic influences. For the purposes of the natural community map, and to guide restoration of the upland pine forest, the boundary has been located based on interpretation of 1949 aerial photos. At this time, the disturbance from the removal of the longleaf pine overstory was still evident in the sandhills and upland pine forests. Invasion of these disturbed areas by offsite hardwoods had already begun, but these trees were much smaller than now. Ground truthing of selected areas and mapping of relict longleaf pines and lightered pine stumps (most likely longleaf pine, but possibly slash pine) have also aided in determining the historical limits of the upland mixed forest along the Ichetucknee River.

Both the upland mixed forests and upland pine forests have been impacted by phosphate mining operations that constructed multiple pits and tram roads. The topographic disturbances and the soil changes caused by mining residues and tailings have severely affected both communities on a local basis.The upland mixed forest was undoubtedly subjected to some level of hardwood cutting, but the clearest evidence of timber harvest are the numerous cedar stumps that occur in the upland mixed forest along the river.

These cedar stumps are relatively large in diameter, and the living cedars that remain on site are much smaller.

Upland pine forest. As mentioned above in the upland mixed forest description, the boundary between upland pine and upland mixed forests is often indistinct under natural conditions. Under disturbed conditions such as logging and fire suppression, the upland mixed forest species quickly invade the upland pine forest resulting in a blending of the two community types. Such is the case at Ichetucknee Springs.

Upland pine forest in peninsular Florida, also known as Southern Red Oak Woods (Duever et al 1997), resembles the clay hills of panhandle Florida in species composition and appearance. However, in peninsular Florida, upland pine forest is more of a broad transition zone between sandhill and non-fire adapted communities such as upland mixed forest or floodplain communities. This transition zone often occurs on soils that are intermediate in drainage and fertility characteristics between sandhill and upland mixed forest soils. Fire also exerts a defining influence on the limits of the upland pine forest. Typically, upland pine forest burns slightly less frequently and less intensely than neighboring sandhills, but much more frequently and intensely than adjacent upland mixed forests.

Upland pine forest at Ichetucknee Springs spans a broad range of quality. Some limited areas that have suffered less fire suppression are in very good to excellent condition. These areas retain a diverse groundcover dominated by grasses, including wiregrass. Beargrass (*Yucca filamentosa*) and longleaf paw paw (*Asimina longifolia*) are also common. The overstory includes adult longleaf pines, mockernut hickories (*Carya tomentosa*), southern red oaks (*Quercus falcata*), and scattered sand post oaks (*Quercus margaretta*). In general, the upland pine forest areas closest to the sandhills are in better condition. These areas were probably burned along with the sandhills when fire was reintroduced to the park in the early 1970s.

One factor that has influenced the boundary between the sandhills and the upland pine forest is an old abandoned trail or road that was located along the historic ecotone between these communities on the west side of the river. This old trail was probably cut before the 1920s when Loncala Phosphate, Inc. acquired the property (Doig, 1992). This old trail has acted as a firebreak and appears to have prevented fires from penetrating the upland pine forest. Consequently, the invasion of the upland pine forest by non-fire adapted hardwoods such as laurel oak, water oak and sweetgum seems to have been accelerated.

Park staff have made great strides in the restoration of "overgrown" upland pine forests throughout the park. Using a combination of prescribed fire, coupled with the girdling and herbiciding of offsite hardwoods, staff have been able to reverse many years of fire suppression. By concentrating hardwood removal in the fringes of the overgrown upland pine forests nearest the sandhills, and in those areas that still have relict longleaf pines, staff have been able to introduce prescribed fires and dramatically enhance the degraded upland pine forests.

Dome. A single dome is found in the northeast corner of the park adjacent to County Road 238. This dome is dominated by hardwoods including black gum (*Nyssa biflora*), red maple (*Acer rubrum*) and overcup oak (*Quercus lyrata*) (Herring 1994). This dome appears to have been impacted by the construction of County Road 238 that passes through the park. The southern tip of the dome was cut off from the main part of this depressional wetland by the fill brought in to construct the roadway. During high water events, overflow from the dome is channeled into the roadside swale and then under County Road 238 through a culvert. The portion of the depression that lies to the south of the road is classified as ruderal since it appears to have been significantly altered during or after construction of the road. The dome that lies north of the road is in relatively good condition although it receives some direct runoff from County Road 238.

Floodplain forest. Floodplain forest is found along much of the Ichetucknee River downslope of the upland mixed and upland pine forests. In some cases, a floodplain swamp or marsh separates the floodplain forest from the spring-run stream. The most extensive floodplain development is in the lower half of the river, although a significant area of floodplain forest occurs near the Ichetucknee Headspring and along the Cedar Head Spring run. Although the larger cypress (*Taxodium distichum*) were removed from the floodplain, the floodplain is recovering and with time will regain its former grandeur.

Floodplain marsh. The middle reach of the Ichetucknee River is dominated by floodplain marsh in the area know as Grassy Flats. The marsh is best developed between Mission and Mill Pond Springs. Dominated by wild rice (*Zizania aquatica*), the marsh is comprised of many emergent aquatic plants rooted within the spring-run stream. High water during the winter of 1998 suppressed or killed back most of the emergent aquatic plants within the floodplain marsh. As water levels returned to normal during the spring and summer of 1998, however, recreational users of the Ichetucknee River, primarily tubers, prevented regrowth of the emergent aquatic vegetation due to trampling. The lack of vegetation left the main channel of the river unmarked and many recreational users ran aground in the shallows of Grassy Flats. Fortunately, the floodplain marsh community is very resilient and the emergent vegetation has made an almost complete recovery in the fall of 1998 and winter of 1999.

Floodplain swamp. Floodplain swamp dominates the lower reach of the Ichetucknee River within the park. Dominated by cypress, the floodplain swamp lies downslope of the floodplain forest and upland community types. In many cases the floodplain swamp and forest are difficult to distinguish from each other and form a complex mosaic based on local topography. Like the floodplain forest, the floodplain swamp was selectively logged of large cypress trees in the distant past, but is making a steady but gradual return to previous conditions.

Spring-run stream. The striking clarity and beauty of the Ichetucknee River ranks it as one of the best, if not the premier, example of a spring-run stream. Protected from development and most sources of water quality damage, the river is the primary focus of the park designation as a National Natural Landmark and a State Natural Feature Site. Flowing for about 3.5 miles through the park, the river eventually joins with the Santa Fe River about 1.5 miles downstream. Two main spring-runs feed the upper reach of the Ichetucknee River: the run from the Ichetucknee Headspring, and the run from Cedar Head Spring which flows into Blue Hole Spring and then into the main channel. Numerous smaller spring-run streams and seepages flow from the edges of the river and from within the floodplain. Additional descriptions of the springs may be found in the Hydrology section above.

The river has long been attractive to outdoor recreation enthusiasts. However, beginning in the 1960s, the river became increasingly popular for tubing and scuba diving. These activities, in addition to swimming, have subjected this aquatic system to highly intensive, and potentially destructive, pressures. Extensive damage occurred to both the stream vegetation and stream bottom, particularly in the narrow, shallow, upper reaches of the river.

Monitoring of the visitor impacts on the spring-run stream began with a study by Charles DuToit in the late 1970s (DuToit 1979). Between 1979 and 1989 the river was monitored using photopoints along the river. In 1989 formal line-intercept transects were installed on the river to monitor seasonal vegetation changes. Additional information on the monitoring methods and results may be found in the Hydrology section above.

Since the implementation of a carrying capacity on the river in 1990, the Ichetucknee has shown a remarkable degree of recovery. Fencing of the runs below the Headspring and Blue Hole has also helped to limit the destruction that was taking place in the highly vulnerable upper reach of the river. Currently, the park and district staffs are considering the replacement of the fence below the Headspring with a buoy line on an experimental basis. It appears that sediments may be accumulating on the downstream side of the existing barrier. Sediment conditions before and after replacement of the barrier will be monitored.

Aquatic cave. - This community is only accessible to humans at Blue Hole Spring, although aquatic caves are associated with all of the springs within the park to a greater

or lesser extent. Aquatic caves that are accessible to scuba divers require careful management to protect them from misuse. The cavern through which divers pass before entering the cave has been defaced in the past with graffiti. As part of the Ichetucknee Hydrology Study, the accessible portions of the Blue Hole Cave were mapped and videographed by a team of cave divers (Skiles et al 1991). Periodic monitoring should be utilized to measure further abuse.

Ruderal. Many of the ruderal areas that are located within the park are associated with the phosphate mining operations described in the Topography section above. A borrow pit and dump were located in the southwest portion of the park adjacent to the park boundary. A depressional wetland located south of County Road 238 was probably at one time part of the dome community north of the road, but was cut off by construction of the road. This area appears to have been modified, perhaps to increase storage of runoff from the roadway.

In nearly all cases, restoration of these ruderal areas to their former natural communities is not likely due to the extent of the damage. Although the planted slash pines in the phosphate settling ponds could be removed, the extensive changes to the soil profile would preclude restoration to a moderately well-drained upland pine forest. Likewise, the topographic and soil changes associated with the phosphate pits prevent typical restoration efforts.

Developed. Developed areas at the park include two shop complexes, park residences, parking lots, picnic areas, tram roads for shuttling tubers, several bath houses, rest rooms and other support structures.

Designated Species

Designated species are those which 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 6 contains a list of the designated species and their designated status for this park. Management measures will be addressed later in this plan.

Ichetucknee Springs State Park has a rich diversity of plant and animal life, including a variety of designated species. Recent botanical studies (Herring and Judd 1995; P.M. Brown pers. comm.) have documented many of the rare plant species within the park. Staff observations and past monitoring efforts have documented rare vertebrate species within the park.

Many of the designated animal species are associated with the sandhill and upland pine forest natural communities. These include the gopher tortoise, Sherman's fox squirrel, short-tailed snake, southeastern kestrel, eastern indigo snake and gopher frog. Continued restoration of the upland fire-adapted communities will only serve to benefit these species.

Additional efforts have been made by park staff and the park biologist to closely

monitor the gopher tortoise population and to map burrow locations within burn zones. For the past several years, the staff have been marking individual tortoises using a simple paint mark. More recently, a long term marking system has been adopted using a standard numbering system based on drilling small holes in the marginal scutes. Basic data is collected on each tortoise marked and released, including a visual inspection for signs of Upper Respiratory Tract Disease (URTD). This disease, caused by the bacterium *Mycoplasma agassizii*, was confirmed at Ichetucknee Springs in the early 1990s. A male tortoise showing respiratory disease symptoms was taken to the University of Florida Veterinary Medical Teaching Hospital and was diagnosed with the disease. All tortoises within the park are considered potential carriers of the disease. Staff have continued to cooperate with the University of Florida researchers and with the Florida Fish and Wildlife Conservation Commission.

One source of transmission of this potentially fatal disease between tortoise populations is the practice of capturing tortoises in developed areas or on roadways, and releasing them into protected areas such as state parks. These misguided attempts to aid tortoises may actually endanger many more tortoises. There are many anecdotal accounts of tortoises being released by park visitors in state parks, including Ichetucknee Springs. Road kills are a persistent problem at the park for designated species, particularly the more mobile ones. Numerous road kills of gopher tortoises and indigo snakes have been documented over the years on park roads and on US 27 that runs along the park's southern boundary.

The park also shelters the only known locality for the Ichetucknee siltsnail (*Cincinnatia mica*), discovered in 1962 by Fred Thompson of the Florida Museum of Natural History. The snail is only known from Coffee Spring on the western edge of the Ichetucknee River. Additional surveys in 1989 by Dr. Thompson failed to find any other populations, but documented that the snail was still as abundant as it was in 1962 (Thompson 1989). Staff erected a fence across the mouth of the Coffee Spring run to prevent tubers from entering the spring and damaging the microhabitat where the snail occurs. The known range of the species is approximately 10 square yards. At this time, it appears that the site is relatively undisturbed, but periodic monitoring will be required to prevent disturbance of the area.

Many rare plant species occur at Ichetucknee Springs State Park, and several of these, particularly the orchids, are relatively cryptic except when in bloom. It is possible that some populations of cryptic species could be damaged or extirpated unknowingly by park development or recreational use. The Florida willow (*Salix floridana*) is another species that may be overlooked. Although documented in the past, the Florida willow has not been observed since the flooding event of the winter of 1998.

Special Natural Features

Certainly, the most significant natural feature at Ichetucknee Springs State Park is the Ichetucknee River and its associated springs. Designated as a National Natural

Landmark and a State Natural Feature Site, the river is considered one of the crown jewels of the Florida state parks. Unmarred by development on its banks, and so far untainted by water or aerial contaminants, the river is a pristine example of a spring-run. Despite the heavy recreational use that the river receives in the summer tubing season, it retains its natural character. The Ichetucknee in winter barely hints at the torrent of humanity that flowed within it a few months previous. The preservation of the primeval nature of the Ichetucknee requires strict adherence to carrying capacities and close monitoring of potential recreational, industrial, and agricultural impacts.

Cultural Resources

A wealth of cultural resources exists within Ichetucknee Springs State Park. In fact, the entire park has been recorded in the Florida Master Site File as the Ichetucknee River Archaeological Zone (8CO49). Excluding the Archaeological Zone, 23 sites located within the park are recorded in the Florida Master Site File.

The park has several types of prehistoric sites (see Addendum 7). There are three confirmed burial sites at Ichetucknee with at least three additional mounds that may or may not contain burials. Two sites are classified as quarries. Numerous sites are classified as artifact scatters including either lithics, ceramics or both. Several of these sites occur underwater. Very little information is available for other sites.

Aboriginal occupation of the area, based on artifacts found within the park, spans the entire length of Florida's Indian ethnohistory. A few Paleo-Indian artifacts have been recovered from the park (12,000 BC to 6500 BC). Archaic period (6500 BC to 1000 BC) tools have also been recovered from Ichetucknee as has late Archaic pottery. Scattered artifacts from the Deptford period (500 BC to A.D. 300) have been found in the river and along the riverbanks.

Archaeological remains from the Weeden Island culture (A.D. 200 to A.D. 1000) include scattered ceramics and two burial mounds, one of which has been looted and may not be presently recorded with the Florida Master Site File (possibly formerly 8SU29, Weisman 1990). The transition period between the Weeden Island period and the Leon-Jefferson period is the Suwannee Valley period (A.D. 750 to currently unknown). The period of European contact, or Spanish Mission period, is characterized by Leon-Jefferson series ceramics and spans (ca. A.D. 1585 to ca. 1700).

Important paleontological resources have been recovered from the riverbed and associated springs within the park. Pleistocene mammal remains include mammoth (*Mammuthus*), horse (*Equus*), mastodon (*Mastodon americaneus*), tapir (*Tapirus*), giant jaguar (*Felis atrox*), saber-tooth cat (*Smilodon fatalis*), bison (*Bison antiquus*) and other extinct and living species. The Ichetucknee River lies in an area where the Ocala Group limestones reach at least mean sea level and very often extend above the surface of the ground. The stratigraphy of the limestone deposits combined with periodic floods has accounted for the continual erosion and redeposition of fossil-bearing Pleistocene soils along the watercourse. Fossils have been recovered at several of the archaeological

sites listed in Addendum 7.

The best documented site at Ichetucknee Springs is the Fig Springs site (8CO1). Refuse dating to the Spanish period was discovered in Fig Spring in the late 1940s by John Goggin (Deagan 1972) who surmised the artifacts in the spring were refuse from a nearby Spanish Mission. Artifacts collected at Fig Springs by John Goggin (of the University of Florida) have been extensively studied and dated (Deagan 1972). The actual mission site was not located until a field crew lead by Ken Johnson (1990) discovered mission artifacts, human burials and a possible clay floor on a nearby bluff in 1986. Until the most recent work at Fig Springs from 1988 to 1990, it was assumed that the Fig Springs Mission was the Santa Catalina de Afuerica based on written mission locations. However, as a result of the recent work that involved excavations and intensive study of many facets of the site by a team of researchers, the current thought is that the Fig Springs Mission is the mission San Martín de Timucua (also called San Martín de Ayaocuto) (Weisman 1991).

Four other sites have been the subjects of small studies over the years. A salvage investigation was conducted before the expansion of the Headsprings parking area in 1973 near 8SU28 (Clauser 1973). The researcher concluded that the site had been previously disturbed but recovered materials spanning from the Deptford period (500 BC) to the Alachua period (A.D. 1539). Dampier's landing (8CO15) has also been studied, primarily to recover Pleistocene fossils, very few cultural remains were recovered in this study (Cring 1986(?)). Brent Weisman (1989) conducted excavations at Midpoint Mound (8CO43) and at Mill Pond (8CO8).

Currently, a restoration of the Ichetucknee Headsprings (8SU28) has been undertaken as discussed in the Hydrology section. Historical and prehistoric artifacts have been recovered along with rubble, sand and silt. These artifacts will be transferred to the Bureau of Archaeological Research, DHR, through an existing procedure.

The bulk of the recorded sites at Ichetucknee Springs State Park are prehistoric sites. Only two other recorded sites in addition to Fig Springs have an historical component. The old Bellamy Road (8CO57), the historic road that connected Tallahassee and St. Augustine, passes near the Ichetucknee Headsprings. Alternate names of this road, the Old Spanish Trail and the Old Indian Trail, suggest it may have been used in prehistoric times as well. The other recorded site with an historic component is the Old Mill Pond site (8CO08). With the influx of agriculture into this area in the 1800s, a grist mill was established at what is now known as Mill Pond Springs. A mill race was cut into the limestone bank next to the spring. A log dam was placed in the spring run to divert water into the race to turn the mill wheel. Evidence of the mill race, slots for the wheel and portions of the log dam, still exist. It has been suggested, though undocumented, that the town of Ichetucknee was located near Old Mill Pond (interviews from Old Timers Day, see below). The town reportedly had a post office, general store and several residences. Spanish artifacts have also been found at Old Mill Pond that date to

the 17th century as have aboriginal artifacts (Weisman 1989).

Numerous unrecorded historical resources are scattered throughout the park. Phosphate was first mined from the park between 1900 and 1920. Black laborers removed the phosphate with picks and shovels, and hauled it by wheelbarrow until a boiler was built and steam-powered winches were put into use. A tram road was built which bridged the Ichetucknee River at "Trestle Point". It was part of a maze of narrow-gauge railroads that existed in Florida at the time. During this period, only "pure rock" phosphate was taken. Around 1943, the value of the residue left behind by these early miners was realized and mining crews returned to retrieve it. Using modern equipment, the operation lasted until about 1967. This was the last time phosphate was mined from the property. Numerous mine pits and tram roads still exist in the park.

From about the time the grist mill was established, until shortly after the first phase of phosphate mining had begun, turpentining operations were conducted in the virgin pine forests. Evidence of turpentining still exists in the form of "catface" scars on a few of the older trees. Most of the mature trees, however, were cut by the early 1920s. Most of the turpentined pines were probably cut then, also. Cedars were also cut from the lands adjacent to the river purportedly for the manufacture of pencils in Perry, Florida, and many stumps remain along the river near Cedar Head Run.

Remnants of a moonshine still, including large pieces of the boiler, have been found along Cedar Head Run. No information is available as to when, or how long, the still was in operation. In addition, at least three old home sites, and likely more, are located on the property. One is located on the NW corner of the property, another on the west side of the river near the south end of the park, and an old log cabin was located NW of the Headsprings. Numerous landings likely dating from the early 20th century also occur along the river. A post office was established at Ichetucknee in 1884, which was discontinued and moved to Branford about 3.5 years later in 1887, however, its location is unknown (Bradbury and Hallock 1962). Ichetucknee Springs State Park has created a program called “Old Timers Day” held once a year where people with historical knowledge are interviewed. Accounts of many potential unrecorded cultural resources have become known as a result of these interviews. Some of these resources include, the Town of Ichetucknee near Old Mill Pond, numerous home sites, an old wagon road, and an historic unmarked graveyard.

The condition of cultural resources in the park is described in terms of a three-part scale: good, fair, poor. Good describes a condition in which the subject is physically stable with no apparent evidence of decline. Fair describes the subject as stable, though with some predictable signs of decline in either its appearance or physical integrity, due largely to age. Poor describes the subject as unstable, in obvious and accelerated decline of either appearance or physical integrity, or both, endangered from its own physical properties or from other, climatic or human introduced causes.

The majority of recorded properties were visited and observed recently on a Resource

Management Evaluation. The evaluators determined that the cultural resources observed were in fair condition. There was no evidence of looting, storm damage, or other accelerating factors (Younker 1999).

RESOURCE MANAGEMENT PROGRAM

Special Management Considerations

Timber Management Analysis

Chapters 253 and 259, Florida Statutes, require an assessment of the feasibility of managing timber in land management plans for parcels greater than 1,000 acres and if the lead agency determines that timber management is not in conflict with the primary management objectives of the land.

Natural community restoration efforts at this unit may include timber harvest of offsite slash pines planted by the previous owner in the 1960s. These slash plantations were planted in phosphate settling ponds and are now considered ruderal. Restoration of these areas to upland pine forest may be impossible due to the drastic changes to the soil profiles. However, the area may be able to support upland mixed forest species, which would be preferable to maintaining an offsite slash pine plantation. More detailed information may be found in Addendum 8.

Visitor Use Management of the Ichetucknee River

The Ichetucknee River has long attracted humans to its banks. Human use and occupation for thousands of years have altered the landscape and the river. However, within the last century, the river has seen an enormous increase in the number of humans using the river for recreational reasons. Recreational use of the river began a rapid increase in the 1960s as it became more of a regional, rather than just a local, attraction. The former owners of the river cited recurrent recreational use problems as one reason for selling the property to the state. In 1970, the state inherited an unmanaged recreation resource. Since that time, the Division has tried to manage the recreational uses in order to curb and reduce the impacts to the natural and cultural resources of the river. The bare sand and rock that remain after aquatic vegetation is trampled and dislodged easily show the impact of overuse on a spring-run stream. However, the saving grace of the Ichetucknee is that the system is as resilient as it is sensitive. Since the state acquired the river, the impacts from years of overuse are gradually healing. Each summer brings new scars from heavy recreational use, but in most parts of the river, these scars heal themselves over winter. The success of that healing process hinges upon carrying capacities and partitioning of recreational use on the river.

In 1978, the first carrying capacity was set on the river. Initially a cap of 3,000 persons per day was set based partly on research by Charles DuToit, a graduate student at the University of Florida (DuToit 1979). A system of quarterly and yearly inspections with photopoints taken above and below the water was used to monitor changes in the aquatic vegetation. The carrying capacity applied to the entire river, and the tube

launches were located at the northern end where the river is at its narrowest and shallowest. The level of damage to the river was still unacceptable, particularly in the upper reach. Two tube launches were removed in the upper reach as a result.

In 1982, new facilities were installed at the southern end of the park, including two new tube launches below Mill Pond Spring (Midpoint and Dampier's Landing). The carrying capacity of 3,000 people per day was split in half between the north and south entrances. This resulted in 1,500 tubers per day allowed to use the entire length of the river within the park, with an additional 1,500 using only the lower half.

In an attempt to increase the use of the south entrance, the carrying capacity was lifted for the stretch of river below Dampier's Landing in 1983. In order to keep the Midpoint launch capacity at 1,500, the tram system stopped shuttling tubers to Midpoint once 1,500 tickets had been sold at the south entrance. Tubers were allowed to walk to Dampier's Landing and repeat the lower section.

Qualitative evaluations of transect points indicated that seasonal degradation still occurred on the lower reaches of the river, but the aquatic vegetation was able to recover over winter in many cases. However, the upper reach of the river was still suffering unacceptable levels of damage during the tubing season. Therefore, in 1989 the carrying capacity was adjusted to reflect this. In 1989, a carrying capacity of 750 per day was set at the north entrance while the Midpoint capacity was increased to 2250 per day. Dampier's Landing remains unrestricted.

In addition, at that time, fifteen permanent vegetation transects were installed to complement the qualitative photopoints and biological assessments. After nearly a decade under the current carrying capacities, the river is relatively stable from year to year. As detailed in the Hydrology section above, the aquatic vegetation is able to recover over the winter season from the damage inflicted in the summer. This general rule varies from year to year based on water levels, however. As water levels drop, vegetation damage increases due to increased foot traffic on the river bottom. Sections of the river with higher numbers of tubers show more damage than areas with fewer tubers, and shallower reaches show more damage than deeper ones.

Management Needs and Problems

The following list details some of the more important concerns for natural resource management at Ichetucknee Springs State Park. Many of these concerns are discussed in the recent Resource Management Evaluation conducted at the park (Younker 1999).

1. Surface and ground water at the park are threatened by contaminants.

A. Creeks and sinkholes north of the park receive contaminated stormwater run-off from urban and agricultural areas in the basin. Untreated stormwater run-off is often contaminated with fertilizers, pesticides, coliform bacteria, gasoline, turbidity, and other pollutants. Additional information may be found in the Hydrology section above.

B. Industrial and agricultural uses proposed near the park may impact park water resources via fallout from aerial emissions or groundwater contamination. Deep limerock mining could impact conduits within the aquifer that supply groundwater to the springs.

C. The locations and extents of the underground conduits that supply the springs of the Ichetucknee River are not adequately known. Additional research is needed to identify the sources of the various springs.

2. Aquatic vegetation is impacted by recreational use of the river.

A. Swimming, canoeing, diving, and tubing decrease the amount of aquatic vegetation in the river and increase the turbidity.

3. Erosion may be accelerated along the banks of the river due to recreational uses.

A. Many of the limestone bluffs, particularly those at the river edge, have elaborate sculpturing from the effects of flowing water and upland runoff. Many of these bluffs, such as Devil's Den, are attractive resting areas for recreational users of the river. Unfortunately, the resulting foot traffic causes increased erosion of the bluff and may damage the delicate limestone formations. Foot traffic also damages the vegetation that clings to the calcareous soils of the unstable bluffs.

B. Unauthorized footpaths within the floodplain along the river may increase erosion and turbidity.

4. The main vent of the Ichetucknee Headspring was partially blocked with debris in the past.

A. The Ichetucknee Headspring was partially blocked with concrete, rubble, scrap metals and other sediments that had been deposited in the spring before state purchase of the site. Although much of this debris has been removed, some still exists in the Headspring and may need to be removed.

5. Designated species occur within the park and may require special protection or management.

A. The world's only known population of the rare, endemic, Ichetucknee siltsnail is found within Coffee Spring. The species has an extremely limited range. Extinction of this species could occur if Coffee Spring is disturbed.

B. Designated species have been killed by vehicles on park roads and adjacent roadways.

C. The park may be lacking in natural nesting cavities for the southeastern kestrel.

D. Gopher tortoises within the park are infected with the bacterium that causes Upper Respiratory Tract Disease. Tortoises from offsite have been illegally released in the park by the public.

E. Park development activities or recreational activities may inadvertently impact cryptic designated plant species.

6. Natural communities within the park require restoration efforts.

A. The upland pine forest community suffers from long-term fire suppression and invasion by offsite hardwoods.

B. The sandhills require growing season fires and some areas are lacking sufficient

numbers of longleaf pines.

C. Several natural and ruderal areas have been infected with invasive exotic plant species.

7. Incidences of trespass and poaching have occurred within the park; the park boundary may not be adequately defined.

8. The park has never been the subject of a comprehensive cultural resource survey; Cultural resource record keeping and management activities are informal.

A. At least 23 cultural sites have been recorded within the park boundaries due to the activities of avocational and professional archaeologists, as well as thematic surveys whose foci only incidentally touched on sites within the park. Activities that were coincident to development of the DeSoto Trail in the 1980s, during which knowledge about 8CO1, the Fig Springs site, was greatly expanded, are an example. Because the park has not been surveyed, most recorded sites reflect the interests of their recorders, which appears to be the pre-Contact (before 1513) era through the first Spanish period (Contact to AD 1763). Except for the route of the historic Bellamy Road, 8CO57, extremely important resources from later periods, especially the 19th and early 20th centuries, are hardly represented. Such neglected resources include but are not limited to mills, farms, fence lines, and resources related to naval stores or phosphate extraction.

