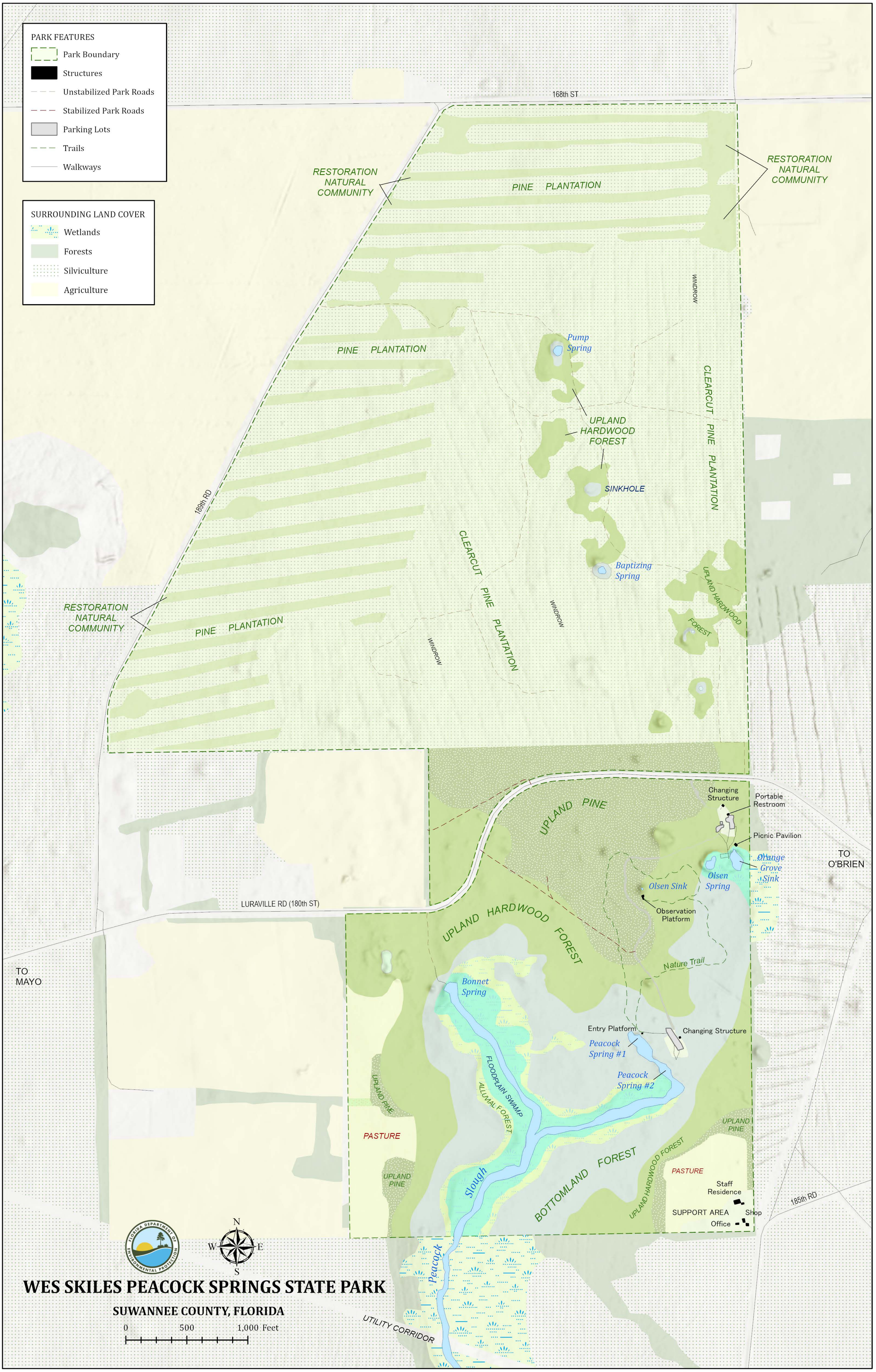
WES SKILES PEACOCK SPRINGS STATE PARK
Park Chapter

SUWANNEE RIVER PLANNING REGION



WES SKILES PEACOCK SPRINGS STATE PARK

SUWANNEE COUNTY, FLORIDA

0 500 1,000 Feet

INTRODUCTION

LOCATION AND ACQUISITION HISTORY

Wes Skiles Peacock Springs State Park is located in Suwannee County (see Vicinity Map). Access to the park is from Luraville Road. The Vicinity Map also reflects significant land and water resources existing near the park.

Wes Skiles Peacock Springs State Park was initially acquired on June 11, 1986, with funds from the Land Acquisition Trust Fund (LATF). Currently, the park comprises 761 acres. The Board of Trustees of the Internal Improvement Trust Fund (Trustees) hold fee simple title to the park and on June 15, 1987, the Trustees leased (Lease No. 3504) the property to the Division of Recreation and Parks (DRP) under a 50-year lease. The current lease will expire on June 15, 2037.

Wes Skiles Peacock Springs State Park is designated single-use to provide public outdoor recreation and conservation. There are no legislative or executive directives that constrain the use of this property (see Addendum 1). 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 timber harvesting as part of the park's natural community restoration and management activities could be accommodated in a manner that would be compatible and not interfere with the primary purpose of resource-based outdoor recreation and conservation.

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. However, for this planning cycle, it was determined that timber harvesting for the express purpose of natural community restoration and management is appropriate as an additional source of revenue for land management since it is compatible with the park's primary purpose of 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

Wes Skiles Peacock Springs State Park protects and preserves outstanding karst features such as springs, sinkholes, and aquatic cave systems, as well as a unique hardwood forest shaped and influenced by local geology. The park provides opportunities to appreciate the subterranean geological features via responsible cave diving and interpretive amenities.

Park Significance

- Wes Skiles Peacock Springs State Park protects several distinct aquatic cave systems, including the 8.5-mile Peacock Springs system and 1.5-mile Bonnet Spring system, which provide habitat for four imperiled species of cave dwelling invertebrates.

- The park protects a matrix of pinelands and upland hardwood forest characterized by a prevalence of Florida maple interspersed with springs and karst windows.

- Significant examples of karst topography, including five second-magnitude springs have international notoriety in the cave diving community.

- The park protects numerous recorded archaeological sites including the Archaic period (circa 6500-1000 B.C.) and the 17th-century Spanish mission era.

Central Park Theme

Crystal clear waters embrace divers who brave the underwater caves at Peacock Springs while hikers trace their journey though the aquifer from forest trails above.

Wes Skiles Peacock Springs State Park is classified as a recreation area in the DRP unit classification system. In the management of a recreation area, major emphasis is placed on maximizing the recreational potential of the unit. Preservation of the park’s natural and cultural resources, however, remains important. Depletion of a resource by any recreational activity is not permitted. In order to realize the park’s recreational potential, the development of appropriate park facilities is undertaken with the goal of providing facilities that are accessible, convenient and safe to support public recreational use or appreciation of 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 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 II by DEP. The park is not adjacent to an aquatic preserve as designated under the Florida Aquatic Preserve Act of 1975 (Section 258.35, Florida Statutes).

PARK ACCOMPLISHMENTS

- Completed for fire management planning.
- Completed fencing survey for the Baptizing Sink Tract.
- Initiated longleaf pine restoration project.
- Completed repairs to the Orange Grove Sink stairs and deck.

RESOURCE MANAGEMENT COMPONENT

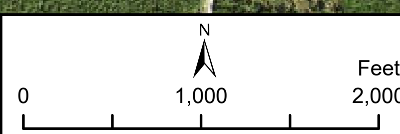
Wes Skiles Peacock Springs State Park Management Zones			
Management Zone	**Acreage**	**Managed With Prescribed Fire**	**Contains Known Cultural Resources**
PS-2A	95.89	Y	Y
PS-2B	126.77	Y	N
PS-2C	79.17	Y	Y
PS-2D	180.56	Y	Y

TOPOGRAPHY

Wes Skiles Peacock Springs State Park is situated in the Gulf Coastal Lowlands, specifically the Suwannee River Lowlands, located in the Northern or Proximal Physiographic Zone and on the Wicomico marine terrace. The Gulf Coastal Lowlands are described as gently sloping terraces originating in the highlands and extending toward the coast. Limestone typically occurs at or near the surface throughout most of this region; sand or sandy clay usually overlies the limestone. Several limestone outcrops occur within the park. The underlying limestone has undergone extensive solution activity resulting in surface features characteristic of karst topography. These features include sinkholes, springs, and depressions caused by the collapse of the upper layers of material into underlying solution voids and caverns. Elevations within the park, according to U.S. Geological Survey (USGS) quadrangle maps, range from 25 feet above mean sea level (msl) at the edge of Peacock Slough during normal water levels to 60 feet above msl at the north boundary (see Topographic Map, page 5). Eighty-eight percent of the park lies within the 100-year floodplain as calculated by the Suwannee River Water Management District for this reach of the Suwannee River, while 36 percent of the park is at or below the ten-year floodplain elevation. Only a few alterations of natural topography are evident in the southern half of the park. Among these is an old tram road that cuts diagonally through the unit in a northwest to southeast direction. The road has been breached in several places, particularly in sloughs, presumably to provide drainage. Otherwise, the tramway remains at design elevations. Secondary growth vegetation now covers the tramway. The northern half of the park, added in 2007, has had extensive topographic alternations due to intensive silviculture on the property over the past several decades.

Much of the area was windrowed in the past, creating multiple, parallel ridges across the property. Another significant alteration exists near the west boundary of the park where a previous landowner had attempted to enlarge a sinkhole by excavating the sides and bottom. Though now vegetated, this excavation and its associated spoil pile remain as somewhat obtrusive features in the natural landscape. Other topographic alterations in the park include unimproved roads that were constructed to provide vehicular access to the springs.

WES SKILES PEACOCK SPRINGS STATE PARK
Management Zones



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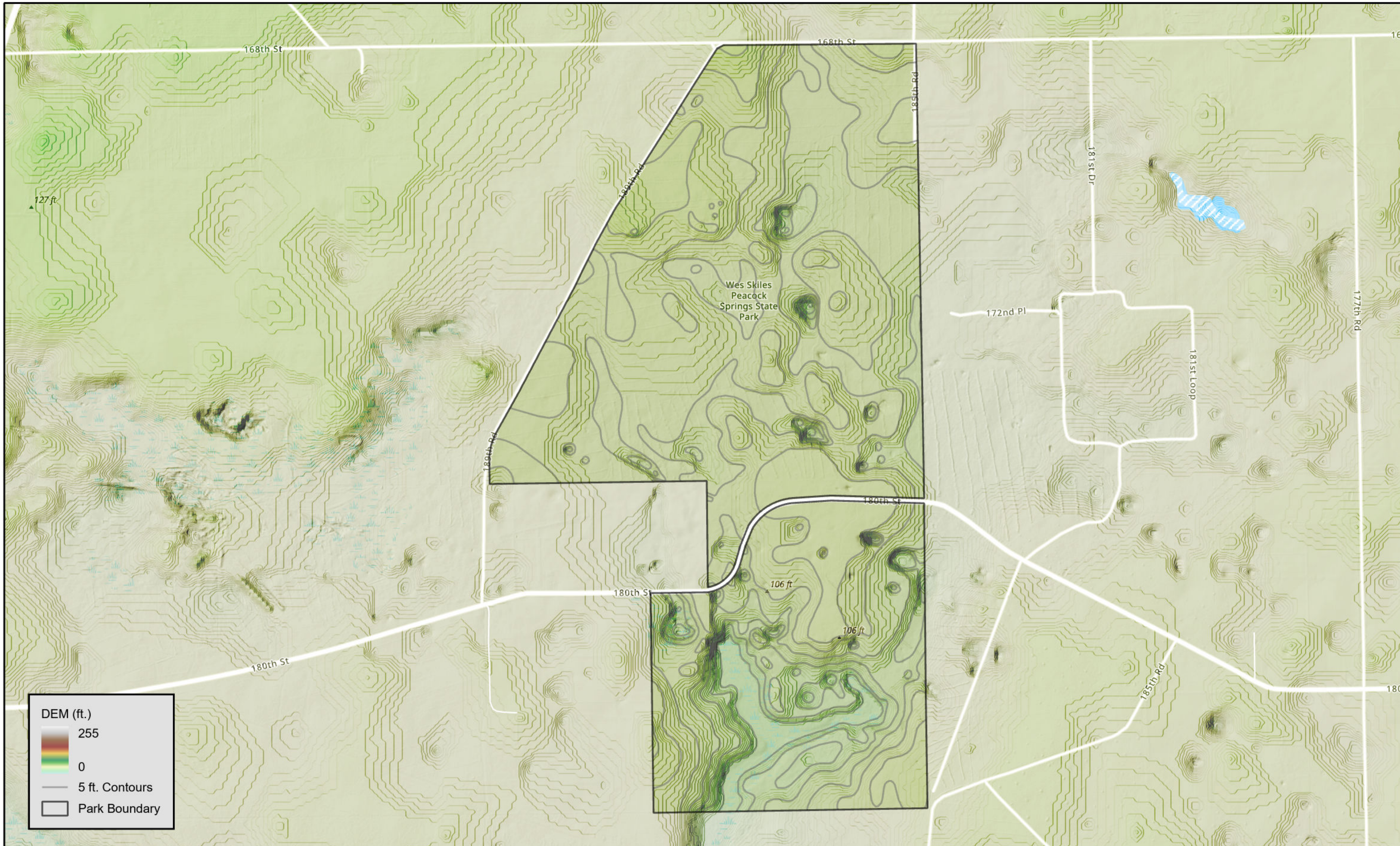

WES SKILES PEACOCK SPRINGS STATE PARK
Topography

N

Miles
0 0.1 0.2 0.4

Sources: ESRI; Florida Department of Environmental Protection
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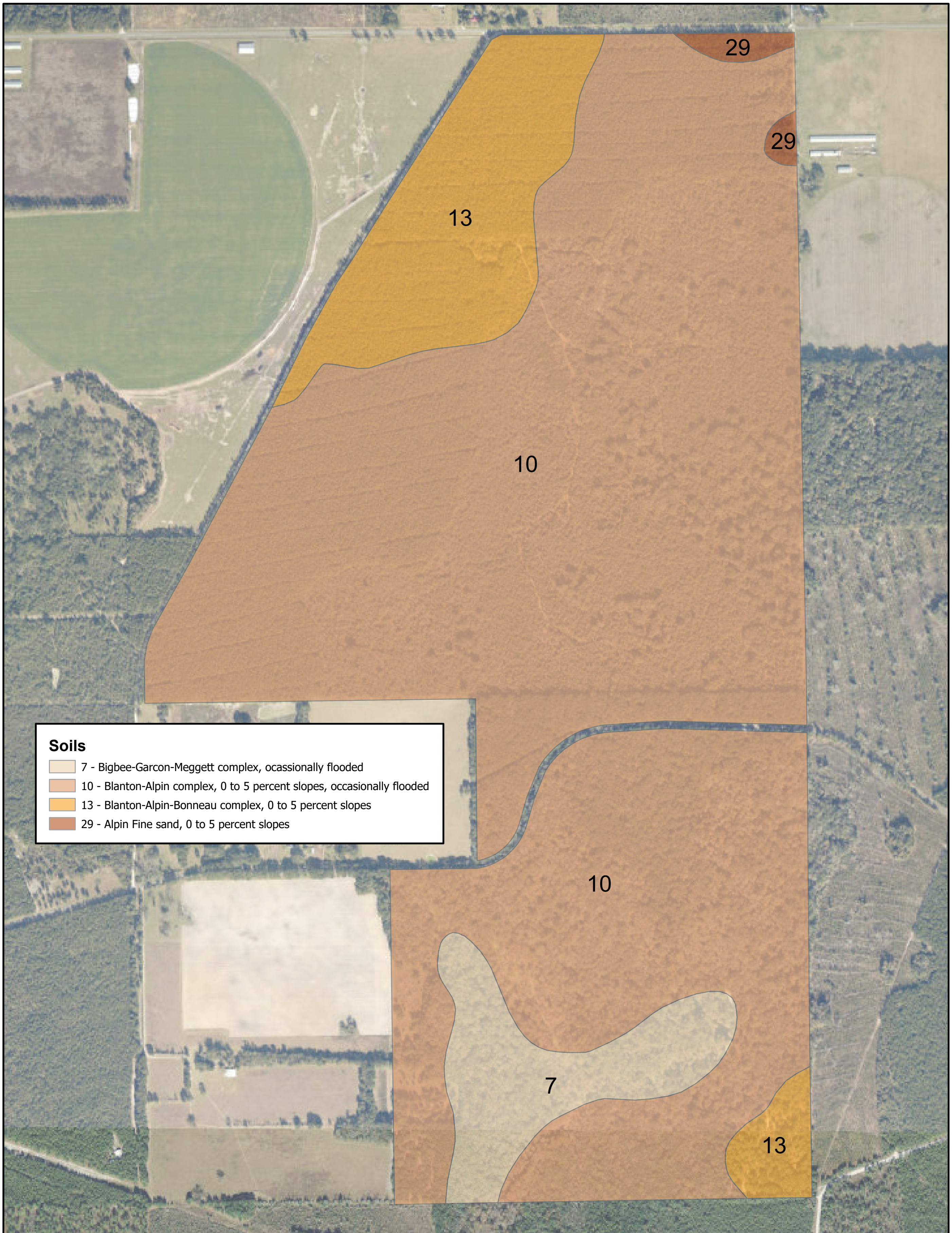
SOILS

