



**SUWANNEE RIVER
STATE PARK**
Park Chapter

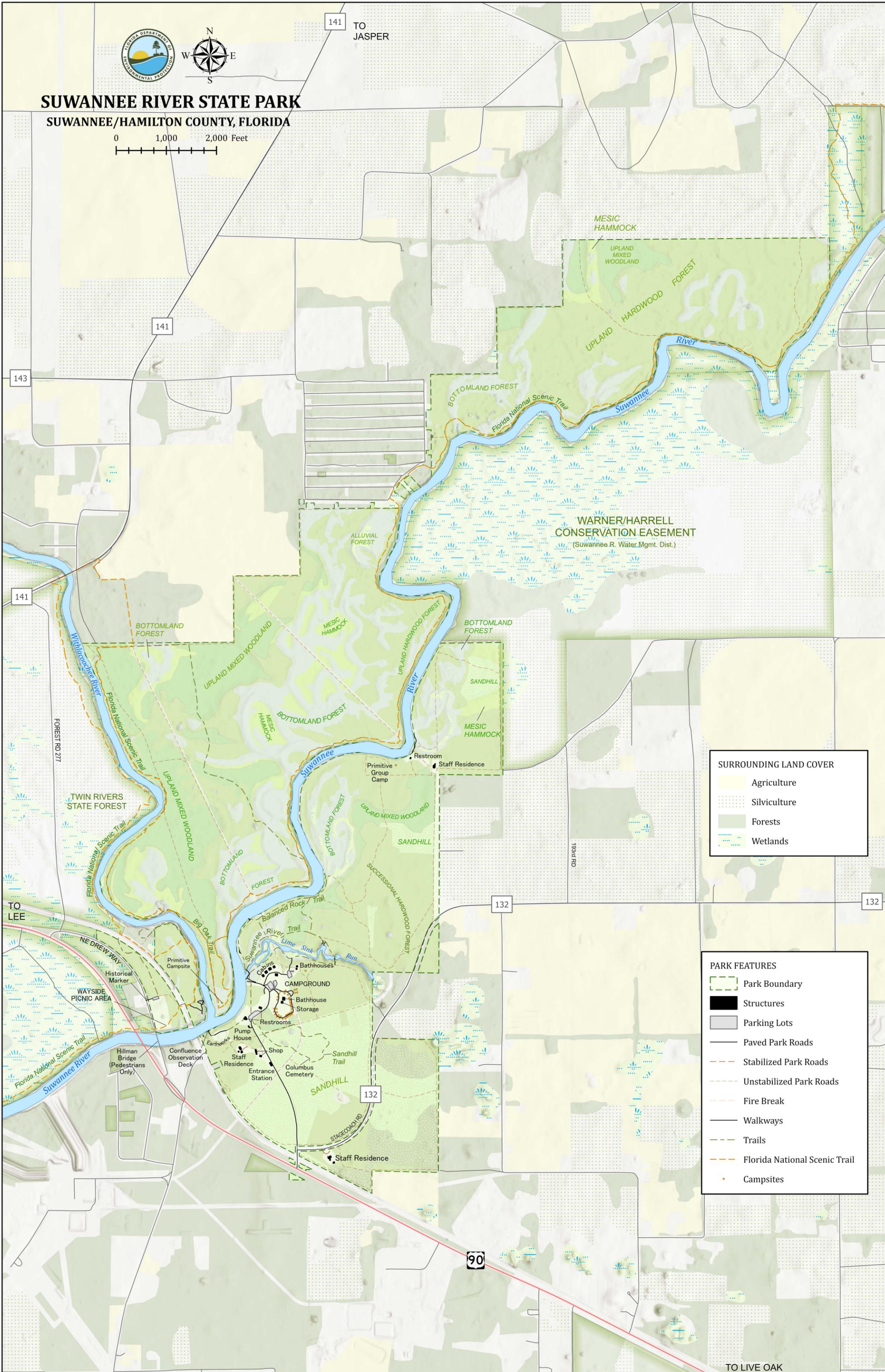
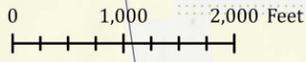
SUWANNEE RIVER REGION



141 TO JASPER

SUWANNEE RIVER STATE PARK

SUWANNEE/HAMILTON COUNTY, FLORIDA



SURROUNDING LAND COVER

- Agriculture
- Silviculture
- Forests
- Wetlands

PARK FEATURES

- Park Boundary
- Structures
- Parking Lots
- Paved Park Roads
- Stabilized Park Roads
- Unstabilized Park Roads
- Fire Break
- Walkways
- Trails
- Florida National Scenic Trail
- Campsites

TO LEE

90

TO LIVE OAK

INTRODUCTION

LOCATION AND ACQUISITION HISTORY

Suwannee River State Park is located in Suwannee County, Madison County and Hamilton County (see Vicinity Map). Access to the park is from U.S. Highway 90 and State Road 132. The Vicinity Map also reflects significant land and water resources existing near the park.

Suwannee River State Park was initially acquired on Nov. 6, 1945, by the Florida Board of Forestry. Currently, the park comprises 1,929 acres. The Board of Trustees of the Internal Improvement Trust Fund (Trustees) hold fee simple title to the park and on Jan. 21, 1968, the Trustees leased (Lease No. 2324) the property to the Division of Recreation and Parks (DRP) under a 99-year lease. In 1988, the Trustees assigned a new lease number (Lease No. 3643), without changing any terms or conditions. The current lease will expire on Jan. 22, 2067.

Suwannee River State Park is designated single-use to provide public outdoor recreation and other park-related uses. There are no legislative or executive directives that constrain the use of this property (see Appendix). A legal description of the park property can be made available upon request to the Florida Department of Environmental Protection (DEP).

SECONDARY AND INCOMPATIBLE USES

In accordance with 253.034(5) F.S., the potential of the park to accommodate secondary management purposes was analyzed. These secondary purposes were considered within the context of DRP's statutory responsibilities and resource values. This analysis considered the park's natural and cultural resources, management needs, aesthetic values, visitation and visitor experiences. It was determined that selective timbering in support of natural community restoration could be accommodated in a manner that would be compatible and not interfere with the primary purpose of resource-based outdoor recreation and conservation. This compatible secondary management purpose is addressed in the *Resource Management Component* of this plan.

DRP has determined that uses such as water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those management activities specifically identified in this plan) would not be consistent with the management purposes of the park.

In accordance with 253.034(5) F.S., 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 selective timbering in support of natural community restoration would be appropriate at this park as an additional source of revenue for land management since the intent of this activity is compatible with the park's primary purpose of resource-based outdoor recreation and conservation. Generating revenue from consumptive uses or from activities that are not expressly related to resource management and conservation is not under consideration.

PURPOSE AND SIGNIFICANCE OF THE PARK

Park Purpose

The purpose of Suwannee River State Park is to conserve high quality natural land and provide Florida residents and visitors access to areas such as the confluence of the Suwannee and Withlacoochee rivers. Habitats, geological resources and cultural artifacts are preserved and interpreted to improve understanding of north Florida's past.

Park Significance

- The park protects important cultural resources representing portions of Florida history from the Paleoindian period to the historical era, including archaeological sites, resource groups representing old communities and a Confederate earthwork.
- The park protects 11 significant springs, including Seven Sisters Spring (Five Hole Spring), Little Sister Spring, Little Gem Springs, Lime Sink and numerous karst windows scattered throughout the park. Lime Sink is directly connected to one of the longest well-explored cave systems in the world, the Cathedral Falmouth system.
- The park protects 14 distinct natural communities that provide habitat for rare and endemic species such as the pallid cave crayfish (*Procambarus pallidus*), Suwannee mocassinshell (*Medionidus walkeeri*), and Suwannee cooter (*Pseudemys concinna suwanniensis*) and imperiled plants such as the Eastern sweetshrub (*Calycanthus floridus*) and Florida mountainmint (*Pycnanthemum floridanum*)
- The park provides access and protection to miles of the Suwannee and Withlacoochee rivers at their confluence for resource-based outdoor recreation.

Central Park Theme

Two rivers converge at Suwannee River State Park, where memories of ghost towns and Civil War earthworks accompany you along the trails.

Suwannee River State Park is classified as a state park in the DRP unit classification system. In the management of a 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.

OTHER DESIGNATIONS

The unit is not within an Area of Critical State Concern as defined in Section 380.05, Florida Statutes, and it is not presently under study for such designation. The park is a component of the Florida Greenways and Trails System, administered by the DEP Office of Greenways and Trails.

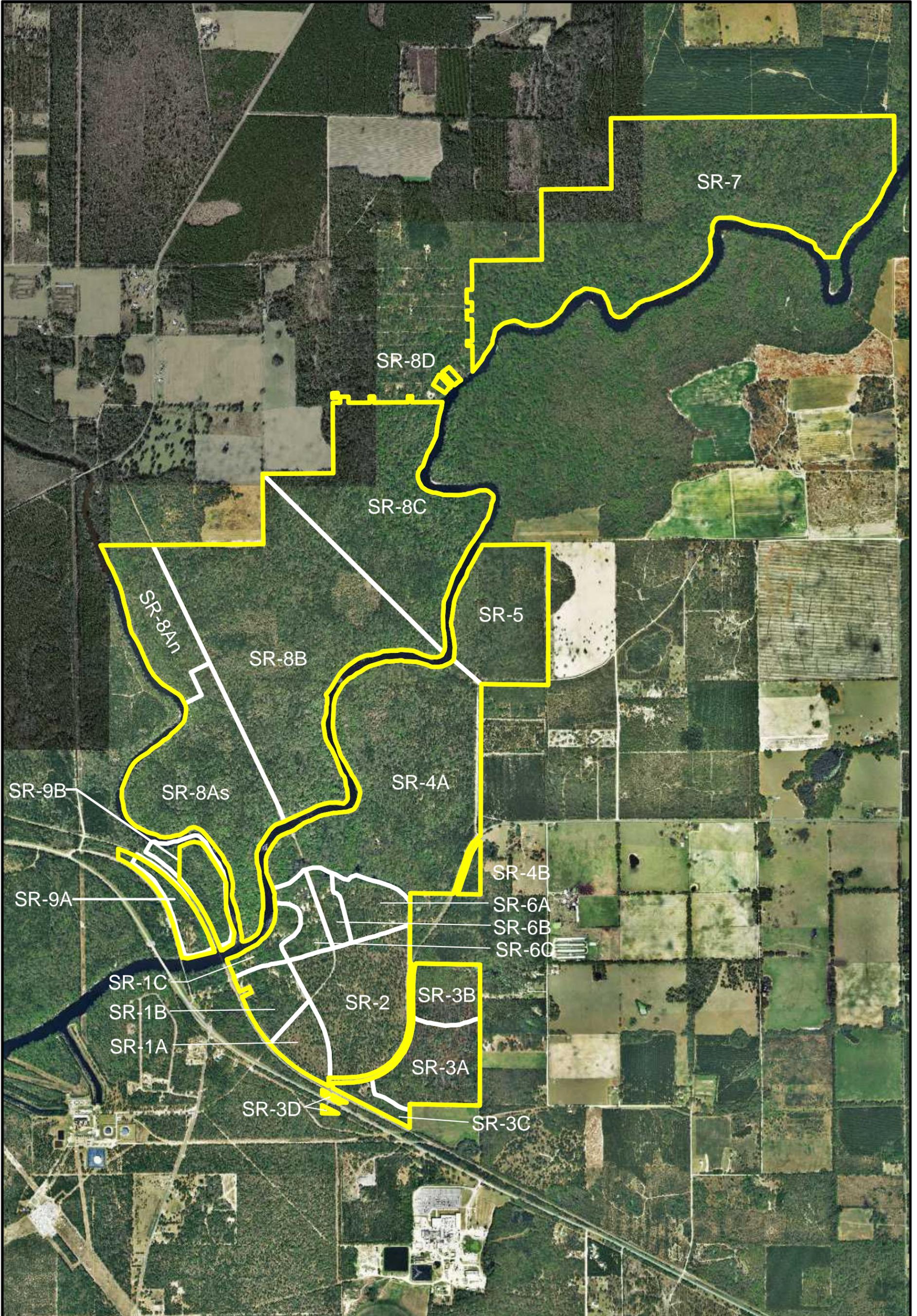
All waters within the park have been designated as Outstanding Florida Waters, pursuant to Chapter 62-302, Florida Administrative Code. Surface waters in this park are also classified as Class III (suitable for fish consumption and recreation) waters by DEP. The park is not within or adjacent to an aquatic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

PARK ACCOMPLISHMENTS

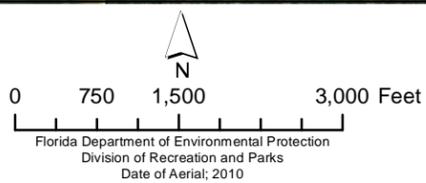
- Met 100% of prescribed fire acreage goals in fiscal year 2019-20.
- Applied prescribed fire to several sandhill units during growing season, which allows for viable wiregrass seed generation.
- Worked with PINE team to prepare Unit 4A for fire-readiness. Work included removing dangerous snags and creating defensible space around a ranger residence.
- Rebuilt the Lime Sink Group Camp restroom facility to allow for better accessibility for all. By making each restroom single-use and removing panel walls, the accessibility of the facility was greatly improved. A new roof and exterior paint have made the group camp very inviting for guests.
- Significantly upgraded two of the vacation cabins, including new flooring and paint on the interior.

RESOURCE MANAGEMENT COMPONENT

Suwannee River State Park Management Zones			
Management Zone	Acreage	Managed With Prescribed Fire	Contains Known Cultural Resources
SR-1A	22.73	Y	Y
SR-1B	28.71	Y	Y
SR-1C	17.46	N	Y
SR-2	100.4	Y	Y
SR-3A	57.82	Y	Y
SR-3B	31.82	Y	Y
SR-3C	10.45	Y	Y
SR-3D	1.14	N	N
SR-4A	272.2	Y	Y
SR-4B	5.74	N	N
SR-5	99.06	Y	Y
SR-6A	28.69	Y	Y
SR-6B	14.21	Y	Y
SR-6C	21.28	Y	Y
SR-7	414.44	Y	N
SR-8An	65.76	Y	N
SR-8As	153.26	Y	Y
SR-8B	326.91	Y	N
SR-8C	211.34	Y	Y
SR-8D	2.42	N	N
SR-9A	22.39	N	Y
SR-9B	24.53	N	Y



SUWANNEE RIVER STATE PARK



MANAGEMENT ZONES MAP

TOPOGRAPHY

Suwannee River State Park is located within the northernmost section of the Gulf Coastal Lowlands physiographic province of Florida. Geologists describe this region as a low karst plain with elevations typically less than 100 feet above mean sea level (msl) (White 1970). Complete and rapid infiltration of surface water runoff is characteristic of the drainage within the Gulf Coastal Lowlands. Exposed limestone features are numerous, with many well-developed sinkholes and a high degree of interconnection between surface water and groundwater systems. This region contains the River Valley Lowlands, a major floodplain terrace that parallels the Suwannee, Withlacoochee and Alapaha Rivers and encompasses most of the park (Ceryak et al. 1983).

Immediately north of the park is the Northern Highlands region, consisting of uplands capped by relatively impermeable, clay-rich sediments. The Northern Highlands are relatively flat and elevations are typically greater than 150 feet above msl. Karst development is minor. A high degree of surface runoff and a more extensive development of lakes and wetlands characterize the drainage in this region (Champion and Upchurch 2003).

The transitional zone between these two physiographic regions is an important karst feature known as the Cody Escarpment, familiarly known as the Cody Scarp (Puri and Vernon 1964). Ancient marine shoreline processes have significantly shaped this visible landscape feature, where topographic relief can range up to 80 feet. The scarp area has an abundance of sinkholes, sinkhole lakes and sinking streams (swallets) that profoundly influence the hydrology of the region. A large portion of the surface runoff from the Northern Highlands drains across the Cody Scarp and becomes groundwater as it rapidly infiltrates subsurface limestone conduits of the Upper Floridan aquifer.

Topographic relief within Suwannee River State Park is variable. Many areas are nearly level, others are gently rolling, and a few are steeply sloped. Elevations range from over 70 feet to less than 40 feet msl. Among the numerous karst features in the park are caves, springs, sinkholes, and karst windows, including a unique area called Seven Sisters Spring (also known as Five Hole Spring by cave divers), which is located in zone SR-7 in the northernmost section of the park. The most significant topographic feature in the park is a deep, limestone solution ravine containing a spring run called Lime Sink Run (also known as Dry Run). Other notable topographic features include the natural levees that generally parallel the edges of the Suwannee and Withlacoochee Rivers.

Historic alterations of the natural topography, including borrow sites and power/gas utility lines, are evident throughout the park. Riverbank erosion caused by unauthorized and excessive foot traffic has occurred in the Seven Sisters Spring area.

SOILS

Soils within Suwannee River State Park range from the frequently flooded soils of floodplains near the river to the well-drained sandy soils of the uplands (see Soils Map). There are 17 mapped soil types at the park. Eight of these occur in Hamilton and Madison Counties (Weatherspoon et al. 2001, Howell and Williams 1990). The remaining nine occur in Suwannee County (Houston et al. 1965). The soil classification scheme used in Suwannee County is an older one, however. It differs somewhat from that used in Hamilton and Madison Counties, so there is a potential for overlap between the two

classification schemes, making it likely that the total number of bona fide soil types in the park is actually less than 17.