B. The park has no written procedures for managing cultural resources, although the park staff visit or monitor them while performing other functions.

C. The park maintains limited specific cultural resource or site files. It is desirable for parks to maintain files relating to specific cultural resources, with duplicate Florida Master Site File information as a minimum, and adding materials relating to visitation, monitoring, and possible unforeseen occurrences.

D. Management activities pose no threat to recorded cultural resources. However, until recommended survey activities are completed, possible unrecorded resources may suffer accelerated deterioration, particularly those in pine restoration areas.

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.

1. Continue monitoring surface and ground waters that are threatened by contaminants.

A. Water quality parameters, particularly nitrate and coliform levels in the park, must be monitored periodically by the appropriate agency. The park should continue supporting research to determine the sources of the groundwater that emerges from the springs in the park and other activities of the water quality working group.

B. Staff should continue to monitor industrial and agricultural uses proposed for areas within the recharge area of the park and work with local county governments as well as the FDEP and Suwannee River Water Management District (SRWMD) on such issues.

C. Division and park staff should continue working with the Ichetucknee Springs Water Quality Working Group to seek funding for additional research and dye trace studies in the Ichetucknee Trace and any other regions that might supply groundwater to the springs along the Ichetucknee River.

2. Maintain carrying capacities; Continue monitoring aquatic vegetation in the river.

A. Carrying capacities for the upper, middle, and lower sections should continue to be enforced. Such limits will prevent long-term damage from visitor use of the Ichetucknee River. Monitoring of the aquatic vegetation in the spring and fall will assist in the detection of unreasonable impacts to the resources, and will indicate if changes to the carrying capacity are needed.

3. Reduce erosion along the banks of the river.

A. Increased interpretation of the effects of erosion on the river bluffs, along with posting and periodic enforcement of closed areas, should help reduce the recreational impacts on the riverbanks. Interpretive signs should be located at the river entry points and at sensitive areas. It may also be possible to block access to the more popular and sensitive sites.

B. Unauthorized foot trails along the river should be discretely brushed over or planted with native species to discourage use.

4. Remove debris that was placed in the Headspring.

A. Concrete, rubble, scrap metals and other sediments deposited in the spring before state purchase of the site should continue to be removed in the appropriate manner.

5. Designated species should be protected and managed as appropriate.

A. Protective fencing and signage in the area of Coffee Spring should be maintained for the protection of the siltsnail. Another survey for the snail should be requested from the Florida Museum of Natural History Malacology Range. Coffee Springs will be periodically inspected by staff to monitor any impacts or changes to the microhabitat of the siltsnail or the surrounding areas.

B. Park staff should continue to record all road kills within and adjacent to the park. Consideration should be given to installing wildlife crossing signs or requesting a reduction in speed limits.

C. The southeastern kestrel nest box program should be continued.

D. Park staff should continue to monitor the gopher tortoise population for signs of URTD, and all efforts should be made to prevent tortoises from being illegally introduced into the park.

E. Rare plant species populations should be located and mapped to prevent inadvertent impacts.

6. Restore natural communities within the park.

A. Park staff should continue their aggressive burning program within the remnant

upland pine forest. Staff should also continue girdling and chemical treatment of offsite hardwoods in overgrown upland pine forest areas. Priority should be given to restoring degraded upland pine forest areas that are adjacent to higher quality upland pine forest where prescribed fires are able to penetrate.

B. Park staff should continue burning the sandhills and emphasize growing season burns. Winter burns may be used to reduce fuels in fire-suppressed areas or in overgrown areas, that require low humidity. Additional local seed source longleaf pines should be planted in some areas to supplement natural reproduction.

C. Park staff should continue removing invasive exotic plant and animal species.

7. Staff should take measures to curb trespass and poaching within the park.

A. Park staff should routinely inspect park fences and insure posting of park boundaries is adequate. Incidences of trespass or poaching should be reported to the appropriate law enforcement agency. The park boundary should be better defined in certain areas such as north of County Road 238.

8. Staff should pursue a comprehensive cultural resource survey and protect and interpret known resources.

A. A combined Level I and Level II survey is recommended in order to locate and record all possible resources in the park. The cultural resource surveyors must utilize GPS technology to locate sites within useful limits.

B. Staff should continue to preserve park cultural resources for the enjoyment and education of present and future visitors and develop non-destructive interpretive programs for the resources.

C. The park should expand the information gathering, filing, and retrieval routines for cultural resources. The park should maintain cultural resource management files for each recorded resource separate from operations materials and use them as a basis for regular condition reporting.

D. The park should develop cultural resource visitation and monitoring routines and use them on a regular basis. Sites should be documented by establishing and use photography points for each resource to enable periodic documentation of conditions of resources.

E. The recordation of additional cultural resources should be continued as resources are encountered and identified.

F. Park and district natural resource restoration planners should employ great cultural resource sensitivity when preparing areas for restoration. Such areas of sensitivity include sandy uplands that are marginally suitable for farming or ranching.

Management Measures for Natural Resources

Hydrology

The hydrology at Ichetucknee Springs State Park involves both surface and ground waters. The park is at the interface where deep groundwater becomes surface water that

eventually mixes with a riverine system. Currently, there are regional concerns about groundwater quality and elevated nitrate levels. Systematic monitoring should continue to detect changes in water quality. It remains the responsibility of regulatory authorities to enforce groundwater standards, however. Staff will continue to monitor land use changes outside the park, particularly in the Ichetucknee Trace, and will provide comments to public officials if any threats to Ichetucknee Springs' groundwater resources become apparent.

Although dye trace studies in the Ichetucknee Trace have provided valuable information about the sources of the springs of the Ichetucknee River, much more information is needed to adequately protect the various sources of the Ichetucknee. Division and park staff will continue to work with the Ichetucknee Springs Water Quality Working Group to seek funding for additional research and dye trace studies. Additional research by university faculty and students will also be encouraged.

In reference to the park's surface waters, control of erosion should help protect water quality. Management will comply with best management practices to maintain the existing water quality on site and will take measures to prevent soil erosion or other impacts to water resources.

Monitoring aquatic vegetation in the spring and fall seasons will help detect long-term damage from visitor use of the Ichetucknee River. Four additional transects have been installed in the river to replace ones that had been lost due to tree falls. Although currently adequate, the carrying capacities for the upper, middle, and lower sections may need to be adjusted in the future, if conditions in the river change.

Prescribed Burning

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

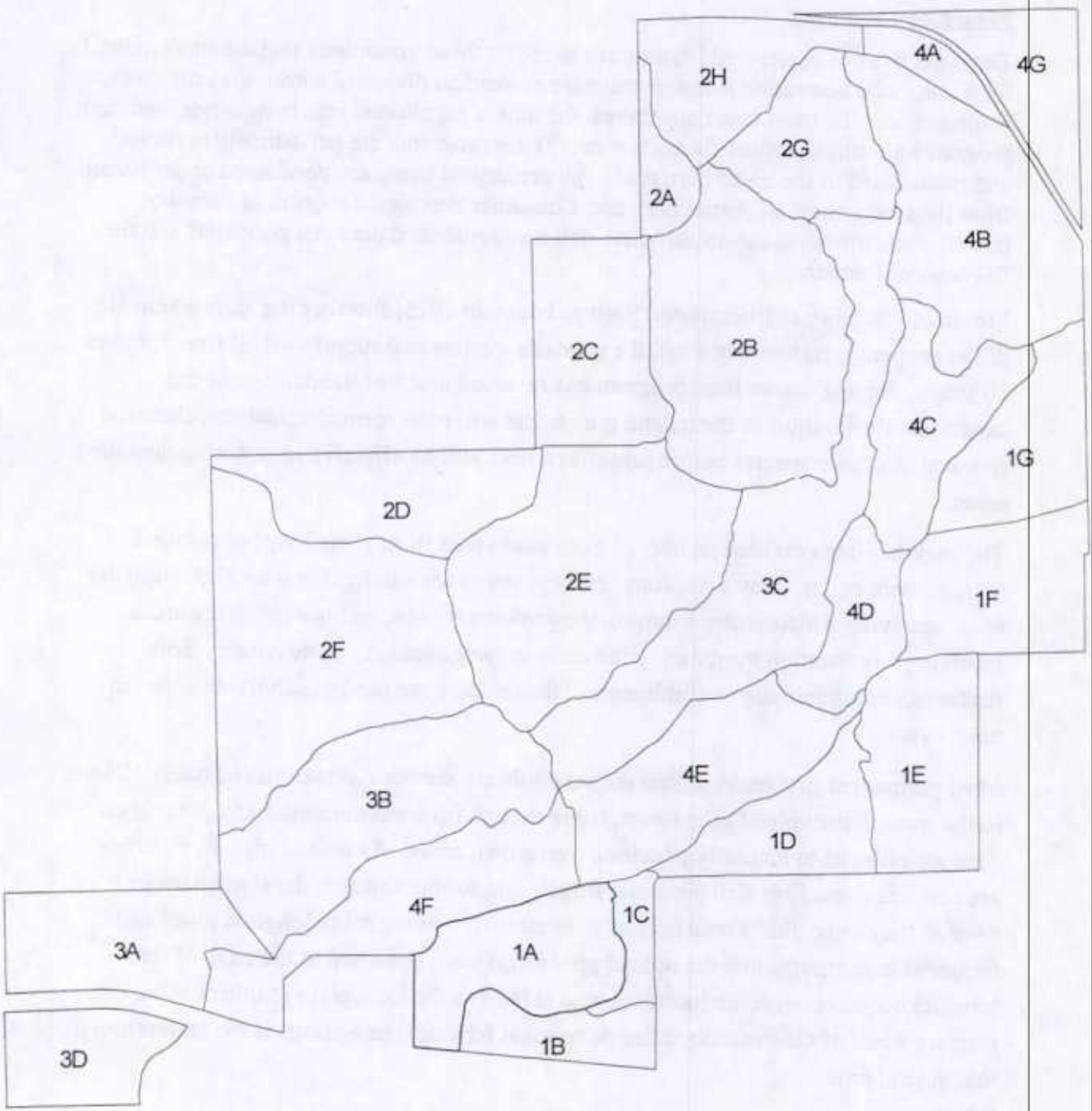
Prescribed burning at Ichetucknee Springs began in 1973, shortly after state acquisition of the property. Before that time, the previous owners had suppressed all fires for over 50 years. An aggressive burn program has reversed much of the damage to the sandhills. Restoration of the upland pine forest will require mechanical and chemical removal of offsite species before prescribed fires will be effective in restoring degraded areas.

The park has been divided up into 26 burn zones (see Burn Zone Map) or resource management zones. However, some of these zones are subdivided with higher quality areas receiving a maintenance burn in the growing season, and lower quality areas receiving a restoration burn during the early growing season or late winter. Soft

firebreaks that minimize or eliminate soil disturbance are used to subdivide zones in most cases.

Most permanent firebreaks within the sandhills are service roads or paved roads. Closer to the river in the upland pine forest, some natural firebreaks are used and prescribed fires are allowed to naturally penetrate overgrown areas. As upland pine forest areas are restored these fires will penetrate further and further towards the floodplain and river as they once did. There is clear evidence from living relict longleaf pines and lightered pine stumps that the upland pine forest once stretched to the edge of the Ichetucknee River in some locations, and at least to the floodplain in others. One the primary goals of the prescribed fire program at Ichetucknee Springs is the restoration of that upland pine
forest.

Staff will also monitor any future restrictions on prescribed burning in the region. Residences along the park boundary should be contacted before conducting adjacent prescribed burns. Public education about the benefits of prescribed fire should be promoted at the park to avoid future efforts to restrict prescribed burning of natural areas.



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Prepared By:
Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning
Date: July 28, 1999-BN

ICHETUCKNEE SPRINGS STATE PARK

BURN ZONE MAP

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 which aggravate the particular problems of a species.

The prescribed fire program at Ichetucknee Springs should benefit the designated species that inhabit fire-adapted communities such as the sandhills and upland pine forests. A southeastern kestrel nest box program supplements natural cavities that are in short supply within the park. The program is run by staff and volunteers each breeding season. In addition to monitoring activity within the boxes, staff cooperate with a USFWS permitted bird bander to band and patagial tag the young kestrel chicks for future identification.

The park staff should continue monitoring the gopher tortoise population for URTD. Continued cooperation with the FFWCC will be an important part of the management of this imperiled species. Any increase in the incidence of the disease or any abnormally frequent observations of dead tortoises should be reported to the FFWCC Wildlife Research Laboratory in Gainesville. While handling gopher tortoises, staff should take care not to allow tortoises to contact each other. All surfaces that the animals touch should be sprayed with a weak chlorine bleach solution (1 to 30 ratio of bleach to water) to kill the bacterium. Staff should also wash their hands in between handling tortoises to reduce the danger of disease transmission. Gopher tortoises should not be subjected to unnecessary stress. Stress has been linked to the onset of URTD symptoms. Public interpretation at the park will be an essential tool in curbing the practice of releasing stray tortoises into the park. Public education about the seriousness of the disease will assist in the management of the disease statewide.

Park staff should continue to record road kills of all species within the park and on adjacent roadways, including gopher tortoise, indigo snakes and Sherman's fox squirrels.

Coffee Spring should remain closed to visitor access to protect the Ichetucknee siltsnail. Another census or survey of the population should be pursued through the Florida Museum of Natural History to verify the status of the snail.

Locations of rare plant species documented by Herring (1994) and other researchers should be mapped near visitor use areas or where future development may occur. Attempts should be made to locate Florida willows, and if found, such populations should be mapped.

Exotic Species Control

Exotic species are those plants or animals that are not native to Florida, but were introduced as a result 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.

Invasive exotic plant populations should be mapped and removal efforts prioritized. When prioritizing species for removal, consideration should be given not only to invasiveness, but whether or not an effective treatment has been developed for a species. Although Japanese climbing fern (*Lygodium japonicum*) is highly invasive, effective treatment of this species is problematic. Funding for removal should be sought from both Division and Department funding sources. When necessary, park staff should continue with manual removal of aquatic exotic or problem species such as water lettuce (*Pistia stratiotes*) in the spring-run stream. Exotic animal species, including stray dogs, cats and armadillos, should be removed using appropriate techniques. If feral hogs are ever detected within the park, they should be removed immediately to prevent damage to the river floodplain and other wetlands.

Adjacent homeowners should be contacted, if necessary, to prevent the introduction of exotic ornamental plants into the park, and to prevent free roaming pets from entering the park.

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. Management must devise measures that balance designated species protection with problem species control.

Although alligators do occur at low densities in spring-run streams, they are not usually a problem at Ichetucknee Springs. The high level of visitor use during the spring and summer months discourages most alligators from frequenting the river within the park.

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. A statement of DHR's policies and procedures for the management and protection of cultural resources is contained in Addendum 9.

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

1. Seek funding to conduct a professional, combined Level I and Level II cultural resources survey. Emphasis should be placed on historic period resources and on providing managers with more information on known sites, particularly accurate locations. The cultural resource surveyors must utilize GPS technology to locate sites within useful limits. Ultimately, the base of knowledge of the resources of the

park can only be expanded or confirmed by professionally conducted survey.

2. Establish photopoints and photograph cultural resources on a regular schedule. Long term management of cultural resources will be facilitated through compilation of a body of visual knowledge that will allow comparison of future conditions.
3. Schedule regular visitation to each resource on at least an annual basis. Regular visitation will foster development of knowledge about each resource and understanding of the natural forces that affect each. Visitors' notes will be added to the data about each resource.
4. Record additional cultural resources as they are encountered and identified. Until a comprehensive, scientifically informed, cultural resources survey can be completed, recording knowledge about previously unrecorded cultural resources is the park staff's contribution to its own ability to manage well.
5. Increase the level of park staff training for cultural resources. Library resources should be expanded and updated regularly, and training programs should be utilized as they become available. A trained park staff will better appreciate cultural resource management routines and be able to conduct the basic research necessary to identify and record new resources.
6. Expand the interpretation of the cultural resources of the park.
7. Expand the current record keeping system to include separate files for each known site. Adopt methods for making and keeping written and photographic records of periodic examinations of cultural resources and train staff in making and using the records.
8. Expand efforts to consider unrecorded cultural resources before initiating restoration activities in pinelands.

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.

1. Additional plant and animal survey work is needed.
   - **A.** Locations of rare plant species should be confirmed and mapped. Additional plant species discovered within the park should be vouchered at the University of Florida Herbarium to supplement the collection described in Herring (1994).
   - **B.** Additional animal surveys are needed at the park, including a re-survey of the Ichetucknee siltsnail, and a continuation of the gopher tortoise and southeastern kestrel monitoring.
   - **C.** The District and Park Biologists will be continuing to monitor bird activity in the sandhills using transects to collect baseline population data. The study will also monitor changes in the breeding bird population as recreational use of the upland

increases.

Cultural Resources

1. Additional cultural resources survey Work is needed.

A. A combined Level I and Level II survey is recommended in order to locate and record all possible resources in the park.

Resource Management Schedule

A priority schedule for conducting all management activities for the purposes for which these lands were acquired, and to enhance the resource values is contained in Addendum 10. 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 10).

Land Management Review

This property was subject to a land management review on January 15, 1999. The land management review team report, including the DRP's responses to the report findings, is contained in Addendum 11.

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 park's natural and cultural resources, 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's interaction with other facilities.

Existing Use of Adjacent Lands

Ichetucknee Springs State Park is located in southeastern Suwannee and southwestern Columbia Counties, approximately 4 miles west of the town of Fort White. Entrance to the park is from U.S. Highway 27, to the south, and from County Road 238 to the north.

Adjacent land uses are mostly low-density residential, agriculture/rural, a designation which allows agricultural uses and residential development up to one unit per 5 to 10 acres, and industrial which includes active limestone mining. Two quarries are located in the proximity of the park: one a few miles to its west, and the other to its northeast. U.S. Highway 27's 200-foot right-of-way is the largest adjacent land use to the southern boundary of the park. The current Florida Department of Transportation (FDOT) five-year plan schedules no major improvements to this highway.

Other significant land and water resources in the vicinity include the state park facilities at O'Leno State Park, River Rise State Preserve, Peacock Springs State Recreation Area, and the Suwannee River Water Management District's (SRWMD) Lower Santa

Fe, Stuarts Landing and Little River Conservation Areas.

Planned Use of Adjacent Lands

Development on the land uses adjacent to Ichetucknee Springs State Park is generally planned to remain at the current level, with primarily agricultural and low-density residential land uses.

Although the County is not particularly large in terms of population, it has experienced a rapid rate of population growth over the last 5 years. Because of this growth, the residential area is in the initial stages of subdivision, with a preponderance of "mini-farm" subdivisions and other low-density residential land uses. Some of the impacts to be expected include declines in local, surface water quantity and quality, an increase in local traffic, point and non-point pollution sources within the park's watershed and continued residential development.

The SRWMD's Greenways 2000 plan proposes a series of shared-use trails in the Suwannee River Basin. In the vicinity of Ichetucknee Springs State Park, the Greenways 2000 plan calls for a shared-use trail south of U.S. Highway 27, from Ft. White to Branford, and a shared-use trail from Lake City to the park's north entrance.

PROPERTY ANALYSIS

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

Recreation Resource Elements

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

Ichetucknee Springs State Park lies on either side of the pristine Ichetucknee River, where clear water boils from a series of springs to create the beautiful wild river. The river winds through outstanding examples of native lowland and upland forests that support a number of endangered or threatened plant and animal species. Fossil remains of prehistoric animals, numerous Indian artifacts, the remains of a large moonshine still and the site of a 17th century Spanish mission have been found along the river. The primary recreational resources of this park are the river and springs. Since acquiring the park, the DRP has continuously worked to reduce environmental impacts through the implementation of a recreational carrying capacity, as detailed earlier in the Visitor Use

Management section.

Ichetucknee Springs State Park contains approximately 2,500 acres of natural landscapes, within reach of nearly 200,000 Florida residents, and easily accessible to tourists traveling on Interstate 75 and U.S. Highway 27. The general topography of the park is relatively flat. The upland natural communities of this park include sandhill, upland mixed forest and upland pine forest. The wetland communities include sinkhole, sinkhole lake, dome, floodplain forest, floodplain swamp, floodplain marsh, spring-run stream and aquatic caves.

The Ichetucknee River is the major water body in the park, and its headwaters and the upper 3.5 miles lie within the park boundaries. The Ichetucknee River is considered by some to be the pristine waterway in the United States. Within the park boundaries, eight main springs, as well as numerous smaller, unnamed, seeps are associated with the river. The river and its associated springs are typical of many of Florida's spring fed streams, and could provide an invaluable educational tool as a distinct example of a spring - stream system.

Gopher tortoises, Sherman's fox squirrel, the short-tailed snake, the southeastern kestrel, the eastern indigo snake and gopher frogs are among the listed species found within the park boundaries. The park is also the only known locality of the Ichetucknee siltsnail. All listed species will be protected under established DRP management policies, and visitor impacts will be carefully monitored to identify potential impacts.

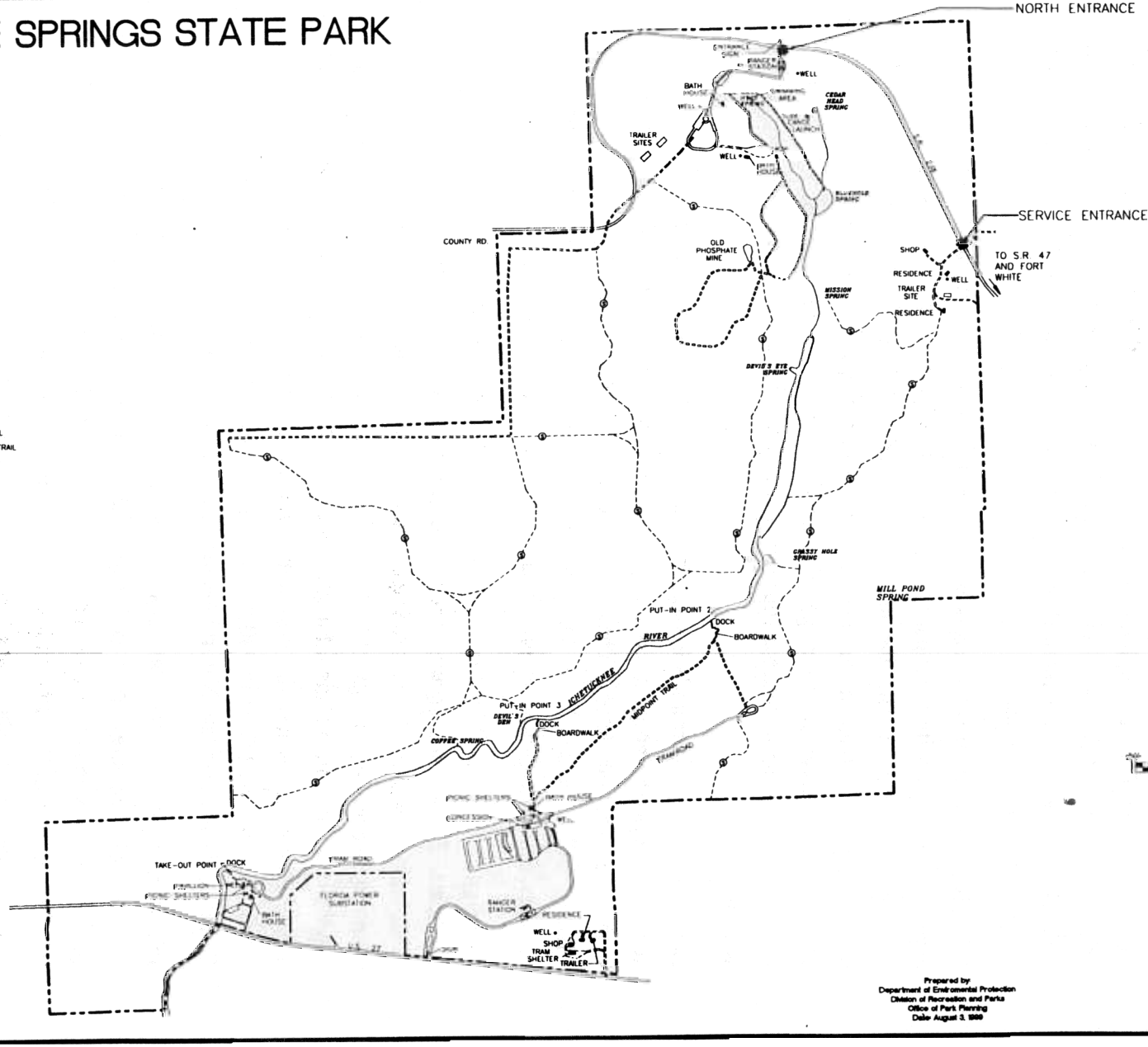
The significant natural features of the park include both hydrological and vegetative elements. The artesian springs, the pristine condition of the Ichetucknee River, and its associated floodplain habitat are important to the interpretation of the natural communities and hydrology of this area. The upland natural communities, especially sandhill, are of utmost regional importance, since the park is one of the few remaining areas in the region where this community remains. These features have been recognized since 1972 and 1980 when the park was registered as a National Natural Landmark and as a State Natural Feature Site, respectively.

Ichetucknee Springs State Park has the potential to contain many important historical and archeological sites. As noted in the *Cultural Resources* section, there are 23 recorded sites with the park boundaries. In addition, the park itself has been recorded in the Florida Master Site File as Ichetucknee River Archeological Zone. Despite this, Ichetucknee Springs State Park has not been the subject of a comprehensive cultural resources survey and further study is required to complete its historical record.

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

ICHETUCKNEE SPRINGS STATE PARK



LEGEND

- FENCE
- E — ELECTRICAL
- W — WATER
- S — SEWAGE
- WATER LINE
- PROPERTY LINE
- ROADWAY
- STABILIZED ROAD
- SERVICE ROAD
- EQUESTRIAN TRAIL
- NATURE/HIKING TRAIL
- CANOE LAUNCH
- STRUCTURE

Prepared by
Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning
Date: August 3, 1988

BASE MAP

uses made of the unit are briefly described in the following sections.

Past Uses

Before acquisition by the state, phosphate mining, timbering and farming operations occurred on the property. Phosphate mining occurred in two phases. During the first phase, the phosphate boom era of the late 19th and early 20th century, phosphate extraction pits were opened on the property, and ore was transported to the neighboring communities, Ft. White or High Springs, via narrow gauge rail cars on the tram roads. This period also marks a time when the park and its surrounding area were heavily logged and converted into an agricultural landscape. The second phosphate phase occurred when Loncala Phosphate, Inc. reopened the old pits, during the 1950's - 60's, and scraped them for phosphate residues. The reminders of these rather recent past are an overgrown mine pit, which has been incorporated into the nature trail near the Head Spring, and a grist mill, located approximately 2 miles downstream of the Head Spring that was once powered by Mill Springs Run.

Swimming and tubing are the traditional uses of the river and the springs. Since the early 1960s, continually increasing recreational use of the river caused considerable damage to the springs, river and shoreline vegetation. Visitor monitoring of recreational impacts began in 1970 when the state acquired the property. Since 1990 when the current recreational carrying capacity was determined, and implemented, the Ichetucknee River has made significant recoveries.

Recreational Uses

The recreational uses available at Ichetucknee Springs State Park include swimming, tubing, snorkeling, scuba diving, canoeing, picnicking, fishing and nature study. To accommodate the park's largest recreational user group, tubers, a park operated tram system connects the mid-point put-in and the south end take-out points. A shuttle bus operates between the north and south ends. The south take-out point and southern parking area are designated tube turn-in points for several tube vendors that have tube collection permits from the Division.