Only four soil types are found within the park: Bigbee-Garcon-Meggett complex, occasionally flooded; Blanton-Alpin complex, 0 to 5 percent slopes, occasionally flooded; Blanton-Alpin-Bonneau complex, 0 to 5 percent slopes; and Alpin fine sand, 0 to 5 percent slopes (Weatherspoon 2006) (see Soils Map). The Bigbee-Garcon-Meggett complex is found in association within the floodplain and bottomland areas of Peacock Slough. While Bigbee soils are excessively drained, the Garcon and Meggett soils are much more poorly drained. The other two soil complexes in the park and the Alpin fine sand soils are moderately to excessively drained soils typical of uplands. Complete descriptions of these soils are included in the Appendix. .

Soil disturbance and erosion from surface water runoff continue to be two very important resource management problems monitored by park staff. Specifically, these two factors are highly detrimental to the already fragile and unstable, steep-sided sinkhole lakes in the park. Sinkhole lakes that are continually exposed to this type of environmental stress will eventually become degraded. 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 Peacock Springs I, II, and III, 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. Since abrupt changes in water quality have been directly linked to declines in troglobitic fauna at Peacock Springs (Streever 1991, 1992a, 1992b), DRP should continue to retrofit park facilities in such a way as to facilitate the greatest amount of natural infiltration of runoff as possible. Areas within the park that are most prone to significant soil erosion include service roads, footpaths, and high visitor use areas around ecologically sensitive karst features such as Olsen Sink. Early efforts to correct soil erosion and compaction at Peacock Springs have included the realignment of parking areas, closure of strategic roads and construction of water bars to intercept, slow, and re-direct surface water sheetflow across the natural landscape away from sensitive karst features. The construction of boardwalk and step structures at Peacock I and Orange Grove Sink has considerably improved visitor access and significantly reduced the erosion at these sites. However, other significant erosion issues occur at the park, and surface water runoff continues to be one of the park's primary ecological threats. In 2007, a majority of the main park drive from the entrance to the Peacock Springs I-III parking area was stabilized using recommendations from a DRP-led engineering proposal concerning best management practices for unpaved roads (Document in files at District 2 office, DRP). Additionally, a geotechnical study was completed to determine potential weight restrictions for the road to account for the likely presence of a network of cavities just below the road surface. Some sections of this stabilization and restoration work remain unfinished due to limited funding. These include much of the lowest elevation area near the Peacock Springs I-III visitor parking lot, as well as service roads leading from this lot to the park office. Even though some early restoration work was done near Peacock III, additional terracing and surface water runoff diversions will be necessary at this location. The main parking lot adjacent to Peacock Springs I-III continues to suffer erosion during heavy rainfall events. During significant Suwannee River flood events, this parking lot can be completely submerged, which complicates the erosion issue even further. In addition, the visitor and diver approach leading to Peacock III still channels runoff and therefore its slopes suffer from soil erosion as water runs off into Peacock III. Historically, both Olsen Sink and Bonnet Spring have experienced significant amounts of soil disturbance due to divers and other visitors traversing the steep slopes above these karst features. In response to this threat, DRP closed these sensitive sites to public access until visitor use guidelines could be developed. Recreational diving has since not been allowed at Bonnet Spring, and Olsen Sink has only been used as an escape route for divers during an emergency. Olsen has greatly benefited from its closure as a public or diver access point. However, limited park staff makes enforcement of closure difficult at these sites, which are two of



WES SKILES PEACOCK SPRINGS STATE PARK

Soils

N

Feet

0 1,000 2,000

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the most pristine and fragile areas within the park. Since Bonnet Spring has a population of resident alligators, safety is also a critical concern that must be managed at this site. Visitor access improvements were completed in 2010 at Olsen Sink in an effort to reduce soil disturbance and erosion at this nearly pristine karst window. The improvements provide visitor interpretation about this sensitive karst feature. This sinkhole lake is one stop on a new interpretive hiking trail that was developed with the assistance of the North Florida Springs Alliance (NFSA), the park's Citizen Support Organization. Management activities will continue to follow DRP's accepted best management practices to prevent further soil disturbances and to protect the parks soil and water resources.

HYDROLOGY

Wes Skiles Peacock Springs State Park is located just north of Reach 3 of the Middle Suwannee River basin in southwestern Suwannee County (Hornsby et al. 2002). The park contains an extraordinary number of unique karst features, including two spring systems that only infrequently discharge enough groundwater to create spring runs. The Peacock spring run, with an occasional contribution of flow from Bonnet Spring, forms the backbone of Peacock Slough, a riparian corridor that extends south about 1.7 miles to the Suwannee River.

Regionally within the Middle Suwannee River basin, which includes Peacock Springs, the upper Floridan aquifer extends close to the surface and is unconfined (Florida Geological Survey 1991). Additional named springs and other karst features similar to those at Peacock Springs are located upstream and downstream of the park along this stretch of the Suwannee River. Groundwater discharge from these hydrologic features significantly augments the base flow of the Suwannee River and is in fact the primary source of inflow to this section of the river. Spring flows constitute about half of the discharge, with the remaining amount attributed to other groundwater sources that re-emerge directly from the river bottom (Pittman et al. 1997). During flood stage of the Suwannee, however, this cycle may reverse as springs and karst windows begin to act as "siphons" or inflow points into the upper Floridan aquifer. When the river stage is greater than 26.5 feet, overland flow from the Suwannee River can back-flood Peacock Slough and ultimately siphon underground through karst features at Peacock Springs. Research has indicated that substantial nitrate loading and other water quality issues are associated with river and groundwater mixing along this reach of the Suwannee River, including at Peacock Springs (Katz et al. 1999; Katz and Hornsby 1998; Berndt et al. 1998; District 2 files). In addition, previously documented flow reversals at Peacock Springs have provided us with an early understanding of cyclic troglobite die-off and recovery episodes (Streever 1991, 1992a and 1992b).

Peacock Springs and other karst features

Included among the numerous sinks and depressions found in the park are named features such as the Peacock Springs Group (I-III), Bonnet Spring, Pump Spring, Baptizing Spring, Challenge Sink, Cisteen Sink, Olsen Sink, Orange Grove Sink, Pothole Sink and Waterhole 3 Sink. While all of these features are significant, the aquatic cave system that surfaces at Peacock Springs I, II and III, and at Orange Grove Sink, gives the park its unique identity.

The Peacock Springs Group (I-III) consists of a series of three interconnected karst windows. Overland discharge from these three windows, when they occasionally act as "spring vents," is directly dependent on the potentiometric surface of the upper Floridan aquifer. However, this type of discharge seems to be very infrequent. Of the Peacock Springs Group, Peacock I (the northernmost spring) is the primary entrance into a very large and complex aquatic cave system. Cave divers also frequently access the cave system via Orange Grove Sink.

The labyrinth of underground conduits at Peacock Springs is world-renowned for its complexity and length. Certified cave divers have been exploring its depths since the late 1950s. By 2012, divers had mapped nearly 10 miles of caves in the system. Many of those divers are now associated with the North Florida Springs Alliance (NFSA), and they continue to map, maintain and promote the park's aquatic cave system as a recreational, training and research destination.

Spring runs from the Peacock Springs Group and Bonnet Spring occasionally carry water. The runs converge within the park about 1,250 feet downstream from Peacock III to form an intermittent spring-run stream. That stream, along with adjacent floodplain swamp and alluvial forest, forms Peacock Slough, a broad wetland corridor that links Peacock Springs to the Suwannee River at a point between river miles 95 and 96 (Gulley et al. 2011). The bottom of much of the upper spring run consists of elaborate, stair-step limestone bedding. The hydroperiod of wetlands bordering Peacock Slough is largely dependent on water levels in the Suwannee River, which can fluctuate by several feet, and to a lesser extent on flows from the two upstream spring systems. The Suwannee River Water Management District (SRWMD) has calculated the following flood elevations for two, 10 and 100-year events along the river mile 95-96 stretch of the Suwannee River. All data are expressed as feet above mean sea level.

Suwannee River Flood Elevation Calculations				
Event	**2-year**	**10-year**	**100-year**	**Flood of Record**
River Mile 96	32'	43'	50'	52'
River Mile 95	32'	42'	49'	51'

Following approval of the previous unit management plan in 2002, the state acquired an important property north of Luraville Road that more than doubled the acreage of Wes Skiles Peacock Springs State Park. This parcel contains a significant portion of the up-gradient Peacock springshed, although there has been no formal delineation of the springshed yet and the proximal source of flow from the upper Floridan aquifer into the park's cave systems is still partially unknown. Based on current cave maps, however, it is obvious that the acquisition plays an important role in protecting the Peacock springshed.

Water Quality

Within the park, the two primary water quality issues are pollution of the groundwater by nutrients and erosion and sedimentation within sensitive karst features. Sporadic water quality monitoring data are available for Peacock Springs (Hornsby and Ceryak 1998; Maddox et al. 1998; DEP 2011a). A groundwater monitoring well (041227001), located southeast of the park, provides data about the Floridan aquifer. Much of the important hydrological information collected, stored and managed by state water management agencies can now be accessed through a variety of web-based databases (U.S. Geological Survey (USGS) 2011, DEP 2011a, DEP 2011b).

During the late 1980s, DEP and the SRWMD collaborated to establish a long-term Very Intense Study Area (VISA) monitoring network to quantify the effects of various land-use activities on regional groundwater quality (Maddox et al. 1998). The Lafayette County VISA site, one of 22 selected throughout the state, is situated within a 28 square mile area adjacent to the Suwannee River and just south of the park. Both Telford Spring (TEL010C1) and Running Springs (RUN010C1), located upstream and downstream of Peacock Slough, respectively, are sampled as part of that VISA.

Within the Middle Suwannee River basin, nutrients, particularly nitrates, have steadily increased over the past 50 years (Ham and Hatzell 1996). Since this region of the basin lacks any major tributary inputs other than upstream drainage, increased nutrients in the water are directly attributable to historic and current groundwater contamination (Katz and Hornsby 1998). Much of the region surrounding Peacock Springs is historically rural and has no heavy industry. Agriculture is the primary economic driving force in the area. Scientific evidence now clearly indicates that agricultural activities surrounding Peacock Springs have played a significant role in long-term contamination of the groundwater (Cohen et al. 2007). This contamination has direct links to inorganic sources and specifically to agricultural fertilizers (Maddox et al. 1998).

Quarterly water quality monitoring in 18 important springs in Florida, including two sites at Wes Skiles Peacock Springs State Park, took place from 2000-07 (DEP 2008). Reports from this work, referred to as an Ecosummary, contain quarterly ecosystem health assessments of Peacock Spring I and Orange Grove Sink. Findings in the assessments revealed that the surface water quality at each of the two sampled sites was very similar, indicating that the two karst systems are closely interconnected.

During the seven-year Ecosummary monitoring period, nitrate-nitrite levels were consistently high at both the Peacock Springs study site (ranging from 1.0 to 2.5 milligrams per liter) and the Orange Grove Sink site (1.9 to 2.4 milligrams per liter). Of the 18 springs monitored, those two sites ranked among the five poorest in water quality based on the nitrate-nitrite parameter. The occurrence of elevated nitrogen levels at these two sites is not particularly surprising given the long period of record, 1973 to present, during which nitrate-nitrite levels averaged just over 2 milligrams per liter (District 2 files). Unfortunately, an increase in nutrients in groundwater contributes to an overall decline in spring ecosystem health (Wetland Solutions Inc. 2010). Naturally occurring background levels for nitrates in groundwater should be less than 0.01 milligrams per liter (Cohen et al. 2007).

Another revelation of the Ecosummary was that the surface waters at Peacock Springs had fluctuating, low levels of dissolved oxygen. Any decrease in dissolved oxygen in these karst systems can cause a decline in abundance of invertebrate grazers and a consequent increase in periphyton accumulation within the system (DEP 2006; Mathew Cohen unpublished research). At this time, only baseline periphyton data have been collected at Wes Skiles Peacock Springs State Park. Nonetheless, the U.S.

Environmental Protection Agency (EPA) has suggested that water bodies with periphyton levels exceeding 150 milligrams per meter squared may be biologically impaired and may experience a decline in ecosystem health. When the visible presence of nuisance algal biomass in a spring begins to interfere with the aesthetics and recreational use of the site, it is considered an indication of an imbalance of aquatic flora (Rule 62-302.500 (48) (b) F.A.C.). There is now widespread recognition that periphyton is increasing in abundance in nearly all of Florida's springs, and that this is a symptom of declining spring health (Mirti et al. 2006; Stevenson et al. 2007).

DEP began a long-term water monitoring program in the late 1990s that was based on the state's natural hydrologic units. This program uses a watershed approach to provide a framework for implementing the Total Maximum Daily Load (TMDL) requirements necessary for restoring and protecting water quality in specific water bodies (Hallas and Magley 2008). Implementation of a Basin Management Action Plan (BMAP) is DEP's primary resource for addressing specific water quality issues (DEP 2007). The DEP Basin Status Report for this region indicates that Peacock Slough, and therefore water bodies associated with Peacock Springs, became potentially impaired in 2001 because of high nutrient loading and the proliferation of algal mats (DEP 2001).

Currently, Peacock Slough is listed as a verified impaired water body based on these two parameters, which means that its surface waters do not meet applicable state water quality standards (Hallas and Magley 2008). DEP is currently developing a BMAP for the Suwannee River, including Peacock Slough.