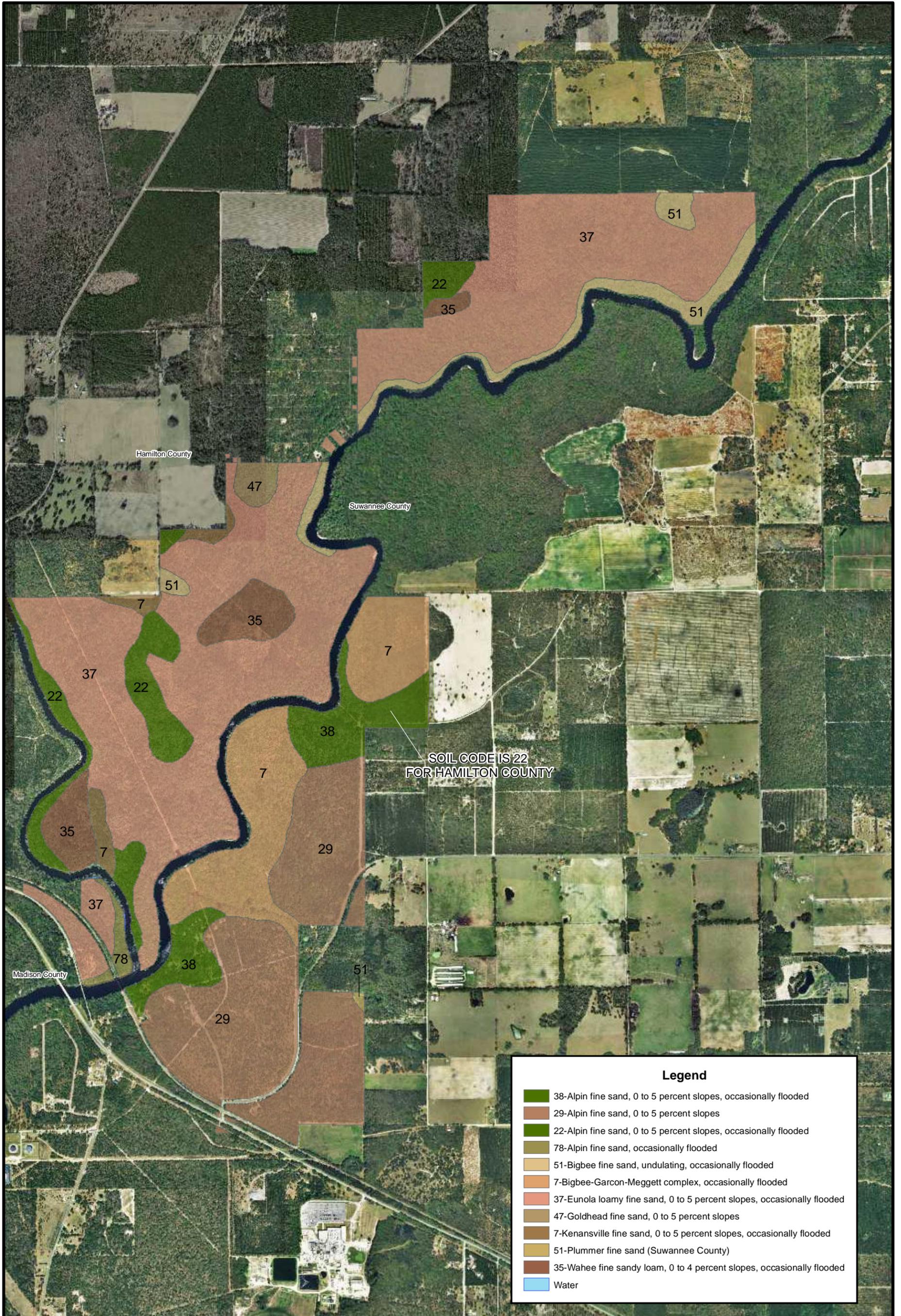
Soil disturbance and erosion from surface water runoff can be highly detrimental to the erosion prone, steep-sided banks of the Suwannee River and to sensitive karst features in the park. Continual exposure to this type of environmental stress may eventually lead to serious degradation. Areas within the park that are most prone to significant soil erosion include service roads, footpaths, and areas of high visitor use around karst features such as Seven Sisters Spring. Despite attempts at mitigation, the foot trails along Lime Sink Run continue to be among the most eroded in the park. The park routinely monitors susceptible areas for changes in erosion patterns. Management activities will continue to follow accepted best management practices to minimize or prevent additional soil erosion and to protect the park's soil and water resources.

Surface water runoff is naturally laden with eroded materials that may flow directly into nearby sinkholes and depressions. Large openings into the Floridan aquifer, such as those at Seven Sisters Spring and Lime Sink Run, are particularly vulnerable to possible contamination from runoff. Especially during strong storm events, runoff that does not have an opportunity to filter through underlying soils may flow directly into these openings, causing increased turbidity and sedimentation and decreased water quality in the aquifer. In addition, unauthorized use of a service road near Seven Sisters has caused significant erosion and disruption of sheetflow into adjacent bottomland forest.

The burial of a gas pipeline along an easement through the park has caused some of the most severe soil disturbance in the park. In 2016, a third major gas pipeline has been proposed to bisect the northern portion of the park in management zone SR-8c. This proposed development entails no above ground disturbance, but instead will be an underground boring that will cross under the park and the Suwannee River. It is unknown what level of soil or karst feature disturbance that will be created by this new development, especially in such close proximity to the Cathedral Falmouth aquatic cave system that will be discussed below.

A source of limited disturbance is the broad, shallow ditches that were cut over the years by utility personnel, presumably to facilitate drainage along easements. A Resource Management Evaluation conducted by the Florida Department of Natural Resources in 1990 recommended that these ditches be eliminated or modified (Yunker 1990).

An inactive borrow pit and debris dump, located in zone SR-2 in the southern part of the park, is the site of some relatively recent soil disturbance. Older, historical soil disturbances include the Confederate earthworks excavated near the Suwannee River and the stagecoach road that passes through the southern end of the park. Past agricultural activities in various parts of the park, especially in zones SR-2, SR-3a, SR-4a, 6a, and 6b, have also caused extensive soil disturbance.



SOIL CODE IS 22
FOR HAMILTON COUNTY

Legend

- 38-Alpin fine sand, 0 to 5 percent slopes, occasionally flooded
- 29-Alpin fine sand, 0 to 5 percent slopes
- 22-Alpin fine sand, 0 to 5 percent slopes, occasionally flooded
- 78-Alpin fine sand, occasionally flooded
- 51-Bigbee fine sand, undulating, occasionally flooded
- 7-Bigbee-Garcon-Meggett complex, occasionally flooded
- 37-Eunola loamy fine sand, 0 to 5 percent slopes, occasionally flooded
- 47-Goldhead fine sand, 0 to 5 percent slopes
- 7-Kenansville fine sand, 0 to 5 percent slopes, occasionally flooded
- 51-Plummer fine sand (Suwannee County)
- 35-Wahee fine sandy loam, 0 to 4 percent slopes, occasionally flooded
- Water

HYDROLOGY

Suwannee River State Park is uniquely positioned at the confluence of the Suwannee River (Reach 2) and Withlacoochee River near Ellaville, Florida. The two rivers are the park's most prominent hydrologic features. The state of Florida owns and DRP manages much of the upland and shoreline acreage along both sides of the Suwannee River for nearly 6 miles upstream from the Withlacoochee. The exception is a sizeable stretch of riverfront property in Suwannee County north of zone SR-5 and across the river from zone SR-7 where the Suwannee River Water Management District (SRWMD) has purchased a conservation easement on property known as the Warner/Harrell Tract.

The Suwannee and Withlacoochee River systems and their tributaries, along with the Alapaha River (located about 8 miles upstream from the park), constitute a majority of the Upper Suwannee River basin. The basin encompasses a 7,056 square-mile surface watershed (Hornsby et al. 2003). Of significance is that over 50% of that vast watershed lies in Georgia (Farrell and Upchurch 2005). All three of these rivers are Class III waters, and the Suwannee River is designated an Outstanding Florida Water in Rule 62-302.700(9) (i), Florida Administrative Code.

From its headwaters in the Okefenokee Swamp in southeastern Georgia, the Suwannee River meanders along a more or less southwesterly course for about 245 miles before emptying into the Gulf of Mexico (Ham and Hatzell 1996). The Suwannee's mean annual flow rate, measured at Ellaville below the mouth of the Withlacoochee, is 6279 cubic feet per second (U.S. Geological Survey (USGS) 2011). In the Upper Suwannee, stream flow is primarily dependent on surface water inputs, while further downstream the river is increasingly fed by groundwater. In fact, during periods of low surface water flows in the Middle Suwannee region below the park, river discharge consists almost entirely of groundwater from springs and from other significant karst features located within the river bottom (Pittman et al. 1997). This phenomenon is evident even in Suwannee River State Park, which is situated just above the Middle Suwannee area. When low water levels occur in the park, a greater proportion of river flow is contributed by springs, and this can trigger significant changes in water chemistry and clarity.

During flood stage of the Suwannee, however, the opposite occurs. As river levels rise, springs and other karst features begin to act as "siphons" or inflow points into the Upper Floridan aquifer (Gulley et al. 2011). This inflow, as surface waters and groundwater mix, causes substantial changes in groundwater quality, including the input of significant loads of nutrients into the aquifer (Katz et al. 1999; Katz and Hornsby 1998; Berndt et al. 1998). The result is a rather rapid and potentially large-scale change within the usually stable aquatic cave environment. One consequence of such insurgence events may be a notable die-off of troglobite fauna (Streever 1991). High troglobite diversity and abundance is considered a strong measure of spring ecosystem health (see Imperiled Species section for additional information). Interestingly, previously documented flow reversals at a nearby site, Wes Skiles Peacock Springs State Park, have indicated that there is a clear pattern of die-off and recovery episodes radically affecting populations of cave invertebrates (Streever 1991, 1992a, and 1992b). It is currently unknown if invertebrate populations in aquatic caves at Suwannee River State Park experience similar episodes (Franz et al. 1994). Given that lack of information, DRP should initiate a program to monitor flow reversals at some of the park's more important springs.

Important Karst Features

Eleven significant springs are located in the park, including Seven Sisters Spring (Five Hole Spring), Little Sister Spring (discovered in 2010), three unnamed springs in Hamilton County (HAM923972, HAM923973 and one discovered in 2010), two unnamed springs in Suwannee County (SUW923971, and SUW923972), Little Gem Spring (also known as Lime Spring), Lime Sink, an unnamed karst window (DEP FGS-224) and Suwanacoochee Spring. Numerous karst windows are scattered throughout the park, but by far the largest concentration occurs in zone SR-7 in the northern section of the park. Four karst features, all equally important to the hydrology of Suwannee River State Park but occurring outside the park on adjacent public or private lands, are Falmouth Spring, Ellaville Spring (also known as Edwards Spring), Giant Hole and Stevenson Spring.

In the summer of 2014, DEP and the SRWMD conducted an initial dye trace study to delineate the springshed for Cathedral-Falmouth Canyon cave system (Scott et al. 2004; Rosenau et al. 1977; DEP 2011a; Greenhalgh et al. 2016). The groundwater flow modeling for this region will likely be as complex as that for the Middle Santa Fe River and its associated springs (Upchurch et al. 2008). Additional springshed research that has been conducted within the park or in this region is the exploration of underground cave systems by certified cave divers. Based on a large body of work, it appears that the Upper Floridan water supply for numerous karst features in the region of Suwannee River State Park could be derived from at least two separate springsheds (District 2 files). Correspondingly, there appears to be at least four significant spring clusters located either inside the park or nearby, including Lime Sink Run, Suwanacoochee Spring, Seven Sisters Spring and Stevenson Spring (see below for details).

Lime Sink, which has a first-magnitude discharge, is a major component of one of the better studied spring clusters associated with the park. The spring itself is located on the park's eastern boundary, and it feeds the 3,000-foot Lime Sink Run (Dry Run), a spring-run stream that flows westerly through the park in a deep limestone ravine before discharging into the Suwannee River. The flow in Lime Sink Run is intermittent, which may have been the impetus many years ago to construct a dam across the lower part of the run to impound water and create a more permanent swimming area. The dam may not have totally served its purpose, however, since an undependable water supply and stagnation problems caused the Florida Park Service in the 1970s to shut down the facility. Although there is no record of the actual date of abandonment of the swimming area, efforts by the park to restore the site to its natural condition took place in the ensuing years. The restoration project resulted in removal of much of the dam structure, but the base of the dam persists to some degree even today. The remnants of the dam do not appear to have a significant effect on water flow, but a more thorough investigation of the site's local hydrology could help determine if that assumption is valid.

Lime Sink is the apparent endpoint for one of the longest interconnected aquatic cave systems in the world, the Cathedral-Falmouth Canyon, which is a very well explored system (Exley 1994). Cave divers have mapped nearly 50,000 feet of conduits within the Cathedral/Falmouth/Lime Sink Run cave system, which ranks as one of the 15 longest caves in the world (Gulden and Coke 2011). After more than 20 years of exploration, divers have mapped a series of strategic cave connections using a number of key entry points (i.e., karst windows) along this very complex and lengthy system. They have discovered that cave conduits trend to the southeast away from the park and toward the city of Live Oak. Completing the delineation of springshed boundaries for the Lime Sink Run cluster should be a top priority for DRP. Another priority should be a continuation of efforts to acquire the east side of Lime Sink and the

adjacent Giant Hole Sink to protect groundwater in the park and to preserve for the public a primary access point to the Cathedral/Falmouth/Lime Sink Run aquatic cave system.

Adjacent to the Suwannee River and associated with Lime Sink Run are two additional springs, Little Gem and SUW923971. Divers have not yet fully explored them, but these springs appear to have significant connections with the Lime Sink Run cluster. Little Gem Spring is a second-magnitude spring vent, whereas SUW923971 is a fourth-magnitude vent.

Suwanacoochee Spring and Ellaville Spring are both second-magnitude springs that comprise a second spring cluster. Suwanacoochee Spring is on state park property in Madison County. It has a short spring run that flows through the remnant masonry of a historic bathhouse structure before discharging into the Withlacoochee River just above its confluence with the Suwannee River. Ellaville Spring is on a private parcel along the Suwannee River adjacent to the park's west boundary and immediately across from the above-mentioned confluence with the Withlacoochee. The underground cave systems of these two springs are interconnected and they have a long history of exploration by cave divers. In 2016, dye trace work has indicated a connectivity between Lime Sink Spring, mentioned above, and Suwanacoochee and Ellaville springs (Greenhalgh et al. 2016).

Seven Sisters Spring (third magnitude) and two unnamed Hamilton County springs (HAM923972 and HAM923973) constitute a third spring cluster, this one located in zone SR-7 in the northern portion of the park. Seven Sisters Spring contains a series of five 20-foot-deep limestone openings, all connected to a primary karst window that leads into an extensive aquatic cave system. There is a long history of cave exploration here as well. The two unnamed Hamilton County spring vents, HAM923973 (third magnitude) and HAM923972 (fourth magnitude), located upstream of Stevenson Spring (see below), were only recently identified. Both springs flow directly into the Suwannee River at the outfall of a riparian area that follows a north-south aligned floodplain corridor through the western third of zone SR-7. Several unique karst windows are situated along this corridor. Severe soil erosion has occurred adjacent to Seven Sisters along the high banks of the Suwannee River in zone SR-7.

Stevenson Spring and an unnamed Suwannee County Spring (SUW923972) comprise the fourth spring cluster associated with the park. Stevenson Spring, also known as Lineater, is a large second-magnitude spring located on SRWMD conservation easement property across the river from the Seven Sisters Spring area. It has been reported that during times of high flow, Stevenson Spring flows as a first-magnitude system (Stevenson 2016). This spring is a large karst vent that emerges from the riverbank on the south side of the Suwannee River. It has a substantial boil area but no spring run. The unnamed spring, SUW923972, is fourth magnitude and is located over a mile downstream from Seven Sisters Spring on park property. It appears likely that this spring and Stevenson Spring may share the same springshed, however delineation of the springshed boundary has not yet occurred.

Water Quantity

Water managers know that springshed boundaries can change naturally over time, but they also realize that consumptive overuse and contamination of groundwater within a springshed can be especially detrimental to the springs within (Upchurch and Champion 2004). Recent research has revealed that a significant area of groundwater supply in the eastern part of the SRWMD, considered a groundwater divide of sorts between the SRWMD and the St. Johns River Water Management District (SJRWMD), has declined to the extent that a westward shift in groundwater potentiometric contours has occurred

(Grubbs and Crandall 2007). The shift appears to be in response to the artificial depletion of groundwater reserves caused by large-scale pumping in northeast Florida and southeast Georgia (SRWMD 2010). This regional drawdown may be partially responsible for shrinking springsheds and declining spring flows within western portions of the SRWMD. Strong scientific evidence supports the hypothesis that the cessation of flow at an upper Suwannee spring, White Sulphur Springs, and a significant decrease in average discharge at a lower Santa Fe tributary, the Ichetucknee River, is due to this unfettered drawdown of regional groundwater levels (Mirti 2001; Grubbs 2011).

Water resources within Suwannee River State Park may also be threatened by large-scale withdrawals from surface or groundwater systems that are hydraulically connected to systems within the park. The SRWMD is responsible for issuing water use permits in the region, and in doing so must ensure that proposed uses are in the public interest, which includes the conservation of fish and wildlife habitat and the protection of recreational values. Additionally, the SRWMD is responsible for prioritizing and establishing Minimum Flows and Levels (MFLs) for water bodies within its boundaries (SRWMD 2004). It is currently developing an MFL for the Upper Suwannee River that includes all first and second magnitude springs; there is no date set for this MFL completion. Water bodies in the park that are part of this schedule include two Lime Sink Run springs, Suwanacoochee Spring, and the Upper Suwannee River.

Water Quality

The main water quality issues that most influence the park's water resources are 1) erosion/sedimentation along the banks of the Suwannee River and within sensitive karst features, and 2) regional groundwater contamination. Erosion and sedimentation in the park are the heaviest in several areas along the Suwannee River and around sensitive karst features such as Seven Sisters and Lime Sink Run. At present, there seems to be little danger that surface water runoff originating within the park itself will cause significant groundwater pollution in the park's springs and caves. Since the Floridan aquifer in the area is unconfined, however, the park should remain vigilant about possible pollution sources. Highly vulnerable karst features within the park have the potential to funnel contaminated surface waters into high quality groundwater resources (Cichon et al. 2004). Outside the park, there are potential sources of groundwater pollution as well. Large-scale chicken farming operations located north of the park could one day pose a threat to the quality of local groundwater and surface water resources. Currently there are no dairy operations near the park.

Nitrogen enrichment has contaminated most of the upper Floridan aquifer in the northern region of the state. Nitrates specifically have increased by an order of magnitude over the past 50 years (Cohen et al. 2007). Human activity, especially the use of inorganic fertilizers, has long been the leading cause of this enrichment, and it may be particularly detrimental to springsheds in the park.

State water managers have monitored groundwater quality in numerous types of wells over the past 25 years. Near the park, over 120 different wells are an integral part of a mechanism to track groundwater quality (DEP 2011b). Some wells were associated with a Very Intense Study Area (VISA) monitoring conducted during the 1990s, while others have served to document changes associated with known contaminated sites (Maddox et al. 1998).

DEP monitors at least three types of contaminated groundwater wells within the Suwannee River State Park region, including restoration wells, Class V wells, and VISA wells. In the town of Live Oak, approximately 10 miles southeast of the park, there are at least 46 wells of this type that are used to monitor aquifer contamination (DEP 2011b). Past sampling of these wells has shown that some sites have exceeded the state's primary drinking water standards for maximum contaminant levels. Additionally, there are at least 13 groundwater monitoring wells located near the park that provide a background data set for the upper Floridan aquifer. The SRWMD and DEP are cooperatively conducting a long-term trend analysis on three of these groundwater wells: 011011002, 021231001, and 021332004 (DEP 2011e).

Groundwater contamination from high nutrient loading has significantly influenced the ecological health of several other spring ecosystems across the state (Cohen et al. 2007; WSI 2010). Studies suggest that one of the primary water quality issues within these karst systems is unhealthy levels of nitrate-nitrogen (Jones et al. 1996). Nitrate concentrations (NO₃ as N) measured at the seven known springs in Suwannee River State Park have ranged from 0.02 milligrams per liter to nearly 0.77 milligrams per liter (DEP 2011b). These levels are far below the concentrations found at other springs in the state (Harrington et al. 2010). However, known nitrate concentrations within some wells near the park have measured greater than 5 milligrams per liter, so caution and continuous assessment are warranted. Naturally occurring background levels for nitrates should be less than 0.01 milligrams per liter (Cohen et al. 2007).