Other Uses

A large distribution sub-station, belonging to Florida Power Corporation, is located midway along the park's frontage with U.S. Highway 27. From this sub-station, three powerline easements cross the park in a northwesterly direction.

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 Ichetucknee Springs State Park the springs, river and associated hydric and mesic communities have been designated as protected zones (see Natural Communities Map). In addition, the park's western side, the floodplain and several locations of very sensitive floral resources has also been designated as a protected zone (as marked on the Conceptual Land Use Plan).

Existing Facilities

To the greatest extent possible, given the steep terrain along the river barrier-free access is provided. During peak use hours, parking and user access related problems occur at the north entrance and use area.

Recreational Facilities

North Use Area
- Picnic tables (3)
- Grills (15)
- Nature Trail (0.8 mi.)

South Use Area
- Large picnic shelter (6)
- Medium picnic shelter (2)
- Small picnic shelter (3)
- Picnic tables (89)
- Grills (42)

Support Facilities

North Use Area
- Bathhouse (2)
- Tube put-in boardwalk
- Canoe launch
- Paved parking (120 vehicles)
- 4" water wells (3)

South Use Area
- Restrooms (3)

Support Facilities (Continued)

South Use Area
- Boardwalk river access points (2)
- Paved parking (400 vehicles)
- Concession (1)

Entrance Station (2)
Tram shelter
Information booth

North Shop
- Storage sheds (2)
- Pole shelter (1)

South Shop
- Storage sheds (2)
- Flammable storage building (1)
- Equipment shelter (1)

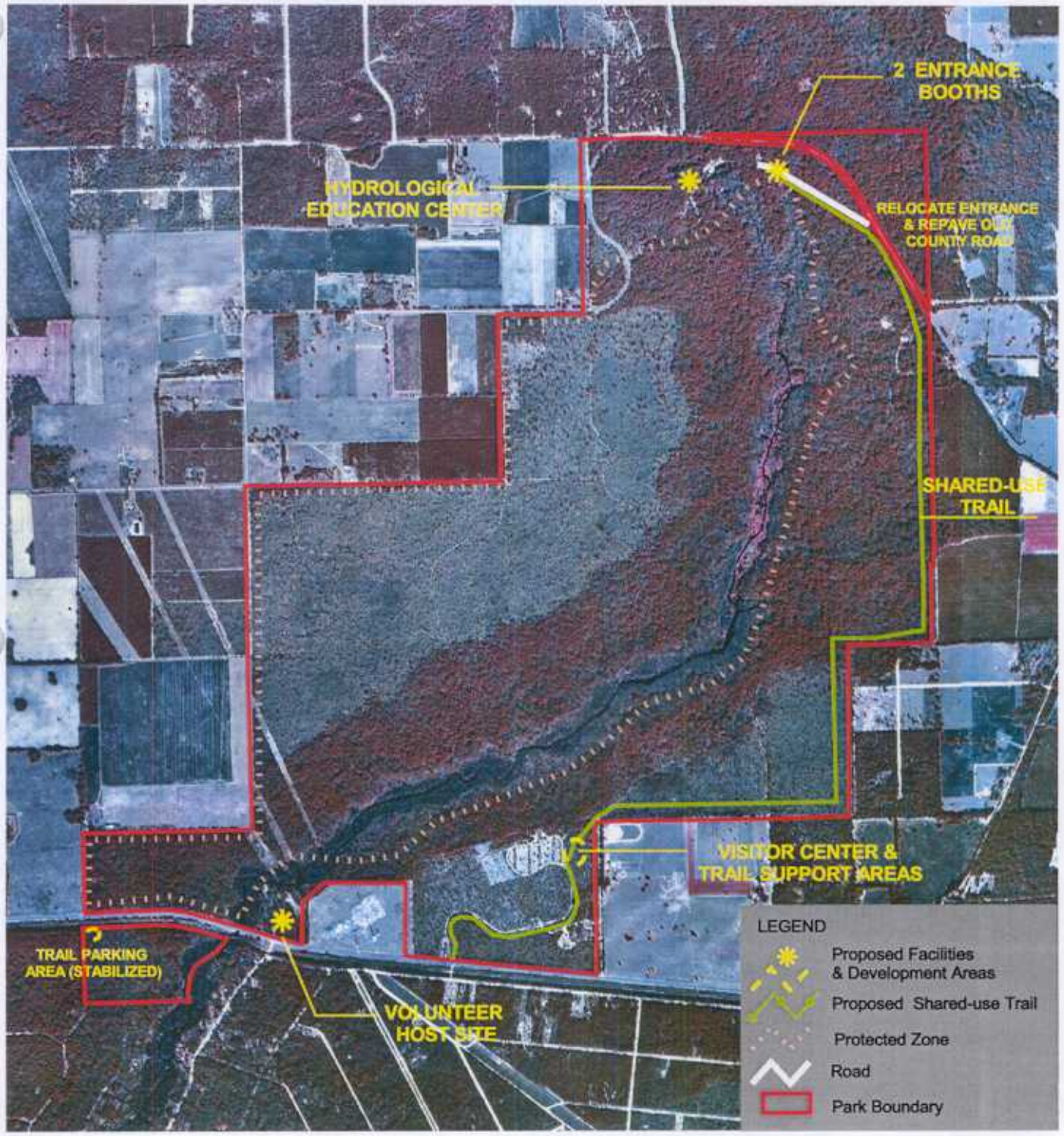
Ranger residences (3)
Volunteer host sites (3)

Roads
- Paved (3.3 mi.)
- Service (5 mi.)

CONCEPTUAL LAND USE PLAN

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

During the development of the unit management plan, the Division assesses potential impacts of proposed uses on the resources of the property. Uses that could result in unacceptable impacts are not included in the conceptual land use plan. Potential impacts are more thoroughly identified and assessed through the site planning process once funding is available for the development project. At that stage, design elements,



N

1000 0 1000 2000 3000 Feet

ICHETUCKNEE SPRINGS STATE PARK

Prepared by:
Division of Recreation and Parks
Office of Park Planning
Date: January 5, 2000
Printed: April 27, 2001
Approved Plan

CONCEPTUAL LAND USE PLAN

such as sewage disposal and stormwater management, and design constraints, such as designated species or cultural site locations, are more thoroughly investigated. Facilities are designed and constructed using best management practices to avoid impacts and to mitigate those that cannot be avoided. 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. After new facilities are constructed, the park staff monitors conditions to ensure that impacts remain within acceptable levels.

Potential Uses and Proposed Facilities

Ichetucknee Springs State Park is one of many recreational and natural areas in the Florida that attracts large numbers of visitors. Resource-based outdoor recreation in Florida continually increases in popularity. The growth of Florida's resident and tourist populations brings increasing pressure for more widespread access, and for denser levels of public use in the natural areas available to the public. Consequently, one of the greatest challenges for public land managers is the balancing of reasonable levels of public access with the need to preserve and enhance the natural and cultural resources of the protected landscapes.

In general, the existing recreational activities provided at Ichetucknee Springs State Park are appropriate, and should continue at existing visitation levels. Some improvements to park facilities and infrastructure are needed for the Division to fulfill its responsibilities to provide outdoor recreation, and protect and enhance the natural and cultural resources of the park. Natural and cultural resource interpretation and environmental education as well as shared-use trails are the activities and facilities proposed for Ichetucknee Springs State Park. Unsupervised public access to the known cultural sites of the park is not recommended, but educational and interpretive tours by qualified staff and volunteers should be important components of park programs.

Interpretation and environmental education. The education of recreational users will become an issue of critical importance in the management of Ichetucknee Springs State Park as population pressure continues to bring large numbers of visitors to the park. Environmental stewardship issues, therefore, need to be brought to the attention of park's recreational users to effectively balance recreation with protection and management of the park's natural and cultural resources.

Toward this end, a system of environmental education and interpretation facilities is recommended for Ichetucknee Springs State Park. This system will include a visitor center for orientation and interpretation; an hydrological education center to highlight this aquatic system; interpretive graphics and text displays at each of the proposed water access facilities, recreational use areas and throughout the trail system, as well as underwater displays in the river. Underwater displays are not proposed for the

headwater spring.

The visitor center would introduce the visitor to the natural and cultural resources of the park, and inform visitors of other nature- and heritage-based tourism sites available in the region. This facility should include a classroom and meeting space, an audio-visual room for presentations, displays that orient the visitor to the natural and cultural resources of the park, laboratory facilities, and an office to support the park's educational and interpretive programs.

The hydrological education center would highlight the park and regional hydrological system. This facility will complement the interpretive activities occurring at the visitor center, and allow users to visually simulate real-time hydrological processes in the Ichetucknee system, and to view its response to environmental changes. This facility is envisaged as a small structure or group of interpretive centers/exhibits that would utilize self-explanatory audio-visual programs similar to "ExplorA-Pond" and "Surf Your Watershed", as well as 3-D Object Watershed Link Simulation (OWLS) models.

Interpretive stations are recommended at each of the locations where visitors gain access to natural or cultural resources through the park's facilities or landscapes. For example, interpretive displays regarding the natural communities of the park and its cultural history would be located along the trails; the protection of aquatic flora and fauna would be highlighted at the tubing launch areas and in underwater displays. All of these displays would also identify the types of behavior that is encouraged in the park, and would discourage perennial problem activities, such as littering.

Trails. Within the park boundaries, a shared-use, spur trail for pedestrians, bicyclists and equestrians is recommended. This trail will be located on or along the existing perimeter service road, and will allow visitors the opportunity to experience some of the upland communities. The trail represents an opportunity for expanding the recreational potential available to park visitors by connecting them to a larger, regional network of public lands and facilities through the trail network proposed by the SRWMD's Greenways 2000 plan.

Interpretive signs should be added to both new and existing, as the establishment of a clear system of trail markings is vital for resource protection, and for ensuring that users have a clear spatial understanding of the trail network. To the extent possible, these signs should be centrally located, with the express purpose of making visitors aware of their location and the sensitivity of the resources at Ichetucknee Springs State Park.

As noted above, interpretive stations are recommended throughout the park, to inform the public about the resource management activities occurring at the park, and incorporating the larger preservation, stewardship, land use and cultural resource issues related to this plan. Where fencing will be installed, visitors should be informed, through interpretive signs and staff contact, of the reasons for the access restrictions.

In addition to the recommended trail, staff will survey, and evaluate the protected zone for the potential to establish additional nature trails. Baseline data on natural resources and regular monitoring of wildlife and plant species should be established before any trail development.

Support facilities. It is recommended that the north entrance be relocated to the old county road. This relocation will allow the DRP to improve visitor access by providing approximately 1,000 feet of stacking distance, and relieve traffic congestion through the installation of two entrance booths. The existing entrance road should be closed, and the ranger station converted into an administrative office.

To alleviate traffic congestion at the southern entrance, a traffic "apron" should be installed along U.S. Highway 27, in coordination with FDOT.

An additional volunteer host site is proposed near the southern boundary of the park. This area includes some previously disturbed areas and where possible, improvement will remain within the developed footprint of the existing facilities.

Two trail support areas are proposed in this plan. The first, a trail parking area, for up to 15 vehicles, will be located south of U.S. Highway 27, and west of the Ichetucknee River, and will serve as a temporary trailhead for the users of the Branford - Ichetucknee trail. The second, a small mowed area adjacent to the visitor center, will provide some hitching posts for those equestrian users who want to use the trails in Ichetucknee River State Park, or any of the parks' other recreational facilities.

Additional renovations/improvements include the replacement of the floating docks at the mid-point and Dampiers Landing; re-installation of the floating dock at the take-out point; and internal renovations to the restrooms at the both the north and south ends. The following is a summary of facilities needed to implement the conceptual land use plan for Ichetucknee Springs State Park:

Recreation Facilities

South Use Area
- Visitor Center

North Use Area
- Hydrological education center
- Interpretive signs

Support Facilities

South Use Area
- Trailhead facilities
- Traffic apron
- Renovate restroom

North Use Area
- Interpretive signs
- Entrance booth (2)
- Re-pave old county road
- Renovate restroom

Interpretive display in use areas
Underwater interpretive displays
Volunteer host site
Replace docks at mid-point and Dampiers Landing (2)
Re-install floating dock at take-out point
Stabilized parking area south of U.S. Highway 27

Facilities Development

A list of proposed facilities to provide for enhanced recreational opportunities is provided in Addendum 10. The cost estimates for the proposed facilities are based on the most cost effective construction standards available.

Existing Use and Optimum Carrying Capacity

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

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

TABLE 1

Existing Use and Optimum Carrying Capacity

	Existing Capacity		Proposed Additional Capacity		Estimated Optimum Capacity	
Activity/Facility	**One Time**	**Daily**	**One Time**	**Daily**	**One Time**	**Daily**
Tubing / Canoeing						
Entire River		750				750
Lower Half		2,250				2,250
Spring Diving	6	60			6	60
Trails						
Hiking	20	80			20	80
Shared-use			20	60	20	60
TOTALS	**26**	**3,140**	**20**	**60**	**46**	**3,200**

Note: The fragility of the aquatic resources is the limiting factor in determining the recreational carrying capacity of this park. The picnicking facilities, visitor center and hydrological education center are assumed to serve the same recreational user base as the tubing/canoeing activities, therefore, no carrying capacity is determined for them.

Optimum Boundary

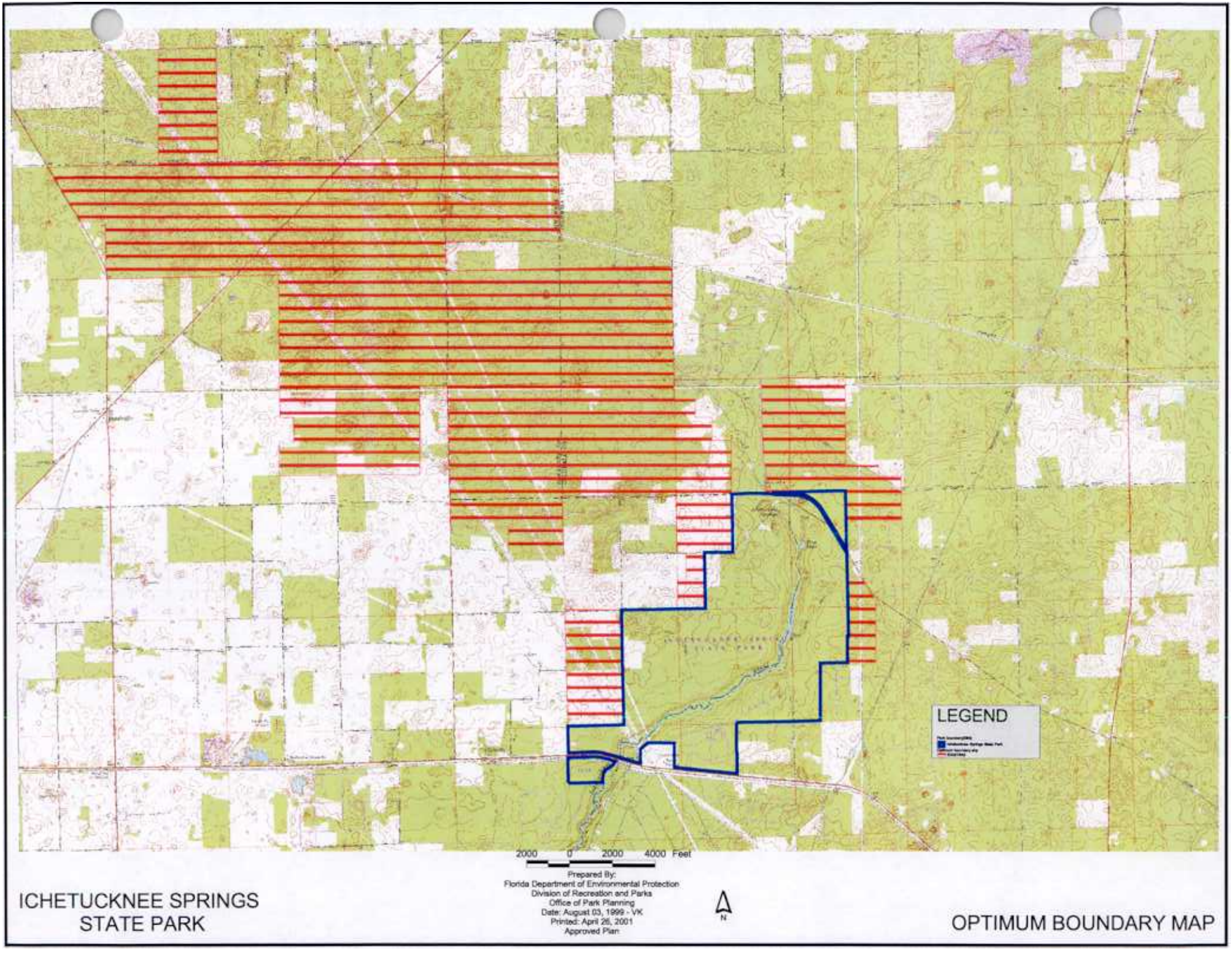
As additional needs are identified through park use, development, research, and as

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

Approximately 8,500 acres has been identified as desirable for addition to Ichetucknee Springs State Park. The majority of the additional land lies to the northwest of the park and contains significant examples of longleaf pine and xeric oak sandhill community. The area will offer additional protected territory for listed species, such as the Sherman's fox squirrel and the Southeastern American Kestrel, and other species. Several aquatic caves exist within the area, which may or may not have a relationship with the springs. Data to demonstrate any relationship is not available at this time.

The recommended additions immediately north of the park have a significant, demonstrated relationship with the spring system. The threat of development in the vicinity of the state park is a constant. Acquisition of these recommended areas will help to protect the surface and groundwater that flows into the Ichetucknee Springs and River.

The lands immediately adjacent to the park on the east, south and west are considered desirable for many of the reasons discussed above. These areas also have resource elements that will compliment the recreational resources and opportunities now found within the state park.



ICHETUCKNEE SPRINGS STATE PARK

OPTIMUM BOUNDARY MAP

ADDENDUM 1

ACQUISITION HISTORY

AND

LEASE AGREEMENT NUMBER 2459

ICHETUCKNEE SPRINGS STATE PARK

ACQUISITION HISTORY

Sequence of Acquisition

On January 6, 1970, the Board of Trustees of the Internal Improvement Trust Fund (Trustees) obtained title to the property which is known as Ichetucknee Springs State Park. The property was purchased with funds from the Land Acquisition Trust Fund (LATF) and comprises 2,276.88 acres.

Title Interest

The Trustees hold fee simple title to Ichetucknee Springs State Park. On September 4, 1970, the Trustees conveyed management authority of Ichetucknee Springs State Park to the Department of Environmental Protection (DEP), Division of Recreation and Parks (DRP) under lease No. 2459. The lease is for a period of ninety-nine (99) years and will expire on September 4, 2069.

Special Conditions on Use

In accordance with the Department's lease agreement with the Board of Trustees, the property must be utilized for public outdoor recreation and related purposes. In accordance with the lease, the property is to be managed for the purpose of preserving, developing, improving, operating, maintaining and otherwise managing said lands for public outdoor recreational, park, conservation, and related purposes. Ichetucknee Springs State Park is designated as single use to provide public outdoor recreation and related purposes.

Outstanding Reservations

Following is a listing of outstanding rights, reservations, and encumbrances that apply to Itchetucknee Springs State Park.

A copy of the Trustees Lease Agreement #2459 is available upon request.

ICHETUCKNEE SPRINGS STATE PARK

ACQUISITION HISTORY

INSTRUMENT:	Easement
INSTRUMENT HOLDER:	The Trustees
BEGINNING DATE:	March 12, 1996
ENDING DATE:	March 11, 2046
OUTSTANDING RIGHTS, USES, ETC.:	This 50-year easement granted to Suwannee Valley Electric Cooperative, Inc. for construction and maintenance of a primary voltage distribution powerline. The easement is subject to automatic termination when, in the opinion of the Trustees, the subject property is not used for the purposes outlined in the instrument.

INSTRUMENT:	Easement
INSTRUMENT HOLDER:	DEP
BEGINNING DATE:	April 2, 1982
ENDING DATE:	coterminous with Lease No. 2459
OUTSTANDING RIGHTS, USES, ETC.:	DEP granted this easement to Florida Power Corporation for the purposes of constructing, installing, operating, and maintaining a distribution system for the transmission and distribution of electricity over a portion of Ichetucknee springs State Park. When the subject lands are not used for the purpose outlined in the easement, the easement shall terminate and all rights conveyed shall automatically revert to the Trustees.

INSTRUMENT:	Easement
INSTRUMENT HOLDER:	The Trustees
BEGINNING DATE:	February 23, 1971
ENDING DATE:	No ending date is given.
OUTSTANDING RIGHTS, USES, ETC.:	The Trustees granted this easement to the Board of County Commissioners of Columbia County, a political division of the State of Florida, for road right-of-way across a portion of Ichetucknee Springs State Park. The easement is subject to automatic reversion to the Trustees when, in the opinion of the Trustees, said lands are not utilized for the purpose stated in the easement.

ADDENDUM 2

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REFERENCES CITED

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ADDENDUM 3

SOIL DESCRIPTIONS

COLUMBIA COUNTY

(**3) Alpin fine sand, 0 to 5 percent slopes** - This is an excessively drained, nearly level to gently sloping soil on broad, slightly elevated ridges. The areas of this soil range from 4 to about 2,000 acres and are circular to irregularly elongated.

Typically, the surface layer is grayish brown fine sand about 6 inches thick. The subsurface layer is fine sand and extends to a depth of 52 inches. In the upper 9 inches, it is pale brown; in the next 12 inches, it is pale brown with common uncoated sand grains; in the next 11 inches, it is very pale brown with light yellowish brown mottles. The subsoil extends to a depth of 80 inches or more. It is very pale brown fine sand and has common uncoated sand grains and common yellowish brown horizontal bands of loamy fine sand 0.1 to 0.5 inches thick.

Included with this soil in mapping are small areas of Blanton, Lakeland, Chipley, and Albany soils. Also included are small areas of soils that have limestone at a depth of 80 inches. These soils make up less than 20 percent of the map unit.

The Alpin soil does not have a water table within a depth of 80 inches at any time. The available water capacity is low. Permeability is rapid in the subsurface layer and moderately rapid in the surface layer and subsoil. Natural fertility is low. The organic matter content is moderately low in the surface layer and low in all layers below that.

(8) Blanton fine sand, 0 to 5 percent slopes - This is a moderately well drained, nearly level to gently sloping soil on broad ridges and undulating side slopes. The areas of this soil range from about 20 to 1,000 acres and area irregular in shape.

Typically, the surface layer is gray fine sand about 7 inches thick. The subsurface layer is very pale brown fine sand in the upper 30 inches and light gray fine sand in the lower 15 inches. The subsoil extends to a depth of 80 inches. In the upper 10 inches, it is light yellowish brown fine sandy loam with brownish yellow mottles; in the next 5 inches, it is very pale brown with strong brown and pale brown mottles; and in the lower part, it is light brownish gray fine sandy loam with strong brown mottles.

Included with this soil in mapping are small areas of Albany, Alpin, Chipley, Lakeland, Ocilla, Troup, and Bonneau soils. These soils make up less than 15 percent of the map unit.

This Blanton soil has a water table at a depth of 5 to 6 feet most of the year. In wet seasons, a perched water table is above the subsoil for less than a month. The available water capacity is medium in the surface layer and low in the subsurface layer and subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Natural fertility and the organic matter content are low.

(13) Bonneau fine sand, 2 to 5 percent slopes - This is a moderately well drained, gently sloping soil on uplands and on knolls in the uplands. The areas of this soil range

from 3 to 300 acres and are circular.

Typically, the surface layer is grayish brown fine sand about 7 inches thick. The subsurface layer is fine sand about 20 inches thick. In the upper 8 inches, it is yellowish brown, and below that, it is yellowish brown fine sandy loam; in the next 22 inches, it is very pale brown, yellowish red, and grayish brown clay loam with pockets of fine sandy loam; and in the lower part it is gray and pink sandy clay loam.

Included with this soil in mapping are small areas of Luck, Ocilla, Blanton, Goldsboro, and Ichetucknee soils. These soils make up less than 20 percent of the map unit.

This Bonneau soils has a water table at a depth of 40 to 72 inches for 1 or 2 months during rainy periods in most years. Otherwise, the water table is below a depth of 72 inches. The available water capacity is low in the subsoil and medium in the lower part of the subsoil. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Natural fertility is moderate. The organic matter content is very low.

(19) Chiefland-Pedro Variant complex, occasionally flooded - This complex consists of nearly level to sloping soils that are within 3 miles of rivers and creeks interspersed with numerous sinkholes. These soils are flooded periodically from river overflow after unusually high rainfall. There have been three major floods since 1948. They occurred in the period April to June. The areas of these soils are so small or so intermingled that it was not practical to map them separately. The areas of this complex range from 5 to 80 acres.

The Chiefland soils makes up about 41 percent of the complex. Typically, the surface layer is about 5 inches of dark grayish brown fine sand. The subsurface layer is light brownish gray fine sand to a depth of 23 inches. The upper 3 inches of the sandy clay loam subsoil is dark brown, and the lower part is strong brown. It is underlain by limestone.

The Chiefland soils has no water table within a depth of 72 inches. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The available water capacity is very low in the surface and subsurface layers and medium in the subsoil. The natural fertility and organic matter content are very low.

The Pedro Variant soils makes up about 39 percent of the complex. Typically, the surface layer is gray fine sand about 3 inches thick. The fine sand subsurface layer is dark brown about 5 inches thick. The subsoil is dark brown sandy clay loam about 3 inches thick. It is underlain by about 3 inches of soft weathered limestone. Below that, hard limestone extends to a depth of 80 inches or more.

The Pedro Variant soil has no water table within a depth of 72 inches. Permeability is rapid in the surface and subsurface layers and moderately rapid in the subsoil. The available water capacity is very low in the surface and subsurface layers and medium in the subsoil. The natural fertility and organic matter content are low.

(27) Ichetucknee fine sand, 2 to 5 percent slopes - This is somewhat poorly drained, gently sloping soil on small knolls and undulating terrain on erosional uplands. The areas range
from 5 to 70 acres and are irregularly shaped.

Typically, the surface layer is gray fine sand about 5 inches thick. The subsurface layer is light gray fine sand with very pale brown splotches about 8 inches thick. The clay subsoil extends to a depth of 55 inches. The upper 26 inches is pale brown with gray, red, and brownish yellow mottles and the lower 16 inches is yellowish red. Limestone bedrock is at a depth of 55 inches.

Included with this soil in mapping are small areas of Bonneau and Goldsboro soils. Also included are areas of soils that are similar to the Ichetucknee soil, but some have a clayey surface layer, some are saturated for 2 to 4 months because of hillside seepage, and some have bedrock within a depth of 40 inches. The included soils make up about 25 percent of the map unit.

This Ichetucknee soil has a perched water table at a depth of 1 1/2 to 3 feet for 1 to 4 months. The soil is saturated after heavy rains. The available water capacity is medium in the surface and subsurface layers and in the lower part of the subsoil. It is low in the upper part of the subsoil. Permeability is rapid in the surface and subsurface layers and slow in the subsoil. Natural fertility is moderate. The organic matter content is moderate in the surface layer and moderately low in the subsurface layer and subsoil.

(29) Lakeland fine sand, 0 to 5 percent slopes - This is an excessively drained, nearly level to gently sloping soil on broad, slightly elevated ridges. The areas range from 8 to 1,500 acres.