One measure of spring ecosystem health is troglobite abundance (see *Imperiled Species* section for additional information). Troglobite populations have been monitored at Peacock Springs since at least the early 1990s. At this time, it is still unknown how water quality impairments may have affected the Peacock Springs troglobite populations over the long term. However, when the Suwannee River floods, which usually occurs annually in the early spring, river waters are elevated above the upper surface of the Floridan aquifer. During these flood events, there may be an insurgence of the Suwannee River's tannin-stained waters into the Peacock Springs cave system. Rather rapid, large-scale changes in the usually stable environment of the aquatic caves may occur. One frequent consequence of these surge events may be a noticeable die-off of troglobite fauna (Streever 1991). Park records contain documentation of past die-offs and subsequent recovery periods.

Due to the unconfined nature of the park's numerous karst features, the sinks and aquatic caves at Wes Skiles Peacock Springs State Park are very vulnerable to potential contamination from surface waters that may contain pollutants (Cichon et al. 2004). Because of that potential threat, DRP staff is ever watchful for signs of increased stormwater erosion, sedimentation and turbidity in the wetland systems at Peacock Springs. Visitor use at significant karst features such as Peacock Springs I-III and Orange Grove Sink is heavier than at some other areas in the park. The primary disturbance factors at these sites are erosion and sedimentation caused by regular foot traffic or by divers as they enter and exit the karst features. Other threats derive from the sheetflow of surface waters across exposed limestone and soils, especially in disturbed areas such as unpaved parking lots and service roads or where foot traffic is concentrated, and groundcover is sparse.

During 2001-02, boardwalks, platforms and steps were installed at two of the most visited natural features in the park, Peacock I and Orange Grove Sink. Also, during this time staff installed strategically located water bars in areas around the Peacock Springs I-III parking area in order to divert stormwater sheetflow away from the spring vents. In 2007, staff stabilized the majority of the unpaved main park drive with additional soil and gravel, constructing a series of water bars and adjusting gradient slopes along the roadway in the process. In 2010, park staff and the park's citizen support organization (North Florida Springs Alliance) planned and constructed a simple overlook structure at Olsen Sink to enable interpretation of the sink and to mitigate erosion and water quality issues. These structures and improvements, plus a realignment of the park entrance road, have significantly improved hydrological conditions in the park and now allow sheetflow to move more naturally across the landscape.

Water Quantity

Water managers have recently begun to address concerns about the quantity of the water that discharges from major springs in Florida (Upchurch and Champion 2004). The development of "Springshed Protection Areas" has evolved into a strategy to protect specific areas within a springshed from "significant harm" (Chapter 373.042 F.S.). Many of Florida's largest springsheds have undergone a detailed delineation process. However, the Peacock springshed has not yet been completed (Florida Geological Survey (FGS) 2007). To achieve a better understanding of trends in groundwater levels within springshed protection areas, the SRWMD has developed a high-resolution monitoring program whereby water levels are measured in a large number of wells scattered throughout the basin (Upchurch et al. 2001).

Based on available groundwater data, water managers now know springshed boundaries are not static. They can change dramatically over time, depending on the amount of consumptive use of groundwater taking place in various parts of the springshed. Recent research has revealed that a significant region 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. The shift appears to be in response to the artificial depletion of groundwater reserves caused by large-scale pumping in Duval and Nassau counties (Grubbs and Crandall 2007). This regional drawdown may be partially responsible for shrinking springsheds and declining spring flows within parts of the SRWMD (Mirti 2001; Grubbs and Crandall 2007). Both water management districts are now attempting to coordinate more closely when issuing consumptive use permits and monitoring groundwater withdrawals.

Current drought levels and increasing consumptive use of groundwater resources have generated strong concerns about lowered water tables and decreased spring flows throughout the Suwannee River basin. The SRWMD is responsible for prioritizing and establishing Minimum Flows and Levels (MFLs) for water bodies within its boundaries. It is currently developing an MFL for the Middle Suwannee River, including Peacock Springs, with a scheduled date of 2024. Once an MFL is established, implementation of a springs protection area for Peacock Springs will be based on projected relative impacts of groundwater withdrawals and on vulnerability of the aquifer (SRWMD 2005).

Peacock Springs essentially has three documented spring systems, Peacock Springs I-III, Orange Grove Sink and Bonnet Spring, all of which are classifiable as second-magnitude springs when they produce overland flow. Discharge from the three springs is intermittent and highly variable, and therefore it has been difficult to obtain accurate and timely flow measurements. Peacock Spring III acts as a siphon during normal to low water levels and often captures the discharge of Peacock Springs I and II. When the Suwannee River floods, all three springs may reverse flow and function as siphons.

During periods of high discharge from the aquifer, all three act as springs. Below is a summary of all discharge data for the springs within the park (Rosenau et al. 1977; Hornsby and Ceryak 1998; DEP 2011a).

Spring Discharge Measurements from Wes Skiles Peacock Springs State Park			
Spring Name	**Date**	**Discharge (cfs)**	**Data Source**
Peacock Springs I-III	Oct. 20, 1973	14.8	USGS
Peacock Springs I-III	July 30, 1997	8.87	SRWMD
Peacock Springs I-III	June 16, 1998	91	DEP STORET
Peacock Springs I-III	July 29, 1998	31.3	SRWMD
Peacock Springs I-III	Aug. 19, 1998	24.8	SRWMD
Bonnet Spring	June 2, 1998	40 estimated	SRWMD
Orange Grove Sink	May 8, 1998	28.7	SRWMD

On Nov. 20, 1973, the USGS observed a reverse flow from Peacock Slough into Bonnet Spring. At the same time, the USGS measured 14.8 cubic feet per second discharge emerging from Peacock Springs I-III. The only known measurement of flow from Bonnet Spring was during June 1998 when the SRWMD estimated a flow of 40 cubic feet per second. Park staff began to document and track all significant discharge events in the Peacock Spring system in 2010. Orange Grove Sink is located to the northeast of Peacock Slough and rarely has a surface water connection with the slough. When Orange Grove discharges overland, it flows for only about 250 feet before entering an unnamed swallet.

Some cave experts have suggested that it may be more appropriate to consider the unique geomorphic features of Peacock Springs not as a spring system but as a swallet plateau (i.e., a karst region with a broad transitional scarp) that experiences occasional groundwater overflows (Wes Skiles, personal communication 2008). That interpretation of Peacock Springs hydrology recognizes that it is much more complex than a simple siphon or spring system. Measuring spring run discharges at Peacock Springs may actually be misleading since overland flows do not reflect the large volumes of groundwater that move internally through deeper parts of the cave system. A large proportion of Wes Skiles Peacock Springs State Park's groundwater may not even discharge through surface features within the park, but instead passes through the system to unknown discharge points, presumably down gradient within the Middle Suwannee River basin (Wes Skiles, personal communication 2008). Indeed, the strongest flow rates at Peacock Springs have been measured within the cave system at depths below 180 feet.

If MFLs are to succeed in providing water bodies with adequate protection against significant harm, it will be important to have a diverse group of stakeholders assist in guiding the MFL review process. One responsibility of DEP is to review annual MFL priority lists submitted by water management districts for water bodies within their regions. Participation by DEP in the review process is important, especially since significant problems (e.g., declines in spring flows) have occurred at some other springs in DRP District 2 such as Madison Blue, Fanning and Manatee Springs, despite their already having MFLs recently assigned to them (SRWMD 2004; SRWMD 2005). For example, scientists and cave divers have documented the first flow reversal ever recorded at Manatee Spring (i.e., since regular measurements were begun in the early 1900s), which lasted over a week (District 2 files).

Strong evidence now exists to support the premise that declining spring flow rates correlate with increased nutrient levels in springs and spring runs (Cohen et al. 2007). Given the recent documentation of flow reductions within other nearby springs (e.g., Ichetucknee River) and trends toward shrinking springsheds in the SRWMD, it will be important for DRP staff to continue to engage with other agencies and the public in cooperative efforts to maintain high standards of water resource protection in the Peacock Springs region.

Objective A: Assess the park's hydrological restoration need***s.***

- Action 1 - Work closely with agencies and independent researchers engaged in hydrological research and monitoring programs.
- Action 2 - Encourage appropriate hydrological experts to initiate a complete delineation of the springshed for Peacock Springs.
- Action 3 - Continue surface and ground water quality monitoring at Peacock Spring III and the tracking of water quality changes within this system.
- Action 4 - Identify specific locations along the tramway for breaching or for culvert installation.

The main hydrological feature of Wes Skiles Peacock Springs State Park is its world-famous aquatic cave system that has been extensively mapped by the cave diving community. Numerous research and monitoring efforts by the SRWMD, DEP, USGS and experts in the cave diving community have produced an abundance of information documenting the hydrology of the Peacock Springs system (see details in the *Hydrology* section above). The following are hydrological assessment actions recommended for the park.

DRP will continue its tradition of closely cooperating with agencies and independent researchers engaged in hydrological research and monitoring programs at Peacock Springs, and it will encourage and facilitate additional research in those areas. Cooperative efforts may include facilitating the review and approval of research permits and providing researchers with assistance in the field, including orientation to park resources. Recommendations derived from that research will be essential to the decision-making process during management planning.

To protect the water quality and quantity of the park's sensitive karst resources, as well as its unique biota, it is of critical importance to understand the extent of the Peacock Springs springshed.

DRP should seek funding for dye trace studies to determine the groundwater sources of the Peacock Springs system and to identify lands that may require extra protection. The proximal source of the flow from the Floridan aquifer into the cave systems has not yet been determined. To ensure the continued purity of the Peacock Springs system, the up-gradient sources of the springs must be identified. Dye trace studies in other managed springsheds have provided park management with invaluable information about the various sources of the springs and the timing of surface to groundwater interactions that potentially affect important surface water bodies.

Other hydrological assessments needed include continued surface and groundwater quality monitoring at Peacock Spring III and the tracking of water quality changes within this system. Based on indications of deteriorating groundwater quality and increased nutrient loading within middle Suwannee River VISA, this third reach of the river is currently listed as a verified impaired water body for nutrients and dissolved oxygen (see details in the *Hydrology* section above). Peacock Slough (as part of the Suwannee River watershed) is currently undergoing Basin Management Action Plan (BMAP) planning. DRP will continue to participate in the BMAP process and work with DEP regulatory personnel in seeking the best available options to reach the Total Maximum Daily Load (TMDL) assigned to the Peacock Springs system.

Staff will also monitor land use or zoning changes within the surrounding landscape bordering the park's resources. Any major ground disturbances in that area, or any runoff into the sinks and springs north of the unit, could seriously degrade the quality of the resource. Given the opportunity, staff will provide comments to other agencies regarding proposed changes in land use or zoning.

The above-grade abandoned tram bed which crosses the unit diagonally may need to be breached in several additional places or have culverts installed to restore a more natural hydroperiod to areas of the unit that are regularly inundated. At least one section of the tram bed has already been breached and stormwater flow appears to be channelized here.

DRP will continue to work closely with the SRWMD to ensure that MFLs developed for the Middle Suwannee River are conscientiously implemented and that spring flows do not decrease to the point that the Peacock Springs system suffers significant harm.

Objective B: Restore hydrological conditions to approximately 200 acres of aquatic cave natural community.

- Action 1 - Implement effective erosion control measures to protect water quality in all the surface waters of the park.
- Action 2 – Consider the strategic design and construction of additional water bars to slow moving water and minimize erosion during strong storm events.
- Action 3 - Monitor and manage access into sensitive karst areas including the two main visitor points of entry, Peacock Springs I-III and Orange Grove Sink.

Several important karst features within the park continue to experience significant erosion and sedimentation despite numerous corrective measures. Some of the most important features still affected by excessive soil disturbance are Peacock Spring III, Bonnet Spring, Olsen Sink, Baptizing Spring and Pump Spring. However, every karst feature in the park is critical in that each one may directly affect the hydrological condition and function of over 200 acres of known subterranean aquatic cave community. In that respect, DRP will investigate best management options to continue to improve public access to the park's two most popular visitor access points, Peacock Springs I-III and Orange Grove Sink, while limiting access to other more sensitive karst areas. Below are hydrological restoration actions recommended for the park.

In regard to erosion control measures, DRP staff should continue the erosion and stabilization work between Orange Grove Sink and Peacock Springs I-III as funds become available. Management will comply with best management practices to maintain the existing water quality onsite and will take appropriate action to prevent soil erosion or other impacts to water resources.

Human-related disturbances such as unauthorized foot traffic in and out of sensitive features greatly exacerbate soil disturbance. Park staff will identify and eliminate visitor access to unauthorized trails that breach the floodplain wetlands or sensitive karst features.

Even though the park has made significant progress in rectifying key erosion issues at Peacock Springs I-III, additional boardwalks, stairs and parking area improvements may still be needed in troubled locations. Floodplain areas receiving heavy visitor use will also be stabilized when soil disturbance is observed. One such area that will be monitored is along the new interpretive hiking trail. Parking area and service road runoff will be diverted away from sensitive karst features and as much as possible into surrounding woodlands to encourage natural infiltration. Unfortunately, in some areas, such as near Peacock III, very little soil overlays the often-exposed limestone bed and engineered stormwater retention may be infeasible.

Olsen Sink, one of the most scenic and fragile sites within the Peacock Springs system, is especially vulnerable to increasing recreational pressures. Historically, Olsen Sink and Bonnet Spring both experienced significant amounts of soil disturbance due to divers and other visitors traversing the steep slopes above these sinkhole lakes. In response to this threat, DRP closed these sensitive sites to public access until visitor-use guidelines could be developed. Recreational diving has since been prohibited at Bonnet Spring, and Olsen Sink has only been used as an escape route for divers during emergency ascents. Olsen Sink has greatly benefited from its closure as a public or diver access point. However, having a small number of park staff makes the enforcement of closures at these sites difficult. Both Pump and Baptizing springs, located in the park's new addition, have significant amounts of soil disturbance along their steep slope banks. Trash dumping occurred prior to state acquisition in limited areas on the new addition, and these sites will require a thorough cleanup.

All visitors will be directed to use specific walkways or trail systems, especially around karst features. Additional wooden decking, stairways and waterfront access platforms should be constructed where necessary to mitigate erosion and safety issues.

Objective C: Monitor impacts of visitor use on the cave system.

- Action 1 - Aggressively investigate all reports of vandalism in the cave environs.
- Action 2 - Continue to develop and implement baseline surveys and monitoring programs for the Peacock Springs cave system that assess biological and physical conditions.
- Action 3 – Regularly monitor and conditionally assess any cave entrances that are more susceptible to erosion prior to future consideration for any dive activity.
- Action 4 - Manage the cave systems to protect sensitive fauna and include an assessment of natural and human impacts.
- Action 5 - Distribute and post a series of guidelines to identify detrimental activities that are forbidden such as the use of motorized diving scooters or purposefully disturbing the silt layers.

DRP staff will continue to coordinate with cave experts as to cave assessments and disturbance issues. Cave assessments should include monitoring within Orange Grove and Peacock I caves given that these two entrances endure higher levels of recreational use than the rest of the system.

DRP will continue to support monitoring and assessment of the condition of all cave entrances and their environs. Accordingly, DRP will coordinate with an existing spring management team that has provided numerous recommendations regarding use and management of the Peacock Springs cave system. This team includes certified cave divers from the North Florida Springs Alliance (NFSA), particularly those who have already volunteered significant time and resources in studying the cave systems of the park or who belong to a national cave diving organization such as the National Speleological Society Cave Diving Section. Also included are professionals with relevant expertise in aquatic cave biology, and representatives from DEP. The ability of DRP to make sound and informed management decisions will be based on team recommendations, adaptive management and a detailed knowledge of the resources.