There is a vast set of water quality data available for many of the springs and karst features in the park, as well as for the two rivers that flow through the park (Hornsby and Ceryak 1998; Scott et al. 2004). Much of the hydrological information that has been collected, stored and managed by state water management agencies can now be accessed through a variety of web-based filters (USGS 2011; SRWMD 2011; DEP 2011a, DEP 2011b).

The Suwannee, Alapaha and Withlacoochee rivers have a number of pollution sources along their courses (Berndt et al. 1998; Katz et al. 1999). Water quality in the Alapaha River is affected by runoff from extensive agricultural lands in Georgia and by outfall from numerous municipal wastewater treatment plants situated along its course. Numerous point sources of pollution also occur along the Withlacoochee River. These include effluent discharge from industrial and domestic wastewater treatment plants, a paper mill and an aluminum manufacturing plant.

Along the upper Suwannee River, the operation of a major phosphate mine (PCS Swift Creek Chemical Complex) and effluent discharge from various wastewater treatment facilities have contributed to an increase in levels of phosphorus, organic nitrogen, sulfates, fluorides and coliform bacteria in the river (Hand et al. 1996). In December 2009, an unforeseen sinkhole collapse on PCS property caused the unexpected release of 84 million gallons of processed water containing gypsum acid into the Upper Floridan aquifer (DEP 2011c). Management of this release was apparently contained onsite, but officials have significantly increased the water quality monitoring at private and public wells within the region.

The SRWMD maintains numerous surface water quality monitoring stations along the upper Suwannee River, plus three on the Withlacoochee River and three on the Alapaha River. Four of these stations are near Suwannee River State Park (Jenkins et al. 2010).

The water quality measured at these stations generally falls in the good to fair range, although inputs from episodic rainfall and runoff events may influence them variably (Hand et al. 1996). Interestingly,

the water quality of the Suwannee River near the park is better below the inputs of the Withlacoochee and Alapaha rivers than above, partly because of the dilution of the Suwannee by rivers of better water quality and partly because of dilution from spring discharges (Hand et al. 1996).

As of 2011, DEP's Total Maximum Daily Load (TMDL) program, which targets surface water quality improvements along the Suwannee River, has focused mainly on the middle and lower basins (Hallas and Magley 2008, DEP 2011d; DEP 2009). The Upper Suwannee River currently has no targeted TMDL requirements, even though there are numerous potential threats to groundwater quality within the region (Silvanima 2008).

Objective A: Assess the park's hydrological restoration needs.

- Action 1 - Establish a monitoring program with at least one of the park's springs to emphasize the impacts of flow reversals.
- Action 2 - Conduct hydrological studies to delineate springsheds of the four spring clusters associated with the park.
- Action 3 - The SRWMD should identify the springs' up-gradient sources and establish meaningful MFLs for Suwanacoochee Spring and Little Gem Spring.
- Action 4 - Closely monitor major phosphate mining operations in the Suwannee watershed upstream of the park and other land-use changes.

Significant hydrological features in the park include two major rivers and seven springs, as well as multiple karst windows scattered throughout the property. Preservation of surface water and groundwater quality, as well as control of erosion and sedimentation along riverbanks and within the numerous karst features, will remain top priorities.

The proximal sources of flow from the Floridan aquifer to the park's seven springs are still unknown. To remedy that, DRP will encourage hydrological studies designed to delineate the entire springsheds of the four spring clusters associated with the park, particularly the Lime Sink Run spring cluster. In addition, if the SRWMD is to establish meaningful MFLs for Suwanacoochee Spring and Little Gem Spring, it must first identify their up-gradient sources. For managers to protect water quality and potentially restore spring flows to their historic volumes, it will be essential that they understand the extent of the springsheds involved.

Staff will continue to monitor land-use or zoning changes within lands bordering the park. Major ground disturbances on neighboring properties or inadequate treatment of runoff into local streams could ultimately cause significant degradation of park resources. District 2 staff will provide comments to other agencies regarding proposed changes in land use or zoning that may affect the park. In addition, district staff will closely monitor the major phosphate mining operations in the Suwannee watershed upstream of the park for significant changes that may adversely affect park resources.

DRP will continue to work closely with the SRWMD to ensure that MFLs developed for the Upper Suwannee River, Suwanacoochee Spring and Little Gem Spring are implemented conscientiously and that historic spring flows are protected. As another protective measure, DRP will continue efforts to acquire the private property at the head of Lime Sink Run.

Objective B: Restore hydrological functions to approximately 5 acres of bottomland forest and 3.5 acres of spring-run stream natural communities.

- Action 1 - If utility easements significantly impact hydrology, then staff should seek cooperation with utility companies to mitigate impacts and restore hydrological function to 5 acres of bottomland forest.
- Action 2 - Evaluate impacts of remnant dam structure on natural hydrology of Lime Sink Run.
- Action 3 - If the dam impedes hydrology functions, the park will restore the 3.5-acre area of spring-run stream.

Bottomland forests adjacent to utility easements may experience some disruption of natural sheetflow due to the filling of low spots along the easements, excavation of shallow ditches to facilitate drainage and wallowing out of low, moist areas by heavy equipment during regular maintenance of easement corridors. Remnants of an old dam from a former swimming area in the lower part of the Lime Sink Run may still be impeding flow along the run.

DRP staff will investigate potential impacts of the gas pipeline and other utility easements on natural sheetflow in the park's bottomland forests. The park will also evaluate other alterations in the park that may have negatively affected the natural hydrology. If necessary, staff will initiate corrective actions such as the installation of low water crossings or culverts in appropriate locations.

If the dam at the former swimming area still impedes flow in the stream or alters the spring-run natural community in some other significant manner, then the park will renew efforts to restore the area to natural grade, which would result in restoration of about 3.5 acres of spring-run stream.

Objective C: Evaluate and mitigate the impacts of soil erosion in the park.

- Action 1 - Assess the extent of erosion attributable to excessive or unauthorized visitor access to the Seven Sisters springs area.
- Action 2 - Identify unauthorized trails along river levees elsewhere in the park and exclude visitor access to them where necessary.
- Action 3 - Stabilize certain areas with erosion issues at the canoe launch area.

Areas in the park that are popular with visitors, particularly Lime Sink Run and Seven Sisters Spring, continue to have erosion issues despite past corrective measures.

DRP will investigate best management options for additional mitigation of erosion at public access points such as hiking trails along the Suwannee River shoreline, the boat launch area and the Seven Sisters Spring area. Staff will regularly monitor areas of the park that are subject to significant erosion. The park will implement corrective measures that reduce the impacts of soil erosion on water resources.

It may be necessary to exclude visitors from the site temporarily to allow healing of erosion scars. The parking area associated with the authorized trail to the spring may need additional water bars designed to minimize erosion during strong storm events by diverting stormwater into surrounding woodlands to encourage natural infiltration. The access road to the site may also need additional work, possibly including the installation of low water crossings. DRP will also explore alternative options for providing visitor access to the Seven Sisters site. Parking and trail improvements would enable proper interpretation of this resource.

In the canoe launch area, despite significant progress in mitigating key erosion issues, certain spots will require additional stabilization measures. Staff will continue to monitor points of significant erosion along the Lime Sink Run trail system and mitigate the problem areas as needed.

NATURAL COMMUNITIES

Mesic Hammock

Mesic hammocks in the park occur mainly on the north side of the Suwannee River and are associated with slopes and plateaus above the bottomland forests. The dominant species in the canopy are live oak and laurel oak, but, unlike bottomland forests, the mesic hammocks typically also have a shrub layer dominated by saw palmetto, sparkleberry, deerberry (*Vaccinium stamineum*) and highbush blueberry (*Vaccinium corymbosum*). Slender woodoats (*Chasmanthium laxum*) are common in the groundcover. Infrequent inundation by floodwaters of the Suwannee and Withlacoochee rivers undoubtedly affects the species composition of the mesic hammocks in this area.

Most of the examples of mesic hammock in the park are in good condition. Past disturbances caused by logging operations to control southern pine beetle outbreaks have reduced some mesic hammock areas to poor condition. Little active management of mesic hammocks is required beyond control of feral hog populations. Areas impacted by pine beetle outbreaks will be allowed to succeed back to mesic hammock. It is likely that the intermittent flood events along the Suwannee contribute to the differentiation of mesic hammock from adjacent upland hardwood forests.

Sandhill

Sandhill is the dominant natural community in the part of the park that lies south and east of the Suwannee River. This community has responded well to restoration efforts such as prescribed fire initiated in the 1970s and hardwood girdling and herbiciding begun in the 1980s. Because of these efforts, much of the system now resembles typical sandhill and is in good condition. In the southern pine beetle invasion of 1996-97, only a few pines in the sandhills were killed, none of them longleaf.

In some areas, however, particularly in zones SR-3, SR-4, SR-5 and SR-6, fire-intolerant species that have invaded the sandhill from adjacent communities continue to thrive. Most of the sandhills in these zones are currently labeled successional hardwood forest, an altered landcover type, due to previous clearing of the native vegetation for agricultural pursuits. Most of these zones were used as fields or pastures and subsequently abandoned. The remnants of sandhill within these disturbed areas are considered to be in poor condition. Restoration of the previously cleared areas to sandhill will be challenging, particularly where pastures grasses remain. In addition, a few acres of non-indigenous slash pines (*Pinus elliottii*) that were planted several decades ago remain in part of zone SR-6. A natural gas pipeline right-of-way also bisects the sandhills of the park in zones SR- 1, SR-2 and SR-6.

Parts of SR-1B and SR-6A were mowed in 2021 to open up the zones for prescribed fires. In 2023, funding from the Florida Forest Service (FFS) was obtained through the Prescribed Fire Enhancement Program (PFEP) to mow invasive native hardwoods in zones SR-3A, SR-3B, SR-4A and SR-5 to open up the zones and release remnant groundcover.

Continued use of prescribed fire in the park's sandhills will be essential to maintaining community structure and ecological integrity. Those zones that require sandhill restoration but retain some native groundcover species will receive a higher priority than degraded sites now devoid of characteristic

species. Additional lightning season fires will no doubt continue to improve the sandhills that are already in fair to good condition. Some areas of sandhill will need additional offsite hardwood removal to improve conditions for prescribed fire and facilitate groundcover recovery.

Sinkhole

Because of the extent of underlying limestone, much of the park is dotted with sinks and depressions characteristic of karst topography. The park's sinkholes range from relatively young with exposed limestone to more gradually sloping sinks containing mature vegetation typical of the surrounding natural communities.

Most sinkholes in the park are in good condition. However, foot traffic on sinkhole slopes occasionally causes erosion, soil compaction and trampling of groundcover. Recreational use of the Seven Sisters Spring area in the western side of zone SR-7 has caused severe erosion in and around the sinkholes that are associated with the spring. Portions of the Florida Trail that pass through this area have also experienced significant erosion. Sinkholes here and in zone SR-9 have also been used in the past as trash disposal sites. Several sinkholes in zones SR-7 and SR-8 have infestations of an invasive plant, the Japanese climbing fern (*Lygodium japonicum*), that is currently undergoing herbicide treatment.

Sinkhole management must emphasize protection. The edges of sinkholes need to be protected from impacts that could accelerate erosion and sedimentation problems. Access to these areas is often restricted. As an erosion prevention measure, the park will reroute the Florida Trail in the Seven Sisters Spring area away from sensitive slopes above sinkholes. The park has limited direct public access to sensitive karst windows and sinkholes in that area by erecting strategically located fencing around the sinkhole field associated with Seven Sisters Spring. Regular monitoring of sinkholes in the park for the presence of invasive plant and animal species will also be necessary.

Upland Hardwood Forest

This community occurs naturally on levees along the Suwannee River and Withlacoochee River and in the less hydric portions of the river floodways. It is usually found within the 10-year floodplain but does not frequently flood. Upland hardwood forest is most common on the north side of the Suwannee River where elevations tend to be lower than on the south side of the river and where the fire-shadow effects of the Suwannee and Withlacoochee rivers exert a dominant influence on the fire regime. Upland hardwood forest is typically located between the upland mixed woodlands or sandhills of the uplands and the bottomland forests of the floodplains.

Portions of this community in zones SR-7 and SR-8 were severely impacted by southern pine beetle outbreaks in which loblolly pines and spruce pines were attacked. Regularly maintained utility rights-of-way in zone SR-8 fragment this community by creating treeless and shrubless zones where there would ordinarily be closed canopy forest. These utility easements include a natural gas pipeline and an electric power transmission line.

Finally, in some areas where upland hardwood forest grows on steeper slopes, minor erosion may occur on recreational trails that traverse the slopes. The most obvious such erosion is along the loop trail that follows Lime Sink Run. Despite these negative influences, the condition of this community in the park is generally good to excellent.

To prevent erosion within this community, staff will need to implement corrective measures such as stabilizing disturbed areas and possibly modifying visitor-use patterns. Where southern pine beetle outbreaks have disturbed areas, successional processes should suffice to restore the upland hardwood forests.

Upland Mixed Woodland

Upland mixed woodland often serves as a transition zone between upland pine or sandhill and adjacent upland hardwood forest or mesic hammock. Similar to upland pine, upland mixed woodland is a fire-adapted community with longleaf as the dominant pine species. Southern red oaks and mockernut hickories maintain a strong presence in the canopy as well. However, upland mixed woodland typically lacks wiregrass as a dominant groundcover, and the oaks and hickories may be co-dominant with the longleaf pines. Being a transitional community, upland mixed woodland is very susceptible to succession to upland hardwood forest when there is a lack of fire. As a result, very few intact examples of upland mixed woodland exist in north central Florida.

Higher ridges of upland hardwood forest parallel both sides of the Suwannee River. Just above the upland hardwood forest, particularly in zones SR-4 and SR-8, are bands of upland mixed woodland. It is likely that all of the longleaf pines were removed from this area prior to 1900, and subsequent fire suppression has caused the majority of the herbaceous species to be shaded out by hardwoods. A majority of the upland mixed woodland slopes downward into an area of upland hardwood forest before grading into bottomland forest. Natural fires in the sandhill or upland pine would have slowly burned downslope into adjacent upland mixed woodland. The dense hardwood growth and a lack of frequent enough fire make it difficult to distinguish many of these areas from upland hardwood forest.

Many decades of fire exclusion have led to a partial disintegration of this community. Former agricultural practices appear to have modified this community, particularly in zone SR-4, by depleting species diversity. Additionally, southern pine beetle outbreaks within zone SR-8 in the late 1990s affected several acres of the best remaining example of upland mixed woodland in the park. The beetle invasion was so virulent that professional loggers had to be contracted to clearcut the infested trees and haul them out of the park. Not only was the pine canopy removed, but heavy logging equipment also impacted many other components of the system, including remnant groundcover species.

Prescribed fire in most of this community was first attempted in the late 1980s when zones SR-7 and SR-8 were treated with fire during the winter. While parts of zone SR-8 have since received growing season fires, the results were less than satisfactory, indicating that additional hardwood treatment may be required to restore this area successfully. At present, this community's condition is rated as fair.

Restoration and improvement of the upland mixed woodland community will entail the reintroduction of fire and the removal of off-site hardwood species. The park will postpone the planting of longleaf pines until the canopy is sufficiently open to allow longleaf seedlings to survive. Staff will need to conduct additional field surveys to verify the historic extent of the upland mixed woodland and to continue documentation of the distribution of remnant species.

Upland Pine

The only substantial amount of upland pine community found at Suwannee River State Park is in zone SR-3. Many decades of fire exclusion have led to the decline of this community, with only very few indicator species remaining. Often only scattered individuals of characteristic upland pine species such

as longleaf pine, southern red oak (*Quercus falcata*), bluejack oak (*Quercus incana*) and sparkleberry (*Vaccinium arboreum*) persist. The dominant canopy species in this degraded upland pine is now typically loblolly pine. The park will need to employ alternative restoration techniques as a supplement to the prescribed fire program to achieve successful restoration of this community. At present, the upland pine community is considered to be in poor to fair condition.

Continued application of prescribed fire and supplemental plantings of longleaf pines and groundcover species will be the primary management measures for the areas of upland pine currently undergoing restoration. Some of the off-site hardwoods in the upland pine in zone SR-3A were mowed in 2023 as part of the PFEP project. Overgrown areas may need additional hardwood removal to make prescribed fires more effective in restoring the native components of this community.

Alluvial Forest

Alluvial forest occurs principally below the 45-foot contour in low floodplains of the Suwannee River and Withlacoochee River. This community grades into bottomland forest and floodplain swamp, both of which also commonly occur in the floodplains of the Suwannee and Withlacoochee rivers. Alluvial forest also occurs along the lower slopes of the primary levees and on point bars that form on the inside curves of river meanders. Distinctions among these communities are often blurred, making accurate categorization difficult. The only known negative impacts on this community in the park are some rooting by feral hogs and minor erosion associated with visitor use of trails.

Alluvial forest requires little active management other than protection from erosion impacts and control of invasive exotic species. The park will monitor river access points and visitor use areas within the alluvial forest and will mitigate erosion impacts as they appear.

Bottomland Forest

Over 75% of the park falls within the 10-year floodplain of the Suwannee River and Withlacoochee River. Bottomland forest occurs in broad, winding depressions that ultimately drain to the river channels. The bottomland forest is found mainly at elevations below the 50-foot contour. It is located in the lower areas of the river floodway, below the upland hardwood forests found along the primary levees and below the mesic hammocks within the floodway. The main negative impact on the bottomland forest of the park is fragmentation by utility rights-of-way that create treeless and shrubless zones in places where there would ordinarily be closed canopy forest. These utility easements include a natural gas pipeline and an electric power transmission line. An additional impact is the rooting of feral hogs, especially in the forests located between the Withlacoochee and Suwannee rivers in zones SR-7 and SR-8. Despite these impacts, this community remains in good to excellent condition.

Maintenance of a natural hydrological regime is critical to the long-term health of bottomland forest communities. Many of the efforts detailed in the *Hydrology* section above, designed to protect the spring-run stream, also apply to the bottomland forest. Monitoring for impacts from invasive plant species and feral hogs will also continue.

Floodplain Swamp

This community is found in depressions or along channels in low floodplains below the 40-foot contour. The floodplain swamp of the park experienced selective logging in the past. Cypress was the main species targeted. Revegetation of the community, particularly through re-sprouting from stumps, has progressed sufficiently that complete recovery seems assured. A small area in the lower reaches of Lime

Sink Run that was cleared and bulkheaded a number of years ago to create a swimming spot has been partially reclaimed. Trees of various species have been planted to revegetate the area. No additional impacts on this community have been observed. The community should continue to flourish barring inordinate changes in the local hydrology.