Typically, the surface layer is grayish brown fine sand about 6 inches thick. Below that, in sequence, there is to a depth of 20 inches, light yellowish brown fine sand; to a depth of 55 inches, very pale brown fine sand with light yellowish brown splotches; and to a depth of 80 inches or more, very pale brown fine sand with yellow mottles.

Included with this soil in mapping are small areas of Alpin, Blanton, Troup, and Chipley soils. Also included area soils that are similar to the Lakeland soil except that they have limestone deposits within a depth of 80 inches. The included soils make up less than 10 percent of the map unit.

This Lakeland soil does not have a water table within a depth of 80 inches at any time. The available water capacity is low. Permeability is rapid. Natural fertility and the content of organic matter are very low.

(52) Plummer fine sand, depressional - This is a nearly level, poorly drained soil in depressions. The areas range from 5 to 80 acres and are circular or irregularly shaped. The slope is less than 2 percent.

Typically, the surface layer is gray fine sand about 5 inches thick. The subsurface layer is light gray fine sand and extends to a depth of 75 inches. It is gray sandy clay loam with yellow, strong brown, and very pale brown mottles. The substratum is white fine sand and extends to a depth of more than 80 inches.

Included with this soil in mapping are small areas of Surrency and Pelham soils, but some have a clayey subsoil, some have phosphatic pebbles and iron concretions, and others have weakly cement organic-stained layers in the subsurface layer. The included soils make up less than 15 percent of the map unit.

(53) Plummer fine sand, occasionally flooded - This is a poorly drained, nearly level soil on the flood plains or rivers and streams. This soil is flooded occasionally after heavy and prolonged rains. A sharp rise in the water level causes the rivers and streams to overflow. The lowlands remain flooded for approximately 30 days and the depressions, which drain by percolation and seepage, for longer periods. This soil has been flooded in March or April in about 1 year out of 10. The slope is less than 2 percent.

Typically, the surface layer is dark gray fine sand about 4 inches thick. The subsurface layer is light gray fine sand to a depth of 55 inches. The subsoil is gray sandy clay loam and has pockets of sandy clay. This layer extends to a depth of 80 inches or more.

Included with this soil in mapping are small areas of Mascotte, Pelham, and Electra Variant soils. Also included are small areas of soils that are similar to the Plummer soil, but some do not have a loamy subsoil, some have a clay subsoil, some have slopes ranging up to 12 percent, and some have ironstone fragments in the profile. The included soils make up about 25 percent of the map unit.

The Plummer soil has a water table within a depth of 15 inches for 6 to 8 months during most years. The water table recedes to a depth of more than 40 inches during very dry periods. The available water capacity is low in the surface and subsurface layers and medium in the subsoil.

Permeability is rapid in the surface and subsurface layers and moderately slow in the subsoil. Natural fertility and the organic matter content are low.

(61) Udorthents, 0 to 2 percent slopes - These soils are near abandoned phosphate mining areas. They formed in refuse that was washed from the phosphate and limestone during mining operations. The refuse was deposited over the nearby soils to a thickness of 20 to 50 inches or more. Individual areas are mainly irregular in shape and range from 5 to 35 acres in size. The slope is less than 2 percent.

The texture and thickness of the soil layers vary, but one of the more common profiles has a very dark gray silt loam surface layer about 1 inch thick. The next layer is underlain by 22 inches of very pale brown silty clay. The next 16 inches is light gray

clay. Below this to a depth of 80 inches or more is and undisturbed buried soil that is mostly very dark gray and light yellowish brown fine sand.

Included in mapping are small areas of Alpin, Blanton, and Bonneau soils. These soils make up less than 5 percent of the map unit.

The water table is at a depth of 60 to 72 inches for 1 to 2 months during most years. A perched water table is at the surface for short periods after heavy rains. The available water capacity is high in the silty and clayey overburden and low in the buried sandy buried soil. Natural fertility of the surface and subsurface layers is medium. The organic matter content is moderate.

SUWANNEE COUNTY

(Al) Alluvial land - This nearly level land type consists of sediment from many different kinds of soils. It occurs on first bottoms and is frequently flooded. It varies widely in drainage and permeability, and in texture and color also, because amount and kind of sediment both differ from area to area and even within one area. The soil material deposited along stream channels is predominantly sand and loamy sand. The deposits away from the stream channels are finer textured material. In the more poorly drained areas, the soil material is gray and light gray. Associate with Alluvial land are Plummer and Blanton soils and the Blanton-Kalmia-Leaf complex. Frequent flooding and variable drainage generally make Alluvial land unsuitable for agriculture.

(Mp) Mining pits and dumps - Mining pits and dumps is a miscellaneous land type that varies widely in texture, consistence, and structure. Areas of this land type occur 1 mile north of Live Oak and 3 miles east of Branford. The wide range of land conditions is a result of the areas where soil and underlying minerals have been removed are scarred with pits and trenches and dotted with piles of waste material. These areas have little or no agricultural value.

(BtB) Blanton-Chiefland fine sands, 0 to 5 percent slopes - The soil complex consists of deep, light-colored, excessively drained soils. They were mapped together as one unit in places where they are so intricately mixed that it was impractical to separate them on the soil map. The proportion of each soil is variable, but most areas are roughly 70 percent Blanton fine sand and 30 percent Chiefland fine sand. These soils are described separately under their respective series.

A few small areas, mostly around sinks, that have slopes steeper than 5 percent were included in mapping this complex.

Limestone is 3 to 10 feet from the surface of these soils. The limestone underlying the Chiefland soil is near enough the surface to affect soil properties. The Blanton soil is strongly acid to a depth of 48 inches or more.

Natural fertility and the organic-matter content are low in both soils. Permeability is

rapid, and the available moisture capacity is low. Water erosion is only a slight hazard, but wind erosion is a severe hazard in unprotected fields.

(BmB) Blanton fine sand, low, 0 to 5 percent slopes - This is a deep, moderately well drained, light-colored, sandy soil. Typically, the surface layer is a light gray to dark-gray, loose fine sand about 7 inches thick. Below that, in sequence, there is to a depth of 28 inches, light-gray to pale-brown, loose fine sand; to a depth of 59 inches light-gray to whitish, loose fine sand; and to a depth of 59 inches or more, a yellowish-brown, variable fine sandy clay loam mottled with gray and red with a subangular block structure.

The surface layer generally is 3 to 7 inches thick. It grades into the underlying layers, which are more than 36 inches thick. The soil material at a depth of about 6 feet is fine sandy clay loam or sandy clay mottled with yellow, brown, red, and dark gray.

This soil has characteristics similar to those of Blanton fine sand, high, 0 to 5 percent, but it is in a lower position where the water table is nearer the surface. Normally, the water table is between 36 and 60 inches from the surface, but it may rise into the root zone for a short time in wet seasons.

(BmC) Blanton fine sand, low 5 to 8 percent slopes - This soil usually occurs as small isolated areas on short breaks associated with Blanton fine sand, low, 0 to 5 percent slopes. In some places the soil is wetter at the bottom of the slope than at the top because of seepage. This soil is more susceptible to erosion by both wind and water than Blanton fine sand, low, 0 to 5 percent slopes, and in many cultivated areas wind and water have removed much of the original surface soil and have exposed the lighter colored underlying sand. This soil is well suited to pasture and to pine trees.

(BfB) Blanton fine sand, high 0 to 5 percent slopes - This is a deep, excessively drained, light-colored, sandy soil on knolls and ridges well above the ground-water level. Typically, the surface layer to a depth of 3 inches is gray loose fine sand. Below that, in sequence, there is to a depth of 84 inches, light-gray to very pale brown fine sand; and to a depth of 116 inches, white fine sand mottled with yellow.

The surface layer is gray or light gray and 3 to 7 inches thick. The subsurface layers range from pale brown to white and are several feet thick. This soil is strongly acid, low in natural fertility, and low in organic-matter content. Permeability is rapid, and the available moisture capacity is low. The water table is normally at a depth below 48 inches and does not affect most crops.

ADDENDUM 4

NATURAL COMMUNITY DESCRIPTIONS

(13) Sandhill. - (synonyms: longleaf pine - turkey oak, longleaf pine - xerophytic oak, longleaf pine - deciduous oak, high pine). Sandhills are characterized as a forest of widely spaced pine trees with a sparse understory of deciduous oaks and a fairly dense ground cover of grasses and herbs on rolling hills of sand. The most typical associations are dominated by longleaf pine, turkey oak, and wiregrass. Other typical plants include bluejack oak, sand post oak, sparkleberry, persimmon, winged sumac, pinewoods dropseed, Indian grass, wild buckwheat, queen's delight, yellow foxglove, bracken fern, runner oak, goats rue, partridge pea, milk pea, dollarweeds, wild indigo, gopher apple, and golden-aster. Typical animals include tiger salamander, barking treefrog, spadefoot toad, gopher frog, gopher tortoise, worm lizard, fence lizard, mole skink, indigo snake, coachwhip snake, pine snake, short-tailed snake, crowned snake, eastern diamondback rattlesnake, bobwhite, ground dove, red-headed woodpecker, rufous-sided towhee, fox squirrel and pocket gopher.

Sandhills occur on hilltops and slopes of gently rolling hills. Their soils are composed of deep, marine-deposited, yellowish sands that are well-drained and relatively sterile. The easily leached soil nutrients are brought back to the surface by the burrowing habits of some sandhill animals. Sandhills are important aquifer recharge areas because the porous sands allow water to move rapidly through with little runoff and minimal evaporation. The deep sandy soils help create a xeric environment that is accentuated by the scattered overstory, which allows more sunlight to penetrate and warm the ground. The absence of a closed canopy also allows Sandhills to cool more rapidly at night and to retain less air moisture. Thus, temperature and humidity fluctuations are generally greater in Sandhills than in nearby closed canopy forests.

Fire is a dominant factor in the ecology of this community. Sandhills are a fire climax community, being dependent on frequent ground fires to reduce hardwood competition and to perpetuate pines and grasses. The natural fire frequency appears to be every 2 to 5 years. Without frequent fires, Sandhills may eventually succeed to Xeric Hammock. Unburned or cutover Sandhills may be dominated by turkey oak.

Sandhills are often associated with and grade into Scrub, Scrubby Flatwoods, Mesic Flatwoods, Upland Pine Forest, or Xeric Hammock. Sandhills were widespread throughout the Coastal Plain, but most have been degraded by timbering, overgrazing, plowing, fire exclusion, and other disturbances. Much of Florida's Sandhill communities have been converted to citrus groves, pastures, pine plantations, or residential and commercial developments. Thus, the importance of properly managing the remaining tracts is accentuated.

(17) Sinkhole. - (synonyms: lime sink, sink, solution pit, cenote, grotto, doline, chimney hole, banana hole). Sinkholes are generally characterized as cylindrical or conical depressions with steep limestone walls. Those which drain readily and only contain standing water during or for short periods following heavy rains are considered to be Sinkholes, while those which contain water throughout most of the year and dry down only during extreme droughts are considered to be Sinkhole Lakes. The

differences between these two communities are often subtle. They may occur together if the upper portions of the limestone are typically above water level, while the lower portions are typically below water level.

The vegetative structure of Sinkholes may be that of a well-developed forest where sands cover the rock and/or the sides of the Sinkholes are moderately sloped. These conditions are typically confined to the upper portions and around the rim of the Sinkhole. Steeper rock walls are generally more or less covered by mosses, liverworts, and ferns with occasional herbs and shrubs in crevices. Typical plants include southern magnolia, sweetgum, wax myrtle, wild grape, Virginia creeper, poison ivy, partridgeberry,greenbrier, water oak, flowering dogwood, horse sugar, sparkleberry, diamond-leaf oak, live oak, hophornbeam, tupelo, white ash, Florida maple, pignut hickory, beautyberry, and gum bumelia. Steep rock walls are more or less covered by a variety of mosses, liverworts, ferns and sometimes herbs, including such rare and threatened species as Venus'-hair fern and halberd fern. Sinkholes provide habitat for relictual populations of many species of salamanders and invertebrates that would be unable to survive in otherwise drier areas.

Sinkholes are most common in karst areas where the underlying limestone has been riddled with solution cavities by the chemical and physical actions of underground waters. As these cavities enlarge and become interconnected, large underwater caverns develop. When water tables drop, the cavern roof is no longer supported by the hydrostatic pressure and portions of it may collapse, leaving a deep cylindrical or conical surface depression known as a Sinkhole. The organic and mineral debris that collapsed into the cavity may partially occlude, but generally does not completely block, the Sinkhole's connections with the underground water table. Thus, Sinkholes frequently function as aquifer recharge areas. Some Sinkholes are the relics of ancient springs or swallowholes, flow having ceased because of lower water tables. The relic stream bed may still be discernible, but has been obliterated in most cases.

Steep limestone walls generally restrict soils to organic accumulations in cracks and crevices. Where the sides of a sinkhole have collapsed, sands may have slumped over the limestone, creating conditions similar to a Slope Forest.

Sinkholes generally have a very moist microclimate. The depression itself helps protect the Sinkhole from drying winds, while the fringe of trees surrounding the Sinkhole often from a nearly complete canopy which shelters the Sinkhole from intensive insolation. Additionally, seepage from the surrounding uplands may slowly moisten the walls, while the frequent presence of standing water contributes to high humidity. These conditions may also buffer temperature extremes, allowing a unique mixture of tropical and temperate flora to exist in many Florida Sinkholes.

Sinkholes and Sinkhole Lakes are often the antecedents of other Lacustrine and Palustrine communities, including Dome Swamp; Depression Marsh; and Sandhill Upland, Flatwoods and Prairie Lakes. When several Sinkholes coalesce, Basin Marsh

or Swamp and Clastic Upland, Marsh or Swamp Lakes may eventually develop. Thus, the distinctions between Sinkhole communities and other related communities are frequently subtle, as one very gradually succeeds to another. The limestone dissolution processes that initiated their development continue, and subsequent droughts which lower ground water tables could renew the Sinkhole development process.

Sinkholes are extremely fragile communities. Their popularity as recreational areas subjects their flora to trampling and their steep walls to severe erosion from foot traffic and, in some cases, from dirt bikes. Sinkhole Lakes attract swimmers and divers whose activities may disturb the aquatic community as well. The unique flora of many Sinkholes has made them additionally vulnerable to overcollection.

Sinkholes are frequently used as dump sites. These activities will degrade water quality in the Sinkhole and eventually the underground aquifer. Thus, litter and refuse should be removed promptly when they occur. Similarly, pollution of the water supplies (aquifer and seepage sources) should be avoided. Chemical applications, waste treatments, and spills on the surrounding upland should be closely monitored to determine their potential impacts and mitigation requirements.

The delicate microclimate of Sinkholes may also be easily disturbed by activities in the surrounding areas. Logging of the surrounding canopy will increase both insolation and sedimentation levels, while major soil disturbances in the surrounding uplands could disrupt seepage water sources. Large withdrawals of groundwater nearby could substantially lower water tables and reduce the hydroperiods of Sinkhole Lakes. Any of these activities could significantly alter the microclimate and induce deleterious vegetational responses. Likewise, the invasion of exotic plant species is also a concern in these important communities.

(20/21) Upland hardwood forest and upland mixed forest. - (synonyms: mesic hammock, climax hardwoods, upland hardwoods, beech-magnolia climax, oakmagnolia climax, pine-oak-hickory association, southern mixed hardwoods, clay hills hammocks, Piedmont forest). Upland Hardwoood Forests and Upland Mixed Forests are characterized as well-developed, closed-canopy forests of upland hardwoods on rolling hills. These communities have quite similar physical environments and share many species, including southern magnolia, pignut hickory, sweetgum, Florida maple, devil's walking stick, American hornbeam, redbud, flowering dogwood, Carolina holly, American holly, eastern hophornbeam, spruce pine, loblolly pine, live oak, and swamp chestnut oak, among others. The primary difference between these communities is that Upland Mixed Forests generally lack shortleaf pine, American beech and other more northern species that typically occur in Upland Hardwood Forests. This is predominantly a result of minor climatic differences, Upland Hardwood Forests being most common in Northern panhandle Florida, and Upland Mixed Forests being most common in northern and central peninsula Florida. Other typical plants include gum bumelia, hackberry, persimmon, red cedar, red mulberry, wild olive, redbay, laurel cherry, black cherry, bluff oak, water oak, cabbage palm, basswood, winged elm,

Florida elm, sparkleberry, Hercules' club, slippery elm, beautyberry, partridgeberry, sarsaparilla vine, greenbrier, trilliums, beech drops, passion flower, bedstraw, strawberry bush, silverbell, caric sedges, fringe tree, horse sugar, white oak, and blackgum. Typical animals include slimy salamander, Cope's gray treefrog, bronze frog, box turtle, eastern glass lizard, green anole, broadhead skink, ground skink, red-bellied snake, gray rat snake, rough green snake, coral snake, woodcock, barred owl, pileated woodpecker, shrews, eastern mole, gray squirrel, wood rat, cotton mouse, gray fox, and white-tailed deer.

Upland Hardwood and Mixed Forests occur on rolling hills that often have limestone or phosphatic rock near the surface and occasionally as outcrops. Soils are generally sandy-clays or clayey sands with substantial organic and often calcareous components. The topography and clayey soils increase surface water runoff, although this is counterbalanced by the moisture retention properties of clays and by the often thick layer of leaf mulch which helps conserve soil moisture and create decidedly mesic conditions. Furthermore, the canopy is densely closed, except during winter in areas where deciduous trees predominate. Thus, air movement and light penetration are generally low, making the humidity high and relatively constant. Because of these conditions Upland Hardwood and Mixed Forests rarely burn.

Upland Hardwood Forests and Upland Mixed Forests are climax communities for their respective geographic locations. They are often associated with and grade into Upland Pine Forest, Slope Forest or Xeric Hammock. Occasionally, Upland Mixed Forests may also grade into Maritime Hammock or Prairie Hammock. During early stages of succession, Upland Hardwood and Mixed Forest may be difficult to distinguish from Upland Pine Forests that have not been burned for several years. Disturbed sites may require hundreds of years to reach full development with species compositions representative of climax conditions.

Silvicultural, agricultural, industrial, and residential developments have already eliminated the vast bulk of these communities. These activities are continuing at an accelerated pace in many areas, such that the few remnant mature examples are in urgent need of protection and proper management.

(22) Upland pine forest - (synonyms: longleaf pine upland forest, loblolly-shortleaf upland forest, clay hills, high pineland). Upland Pine Forest is characterized as a rolling forest of widely spaced pines with few understory shrubs and a dense ground cover of grasses and herbs. Pristine areas are dominated by longleaf pine and wiregrass, while areas that suffered agricultural disturbances are dominated generally by shortleaf and loblolly pines and old field grasses and herbs. Other typical plants include southern red oak, runner oak, bluejack oak, black jack oak, post oak, sassafras, black cherry, gallberry, persimmon, mockernut hickory, twinflower, huckleberry, dangleberry, goldenrod, Indian grass, partridge pea, goats rue, winged sumac, blueberry, dog fennel, snakeroot, golden-aster, yellow jessamine, broomsedge, asters, pencil flower, bracken fern, greenbrier, fox grape, flowering dogwood, sweetgum, and blackgum. Typical

animals include gopher tortoise, eastern fence lizard, eastern diamondback rattlesnake, bobwhite, red-bellied woodpecker, fox squirrel, cotton rat, cotton mouse, gray fox, bobcat, and white-tailed deer.

Upland Pine Forest occurs on the rolling hills of extreme northern Florida. The soils are composed of sand with variable, sometimes substantial, amounts of Miocene clays. The resultant prevalence of clays helps retain soil moisture, creating more mesic conditions than originally would have occurred. Thus, many plants which previously were restricted to valleys and other low areas may now inhabit the Upland Pine Forests.

Fire is a dominant factor in the ecology of this community because it reduces hardwood encroachment and facilitates pine and wiregrass reproduction. Without relatively frequent fires, Upland Pine Forest succeeds to Upland Mixed Forest and eventually to Upland Hardwood Forest. The natural fire frequency appears to be every 3 to 5 years. More frequent fires would likely eliminate pine recruitment, especially when loblolly and shortleaf pines are dominant species.

Upland Pine Forest is a fire climax community that is associated with and often grades into Upland Mixed Forest or Upland Hardwood Forest. Gradations between these communities are frequently so subtle that distinctions are usually arbitrary. Upland Pine Forest is often confused with Sandhill. The primary differences between them reside in their soil characteristics and some species of plants and animals.

Upland Pine Forests have been substantially degraded throughout their range. The sandy clay soils were prime agricultural lands for plantations as well as for American Indians. Thus, the longleaf pines were logged, the soil was turned, and the wiregrass disappeared. Only isolated tracts of the original longleaf pine-wiregrass association remain, the bulk being replaced by loblolly-shortleaf pine associations. Much of the latter has further succeeded to Upland Mixed or Hardwood Forest because of fire exclusion. The restoration of Upland Pine Forest to its original condition is impeded by the current inability to propagate wiregrass where it has been extirpated.

(30) Dome swamp. - (synonyms: isolated wetland cypress dome, cypress pond, gum pond, bayhead, cypress gall, pine barrens pond). Dome Swamps are characterized as shallow, forested, usually circular depressions that generally present a domed profile because smaller trees grow in the shallower waters at the outer edge, while bigger trees grow in the deeper water in the interior. Pond cypress, swamp tupelo, and slash pine are common plants. Other typical plants include red maple, dahoon holly, swamp bay, sweetbay, loblolly bay, pond apple, Virginia willow, fetterbush, chain fern, netted chain fern, poison ivy, laurel greenbrier, Spanish moss, wild pine, royal fern, cinnamon fern, coastal plain willow, maidencane, orchids, wax myrtle, swamp titi, St. John's wort, sawgrass, lizard's tail, swamp primrose, water hyssop, redroot, sphagnum moss, floating heart, buttonbush, arum, and fire flag. Typical animals include flatwoods salamander, mole salamander, dwarf salamander, oak toad, southern cricket frog, pinewoods treefrog, little grass frog, narrowmouth toad, alligator, snapping turtle, striped mud

turtle, mud turtle, eastern mud snake, cottonmouth, woodstork, wood duck, swallow-tailed kite, barred owl, pileated woodpecker, great-crested flycatcher, prothonotory warbler, and rusty blackbird.

Dome Swamps typically develop in sandy flatwoods and in karst areas where sand has slumped around or over a sinkhole, creating a conical depression. Soils are composed of peat, which becomes thickest toward the center of the dome, and are generally underlain with acidic sands and then limestone, although other subsoils may also occur. Some domes have a clay lens that helps retain water levels.

Dome Swamps often derive much of their water through runoff from surrounding uplands, but they may also be connected with underground channels, in which case subterranean flows would dominate the hydrological regime. Dome Swamps generally function as reservoirs that recharge the aquifer when adjacent water tables drop during drought periods. The normal hydroperiod for Dome Swamps is 200 to 300 days per year with water being deepest and remaining longest near the center of the dome.

Fire is essential for the maintenance of a cypress dome community. Without periodic fires, hardwood invasion and peat accumulation would convert the dome to Bottomland Forest or Bog. Dome Swamps dominated by bays are close to this transition. Fire frequency is greatest at the periphery of the dome and least in the interior where long hydroperiods and deep peat maintain high moisture levels for most of the year. The normal fire cycle might be as short as 3 to 5 years along the outer edge and as long as 100 to 150 years towards the center. The profile of a Dome Swamp (i.e., smaller trees at the periphery and largest trees near the center) is largely attributable to this fire regime. The shorter hydroperiods along the periphery permit fires to burn into the edge more often, occasionally killing the outer trees. Cypress is very tolerant of light surface fires, but muck fires burning into the peat can kill them, lower the ground surface, and transform a dome into a pond.

Dome Swamps may have a Depression Marsh or pond in their center, creating a doughnut appearance when viewed from above. Dome Swamps typically grade into Wet Prairie or Marl Prairie around the periphery, but they may also be bordered by Bottomland Forest or Swale. The species composition of Dome Swamps frequently overlaps with Strand Swamp, Wet Flatwoods, Basin Swamp, Baygall, Floodplain Swamp, and Freshwater Tidal Swamp.

Normal hydroperiods must be maintained. Somewhat deeper than normal water levels are not likely to do much harm, but extended hydroperiods will limit tree growth and prevent reproduction. Shortened hydroperiods will permit the invasion of mesophytic species, which will change the character of the understory and eventually allow hardwoods to replace cypress. Dome Swamps may also be degraded by pollution and the invasion of exotic plants.

(31) Floodplain forest. - (synonyms: bottomland hardwoods, seasonally flooded

basins or flats, oak-gum-cypress, elm-ash-cottonwood, second bottom, levee forest, river terrace, river ridge). Floodplain Forests are hardwood forests that occur on drier soils at slight elevations within floodplains, such as on levees, ridges and terraces, and are usually flooded for a portion of the growing season. Floodplain Forests are largely restricted to the alluvial rivers of the panhandle. The dominant trees are generally mixed mesophytic hardwoods, such as overcup oak, water hickory, diamond-leaf oak and swamp chestnut oak. The understory may be open and parklike or dense and nearly impenetrable. Other typical plants include bluestem palmetto, willow oak, green ash, Florida elm, sweetgum, hackberry, water oak, American hornbeam, tulip poplar, coastal plain willow, black willow, eastern cottonwood, swamp cottonwood, river birch, red ample, silver maple, box elder, American sycamore, catalpa, sweetbay magnolia, hawthorn, swamp azalea, pink azalea, gulf sebastiana, lanceleaf greenbrier, poison ivy, peppervine, rattanvine, indigo bush, white grass, plume grass, redtop panicum, caric sedges, silverbells, crossvine, American wisteria and wood grass.

Floodplain Forests harbor a diverse array of animals including both temporary residents and permanent residents. Typical animals include marbled salamander, mole salamander, two-toed amphiuma, Alabama waterdog, Southern dusky salamander, two-lined salamander, three-lined salamander, dwarf salamander, slimy salamander, rusty mud salamander, sirens, southern toad, cricket frog, bird-voiced treefrog, gray treefrog, bullfrog, river frog, Southern leopard frog, alligator, river cooter, stinkpot, Southeastern five-lined skink, broadhead skink, mud snake, rainbow snake, redbelly watersnake, brown water snake, glossy crayfish snake, black swamp snake, cottonmouth, yellow-crowned night-heron, wood duck, Mississippi kite, swallowtail kite, red-shouldered hawk, woodcock, barred owl, chimney swift, hairy woodpecker, pileated woodpecker, Acadian flycatcher, Carolina wren, veery, white-eyed vireo, red-eyed vireo, parula warbler, prothonotary warbler, Swainson's warbler, hooded warbler, cardinal, towhee, opossum, southeastern shrew, short-tailed shrew, beaver, wood rats, rice rats, cotton mouse, golden mouse, bear, and raccoon.

Soils of Floodplain Forests are variable mixtures of sand, organics, and alluvials, which are often distinctly layered. Hydroperiod is the primary physical feature of Floodplain Forests, which are inundated by flood waters nearly every year for 2 to 50% of the growing season. The organic material accumulating on the floodplain forest floor is picked up during floods and redistributed in the flood plain or is washed downriver to provide a critical source of minerals and nutrients for downstream ecosystems, in particular estuarine systems. These floods also replenish soil minerals through deposition on the floodplain. Floodplain Forests usually do not have standing water in the dry season.

Floodplain Forests are often associated with and grade into Floodplain Swamp, Bottomland Forest, Baygall, or Slope Forest. The species composition is frequently similar to that of Hydric Hammock and Bottomland Forest communities.

The maintenance of natural hydrologic regimes is critical to the health of Floodplain

Forests and to the downstream systems with which they are connected. Species composition and the functional relationships throughout a river system are negatively impacted by hydrological alterations such as artificial impoundments, river diversion projects, pesticide use, forest clearcutting, or intensive agriculture.