DRP staff will work closely with the team to develop and establish standardized photo points at select areas within the cave system. These photo-point locations will be monitored on a regular basis to track the condition of certain passages and rooms that are popular with cave divers. If necessary, DRP will modify public access and establish science-based carrying capacities at the primary and secondary dive access points in the park. Appropriate limits should be set and enforced for all recreational diving. Cave diving carrying capacities will be used if resources show signs of unacceptable levels of disturbance from visitor-use impacts.

In 2010, DRP staff collaborated with the NFSA and the local dive community to construct an overlook and interpretive panel at Olsen Sink. Olsen Sink will continue to be closed as an entrance for recreational diving. Additional cave entrances that are highly susceptible to soil disturbance will also be closed to diving except for research dives sanctioned by special permit. These include Pump Spring, Baptizing Spring, Challenge Sink, Pot Hole Sink, Waterhole 3 Sink and Cisteen Sink. The sinkhole lakes will continue to be closed to open-water scuba divers and swimmers to protect these resources from erosion and degradation.

Cave diver training and certification dives should be restricted to Peacock Spring I or Orange Grove Sink. Park staff will continue a diver check-in system to track daily cave use. Unauthorized access to the cave system by non-certified cave divers must be prevented out of concern for both the resource and for visitor safety. The advice of cave diving organizations will be considered in making these decisions.

Cave diving activities will be monitored to determine if there are any negative impacts on the cave fauna. The possible effects of divers on cave fauna within the Peacock Springs system are unknown. Hydrologic events will also be monitored to determine their effects on troglobite populations. DRP will continue to support ongoing cave faunal surveys to monitor trends of these imperiled species. Survey data will be used to generate recommendations for the protection of troglobites, which could include the setting aside of restricted areas and the determination of appropriate numbers of divers for the caves.

DRP staff will work with the North Florida Springs Alliance, the National Association of Cave Divers and the National Speleological Society Cave Diving Section to support interpretive programs that educate cave divers about cave preservation and proper behavior within caves.

NATURAL COMMUNITIES

Upland hardwood forest

This natural community occurs primarily on slopes above the bottomland forest that borders Peacock Slough and grades into the upland pine higher up the slopes. Upland hardwood forest is also found associated with Pump Spring and Baptizing Spring and numerous sinkholes, karst windows and shallow depressions of various sizes in the northern end of the park. This natural community may have formed a swath from Pump Spring arcing toward the eastern edge of the park. Smaller areas of this community type may also be found on low ridges within the bottomland forest.

The boundary between the upland hardwood forest and the upland pine has been modified due to decades of timber harvest and fire suppression. Historic industrial forestry practices likely planted slash pine in areas that were previously upland hardwood forest. Conversely, some areas mapped as upland hardwood forest may, in fact, have been upland pine. Southern red oak was selectively logged at one time in the northern part of the park (park neighbor personal communication).

Although some selective logging occurred historically in the upland hardwood forest in the southern end of the park, it is currently in good condition and is a prime example of the secondary climax forest of the region. Impressive specimens of laurel oak and Florida maple (*Acer saccharum* subsp. *floridanum*) are scattered throughout the area. The upland hardwood forest in the northern end of the park, in contrast, was impacted by silviculture in the past and almost completely cleared prior to state acquisition in 2007. Management of the upland hardwood forests at Peacock Springs State Park will require periodic monitoring and removal of invasive plant and animal species. Future re-evaluation and remapping of the historic extent of upland hardwood forest should be based on LIDAR data, remnant plant species and soils data.

Upland pine

Upland pine occurs primarily in the northern end of the park. Unfortunately, the majority of this habitat north of Luraville Road was dramatically altered during site preparation for conversion to industrial slash pine plantations in the 1970s. The upland pine borders upland hardwood forest, generally occurring at elevations slightly greater than 45 feet mean sea level. At Peacock Springs State Park, this natural community probably constitutes a transition zone between the park's upland hardwood forest and sandhill that historically stretched for miles to the north, east and west.

The upland pine on either side of Luraville Road suffers from long-term fire suppression. That only a few adult longleaf pines survive is probably attributable to past logging activities. Southern red oaks are scattered throughout the area along with mockernut hickories and other remnants of upland pine, including a few imperiled plant species. This area has been heavily invaded by less fire-tolerant species, primarily laurel oak, live oak and sand live oak (*Quercus geminata*). Livestock grazing may have also occurred there in the past since the herbaceous layer is not as diverse as might be expected. A small remnant of upland pine, lying between an abandoned pasture and upland hardwood forest, remains intact in the southwest corner of the property. It is in fair condition, with many large sand post oaks and southern red oaks present. This site also retains small populations of wiregrass and pinewoods dropseed (*Sporobolus junceus*). These areas are considered to be in fair condition. There are small areas of highly disturbed upland pine located in the southeast corner of the park and along the southwest boundary. These areas were cleared many years ago, presumably for agriculture.

The large area of upland pine to the north of Luraville Road was in commercial silviculture since before 1977. As a result, miles of windrows consisting of timber harvest debris and soil were formed after the harvest of the original longleaf pine forest. These windrows remained in the original location, in which they were formed when the longleaf forest was converted to plantations. Most of the slash pine plantation acres north of Luraville Road were harvested and replanted in slash pines in the early 1990s. Just prior to state acquisition of the park in 2007, the interior pine plantations in zone PS-2C and PS-2D were harvested. The pine plantations in zone PS-2A and PS-2B remained in slash pine plantation at that time.

In early 2020, restoration began in this area. For a description of restoration activities see the "Restoration natural community" section.

Zones PS-2C and PS-2D were almost completely cleared of standing pines and hardwoods just prior to state acquisition. Most of the remaining trees are located on the perimeter of springs, sinks or other karst features. This area also contains miles of windrows from previous timber harvests. Some windrows actually were pushed into the sinkhole edge where the slope begins to change downward. There are scattered saplings of southern red oaks and mockernut hickories in the zones which are primarily dominated by laurel oak saplings. Some areas have small patches of suppressed native pineland groundcover, but the area is quite disturbed in part due to its more recent harvest. It also has not been thoroughly evaluated for remnant groundcover.

Future restoration in PS-2C and PS-2D will require careful planning that takes into consideration all the springs, sinks and karst feature, and the existing windrow impacts to them, archaeological issues, and preservation of any remnant groundcover. Hardwood removal via mechanical or chemical methods, targeted windrow removal, direct seeding of groundcover species and planting of longleaf pines will all be components of the restoration in these zones. Prescribed fire will be an integral part of successful restoration. The PS-2C and PS-2D area is discussed further under the "Clear-cut pine plantation altered community."

Restoration of the upland pine is discussed further in the *Resource Management Program* section of this component. As restoration proceeds, staff will continue to monitor these areas for rare species that are endemic to these communities.

<u>Sandhill</u>
The only sandhill in the park lies above the 50-foot contour along the west boundary in both the north and the south sections. In the southern end of the park, the sandhill in zone 1D along the western boundary is situated slightly upslope of a band of upland pine that separates it from bottomlands surrounding Bonnet and Peacock springs. Although few remnants remain, the shift in soils on the slopes delineates the apparent upland pine-sandhill boundary. The sandhill fringe mapped along the western boundary at the north end of the park has been subjected to intense silvicultural practices over the past few decades. Despite past land use, there is remnant groundcover species in a very suppressed condition. This area was originally planted with slash pines in the 1970s and replanted with the same species in the early 1990s. The boundary between upland pine and sandhill is based primarily on topography since the existing planted pine plantation obscures the ecotone. The small sandhill fragments in the park represent the fringe of what was once an extensive expanse of natural sandhill covering hundreds of square miles of countryside north, west and east of the Peacock Springs system. Most of this land was historically cleared for agriculture and later converted to silviculture. The sandhill community in the park is presently in poor condition, but it is restorable.

Sinkhole and Sinkhole Lake

Because of underlying limestone, the entire unit is riddled with sinks and depressions characteristic of karst topography. Sinkholes and sinkhole lakes are scattered throughout the other natural communities. Due to the extreme variation in water levels of both the Suwannee River and the Floridan aquifer, many sinkholes hold water for varying lengths of time. Thus, they may be classified as either sinkholes or sinkhole lakes, depending on recent hydrologic events. Most of the sinkholes and sinkhole lakes in the unit are in good condition. The main concerns are erosion and sedimentation problems caused by visitor use or by improperly located roadways.

Many of the permanent sinkhole lakes in the park provide direct access to the extensive Peacock Springs cave system. These include Orange Grove Sink, Cisteen Sink, Olsen Sink, Pot Hole Sink, Challenge Sink and Waterhole 3 Sink. Some of these, such as Orange Grove Sink, are connected to the Suwannee River by surface flow during and after flood events. Pump and Baptizing springs are connected to an aquatic cave system, but the subterranean conduits are limited in size and exploration has been restricted. Sinkhole lakes on the new addition to the park also have connections to subterranean conduits. It is presumed that the apparent flow in the sinks and springs to the north is connected to the conduits that supply water to the sinks and springs in the southern end of the park. In general, the sinkholes and sinkhole lakes in the park are in good condition. The sinkholes and sinkhole lakes in the new addition were not directly damaged by the clearcutting of the surrounding lands due to vegetative buffers being left in place around all karst features.

Management of sinkholes and sinkhole lakes must emphasize protection. The edges of sinkholes need to be protected from impacts that could accelerate erosion and sedimentation problems. This is even more critical with sinkhole lakes since increased levels of erosion can cause a decline in water quality. Access to these areas, particularly the sinkhole lakes, is often restricted except for legitimate research purposes or other management activities. Monitoring of these communities for impacts from invasive plant and animal species will also be necessary.

Floodplain Swamp

The floodplain swamp borders Peacock Slough, which includes the spring runs of Peacock Springs I-III, Bonnet Spring and Orange Grove Sink. The floodplain swamp varies in width depending on topography. It is usually inundated during periods of normal high water, either when the Suwannee River floods or when the springs are flowing abundantly. Although this area was logged at one time, due to its age and lack of recent disturbance it represents the best example of a floodplain swamp associated with a spring run in the Suwannee River basin (Lynch 1984). It is considered to be in very good to excellent condition. The area is dominated by bald cypress with an understory of buttonbush (*Cephalanthus occidentalis*), pop ash (*Fraxinus caroliniana*) and swamp privet (*Forestiera acuminata*). The upper portion of the floodplain swamp borders a well-defined spring-run channel, while the lower portion is less well defined as the spring run broadens and the channels diverge and anastomose.

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

Bottomland Forest

Bottomland forest occurs below the 35-foot contour around Peacock Springs (I-III), Bonnet Spring and Orange Grove Sink. It also extends along the flats on both sides of Peacock Slough above the alluvial forest and floodplain swamp that border the spring run. The transition between bottomland forest and upland hardwood forest may be gradual or abrupt depending on the angle of the slope. The same holds true for the transition between bottomland forest and alluvial forest or floodplain swamp. Shallow sinks and wet depressions are scattered throughout much of the bottomland forest.

The bottomland forest at Wes Skiles Peacock Springs State Park is in very good condition despite selective logging in the past. It represents an excellent example of mature second growth and old growth bottomland forest (Lynch 1984). The canopy is dominated by laurel oak, live oak and water hickory while the understory is relatively open.

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 that are 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.

Alluvial Forest

Small areas of alluvial forest are scattered throughout the bottomland forest and occur sporadically in a transition zone between the floodplain swamp and bottomland forest. Topographic relief determines the community's frequency of inundation, which forms the primary basis for distinguishing between alluvial forest and bottomland forest. The alluvial forest in the park is generally in excellent condition.

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

Spring-run Stream

The intermittent spring-run stream that connects Peacock and Bonnet springs to the Suwannee River varies enormously in size both seasonally and annually. When Suwannee River floodwaters inundate Peacock Slough, several upstream karst windows serve as siphons and reverse flow into the Floridan aquifer occurs. For a period after the waters recede, these windows discharge as springs and create a spring-run stream. As the potentiometric level of the aquifer decreases, the discharge from the karst windows declines and eventually ceases altogether. When the spring run dries up completely, the exposed streambed supports an abundant diversity of herbaceous grasses and flowers.

Bonnet Spring and Peacock Springs I, II and III discharge into the spring-run stream, although Peacock III may also serve as a siphon for I and II during periods of low water. The total length of the spring-run channel from Peacock I to the Suwannee River is about 1.7 miles, of which approximately 3,000 feet is inside the park boundary. The length of the spring run from Bonnet Spring to the Peacock Springs run is about 1,250 feet. Additionally, Baptizing Spring in the north section of the park has a short spring run extending approximately 10 feet.

Submerged aquatic vegetation in the spring run is relatively sparse due to the ephemeral nature of the run. During periods of spring discharge, the green alga *Hydrodictyon reticulatum* is abundant, while during stagnant periods, duckweed (*Lemna* sp.) may completely cover the water surface. The spring run is in good condition, although some karst windows are infested with the exotic plant hydrilla (*Hydrilla verticillata*) and feral hogs have become increasingly problematic along the majority of Peacock Slough.

Management of complex aquatic systems is a difficult task. Since many factors affecting the spring-run stream originate outside the park within the Peacock springshed, management considerations must extend beyond the park boundary. Protection of groundwater sources within the Peacock springshed will be a priority when the boundary delineation of this watershed is complete. DRP staff will continue to work with the cave diving community and to coordinate the numerous research projects associated with the river and its springshed. Additionally, staff should document and track water clarity at select karst features of the park as a rapid response effort to identify significant changes that might occur in this natural community. Monitoring of this community for impacts from invasive plant and animal species will also be necessary.

Aquatic Cave

The Peacock Springs cave system has been extensively mapped and is one of the longest in Florida. Nearly 10 miles of passages have been mapped to date. Peacock Springs I, II and III, Bonnet Spring, Orange Grove Sink, Cisteen Sink, Olsen Sink, Pot Hole Sink, Challenge Sink and Waterhole 3 Sink all provide access to the aquatic cave system. Peacock Spring II is hydrologically connected to Peacock Springs I through underground conduits and the spring-run channel. Bonnet Spring has the only entrance to a separate cave system that may be hydrologically linked to the Peacock Springs system by means of smaller conduits (Wes Skiles personal communication). Peacock Spring III probably represents an independent link to the Floridan aquifer since its hydrodynamic pressure is less than that of the main cave system.

The Peacock Springs cave system seems to be in fair to good condition, depending on the level of use it receives by cave and cavern scuba divers. Much of the information available to DRP biologists about the recreational use of these caves and associated impacts is derived from communications with volunteer cave divers. The North Florida Springs Alliance has been an active volunteer group and consistent source of data for the park. In general, narrower passages experience higher levels of damage, whether from equipment scraping walls, from divers disturbing the clay or silt substrate, or from exhaled air bubbles dislodging fauna clinging to cave surfaces. Damage to the clay or silt layers may persist for long periods of time. This detracts from the natural beauty of the caves and may have unknown consequences for troglobites. Those caves in which certification or instructive dives are conducted may be subject to greater levels of use and consequent impacts.

Popular entrances into the cave system, such as Peacock Spring I and Orange Grove Sink, show the most significant degradation. The NFSA documented two separate cave vandalism events in 2007 and 2008 at Peacock Spring I. Peacock Spring III receives an intermediate level of use since it has relatively more silt and often acts as a siphon. Other entrances, such as Challenge and Pot Hole sinks, receive far less use from divers and are not as degraded (Vincent DeMarco personal communication).