Floodplain swamps require little active management other than protection from erosion impacts and control of invasive species. Staff will monitor river access points and visitor-use areas within the floodplain swamp for erosion issues and will mitigate impacts as needed.

Sinkhole Lake

Because of the extent of underlying limestone, much of the park is dotted with sinks and depressions characteristic of karst topography. Sinkhole lakes are scattered throughout the park, but zone SR-7 in the north appears to have the greatest concentration of those that are actually karst windows with direct groundwater connections. Due to the extreme variations in water levels of both the Suwannee River and the surficial aquifer, the sinkhole lakes hold water for varying lengths of time. Some are continuously flooded, but some may go dry as water levels drop. The actual number of sinkhole lakes in the park is difficult to determine accurately. Only those that are known to normally contain water are indicated on the Natural Community Map as sinkhole lakes.

Most sinkhole lakes in the park are in good condition, however foot traffic on sinkhole slopes occasionally causes erosion, soil compaction and trampling of ground cover. Heavy foot traffic near the Seven Sisters Spring in the western end of zone SR-7 has caused significant erosion in and around the sinkhole lakes associated with the spring. Portions of the Florida Trail that pass through this area have also experienced erosion.

Management of sinkhole lakes must emphasize protection. The edges of sinkhole lakes need to be protected from impacts that could accelerate erosion and sedimentation problems. Increased erosion can cause a decline in water quality, especially if a karst window is present. Access to sinkhole lakes is often restricted except for legitimate research purposes or management activities. Protective measures recommended for the sinkholes/sinkhole lakes in the Seven Sisters Spring area and similar sites in the park are described above under the "Sinkhole" section of the Natural Communities section of this plan.

Alluvial Stream

The Withlacoochee River (north) is one of the few alluvial streams occurring in Florida. Most of Florida's alluvial streams originate in the clayey uplands of Georgia and then follow a southerly course until they reach the Gulf of Mexico. The Withlacoochee River, however, only flows 84 miles from its headwaters near Tifton, Georgia, to its junction with the Suwannee River at Suwannee River State Park. The park has approximately 2 miles of frontage on the Withlacoochee. For the last half-mile of the river's course, state park lands border each bank.

Although land use within the Withlacoochee River basin is predominantly agricultural, the stream has several substantial point sources of domestic or industrial wastewater discharge along its course. Of these point sources, five are municipal sewage treatment plants. The most significant source of pollution in recent history has been a pulp mill that operates in Georgia but discharges its wastewater directly into Jumping Gully Creek, a minor tributary of the Withlacoochee River at the state line. State agencies in both Florida and Georgia have made a concerted effort in recent years to monitor this situation. Despite

these potentially significant upstream sources of pollution, the water quality of the Withlacoochee River as it enters the park remains good.

Monitoring of water quality, particularly of tributaries affected by industrial operations, is an important management measure. This will be primarily accomplished in cooperation with DEP and the SRWMD. Monitoring and mitigation of any riverbank erosion is also a priority.

Blackwater Stream

Because of its outstanding scenic and historic attributes, the Suwannee River is renowned worldwide. In that sense, it is the most notable example of blackwater stream in existence. In the ordinary sense, however, it exhibits all the typical characteristics of blackwater streams elsewhere. The park has over 5 miles of frontage on the Suwannee River. For the last 2 miles of that stretch, both banks lie within park boundaries.

As previously noted, there are several substantial point sources of domestic or industrial wastewater discharge within the Upper Suwannee River basin, including municipal sewage treatment plants. The quality of the river water upstream from the park all the way to the entry point of Swift Creek is currently rated as only fair. The main reason for the lower water quality is the discharge by PCS Phosphate of significant loads of phosphorus and fluorides into Swift Creek and other tributaries of the Suwannee (see discussion under the *Hydrology* section). Increased coliform levels attributable to the wastewater treatment plants also contribute to the problem.

Monitoring of water quality, particularly of tributaries affected by industrial operations, is an important management measure. This will be primarily accomplished in cooperation with DEP and the SRWMD. Monitoring and mitigation of any riverbank erosion is also a priority.

Spring-Run Stream

Eleven known springs are located within the park. Details about them are provided in the *Hydrology* section above. There are four different spring-run streams in the park, including Lime Sink Run, Seven Sisters Spring, Suwanacoochee Spring and Little Gem Spring. The latter two springs are located immediately adjacent to the Suwannee River and thus have extremely short spring runs.

Lime Sink Run, also known as Dry Run, is a spring-run stream that flows through a deep ravine system in the southern portion park for approximately 3,000 feet before discharging to the Suwannee River. The flow of this highly intermittent stream follows a westerly course. The origin of the stream is at Lime Sink, a karst window located partially outside the park boundary. When the stream does flow, numerous additional karst windows are intersected along its course. There are as many as nine known karst windows in this system, and divers use these entry points into the Floridan aquifer to map aquatic cave systems. When Lime Sink Run dries up completely, large expanses of limestone boulders and discontinuous karst windows are the only visible features along its entire path.

Lime Sink Run was considerably altered in the past when a segment of it was dammed and dredged to create a swimming area. The facility was later abandoned for a number of reasons, chief among them being insufficient water levels. The park has partially restored the natural hydrology of the area, but some debris from two former dams persists.

Seven Sisters Spring, located in zone SR-7 in the northern portion of the park, has a 230-foot long spring-run stream that also discharges into the Suwannee. This stream is associated with a series of five

interconnected, 20-foot deep, conical-shaped sinkholes and several karst windows upstream in an aquatic cave system. The spring has continuous flow.

The volume of flow from the spring-run streams fluctuates dramatically with groundwater levels and is largely dependent on the relationship between river stage and the potentiometric surface of the aquifer. When the Suwannee River stage increases, there is a corresponding rise in the waters of all four spring-run systems, and when the river stage exceeds the potentiometric surface of the aquifer, backflow of river water into the karst windows and spring occurs. In general, the spring-run streams in the park are in good condition.

DRP will continue to work with the SRWMD and other appropriate agencies in seeking ways to improve water quality and quantity in the Lime Sink Run system. The park will also monitor and mitigate any erosion occurring adjacent to the spring.

Aquatic Cave

The three separate aquatic cave systems in the park that have had extensive exploration by divers include Cathedral-Falmouth Canyon, Suwanacoochee/Edwards and Seven Sisters. One entrance into the Cathedral-Falmouth Canyon is located on park property at the head of Lime Sink Run. This entrance is a significant exsurgence point for groundwater flowing through the Cathedral system. Most of the karst windows in this cave system are located far outside the park boundary. In total, there are nearly 20 additional entry points into this world-renowned cave system.

Another significant exsurgence point along the Lime Sink Run cave system, called Little Gem Spring, is located on the east side of the Suwannee River just upstream from the mouth of Lime Sink Run. Cave divers have explored this cave sufficiently to know that its length exceeds 1,200 feet and that it has depths of over 150 feet. However, a clear definitive link of this cave to the Lime Sink Run cave system has not yet been established. Nonetheless, current research indicates that these two cave systems are most likely part of the same springshed.

The second aquatic cave system, Suwanacoochee Spring, has a spring-run stream that discharges directly into the Withlacoochee River just above its confluence with the Suwannee River. This extensive cave system has a direct connection with Ellaville Spring, which was described earlier in the *Hydrology* section.

Some of the most spectacular karst features in the park, including Seven Sisters Spring, are located in zone SR-7. This area is underlain with numerous aquatic caves that are often associated with springs located along the banks of the Suwannee River. Seven Sisters is among the most studied springs in this region. Over the past decades, divers have explored over 8,000 feet of cave passages in the system.

Most of the aquatic caves in Suwannee River State Park provide habitat for troglobitic invertebrates. However, the only species recorded in the caves and actually identified as of 2011 was the pallid cave crayfish (*Procambarus pallidus*) (Franz et al. 1994). Very little is known about the population dynamics or ecology of these organisms, although their populations can vary greatly over time and space. Some troglobite populations in the park appear to have experienced a die-off in the late 1980s that might have been attributable to herbicide use on treated timberlands on a nearby private property (Younker 1990).

Protection of the numerous springsheds from excessive groundwater withdrawals and contamination are important management measures for the aquatic caves in the park, as well as for the spring-run

streams. Even though no springshed research has occurred at any of the park's springs, the boundaries of these systems undoubtedly lie outside of state property. As with the spring-run stream, park staff will continue to work with other agencies and researchers on issues that extend beyond the park boundary. Current research projects in the caves include mapping to determine the extent of the underground passages and troglobite survey and identification to species. Monitoring and mitigation of erosion on slopes above the springs must also be an integral part of cave management in order to prevent siltation of the aquatic caves.

Developed

The developed areas include staff residences, maintenance structures, paved roads and recreational facilities such as campgrounds, picnic areas and a boat ramp. A complete list of all the developed areas may be found in the *Land Use Component*. The picnic area located south of the former roadside park on old U.S. Highway 90 is also classified as developed.

Priority invasive plant species (Florida Invasive Species Council (FISC) Category I and II species) will be removed from all developed areas. Other management measures will include the use of proper stormwater management techniques for developed areas and the designing of future development so that it is compatible with prescribed fire management in adjacent natural areas.

Successional Hardwood Forest

Previous agricultural areas that were cleared for crops or pasture are considered successional hardwood forest. Most were likely to have once been either sandhill, upland pine or upland mixed woodland. The optimal fire return interval in these areas should be 2-5 years. Some smaller areas are likely to have been either mesic hammock or upland hardwood forest and are not considered fire-type areas. The long term desired future condition for successional hardwood forest is to restore this altered landcover type to the respective previous natural community type.

Spoil Area

A limited area in zone SR-2 was used as a dumpsite for concrete debris and other refuse in the 1970s. It may have also served as a borrow site in the 1950s and 1960s. The area has been partially restored, but some debris still remains onsite and native groundcover is still lacking. The long-term desired future condition for spoil area is to restore the altered landcover type to sandhill.

Utility Corridor

A natural gas pipeline right-of-way passes through the park within management zones 1, 2, 4, 6 and 8. The right-of-way is maintained as a permanently cleared area and in most cases serves as a management zone boundary or firebreak. A cleared power line right-of-way passes through zone SR-8 and between zones SR-4 and SR-5. It is unlikely that these corridors will be restored to their previous natural community types.

With only 1,870 acres of uplands protected within its boundaries, Suwannee River State Park is a relatively small natural area, but it is one with many distinct natural communities packed into it. Rarely does an upland natural community in the park cover more than a couple hundred acres without encountering some form of discontinuity. Given that two major rivers flow through the park and their floodplains are extensive, these discontinuities may sometimes be natural. More often, however, the discontinuities are human-derived. For example, the park contains a considerable number of utility

easements, roads and visitor facilities. On top of that, just outside the park boundary are agricultural fields, pine plantations and home sites. One effect of this fragmentation of the landscape over time is the gradual loss from natural communities of some of their definitive plant and animal species. This effect is most noticeable in communities that happen to be fire-maintained.

Fortunately, within a reasonable distance of the park are additional protected lands that are managed by other state agencies, Twin Rivers State Forest for example. If DRP expeditiously restores the park’s natural communities to their optimum condition and then maintains them at that level over the long term, and if DRP manages the park’s natural areas within a regional ecosystem context through improved coordination with other land management agencies, then prospects for the long-term survival of those communities will be favorable.

Objective A: Maintain 550 acres within the optimum fire return interval.

- Action 1 - Update the annual prescribed fire plan.
- Action 2 - Concentrate on reintroducing prescribed fire to backlogged zones.

The table below contains a list of all fire-dependent natural communities found within the park, their associated acreage and optimal fire return interval, and the annual average target for acres to be burned.

Prescribed Fire Management		
Natural Community	Acres	Optimal Fire Return Interval (Years)
Sandhill	174	1-3
Upland Mixed Woodland	275	2-5
Upland Pine	46	2-3
Successional Hardwood Forest	256	2-5
Annual Target Acreage*	200 - 550	
*Annual Target Acreage Range is based on the fire return interval assigned to each burn zone. Each burn zone may include multiple natural communities.		

There are three fire-maintained natural communities in Suwannee River State Park, including sandhill, upland mixed woodland and an area of upland pine in zone SR-3. Some adjacent natural communities that border these fire-maintained habitats, such as upland hardwood forests, may also be affected by fire. The park has nine resource management zones, eight of which contain fire-maintained communities. Some zones are subdivided based on current firebreaks that provide park staff a more efficient tool to accomplish safe and productive fires. As these zones approach maintenance condition, zone breaks will be evaluated and potentially closed if appropriate.

Despite a prescribed fire program at the park that spans more than three decades, further restoration of natural communities is needed. While the sandhill community in zones SR-1 and SR-2 is in good condition because of more frequent prescribed fire and other resource management efforts, there are still pockets dominated by invasive hardwoods.

Management zones SR-1 and SR-6 have been exposed to significantly more prescribed fire than zones SR-7 and SR-8. Park staff has introduced lightning season burns to all areas except zones SR-7 and SR-8, but the frequency of prescribed fire should be increased in all zones according to the recommended fire return intervals. The annual targeted acreage is between 200 and 550 acres per year based on the range of fire return intervals for the natural communities and altered landcover types within the park.

Only zone SR-2 and the southern portion of zone SR-1 have improved to the point that they are in maintenance condition. The sandhill, upland pine and upland mixed woodland communities in zones SR-3, SR-4, SR-5 and SR-6, however, are in considerably worse shape because of past agricultural activities and historic fire suppression. A 1937 aerial photograph of this region clearly depicts severe agriculture alterations in most of these zones. The intense land use disturbance during that time virtually eliminated the herbaceous groundcover in large areas of these zones. Many of these areas are currently classified as successional hardwood forest. Additional restoration and improvement efforts will be required to restore lost components of the sandhill, upland pine and upland mixed woodland communities.

Off-site hardwoods were removed from zones SR-3a and SR-3b in 2004 using a contractor. These zones were subsequently treated with prescribed fire, and in 2011 a portion of the area was planted with longleaf pines. SR-1B and SR-6A were mowed in 2021 to open up the zones by removing the off-site hardwoods. In 2023, funding from the FFS was obtained through the Prescribed Fire Enhancement Program (PFEP) to mow invasive native hardwoods in zones SR-3A, SR-3B, SR-4A and SR-5 to open up the zones and release remnant groundcover. More frequent prescribed fires will be needed to improve the condition of these zones.

Upland mixed woodland dominates large areas of zones SR-8 and SR-4A and is a transitional zone between sandhills and non-fire type communities throughout the park. Upland mixed woodland is a declining natural community in north Florida due to disturbance and fire suppression. Restoration of a natural fire return interval to this rare community type will be essential in restoration and improvement efforts.

A special effort will be made to increase the prescribed fire frequency of zones that have been neglected, particularly in zone SR-8. Prescribed fires will be conducted at fire return intervals appropriate for the community type. Given the small size of the park staff, there must be increased reliance upon assistance from other parks and from District 2 staff. Coordination with other land management agencies will also be important.

Fire-maintained natural communities in the park have become susceptible to invasion by southern pine beetles due to the increased numbers of off-site loblolly pine that seeded into disturbed areas and abandoned fields or pastures coupled with fire suppression and historical logging of longleaf pines. The beetle infestations have been especially severe in the upland mixed woodland, where several areas had to be clear-cut.

Many animal and plant species are adapted to natural communities that periodically burn. Species such as the gopher tortoise and the many commensals that share their burrows require fire-maintained habitats. At Suwannee River State Park, these areas include the sandhill, upland pine and upland mixed woodland natural communities. Maintenance of the gopher tortoise population in the park requires regular prescribed fire to maintain a diverse herbaceous groundcover under an open canopy of pines and scattered hardwoods.

Standing dead trees (i.e., snags) with cavities are an important ecological component for forest management. Snags provide critical nesting and roosting habitat for a suite of invertebrates as well as vertebrates like woodpeckers, American kestrels, eastern bluebirds (*Sialia sialis*), and flying squirrels. Many of these species cannot exist without an adequate number of snags. Protection of snags demonstrates a high degree of management sensitivity.

Objective B: Continue natural community restoration activities on 54 acres of sandhill and upland mixed woodland communities.

- Action 1 - Continue implementing restoration plan for zone SR-4A.
- Action 2 - Remove or thin off-site loblolly pines and plant longleaf pines in their place.
- Action 3 - Conduct consistent follow-up treatments of hardwoods mechanically treated in 2023.

Fifty-four acres of sandhill and upland mixed woodland that had been invaded by off-site hardwood species in the northern portion of zone SR-4A was mowed in 2023. This was funded through a PFEP grant for fuels management. Maintenance activities for the restoration area will consist of follow-up treatments of off-site hardwood sprouts and the regular application of prescribed fire. The southern end of the zone contains a 25-acre stand of loblolly pines growing on former agricultural fields. Fringes of the stand may retain elements of the original natural community. Consideration will be given to thinning of the loblolly stand and replacement with longleaf pines.

Prescribed fire will be important in controlling the sprouting of invasive hardwoods on the site and in hindering invasion by old-field types of vegetation. After additional prescribed fires, it will be determined if there is a need to plant southern red oaks and other appropriate hardwood species in the upland mixed woodland portions of the zone. Groundcover species may need restocking as well. Old aerial photographs indicate that the northern portion of the zone was not as heavily disturbed as the southern end. District 2 staff will decide whether groundcover restoration is necessary.

Objective C: Conduct natural community improvement activities on 15 acres of upland pine community and 14 acres of sandhill community.

