



SUBMITTAL SUMMARY REPORT

MajorSite-000060-2025

PLAN NAME:	Multi-Family- 8 Units - 351 Marion Oaks Blvd	LOCATION:	351 MARION OAKS BLVD OCALA,
APPLICATION DATE:	11/20/2025	PARCEL:	8004-0433-18
DESCRIPTION:	New 8-unit residential building		

CONTACTS	NAME	COMPANY
Applicant	ADAN ORDONEZ ORDONEZ	ORDONEZ ORDONEZ CONSTRUCTION, INC
Engineer of Record	CHAD LINN	LINN ENGINEERING

SUBMITTAL	STARTED	DUUE	COMPLETE	STATUS
OCE: Plan Review (DR) v.				Not Received
OCE: Plan Review (DR) v.	12/05/2025	12/19/2025	12/24/2025	Requires Re-submit

SUBMITTAL DETAILS

OCE: Plan Review (DR) v.1				
ITEM REVIEW NAME (DEPARTMENT)	ASSIGNED TO	DUUE	COMPLETE	STATUS
911 Management (DR) (911 Management)	Caroline Dennison	12/19/2025	12/09/2025	Approved
Corrections	Additional 911 Comments (Resolved) -			
Environmental Health (Plans) (Environmental Health)	Evan Searcy	12/19/2025	12/23/2025	Approved
Fire Marshal (Plans) (Fire)	Jonathan Kenning	12/19/2025	12/05/2025	Approved
Growth Services Planning & Zoning (DR) (GS Planning and Zoning)	Jared Rivera	12/19/2025	12/10/2025	Requires Re-submit
Comments	See corrections for Planning/Zoning comments.			
Corrections	2.12.4.L & Article 5 - Overlay zones (Resolved) - 2.12.4.L & Article 5 - Overlay zones: Provide a statement showing all applicable overlay zones on the subject properties such as Airport Overlay Zones (AOZ), Environmentally Sensitive Overlay Zone (ESOZ), Floodplain, Springs Protection Overlay Zone (SPOZ), Military Operating Area (MOA), Scenic Roads Area (SRA), Wellhead/Wellfield Protection Area (WHPA), Silver Springs Community Redevelopment Area (SSCRA), and CR 475A Visual Enhancement Gateway Development Overlay, etc. Refer to LDC Article 5 - OVERLAY ZONES AND SPECIAL AREAS.			
Corrections	2.12.4.L - DRI/FQD Compliance Note (Not Resolved) - 2.12.4.L - DRI/FQD Compliance Note?: Revise the plan to add the following advisory note: "DEVELOPMENT OF THE PROPERTY AS SHOWN ON THIS [SITE PLAN/SUBDIVISION PLAT] IS SUBJECT TO THE TERMS AND CONDITIONS OF THE [PROJECT NAME DRI/FQD] DEVELOPMENT ORDER, AS MAY BE AMENDED FROM TIME TO TIME, INCLUDING PROVISIONS REGARDING THE CONCURRENCY OF PUBLIC FACILITIES."			
Corrections	2.12 - Rezoning (Not Resolved) - 2.12 - Rezoning: List of approved Rezoning, case numbers, conditions, and the date of approval.			
Corrections	2.12.4/6.11.8 - Parking (Resolved) - 2.12.4/6.11.8 - Parking: Provide number and calculation of required and proposed parking spaces in table format, per LDC Sec. 6.11.8. - Parking requirements.			
Corrections	2.12.27 - Location & screening of outside storage (Resolved) - 2.12.27 - Location & screening of outside storage: Provide a statement indicating any outside storage area is proposed. If applicable, show location of outside storage areas on plan. Check special requirements under zoning code sections.			
Corrections	2.12 - Land Use Designation-adjacent properties (Resolved) - 2.12 - Land Use Designation-adjacent properties: Show existing land use designation on the adjacent properties.			
Corrections	2.12.6 - Location of water and sewer (Resolved) - 2.12.6 - Location of water and sewer: Show location of septic systems and wells. Locations shall be outside setback and clearance.			
Corrections	2.12.24 - Landscape requirements/6.8.6 - Buffering (Not Resolved) - 2.12.24 - Landscape requirements/6.8.6 - Buffering: Show buffer types, locations, and dimensions of required buffering on plan. Show buffer descriptions and illustrations of each proposed buffer (including longitudinal and transverse cross-sections)			
Corrections	2.12/4.2 - Building height (Not Resolved) - 2.12/4.2 - Building height: Show building height (primary and accessory structures) in the site data table.			
Corrections	2.12.16/6.5 - EALS or Exemption provided (Resolved) - 2.12.16/6.5 - EALS or Exemption provided?: Provide Environmental Assessment of Listed Species (EALS) or submit an Exemption (EALS-ER). Copy of the EALS/EALS-ER will be forwarded to review agency for comments. Refer to LDC Sec. 6.5 for submittal requirements and review procedures.			
Corrections	2.12 - Waivers (Requested & Approved) (Resolved) - 2.12 - Waivers (Requested & Approved): List of all requested and approved waivers, conditions, and the date of approval.			
Corrections	2.12.5/1.8.2.D - Traffic Concurrency Evaluation? (Not Resolved) - 2.12.5/1.8.2.D - Traffic Concurrency Evaluation?: In order to propose alternative solutions to addressing the lack of roadway capacity, a traffic study will be required and a traffic methodology must be submitted for review and approval prior to the traffic study being completed. Please contact OCE-Traffic Review for further information on completing the necessary methodology and study.			

SUBMITTAL SUMMARY REPORT (MajorSite-000060-2025)

ITEM REVIEW NAME (DEPARTMENT)	ASSIGNED TO	DUEDUE	COMPLETE	STATUS
Landscape (Plans) (Parks and Recreation)	Susan Heyen	12/19/2025	12/12/2025	Requires Re-submit
Comments	Please submit Tree Preservation, signed and sealed Landscape, Irrigation and if necessary, photometric plans for review			
OCE Design (Plans) (Office of the County Engineer)	Gerald Koch	12/19/2025	12/22/2025	Approved
Corrections	6.2.1.B.-F. - Requirements (Resolved) - 6.2.1.B.-F. - Requirements: Technical standards and requirements as listed in Section 6.2.1.B. through F. of the LDC			
Corrections	6.2.1.A. - Licensed Professional (Resolved) - 6.2.1.A. - Licensed Professional: Plans shall be prepared by a professional licensed by the State of Florida. The name, street address, signature, date, license number, and seal of the responsible professional shall be shown on each plan sheet. The same shall be provided on the cover page of any supporting documents and calculations.			
Corrections	Additional Design Comments (Resolved) - Additional Comments:			
OCE Property Management (Plans) (Office of the County Engineer)	Elizabeth Woods	12/19/2025	12/22/2025	Requires Re-submit
Comments	Please upload application and Site Plan for review -EMW 12.22.25			
OCE Stormwater (Permits & Plans) (Office of the County Engineer)	Alexander Turnipseed	12/19/2025	12/10/2025	Requires Re-submit
Corrections	6.13.2.B(4) - Hydrologic Analysis (Not Resolved) - 6.13.2.B(4) - Hydrologic Analysis: Hydrologic stormwater model analysis including all input parameters, supporting calculations, assumptions, documentation for design and results.			
Corrections	6.13.2.A(1)/(2) - Contributing Basins/Tc (Not Resolved) - 6.13.2.A(1)/(2) - Contributing Basins/Tc: Plan sheets shall minimally show: All pre-development and post-development basins that contribute runoff to the area proposed for development, including all off-site contributions, and areas that may be impacted by the development fully delineated and quantified. The time of concentration, and travel path, for each watershed shall be shown.			
Corrections	2.12.4.L(9)(b) - Data Block (Impervious Area) (Not Resolved) - 2.12.4.L(9)(b) - Data Block (Impervious Area): Provide existing and proposed gross impervious area in SF, ac, and percentage in the data block on the cover sheet. Include any offsite drainage to your site in the data block.			
Corrections	6.13.2.B(6) - Freeboard (Not Resolved) - 6.13.2.B(6) - Freeboard: A minimum freeboard of six inches shall be provided for all retention/detention areas.			
Corrections	6.13.6 - Stormwater Quality Criteria (Not Resolved) - 6.13.6 - Stormwater Quality Criteria: The following systems shall be considered as meeting the County's stormwater quality criteria: a) Systems that demonstrate numerically the post-development stormwater quality is equal to or better than the pre-development stormwater quality using methodology approved by the County Engineer or his designee. b) Dry retention systems that have a depth of four feet or less, measured from top of bank to pond bottom, shall have an appropriate vegetative cover. c) Dry retention systems that have a depth of six feet or less, measured from top of bank to pond bottom, with side slopes that are no steeper than 4:1, shall have sodded bottoms. d) Wet retention/detention systems, including wetlands, shall meet the governing State standards. e) Systems demonstrating distributed volume.			
Corrections	Additional Stormwater comments (Not Resolved) - (1) INFO: Please provide a copy of the NPDES permit or NOI as well as a copy of the District permit prior to construction. (2) INFO: If you have questions or would like to discuss the stormwater review comments, please contact Alexander Turnipseed at (352) 671-8376 or at alexander.turnipseed@marionfl.org.			
Corrections	6.13.12 - Operation and Maintenance (Not Resolved) - 6.13.12 - Operation and Maintenance: Provide an O&M manual detailing the steps for operating and maintaining the proposed private system of DRAs, pipes, inlets, swales, etc. Manual shall be signed by Owner and owner's certification statement shall be on the manual. Owner's certification statement: "I hereby certify that I, my successors, and assigns shall perpetually operate and maintain the stormwater management and associated elements in accordance with the specifications shown herein and on the approved plan".			
Corrections	2.12.8 - Topographical Contours (Not Resolved) - 2.12.8 - Topographical Contours: Current boundary and topographic survey (one foot contour intervals extending 100 feet beyond the project boundary) based upon accepted vertical datum. Surveys will be less than 12 months old and accurately reflect current site conditions, meeting standards set forth in Ch. 5J-17 FAC. Alternate topographic data may be accepted if pre-approved by the Marion County Land Surveyor.			
Corrections	6.13.2.B(8) - Calculation & Plan Consistency (Not Resolved) - 6.13.2.B(8) - Calculation & Plan Consistency: Calculations must be consistent with the plan sheets and other supporting details. Calculations shall use standard methodology recognized in the State of Florida, including hand and/or computerized calculations.			
Corrections	Final signed and sealed hard copy signature page (Not Resolved) - After all stormwater comments are resolved, please upload a scanned copy of the digitally signed and sealed certification page of the stormwater report. Alternatively, a hard copy can be submitted. If you choose to submit a hard copy, you only need to submit the certification page of the report. A full report is not necessary. However, full reports are accepted if desired.			
Corrections	6.13.8 - Stormwater Conveyance Criteria (Not Resolved) - 6.13.8 - Stormwater Conveyance Criteria: Conveyance systems shall be sized to accommodate the 25-year 24-hour storm event. The tailwater elevation utilized shall be based on the tailwater elevation of the receiving water body plus 6 inches at the peak discharge time of the design storm. Alternatively, the tailwater elevation utilized can be the design high water elevation of the 25-year 24-hour design storm. All retention/detention areas within subdivision developments shall have direct access to a right-of-way. A drainage right-of-way may be necessary to establish this access. Drainage rights-of-way shall be a minimum of 30 feet in width. All drainage swales to facilities or underground stormwater conveyance systems shall be within drainage easements, except where rights-of-way are provided. Drainage easements shall be a minimum of 20 feet in width.			
Corrections	6.13.2.A(9) - Access Accommodates Stormwater (Not Resolved) - 6.13.2.A(9) - Access Accommodates Stormwater: Site access accounting for stormwater conveyance with a swale, culvert, or curb and gutter driveway.			
Corrections	6.13.4 - Stormwater Quantity Criteria (Not Resolved) - 6.13.4 - Stormwater Quantity Criteria: Methodologies, rainfall distribution and intensities shall be consistent with those approved by the governing water management district. Assumed parameters must be supported by conventional methods. Design storms shall consider open or closed basins as provided in Table 6.13-1.			
Corrections	6.13.4.D - Recovery Analysis (Not Resolved) - 6.13.4.D - Recovery Analysis: All retention/detention areas shall recover the total volume required to meet the discharge volume limitations within 14 days following the design rainfall event. For retention/detention areas not able to recover the total required volume within 14 days, the stormwater facility volume shall be increased to retain an additional volume from a second design storm.			

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OCE Stormwater (Permits & Plans) (Office of the County Engineer)	Alexander Turnipseed	12/19/2025	12/10/2025	Requires Re-submit
Corrections	6.13.4.C - Discharge Conditions (Not Resolved) - 6.13.4.C - Discharge Conditions: All stormwater facilities shall be designed to limit discharges considering open or closed basins per Table 6.13-1. A discharge structure shall be required for all retention/detention areas not designed to retain the entire 100-year 24-hour post-development design storm. Discharge structures shall include a skimmer at a minimum.			
OCE Survey (Plans) (Office of the County Engineer)	Theresa Smail	12/19/2025	12/17/2025	Requires Re-submit
Corrections	6.4.7. Construction Plans - Survey Requirements (Not Resolved) - 6.4.7. Construction Plans - Survey Requirements: Survey information to support construction plans, including but not limited to Mass Grading, Improvement, or Major Site plans, shall meet requirements as set forth in Ch. 5J-17 FAC in addition to the following as identified in Section 6.4.7.A. through H. of the LDC.			
Corrections	2.12.8. - Current boundary and topographic survey (Not Resolved) - 2.12.8. - Current boundary and topographic survey: Current boundary and topographic survey (one foot contour intervals extending 100 feet beyond the project boundary) based upon accepted vertical datum. Surveys will be less than 12 months old and accurately reflect current site conditions, meeting standards set forth in Ch. 5J-17 FAC. Alternate topographic data may be accepted if pre-approved by the Marion County Land Surveyor.			
OCE Traffic (Permits & Plans) (Office of the County Engineer)	Chris Zeigler	12/19/2025	12/08/2025	Requires Re-submit
Corrections	6.11.4.B - Cross access (Not Resolved) - 6.11.4.B - Cross access: Provide a 24' wide paved cross access easement as specified in 6.11.4.B			
Corrections	6.12.12 - Sidewalks (Not Resolved) - 6.12.12 - Sidewalks: Show sidewalk on the plans as required in section 6.12.12.			
Utilities (OCE Plans) (Utilities)	Heather Proctor	12/19/2025	12/22/2025	Requires Re-submit
Comments	The parcel will be connecting to Marion County Utilities water and will connect to and extend the sewer force main. Please see the correction comments.			
Corrections	6.14.6 - Utilities design to be owned by MCU (Not Resolved) - 6.14.6 - Utilities design to be owned by MCU:			
Corrections	6.14.4 - Capacity charges - irrigation (Not Resolved) - 6.14.4 - Capacity charges			
Corrections	MCU Contact Info on Project Cover Sheet (Resolved) - MCU Contact Info on Project Cover Sheet: Marion County Utilities, 11800 S US Hwy 441, Bellevue FL 34420 - Customer Service 24/7/365 352-307-6000			
Corrections	6.14.8.A - Completion & Closeout - PLAN NOTE: (Not Resolved) - 6.14.8.A - Completion & Closeout - PLAN NOTE:			
Corrections	6.14.5.A(2) - Proposed mains & connections shown (Not Resolved) - 6.14.5.A(2) - Proposed mains & connections shown:			
Corrections	6.14.5.A(8) - Connection to existing sanitary (Not Resolved) - 6.14.5.A(8) - Connection to existing sanitary:			
Corrections	6.14.9.B - Transfer of Assets to MCU - PLAN NOTE: (Not Resolved) - 6.14.9.B - Transfer of Assets to MCU - PLAN NOTE::			
Corrections	6.14.5.B - FDEP PWS and/or WW permits (Not Resolved) - 6.14.5.B - FDEP PWS and/or WW permits			
Corrections	6.15.7 - Cross Connection Control/Backflow (Not Resolved) - 6.15.7 - Cross Connection Control/Backflow:			
Corrections	6.14.5.C - Hydraulic Analysis (Not Resolved) - 6.14.5.C - Hydraulic Analysis: The hydraulic analysis is required to analyze the water or wastewater pressures in this area.			
Corrections	6.15.3 - Fire Protection/Fire Flow Capacity (Not Resolved) - 6.15.3 - Fire Protection/Fire Flow Capacity:			
Corrections	6.14.5.A(1) - Existing water & sewer mains shown (Not Resolved) - 6.14.5.A(1) - Existing water & sewer mains shown: The entire utility system shall be shown on the plan, including existing water systems and all proposed components within the project area.			
Corrections	Review Fee as applicable (per Resolution) (Not Resolved) - Review Fee as applicable (per Resolution): MCU review fee for this submittal			
Corrections	6.14.5.A(3) - LS layout, elevations, schedules (Not Resolved) - 6.14.5.A(3) - LS layout, elevations, schedules: Lift station details shall be included on a separate page showing general location of LS with details, working elevations & schedules.			
Corrections	Additional Utilities Comments (Not Resolved) - Additional Utilities Comments			
Corrections	6.15.6.D - Meter Location (Not Resolved) - 6.15.6.D - Meter Location:			
Corrections	6.14.4 - Capacity charges - domestic water/sewer (Not Resolved) - 6.14.4 - Capacity charges - domestic water/sewer: Capacity charges to be invoiced and collected by MCU Permitting at time of building permit review - Cap Fee Worksheet and interior floor plan may be required.			
Corrections	Parcel numbers match project area (Resolved) - Parcel numbers match project area: The parcels(s) shown on the application and/or site plan must match the project area.			
Corrections	6.15.4 - Water Main Piping Installation (Not Resolved) - 6.15.4 - Water Main Piping Installation:			
Corrections	6.14.5.B - Submit permits to MCU (DOT, ROW etc) (Not Resolved) - 6.14.5.B - Submit permits to MCU (DOT, ROW etc): A copy of any permit issued to the contractor shall also be submitted to MCU's Construction Manager, or designee.			
Corrections	6.15.6.B - Irrigation Water Metering - size (Resolved) - 6.15.6.B - Irrigation Water Metering - size:			
Corrections	6.14.7 - Construction Inspection - PLAN NOTE: (Not Resolved) - 6.14.7 - Construction Inspection - PLAN NOTE			
Corrections	7.1.3 - UT DETAILS - current LDC version (Not Resolved) - 7.1.3 - UT DETAILS - current LDC version: UT details shall be current version based on latest edition of approved LDC			
Corrections	6.15.4 - Water Distribution System (Not Resolved) - 6.15.4 - Water Distribution System:			
Corrections	6.14.2 - Connection Requirements (Not Resolved) - 6.14.2 - Connection Requirements:			
Corrections	6.14.5.A(6) - MH locations, rim & invert elevation (Resolved) - 6.14.5.A(6) - MH locations, rim & invert elevation:			

January 26, 2025

Development Review Committee
 Marion County, Office of County Engineer
 412 SE 25th Ave.
 Ocala, FL 34471

Re: Response to Comments dated 12/24/2025
 Request for Land Development Code Waiver
 Site Name: Silver Springs State Park: Swimming Area, Kayak Launch, and Sea Hunt Area Improvements

Committee Members,

The following is our response and additional information based on the comments received dated December 24, 2025.

We are clarifying the waiver request from LDC Section 2.21.1 Major Site Plan and LDC Section 6.13.5 Flood Plain and Protection. We reference back to the original submittal for a detailed project description and discussion on impacts. That discussion outlined the impacts to wetlands, other surface waters, and uplands. Reviewing the GIS Flood Prone Areas, it appears that on this project, The Flood Prone Areas includes areas that are in the uploads and outside of delineated wetlands. The flood plain boundary is shown on sheet G-101 of the previously provided plans.

The cut and fill volumes are shown on sheet G-002. The table is also provided below with a column added showing the difference between fill and cut volumes.

Location		Cut (cy) Zone A	Cut (cy) Zone X	Cut (cy) Total	Fill (cy) Zone A	Fill (cy) Zone X	Fill (cy) Total	Difference (cy)
Swimming Area	Uplands	1	126	127	0	162	162	35
	Wetlands	2	0	2	183	0	183	181
	Below OHWL	3	0	3	0	0	0	-3
	Overall	6	126	132	183	162	345	213
Kayak Launch	Uplands	0	50	50	0	49	49	-1
	Wetlands	0	1	1	3	0	3	2
	Below OHWL	0	0	0	0	0	0	0
	Overall	0	51	51	3	49	52	1
Grand Total		6	177	183	186	211	397	214

Attached please find the following:

- Attachment 1 – Approved 2014 Unit Management Plan Amendment for Silver Springs State Park.
- Attachment 2 – Natural Resource Survey (EALS)
- Attachment 3 – UMAM Summaries

If the full ERP application will be helpful in your evaluation, that can be provided.

Best Regards,



Michael Schwier, PE

CC: Terry Cake, PE, Tayler Engineering

Silver Springs State Park

APPROVED
Unit Management Plan Amendment

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Division of Recreation and Parks
December 17, 2014





FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

MARJORY STONEMAN DOUGLAS BUILDING
3900 COMMONWEALTH BOULEVARD
TALLAHASSEE, FLORIDA 32399-3000

RICK SCOTT
GOVERNOR

CARLOS LOPEZ-CANTERA
LT. GOVERNOR

CLIFFORD D. WILSON III
INTERIM SECRETARY

December 17, 2014

Ms. Jennifer Z. Carver, AICP
Office of Park Planning
Division of Recreation & Parks
Department of Environmental Protection
3900 Commonwealth Boulevard, MS 525
Tallahassee, Florida 32399-3000

RE: Amendment to the Silver Springs State Park Management Plan - Lease 3488

Dear Ms. Carver:

The Division of State Lands, Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, hereby approves the amendment to the Silver Springs State Park management plan. The next management plan update is due December 17, 2024.

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

Sincerely,

Marianne S. Gengenbach
Office of Environmental Services
Division of State Lands



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INTRODUCTION

The Silver Springs State Park is located in central Marion County about seven miles northeast of downtown Ocala (see Vicinity Map). Access to the park is from Baseline Road (State Road 35) and from State Road 40 (see Reference Map). In addition, the Vicinity Map reflects significant land and water resources existing near the park.

The initial acquisition of the Silver River State Park occurred in 1985 and was funded through the Conservation and Recreation Lands (CARL) program. Funds from the CARL, Preservation 2000 (P2000) and Acquisition and Inholdings programs provided for acquisition of additional property. Marion County acquired a 220-acre parcel using funds from the Florida Community Trust. After acquisition, Marion County leased the property to the Division of Recreation and Parks (DRP) for management as part of the park (see Addendum 1).

Currently, the park contains 4,446.93 acres. The 266-acre Silver Springs addition was recently incorporated into the state park, and is the main subject of this management plan amendment. Due to the significance of Silver Springs as a unique natural feature and its historic importance to the State of Florida, the name of the state park officially changed to Silver Springs State Park on October 1, 2013. That name is used throughout this management plan amendment to refer to both to the additional acreage of the former attraction and to the entire acreage formerly managed as Silver River State Park.

At Silver Springs State Park, public outdoor recreation and conservation is the designated single use of the property. There are no legislative or executive directives that constrain the use of this property.

PURPOSE AND SIGNIFICANCE OF THE PARK

The purpose of Silver Springs State Park is to conserve and protect the natural value and water quality of the Silver River and its headwaters, Silver Springs, for the benefit of the people of Florida.

Park Significance

- The park protects Silver Springs, one of Florida's largest first magnitude springs and one of the largest artesian springs in the world. Silver Springs was declared a National Natural Landmark in 1972.
- The park contains the entire length of the Silver River, an Outstanding Florida Waterway (OFW) and one of the few remaining undeveloped rivers of Florida.
- The park provides for the scenic conservation of Silver Springs, one Florida's oldest tourist destinations.

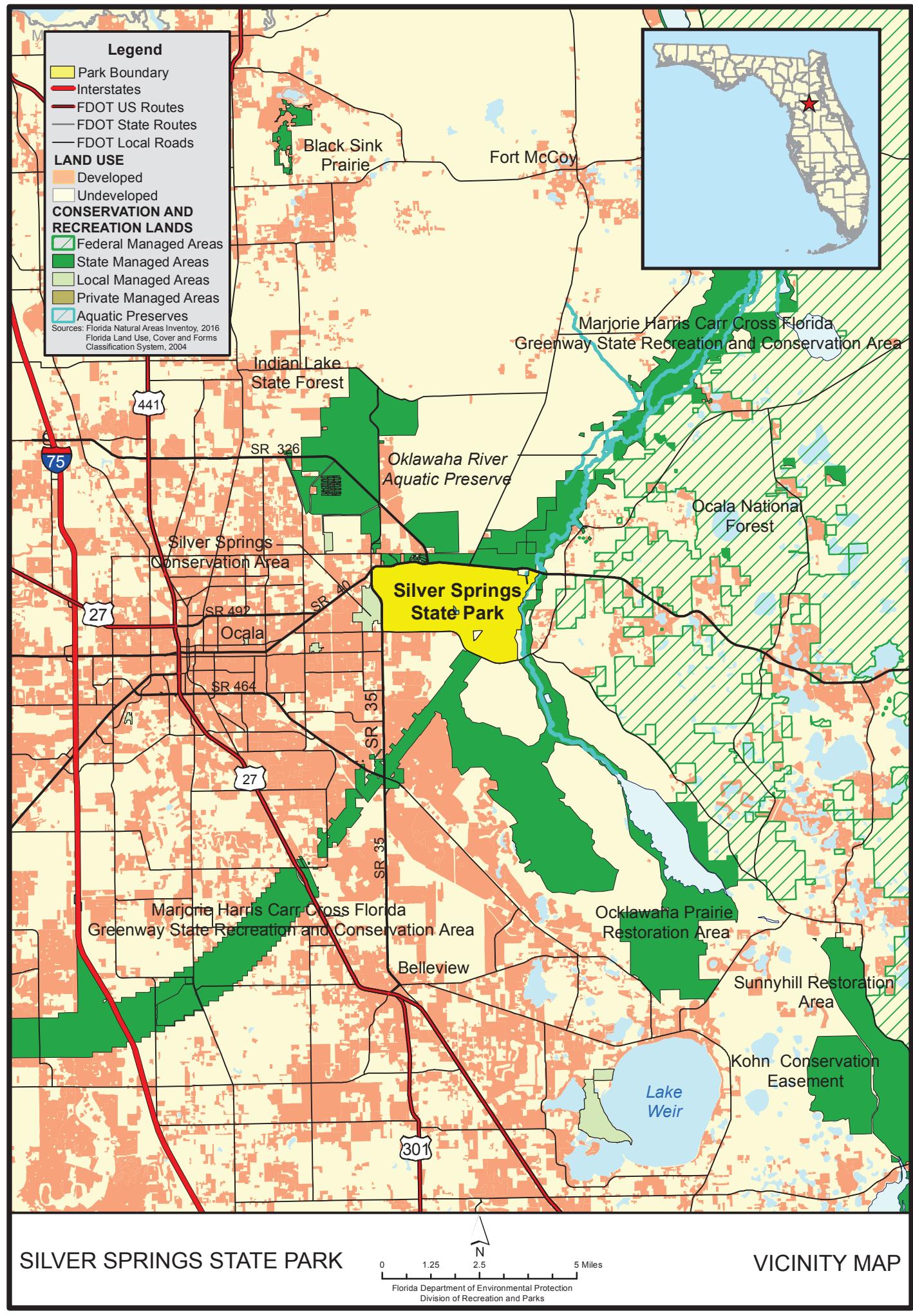
- The park protects contain important archaeological sites and historic architecture that represent periods of Florida's history from the Paleo-Indian through the mid-20th century.
- Park lands support a significant population of Florida pinkroot (*Spigelia loganioides*), an endangered plant species, and provide important habitat for a variety of other imperiled plants and animals including Florida gopher tortoise (*Gopherus polyphemus*), Florida black bear (*Ursus americanus floridanus*), Silver buckthorn (*Sideroxylon alachuense*) and Godfrey's swamp privet (*Forestiera godfreyi*).

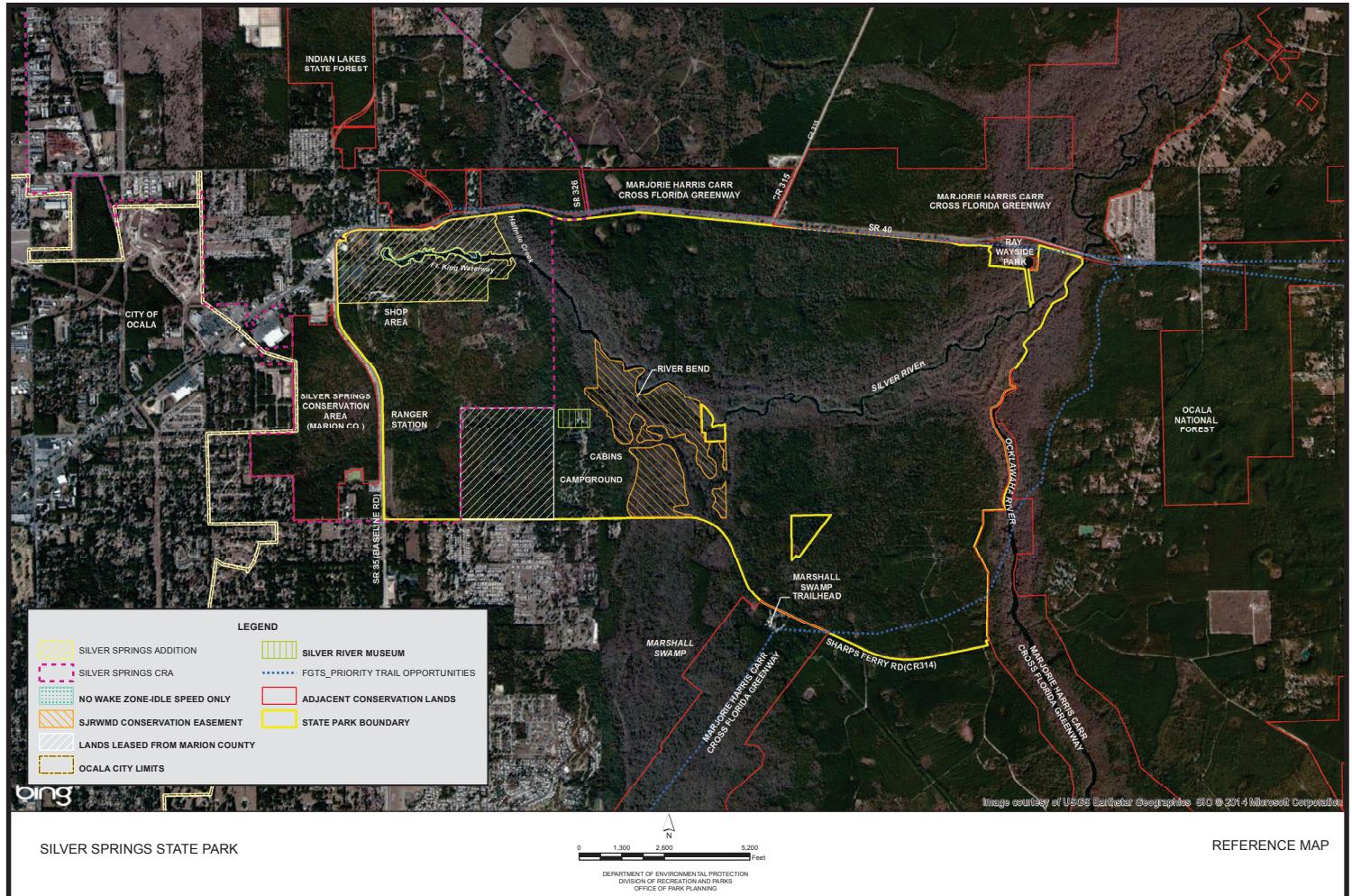
In DRP's unit classification system, Silver Springs State Park is classified as a state park. DRP seeks balance in the management of a state park, between the goals of maintaining and enhancing natural conditions, and providing public outdoor recreational opportunities. Natural resource management activities involve the management of natural systems. Park development provides public access and recreational facilities that are convenient, safe and compatible with existing resources. Program emphasis is on interpretation of the park's natural, aesthetic and educational attributes.

PURPOSE AND SCOPE OF THE PLAN

The approved 2010 park management plan serves as the basic statement of policy and direction for the management of the park as a unit of Florida's state park system and this amendment is intended to expand that role to encompass the land area of the former Silver Springs attraction. The management plan amendment identifies the goals, objectives, actions, criteria and standards that guide each aspect of park administration primarily related to the additional property, and identifies specific measures for implementation of management objectives. Where needed, elements of the 2010 approved Silver River State Park management plan are also amended to integrate the resource management, public use and land use programs within the previous park boundary with those of the added property. The plan meets the requirements of Sections 253.034 and 259.032, Florida Statutes, Chapter 18-2, Florida Administrative Code, and is consistent with the State Lands Management Plan. With approval, amendment will become a part of the 2010 approved plan.

The plan consists of three interrelated components: the Resource Management Component, the Land Use Component and the Implementation Component. The Resource Management Component provides a detailed inventory and assessment of the natural and cultural resources of the park. In addition, this component identifies resource management problems and needs, and establishes measurable management objectives for each of the park's management goals according to resource type. The Resource Management Component also provides guidance on the application of such measures as prescribed burning, exotic species removal, imperiled species management, cultural resource management and restoration of natural conditions.





The Land Use Component allocates the park's recreational resources, determines the volume of public use, and develops the park's physical plan. During development of the Land Use Component, intrinsic factors such as access, population, adjacent land uses, natural and cultural resources, current public uses, and existing park development are considered. Measurable objectives are established to expand recreational opportunities and to develop or improve use areas, facilities and programs.

The Implementation Component summarizes DRP progress toward achieving resource management, operational and capital improvement goals and objectives since October 1, 2013. All development and resource alterations proposed in this plan are subject to the granting of appropriate permits, easements, licenses, and other required legal instruments. Approval of the management plan does not constitute an exemption from complying with appropriate local, state or federal agencies.

In the development of this plan, the DRP analyzed the potential and ability to accommodate secondary management purposes within the park. Considerations given to secondary management purposes are within the context of the DRP's statutory responsibilities and the resource needs and values of the park. This analysis considered the park's natural and cultural resources, management needs, aesthetic values, visitor experiences and visitation. For this park, it was determined that no secondary management purposes could be accommodated in a manner that would not interfere with the park's primary purpose of resource-based outdoor recreation and conservation. Uses such as water resource development projects, water supply projects, regional storm water management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of the park.

Visitor fees and charges are the principal source of revenue generated by the park. The DRP analyzed the feasibility of the park to generate revenue to enhance management; however, it was determined that multiple-use management activities would not be appropriate as a means of generating revenues for land management. On a case-by-case basis, the DRP evaluates strategies to supplement park funding and include, but are not limited to, fees, concessions and similar measures.

The DRP analyzed the use of private land managers to facilitate restoration and management of this park. Decisions regarding this type of management (such as outsourcing, contracting with the private sector, use of volunteers, etc.) are determined on a case-by-case basis as necessity dictates.

MANAGEMENT PROGRAM OVERVIEW

Management Authority and Responsibility

In accordance with Chapter 258, Florida Statutes and Chapter 62D-2, Florida Administrative Code, the DRP has the responsibility of developing and operating

Florida's recreation and parks system. Administration is in accordance with the following policy:

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

Many operating procedures, used system-wide, are outlined in the DRP's Operations Manual (OM).

Park Management Goals

The following park goals express the DRP's long-term intent in managing the state park.

1. Provide administrative support for all park functions.
2. Protect water quality and quantity in the park, restore hydrology to the extent feasible and maintain the restored condition.
3. Restore and maintain the natural communities/habitats of the park.
4. Maintain, improve or restore imperiled species populations and habitats in the park.
5. Remove exotic and invasive plants and animals from the park and conduct needed maintenance control.
6. Protect, preserve and maintain the cultural resources of the park.
7. Provide public access and recreational opportunities in the park.
8. Develop and maintain the capital facilities and infrastructure necessary to meet the goals and objectives of this management plan.

Management Coordination

Management of the park is in accordance with all applicable laws and administrative rules. Identification of agencies having a major or direct role in the management of the park follows.

The Florida Department of Agriculture and Consumer Services, Florida Forest Service (FFS), assists DRP staff in the development of wildfire emergency plans and provides the authorization required for prescribed burning. The Florida Fish and Wildlife Conservation Commission (FWC), assists staff in the enforcement of state

laws pertaining to wildlife, freshwater fish and other aquatic life existing within the park. In addition, the FWC aids the DRP with wildlife management programs, including imperiled species management. The Florida Department of State, Division of Historical Resources (DHR) assists staff to ensure protection of archaeological and historical sites. The Florida Department of Environmental Protection, Office of Coastal and Aquatic Managed Areas (CAMA) aids staff in aquatic preserves management programs.

DRP will be proactive in coordination and communication on resource protection initiatives, ecotourism promotion and networking with public and private land managers throughout the Silver Springs Basin watershed. This includes participation in the Silver Springs Forever Working Group and the DEP Basin Management Action Plan process, consultation and cooperation with the Florida Department of Transportation (FDOT) on future improvements to State Road 40 and regular contact with other citizen and governmental initiatives operating in the river basin. DRP is working in close partnership with Marion County to coordinate the management of the state park with local environmental and economic redevelopment initiatives. DRP works closely with the St. Johns River Water Management District on water protection and land management issues, and coordinates regularly on recreation and ecotourism development opportunities with the managers of other public lands in the region including the FFS, the FWC, the US Forest Service, and others.

Public Participation

DRP solicited preliminary public input by conducting a preliminary public workshop on Thursday, March 7, 2013 in Ocala. The purpose of this meeting was to gather input for the plan at the beginning of the management planning process. DRP also conducted a series of four advisory group meetings from October 2013 to January 2014 as part of the development of this management plan amendment. DRP conducted a final public workshop on April 9, 2014 to gather comments on the draft management plan amendment. On April 10, 2014 DRP held a final Advisory Group meeting to gather comments on the draft management plan amendment from appointed Advisory group members (see Addendum 2).

Other Designations

Silver Springs State Park is not within an Area of Critical State Concern as defined in Section 380.05, Florida Statutes, and it is not presently under study for such designation. The park is a component of the Florida Greenways and Trails System. The park is a designated stop on the East Section of the Great Florida Birding and Wildlife Trail and the federally designated Black Bear Scenic Byway.

All waters within the park have an Outstanding Florida Waters designation, pursuant to Chapter 62-302, Florida Administrative Code. In addition, the Florida Department of Environmental Protection classified surface waters in the park as Class III waters. Portions of the park are designated as part of the Ocklawaha Aquatic Preserve under the provision of the Florida Aquatic Preserve Act of 1975 (Section 258.35, Florida Statutes).

Marion County has established a no wake-idle speed only zone by resolution (no. 85-R-128) on portions of the Silver River. In addition, there is a fishing prohibition in the Silver River from the headwaters at Silver Springs to its junction with the Ocklawaha River under Chapter 62D-2 Florida Administrative Code.

RESOURCE MANAGEMENT COMPONENT

Introduction

The Florida Department of Environmental Protection (DEP), DRP of Recreation and Parks (DRP) in accordance with Chapter 258, Florida Statutes, has implemented resource management programs for preserving for all time the representative examples of natural and cultural resources of statewide significance under its administration. This component of the unit plan describes the natural and cultural resources of the park and identifies the methods that will be used to manage them. Management measures expressed in this plan are consistent with DEP's overall mission in ecosystem management. Cited references are contained in Addendum 2.

DRP's philosophy of resource management is natural systems management. Primary emphasis is placed on restoring and maintaining, to the degree possible, the natural processes that shaped the structure, function and species composition of Florida's diverse natural communities as they occurred in the original domain. Single species management for imperiled species is appropriate in state parks when the maintenance, recovery or restoration of a species or population is complicated due to constraints associated with long-term restoration efforts, unnaturally high mortality or insufficient habitat. Single species management should be compatible with the maintenance and restoration of natural processes, and should not imperil other native species or seriously compromise park values.

DRP's management goal for cultural resources is to preserve sites and objects that represent Florida's cultural periods, significant historic events or persons. This goal often entails active measures to stabilize, reconstruct or restore resources, or to rehabilitate them for appropriate public use.

Because park units are often components of larger ecosystems, their proper management can be affected by conditions and events that occur beyond park boundaries. Ecosystem management is implemented through a resource management evaluation program that assesses resource conditions, evaluates management activities and refines management actions, and reviews local comprehensive plans and development permit applications for park/ecosystem impacts.

The entire park is divided into management zones that delineate areas on the ground that are used to reference management activities (see Management Zones Map). The shape and size of each zone may be based on natural community type, burn zone, and the location of existing roads and natural fire breaks. It is important to note that all burn zones are management zones; however, not all management zones include fire-dependent natural communities. Table 1 reflects the management zones with the acres of each zone of the addition.

Table 1. Silver Springs Addition Management Zones

Management Zone	Acreage	Managed with Prescribed Fire	Contains Cultural Resources
SV 31	49.1	No	Yes
SV 32	47.6	No	Yes
SV 33	20.5	No	No
SV 34	14.5	No	Yes
SV 35	8.6	No	Yes
SV 36	107.2	Yes	Yes

Resource Description and Assessment

Natural Resources

Topography

The park is located on the eastern edge of the Ocala Platform. Within this district, the western part of the unit lies in the Anthony Hills subdivision of the Marion Hills physiographic division. In this area, low hills developed where Miocene clay was thin or nonexistent and sands and clayey sands of Upper Miocene origin rest directly on limestone.

Within the unit, relatively flattened uplands gradually slope downward to the floodplain in most areas, although somewhat abruptly in others. A few shallow depressions exist as well. The southwest portion of the property contains the highest elevation of 75 feet. Along the northern boundary of the park, bordered by State Road 40, elevations are 55 feet. The lowest elevations (45 feet) are in the Silver River floodplain.