Motorized diving scooters have also caused damage to the cave systems, particularly when used by less experienced divers. Most of the passages at Peacock Springs are too narrow to accommodate scooters without causing incidental damage to walls and substrate. Divers who are very familiar with the Peacock Springs cave system believe that virtually all passages now open to recreational diving, even the longer ones, can be navigated successfully without the assistance of scooters. Recreational use of diving scooters at Wes Skiles Peacock Springs State Park is prohibited. Divers wishing to conduct research in the cave system, however, may have a legitimate reason to use scooters. In these cases, permission may be granted via a standard research permit from DRP if the research is judged to be beneficial to DRP.

The Peacock Springs cave system harbors a number of rare species that exist only within aquatic caves, including the pallid cave crayfish (*Procambarus pallidus*), the Florida cave amphipod (*Crangonyx grandimanus*) and Hobbs' cave amphipod (*Crangonyx hobbsi*) (Lynch 1984). Dick Franz (Franz et al. 1994) also describes the swimming little Florida cave isopod (*Remasellus parvus*) from Peacock Springs. Very little is known about the population dynamics or ecology of these organisms, although their populations can vary greatly over time and space. The highest densities of the pallid cave crayfish are found within Peacock III, possibly due to the high organic input that occurs when Peacock III acts as a siphon (Streever 1991).

Periodic monitoring by cave divers will allow staff to monitor impacts on the aquatic caves, particularly Peacock Springs I-III and Orange Grove Sink. Research dives throughout this cave system provide details on the condition of the caves. Erosion of the slopes above the sinkhole lakes must also be monitored and corrected to prevent siltation of the aquatic caves.

Abandoned Field/Abandoned Pasture
An abandoned field is located in the southeastern corner of the park. Historical aerial photographs show that it was apparently used for agricultural crops in the past. It more recently may have been used for livestock, but it retains a mix of weedy vegetation. This part of the park was probably upland pine in the distant past. Given the complexity of restoring upland pine groundcover and the limited nature of this area, it is not the highest priority for restoration but will be included in the prescribed fire plan.

Historically, pastures were created in a variety of natural community types, including sandhill and upland pine. In some cases, they may have been used for agricultural crops prior to being converted to pastures. The abandoned pastures at Wes Skiles Peacock Springs State Park are restricted to the southwestern edge of the park and are adjacent to improved pastures on private lands. Given the difficulty of restoring sandhill and upland pine from bahiagrass pastures, restoration will not be a high priority. The abandoned pastures will be managed with prescribed fire to discourage off-site hardwoods such as laurel oaks and sweetgums from becoming established in former fire-type communities.

Clearcut Pine Plantation
Much of the northern addition to the park was managed for multiple harvests of industrial pine. Most recently, the mixed hardwoods and planted pines in the southeastern portion of the addition north of Luraville Road were clear-cut prior to state acquisition. In her archaeological field work at the site, Jill Loucks indicated that the area had been cleared, plowed and planted in pines in 1975 (Loucks 1978b). She noted that prior to that date, the vegetation had been longleaf pine and xeriphytic oaks in the higher elevations. However, closer to the springs, local observers indicated that, prior to clearing, the area was relatively moist and had flooded in 1973 during the flooding of the Suwannee and Santa Fe rivers. Jill Loucks observed soil characteristics indicative of a moister regime during her field work. All the forest except for large live oaks was cleared for pine planting around the springs (Loucks, 1979). Remnant tree species in the area around the springs included pignut hickory, American elm, Sugarberry and other species indicative of upland hardwood forest.

Long-term impacts from silviculture have blurred the original natural community boundaries. However, it is thought that the clearcut area was primarily upland pine or upland mixed woodland with a core of upland hardwood forest associated with the various karst features. Remnant southern red oaks and mockernut hickories occur onsite, but most are small specimens. Prior to beginning restoration in zones PS-2C and PS-2B, the upland hardwood forest natural community should be remapped to encompass its full original area. The current soils map does not accurately reflect the natural communities or the soils around the springs and karst features as the topography changes toward the southeastern area of zone 2C and northeast edge of 2D. After refinement of the natural community boundaries, restoration will focus on replanting of longleaf pines and reinstituting the natural fire regime in the upland pine/upland mixed woodland areas. Areas determined to be upland hardwood forest will be allowed to revegetate naturally. Pineland groundcover restoration will be necessary in areas where windrows are removed and possibly outside of the windrow footprints depending on the results of prescribed fires and any off-site hardwood removal. Due to the presence of cultural sites in the area, potential ground-disturbing activities such as windrow removal will be evaluated during the planning process. Regular treatment of invasive plant species will be needed in these zones.

Developed

The developed areas within the park include access roads, parking lots, restroom facilities, picnic areas and a residence and shop site in the southeast corner. A complete list of all the developed areas may be found in the *Land Use Component*.

Priority invasive plant species (Florida Invasive Species Council (FISC) Category I and II species) will be removed from all developed areas. Other management measures include proper stormwater management and development guidelines that are compatible with prescribed fire management in adjacent natural areas.

Impoundment/Artificial Pond

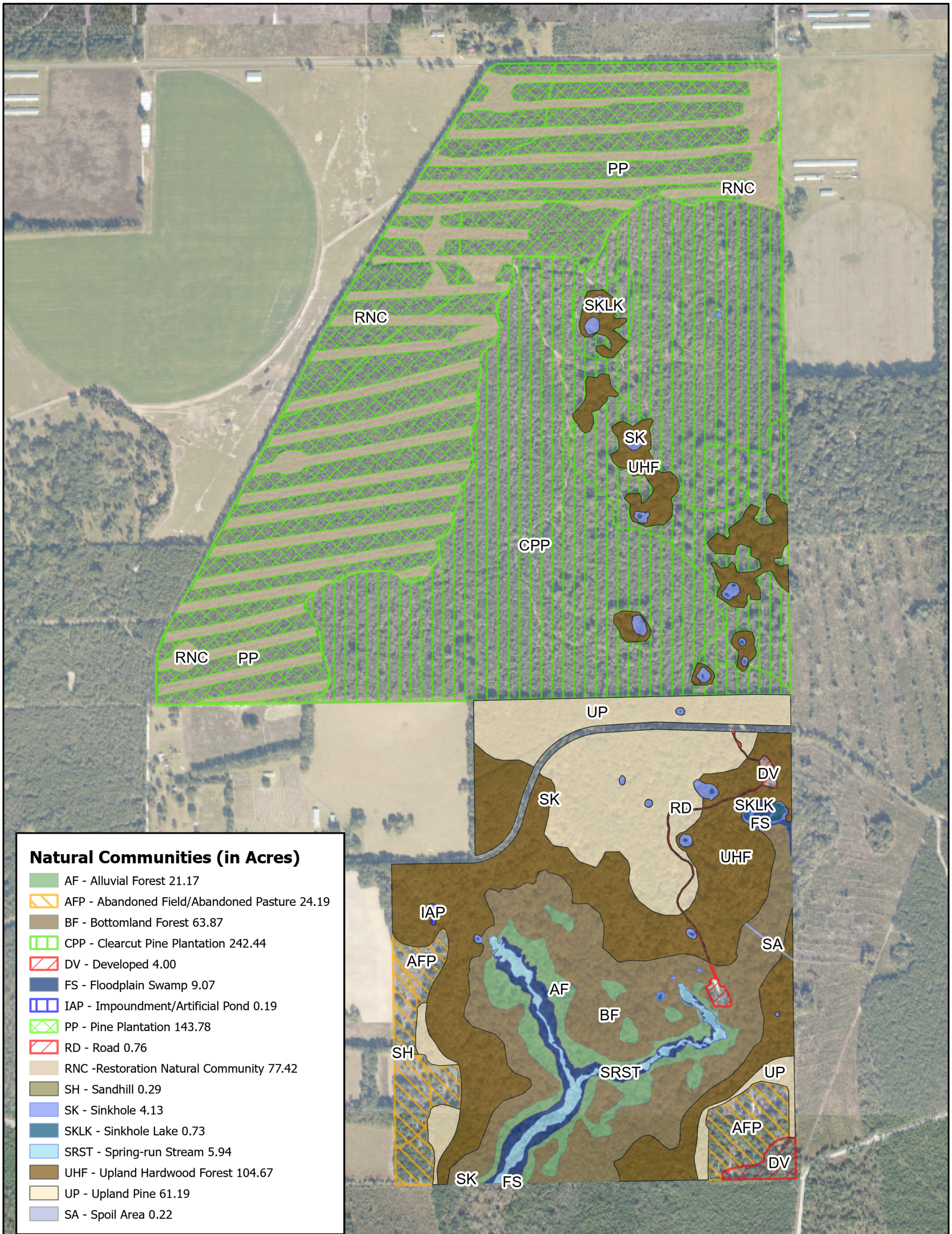
A small depression area near the west boundary shows evidence of extensive disturbance, possibly due to dredging or a small-scale mining operation for limestone or phosphate. The area includes pre-existing sinks that have been enlarged to form an elongated pond with multiple spoil piles along the banks.

Pine Plantation

Zones PS-2A and PS-2B north of Luraville Road still contain about 146 acres of slash pine plantation that was thinned in 2020 and 2021. It is thought that this area was originally upland pine with sandhill along the northwest edge. While these areas still retain slash pines that were planted as a plantation, restoration actions have begun. Steps taken to move the areas under pines toward restoration include multiple years of invasive plant treatment followed by a pine thinning and harvest of off-site hardwood species and, finally, an herbicide treatment of hardwood re-sprouts a year after timber harvest. The pine plantations will be treated with prescribed fire in conjunction with the interspersed restoration natural community. In the future, 10 to 15 years after the 2020-21 thinning, the slash pines will be clearcut and planted in longleaf pine.

Restoration Natural Community

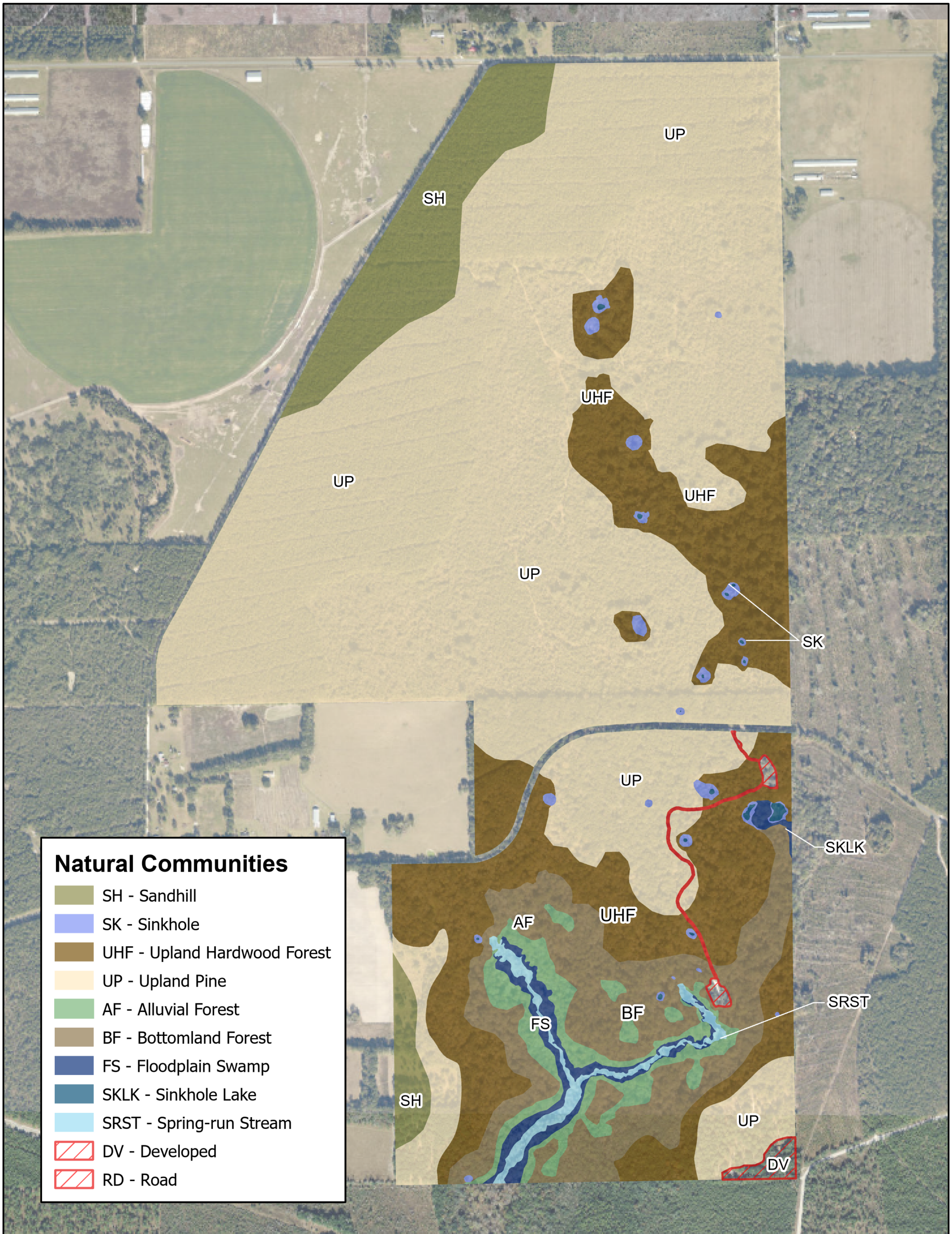
Prior to 2020, restoration actions in zones PS-2A and PS-2B consisted primarily of multiple years of invasive plant treatment and planning of restoration activities. In 2020, timber harvests and windrow removal began a more intensive phase of restoration of the pine plantation in zone PS-2B. The pines were thinned, off-site hardwoods were removed and two rows of pines on either side of every windrow were clearcut. In the fall of 2020, off-site hardwood sprouts were treated with herbicide in the pine corridors. In the clearcut windrow corridors, stumps were removed, piled and burned, and the soil was leveled to approximately the historic contour. The windrow corridors were lightly harrowed to create a seedbed for native groundcover species. Locally collected seed was harvested in late November and



WES SKILES PEACOCK SPRINGS STATE PARK

Natural Communities - Existing Conditions

Sources: ESRI; Florida Department of Environmental Protection
This graphical representation is provided for informational purposes and should not be considered authoritative for navigational, engineering, legal, and other uses.



WES SKILES PEACOCK SPRINGS STATE PARK

Natural Communities - Desired Future Conditions

N

Feet

0 1,000 2,000

Sources: ESRI; Florida Department of Environmental Protection
This graphical representation is provided for informational purposes and should not be considered authoritative for navigational, engineering, legal, and other uses.

direct-seeded with a grasslander seeder in December 2020. Prescribed fire was applied to the thinned pine corridors in February 2021. Longleaf pines were planted within the clearcut-seeded corridors in early February 2021.

This same cycle of activities was repeated in zone PS-2A in January 2021, beginning with a timber harvest. In January 2022, zone PS-2A had been thinned, windrows removed and groundcover and longleaf pines had been seeded. Within these two management zones, 215 acres of timber were thinned or otherwise managed. The remaining slash pine plantation embedded in the restoration natural community is 146 acres and is shown as pine plantation in the natural community map. The restoration natural community within these two zones is 76.89 acres. This represents all of the former windrows in zones PS-2A and PS-2B, which is the area that needed the most intensive restoration actions.

Within the thinned pines, remnant original groundcover remains in varying amounts. Prescribed fire will improve its condition. Once the seeded groundcover is established, or about two years after seeding, the entire zone can be treated with prescribed fire. Subsequent fires should occur on the shorter end of the fire return interval, or at least every two years, for at least 10 years. This will help control the off-site hardwood re-sprouts. Additional chemical treatment of hardwood re-sprouts may be necessary in the future. In zone 2B, the seeded groundcover received its first prescribed fire throughout the entire zone in June 2023. In the future, once the longleaf and groundcover are well on their way to restoration maintenance, the remaining slash pines will be harvested and planted with longleaf pines in zones PS-2A and 2B.