(32) Floodplain marsh. - (synonyms: river marsh). Floodplain Marshes are wetlands of herbaceous vegetation and low shrubs that occur in river floodplains, mainly in Central Florida and along the St. Johns, Kissimmee and Myakka rivers, on sandy alluvial soils with considerable peat accumulation. Emergent grasses, herbs, and shrubs that dominate Floodplain Marshes include sawgrass, maidencane, and buttonbush. Other typical plants include sand cordgrass, dotted smartweed, arrowheads, pickerelweed, reimargrass, spikerush, bulrushes, bladderpod, common reed, coreopsis, glasswort, seashore dropseed, sea purslane, and water primrose. Typical animals include cricket frog, pig frog, leopard frog, American alligator, eastern mud snake, banded water snake, striped swamp snake, great blue heron, great egret, snowy egret, little blue heron, tricolored heron, black-crowned night-heron, yellow-crowned night-heron, northern harrier, sandhill crane, raccoon, and river otter.

Floodplain Marshes are maintained by regimes of fire and water. Fires apparently burn on a one- to five-year basis under natural conditions and maintain the open herbaceous community by restricting shrub invasion; however, severe fires during drought periods will often burn the mucky peat.

Floodplain Marshes are flooded with flowing water for about 250 days annually. Shortened hydroperiods will permit invasion by shrubs and subsequent loss of the marsh. Many of these marshes have been degraded by pollution or destroyed by drainage for agricultural uses.

Floodplain Marshes are associated with, and often grade into, Wet Prairie or Riverine communities. They eventually succeed to Bog, if succession is not reversed by a muck fire.

(33) Floodplain swamp. - (synonyms: river swamp, bottomland hardwoods, seasonally flooded basins of flats, oak-gum-cypress, cypress-tupelo, slough, oxbow, back swamp). Floodplain Swamps occur on flooded soils along stream channels and in low spots and oxbows within river floodplains. Dominant trees are usually buttressed hydrophytic trees such as cypress and tupelo; the understory and ground cover are generally very sparse. Other typical plants include ogeechee tupelo, water tupelo, swamp titi, wax myrtle, dahoon holly, myrtle-leaved holly, large galberry, possumhaw, hurrah-bush, white alder, lizard's tail, leather fern, royal fern, marsh fern, soft rush, laurel greenbrier, hazel alder, hawthorn, and swamp privet.

Floodplain Swamps harbor a diverse array of animals including both temporary and permanent residents. Typical animals include marbled salamander, mole salamander, amphiuma, Alabama waterdog, Southern dusky salamander, two-lined salamander,

three-lined salamander, dwarf salamander, slimy salamander, rusty mud salamander, southern toad, cricket frog, bird-voiced treefrog, gray treefrog, bullfrog, river frog, Southern leopard frog, alligator, river cooter, stinkpot, Southeastern five-lined skink, broadhead skink, mud snake, rainbow snake, redbelly water snake, brown water snake, glossy crayfish snake, black swamp snake, cottonmouth, yellow-crowned night-heron, wood duck, swallowtail kite, Mississippi kite, redshouldered hawk, woodcock, barred owl, chimney swift, hairy woodpecker, pileated woodpecker, Acadian flycatcher, Carolina wren, veery, white-eyed vireo, red-eyed vireo, parula warbler, prothonotary warbler, hooded warbler, Swainson's warbler, cardinal, towhee, opossum, southeastern shrew, short-tailed shrew, beaver, wood rat, rice rat, cotton mouse, golden mouse, bear, raccoon, and bobcat.

Soils of Floodplain Swamps are highly variable mixtures of sand, organic, and alluvial materials, although some sites, especially within sloughs or on smaller streams, may have considerable peat accumulation. Floodplain Swamps are flooded for most of the year, with sites along channels inundated by aerobic flowing water while those of sloughs and backswamps are flooded with anerobic water for extensive periods of time. Soils and hydroperiods determine species composition and community structure. Seasonal and often prolonged inundations restrict the growth of most shrubs and herbs, leaving most of the ground surface open or thinly mantled with leaf litter. Floods redistribute detrital accumulations to other portions of the floodplain or into the main river channel. This rich organic debris is essential to the functional integrity of downriver ecosystems such as estuaries. These swamps are usually too wet to support fire.

Floodplain Swamps are often associated with and grade into Floodplain Forest or Hydric hammock, and occasionally Baygall. The species composition of Floodplain Swamps is frequently similar to the Slough, Strand Swamp, Dome Swamp, and Basin Swamp communities.

Alteration of the hydroperiod by impoundments or river diversions and the disruption of floodplain communities by forestry or agriculture have devastating consequences to entire river and bay systems. Many plant and animal species, both onsite and down river, depend upon the presence and natural fluctuations of these swamps for survival and reproduction.

(55) Spring-run stream. - (synonyms: calcareous stream, spring, or creek). Spring-run Streams are characterized as perennial water courses which derive most, if not all, of their water from artesian openings in the underground aquifer. Waters issuing from the aquifer are generally clear, circumneutral to slightly alkaline (pH = 7.0 - 8.2), and perennially cool (66 - 75F). These conditions saturate the water with important minerals, allow light to penetrate deeply, and reduce the limiting effects of environmental fluctuations, all of which are conducive for plant growth. Thus, Spring-run Streams are among the most productive aquatic habitats. Typical plants include tape grass, wild rice, giant cutgrass, arrowheads, southern naiads, pondweeds, and chara. Typical animals include mollusks,

stoneflies, mayflies, caddisflies, simuliids, chironomids, American alligator, alligator snapping turtle, Suwannee cooter, loggerhead musk turtle, rainbow snake, red-belly watersnake, brown watersnake, and many fishes.

Spring-run Streams generally have sand bottoms or exposed limestone along their central channel. Calcareous silts may form thick deposits in quiet shallow zones, while leaf drift and other debris collect around fallen trees and quiet basins. The latter, along with limestone outcrops and rock debris, form important aquatic habitats for many small aquatic organisms. When undisturbed, submerged aquatic vegetation clothes most of the spring-run stream bottom and provides shelter and an abundant food source for the extensive web of life.

The water emanating from the aquifer is generally clear because of the filtering and absorbing actions of the soils and aquifer limestones through which the water percolates and flows. When the water is deep, it may appear bluish because of light-refraction characteristics that are similar to those which cause the sky to be blue on clear days. If the water sources for the aquifer are substantially influenced by nearby swamps or flatwoods, the spring-run may temporarily become stained with tannins and other dissolved organics during or following periods of heavy rains. When extensive underground cavities connect the spring caverns with nearby sinks and swallow holes, the spring-run may become turbid with suspended particulates during and following heavy rains and floods. Conversely during periods of low rainfall, the aquifer can become supersaturated with calcium, carbonates, and other ions. These chemicals readily precipitate when water reaches the surface, causing the spring head or boil to appear milky.

Human activities affect flow rates by withdrawing water from the aquifer through deep wells. When withdrawal is substantial within the recharge area, spring flow is reduced or, in some cases, ceases entirely. Normal flow rates may return when excessive withdrawals are eliminated.

People can also substantially affect the quality of spring waters. Agricultural, residential, and industrial pollutants may readily leach through soils, especially when they are improperly applied or disposed. If polluted groundwater infiltrates the deep aquifer feeding a Spring-run Stream, recovery may not be possible. Applications of herbicides to control aquatic plant growth are also detrimental, because their use often induces eutrophication of the stream.

Other human-related impacts to Spring-run Streams include the destruction of aquatic vegetation by overuse or misuse, and the introduction and proliferation of exotic plants and animals. Both of these impacts may be very difficult to control. Overuse is likely to increase because of the limited number of publicly-owned springs and the desires of an increasing population to enjoy their clean, cool, aesthetic qualities and unique recreational opportunities. Exotic species are often severely detrimental to native species, and they may also disrupt recreational activities. A delicate balance between recreation and preservation must be sought.

(79/80) Aquatic and terrestrial cave. - (synonyms: cave, cavern grotto, chamber, chimney, sink, swallow hole, spring rise). Aquatic and Terrestrial Caves are characterized as cavities below the surface of the ground in karst areas of the state. A cave system may contain portions classified as Terrestrial Caves and portions classified as Aquatic Caves. The latter vary from shallow pools highly susceptible to disturbance, to more stable, totally submerged systems. Because all caves initially develop under aquatic conditions, Terrestrial Caves can be considered essentially dry Aquatic Caves. The limestone aquifers that underlie the entire state of Florida could be considered vast Aquatic Cave communities. Troglobites (also called phreatobites) are organisms specially evolved to survive in deep cave habitats. The occasional observation of various species of troglobites in deep water wells from several regions in the state suggests that this community could be widespread. However, the dependence of troglobites on detrital inputs and other nutrients imported from the surface generally limits the distribution of well developed Aquatic Cave communities to karst areas with surface connections.

The area around cave entrances may be densely vegetated with species from the surrounding Natural Community. Within the cave, however, illumination levels and, thereby, vegetation densities drop rapidly with increased distance from the entrance. Within the limits of light penetration, called the twilight zone, species of algae, mosses, liverworts, and an occasional fern or herbaceous plant may grow. Beyond the twilight zone, plants are generally absent or limited to a few inconspicuous species of fungi that grow on guano or other organic debris. Thus, Subterranean Natural Communities differ from most other Natural Communities in that living plants are not dominant elements.

Animals inhabiting Subterranean Natural Communities are generally divided into three groups according to their cave adaptations: trogloxenes, troglophiles, and troglobites. Trogloxenes spend much of their time in caves, but they must periodically return to the surface to feed or breed. Woodrats, harvestmen, cave crickets, some salamanders, and many species of bats are typical examples of trogloxenes. Troglophiles may regularly live in caves, but their conspecifies also inhabit surface communities with moist microhabitats. Cave orb spiders, and some crickets, fish and salamanders are typical examples of troglophiles. Troglobites are obligatory cave dwellers with special adaptations for living in complete darkness. Blind cave crayfish, blind cave salamander, cave amphipods, cave shrimp, cave snail, and cave isopods are typical troglobites in Florida's Aquatic Caves; cave mites, some cave spiders and springtails, and a cave earwig are typical troglobites in some Terrestrial Caves in north Florida. Even though they never leave their cave environments, troglobites and troglophiles depend on outside energy sources, such as detritus that washes in through sinkholes and other cave entrances. Fecal materials derived from trogloxenes which feed outside the cave are also important nutrients for troglobites. Without these energy subsidies, the troglobitic elements could not exist.

Two geologic processes are predominantly responsible for the development of caves: phreatic and vadose. Phreatic processes occur below the aquifer's surface where ground water is confined and subjected to hydrostatic pressure. Vadose processes occur at the top

or above the aquifer, where air enters the passageways and water flows freely under the influence of gravity. In both processes, the dissolution and corrosion of limestone play active roles in enlarging cave passageways. These forces differ primarily in the slopes of the passageways which result. Phreatic passageways are generally circular or elliptic, while vadose passageways are more triangular with the broad base of the triangle at the bottom. All limestone caves begin development under phreatic conditions in the aquifer. As water tables drop, vadose conditions eventually replace phreatic conditions. If the water table then rises, another reversal of processes occurs. Because water tables have fluctuated substantially with fluctuating sea levels during the Pleistocene and other geologic epochs, most caves in Florida exhibit both phreatic and vadose characteristics.

Since limestone caves initially develop in the aquifer, they are frequently associated with aquifer-related surface features. Thus, a Spring Run Stream issues from an Aquatic Cave, while Sinkhole Lakes and occasionally Blackwater Streams lead into Aquatic Caves. Similarly, Terrestrial Caves may occur at the bottoms of dry sinkholes or be associated with ancient springs, swallow holes or Aquatic Caves that have since been exposed by lower water tables. Typically, Terrestrial Caves may also exhibit aquatic conditions during periods of heavy rainfall, or vice versa during droughts. Additionally, Terrestrial Caves may harbor relatively permanent pools or lakes that are formed in natural depressions in the floor of the cave from the buildup of rimstone, or where the aquifer inundates the lower cavities. Thus, Terrestrial and Aquatic Caves often occur together.

Cave waters are generally clear, with deep water appearing bluish. The water may become stained brown from tannins leached from decaying plant matter nearby and carried in with rainwater. The water may also become milky white if fine limestone mud from the bottom of the Aquatic Cave is suspended in the water column following disturbance. A bottom substrate of organic silts can also muddy the water with suspended particles. Waters are generally circumneutral to alkaline with a high mineral content (particularly calcium bicarbonate and magnesium) and with constant temperature. Flowing water within Aquatic Caves generally has a lower pH, is often undersaturated with respect to carbonates, and has a relatively richer fauna. Contrastingly, pools that are fed by seepage or dripping water are generally characterized by a high pH, high concentration of dissolved carbonates, low content of organic matter suitable for food, and a sparse fauna. Cave water characteristics may also vary seasonally because of fluvial inputs from interconnected surface streams, or because of detrital pulses and other surface inputs during periods of substantial aquifer recharge. In general, however, Aquifer Caves are very stable environments with relatively constant physical and chemical characteristics.

Terrestrial Caves also are very stable environments, having relatively constant temperatures and humidities. Within the cave, however, these factors may vary with location. For example, the twilight zone (nearest to the light source) is generally warmer and experiences more temperature and humidity fluctuations than does the middle zone, a dark zone that is subject to air circulation due to "cave breathing" phenomena. The deep zone, when it occurs, is the most stable zone of a Terrestrial Cave, because the air in it is essentially static. Terrestrial Cave faunas often partition their distributions according to

these zones, with trogloxenes being more common in the twilight and middle zones and troglobites being more common in the deep zone.

Subterranean Natural Communities are extremely fragile. Their faunas are adapted to very stable environments and have a limited ability to survive even minor environmental perturbations. Terrestrial Caves are threatened by disturbances of spelunkers. The mere entry into a bat roosting, maternity, or hibernation cave is often sufficient to cause abandonment by bats, thereby causing a major reduction in an important energy source for the remainder of the cave ecosystem.

Alterations in or around cave entrances will often upset detrital input levels and may also induce significant changes in air circulation patterns and the cave microclimate. Aquatic Caves are threatened by pollution of ground and surface waters from agricultural, industrial, and residential sources, as well as by disturbances from divers. The unique troglobitic species generally have very low population levels and can be severely impacted by overcollection or by changes in nutrient input levels that result from surface manipulations or hydrological alterations. Thus, special precautions and management procedures must be invoked to protect these unique, fragile communities from deleterious activities.

(81/82) Ruderal and developed. - Ruderal areas are characterized by having the natural substrate or the natural community overwhelmingly altered as a result of human activity. Native vegetation is sparse and is often replaced by weedy or exotic species. These areas require a long-term restoration effort.

Developed areas consist of natural biological communities that have been replaced or nearly replaced by structures or permanently cleared areas such as roads, visitor facilities, campgrounds, recreation areas, parking lots or concessions.

ADDENDUM 5
PLANT AND ANIMAL LIST

ICHETUCKNEE SPRING STATE PARK

PLANTS

Common Name	*Scientific Name*	Primary Habitat (for designated species)

LICHENS

Cheilolejeunea myriantha
Cheilolejeunea rigidula
Cololejeunea cardiocarpa
Dumortiera hirsuta
Frullania ericoides
Frullania kunzei
Frullania obcordata
Lejeunea bermudiana
Lejeunea cladogyna
Lejeunea flava
Lejeunea laetevirens
Leucolejeunea unciloba
Metzgeria furcata
Plagiochila aspleniformis
Plagiochila dubia
Plagiochila floridana
Plagiochila invisa
Plagiochila miradorensis
Porella pinnata
Radula australis
Rectolejeunea maxonii
Rectolejeunea spiniloba

BRYOPHYTES

Amblystegium varium
Anomodon attenuatus
Anomodon rostratus
Atrichum angustatum
Barbula agraria
Barbula cancellata
Brachythecium acuminatum
Bryoandersonia illecebra
Bryohaplocladium microphyllum
Bryum pseudotriquetrum
Clasmatodon parvulus
Cryphaea glomerata
Cyrto-hypnum minutulum
Ditrichum pallidum
Entodon seductrix
Eurhynchium hians
Fissidens garberi
Fissidens bryoides
Fissidens taxifolius
Forsstroemia trichomitria
Funaria hygrometrica
Hypnum lindbergii
Isopterygium tenerum

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat (for designated species)
	Leptodictyum riparium	
	Leskea australis	
	Leucobryum albidum	
	Leucodon julaceus	
	Luisierella barbula	
	Mnium cuspidatum	
	Philonotis gracillima	
	Platygyrium repens	
	Rhynchostegium serrulatum	
	Sematophyllum adnatum	
	Syrrhopodon incompletus	
	Syrrhopodon parasiticus	
	Thelia hirtella	
	Thuidium delicatulum	
	Weissia controversa	
	Weissia jamaicensis	
	PTERIDOPHYTES	
Ebony spleenwort	*Asplenium platyneuron*	
Rattlesnake fern	*Botrychium virginianum*	
Japanese climbing fern	*Lygodium japonicum* *	
Royal fern	*Osmunda regalis*	
Cinnamon fern	*Osmunda cinnamomea*	
Ressurection fern	*Polypodium polypodioides*	
Bracken fern	*Pteridium aquilinum*	
Cretan brake	*Pteris cretica*	
Ladder-brake fern	*Pteris vittata* *	
Water spangles	*Salvinia minima*	
Southern shield fern	*Thelypteris kunthii*	
Harper's maiden fern	*Thelypteris ovata*	
Marsh fern	*Thelypteris palustris*	
Mariana maidenfern	*Macrothelypteris torresiana* *	
Netted chain-fern	*Woodwardia areolata*	
Virginia chain fern	*Woodwardia virginica*	
	GYMNOSPERMS	
Southern red cedar	*Juniperus silicicola*	
Eastern red cedar	*Juniperus virginiana*	
Shortleaf pine	*Pinus echinata*	
Slash pine	*Pinus elliottii*	
Spruce pine	*Pinus glabra*	
Longleaf pine	*Pinus palustris*	
Loblolly pine	*Pinus taeda*	
Pond cypress	*Taxodium ascendens*	
Bald cypress	*Taxodium distichum*	
Florida coontie	*Zamia floridana*	
	ANGIOSPERMS	

*** Non-native Species**

ICHETUCKNEE SPRING STATE PARK

PLANTS

Common Name	*Scientific Name*	Primary Habitat (for designated species)

MONOCOTS

Wild onion	*Allium canadense*
Bushy beard grass	*Andropogon glomeratus*
Beard grass	*Andropogon gyrans*
Splitbeard bluestem	*Andropogon ternarius*
Broom grass	*Andropogon virginicus*
Green silkyscale	*Anthaenantia villosa*
Green dragon	*Arisaema dracontium*
Jack-in-the-pulpit	*Arisaema triphyllum*
Wire grass	*Aristida beyrichiana*
Big threeawn	*Aristida condensata*
Woolysheath threeawn	*Aristida lanosa*
Switch cane	*Arundinaria gigantea*
Water-grass	*Bulbostylis barbata* *
Hair sedge	*Bulbostylis ciliatifolia*
Ware's hair sedge	*Bulbostylis warei*
Pindo palm	*Butia capitata* *
Bristly sedge	*Carex comosa*
Sedge	*Carex dasycarpa*
White-yellow sedge	*Carex longii*
Southern sandspur	*Cenchrus echinatus*
Coast sandspur	*Cenchrus incertus*
Spike grass	*Chasmanthium laxum*
Shiny spike grass	*Chasmanthium nitidum*
Two-spike windmill grass	*Chloris floridana*
Rock finger grass	*Chloris petraea*
Sawgrass	*Cladium jamaicense*
Day-flower	*Commelina erecta*
Spring coralroot	*Corallorhiza wisteriana*
Globe sedge	*Cyperus croceus*
Marshland flat sedge	*Cyperus distinctus*
Slender flat sedge	*Cyperus filiculmis*
Flat sedge	*Cyperus odoratus*
Sedge	*Cyperus plukenetii*
Cylindric sedge	*Cyperus retrorsus*
False nut-sedge	*Cyperus strigosus*
Surinam sedge	*Cyperus surinamensis*
Crowfoot grass	*Dactyloctenium aegyptium* *
Needle-leaf panic grass	*Dichanthelium aciculare*
Bosc's panic grass	*Dichanthelium boscii*
Variable panic grass	*Dichanthelium commutatum*
Forked panic grass	*Dichanthelium dichotomum*
Openflower witchgrass	*Dichanthelium laxiflorum*
Sandhill panic grass	*Dichanthelium ovale*
Shaggy crab grass	*Digitaria villosa*
Wild yam	*Dioscorea floridana*
Coastal cockspur	*Echinochloa walteri*
Burhead	*Echinodorus* sp.

*** Non-native Species**

ICHETUCKNEE SPRING STATE PARK

PLANTS

Common Name	*Scientific Name*	Primary Habitat (for designated species)
Water-hyacinth	*Eichhornia crassipes* *	
Road-grass	*Eleocharis baldwinii*	
Goose grass	*Eleusine indica* *	
Green-fly orchid	*Epidendrum conopseum*	Upland mixed forest
Feather grass	*Eragrostis amabilis* *	
Elliott love grass	*Eragrostis elliottii*	
Bigtop love grass	*Eragrostis hirsuta*	
Purple love grass	*Eragrostis spectabilis*	
Centipede grass	*Eremochloa ophiuroides* *	
Gladiolus	*Gladiolus* X *hortulanus* *	
Bearded skeleton grass	*Gymnopogon ambiguus*	
Sweet tanglehead	*Heteropogon melanocarpus*	
Crested coralroot	*Hexalectris spicata*	
Little barley	*Hordeum pusillum*	
Spider lily	*Hymenocallis crassifolia*	
Yellow star-grass	*Hypoxis curtisii*	
Duckweed	*Lemna obscura*	
Duckweed	*Lemna valdiviana*	
Florida Malaxis	*Malaxis spicata*	
Muhly grass	*Muhlenbergia capillaris*	
Southern naiad	*Najas guadalupensis*	
Wood grass	*Oplismenus hirtellus*	
Beaked Panicum	*Panicum anceps*	
Redtop Panicum	*Panicum rigidulum*	
Warty Panicum	*Panicum verrucosum*	
Bahia grass	*Paspalum notatum* *	
Thin Paspalum	*Paspalum setaceum*	
Vasey grass	*Paspalum urvillei* *	
Green arum	*Peltandra virginica*	
Panic grass	*Phanopyrum gymnocarpon*	
Blackseed needle grass	*Piptochaetium avenaceum*	
Water lettuce	*Pistia stratiotes* *	
Annual blue grass	*Poa annua* *	
Rattlesnake master	*Polianthes virginica*	
Solomon's-seal	*Polygonatum biflorum*	
Pickerel-weed	*Pontederia cordata*	
Shadow witch	*Ponthieva racemosa*	
Northern wild coco	*Pteroglossapsis ecristata*	Sandhill
Natal grass	*Rhynchelytrum repens* *	
White-top	*Rhynchospora colorata*	
Horned beak-rush	*Rhynchospora corniculata*	
Gray's beak-rush	*Rhynchospora grayi*	
Large-fruited beak-rush	*Rhynchospora megalocarpa*	
Millet beak-rush	*Rhynchospora miliacea*	
Wire-grass beak-rush	*Rhynchospora plumosa*	
Bluestem	*Sabal minor*	
Cabbage palm	*Sabal palmetto*	
Silver plume grass	*Saccharum alopecuroides*	
American cupscale grass	*Sacciolepis striata*	
Water arrowhead	*Sagittaria filliformis*	

*** Non-native Species**

ICHETUCKNEE SPRING STATE PARK

PLANTS

Common Name	*Scientific Name*	Primary Habitat (for designated species)
Spring-tape	*Sagittaria kurziana*	
Lanceleaf arrowhead	*Sagittaria lancifolia*	
	Schizachyrium sanguineum	
Soft-stem bulrush	*Scirpus tabernaemontani*	
Tall nut-rush	*Scleria triglomerata*	
Fringed nut-rush	*Scleria ciliata*	
Saw-palmetto	*Serenoa repens*	
Knotroot foxtail	*Setaria parviflora*	
Narrow-winged blue-eyed	*Sisyrinchium angustifolium*	
Sandhill blue-eyed-gras	*Sisyrinchium nashii*	
Annual blue-eyed-grass	*Sisyrinchium rosulatum* *	
Wild-bamboo	*Smilax auriculata*	
Catbrier	*Smilax bona-nox*	
Wild sarsaparilla	*Smilax glauca*	
Bamboo-vine	*Smilax laurifolia*	
Sarsaparilla vine	*Smilax pumila*	
Lanceleaf greenbrier	*Smilax smallii*	
Hogbrier	*Smilax tamnoides*	
Coral greenbrier	*Smilax walteri*	
Yellow indian grass	*Sorghastrum nutans*	
Lopsided indian grass	*Sorghastrum secundum*	
Longleaf wedgescale	*Sphenopholis filiformis*	
Praire wedgescale	*Sphenopholis obtusata*	
Nodding ladies'-tresses	*Spiranthes cernua*	
Lace-lip	*Spiranthes laciniata*	
Lesser ladies'-tresses	*Spiranthes ovalis*	
Giant duckweed	*Spirodela polyrhiza*	
Duckmeat	*Spirodela punctata*	
Smut grass	*Sporobolus indicus* *	
Pineywoods dropseed	*Sporobolus junceus*	
St. Augustine grass	*Stenotaphrum secundatum*	
Wild-pine	*Tillandsia bartramii*	
Spanish moss	*Tillandsia usneoides*	
Carolina Tridens	*Tridens carolinianus*	
Tall redtop	*Tridens flavus*	
Wake robin	*Trillium maculatum*	
Nodding pogonia	*Triphora trianthophora*	
Purple sand grass	*Triplasis purpurea*	
Common cattail	*Typha latifolia*	
Browntop millet	*Urochloa ramosa* *	
Eel-grass	*Vallisneria americana*	
Squirrel sixweeks grass	*Vulpia elliotea*	
Common sixweeks grass	*Vulpia octoflora*	
Water meal	*Wolffia columbiana*	
Spanish bayonet	*Yucca aloifolia* *	
Bear grass	*Yucca filamentosa*	
Rain lily	*Zephryanthes atamasco*	Upland mixed forest
Lawn orchid	*Zeuxine strateumatica* *	
Annual wild rice	*Zizania aquatica*	