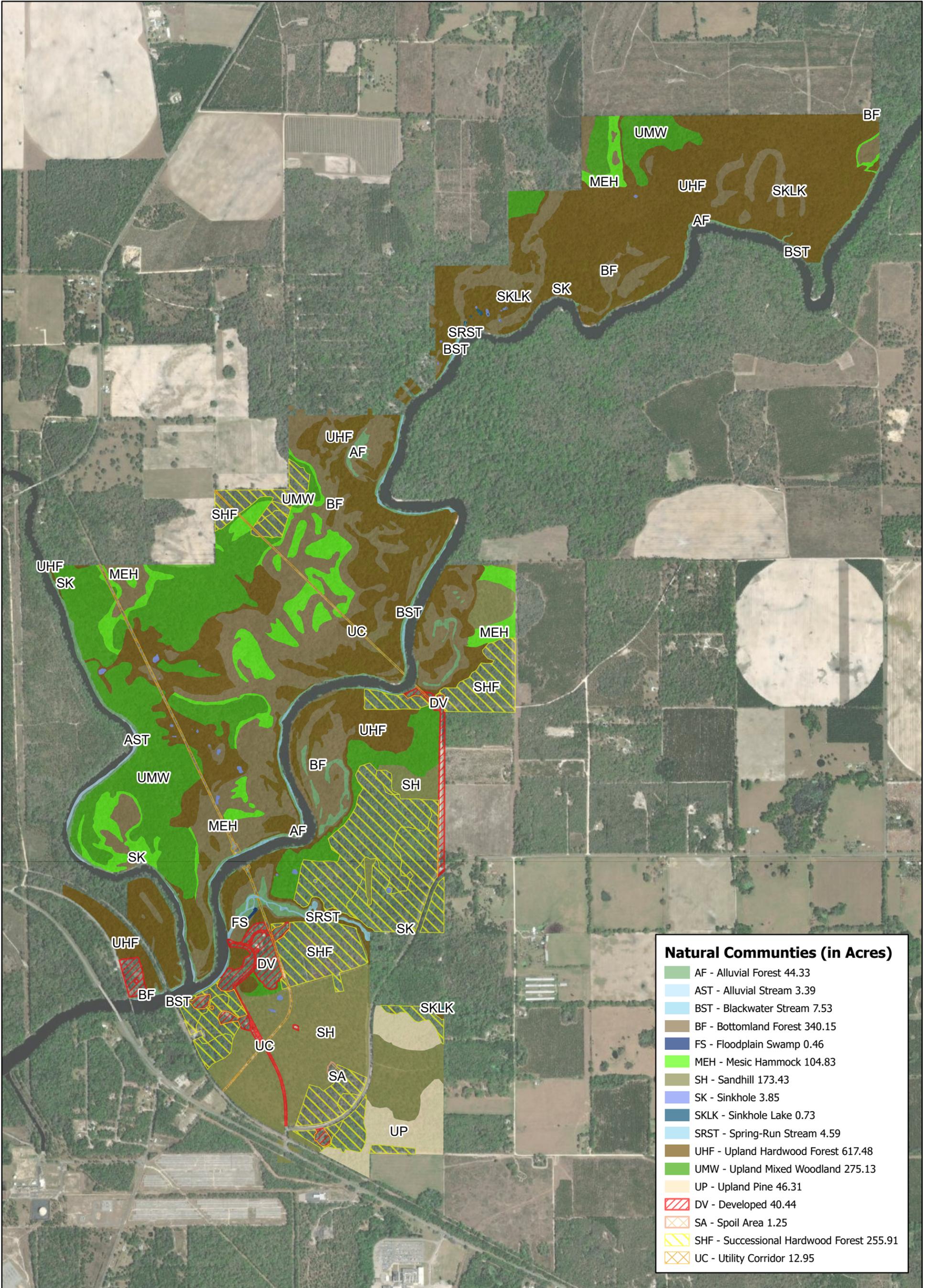
- Action 1 - Connect previously treated areas to areas where remnant species continue to be present.
- Action 2 - Continue prescribed fire, retreat off-site hardwood sprouts and plant longleaf pines and groundcover species.

Several areas of upland pine community in the park were overgrown with off-site hardwoods due to a lack of frequent fire. Restoration actions, including chemical and mechanical hardwood control and planting of longleaf pines, have already taken place in these areas, particularly in zones SR-3B and SR-3A. In addition, zone SR-1B and SR-6B have been mechanically treated to reduce off-site hardwoods in overgrown areas.

Invading hardwoods such as laurel oak and live oak may need mechanical and/or chemical treatments. Fire will be an important part of the process to control hardwood re-sprouting and stimulate the recovery of remnant groundcover species. Planting longleaf pines will be necessary. It may also be necessary to plant some groundcover species.

DRP staff has surveyed all zones damaged by pine beetles in the past 20 years and has mapped the areas that were clearcut to control pine beetle infestations. DRP will gradually re-establish the longleaf pine overstory and herbaceous groundcover in fire-maintained natural communities that were impacted by the beetles and will restore the natural species composition. Restoration and maintenance of these communities should suffice to discourage future outbreaks of southern pine beetles.

Zone SR-5 contains 14 acres of fire-suppressed sandhill. Invading hardwoods were mowed in 2023 under a PFEP grant. Fire will be a critical part of habitat maintenance actions to stimulate groundcover and control hardwood sprouts. Chemical retreatment of hardwood sprouts and longleaf pine planting may also be necessary.

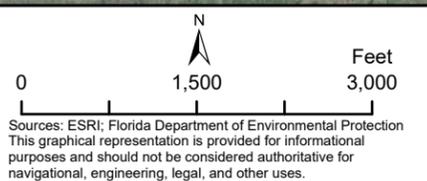


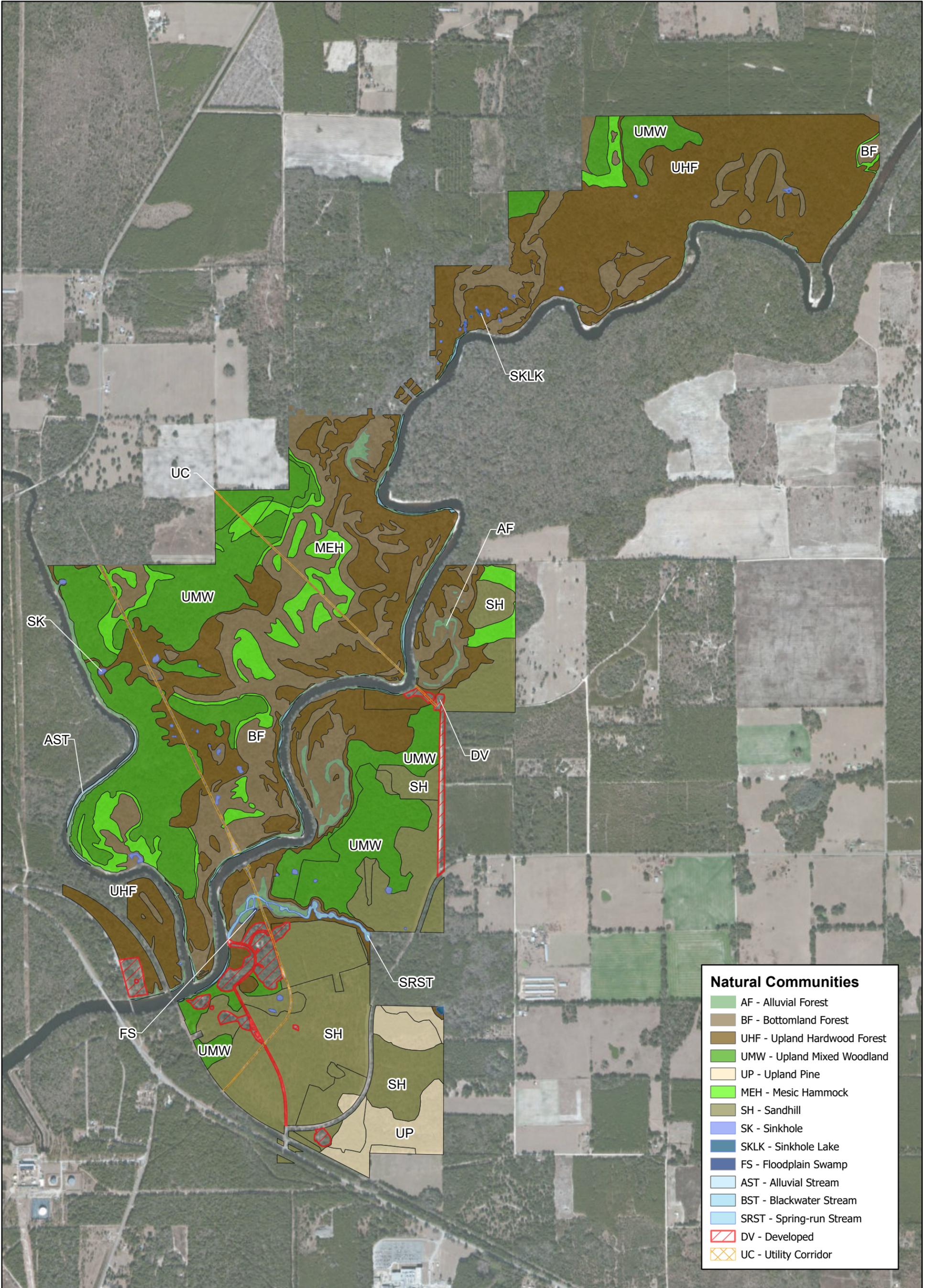
Natural Communities (in Acres)

AF	- Alluvial Forest	44.33
AST	- Alluvial Stream	3.39
BST	- Blackwater Stream	7.53
BF	- Bottomland Forest	340.15
FS	- Floodplain Swamp	0.46
MEH	- Mesic Hammock	104.83
SH	- Sandhill	173.43
SK	- Sinkhole	3.85
SKLK	- Sinkhole Lake	0.73
SRST	- Spring-Run Stream	4.59
UHF	- Upland Hardwood Forest	617.48
UMW	- Upland Mixed Woodland	275.13
UP	- Upland Pine	46.31
DV	- Developed	40.44
SA	- Spoil Area	1.25
SHF	- Successional Hardwood Forest	255.91
UC	- Utility Corridor	12.95

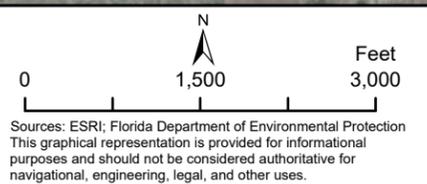


SUWANNEE RIVER STATE PARK
Natural Communities - Existing Conditions





SUWANNEE RIVER STATE PARK
Natural Communities - Desired Future Conditions



IMPERILED SPECIES

Most of the imperiled animal species range beyond the park boundary on a regular basis. Only a few of these species, such as the gopher tortoise (*Gopherus polyphemus*), have populations that are probably able to fulfill their needs entirely within the park. Suwannee River State Park is currently listed as a fourth-tier priority for a Line Transect Distance Sampling (LTDS) survey by the Florida Fish and Wildlife Conservation Commission (FWC 2018). Any gopher tortoise surveys in the park should take advantage of the LTDS methodology (Smith et al 2009). Management of gopher tortoises in the park will be guided by the FWC Gopher Tortoise Management Plan (FWC 2012).

The southeastern kestrel (*Falco sparverius paulus*) population in the park appears to be smaller than might be expected. While it is recognized that some of the park's sandhill and upland pine landscapes will need to be opened more before they will become attractive to kestrels, it is not known if the habitat that is already in good condition sustains an optimal population of kestrels. DRP has long cooperated with FWC concerning appropriate habitats to install nest boxes for southeastern American kestrels. The park currently maintains several kestrel nest boxes following the protocols of the American Kestrel Partnership.

Suwannee River State Park is at the extreme northern limit of the range for Florida mice (*Peromyscus floridanus*). Trapping surveys by FWC at Suwannee River State Park have failed to document Florida mice although appropriate habitat occurs within the park (Doonan 2002). Subsequent trapping surveys by DRP staff in 2005 also failed to capture any Florida mice, although old field mice (*Peromyscus polionotus*) and cotton mice (*Peromyscus gossypinus*) were abundant in the sandhills. Surveys by Stout and Corey (1995) documented Florida mice at Suwannee River State Park in 1986-88, but no voucher specimens were taken. The previous record for the Florida mouse in the area is from a specimen housed in the U.S. National Museum that was collected in 1947 at "Falmouth." This is presumed to be from the vicinity of Falmouth Spring about 2 miles southeast of the park. In a letter to DRP staff in 1980, James Layne states that according to staff at the U.S. National Museum, the "Falmouth" specimen is labeled as "not typical," so there may be some question about the identification of the specimen (Layne 1980). Additional surveys for Florida mice at Suwannee River State Park are needed in cooperation with FWC staff. Continued improvement of the sandhills and upland pine in the park through prescribed fire and hardwood control is also a priority. Enhancement of the gopher tortoise population will also serve to benefit any Florida mouse populations that may be extant.

The gopher tortoise and Suwannee alligator snapping turtle were historically harvested for meat in the region. Both of these species are currently protected from harvest, and possession is prohibited without a permit from FWC. Recent regulation changes have also prohibited the sale of all freshwater turtles taken from the wild. The harvest of all wildlife, with the exception of fish, is prohibited along the length of the Suwannee and Withlacoochee rivers where the rivers pass through or along the boundary of the park. The area under jurisdiction of the park includes a 400-foot zone from the edge of mean high water along sovereign submerged lands of the Suwannee and Withlacoochee rivers. Where emergent wetland vegetation exists, the zone extends water-ward 400 feet beyond the vegetation.

Although the impact of roads is felt by nearly all wildlife species, road kills can have particularly harmful effects on imperiled species that already suffer from reduced population levels. The gopher tortoises of the park are at particular risk since several public and park roads pass through sandhill and upland pine

communities. Monitoring of road kills is an important part of the management of imperiled species and other wildlife. Collecting roadkill data can help define wildlife-crossing zones and can provide records for rare species that otherwise would have gone unnoticed.

The table below contains a list of all known imperiled species within the park and identifies their status as defined by various entities. It also identifies the types of management actions that are currently being taken by DRP staff or others and identifies the current level of monitoring effort. The codes used under the column headings for management actions and monitoring level are defined following the table. Explanations for federal and state status as well as Florida Natural Areas Inventory (FNAI) global and state rank are provided in the Appendix.

Imperiled Species Inventory						
Common and Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FWC	USFWS	FDACS	FNAI		
PLANTS						
Eastern sweetshrub <i>Calycanthus floridus</i>			LE	G5,S2	10	Tier 1
Angle Pod <i>Gonolobus suberosus</i>			LT		10	Tier 1
Florida Mountainmint <i>Pycnanthemum floridanum</i>			LT	G3,S3	1,6,9	Tier 1
Treat's Rain Lily <i>Zephyranthes atamasca</i>			LT		4	Tier 1
INVERTEBRATES						
Pallid Cave Crayfish <i>Procambarus pallidus</i>		UR		G1G2,S1S2	4,10,13	Tier 2
Simple Cebrionid Beetle <i>Selonodon simplex</i>				G1G2,S1	1	Tier 1
Dusky Roadside-Skipper <i>Amblyscirtes alternata</i>				G3G4, S2	1,13	Tier 1

Imperiled Species Inventory						
Common and Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FWC	USFWS	FDACS	FNAI		
Suwannee Moccasinshell <i>Medionidus walkeri</i>	FT	T		G1,S1	4,10	Tier 1
FISH						
Gulf Sturgeon <i>Acipenser oxyrinchus desotoi</i>	FT	T		G3T2,S 2	4,9,13	Tier 1
REPTILES						
American Alligator <i>Alligator mississippiensis</i>	FT(S/A)	T(S/A)		G5,S4	4,10	Tier 1
Eastern Indigo Snake <i>Drymarchon couperi</i>	FT	T		G3,S2?	1,6,7	Tier 1
Gopher Tortoise <i>Gopherus polyphemus</i>	ST			G3,S3	1,6,7, 10,12	Tier 1
Suwannee Alligator Snapping Turtle <i>Macrochelys suwanniensis</i>	SSC			G2,S2	4,9	Tier 1
BIRDS						
Little Blue Heron <i>Egretta caerulea</i>	ST			G5,S4	4,13	Tier 1
Southeastern American Kestrel <i>Falco sparverius paulus</i>	ST			G5T4,S3	1,6	Tier 1

Management Actions:

1. Prescribed Fire
2. Invasive Plant Removal
3. Population Translocation/Augmentation/Restocking

4. Hydrological Maintenance/Restoration
5. Nest Boxes/Artificial Cavities
6. Hardwood Removal
7. Mechanical Treatment
8. Predator Control
9. Erosion Control
10. Protection from visitor impacts (establish buffers)/law enforcement
11. Decoys (shorebirds)
12. Vegetation planting
13. Outreach and Education
14. Other

Monitoring Level:

Tier 1. Non-Targeted Observation/Documentation: includes documentation of species presence through casual/passive observation during routine park activities (i.e. not conducting species-specific searches). Documentation may be in the form of Wildlife Observation Forms, or other district specific methods used to communicate observations.

Tier 2. Targeted Presence/Absence: includes monitoring methods/activities that are specifically intended to document presence/absence of a particular species or suite of species.

Tier 3. Population Estimate/Index: an approximation of the true population size or population index based on a widely accepted method of sampling.

Tier 4. Population Census: A complete count of an entire population with demographic analysis, including mortality, reproduction, emigration, and immigration.

Tier 5. Other: may include habitat assessments for a particular species or suite of species or any other specific methods used as indicators to gather information about a particular species

Objective A: Update baseline imperiled species occurrence inventory lists.

- Action 1 - Conduct additional surveys for imperiled species to ensure all imperiled species are documented.

DRP will enlist the assistance of academic researchers and staff from other agencies during development of species-occurrence inventory lists, especially where necessary for certain taxonomic groups.

Objective B: Monitor two imperiled animal species in the park.

- Action 1 - Coordinate with research cave divers and other researchers to monitor aquatic cave-dwelling invertebrates.
- Action 2 - Work with FWC and the American Kestrel Partnership to maintain kestrel nest boxes.

The aquatic cave system at the park provides essential habitat for at least one cave-dwelling invertebrate, the pallid cave crayfish. The troglobyte fauna associated with aquatic cave systems is dependent upon a stable environment that experiences few fluctuations in water temperature or quality. Drastic decreases in troglobite populations that have been recorded periodically have been interpreted by some observers to be the result of flooding of the cave system by the Suwannee River. However, very little research has been conducted to confirm this hypothesis.

DRP staff will continue to consult with FWC concerning appropriate areas to place nest boxes for southeastern American kestrels and will follow the protocols of the American Kestrel Partnership.

Objective C: Monitor two imperiled plant species in the park.

- Action 1 - Staff will conduct additional surveys for Florida mountainmint and Angle pod.

Timing will consider flowering phenology of the two species to ensure proper identification.

INVASIVE SPECIES

While much of Suwannee River State Park is free of invasive plants, the park does have several invasive species scattered about in various areas. The species of greatest concern is Japanese climbing fern (*Lygodium japonicum*), which is found primarily along the banks of the Suwannee and Withlacoochee rivers as well as in some upland areas where disturbance has occurred in the past. The most severe infestations are located along an active railway corridor that divides zone SR-9a from SR-9b, at the salvage harvest site of a large pine beetle outbreak in the 1990s (zone SR-9a), and in zone SR-8B. Chinese wisteria (*Wisteria sinensis*), chinaberry (*Melia azedarach*), mimosa (*Albizia julibrissin*) and camphortree (*Cinnamomum camphora*) occur around old house sites and along some park boundaries. Nandina (*Nandina domestica*) and Japanese honeysuckle (*Lonicera japonica*) are found near an old dumpsite. Another invasive species that showed up recently at one location in the park is winged yam (*Dioscorea alata*), which may have been introduced during river flooding events.

Because Japanese climbing fern potentially infests a large number of river miles and floodplain acres in the park, it would be extremely difficult for staff alone to control this species in-house. In that regard, the park has been fortunate over the years to receive regular funding for contract work to control the species, with grants currently coming from the FWC and previously from the Bureau of Invasive Plant Management (BIPM). The District 2 invasive plant rover and park staff have augmented the contract work by conducting follow-up treatments of known Japanese climbing fern infestations and by surveying for new sites throughout the park. They have provided in-house primary treatment of various other species as well.