Objective A: Maintain 350 acres within the optimum fire return interval.

- Action 1 - Update annual prescribed fire plan.
- Action 2 – Treat the restoration and pine plantation acres in zones 2B and 2A with prescribed fire as frequently as possible. Preferably, fire would occur every one to two years for at least 10 years while the zones are recovering and moving toward maintenance condition.
- Action 3 – Construct additional firebreaks along the park boundary as needed.
- Action 4 – Include the abandoned field in the southeast corner and fire-dependent areas located along the west boundary south of Luraville Road in the prescribed fire plan.

The Prescribed Fire Management Table 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		
Community	**Acres**	**Optimal Fire Return Interval (Years)**
Natural Communities		
Upland Pine	58.32	1-3
Sandhill	0.29	1-3
Altered Landcover Types		
Pine Plantation	138	1-3
Restoration Natural Community	76	1-3

Prescribed Fire Management		
Community Type	**Acres**	**Optimal Fire Return Interval (Years)**
Abandoned Pasture	15.35	3-20
Clear-cut Pine Plantation	242.81	3-20
Abandoned field	8.84	3-20
Annual Target Acreage*	104 - 361	
*Annual Target Acreage Range is based on the fire return interval assigned to each burn zone. Each burn zone may include multiple natural communities.		

Two fire-dependent natural communities exist at Wes Skiles Peacock Springs State Park: upland pine and sandhill. During prescribed fires, existing firebreaks such as roads or boundaries are used in conjunction with natural firebreaks such as mesic woods or watercourses.

All fire habitats at Peacock Springs State Park have endured fire exclusion and hardwood invasion. Prescribed fires will emphasize fuel reduction and ecological restoration. Fires will be used in conjunction with off-site hardwood reduction and timber management activities. Selective girdling of off-site hardwoods may be necessary to open up the canopy and promote the growth of herbaceous fuels in certain areas. In some areas, fire control lines should not be disked but rather mowed due to the rich archaeological sites known to exist throughout the park.

The annual targeted burn acreage is between 104 and 361 acres per year based on the range of fire return intervals for the natural communities and altered landcover types within the park. The wide range of the fire return intervals for some of the altered landcover types heavily weights these figures (three to 20 years).

The upland pine to the south of Luraville Road currently has adequate firebreaks in the form of service roads and non-fire type natural communities. Although still in poor condition, this zone can be restored with additional prescribed fire and hardwood control to release the remaining longleaf pines and stimulate herbaceous fuels.

The upland hardwood forest serves as a firebreak to the north and west. The current park boundary serves as a firebreak to the east and south. Absolutely no disking should be permitted in this area due to its proximity to an archaeological site. Staff in the Public Lands Archaeology section of the Bureau of Archaeological Research should be notified when this zone is scheduled for prescribed fire in case they wish to conduct a post-fire survey for archaeological information. The fire-dependent areas located along the west boundary south of Luraville Road are dominated by abandoned pasture, with only a few acres of relatively intact upland pine remaining. This area should also be treated with fire. This zone does not have adequate firebreaks and will require a secure boundary line. The upland hardwood forest serves as a firebreak to the east. Like the abandoned field, this site may contain significant archaeological material and should be disturbed as little as possible.

Objective B: Conduct natural community restoration activities on 146 acres of pine plantation and 242 acres of clear-cut pine plantation.

- Action 1 - Continue restoration of the slash pine plantation north of Luraville Road to upland pine forest.
- Action 2 - Develop a restoration plan for the 242-acre cleared pine plantation.

Restoration will continue north of Luraville Road within the pine plantation and restoration natural communities. It may be necessary to continue chemical control of off-site hardwood re-sprouting. The remaining strips of slash pine should be clearcut in the future and replanted with longleaf pines. This should occur after zones PS-2A and PS-2B have received at least 10 years of prescribed fire to control off-site hardwoods and stimulate the remaining and restored groundcover. Some supplemental groundcover seeding may be needed. The area will need regular scouting for and treatment of invasive plants.

To the east of the pine plantation is a 242–acre cleared pine plantation. Options for this area include a fuelwood harvest, chemical treatment of off-site hardwoods, prescribed fire, and replanting with longleaf pines. This site is complicated by the presence of windrows from a previous timber operation, sinkhole lakes, other karst features, and cultural resources. Prior to any restoration activities, the original extent of the upland hardwood forest embedded in these zones should be determined and excluded from any pine planting. Careful planning of specific restoration areas and actions is needed for this area due to the existing impact of windrows on the sinkhole lakes, cultural resources and the matrix of natural communities. Issues of concern are the protection of existing cultural sites from excessive ground disturbance, protection of the springs and groundwater from siltation and herbicide impacts, and determining a clear delineation of pine and non-pine natural communities. Windrow removal will be constrained by these issues. Upland hardwood areas will be allowed to revegetate naturally while pine areas and associated windrows will require groundcover and longleaf pine planting.

IMPERILED SPECIES

The Peacock Springs cave system contains two listed species of amphipod, the Florida cave amphipod (*Crangonyx grandimanus*) and Hobbs' cave amphipod (*Crangonyx hobbsi*). In addition, this ecosystem provides the essential habitat for two other endemic cave-dwelling species, the pallid cave crayfish (*Procambarus pallidus*) and the swimming little Florida cave isopod (*Remasellus parvus*) (Franz et al 1994). A significant amount of the habitat of these four species within the park may experience impacts from cave divers. However, these species may actually be widespread within passages too small for divers to enter, and therefore may receive some degree of insulation from human disturbance. The swimming little Florida cave isopod may not be affected by cave diving (Deyrup and Franz 1994).

Degradation of groundwater quality may pose the greatest threat to these species (Deyrup and Franz 1994). Independent researchers have documented distinct fluctuations in the crayfish populations that have resulted from rapid changes to groundwater in the Peacock Springs cave system (Streever 1991; District 2 files). In the spring of 1991, back-flooding from the Suwannee River into the Peacock Springs cave system was the first time that experts documented a large die-off in troglobite populations (Streever 1992b). Subsequent cave faunal surveys at Peacock Springs have indicated that troglobite populations typically will experience a die-off during major brownout events but will recover after groundwater clarity returns (District 2 files). The long-term impacts of these stochastic water quality events on the populations of these troglobite species are unknown. Surveys are limited to the accessible portions of the cave system, and it is likely that the habitat of these species extends much further into the Floridan aquifer.

Since 2001, the four imperiled troglobite species have been part of an ongoing monitoring project conducted by cave divers from the North Florida Springs Alliance. This group is currently conducting these censuses as part of a series of cave faunal abundance surveys.

Historically, gopher tortoises (*Gopherus polyphemus*) and indigo snakes (*Drymarchon couperi*) occurred within the park in upland pine habitat. Both have been documented within the park boundary. These species are gradually being excluded from their natural habitat due to lack of natural or prescribed fires over the past several decades. Proper restoration and maintenance of the fire-adapted communities within Wes Skiles Peacock Springs State Park will likely assist the recovery of these imperiled species. Efforts should be made to locate and map gopher tortoise burrows within the park to monitor changes in the tortoise population over time. Additional sightings of indigo snakes will be reported to the Florida Fish and Wildlife Conservation Commission (FWC).

The Suwannee cooter (*Pseudemys concinna suwanniensis*) inhabits the springs and spring runs within the park. Both the Suwannee cooter and the gopher tortoise are still illegally harvested as a food source (FWC 2012). Protection of these species from human disturbance is critical to their survival. The Central Florida Freshwater Turtle Research Group, which is actively monitoring aquatic turtle populations in other spring run systems in north and central Florida, expanded its studies to include Peacock Springs in 2011. The study has focused on monitoring population trends using mark and recapture techniques.

Five listed plant species are known to occur within the park. These include Chapman's sedge (*Carex chapmanii*) and rainlily (*Zephyranthes atamasca*). Management of Chapman's sedge and rain lily focuses on protection from disturbance. Other imperiled plants currently identified within the park depend on prescribed fire. As restoration progresses, more imperiled plant species may be observed.

Table 4 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 below the table. Explanations for federal and state status as well as 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						
Incised agrimony *Agrimonia incisa*			LT	G2,S2	1	1
Chapman's sedge *Carex chapmanii*			LT	G3,S3	4,10	1
Florida milkvine *Matelea floridana*			E	G2, S2	1	1
Florida mountain mint *Pycnanthemum floridanum*			LT	G3, G3	1	1
Rainlily *Zephyranthes atamasca*			LT		10	1
INVERTEBRATES						
Florida cave amphipod *Crangonyx grandimanus*		UR		G2G3, S2S3	10	2
Hobbs' cave amphipod *Crangonyx hobbsi*		UR		G2G3, S2S3	10	2
Pallid cave crayfish *Procambarus pallidus*		UR		G1G2, S1S2	10	2
Swimming little Florida cave isopod *Remasellus parvus*				G1G2, S1S2	10	2
REPTILES						
American alligator *Alligator mississippiensis*	FT(S/A)	FT(S/A)		G5, S4		1
Eastern indigo snake *Drymarchon couperi*	FT	LT		G3,S2?	1,6,13	1
Gopher tortoise *Gopherus polyphemus*	ST			G3,S3	1,6, 13	1
Florida pine snake *Pituophis melanoleucus mugitus*	ST	UR		G4,S3	1,6	1
BIRDS						
Little Blue Heron *Egretta caerulea*	ST			G5,S4		2

Imperiled Species Inventory						
Common and ***Scientific Name***	**Imperiled Species Status**				**Management Actions**	**Monitoring Level**
	FWC	**USFWS**	**FDACS**	**FNAI**		
Tricolored Heron *Egretta tricolor*	ST			G5,S4	10	2
Swallow-tailed kite *Elanoides forficatus*				G5,S2	10	2
Wood Stork *Mycteria americana*	FT	LT		G4,S2	10	2

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 list

- Action 1 – Conduct additional surveys for imperiled plant and animal species.

Objective B: Monitor and document four imperiled animal species.

- Action 1 - Continue to implement existing monitoring protocols and work with other researchers and partnering organizations.
- Action 2 - Periodically review existing protocols and ongoing monitoring efforts.

Wes Skiles Peacock Springs State Park, by virtue of its high exposure as a world-renowned cave system, has received a great deal of scientific attention since it was acquired by the state. The underground ecosystem at Peacock Springs provides essential habitat for at least four cave-dwelling invertebrates, including pallid cave crayfish (*Procambarus pallidus*), Florida cave amphipod (*Crangonyx grandimanus*), Hobbs' cave amphipod (*Crangonyx hobbsi*) and swimming little Florida cave isopod (*Remasellus parvus*). These four species are part of an ongoing monitoring project. DRP staff will continue to work with the North Florida Springs Alliance, which conducts routine monitoring of these cave-dwelling species. This group is currently conducting these censuses as part of a series of cave faunal abundance surveys. DRP staff will also continue to cooperate with other researchers monitoring or sampling aquatic cave-dwelling invertebrates.

The cave fauna associated with the Peacock Springs cave system is dependent upon a stable environment that experiences few fluctuations in water temperature or quality. Many of the troglobites that have evolved under these special conditions are considered threatened species. 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 investigate this hypothesis. Analysis of ongoing cave faunal monitoring may help to delineate trends associated with arthropod fluctuations.

The cave diving community should continue to be educated about the vulnerability of cave fauna to human disturbance, whether deliberate or incidental. In addition, divers should be warned not to collect flora or fauna found in the springs or sinkholes for exhibition in aquaria.

Objective C: Monitor and document two selected imperiled plant species.

- Action 1 - Monitor two selected imperiled plant species, including Florida milkvine and Florida mountain mint.
- Action 2 - Conduct an expanded floristic study to locate other imperiled plant species that may be present and develop a comprehensive species list, particularly in the upland restoration area.

Several of the imperiled plant species within the unit were negatively impacted by historic forestry activities. Populations of imperiled plants, particularly those that may be endemic to karst features, should be surveyed and mapped so that any future development will avoid those sites. Particular care should be taken to avoid populations of Chapman’s sedge and rainlilly during development of any additional facilities.

Periodic monitoring of rare plant populations may be necessary at some sites. Proper natural systems management using prescribed fire and the maintenance of natural hydroperiods in floodplain areas should suffice to preserve imperiled species along with other components of the natural communities.

INVASIVE SPECIES

Few species of invasive plants are found in the park, and none currently occur in large infestations. The portion of the park north of Luraville Road was in industrial timber production prior to acquisition by DRP. Decades of timber harvesting, soil disturbance and windrowing of timber harvest debris created favorable conditions for invasive plants. The FISC-listed species found north of Luraville Road are cogongrass (*Imperata cylindrica*), small leaf spiderwort (*Tradescantia fluminensis*), Chinese privet (*Ligustrum sinense*), mimosa (*Albizia julibrissin*), heavenly bamboo (*Nandina domestica*) and chinaberry (*Melia azerdarach*). The invasive grass sweet tanglehead (*Heteropogon melanocarpus*) is spreading along the road shoulders via mowers and is moving into restoration areas. Johnson grass (*Sorghum haplense*), an invasive grass, occurs in a small area on the northeast side north of Luraville Road.

Invasive plants that occur south of Luraville Road are cogongrass, Japanese honeysuckle (*Lonicera japonica*), Japanese climbing fern (*Lygodium japonicum*) and nandina (*Nandina domestica*). These are mostly scattered and low-density populations. The park periodically surveys for invasive plants, and data is stored in the statewide invasive plant database.

The area north of Luraville Road has been the focus of invasive plant treatment in recent years to prepare the area for a large restoration project to reverse the impacts of industrial forestry. These zones have been treated primarily in-house by Florida Conservation Corps (FLCC) members and DRP staff. Chinaberry and mimosa are scattered throughout the zones with some smaller areas of small flowered spiderwort and cogongrass. All these zones will need regular ongoing treatment, and cogongrass will need annual fall and spring treatment until it is eradicated. The small flowered spiderwort also needs regular annual treatment, and equipment should be kept of out this infestation, as each plant piece can start a new infestation. The active restoration area in zones PS-2A and PS-2B have received more treatments than zones PS-2C and PS-2D, which are overgrown with hardwoods. The southern portion of the park below Luraville Road has fewer invasive plants. Known populations should be treated regularly with the intent of eradicating them.

Wes Skiles Peacock Springs State Park is fortunate to have very few problems with invasive or nuisance animals. The invasive species present are feral hogs (*Sus scrofa*), nine-banded armadillo (*Dasypus novemcinctus*) and the occasional feral cat or dog. Signs of feral hogs have been seen from time to time in the park south of Luraville Road. The staff does not have a current program of feral hog control due to the low and transitory population. However, staff monitors their presence and, if conditions warrant, will pursue feral hog control.