*** Non-native Species**

ICHETUCKNEE SPRING STATE PARK

PLANTS

Common Name	*Scientific Name*	Primary Habitat (for designated species)
DICOTS		
Three-seeded mercury	*Acalypha gracilens*	
Box-elder	*Acer negundo*	
Red maple	*Acer rubrum*	
Florida maple	*Acer saccharum*	
Creeping spotflower	*Acmella oppositifolia*	
Joint-vetch	*Aeschynomene viscidula*	
Red buckeye	*Aesculus pavia*	
Pineland false-foxglove	*Agalinis divaricata*	
False-foxglove	*Agalinis fasciculata*	
Small leaf thoroughwort	*Ageratina jucunda*	
Harvest lice	*Agrimonia incisa*	Sandhill
Harvest lice	*Agrimonia microcarpa*	
Mimosa	*Albizia julibrissin* *	
Tung-oil tree	*Aleurites fordii* *	
Alligator weed	*Alternathera philoxeroides* *	
False moneywort	*Alysicarpus vaginalis* *	
Common pigweed	*Amaranthus hybridus* *	
Common ragweed	*Ambrosia artemisiifolia*	
False indigo	*Amorpha fruticosa*	
Pepper-vine	*Ampelopsis arborea*	
Hog peanut	*Amphicarpaea bracteata*	
Texas-star	*Amsonia tabernaemontana*	
Ground nut	*Apios americana*	
Devil's walking stick	*Aralia spinosa*	
Thyme-leaved sandwort	*Arenaria serypyllifolia* *	
Snake root	*Aristolochia serpentaria*	
Indian plantain	*Arnoglossum floridanum*	
Curly milkweed	*Asclepias amplexicaulis*	
Sandhill milkweed	*Asclepias humistrata*	
Aquatic milkweed	*Asclepias perennis*	
Velvet-leaf milkweed	*Asclepias tomentosa*	
Butterfly weed	*Asclepias tuberosa*	
Whorled-leaf milkweed	*Asclepias verticillata*	
Pawpaw	*Asimina angustifolia*	
Flag pawpaw	*Asimina incarna*	
Small-fruited pawpaw	*Asimina parviflora*	
Tight-leaved Aster	*Aster adnatus*	
Climbing Aster	*Aster carolinianus*	
Silvery Aster	*Aster concolor*	
Bushy Aster	*Aster dumosus*	
White-topped Aster	*Aster tortifolius*	
Wavy-leaf Aster	*Aster undulatus*	
Milk vetch	*Astragalus obcordatus*	
Hairy milk vetch	*Astragalus villosus*	
Hairy foxglove	*Aureolaria pedicularia* var. *pectinata*	
Salt bush	*Baccharis halimifolia*	
Water hyssop	*Bacopa monnieri*	
Yellow buttons	*Balduina angustifolia*	

*** Non-native Species**

ICHETUCKNEE SPRING STATE PARK

PLANTS

Common Name	*Scientific Name*	Primary Habitat (for designated species)
False indigo	*Baptisia lecontei*	
Rattan vine	*Berchemia scandens*	
Green eyes	*Berlandiera pumila*	
River birch	*Betula nigra*	
Common beggar-ticks	*Bidens alba*	
Spanish needles	*Bidens bipinnata*	
Wild goldenglow	*Bidens laevis*	
Cross vine	*Bignonia capreolata*	
Bog hemp	*Boehmeria cylindrica*	
Wineflower	*Boerhavia diffusa*	
False boneset	*Brickellia eupatorioides*	
Blueheart	*Buchnera floridana*	
Beautyberry	*Callicarpa americana*	
Sweet-shrub	*Calycanthus floridus*	Sandhill, upland pine forest
Florida bluebell	*Campanula floridana*	
Trumpet-vine	*Campsis radicans*	
Bitter-cress	*Cardamine hirsuta* *	
Muscle wood	*Carpinus caroliniana*	
Water hickory	*Carya aquatica*	
Pignut hickory	*Carya glabra*	
Mockernut hickory	*Carya tomentosa*	
Chinquapin	*Castanea pumila*	
Catalpa	*Catalpa bignonioides*	
Madagascar periwinkle	*Catharanthus roseus* *	
New Jersey-tea	*Ceanothus americanus*	
Sugarberry	*Celtis laevigata*	
Coinwort	*Centella asiatica*	
Butterfly-pea	*Centrosema virginianum*	
Buttonbush	*Cephalanthus occidentalis*	
Mouse-ear chickweed	*Cerastium glomeratum* *	
Hornwort	*Ceratophyllum demersum*	
Redbud	*Cercis canadensis*	
Wild chervil	*Chaerophyllum tainturieri*	
Partridge-pea	*Chamaecrista fasciculata*	
Wild sensitive plant	*Chamaecrista nictitans*	
Hairy spurge	*Chamaesyce hirta*	
Eyebane	*Chamaesyce hyssopifolia*	
Milk purslane	*Chamaesyce maculata*	
Mexican-tea	*Chenopodium ambrosioides* *	
Fringe tree	*Chionanthus virginica*	
Fringed leaf golden Aster	*Chrysopsis gossypina*	
Water hemlock	*Cicuta maculata*	
Nuttall's thistle	*Cirsium nuttallii*	
Sour orange	*Citrus aurantium* *	
Leatherleaf	*Clematis crispa*	
Vase-vine	*Clematis reticulata*	
Turk's-turban	*Clerodendron indicum* *	
Butterfly-pea	*Clitoria mariana*	
Tread softly	*Cnidoscolus stimulosus*	
Carolina moonseed	*Cocculus carolinus*	

*** Non-native Species**

ICHETUCKNEE SPRING STATE PARK

PLANTS

Common Name	*Scientific Name*	Primary Habitat (for designated species)
Mist flower	*Conoclinium coelestinum*	
Squaw root	*Conopholis americana*	
Horseweed	*Conyza canadensis*	
Dye flower	*Coreopsis basalis* *	
Common tickseed	*Coreopsis leavenworthii*	
Rough-leaf cornel	*Cornus asperifolia*	
Swamp dogwood	*Cornus foemina*	
Flowering dogwood	*Cornus florida*	
Harlequin	*Corydalis micrantha*	
Summer haw	*Crataegus floridana*	
Dwarf-thorn	*Crataegus uniflora*	
Green haw	*Crataegus viridus*	
Scratch daisy	*Croptilon divaricatum*	
Rattle-box	*Crotalaria lanceolata*	
Rabbit-bells	*Crotalaria rotundifolia*	
Showy Crotalaria	*Crotalaria spectabilis* *	
Silver Croton	*Croton argyranthemus*	
Tropic Croton	*Croton glandulosus*	
Wooly Croton	*Croton capitatus*	
Rushfoil	*Crotonopsis linearis*	
Field dodder	*Cuscuta pentagona*	
Marsh parsley	*Cyclospermum leptophyllum* *	
Three corner prairie-clover	*Dalea carnea*	
Summer farewell	*Dalea pinnata*	
South-western carrot	*Daucus pusillus*	
Climbing hydrangea	*Decumaria barbara*	
Tansy mustard	*Descurainia pinnata*	
Hoary tick-clover	*Desmodium canescens*	
Small-leaved tick-trefoil	*Desmodium ciliare*	
Rhomb-leaved tick-trefoil	*Desmodium floridanum*	
Smooth tick-clover	*Desmodium laevigatum*	
Stiff tick-trefoil	*Desmodium strictum*	
Narrowleaf tick-trefoil	*Desmodium tenuifolium*	
Florida beggarweed	*Desmodium tortuosum*	
Sagotia beggarweed	*Desmodium triflorum* *	
Pony-foot	*Dichondra carolinensis*	
Poor Joe	*Diodia teres*	
Buttonweed	*Diodia virginiana*	
Persimmon	*Diospyros virginiana*	
West Indian chickweed	*Drymaria cordata*	
Blue twin flower	*Dyschoriste oblongifolia*	
Leafy elephant's-foot	*Elephantopus carolinianus*	
Florida elephant's-foot	*Elephantopus elatus*	
Southeastern elephant's-foot	*Elephantopus tomentosus*	
Fireweed	*Erechtites hieracifolia*	
White-tops	*Erigeron strigosus*	
Southern fleabane	*Erigeron quercifolius*	
Loquat	*Eriobotrya japonica* *	
Dog-tongue	*Eriogonum tomentosum*	
Matted button snakeroot	*Eryngium baldwinii*	

*** Non-native Species**

ICHETUCKNEE SPRING STATE PARK

PLANTS

Common Name	***Scientific Name***	**Primary Habitat (for designated species)**
Cherokee bean	*Erythrina herbacea*	
Heart's-a-bustin'	*Euonomys americanus*	
White thoroughwort	*Eupatorium album*	
Dog fennel	*Eupatorium capillifolium*	
Dog fennel	*Eupatorium compositifolium*	
Boneset	*Eupatorium cuneifolium*	
Late thoroughwort	*Eupatorium serotinum*	
Red Agaloma	*Euphorbia exserta*	
Flat-topped goldenrod	*Euthamia caroliniana*	
Swamp privet	*Forestiera acuminata*	
White ash	*Fraxinus americana*	
Pop ash	*Fraxinus caroliniana*	
Pumpkin ash	*Fraxinus pennsylvanica*	
Cottonweed	*Froelichia floridana*	
Smooth-headed blanket flower	*Gaillardia aestivalis*	
Florida milk-pea	*Galactia regularis*	
Milk-pea	*Galactia mollis*	
Downy milk-pea	*Galactia volubilis*	
Spring cleavers	*Galium aparine*	
Purple Galium	*Galium hispidulum*	
Hairy-fruited bedstraw	*Galium pilosum*	
Dye bedstraw	*Galium tinctorium*	
Bedstraw	*Galium uniflorum*	
Southern Gaura	*Gaura angustifolia*	
Yellow jessamine	*Gelsemium sempervirens*	
Cranesbill	*Geranium carolinianum*	
Rose vervain	*Glandularia canadensis*	
Moss Verbena	*Glandularia pulchella* *	
Water locust	*Gleditsia aquatica*	
Cudweed	*Gnaphalium americanum*	
Cudweed	*Gnaphalium falcatum*	
Sweet everlasting	*Gnaphalium obtusifolium*	
Wandering cudweed	*Gnaphalium pensilvanicum*	
Silverbells	*Halesia carolina*	
Witch hazel	*Hamamelis virginiana*	
Old World diamond-flower	*Hedyotis corymbosa*	
Fairy footprints	*Hedyotis procumbens*	
Clustered diamond-flower	*Hedyotis uniflora*	
Sun-rose	*Helianthemum carolinianum*	
Rock-rose	*Helianthemum corymbosum*	
Swollen sunflower	*Helianthus strumosus*	
Camphor weed	*Heterotheca subaxillaris*	
Pineland Hibiscus	*Hibiscus aculeatus*	
Hawkweed	*Hieracium gronovii*	
Large-head hawkweed	*Hieracium megacephalon*	
Floating pennywort	*Hydrocotyle ranunculoides*	
Marsh pennywort	*Hydrocotyle umbellata*	
Swamp pennywort	*Hydrocotyle verticillata*	
Old plainsman	*Hymenopappus scabiosaeus*	
St. John's wort	*Hypericum galioides*	

*** Non-native Species**

ICHETUCKNEE SPRING STATE PARK

PLANTS

Common Name	*Scientific Name*	Primary Habitat (for designated species)
St. Andrew's-cross	*Hypericum hypericoides*	
Dwarf St. John's-wort	*Hypericum mutilum*	
Bitter mint	*Hyptis mutabilis* *	
Sand holly	*Ilex ambigua*	
Dahoon holly	*Ilex cassine*	
Large gallberry	*Ilex coriacea*	
Possum haw	*Ilex decidua*	
Gallberry	*Ilex glabra*	
American holly	*Ilex opaca*	
Yaupon holly	*Ilex vomitoria*	
Hairy indigo	*Indigofera hirsuta* *	
Creeping indigo	*Indigofera spicata* *	
Morning-glory	*Ipomoea macrorhiza* *	
Man-of-the-earth	*Ipomoea pandurata*	
Sharp-pod morning-glory	*Ipomoea cordatotriloba*	
Three-lobe morning-glory	*Ipomoea triloba* *	
Virginia-willow	*Itea virginica*	
Water-willow	*Justicia ovata*	
Sandbur	*Krameria lanceolata*	
Dwarf dandelion	*Krigia virginica*	
Japanese clover	*Kummerowia striata* *	
Wood lettuce	*Lactuca canadensis*	
Wild lettuce	*Lactuca floridana*	
Blue lettuce	*Lactuca graminifolia*	
Crepe-myrtle	*Lagerstroemia indica* *	
Henbit	*Lamium amplexicaule* *	
Shrub Verbena	*Lantana camara* *	
Thyme-leaved pinweed	*Lechea minor*	
Hairy long-leaved pinweed	*Lechea mucronata*	
Pepper weed	*Lepidium virginicum*	
Hairy bush-clover	*Lespedeza hirta*	
Creeping Lespedeza	*Lespedeza repens*	
Tall bush-clover	*Lespedeza stuevei*	
Handsome blazing star	*Liatris elegans*	
Fine leaf blazing star	*Liatris tenuifolia*	
Gopher-apple	*Licania michauxii*	
Japanese privet	*Ligustrum japonicum* *	
Glossy privet	*Ligustrum lucidum* *	
Hedge privet	*Ligustrum sinense* *	
Blue toad-flax	*Linaria canadensis*	
Sweetgum	*Liquidambar styraciflua*	
Pucoon	*Lithospermum tuberosum*	
Cardinal flower	*Lobelia cardinalis*	Floodplain swamp
Downy Lobelia	*Lobelia puberula*	
Japanese honeysuckle	*Lonicera japonica* *	
Coral honeysuckle	*Lonicera sempervirens*	
Coastal plain seedbox	*Ludwigia maritima*	
Water-primrose	*Ludwigia repens*	
Sundial lupine	*Lupinus perennis*	
Lady lupine	*Lupinus villosus*	

*** Non-native Species**

ICHETUCKNEE SPRING STATE PARK

PLANTS

Common Name	*Scientific Name*	Primary Habitat (for designated species)
Roserush	*Lygodesmia aphylla*	
Staggerbush	*Lyonia ferruginea*	
Fetterbush	*Lyonia lucida*	
Southern Magnolia	*Magnolia grandiflora*	
Sweet bay	*Magnolia virginiana*	
Florida Matelea	*Matelea floridana*	Upland pine forest
Angle-pod	*Matelea gonocarpos*	Upland mixed forest
Trailing spiny-pod	*Matelea pubiflora*	
White-flowered Mecardonia	*Mecardonia acuminata*	
Black medic	*Medicago lupulina* *	
Halberd-leaf	*Melanthera nivea*	
White sweet-clover	*Melilotus alba* *	
Hairy Melochia	*Melochia spicata*	
Creeping cucumber	*Melothria pendula*	
Globifera	*Micranthemum umbrosum*	
False pennyroyal	*Micromeria brownei*	
Climbing hempweed	*Mikania cordifolia*	
Climbing hempweed	*Mikania scandens*	
Sensitive brier	*Mimosa quadrivalvis*	
Partridge berry	*Mitchella repens*	
Miterwort	*Mitreola petiolata*	
Carpet-weed	*Mollugo verticillata* *	
Horse mint	*Monarda punctata*	
Indian pipes	*Monotropa uniflora*	
Red mulberry	*Morus rubra*	
Wax-myrtle	*Myrica cerifera*	
Water milfoil	*Myriophyllum heterophyllum*	
Green parrot-feather	*Myriophyllum pinnatum*	
Spatterdock	*Nuphar luteum*	
Black gum	*Nyssa sylvatica* var. *biflora*	
Sour gum	*Nyssa sylvatica*	
Weedy evening-primrose	*Oenothera biennis*	
Cut-leaved evening primrose	*Oenothera laciniata*	
False gromwell	*Onosmodium virginianum*	
Prickly pear	*Opuntia humifusa*	
Fine-leaf Psoralea	*Orbexilum lupinellus*	
Wild olive	*Osmanthus americanus*	
Hop-hornbeam	*Ostrya virginiana*	
Lady's wood-sorrel	*Oxalis corniculata*	
Violet wood-sorrel	*Oxalis rubra* *	
Many wings	*Palafoxia integrifolia*	
American whitlow-wort	*Paronychia americana*	
Baldwin's whitlow-wort	*Paronychia baldwinii*	
Sand-squares	*Paronychia rugelii*	
Virginia creeper	*Parthenocissus quinquefolia*	
Maypop	*Passiflora incarnata*	
Yellow passionflower	*Passiflora lutea*	
Fetid marigold	*Pectis prostrata*	
Hoary scurf-pea	*Pediomelum canescens*	
Beard-tongue	*Penstemon australis*	

*** Non-native Species**

Common Name	***Scientific Name***	**Primary Habitat (for designated species)**
Hall's Pentodon	*Pentodon pentandrus*	
Red bay	*Persea borbonia*	
Swamp bay	*Persea palustris*	
Wild bean	*Phaseolus polystachios*	
Trailing wild bean	*Phaseolus polystachios* var. *sinuatus*	
Annual garden Phlox	*Phlox drummondii* *	
Downy Phlox	*Phlox pilosa*	
Mistletoe	*Phoradendron leucarpum*	
Red-leaf photina	*Photina glabra* *	
Match-head	*Phyla nodiflora*	
Long-stalked Phyllanthus	*Phyllanthus tenellus* *	
Chamberbitter	*Phyllanthus urinaria* *	
Pubescent ground-cherry	*Physalis arenicola*	
Ground-cherry	*Physalis carpenteri*	
Downy ground-cherry	*Physalis pubescens*	
Ground-cherry	*Physalis longifolia* var. *subglabrata*	
Slender-leaf dragon-head	*Physostegia leptophylla*	
Pokeweed	*Phytolacca rigida*	
Piriqueta	*Piriqueta caroliniana*	
Pittosporum	*Pittosporum* sp. *	
Silk-grass	*Pityopsis graminifolia*	
Southern plantain	*Plantago virginica*	
Marsh fleabane	*Pluchea camphorata*	
Painted-leaf	*Poinsettia heterophylla*	
Large-flower Polygala	*Polygala grandiflora*	
Milkwort	*Polygala leptostachys*	
Wireweed	*Polygonella gracilis*	
Sandhill wireweed	*Polygonella robusta*	
Smartweed	*Polygonum hydropiperoides*	
Dotted smartweed	*Polygonum punctatum*	
Stubble smartweed	*Polygonum setaceum*	
Jumpseed	*Polygonum virginianum*	
Rustweed	*Polypremum procumbens*	
Marsh mermaid weed	*Proserpinaca palustris*	
Cherry laurel	*Prunus caroliniana*	
Black cherry	*Prunus serotina*	
Hog plum	*Prunus umbellata*	
Skunk bush	*Ptelea trifoliata*	
Blackroot	*Pterocaulon pycnostachyum*	
Mock bishop's-weed	*Ptilimnium capillaceum*	
False dandelion	*Pyrrhopappus carolinianus*	
Southern red oak	*Quercus falcata*	
Sand-live oak	*Quercus geminata*	
Blue-jack oak	*Quercus incana*	
Turkey oak	*Quercus laevis*	
Diamond-leaf oak	*Quercus laurifolia*	
Overcup oak	*Quercus lyrata*	
Sand-post oak	*Quercus margaretta*	
Swamp chestnut oak	*Quercus michauxii*	
Water oak	*Quercus nigra*	

*** Non-native Species**

ICHETUCKNEE SPRING STATE PARK

PLANTS

Common Name	*Scientific Name*	Primary Habitat (for designated species)
Shumard oak	*Quercus shumardii*	
Bluff oak	*Quercus sinuata*	
Live oak	*Quercus virginiana*	
Indian azalea	*Rhododendron simsii* *	
Winged sumac	*Rhus copallina*	
Twining Rhynchosia	*Rhynchosia difformis*	
Small Rhynchosia	*Rhynchosia minima*	
Dollar-weed	*Rhynchosia reniformis*	
Tall Rhynchosia	*Rhynchosia tomentosa*	
Brazil pusley	*Richardia brasiliensis* *	
Florida pusley	*Richardia scabra*	
Water-cress	*Rorippa floridana*	
Water-cress	*Rorippa nasturtium-aquaticum* *	
Swamp rose	*Rosa palustris*	
Highbush blackberry	*Rubus argutus*	
Sand blackberry	*Rubus cuneifolius*	
Dewberry	*Rubus trivialis*	
Black-eyed Susan	*Rudbeckia hirta*	
Sandhill coneflower	*Rudbeckia mollis*	
Wild petunia	*Ruellia caroliniensis*	
Sourdock	*Rumex hastatulus*	
Marsh pink	*Sabatia calycina*	
Buckthorn	*Sageretia minutiflora*	
Carolina willow	*Salix caroliniana*	
Florida willow	*Salix floridana*	Floodplain marsh
Blue sage	*Salvia azurea*	
Lyre-leaved sage	*Salvia lyrata*	
Elderberry	*Sambucus canadensis*	
Pineland pimpernel	*Samolus valerandi* subsp. *parviflorus*	
Snakeroot	*Sanicula canadensis*	
Southern soapberry	*Sapindus saponaria*	
Sassafras	*Sassafras albidum*	
Lizard-tail	*Saururus cernuus*	
Central Florida skullcap	*Scutellaria arenicola*	
Skullcap	*Scutellaria incana*	
Rolled-leaf skullcap	*Scutellaria mutiglandulosa*	
Hairy groundsel	*Senecio tomentosus*	
Sicklepod	*Senna obtusifolia*	
Sesban	*Sesbania punicea* *	
Sticky Seymeria	*Seymeria pectinata*	
Elliott's Sida	*Sida elliottii*	
Arrowleaf Sida	*Sida rhombifolia*	
Black-haw	*Sideroxylon lanuginosum*	
Shrubby buckthorn	*Sideroxylon reclinatum*	
Rusty buckthorn	*Sideroxylon rufohirtum*	
Sleepy catchfly	*Silene antirrhina*	
Common nightshade	*Solanum americanum*	
Soda-apple	*Solanum capsicoides* *	
Sharp-toothed goldenrod	*Solidago arguta*	
Leavenworth's goldenrod	*Solidago gigantea*	

*** Non-native Species**

ICHETUCKNEE SPRING STATE PARK

PLANTS

Common Name	*Scientific Name*	Primary Habitat (for designated species)
Sweet goldenrod	*Solidago odora*	
Goldenrod	*Solidago petiolaris*	
Slender goldenrod	*Solidago stricta*	
Twisted-leaf goldenrod	*Solidago tortifolia*	
Spiney-leaved sow thistle	*Sonchus asper* *	
Common sow thistle	*Sonchus oleraceus* *	
Spreading scaleseed	*Spermolepis divaricata*	
Scaleseed	*Spermolepis echinata*	
Florida betony	*Stachys floridana*	
Common chickweed	*Stellaria media* *	
Queen's delight	*Stillingia sylvatica*	
Trailing Stylisma	*Stylisma patens*	
Carolina vervain	*Stylodon carneus*	
Pencil flower	*Stylosanthes biflora*	
Sweetleaf	*Symplocos tinctoria*	
Long-stalked hoary-pea	*Tephrosia florida*	
Hoary-pea	*Tephrosia spicata*	
Squareheads	*Tetragonotheca helianthoides*	
Wood sage	*Teucrium canadense*	
Purple meadow parsnip	*Thaspium trifoliatum*	
Basswood	*Tilia americana*	
Poison ivy	*Toxicodendron radicans*	
Eastern poison oak	*Toxicodendron toxicarium*	
Eastern Tragia	*Tragia urens*	
Blue curls	*Trichostema dichotomum*	
Low hop clover	*Trifolium campestre* *	
Wild white clover	*Trifolium carolinianum*	
White clover	*Trifolium repens* *	
Two-flowered venus' looking	*Triodanis perfoliata* var. *biflor*a	
Venus' looking-glass	*Triodanis perfoliata*	
Winged elm	*Ulmus alata*	
American elm	*Ulmus americana*	
Sparkleberry	*Vaccinium arboreum*	
Highbush blueberry	*Vaccinium corymbosum*	
Darrow's blueberry	*Vaccinium darrowii*	
Shiney blueberry	*Vaccinium myrsinites*	
Deerberry	*Vaccinium stamineum*	
Corn salad	*Valerianella radiata*	
Brazil vervain	*Verbena brasiliensis* *	
European vervain	*Verbena officinalis*	
Harsh Verbena	*Verbena scabra*	
Narrow-leaf ironweed	*Vernonia angustifolia*	
Tall ironweed	*Vernonia gigantea*	
Corn speedwell	*Veronica arvens*is *	
Walter's Viburnum	*Viburnum obovatum*	
Rusty-haw	*Viburnum rufidulum*	
Florida vetch	*Vicia floridana*	
Common vetch	*Vicia sativa* *	
Florida violet	*Viola sororia*	
Seven-lobed violet	*Viola palmata*	

*** Non-native Species**

ICHETUCKNEE SPRING STATE PARK
PLANTS

Common Name	*Scientific Name*	Primary Habitat (for designated species)
Walter's violet	*Viola walteri*	
Summer grape	*Vitis aestivalis*	
Simpson's grape	*Vitis cinera*	
Red grape	*Vitis palmata*	
Muscadine grape	*Vitis rotundifolia*	
Frost grape	*Vitis vulpina*	
Asiatic bellflower	*Wahlenbergia marginata* *	
Chinese Wisteria	*Wisteria sinensis* *	
Hawk's-beard	*Youngia japonica* *	
Hercules'-club	*Zanthoxylum clava-herculis*	

*** Non-native Species**

ICHETUCKNEE SPRING STATE PARK
ANIMALS

Common Name	*Scientific Name*	Primary Habitat (for all species)
	FISHES	
Bowfin	*Amia calva*	Spring-run stream
American eel	*Anguilla rostrata*	Spring-run stream
Pirate perch	*Aphredoderus sayanus*	Spring-run stream
Banded pygmy sunfish	*Elassoma zonatum*	Spring-run stream
Lake chubsucker	*Erimyzon sucetta*	Spring-run stream
Redfin pickerel	*Esox americanus*	Spring-run stream
Florida swamp darter	*Etheostoma fusiforme barratti*	Spring-run stream
Brown darter	*Etheostoma edwini edwini*	Spring-run stream
Golden topminnow	*Fundulus chrysotus*	Spring-run stream
Eastern starhead topminnow	*Fundulus escambia*	Spring-run stream
Seminole Killifish	*Fundulus seminolis*	Spring-run stream
Eastern mosquitofish	*Gambusia affinis holbrooki*	Spring-run stream
Least killifish	*Heterandria formosa*	Spring-run stream
Yellow catfish	*Ictalurus natalis*	Spring-run stream
Flagfish	*Jordanella floridae*	Spring-run stream
Florida gar	*Lepisosteus platyrhincus*	Spring-run stream
Redbreast sunfish	*Lepomis auritus*	Spring-run stream
Warmouth	*Lepomis gulosus*	Spring-run stream
Bluegill	*Lepomis macrochirus*	Spring-run stream
Dollar Sunfish	*Lepomis marginatus*	Spring-run stream
Shellcracker	*Lepomis microlophus*	Spring-run stream
Stumpknocker	*Lepomis punctatus*	Spring-run stream
Bluefin killifish	*Lucania goodei*	Spring-run stream
Suwannee bass	*Micropterus notius*	Spring-run stream
Florida largemouth bass	*Micropterus salmoides floridanus*	Spring-run stream
Spotted sucker	*Minytrema melanops*	Spring-run stream
Striped mullet	*Mugil cephalus*	Spring-run stream
Golden shiner	*Notemigonus crysoleucas*	Spring-run stream
Redeye chub	*Notropis harperi*	Spring-run stream
Sailfin shiner	*Notropis hypselopterus*	Spring-run stream
Coastal shiner	*Notropis petersoni*	Spring-run stream
Tadpole madtom	*Noturus gyrinus*	Spring-run stream
Speckled madtom	*Noturus leptacanthus*	Spring-run stream
Blackbanded darter	*Percina nigrofasciata*	Spring-run stream
Armored catfish	*Plecostomus* sp. *	Spring-run stream
Sailfin molly	*Poecilia latipinna*	Spring-run stream
Speckled perch	*Pomoxis nigromaculatus*	Spring-run stream
Atlantic needlefish	*Strongylura marina*	Spring-run stream
Hogchoker	*Trinectes maculatus*	Spring-run stream
	AMPHIBIANS	
FROGS		
Florida cricket frog	*Acris gryllus dorsalis*	Floodplain swamp
Oak toad	*Bufo quercicus*	Upland pine forest
Southern toad	*Bufo terrestris*	Upland mixed forest