Since adoption of the previous version of the unit management plan in 2002, 198 acres of invasive plants have been treated at the park. In 2007, District 2 biological staff assisted FNAI personnel in a comprehensive multiagency effort to survey the banks of the Withlacoochee and Suwannee rivers for Japanese climbing fern. All observed populations were mapped at that time. DRP staff has supplemented that effort by regularly surveying all areas of the park for occurrences of invasive plants, particularly the most invasive species.

Species Name Scientific Name - Common Name	FLEPPC Category	Distribution	Zone ID
<i>Albizia julibrissin</i> - Mimosa	I	Single Plant or Clump, Scattered Plants or Clumps	SR-6C, SR-1C, SR-9A
<i>Cinnamomum camphora</i> - Camphor-tree	I	Single Plant or Clump	SR-9A
<i>Dioscorea alata</i> - Winged yam	I	Single Plant or Clump	SR-9A
<i>Ligustrum sinense</i> - Chinese privet	I	Dense Monoculture	SR-4A
<i>Lonicera japonica</i> - Japanese honeysuckle	I	Single Plant or Clump, Scattered Dense Patches	SR-1B, SR-9A

Species Name Scientific Name - Common Name	FLEPPC Category	Distribution	Zone ID
<i>Lygodium japonicum</i> - Japanese climbing fern	I	Single Plant or Clump Scattered Plants or Clumps Scattered Dense Patches	SR-1B, SR-1C, SR-3A, SR-5, SR-6A, SR-6B, SR-6C, SR-7, SR-8An, SR-8As, SR-8C, SR-8D, SR-9A, SR-9B, SR-8B
<i>Melia azedarach</i> - Chinaberry	II	Single Plant or Clump	SR-9A
<i>Nandina domestica</i> - Nandina	I	Single Plant or Clump	SR-1B
<i>Wisteria sinensis</i> - Chinese wisteria	II	Scattered Plants or Clumps	SR-3B, SR-4B

Invasive animal species include non-native wildlife species, free-ranging domesticated pets or livestock, and feral animals. Because of the negative impacts to natural systems attributed to invasive animals, DRP actively removes invasive animals from state parks, with priority being given to those species causing the greatest ecological damage.

Invasive and nuisance animals are removed from the park as necessary to protect native wildlife populations and preserve the integrity of natural communities. Feral hogs (*Sus scrofa*) are actively removed in the park, particularly in zones 8an, 8as, 8b and 8c. Isolated incidents of hog damage have been reported, especially in the lower, flood-prone areas. Feral hogs tend to travel along river corridors, and they may not be continually present in the park. Trained park staff members have conducted hog removal efforts for a sustained period. Nine-banded armadillos (*Dasypus novemcinctus*) are occasionally removed as well. Armadillos may cause extensive ground disturbance and are a threat to ground nesting birds and small reptiles and amphibians. Feral cats and dogs are removed from the park on an as-needed basis. Coyote (*Canis latrans*) populations in the park seem to be increasing. Research on the ecological impacts of coyotes in north Florida would benefit many natural areas. Detailed management goals, objectives and actions for management of invasive plants and invasive and nuisance animals are discussed in the *Resource Management Program* section of this component.

Objective A: Annually treat 22 gross acres equivalent to 1 acre of invasive plant species in the park.

- Action 1 - Annually develop invasive plant management work plan.
- Action 2 - Annually treat all populations of sweet tanglehead grass (*Heteropogon melanocarpus*).
- Action 3 - Annually inspect and treat all known populations of Japanese climbing fern.
- Action 4 - Continue maintenance and follow-up treatments as needed.

Sweet tanglehead grass, while not yet on the Florida Invasive Species Council (FISC) list of category I and II invasive plants, is a species that is quite invasive in sandhill and other fire-type pine communities in Florida. The plant is an annual that usually becomes visible in late July or August. Treatment needs to occur multiple times between August and October.

All known populations of Japanese climbing fern should be treated annually. Climbing ferns grow along rivers, spring runs and sinkholes in the park, and their spores may become waterborne, allowing easy

translocation to other sites during periods of high water. As river levels drop, the ferns may colonize newly exposed soil and limestone.

Nandina is one of several invasive species that occur at low levels in the park. This species is one that the park could actually eliminate with focused treatment efforts. Another invasive species, Chinese wisteria, grows at old home sites and is very persistent. Consequently, it will need long-term, continued treatment.

There is a new invasive plant threat at the park, a population of winged yam. This species should be treated on an annual basis since the population is still small and there is a chance that it can be eradicated before it spreads.

Objective B: Implement measures to prevent the accidental introduction or further spread of invasive plants in the park.

- Action 1 - Survey every zone for new invasives and map any infestations at least twice before the next updated management plan.
- Action 2 - Develop and practice preventative measures, including a protocol for equipment inspection and decontamination.

Corridors such as highways and rivers often facilitate the spread of invasive plants into new areas. Rivers and flooding events associated with them provide an excellent means of translocation of invasive plants into new territories. Because two rivers flow through Suwannee River State Park, it is subject to repeated disturbances from flooding and must cope with the continual threat of new introductions of invasive plants.

It is important to know what invasive species are present within the park, where they are located and how severe their infestations are. It is also important to know what zones or communities are currently free of invasives so that the park can continue to maintain those areas. This is particularly true for high quality or ecologically important habitats.

By regularly surveying invasives-free zones, staff can discover new infestations at an early stage and eliminate them before they have a chance to significantly increase. Areas that serve as sources of particularly aggressive species, or of species that can dramatically change ecosystem function, may need to be scouted more frequently. Finding new populations of invasive plants before they become established will help prevent larger infestations from developing. The focus should be on Category I and II species while watching out for new species that exhibit aggressive tendencies.

Invasive plants often invade an area through preventable methods of entry. Activities such as mowing, logging, fire line preparation, landscaping debris disposal and road building can introduce or redistribute invasives through contaminated equipment. Fill dirt, lime rock, potted horticultural plants and mulch are all potentially contaminated by invasives even if they are not readily visible at the time of entry into the park. Some new infestations of invasives may be preventable by ensuring that contractors clean their equipment before entering the park. The further spread of invasives already established in the park may be avoided by making sure that staff and contractors do not move equipment, landscaping debris or soil from a contaminated area to an invasives-free area. Care is needed when mowing. Known populations of invasive plants should not be mowed, as this can cause them to spread them to non-infested areas.

Any equipment that is moved from a contaminated site to an invasive-free area should be cleaned before moving it.

Objective C: Implement control measures on one nuisance species in the park.

- Action 1 - Establish and maintain monitoring procedures for areas with reoccurring hog damage.
- Action 2 - Remove feral cats, dogs and nine-banded armadillos when encountered.

Feral hog populations at Suwannee River State Park tend to move along river corridors and can be transitory in nature. The park currently controls feral hogs on an as-needed basis and will continue to do so.

Fortunately, because of the rural nature of the area, not many feral cats and dogs are present in the park. Staff will occasionally remove nine-banded armadillos from the park when they pose a threat to ground nesting birds or small reptiles and amphibians.

CULTURAL RESOURCES

Prehistoric and Historic Archaeological Sites

Sixteen archaeological sites, one historic cemetery, and two resource groups are currently known to occur in the park. These sites are all recorded with the Florida Master Site File (FMSF). Seven of the park's archaeological sites have aboriginal components. Most of the known archaeological sites in the park are historic, dating from the 19th century or early 20th century. Another historic cemetery has been reported between the confluence of the Suwannee and Withlacoochee rivers. This site has not yet been recorded.

The confluence of the Suwannee and Withlacoochee rivers was a strategic location in the 19th and early 20th centuries. In 1841, an enterprising man named David Platt bought land just south of the union of these two rivers and, in 1846, began to operate a ferry (SU00401) (Mainer 1972). The town of Columbus (SU00199), on the east bank of the Suwannee River, became the first chartered community in Suwannee County when it received a post office in 1842. River transport of cotton and timber was a significant part of the town's economy in the 1800s. The boundaries of this site were expanded in 1997 based on work by Tesar and Harp (1997). The site now constitutes a resource group that encompasses the Columbus Cemetery, the Confederate earthworks and the well site.

It may be advisable to expand the resource group boundary even further to include at least the newly listed sites SU00402 (sawmill) and SU00405 (steamboat landing). The sawmill and its associated log-landing areas, where timber was pulled ashore from the river, were located in the town of Columbus. The steamboat landing (SU00405), located on the east side of the Suwannee River, served not only Columbus but also Ellaville later on. In the 1800s, steamboats en route from Cedar Key on the Gulf of Mexico to Ellaville regularly plied the Suwannee. During the Civil War, Confederate troops constructed earthworks (SU00035, SU00200) on the east bank of the Suwannee to protect the railroad bridge that crossed the river. The Columbus Cemetery (SU00362) served the town from at least 1862. An old stagecoach road (SU00367) runs through the southern portion of the park.

Eventually, in 1903, a vehicular bridge crossing the Suwannee River was constructed and the importance of ferry and boat traffic diminished. All that remains of that bridge today are its abutments (SU00403).

In the late 19th century, as the importance of cotton was decreasing and that of timber increasing, the town of Ellaville (MD00058) was founded in Madison County along the west bank of the Withlacoochee River near its confluence with the Suwannee. The town contained a sawmill (MD00279), schools and a railroad car factory. In 1942, the town's post office moved back across the river to its former location in the town of Columbus, and Ellaville relocated with it. Near the original Ellaville site is Suwanacoochee Spring. Remnants of a concrete wall (MD00236) separate the spring from the Withlacoochee River. The spring once supplied the town of Ellaville with drinking water. The exact boundaries of the Ellaville site are still undetermined, but part of the site is on land managed by the Florida Forest Service.

The scattered remnants of St. Paul's Church (SU00417) are located near Lime Sink Run, but the site lies north of the run and away from the town sites of Ellaville or Columbus. It is unknown if there was a graveyard associated with the church. SU00404 (Suwannee Scatter) is 20th-century and appears to be associated with a pre-1959 house site.

Four prehistoric aboriginal sites have been identified at the park (SU00201, SU00343, SU00355 and SU00365). One of the sites was a campsite and another was a prehistoric quarry. The quarry site (SU00355) appears unaltered but lacks cultural features (SouthArc 2003). A third site may be a dwelling site, and the fourth site does not contain sufficient diagnostic features to adequately identify it. During the documentation of SU00365, the recorders examined only a limited area (SouthArc 2006). It should be determined if the site actually extends beyond its current boundaries.

There may be another archaeological site in the park, but it is yet to be recorded. A 1937 aerial photograph shows what appears to be a structure in what is now zone SR-4b. Park staff should ground-truth that zone and record any cultural resources discovered.

The park has submitted all known archaeological sites, except for the possible site in zone SR-4b, to the FMSF. A predictive model for the park was completed in 2011.

All of the archaeological sites within the park are in good condition with the exception of the Columbus Cemetery (SU00362), Lime Sink Youth Area (SU00343), Confederate earthworks (SU00035) and Sam's Pond (SU00201) sites, which are in fair condition. All 16 archaeological sites and all other cultural sites should be monitored at least annually.

The Columbus Cemetery may contain gravesites that are unmarked and outside the cemetery walls. The park needs to determine the actual extent of the cemetery and the location of any unmarked graves so that they can receive adequate protection. The cemetery's wall, made of concrete and brick, has areas along the cap that are damaged. A mold of the existing caps is needed so that they can be duplicated and used to replace the damaged caps. The wrought iron fences and gates need a protective coating and preventative maintenance so that they do not deteriorate further.

Some of the old headstones are metal and are rusting.

The Sam's Pond site (SU00201) has the potential to be disturbed by plowing. People have also collected there in the past. This site needs to be monitored regularly to prevent further collecting activities.

The Lime Sink Youth Area (SU00343) has a road running through it to the youth camp, thus it is subject to continued disturbance. The site needs to be monitored regularly.

The extent of the town of Ellaville (MD00058) is unknown, individual features have not been mapped, and it is not entirely on park property. To protect the site, its boundaries need to be determined and building remains and other features need to be recorded. If the site contains sufficient resources, it may warrant recordation as a resource group. The park should collaborate with the Florida Forestry Service in this effort.

The Confederate earthworks site (SU00035) is in fair condition. The earthworks have several large trees growing on them that could affect their condition. The earthworks had experienced previous disturbance when a house was built in the center of the site in the early 1900s. DRP eventually moved this house, which became the Suwannee River ranger residence (SU00416), away from the earthworks to a more suitable location within the park.

The log landing site (SU00402), where timber was pulled ashore from the river, is in good condition, but it could act as a conduit for erosion. To lessen this possibility, the vegetation at the upper end of the log landing should not be mowed. Staff will need to delineate the desired footprint of the mowed footpath and reduce the size of the mowed area.

The St. Paul's Church site (SU417) is in good condition. At some point in the past, a fire plow had disturbed the site, but there have been no apparent impacts since then.

Archaeological sites in the park have not been evaluated by the State Historic Preservation Officer (SHPO) for National Register of Historic Places (NRHP) eligibility. However, in 2006, a professional archaeologist determined that the Stagecoach Road (SU367) was potentially NRHP eligible. The road is likely significant for the role it played as a major transportation corridor for goods and people in the area in the mid-to-late 19th century. Additionally, the road retains a substantial level of physical integrity. The park also contains archaeological sites associated with early historic development of the area that may prove to be significant upon further evaluation (e.g., the old town sites of Ellaville and Columbus).

All cultural sites should be checked regularly so that problems caused by erosion, looting, vegetation, fire lines and other impacts are detected before resources are damaged. The park should develop a monitoring plan that includes a schedule and a protocol for recording concerns and needed actions at the time of each visit.

The Confederate earthworks site (SU00035) requires extensive vegetation management. Some large senescent trees are currently growing on the earthworks, and, if they happen to topple, significant ground disturbance will result. Staff should carefully consider appropriate methods of removing these trees without disturbing the site any more than necessary. Roots should be left in place. The park also needs to remove smaller trees and prevent additional trees from establishing on the site. Refer to the DRP Guidelines for Managing Earthen Structures.

The Columbus Cemetery (SU00362) needs a maintenance plan to prevent further deterioration of the fences, wall and grave markers. The extent of the cemetery should be determined with ground penetrating radar.

DRP needs to determine the full extent of MD00058, SU00365 and SU199. Individual features of MD00058 should be recorded. Collaboration with the Florida Forest Service, the adjacent landowner, would be beneficial.

Historic Structures

There are 11 known historic structures in the park recorded with the FMSF, all of them dating from the 20th century. The state park formally opened in 1951, and the structures were built in the 1950s and 1960s during the early years of park operation. All the structures are still in use today, with most of them functioning in their original capacity.

The first structure built in the park was the Suwannee River ranger residence (SU00416). Formerly known as the Hinely Cottage, it was named after its builder, Florida Senator Archie Hinely. The exact construction date has not yet been determined, but it was likely between 1920 and 1937. The structure has heart pine flooring. At one time, it was inhabited by a Civilian Conservation Corps (CCC) member who monitored river levels. Its original location was in the center of the Confederate earthworks, and it remained there until at least 1955. After serving as a CCC residence, it functioned as a bar and then was moved to its present location.

Currently, it is in adaptive reuse as a ranger residence.

The Suwannee River Pavilion 2 (SU00410) and the Suwannee River Pavilion 3 (SU00411) were the first structures built (about 1955) that were associated with the park's opening in the 1950s. The Suwannee River Laundry-Camp (SU00412) followed in 1960, with the Suwannee River Workshop (SU00413) and Suwannee River Pumphouse (SU00414) appearing in 1961. The park entrance, Suwannee River Entrance Wall (SU00415), was built in 1965 using cement and limestone. The park constructed the Suwannee River Residence – Mgr. (SU00407) in 1966 and the Suwannee River Storage -Equip (SU00406) in 1964. The two remaining structures, Suwannee River Restroom - Group Area (SU00408) and Suwannee Pumphouse/Storage (SU00409) were built in 1968. All historic structures have been submitted to the FMSF.

Three of the historic structures in the park are in good condition (SU00407, SU00415, and SU00416), one is in poor condition (SU00408) and the rest are in fair condition.

Suwannee River Restroom - Group Area (SU00408) is not ADA compliant. It needs a new roof and new floor tiles, and the interior is in poor condition. DRP should document this building and replace it.

The two residences (SU00407 and SU00416) need regular maintenance to remain in good condition. While the Suwannee River Entrance Wall (SU00415) is in good condition, it does have some exposed, rusting rebar in the pillars. Staff will need to select and implement the best techniques of preventative maintenance in order to prevent further deterioration.

The structures discussed below are all in fair condition. Pavilions 2 and 3 (SU00410 and SU00411) need upgrades to meet ADA requirements. According to the local fire marshal, the wiring in each pavilion is not up to code. Squirrels and woodborers have attacked the posts and railings in both pavilions; consequently, they need replacing. The Suwannee River Workshop (SU00413) has its original board and batten siding, which is still in good condition. The wiring does need to be upgraded, however. The character of the building should be retained as repairs are made since the style represents the early period of the Florida Park Service. The roof beams of the Suwannee River Storage – Equip. (SU00406) need bracing. Its characteristic appearance should be retained while making the space more usable. The fire marshal reports that the wiring in the Suwannee River Pumphouse (SU00414) needs to be brought up to code. The pumphouse needs its roof replaced as well.

The roof and T-111 siding for the Suwannee Pumphouse/Storage (SU00409) also need replacing. The Suwannee River Laundry-Camp (SU00412) needs upgraded wiring and a new roof.

The Suwannee River Pavilion 2 (SU00410), the Suwannee River Pavilion 3 (SU00411) and the Suwannee River Entrance Wall (SU00415) are considered as potentially eligible for inclusion in the National Register of Historic Places. Pavilions 2 and 3 are excellent remaining examples representative of early Florida Park Service-designed combination picnic shelters. Shelters of this type, which combine a covered picnic area with enclosed offices and/or restrooms, were popular in parks in the 1940s through the early 1960s, but, over the years, many have been replaced or altered. The Suwannee River Pavilion 2 (SU00410) and the Suwannee River Pavilion 3 (SU00411) both retain a high degree of design and construction integrity and reflect the sensitivity of early Florida Park Service architects toward creating serviceable park buildings that reflected the natural setting in which they were located. The Suwannee River Entrance Wall (SU00415), which will become 50 years of age during the 10-year period covered by this management plan, is notable for its distinctive limestone and wood construction which provides an attractive and appropriate entry into a park that is noted for its historic and scenic vistas.

The remaining historic structures in the park do not meet the criteria for potential inclusion in the National Register. Although the Suwannee River ranger residence (SU00416) is the oldest structure in the park, it has been altered and was moved from its original location, thus affecting its potential for National Register eligibility. The rest of the historic structures in the park are standard park structures of various designs and are not exceptional in design or construction.

Park staff should inspect the historic structures regularly to identify potential threats or damage and plan necessary repairs. The Division of Historical Resources (DHR) should be consulted about any proposed rehabilitation treatments.

Collections

The collection at Suwannee River State Park contains archaeological, historic and natural history items. The historic items are primarily from the late 19th century and are associated with the river traffic and timber removal activities prevalent in that era.