Invasive Species Inventory			
Species Name Scientific Name - Common Name	**FLEPPC Category**	**Distribution**	**Zone ID**
Albizia julibrissin - Mimosa	I	Single Plant or Clump, Scattered Plants or Clumps	PS-2D, PS-2B, PS-2C
Imperata cylindrica - Cogongrass	I	Scattered Plants or Clumps, Linearly Scattered	PS-1A, PS-2D
Ligustrum lucidum - Glossy privet	I	Single Plant or Clump	PS-2C
Ligustrum sinense - Chinese privet	I	Single Plant or Clump	PS-2C
Lonicera japonica - Japanese honeysuckle	I	Single Plant or Clump	PS-1C
Lygodium japonicum - Japanese climbing fern	I	Single Plant or Clump, Scattered Plants or Clumps	PS-1F, PS-2C
Melia azedarach - Chinaberry	II	Single Plant or Clump, Scattered Plants or Clumps	PS-2D, PS-1E, PS-2A, PS-2B, PS-2C
Nandina domestica - Nandina	I	Single Plant or Clump, Scattered Plants or Clumps	PS-2C, PS-1F
Tradescantia fluminensis - Small-leaf spiderwort	I	Scattered Plants or Clumps	PS-2A

Objective A: Annually treat 100 gross acres, equivalent to 4 infested acres of invasive plant species.

- Action 1 - Annually update invasive plant management work plan.
- Action 2 - Implement annual work plan by treating 100 gross acres.
- Action 3 - Annually treat cogongrass, small flowered spiderwort, sweet tanglehead and Johnson grass infestations. Continue maintenance and follow-up treatments of other species in the restoration area and southern portions of the park.

The invasive plant infestations of greatest concern are north of Luraville Road, with the exception of a second infestation of cogongrass south of Luraville Road. Sweet tanglehead is an annual that becomes visible in late July, August and September. It is spreading from the county road right-of-way into zones PS-2A and PS-2B. Because the infestation at the park is still relatively contained, hand-pulling every two weeks can be effective. If herbicide is used, it should be before the plant grows tall and begins seed production. Regular follow-up treatment and monitoring of the zones north of Luraville Road will be particularly important during and after restoration actions.

Objective B: Implement control measures on three nuisance species.

- Action 1 - Remove any feral cats, dogs or hogs that are encountered.
- Action 2 - Form a control program if feral hog damage increases.

Feral cats and dogs will be removed from the park as they are encountered. Currently, the park has few feral hogs. Hog damage will continue to be monitored. A control program should be initiated if damage increases.

CULTURAL RESOURCES

Prehistoric and Historic Archaeological Sites

Wes Skiles Peacock Springs State Park contains 20 known archaeological sites and one resource group that are recorded with the Florida Master Site File (FMSF). The archaeological sites are primarily indigenous sites, many of them prehistoric.

Peacock Springs and Peacock Springs Slough, which connects the springs to the Suwannee River, have attracted human habitation and use from Paleoindian times through the modern era. Archaeological evidence indicates the area has been used by peoples of the Archaic, Weeden Island, post-Weeden Island, and Spanish contact periods, as well as by other early European inhabitants. Late 19^{th}-century development included land-use activities such as agriculture and timbering (Exley 2004).

The broad diversity of Native American cultural periods represented by the Peacock Springs sites is attributable to the presence of multiple springs in a compact area and the proximity of the Suwannee River. Also, the park contains many chert sources that could have served as Native American quarry sites from Paleolithic to recent times. The climate 5,000 years ago was drier than it is today. From 12,000 to 9,000 years Current Era (C.E.), caves as deep as 60 feet containing chert sources could have been accessible as quarries (Mike Wisenbaker personal communication).

Within the boundaries of the park are an array of village sites and habitations (SU00084, and SU00121), campsites (SU555, SU556, SU557, SU558, SU559, SU560, SU561, SU562, SU563, SU564, SU565, SU566, SU00274 and SU00275) and quarry sites (SU20 and SU00122). Archaeologist Jill Loucks hypothesized that some of the smaller habitation areas may have been suburbs of the larger village sites (Loucks 1978a, 1978b, 1979 and 1991). She recommended further study to determine the relationships among these sites. Nine archaeological investigations of varying intensity have taken place within the park (Horvath, E.A. 2003 and 2004; Loucks, J. 1978; Memory, M. 1996; Weisman, B. R. 1991; Weisman, B. R. and C. L. Newman 1992; West, R. L. 2004 and 2006; Saionz, M and L.B. Wayne 2019). In addition, a predictive model for the park was completed in 2012 (Collins et al. 2012).

Many sites in the park show evidence of occupation by several cultures. SU65 encompasses at least eight different cultural periods, including the Spanish mission period. The descriptions of many of these sites in the FMSF by the archaeologists investigating them say that they may be suburbs or part of a village complex. Unfortunately, the archaeological research completed to date does not clarify how these various sites are related to each other or to the mission site. Some sites, SU00020 for example, do not contain diagnostic features. SU00399 contains a weir that has not been evaluated by an archaeologist. Its period is undetermined.

In 2019, an archaeological survey was conducted to provide guidance for a natural resource restoration project at the park. One of the goals was to define the cultural resource site boundaries. As a result of this cultural resources assessment survey (CRAS), a number of previously listed sites were consolidated, many of them into SU65.

The Weeden Island culture is present at several sites at Wes Skiles Peacock Springs State Park. "Weeden Island" refers to several distinct regional cultures that flourished in Florida from 100 to 1400 C.E. These cultures had different subsistence adaptations but shared a religious ceremonial complex and traded extensively with neighboring cultures throughout Florida and the southeastern United States. The whole Weeden Island period is archaeologically significant for its elaboration of cultural traits, particularly in burial rituals and ceramics. Weeden Island pottery is considered the best-made and most ornate aboriginal pottery in Florida (Milanich and Fairbanks 1987).

An important site at the park, SU00065, represents the Spanish Mission period, which in Florida extended from 1585 to 1706. The 17th-century Utina Spanish mission, San Augustine de Urica, is located at SU00065 within the current boundaries of Wes Skiles Peacock Springs State Park (Loucks 1978a, 1978b, 1979 and 1991; Weisman 1991). The site contains both Indian and Spanish structural remains. The mission was probably abandoned as a result of the Timucuan uprising in 1656 (Geiger 1937). The mission site needs further archaeological investigation, as do many other sites within the park. Future archaeological investigations should address relationships of the various sites to each other, as well as interactions between Spaniards and Indians at mission sites (Loucks 1991).

Suwannee County was established in 1858. Prior to that, the first permanent European inhabitants after the Spanish Mission period were the Reuben Charles family. Charles established a trading post in 1824 at Charles Spring on the Spanish Trail about 6 miles from the present-day park. In 1857, Dr. John Peacock and his family moved to the area and established the town of Luraville. Peacock purchased lands that included the slough connecting the springs to the Suwannee River (Exley 2004). Today this area is known as Peacock Slough and the park is named for the Peacock family. In addition to the known archaeological sites, there are probable archaeological sites within the park that are representative of this era. Abandoned and overgrown fields within the park indicate areas that had been used for agricultural purposes before acquisition by the state. The remains of a 19th- or possibly early 20th-century logging tram road (SU00400) of indeterminate age runs in a northwest-southeast direction through the section of the park north and south of Luraville Road. The origin of this tram road has not been determined. A sawmill apparently operated in Luraville during the late 1800s (Exley 2004), so the tram road may have been constructed during the same era to transport lumber to the mill.

The predictive model (Collins, 2012) indicated areas of high, medium and low probability for the occurrence of archaeological sites. The park should utilize this information to protect the highest probability areas from disturbance. It is possible that the entire park should be recorded as an archaeological zone given the diversity and widespread nature of the cultural resources. All known cultural sites have been submitted to the FMSF.

All of the archeological sites in the park are either in good condition (SU00020, SU00122, SU00274, SU00399 and SU00400) or in fair condition (SU00065, SU00084, SU00275 and SU00121). SU00275 has experienced some soil disturbance due to past looting. SU00121 has numerous holes where looters have dug for artifacts in the past. Previous agricultural uses have also damaged the site. The net area damaged or altered by those activities combined is conservatively estimated at 50% of the total site. At other sites such as SU00065 and SU0084, industrial logging and industrial forestry operations have impacted the first 20-25 centimeters of soil or more.

Threats to these sites include wind and water erosion and inadvertent collection of exposed artifacts. The sites are in good to fair condition but may be potentially degraded by illicit artifact collection.

The unit management plan for Wes Skiles Peacock Springs State Park addresses the current status and expected condition of cultural resources located in the park. The FMSF has records of 20 archaeological sites and one known resource group in the park. The significance of each cultural resource site is addressed separately in this overview. The sites must be monitored, any stabilization issues addressed, and additional information or data related to any of the sites submitted to the Division of Historical Resources (DHR)/FMSF.

There are two sites in the park eligible for the National Register of Historic Places: the Spanish mission sites SU65 and SU84. SU564 should be tested further to determine National Register eligibility. The surveyors of SU564 recommend that it should be evaluated by the State Historic Preservation Officer (SHPO). Individuals who have actually recorded sites in the park have cited insufficient information to determine eligibility for listing: Loucks I (8SU00121), Loucks II (8SU00122) and Olsen Spring (8SU00274), Bonnet Springs (8SU00020), West Peacock Field (8SU00275) and Peacock Slough Weir (8SU00399) listed as not evaluated by recorder.

Wes Skiles Peacock Springs State Park contains many sites within a small area. Therefore, these should be afforded all the considerations and protections of a National Register-listed site until the appropriate evaluations are done. The entire park should be considered for archaeological zone designation. All recorded sites will be located, visited and monitored regularly, with necessary steps taken to conserve their integrity. Evidence of previously unrecorded sites will be documented, and newly discovered sites will be recorded to DHR/FMSF standards. Boundaries of sites will be redefined as appropriate. The park has no significant collection of artifacts.

Wes Skiles Peacock Springs State Park contains important archaeological sites. Due to the sensitive nature and importance of the cultural sites, sinks and springs north of Luraville Road should not be open for recreational cave diving.

The park has an established cyclical monitoring program which should continue such that all sites are visited regularly. Staff should document the monitoring activities at each site and store the information in a file at the park. It is critical that staff frequently visit the most important archaeological sites and those with a history of looting, especially if they are in an area not regularly patrolled. Sites north of Luraville Road are particularly vulnerable.

Several sites need further investigation. SU00065 in particular would benefit from additional historic, archival and archaeological work to further understanding of the Mission San Augustine de Urica and its relationship with the native peoples. The archival research should be the first priority, supplemented by archaeological work as needed. Research into the interrelationships of the different habitation or village sites in SU00065 is needed.

The important archaeological sites at the park provide a rich opportunity for interpretation. However, interpretation should not occur at the exact site locations so as to protect the sites from potential looting. Alternative locations for interpretation could be at the Ichetucknee Springs State Park visitor center.

Cultural Sites Listed in the Florida Master Site File					
Site Name and FMSF #	**Culture/Period**	**Description**	**Significance**	**Condition**	**Treatment**
Bonnet Springs SU00020	Pre-Columbian, Aboriginal prehistoric	Archaeological Site	NE	F	P
San Augustine de Urica SU00065	Aboriginal, 17th Century exploration and settlement, Leon Jefferson	Archaeological Site	NRL	F	P
Pump Spring SU00084	Pre-Columbian Aboriginal, Deptford through Alachua	Archaeological Site	NRL	F	P
Loucks I SU00121	Aboriginal, Weeden Island	Archaeological Site	NE	P	P
Orange Grove Spring, Loucks II SU00122	Pre-historic, Aboriginal	Archaeological Site	NE	G	P
Olsen Spring SU00274	Pre-historic, Aboriginal, Weeden Island	Archaeological Site	NE	G	P
West Peacock Field SU00275	Aboriginal, possibly Weeden Island	Archaeological Site	NE	G	P
Peacock slough Weir SU399	Aboriginal, not yet determined	Archaeological Site	NE	G	P
Peacock Tram Road SU400	Historic, not yet determined	Resource Group	NE	G	P
Old Chicken Farm SU555	Archaic	Archaeological Site		G	P
Pump Spring Satellite 1 SU556	Archaic	Archaeological Site		G	P
Pump Spring Satellite 2 SU557	Archaic	Archaeological Site		G	P
Pump Spring Satellite 3 SU558	Archaic	Archaeological Site		G	P
Baptizing Spring Satellite 1 SU559	Archaic	Archaeological Site		G	P
Baptizing Spring Satellite 2 SU560	Archaic	Archaeological Site		G	P
Baptizing Spring Satellite 3 SU561	Archaic	Archaeological Site		G	P
Mammoth Sink SU562	Archaic	Archaeological Site		G	P

Cultural Sites Listed in the Florida Master Site File					
Site Name and FMSF #	**Culture/Period**	**Description**	**Significance**	**Condition**	**Treatment**
Walker Spring SU563	Archaic	Archaeological Site		G	P
Challenge Sink SU564	Alachua	Archaeological Site		G	P
Bonnet Springs 2 SU565	Archaic	Archaeological Site		G	P
Baptizing Spring Satellite 4 SU566	Archaic	Archaeological Site		G	P

Objective A: Assess/evaluate 21 of 21 recorded cultural resources in the park.

- Action 1 - Complete 21 assessments/evaluations of archaeological sites.

The park will continue to regularly assess its cultural resources. Assessments should be conducted in a manner that can document changes over time. Those sites where looting has occurred will need more frequent assessments. Vulnerable sites may need to be visited on a monthly or even weekly basis.

If stabilization or preservation needs become apparent during the course of the assessment of all sites, the park should identify and prioritize those needs. The park should maintain a file on each site that documents issues such as looting and any other changes in condition.

Objective B: Compile reliable documentation for all recorded historic and archaeological resources.

- Action 1 - Ensure all known sites are recorded or updated in the Florida Master Site File.
- Action 2 - Enlist the assistance of the DRP Bureau of Natural and Cultural Resources (BNCR) and DHR to determine if the entire park should be registered as an archaeological zone.
- Action 3 - Enlist the assistance of BNCR and DHR to evaluate all known sites for significance.
- Action 4 - Develop and adopt a Scope of Collections Statement.

University of South Florida researchers completed a predictive model for Wes Skiles Peacock Springs State Park in 2012 (Collins et al. 2012). All known cultural sites in the park were updated as part of this plan revision. After the Collins work, the cultural resources assessment survey (Saionz, M and L.B. Wayne 2019) consolidated some sites. The current cultural resource table list of sites is the result of that consolidation. If new sites are discovered in the future, staff will submit them to the Florida Master Site File.

The park contains many archaeological resources which have not been evaluated for significance. Because of the density of these sites, the park should be evaluated to determine if the entire park should be registered as an archaeological zone. Known sites should be evaluated for significance.

SU00065 would benefit from additional historic archival and archaeological work to further understanding of the Mission San Augustine de Urica and its relationship with native peoples of that time, as well as research evaluating the relationships of the various native habitation sites. DRP staff should seek opportunities to support further research.

Not much is known about late 19^{th} century and early 20th century homesteads and logging activity in the area of the park. Oral history and courthouse records would enhance our understanding of previous land uses in and around the park. Any remains of old roads and tramways need to be recorded using GPS technology and submitted to the FMSF.

Although the park currently does not have any collections, staff will develop a Scope of Collections Statement. This statement should be based on the focus of the park. A Scope of Collections does not mean that the park needs to acquire or accept items for a collection. The scope will describe under which, if any, conditions the park would accept items for a collection. It should guide the development of any additional collections or acceptance of donations. However, the collection is not appropriate for Wes Skiles Peacock Springs State Park.

Objective C: Bring 21 of 21 recorded cultural resources into good condition.

- Action 1 - Design and implement regular monitoring programs for 21 cultural sites.

SU121 was vandalized in the past and probably can never be returned to good condition. The site will be visited regularly to prohibit further looting.

Sites SU00020, SU00065 and SU00084 have been impacted by ground disturbance including forestry operations. These sites are in fair condition. Park staff will regularly visit these sites to prevent vandalism and looting. The section of the park north of Luraville Road should be visited at least weekly to enhance site protection.