Some alteration of the terrain by past activities has affected the topography of the park. Roads, attractions infrastructure development, small gauge railway bed construction, drainage ditches, borrow pits, past timber harvests and other notable topographic disturbances on the property have all affected the property in some way. One large and several small borrow pits are scattered throughout the south side of the property. One of the most significant alterations was the construction of the Ft. King Waterway during the 1970s south of the Silver River head spring and run.

Geology

Silver Springs lies near the DRP of the Central Lakes and Ocala Karst geomorphic districts. The Central Lakes District consists of mostly karst seepage lakes that developed beneath a cover of sand, and the Ocala Karst District consists mainly of a freshwater peat marsh that developed over Eocene and Oligocene age limestones (Bryan et al. 2008). Regionally, deposits of varied origin underlie the area. These deposits include Holocene Undifferentiated Quaternary Sediments (Qh), Pleistocene Undifferentiated Quaternary Sediments (Qu), Pliocene Undifferentiated



Tertiary/Quaternary Sediments (TQu), Pliocene Cypresshead Formation (Tc), Miocene Hawthorn Group, Coosawhatchie Formation (Thc) and Eocene Ocala Limestone (To) (Scott, et al. 2001 Map).

Undifferentiated Holocene sediments (Qh) are mapped within the Silver River valley and include quartz sands, marls, organics, and minor carbonate sands and mud and have an origin of less than 4,500 years. The undifferentiated Holocene sediments are part of the surficial aquifer system (Green et al. 2009)

Pleistocene Undifferentiated Quaternary sediments (Qu) are likely derived from erosion and re-deposition of sediments from the Coosawhatchie and the Cypresshead Formations. Generally, these sediments consist of white to gray to orange to blue-green, fine to coarse grained, clean to clayey unfossiliferous sands, sandy clays and clays with variable admixtures or organics. These sediments form part of the surficial aquifer system (Green et al. 2009).

Pliocene Undifferentiated Tertiary/Quaternary Sediments (TQu) are siliciclastics that are separated from the undifferentiated Quaternary sediments solely on the basis of elevation. The sediments which occur above 100 feet MSL are predominately older than Pleistocene but may have been reworked during the Pleistocene. Pliocene Undifferentiated Tertiary/Quaternary Sediments (TQu) consist of poorly consolidated to unconsolidated siliciclastics with white to gray to orange to blue-green, fine to coarse, clean to clayey unfossiliferous sands, sandy clays and clays with variable admixtures of clay and organics. Permeable sediments of the undifferentiated Tertiary/Quaternary sediments form part of the surficial aquifer system (Green et al. 2009).

The Pliocene Cypresshead Formation (Tc) is a mottled reddish-brown to reddish-orange to white, unconsolidated to poorly consolidated, fine to very coarse grained, variably clayey to clean quartz sand. Discoid quartzite pebbles, mica, and ghosts of nearshore mollusks are often present. This formation is exposed at the surface above 100 feet above mean sea level. The Cypresshead Formation (Tc) is unconformably overlain by Undifferentiated Quaternary Sediments (Qu), and permeable sediments of the Cypresshead Formation form part of the surficial aquifer system (Green et al. 2009).

The Miocene Hawthorn Group, Coosawhatchie Formation (Thc) is present near the surface where it unconformably overlies the Ocala Limestone. The Coosawhatchie Formation consists of gray to bluish-gray sandy clay or clayey sand with phosphate grains, sands, and sandy limestone to dolostone. This formation has a low permeability and is part of the intermediate aquifer system, and where present, ranges from over 180 feet above MSL to 18 feet below MSL (Green et al. 2009).

The upper portion of the Eocene Ocala Limestone (To) is a biogenic marine limestone comprised largely of foraminifera, mollusks, echinoides, and bryozoans. The top of the Ocala Limestone ranges from over 150 feet above mean sea-level (MSL) in field exposures to 11 feet below MSL. The Ocala Limestone forms part of the Floridan aquifer system (Green et al. 2009).

There are two aquifers in this region, the Floridan and the shallow aquifer (Hyde 1965). The shallow aquifer is composed of Miocene to Holocene sand and shell beds. This aquifer is often of limited horizontal and vertical extent and generally exists as a water-table aquifer. The Floridan aquifer has an average thickness of more than 1,000 feet (Fernald and Patton 1984), and its nearness to the surface varies. Occasionally, clay beds that place it under artesian pressure confine the aquifer. Recharge is by rainfall and discharge occurs by way of evapotranspiration and seepage to surface water bodies.

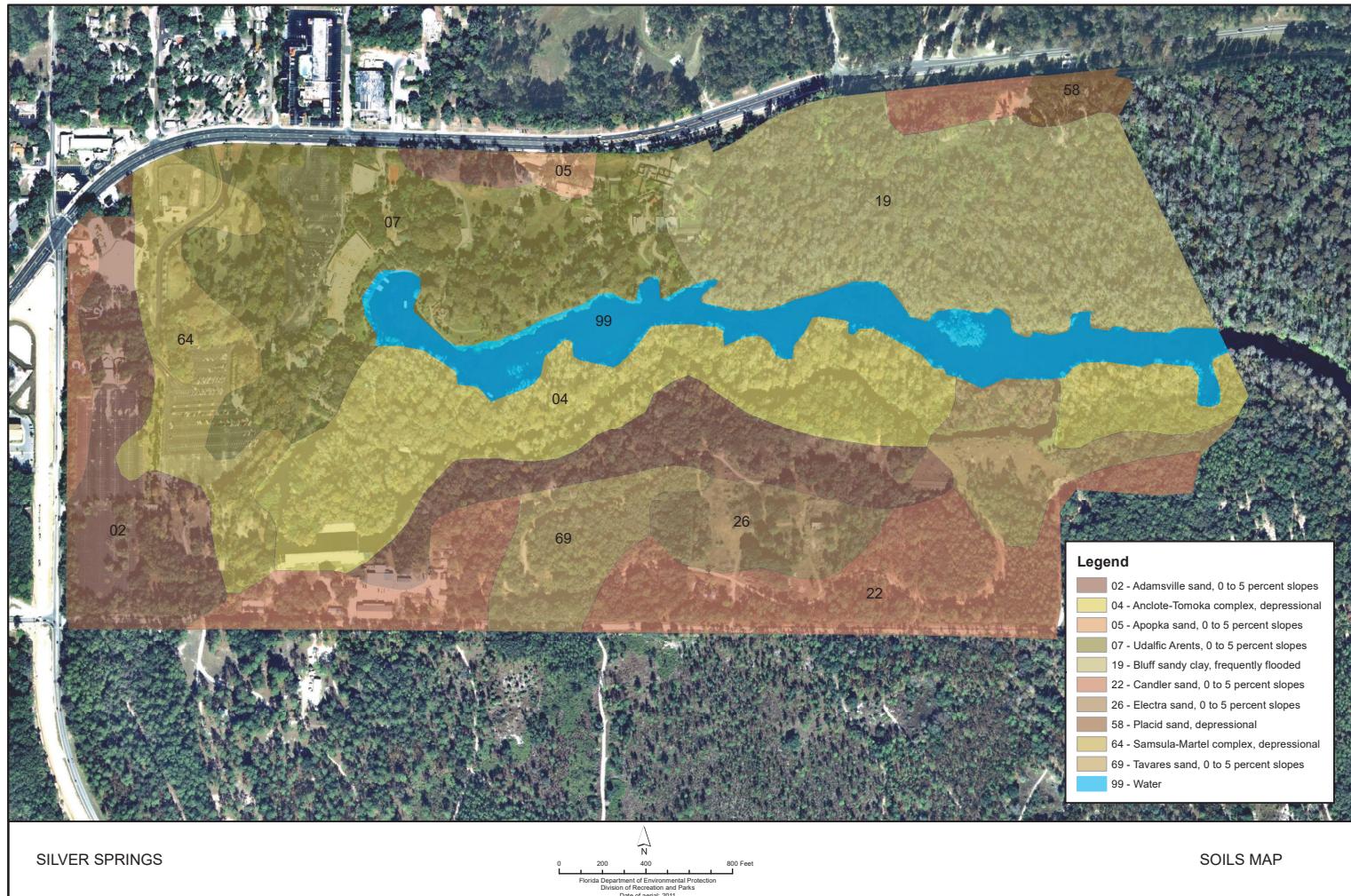
East of Silver Springs, the Floridan aquifer is confined, particularly in the Ocklawaha River valley, by a mantle of Miocene and perhaps younger deposits. West of the springs, considerable erosion of these confining beds has taken place. Here the aquifer receives direct recharge via permeable, thin surficial deposits. The Silver Springs complex provides a major discharge from the Floridan aquifer with a long-term average flow of over 500 million gallons per day (Munch et al. 2006).

A small but deep sinkhole exists in the uplands south of the Silver River in SV-36. Little is known at this time about the sinkhole or its potential connectivity with the springs and aquifer. Further investigation should occur to assess this sinkhole and determine its relationship with the springs and aquifer as sinkholes can provide direct connectivity to the aquifer. Protective precautions should be taken to ensure groundwater protection when conducting any construction or demolition activities near this area.

Soils

The Natural Resources Conservation Service (NRCS) has identified 10 different soil types (see Soils Map) in the property. The soils existing on the property range from fine sands in the uplands to muck in the depressional and wetland areas. Detailed soil descriptions are contained in Addendum 3. In general, the natural areas of the property adhere to the natural community-soil type relationship described by the NRCS. However, differences in elevation and slope, human land alterations and suppression of fire have caused some deviations from the norm. For example, Bluff sandy clay (Bf), a very poorly drained soil typically supports floodplain swamp or floodplain forest communities. However, when the relief is high enough, either upland hardwood forest or upland mixed forest exists on the site. Placid Sand (Pm) is another very poorly drained soil and characterized by some type of hydric forest. When found on a slope, Placid sand supports an upland hardwood or upland mixed forest.

All management activities will follow best management practices to prevent soil erosion and to conserve soil and water resources at the park. Soil erosion will be monitored for and corrective actions taken to protect soil resources and water quality. Of concern will be to remediate any current recreational erosion impacts, to avoid the creation of new erosion issues, avoiding impacts to aquatic vegetation, and to reduce runoff from facilities directly into the springs.



Minerals

No deposits of commercial value have been discovered on the property.

Hydrology

The park lies within the approximately 850 square mile Ocklawaha River drainage basin. A group of several large artesian springs, collectively known as Silver Springs, give rise to the Silver River. The river flows east through Silver Springs State Park for approximately 5 miles before it joins the Ocklawaha River, which ultimately flows into the St. Johns River. The Silver River has a designation as an Outstanding Florida Water (OFW). The portion of the Silver River downstream of the boundary with the former Attractions property addressed in this plan is included within the Ocklawaha River Aquatic Preserve (ORAP) boundary.

The Silver Springs complex consists of at least 30 spring vents scattered along the bottom of the uppermost $\frac{3}{4}$ mile of the Silver River. The vents vary in size from small sand boils to massive caves. The largest of the spring vents is Mammoth Spring (also known as Main Spring). Mammoth Spring has two vents in the main pool that combined contribute about 45 percent of the total flow of Silver Springs. The remaining springs contribute additional flow as the Silver River flows downstream. About a mile downstream from the head spring, Half-mile Creek flows into the Silver River from the north. Half-mile Creek is the only significant tributary of the Silver River (Scott et al. 2004; SJRWMD 2013).

South of the main Silver River channel, from the head spring downstream to approximately $\frac{1}{2}$ mile, a secondary channel was dug, more or less paralleling the Silver River. This channel is known as the Fort King Waterway. The first excavations were dug in the 1940s but the final portions of the current Fort King Waterway channel were not completed until the 1970s. The waterway has been used over the years for riverboat tours provided by the Silver Springs attraction operations and it also appears to aid in the drainage of Ross Allen Island and its former animal enclosures, as well as carry drainage from a large ditch that traverses the parking areas. There is a basin with a docking and maintenance area for the glass-bottom boats located near the western end of the Fort King Waterway, south of Ross Allen Island. Some spoil material from the waterway excavations may have been spread along the length of the waterway but most of it appears to have been hauled off site. A large spoil pile is present in zone SV-12 of the adjacent Silver River State Park property and may have originated from the excavation of the Fort King Waterway. Another large spoil pile is present near the eastern end of the Fort King Waterway and may also contain materials dug from a portion of the waterway, especially the basin near the former Paradise Beach.

The majority of the Silver River is bordered by a fringe of floodplain swamp. Aerial photography from the 1940s shows the floodplain swamp to the west of the head spring area was formerly more extensive than current conditions. Some of the swamp in this area was converted to parking areas and remnant portions now exist in an altered condition due to roads bisecting them and increased drainage due to

ditching. The portion adjacent to the entrance boardwalk has been altered by pumping of water to maintain water levels under the boardwalk. An outfall was installed to drain overflow so that a near constant water level was maintained. Due to these past hydrological alterations and the lack of the former continuity with the rest of the floodplain swamp, these remnant portions of floodplain swamp in this area currently exist in a condition more like a cypress dome natural community but historically were floodplain swamp.

Past hydrological disturbances on the property are varied. Some areas have been drained by ditching, others have been flooded by pumping water, some wetlands have been cleared and developed, spring flows have been reduced, and nutrient loading has increased. These disturbances have had various levels of impact on the resources of the park and some projects have already been implemented to improve the hydrological conditions.

The largest ditch in the park is the Fort King Waterway. The waterway was dug through the floodplain swamp along the south side of the Silver River near the ecotone between the swamp and the adjacent uplands. To the southwest of the head spring the waterway bisects a section of former floodplain swamp that extends northward to the west of the headspring area. The Fort King Waterway flows west to east and likely facilitates drainage of portions of the floodplain. In addition, the waterway formerly drained overflow water that was pumped through the animal enclosures on Ross Allen Island. This pumping has since ceased and the animals have been removed and transferred to other facilities. The animal enclosures are scheduled to be removed. Additional future nutrient input to the Fort King Waterway from captive animal waste will be eliminated.

A secondary ditch that drains north to south, through the parking areas to the west of the head spring, outfalls into the Fort King Waterway near the boathouse facility located south of Ross Allen Island. Just to the west of the service road connecting the parking area to Paradise Road is a large overflow weir structure that maintains the water levels behind it throughout the majority of the length of the ditch. This ditch serves a primary purpose of draining storm water runoff from the parking areas. It also aids in the drainage of the northernmost disjoint section of the floodplain swamp and formerly drained the overflow from the outfall located in the wetland along the entrance boardwalk. This wetland was maintained in a flooded condition by constantly pumping water into it from the Fort King Waterway. The pumping of water into this area has since ceased and the wetland will be allowed to exist in a more natural hydrological state with normal wet-dry cycles.

In the past, large volumes of water were pumped around the property to hydrate certain areas and flush animal enclosures as described above, as well as to irrigate lawn and landscaping. Additional surface water was pumped from the north side of Silver River and used to irrigate the lawn and landscaping across much of the attractions area. This irrigation use will be reduced and phased out. Pumping of surface and groundwater onsite for irrigation and other uses will be reduced to the furthest extent possible. A number of small wells exist on the property. The need for each one will be evaluated and wells will be properly capped and/or

permanently abandoned if no longer needed to support park operations.

Two eight inch wells owned and maintained by Marion County Utilities exist on the property. One is located just north of the head spring and the other south of Ross Allen Island near the covered boat slips. These two wells are used primarily for public water supply via Marion County's Silver Springs Regional Water Treatment Facility under SJRWMD Consumptive Use Permit (CUP) #4578-6. The permitted allocation for these two wells is 233.235 million gallons per year (0.639 million gallons per day (mgd) average) of groundwater from the Floridan aquifer for public supply type use (which includes household, commercial/industrial, water utility, and unaccounted for uses), and an additional 1.4 million gallons per day for essential use (fire protection) (SJRWM 2008). A portion of the water withdrawn from these two wells under CUP #4578-6 is sold by Marion County Utilities to the Margaret C. Dickson Revocable Trust #1 under SJRWMD Secondary Use CUP #80363-3 for the sale in bulk to commercial water bottling companies. The permitted secondary use CUP allocation under this permit is 73.0 million gallons per year (mgy) (0.2 mgd average) (SJRWM 2007).

An earthen berm was created around the perimeter of Ross Allen Island to contain all of the water that was pumped through the animal enclosures. Current plans call for leaving the berm intact to contain any potentially sediment and nutrient loaded water from entering the Silver River or Fort King Waterway during the period of demolition/construction activities occurring on Ross Allen Island. Once all of the captive animals have been moved to other facilities and the enclosures have been removed and restored to more natural conditions, the feasibility of removal or breaching of the berm should be evaluated. Total removal may not be feasible given the limitations of access by heavy equipment to the area but breaching the berm with small cuts may be a good option to allow water from the Silver River to freely move in and out of the wetlands of Ross Allen Island, providing for a more natural hydroperiod cycle. Restoration options for Ross Allen Island should be thoroughly assessed, with the protection of downstream water quality in mind, and a plan for restoration regarding removal and/or breaching of the berm should be formulated and implemented.

Over the years, large paved parking areas were installed to support the Attraction operations. They are located to the west and southwest of the head spring. Most of the parking areas were created in the uplands but some of the parking lots were built over former wetlands, specifically the section of floodplain swamp that extended northward, west of the head spring area. Much of that wetland area was directly lost to development of the parking areas and the remainder was heavily impacted by the construction of roads and drainage ditches. Currently, storm water runoff from most of the paved parking areas discharges without retention directly into the north-south running ditch that ultimately outfalls into the Silver River via the Fort King Waterway. Storm water from a section of road near the main entrance is diverted through curb and gutter inlets into a small water retention area east of the entrance road where it percolates. Another small water retention area is located just to the east of the stage and collects some storm water from the paved areas behind the stage. There is a need to evaluate the vast amount of asphalt

parking lot present and the need for improved stormwater attenuation and treatment. Currently, large amount of impervious surface exists where wetlands once provided filtration near the headspring.

Silver Springs has been the site of an extraordinary amount of ecological research. Dr. Howard T. Odum in the 1950s (Odum 1957) and Dr. Robert L. Knight in the 1970s (Knight 1980) conducted large scale biological and ecosystem metabolism studies of Silver Springs. In 2006, Munch et al. completed a Fifty Year Retrospective Study of the Ecology of Silver Springs, which provides an assessment of land use and water quality changes in Silver Springs and a development of cause-and-effect relationships to the spring's ecology (Munch et al. 2006).

The Silver River is known for its abundance of fish and other wildlife. Passengers on glass-bottom boat rides have long been able to view huge fish in the clear waters of the spring run. Fishing has not been allowed in the river for decades; however, fish populations have declined since the 1950s so much so that measures of fish biomass show declines of greater than 90 percent from historic conditions (Munch et al. 2006). Given the uniqueness of an un-fished spring run system and the significance of the large fish population to glass-bottom boat tours, staff should pursue periodic monitoring of the river's fish population to assess impacts of ecological change and recreational use. Future research should be conducted to determine the causes of the fish population decline and to identify possible restoration options.

The headspring area and a portion of the northern shoreline of the Silver River just downstream of the headspring have been enclosed by a man-made bulkhead. The natural shoreline vegetation has been mostly or completely lost in this area and erosion is a problem. The bulkhead is in relatively poor condition. Prior to repair or replacement of the bulkhead structure, staff should assess the feasibility of removing the bulkhead (or at least a portion of it) and restoration of the shoreline to natural grade and native vegetation. Similar projects have been conducted in other state parks and can serve as models. If bulkhead removal is deemed feasible, a plan for shoreline restoration should be developed and implemented.

The U.S. Geological Survey (USGS), the St. Johns River Water Management District (SJRWMD), the Florida Department of Environmental Protection (DEP), and others have conducted considerable hydrologic research in Silver Springs and the Silver River. Many research and monitoring projects are ongoing. Of particular note is the period of record of flow measurement by the USGS recorded at Silver Springs and the Silver River. It is among the longest in the state, going back to the early 1900s. It is because of this wealth of historic data and current research that two important trends are evident. The current flow of Silver Springs is much reduced from historic levels and continues to decline. The system is further stressed by nutrient loading in the form of nitrate nitrogen which has increased dramatically in concentration over the period of record (Munch et al. 2006; Harrington et al. 2008; WSI 2012). Both of these trends are cause for concern and many projects are already underway to address these issues.

Research shows that the flow rate of Silver Springs/River is variable over time but the long-term trend is a significant reduction in flow and a continual decline in average flow since about the 1950s (Munch et al. 2006, Harrington et al. 2008). Reasons for the decline in discharge/flow are varied. Research shows that rainfall trends are closely linked to trends in spring discharge (Munch et al. 2006). This is not surprising considering the aquifer's proximity to the surface over much of the springs' recharge area (Baker et al. 2007). Infiltration in the area is rapid and lateral movement within the local aquifer has been shown to be fast based upon dye tracer studies (McGurk et al. 2011). These aquifer characteristics allow for a close relationship between rainfall and discharge. However, the observed decline in flow may not be explained wholly by rainfall trends. The average measured flow in the 1930s was approximately twice the average flow of recent years yet rainfall has not declined nearly as dramatically as spring flow during that same timeframe (Harrigan 2008, WSI 2012). Although rainfall is very important, other factors are likely contributing to the declining spring flows.

The Silver Springs complex has a recharge basin of approximately 1200 square miles (Munch et al. 2006). Land use changes within the springshed have increased the amount of impervious surface and reduced the potential area available for aquifer recharge. Current land uses also require more consumptive use of groundwater than previous land uses within the basin. Both of these factors have contributed to spring flow reductions. Population growth and the associated increased groundwater pumping for consumptive uses amplify the effects of droughts on spring discharge (Harrigan 2008, Munch 2006). The lows in normal fluctuations of flow rates become more pronounced when the effects of increased groundwater pumping are coupled with periods of low rainfall. In some cases, this can cause springs to completely stop flowing (Harrigan 2008). Silver Springs lies within a region of mixed land uses and heavy consumptive water use that contributes to the observed reduction in spring discharge. The St Johns River Water Management District (SJRWMD) is addressing this issue by establishing and adopting a Minimum Flow and Level (MFL) regime for Silver Springs and the Silver River. Establishment of the Silver Springs/River MFL was scheduled for 2013 and most of the field work and analyses have already been conducted. A draft MFL report dated Feb 22, 2013 is available (Hall and Slater 2013). The current draft MFL would set the minimum flow regime for Silver Springs at 677 cfs, which is 31 cfs lower than the baseline median of 708 cfs used in the data analysis. If adopted, this MFL value would allow an additional reduction in flow of 2 cfs without violating the MFL. However, if water withdrawals increase to the full capacity of existing permitted allocations within the springshed, the MFL would be exceeded. The SJRWMD is currently developing a strategy to address this issue. A prevention strategy must be developed concurrently by SJRWMD to try to prevent MFL exceedance. The MFL, once adopted, will provide some legal protection for Silver Springs' discharge.

Land use changes in the spring basin have also led to an increase in available nutrients entering the groundwater that ultimately reaches Silver Springs (Munch et al. 2006). As natural forested lands have been converted to agriculture, commercial, industrial, or residential use, more fertilizers are applied and septic and

other wastewater systems are installed. This conversion has contributed nutrients that percolate to the aquifer. Silver Springs is particularly vulnerable because of the unconfined nature of the aquifer throughout much of the springshed and the aquifer's proximity to the surface (Baker et al. 2007, NAI 2011, Hicks and Holland 2012).

Elevated levels of nutrients in groundwater discharging from springs can cause significant ecological harm (Hicks and Holland 2012, Harrington et al. 2008, Munch et al. 2006). Typically, spring systems become plagued by excessive growth of filamentous algae. In some cases algal growth and algal mat accumulation are such that native aquatic macrophytes like eelgrasses are shaded out and lost from the system. This causes large scale ecological shifts in the ecosystem (Harrington et al. 2008). Nitrogen and phosphorus are the two nutrients generally responsible for excessive algal growth in springs (Stevenson et al. 2007). In the Silver Springs system, as in most Florida springs, it is nitrogen (in the form of nitrate) that is the main water quality problem (Munch et al. 2006, Harrington et al. 2008).

Background levels of nitrate in springs that discharge groundwater from areas of the aquifer that are not polluted by human influence, such as deep within national forests and other conservation lands, are generally well below 0.1 mg/L. Harrington et al. (2008) found a background concentration of 0.015 mg/L for the median concentration of springs with the lowest measured nitrate levels in the state. The first recorded measurement of nitrate levels in Silver Springs was measured by USGS in 1907 at 0.04 mg/L (Scott et al. 2004). Since that time nitrate concentration in Silver Springs has steadily increased [0.46 mg/L in 1953 (Odum 1957), 0.67 mg/L in 1980 (Knight 1980), 1.14 mg/L in 2005 (Munch et al. 2006), and as high as 1.19 mg/L in 2010 (WSI 2012)]. Nitrate-fueled algal mat growth in Silver Springs became elevated to the point that the water body was verified as impaired by FDEP in 2009 and the Total Maximum Daily Load (TMDL) process was initiated. In November 2012 a nitrate TMDL for Silver Springs (WBID 2772A), the Silver Springs Group (WBID 2772C), and the Upper Silver River (WBID 2772E) was set at 0.35 mg/L, which corresponds to a 79 percent reduction from current levels (Hicks and Holland 2012). The TMDL process calls for the development of a Basin Management Action Plan (BMAP). The first BMAP orientation meeting occurred in January 2013 and meetings have been held approximately once per month since that time. The goal of the BMAP is to identify and implement projects to achieve the TMDL target of 0.35 mg/L nitrate concentration.

The removal of captive animals from Ross Allen Island and elsewhere on the Silver Springs property, will eliminate a large source of nutrient loading. Another project is a waste water improvement project that will connect many of the facilities at Silver Springs State Park to the municipal sewer system. When complete, this project will eliminate many of the existing septic tank systems onsite. DRP will systematically connect additional park facilities to the municipal sewer system as funding becomes available.

Natural Communities

This section of the management plan describes and assesses each of the natural communities found within the former attraction property. It also describes the desired future condition (DFC) of each natural community and identifies the actions that will be required to bring the community to its desired future condition. Specific management objectives and actions for natural community management, exotic species management, imperiled species management and restoration are discussed in the Resource Management Program section of this component.

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

When a natural community within a park reaches the desired future condition, it is considered to be in a "maintenance condition." Required actions for sustaining a community's maintenance condition may include, maintaining optimal fire return intervals for fire dependent communities, ongoing control of non-native plant and animal species, maintaining natural hydrological functions (including historic water flows and water quality), preserving a community's biodiversity and vegetative structure, protecting viable populations of plant and animal species (including those that are imperiled or endemic), and preserving intact ecotone linking natural communities across the landscape.

The property contains 6 distinct natural communities. Altered land cover types exist as well (see Existing Conditions Map). The list of known plants and animals occurring in the park was updated to include the Silver Springs addition. The current species list is contained in Addendum 4.

Sandhill

Desired future condition: Dominant pines should be longleaf pine. Herbaceous cover should be 80 percent or greater, and less than 3 feet in height. In addition to groundcover and pines, there should be scattered individual trees and/or clumps of onsite oak species (usually turkey oaks (*Quercus laevis*), sand post oak (*Quercus margaretta*), and blue-jack oak (*Quercus incana*)). In old-growth conditions, sand post oaks could be 150-200 years old, and some turkey oaks could be over 100 years old. The Optimal Fire Return Interval for this community is 1-3 years.

Description and assessment: This community occurs in the southern portion of the property south of the Ft. King Waterway in management zone SV-36. Most of this community is considered to be in fair to poor condition due to fragmentation by roads, earth moving, exotic plant infestation, and fire exclusion. Historic aerial photography clearly shows the signature indicative of a high quality sandhill throughout SV-36 south of the hydric hammock. However, all that remains of this intact plant community now is a small area in the southeastern portion of SV-36. This area, approximately 4 acres in size, remains intact with native sandhill groundcover and canopy species. This remaining sandhill is significant and is all that remains of the previous surrounding natural land cover within this portion of the park. Most of the former sandhill has succeeded to "successional hardwood forest" due to lack of fire (please see description below in altered land cover types).

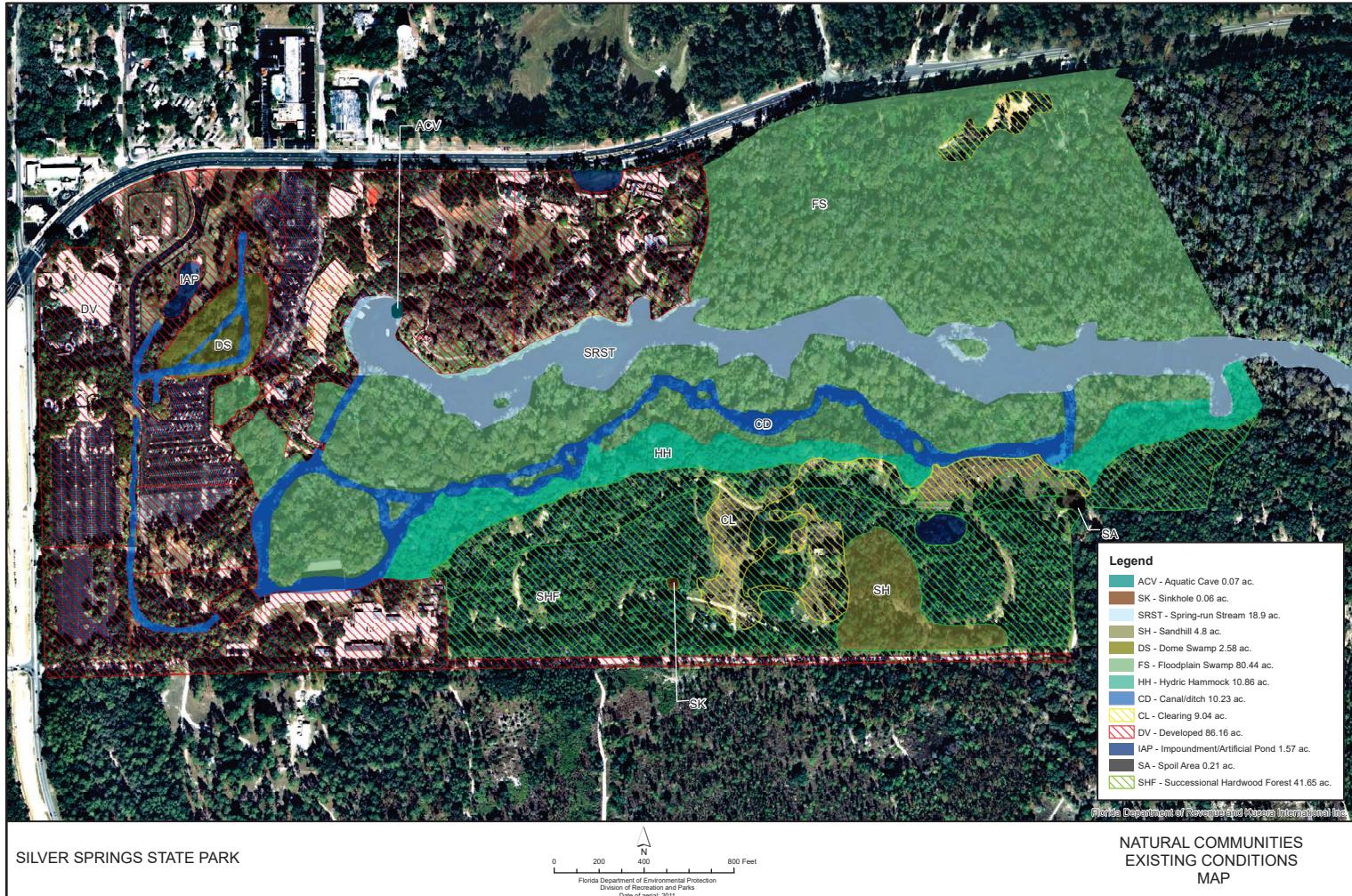
General management measures: For these four acres of sandhill, exotic plant infestations should be treated and retreated as necessary until eliminated. No disturbance other than activities directly related to sandhill restoration should occur. Prescribed fire should be applied as soon as possible, preferably in the growing season. Some fire line installation prior to fire management occurring may be necessary. Ideally, the sandhill will need to be burned once every 1-3 years.

Hydric Hammock

Desired Future Condition: Hydric hammock is characterized with a closed canopy, evergreen hardwood and/or palm forest with a variable understory dominated by palms, with sparse to moderate ground cover of grasses and ferns. Typical canopy species will include laurel oak (*Quercus laurifolia*), cabbage palm (*Sabal palmetto*), live oak (*Quercus virginiana*), sweetbay (*Magnolia virginiana*), swamp tupelo (*Nyssa sylvatica biflora*), American elm (*Ulmus americana*), red maple (*Acer rubrum*) and other hydrophytic tree species. Soils will be poorly drained but only occasionally flooded. Hydric hammock should occasionally burn when fires naturally cross ecotones from adjacent uplands.

Description and assessment: This plant community can be found just upland of the floodplain swamp associated with the Silver River. Due to rooting by feral hogs, exotic plant infestations, and past land usages/disturbances, including the excavation of the Ft. King Waterway, the hydric hammock on the property is considered to be in fair to poor condition.

General management measures: Management measures to be implemented should include continual exotic plant and animal removals. Soil disturbing activities should be avoided in this community to limit the spread of invasive plants and erosion. Management should be focused on preventing further adverse impacts to the hydrology and water quality of the Silver and Ocklawaha rivers, and restoring natural hydrology where possible.



Dome Swamp

Desired Future Condition: Dome swamp is an isolated, forested, depression wetland occurring within a fire-maintained matrix such as mesic flatwoods. The characteristic dome appearance will be created by smaller trees that grow on the outer edge (shallower water and less peat) and larger trees that grow in the interior. Pond cypress (*Taxodium ascendens*) or bald cypress (*Taxodium distichum*) will typically dominate, but swamp tupelo may also form a pure stand or occur as a co-dominant. Other subcanopy species may include red maple, dahooon holly (*Ilex cassine*), swamp bay (*Persea palustris*), sweetbay, and loblolly bay (*Gordonia lasianthus*). Shrubs may be absent to moderate (a function of fire frequency) and can include Virginia willow (*Itea virginica*), fetterbush (*Lyonia lucida*), buttonbush (*Cephalanthus occidentalis*), and wax myrtle (*Myrica cerifera*). An herbaceous component may range from absent to dense and include ferns, maidencane (*Panicum hemitomon*), sawgrass (*Cladium jamaicense*), sedges (*Carex* spp.), lizards tail (*Saururus cernuus*), and sphagnum moss (*Sphagnum* spp.). Vines and epiphytes will be commonly found.

Description and assessment: A dome swamp exists in the western portion of the property and is confined and isolated by asphalt. This dome appears to have been part of the floodplain swamp community associated with the Silver River but was separated from the larger community during land conversion and parking lot installations which took place during the Attraction development. This dome is in poor condition due to various factors. It is infested with various exotic plant species (bamboo, wild taro, cat's claw vine, skunk vine, and cogon grass). The hydrology in this dome has been altered due to surrounding land conversions and usage, ditching, and unnatural hydroperiod as a result of continual water pumping.

General management measures: This dome should be returned to floodplain swamp if possible. It is currently fragmented from the existing floodplain swamp by roads and parking lots. To the extent feasible these confining features should be removed. The rim ditching that was installed to facilitate pumped water through this area should be filled or blocked if possible. The feasibility of this will depend upon in-process plans concerning the development of better stormwater treatment measures. The ditch may be integrated into this plan to facilitate stormwater storage. Continual exotic plant removals will be necessary to rid this area of its highly invasive plethora of exotic plants which have been allowed to establish in thick densities over the years.

Floodplain Swamp

Desired Future Condition: Floodplain swamp should be a frequently or permanently flooded community in low-lying areas along streams and rivers. Soils will consist of a mixture of sand, organics, and alluvial materials. The closed canopy will typically be dominated by bald cypress but commonly includes tupelo species (*Nyssa* spp.) as well as water hickory (*Carya aquatica*), and red maple. Trees bases are typically buttressed. Understory and groundcover will typically be sparse.

Description and assessment: The floodplain swamp is adjacent to the Silver River. Bald cypress is still present in the overstory of the floodplain. The condition of this community is rated good to fair to poor. In many areas the floodplain swamp is intact and relatively undisturbed. However, in areas it has been impacted by human activities such as boardwalk, boat basin, and seawall construction. The clearing associated with the attraction's operation extends down to the river's edge in places near the headspring. The floodplain swamp west of the head spring has had major impacts due to attractions development. Portions of the floodplain swamp were fragmented by the construction of the Ft. King Waterway and paving activities to construct parking lots and roads. Numerous invasive exotic plants occur in this community, the worst of which are concentrated in the portions of the community west of the headspring. The main species of concern are cogongrass (*Imperata cylindrica*), skunk vine (*Paederia foetida*), and wild taro (*Colocasia esculenta*).

General management measures: Management measures to be implemented should include ongoing exotic plant treatments. The natural hydrology of the Silver and Oklawaha rivers should be restored and/or maintained for this community. Restoration of the flow rate, water quantity and quality and flooding duration of these rivers will have a positive impact on this community.

Sinkhole

Desired Future Condition: Sinkholes are characterized by cylindrical or conical depressions with limestone or sand walls. Sinkholes do not contain standing water for long periods of time as do sinkhole lakes. Depending upon the age of the sinkhole, the vegetation of sandy sinkholes may represent a well-developed forest including southern magnolia (*Magnolia grandiflora*), sweetgum (*Liquidambar styraciflua*), wax myrtle (*Myrica cerifera*), grape vines (*Vitis* spp.), Virginia creeper (*Parthenocissus quinquefolia*), water oak (*Quercus nigra*) and pignut hickory (*Carya glabra*). Sinkholes with vertical limestone walls may be covered by a variety of mosses, liverworts, ferns and small herbs. Sinkholes will generally have a very moist microclimate due to seepage and being buffered by the lower elevation and a tree canopy. Desired future conditions include limiting unnatural erosion and protecting the microclimate from disturbance.

Description and assessment: The sinkhole is located in management zone SV36. It has steep sandy sides and is approximately 15 feet deep. It is relatively small in diameter. Standing water has been visible in the very bottom of the sinkhole where a split tree root protrudes from the ground. Surrounding it are several large trees, and there is no concern about erosion occurring at this time. There were no exotic plants observed, but there are exotic plants in the surrounding areas. There is a very small amount of metal refuse present near the top of the sinkhole, and no evidence of recent or historic dumping into the sinkhole. The condition of this community is rated as good.

General management measures: Monitor for exotic plants and treat as necessary. Due to the presence of standing water at the bottom of the sinkhole, appropriate herbicides and application methods should be used if ever required in or around the

sinkhole. This sinkhole could link directly to groundwater therefore any activity or substance which could cause contamination should be avoided near this sinkhole.

Spring-run Stream

Desired Future Condition: This community should consist of a perennial water course that derives most, if not all, of its water from limestone artesian openings from the underground aquifer. The water will be typically cool, clear, and circumneutral to slightly alkaline. These factors allow for optimal sunlight penetration and minimal environmental fluctuations which promote plant and algae growth. However, the characteristics of the water can change significantly downstream as surface water runoff becomes a greater factor. Areas of high flow will typically have sandy bottoms while organic materials concentrate around fallen trees and limbs and slow moving pools. Typical vegetation will include strap-leafed sagittaria (*Sagittaria kurziana*), eelgrass (*Valisneria americana*), and coontail (*Ceratophyllum demersum*).

Description and assessment: The Silver River is the result of a large first magnitude spring group. Several additional springs also occur along its length. Native and exotic vegetation exist in the system. This community is rated as fair overall, but aspects of it could be rated as poor due to reduced flow, a decline in water quality, and the presence of dense algal growth in the system. Please refer to the hydrological section of this plan for more detailed description and assessment of this community.

General management measures: Exotic plants should be treated, mainly wild taro and water lettuce. Other aquatic exotic plants should be monitored for and treated as detected. Preventative measures should be taken to limit or prevent the spread of aquatic exotic plants such as hydrilla (*Hydrilla verticillata*). Hydrilla is already in the spring-run system but has not yet spread to the upper portions of the river.

Aquatic Cave

Desired Future Condition: Aquatic caves will vary from shallow pools highly susceptible to disturbance, to more stable, totally submerged systems. Near the cave entrance, the vegetation may be typical of the surrounding natural community. Within the cave, illumination levels and therefore vegetation densities will drop rapidly. Cave systems are extremely fragile. Desired future conditions include protecting against alterations that may affect light penetration, air circulation, microclimate, or increase pollution in aquatic systems.

Description and assessment: The waters which give rise to the Silver River originate from aquatic caves, each with individual vents of varying size. These caves are the result of fractures and solution channels in the limestone and dolomite of the Floridan aquifer. As described by Butt and Aly (2008), there are at least 30 named springs or spring groups along the upper 0.5 mile of the Silver River.

The largest and most upstream vent is named Mammoth Spring. The bottom of the

vent's mouth is composed largely of boulders and rubble, and the depth measured in front of the vent is approximately 34 feet. The entire Mammoth Spring basin measures approximately 300 feet north to south and 200 feet east to west. The flow rate of Mammoth Spring is 240 cubic feet per second, and it discharges horizontally into a large basin east of the glass-bottom loading area. Water from at least two distinct sources (Mammoth East and Mammoth West) discharges from the cave and differs in temperature and chemistry. The second largest discharge vent is named Catfish Reception Hall and is located in the western part of a cove on the south side of the Silver River, approximately 50 feet southeast of Jacob's Well Spring. Catfish Reception Hall discharges 36 cfs horizontally from a limestone ledge that forms a vent 26 feet long and up to five feet high at its eastern end, and tapering in height to its western side. The deepest portion of the vent bottom is 32 feet. Two other vents for this spring exist in the immediate vicinity of the main vent (Butt and Aly, 2008).