ICHETUCKNEE SPRING STATE PARK
ANIMALS

Common Name	*Scientific Name*	Primary Habitat (for all species)
Eastern narrowmouth toad	*Gastrophryne carolinensis*	Upland mixed forest
Green treefrog	*Hyla cinerea*	Upland mixed forest
Gray treefrog	*Hyla chrysoscelis*	Upland mixed forest floodplain forest
Spring peeper	*Hyla crucifer*	Upland mixed forest, floodplain forest
Pinewoods treefrog	*Hyla femoralis*	Upland pine forest
Squirrel treefrog	*Hyla squirella*	Upland mixed forest
Southern chorus frog	*Pseudacris nigrita*	Upland mixed forest
Ornate chorus frog	*Pseudacris ornata*	Upland mixed forest
Florida gopher frog	*Rana capito aesopus*	Sandhill
Bull frog	*Rana catesbeiana*	Floodplain swamp
Pig frog	*Rana grylio*	Floodplain swamp
Southern leopard frog	*Rana sphenocephala*	Floodplain swamp
Eastern spadefoot	*Scaphiopus holbrooki*	Upland pine forest
SALAMANDERS		
Central newt	*Notophthalmus viridescens louisianensis*	Spring-run stream
	REPTILES	
CROCODILIANS		
Alligator	*Alligator mississippiensis*	Spring-run stream
TURTLES		
Florida snapping turtle	*Chelydra serpentina osceola*	Floodplain swamp
Gopher tortoise	*Gopherus polyphemus*	Upland pine forest, sandhill
Alligator snapping turtle	*Macroclemys temminckii*	Spring-run stream
Suwannee cooter	*Pseudemys concinna suwanniensis*	Spring-run stream
Peninsula cooter	*Pseudemys floridana peninsularis*	Spring-run stream
Loggerhead musk turtle	*Sternotherus minor minor*	Spring-run stream
Stinkpot	*Sternotherus odoratus*	Spring-run stream
Florida box turtle	*Terrapene carolinensis bauri*	Upland mixed forest
Yellowbelly turtle	*Trachemys scripta scripta*	Spring-run stream
Florida softshell	*Trionyx ferox*	Spring-run stream
LIZARDS		
Green anole	*Anolis carolinensis*	Throughout
Brown anole	*Anolis sagrei* *	Developed
Six-lined racerunner	*Cnemidophorus sexlineatus*	Sandhill
Northern mole skink	*Eumeces egregius similis*	Sandhill
Southeastern five-lined skink	*Eumeces inexpectatus*	Upland pine forest
Broad-head skink	*Eumeces laticeps*	Upland mixed forest
Mediterranean gecko	*Hemidactylus turcicus* *	Developed
Eastern slender glass lizard	*Ophisaurus attenuatus longicaudus*	Sandhill
Eastern glass lizard	*Ophisaurus ventralis*	Upland pine forest

*** Non-native Species**

ICHETUCKNEE SPRING STATE PARK
ANIMALS

Common Name	*Scientific Name*	Primary Habitat (for all species)
Florida worm lizard	*Rhineura floridana*	Sandhill
Southern fence lizard	*Sceloporus undulatus*	Sandhill
Ground skink	*Scincella lateralis*	Upland mixed forest
SNAKES		
Florida cottonmouth	*Agkistrodon piscivorus conanti*	Floodplain swamp
Scarlet snake	*Cemophora coccinea*	Upland pine forest
Southern black racer	*Coluber constrictor priapus*	Upland mixed forest
Eastern diamondback rattlesnake	*Crotalus adamanteus*	Sandhill
Southern ringneck snake	*Diadophis punctatus punctatus*	Upland mixed forest
Eastern indigo snake	*Drymarchon corais couperi*	Sandhill
Corn snake	*Elaphe guttata*	Sandhill
Rat snake	*Elaphe obsoleta*	Upland mixed forest
Eastern mud snake	*Farancia abacura abacura*	Floodplain marsh
Eastern hognose snake	*Heterodon platyrhinos*	Sandhill
Scarlet kingsnake	*Lampropeltis triangulum elapsoides*	Upland pine forest
Eastern kingsnake	*Lampropeltis getula getula*	Upland mixed forest
Eastern coral snake	*Micrurus fulvius*	Upland mixed forest
Redbelly water snake	*Nerodia erythrogaster erythrogaster*	Spring-run stream
Florida water snake	*Nerodia fasciata pictiventris*	Floodplain marsh
Green water snake	*Nerodia floridana*	Floodplain marsh
Brown water snake	*Nerodia taxispilota*	Floodplain swamp
Rough green snake	*Opheodrys aestivus*	Upland mixed forest
Florida pine snake	*Pituophis melanoleucus mugitus*	Sandhill
Short-tailed snake	*Stilosoma extentuatum*	Sandhill
Florida crowned snake	*Tantilla relicta neilli*	Sandhill
Peninsula ribbon snake	*Thamnophis sauritus sackeni*	Upland mixed forest
Eastern garter snake	*Thamnophis sirtalis sirtalis*	Upland mixed forest
BIRDS		
LOONS		
Common loon	*Gavia immer*	Spring-run stream
GREBES		
Pied-billed grebe	*Podilymbus podiceps*	Spring-run stream
CORMORANTS		
Double-crested cormorant	*Phalacrocorax auritus*	Spring-run stream
ANHINGAS		
Anhinga	*Anhinga anhinga*	Spring-run stream
HERONS AND BITTERNS		
Great blue heron	*Ardea herodias*	Spring-run stream
American Bittern	*Botaurus lentiginosus*	Floodplain marsh
Cattle egret	*Bubulcus ibis*	Ruderal, developed

*** Non-native Species**

ICHETUCKNEE SPRING STATE PARK
ANIMALS

Common Name	*Scientific Name*	Primary Habitat (for all species)
Green-backed heron	*Butorides striatus*	Spring-run stream
Great egret	*Casmerodius albus*	Spring-run stream
Little blue heron	*Egretta caerulea*	Spring-run stream
Snowy egret	*Egretta thula*	Spring-run stream
Tricolored heron	*Egretta tricolor*	Spring-run stream
Least Bittern	*Ixobrychus exilis*	Spring-run stream
Black-crowned Night-Heron	*Nticorax nycticorax*	Floodplain swamp
Yellow-crowned night heron	*Nyctanassa violacea*	Floodplain swamp
IBIS AND SPOONBILLS		
White ibis	*Eudocimus albus*	Floodplain swamp
STORKS		
Wood Stork	*Mycteria americana*	Floodplain swamp
SWANS, GEESE, AND DUCKS		
Wood duck	*Aix sponsa*	Spring-run stream
Northern pintail	*Anas acuta*	Spring-run stream
Blue-winged Teal	*Anas discors*	Spring-run stream
Mallard	*Anas platyrhynchos*	Spring-run stream
Lesser Scaup	*Aythya affinis*	Spring-run stream
Ring-necked duck	*Aythra collaris*	Spring-run stream
Canada goose	*Branta canadensis*	Spring-run stream
Fulvous Whistling-Duck	*Dendrocygna bicolor*	Spring-run stream
VULTURES		
Turkey vulture	*Cathartes aura*	Throughout
Black vulture	*Coragyps atratus*	Throughout
KITES, EAGLES, AND HAWKS		
Cooper's hawk	*Accipiter cooperi*	Upland mixed forest
Sharp-shinned hawk	*Accipiter striatus*	Upland mixed forest
Red-tailed hawk	*Buteo famaicensis*	Upland pine forest
Red-shouldered hawk	*Buteo lineatus*	Floodplain swamp
Broad-winged hawk	*Buteo platypterus*	Upland mixed forest
Northern harrier	*Circus cyaneus*	Floodplain marsh
Swallow-tailed kite	*Elanoides forficatus*	Throughout
Bald eagle	*Haliaeetus leucocephalus*	Throughout
Mississippi kite	*Ictinia mississipiensis*	Throughout
Snail kite	*Rostrhamus sociabilis*	Floodplain marsh
OSPREY		
Osprey	*Pandion haliaetus*	Spring-run stream
FALCONS		
American Kestrel	*Falco sparverius*	Sandhill
PHEASANTS, TURKEY, AND QUAIL		
Northern bobwhite	*Colinus virginianus*	Sandhill
Wild turkey	*Meleagris gallopavo*	Upland pine forest

*** Non-native Species**

ICHETUCKNEE SPRING STATE PARK
ANIMALS

Common Name	*Scientific Name*	Primary Habitat (for all species)
CRANES		
Sandhill crane	*Grus canadensis*	Floodplain marsh
LIMPKINS		
Limpkin	*Aramus guarauna*	Spring-run stream
RAILS AND GALLINULES		
Common moorhen	*Gallinula chloropus*	Spring-run stream
American coot	*Fulica americana*	Spring-run stream
Purple gallinule	*Poryphyrula martinica*	Spring-run stream
Sora	*Porzana carolina*	Floodplain marsh
Virginia rail	*Rallus limicola*	Floodplain marsh
PLOVERS		
Killdeer	*Charadrius vociferus*	Developed
SNIPES & SANDPIPERS		
Spotted sandpiper	*Actitis macularia*	Floodplain swamp
American woodcock	*Scolopax minor*	Upland mixed forest
Solitary sandpiper	*Tringa solitaria*	Floodplain swamp
PIGEONS AND DOVES		
Rock dove	*Columba livia* *	Developed
Common ground dove	*Columbina passerina*	Sandhill
Eurasian collared-dove	*Streptopelia decaocto* *	Developed
Mourning dove	*Zenaida macroura*	Throughout
CUCKOOS		
Yellow-billed cuckoo	*Coccyzus americanus*	Upland mixed forest
OWLS		
Great horned owl	*Bubo virginianus*	Upland mixed forest
Eastern screech owl	*Otus asio*	Upland mixed forest
Barred owl	*Strix varia*	Floodplain forest
Common barn owl	*Tyto alba*	Throughout
NIGHTJARS		
Chuck-will's-widow	*Caprimulgus carolinensis*	Sandhill
Whip-poor-will	*Caprimulgus vociferus*	Sandhill
Common nighthawk	*Chordeiles minor*	Sandhill
SWIFTS		
Chimney swift	*Chaetura pelagica*	Throughout
HUMMINGBIRDS		
Ruby-throated hummingbird	*Arichilochus colubris*	Upland mixed forest
KINGFISHERS		
Belted kingfisher	*Ceryle alcyon*	Spring-run stream

*** Non-native Species**

ICHETUCKNEE SPRING STATE PARK
ANIMALS

Common Name	*Scientific Name*	Primary Habitat (for all species)
WOODPECKERS		
Northern flicker	*Colaptes auratus*	Upland pine forest
Pileated woodpecker	*Dryocopus pileatus*	Upland mixed forest
Red-bellied woodpecker	*Melanerpes carolinus*	Throughout
Red-headed woodpecker	*Melanerpes erythrocephalus*	Sandhill
Yellow-bellied sapsucker	*Sphyrapicus varius*	Upland mixed forest
Downy woodpecker	*Picoides pubescens*	Throughout
Hairy woodpecker	*Picoides villosus*	Sandhill
FLYCATCHERS		
Eastern wood-pewee	*Contopus virens*	Upland mixed forest
Acadian flycatcher	*Empidonax flaviventris*	Upland mixed forest
Great crested flycatcher	*Myiarchus crinitus*	Upland pine forest
Eastern phoebe	*Sayornis phoebe*	Upland pine forest
Eastern kingbird	*Tyrannus tyrannus*	Upland pine forest
SWALLOWS		
Barn swallow	*Hirundo rustica*	Throughout
Purple martin	*Progne subis*	Throughout
Tree swallow	*Tachycineta bicolor*	Throughout
JAYS, CROWS, AND MAGPIES		
American crow	*Corvus brachyrhynchos*	Throughout
Fish crow	*Corvus ossifragus*	Throughout
Blue jay	*Cyanocitta cristata*	Throughout
TITMICE		
Tufted titmouse	*Parus bicolor*	Throughout
Carolina chickadee	*Parus carolinensis*	Throughout
WRENS		
House wren	*Troglodytes aedon*	Throughout
Bewick's wren	*Thryomanes bewickii*	Upland mixed forest
Carolina wren	*Thryothorus ludovicianus*	Throughout
NUTHATCHES		
Brown-headed nuthatch	*Sitta pusilla*	Sandhill
CREEPERS		
Brown creeper	*Certhia familiaris*	Upland mixed forest
THRASHERS		
Gray catbird	*Dumetella carolinensis*	Upland mixed
Northern mockingbird	*Mimus polyglottos*	Ruderal, developed
Brown thrasher	*Toxostoma rufus*	Upland pine forest
THRUSHES, AND VEERY		
Veery	*Catharus fuscescens*	Upland mixed forest
Hermit thrush	*Catharus guttatus*	Upland mixed forest

*** Non-native Species**

ICHETUCKNEE SPRING STATE PARK
ANIMALS

Common Name	*Scientific Name*	Primary Habitat (for all species)
Gray-cheeked thrush	*Catharus minimus*	Upland mixed forest
Swainson's thrush	*Catharus ustulatus*	Upland mixed forest
Wood thrush	*Hylocichla mustelina*	Upland mixed forest
Eastern bluebird	*Sialia sialis*	Sandhill
American robin	*Turdus migratorius*	Throughout
KINGLETS & GNATCATCHERS		
Blue-gray gnatcatcher	*Polioptila caerulea*	Upland mixed forest
Ruby-crowned kinglet	*Regulus calendula*	Upland mixed forest
Golden-crowned kinglet	*Regulus satrapa*	Upland mixed forest
SHRIKES		
Loggerhead shrike	*Lanius ludovicianus*	Sandhill
STARLINGS		
European starling	*Sturnus vulgaris* *	Developed
WAXWINGS		
Cedar waxwing	*Bombycilla cedrorum*	Throughout
VIREOS		
Yellow-throated vireo	*Vireo flavifrons*	Upland pine forest
White-eyed vireo	*Vireo griseus*	Throughout
Red-eyed vireo	*Vireo olivaceus*	Upland mixed forest
Blue-headed vireo	*Vireo solitarius*	Upland mixed forest
WARBLERS, BLACKBIRDS, ETC.		
Black-throated blue warbler	*Dendroica caerulescens*	Upland mixed forest
Bay-breasted warbler	*Dendroica castanea*	Upland mixed forest
Yellow-rumped warbler	*Dendroica coronata*	Throughout
Prairie warbler	*Dendroica discolor*	Upland pine forest
Yellow-throated warbler	*Dendroica dominica*	Upland pine forest
Blackburnian warbler	*Dendroica fusca*	Upland mixed forest
Magnolia warbler	*Dendroica magnolia*	Upland mixed forest
Palm warbler	*Dendroica palmarum*	Upland pine forest
Yellow warbler	*Dendroica petechia*	Upland mixed forest
Chestnut-sided warbler	*Dendroica pensylanica*	Upland mixed forest
Pine warbler	*Dendroica pinus*	Upland pine forest
Blackpoll warbler	*Dendroica striata*	Upland mixed forest
Cape May Warbler	*Dendroica tigrina*	Upland mixed forest
Black-throated green warbler	*Dendroica virens*	Upland mixed forest
Common yellowthroat	*Geothlypis trichas*	Floodplain swamp
Worm-eating Warbler	*Helmitheros vermivorus*	Upland mixed forest
Yellow-breasted chat	*Icteria virens*	Upland pine forest
Swainson's warbler	*Limnothlypis swainsonii*	Throughout
Black-and-white warbler	*Mniotilta varia*	Throughout
Kentucky warbler	*Oporornis formosus*	Upland mixed forest
Northern parula	*Parula americana*	Throughout
Prothonotary warbler	*Protonotaria citrea*	Floodplain swamp
Ovenbird	*Seiurus aurocapillus*	Upland mixed forest

*** Non-native Species**

ICHETUCKNEE SPRING STATE PARK
ANIMALS

Common Name	*Scientific Name*	Primary Habitat (for all species)
Louisiana waterthrush	*Seirus motacilla*	Floodplain forest
Northern waterthrush	*Seiurus noveboracensis*	Floodplain forest
American Redstart	*Setophaga ruticilla*	Upland mixed forest
Orange-crowned warbler	*Vermivora celata*	Upland mixed forest
Golden-winged warbler	*Vermivora chrysoptera*	Upland mixed forest
Tennessee warbler	*Vermivora peregrina*	Upland mixed forest
Blue-winged warbler	*Vermivora pinus*	Upland pine forest
Hooded warbler	*Wilsonia citrina*	Floodplain forest
MEADOWLARKS, BLACKBIRDS & ORIOLES		
Red-winged blackbird	*Agelaius phoeniceus*	Floodplain marsh
Bobolink	*Dolichonyx orzivorus*	Sandhill
Northern oriole	*Icterus galbula*	Upland pine forest
Orchard oriole	*Icterus spurius*	Upland pine forest
Brown-headed cowbird	*Molothrus ater*	Throughout
Boat-tailed grackle	*Quiscalus major*	Floodplain swamp
Common grackle	*Quiscalus quiscula*	Throughout
Eastern meadowlark	*Sturnella magna*	Sandhill
TANAGERS		
Scarlet tanager	*Piranga olivacea*	Upland mixed forest
Summer tanager	*Piranga rubra*	Upland pine forest
GROSBEAKS, SPARROWS, AND BUNTINGS		
Bachman's sparrow	*Aimophila aestivalis*	Sandhill
Grasshopper sparrow	*Ammodramus savannarum*	Sandhill
American goldfinch	*Cardeulis tristis*	Throughout
Northern cardinal	*Cardinalis cardinalis*	Throughout
Blue grosbeak	*Guiraca caerulea*	Sandhill
Dark-eyed junco	*Junco hyemalis*	Upland mixed forest
Swamp sparrow	*Melospiza georgiana*	Floodplain swamp
Song sparrow	*Melospiza melodia*	Sandhill
House sparrow	*Passer domesticus* *	Ruderal, developed
Savannah sparrow	*Passerculus sandwichensis*	Sandhill
Fox sparrow	*Passerella iliaca*	Upland pine forest
Indigo bunting	*Passerina cyanea*	Sandhill
Rose-breasted grosbeak	*Pheucticus ludovicianus*	Upland pine forest
Eastern towhee	*Pipilo erythrophthalmus*	Upland pine forest
Vesper sparrow	*Pooecetes gramineus*	Sandhill
Chipping sparrow	*Spizella passerina*	Sandhill
Field sparrow	*Spizella pusilla*	Sandhill
White-throated sparrow	*Zonotrichia albicollis*	Upland pine forest

MAMMALS

MARSUPIALS		
Opossum	*Didelphis marsupialis*	Throughout
INSECTIVORES		
Short-tailed shrew	*Blarina carolinensis*	Upland mixed forest

*** Non-native Species**

ICHETUCKNEE SPRING STATE PARK
ANIMALS

Common Name	*Scientific Name*	Primary Habitat (for all species)
Eastern mole	*Scalopus aquaticus*	Upland pine forest
Southeastern shrew	*Sorex longirostris*	Upland mixed forest
EDENTATES		
Armadillo	*Dasypus novemcinctus* *	Throughout
LAGOMORPHS		
Eastern cottontail	*Sylvilagus floridanus*	Throughout
RODENTS		
Beaver	*Castor canadensis*	Spring-run stream
Southern flying squirrel	*Glaucomys volans*	Throughout
Southeastern pocket gopher	*Geomys pinetis*	Sandhill
House mouse	*Mus musculus*	Developed
Eastern woodrat	*Neotoma floridana*	Upland mixed forest
Golden mouse	*Ochrotomys nuttalli*	Upland mixed forest
Rice rat	*Oryzomys palustris*	Floodplain forest
Cotton mouse	*Peromyscus gossypinus*	Upland mixed forest
Florida mouse	*Podomys floridanus*	Sandhill
Gray squirrel	*Sciurus carolinensis*	Throughout
Sherman's fox squirrel	*Sciurus niger shermani*	Sandhill
Cotton rat	*Sigmodon hispidus*	Upland pine forest
CARNIVORES		
Coyote	*Canis latrans* *	Throughout
Domestic cat	*Felis catus* *	Throughout
River otter	*Lutra canadensis*	Spring-run stream
Bobcat	*Lynx rufus*	Throughout
Striped skunk	*Mephitis mephitis*	Throughout
Raccoon	*Procyon lotor*	Throughout
Gray fox	*Urocyon cinereoargenteus*	Upland mixed forest
Florida black bear	*Ursus americanus floridanus*	Throughout
Red fox	*Vulpes vulpes*	Upland mixed forest
MANATEES		
West Indian manatee	*Trichechus manatus*	Spring-run stream
ARTIODACTYLS		
White-tailed deer	*Odocoileus virginianus*	Throughout

*** Non-native Species**

ADDENDUM 6

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)

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 which is in danger of extinction throughout all or a significant portion of its range.
PE	=	Proposed for addition to the List of Endangered and Threatened Wildlife and Plants as Endangered Species.
LT	=	Listed as Threatened Species. Defined as any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
PT	=	Proposed for listing as Threatened Species.
C	=	Candidate Species for addition to the list of Endangered and Threatened

Wildlife and Plants. Defined as those species for which the USFWS currently has on file sufficient information on biological vulnerability and threats to support proposing to list the species as endangered or threatened.

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

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

STATE

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

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

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

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

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

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

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

ICHETUCKNEE SPRINGS STATE PARK

DESIGNATED SPECIES

PLANTS

Common Name/ *Scientific Name*	**DESIGNATED SPECIES STATUS** **FDA**	**USFWS**	**FNAI**
Incised groove-bur			
Agrimonia incisa	E		G3,S2
Sweet-shrub			
Calcanthus floridus	E		S2
Greenfly orchid			
Epidendrum canopseum	CE		
Crested coralroot			
Hexalectris spicata	E		
Cardinal flower			
Lobelia cardinalis	T		
Florida matelea			
Matelea floridana	E		G2,S2
Angle-pod			
Matelea gonocarpos	T		
Trailing spiny-pod			
Matelea pubiflora	E		
Shadow witch			
Ponthieva racemosa			
Northern wild coco			
Pteroglossapsis ecristata	T		G2G3, S2
Cinnamon fern			
Osmunda cinnamomea	CE		
Royal fern			
Osmunda regalis	CE		
Florida willow			
Salix floridana	E		G2,S2
Nodding ladies'-tresses			
Spiranthes cernua			
Lace-lip			
Spiranthes laciniata	T		
Lesser ladies'-tresses			
Spiranthes ovalis	E		
Nodding pogonia			
Triphora trianthophora	T		
Florida coontie			
Zamia floridana	CE		
Rain lily			
Zephyranthes atamasco	T		

ICHETUCKNEE SPRINGS STATE PARK

DESIGNATED SPECIES

ANIMALS

Common Name/ *Scientific Name*	**DESIGNATED SPECIES STATUS** FFWCC	USFWS	FNAI
FISH			
Suwannee Bass *Micropterus notius*	SSC		G2G3, S2S3
AMPHIBIANS			
Gopher frog *Rana capito*	SSC		G4,S3
REPTILES			
American Alligator *Alligator mississippiensis*	SSC	T(S/A)	G5, S4
Eastern diamondback rattlesnake *Crotalus adamanteus*			G5, S3
Eastern Indigo Snake *Drymarchon corais couperi*	T	T	G4T3, S3
Gopher tortoise *Gopherus polyphemus*	SSC		G3, S3
Alligator Snapping Turtle *Macroclemys temmincki*	SSC		G3G4, S3
Florida pine snake *Pituophis melanoleucus mugitus*	SSC		G5T3?,S3
Suwannee cooter *Pseudemys concinna suwanniensis*	SSC		G5T3, S3
Short-tailed snake *Stilosoma extenuatum*	T		G3,S3
BIRDS			
Cooper's hawk *Accipiter cooperii*			G4,S3?
Bachman's sparrow *Aimophila aestivalis*			G3,S3
Limpkin *Aramus guarauna*	SSC		G5, S3
Little blue heron *Egretta caerulea*	SSC		G5,S4
Snowy egret *Egretta thula*	SSC		G5, S4
Tricolor heron Egretta tricolor	SSC		G5,S4

ICHETUCKNEE SPRINGS STATE PARK

DESIGNATED SPECIES

ANIMALS

Common Name/ *Scientific Name*	**DESIGNATED SPECIES STATUS** FFWCC	USFWS	FNAI
Swallow-tailed Kite			
Elanoides forficatus			G4, S2S3
White ibis			
Eudocimus albus	SSC		G5, S4
Southeastern American kestrel			
Falco sparverius paulus	T		G5T3T4,S3?
Bald eagle			
Haliaeetus leucocephalus	T	T	G4,S3
Worm-eating Warbler	E		G5,S1
Helmitheros vermivorus			
Wood stork			
Mycteria americana		E	G4,S2
Yellow crowned night heron			
Nyctanassa violacea			G5,S3?
Black-crowned night heron			
Nycticorax nycticorax			G5, S3?
Osprey			
Pandion haliaetus			G5,S3S4
Hairy Woodpecker			
Picoides villosus			G5, S3?
Louisiana Waterthrush			
Seiurus motacilla			G5, S3
American Redstart			
Setophaga ruticilla			G5,S3
MAMMALS			
Sherman's Fox Squirrel			
Sciurus niger shermani	SSC		G5T2,S2
Florida mouse			
Podomys floridanus	SSC		G3,S3
West Indian manatee			
Trichechus manatus	E	E	G2?, S2?
Florida black bear			
Ursus americanus floridanus	T		
INVERTEBRATES			
Ichetucknee siltsnail			
Cincinnatia mica			G1,S1

ADDENDUM 7

FLORIDA MASTER SITE FILE
LIST OF CULTURAL SITES

ICHETUCKNEE SPRINGS STATE PARK

FLORIDA MASTER SITE FILE LISTED CULTURAL SITES

FMSF #	Site Name	Period	Site Type
CO 1	Fig Springs -Probably San Martín de Timucua	Deptford, Spanish, Spanish-First Period, Suwannee Valley and Leon-Jefferson	Mission site, aboriginal habitation, historic refuse, underwater disposal midden, burial
CO 2	None	Prehistoric Aboriginal	Prehistoric ceramic artifact scatter
CO 3	None	Prehistoric Aboriginal	unknown
CO 4	Little Spring and Run	Prehistoric Aboriginal	Lithic scatter, quarry
CO 5	None	Leon-Jefferson	Artifact scatter
CO 8	Old Mill Pond	Historic, Leon-Jefferson, Spanish (17th century)	Historic habitation, historic mill, prehistoric artifact scatter
CO 9	Old Mill Landing	Prehistoric Aboriginal	Prehistoric ceramic, underwater disposal midden
CO 10	Lowe's Field	Prehistoric Aboriginal	Quarry, lithic scatter
CO 15	New Ichetucknee River/Dampier's Landing	Prehistoric Aboriginal	Underwater unspecified
CO 25	Ichetucknee Railroad Crossing	Possible Paleo- Indian	unknown
CO 36	Old Fort White Landing	Prehistoric Aboriginal	Prehistoric burials, lithic scatter/non-quarry
CO 43	Midpoint Mound	Weeden Island	Burial
CO 57	Bellamy Road, Old Spanish Trail, Old Indian Trail	Unspecified	Historic road segment
CO 173	Simpson's Flats	Unspecified	Unknown
CO 174	Simpson's Camp	Unspecified	Underwater unspecified
SU 5	Ichetucknee River	Weeden Island (?)	Underwater unspecified
SU 16	None	Prehistoric Aboriginal	Mound
SU 17	None	Prehistoric Aboriginal	Mound
SU 18	None	Prehistoric Aboriginal	Mound
SU 26	Devil's Eye Spring Ichetucknee River	Unspecified	Unknown
SU 28	Ichetucknee Springs	Prehistoric Aboriginal	Lithic scatter
SU 249	Power Line Crossing	Paleo-Indian, Early Archaic	Artifact scatter
SU 251	None	Prehistoric Aboriginal	Artifact scatter

ADDENDUM 8

TIMBER MANAGEMENT ANALYSIS

Timber Stand 1

Stand 1 is a 5.35 acre site of 35-year-old planted slash pine with some naturally seeded loblolly pine. The area is surrounded on three sides by a berm that was constructed prior to state ownership of the property when the site was used as a clay settling pond. There are approximately 364 pine trees per acre. Tree diameters range from 6 to 14 inches with an average dbh between 8 and 9 inches. Total tree heights range from 60 to 80 feet with most trees close to 75 feet. Wood products include pulp wood, chip-n-saw and some saw timber. Access to the site is from an adjacent service road. An exclusion area exists just outside the west boundary of the stand where there is a park residence. A hiking trail occurs on the east side of the stand near an abandoned phosphate pit. There are no wetlands in the stand. No cultural resources have been identified in or adjacent to this site.