The historic collection contains machinery, photographs and original blueprints. A flywheel, a cart and associated railroad tracks are located on the site of the old sawmill (SU402) and were part of that operation. The cart was probably used to haul timber along the railroad tracks.

Another historic item, a boat gunnel, is displayed outside near the Confederate earthworks (SU35). The gunnel is reported to be from a ferry owned by Charles Dean. This ferry probably docked at Platt's Ferry Landing (SU401). After the vehicular bridge was constructed over the river, Dean sailed the ferry downstream to the Highway U.S. 90 bridge and sank it.

The park also has approximately 20 historic photographs from the 1950s and 1960s, shortly after it officially opened. It also has the original blueprints for the early construction that occurred in the park, including the park entrance wall, the park manager's residence, and pavilions 2 and 3.

Archaeological items discovered at the park over the years are displayed in a 5 cubic foot area of the camper registration building. Among the collection are stone points and pottery sherds.

The natural history collection consists of several taxidermy items from the park, as well as turtle shells and the skeleton of a large alligator snapping turtle. The taxidermy items include two barred owls, one fox squirrel and one bobcat. The natural history collection is located in the ranger station and occupies about 75 square feet.

In general, the park’s collection items are in good condition. The boat gunnel does need to be relocated and placed under some sort of cover that will provide better protection. It should also be displayed and interpreted in a more accessible area. The flywheel, cart and rails need regular treatment with a protective coating to prevent deterioration caused by exposure to the elements.

Previously, the park painted them as a protective measure. At this time, they are still in good condition, but they will soon need treatment to prevent rust.

The taxidermy animals are in good condition, but staff will need to assess them regularly to detect the presence of moths and other insects. All items except those in outdoor interpretive exhibits are displayed or stored in climate-controlled buildings that are locked when they are unoccupied.

All of the collection items were retrieved either inside the park or from the Suwannee River. They therefore have significance in interpreting the park’s history and natural resources. The value of the objects lies in their interpretive, educational and research potential in relation to the cultural and natural history of the park and the surrounding area.

The park does not have a Scope of Collections Statement or a complete inventory of the collection items. A collection management assessment has not been completed. The park should develop a housekeeping and record keeping system for cyclical maintenance of the collection, particularly with regard to prevention of pest problems and the protection of the items exhibited outdoors.

Cultural Sites Listed in the Florida Master Site File					
Site Name and FMSF #	Culture/Period	Description	Significance	Condition	Treatment
HA000575 FL-811	Aboriginal 1000 – 700 B.C., Non-aboriginal 20 th century American	Archaeological site	NS	G	P
MD00058 Old Ellaville	Aboriginal and non-aboriginal, 19 th Century	Archaeological Site	NE	G	P
MD00236 Suwanacoochee Springs	Historic, 19 th Century	Archaeological Site	NE	G	P

Cultural Sites Listed in the Florida Master Site File					
Site Name and FMSF #	Culture/Period	Description	Significance	Condition	Treatment
MD00279 Drew Bucky Sawmill Complex	Historic, 19 th and 20 th century American	Archaeological Site	NE	G	P
SU00035 Confederate Earthworks	Historic, 19 th Century	Archaeological Site	NE	F	P
SU00199 Old Columbus/ Ellaville Community	Historic, 19 th Century Pre-historic	Resource Group	NE	G	P
SU00200 Confederate Earthworks	Historic, 19 th Century	Archaeological site	NRL	G	P
SU00201 Sam's Pond	Aboriginal and non- aboriginal	Archaeological Site	NE	F	P
SU00343 Lime Sink Youth Area	Archaic	Archaeological Site	NE	F	P
SU00355 Suwannee River Cabins	Archaic	Archaeological Site	NS	G	P
SU00362 Columbus Cemetery	Historic, Mid-19 th Century	Historic Cemetery	NE	F	P
SU00365 Well Site	Archaic	Archaeological Site	NE	G	P
SU00367 Stagecoach Road	Historic, 19 th Century	Resource Group	NR	G	P

Cultural Sites Listed in the Florida Master Site File					
Site Name and FMSF #	Culture/Period	Description	Significance	Condition	Treatment
SU00401 Platts Ferry Landing	Historic, 19 th Century	Archaeological Site	NE	G	P
SU00402 Columbus Sawmill	Historic, 19 th Century	Archaeological Site	NE	G	P
SU00403 Ellaville Bridge	Historic, late 19 th – early 20 th Century	Archaeological Site	NE	G	P
SU00404 Suwannee Scatter	Historic, 20 th Century	Archaeological Site	NE	G	P
SU00405 Columbus/ Ellaville Steamboat Landing	Historic, 19 th Century	Archaeological Site	NE	G	P
SU00406 Suwannee River Storage – Equip.	20 th Century, 1964	Historic Structure	NE	F	RH
SU00407 Suwannee River Residence – Mgr.	20 th Century, 1966	Historic Structure	NE	G	RH
SU00408 Suwannee River Restroom - Group Area	20 th Century, 1968	Historic Structure	NE	P	R
SU00409 Suwannee Pump- house/Storage	20 th Century, 1968	Historic Structure	NE	F	RH

Cultural Sites Listed in the Florida Master Site File					
Site Name and FMSF #	Culture/Period	Description	Significance	Condition	Treatment
SU00410 Suwannee River Pavilion 2	20 th Century, 1955	Historic Structure	NR	F	RH
SU00411 Suwannee River Pavilion 3	20 th Century, 1955	Historic Structure	NR	F	RH
SU00412 Suwannee River Laundry-Camp	20 th Century, 1960	Historic Structure	NE	F	RH
SU00413 Suwannee River Workshop	20 th Century, 1961	Historic Structure	NE	F	RH
SU00414 Suwannee River Pump House	20 th Century, 1961	Historic Structure	NE	F	RH
SU00415 Suwannee River Entrance Wall	20 th Century, 1965	Historic Structure	NE	G	RH
SU00416 Suwannee River Ranger Residence	20 th Century	Historic Structure	NE	G	RH
St. Paul's Church SU00417	Early 20 th Century, Unknown	Archaeological Site	NE	G	P
SU00503 FL-820	20 th Century & Prehistoric	Archaeological Site	NR	G	P

Objective A: Assess and evaluate 27 of 27 recorded cultural resources in the park.

- Action 1 - Complete 27 assessments/evaluations of archaeological sites.
- Action 2 - Monitor all cultural sites at least once a year.
- Action 3 - Complete two Historic Structures Reports (HSRs) for historic buildings and cultural landscape.

Park staff will assess all 27 known cultural resources in the park so that their condition and any threats can be identified and corrected. Staff should document site assessments in a written and photographic format. Any threats detected, including looting, erosion, fire line construction, building deterioration and others, should be documented during the assessments. Documentation should be consistent so that changes in site condition can be determined by comparing previous assessments. The park will prioritize future preservation and rehabilitation treatments based on the assessments.

The park will prepare HSRs for site SU00410 and SU00411. Repair, restoration and rehabilitation projects identified by the HSRs will be prioritized.

To ensure the ongoing recognition, protection and management of cultural resources, there should always be at least one staff member at the park who is a certified archaeological monitor. In addition, park management should ensure that all personnel have sufficient training to provide adequate protection to the park's cultural resources, both documented and undocumented.

Objective B: Compile documentation for historic and archaeological resources.

- Action 1 - Ensure all known sites are recorded or updated in the Florida Master Site File.
- Action 2 - Review the results of the predictive model and consult with the Division of Historical Resources' Public Lands Archaeology Program to determine priority areas for additional surveys.
- Action 3 - Develop and adopt a Scope of Collections Statement based on interpretive themes.
- Action 4 - Organize the park's administrative history documents.
- Action 5 - Conduct oral history interviews to fill in historic record gaps.

A predictive model for the park was completed in 2011. Sites identified by the model were submitted to the FMSF. An historic cemetery has been identified between the confluence of the Suwannee and Withlacoochee rivers. This site needs to be submitted to the FMSF.

The park has historic documents and photographs relating to the Suwannee River ranger residence (SU00416), Old Ellaville (MD00058), the Confederate earthworks (SU00035), and other cultural sites from the time the park formally opened. Staff will need to review these documents and submit pertinent information as updates to each site's FMSF form.

The individual components of Old Ellaville that remain visible should be mapped, including structural remains of the town, Drew Mansion, and family cemetery that are not on park property. Park management should collaborate with the FFS to document components of those sites partially on FFS property. Old Ellaville may be recorded as a resource group so that it can incorporate the various components.

At least two themes are evident in items in the current collections: the natural history of the area and the impact of the river and the natural resources on the development of the area by early settlers from the mid-1800s to the early 1900s. The Scope of Collections Statement should guide the development of any additional collections, the acceptance of any future donations and interpretive efforts. Staff should review the Scope of Collections Statement regularly.

Objective C: Bring 10 of 27 recorded cultural resources into good condition.

- Action 1 - Develop and implement a cyclical maintenance plan that will guide staff in maintenance of the park's cultural resources.
- Action 2 - Develop and implement a preventative maintenance plan for the cemetery fences, walls and grave markers.

The cyclical maintenance plan should include a site visitation schedule and a process to identify and record issues that impact the condition of the resources. A method to prioritize repairs should be part of the plan.

The following is a prioritized list of cultural resources in the park that need repairs: Confederate earthworks (SU00035), Columbus Cemetery (SU00362), Suwannee River Pavilion 2 (SU00410), Suwannee River Pavilion 3 (SU00411), Suwannee River Workshop (SU00413), Suwannee River Storage – Equip (SU00406), Suwannee River Laundry-Camp (SU00412), Suwannee Pumphouse/Storage (SU00409), Suwannee River Pumphouse (SU00414) and Suwannee River Restroom - Group Area (SU00408).

The highest priority for repair is the Confederate earthworks, which needs vegetation management. The park should remove the larger trees and prevent the establishment of smaller trees. Roots should be left in place to minimize soil disturbance.

The Columbus Cemetery needs to be surveyed with ground penetrating radar to determine the location of all graves. The actual perimeter of the cemetery needs to be marked so that graves outside the enclosure are protected from disturbance.

Suwannee River pavilions 2 and 3 need upgraded wiring, post and railing replacements, and ADA upgrades. Suwannee River Workshop needs a wiring upgrade. Suwannee River Storage – Equip needs bracing for the roof beams. Suwannee River Laundry – Camp needs a new roof and upgraded wiring. Suwannee Pumphouse/Storage needs to have the roof and T111 siding replaced. Suwannee River Restroom – Group Area is in poor condition and should be evaluated for replacement or rehabilitation. If it is determined that replacement is necessary, the building should be removed whenever feasible.

LAND USE COMPONENT

VISITATION

The confluence of the Suwannee and Withlacoochee rivers has been a pivotal location for centuries generating multiple locations for interpretation within the park. The rivers helped form Suwannee County's first chartered community, the town of Columbus, with the commute of goods along the Suwannee River from the Gulf of Mexico to the Atlantic coast.

Kayaking and canoeing are primary resource-based recreational activities at Suwannee River State Park, where the confluence of the Suwannee River and the Withlacoochee River serves as the park's most notable natural feature. The park serves as a hub for paddlers following the Suwannee River Wilderness Trail, a system of public and private recreational service sites between Big Shoals State Park and the Gulf of Mexico.

Hiking offers rewarding views of the Suwannee River from the park's many bluff-top vantage points, as well as closer views of karst features which include springs, sinkholes and limestone outcroppings. Popular trails include the Balanced Rock Trail, Lime Sink Run Trail, Big Oak Trail, Sandhills Trail and a stretch of the Florida National Scenic Trail. Long-distance hikes and short nature walks are both possible in the park.

Picnicking, fishing, birding, wildlife observation, nature study and interpretive programs are also available to park visitors. A secondary roadside picnic area is available on the west bank of the Suwannee, where visitors can walk across the river on the old U.S. Highway 90 bridge, and an official state historical marker describes the Drew Mansion site and the former town of Ellaville.

Where nature has cultivated communities and nurtured wildlife, the natural features of Suwannee River State Park now provide serene and thoughtful escapes and foster appreciation for the resources contained within.

Visitation Trends

Suwannee River State Park receives about 40,000 visitors annually. Suwannee River State Park experiences more visitation in the late winter and early spring months, from January to May, with eventual declines from the onset of warm, stormy summer weather. Paddling the connected Suwannee and Withlacoochee rivers and hiking the Florida National Scenic Trail are highly attractive features of the park that draw visitation during the warmer months.

EXISTING FACILITIES AND INFRASTRUCTURE

About 50 feet inside the park boundary, County Road 132 veers to the east just before the park entrance gate, intersecting the lower park boundaries. About 600 feet beyond the turn, a residence, and storage structure are located on the south side of County Road 132.

The park entrance consists of a historic stone wall and entrance gate. Less than a half-mile beyond the stone wall, an entrance station is the first structure encountered in the heart of the park. Further north, a shop area and park residence lie just off the main park road to the west.

The main day-use area includes 44 paved parking spaces, a restroom facility connected to two picnic pavilions, picnic tables, a playground and benches that overlook the Suwannee River. The Sandhill Trail leads visitors southeast into a well-managed and exemplary sandhill natural community. The Earthworks Trail connects the day-use area to a display of steamboat components, Confederate earthworks and a wooden boardwalk with interpretive panels. Further west, a natural path leads visitors to an observation platform. This elevated platform facilitates a panoramic view of the confluence of the Suwannee and Withlacoochee rivers. Historical, natural and wayfinding interpretive panels are provided for visitors around the park, including at the Confederate earthworks site and junction of the park’s trails. Occasionally, interpretive programs and ranger-led tours are also provided that teach visitors more about the area’s local history.

A 30-site campground, bathhouse and volunteer campsite are located east of the main day-use area. Five cabins are located just to the north of the campground. In the rear of the cabin area to the east, Lime Sink Run Group Camp includes a small restroom facility and picnic area. The main park road terminates at a west-facing boat ramp on the Suwannee River, which also serves as a trailhead for the Lime Sink Run and Balanced Rock trails. Little Gem Spring is north of the boat ramp, bordering the east side of the Suwannee River, and is accessible via the Suwannee River Trail.

Previous planning efforts have proposed expanding the campground east, across a utility corridor in the successional hardwood forest (altered landcover type). Although expansion would increase capacity in this high-demand facility, it would come with some impacts. The dense tree canopy east of the current campground provides a buffer for the Lime Sink Run Group Camp. Additionally, old-growth pines are located here, suggesting that the site should be restored to sandhill.

Just over a mile to the northeast, the Hickory Bend Primitive Group Camp area provides visitors a primitive campsite, two primitive group camps and a bathhouse.

The Florida National Scenic Trail parallels the Suwannee and Withlacoochee rivers for about 5 miles, with the park’s Big Oak Trail overlapping the Florida Trail where the two rivers converge. A primitive group camp is also situated on the peninsula between the rivers. On the west bank of the Suwannee, a roadside picnic area is accessible via U.S. Highway 90 before the highway crosses the river. Facilities include picnic tables, a stabilized parking area and the historic Highway 90 bridge over the Suwannee. A historical marker describing the former town of Ellaville and the Drew Mansion site is also present.

Facilities Inventory

<i>Southern Support Area</i>	
Residence	1
Animal Enclosure	1
Storage Structure	1
<i>Entrance Area</i>	
Suwannee River Entrance Wall	1
Entrance Station	1
Parking Area (9 spaces)	1
Informational Kiosk	2
Honor Box	1
<i>Central Support Area</i>	

Shop	1
Storage Structures	5
Residence	1
<i>Main Day Use Area</i>	
Parking Area (44 spaces)	1
Restroom/ Pavilion	2
Playground	1
Sandhill Trail (length in miles)	0.8
Columbus Cemetery	1
Earthworks Trail (length in miles)	0.25
Interpretive Panels	3
Boardwalk (length in feet)	119
Confluence Overlook	1
<i>Campground</i>	
Campsites	30
Bathhouse	1
Linen Room	1
Volunteer Campsite	4
<i>Cabin Area</i>	
Cabins (1 ADA)	5
Parking Area (10 spaces)	1
<i>Boat Ramp</i>	
Boat Ramp	1
Parking Area (5 spaces)	1
Suwannee River Trail (length in miles)	0.7
Lime Sink Run Trail (length in miles)	0.75
Balanced Rock Trail (length in miles)	3
<i>Lime Sink Run Primitive Camping Area</i>	
Group Campsites	1
Restroom	1
Shower House	1
<i>Hickory Bend Primitive Camping Area</i>	
Primitive Campsite	1
Primitive Group Campsites	2
Bathhouse	1
<i>Confluence Primitive Camping Area</i>	
Group Campsites	
Big Oak Trail (length in miles)	12.5
<i>Drew Mansion Picnic Area</i>	
Historic Landmark Sign	2
Paved Parking Area (15 spaces)	1
<i>Parkwide</i>	
Florida National Scenic Trail (mileage within the park)	7.68

CONCEPTUAL LAND USE PLAN

Detailed Conceptual Land Use Plan Objectives

Several areas at Suwannee River State Park are listed below for improvements to be implemented within the 10-year planning cycle.

Earthworks Area

Objective: Improve interpretation and wayfinding.

Actions:

- Improve wayfinding.
- Update interpretation.
- Prevent makeshift paths.

The earthworks area presents the park's most obvious interpretive opportunity. The steamboat machinery, the Confederate earthworks and the confluence overlook, which are all clustered in this area, are not obvious to park visitors that have not thoroughly researched the layout and features of the park prior to arrival. Signage in the picnic area is necessary to convey the significance of the interpretive centerpieces of the park and funnel visitors in the correct direction.

A more detailed description of the machinery and the Confederate earthworks is recommended but should be kept confined to not pollute the historic landscape. Propose updating interpretive elements to describe the era in which the steamboat was utilized, as well as the purpose and timeline regarding the construction of the Confederate earthworks.

The Earthworks Trail should be delineated and stabilized while existing and future makeshift paths should be prevented with revegetation and informative signage to prevent further erosion of the landscape.

Confluence Overlook

Objective: Improve infrastructure.

Actions:

- Complete structural assessment of overlook.
- Consider removing the unused section of boardwalk.

The confluence of the Withlacoochee and Suwannee rivers lies at the end of the Earthworks Trail and can be viewed from the ferry landing and confluence overlook that stands over the Suwannee River. At the main day-use area, visitors should be directed to the location of the view of the confluence, while the trail to the observation deck over the river should consider featuring interpretation regarding the hydrology and ecology of the river systems. On the observation deck, a vicinity map depicting the convergence of the two rivers and their setting in North Florida and South Georgia should be considered.

Near the observation platform and earthworks, an eroded, makeshift path leads to a partially constructed boardwalk. Consideration should be given to removing the unused, cut-off section of the boardwalk on the path leading to the confluence overlook. Finally, the wooden boardwalk and observation platform were constructed in the 1990s. Given the age of the structures, a structural assessment is needed to evaluate their integrity.