Pleistocene mammal bone deposits and significant Paleolithic artifacts have been discovered in this cave system. Living animals are represented by an intergrade population of light-fleeing cave crayfish (*Procambarus l. lucifugus X l. alachua*) and unidentified cave amphipods and isopods. The giant freshwater shrimp (*Marcobrachium carcinus*) was previously encountered but is now thought to be extirpated from the Silver Springs cave entrances. This species was reported as common in Silver Springs prior to the construction of Rodman Dam. Specimens have been collected from streams below the dam as recently as 1990 (Franz et al. 1994).

General management measures: Aquatic caves are threatened by pollution of ground and surface waters from agricultural, industrial, and residential sources, as well as by disturbances from divers. The unique troglobitic species generally have very low population levels and can be severely impacted by overcollection or by changes in nutrient input levels that result from surface manipulations or hydrologic alterations. Special precautions and management procedure must be invoked to protect these unique and fragile communities from deleterious activities.

Altered Land Cover Types

In place of using "ruderal" to describe areas of the property which have had major past disturbances, FNAI's "altered land cover types" are used below.

Developed

Desired Future Condition: Previously developed areas not slated for natural community restoration should be treated for Category I and II exotic plants.

Description and assessment: The developed areas of the property are mainly southwest, west, north and northeast of the main spring pool. The developed areas consist of paved roads, sidewalks and parking lots, buildings, a water park, bulkheads, boardwalks and other related infrastructure.

General management measures: The developed areas within the park will be managed to minimize their effect on adjacent natural areas. Priority invasive plant species (FLEPPC Category I and II species) will be removed from all developed areas. Other management measures include proper stormwater management and the development practices that avoid hindering prescribed fire management in adjacent natural areas.

Canal/Ditch

Description and assessment: Ditches exist in the parking lot areas on the west side of the property. They receive stormwater runoff from the parking lots and previously received overflow from the “entrance way wetland” under the entrance boardwalk. These ditches contain several exotic plant species. The parking lot ditch flows south and then east where they empty into the Ft. King Waterway. It was dug along the ecotone between the floodplain swamp and hydric hammock on the south side of the Silver River. Due to erosion stabilization was required along its shores. Further description of these features can be found in the hydrology section of this plan.

Desired future conditions: Ditches and canals should be free of exotic plants and animals and filled or blocked where possible. A hydrological assessment should be conducted to determine the future usage and ultimately the condition of the ditches in the parking lot area. All artificial hydrologic alterations should be mitigated and natural hydrology returned where possible. The Ft. King Waterway should be evaluated for removal but that may pose greater harm to the system than benefit.

General management measures: Control of Category I and II exotic plant species should be on-going. Management measures identified as result of hydrological assessment should be implemented. Please refer to the Hydrological section of this plan for more extensive management measures.

Impoundment/Artificial Pond

Description and assessment: Storm water retention ponds exist on the property. One is located near the main entrance road and the other is located northeast of the stage. A pond-type structure also exists in the northwest portion of SV35. It is associated with the ditching/canal system in the parking lot area which empties into the Ft. King Waterway. Various impoundments and evidence of earth moving is found in the eastern portion of SV36. Large impoundments exist south of the clearing near Paradise Beach. South of these impoundments exists a large borrow pit area which has reforested itself naturally as successional hardwood forest.

Desired future conditions: These ponds, impoundments, and borrow pits should be kept free of exotic plants and animals. The retention ponds will most likely remain to provide for stormwater retreatment. The original source of the impoundment material should be investigated. The borrow pit area was originally sandhill. The feasibility of filling should be evaluated. It is possible that some of the mounded material on the park came from this borrow. If the borrow pit was filled with

appropriate soils, sandhill restoration could be considered for this area, however, it would be low in priority considering other restoration needs park-wide.

General management measures: The altered land cover areas within the park will be managed to remove FLEPPC Category I and II priority invasive exotic plant species. Other management measures include limited restoration efforts designed to minimize the effect of the ruderal areas on adjacent natural areas. Cost-effectiveness, return on investment and consideration of other higher priority restoration projects within the park will determine the extent of restoration measures in ruderal areas.

Clearing

Description and assessment: Clearings exist on the northeast side of the property where exotic wildlife has been corralled as part of the "jeep safari tour." The clearing is a result of the animals trampling and eating native vegetation in their confined area. Exotic plants are also present in these highly disturbed areas.

Clearings also exist on the southeast side of the property. Some clearings exist in the center of the old small-gauge rail bed. This area contains large infestations of exotic cogon grass and paper mulberry. A second clearing exists where giraffes were once kept directly south of the Ft. King Waterway. This area is primarily pasture with relic longleaf pines.

Desired future conditions: North of the Silver River the clearings should resemble floodplain swamp as described above in the natural community description section. South of the Silver River, the clearings should resemble hydric hammock and sandhill as described above in the natural community description section of this plan. Exotic plant infestations should be eradicated in all areas.

General management measures: Control of Category I and II exotic plant species should be ongoing. The native floodplain vegetation surrounding the clearing north of the river should be allowed to revegetate the area. Generally, exotic plants need to be eradicated.

Spoil

Description and assessment: A spoil pile exists on the property south of the Ft. King Waterway near the eastern extent of the attraction's property boundary near Paradise Road. Its origin is not known. It is infested by exotic plants

Desired future conditions: The desired future condition of this pile is for it to be removed. Where it should be moved to is yet to be determined. Origins of this spoil should be investigated and its return to its place of origin evaluated. Until it can be removed, it should be maintained free of exotic plants.

General management measures: Exotic plants should be treated. If any spoil is relocated, monitoring for exotic plants in recipient sites should be implemented to

prevent the spread of exotic plants.

Successional Hardwood Forest

Description and assessment: Successional hardwood forest exists south of the Ft. King Waterway and east of the shop area. This land cover type is being used to describe the degraded late successional sandhill occupying this area. The succession is attributed primarily to lack of frequent fire. Historically, this area was sandhill, but is currently dominated by oak species and contains relict longleaf pines and a few patches of sandhill ground cover species such as wiregrass. Cogon grass infestations are also present in these areas.

Desired future conditions: The long-term desired future condition of this land cover type is sandhill. Please refer to the sandhill natural community description described above.

General management measures: This natural community has potential for restoration, but will require extensive and repeated exotic plant treatments for many years. Removal of dumped debris may be necessary as current amounts could limit natural land management, specifically fire. Hardwood reduction measures may be necessary to open up the canopy to promote native groundcover species. Once the dumped debris has been removed and exotic plant infestations are in a treatment rotation, prescribed fire should be introduced to reduce fuel loading and vegetation structure. Then, implement extensive native groundcover restoration and reforestation with longleaf pines, followed by frequent growing season prescribed fires. The feasibility and extent of the restoration efforts will depend on funding availability and also future land use and development of this area.

Imperiled Species

Imperiled species are those that are (1) tracked by FNAI as critically imperiled (G1, S1) or imperiled (G2, S2); or (2) listed by the U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FFWCC) or the Florida Department of Agriculture and Consumer Services (FDACS) as endangered, threatened or of special concern.

Imperiled plant species have been documented in other portions of the park. Species that may be present within the attraction property are silver buckthorn (*Sideroxylon alachuense*), wood spurge (*Euphorbia commutata*), Godfrey's swamp privet (*Forestiera godfreyi*), and woodland poppymallow (*Callirhoe papaver*). A significant population of pinkroot (*Spigelia loganioides*) is also known to occur within the park and could potentially be found on the attraction property throughout the floodplain swamp, hydric hammock, and in disturbed habitat adjacent to these areas. A detailed floristic study is needed for this parcel to verify the existence of these species and document other occurrences.

Gopher tortoises (*Gopherus polyphemus*) have been observed within the property,

specifically on the south side of the property in management zone SV-36. Management practices for this species include prescribed fire, exotic plant species control, and habitat restoration. Gopher tortoises would benefit from the reduction of encroaching hardwood species and the removal of the exotic trees and grasses that have impacted the sandhill and successional hardwood forest communities within zone SV-36.

The American alligator (*Alligator mississippiensis*) inhabits the Silver River and the Ft. King Waterway. This species is currently observed frequently throughout both waterways. Ongoing and recent public feeding of wildlife at the Silver Springs/River has resulted in human habituation and unnatural behaviors exhibited by some of the alligators inhabiting the Silver River. Efforts have been underway to better interpret the importance of not feeding wildlife within Silver River State Park. These efforts should continue and be expanded to the Silver Springs property.

The bluenose shiner (*Pteronotropis welaka*), a state-listed species of special concern, and the southern tessellated darter (*Etheostoma olmstedi maculaticeps*), federally listed as threatened, historically occurred in the Ocklawaha River and most likely within the park boundary, but neither have been documented in the river since 1949. It appears that both species may have been extirpated from the Ocklawaha and Silver rivers. Removal of Rodman Dam and the restoration of the Ocklawaha River could potentially benefit both species by increasing tributary flow and increasing the availability of stream habitat suitable for these fish.

There are several old records of gopher frog (*Rana capito*) in the vicinity of, and possible on, this property. There is one record with no date but recorded as Silver Springs, a second record recorded as 1955 also as Silver Springs, and a third record from 1954 recorded as Halfmile Creek, 0.5 mile northeast of Silver Springs (Franz and Smith 1993). There are no recent records of gopher frog; however, the habitat still exists, and the frog may be rediscovered at the park during future surveys.

The eastern indigo snake (*Drymarchon corais couperi*) and the Florida pine snake (*Pituophis melanoleucus mugitus*) have yet to be documented on this parcel but suitable habitat exists. The habitat found within zone SV-36 would be the most likely location to find these snakes during future surveys. Short-tailed snake (*Lampropeltis extenuata*) was documented on the property by FNAI but has not been documented since the 1970s.

Several bird species occurring in the Silver River and its floodplain swamp likely occur on this addition property. Limpkin (*Aramus guarauna*), snowy egret (*Egretta thula*), little blue heron (*Egretta caerulea*), tricolored heron (*Egretta tricolor*), white ibis (*Eudocimus albus*), wood stork (*Mycteria americana*), osprey (*Pandion haliaetus*), and swallow-tailed kite (*Elanoides forficatus*) have all been documented utilizing the Silver River and its associated floodplain swamp fringes. They are all most likely utilizing the Ft. King Waterway as well.

The Southeastern American kestrel (*Falco sparverius paulus*) has been documented

both north and south of Silver River State Park and could potentially inhabit this property. The closest known historic nesting site for this species was near the youth camp at Silver River State Park in zone SV-11. There are no recent records of kestrels nesting in the area.

Sherman's fox squirrel (*Sciurus niger shermanii*) inhabits the park's sandhill. It is highly likely that Sherman's fox squirrels forage and/or inhabit the attraction property. The habitat found within zone SV-36 would be the most likely location to find this species during future surveys.

Florida long-tailed weasel (*Mustela frenata peninsulae*), southeastern weasel (*Mustela frenata olivacea*), and hoary bat (*Lasiorurus cinereus*) were documented on the property by FNAI but have not been seen observed since the 1970s.

Florida black bear (*Ursus americanus floridanus*) is frequently documented in the park in the upland and wetland plant communities. It is very likely Florida black bears utilize the floodplain swamp and possibly the uplands within this property from time to time. Very little negative human and bear interaction has occurred at the park. Preventative measures are utilized to minimize conflicts. These include responsible trash management, signage, and interpretation to park visitors. These same practices will be incorporated into the management of this additional property.

The Florida manatee (*Trichechus manatus*) historically utilized both the Silver and Oklawaha rivers but is now substantially excluded from access by dams on the Oklawaha River. The spring run can be utilized as a warm water refuge during cold weather events, and they are still occasionally documented in the Silver River, most recently in 2013.

If issues concerning imperiled species and their management arise, staff will coordinate with FFWCC to ensure that management and monitoring of imperiled animal species is consistent with statewide recovery goals.

Table 2 contains a list of all known imperiled species within the park and identifies their status as defined by various entities. It also identifies the types of management actions that are currently being taken by DRP staff or others, and identifies the current level of monitoring effort. The codes used under the column headings for management actions and monitoring level are defined following the table. Explanations for federal and state status as well as FNAI global and state rank are provided in Addendum 5.

Table 2. Imperiled Species Inventory

Common And Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FFWCC	USFWS	FDACS	FNAI		
REPTILES						
Gopher Tortoise <i>Gopherus polyphemus</i>	ST			G3, S3	1, 2, 6, 7, 10	Tier 3
American Alligator <i>Alligator mississippiensis</i>	FT(S/A)	LT(S/A)		G5, S4	10, 13	Tier 1
BIRDS						
Snowy Egret <i>Egretta thula</i>	SSC			G5, S3	10	Tier 1
Little Blue Heron <i>Egretta caerulea</i>	SSC			G5, S4	10	Tier 1
Tricolored Heron <i>Egretta tricolor</i>	SSC			G5, S4	10	Tier 1
White Ibis <i>Eudocimus albus</i>	SSC			G5, S4	10	Tier 1
Wood Stork <i>Mycteria americana</i>	LE	LE		G4, S2	10	Tier 1
Limpkin <i>Aramus guarauna</i>	LS			G5, S3	10	Tier 1
Swallow-tailed kite <i>Elanoides forficatus</i>				G5, S2	10	Tier 1
MAMMALS						
Florida Manatee <i>Trichechus manatus</i>	LE	LE		G2, S2	4, 10	Tier 1

Management Actions:

1. Prescribed Fire
2. Exotic 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.

Detailed management goals, objectives and actions for imperiled species in this park are discussed in the Resource Management Program section of this component and the Implementation Component of this plan.

Exotic Species

Exotic species are plants or animals not native to Florida. Invasive exotic species are able to out-compete, displace or destroy native species and their habitats, often because they have been released from the natural controls of their native range, such as diseases, predatory insects, etc. If left unchecked, invasive exotic plants and animals alter the character, productivity and conservation values of the natural areas they invade.

There are at least 28 invasive exotic plant species (those included on the Florida Exotic Pest Plant Council's 2011 list of Category I and II species) found on the Silver Springs addition. Category I species are invasive exotic plants that are altering native plant communities by displacing native species, changing community structures or hybridizing with natives. This definition does not rely on the economic severity or geographic range of the problem, but on the documented ecological damage caused. Some of these species, such as Sprenger's asparagus-fern (*Asparagus aethiopicus*), Britton's wild petunia (*Ruellia simplex*), silverthorn (*Elaeagnus pungens*), and Chinese wisteria (*Wisteria sinensis*) were planted as ornamentals within the main use area of the park; others, such as skunkvine, torpedograss (*Panicum repens*), and Caesarweed (*Urena lobata*) likely were introduced into the area by other means. Category II species are invasive exotics that have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species. These species may become ranked Category I if ecological damage is demonstrated. In addition to these, more than 48 other exotic plant species are found on the addition. Most of these have been planted as ornamentals throughout the main use area of the park. While not currently listed as Category I or II invasive species, the potential exists for some of these plants to become listed as invasive in the future; others will likely never become invasive.

In most of the management zones, the majority of the exotic plants are widespread and common; they occur as multiple individual plants or small clumps of a single species scattered within zones. In some zones, however, species such as

cogongrass, silverthorn, and oysterplant (*Tradescantia spathacea*) occur in scattered dense patches. While the density of both silverthorn and oysterplant can be explained due to their use in ornamental plantings, the density of cogongrass is due to both its prolific growth habits and the lack of any known historic herbicide treatment at the park.

The first known treatment of invasive exotic plant species at the Silver Springs addition occurred in April 2013 and was conducted by private exotic control contractors. Given the amount and overall density of Category I and II species it will likely be necessary to receive outside assistance from the FFWCC Invasive Upland Plant Management program.

Annual treatment plans will be developed to eliminate these species from the natural communities they have invaded as well as from ruderal or developed areas to minimize the risk of invasion from these areas into the rest of the park's natural communities. Exotic plant surveys by District 3 biological staff have been conducted, and will continue to be conducted as treatments occur; the location of Category I and II species will be identified using GPS and mapped to assist in treatment activities.

Table 3 contains a list of the Florida Exotic Pest Plant Council (FLEPPC) Category I and II invasive exotic plant species found within the park (FLEPPC, 2011). The table also identifies relative distribution for each species and the management zones in which they are known to occur. An explanation of the codes is provided following the table. For an inventory of all exotic species found within the park, see Addendum 4.

Table 3. Inventory of FLEPPC Category I and II Exotic Plant Species			
Common and Scientific Name	FLEPPC Category	Distribution	Management Zone (s)
PLANTS			
Sisal hemp <i>Agave sisalana</i>	II	2	SV-32
		2	SV-36
Sprenger's asparagus-fern <i>Asparagus aethiopicus</i>	I	2	SV-32
		2	SV-36
Paper mulberry <i>Broussonetia papyrifera</i>	I	2	SV-36
Camphor tree <i>Cinnamomum camphora</i>	I	2	SV-32
Wild taro <i>Colocasia esculenta</i>	I	2	SV-32
		2	SV-32
		2	SV-36
Umbrella plant <i>Cyperus involucratus</i>	II	2	SV-36
Air-potato <i>Dioscorea bulbifera</i>	I	2	SV-36

Table 3. Inventory of FLEPPC Category I and II Exotic Plant Species

Common and Scientific Name	FLEPPC Category	Distribution	Management Zone (s)
Silverthorn <i>Elaeagnus pungens</i>	II	3	SV-32
Cogongrass <i>Imperata cylindrica</i>	I	2	SV-32
		2	SV-34
		3	SV-35
		3	SV-36
Lantana <i>Lantana camera</i>	I	2	SV-36
Glossy privet <i>Ligustrum lucidum</i>	I	2	SV-32
		2	SV-36
Peruvian primrosewillow <i>Ludwigia peruviana</i>	I	2	SV-32
Catclawvine <i>Macfadyena unguis-cati</i>	I	2	SV-32
Bottlebrush <i>Melaleuca viminalis</i>	II	2	SV-32
Heavenly bamboo <i>Nandina domestica</i>	I	2	SV-32
Tuberous sword fern <i>Nephrolepis cordifolia</i>	I	2	SV-30
		2	SV-32
		2	SV-36
Skunkvine <i>Paederia foetida</i>	I	2	SV-32
		2	SV-33
		2	SV-34
Torpedograss <i>Panicum repens</i>	I	2	SV-32
Water-lettuce <i>Pistia stratiotes</i>	I	2	SV-30
		2	SV-36
Chinese ladder brake <i>Pteris vittata</i>	II	2	SV-30
		2	SV-36
Britton's wild petunia <i>Ruellia simplex</i>	I	2	SV-32
Bowstring hemp <i>Sansevieria hyacinthoides</i>	II	2	SV-32
Creeping oxeye <i>Sphagneticola trilobata</i>	II	2	SV-36
American evergreen <i>Syngonium podophyllum</i>	I	2	SV-30
Oyster-plant <i>Tradescantia spathacea</i>	II	3	SV-32
		2	SV-36
Caesarweed <i>Urena lobata</i>	I	2	SV-36

Table 3. Inventory of FLEPPC Category I and II Exotic Plant Species			
Common and Scientific Name	FLEPPC Category	Distribution	Management Zone (s)
Chinese wisteria <i>Wisteria sinensis</i>	II	1	SV-32
Arrowleaf elephant-ear <i>Xanthosoma sagittifolium</i>	II	2	SV-32
		2	SV-36

Distribution Categories:

- 0 No current infestation: All known sites have been treated and no plants are currently evident.
- 1 Single plant or clump: One individual plant or one small clump of a single species.
- 2 Scattered plants or clumps: Multiple individual plants or small clumps of a single species scattered within the gross area infested.
- 3 Scattered dense patches: Dense patches of a single species scattered within the gross area infested.
- 4 Dominant cover: Multiple plants or clumps of a single species that occupy a majority of the gross area infested.
- 5 Dense monoculture: Generally, a dense stand of a single dominant species that not only occupies more than a majority of the gross area infested, but also covers/excludes other plants.
- 6 Linearly scattered: Plants or clumps of a single species generally scattered along a linear feature, such as a road, trail, property line, ditch, ridge, slough, etc. within the gross area infested.

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

Feral hogs (*Sus scrofa*), nine-banded armadillos (*Dasypus novemcinctus*), Asian rhesus monkeys (*Macaca mulatta*), red-eared sliders (*Trachemys scripta*), and brown anoles (*Anolis sagrei*) are the most common exotic animal species documented within the former attraction property. Hog rooting can render large areas devoid of vegetation, create extensive ground disturbance, disrupt surface water flow, inhibit fire from moving across the landscape, decimate the arthropod community, and compete with native wildlife species for food resources. Evidence of hog disturbance can easily be found in the natural communities both north and south of the Silver River. Nine-banded armadillos create the same disturbances on a smaller scale. Armadillo rooting can be found throughout the park. Park staff will monitor for the both feral hogs and nine-banded armadillos and they will be removed per DRP policy. Detailed management goals, objectives and actions for management of invasive exotic plants and exotic and nuisance animals are discussed in the Resource Management Program section of this component.

Asian rhesus monkeys are currently found in the floodplain swamps adjacent to the Silver and Ocklawaha rivers. They were introduced to the Silver Springs Attraction area in the 1930s and have ranged freely since that time. More than 100 rhesus individuals have recently been documented, although population estimates vary, and the population itself fluctuates according to trapping pressure and season. The rhesus range along both sides of the Silver River, and also along the Ocklawaha

River north and south of its confluence with the Silver River. Occasional sightings also occur in many other locations in central Florida and those rhesus are suspected to have ventured from this core population. Because the Silver River population naturally reproduces and expands, public land managers and wildlife authorities have prescribed regular trapping over the last 30 years to contain the population.

Red-eared sliders can be found in established bodies of water; they too have been introduced and have ranged freely for decades. The mode of introduction of brown anoles is unknown. Impacts to the park resources from these animals have not been documented, though these species compete with native species for resources.

Vermiculated sailfin catfish (*Pterygoplichthys disjunctivus*) are known to inhabit the Silver River. Negative effects of this species on the park's water resources are not yet known, though their burrowing activities have led to shore erosion problems in other waterways.

In some cases, native wildlife may also pose management problems or nuisances within state parks. A nuisance animal is an individual native animal whose presence or activities create special management problems. Examples of animal species from which nuisance cases may arise include raccoons, venomous snakes and alligators that are in public areas. Nuisance animals are dealt with on a case-by-case basis in accordance with DRP's Nuisance and Exotic Animal Removal Standard.

Detailed management goals, objectives and actions for management of invasive exotic plants and exotic and nuisance animals are discussed in the Resource Management Program section of this component.

Cultural Resources

This section addresses the cultural resources present in the park that may include archaeological sites, historic buildings and structures, cultural landscapes and collections. The Florida Department of State (FDOS) maintains the master inventory of such resources through the Florida Master Site File (FMSF). State law requires that all state agencies locate, inventory and evaluate cultural resources that appear to be eligible for listing in the National Register of Historic Places. Addendum 7 contains the FDOS, DRP of Historical Resources (DHR) management procedures for archaeological and historical sites and properties on state-owned or controlled properties; the criteria used for evaluating eligibility for listing in the National Register of Historic Places, and the Secretary of Interior's definitions for the various preservation treatments (restoration, rehabilitation, stabilization and preservation). For the purposes of this plan, significant archaeological site, significant structure and significant landscape means those cultural resources listed or eligible for listing in the National Register of Historic Places. The terms archaeological site, historic structure or historic landscape refer to all resources that will become 50 years old during the term of this plan.

Condition Assessment

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

Level of Significance

Applying the criteria for listing in the National Register of Historic Places involves the use of contexts as well as an evaluation of integrity of the site. A cultural resource's significance derives from its historical, architectural, ethnographic or archaeological context. Evaluation of cultural resources will result in a designation of NRL (National Register or National Landmark Listed or located in an NR district), NR (National Register eligible), NE (not evaluated) or NS (not significant) as indicated in the table at the end of this section.

There are no criteria for use in determining the significance of collections or archival material. Usually, significance of a collection is based on what or whom it may represent. For instance, a collection of furniture from a single family and a particular era in connection with a significant historic site would be considered highly significant. In the same way, a high quality collection of artifacts from a significant archaeological site would be of important significance. A large herbarium collected from a specific park over many decades could be valuable to resource management efforts. Archival records are most significant as a research source. Any records depicting critical events in the park's history, including construction and resource management efforts, would all be significant.

The following is a summary of the FMSF inventory. In addition, this inventory contains the evaluation of significance.

Prehistoric and Historic Archaeological Sites

Desired future condition: All significant archaeological sites within the park that represent Florida's cultural periods or significant historic events or persons are preserved in good condition in perpetuity, protected from physical threats and interpreted to the public.

Description: Silver Springs is one of the world's largest fresh-water springs. It has attracted humans for millennia. These springs figured large to those as disparate in time and culture as Paleo-Indians at the end of the late Pleistocene to Seminoles resisting removal to the west in the 19th century to modern tourists visiting one of

Florida's premier pre-Disney attractions. The history of Florida's springs and her people are intertwined. The springs have had, and continue to have, spiritual, economic, political, aesthetic, environmental, recreational, and scientific value to the people who visit and who live nearby.

Silver Springs appears to have been repeatedly occupied throughout Florida's prehistory, including in the Paleo-Indian, Archaic, Deptford, Weeden Island, St. Johns, and Alachua periods. Fossilized bones and lanceolate stone tools in submerged contexts indicate that both megafauna and Florida's earliest inhabitants frequented this once critical freshwater source over twelve thousand years ago. Whether the two co-existed here is of great interest, as is whether now inundated caverns were once inhabitable. Extensive lithic scatters and a relative dearth of ceramics suggest extensive activity by later Archaic people (10,000 – 3,000 B.P.). It is still unclear whether these scatters represent villages or campsites, short or long-term occupations. Small amounts of various ceramic types indicate that later, even as cultures developed regional variations and adapted to changing environmental conditions, people continued to live and visit here. The archaeological record at Silver Springs provides evidence of some of Florida's first inhabitants, and the long prehistory that is the vast majority of human history in the area.

Silver Springs continued to be pivotal to Florida's indigenous population in the 19th century. The federal government founded a military post, and then Fort King to broker the terms of the Treaty of Moultrie Creek and establish a Seminole reservation in 1823. Seminole settlements in the area resisted the Indian Removal Act of 1830, and in 1835 Osceola and some of his followers shot and killed a federal agent and a fort commander outside of Fort King on the same day as the Dade Massacre. The Second Seminole War followed these mounting hostilities. A couple of sites with possible Seminole associations have been identified, including submerged artifacts and a shell midden. Today a statue of Osceola, famed Seminole leader, overlooks the springs at the attraction.

As white settlers replaced the native population and the Civil War ended, Silver Springs became a busy Ocala locale, its spring run serving to move people, and locally procured raw materials such as lumber and consumer goods, to and from the Ocklawaha River. A port with docks, a warehouse, hotel, railroad, store, tavern, and post office served this traffic and nearby commercial enterprises. By the 1870s, Silver Springs had also become a tourist destination with glass-bottom boat rides that showcased its natural beauty. In the 1920s Carl Ray and W. M. Davidson created a recreational attraction at the spring that was joined by herpetologist Ross Allen in 1929, who opened his famed Florida Reptile Institute. A competing attraction was opened by M. R. Porter on the springs' south bank in 1928, which Ray and Davidson later acquired. This became Paradise Park, a well-known, heavily visited attraction with similar rides and shows which served African-Americans in mid-twentieth century, racially segregated Florida. Additional attractions over the years at Silver Springs included a recreated Seminole village, Six Gun Territory, Carriage Cavalcade, Early American Museum, Prince of Peace Memorial, and today's Wild Waters and Silver Springs Nature Theme Park. Despite

the springs' heavy historical use, few related archaeological resources have been documented, and the association of the few recorded late 19th – early 20th century artifacts scatters have not been clearly identified. Intensive use and subsequent re-use of the area around the springs, along with associated landscape modifications, may have severely disturbed historic archaeological remains near or at the ground surface.

Silver Springs' archaeological richness has long been known. Even the early European-American settlers and visitors reported prehistoric artifacts and mounds in the area. Early amateur archaeologist and explorer C. B. Moore visited Silver Springs in 1895 as he plied the Ocklawaha and St. Johns Rivers in his steamboat *Gopher* excavating sites. In the 1950s, Wilfred T. Neill, a herpetologist and Research Director of the Florida Reptile Institute, reported several sites to the Archaeological Site Survey at the University of Florida. Some of these sites were probably discovered during work projects at the park involving dredging, diving, and sand mining. Ripley Bullen, John Griffin and John Goggin, well known archaeologists and anthropologists, all visited Silver Springs –the sites' Paleo-Indian components were a particular draw. A wooden canoe was discovered in 1970. The remaining sites were discovered and recorded during large Phase I archeological surveys associated with gas line, road and retention pool construction along the State Road 40 corridor.

Silver Springs contains eight recorded archaeological sites, or portions thereof, including six terrestrial sites, one submerged site, and a wooden canoe. All of these sites (except the canoe) are multi-component sites that include both prehistoric and historic deposits. Archaeological sites are found throughout the park, along the water's edge and far away, in the relic sand dunes and in the low lands. Archaeological resources permeate Silver Springs, extending from ground surface down several feet. Additionally, the park contains submerged archaeological resources that span the entire length of human occupation in the area.

The most common prehistoric archaeological resource at the park is the lithic scatter of variable density that contains a relatively few diagnostic tools and small amount of pottery. Franklin 15 (8MR1082) and No Name (8MR93) are examples of this site type. Even through Phase I shovel testing, spatial patterning has been detected that suggests variations in the use of space across the landscape and over time. Artifact density appears to increase nearer the water, both the spring run and particularly the spring pool. The artifact scatter Cactus Flower (8MR1878), however, includes ceramics from many time periods and cultural groups, as well as higher artifact diversity and the presence of features. This site may contain more elements than other sites, but then we may know more about it thanks to the test unit excavation conducted in addition to the standard shovel testing. Paradise Park (8MR92) is well known for the mid-twentieth century claim that fluted lanceolate points were found in an undisturbed stratified context. The results of subsequent investigations show that it is unclear how much if any of this intact Paleo-Indian deposit still exists. A wide range of artifacts has been recovered from the Silver Springs Cavern (8MR59), but no formal survey has documented the park's submerged archaeological resources. The park's prehistoric resources appear to

represent a small but notable Paleo-Indian and a large Archaic period presence, as well as occupation throughout Florida's prehistory.

The most common historic archaeological resource at the park is the artifact scatter at or just below ground surface. These sites tend to be diffuse and highly disturbed, ranging from the first half of the 19th century to the mid-20th century. All of them are recorded as components of predominantly prehistoric archaeological sites, and their historical association has not been identified. The exception is the Paradise Park Attraction (8MR3746), which includes a large scatter of food and drink containers and serving vessels, *in situ* posts, and structural debris. Its site components have not been well delineated yet nor its history well researched.

The recent Phase I surveys indicate an almost continuous presence of archaeological remains throughout the Silver Springs addition. However, the geographical extent of each recorded site is unknown. Sites recorded as a result of these surveys largely have artificial boundaries that correlate with the boundaries of the project area. While discrete archaeological sites may exist, research conducted so far suggests that many are likely to be large sites inseparable from each other. Additional survey may reveal that the entire parcel or a large subset can be considered a single archaeological site that represents multiple cultural periods and types of archaeological material. Groups of related sites could also qualify as an archaeological district.

The recent Phase I survey of approximately 104 park acres was conducted in June 2013. The purpose of this survey was to revisit previously recorded sites and locate, identify and record new archaeological resources. The project area included a smaller parcel in the attraction proper north of the spring run, and a larger parcel with defunct animal enclosures and interpretive exhibits south of the run. The survey consisted primarily of a subsurface investigation, with judgmental and systematic shovel testing at 25-meter intervals. The main objectives of the survey were to determine the character and extent of archeological resources, the extent of disturbance and fill, and the need for additional testing in the project area. As a result of the survey, the location of one previously recorded site was corrected (8MR92), the boundaries of two previously recorded sites were significantly expanded (8MR93 and 8MR1082), and one new site was identified and recorded (8MR3746). Almost all of the two parcels tested are now subsumed within two recorded sites, having tested overwhelmingly positive for archaeological resources. The preliminary survey results support the above synthesis of archaeological data available on the park. Two previously recorded sites were not relocated during the survey, a shell midden (MR92) and the canoe (MR3073). It is possible that the midden was inaccurately mapped or has since been destroyed, and that the canoe was removed from the property.

The park possesses several additional, unrecorded archaeological resources which were observed or realized during the recent Phase I survey. This will be recorded by the consultant as the project concludes in mid 2014 or by park staff shortly after. The borrow pit in which Paradise Park (MR92) is located was constructed in the mid-20th century during sand mining activity, and is now a historic resource in

its own right. A small pile of antique license plates was discovered during the recent fieldwork. A large two-story high pile of dirt excavated during past tram construction represents re-deposited material that is now a feature in the expanded boundaries of MR93. There also appears to be historic artifact scatters on the ground surface at several locations throughout the park which require additional evaluation to determine their date.

Isolated, fragmentary human remains were discovered during the recent Phase I survey in a disturbed context. In the opinion of the consulting archaeologist, the remains had been re-deposited in this location along with fill material at an unknown time and from an unknown location. The site of the original interment is unknown –it may have originated from the park or been trucked in from an off-site location. The State Archaeologist's Office handled the statutory case and their disposition.

The area around the spring head where the tourist center and the boat docks are located has not been surveyed. This area contains one recorded site that corresponds to submerged deposits; it is unknown whether there is a related terrestrial component. Surveys to the northeast and southeast of the spring head documented widespread deposits that increased in density towards the spring. It is unknown at this time what archaeological resources are here. The area includes both wetlands and land built up by fill, and has been heavily developed over the years. There may be few archaeological resources in some areas due to saturated soils, or they may be deeply buried due to fill, or they may have been destroyed or heavily damaged by past development.

While archaeological sensitivity models are currently being developed for all of Florida's state parks, Silver Springs was acquired after models for this region were completed. Predictive models have been developed for the larger area, however, as part of nearby Phase I surveys and for Marion County itself. The area around Silver Springs, along Silver River, and within the river's drainage is considered to have a high probability for containing significant archaeological resources of any type and cultural period, from Paleo-Indian to early Spanish to Seminole to 19th century homesteads. Well-drained soil and higher elevations adjacent to the water is the most likely site location, particularly in the vicinity of the springs. Nearby surveys have also proven that even areas with lower elevations and inundated soils near rivers or streams have a potential to contain unrecorded sites, particularly shell midden. The recent Phase I survey results reveal the prevalence of archaeological materials at the unit. Because of its proximity to a first magnitude spring, it is recommended that un-surveyed areas be considered high probability for containing archaeological sites.

Condition Assessment: All of the archaeological sites at Silver Springs have been impacted by past human activity in recent, historic and prehistoric times. This heavily used landscape has been modified by humans for millennia, the extent of which may never be fully gauged. Historic photographs and aerial images indicate that since the late 19th century roads, buildings and various structures have been constructed and demolished, and the landscape has been cleared and re-vegetated

repeatedly. It is believed that over time the edges of the spring pool have been modified, the uplands around the pool contoured, low-lying wetlands filled, and canals dredged. The recent Phase I archaeological survey at the park attempted to identify some of these changes through informant interviews, archival research, and stratigraphic analysis. The primary objectives were to describe and map the location, depth and composition of archaeological resources, as well as the horizontal and vertical extent of disturbance. A corollary objective was to document alterations to the landscape over time.

The Phase I survey demonstrated that the park still contains substantial intact archaeological deposits despite its historical land use. The parcel north of the spring run appears to have been more heavily altered and impacted over time, with more areas of disturbance and fill than the southern parcel, particularly along the water's edge and the western two-thirds. But beneath the disturbance, under various depths of overburden, are intact deposits with a fairly uniform distribution of artifacts across the parcel. The disturbed areas themselves contain cultural material. It is not clear yet based on the analysis completed so far what may have been brought in with fill and what was once *in situ* before being disturbed. It is unknown exactly what the condition of deposits is in the southeastern corner of this parcel, as units were terminated at the water table. The area south of the spring run has been much less impacted by past human activity. Disturbance here is much more localized, and often seems to correspond with very specific things, such as animal enclosures, buildings, dredging, borrow pits, and interpretive exhibits. The disturbed areas are quite deep, and yet shovel test units often contained intact deposits at their base even in these areas.

A literature review indicates that many of the park's sites have been disturbed in the past by dredging, fire line construction, sand mining, road construction, and infrastructure improvements. Most of these impacts were one-time events that occurred before the property came into state ownership. In some instances, however, they have led to on-going decline where cuts below the ground surface and removal of vegetation have left ground surfaces exposed to natural and human forces that cause erosion, such as rain, wind, and vehicular or foot traffic.

The area around the spring head and north of the initial spring run has been incorporated into various private attractions for decades. Many parts of it are heavily developed, and contain buildings, docks, bridges, roads, paths, parking lots, signs, fences, animal enclosures, and other structures. Both visitors and park staff travel around the area by foot, motor vehicles, and motorized and un-motorized boats. The landscape is regularly maintained, and includes grassy lawn cover and planted shrubs, trees and flower beds. There are wooded slopes and wetlands to the east of the bear enclosure that are left in their natural state of succession. This developed area, which contains 8MR59, 8MR1082 and 8MR1878, appears to be in good condition overall. Despite heavy disturbance in the past, it is currently stable. The impacts of on-going daily visitation and property management are largely superficial. There are no known components of the site that are actively deteriorating or threatened by future impacts. At some point, repair of bulkheads around the spring pool may be required, which will precipitate the need to identify and mitigate

adverse impact to any nearby archaeological deposits and to proceed with the assumption that such a project carries a high potential for impacting archaeological resources in the vicinity. The infrastructure removal work and any associated ground-disturbance presently occurring in conjunction with the unit's transfer to the state park system is being monitored by a professional archaeologist.

The area south of the spring run contains the remnants of Ross Allen Island, shoreline interpretive exhibits and animal pens once toured by a jungle cruise ride, remnants of the old Paradise Park attraction, and the park's maintenance facilities. This area is no longer visited by the public, and staff activity is largely confined to the maintenance yard and boat dock. A dirt loop road constructed for a never-completed tourist tram spans the area. This area, which is heavily wooded except for some remnant clearings associated with old exhibits and pens, contains 8MR92, 8MR93, 8MR83, 8MR3173, and 8MR3746. It appears to be in good condition overall with the exception of a few sub-areas impacted by hogs and surface erosion that are in fair condition. Hog rooting has substantially disturbed the ground surface in several areas, pocking and churning the soil and exposing subsurface limestone deposits and lithicdebitage. Hogs have the potential to be particularly damaging to historic surface scatters that contain breakable artifacts such as ceramics, glass and cans. Several areas impacted by construction of the dirt road are eroding, including adjacent cut banks and the road track itself, exposing lithic artifacts periodically. The cut banks of the Aeolian sand dune that contains the deeply buried site (9MR92) are also eroding in places, as the borrow pit cut into this deposit.

The condition of three of the park's sites is unknown. The underwater deposits in the spring pool (8MR59) were last described after a mid-1970s investigation. Two sites could not be relocated by park staff or during the recent Phase I survey (8MR83 and 8MR3173).

Level of Significance: Silver Springs is a place that has had a high cultural value to many people, and it has an extensive archaeological record that can shed light on its rich history. One site is eligible for the National Register of Historic Places (8MR1878), and several more sites appear to be eligible according to the professional consultants who have surveyed them (8MR1082/3519, 8MR59, 8MR92, 8MR93, 8MR3746). Additional research, testing and evaluation are required to confirm this.

Silver Springs contains three sites with a Paleo-Indian component. Their great antiquity and rarity alone endow them with significance. Paradise Park (8MR92), excavated in the 1950s, was renowned as the only site in Florida where fluted Paleo-Indian points had been found in stratigraphic context; however, later investigations in 2003 could not identify a definitive Paleo-Indian strata. Excavations at the Guest Mammoth Kill Site down-river in 1973 recovered Paleo-Indian artifacts in association with fossilized megafauna remains. The presence of both at a site (8MR59) in Silver Springs means that additional archaeological and paleo-environmental investigations could increase our understanding of Paleo-Indian subsistence, and the relationship between the age of the spring and the earliest human habitation in the area.

The nearby Fort King military post and federal Indian agency, Silver Springs' location on the outskirts of the former Seminole reservation, and the presence of Seminole cultural material at a couple of the park's sites (8MR59, 8MR83, and 8MR93) speak of these sites' potential ability to increase our understanding of Seminole occupation of the area and the Second Seminole War period.

The former Paradise Park attraction (8MR3746) still holds a special place in the memory of living communities for its associations both with recreational pastimes and Florida's painful segregated past.

The depth and expanse of the archaeological remains encountered at Silver Springs so far offer us the tremendous opportunity to learn about cultural change over time. Some of the park's sites (8MR93, 8MR1878) contain evidence of repeated or continuous occupation from Florida's earliest human occupation to the present day. Taken alone, individual lithic scatters may not appear to be significant representatives of this plentiful site type in Marion County. Such was the opinion of a consultant who surveyed the Franklin 15 site (8MR1082), and the SHPO concurred. Consultants conducting a separate survey nearby about the same time recommended additional excavation at a similar site, Lost Arrow (8MR3519), in order to finish the significance evaluation. Artifact density appeared to increase closer to the spring, and considered in conjunction with the other archaeological resources identified in the area, it was the consultant's opinion that the site could contribute to our overall understanding of human history at the spring and the interaction between humans and the springs over time. The SHPO agreed; when these two sites were recently merged into a single site, the SHPO evaluation was changed to insufficient information.

As mentioned, Silver Springs has been heavily impacted over time through repeated use, disturbing and probably destroying portions of the archaeological record in areas. A large, multi-faceted investigation at Silver Glen Spring by the University of Florida found that despite ground disturbance, the archaeological deposits at this site retained significance. The variety of artifacts and other anthropogenic features, and the state of preservation of organic remains, combined with in-depth testing to delineate intact archaeological deposits, revealed that the site still held information important to augmenting our understanding of the past.