Sweet gum and southern red cedar occur in the understory, but are not considered merchantable at this time. Other understory species include Aralia spinosa, laurel oak, cat briar, and wild grape. An exotic plant species, Japanese climbing fern, is found in this stand. It will be necessary to treat this species with herbicide following the removal of timber. The site is managed using dormant season prescribed burns that were last conducted in 1998.

Management recommendations are to selectively thin the pine species to approximately half of the current density. Timber removal should take place during the winter to avoid conflicts with recreation at the park. During harvesting there should be no injury to residual trees, and soil disturbance should be limited to areas within the berm. The berm should be removed after the logging operation is completed. The site will be evaluated after the harvest to determine the feasibility of natural community restoration.

Timber Stand 2

Stand 2 is less than 2 acres of 38-year-old planted slash pine with some naturally seeded loblolly pine. A berm similar to that in stand 1 is also found at this site. Natural thinning has occurred and trees are widely spaced. There are approximately 225 pine trees per acre. Tree diameters range from 8 to 16 inches with an average dbh of 10 inches. Total tree heights range from 70 to 80 feet. Wood products include pulp, chip-n-saw and saw timber. Access to the site is from an adjacent service road. No exclusion areas are identified in this stand. There are no wetlands or cultural resources at this site. The understory is sparse with only a few shrubs. The ground cover is dominated by various grasses and herbs. Although no exotic plant species were observed, the site should be thoroughly inspected for exotic species following timber removal.

Management recommendations are to selectively thin the pine species. Timber removal should take place during the winter to avoid conflicts with recreation in the park. During harvesting there should be no injury to residual trees, and soil disturbance should be limited to areas within the berm. The berm should be removed after the logging operation is completed.

ADDENDUM 9

CULTURAL MANAGEMENT STATEMENT

DEPARTMENT OF STATE

DIVISION OF HISTORICAL RESOURCES

MANAGEMENT PROCEDURES FOR ARCHAEOLOGICAL AND HISTORICAL SITES AND PROPERTIES ON STATE -- OWNED OR CONTROLLED LANDS (Revised August, 1995)

A. GENERAL DISCUSSION

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

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

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

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

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

B. STATUTORY AUTHORITY

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

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

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

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

1. Cooperate with federal and state agencies, local Governments, and private organizations and individuals to direct and conduct a comprehensive statewide survey of historic resources and to maintain an inventory of such responses.
2. Develop a comprehensive statewide historic preservation plan.
3. Identify and nominate eligible properties to the National Register of Historic Places and otherwise administer applications for listing properties in the National Register of Historic Places.
4. Cooperate with federal and state agencies, local governments, and organizations and individuals to ensure that historic resources are taken into consideration at all levels of planning and development.
5. Advise and assist, as appropriate, federal and state agencies and local governments in carrying out their historic preservation responsibilities and programs.
6. Carry out on behalf of the state the programs of the National Historic Preservation Act of 1966, as amended, and to establish, maintain, and administer a state historic preservation program meeting the requirements of an approved program and fulfilling the responsibilities of state historic preservation programs as provided in subsection 101(b) of that act.

7. Take such other actions necessary or appropriate to locate, acquire, protect, preserve, operate, interpret, and promote the location, acquisition, protection, preservation, operation, and interpretation of historic resources to foster an appreciation of Florida history and culture. Prior to the acquisition, preservation, interpretation, or operation of a historic property by a state agency, the Division shall be provided a reasonable opportunity to review and comment on the proposed undertaking and shall determine that there exists historic authenticity and a feasible means of providing for the preservation, interpretation and operation of such property.

8. Establish professional standards for the preservation, exclusive of acquisition, of historic resources in state ownership or control.

9. Establish guidelines for state agency responsibilities under subsection (2).

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

1. Each state agency of the executive branch having direct or indirect jurisdiction over a proposed state or state-assisted undertaking shall, in accordance with state policy and prior to the approval of expenditure of any state funds on the undertaking, consider the effect of the undertaking on any historic property that is included in, or eligible for inclusion in, the National Register of Historic Places. Each such agency shall afford the division a reasonable opportunity to comment with regard to such an undertaking.

2. Each state agency of the executive branch shall initiate measures in consultation with the division to assure that where, as a result of state action or assistance carried out by such agency, a historic property is to be demolished or substantially altered in a way that adversely affects the character, form, integrity, or other qualities that contribute to [the] historical, architectural, or archaeological value of the property, timely steps are taken to determine that no feasible and prudent alternative to the proposed demolition or alteration exists, and, where no such alternative is determined to exist, to assure that timely steps are taken either to avoid or mitigate the adverse effects, or to undertake an appropriate archaeological salvage excavation or other recovery action to document the property as it existed prior to demolition or alteration.

3. In consultation with the division [of Historical Resources], each state agency of the executive branch shall establish a program to locate, inventory, and evaluate all historic properties under the agency's ownership or control that appear to qualify for the National Register. Each such agency shall exercise caution to assure that any such historic property is not inadvertently transferred, sold, demolished, substantially altered, or allowed to deteriorate significantly.

4. Each state agency of the executive branch shall assume responsibility for the preservation of historic resources that are owned or controlled by such agency. Prior to acquiring, constructing, or leasing buildings for the purpose of carrying out agency responsibilities, the agency shall use, to the maximum extent

feasible, historic properties available to the agency. Each agency shall undertake, consistent with preservation of such properties, the mission of the agency, and the professional standards established pursuant to paragraph (3)(k), any preservation actions necessary to carry out the intent of this paragraph.

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

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

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

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

C. MANAGEMENT POLICY

The choice of a management policy for archaeological and historic sites within state-owned or controlled land obviously depends upon a detailed evaluation of the

characteristics and conditions of the individual sites and groups of sites within those tracts. This includes an interpretation of the significance (or potential significance) of these sites, in terms of social and political factors, as well as environmental factors. Furthermore, for historic structures architectural significance must be considered, as well as any associated historic landscapes.

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

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

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

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

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

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

4. If in the course of management activities, or as a result of development or the permitting of dredge activities (see 403.918(2)(6)a, F.S.), it is determined that valuable historic or archaeological sites will be damaged or destroyed, the Division reserves the right, pursuant to 267.061(1)(b), F.S., to require salvage measures to mitigate the destructive impact of such activities to such sites. Such salvage measures would be accomplished before the Division would grant permission for destruction of the affected site areas. The funding needed to implement salvage measures would be the responsibility of the managing agency planning the site destructive activity. Mitigation of historic structures at a minimum involves the preparation of measured drawings and documentary photographs. Mitigation of archaeological resources involves the excavation, analysis and reporting of the project findings and must be planned to occur sufficiently in advance to avoid project construction delays. If these services are to be contracted by the state agency, the selected consultant will need to obtain an Archaeological Research Permit from the Division of Historical Resources, Bureau of Archaeological Research (see 267.12, F.S. and Rules 1A-32 and 1A-46 F.A.C.).

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

encouraged in order to build an inventory of the resources present, and to assess their scientific research potential and historic or architectural significance.

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

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

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

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

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

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

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

undertaken.

4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.
6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.
7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.
8. Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
9. New additions, exterior alterations, or related new construction shall not destroy materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired. (see Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings [Revised 1990]).

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

D. MANAGEMENT IMPLEMENTATION

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

1. All land managing agencies should contact the Division and send U.S.G.S. 7.5 minute quadrangle maps outlining the boundaries of their various properties.
2. The Division will in turn identify site locations on those maps and provide descriptions for known archaeological and historical sites to the managing agency.

3. Further, the Division may also identify on the maps areas of high archaeological and historic site location probability within the subject tract. These are only probability zones, and sites may be found outside of these areas. Therefore, actual ground inspections of project areas may still be necessary.

4. The Division will send archaeological field recording forms and historic structure field recording forms to representatives of the agency to facilitate the recording of information on such resources.

5. Land managers will update information on recorded sites and properties.

6. Land managers will supply the Division with new information as it becomes available on previously unrecorded sites that their staff locate. The following details the kind of information the Division wishes to obtain for any new sites or structures that the land managers may report:

A. Historic Sites

(1) Type of structure (dwelling, church, factory, etc.).
(2) Known or estimated age or construction date for each structure and addition.
(3) Location of building (identify location on a map of the property, and building placement, i.e., detached, row, etc.).
(4) General Characteristics: (include photographs if possible) overall shape of plan (rectangle, "L" "T" "H" "U", etc.); number of stories; number of vertical divisions of bays; construction materials (brick, frame, stone, etc.); wall finish (kind of bond, coursing, shingle, etc.); roof shape.
(5) Specific features including location, number and appearance of:

(a) Important decorative elements;
(b) Interior features contributing to the character of the building;
(c) Number, type, and location of outbuildings, as well as date(s) of construction;
(d) Notation if property has been moved;
(e) Notation of known alterations to building.

B. Archaeological Sites

(1) Site location (written narrative and mapped location).
(2) Cultural affiliation and period.
(3) Site type (midden, burial mound, artifact scatter, building rubble, etc.).
(4) Threats to site (deterioration, vandalism, etc.).
(5) Site size (acreage, square meters, etc.).
(6) Artifacts observed on ground surface (pottery, bone, glass, etc.).
(7) Description of surrounding environment.

7. No land disturbing activities should be undertaken in areas of known

archaeological or historic sites or areas of high site probability without prior review by the Division early in the project planning.

8. Ground disturbing activities may proceed elsewhere but land managers should stop disturbance in the immediate vicinity of artifact finds and notifies the Division if previously unknown archaeological or historic remains are uncovered. The provisions of Chapter 872, F.S., must be followed when human remains are encountered.

9. Excavation and collection of archaeological and historic sites on state lands without a permit from the Division are a violation of state law and shall be reported to a law enforcement officer. The use of metal detectors to search for historic artifacts shall be prohibited on state lands except when authorized in a 1A-32, F.A.C., research permit from the Division.

10. Interpretation and visitation which will increase public understanding and enjoyment of archaeological and historic sites without site destruction or vandalism is strongly encouraged.

11. Development of interpretive programs including trails, signage, kiosks, and exhibits is encouraged and should be coordinated with the Division.

12. Artifacts found or collected on state lands are by law the property of the Division. Land managers shall contact the Division whenever such material is found so that arrangements may be made for recording and conservation. This material, if taken to Tallahassee, can be returned for public display on a long term loan.

C. ADMINISTERING AGENCY

Questions relating to the treatment of archaeological and historic resources on state lands may be directed to:

Compliance Review Section
Bureau of Historic Preservation
Division of Historical Resources
R.A. Gray Building
500 South Bronough Street
Tallahassee, Florida 32399-0250

Contact Person: **Susan M. Harp**
Historic Preservation Planner
Telephone (904) 487-2333
Suncom 277-2333
FAX (904) 922-0496

ADDENDUM 10

PRIORITY SCHEDULE AND COST ESTIMATES

1. In cooperation with other agencies, periodically monitor surface and ground water quality and quantity. Also conduct additional biological assessments of the springs. 0-5 years. Estimated Cost: $60,000.

2. Conduct additional research to identify ground water sources of the park's major springs. 0-5 years. Estimated Cost: $20,000.

3. Continue to monitor the condition of the river's aquatic vegetation as a means of evaluating the effectiveness of visitor carrying capacities. 0-5 years. Estimated Cost: $11,950.

4. Continue the prescribed burn program, averaging 10-12 burns (800-900 acres) per year. 0-5 years. Estimated Cost: Average of $10,750/year for personnel and $5,500/year for equipment. Total Estimated Cost: $81,250.

5. Continue restoration of the upland pine forest through mechanical and chemical treatment of off-site species. 0-5 years. Estimated Cost: $24,800.

6. Continue to monitor designated species within the park. Collect and evaluate baseline data about the park's designated and declining species. Implement protective measures as needed. 0-5 years. Estimated Cost: $ 49,150.

7. Continue to map exotic plant infestations. Develop and implement plans to remove invasive exotics. 0-5 years. Estimated Cost: $25,000.

8. Control erosion along the banks of the river and springs. 0-5 years. Estimated Cost: $1500.

9. Pursue funding for Level I and Level II surveys of cultural resources. Develop and implement procedures for documenting cultural sites and maintaining their integrity. 0-5 years. Estimated Cost: $50,000.

10. Using educational programs in conjunction with enforcement of rules and regulations, manage public access to the park so as to provide visitors with safe, high quality recreational opportunities while protecting natural and cultural resources. 0-5 years. Estimated Cost: $100,000.

TOTAL RESOURCE MANAGEMENT AND PROGRAMS COST: $423,650.

Item No.	Item Description	Quantity	Unit	Unit Price	Estimated Cost
76	Visitor Center	1	ea.	$ 300,000.00	$ 300,000.00
	Hydrological Education Center				$ 200,000.00
77	Interpretive Display / Kiosk	10	ea.	$ 20,000.00	$ 200,000.00
	Underwater Interpretive Display	3	ea.	$ 30,000.00	$ 90,000.00
19	Entrance Booth	2	ea.	$ 8,712.00	$ 17,424.00
29	Park Entrance Gate	1	pair	$ 1,500.00	$ 1,500.00
30	Two Lane Road (repaving)	0.3	mile	$ 90,346.00	$ 27,103.80
	Convert Old Ranger Station to Admin. Office				$ 10,000.00
	Traffic Apron at the Southern Entrance				$ 200,000.00
93	Volunteer Host Site	1	ea.	$ 3,000.00	$ 3,000.00
74	Stabilized Trail Parking Area	1.5	per 10 cars	$ 2,380.00	$ 3,570.00
37	Replace Floating Docks	2	slip	$ 8,000.00	$ 16,000.00
	Re-install Floating Dock at the Take-out Point				$ 10,000.00
	Internal Renovation of the Restrooms	2	ea.	$ 15,000.00	$ 30,000.00
68	6' High Vinyl Coated Chain Link Fence	6000	LF	$ 13.00	$ 78,000.00
	Redesign Highway 27 Take-out Dock				$ 80,000.00
	Utilities				$ 55,000.00
			Sub-total		$ 1,321,597.80
			20% contingency fees		$ 264,319.56
			Total		**$ 1,585,917.36**

ADDENDUM 11

LAND MANAGEMENT REVIEW

REPORT AND DRP RESPONSE

Land Management Review of Ichetucknee Springs State Recreation Area

Suwannee and Columbia Counties (Lease No. 2459):

January 15, 1999

Prepared by Division of State Lands Staff

Robert Clark, Program Administrator
William Howell, OMC Manager
Amy Knight, Environmental Specialist

for
the Ichetucknee Springs State Recreation Area Management Review Team

Land Manager:	Division of Recreation and Parks
Area:	2,276.88 acres
County:	Suwannee, Columbia
Mngt. Plan Approved:	05/29/97
Mngt. Plan Update Due:	05/29/02

Management Review Team Members

Agency Represented	Team member appointed	Team member in attendance
DEP/DRP	Mr. Tom Workman	Mr. Tom Workman
DEP Northeast District	Mr. Don Jensen	Mr. Dennis Murrin
DACS/DOF	Mr. Bill Korn	Mr. Bill Korn
GFC	Mr. Art Stockle	Mr. Art Stockle
Soil and Water Conservation	Mr. James Williams	Mr. Joel Love
County Commission	Mr. Barry Long	Mr. Barry Long
Conservation Organization (Citizens Rediscovering the Ichetucknee Basin)	Mr. Johnny Dame	Mr. Johnny Dame
Private Land Manager (Poole Realty)	Mr. Ronnie Poole	Mr. Ronnie Poole

Process for Implementing Regional Management Review Teams

Legislative Intent and Guidance:

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

Review Site

The management review of Ichetucknee Springs State Recreation Area considered approximately 2,241 acres in Suwannee and Columbia Counties that are managed by DEP/Division of Recreation and Parks. The team evaluated the extent to which current

management actions are sufficient, whether the land is being managed for the purpose for which it was acquired, and whether actual management practices, including public access, are in compliance with the management plan. The Division of State Lands approved the management plan on May 29, 1997 and the management plan update is currently being prepared.

Review Team Analysis

The management review checklist was analyzed as follows: The checklist consisted of two parts: a plan review section that answered whether or not the management plan sufficiently addressed protection/ restoration/ management needs for a series of items; and a field review section that scored to what extent sufficient management actions were being taken for a series of items.

Review Team Findings

CHECKLIST RESULTS

Exceptional Management Actions

I.A.1	Sandhill	Management/protection of the sandhill community is excellent.
I.A.3	Upland mixed forest	Management/protection of the upland mixed forest community is excellent.
I.A.4	Upland pine forest	Management/protection of the upland pine forest community is excellent.
I.A.6	Floodplain forest and forest swamp	Management/protection of the floodplain and swamp communities is excellent.
I.A.7	Spring-run stream	Management/protection of the spring-run stream community is excellent.
I.B.1	Kestrel: protection	Protection/preservation of the southeastern American kestrel is exceptional.
I.B.1.a	Kestrel: inventory	Efforts to locate and identify southeastern American kestrels are outstanding.
I.B.1.b	Kestrel: monitoring	Monitoring of the southeastern American kestrel population is excellent.
I.B.2	Gopher tortoise: protection	Protection/preservation of the gopher tortoise is exceptional.
I.B.2.a	Gopher tortoise: inventory	Efforts to locate and identify gopher tortoises are outstanding.
I.B.2.b	Gopher tortoise: monitoring	Monitoring of the gopher tortoise population is excellent.
I.B.3	Ichetucknee siltsnail: Protection	Protection/preservation of the Ichetucknee siltsnail is exceptional.

III.A.1	Prescribed fire: area	The number of acres being burned through prescribed fire is excellent.
III.A.1	Prescribed fire: frequency	The use of appropriate inter-fire intervals is excellent.
III.A.3	Prescribed fire: quality	The quality of prescribed burns for community maintenance and restoration is exceptional.
III.B.3	Restoration: spring head	Restoration of the springs, especially the Ichetucknee spring head is outstanding.
III.B.4	Restoration: upland pine	Restoration of the upland pine area is outstanding.
III.D.2.a	Non-native plants: control	The effort to control non-native invasive plants on the property is outstanding.
III.D.2.b	Non-native plants: the monitoring	Monitoring of non-native invasive plants on property is outstanding.
III.I.1.a	Waste disposal	Waste disposal facilities are excellent.
IV.	Education/Public Outreach	Park staff are doing an excellent job with public education and community outreach.

Inadequate items:		**Plan review**
I.B.3.b	Ichetucknee siltsnail: monitoring*	Monitoring of the Ichetucknee siltsnail should be addressed in the plan update.
DRP RESPONSE:		Agree. The Ichetucknee Siltsnail was first identified in 1962. Monitoring of the Ichetucknee Siltsnail last took place in 1989. Establishment of a long-term monitoring program for the siltsnail will be discussed in the next updated plan.
II.C	Cultural interpretation*	The interpretation of cultural sites should be addressed in the plan update.
DRP RESPONSE:		Agree. Several archeological investigations have been conducted since the last UMP. The results of these studies and the interpretation of cultural sites will be included in the next updated plan.
III.F.1.a	Poaching*	The problem of poaching should be addressed in the plan update.
DRP RESPONSE:		Agree. The park boundaries are well marked and poaching from the upland areas is not a problem. However, the rules for "taking" from the aquatic areas are not well posted and

		poaching of aquatic flora and fauna may be a problem. This will be addressed in the next updated plan.
III.F.1.b	Releasing gopher tortoises*	The problem of the public releasing off-site gopher tortoises onto state land should be addressed in the plan update.
DRP RESPONSE:		Agree. This problem will be addressed in the next updated plan.
III.F.1.c	Trespassing*	The problem of trespassing should be addressed in the plan update.
DRP RESPONSE:		Agree. This problem will be addressed in the next updated plan.
III.H.1.a	Adj. Property concerns: Dumping in Sinks*	The management problems/concerns caused by dumping into sinks on adjacent property should be addressed in the plan update.
DRP RESPONSE:		Agree. This is a water quality protection issue that will be addressed in the next updated plan.
III.H.1.b	Adj. Property concerns: Residential development	The management problems/concerns caused by residential development (burn restrictions, release of exotics) should be addressed in the plan update.
DRP RESPONSE:		Agree. The management problems and concerns caused by residential development such as burn restrictions and the release of exotic plants and animals will be addressed in the next updated plan.
III.H.1.c	Adj. Property concerns: Upstream groundwater*	The management problems/concerns caused by upstream impacts to groundwater should be addressed in the plan update.
DRP RESPONSE:		Agree. This is a water quality protection issue that will be addressed in the next updated plan.
III.H.2	Inholdings and additions	Important inholdings and additions should be addressed in the plan update.
DRP RESPONSE:		**Disagree. Important inholdings and additions have already been identified in the UMP.**

Inadequate items:		**Field review**
I.B.3.b	Ichetucknee siltsnail: monitoring*	Monitoring of the Ichetucknee siltsnail should be conducted.
DRP RESPONSE:		Agree. See above comments on this item.
II.C	Cultural interpretation*	The interpretation of cultural sites is needed.
DRP RESPONSE:		Agree. See above comments on this item.
III.E.2.a	Ground water quality	Additional monitoring of ground water quality is needed and should be conducted in coordination with appropriate agencies.
DRP RESPONSE:		**Disagree. Monitoring of ground water quality is an ongoing and long-term project.**
III.F.1.a	Poaching*	Additional effort is needed to control poaching on the property.
DRP RESPONSE:		Agree. See above comments on this item.
III.F.1.b	Releasing gopher tortoises*	Additional effort is needed to educate the public and prevent the release of off-site gopher tortoises onto state land.
DRP RESPONSE:		Agree. Additional efforts will be taken where possible to minimize the release of off-site gopher tortoises in the park.
III.F.1.c	Trespassing*	Additional effort is needed to control trespassing on the property.
DRP RESPONSE:		Agree. Efforts to minimize the problem of trespassing will be increased.
III.H.1.a	Adj. Property concerns: Dumping in sinks*	Effort should be made to minimize the management problems/concerns caused by dumping into sinks on adjacent property.
DRP RESPONSE:		**Disagree. Park staff in conjunction with the Ichetucknee Springs Water Quality Working Group initiated an extensive public education program to inform residents throughout the Ichetucknee Trace (headwaters of the Ichetucknee) of the importance of protecting the sinkholes from dumping. Actions taken include meetings withlandowners, informational mailings, and cleanup events in area sinkholes.**
III.H.1.c	Adj. Property concerns:	Effort should be made to minimize the

	Upstream groundwater*	management problems/concerns caused by upstream impacts to ground water.
DRP RESPONSE:		**Disagree. Park staff in conjunction with the Ichetucknee Springs Water Quality Working Group initiated an extensive public education program to inform residents throughout the Ichetucknee Trace (headwaters of the Ichetucknee) of the importance of protecting surface and groundwater. Actions taken include public meetings, meetings with landowners, informational mailings, and cleanup events in area waterways.**
III.I.1.b	Sanitary facilities	Additional public restrooms are needed on the south end of the park.
DRP RESPONSE:		**Disagree. The need for "<u>additional sanitary facilities</u>" and "<u>buildings</u>" and the need for "<u>pavilions</u>" must be considered within the context of the entire park through the unit planning process. Such facilities and structures may be included in the UMP if determined to be appropriate during the planning process.**
III.I.3.a	Buildings	Additional buildings for staff and meetings are needed.
DRP RESPONSE:		**Disagree. The need for "<u>additional sanitary facilities</u>" and "<u>buildings</u>" and the need for "<u>pavilions</u>" must be considered within the context of the entire park through the unit planning process. Such facilities and structures may be included in the UMP if determined to be appropriate during the planning process.**
III.I.3.b	Equipment	Additional equipment, especially staff utility vehicles, are needed.
DRP RESPONSE:		**Agree. Additional equipment needs will be identified in the plan. However, no additional equipment can be purchased at this or any park unit unless funding for the additional equipment is appropriated by the Legislature or reassigned from other units. This latter action is not appropriate at this time.**
III.I.3.c	Pavilions	Additional pavilions/visitor center are needed on the north and south ends.

DRP RESPONSE:		**Disagree. The need for "<u>additional sanitary facilities</u>" and "<u>buildings</u>" and the need for "<u>pavilions</u>" must be considered within the context of the entire park through the unit planning process. Such facilities and structures may be included in the UMP if determined to be appropriate during the planning process.**
III.I.4	Staff	Additional staff are needed for all aspects of property management.
DRP RESPONSE:		**Agree. Additional staff are needed for all aspects of property management. However, no new staff can be assigned to this or any park unit unless the new positions are appropriated by the Legislature or reassigned from other units. This latter action is not appropriate at this time according to Division staff allocation research. Additional staff is needed by our parks statewide which is why we regularly seek positions, volunteers, and partners to help us overcome staff deficiencies.**
III.I.5	Funding	Additional funding is needed for resource management.
DRP RESPONSE:		**Agree. More funding is needed, especially for resource management. Additional funds will be pursued, but funding is contingent on DRP and DEP budget resources and priorities and also on legislative action.**

Inadequate items:	**Field review**	**Exisiting and Proposed Uses**
V.B.2	Interpretive site	The team recommended that the proposed interpretive facilities at the old still site not be constructed.
DRP RESPONSE:		**Disagree. The decision to include recreational facilities, such as the proposed interpretive site, is a function that is more appropriately carried out through the unit planning process. We believe it is beyond the scope of the LMR to make recommendations of this type.**
V.B.5	Horseback riding	The team recommended that the horseback

riding not be allowed in the park.

DRP RESPONSE: **Disagree. The decision to include recreational activities, such as horseback riding, is a function that is more appropriately carried out through the unit planning process. We believe it is beyond the scope of the LMR to make recommendations of this type.**

Recommendations to the managing agency

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

1. For traffic safety reasons, the team recommends moving the north entrance, during peak season, from the current entrance gate to the old CR 238 entrance.

DRP RESPONSE: **Disagree. The existing UMP addresses this problem. On pages 73 and 75 of the plan it already recommends relocating the park entrance in order to create stacking space for automobiles entering the park and finds that the change would also improve the function of the main park road by allowing smoother circulation to and from the parking area. Any further consideration of this matter should appropriately be addressed and resolved during the UMP planning process.**

2. DRP should better define property boundaries on the SW corner and NE corner above CR 238.

DRP RESPONSE: **Agree. The boundary of the property above CR 238 should be properly defined.**

3. DRP needs to periodically site inspect the aquatic cave for vandalism and disturbance.

DRP RESPONSE: **Agree. The aquatic cave should be properly monitored and inspected for vandalism and disturbances. However, adequate funding and staff will be appropriated in order to conduct regular surveys of the aquatic cave.**

4. The team recommends additional pavilions at the north and south entrance.

DRP RESPONSE: **Disagree. See comments above under III.I.3.c.**

5. The team recognizes a need for additional career service staff, including a full-time biologist, resident law enforcement, and park rangers.

DRP RESPONSE: **Agree. See comments above under III.I.4.**

Commendations to the managing agency

There has been a remarkable improvement and restoration implemented by park staff since 1970, of the natural resources.

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

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

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

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