Main Day Use Area

Objective: Improve utilization of green space and improve wayfinding.

Actions:

- Install native plants to delineate paths and guide visitors.

The open green space between the riverbank and the parking lot is underutilized and lacks a sense of purpose. Currently, upon entering the green space from the parking lot, it is not apparent how to access the other use areas. To better use the space and help mitigate the mowing of this area, the use of native vegetation to delineate walking paths should be considered. A natural path, perhaps flanked by rows of palmettos or other low growing vegetation, would help guide the visitors to hiking trails and the adjacent Earthworks area. Small wayfinding signs could be used in conjunction with the paths as well.

Hickory Bend Primitive Camping Area

Objective: Improve camping area.

Actions:

- Designate paths to campsites.
- Stabilize and expand parking.
- Delineate campsites.
- Replace restroom with a bathhouse.
- Re-contour camping space.
- Remove residence.
- Remove concrete slab.

The parking area for the primitive campground receives heavy use, which has led to the appearance of makeshift disorganized footpaths between the parking area and campsites. To protect the scenic landscape from more erosion, stabilized parking and clearly delineated walking paths to the campsites are recommended. The parking area should also be expanded to accommodate more guests. Signage delineating the two campsites into site 1 and site 2 should be considered along the designated path.

The Hickory Bend Group Camp can host approximately 45 guests. The existing bathhouse is inadequate for groups of this size, and, despite its location on elevated terrain, is also flood prone. A new, larger bathhouse in a less flood-prone location is recommended. Once this larger bathhouse is constructed, the current restroom should be removed.

Camping under the oak trees should be prohibited to ensure visitor safety. The oak tree branches should be trimmed back, and the surrounding brush should be mowed for more space. Although this is operational and included in the park's general maintenance, these trees can cause visitor displacement and hinder the Suwannee River viewshed. Considering that vegetation along the bank of the Suwannee River can only be maintained by Suwannee River Water Management District, this space should be intentionally maintained for camping with better organization and re-contoured to maximize camping space.

The ranger residence located near Hickory Bend has fallen into disrepair, and removal of the structure is recommended. Replacement of the residence should be considered.

A concrete slab remains in place adjacent to the parking area and bathhouse. It is no longer used and should be removed.

Lime Sink Run Primitive Camping Area

Objective: Improve visitor experience with upgraded facilities.

Actions:

- Install a larger bathhouse with showers.

Considering the Lime Sink Run Group Camp accommodates approximately 30 guests, the small bathhouse in this location does not meet group camp capacity needs. Outdoor showers are also present, but these facilities create greywater runoff, which can introduce surfactants and nutrients into nearby wetlands. A new facility with expanded restroom capacity and provision for greywater capture should be constructed.

Parkwide

Objective: Modify facilities to increase accessibility.

A priority for the park should be to modify all park facilities to comply with the ADA guidelines, with a focus on accessible parking at the boat ramp.

Where necessary, boundary surveys and fencing may be needed to clarify the location of the park boundary and prevent encroachment.

Ellaville Picnic Area

Objective: Improve interpretation and wayfinding.

Actions:

- Communicate with the Florida Department of Transportation (FDOT).
- Develop a maintenance and interpretation plan.
- Consider formalizing the paddling launch.
- Resurface Northeast Drew Way.

There are currently no signs installed directing visitors to the Ellaville picnic area traveling eastbound or westbound on U.S. Highway 90. Considering this part of the park is slightly disjunct from the rest of the unit, DRP should communicate with the FDOT and emphasize the need for directional signage that informs visitors of this feature of the park.

This roadside park area on the west bank of the Suwannee River holds some historic value with the remnants of past occupants and historic Hillman Bridge. It is also a quiet picnic location that is easily accessible from U.S. Highway 90. A historic marker is maintained at the site by the state of Florida, but the U.S. Highway 90 bridge over the Suwannee has the potential to draw more visitors that would show interest in crossing the Suwannee on foot. A robust maintenance and interpretation plan should be developed for this historic structure.

A formalized paddling launch and potential concessionaire operation are also under consideration for this area. Effectively monitoring this disjunct park area to ensure visitor safety may require staffing adjustments.

If this wayside picnic area attracts more visitors, the access road (Northeast Drew Way) will need to be resurfaced to improve its appearance and function.

Seven Sisters Spring

Objective: Remove infrastructure to reduce maintenance needs.

Actions:

- Reduce the width of the gate opening.
- Remove the gate.

The Florida National Scenic Trail follows the west bank of the Suwannee River and the east bank of the Withlacoochee River, and travels through the Ellaville picnic area. Where the trail enters the northeastern section of the park, a nearby gate suffers repeated damage from visitors. This remote area of the park has less staff supervision and contains significant karst features. This gate should be removed and the width of the opening should be reduced to eliminate maintenance needs and allow pedestrian-only access for the trail.

VISITOR USE MANAGEMENT

Objectives

Little Gem Springs

Objective: Protect natural resources by managing visitor use.

Actions:

- Construct an observation platform.
- Designate an accessible trail.

Little Gem Springs

Lime Sink Run contains a series of picturesque, steep-walled sinkholes and sinkhole lakes along its course. These features are visible from the loop trail that follows the rim of the ravine. Typically, visitors form makeshift paths down the slopes of the river to observe this natural feature. There is concern surrounding a place where visitors are leaving the trail to access the river and causing erosion. To mitigate, a new accessible trail and platform will be constructed at Little Gem Springs. Trail routing must avoid impacts to sensitive natural features while providing adequate vantage to preclude users from leaving the trail.

OPTIMUM BOUNDARY

Suwannee River State Park is a segment of the chain of conservation lands along the Suwannee River. Twin Rivers State Forest and several Florida Forever BOT projects are located to the southwest and the Warner/Harrell Conservation Easement is to the east. Along with conservation land, there are numerous agricultural and silvicultural operations and private residential properties surrounding the park. There are no Florida Forever BOT projects directly connected to the park.

Toward the southeast end of the park, there are approximately 15 properties that total 183.67 acres proposed for acquisition. These include privately owned land, some vacant parcels and several springs. To the east of these parcels are multiple agricultural fields. These proposed parcels help buffer any agricultural pollution discharged away from the Suwannee River, as well as multiple karst windows identified in and surrounding the park.

Two vacant parcels to the south, approximately 5.43 acres in total, are enclosed by CSX railroad tracks and U.S. Highway 90. These parcels are within proximity to the Suwannee River and park entrance and should be restored to enhance protection of nearby springs and habitats.

To the west of the park entrance and connected to the southern bank of the Suwannee River, there is a 10.49-acre parcel proposed for acquisition that is designated by the Florida Natural Areas Inventory (FNAI) as a priority 1 habitat conservation site. This parcel contains the Ellaville Spring and should be acquired to improve watershed and habitat protection adjacent to the CSX railroad. To the east are CSX railroad tracks and to the west is Northeast Drew Way or the historic Hillman Bridge. Directly east of this parcel is a 2.17-acre single-family home that could fulfill the park's boundary and improve routine maintenance operations.

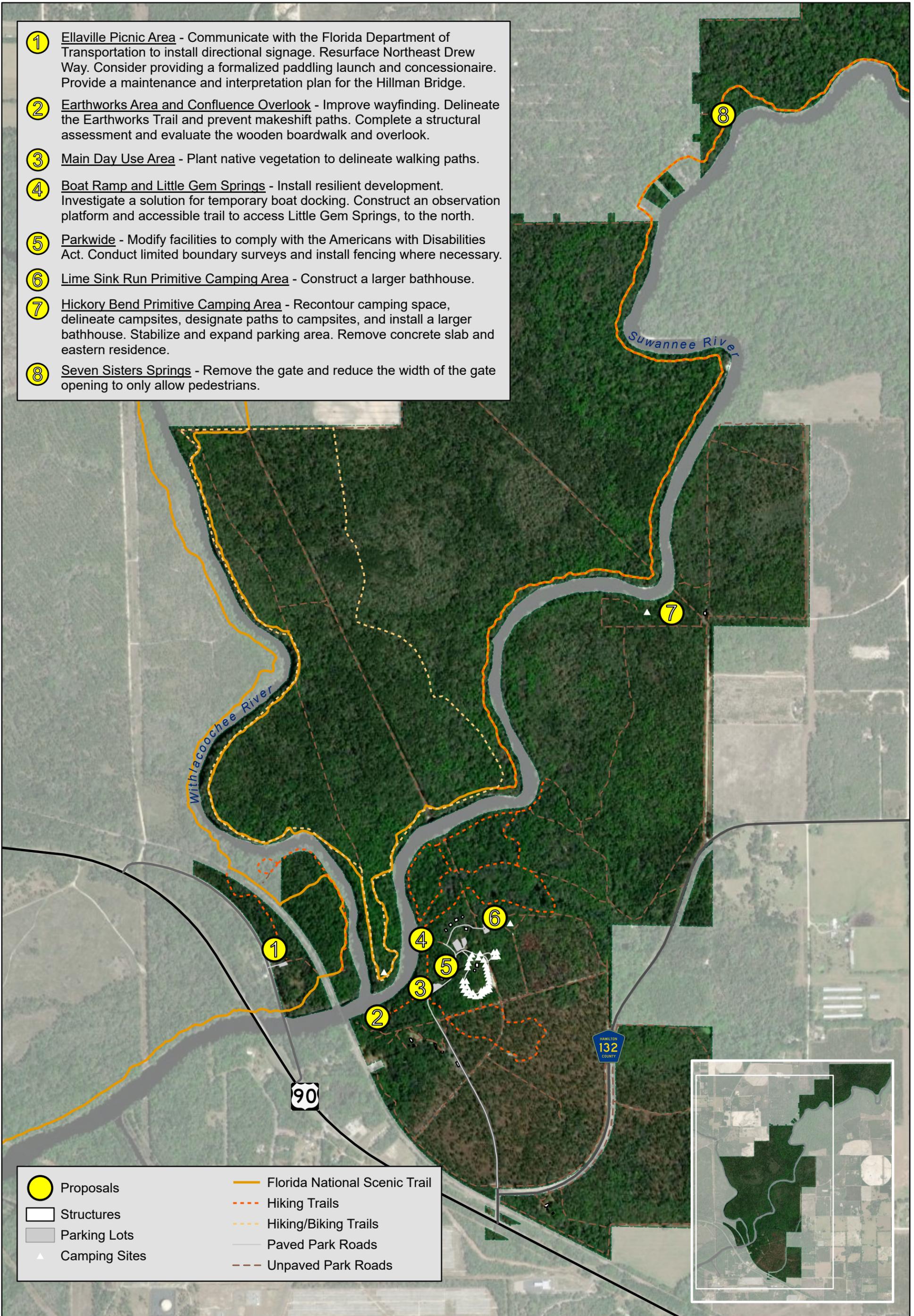
To the north of the park boundary and bordering the east side of the Withlacoochee River, there is a 28.96-acre parcel zoned for timberland operations. This parcel is also designated by FNAI as a priority 1 habitat conservation site. Parcels bordering the prominent Withlacoochee and Suwannee rivers should be acquired to improve and protect water quality in and surrounding the waterways and further enhance ecological connectivity.

To the north of the main body of the park, about 115 parcels, some bordering the west bank of the Suwannee River, are proposed for acquisition. These subdivision parcels will connect the most northern segment of the park, where the Florida National Scenic Trail winds through. Protecting these properties will provide a more seamless experience for hikers along the trail and protect the numerous karst features scattered around this area. This area is also considered a priority 1 habitat conservation site by FNAI and would provide protection for the Suwannee River and serve as a segment of the river's ecological corridor.

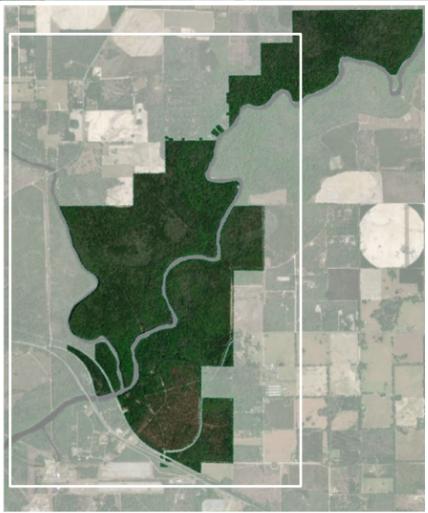
Northeast of the main body of the park, mostly bordering the east side of the Suwannee River, previously proposed optimum boundary parcels are now acquired and protected under the Warner/Harrell Conservation Easement and the Falmouth Conservation Area, which are both managed by the Suwannee River Water Management District. A 2.33-acre vacant lot cuts out the park boundary above these conservation lands. Projecting out into the Suwannee River is proposed to fulfill the park's boundary and help avoid future development along the Suwannee River. Surrounding these conservation lands are five more privately owned parcels totaling 58.45 acres that are zoned for timberland operations and single-family homes. Preserving these parcels will protect valuable natural areas for purposes pertaining to natural resource protection and recreational enjoyment.

Many parcels surrounding Suwannee River State Park, approximately 330 acres in total, have been identified as desirable for acquisition (see Optimum Boundary Map). The acquisition of these lands will add desirable natural resources and will enhance the unit's boundaries for management purposes. Acquisition of these lands will provide opportunities for expanded public recreational use and will help to maintain an adequate buffer from future private development along the Suwannee River.

- ① **Ellaville Picnic Area** - Communicate with the Florida Department of Transportation to install directional signage. Resurface Northeast Drew Way. Consider providing a formalized paddling launch and concessionaire. Provide a maintenance and interpretation plan for the Hillman Bridge.
- ② **Earthworks Area and Confluence Overlook** - Improve wayfinding. Delineate the Earthworks Trail and prevent makeshift paths. Complete a structural assessment and evaluate the wooden boardwalk and overlook.
- ③ **Main Day Use Area** - Plant native vegetation to delineate walking paths.
- ④ **Boat Ramp and Little Gem Springs** - Install resilient development. Investigate a solution for temporary boat docking. Construct an observation platform and accessible trail to access Little Gem Springs, to the north.
- ⑤ **Parkwide** - Modify facilities to comply with the Americans with Disabilities Act. Conduct limited boundary surveys and install fencing where necessary.
- ⑥ **Lime Sink Run Primitive Camping Area** - Construct a larger bathhouse.
- ⑦ **Hickory Bend Primitive Camping Area** - Recontour camping space, delineate campsites, designate paths to campsites, and install a larger bathhouse. Stabilize and expand parking area. Remove concrete slab and eastern residence.
- ⑧ **Seven Sisters Springs** - Remove the gate and reduce the width of the gate opening to only allow pedestrians.



- | | |
|-----------------|---------------------------------|
| ● Proposals | — Florida National Scenic Trail |
| ▭ Structures | - - - Hiking Trails |
| ▭ Parking Lots | - - - Hiking/Biking Trails |
| ▲ Camping Sites | — Paved Park Roads |
| | - - - Unpaved Park Roads |

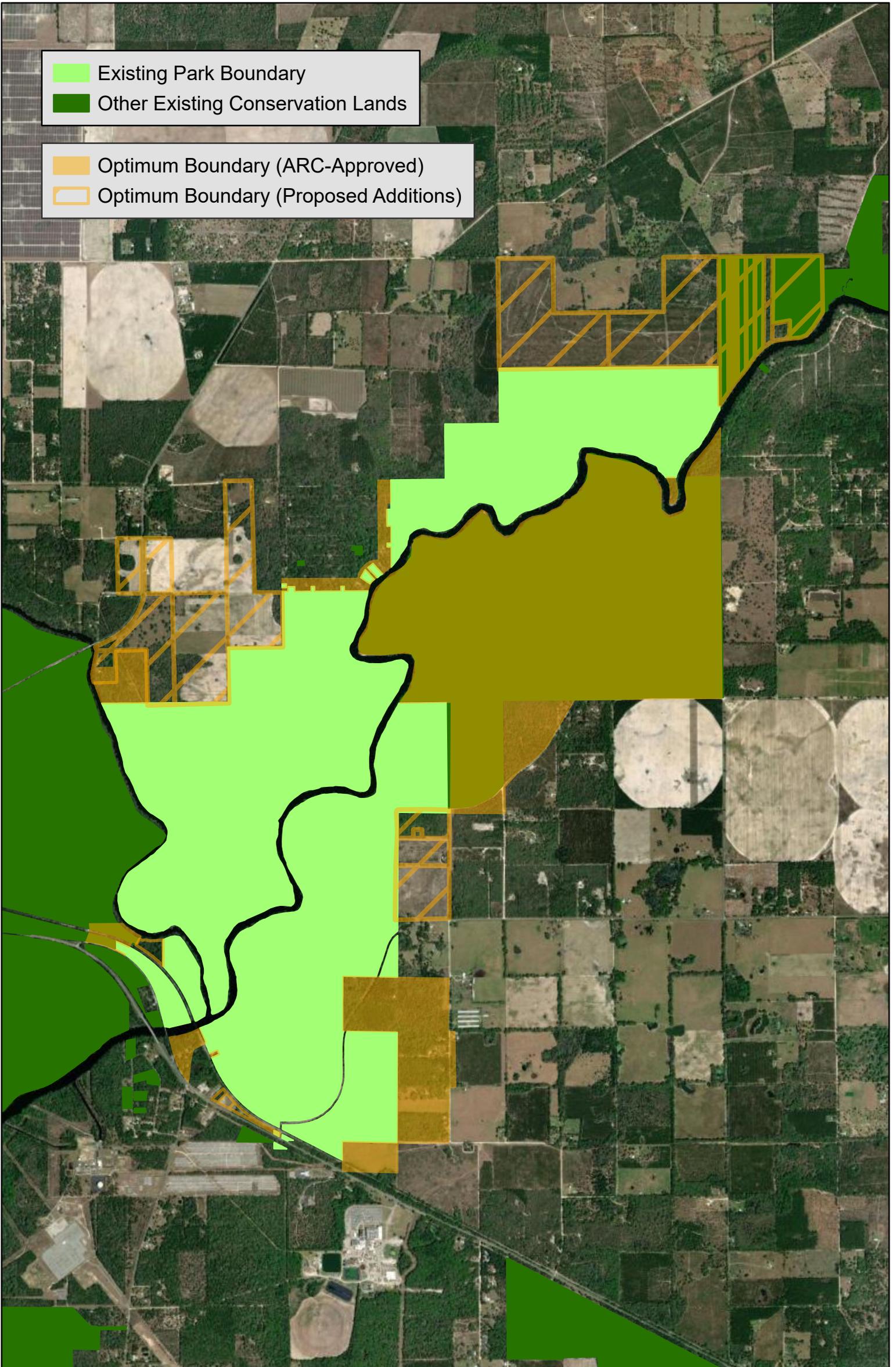


Suwannee River State Park

Conceptual Land Use Plan

0 1,000 2,000 Feet





Existing Park Boundary
Other Existing Conservation Lands

Optimum Boundary (ARC-Approved)
Optimum Boundary (Proposed Additions)



Suwannee River State Park

Optimum Boundary