General management measures: The DRP's selected treatment for the archaeological sites at Silver Springs is preservation, including protecting sites from impacts to their physical integrity and stabilizing sites that are actively deteriorating. As detailed, up-to-date condition assessments are conducted of the park's eight recorded archaeological sites, site-specific management recommendations will be developed as needed.

Besides actual impacts and potential threats, the other critical management issue at Silver Springs is incomplete information about the park's recorded archaeological sites and the areas that have never been subjected to archaeological survey. None of the sites are well-bounded, and descriptions of some are based on informant

interviews or limited fieldwork. Additional research and survey is required to bound, relocate, further document, and evaluate sites.

Site preservation will rely heavily on a program of routine site monitoring and condition assessments. The first formal condition assessment will provide baseline data against which the results of subsequent assessments can be compared in order to gauge the rate and severity of deterioration.

Historic Structures

Desired future condition: All significant historic structures and landscapes that represent Florida's cultural periods or significant historic events or persons are preserved in good condition in perpetuity, protected from physical threats and interpreted to the public.

Description: The Silver Springs addition has one resource group (building complex) and seven historic structures recorded in the FMSF.

Most the historic buildings currently located at Silver Springs are commercial structures relating to the Silver Springs attraction and date from the mid-twentieth century. However, the area was well-known as a tourist destination in the post-Civil War era when travelers would arrive by steamboat after a long journey down the Ocklawaha River. By the late 1870s, the first glass-bottom boats were developed from converted rowboats, and in the early 1880s, a large hotel was built near the main springs. Commercial glass-bottom boats appeared in the 1890s, and by 1909 had been improved with the installation of the internal combustion engine, cushioned seats and canopies.

Major tourist development around Silver Springs began in earnest in 1924, when local Ocala businessmen Carl Ray and W. M. Davidson bought the property surrounding the headwaters of the Silver River. In a year, they had equipped the glass-bottom boats with gasoline engines, and by 1932, converted the boats to use electric motors.

Although the evolution of the glass-bottom boat was critical to Ray and Davidson's success at Silver Springs, they understood the need to have additional support structures and attractions to draw in tourists and encourage them to spend time in the area. In addition to development of a beach area with a bath house, café and gift shops, Ray and Davidson supported the development of separate attraction areas around the springs and spent an enormous amount of money advertising them.

In the 1930s, a concessionaire named Colonel Tooey operated a jungle cruise along the Silver River and established a colony of rhesus monkeys on an island in the river. Tooey was unaware that the monkeys could swim and soon they escaped the island and established wild troops along the river. The Ross Allen Reptile Institute began in the 1930s. Allen, a noted herpetologist, developed several forms of snake antivenom and imported and supplied venoms for research and medical purposes.

The Institute hosted demonstrations and lectures on snakes, alligators and turtles. Only one building associated with the Reptile Institute remains on the Silver Springs grounds: the former wildlife office (MR03736) originally stood near the current Silver Springs entrance and was later relocated to the shop complex.

Silver Springs proved an attractive landscape for photographers and movie and television producers as well as tourists. Bruce Mozert, a resident photographer at Silver Springs, became well-known for his underwater publicity shots of the springs, often utilizing other staff members as models. Newt Perry, later known for his development of underwater shows at Weeki Wachee, began his career at Silver Springs, first assisting his high school friend Ross Allen in rounding up snakes for his demonstrations. But Perry was best known for his swimming skills and ability to stay underwater for long periods of time. He performed various underwater stunts in Grantland Rice's *Spotlight* movie shorts, and eventually his swimming and Hollywood connections put him in contact with Olympic swimmer, Johnny Weissmuller. After Weissmuller became friends with Perry and Allen, MGM moved the location of the Tarzan movie series from Los Angeles to Silver Springs, where six of the Tarzan episodes were filmed, before Weissmuller and the Tarzan series followed Perry again, this time moving to Wakulla Springs.

The success of the Tarzan movies and the beauty and wildness of Silver Springs made the location an ideal backdrop for movies such as *The Yearling* (1946), *Distant Drums* (1951), *Rebel Without a Cause* (1955), *Cross Creek* (1983), *Creature From the Black Lagoon* (1954) and *Revenge of The Creature* (1955). Major television shows such as *Sea Hunt*, *Mutual of Omaha's Wild Kingdom*, and *I Spy* also used Silver Springs as a filming location, with *Sea Hunt* filming over 100 episodes at Silver Springs.

By 1959 Silver Springs was attracting more than one million visitors a year. The Silver Springs Tourist Center (MR03723) was constructed to replace several frame structures which were destroyed by fire on June 17, 1955. The new Tourist Center was commissioned by long-time owners William Carl Ray and W. C. "Shorty" Davidson, who operated Silver Springs from 1924 through 1962. Ray and Davidson hired Sarasota architect Victor A. Lundy, to design a new tourist center to house retail and administrative functions. The tourist center was originally designed to include a main building containing shops and administrative offices (MR03732), a restaurant building (MR03732), and a boat dock.

Lundy's architectural style has been attributed to the Sarasota School of Architecture, a group of Sarasota architects whose works are considered southern adaptations of the International Style of Architecture. The architects of the Sarasota School are noted for designs which emphasized the relationship between buildings and the environment, simplicity and conciseness of architectural form, the relationship between interior and exterior planning, continuity of spatial flow, and appropriateness of construction and building materials. Lundy's design for the Silver Springs Tourist Center was noted for its dramatic roofs, exposed steel construction, and the interaction between the dynamic forms of the buildings and the landscape. The Silver Springs Tourist Center was awarded the 1956 Progressive Architecture

Award and the 1959 American Institute of Architects (AIA) Merit Award.

All of the park's recorded historic structures and recorded archaeological sites are encompassed by a single resource group called the Silver Springs Head Springs Site Complex. In this instance, the Florida Master Site File resource group category was used to denote a National Register category mixed district consisting of more than one type of cultural resource. At the time of its listing with FMSF, the resource included twenty-two previously recorded archaeological sites, including the eight archaeological sites located at the Silver Springs attraction. The intention of the listing is to include all of the cultural resources that share a common association with the springs itself, representing over ten thousand years of history. The district's significance has been recognized for its research potential and contribution to broad patterns in history in the areas economics, tourism, archaeology, African-American history, and prehistory.

Condition Assessment: All of the historic structures in the park are in fair condition. The biggest threat to these structures is material deterioration due to deferred maintenance and repair. Leaking roofs, recurrent problems with heating and air conditioning, and wood rot from water damage are among the issues which need to be addressed to bring the structures to good condition. Currently, several of these buildings are in the process of being repaired.

Level of Significance: The Silver Springs Tourist Center (MR03723), which includes the Tourist Center – Main Building (MR03732) and the Tourist Center – Restaurant (MR03733), is considered potentially eligible for the National Register under Criterion C, Design/Construction for its unique design and association with noted Sarasota architect Victor Lundy. Two of its three original design components (the original boat dock was rebuilt) retain a high degree of integrity in location, design, setting, materials and workmanship. The Tourist Center is an excellent example of International Style as modified by one of the noted members of the Sarasota School of Architecture and can also be considered potentially eligible under the "National Register of Historic Places Multiple Property Documentation Form: Architectural Resources of the Sarasota School of Architecture (Sarasota County, Florida)", as it meets the description and registration requirements set under Property Type F.5, Miscellaneous Buildings. The remaining historic structures in the park: the Paint Shop (MR03734), the Covered Boat Storage – South (MR03735), the Wildlife Office (Ross Allen Building) (MR03736), the Sea Hunt Cabin (MR03737) and the Jeep Safari Gift Shop (MR03738) were determined as not contributing to the Silver Springs Tourist Center (MR03723) resource group.

The Wildlife Office (Ross Allen Building) (MR03736) is not considered eligible for the National Register as it was moved from its original location and historic context near the front of a park to the current shop area prior to construction of a new entrance and parking area. However, the wildlife building should be considered significant and preserved within the park for its association to Ross Allen and his work at Silver Springs, and consideration should be given to utilizing the building as part of an interpretive program.

General management measures: Three buildings will be managed utilizing the Secretary of the Interior's Standards for the Treatment of Historic Properties. The Tourist Center – Main Building (MR03732) and the Tourist Center – Restaurant (MR03733) shall be managed using a combination of preservation and rehabilitation as the treatment standards, focusing on the retention of materials from the most significant time in the building's history (the late 1950s, early 1960s), while allowing some latitude for replacement materials and potential adaptive reuse of the buildings. Although the Wildlife Office (Ross Allen Building) (MR03736) is not eligible for the National Register, rehabilitation is the recommended treatment standard due to the building's association with Ross Allen. Rehabilitation emphasizes the retention and repair of historic materials that give the building its historic character, but provides some latitude for replacement of historic materials that have deteriorated beyond repair.

As the Paint Shop (MR03734) and the Covered Boat Storage – South (MR03735) are utilitarian structures and were determined as not contributing to the Silver Springs Tourist Center (MR03723) resource group, these structures will be maintained using regular park maintenance standards; application of the Secretary of the Interior's Standards for the Treatment of Historic Properties is not necessary.

Two historic structures recorded in the FMSF are planned for demolition: the Sea Hunt Cabin (MR03737), and the Jeep Safari Gift Shop (MR03738). BNCR staff initiated compliance review with DHR for removal of the structures along with submission of detailed FMSF forms; the State Historic Preservation Officer (SHPO) concurred with BNCR staff's opinion that the two structures no longer retain their historic integrity and do not contribute to the recorded Silver Springs resource group (the Silver Springs Tourist Center (MR03723)).

Collections

Desired future condition: All historic, natural history and archaeological objects within the park that represent Florida's cultural periods, significant historic events or persons, or natural history specimens are preserved in good condition in perpetuity, protected from physical threats and interpreted to the public.

Description: Silver Springs contains a wide variety of collections which include photographs, historic artifacts, brochures and other ephemera associated with the history of Silver Springs, many which are on display in a designated education center area of the main building. Other items on display include collections related to the Seminole Tribe, Ross Allen, Newt Perry, Bruce Mozert, historic souvenirs and brochures, and a model of a glass-bottom boat. Two large dioramas, formerly housed in an area adjacent to the museum, are currently not on display and are stored in a climate-controlled area.

Many items which are part of the overall Silver Springs collection are not on display in the museum. They include a large collection of film and audio and video recordings, scrapbooks of old photographs, slides, promotional materials, and building plans, all of which are currently stored in a climate-controlled area.

One of the most iconic collections in the park is a group of several glass-bottom boats and tour boats, many of which continue to operate daily in the park. These boats are docked daily under covered docks.

Condition Assessment: The condition of collection items in the park can be generalized as "fair" to "good". Items on display in the museum are mostly in good condition, and the items not on display are largely in fair condition. Exceptions are a portion of the historic films and building plans which are in poor condition due to past damage from exposure to excessive heat and water leaks.

Collections are currently in the process of being inventoried and assessed, and management actions will be developed to address any issues or threats to the collection. These management measures could include repairs or conservation, improved storage, improved climate control or relocation of collections.

Most of the collections are currently housed in climate-controlled controlled areas. The exception is the glass-bottom boats and tour boats which are housed outdoors at the main boat dock at the springhead and the docks located near the shop area.

Level of Significance: The collections that are part of the Silver Springs addition are significant for their representation of the evolving history of Silver Springs and its importance both in prehistoric and historic time periods. The collections are focused largely on the interaction between animals and humans and the springs and serve to remind visitors that Silver Springs has been an attractive destination for thousands of years for a variety of reasons.

General management measures: General management measures need to be developed for the collections within the Silver Springs addition. These measures include developing a Scope of Collections Statement, a house-keeping manual, and a record keeping system; inventorying and cataloging collection items; instituting climate control and monitoring, pest control and security measures; and having trained staff to care for the collections.

Detailed management goals, objectives and actions for the management of cultural resources in this park are discussed in the Cultural Resource Management Program section of this component. Table 4 contains the name, reference number, culture or period, and brief description of all the cultural sites within the park that are listed in the Florida Master Site File. The table also summarizes each site's level of significance, existing condition and recommended management treatment. An explanation of the codes is provided following the table.

Table 4: Cultural Sites Listed in the Florida Master Site File

Site Name and FMSF #	Culture/Period	Description	Significance	Condition	Treatment	Management Zone
MR00059 Silver Springs Cavern	Prehistoric, multicomponent; Historic, multicomponent	Archaeological Site	NE	NA	P	SV-32
MR00083 No Name	Prehistoric, unspecified	Archaeological Site	NE	NE	P	SV-36
MR00092 Paradise Park	Prehistoric, multicomponent; Historic, 20 th century	Archaeological Site	NE	F	P	SV-36
MR00093 No Name	Prehistoric, multicomponent; Historic, multicomponent	Archaeological Site	NE	F	P	SV-36
MR01082 Franklin 15	Prehistoric, a-ceramic; Historic, multicomponent	Archaeological Site	NE	F	P	SV-31 & SV-32
MR01878 Cactus Flower	Prehistoric, multicomponent	Archaeological Site	NR	NE	P	SV-31 & SV-01
MR 3746 Paradise Park Attraction	Historic	Archaeological Site	NE	F	P	SV-36
MR03173 Silver River Run Canoe	Prehistoric, unspecified	Archaeological Site	NE	NE	P	SV-31, SV-30, & SV-36
Silver Springs Tourist Center MR03723	Modern (Post-1950)	Resource Group (Building Complex)	NR	F	P,RH	SV-32
Tourist Center – Main Building MR03732	Modern (Post-1950)	Historic Structure	NR	F	P,RH	SV-32
Tourist Center – Restaurant MR03733	Modern (Post-1950)	Historic Structure	NR	F	P,RH	SV-32
Paint Shop MR03734	Modern (Post-1950)	Historic Structure	NS	F	N/A	SV-32

Table 4: Cultural Sites Listed in the Florida Master Site File

Site Name and FMSF #	Culture/Period	Description	Significance	Condition	Treatment	Management Zone
Covered Boat Storage – South MR03735	Modern (Post-1950)	Historic Structure	NS	F	N/A	SV-35 & SV-36
Wildlife Office (Ross Allen Building MR03736	1950	Historic Structure	NS	F	RH	SV-35
Sea Hunt Cabin MR03737	c. 1920	Historic Structure	NS	F	R	SV-36
Jeep Safari Gift Shop MR03738	1940	Historic Structure	NS	F	R	SV-32
Silver Springs Head Springs Site Complex MR3762	Prehistoric – mid 20th century	Resource Group	NR	F	N/A	All

Significance:

NRL National Register listed
 NR National Register eligible
 NE not evaluated
 NS not significant

Condition

G Good
 F Fair
 P Poor
 NA Not accessible
 NE Not evaluated

Recommended Treatment:

RS Restoration
 RH Rehabilitation
 ST Stabilization
 P Preservation
 R Removal
 N/A Not applicable

Resource Management Program

Management Goals, Objectives and Actions

Measurable objectives and actions have been identified for each of DRP's management goals for the Silver Springs addition to Silver River State Park. While, DRP utilizes the ten-year management plan to serve as the basic statement of policy and future direction for each park, a number of annual work plans provide more specific guidance for DRP staff to accomplish many of the resource management goals and objectives of the park. Where such detailed planning is appropriate to the character and scale of the park's natural resources, annual work plans are developed for prescribed fire management, exotic plant management and imperiled species management. Annual or longer-term work plans are developed for natural community restoration and hydrological restoration. The work plans provide DRP with crucial flexibility in its efforts to generate and implement adaptive resource management practices in the state park system.

The work plans are reviewed and updated annually. Through this process, DRP's resource management strategies are systematically evaluated to determine their effectiveness. The process and the information collected is used to refine techniques, methodologies and strategies, and ensures that each park's prescribed management actions are monitored and reported as required by Sections 253.034 and 259.037, Florida Statutes.

The goals, objectives and actions identified in this management plan will serve as the basis for developing annual work plans for the park. The ten-year management plan is based on conditions that exist at the time the plan is developed, and the annual work plans provide the flexibility needed to adapt to future conditions as they change during the ten-year management planning cycle. As the park's annual work plans are implemented through the ten-year cycle, it may become necessary to adjust the management plan's priority schedule and cost estimates to reflect changing conditions.

Natural Resource Management

Hydrological Management

Goal: Protect water quality and quantity in the park, restore hydrology to the extent feasible and maintain the restored condition.

The natural hydrology of most state parks has been impaired prior to acquisition to one degree or another. Florida's native habitats are precisely adapted to natural drainage patterns and seasonal water level fluctuations, and variations in these factors frequently determine the types of natural communities that occur on a particular site. Even minor changes to natural hydrology can result in the loss of plant and animal species from a landscape. Restoring state park lands to original natural conditions often depends on returning natural hydrological processes and conditions to the park. This is done primarily by filling or plugging ditches,

removing obstructions to surface water “sheet flow,” installing culverts or low-water crossings on roads, and installing water control structures to manage water levels.

Objective: Conduct/obtain an assessment of the park’s hydrological restoration needs.

As described above, Silver Springs has the luxury of being one of the best studied spring systems in the state, with historical data going back about one hundred years. Although 100 years is just a snapshot in time of the long history of Silver Springs, it provides us with valuable data about historical conditions and gives us a target for restoration. A lot of research and assessment work related to hydrological restoration of the spring has already occurred. Much of this work is summarized into a draft document contracted by DEP under the Florida Springs Initiative entitled “Restoration Plan for the Silver Springs and River” (NAI 2011). This draft restoration plan outlines current and historical information and provides some goals and suggested action items for restoration of the system from a broad spectrum perspective. The draft plan identifies some of the restoration needs and organizes goals and actions into six categories: biodiversity, education and outreach, land use and development, recreation, water quality and water quantity (spring flow). This document provides a good basis for restoration of the spring. Staff should use it as a guideline for restoration activities that require action beyond the park boundaries and should provide feedback and recommendations to assist with the development of a final draft and accepted restoration plan.

While the NAI (2011) restoration plan identifies big picture measures needed to restore the spring, it does not address specific restoration needs on a smaller scale within the Silver Springs property. Within Silver Springs, there are specific areas that would benefit from a thorough assessment and formulation of a restoration plan of action. The first such area is Ross Allen Island. Ross Allen Island has been heavily impacted by past land use activities as described above in the hydrology section. Some restoration activities are already underway (removal of animal enclosures, removal of some of the boardwalk, ceasing of water pumping and discharge, treatment of exotic plants) but the area will likely benefit from additional restoration. Upon completion of the current projects, a more thorough assessment of current onsite conditions and further restoration needs should be obtained. Based upon this assessment, additional restoration goals and actions for Ross Allen Island should be prescribed and implemented as needed.

As described above in the hydrology section, a project is already underway that will address the main stormwater discharge issues by reducing the amount of impervious surface (some of it currently in floodplain swamp wetlands) and providing for additional treatment and attenuation of stormwater. Upon completion of this project, a further assessment should be conducted to determine the project’s efficacy and if additional areas in the park would benefit from stormwater management improvements. An overall stormwater management assessment and plan for the property should be obtained.

An additional area that may require further assessment of restoration need is the

wetland along the entrance boardwalk, often referred to as "Cypress Island." This area is an extension of the former floodplain swamp but it has been heavily altered by bisecting roads and ditches that separate it from the rest of the swamp, and by the pumping of water that kept the area constantly hydrated. The pumping has ceased and the area will be allowed to return to a normal hydroperiod, however, staff should monitor the condition of the wetland and assess if additional restoration actions would benefit the overall condition and health of this area. Based upon this assessment, further restoration needs, goals, and actions should be identified, planned, and implemented as needed.

Objective: Monitor and protect the water resources of the park.

Water quality and quantity are of utmost importance to the Silver Springs ecosystem. Several agencies are involved in monitoring and protecting the water resources including several DRPs within DEP, SJRWMD, USGS, and Marion County. DRP staff should continue to work closely with partner agencies to foster relationships, share information, and support research and monitoring efforts that document and protect the park's water resources. As detailed in the hydrology section, the major threats to Silver Springs and its unique water resources are declines in water quality and water quantity (spring flow).

The SJRWMD is the lead agency charged with protection of water quantity related to Silver Springs. They issue consumptive use permits for water withdrawal and formulate district water supply plans. They are also responsible for developing a Minimum Flow and Level (MFL) regime for Silver Springs and River. DRP staff will remain heavily involved as stakeholders in that process.

The DEP is the main agency responsible for protection of water quality in the Silver Springs and River system. Overall, water quality in the system is good with the exception of elevated levels of nitrate. The elevated nitrate levels prompted the development of a Total Maximum Daily Load (TMDL) threshold value for nitrate. The TMDL was established in November 2012. The TMDL process calls for the development of a Basin Management Action Plan (BMAP) to identify measures required to obtain the target nitrate reduction. The BMAP planning process was initiated in January 2013 and meetings have been held about once per month since then. DRP staff will continue to remain heavily involved as stakeholders in that process.

DRP will also stay informed regarding land-use planning in the surrounding area. DRP will continue to participate in local springs working groups to encourage projects that will benefit the health of the springs. DRP will continue to review all consumptive use permits submitted to the SJRWMD within the vicinity of Silver Springs and its springshed and provide comments to SJRWMD regarding issues that could negatively impact the resources of Silver Springs and Silver River. The SJRWMD monitors surface and groundwater levels in and around Silver Springs. Water quality information is collected periodically and made available.

Objective: Restore/enhance natural hydrological conditions and functions to approximately 8 acres of floodplain swamp natural community.

This objective is aimed at restoring/enhancing all or portions of the impacted floodplain swamp areas that are identified above (paved over wetlands in parking lots, Ross Allen Island wetlands, and Cypress Island wetlands). Restoration focus should be on restoring connectivity between these areas and connectivity to adjacent floodplain swamp areas and to returning/enhancing natural hydroperiods. This objective could be met by installation or improvement of culverts, removal of pavement, stopping water pumping, correcting artificial drainage, etc. The assessment and planning called for above will identify specific needs and actions for each area to achieve this objective.

Objective: Monitor, protect, and restore fish populations in the Silver River.

As described above, the Silver River has been closed to fishing for decades and is known for its abundance of very large fish. The large fish are an important aspect to the glass-bottom boat tours, among other reasons. Studies have documented measurements of fish biomass in the Silver River show declines of greater than 90 percent from historic conditions (Munch et al. 2006). Given the uniqueness of an un-fished spring run system and the significance of the large fish population to glass-bottom boat tours, staff should pursue periodic monitoring of the river's fish population to assess impacts of recreational use and other changes on the spring run to overall fish population trends. Methodology should mimic past studies to ensure that data is comparable between independent sampling events. Future research should be conducted to better determine the causes of the fish population decline and to identify possible solutions. Projects based upon this research should be designed and implemented to protect and restore fish populations in the Silver River.

Objective: Reduce water use in the park.

Previous land uses on the property required the use of large volumes of water for captive animal care, aesthetics, recreation, and irrigation. An elaborate pumping system was used to move surface and groundwater around the property. Much of the water was discharged back into the Fort King Waterway but some was lost to evapotranspiration and percolation. As described above, most of the pumping has already ceased and the need for it has been reduced. However, staff should continue to seek out additional opportunities to further reduce the need for water use through landscaping changes/improvements, low-flow/waterless fixtures, best management practices, etc. Consumptive water use on the property should be reduced to the greatest extent possible.

A number of small wells exist on the property. Each existing well should be inspected and the need for it evaluated. All wells that are deemed no longer necessary to support park operations should be properly capped. Some existing wells on the property have already been capped and/or abandoned. These should be inspected to ensure that they were properly abandoned and sealed to prevent

leakage and/or aquifer contamination. Remedial action should be taken accordingly to properly abandon wells that are no longer needed or non-functional.

Objective: Connect all remaining facilities to municipal wastewater treatment system.

As described above in the hydrology section, another project in the works is a large scale waste water improvement project that will connect many of the facilities at Silver Springs and adjacent Silver River State Park to the municipal sewer system. When complete, this project will eliminate many of the existing septic tank systems onsite and waste water will be given advanced levels of treatment offsite. This project should greatly reduce the nitrate contributions of onsite sewage treatment systems. There are still several facilities within the state park that will not be hooked up during this phase of the project. As future funding becomes available, staff should pursue connecting the remaining facilities to the municipal sewer system and properly abandoning the existing septic systems.

Objective: Partner with federal, state and local agencies to determine the appropriate recreational carrying capacity for the main headspring and Silver River.

The cumulative effects, seasonality and long-term impacts of current recreational use of the main headspring and river are poorly understood. In particular, additional data gathering on the current condition of both the biotic and abiotic environment of the spring is needed. The recreational use of the upper river by motor boats and paddle craft will likely continue to increase. Research is needed to determine the recreational carrying capacity of the main headspring and river that would allow the maximum level of public access and recreational enjoyment while preventing damage to the river bottom and shoreline, impacts to wildlife or hindrances to wildlife access. DRP staff will coordinate with partner agencies to establish a recreational use monitoring protocol and implement baseline monitoring. The public will have the ability to comment on any subsequent recommendations regarding recreational management of the river and the headsprings. Based on the results of the study, a range of potential management actions may be considered to adjust recreational carrying capacities, recommend vessel-type use restrictions or establish minimum water levels for the operation of tour boats, as needed.

Objective: Partner with federal, state and local agencies, private non-profits and volunteer groups to educate the public in and around the Silver Springs springshed about water quality and quantity protection.

Public awareness of the actions that can be taken both by individuals as well as by the collective local community will be a critical component in restoring the health of the spring and the river. Proactive outreach in the park and throughout the community through education and interpretation will be done to promote this awareness.

Objective: Implement Florida-friendly landscape best management practices for landscape and turf areas within the Silver Springs addition.

The protection of water resources is enhanced through environmentally-sensitive turf and landscape care practices. Florida-Friendly best management practices (BMPs) address the protection of water resources where pesticides, nutrients, and sediments enter the surface water and ground water as a result of nonpoint source pollution. BMP goals are to promote the efficient use of water and reduce nonpoint source pollution through (1) the use of appropriate site design and plant selection; (2) application of appropriate rates of irrigation and fertilizer; and (4) the use of integrated pest management (IPM) to minimize pests and apply chemicals only when appropriate. The application of these BMPs in the proposed redevelopment and management of the Silver Springs State Park landscape will contribute significantly to the protection of this unique and beautiful spring system.

Natural Communities Management

Goal: Restore and maintain the natural communities/habitats of the park.

DRP practices natural systems management. In most cases, this entails returning fire to its natural role in fire-dependent natural communities. Other methods to implement this goal include large-scale restoration projects as well as smaller scale natural community improvements. Following are the natural community management objectives and actions recommended for the property.

Prescribed Fire Management: Prescribed fire is used to mimic natural lightning-set fires, which are one of the primary natural forces that shaped Florida's ecosystem. Prescribed burning increases the abundance and health of many wildlife species. A large number of Florida's imperiled species of plants and animals are dependent on periodic fire for their continued existence. Fire-dependent natural communities gradually accumulate flammable vegetation; therefore, prescribed fire reduces wildfire hazards by reducing these wild land fuels.

All prescribed burns in the Florida state park system are conducted with authorization from the FDACS, Florida Forest Service (FFS). Wildfire suppression activities in the park are coordinated with the FFS.

Objective: Within 10 years, have the only remaining sandhill community (4 acres) maintained within the optimum fire return interval.

Table 5 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.

Table 5. Prescribed Fire Management		
Natural Community	Acres	Optimal Fire Return Interval (Years)
Sandhill	4	1-3
Annual Target Acreage*	1 - 4	

*Annual Target Acreage Range is based on the fire return interval assigned to each burn zone. Each burn zone may include multiple natural communities.

The park is partitioned into management zones including those designated as burn zones. Prescribed fire is planned for each burn zone on the appropriate interval. The park's burn plan is updated annually because fire management is a dynamic process. To provide adaptive responses to changing conditions, fire management requires careful planning based on annual and very specific burn objectives. Each annual burn plan is developed to support and implement the broader objectives and actions outlined in this ten-year management plan.

In order to track fire management activities, DRP maintains a statewide burn database. The database allows staff to track various aspects of each park's fire management program including individual burn zone histories and fire return intervals, staff training/experience, backlog, if burn objectives have been met, etc. The database is also used for annual burn planning which allows DRP to document fire management goals and objectives on an annual basis. Each quarter the database is updated and reports are produced that track progress towards meeting annual burn objectives.

Fire management within the small amount of remaining sandhill community on the property will focus on reducing the total amount of hardwood cover, encouraging native herbaceous groundcover and restoring the community to an earlier successional structure. There is very little of the original sandhill left on the property. What remains is located in the eastern portion of zone SV-36. This sandhill would benefit from a spring burn timed to stress and kill sprouting oaks. These 4 acres should be burned every 1 to 3 years ideally.

The successional hardwood forest, occupying most of SV-36, was previously sandhill. While it does not currently resemble a fire-maintained natural community, the hope is to restore at least a portion of this altered land cover back to a fire maintained sandhill natural community. The extent of restoration will depend on the planned usages of this area. Due to fire exclusion, land conversion, borrow pit disturbance, and extensive exotic plant infestations this community will require many improvements prior to receiving prescribed fire safely. Extensive exotic plant infestations exist in this zone and will require treatment prior to burning. Burning the dominant exotic plant infestations at current densities could result in the loss of remaining desirable canopy species. Several locations of dumped debris exist

throughout this zone as well. Most of the dump piles consist of plant debris, but some contain plastics and possibly construction debris. These piles will need to be investigated and possibly removed. This altered land cover type may also require mechanical treatment to reduce shading and allow wind penetration prior to burning. A fuel reduction burn timed for the dormant season is recommended given current fuel load conditions. Consideration for duff moisture content in this zone is also important. Ground-truthing for moisture content in the duff layer throughout the zone should be conducted prior to the burn to insure adequate moisture content. If the duff is dry pine tree kill could result when the fine roots growing in this organic layer are killed. Duff ignition could also result in prolonged smoking and hazardous amounts of residual smoke being produced. State Road 40, State Road 35, and County Road 314 are within close proximity to the park. Accumulated duff should be burned off gradually. Burns should be planned for periods when deeper duff deposits are wet and only manageable amounts of duff are dry enough to burn. The successional hardwood forest zones should be burned during the growing season once fuel reduction burns have been conducted.

Pre-burn preparation is an important consideration when applying fire to areas that have had fire excluded for long periods. Perimeter and internal firebreaks should be maintained and established according to agency policy. They should provide for adequate park protection and safe prescribed fire application. The complexity of the burn unit including the structure and height of the fuel within the zone and the receptiveness of fuels adjacent to the zone should be taken into account when preparing the firebreaks. Firebreaks twice as wide as the adjacent fuel height is a general guideline for preparation (10 foot fuel heights adjacent to line = 20 foot wide firebreak). Mechanical treatment of fuels adjacent to the firebreak may be needed to burn the zone safely.

Preparation and planning for wildfires or escaped prescribed burns within the park should also be a component of the park's prescribed burn plan. Preferred fire suppression techniques and guidelines should be identified and discussed with the local FFS staff prior to the need for fire suppression within the park. Sensitive resources such as wetlands, imperiled species and cultural sites should be identified and mapped and that information conveyed to FFS prior to any suppression activities.

In developing prescribed burn plans for the fire-adapted communities in the park, every effort should be made to mimic natural fire regimes in both timing and technique. Fire season and fire-return interval are both critical components of a fire regime. In most cases after initial fuel reduction burns have been completed during the non-growing season, all burns should then be conducted during the natural lightning season. However, non-growing season burns are favorable as a last resort to prevent the zone from going into backlog.

Natural Communities Restoration: In some cases, the reintroduction and maintenance of natural processes is not enough to reach the natural community desired future conditions in the park, and active restoration programs are required. Restoration of altered natural communities to healthy, fully functioning natural

landscapes often requires substantial efforts that may include mechanical treatment of vegetation or soils and reintroduction or augmentation of native plants and animals. For the purposes of this management plan, restoration is defined as the process of assisting the recovery and natural functioning of degraded natural communities to desired future condition, including the re-establishment of biodiversity, ecological processes, vegetation structure and physical characters.

Examples that would qualify as natural communities' restoration, requiring annual restoration plans, include large mitigation projects, large-scale hardwood removal and timbering activities, roller-chopping and other large-scale vegetative modifications. The key concept is that restoration projects will go beyond management activities routinely done as standard operating procedures such as routine mowing, the reintroduction of fire as a natural process, spot treatments of exotic plants, and small-scale vegetation management.

Following are the natural community/habitat restoration and maintenance actions recommended to create the desired future conditions in the floodplain swamp, sandhill, and successional hardwood forest communities.

Objective: Conduct habitat/natural community restoration activities within floodplain swamp community

Portions of the floodplain swamp community on the north side of the Silver River were impacted as part of prior attractions operations. The animal pen enclosures associated with the "jeep safari ride" are approximately 1 acre in size. Much of the developed portions of this community appear to contain fill substrate to elevate the area due to the prior natural low lying hydric conditions.

A phased plan should be developed to guide restoration of the above identified area. The extent of restoration efforts will depend on future recreational usage of this area. The restoration of these will include removal of attractions related features. A return to natural grade/removal of fill substrate should be evaluated for feasibility and considered if possible. Adjacent areas contain native floodplain swamp species which will seed in naturally. Ongoing control of exotic plant species will be required in these areas due to the level of disturbance already present and expected with demolition activities. Photopoint monitoring is suggested to track changes associated with this restoration.

Objective: Conduct /natural community restoration activities within the successional hardwood forest community to restore portions of the historic sandhill.

The successional hardwood forest altered land cover type on the south side of the property exists due to prior attractions operations, disturbances, and fire exclusion. It is the desire of the DRP to restore portions of this land cover type east of the "shop" area and south of the hydric hammock to its former natural community - sandhill.

A phased plan should be developed to guide restoration of the successional hardwood forest back to sandhill. This type of restoration is expensive and very intensive and the extent of restoration efforts will depend on future recreational usage of this area. The restoration of these areas should include removal of Attraction related debris piles and buildings, ongoing treatment of extensive exotic plant infestations, recontouring current impoundments and borrow pits, mechanical mowing to remove dense overgrown hardwoods, replanting of longleaf pine and native groundcover species, and the application of prescribed fire once fuel conditions are safe. A circular road was installed initially as part of the attraction. Berms exist along portions of this road as well as portions of Paradise Road. These berms are now inhabited by several gopher tortoises. Return of the berms to natural grade should be evaluated for feasibility and considered if possible. The presence of gopher tortoises should be taken into consideration when making this decision. The results of a comprehensive hydrological assessment of the property which included the impact of these berms on the hydrology of the property could aid in this decision.

Objective: Assess the bulkhead structures along the spring head and spring run and develop a shoreline restoration plan.

The headspring area and a portion of the northern shoreline of the Silver River just downstream of the headspring have been enclosed by a man-made bulkhead. The natural shoreline vegetation has been mostly or completely lost in this area and erosion is a problem. The bulkhead is in relatively poor condition. Prior to repair or replacement of the bulkhead structure, staff should assess the feasibility of removing portions of the bulkhead in order to restore portions of the shoreline to natural grade and native vegetation. Similar projects have been conducted in other State Park springs and can serve as models. If bulkhead removal is deemed feasible, a plan for shoreline restoration should be developed and implemented. Shoreline restoration plans should be coordinated with landscape plans for the formal gardens.

Natural Communities Improvement: Improvements are similar to restoration but on a smaller, less intense scale. This typically includes small-scale vegetative management activities or minor habitat manipulation. Following are the natural community/habitat improvement actions recommended at the park.

Objective: Conduct natural community/habitat improvement activities on 4 acres of sandhill community

Approximately 4 acres of sandhill remain on the property. Its structure and species composition is in relatively decent shape given its past fire exclusion. This sandhill would benefit from the application of fire, possibly a dormant season fuel reduction burn first to remove accumulated fuel, and then a growing season burn for ecological response. This community may also benefit from selective removal of encroaching hardwoods, but it is recommended this area be burned first and evaluated post-burn as fire may impact the oaks sufficiently. Exotic pasture grasses and cogon grass infestations exist in and near this community and should

be treated. Exotic plant treatment areas should be monitored and retreated as needed, and efforts should be made to reseed treatment areas with native groundcover species to prevent bare ground areas from being repopulated by exotic plants.

Imperiled Species Management

Goal: Maintain, improve or restore imperiled species populations and habitats in the park.

DRP strives to maintain and restore viable populations of imperiled plant and animal species primarily by implementing effective management of natural systems. Single species management is appropriate in state parks when the maintenance, recovery or restoration of a species or population is complicated due to constraints associated with long-term restoration efforts, unnaturally high mortality or insufficient habitat. Single species management should be compatible with the maintenance and restoration of natural processes, and should not imperil other native species or seriously compromise park values.

In the preparation of this management plan, DRP staff consulted with staff of the FFWCC's Imperiled Species Management or that agency's Regional Biologist and other appropriate federal, state and local agencies for assistance in developing imperiled animal species management objectives and actions. Likewise, for imperiled plant species, DRP staff consulted with FDACS. Data collected by the USFWS, FFWCC, FDACS and FNAI as part of their ongoing research and monitoring programs will be reviewed by park staff periodically to inform management of decisions that may have an impact on imperiled species at the park.

Ongoing inventory and monitoring of imperiled species in the state park system is necessary to meet DRP's mission. Long-term monitoring is also essential to ensure the effectiveness of resource management programs. Monitoring efforts must be prioritized so that the data collected provide information that can be used to improve or confirm the effectiveness of management actions on conservation priorities. Monitoring intensity must at least be at a level that provides the minimum data needed to make informed decisions to meet conservation goals. Not all imperiled species require intensive monitoring efforts on a regular interval. Priority must be given to those species that can provide valuable data to guide adaptive management practices. Those species selected for specific management action and those that will provide management guidance through regular monitoring are addressed in the objectives below.

Objective: Develop baseline imperiled species occurrence inventory lists for plants and animals.

Initial surveys of this property documented gopher tortoises. Detailed surveys are needed for this property to determine the presence of all imperiled animal and plant species. Assistance from the FPS District office, other state agencies universities, and other researchers will be requested to meet this need. Once species are

identified, monitoring and documentation procedures can be prescribed.

Objective: Monitor and document one selected imperiled animal species in the park.

Park and District staff will survey and monitor the property's gopher tortoise population per the DRP's established guidelines. All attempts will be made to survey for gopher tortoises following prescribed burns. Survey transects will be used to sample at least 10 percent of the zone.

Exotic Species Management

Goal: Remove exotic and invasive plants and animals from the park and conduct needed maintenance control.

DRP actively removes invasive exotic species from state parks, with priority being given to those causing the ecological damage. Removal techniques may include mechanical treatment, herbicides or biocontrol agents.

Objective: Annually treat 3 acres of exotic plant species in the park.

An exotic plant removal plan is recommended that maps infested areas by management zone and determines priorities for treatment. The plan will provide guidance for subsequent annual work plans. The number of acres of exotic plants treated per year is likely to vary widely depending on the status of current infestations and any new infestations that might arise during the life of this management plan. Cogongrass will continue to be treated promptly and repeatedly. Priority should be given to FLEPPC Category I and II species when treating exotic plant species in the park. Non-invasive exotic plants that occur within the park will be removed whenever possible; however, ornamentals that are known to be non-invasive and occur in landscaping around the attractions area may remain. All other scattered invasive exotic plant species will be treated upon detection and mapped for follow-up treatments. Any cut stumps will be treated with appropriate herbicide to prevent resprouting.

A plan and schedule should be developed that complies with DRP standards for scouting and mapping invasive exotics in every zone within the park. Areas that have sources of particularly aggressive species, such as cogon grass, will need to be scouted more frequently. Finding new populations of invasive exotic plants before they become established will help prevent larger infestations and reduce the cost and effort needed to control them. All known and newly detected locations of exotic plants should be GPSed and mapped. The park should develop an exotic plant management plan to outline procedures for scouting, marking, treatment scheduling, treatment progress, retreatment, and herbicide use procedures. As funds become available, contract herbicide treatments should be considered. Objective: Practice preventative measures to avoid accidental introduction and spreading of exotics within the park.

Guidelines for clean sod, fill dirt, lime rock, and mowing, as well as cleaning and inspecting equipment that enters the park are recommended. New infestations of exotics can be prevented by ensuring that contractors such as mowers clean their equipment before entering the park and do not spread exotics by moving from a contaminated area within the park without cleaning their equipment.

Objective: Implement control measures on 4 nuisance and exotic animal species in the park.

Control activities will focus on areas where feral hogs and nine-banded armadillos are causing the most damage. Park staff will actively remove hogs and armadillos from the property. Contractual services to remove feral hogs should be investigated to increase the number of hogs removed. The park also occasionally has to remove feral or stray cats and dogs from the property. These animals should be turned over to the county animal control facility. Trapping of rhesus to control the expansion of the Silver River population expansion may continue to occur annually (as it has for many years), or may be prescribed on an "as-needed" basis. This trapping will presumably continue to occur on the Silver Springs property, as it has before. DRP is discussing a long-term management strategy with FWC, the Florida Department of Agriculture and Consumer Affairs, and the Florida Department of Health.

Cultural Resource Management

Cultural resources are individually unique, and collectively, very challenging for the public land manager whose goal is to preserve and protect them in perpetuity. DRP is implementing the following goals, objectives and actions, as funding becomes available, to preserve the cultural resources found in this property.

Goal: Protect, preserve and maintain the cultural resources of the park.

The management of cultural resources is often complicated because these resources are irreplaceable and extremely vulnerable to disturbances. The advice of historical and archaeological experts is required in this effort. All activities related to land clearing, ground disturbing activities, major repairs or additions to historic structures listed or eligible for listing in the National Register of Historic Places must be submitted to the Division of Historical Resources (DHR) for review and comment prior to undertaking the proposed project. Recommendations may include, but are not limited to concurrence with the project as submitted, monitoring of the site by a certified archaeological monitor, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effect. In addition, any demolition or substantial alteration to any historic structure or resource must be submitted to DHR for consultation and DRP must demonstrate that there is no feasible alternative to removal and must provide a strategy for documentation or salvage of the resource. Florida law further requires that DRP consider the reuse of historic buildings in the park in lieu of new construction and must undertake a cost comparison of new development versus rehabilitation of a building before electing to construct a new or replacement building. This comparison must be accomplished with the assistance

of DHR.