The park will develop and implement a monitoring program for the recorded cultural sites that is capable of tracking changes in site conditions. Monitoring will include the use of photographic documentation during regular visitation.

LAND USE COMPONENT

VISITATION

With numerous springs and aquatic caves, the park is a draw for naturalists of all levels of adventure. Whether diving deep into the Floridan Aquifer or hiking trails that follow and interpret the aquatic cave conduits, visitors come from around the world to experience the natural wonders of the park's karst geology.

Trends

Cave divers are the majority user group. With steady water temperatures, their visitation remains steady year-round.

EXISTING FACILITIES AND INFRASTRUCTURE

Luraville Road runs east-west through the center of the park. The Peacock Springs Tract, south of Luraville Road, contains all recreational facilities, as well as a small shop area that supports staff operations. The Baptizing Sink Tract, north of Luraville Road, currently has no recreational facilities, as the focus has been on natural community restoration.

Facilities Inventory

Park Entrance	
Iron Ranger	1
Portable Restroom	1
Unimproved Parking Area	1
Orange Grove Sink Use Area	
Picnic Pavilion	1
Boardwalk/Access Stairs	1
Portable Restroom	1
Interpretive Kiosk	1
Olsen Sink Overlook	
Observation Platform	1
Interpretive Kiosk	1
Peacock Spring 1	
Dive Staging Benches	5
Boardwalk	1
Unimproved Parking Area	1
Changing Station	1
Portable Restroom	1
Peacock Spring 2	
Swimming Area	1
Interpretive Kiosk	1
Support Area	
Residence	1
Volunteer Sites	2
Administrative Office	1
Storage Shed	3

CONCEPTIONAL LAND USE

Orange Grove Sink

Objective: Use Area Improvements

Actions:

- Maintenance of spring access stairs and boardwalk.
- Update interpretation
- Replace portable restroom with an above-ground vault system

After a short drive from the park entrance, visitors arrive at the Orange Grove Sink use area. Facilities here include a large picnic pavilion and one interpretive panel depicting the underground aquatic cave system. A boardwalk and descending stairs lead visitors to the sink. This plan provisions for the complete in situ replacement of the boardwalk and stairs if necessary during this planning cycle.

Interpretation here might include the formation of sinkhole lakes and their natural processes, as well as the park's unique flora.

Consideration should be given to replacing the portable restroom at this use area with an restroom in this use area with an above-ground vault restroom.

Olsen Sink

Objective: Modify viewing platform

Actions:

- Conduct structural assessment on observation platform and modify as necessary to ensure protection of the sink and visitor safety
- Update interpretation

An observation platform allows visitors to safely observe Olsen Sink, a prominent geological feature. The platform is unnecessarily large, shielding the underlying slope from the natural accumulation of leaf litter that helps armer against erosion. Re-design with the intent of reducing the platform's width and dependance on terminal pilings along the upper slope of the sinkhole would reduce impact to the geological feature while still providing a high-quality viewing experience.

Peacock Spring I

Objective: Improve, renovate facilities

Actions:

- Add two ADA accessible parking spots
- Replace boardwalk within existing footprint
- Replace portable restroom with above-ground vault system

A shared unimproved parking area allows access to both Peacock I and Peacock II springs, along with a changing station and a portable restroom. There is a need for up to two ADA accessible parking spaces, and consideration should be given to replacing the portable restroom with an above ground vault system. Any stabilization of the new ADA accessible spaces should be mindful of the sensitive karst features of the park and avoid impervious surfaces to the extent feasible.

The current wooden boardwalk leads to a set of stairs providing access for divers into the spring. This boardwalk is sometimes inundated by floodwaters, necessitating frequent repairs. Replacement of the structure during this planning cycle is likely. At such time, the use of materials with greater durability should be considered.

The parking area at Peacock I also provides access to the park's main interpretive trail. Updates to interpretation are needed along the trail to effectively highlight elements of the park's central theme, including the karst geology, natural communities and associated biota.

Peacock Spring II

Objective: Minimize visitor impacts

Actions:

- Evaluate visitor-use patterns
- Naturalize surrounding area

Peacock Spring II is currently accessed by a wide grassy clearing that leads to a limestone ledge at the edge of the spring. The spring is increasingly frequented for swimming, especially when low water levels and diminished clarity discourage swimming at Peacock Spring I. An assessment is necessary to determine the level of swimming use at Peacock II. If the level of use is above an established threshold, then formalized safe and sustainable access is needed, including a modest set of steps to traverse the steep limestone ledge. If the level of use is below an established threshold, then measures should be implemented to de-emphasize access into the spring. While swimming should not be precluded, measures to reduce the volume of use may be necessary to ensure protection of the spring and visitor safety. Regardless of the assessment outcomes, restoration of native vegetation by active measures or by passive re-naturalization should be implemented along the approach to Peacock II.

Southwestern Trail Expansion

Objective: Expand interpretive trail with potential linkage to vicinity conservation lands

Actions:

- Extend the current trail system
- Provide potential connection to Peacock Slough Conservation Area

Additional trails are proposed in the southern portion of the park in vicinity of Bonnet Spring and Peacock Slough, where no form of visitor access currently exists. Sensitive features such as Bonnet Spring occur throughout this area and must remain outside of the trail routing to preserve their undisturbed conditions. Trail construction should strive to minimize habitat bisection and avoid hydrological interruptions. Signage advising of resource sensitivity and the need for hikers to adhere strictly to trails (e.g., "Sensitive Area – Stay on Marked Trails") should be a component of trail design to encourage proper hiking etiquette and promote citizen stewardship. DRP should coordinate with the SRWMD regarding a potential connection to the trail network in the Peacock Slough Conservation Area. An additional 1.5 miles are proposed in this area.

Baptizing Spring Tract

Objective: Provide passive recreational access

Actions:

- Develop plans for interpretive trails once restoration is complete
- Install standard fencing and signage

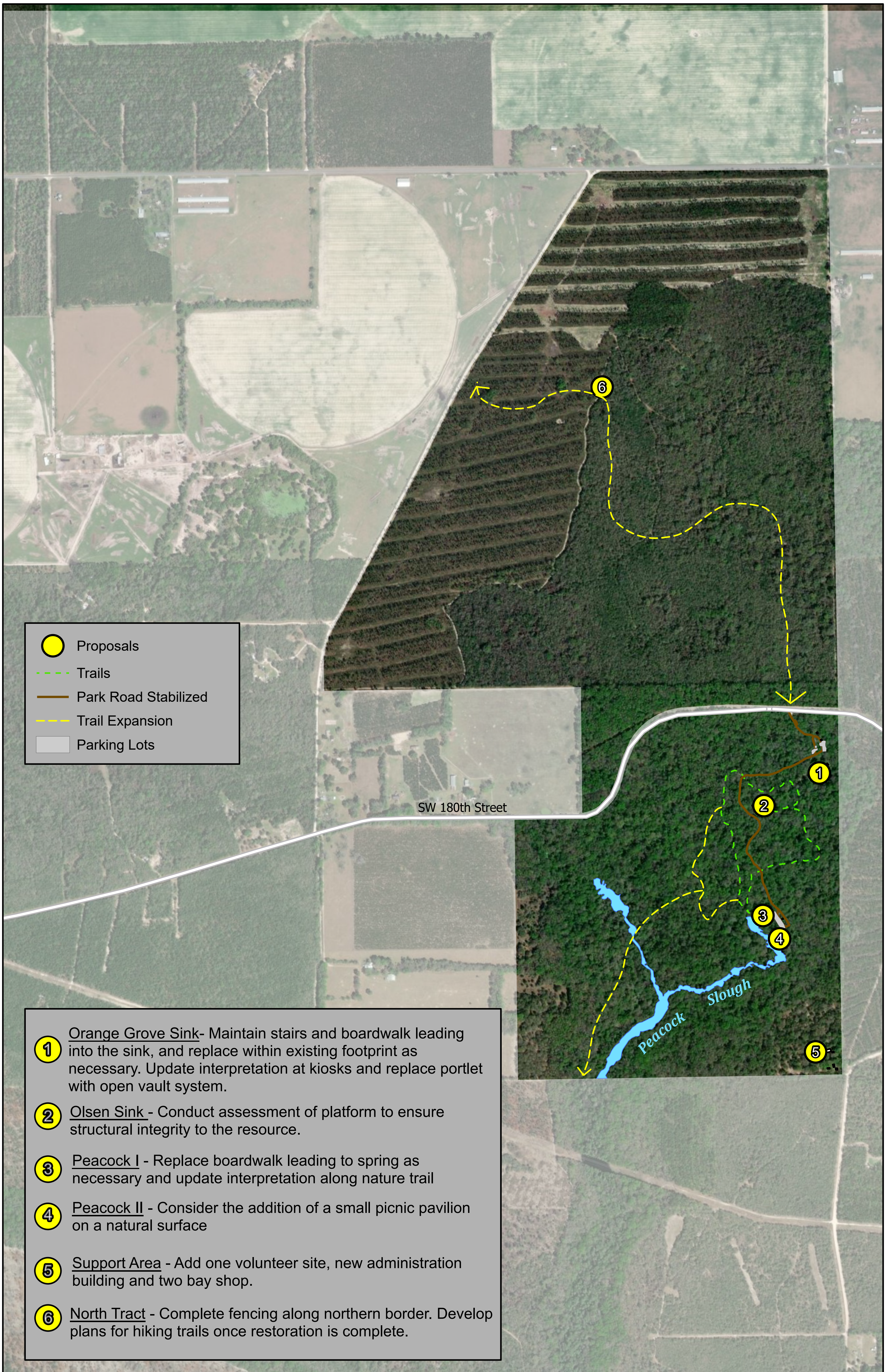
Although extensive upland natural community restoration is needed in the Baptizing Spring Tract, a discussion of future trail expansion is necessary to begin addressing the need for passive recreational access and the associated opportunity to educate and foster stewardship of karst resources. It is proposed that future trail users will park at the Orange Grove Sink parking area just south of the main park entrance. Access to an enterpretive trail will be via pedestrian crosswalk across Luraville Road. Installation of pedestrian crossing facilities such as pavement markings and signage on Luraville Road will require coordination with the Florida Department of Transportation. The interpretive trail will be aligned to protect archaeological resources and avoid hydrological disruption while providing visitors with views of appealing karst features. Up to 5 miles of trail is proposed in this area. With numerous geologic features and the associated network of subterranean caves, the conveyance of stewardship will need to be an essential component of interpretation.

Recognizing the archaeological sensitivity and extensive need for uplands restoration, visitor access should remain restricted until prerequisite restoration measures are met. Proposed trails should be planned in concert with the ongoing natural community restoration work. Design considerations such as routing and potential crossings of drainageways will avoid wetland impacts.

Completion of perimeter fencing at the Baptizing Spring Tract should be prioritized for protection of cultural sites and sensitive karst features.

Support Area

The staff support area is located in the southeastern corner of the park. This area contains two volunteer sites, a site-built staff residence and a small administrative building. Recommended additions include one new volunteer RV site with full utilities, a two-bay shop, and a new administrative building to replace the existing undersized structure. It Is important to note that the support area is located within the 100-year floodplain.



Wes Peacock Springs State Park

Conceptual Land Use Plan

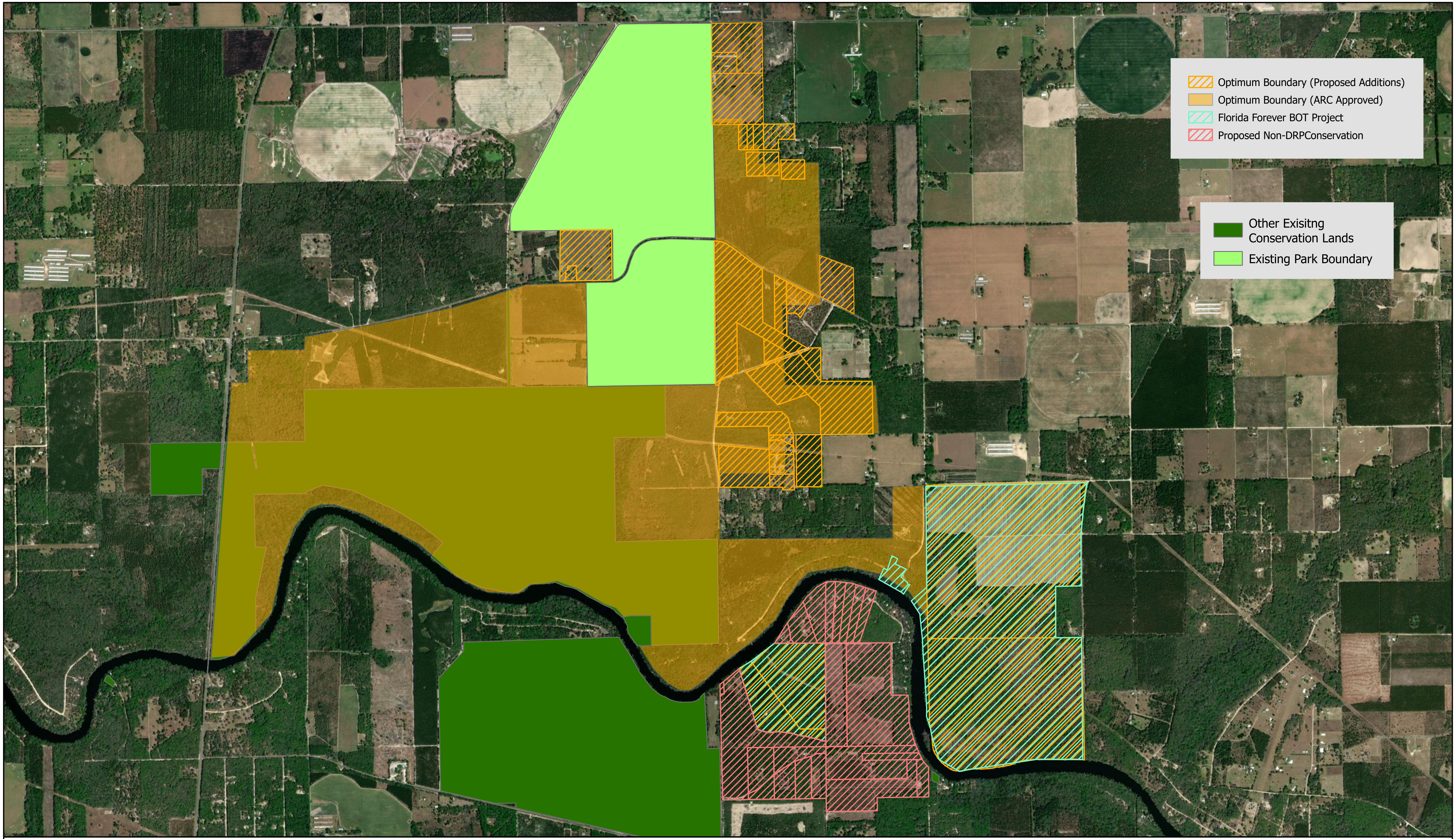
0 500 1,000 Feet

N

OPTIMUM BOUNDARY

Nearly 2,600 acres of land extending south to the Suwannee River are identified in the optimum boundary for Wes Skiles Peacock Springs State Park. The optimum boundary includes much of the river floodplain and significant portions of Peacock Slough and Irving Slough.

Multiple parcels east of the park boundary have been identified for habitat expansion along with continued floodplain and springshed protection.



Wes Skiles Peacock Springs State Park

Optimum Boundary Map