Objective: Assess and evaluate 11 of 15 recorded cultural resources in the park.

The park will conduct site condition assessments for its seven recorded terrestrial archaeological sites at least annually. These assessments will utilize the DRP's standardized approach and forms for archaeological site condition assessments. The park contains few enough archaeological sites and archaeologically sensitive areas that this schedule should be feasible. This schedule –the two year rotation– can be modified as fits actual conditions. Areas that are actively deteriorating or subjected to ground disturbance should be assessed more often, while sites that remain consistently in good condition may be assessed less frequently. These decisions will be made in consultation with the Bureau of Natural and Cultural Resources.

As more and more of the park is pulled into a couple of continuously expanding archaeological sites, it gets more difficult to assess the entire acreage. The sites now encompass a large geographical area that includes various natural and cultural resources and modern infrastructure, host a variety of activity, and are subjected to both direct and indirect impacts that can have from serious to subtle effect. Staff will continue to identify specific areas within the large recorded sites that are actively deteriorating, and focus condition assessments on these areas as well as provide a general overview of site condition.

The submerged site should be included in the inspection rotation with a modified visitation schedule. The priority at this time is to conduct a baseline survey of the condition of submerged cultural material. Because of the resources and logistics involved with coordinating divers to assess the site, regular underwater assessments will likely occur less frequently. Once the submerged site is better documented, an appropriate assessment schedule can be adopted.

In addition to formal condition assessments, staff is encouraged to monitor the archaeological sites as frequently as possible whenever working in their vicinity. While monitoring does not produce documentation of observed conditions, it checks on the sites' general condition so that management can be alerted of any needed intervention.

In addition to tracking changes to the physical integrity of the park's archaeological sites, additional research is required to better understand and evaluate their significance, both as individual resources and now as contributing resources to the mixed district resource group. Only two sites have been formally evaluated by the State Historic Preservation Office. Professional opinions vary about the significance of lithic scatters, and various evaluations consider different criteria, contexts and scale of consideration. The compliance-related Phase I surveys that have been conducted in and around park have produced preliminary opinions, and recommended additional testing to complete the significance evaluation. The 2013 Phase I survey conducted by a state university will tie its results to a larger body of

work on Florida's springs, their importance to human history, and the value of their archaeological record. Additional archival research and oral history interviews may also illuminate the significance of the park's more recent past and its related archaeological resources. As more data becomes available, the DRP will revisit sites' significance evaluations and consult with the SHPO, particularly to facilitate planning and mitigation of future impacts.

Three Historic Structures Reports (HSRs) will be prepared for the Tourist Center – Main Building (MR03732), the Tourist Center – Restaurant (MR03733) the Wildlife Office (Ross Allen Building). Repair, restoration and rehabilitation projects shall be identified and prioritized by the HSRs.

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

Documenting the park's rich history demands and deserves a variety of investigative techniques. We want to learn about all the facets of the springs' significant cultural associations past and present, the human past that has unfolded here, and the tangible cultural resources that the park stewards. Archival research, oral history interviews, landscape analysis, historic structure assessments, and archeological surveys are a few of the methods that may be employed.

Paradise Park was a very popular tourist attraction for African-Americans during Florida's period of enforced racial segregation in the mid-twentieth century. A local resident reported that locals and people from all over the country visited the park, which offered amusements and recreational opportunities that mirrored the nearby whites-only attraction. Its story is representative of the State's racially segregated past. Because it is part of our recent past, there are many people still living who can provide information about the park and its significance. An oral history project and in-depth research on this resource is highly recommended. Several former Silver Springs attraction employees live in the Ocala area and are excellent first-hand resources for the history of the attraction. Oral history interviews shall be developed with former Silver Springs attraction staff and an administrative history of the attraction shall be developed.

The 2013 Phase I survey consisted of systematic shovel testing at 25-meter intervals across two large parcels at the park, plus judgmental shovel testing of the small strip of land along the southern shoreline of the spring run. The newly documented presence and absence of artifacts will guide archaeological site management, as well as the planning of future improvements and restoration activity in the park. Future analysis of the survey results may also provide more detailed information about the depth and distribution of intact archaeological deposits, fill and disturbed areas. Portions of the park have not been surveyed yet, including much of the jeep trail east of the bear enclosure, and from the large performance stage west around the entire spring head. These areas are believed to have been heavily disturbed in the past, as they have been the loci of tourist activity; it is unknown how much of the archaeological record has survived. The utility of additional Phase I survey in these locations will be evaluated in advance of

any ground-disturbing activity or in light of a compelling management or research benefit.

In addition to locating unrecorded sites, additional archaeological survey can assist with bounding, relocating, further documenting, and evaluating the significance of the park's already recorded sites. The two sites that encompass almost half of the park's acreage (MR1082 and MR93) are unbounded on their eastern and western edges. It is possible that they encompass virtually the entire park. Two sites require relocation or confirmation of fate in order to be effectively managed (MR83 and MR3173). The Paradise Park Attraction (MR3746) and Silver Springs Cavern (MR59) are scantily documented, and require field survey to identify site components and their condition. The island between the spring run and the canal has only been partially tested. Undocumented historic artifact scatters may exist that need to be mapped and recorded. Finally, test unit excavation units strategically placed to assess sites' research potential may provide data critical to the continued evaluation of their significance.

Several actions are necessary in regard to the collections at the park. The collection items will continue to be inventoried and assessed, a Scope of Collections Statement will be developed and adopted, a house-keeping manual will be created, a record keeping system will be established and collection items will be formally catalogued.

Objective: Bring 6 of 15 recorded cultural resources into good condition.

The archaeological sites in fair condition are being adversely impacted by erosion and hogs. The erosion is primarily located in areas that have been disturbed by past human activity, such as road cuts, cut banks, and a large borrow pit. Many of these areas have been largely stabilized by the subsequent establishment of grass, shrubby growth, and in some instances trees. As specific areas impacted by erosion are identified via monitoring and condition assessment, measures should be developed to both stabilize the area and prevent additional impacts.

Hog damage consists of turned up topsoil and pocked ground surfaces. Park staff will monitor the specific areas impacted by hog rooting, extend or expand their pre-existing hog removal and exclusion measures to these areas, and stabilize the ground surface as needed.

Restoration projects for the Tourist Center – Main Building (MR03732) and the Tourist Center – Restaurant (MR03733) and rehabilitation projects for the Wildlife Office (Ross Allen Building) (MR03736) shall be designed and implemented utilizing information from the HSRs.

Special Management Considerations

Timber Management Analysis

Chapters 253 and 259, Florida Statutes, require an assessment of the feasibility of

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

A timber management analysis was not conducted for this property since its total acreage is below the 1,000-acre threshold established by statute. Timber management will be re-evaluated during the next revision of this management plan.

Arthropod Control Plan

All DRP lands are designated as "environmentally sensitive and biologically highly productive" in accordance with Ch. 388 and Ch. 388.4111 Florida Statutes. If a local mosquito control district proposes a treatment plan, DRP works with the local mosquito control district to achieve consensus. By policy of DEP since 1987, aerial adulticiding is not allowed, but larviciding and ground adulticiding (truck spraying in public use areas) is typically allowed. DRP does not authorize new physical alterations of marshes through ditching or water control structures. Mosquito control plans temporarily may be set aside under declared threats to public or animal health, or during a Governor's Emergency Proclamation. A mosquito control plan has not been adopted for this park.

Additional Considerations

If possible, the Ocklawaha River Aquatic Preserve boundaries should be amended to include the excluded upper reach of the Silver River.

Resource Management Schedule

A priority schedule for conducting all management activities that is based on the purposes for which these lands were acquired, and to enhance the resource values, is located in the Implementation Component of this management plan.

Land Management Review

Section 259.036, Florida Statutes, established land management review teams to determine whether conservation, preservation and recreation lands titled in the name of the Board of Trustees are being managed for the purposes for which they were acquired and in accordance with their approved land management plans. DRP considered recommendations of the land management review team and updated this plan accordingly.

The Silver Springs addition has not been subject to a land management review.

Silver River State Park was subject to a land management review on February 23, 2012. The review team made the following determinations:

The land is being managed for the purpose for which it was acquired.

The actual management practices, including public access, complied with the management plan for this site.

LAND USE COMPONENT

INTRODUCTION

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

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

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

EXTERNAL CONDITIONS

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

Silver Springs State park is located within Marion County. The park is approximately seven miles northeast of downtown Ocala in the north central part of the state. Significant resource-based recreation opportunities occur within the vicinity of the park (see reference map).

Existing Use of Adjacent Lands

State Road 40 (Silver Springs Blvd.) runs along the northern park boundary, State Road 35 (Baseline Rd.) parallels the park's western boundary, and County Road 314 (Sharps Ferry Rd) is aligned with the park's southern boundary. Northeast 24th Street (Paradise Rd) is aligned with the southern boundary of the Silver Springs addition. SR 326, a main travel corridor from the north, intersects with SR 40 approximately one mile east of the SR 35/SR 40 intersection.

Land uses surrounding the park include commercial development at the intersection of State Roads 35 and 40. Many of the businesses in the vicinity are hotels and restaurants. Residential and various other forms of commercial development also occurs to the north and south of the park.

Marion County manages the Silver Springs Conservation Area, a 330-acre tract of sandhill, upland forest, and wet prairie that was acquired in 2005 through the Florida Forever Program to preserve Silver Springs and the Floridan Aquifer. Marjorie Harris Carr Cross Florida Greenway forms an additional buffer adjacent to Silver Springs and along the Ocklawaha River. Marion County maintains a regional stormwater management facility within an easement over a portion of the Cross Florida Greenway. An interpretive trail and trailhead were incorporated in the design of the facility.

Ray Wayside Park is located at the State Road 40 Bridge on the Ocklawaha River. The property is a former highway wayside owned by the Florida Department of Transportation (FDOT) and leased to Marion County. It supports a popular local boat ramp and basin. This facility generates a large amount of motorized boat use of both the Ocklawaha River and Silver River, especially during weekends. Boaters may access the waters of Silver Springs State Park by navigating upriver.

Vehicular traffic on highways surrounding the park, motorized boat traffic, and nitrate pollution are the primary impacts from adjacent land uses on the park's resources and visitor experience. Public infrastructure projects that are either underway or have been completed within the past ten years provide some mitigation against these environmental impacts. A large treatment facility constructed by Marion County has reduced the impact of off-site stormwater to Halfmile Creek. The DEP is currently connecting all of the park's facilities to central sewer and recently completed significant upgrades to the existing sewer facilities within the Silver Springs addition.

Over the last fifty years, predominate land uses within the recharge area for Silver Springs have gradually shifted from mostly rural and forested to developed. Groundwater extraction, and nitrate concentration has increased significantly over the last few decades (Munch 2006 Silver Springs Restoration Plan). The majority of the recharge area is considered "vulnerable", "more vulnerable" or "most vulnerable" to contamination from pollutants such as nitrogen fertilizers. DRP will continue to review proposed land use changes within the recharge area for potential impacts to the water resources of the park.

Planned Use of Adjacent Lands

Over 1.55 million people reside within 50 miles of the park, which includes the incorporated areas of Ocala, Sanford, Daytona Beach, Gainesville and Palm Coast (Bureau of Economic and Business Research 2013). As lands to the north and west of the park become more urbanized, concerns arise related to changes in surface and groundwater quality and quantity, additional fragmentation of wildlife habitat,

complication of prescribed fire management activities, traffic congestion and degradation of the aesthetic character of the surrounding land. Marion County has taken steps to address land use impacts on the Silver Springs system by establishing a Springs Protection Overlay Zone in the Land Development Code. The Code prohibits certain uses and establishes development standards related to impervious surfaces and wastewater treatment that are designed to protect groundwater within this vulnerable karst system. Marion County has also passed a new ordinance to restrict fertilizer use on developed lots in the unincorporated sections of the county. Despite the provisions in the County's Land Development Code and Comprehensive Plan, it will still be important for DRP staff to participate in the review of all Comprehensive Plan amendments, proposed zoning changes, and development plans within the vicinity of the park to ensure that protection of park resources is given due consideration.

Marion County is ranked fifteenth and thirtieth out of Florida's 67 counties in terms of total population and population density, respectively. The estimated 2013 population was 335,008 and is projected to grow another 29 percent by 2025. The adjacent city of Ocala (population 56,945) accounts for 16 percent of the county's population (Bureau of Economic and Business Research 2013). It is anticipated that growth from the Ocala metro area will continue to drive the conversion of adjacent lands to increasingly higher intensity uses. While there were no significant land use changes being pursued on adjacent lands at the time of the writing of this plan amendment, additional medium density residential development is expected to the northwest and to the southwest of the park.

The projected increase in population and land use density will also generate changes in the area's transportation network. SR 35, a north-south roadway, was recently widened to four lanes with bike lanes and sidewalks on both sides from SR 40 south to SR 464. Future expansion to six lanes would be provided using the center medians as needed. Design is currently underway for the widening of SR 40 to four lanes from the end of the existing four-lane section at Silver Springs to just west of CR 314. Preliminary designs included medians and paved shoulders. A 12-foot multi-use trail is planned for the north side of the roadway for the length of the project. Construction of the SR 40 project will not likely occur within the 10-year implementation timeframe of this plan; however, the multi-use trail may be constructed during the planning period.

The Ocala-Marion County Transportation Planning Organization (TPO) will be conducting a corridor study to identify multimodal improvements on the SR 35 and SR 40 in the Silver Springs area. The study will identify the future vision for the roadways in the area and develop potential solutions that will create a more walkable environment and urban character. These projects are intended to increase the transportation efficiency and safety of several of the County's most key traffic corridors and intersections.

The TPO is currently updating its Bicycle and Pedestrian Master Plan which will identify opportunities to increase connectivity between downtown Ocala, Silver Springs State Park and the Cross-Florida Greenway. The Master Plan will also

identify connections to the Florida Greenways and Trails System (FGTS) and other local and regional trails. Several projects identified in the TPO's current Bicycle and Pedestrian Master Plan and Long-Range Transportation Plan are funded for various phases (Ocala-Marion County TPO 2014; FDOT Work Program 2014).

SunTran, the local transit service, operates three bus routes that provide service between Silver Springs (former attraction), downtown Ocala, and other areas of the County, passing by various destinations along SR 35, SR 40 and other major roadways. At this time, no increase in service to Silver Springs is planned; however, future development and activities in the area may increase demand for additional transit service.

Silver Springs Community Redevelopment Area

The Marion County Board of County Commissioners (BOCC) established the Silver Springs Community Redevelopment Area (SSCRA) on June 18, 2013. The purpose of the SSCRA as stated in Marion County Ordinance No. 13-14 (2013) is to "provide for the removal of such slum and blighted conditions and redevelop such areas, pursuant to the Community Redevelopment Act of 1969, as contained in Florida Statutes, Chapter §163.355, and promote the economic health, safety and welfare of the citizens of Marion County, Florida." The CRA boundaries include a large portion of Silver Springs State Park, including the former attraction area as well as older developed areas to the north and west of the park, centered on the SR 40/SR 35 intersection.

The BOCC adopted an initial Community Redevelopment Plan for the area that includes a series of proposed eligible project activities designed to address existing conditions of blight and related transportation, utilities, environmental and economic development concerns. A more detailed redevelopment plan will be prepared for the area closest to the former Silver Springs attraction. Projects identified in the redeveloped plan are eligible for funding under the Redevelopment Trust Fund established by the BOCC. The BOCC will serve as the Community Redevelopment Agency, the governing body responsible for administration of the CRA funds and programs.

The objectives and initiatives of the CRA seek to promote economic development by creating new jobs, stabilizing existing businesses, and establishing an environment that encourages new investment. Two key initiatives identified by the community were the redevelopment of the historic Silver Springs Park area, as both a public resource and private investment opportunity, and the revitalization of the SR 40 business corridor.

Redevelopment of the Silver Springs area should emphasize protection of the springs and promote quality development to attract a variety of commercial, educational, environmental and tourism interests. The SR 40 commercial corridor experienced physical and economic decline alongside the Silver Springs attraction. Specific initiatives recommended to enhance the corridor's viability include Façade grant/loan programs, enhanced code enforcement, streetscape and street lighting upgrades. The county will seek to provide administrative, regulatory, financial and

infrastructure incentives to meet the redevelopment objectives. Effective collaboration with a wide range of public and private interests, including the state park, will be necessary to meet community redevelopment objectives.

Florida Greenways and Trails System

The Florida Greenways and Trails System (FGTS) is made up of existing, planned and conceptual non-motorized trails and ecological greenways that form a connected, integrated statewide network. The FGTS serves as a green infrastructure plan for Florida, tying together the greenways and trails plans and planning activities of communities, agencies and non-profit organizations throughout Florida. Trails include paddling, hiking, biking, multi-use and equestrian trails. The Office of Greenways and Trails maintains a priority trails map and gap analysis for the FGTS to focus attention and resources on closing key gaps in the system.

In some cases, existing or planned priority trails run through or are adjacent to state parks, or they may be in close proximity and can be connected by a spur trail. State parks can often serve as trailheads, points-of-interest, and offer amenities such as camping, showers and laundry facilities, providing valuable services for trail users while increasing state park visitation.

The park will serve as a major destination point in the FGTS. As part of the Ocala-Marion 2035 Bicycle and Pedestrian Master Planning effort, two feasibility studies are underway to identify connections to the park.

The Silver Springs Bikeway (Bikeway) Study focuses on a planned system of bicycle facilities throughout Marion County that will begin in Downtown Ocala through its historic district and connect to SSSP from the west via the local road network. From the Park, the conceptual alignment runs southeast through the Marjorie Harris Carr Cross Florida Greenway (CFG), along the Ocklawaha River, past the Moss Bluff Lock and Dam, and down the St. Johns River Water Management District's canal and Levee Trail. The Bikeway will terminate at the Sunnyhill Restoration Area Visitor Center just north of County Road 42. As bicycle facilities and trail projects develop throughout the region, an opportunity exists to continue the Bikeway to Lake County and eventually Mt. Dora.

The Cross Florida Greenway (CFG) Feasibility Study will focus on the conceptual alignment for a paved multi-use trail the length of the CFG from the park southwest to the CFG Dunnellon Paved Trail. Efforts are underway to close the two-mile gap between the CFG in this area and the 46-mile Withlacoochee State Trail.

To the northwest, plans are to link the park to the Indian Lake State Forest and the CFG. To the northeast, plans are to link the park to Rodman Reservoir via the CFG and Ocala National Forest. Also to the east, opportunities exist to link the park to Lake County as part of the SR40 road-widening project. Design plans are complete for a paved trail from Silver Springs to the Ocklawaha River, along this route.

The Florida National Scenic Trail (FNST), located on CFG lands, connects to the park

near its southeastern boundary. The route continues east along the park boundary via an “unofficial connector” following CR 314 to Ocala National Forest where the FNST picks back up.

The Ocklawaha River is a popular paddling trail for paddlers. Both the Silver River and the Ocklawaha River are candidates for designation as state paddling trails.

PROPERTY ANALYSIS

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

Recreation Resource Elements

This section assesses the unit's recreation resource elements, those physical qualities that, either singly or in certain combinations, can support various resource-based recreation activities. Breaking down the property into such elements provides a means for identifying the individual recreation activities that could be developed within the unit and an analysis of the existing spatial factors that either favor or limit the provision of each activity.

Land Area

The majority of the Silver Springs addition is comprised of the developed areas of the former attraction. To the north of the Silver River undeveloped portions of the addition are dominated by hydric hammock and floodplain swamp. Numerous pre-existing jeep trails are available for recreational trail use, although certain areas can be seasonally inaccessible due to high water.

The portion of the addition south of the Silver River was heavily impacted by the attraction operation. The dominant natural community is successional hardwood forest. However, a small remnant of the former sandhill with intact ground cover is also present. The disturbed areas south of the river can support a broad range of recreational activities when developed in conjunction with ecological restoration activities.

The park's proximity to the Marjorie Harris Carr Cross Florida Greenway, Marion County's Silver Springs Conservation Area, the Ocala National Forest, and Indian Lake State Forest, provides a valuable opportunity for recreational trail connections to over 500,000 acres of additional conservation land outside of park boundaries.

Water Area

Silver Springs and the Silver River are the primary scenic attraction of the park.

The river is a clear, spring run stream, varying in width from 75 to 150 feet with a broad forested floodplain. The forested floodplain of the Silver River creates beautiful scenery and wildlife viewing is excellent along the river corridor. Glass-bottom boat tours of the headsprings and river have been offered for over 100 years. Paddling and boating are already popular activities along the river. Portions of the floodplain swamp are accessible for interpretation and nature study, within Ross Allen Island particularly. An elaborate network of boardwalks, reptile exhibits, and stages for wildlife shows created the "Island".

The Ft. King Waterway is an artificial channel that parallels the Silver River. The waterway was completed in the 1970s and was previously used for riverboat tours. The relatively slow current and natural scenery along the waterway make it suitable for paddling.

Natural Features

The Silver Springs complex creates one of the largest artesian spring formations in the world. The largest of the spring vents is Mammoth Spring (also known as Main Spring). The Mammoth Spring Basin is quite large and directly adjacent to the glass-bottom boat dock and the developed areas of the former attraction. The spring basin has been used historically for a variety of recreational activities including paddling, swimming, and boating. Views of the headspring and upper reaches of the river from the "Town Center" and other developed areas of the park are excellent.

Archaeological and Historical Features

Humans have used the uplands around the headsprings for thousands of years. The Silver Springs addition contains numerous significant prehistoric and historic cultural resources. The natural and cultural history of Silver Springs provides abundant opportunities for interpretive programming. The story of Silver Springs is part of Florida's cultural heritage.

Assessment of Use

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

Past Uses

After the Civil War, Silver Springs was a busy port for paddle steamers that moved people, raw materials, and consumer goods from the St. John's River. Docks, a warehouse, hotel, railroad, store, tavern, and post office were all located within close proximity of the headsprings. With the expansion of railroads and then roadways, Silver Springs primarily became a tourist destination. The area around the headsprings has been a recreational tourist attraction since the 1920s. Paradise Park, located south of the Silver River near the present outlet of the Ft. King

Waterway was a popular attraction similar to Silver Springs that served African-Americans during the mid-20th century. Numerous tourist attractions existed in and around the headsprings area including the Six Gun Territory, the Carriage Cavalcade and the Prince of Peace to Memorial to name but a few.

Future Land Use and Zoning

DRP works with local governments to establish future land use (FLU) and zoning designations that provide both consistency between comprehensive plans and land development codes and permit typical state park uses and facilities necessary for the provision of resource based recreation opportunities. FLU and zoning designations not clearly related to state park uses generally reflect patterns of previous ownerships or a lack of specific options dedicated to accommodate such uses.

The current FLU designation for the Silver Springs addition is Commercial and Rural Land. Commercial and Rural Land designations remain from the park's former use as a privately managed theme park attraction. Revisions to the Marion County Comprehensive Plan are underway (for early 2014). These revisions will propose converting the land use designation of the Silver Springs addition to Public Lands.

The Natural Groundwater Aquifer Recharge Element of the Marion County Comprehensive Plan requires land development planning that is sensitive to conservation of aquifer recharge areas, reduction of groundwater withdrawal, and protection of water quality (Marion County Comprehensive Plan 2035).

The current FLU designation for the original portions of Silver Springs State Park is Natural Reservation (NR). NR covers the all park property, including the existing facilities as well as areas identified for future development, and is reserved for lands that are managed by state agencies for conservation purposes. The current land use designation for all parklands is Rural Preservation (RP). Park zoning includes, Single Family Dwelling (R-1), Government Use (GU) and General Agriculture (A-1). However, a proposed amendment may classify the park only as GU. The GU zoning class would be consistent with park's existing and proposed facilities for public recreational and interpretive uses. Additionally all parklands are included within the Environmentally Sensitive Overlay Zone (ESOZ) and the Springs Protection Overlay Zone (SPOZ). Typical state park uses and facilities are currently permissible within current land use categories, zoning and zoning overlays however, specific development standards may be applicable to future park development.

Current Recreational Use and Visitor Programs

The Florida Park Service assumed management of the Silver Springs Addition on October 1, 2013. Current recreational uses with the Silver Springs addition include interpretive trails, paddling, picnicking, and nature study. Park staff are currently

providing interpretive programs based on the park's natural and cultural resources. Interpretive programs focused on the region's water resources are in development.

DRP solicited proposals from vendors to provide a range of typical visitor services at Silver Springs, including food service, equipment rentals and retail sales. Most of these services are provided in the "Town Center," the historic building adjacent to the glass- bottom boat dock. The park's current concessionaire is also responsible for operating the world famous glass-bottom boats and the Wild Waters Water Park (opening during summer 2014). The concessionaire organizes the concert series for the Twin Oaks stage. National touring acts visit Silver Springs in order to perform for large crowds that can number in the thousands.

Visitors can participate in additional recreational activities throughout the park's original acreage. These activities include hiking, off-road biking, camping, and museum visitation. Power boating and paddling are popular on both the Silver River and Ocklawaha River. Cabins are also available for overnight lodging at the park.

The Silver River is accessible to private and commercially operated boats from the Ocklawaha River. The nearest boat ramp is located at Ray Wayside Park. The Silver River experiences high levels of motorboat traffic during weekends and holidays. Marion County Resolution 85-R-128 establishes a "no wake-idle speed only" zone on a portion of the river that extends about .5 miles from the headspring. In addition, fishing is prohibited in the Silver River from the headwaters at Silver Springs to its junction with the Ocklawaha River under Rule 62D-2.

Peak visitation for both day and overnight visitors occurs in spring and fall. Overnight visitation is at its lowest during the summer months. Total visitation has increased dramatically over the last decade. By DRP estimates, 243,080 visitors came to Silver River State Park during the FY 2012/2013 and contributed over \$11 million in direct economic impact and the equivalent of 179 jobs to the local economy (Florida Department of Environmental Protection, 2013). DRP has welcomed over 160,000 visitors to the new Silver Springs State Park since October 1, 2013.

Protected Zones

A protected zone is an area of high sensitivity or outstanding character from which most types of development are excluded as a protective measure. Generally, facilities requiring extensive land alteration or resulting in intensive resource use, such as parking lots, camping areas, shops or maintenance areas, are not permitted in protected zones. Facilities with minimal resource impacts, such as trails, interpretive signs and boardwalks are generally allowed. All decisions involving the use of protected zones are made on a case-by-case basis after careful site planning and analysis.

Within the Silver Springs addition the headsprings, spring-run stream, undisturbed portions of the floodplain swamp, and a portion of remnant sandhill, are designated as protected zones.

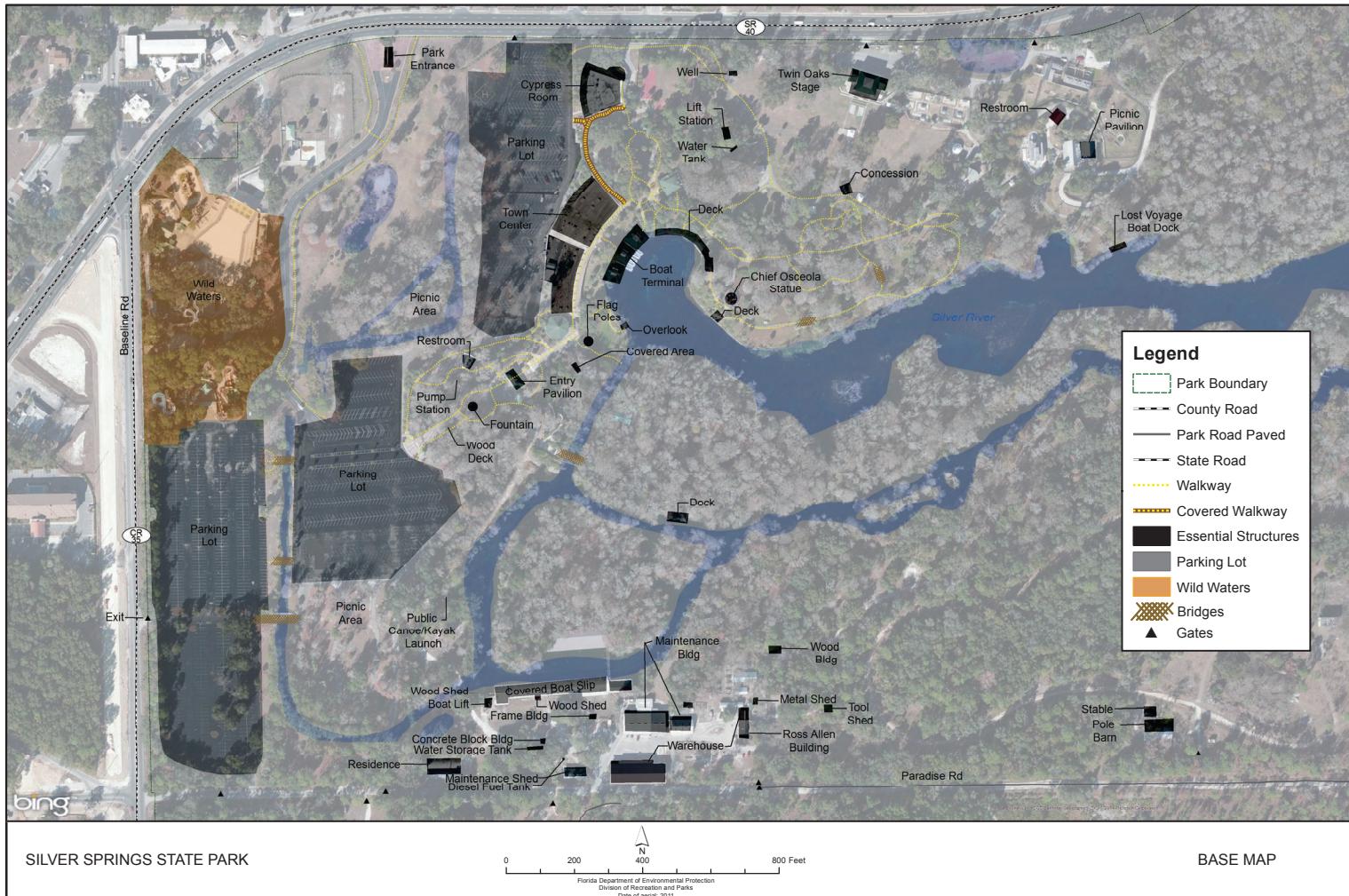
Existing Facilities

Existing facilities within the Silver Springs addition are located in close proximity to one another and within the developed areas of the former attraction. The DRP assessed the existing facilities and developed an Interim Operations and Facilities Plan in the summer of 2013. The facilities associated with the former attraction were numerous and all are in need of repair, renovation or removal. A prioritized list of repair and renovation needs was created based on the following guidelines:

- Facilities and infrastructure that are essential for state park management;
- Removal of impervious surfaces and stormwater management improvements to reduce water quality impacts on the springs and river;
- Essential facilities and infrastructure that have deteriorated beyond the point where repair is economical should be refurbished or rebuilt;
- Facilities that are non-essential or incompatible with the resource protection and resource-based recreation mission of the state park system should be removed from the property.

Facilities and structures considered essential for future management of the property as a state park will be repaired, rehabilitated or replaced. This will occur as needed to ensure their continued operation and usefulness. These facilities include:

- Main entrance area;
- Antique car exhibit building ("Cypress Room")
- Parking areas--reduce in size and retrofit to improve stormwater management;
- Glass-bottom boats, docks and waiting area;
- Retail area and public restrooms adjacent to glass-bottom boat docks ("Town Center");
- Concert stage and adjacent grounds;
- Covered shelters adjacent to spring;
- Paradise Treats gift shop—convert to another purpose;
- Ross Allen Island—complete redevelopment. Remove buildings and on-grade boardwalks with a simplified, elevated boardwalk design. Remove animal exhibits, restore natural hydrology and re-establish native vegetation.
- South boat house/service area;
- Maintenance area, warehouses and related buildings;
- Wild Waters Park;
- Main office/administration building;
- Formal gardens area.



All non-essential facilities remaining from the former attraction are to be removed from the property. Facilities and structures that were considered to be non-essential for future state park management of the property include:

- Jeep Safari area and maintenance building;
- Animal exhibits and enclosures;
- Petting zoo;
- Amusement rides;
- Kids Ahoy Playland, adjacent gift shop and restroom;
- Replica interpretive structures on Fort King Waterway;
- North boathouse.

CONCEPTUAL LAND USE PLAN

The following section presents the current conceptual land use plan for this park. The conceptual land use plan (see Conceptual Land Use Plan) may be amended to address new information regarding the park's natural or cultural resources, changes in recreational usage, or as new land is acquired. A detailed development plan for the park and a site plan for specific facilities will be developed based on this conceptual land use plan, as funding becomes available.

During the development of the management plan, the DRP assesses the potential impacts of proposed uses or development on park resources and applies that analysis to decisions on the physical plan of the park as well as the scale and character of proposed development. Potential impacts are more thoroughly identified and assessed as part of the site planning process once funding is available for facility development. At that stage, design elements (such as existing topography and vegetation, sewage disposal and stormwater management) and design constraints (such as designated species or cultural site locations) are more thoroughly investigated. Municipal sewer connections, advanced wastewater treatment or best available technology systems are applied for on-site sewage disposal. Stormwater management systems are designed to minimize impervious surfaces to the greatest extent feasible, and all facilities are designed and constructed using best management practices that limit resource impacts. Federal, state and local permit and regulatory requirements are met during the final design and facility development. All new park facilities are consistent with the universal access requirements of the Americans with Disabilities Act (ADA). After new facilities are constructed, the park staff monitors the surrounding conditions to ensure that resource impacts remain within acceptable levels.

Potential Uses

Public Access and Recreational Opportunities

Goal: Provide public access and recreational opportunities in the park.

The DRP will continue to provide those recreational activities and programs that are appropriate to the natural and cultural resources contained within the Silver Springs

addition. Proposed improvements focus on enhancing recreational connectivity to adjacent conservation lands, improving the availability of resource compatible day-use opportunities, and future expansion of interpretive programming, visitor services and special events.

Objective: Maintain the park's current recreational carrying capacity of 1,354 users per day.

The park's current carrying capacity was established based on the recreational opportunities provided within the original park acreage. DRP will continue to provide opportunities for hiking, nature observation, camping, cabin lodging, canoeing and picnicking. Interpretive and educational programs will continue to be offered throughout the park and at the Silver River Museum.

Objective: Expand the park's recreational carrying capacity by 1,460 users per day.

The Silver Springs addition provides a significant opportunity to expand the availability of recreational activities and interpretive programming within the park. DRP proposed expansion of the park's recreational carrying capacity in the current management plan for Silver River State Park. This included expansion of camping, paddling, and equestrian activities. Further expansion of paddling, camping, biking, picnicking, swimming, boating, equestrian activities, interpretive programming, and special events is proposed as part of this management plan amendment.

Objective: Continue to provide and develop interpretive/educational programs that will be offered on a regular basis.

A range of interpretive programs are currently offered to park visitors and the park hosts one of Marion County's most popular local festivals, the Ocali Country Days. There is potential for improving interpretive programs and nature and heritage based tourism at Silver Springs State Park. These programs will build on the resources and facilities of the state park and the diverse range of natural and cultural sites in the Ocala region. Interpretive content should focus on the ecosystem of the headsprings and the relatively unspoiled spring-run stream, the need for protection of surface and groundwater within the springshed, and the significance of cultural sites located in and around Silver Springs. The park will expand the frequency and content of existing programming, as resources allow, and encourage the involvement of other land managing agencies, public and private sector interests and citizen volunteers in the development and delivery of interpretive programs.

Proposed Facilities

Capital Facilities and Infrastructure

Goal: Develop and maintain the capital facilities and infrastructure necessary to implement the recommendations of the management plan.



The existing facilities within the Silver Springs addition are still under evaluation. The DRP will maintain and rehabilitate those facilities appropriate to the natural and cultural resources of the park. New construction is also recommended to improve the quality and safety of recreational opportunities, enhance the protection of park resources, and to streamline the efficiency of park operations.

Objective: Improve and repair existing facilities and construct new facilities that will promote safety, protect park resources, and enhance resource-based recreational activities.

Major repair projects for park facilities may be accomplished within the ten-year term of this management plan, if continued funding is made available. The modification of existing park facilities to improve accessibility is a top priority for all facilities maintained by DRP.

DRP's initial task in the management of the Silver Springs addition is to address the large backlog of repair, maintenance needs and regulatory compliance issues that affect most of the buildings and infrastructure within the Silver Springs addition. Over the next several years, efforts will focus on repairs and renovations to address deteriorated conditions, ADA issues and safety hazards. Department staff have developed a priority list of repair and renovation projects.

Two notable historic structures, the "Town Center" building that contains shops, a food concession and administrative offices (MR03732), and the "Cypress Room" a former catering venue and antique car museum, were originally part of the Silver Springs Tourist Center. Noted Florida architect Victor A. Lundy who was commissioned by former owners of the attraction designed both buildings. The "Town Center" building is to be preserved and rehabilitated. It will continue to serve as a primary location for food service, retail, interpretation and house park administrative offices. The "Cypress Room" will be evaluated for rehabilitation and adaptation to appropriate uses.

Over the long-term gradual redevelopment of the former attraction will occur in order to provide greater access and enjoyment of the headsprings and river and improved interpretation of the significant natural and cultural resources contained within the former attraction. Redevelopment projects currently underway include the removal of the former animal enclosures, ongoing repair to existing facilities such as the glass-bottom boat dock, improvements to existing walkways, exotics removal and landscape improvements within the gardens.

Direct proximity to major thoroughfares means traffic noise, unsightly views and stormwater impacts; all of which detract from the park visitor experience. The current entrance along SR 40 has poor sightlines and is located too close to the SR 40/SR 35 intersection. The DRP will continue to coordinate with local transportation authorities on a potential new entrance location and realigned park drive. The final location and design of the new entrance and park drive will be in part determined by future corridor studies and improvements to the SR 35 and SR 40 intersection. A landscape buffer of native trees and shrubs will be systematically installed along park boundaries in order to buffer traffic noise and screen views of adjacent

commercial areas. The vehicular exit will be relocated further south on SR 35 to the intersection of SR 35 and Paradise Rd. Additional improvements will be made to the existing parking area, including the installation of interior landscape islands, pervious parking surfaces, and enhanced stormwater treatment to protect water quality in the headsprings and river.

Wild Waters: DEP has analyzed and evaluated the costs involved with maintaining the existing facilities within Wild Waters. DRP is working with the park's current concessionaire to operate the water park for the upcoming 2014 summer season. However, DRP intends to create a swimming area within the headsprings. Once the proposed swimming area is complete, the existing water park will be removed in order to encourage a variety of development that will support park visitors and the surrounding community. Visitor services considered for this area could include limited retail and food service concessions compatible with outdoor resource-based recreation pursuits. Interpretive and other park-compatible facilities would also be encouraged in these areas. Most critically, Silver Springs has the ability to become the gateway to the numerous outdoor recreational opportunities within the large network of conservation lands that characterize the region. DRP proposes that these highly visible and strategic portions of the property are dedicated to supporting the revitalization of both the park and the surrounding area. Removing the aging water park will allow a wide range of aesthetic enhancements as well as promote future recreational and economic opportunity.

Formal Gardens: Visitors should experience the colorful, "tropical" ambiance common in Florida's mid-20th Century tourist attractions. Landscape improvements will reflect the character of the original gardens through the use of native plants and non-invasive ornamentals in attractive formalized groupings. Landscape improvements will maximize the use of native plant material and minimize the use of water, fertilizer and pesticides in order to protect water quality. The landscape itself will serve to interpret environmentally sensitive landscape management techniques for the park's visitors.

Views of the headsprings and the upper reaches of the Silver River from the gardens area are very dramatic. Careful landscape design will protect and enhance important viewsheds. Landscape plans for the gardens will be coordinated with the potential shoreline restoration project. Reciprocally, shoreline restoration plans will consider the need to preserve the formal gardens element of the former attraction.

The gardens already provide a scenic backdrop for special events such as family reunions and weddings. A large group pavilion is proposed in the location of the former lighthouse ride, within close proximity of the "lucky palm." Enhanced opportunities for picnicking and nature observation are a natural fit for this area.

Ross Allen Island: All of the former animal enclosures and nearly all of the interpretive amphitheaters will be removed and the current boardwalk system will be realigned and replaced. The ultimate goal is to recreate Ross Allen Island as a unique interpretive area that will provide visitors with the opportunity to experience the wildlife and plant species found within Florida's floodplain swamp communities.

Trails: The geographical location of the Silver Springs addition provides the opportunity for the park to serve as a hub for single and multi-use trails. For example, a trail connection to link Rays Wayside Park and the Marjorie Harris Carr Cross Florida Greenway to Silver Springs via the proposed multiuse trails along SR 40 and SR 35. Two trail hubs are proposed within the addition. Each hub would include trail information kiosks, playground, restrooms, and picnic areas. The southern hub would link Silver Springs to conservation lands located to the south. This hub would include a dedicated parking area and be designed to serve trail users and a public canoe/kayak launch. The eastern hub would link Silver Springs to the additional conservation lands to the north and east. This hub would only be accessible from within the park via trail. The hub would serve as a primary day-use destination within the park. Concessions would provide bike rentals and short horseback rides as well as other potential adventure activities such as ziplining.

In addition to the primary trail hubs, trail improvements are needed throughout the park. This includes a critical bridge crossing at Half Mile Creek to connect the Eastern trail hub to existing equestrian facilities and multi-use trails located on the north side of the Silver River. DEP is committed to protecting surface water quality. All proposed equestrian facilities and trails are to be designed in accordance with best management practices developed by the DEP Division of Environmental Assessment and Restoration.

An interpretive trail that focuses on the parks important cultural heritage will be created south of the river. Access to this trail will be provided through Ross Allen Island. The Paradise Park Interpretive Overlook will feature interpretive displays about Paradise Park, a popular tourist attraction developed for African-Americans during segregation. Internal trail and road connections will be provided at the Southern trail hub in order to provide visitor access to the Silver River Museum, as well as the existing camping and cabin areas. One paved road for trams or vehicles is proposed as part of this network. Additional study will be necessary to determine the final location and design of the proposed trail network and paved road.

There is also the potential to establish a portion of the FNST within the park. This would represent a reroute of the “unofficial connector” that follows CR 314 and connects the FNST portion within the CFG to the portion within the Ocala National Forest. Establishing a new FNST route within the park would eliminate the need for trail users to hike along a road shoulder and avoid areas of the National Forest that are frequently flooded. DRP will work with the US Forest Service and the Florida Trail Association on the potential to accommodate a portion of the FNST within the park.

Swimming/Paddling/Boating Facilities: Paddling opportunities will be provided at two launch points. A public canoe/kayak launch was installed recently in the southern portion of the parking area. This launch will provide direct public access to the Ft. King Waterway without the public having to enter the main headsprings area. Future improvements to this launch will be incorporated into the design of the Southern trail hub. A second canoe kayak launch will be dedicated to a canoe and

kayak outfitter concession and directly accessible from the main headsprings area via a walkway. Both launches are located on proposed paddling trails along the Ft. King Waterway and Silver River. The design of the launches will emphasize water quality protection by minimizing the potential for erosion and impacts to submerged aquatic vegetation.

Swimming was once a popular activity at Silver Springs. However, providing swimming today presents several challenges. While there is certainly room within the spring for swimming, there is not enough upland area to provide adequate space for the associated sunning, resting and picnicking activity. In order to provide a safe and accessible swimming area, DRP proposes to redevelop a portion of the headsprings area located to the south of the main entry. This area once contained animal exhibits and was the point of entry to Ross Allen Island. Removal of the old structures and landscape berms will facilitate the creation of an open landscaped area that can be used for picnicking, a bathhouse, and a canoe/kayak concession. A floating dock and floating containment rope will demarcate the swimming area within the spring. Impacts to the submerged aquatic vegetation within the swimming area are likely. A study of recreational use at Ichetucknee Springs State Park has shown that aquatic vegetation can recover if given a respite from disturbance (DuToit 1979). In order to limit the potential recreational impacts from swimming, the swimming area will open seasonally from Memorial Day to Labor Day.

Recreational boating is a popular activity on the Silver River. DRP proposes a convenience dock on the north side of the Silver River just past the current limits of development. Recreational boaters would dock, disembark and visit the park. This "boater entry" would be connected to the Eastern Trail Hub via an interpretive boardwalk along the river. Construction of the proposed boating area is dependent upon the completion of the proposed recreational carrying capacity study identified in the Resource Management Component. A "boater entry" near the springs may be necessary for public safety and for protection of natural resources in the upper-spring run and headsprings area.

Camping Facilities: The park currently contains a popular 60-site campground and cabin area. Connecting these existing facilities to the statewide trail network as well as the amenities available at the headsprings is one of the most valuable recreational opportunities made possible by the Silver Springs addition. Park visitors will be able to camp and visit the headsprings area via the proposed trail network or via a proposed paved road. Camping opportunities could be expanded with the creation of a large developed group camp. Such a group camp could support corporate retreats, school groups, scouts, tour groups and even special group events like family reunions. The proposed group camp would contain several groups of small rustic cabins located around central facilities such as a recreation/meeting hall, a kitchen, and a dining hall. Most cabins would utilize a shared bathhouse but some cabins would be appointed with bathrooms. The proposed group camp would be connected to the main headsprings area via an extension of the interpretive boardwalk through Ross Allen Island.

The addition of Silver Springs also provides the opportunity to relocate the park's current primitive group camp. The existing camp is located within the park's sandhill community in close proximity to Baseline Rd. Relocating the camp to the southeastern portion of the addition property will facilitate resource management and improve the camping experience. Both the primitive group camp and the developed group camp would utilize a shared canoe/kayak launch on the Ft. King Waterway.

Support Facilities: The former attraction required an extensive maintenance area. Portions of this will continue to be utilized. The south "boat barn" will continue to house the glass-bottom boats overnight, and boat repairs will continue to take place in this area. Park staff utilize the shop and warehouses associated with the former attraction for electrical, plumbing and carpentry. Mechanical maintenance for trucks, motors, small engines, anything that uses gas, oil, and grease has been moved across Paradise road, to the park's original shop and maintenance area. In addition, a ranger residence will be located within the maintenance area. All proposed facilities are to be connected to central sewer.

Facilities Development

This management plan amendment describes proposed land uses and most proposed facility development in general terms. The total estimated cost for the facilities discussed in this amendment is in excess of 15 million dollars. This does not include the potential cost of proposed visitor service areas along Baseline Rd. This cost estimate is based on the most cost-effective construction standards available at this time. It may be revised as more information is collected through the site planning and design processes. A portion of the proposed improvements will be completed through funds provided as part of the lease transfer agreement. Ultimately however development can only occur as funding becomes available. DRP will explore the possibility of partnerships with public and private interests in an effort to improve the park.

Existing Use and Recreational Carrying Capacity

Carrying capacity is an estimate of the number of users a recreation resource or facility can accommodate and still provide a high quality recreational experience and preserve the natural values of the site. The carrying capacity of a unit is determined by identifying the land and water requirements for each recreation activity at the unit, and then applying these requirements to the unit's land and water base. Next, guidelines are applied which estimate the physical capacity of the unit's natural communities to withstand recreational uses without significant degradation. This analysis identifies a range within which the carrying capacity most appropriate to the specific activity, the activity site and the unit's classification is selected (see Table 6).

Table 6.--Existing Use And Recreational Carrying Capacity

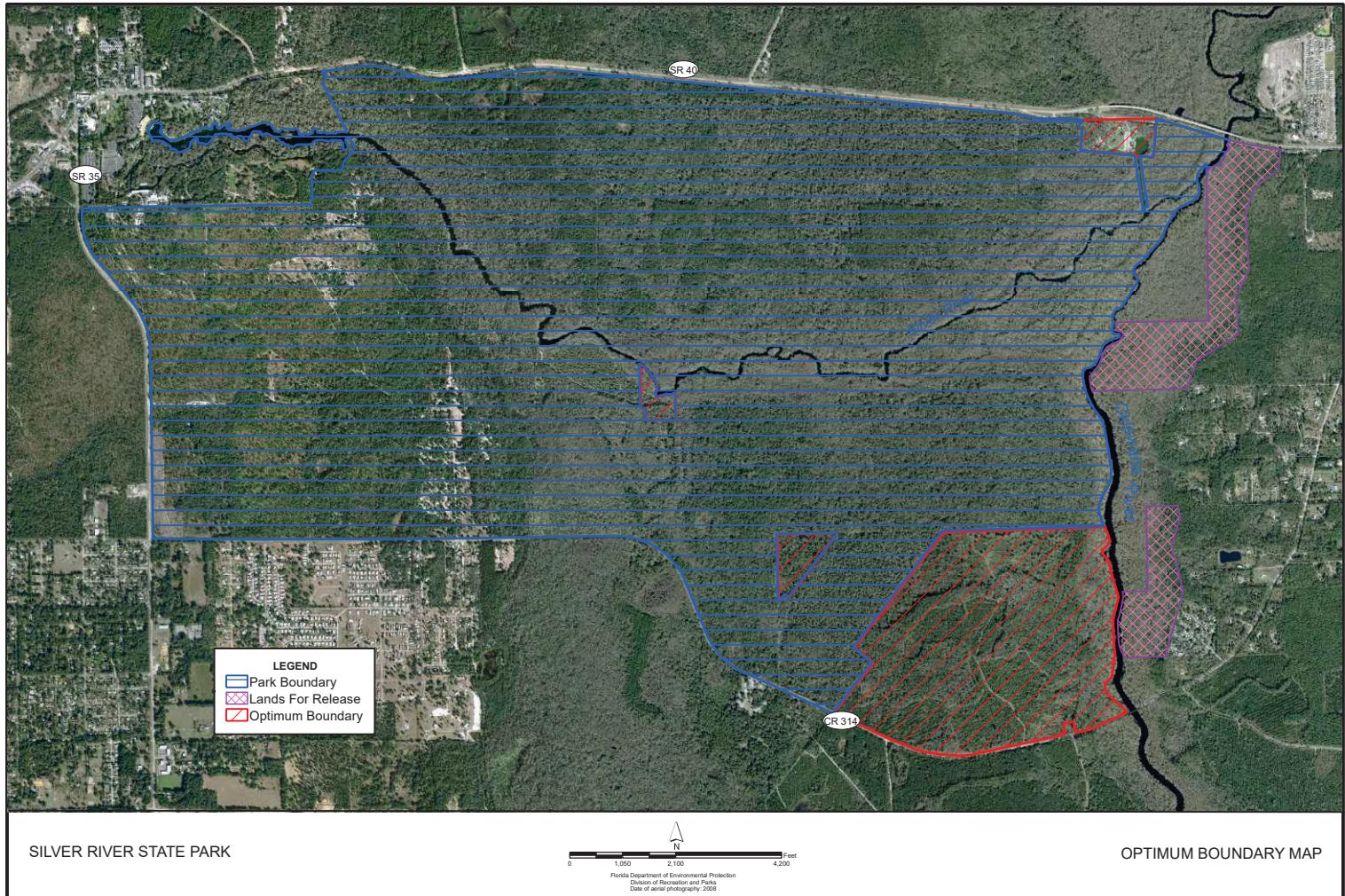
Activity/Facility	Existing Capacity		Proposed Additional Capacity		Estimated Recreational Capacity	
	One Time	Daily	One Time	Daily	One Time	Daily
Attraction			500	500	500	500
Museum	100	200			100	200
Trails						
Hiking & biking	46	92	6	12	52	104
Horseback riding	24	24	32	32	56	56
Swimming			88	176	88	176
Picnicking	140	280	140	280	280	560
Overnight Facilities						
Cabins	60	60			60	60
Campground	520	520			520	520
Equestrian camping	12	12			12	12
Primitive camping	6	6			6	6
Developed Group Camp			400	400	400	400
Primitive Group Camp	60	60			60	60
Canoeing/kayaking						
Ft. King Paddling Loop			15	60	15	60
Silver River Trip	50	100			50	100
TOTAL	1,018	1,354	1,181	1,460	2,199	2,814

***Note:** Recreational capacity for canoeing/kayaking determines number of boats launched from within park boundaries.

Optimum Boundary

The optimum boundary map reflects lands identified for direct management by the DRP as part of the park. These parcels may include public as well as privately owned lands that improve the continuity of existing park lands, provide additional natural and cultural resource protection and/or allow for future expansion of recreational activities. As additional needs are identified through park use, development, research, and as adjacent land uses change on private properties, modification of the unit's optimum boundary may occur for the enhancement of natural and cultural resources, recreational values and management efficiency.

Identification of lands on the optimum boundary map is solely for planning purposes and not for regulatory purposes. A property's identification on the optimum boundary map is not for use by any party or other government body to reduce or restrict the lawful right of private landowners. Identification on the map does not empower or require any government entity to impose additional or more restrictive environmental land use or zoning regulations. Identification is not for use as the basis for permit denial or the imposition of permit conditions. The current optimum boundary includes Ray Wayside Park, two outparcels located in the interior of the park, and one parcel adjacent to the Silver Springs addition.



IMPLEMENTATION COMPONENT

The resource management and land use components of this management plan amendment provide a thorough inventory of the park's natural, cultural and recreational resources. They outline the management needs for the Silver Springs addition, and recommend specific management objectives. The implementation component reports on DRP progress toward achieving resource management, operational and capital improvement goals and objectives.

MANAGEMENT PROGRESS

Since the Division of Recreation and Parks (DRP) assumed management of the Silver Springs addition on October 1, 2013, significant work has been accomplished and progress made towards meeting DRP management objectives for the park. These accomplishments fall within three of the five general categories that encompass the mission of the park and the Division.

Park Administration and Operations

- Completed Asset Transfer Agreement
- Over 80 volunteers on National Public Lands Day, many more over the last two weeks of September helping get park ready for opening
- Advertised, selected and executed contract with concessionaire, Silver Springs Management, to provide visitor services
- Food service provided
- Canoe and kayak rentals provided
- Glass-bottom boat tours of the springs and river provided
- Concerts and special events being scheduled
- Interpretive programs being implemented
- Initiated removal of accumulated trash and debris
- New office and communications systems being established

Natural and Cultural Resource Management

- Exotic plant removal and treatment initiated
- Archaeological survey completed

Park Facilities

- Rebuilt main entrance boardwalk and Spring deck
- Demolished Pearl Pavilion and bleachers
- Town Center Complex and other buildings wood rot repair, painting and pressure washing
- Twin Oaks Mansion repair (partial)
- Four glass bottom boats refurbished
- Water retention areas maintenance conducted; pumping of stormwater discharge into river stopped
- Asbestos and lead paint survey completed

- ADA report completed
- Canoe/kayak launch renovated and opened
- Rides and captive animals removed
- Fencing along river removed and lighting cleaned/painted
- Interpretive exhibits upgraded
- Signage upgraded
- Boat terminal repair - design/permitting completed and materials purchased
- Ross Allen Island boardwalk and two bridges designed and permitted
- Demolition permitting completed for upland and wetland sites
- Stormwater management improvements designed and permitted
- Water Distribution system designed and permitted
- Sanitary sewer systems designed and permitted
- Spring bulkhead designed and permitted

Many of the objectives identified in the plan can be implemented using existing staff and funding sources based on previous grants, partnerships, and legislative appropriations. However, as the plan amendment guides long-term management, a number of objectives have been identified that may require additional resources. It should be noted that the costs associated with each of the five standard land management categories are expected to increase over period covered by this amendment.

The administration of the state park is an ongoing cost that will increase in the future as additional staff, programs and responsibilities are assigned. These administrative costs include a variety of activities, such as the administration of personnel, the management of vendors and contractors for all the park's supply and service needs and the coordination of the park's Citizen Support Organization, to name a few.

A high degree of adaptability and flexibility is necessary for implementation of this management plan amendment to ensure that the DRP can adjust to changes in the availability of funds, improved understanding of the park's natural and cultural resources, and changes in statewide land management issues, priorities and policies.

Statewide priorities for all aspects of land management are evaluated each year as part of the process for developing DRP's annual legislative budget requests. When preparing these annual requests, DRP considers the needs and priorities of the entire state park system and the projected availability of funding from all sources during the upcoming fiscal year. In addition to annual legislative appropriations, DRP pursues supplemental sources of funds and staff resources wherever possible, including grants, volunteers and partnerships with other entities. DRP's ability to accomplish the specific actions identified in the plan will be determined largely by the availability of funds and staff for these purposes, which may vary from year to year.

Addendum 1—Advisory Group Members and Report

Silver Springs State Park Advisory Group Members and Report

Government Officials

Katy Fenton, Deputy Secretary
Land and Recreation
Department of Environmental
Protection

The Honorable Stan McClain
Marion County Board of
County Commissioners

The Honorable Kent Guinn, Mayor
City of Ocala

Dr. Thomas J. Lane, Chair
Marion Soil & Water
Conservation District

Business Representatives

Kevin T. Sheilley, President & CEO
Ocala/Marion County
Chamber & Economic Partnership

Loretta Shaffer, Executive Director
Ocala/Marion County Visitors and
Convention Bureau

Adjacent Landowner

Navroz Saju, CEO/President
HDG Hotels

Environmental Resource Groups

Andy Kesselring, President
Silver Springs Alliance

Representative:
Guy Marwick

Judy Greenburg, President
Marion Audubon Society

Representative:
Mary Trowbridge

Cultural/Educational Groups

Morrey Deen, President

Fort King Heritage Association

Scott Mitchell, Museum Director
Silver River Museum

User Groups and Volunteers

Jacque Steer, Chair
Florida Crackers Chapter

Judi Allison, President
Altoona Trail Riders Association

Carolyn Channave, President
Marion County Aquaholics

Representative:
Chris Spontak

Jane Kaufman, President
Friends of Silver River State Park

Land Management Agencies

Travis Blunden, Conservation Biologist
Florida Fish and Wildlife
Conservation Commission

Justin Kilcrease, Manager
Indian Lakes State Forest

Tim Parsons, Compliance Review Supervisor
Division of Historical Resources

Sally Lieb, Manager
Silver River State Park

J. B. Miller, Biologist
St. Johns River Water
Management District

Mike Herrin, Ranger
Ocala National Forest

Silver Springs State Park
DEP Advisory Group Staff Report
May 7, 2014

The Advisory Group meeting to review the proposed land management plan amendment for Silver Springs State Park was held at the park in the Town Center on April 10, 2014 at 1:00 PM.

Jim Couillard represented Commissioner Stan McClain (Marion County), Chris Spontak represented Carolyn Channave (Marion County Aquaholics) and Guy Marwick represented Andy Kesselring (Silver Springs Alliance). Mayor Quinn (City of Ocala), Scott Mitchell (Silver River Museum) and Judy Allison (Altoona Trail Riders Association) did not attend the meeting. Division of Recreation and Parks (DRP) staff attending included Larry Fooks, FPS Bureau of Park Operations, District 1, Amy Copeland, Sine Murray and Lew Scruggs, Office of Park Planning

Mr. Scruggs began the meeting by explaining the purpose of the Advisory Group and reviewing the process to be followed. He summarized public comments received during the previous evening's public workshop. He then asked each member of the advisory group to express his or her comments on the plans.

Summary of Advisory Group Comments

Mr. Couillard provided some of the comments contained in the attached 'Marion County Advisory Group Comments' document. Several of the County's comments and recommendations were not discussed with the group. DRP staff have provided clarification for some of the comments. If other members of the group would like to respond, please do so via email or mail by Friday, May 23, 2014.

Mr. Herrin thanked the Division for involving the US Forest Service in the deliberations and said he is glad the plan is moving forward. He commented that the state park and the national forest have overlapping missions and will certainly share visitors going forward.

Mr. Deen urged all parties to continue efforts to break down the barriers to cooperation and communication. He urged the creation of a one-stop source for information about recreational opportunities to provide a seamless approach for visitors seeking recreation sites. He encouraged continued collaboration among the providers in the Silver Springs area and offered the assistance of the historic Fort King group. He suggested consideration of Segway tours at the state park and between the park and other places, such as Fort King. Later in the meeting Mr. Deen said that he expects a greater interest in the history of Silver Springs and urged the Division to not lose sight of the value to visitors of discovering the true Florida represented by that legacy.

Mr. Blunden said he is concerned that the proposed horse rental facility would generate pressure for access to the springs area from private horse owners and clubs, which would not be appropriate to that area. He recommended that the Division proceed with the proposed restoration of sandhill natural community near the proposed developed group camp and on Ross Allen Island so that the restoration projects become part of the interpretive message of the camp, and the restoration goal does not get lost among other priorities.

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Mr. Kilcrease commended the open planning process. He echoed Mr. Blunden's statements regarding natural community restoration being started soon. He said he is excited by the potential growth of recreational opportunities in the Silver Springs region and looks forward to continued partnership between the Florida Forest Service and the Florida Park Service.

Mr. Parsons said that he is very pleased with the plan and offered to provide written comments. He said that his agency appreciates the commitment to protection of cultural resources and the emphasis on DHR consultation expressed in the plan. He supported the adaptive reuse of the Victor Lundy buildings. He stated concern with the group camp location since archaeological resources in that area are eligible for listing on the National Register of Historic Sites. He said the area provides a great opportunity for extensive research, and encouraged avoidance of impacts to the cultural resources there. He encouraged the park's efforts to interpret the cultural resources and offered DHR assistance in developing interpretive programs. He said his agency is pleased at the focus in the plan on documenting the park's cultural resources. He urged the park to curate the historic building plans.

Ms. Shaffer expressed her thanks for the open planning process. She said that Silver Springs is vital to the local long-term strategy for economic development which include connecting the Silver Springs community with downtown Ocala. She said the Visitors and Convention Bureau looks forward to helping with marketing the park and with encouraging local legislators to provide funding for the park.

Mr. Spontak applauded the Division's focus on ecotourism in the park. He asked if paddlers on the river can enter the park at the River Bend area to use the facilities (answer: yes). He urged the establishment of a paddler shuttle between the headsprings and Ray Wayside Park. He recommended the plan include a playground, and noted that managing an appropriate recreational carrying capacity will be challenging.

Ms. Kauffman expressed the citizen support organization's eagerness to work with the park to implement the plan. She said the organization will work to promote the connections between the park and adjacent public lands. She noted that the group is expanding its membership to provide more volunteers for the larger park. She said the Friends group is very interested in fundraising for development of a universally-accessible playground for the park. She expressed concern that the proposed swimming area will harm aquatic vegetation, and that alligators will pose a safety threat to swimmers.

Mr. Marwick asked staff to consider locating the proposed swimming area in the Fort King Waterway as an alternative to the spring location. He urged reconsideration of the location of a horse livery as indicated in the draft plan because of the wet conditions encountered on the horse trails west of the developed area around the spring. He suggested that the bottled water operation currently drawing from a well on park property should be terminated to reduce consumption of water supplying the spring.

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Ms. Fenton said that the plan offers flexible solutions to provide facilities and infrastructure for recreation at Silver Springs. She said the plan does a good job of addressing both stakeholder and DEP goals to improve water quality and to leverage resources for greater benefits to visitors to the area. She said that public-private partnerships will be keys to the success of the plan and encouraged the group to continue their involvement with the park. She said that DEP understands private business needs a degree of certainty and long-term stability in contractual arrangements to allow private capital to be invested in the park.

Mr. Miller offered 'kudos' to the planning process. He complemented Ms. Copeland on the quality of the resource management planning incorporated in the management plan. He noted that the spring is currently surrounded by a large area of development in the Town Center, paved walkways and large parking areas and future redevelopment should seek to reduce the scale of development, not enlarge it. Mr. Miller discussed alternatives to locating a swimming area on the spring shoreline, include providing a floating platform in deep water, admitting that it would not serve well for young visitors. He urged that future development plans build and maintain a vegetative buffer between the park and Baseline Road to improve the aesthetic qualities of the park and the intersection. He urged the Department to provide staffing for an on-site biologist to coordinate the variety of ongoing springs protection and restoration research programs, and a cultural resources specialist to monitor future development for impacts to cultural sites.

Mr. Saju said he was amazed how well the plan balances such divergent priorities. He applauded the fact that the plan encourages public-private partnerships, and agreed that private capital will require long-term commitments to move forward in the park. He summed up by saying that Silver Springs will simply not have an ecotourism industry unless the natural resources of the park and surrounding lands are not restored and protected.

Ms. Greenburg said that the plan was the culmination of an excellent process and thanked the Department for including a high level of local involvement. She said that protection and restoration of Silver Springs must be the Department's overriding focus. She said that both the Marion Audubon Society and the Florida Federation of Garden Clubs are watching current springs legislation with interest. She said that Marion County's efforts at springs protection at the local level, although stop and go at times, have been good. She said the local Garden Club chapter is working with on a redesign of the formal gardens area to become interpretive gardens highlighting native species and water quality protection/water conservation. She noted that the state park does not need to be everything to everybody. She said she opposes the boat docks and the swimming area. She recommended that the intrusion of motorboats in the upper river should be ended. She said that the noise and appearance of a swimming area will cause major distraction from the natural beauty of the headsprings. She agreed that equestrian activity in close proximity to the spring should not be allowed because of potential pollution.

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Public Comments

At the conclusion of the group members' comments, the floor was opened for public comments.

Ms. Graham said that Paradise Park is an important historic site within the state park as it provided a perfect swimming area during segregation, and became a favored destination of many African-American visitors. She agreed that playgrounds should be included in the plan, stating that playgrounds become valuable community resources for local programs, such as Head Start. She echoed other speakers' emphasis on the importance of the unique history that is imbedded in the Silver Springs property.

Mr. Hunter said he is a local boater, and urged the Department to continue the traditional boating access provided on the Silver River.

Ms. Tillman, representing Silver Springs Management, LLC, said that she is encouraged by the flexibility incorporated in the management plan and that the plan will provide opportunities for her business to grow with the park.

Staff Recommendations

The comments received from the advisory group show a broad-based support of the draft management plan.

Concerns were expressed by group members about the proposed swimming area, day-use horse livery and horse trails and public boat docking facility.

The Division recognizes the importance of protecting the submerged aquatic vegetation in the spring bowl. We also believe that providing public swimming in the spring is a very important goal for the park. As we explained at the meeting, the proposed swimming area will be operated seasonally. From September through late spring it will be closed, during which time submerged vegetation may recover from impact, based on our experience at other springs parks. A floating platform will be included in the plan to encourage adult use away from the shallows to reduce impacts to aquatic vegetation. Division staff will monitor the effects of swimming on the vegetation. With these measures, we believe that the swimming area should be provided in the park and managed to provide a balance of recreational access and resource protection as is appropriate in a state park setting.

Providing hiking, biking and equestrian trail connections from the park to the surrounding public lands is important to the ecotourism concept that was developed as part of the Silver Springs plan. The horse livery would be located in the former Jeep Safari support area (immediately south of the SR 40 right of way). This is not a wet area. It was filled and developed for park use many years ago. The horse livery is proposed for day use only. The park will arrange for a concessionaire to bring horses and remove them each day and to collect and remove manure. DEP is committed to maintaining best management practices for surface water quality protection. Division staff are reviewing this plan and the existing equestrian trails

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north of the Silver River with the DEP Division of Environmental Assessment and Restoration. Existing trail locations will be modified, as needed, and the proposed trail connection across Half Mile Creek will be designed to assure that water quality best management criteria are met.

The addition of the headsprings to the park has changed the way people use the river. An important objective of the plan is to conduct a comprehensive review of recreational uses on the Silver River with focus on visitor safety and the protection of river resources. That review will provide a scientific baseline for deciding what types and volumes of recreational activities can be managed to balance public access and resource protection on the river. Staff recommends the potential boat docking facility should remain in the plan. The Land Use Component will be revised to clarify that this facility will not be constructed before the review is completed.

Notes on Composition of the Advisory Group

Florida Statutes Chapter 259.032 Paragraph 10(b) establishes a requirement that all state land management plans for properties greater than 160 acres will be reviewed by an advisory group:

"Individual management plans required by s. 253.034(5), for parcels over 160 acres, shall be developed with input from an advisory group. Members of this advisory group shall include, at a minimum, representatives of the lead land managing agency, co-managing entities, local private property owners, the appropriate soil and water conservation district, a local conservation organization, and a local elected official."

Advisory groups that are composed in compliance with these requirements complete the review of State park management plans. Additional members may be appointed to the groups, such as a representative of the park's Citizen Support Organization (if one exists), representatives of the recreational activities that exist in or are planned for the park, or representatives of any agency with an ownership interest in the property. Special issues or conditions that require a broader representation for adequate review of the management plan may require the appointment of additional members. The Division's intent in making these appointments is to create a group that represents a balanced cross-section of the park's stakeholders. Decisions on appointments are made on a case-by-case basis by Division of Recreation and Parks staff.

Marion County Comments

Division of Recreation and Parks Clarification in Blue Underlined Text

General

It is recognized that this amendment will become a part of the 2010 Silver River State Park approved plan. Why wasn't the approved park UMP re-opened and used to discuss both areas (the addition and the existing state park) as a comprehensive piece of land (p.2)? The conceptual land use plan for the riverside area of the park was discussed with the advisory group. Additions to that plan are included in the plan amendment to establish tram road and internal trail connections, relocate the primitive group camp and identify regional trail connectivity opportunities.

General strategies for supplementing park funding include fees, concessions and similar measures (p. 7). What about public/private partnerships and their ability to make things happen at a quicker pace? The purpose of the park management plan is to gain conceptual approval of future development on the Trustees' land. The Division will consider funds from both public and private sources as we move to implement the management plan.

Regional connectivity is only casually mentioned in the UMP. Connectivity should be emphasized and demonstrations of how this can be achieved should be provided. Discussion of regional trails connectivity will be expanded.

Question the statement that "passengers on glass-bottom boats have long been able to view huge fish in the clear waters of the spring" (p. 22) as the fish population in this area has declined significantly and there are numerous studies which agree, one of which is referenced in the Works Cited.

Does having the Town Center and the Cypress Room added to the National Register hinder the park's ability to serve as an ecotourism hub? Buildings are just too close to the spring. National Register listing does not prohibit removal of historic buildings.

In *Conceptual Land Use Plan*, the opening paragraph mentions that a "detailed development plan" will be created based on the Conceptual land Use Plan, when funding becomes available. In the *Facilities Development* section, an estimated cost of \$15M is discussed, Will a development plan need to wait on the entire \$15M to be appropriated or can this be done through public/private partnerships? Division staff will continue the current dialog with local stakeholders to develop an appropriate phasing plan for new development. Privately-funded projects that fit into logical development phases could proceed right away. Design, permitting and construction of state-funded development can proceed as funding for each phase becomes available.

Facilities/Amenities

A high-end restaurant overlooking the springs

A location of additional lodging (RV, family camping, higher end cabins, hotel). The creation of additional RV camping spaces would create better economic impact

A uniquely special hotel/lodge at the park would create a place that people would want to visit repeatedly

Open view of the springs in the town center building area.

Relocate glass bottom boat dock to where the jungle cruise dock is. Open the headsprings!

There is no mention of any type of play area or playground. Add one or two. [Draft Plan, p. 94 states: Each hub would include trail information kiosks, playground, restrooms, and picnic areas.](#)

Add a new waterpark; provide land in general vicinity of Silver Springs for a new waterpark.

The proposed \$15M cost does not include the proposed visitor service center along Baseline Road, which is not shown on the Conceptual Land Use Plan. [The Conceptual Land Use Plan includes two areas clearly labeled "Public/Private Partnerships – Visitor Services" located on Baseline Road and on SR 40. The development cost estimate is based on the improvements such as the swimming area, bathhouse and parking improvements that will likely be funded by the state. Development that will be funded by the private sector is not included in the estimate.](#)

Implement energy efficiency projects and technologies and lower the cost of operations.

Activities

Guided snorkeling at the headspring.

Guided SCUBA diving during times when the park is closed.

Catch and release fishing tournaments.

Remove the equine use of the northern floodplain area; contradicts equine BMPs of having manure/waste this close to an Outstanding Florida Waterway and an impaired spring. Move all facilities to Indian Lake State Forest.

The proposed livery is part of the potential private-sector visitor service and ecotourism hub opportunities planned for the state park to connect with the other public lands in the region. Staff is working with the DEP Division of Environmental Assessment and Restoration to assure the park operation is in compliance with all of DEP's water quality Best Management Practices (BMPs) for equestrian facilities.

Add boat tours of the entire Silver River.

Increase the amount of canoeing/kayaking, specifically the Silver River Trip.
Evaluation of recreational uses on the river with a focus on the safety of visitors the protection of river resources is recommended in the plan. The outcome of that review should be used to inform future decisions on canoeing/kayaking carrying capacities and on the need for the boat docks proposed by the draft plan.

Land Management

There is a big emphasis on "restoration" in several areas of the park that are or have been historically impacted. These areas should be vetted for potential to help bring in revenue before being considered for restoration. Find appropriate uses for the areas that are impacted

Dedicated locations for private sector investment. See above.

Complete restoration of Ross Allen Island is needed, including removal of all pollutants (p. 21). DEP Division of Waste is investigating conditions on the island and will advise on best management practices for that area.

Revisit the entire UMP and include all of the Silver Springs State Park, not just the Attraction. See response above.

In *Special Management Considerations, Additional Considerations*, one sentence "If possible, the Ocklawaha River Aquatic Preserve boundaries should be amended to include the excluded reach of the Silver River" rolling implications and added restrictions to what can happen along the river (p. 75).

Remove Ray Wayside from the Optimum Boundary of the park. This is a community resource providing public access to two publicly owned rivers.

In the *Land Use Component, Existing Use of Adjacent Land*, (p. 78) states "Vehicular traffic on the highways surround the park, high levels of motorized boat traffic, wastewater, and the input of untreated stormwater runoff are the primary impacts from adjacent land uses on the park's resources and visitor experience." This statement is misleading. The term "high levels of motorized boat traffic" is subjective and no supporting references are provided. Language will be revised.

Further in the same section, last sentence before the next subsection states: "Any significant expansion of the current levels of development or agricultural activity has the potential to affect adversely the water resources of the park." Another subjective statement which leans towards no new development and counteracts the County's vision of revitalization of the area.

Scruggs, Lewis

From: Guy Marwick <the_felburn_foundation@yahoo.com>
Sent: Thursday, May 08, 2014 11:07 AM
To: Scruggs, Lewis; bknight@floridaspringsinstitute.org
Subject: Advisory Group response

There are a great many suggestions by the County that were in direct opposition to the Advisory group's recommendations.

The first problem I see is the idea that the entire state park should have been opened. This is not needed as the connections of the two parts were thoroughly discussed by the advisory panel.

The consensus of the group was an emphasis on restoration, removal of old infrastructure that was beyond repair and no major construction such as hotels or convention centers.

Cabins are already provided by the park as are campground loops that provide approximately sixty spaces.

This precludes any rationale for a duplication of those types of facilities.

The town center is an integral part of the ambiance and history of the springs and no one on the panel said it should be removed or that the cypress room should be demolished.

Additional camping and lodging would compete with the private sector that surrounds the park.

The advisory group was adamant about no Eco Lodge or hotel yet the idea keeps coming up. This is not a suitable addition to this already developed park addition.

Snorkeling and diving were NOT recommended by the panel for many reasons. The cave system is very dangerous and fragile and both activities would silt out the glass bottom boats.

Against all common sense the idea of catch and release fishing in a Spring where the fish population has declined by well over 90% is ridiculous.

This park was NOT purchased to be given away to private investors but it was bought to restore and preserve the land and Spring for future generations.

This last minute proposal by the County was not vetted by this panel or shared early on. The sad thing is that it seems they weren't listening to the large numbers of people who supported the Division of Recreation and Parks being in charge of running the Silver Springs State Park just as they successfully run all the parks in Florida.

Guy Marwick

Scruggs, Lewis

Subject: FW: Silver Springs State Park Management Plan Amendment Advisory Group Staff Report

From: Jacque Steer [mailto:STEERSKI@AOL.COM]

Sent: Thursday, May 08, 2014 6:26 AM

To: Scruggs, Lewis

Subject: Re: Silver Springs State Park Management Plan Amendment Advisory Group Staff Report

Lew,

I want to apologize for leaving in the middle of the last meeting. My mother passed away and I got the notification during the meeting. I did not have a chance to advocate for the Florida Trail at that final meeting. As you know it is my desire to reroute the trail through the State Park. The plans you devised have left room for connectivity, and I would like for the FNST to take advantage of your plans. Personally I thought the plans have something for everyone and was well thought out. I will continue to be involved and will work with Sally and others at the park to make sure the Florida Trail is represented in the Silver Springs State Park.

Thank You for involving me in this process.

Jacque Steer
Florida Trail Association

Subject: Re: A Hotel at Silver Springs???

Without a unique lodging property, Marion County and Silver Springs can not become a legitimate ecotourist destination.

A specialized lodging facility will attract overnight guests from around the world, bringing the needed attention to Marion County and Silver Springs. The attention will bring more people which in turn spurs redevelopment. Without the world famous attention that Silver Springs deserves, Silver Springs State Park will continue to be the best local park in the world.

Silver Springs has an identity crisis (see youtube video <https://www.youtube.com/watch?v=otA1ApLwdwQ>). If you are going to revitalize the park, a new specialized hotel can go along way in being the face of a new Silver Springs.

Jacque Steer

Scruggs, Lewis

Subject: FW: A Hotel at Silver Springs???

Importance: High

Lew,

With all due respect I don't understand why the comments by Marion County are separate from the rest of the Advisory Group comments. Wasn't Marion County represented as part of the Advisory Group? I also find it troubling that at the very end of the advisory process Marion County officials were able to add several concepts to our group's recommendations that are so completely opposite of what we decided. This has the appearance of slipping in an unpopular idea at the last minute and hoping the rest of the group won't notice.

Specifically I refer to the following recommendations by Marion County:

"A location of additional lodging (RV, family camping, higher end cabins, hotel). The creation of additional RV camping spaces would create better economic impact."

"A uniquely special hotel/lodge at the park would create a place that people would want to visit repeatedly."

"Open view of the springs in the town center building area."

"Relocate glass bottom boat dock to where the jungle cruise dock is. Open the headsprings!"

What I see are the words HOTEL and OPEN THE VIEW TO THE SPRINGS. Reading between the lines I would venture they are talking about the construction of a new hotel at the headspring.

This notion is completely contrary to the consensus of, and direction taken by, the advisory panel. In fact, the majority of the advisory group was against the concept of a hotel or eco-lodge constructed within the state park.

There is also mention of priority being given to land generating revenue over being restored. Specifically under the title Land Management Marion County proposes:

"There is a big emphasis on "restoration" in several areas of the park that are or have been historically impacted. These areas should be vetted for potential to help bring in revenue before being considered for restoration. Find appropriate uses for the areas that are impacted."

Does this mean that the state park system is to weigh generating revenue against the restoration of natural lands in a state park?

These last minute additions by the county are very troubling to me. Why didn't any discussion of a hotel come up during the four meetings? Do we really need a new hotel built in the new Silver Springs State Park?

I look forward to learning more and appreciate you sending out the attachment with these additions.

Scott E. Mitchell, Director
Silver River Museum & Environmental Education Center
1445 NE 58th Avenue
Ocala, FL 34470

(352) 236-5401
scott.mitchell@marion.k12.fl.us
www.SilverRiverMuseum.com

Marion County Public Schools
An Equal Opportunity School District

Scruggs, Lewis

Subject: FW: A Hotel at Silver Springs???

From: Parsons, Timothy A. [mailto:Timothy.Parsons@dos.myflorida.com]

Sent: Wednesday, May 14, 2014 11:41 AM

To: Scruggs, Lewis; Murray, Sine

Subject: RE: A Hotel at Silver Springs???

Hi Lew and Sine,

I'm just following along with this; it's no surprise to me that Jacque and the County share and promote that perspective. My hope is that the management plan amendment will have a more balanced approach to stewardship.

Tim

Timothy Parsons, Ph.D., RPA

Compliance Review Supervisor | Deputy State Historic Preservation Officer | Bureau of Historic Preservation | Division of Historical Resources | Florida Department of State | 500 South Bronough Street | Tallahassee, Florida 32399 | [850.245.6333](tel:850.245.6333) | [1.800.847.7278](tel:1.800.847.7278) | Fax: [850.245.6439](tel:850.245.6439) | www.flheritage.com

May 23, 2014

To: DEP Office of Park Planning & Silver Springs State Park Advisory Group

Re: Proposed Land Management Plan Amendment

Comments by Judy Greenberg, Marion Audubon Society

The Advisory Group process has allowed a high level of focused local involvement with the planning process for the Silver Springs State Park. Marion Audubon Society actively participated at meetings, and with documented comments on January 10, 2014 for the final meeting of the group. Additional comments were made at the May 7, 2014 Advisory Group meeting regarding the Draft Management Plan Document.

In January our comments focused on the three priorities outlined by the Advisory Group in December, 2013 as having equal weight/priority. These priorities were established during the process to provide general direction/parameters to the DEP for the more detailed planning document required by State Statute.

The three priorities established by the Advisory Group are:

- Create an experience to promote nature-based recreation and interpretation
- Connectivity and partnerships to improve resource management, enhance recreational opportunities, to increase local support, and create business and funding opportunities
- Protection of the park's natural and cultural resources.

During Advisory Group discussions individuals re-iterated the need to protect the water resource from further harm. Some individuals went a step further to suggest that future land use of the roughly 250 acres known as the "Attraction" should help improve the health of the spring. Improving the health of Silver Spring is the top priority of the Marion Audubon Society.

Given the Advisory Group priorities stated above, we offered the following high level direction setting comments for the three planning areas for consideration by DEP:

Headsprings Area

- Preserve elements of the original attraction (glass bottom boats, formal gardens, historic "Town Center"). Preservation of buildings should be done without adding to the existing footprint.
- Maintain the concert venue and improve the formal gardens with minimal hard-scape (picnic areas and interpretive overlooks). Replace non-native plants with native plants when possible by adding themed gardens that are beneficial to the health of the

ecosystem. Examples: butterfly/pollinator gardens, bird sanctuary garden, nutrient filtering plant gardens with interpretive signage.

- Dedicate the Ross Allen Island to wildlife viewing, nature study, and restoration of the wetland.

Wild Waters Area (SR 40/Baseline Rd. Intersection)

- Removal of the Wild Waters Park for improved storm-water treatment by incorporating beautification of the area via natural filtering systems when possible.
- Create a visual gateway to the recreational opportunities of the state park and regional conservation lands at the SR40/Baseline Road corner that brands the surrounding Silver Springs community re-development as “the real natural Florida”.
- Utilize existing buildings for recreational services: biking, paddling, and hiking.

“Back 40” Area (Including Maintenance Area)

- New bridge from Ross Allen Island across the Ft. King waterway to the “Back 40”
- Dedicate the area to cultural resource protection and interpretation, hiking trails with interpretive signs and overlooks.
- Connecting headsprings area to the day use areas, and the existing state park campground and cabins utilizing a tram road and trails. Minimize visitor vehicular movement around the park in order to minimize the amount of paved roads within the park.
- Maintain the maintenance area in the current location.

The iterative planning process established by the DEP for planning the future land use of the Silver Springs State Park requires that we now comment on the Advisory Group Draft Unit Management Plan Amendment distributed by the Division of Recreation and Parks on March 26, 2014.

The Marion Audubon Society comments that follow will provide 1) General Statement about whether the Plan gives equal weight to the three priorities established by the Advisory Group, 2) Plan Amendment compatibility with the purpose of the Silver Springs State Park.

1) General Statement

The 10 Year plan appears to give equal weight to the three priorities established by the Advisory Group. The long-term re-development perspective of the plan gives greater weight to the business development aspects which historically result in degradation of the natural resources.

2) Stated Purpose of the Silver Springs State Park

Conserve and protect the natural value and water quality of the Silver River and its headwaters, Silver Springs for the benefit of the people of Florida.

Plan Amendment Component Analysis – Resource Management

DRP's philosophy of Resource Management is to employ Natural Systems Management. (pg 11). The natural system of the Silver Springs State Park according to the stated purpose of the park is best described by the following description in the plan:

"The park lies within the approximately 850 square mile Ocklawaha River drainage basin. A group of several large artesian springs, collectively known as Silver Springs, give rise to the Silver River. The river flows east through Silver River State Park ... it joins the Ocklawaha River, which ultimately flows into the St. Johns River." (pg 19)

Assumption for Analysis

Resource Management includes natural and cultural. Cultural resources by definition include man -made structures. Thus, the man- made structures on the property should facilitate the success of the Natural System Management Activity.

Conclusions

Conclusions are presented as agreement or disagreement with the plan:

Agree with the following:

1. Protective precautions should be taken to ensure groundwater protection when conducting any construction or demolition activities near the sinkhole are in SV-36. (pg 16)
2. The wetland along the entrance boardwalk will be allowed to exist in a more natural hydrological state with normal wet-dry cycles. (pg 20)
3. Reduce and phase out pumping of surface and ground water onsite for irrigation and other uses. (pg 20)
4. Small wells will be evaluated and capped/abandoned when no longer needed to support park operations. (pg 20/ 21)
5. Allow water from the Silver River to freely move in and out of the wetlands of Ross Allen Island, with the protection of downstream water quality and a plan for removal/ breaching of the berm around the perimeter of Ross Allen Island. (pg 21)
6. If bulkhead removal along the northern shoreline of the Silver River is deemed feasible, a plan for shoreline restoration should be developed and implemented. (pg 22)

7. A prevention strategy must be developed by SJRWMD to prevent MFL being exceeded. (pg 23)
8. Waste water utility improvement projects to eliminate existing septic tanks onsite by connecting to the municipal sewer system. (pg 24)
9. All artificial hydrological alterations should be mitigated and natural hydrology returned where possible. The Ft. King Waterway should be evaluated for removal but that may pose greater harm to the system than benefit. (pg 33)
10. All six natural communities should be managed so that no further soil disturbing activities occur other than those deemed necessary to restoration process. (pg 25 – 32)
11. The dome swamp is in poor condition and should be returned to a floodplain swamp by removing the confining features: roads, parking lots and rim ditching. (pg 29)
12. The natural hydrology of the Silver River and Ocklawaha rivers should be restored and maintained for the floodplain swamp. Addressing the confining parking lots, roads and Ft. King Waterway will assist with restoration of the floodplain swamp. (pg. 30)
13. Special precautions must be invoked to protect the aquatic caves. (pg 32)
14. Generally exotic plants need to be eradicated throughout the park and BMP implemented to allow for reforestation and restoration of natural areas previously disturbed by past land altering activities. (pg 32 – 43)

Disagree with the following:

1. Allowing the continued sale of water withdrawn from the two Marion County Utility wells to a private trust for commercial water bottling. This is in direct conflict with the stated purpose of the park; *for the benefit of the people of Florida*, unless the park is benefiting financially from the sale of the water. Financial benefit to the park, if it exists needs to be quantified and compared to the natural value of this withdrawn water. Intuitive wisdom about the natural value of the water would lead one to believe that the people of Florida benefit from the water remaining in the natural system. The Plan states on page 23 that “Research shows that the flow rate of Silver Springs/River is variable over time but that the long-term trend is a significant reduction in flow and a continued decline in average flow since about the 1950s (Munch et al. 2006, Harrington et al.2008). Any withdrawal for bottling purposes creates a decline in the flow because none of the bottled water makes it back into the natural system.

Plan Amendment Component Analysis – Land Use

DRP's responsibilities are to preserve representative examples of original natural Florida and its cultural resources, and to provide outdoor recreation for Florida's citizens and visitors. The DRP objective is to provide quality development for resource – based

recreation with a high level of sensitivity to the natural and cultural resources at each park throughout the state.

Assumption for Analysis

The DRP stated responsibilities are inconsistent with the stated objective. The inconsistency results from the conflicting behaviors: preserving a representative example of original natural Florida and keeping a high level of sensitivity to the natural resource. The behaviors do not support each other; high levels of sensitivity to the natural resource will override the selective process of narrowing the resource to a representative example. This inconsistency is elevated for the Silver Springs State Park given its stated purpose *to conserve and protect the natural value and water quality of the Silver River and its headwaters, Silver Springs for the benefit of the people of Florida.*

Therefore, the analysis of the Land Use Component must defer to the Assumption applied to the Resource Management Component: *the man-made structures on the property should facilitate the success of the Natural System Management Activity.*

Conclusions

Conclusions are presented as agreement or disagreement with the plan:

Agree with the following:

1. Designated protection zones within the Silver Springs addition to include the headsprings, spring-run stream, undisturbed portions of the floodplain swamp, and a portion of remnant sandhill. (pg 84)
2. Existing facility repair and renovation prioritization should adhere to the guidelines stated on page 85.
3. The list of facilities and structures (pg 85) considered essential for future management of the property as a State Park; except that the Wild Waters Park should be moved to the list of non-essential facilities which are to be removed from the property.
4. The list of non-essential facilities (pg 86) to be removed; except that this list should include the Wild Waters Park.
5. The Town Center and Cypress Room should be preserved and rehabilitated to serve as primary location for food service, retail, interpretation and administrative buildings. (pg 90)
6. The Formal Gardens Plan is consistent with the purpose of the park.(pg. 93)
7. The Ross Allen Island Plan is consistent with the purpose of the park. (pg 93)

8. Additional study is necessary to determine the final location and design of the proposed trail network and paved road. (pg 94)
9. The Camping Facilities Plan is consistent with the purpose of the park. Connecting facilities to the statewide trail network as well as the amenities at the headsprings is one of the most valuable opportunities made possible by the Silver Springs addition. (pg95)

Disagree with the following:

1. Once the proposed swimming area is complete, the existing water park will be removed. (pg 93). The plan has it backwards – see recommendations below.
2. Greater access to the headspring as part of long-term re-development (pg 90). This would be in direct conflict with the designation of the headsprings as a protection zone.
3. The plan proposes to re-develop a portion of the headsprings area for swimming and other recreational activity. The headsprings is designated as a protection zone within the park requiring case-by case site planning and analysis. “ Providing swimming today presents several challenges” (pg 94). The 1979 DuToit Study referenced as justification for seasonal swimming is outdated and more recent studies about the impact of swimming at similar springs in Florida needs to be considered as part of the site planning and analysis.

Recommendations to better align the plan with the purpose of the park:

1. Elevate the following natural communities to the category of Protection Zones in the Land Use Component: Dome Swamp and Aquatic Cave.
2. Remove the water park before creating a swimming area. Develop the water park area for visitor services to promote the Proposed Additional Capacity for Trails, Developed Group Camp and Ft. King Paddling Loop. (Table 6. Pg 96)
3. Rehab the Glass Bottom Boat facility to be consistent with the original Lundy design. The current Victorian architectural treatment is inconsistent with the cultural resource which was established in the mid-century era.
4. Eliminate the proposed swimming capacity from Table 6.

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Addendum 3—Soil Descriptions

Silver Springs State Park Soil Descriptions

Adamsville sand, 0 to 5 percent slopes (2). - The Adamsville series consists of nearly level to gently sloping, somewhat poorly drained soils that are sandy to a depth of 80 inches or more. This is a nearly level to gently sloping, somewhat poorly drained soil that occurs as small and large areas in the flatwoods and along the lower slopes of the sandy uplands.

In a representative profile, the surface layer is dark gray sand about 6 inches thick. The underlying material to a depth of 88 inches is sand. The upper 14 inches is gray mottled with light brownish gray, the next 8 inches is gray mottled with brownish yellow, and the lower 60 inches is white mottled with light gray.

Anclope-Tomoka association (4). - This mapping unit consists of very poorly drained, nonacid mineral and organic soils. It occurs as large areas on the flood plain along the Oklawaha River. It is about 45 percent Anclope soil and 40 percent Tomoka soil but the composition differs from area to area. The outer rims of delineated areas are dominantly Anclope soil, and the flooded areas toward the river are dominantly Tomoka soil. Slopes are less than 2 percent.

In this unit are areas where a 24 to 35 inch, very dark gray sandy surface layer is underlain to a depth of more than 60 inches by gray or light gray, nonacid sand; areas where an 8 to 16 inch, black surface layer that is more than 20 percent organic matter is underlain to a depth of more than 60 inches by sandy material; and many areas of Okeechobee and Terra Ceia soils.

Apopka sand, 0 to 5 percent slopes (5). - This mapping unit consists of well drained eolian deposits and/or sandy and loamy marine deposits. It occupies a small area in the north central portion of the property. The depth to restrictive features is more than 80 inches. The depth to the water table is more than 80 inches, and the capacity of the most limiting layer to transmit water is rated at moderately high to high. Slopes are 0 to 5 percent. Soil profile consists of sand at 0 to 55 inches and sandy clay loam at 55 to 80 inches. This soil can be found on ridges and dunes of xeric uplands.

Udalfic Arenets, 0 to 5 percent slopes (7). - This mapping unit consists well drained of altered marine deposits. It occupies a large area north of the spring. The depth to restrictive features is more than 80 inches. The depth to the water table is more than 80 inches, and the capacity of the most limiting layer to transmit water is rated at high to very high. Slopes are 0 to 5 percent. Soil profile consists of sandy clay loam at 0 to 33 inches and fine sand at 33 to 65 inches.

Bluff sandy clay (19). - The Bluff series consists of nearly level, very poorly drained soils that formed in thick beds of alkaline loamy marine sediments. Slopes are 0 to 2 percent.

In a representative profile, the surface layer is about 17 inches thick. The upper 6 inches is black sandy clay, the next 7 inches is black sandy clay loam, and the lower 4 inches is very dark gray sandy clay. The subsoil is between depths of 17 and 60

Silver Springs State Park Soil Descriptions

inches. The upper 12 inches is dark gray sandy clay and has few medium streaks and pockets of white calcium carbonate; the next 9 inches is gray sandy clay loam and has common fine streaks and pockets of white calcium carbonate; and the lower 22 inches is gray sandy clay loam and has common fine streaks and pockets of white calcium carbonate.

Candler sand, 0 to 5 percent slopes (22). - The Candler series consists of nearly level to strongly sloping, excessively drained soils that formed in thick beds of sandy marine deposits. These soils occur as broad areas of the sandy uplands.

In a representative profile, the surface layer is dark gray sand about 5 inches thick. It is underlain by 62 inches of yellow sand. The next 42 inches is very pale brown sand that is mottled with white and has thin lamellae of yellowish brown loamy sand. Below this is 6 inches of brownish yellow sandy loam.

Electra sand, 0 to 5 percent slopes (26). - The Electra series consists of nearly level to gently sloping, somewhat poorly drained sandy soils that formed in thick beds of sandy and loamy marine sediments. These soils occur in the flatwoods and in the sandy areas of the upland.

In a representative profile, the surface layer is gray sand about 4 inches thick. Next, in sequence downward, is 13 inches of light gray sand; 24 inches of white sand streaked with grayish brown; 4 inches of black, weakly cemented sand that is well coated with organic matter; 5 inches of dark reddish brown, weakly cemented sand that is mottled with black and dark brown and is well coated with organic matter; 4 inches of brown sand; and 6 inches of mottled light brownish gray and pale brown sandy clay loam. Below the sandy clay loam is 12 inches of mottled gray light sandy clay.

Placid sand (58). - The Placid series consists of nearly level, very poorly drained sandy soils that formed in thick beds of sandy marine deposits. These soils are in small depressions and along poorly defined drainageways of the flatwoods and in shallow depressions on sandy ridges. Slopes are 0 to 2 percent.

Samsula-Martel complex, depressional (64). - This series consists of very poorly drained herbaceous organic materials over sandy and loamy marine deposits. These soils exist in depressions on marine terraces. Slopes are 0 to 2 percent, and the depth to restrictive features is more than 80 inches. The depth to the water table is about 0 inches. The frequency of flooding is none, but the frequency of ponding is high. The soil profile is muck at 0 to 31 inches, sand at 31 to 49 inches, and sandy clay loam at 49 to 60 inches.

Tavares sand, 0 to 5 percent slopes (69). - The Tavares series consists of nearly level to gently sloping, moderately well drained soils that formed in thick beds of sandy marine deposits. These soils occur in the broad sandy flatwoods and along lower slopes of the sandy uplands.

Silver Springs State Park Soil Descriptions

In a representative profile the surface layer is sand about 6 inches thick. The upper 3 inches is dark gray, and the lower 3 inches is gray. The underlying material to a depth of 85 inches is sand. It is pale brown between depths of 6 and 33 inches, pale brown mottled with yellowish red between 33 and 42 inches, very pale brown mottled with yellowish red and light gray between 42 and 53 inches, light gray mottled with very pale brown and yellowish red between 53 and 63 inches, white mottled with yellowish brown between 63 and 67 inches, and white mottled with gray between 67 and 85 inches.

Silver Springs State Park Soil Descriptions

Addendum 4—Plant and Animal List

Silver Springs State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
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ALGAE

Cyanobacteria

Blue-green algae	<i>Oscillatoria</i> sp.....
Blue-green algae	<i>Phormidium</i> sp.
Giant lyngbya.....	<i>Lyngbya wolfei</i>

Green algae

Green algae	<i>Cladophora</i> sp.
Green algae	<i>Mougeotia</i> sp.....
Green algae	<i>Ulothrix</i> sp.

Yellow-green algae

Yellow-green algae	<i>Vaucheria</i> sp.
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Diatoms-centric

Diatom	<i>Aulacoseira italicica</i>
Diatom	<i>Aulacoseira varians</i>
Diatom	<i>Cocconeis</i> sp.
Diatom	<i>Terpsinoe musica</i>

Diatoms-pennate

Diatom	<i>Cymbella</i> sp.....
Diatom	<i>Fragilaria crotonensis</i>
Diatom	<i>Fragilaria</i> sp.....
Diatom	<i>Gomphonema</i> sp.....
Diatom	<i>Navicula</i> sp.
Diatom	<i>Synedra ulna</i>

PLANTS

Adam's needle.....	<i>Yucca filamentosa</i>
Air-potato *	<i>Dioscorea bulbifera</i>
Alabama supplejack	<i>Berchemia scandens</i>
Alicia	<i>Chapmannia floridana</i>
Alligatorflag; Fireflag	<i>Thalia geniculata</i>
Alligatorweed*	<i>Alternanthera philoxeroides</i>
Alocasia	<i>Alocasia</i> sp.
American beautyberry	<i>Callicarpa americana</i>
American black nightshade.....	<i>Solanum americanum</i>
American bluehearts	<i>Buchnera americana</i>
American burnweed; Fireweed..	<i>Erechtites hieracifolia</i>
American cupscale	<i>Sacciolepis striata</i>
American elder; Elderberry	<i>Sambucus canadensis</i>
American elm; Florida elm	<i>Ulmus americana</i>

Silver Springs State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
American evergreen*	<i>Syngonium podophyllum</i>	
American everlasting	<i>Gamochaeta americana</i>	
American everlasting	<i>Gnaphalium americanum</i>	
American Holly	<i>Ilex opaca</i>	
American hornbeam; Bluebeech	<i>Carpinus caroliniana</i>	
American pokeweed	<i>Phytolacca americana</i>	
American spongeplant;		
American strawberrybush	<i>Euonymus americanus</i>	
American white waterlily	<i>Nymphaea odorata</i>	
American wisteria	<i>Wisteria frutescens</i>	
Angel's-trumpet*	<i>Datura</i> sp.	
Anglestem beaksedge	<i>Rhynchospora caduca</i>	
Angularfruit milkvine	<i>Matelea gonocarpos</i>	
Annual blueeyed grass*	<i>Sisyrinchium rosulatum</i>	
Annual phlox*	<i>Phlox drummondii</i>	
Annual saltmarsh aster	<i>Aster subulatus</i>	
Annual saltmarsh aster	<i>Symphyotrichum subulatum</i>	
Apalachicola toadflax	<i>Linaria floridana</i>	
Arrowleaf elephant's ear*	<i>Xanthosoma sagittifolium</i>	
Asiatic jasmine*	<i>Trachelospermum asiaticum</i>	
Atamasco lily; Rainlily	<i>Zephyranthes atamasco</i>	
Atlantic poison oak;		
Axilflower	<i>Mecardonia acuminata</i>	
Azalea*	<i>Azalea</i> spp.	
Azure blue sage	<i>Salvia azurea</i>	
Baby jumpup	<i>Mecardonia procumbens</i>	
Bald-cypress	<i>Taxodium distichum</i>	
Baldwin's eryngo	<i>Eryngium baldwinii</i>	
Baldwin's flatsedge	<i>Cyperus croceus</i>	
Baldwin's nailwort	<i>Paronychia baldwinii</i>	
Baldwin's nutrush	<i>Scleria baldwinii</i>	
Baldwin's spikerush; Roadgrass	<i>Eleocharis baldwinii</i>	
Ballmoss	<i>Tillandsia recurvata</i>	
Bamboo*	<i>Bambusa</i> spp.	
Bandana-of-the-everglades	<i>Canna flaccida</i>	
Barnyardgrass *	<i>Echinochloa crusgalli</i>	
Bartram's airplant	<i>Tillandsia bartramii</i>	
Basket oak	<i>Quercus michauxii</i>	
Bastard false indigobush	<i>Amorpha fruticosa</i>	
Bastard white oak	<i>Quercus austrina</i>	
Beaked panicum	<i>Panicum anceps</i>	
Beggarticks; Romerillo	<i>Bidens alba</i>	
Big carpetgrass	<i>Axonopus furcatus</i>	
Big floatingheart	<i>Nymphoides aquatica</i>	
Big threeawn	<i>Aristida condensata</i>	
Bigflower pawpaw	<i>Asimina obovata</i>	

Silver Springs State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Black cherry.....	<i>Prunus serotina</i> var. <i>serotina</i>	
Black medick *	<i>Medicago lupulina</i>	
Blackroot.....	<i>Pterocaulon pycnostachyum</i>	
Black-stemmed spleenwort	<i>Asplenium resiliens</i>	
Blue huckleberry.....	<i>Gaylussacia tomentosa</i>	
Blue maidencane	<i>Amphicarpum muhlenbergianum</i>	
Blue mistflower	<i>Conoclinium coelestinum</i>	
Blue waterhyssop	<i>Bacopa caroliniana</i>	
Bluejack oak	<i>Quercus incana</i>	
Bluejacket; Ohio spiderwort	<i>Tradescantia ohensis</i>	
Bluestem palm	<i>Sabal minor</i>	
Bluff oak; Bastard white oak.....	<i>Quercus sinuata</i>	
Bog yelloweyed grass	<i>Xyris difformis</i>	
Bottlebrush*	<i>Melaleuca viminalis</i>	
Bougainvillea*.....	<i>Bougainvillea glabra</i>	
Bowstring hemp*.....	<i>Sansevieria hyacinthoides</i>	
Boxelder.....	<i>Acer negundo</i>	
Bracken fern	<i>Pteridium aquilinum</i>	
Brazilian vervain*	<i>Verbena brasiliensis</i>	
Bristly greenbrier.....	<i>Smilax tamnoides</i>	
Bristly scaleseed	<i>Spermolepis echinata</i>	
Brittle maidenhair	<i>Adiantum tenerum</i>	
Britton's wild petunia*	<i>Ruellia simplex</i>	
Buckroot	<i>Pediomelum canescens</i>	
Buckthorn bully	<i>Sideroxylon lycioides</i>	
Bunched beaksedge	<i>Rhynchospora microcephala</i>	
Burford holly*	<i>Ilex cornuta</i> 'Burfordii'	
Burrmarigold.....	<i>Bidens laevis</i>	
Bushy bluestem.....	<i>Andropogon glomeratus</i> var. <i>pumilus</i>	
Butterflyweed.....	<i>Asclepias tuberosa</i>	
Butterweed	<i>Packera glabella</i>	
Cabbage palm	<i>Sabal palmetto</i>	
Caesarweed*	<i>Urena lobata</i>	
Calamondin*.....	<i>Citrus madurensis</i>	
Calloose grape	<i>Vitis shuttleworthii</i>	
Camellia*	<i>Camellia</i> spp.	
Camphortree*.....	<i>Cinnamomum camphora</i>	
Camphorweed	<i>Heterotheca subaxillaris</i>	
Camphorweed	<i>Pluchea camphorata</i>	
Canada lettuce	<i>Lactuca canadensis</i>	
Canada toadflax	<i>Linaria canadensis</i>	
Canadian blacksnakeroot	<i>Sanicula canadensis</i>	
Canadian horseweed	<i>Conyza canadensis</i> var. <i>pusilla</i>	
Canary Island date palm*	<i>Phoenix canariensis</i>	
Candyroot	<i>Polygala nana</i>	
Cape leadwort*	<i>Plumbago auriculata</i>	

Silver Springs State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Cardinalflower.....	<i>Lobelia cardinalis</i>	
Carolina ash; Pop ash.....	<i>Fraxinus caroliniana</i>	
Carolina basswood.....	<i>Tilia americana</i> var. <i>caroliniana</i>	
Carolina bristlemallow	<i>Modiola caroliniana</i>	
Carolina cranesbill	<i>Geranium carolinianum</i>	
Carolina desertchicory	<i>Pyrrhopappus carolinianus</i>	
Carolina elephantsfoot.....	<i>Elephantopus carolinianus</i>	
Carolina fanwort.....	<i>Cabomba caroliniana</i>	
Carolina frostweed	<i>Helianthemum carolinianum</i>	
Carolina holly; Sand holly	<i>Ilex ambigua</i> var. <i>ambigua</i>	
Carolina horserettle.....	<i>Solanum carolinense</i>	
Carolina indigo	<i>Indigofera caroliniana</i>	
Carolina laurelcherry	<i>Prunus caroliniana</i>	
Carolina leafflower	<i>Phyllanthus caroliniensis</i>	
Carolina mosquito fern	<i>Azolla caroliniana</i>	
Carolina ponysfoot.....	<i>Dichondra caroliniensis</i>	
Carolina redroot	<i>Lachnanthes caroliniana</i>	
Carolina scalystem.....	<i>Elytraria caroliniensis</i>	
Carolina violet.....	<i>Viola villosa</i>	
Carolina wild petunia.....	<i>Ruellia caroliniensis</i>	
Carolina willow	<i>Salix caroliniana</i>	
Carolina yelloweyed grass.....	<i>Xyris caroliniana</i>	
Cat greenbrier; Wild sarsaparilla	<i>Smilax glauca</i>	
Catclawvine*	<i>Macfadyena unguis-cati</i>	
Cattail.....	<i>Typha</i> sp.	
Cedar elm.....	<i>Ulmus crassifolia</i>	
Centipedegrass *	<i>Eremochloa ophiuroides</i>	
Cerulean flaxlily*	<i>Dianella ensifolia</i>	
Chalky bluestem.....	<i>Andropogon virginicus</i> var. <i>glaucus</i>	
Chapman's goldenrod.....	<i>Solidago odora</i> var. <i>chapmanii</i>	
Chapman's oak.....	<i>Quercus chapmanii</i>	
Cherokee sedge.....	<i>Carex cherokeensis</i>	
Chickasaw plum	<i>Prunus angustifolia</i>	
Chinaberrytree*	<i>Melia azedarach</i>	
Chinese ladder brake*	<i>Pteris vittata</i>	
Chinese privet *	<i>Ligustrum sinense</i>	
Chinese wisteria *	<i>Wisteria sinensis</i>	
Chocolateweed*	<i>Melochia corchorifolia</i>	
Cinnamon fern	<i>Osmunda cinnamomea</i>	
Citron*.....	<i>Citrus medica</i>	
Citrus*.....	<i>Citrus</i> spp.	
Clasping Venus's looking glass..	<i>Triodanis perfoliata</i>	
Climbing aster.....	<i>Aster carolinianus</i>	
Climbing aster.....	<i>Symphyotrichum carolinianum</i>	
Climbing fig*.....	<i>Ficus pumila</i>	
Climbing hempvine	<i>Mikania scandens</i>	

Silver Springs State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Climbing hydrangea	<i>Decumaria barbara</i>	
Clustered bushmint; Musky mint		<i>Hyptis alata</i>
Clustered mille graine.....	<i>Oldenlandia uniflora</i>	
Coast sandbur.....	<i>Cenchrus spinifex</i>	
Coastal bedstraw	<i>Galium hispidulum</i>	
Coastal bristlegrass.....	<i>Setaria corrugata</i>	
Coastal rosegentian	<i>Sabatia calycina</i>	
Coastalplain chaffhead.....	<i>Carphephorus corymbosus</i>	
Coastalplain dawnflower	<i>Styloisma patens</i>	
Coastalplain hawkweed.....	<i>Hieracium megacephalon</i>	
Coastalplain honeycombhead ..	<i>Balduina angustifolia</i>	
Coastalplain palafox	<i>Palafoxia integrifolia</i>	
Coastalplain staggerbush	<i>Lyonia fruticosa</i>	
Cockspur hawthorn	<i>Crataegus crus-galli</i>	
Coffeeweed; Sicklepod	<i>Senna obtusifolia</i>	
Cogongrass *	<i>Imperata cylindrica</i>	
Colombian waxweed.....	<i>Cuphea carthagenensis</i>	
Combleaf mermaidweed	<i>Proserpinaca pectinata</i>	
Common banana*.....	<i>Musa x paradisiaca</i>	
Common blue violet	<i>Viola sororia</i>	
Common buttonbush	<i>Cephalanthus occidentalis</i>	
Common chickweed*.....	<i>Stellaria media</i>	
Common duckweed.....	<i>Lemna minor</i>	
Common eveningprimrose	<i>Oenothera biennis</i>	
Common hoptree; Wafer ash....	<i>Ptelea trifoliata</i>	
Common persimmon	<i>Diospyros virginiana</i>	
Common ragweed.....	<i>Ambrosia artemisiifolia</i>	
Common sunflower*	<i>Helianthus annuus</i>	
Common vetch *	<i>Vicia sativa</i>	
Common wireweed	<i>Sida acuta</i>	
Common yellow stargrass	<i>Hypoxis curtissii</i>	
Common yellow woodsorrel.....	<i>Oxalis corniculata</i>	
Confederate huckleberry	<i>Gaylussacia nana</i>	
Coontail	<i>Ceratophyllum demersum</i>	
Coral honeysuckle.....	<i>Lonicera sempervirens</i>	
Coralbean; Cherokee bean	<i>Erythrina herbacea</i>	
Corkscrew threeawn.....	<i>Aristida gyrans</i>	
Corn plant*.....	<i>Dracaena</i> sp.	
Corn speedwell *	<i>Veronica arvensis</i>	
Cottonweed; Plains snakecotton	<i>Froelichia floridana</i>	
Crapemyrtle*	<i>Lagerstroemia indica</i>	
Creeping cucumber	<i>Melothria pendula</i>	
Creeping oxeye*.....	<i>Sphagneticola trilobata</i>	
Creeping primrosewillow	<i>Ludwigia repens</i>	
Crossvine	<i>Bignonia capreolata</i>	
Crowpoison; False garlic	<i>Nothoscordum bivalve</i>	

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Cuban jute; Indian hemp	<i>Sida rhombifolia</i>	
Curtiss' milkweed	<i>Asclepias curtissii</i>	
Cutleaf eveningprimrose	<i>Oenothera lacinata</i>	
Cutleaf spleenwort	<i>Asplenium abscessum</i>	
Cutleaf watermilfoil	<i>Myriophyllum pinnatum</i>	
Cut-leaf philodendron*	<i>Philodendron selloum</i>	
Cypress witchgrass	<i>Dichanthelium dichotomum</i>	
Dahoon	<i>Ilex cassine</i>	
Dallisgrass*	<i>Paspalum dilatatum</i>	
Danglepod	<i>Sesbania herbacea</i>	
Darrow's blueberry	<i>Vaccinium darrowii</i>	
Deerberry	<i>Vaccinium stamineum</i>	
Deertongue witchgrass	<i>Dichanthelium clandestinum</i>	
Delta arrowhead	<i>Sagittaria platyphylla</i>	
Densetuft hairsedge	<i>Bulbostylis ciliatifolia</i>	
Devil's walkingstick	<i>Aralia spinosa</i>	
Dickert's pinweed	<i>Lechea deckertii</i>	
Dixie iris; Prairie iris	<i>Iris hexagona</i>	
Dogfennel	<i>Eupatorium capillifolium</i>	
Dogtongue wild buckwheat	<i>Eriogonum tomentosum</i>	
Dollarleaf	<i>Rhynchosia reniformis</i>	
Dotted smartweed	<i>Polygonum punctatum</i>	
Downy milkpea	<i>Galactia volubilis</i>	
Downy ragged goldenrod	<i>Solidago petiolaris</i>	
Drooping bulrush	<i>Scirpus lineatus</i>	
Drug fumitory; Earthsmoke*	<i>Fumaria officinalis</i>	
Durban crowfootgrass *	<i>Dactyloctenium aegyptium</i>	
Dwarf huckleberry	<i>Gaylussacia dumosa</i>	
Dwarf live oak	<i>Quercus minima</i>	
Dwarf palmetto;		
Dwarf pawpaw	<i>Asimina pygmaea</i>	
Dwarf St. John's-wort	<i>Hypericum mutilum</i>	
Dwarf sundew	<i>Drosera brevifolia</i>	
Earleaf greenbrier	<i>Smilax auriculata</i>	
Early blue violet	<i>Viola palmata</i>	
Early whitetop fleabane	<i>Erigeron vernus</i>	
Eastern gamagrass	<i>Tripsacum dactyloides</i>	
Eastern hophornbeam	<i>Ostrya virginiana</i>	
Eastern milkpea	<i>Galactia regularis</i>	
Eastern poison ivy	<i>Toxicodendron radicans</i>	
Eastern poison oak	<i>Toxicodendron pubescens</i>	
Eastern purple bladderwort	<i>Utricularia purpurea</i>	
Eastern redbud	<i>Cercis canadensis</i>	
Eastern silver aster	<i>Symphyotrichum concolor</i>	
Ebony spleenwort	<i>Asplenium platyneuron</i>	
Egyptian paspalidium	<i>Paspalidium geminatum</i>	

Silver Springs State Park Plants

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Elephantgrass; Napiergrass*	<i>Pennisetum purpureum</i>	
Elliott's aster	<i>Symphyotrichum elliottii</i>	
Elliott's lovegrass	<i>Eragrostis elliottii</i>	
Elliott's milkpea	<i>Galactia elliottii</i>	
English ivy*	<i>Hedera helix</i>	
English plantain;		
Fall panicgrass	<i>Panicum bartowense</i>	
False daisy	<i>Eclipta prostrata</i>	
False nettle, Bog hemp	<i>Boehmeria cylindrica</i>	
Feay's prairieclover	<i>Dalea feayi</i>	
Fernleaf yellow false foxglove	<i>Aureolaria pedicularia</i>	
Fetterbush	<i>Lyonia lucida</i>	
Field clover; Hop clover*	<i>Trifolium campestre</i>	
Firebush	<i>Hamelia patens</i>	
Firewheel	<i>Gaillardia pulchella</i>	
Flattop mille graine*	<i>Oldenlandia corymbosa</i>	
Flatwoods plum; Hog plum	<i>Prunus umbellata</i>	
Floating marshpennywort	<i>Hydrocotyle ranunculoides</i>	
Florida bellflower	<i>Campanula floridana</i>	
Florida bluestem	<i>Andropogon floridanus</i>	
Florida bully	<i>Sideroxylon reclinatum</i> ssp. <i>reclinatum</i>	
Florida crabgrass	<i>Digitaria floridana</i>	
Florida false sunflower	<i>Phoebanthus grandiflorus</i>	
Florida greeneyes	<i>Berlandiera subacaulis</i>	
Florida hedgenettle	<i>Stachys floridana</i>	
Florida hoarypea	<i>Tephrosia florida</i>	
Florida hobblebush; Pipestem	<i>Agarista populifolia</i>	
Florida indian plantain	<i>Arnoglossum floridanum</i>	
Florida milkvine	<i>Matelea floridana</i>	
Florida needlegrass	<i>Piptochaetium avenacioides</i>	
Florida paspalum	<i>Paspalum floridanum</i>	
Florida pellitory	<i>Parietaria floridana</i>	
Florida pinkroot	<i>Spigelia loganioides</i>	
Florida rosemary; Sand heath	<i>Ceratiola ericoides</i>	
Florida scrub frostweed	<i>Helianthemum nashii</i>	
Florida scrub skullcap	<i>Scutellaria arenicola</i>	
Florida vetch	<i>Vicia floridana</i>	
Flowering dogwood	<i>Cornus florida</i>	
Forked bluecurls	<i>Trichostema dichotomum</i>	
Forked rush	<i>Juncus dichotomus</i>	
Fourangle flatsedge	<i>Cyperus tetragonus</i>	
Fourpetal St. John's-wort	<i>Hypericum tetrapetalum</i>	
Fourspike fingergrass	<i>Eustachys neglecta</i>	
Fragrant beaksedge	<i>Rhynchospora odorata</i>	
Fragrant flatsedge	<i>Cyperus odoratus</i>	
Fragrant ladiestresses	<i>Spiranthes odorata</i>	

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Fringe flower*	<i>Loropetalum chinense</i>	
Fringed bluestar	<i>Amsonia ciliata</i>	
Fringed meadowbeauty	<i>Rhexia petiolata</i>	
Fringed yellow stargrass	<i>Hypoxis juncea</i>	
Fringed yelloweyed grass	<i>Xyris fimbriata</i>	
Frog's-bit	<i>Limnobium spongia</i>	
Garberia	<i>Garberia heterophylla</i>	
Garden rosemallow*	<i>Hibiscus rosa-sinensis</i>	
Gardenia*	<i>Gardenia</i> sp.	
Georgia frostweed	<i>Helianthemum georgianum</i>	
Giant reed*	<i>Arundo donax</i>	
Giant whitetop	<i>Rhynchospora latifolia</i>	
Globe amaranth*	<i>Gomphrena serrata</i>	
Glorybower*	<i>Clerodendrum</i> sp.	
Glossy privet *	<i>Ligustrum lucidum</i>	
Godfrey's swamprivet	<i>Forestiera godfreyi</i>	
Golden polypody	<i>Phlebodium aureum</i>	
Goosegrass; Spring cleavers	<i>Galium aparine</i>	
Gopher apple	<i>Licania michauxii</i>	
Grassleaf lettuce	<i>Lactuca graminifolia</i>	
Grassleaf roseling	<i>Callisia graminea</i>	
Grassleaf roseling	<i>Cuthbertia graminea</i>	
Grassy arrowhead	<i>Sagittaria graminea</i>	
Gray's beaksedge	<i>Rhynchospora grayi</i>	
Green arrow arum	<i>Peltandra virginica</i>	
Green ash; Pumpkin ash	<i>Fraxinus pennsylvanica</i>	
Green flatsedge	<i>Cyperus virens</i>	
Greendragon	<i>Arisaema dracontium</i>	
Green-fly orchid	<i>Epidendrum conopseum</i>	
Greenvein ladiestresses	<i>Spiranthes praecox</i>	
Groundsel tree; Sea myrtle	<i>Baccharis halimifolia</i>	
Guinea hen weed	<i>Petiveria alliacea</i>	
Hairy bedstraw	<i>Galium pilosum</i>	
Hairy bittercress*	<i>Cardamine hirsuta</i>	
Hairy fimbry	<i>Fimbristylis puberula</i>	
Hairy indigo *	<i>Indigofera hirsuta</i>	
Hairy maiden fern	<i>Thelypteris hispidula</i> var. <i>versicolor</i>	
Hairy shadow witch	<i>Ponthieva racemosa</i>	
Hairyfruit chervil	<i>Chaerophyllum tainturieri</i>	
Hammock snakeroot	<i>Ageratina jucunda</i>	
Hardy orange *	<i>Poncirus trifoliata</i>	
Harlequin	<i>Corydalis micrantha</i>	
Heartwing dock	<i>Rumex hastatulus</i>	
Heavenly bamboo*	<i>Nandina domestica</i>	
Helmet skullcap	<i>Scutellaria integrifolia</i>	
Herb-of-grace	<i>Bacopa monnieri</i>	

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Hercules'-club	<i>Zanthoxylum clava-herculis</i>	
Highbush blueberry	<i>Vaccinium corymbosum</i>	
Hispid starburr*	<i>Acanthospermum hispidum</i>	
Hydrangea*	<i>Hydrangea</i> spp.	
Hyssopleaf sandmat	<i>Chamaesyce hyssopifolia</i>	
Indian hawthorn*	<i>Raphiolepis indica</i>	
Indian strawberry*	<i>Duchesnea indica</i>	
Indian woodoats	<i>Chasmanthium latifolium</i>	
Indianpipe	<i>Monotropa uniflora</i>	
Inkberry; Gallberry	<i>Ilex glabra</i>	
Innocence; Roundleaf bluet	<i>Houstonia procumbens</i>	
Italian ryegrass*	<i>Lolium perenne</i>	
Jack-in-the-pulpit	<i>Arisaema triphyllum</i>	
Jackson vine	<i>Smilax smallii</i>	
Jamaica swamp sawgrass	<i>Cladium jamaicense</i>	
Japanese cheesewood*	<i>Pittosporum tobira</i>	
Japanese climbing fern *	<i>Lygodium japonicum</i>	
Japanese boxwood*	<i>Buxus microphylla</i>	
Japanese clover *	<i>Kummerowia striata</i>	
Juba's bush	<i>Iresine diffusa</i>	
Kidneyleaf rosinweed	<i>Silphium compositum</i>	
King Solomon's seal	<i>Polygonatum biflorum</i>	
Lanceleaf tickseed	<i>Coreopsis lanceolata</i>	
Lantana; Shrubverbena*	<i>Lantana camara</i>	
Largeflower mexican clover*	<i>Richardia grandiflora</i>	
Large-flowered rosemary	<i>Conradina grandiflora</i>	
Largeroot morning-glory*	<i>Ipomoea macrorhiza</i>	
Lateflowering thoroughwort	<i>Eupatorium serotinum</i>	
Laurel oak; Diamond oak	<i>Quercus laurifolia</i>	
Lax hornpod	<i>Mitreola petiolata</i>	
Leavenworth's tickseed	<i>Coreopsis leavenworthii</i>	
Lemon bacopa;		
Lesser Florida spurge	<i>Euphorbia polyphylla</i>	
Lily-of-the-Nile; agapanthus*	<i>Agapanthus</i> spp.	
Limestone meadow sedge	<i>Carex granularis</i>	
Lion's-ear*	<i>Leonotis nepetifolia</i>	
Little duckweed	<i>Lemna obscura</i>	
Lizard's tail	<i>Saururus cernuus</i>	
Llima*	<i>Sida cordifolia</i>	
Lobed croton	<i>Croton lobatus</i>	
Loblolly bay	<i>Gordonia lasianthus</i>	
Loblolly pine	<i>Pinus taeda</i>	
Longhorn false reinorchid	<i>Habenaria quinqueseta</i>	
Longleaf camphorweed	<i>Pluchea longifolia</i>	
Longleaf chasmanthium	<i>Chasmanthium laxum</i> var. <i>sessiliflorum</i>	
Longleaf pine	<i>Pinus palustris</i>	

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Longlip ladiestresses	<i>Spiranthes longilabris</i>	
Long's sedge.....	<i>Carex longii</i>	
Lopsided Indiangrass.....	<i>Sorghastrum secundum</i>	
Loquat*.....	<i>Eriobotrya japonica</i>	
Low spearwort.....	<i>Ranunculus pusillus</i>	
Low spikesedge	<i>Kyllinga pumila</i>	
Lowland rotala; Toothcup.....	<i>Rotala ramosior</i>	
Lyreleaf sage	<i>Salvia lyrata</i>	
Madagascar periwinkle *	<i>Catharanthus roseus</i>	
Maid marian.....	<i>Rhexia nashii</i>	
Maidencane	<i>Panicum hemitomon</i>	
Malaysian false pimpernel*	<i>Lindernia crustacea</i>	
Maleberry	<i>Lyonia ligustrina</i>	
Man-of-the-earth	<i>Ipomoea pandurata</i>	
Manyflower beardtongue.....	<i>Penstemon multiflorus</i>	
Manyflower marshpennywort....	<i>Hydrocotyle umbellata</i>	
Manyspike flatsedge.....	<i>Cyperus polystachyos</i>	
Mariana maiden fern *	<i>Macrothelypteris torresiana</i>	
Marsh mermaidweed	<i>Proserpinaca palustris</i>	
Marsh parsley *	<i>Cyclospermum leptophyllum</i>	
Maryland goldenaster	<i>Chrysopsis mariana</i>	
Maryland wild sensitive plant....	<i>Senna marilandica</i>	
Matted waterstarwort	<i>Callitricha peploides</i>	
Mexican primrosewillo	<i>Ludwigia octovalvis</i>	
Mexican tea*	<i>Chenopodium ambrosioides</i>	
Michaux's hawthorn	<i>Crataegus michauxii</i>	
Mild waterpepper.....	<i>Polygonum hydropiperoides</i>	
Millet beaksedge.....	<i>Rhynchospora miliacea</i>	
Mockernut hickory	<i>Carya alba</i>	
Mohr's thoroughwort	<i>Eupatorium mohrii</i>	
Mondo grass*.....	<i>Ophiopogon japonicus</i>	
Monkey-grass*	<i>Liriope spicata</i>	
Moses-in-the-cradle;		
Oyster-plant*.....	<i>Tradescantia spathacea</i>	
Mountain spikerush.....	<i>Eleocharis montana</i>	
Mouseear chickweed *	<i>Cerastium glomeratum</i>	
Muscadine	<i>Vitis rotundifolia</i>	
Myrtle oak	<i>Quercus myrtifolia</i>	
Narrow pipewort.....	<i>Eriocaulon lineare</i>	
Narrowleaf blueeyed grass	<i>Sisyrinchium angustifolium</i>	
Narrowleaf plantain*	<i>Plantago lanceolata</i>	
Narrowleaf purple everlasting ...	<i>Gamochaeta falcata</i>	
Narrowleaf purple everlasting ...	<i>Gnaphalium falcatum</i>	
Narrowleaf silkgrass.....	<i>Pityopsis graminifolia</i>	
Neckweed.....	<i>Veronica peregrina</i>	
Needle palm.....	<i>Rapidophyllum hystrix</i>	

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Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Needleleaf witchgrass.....	<i>Dichanthelium aciculare</i>	
Netleaf leather-flower.....	<i>Clematis reticulata</i>	
Netted chain fern.....	<i>Woodwardia areolata</i>	
Netted pawpaw	<i>Asimina reticulata</i>	
Nimblewill muhly	<i>Muhlenbergia schreberi</i>	
Noyau vine*.....	<i>Merremia dissecta</i>	
Nuttall's thistle	<i>Cirsium nuttallii</i>	
Oak mistletoe.....	<i>Phoradendron leucarpum</i>	
Oakleaf fleabane.....	<i>Erigeron quercifolius</i>	
Oakleaf hydrangea; Graybeard .	<i>Hydrangea quercifolia</i>	
Obedientplant*.....	<i>Physostegia virginiana</i>	
Oblongleaf twinflower.....	<i>Dyschoriste oblongifolia</i>	
Oleander*	<i>Nerium oleander</i>	
Openflower witchgrass	<i>Dichanthelium laxiflorum</i>	
Oppositeleaf spotflower	<i>Acmella oppositifolia</i>	
Orange milkwort.....	<i>Polygala lutea</i>	
Oriental false hawksbeard*	<i>Youngia japonica</i>	
Overcup oak	<i>Quercus lyrata</i>	
Owlfruit sedge.....	<i>Carex stipata</i>	
Pampasgrass*	<i>Cortaderia selloana</i>	
Panicledleaf ticktrefoil.....	<i>Desmodium paniculatum</i>	
Panicum	<i>Panicum</i> spp.	
Paper mulberry*.....	<i>Broussonetia papyrifera</i>	
Parsley hawthorn.....	<i>Crataegus marshallii</i>	
Partridge pea	<i>Chamaecrista fasciculata</i>	
Partridgeberry; Twinberry	<i>Mitchella repens</i>	
Peace lily*	<i>Spathiphyllum</i> spp.	
Pecan *	<i>Carya illinoinensis</i>	
Pennsylvania bittercress	<i>Cardamine pensylvanica</i>	
Pennsylvania everlasting.....	<i>Gamochaeta pensylvanica</i>	
Pennsylvania everlasting.....	<i>Gnaphalium pensylvanicum</i>	
Pepper-elder; Rat-ear *	<i>Peperomia pellucida</i>	
Peppervine	<i>Ampelopsis arborea</i>	
Perennial sandgrass	<i>Triplasis americana</i>	
Pickerelweed.....	<i>Pontederia cordata</i>	
Piedmont leatherroot.....	<i>Orbexilum lupinellus</i>	
Pignut hickory	<i>Carya glabra</i>	
Pindo palm*	<i>Butea capitata</i>	
Pinebarren flatsedge	<i>Cyperus retrorsus</i>	
Pinebarren frostweed	<i>Helianthemum corymbosum</i>	
Pinebarren goldenrod	<i>Solidago fistulosa</i>	
Pineland nerveray; Squarehead	<i>Tetragonotheca helianthoides</i>	
Pineland pimpernel	<i>Samolus valerandi</i> ssp. <i>parviflorus</i>	
Pineland pinweed.....	<i>Lechea sessiliflora</i>	
Pineland scalypink	<i>Stipulicida setacea</i>	
Pineweeds; Orangegrass.....	<i>Hypericum gentianoides</i>	

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Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Pinewoods fingergrass	<i>Eustachys petraea</i>	
Pinewoods milkweed	<i>Asclepias humistrata</i>	
Pink mandevilla*	<i>Mandevilla splendens</i>	
Pink woodsorrel*	<i>Oxalis debilis</i> var. <i>corymbosa</i>	
Pinkscale gayfeather	<i>Liatris elegans</i>	
Pinquin*	<i>Bromelia pinquin</i>	
Pond pine	<i>Pinus serotina</i>	
Poor joe; Rough buttonweed	<i>Diodia teres</i>	
Powderpuff	<i>Mimosa strigillosa</i>	
Prairie fleabane	<i>Erigeron strigosus</i>	
Pricklypear	<i>Opuntia humifusa</i>	
Primroseleaf violet	<i>Viola primulifolia</i>	
Princess flower*	<i>Tibouchina urvilleana</i>	
Prostrate blue violet	<i>Viola walteri</i>	
Prostrate false buttonweed	<i>Spermacoce prostrata</i>	
Prostrate starwort	<i>Stellaria prostrata</i>	
Purple false foxglove	<i>Agalinis purpurea</i>	
Purple passionflower	<i>Passiflora incarnata</i>	
Purplehead sneezeweed	<i>Helenium flexuosum</i>	
Queen-devil	<i>Hieracium gronovii</i>	
Queensdelight	<i>Stillingia sylvatica</i>	
Rabbit tobacco	<i>Pseudognaphalium obtusifolium</i>	
Rabbitbells	<i>Crotalaria rotundifolia</i>	
Racemed milkwort	<i>Polygala polygama</i>	
Rattlesnake fern	<i>Botrychium virginianum</i>	
Red buckeye	<i>Aesculus pavia</i>	
Red cedar	<i>Juniperus virginiana</i>	
Red chokeberry	<i>Photinia pyrifolia</i>	
Red maple	<i>Acer rubrum</i>	
Red mulberry	<i>Morus rubra</i>	
Redbay	<i>Persea borbonia</i> var. <i>borbonia</i>	
Redmargin zephyrlily	<i>Zephyranthes simpsonii</i>	
Redtop panicum	<i>Panicum rigidulum</i>	
Resurrection fern	<i>Pleopeltis michauxianum</i>	
Rice button aster	<i>Aster dumosus</i>	
Rice button aster	<i>Symphyotrichum dumosum</i>	
Richard's yelloweyed grass*	<i>Xyris jupicai</i>	
Rose*	<i>Rosa</i> spp.	
Rose natalgrass*	<i>Rhynchospora repens</i>	
Rose-rush	<i>Lygodesmia aphylla</i>	
Rougeplant	<i>Rivina humilis</i>	
Rough hedgehyssop	<i>Gratiola hispida</i>	
Rough Mexican clover*	<i>Richardia scabra</i>	
Roughfruit scaleseed	<i>Spermolepis divaricata</i>	
Roughleaf dogwood	<i>Cornus asperifolia</i>	
Roundfruit hedgehyssop	<i>Gratiola virginiana</i>	

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Royal fern.....	<i>Osmunda regalis</i>	
Running oak	<i>Quercus elliottii</i>	
Rushfoil; Michaux's croton.....	<i>Croton michauxii</i>	
Rustweed; Juniperleaf	<i>Polypremum procumbens</i>	
Rusty staggerbush	<i>Lyonia ferruginea</i>	
Rustyseed paspalum	<i>Paspalum langei</i>	
Sago palm*	<i>Cycas revoluta</i>	
Saltmarsh fingergrass	<i>Eustachys glauca</i>	
Saltmarsh morning-glory	<i>Ipomoea sagittata</i>	
Sand blackberry	<i>Rubus cuneifolius</i>	
Sand live oak	<i>Quercus geminata</i>	
Sand pine	<i>Pinus clausa</i>	
Sandpaper vervain.....	<i>Verbena scabra</i>	
Sandspur; Ratany	<i>Krameria lanceolata</i>	
Sandyfield beaksedge.....	<i>Rhynchospora megalocarpa</i>	
Sarsaparilla vine.....	<i>Smilax pumila</i>	
Sassafras	<i>Sassafras albidum</i>	
Satincurls	<i>Clematis catesbyana</i>	
Savannah false pimpernel	<i>Lindernia grandiflora</i>	
Savannah panicum	<i>Phanopyrum gymnocarpon</i>	
Saw greenbrier.....	<i>Smilax bona-nox</i>	
Saw palmetto.....	<i>Serenoa repens</i>	
Sawtooth blackberry	<i>Rubus argutus</i>	
Scarlet rosemallow.....	<i>Hibiscus coccineus</i>	
Scrub holly	<i>Ilex opaca</i> var. <i>arenicola</i>	
Scrub palmetto.....	<i>Sabal etonia</i>	
Scurf hoarypea.....	<i>Tephrosia chrysophylla</i>	
Seaside goldenrod	<i>Solidago sempervirens</i>	
Seaside primrosewillow.....	<i>Ludwigia maritima</i>	
Sedge	<i>Carex</i> sp.....	
Sensitive briar	<i>Mimosa quadrivalvis</i>	
Seven-sisters; String-lily	<i>Crinum americanum</i>	
Shakeshake*	<i>Crotalaria incana</i>	
Shiny blueberry	<i>Vaccinium myrsinites</i>	
Shoestring fern	<i>Vittaria lineata</i>	
Shore rush; Grassleaf rush.....	<i>Juncus marginatus</i>	
Shortbristle horned beaksedge	<i>Rhynchospora corniculata</i>	
Shortleaf gayfeather	<i>Liatris tenuifolia</i>	
Shortleaf gayfeather	<i>Liatris tenuifolia</i> var. <i>quadriflora</i>	
Shortleaf rosegentian	<i>Sabatia brevifolia</i>	
Shortleaf yelloweyed grass.....	<i>Xyris brevifolia</i>	
Showy milkwort.....	<i>Polygala grandiflora</i>	
Showy rattlebox*.....	<i>Crotalaria spectabilis</i>	
Shrimpplant*	<i>Justicia brandegeana</i>	
Shrubby primrosewillow.....	<i>Ludwigia suffruticosa</i>	
Shumard's oak	<i>Quercus shumardii</i>	

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Silktree, mimosa *	<i>Albizia julibrissin</i>	
Silver buckthorn; Silver bully	<i>Sideroxylon alachuense</i>	
Silver croton; Healing croton	<i>Croton argyranthemus</i>	
Silverling	<i>Baccharis glomeruliflora</i>	
Silverthorn*	<i>Elaeagnus pungens</i>	
Sisal hemp*	<i>Agave sisalana</i>	
Sixangle foldwing	<i>Dicliptera sexangularis</i>	
Skunkvine*	<i>Paederia foetida</i>	
Skyblue lupine	<i>Lupinus diffusus</i>	
Slash pine	<i>Pinus elliottii</i>	
Slender crabgrass	<i>Digitaria filiformis</i>	
Slender fimbry	<i>Fimbristylis autumnalis</i>	
Slender goldenrod	<i>Euthamia caroliniana</i>	
Slender indiangrass	<i>Sorghastrum elliottii</i>	
Slender sandbur	<i>Cenchrus gracillimus</i>	
Slender scratchdaisy	<i>Croptilon divaricatum</i>	
Slender threeseed mercury	<i>Acalypha gracilens</i>	
Slender woodland sedge	<i>Carex digitalis</i>	
Slender woodoats	<i>Chasmanthium laxum</i>	
Small butterwort	<i>Pinguicula pumila</i>	
Small post oak	<i>Quercus margareta</i>	
Smallflower fumewort;		
Smallflower mock buckthorn	<i>Sageretia minutiflora</i>	
Smallflower pawpaw	<i>Asimina parviflora</i>	
Smallfruit beggarticks	<i>Bidens mitis</i>	
Smallfruit primrosewillow	<i>Ludwigia microcarpa</i>	
Small's skullcap	<i>Scutellaria multiglandulosa</i>	
Smooth rattlebox*	<i>Crotalaria pallida</i>	
Smooth yellow false foxglove	<i>Aureolaria flava</i>	
Snow squarestem	<i>Melanthera nivea</i>	
Soapberry	<i>Sapindus saponaria</i>	
Soda apple; Cockroachberry	<i>Solanum capsicoides</i>	
Soft rush	<i>Juncus effusus</i>	
Softhair coneflower	<i>Rudbeckia mollis</i>	
Soldier's orchid; Lawn orchid*	<i>Zeuxine strateumatica</i>	
Southern bayberry; Wax myrtle	<i>Myrica cerifera</i>	
Southern beeblossom	<i>Gaura angustifolia</i>	
Southern bogbutton	<i>Lachnocaulon beyrichianum</i>	
Southern catalpa*	<i>Catalpa bignonioides</i>	
Southern cattail	<i>Typha domingensis</i>	
Southern crabgrass	<i>Digitaria ciliaris</i>	
Southern cutgrass	<i>Leersia hexandra</i>	
Southern dewberry	<i>Rubus trivialis</i>	
Southern grape-fern	<i>Botrychium biternatum</i>	
Southern magnolia	<i>Magnolia grandiflora</i>	
Southern needleleaf	<i>Tillandsia setacea</i>	

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Southern rockbell*	<i>Wahlenbergia marginata</i>	
Southern sandbur	<i>Cenchrus echinatus</i>	
Southern waternymph	<i>Najas guadalupensis</i>	
Spadeleaf	<i>Centella asiatica</i>	
Spanish bayonet; Aloe yucca*	<i>Yucca aloifolia</i>	
Spanish daisy; Bitterweed	<i>Helenium amarum</i>	
Spanish larkspur	<i>Ipomopsis rubra</i>	
Spanish moss	<i>Tillandsia usneoides</i>	
Spanish needles	<i>Bidens bipinnata</i>	
Spanish oak; Southern red oak	<i>Quercus falcata</i>	
Sparkleberry; Farkleberry	<i>Vaccinium arboreum</i>	
Spatter-dock; Cowlily	<i>Nuphar luteum</i>	
Spatterdock; Yellow pondlily	<i>Nuphar advena</i> ssp. <i>orbiculata</i>	
Spider plant*	<i>Chlorophytum comosum</i>	
Spiny sowthistle*	<i>Sonchus aspera</i>	
Splitbeard bluestem	<i>Andropogon ternarius</i>	
Spotted beebalm	<i>Monarda punctata</i>	
Spotted sandmat	<i>Chamaesyce maculata</i>	
Spotted water hemlock	<i>Cicuta maculata</i>	
Sprenger's asparagus-fern*	<i>Asparagus aethiopicus</i>	
Springtape	<i>Sagittaria kurziana</i>	
St. Andrew's-cross	<i>Hypericum hypericoides</i>	
St. Augustinegrass*	<i>Stenotaphrum secundatum</i>	
Standingcypress;		
Starrush whitetop	<i>Rhynchospora colorata</i>	
Stickbush*	<i>Clerodendrum chinense</i>	
Stiff marsh bedstraw	<i>Galium tinctorium</i>	
Strawcolored flatsedge	<i>Cyperus strigosus</i>	
Streambank spiderlily	<i>Hymenocallis rotata</i>	
Sugarberry; Hackberry	<i>Celtis laevigata</i>	
Summer farewell	<i>Dalea pinnata</i> var. <i>adenopoda</i>	
Summer grape	<i>Vitis aestivalis</i>	
Swamp bay	<i>Persea palustris</i>	
Swamp dock	<i>Rumex verticillatus</i>	
Swamp doghobble	<i>Leucothoe racemosa</i>	
Swamp dogwood; Stiff dogwood	<i>Cornus foemina</i>	
Swamp flatsedge	<i>Cyperus distinctus</i>	
Swamp loosestrife	<i>Decodon verticillatus</i>	
Swamp milkweed	<i>Asclepias incarnata</i>	
Swamp rose	<i>Rosa palustris</i>	
Swamp tupelo	<i>Nyssa sylvatica</i> var. <i>biflora</i>	
Swamp twinflower	<i>Dyschoriste humistrata</i>	
Sweet autumn virginsbower*	<i>Clematis terniflora</i>	
Sweet everlasting	<i>Gnaphalium obtusifolium</i>	
Sweet everlasting;		
Sweet orange *	<i>Citrus sinensis</i>	

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Sweetbay	<i>Magnolia virginiana</i>	
Sweetbroom; Licoriceweed.....	<i>Scoparia dulcis</i>	
Sweetgum	<i>Liquidambar styraciflua</i>	
Sweetscent.....	<i>Pluchea odorata</i>	
Switchcane	<i>Arundinaria gigantea</i>	
Tall elephantsfoot	<i>Elephantopus elatus</i>	
Tall redtop; Purpletop tridens ...	<i>Tridens flavus</i> var. <i>flavus</i>	
Tangerine *	<i>Citrus reticulata</i>	
Tapegrass; American eelgrass ..	<i>Vallisneria americana</i>	
Taperleaf waterhorehound	<i>Lycopus rubellus</i>	
Tarflower	<i>Befaria racemosa</i>	
Texas vervain.....	<i>Verbena officinalis</i> ssp. <i>halei</i>	
Thin paspalum.....	<i>Paspalum setaceum</i>	
Threeflower ticktrefoil*	<i>Desmodium triflorum</i>	
Ticktrefoil	<i>Desmodium incanum</i>	
Tievine.....	<i>Ipomoea cordatotriloba</i>	
Torpedograss*	<i>Panicum repens</i>	
Tough bully.....	<i>Sideroxylon tenax</i>	
Trailing milkvine	<i>Matelea pubiflora</i>	
Tread-softly; Finger-rot	<i>Cnidoscolus stimulosus</i>	
Tropical bushmint*	<i>Hyptis mutabilis</i>	
Tropical flatsedge	<i>Cyperus surinamensis</i>	
Tropical girdlepod*	<i>Mitracarpus hirtus</i>	
Tropical Mexican clover*	<i>Richardia brasiliensis</i>	
Tropical puff.....	<i>Neptunia pubescens</i>	
Tropical soda apple*	<i>Solanum viarum</i>	
Tropical waterhyssop.....	<i>Bacopa innominata</i>	
Trumpet creeper.....	<i>Campsis radicans</i>	
Tuberous sword fern*.....	<i>Nephrolepis cordifolia</i>	
Turkey oak	<i>Quercus laevis</i>	
Turkey tangle fogfruit.....	<i>Phyla nodiflora</i>	
Twistedleaf goldenrod	<i>Solidago tortifolia</i>	
Twoline false foxglove	<i>Agalinis laxa</i>	
Umbrella plant*.....	<i>Cyperus involucratus</i>	
Valdivia duckweed	<i>Lemna valdiviana</i>	
Vanillaleaf.....	<i>Carphephorus odoratissimus</i>	
Variable witchgrass	<i>Dichanthelium commutatum</i>	
Variegated shell ginger*	<i>Alpinia zerumbet</i>	
Vegetable fern *.....	<i>Diplazium esculentum</i>	
Virginia buttonweed	<i>Diodia virginiana</i>	
Virginia chain fern.....	<i>Woodwardia virginica</i>	
Virginia creeper; Woodbine	<i>Parthenocissus quinquefolia</i>	
Virginia dwarfdandelion	<i>Krigia virginica</i>	
Virginia live oak.....	<i>Quercus virginiana</i>	
Virginia pepperweed.....	<i>Lepidium virginicum</i>	
Virginia plantain	<i>Plantago virginica</i>	

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Virginia snakeroot.....	<i>Aristolochia serpentaria</i>	
Virginia willow	<i>Itea virginica</i>	
Virginsbower.....	<i>Clematis virginiana</i>	
Viviparous spikerush	<i>Eleocharis vivipara</i>	
Walter's aster.....	<i>Aster walteri</i>	
Walter's aster.....	<i>Symphyotrichum walteri</i>	
Walter's groundcherry	<i>Physalis walteri</i>	
Walter's viburnum	<i>Viburnum obovatum</i>	
Wand goldenrod	<i>Solidago stricta</i>	
Warty panicgrass.....	<i>Panicum verrucosum</i>	
Warty sedge	<i>Carex verrucosa</i>	
Water cowbane	<i>Oxypolis filiformis</i>	
Water hickory	<i>Carya aquatica</i>	
Water oak.....	<i>Quercus nigra</i>	
Water spangles	<i>Salvinia minima</i>	
Water-lettuce*	<i>Pistia stratiotes</i>	
Wavyleaf noseburn	<i>Tragia urens</i>	
West Indian meadowbeauty	<i>Rhexia cubensis</i>	
Western tansymustard	<i>Descurainia pinnata</i>	
White ash.....	<i>Fraxinus americana</i>	
White clover; Dutch clover *	<i>Trifolium repens</i>	
White crownbeard; frostweed ...	<i>Verbesina virginica</i>	
White pellitory.....	<i>Parietaria praetermissa</i>	
White sweetclover *	<i>Melilotus alba</i>	
White thoroughwort	<i>Eupatorium album</i>	
Whitegrass	<i>Leersia virginica</i>	
Whitemouth dayflower.....	<i>Commelina erecta</i>	
Whitetop aster; Dixie aster	<i>Sericocarpus tortifolius</i>	
Whorled marshpennywort	<i>Hydrocotyle verticillata</i>	
Whorled milkweed	<i>Asclepias verticillata</i>	
Wicky; Hairy laurel	<i>Kalmia hirsuta</i>	
Widespread maiden fern	<i>Thelypteris kunthii</i>	
Wild coco.....	<i>Eulophia alta</i>	
Wild coffee.....	<i>Psychotria nervosa</i>	
Wild olive	<i>Osmanthus americanus</i>	
Wild pennyroyal.....	<i>Piloblepharis rigida</i>	
Wild taro; Dasheen; Coco yam *	<i>Colocasia esculenta</i>
Willow-herb;		
Winged elm	<i>Ulmus alata</i>	
Wiregrass	<i>Aristida beyrichiana</i>	
Wood spurge.....	<i>Euphorbia commutata</i>	
Woodland lettuce.....	<i>Lactuca floridana</i>	
Woodland poppymallow	<i>Callirhoe papaver</i>	
Woodsgrass; Basketgrass	<i>Oplismenus hirtellus</i>	
Woolly pawpaw; Polecat bush...	<i>Asimina incana</i>	

Silver Springs State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Yankeeeweed	<i>Eupatorium compositifolium</i>	
Yaupon	<i>Ilex vomitoria</i>	
Yellow anisetree	<i>Illicium parviflorum</i>	
Yellow bristlegrass	<i>Setaria parviflora</i>	
Yellow hatpins	<i>Syngonanthus flavidulus</i>	
Yellow jessamine	<i>Gelsemium sempervirens</i>	
Yellow passionflower	<i>Passiflora lutea</i>	
Yellow thistle	<i>Cirsium horridulum</i>	
Yellowleaf hawthorn	<i>Crataegus flava</i>	
Yerba de jicotea	<i>Ludwigia erecta</i>	
Yew plum pine*	<i>Podocarpus macrophyllus</i>	
Zigzag bladderwort	<i>Utricularia subulata</i>	

Silver Springs State Park- Animals

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
ANIMALS		
FISH		
American eel	<i>Anguilla rostrata</i>	
Armored catfish*	<i>Pterygoplichthys disjunctivus</i>	
Black crappie	<i>Pomoxis nigromaculatus</i>	
Blackbanded darter	<i>Percina nigrofasciata</i>	
Bluefin killifish	<i>Lucania goodei</i>	
Bluegill.....	<i>Lepomis macrochirus</i>	
Bowfin	<i>Amia calva</i>	
Brook silverside	<i>Labidesthes sicculus</i>	
Chain pickerel	<i>Esox niger</i>	
Channel catfish.....	<i>Ictalurus punctatus</i>	
Coastal shiner	<i>Notropis petersoni</i>	
Eastern mosquitofish.....	<i>Gambusia holbrooki</i>	
Florida gar	<i>Lepisosteus platyrhincus</i>	
Gizzard shad	<i>Dorosoma cepedianum</i>	
Golden shiner.....	<i>Notemigonus crysoleucas</i>	
Golden topminnow	<i>Fundulus chrysotus</i>	
Lake chubsucker.....	<i>Erimyzon sucetta</i>	
Largemouth bass	<i>Micropterus salmoides</i>	
Least killifish	<i>Heterandria formosa</i>	
Lined topminnow	<i>Fundulus lineolatus</i>	
Longnose gar	<i>Lepisosteus osseus</i>	
Okefenokee pygmy sunfish	<i>Elassoma okefenokee</i>	
Pugnose minnow	<i>Opsopoeodus emiliae</i>	
Pygmy killifish	<i>Leptolucania ommata</i>	
Rainwater killifish	<i>Lucania parva</i>	
Redbreast sunfish	<i>Lepomis auritus</i>	
Redear sunfish	<i>Lepomis microlophus</i>	
Redeye chub	<i>Notropis harperi</i>	
Redfin needlefish	<i>Strongylura notata</i>	
Sailfin molly	<i>Poecilia latipinna</i>	
Sailfin shiner.....	<i>Notropis hypselopterus</i>	
Snail bullhead	<i>Ameiurus brunneus</i>	
Spotted sunfish	<i>Lepomis punctatus</i>	
Swamp darter	<i>Etheostoma fusiforme</i>	
Tadpole madtom	<i>Noturus gyrinus</i>	
Tilapia*	<i>Oreochromis</i> sp.	
Threadfin shad	<i>Dorosoma petenense</i>	
Vermiculated sailfin catfish*.....	<i>Pterygoplichthys disjunctivus</i>	
Warmouth	<i>Lepomis gulosus</i>	
White catfish.....	<i>Ameiurus catus</i>	
Yellow bullhead	<i>Ameiurus natalis</i>	

Silver Springs State Park- Animals

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
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INVERTEBRATES

Molluscs

Asian clam* *Corbicula fluminea*

Insects

Ambrosia beetle *Ambrosiodmus devexulus*

Caddisfly *Ceraclea transversa*

Caddisfly *Cernotina calcea*

Caddisfly *Cheumatopsyche burksi*

Caddisfly *Cheumatopsyche pinaca*

Caddisfly *Hydropsyche rossi*

Caddisfly *Hydropsyche wakulla*

Caddisfly *Ochrotrichia tarsalis*

Caddisfly *Oecetis avara*

Caddisfly *Oecetis cinerascens*

Caddisfly *Oecetis inconspicua*

Caddisfly *Oecetis persimilis*

Caddisfly *Orthotrichia dentata*

Caddisfly *Oxyethira janella*

Caddisfly *Triaenodes helo*

Caddisfly *Triaenodes ignitus*

Carolina satyr *Hermeuptychia sosybius*

Ceraunus blue *Hemiarthus ceraunus antibubastus*

Common buckeye *Junonia coenia*

Confused cloudywing *Thorybes confusis*

Cotton rat flea* *Polygenis gwyni*

Death-watch beetle *Priobium sericeum*

Eastern pondhawk *Erythemis simplicicollis*

Eastern tiger swallowtail *Papilio glaucus australis*

False click beetle *Isorhipis nubila*

Flea beetle *Altica* sp.

Gulf fritillary *Agraulis vanillae nigrior*

Hackberry emperor *Asterocampa celtis alicia*

Horace's duskywing *Erynnis horatius*

Ladybird beetle *Brachiacantha dentipes*

Lawn midge *Dicrotendipes neomodestus*

Longhorned caddisfly *Leptocerus americanus*

Metallic wood-boring beetle *Chrysobothris femoralis* complex

Midge *Ablabesmyia mallochi*

Midge *Cricotopus bicinctus*

Midge *Labrudinia johannseni*

Midge *Microtendipes pedellus*

Midge *Polypedilium illinoense*

Midge *Rheotanytarsus exiguus*

Silver Springs State Park- Animals

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Midge.....	<i>Stenochironomus maceteei</i>	
Midge.....	<i>Tanytarsus buckleyi</i>	
Midge.....	<i>Tanytarsus pathudsoni</i>	
Midge.....	<i>Tribelos fuscicorne</i>	
Needham's skipper	<i>Libellula needhami</i>	
Non-biting midge.....	<i>Pseudochironomus</i> sp.	
Palamedes swallowtail	<i>Papilio palamedes</i>	
Pipevine swallowtail	<i>Battus philenor philenor</i>	
Queen butterfly	<i>Danaus gilippus berenice</i>	
Red-banded hairstreak	<i>Calycopis cecrops</i>	
Red-spotted purple	<i>Limenitis arthemis astyanax</i>	
Root-eating beetle	<i>Thione championi</i>	
Snout beetle	<i>Cophes oblongus</i>	
Southern oak hairstreak	<i>Satyrium favonius</i>	
Swamp darner.....	<i>Epiaschna heros</i>	
Two-lined chestnut borer	<i>Agrilus bilineatus</i>	
White M hairstreak.....	<i>Parrhasius m-album m-album</i>	
Willow leaf beetle	<i>Chrysomela interrupta</i>	
Zebra swallowtail.....	<i>Eurytides marcellus floridensis</i>	

VERTEBRATES

AMPHIBIANS

Bronze frog.....	<i>Rana clamitans clamitans</i>
Bullfrog	<i>Rana catesbeiana</i>
Florida leopard frog.....	<i>Rana utricularia sphenocephala</i>
Lesser siren	<i>Siren intermedia</i>
Narrow-striped dwarf siren.....	<i>Pseudobranchus striatus axanthus</i>
Pig frog	<i>Rana grylio</i>
Pine woods treefrog	<i>Hyla femoralis</i>
River frog	<i>Rana heckscheri</i>
Southern cricket frog.....	<i>Acris gryllus gryllus</i>
Southern spring peeper	<i>Pseudacris crucifer bartramiana</i>

REPTILES

American alligator.....	<i>Alligator mississippiensis</i>
Banded water snake.....	<i>Nerodia fasciata fasciata</i>
Broadheaded skink	<i>Eumeces laticeps</i>
Brown anole *.....	<i>Anolis sagrei</i>
Brown water snake	<i>Nerodia taxispilota</i>
Common musk turtle.....	<i>Sternotherus odoratus</i>
Corn snake	<i>Elaphe guttata guttata</i>

Silver Springs State Park- Animals

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Eastern coachwhip	<i>Masticophis flagellum flagellum</i>	
Eastern coral snake.....	<i>Micruurus fulvius fulvius</i>	
Eastern cottonmouth.....	<i>Agkistrodon piscivorus piscivorus</i>	
Eastern diamondback rattlesnake.....	<i>Crotalus adamanteus</i>	
Eastern indigo snake	<i>Drymarchon corais couperi</i>	
Eastern mud snake	<i>Farancia abacura abacura</i>	
Florida box turtle	<i>Terrapene carolina bauri</i>	
Florida kingsnake.....	<i>Lampropeltis getula floridana</i>	
Florida mud turtle	<i>Kinosternon subrubrum steindachneri</i>	
Florida pine snake.....	<i>Pituophis melanoleucus mugitus</i>	
Florida redbelly turtle	<i>Pseudemys nelsoni</i>	
Florida snapping turtle.....	<i>Chelydra serpentina osceola</i>	
Florida softshell	<i>Apalone ferox</i>	
Gopher tortoise	<i>Gopherus polyphemus</i>	
Green anole	<i>Anolis carolinensis carolinensis</i>	
Ground skink	<i>Scincella lateralis</i>	
Loggerhead musk turtle	<i>Sternotherus minor minor</i>	
Peninsula ribbon snake	<i>Thamnophis sauritus sackeni</i>	
Rainbow snake	<i>Farancia erytrogramma erytrogramma</i>	
Rough earth snake.....	<i>Virginia striatula</i>	
Scarlet kingsnake	<i>Lampropeltis triangulum elapsoides</i>	
Short-tailed snake	<i>Stilosoma extenuatum</i>	
Six-lined racerunner.....	<i>Cnemidophorus sexlineatus sexlineatus</i>	
Southern black racer	<i>Coluber constrictor priapus</i>	
Southern fence lizard	<i>Sceloporus undulatus undulatus</i>	
Suwannee river cooter.....	<i>Pseudemys concinna suwanniensis</i>	
Yellow rat snake	<i>Elaphe obsoleta quadrivittata</i>	

BIRDS

Acadian Flycatcher	<i>Empidonax virescens</i>
American Avocet.....	<i>Recurvirostra americana</i>
American Bittern.....	<i>Botaurus lentiginosus</i>
American Coot	<i>Fulica americana</i>
American Crow	<i>Corvus brachyrhynchos</i>
American Goldfinch	<i>Carduelis tristis</i>
American Kestrel	<i>Falco sparverius</i>
American Robin	<i>Turdus migratorius</i>
American Woodcock.....	<i>Scolopax minor</i>
Anhinga	<i>Anhinga anhinga</i>
Bald Eagle.....	<i>Haliaeetus leucocephalus</i>
Barn Swallow	<i>Hirundo rustica</i>
Barred Owl	<i>Strix varia</i>
Belted Kingfisher	<i>Ceryle alcyon</i>

Silver Springs State Park- Animals

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Black Vulture	<i>Coragyps atratus</i>	
Black-and-white Warbler.....	<i>Mniotilla varia</i>	
Black-crowned Night-Heron.....	<i>Nycticorax nycticorax</i>	
Black-necked Stilt.....	<i>Himantopus mexicanus</i>	
Blue Jay	<i>Cyanocitta cristata</i>	
Blue-gray Gnatcatcher.....	<i>Polioptila caerulea</i>	
Boat-tailed Grackle	<i>Quiscalus major</i>	
Brown Thrasher.....	<i>Toxostoma rufum</i>	
Carolina Chickadee	<i>Parus carolinensis</i>	
Carolina Wren	<i>Thryothorus ludovicianus</i>	
Cattle Egret	<i>Bubulcus ibis</i>	
Cedar Waxwing	<i>Bombycilla cedrorum</i>	
Chimney Swift.....	<i>Chaetura pelasgica</i>	
Chuck-will's-widow.....	<i>Caprimulgus carolinensis</i>	
Common Grackle	<i>Quiscalus quiscula</i>	
Common Moorhen.....	<i>Gallinula chloropus</i>	
Common Nighthawk	<i>Chordeiles minor</i>	
Cooper's Hawk	<i>Accipiter cooperii</i>	
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	
Downy Woodpecker	<i>Picoides pubescens</i>	
Eastern Phoebe	<i>Sayornis phoebe</i>	
Eastern Towhee.....	<i>Pipilo erythrorththalmus</i>	
Fish Crow	<i>Corvus ossifragus</i>	
Glossy Ibis.....	<i>Plegadis falcinellus</i>	
Gray Catbird	<i>Dumetella carolinensis</i>	
Great Blue Heron.....	<i>Ardea herodias</i>	
Great Crested Flycatcher.....	<i>Myiarchus crinitus</i>	
Great Egret.....	<i>Ardea alba</i>	
Green Heron	<i>Butorides virescens</i>	
Green-winged Teal.....	<i>Anas crecca</i>	
Hairy Woodpecker.....	<i>Picoides villosus</i>	
Hermit Thrush.....	<i>Catharus guttatus</i>	
Least Bittern	<i>Ixobrychus exilis</i>	
Limpkin.....	<i>Aramus guarauna</i>	
Little Blue Heron.....	<i>Egretta caerulea</i>	
Mottled Duck.....	<i>Anas fulvigula</i>	
Mourning Dove	<i>Zenaida macroura</i>	
Northern Bobwhite.....	<i>Colinus virginianus</i>	
Northern Cardinal	<i>Cardinalis cardinalis</i>	
Northern Flicker.....	<i>Colaptes auratus</i>	
Northern Mockingbird	<i>Mimus polyglottos</i>	
Northern Parula	<i>Parula americana</i>	
Osprey	<i>Pandion haliaetus</i>	
Pied-billed Grebe	<i>Podilymbus podiceps</i>	
Pileated Woodpecker	<i>Dryocopus pileatus</i>	
Pine Warbler	<i>Dendroica pinus</i>	

Silver Springs State Park- Animals

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Prairie Warbler	<i>Dendroica discolor</i>	
Prothonotary Warbler	<i>Protonotaria citrea</i>	
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	
Red-eyed Vireo	<i>Vireo olivaceus</i>	
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	
Red-shouldered Hawk	<i>Buteo lineatus</i>	
Red-tailed Hawk	<i>Buteo jamaicensis</i>	
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	
Ruby-crowned Kinglet	<i>Regulus calendula</i>	
Sandhill Crane	<i>Grus canadensis</i>	
Sharp-shinned Hawk	<i>Accipiter striatus</i>	
Snowy Egret	<i>Egretta thula</i>	
Southeastern American Kestrel	<i>Falco sparverius paulus</i>	
Summer Tanager	<i>Piranga rubra</i>	
Swallow-tailed Kite	<i>Elanoides forficatus</i>	
Thick-billed Murre	<i>Uria lomvia</i>	
Tree Swallow	<i>Tachycineta bicolor</i>	
Tricolored Heron	<i>Egretta tricolor</i>	
Tufted Titmouse	<i>Parus bicolor</i>	
Turkey Vulture	<i>Cathartes aura</i>	
White Ibis	<i>Eudocimus albus</i>	
White-eyed Vireo	<i>Vireo griseus</i>	
Wild Turkey	<i>Meleagris gallopavo</i>	
Wood Duck	<i>Aix sponsa</i>	
Wood Stork	<i>Mycteria americana</i>	
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	
Yellow-rumped Warbler	<i>Dendroica coronata</i>	
Yellow-throated Vireo	<i>Vireo flavifrons</i>	
Yellow-throated Warbler	<i>Dendroica dominica</i>	

MAMMALS

Bobcat	<i>Felis rufus</i>
Coyote *	<i>Canis latrans</i>
Eastern cottontail	<i>Sylvilagus floridanus</i>
Eastern mole	<i>Scalopus aquaticus</i>
Eastern pipistrelle	<i>Pipistrellus subflavus</i>
Feral hog *	<i>Sus scrofa</i>
Florida black bear	<i>Ursus americanus floridanus</i>
Florida manatee	<i>Trichechus manatus</i>
Fox squirrel	<i>Sciurus niger</i>
Gray fox	<i>Urocyon cinereoargenteus</i>
Gray squirrel	<i>Sciurus carolinensis</i>
Marsh rabbit	<i>Sylvilagus palustris</i>
Nine-banded armadillo *	<i>Dasypus novemcinctus</i>

Silver Springs State Park- Animals

Common Name	Scientific Name	Primary Habitat Codes (for imperiled species)
Raccoon	<i>Procyon lotor</i>	
Red bat.....	<i>Lasiurus borealis</i>	
River otter.....	<i>Lutra canadensis</i>	
Southeastern myotis	<i>Myotis austroriparius</i>	
Southeastern pocket gopher.....	<i>Geomys pinetis</i>	
Southern flying squirrel	<i>Glaucomys volans</i>	
Striped skunk.....	<i>Mephitis mephitis</i>	
Virginia opossum	<i>Didelphis virginiana</i>	
White-tailed deer.....	<i>Odocoileus virginianus</i>	

Primary Habitat Codes

TERRESTRIAL

Beach Dune	BD
Coastal Berm	CB
Coastal Grassland	CG
Coastal Strand	CS
Dry Prairie	DP
Keys Cactus Barren.....	KCB
Limestone Outcrop.....	LO
Maritime Hammock.....	MAH
Mesic Flatwoods	MF
Mesic Hammock	MEH
Pine Rockland	PR
Rockland Hammock.....	RH
Sandhill.....	SH
Scrub.....	SC
Scrubby Flatwoods.....	SCF
Shell Mound	SHM
Sinkhole.....	SK
Slope Forest	SPF
Upland Glade	UG
Upland Hardwood Forest.....	UHF
Upland Mixed Woodland.....	UMW
Upland Pine	UP
Wet Flatwoods.....	WF
Xeric Hammock	XH

PALUSTRINE

Alluvial Forest	AF
Basin Marsh	BM
Basin Swamp	BS
Baygall.....	BG
Bottomland Forest	BF
Coastal Interdunal Swale	CIS
Depression Marsh	DM
Dome Swamp	DS
Floodplain Marsh	FM
Floodplain Swamp.....	FS
Glades Marsh	GM
Hydric Hammock	HH
Keys Tidal Rock Barren.....	KTRB
Mangrove Swamp	MS
Marl Prairie	MP
Salt Marsh	SAM
Seepage Slope	SSL
Shrub Bog	SHB
Slough	SLO
Slough Marsh	SLM

Primary Habitat Codes

Strand Swamp	STS
Wet Prairie.....	WP

LACUSTRINE

Clastic Upland Lake.....	CULK
Coastal Dune Lake	CDLK
Coastal Rockland Lake.....	CRLK
Flatwoods/Prairie	FPLK
Marsh Lake	MLK
River Floodplain Lake	RFLK
Sandhill Upland Lake.....	SULK
Sinkhole Lake.....	SKLK
Swamp Lake	SWLK

RIVERINE

Alluvial Stream.....	AST
Blackwater Stream.....	BST
Seepage Stream.....	SST
Spring-run Stream.....	SRST

SUBTERRANEAN

Aquatic Cave.....	ACV
Terrestrial Cave.....	TCV

ESTUARINE

Algal Bed.....	EAB
Composite Substrate.....	ECPS
Consolidated Substrate.....	ECNS
Coral Reef	ECR
Mollusk Reef	EMR
Octocoral Bed.....	EOB
Seagrass Bed	ESGB
Sponge Bed	ESPB
Unconsolidated Substrate	EUS
Worm Reef	EWR

Primary Habitat Codes

MARINE

Algal Bed.....	MAB
Composite Substrate.....	MCPS
Consolidated Substrate.....	MCNS
Coral Reef	MCR
Mollusk Reef	MMR
Octocoral Bed.....	MOB
Seagrass Bed	MSGB
Sponge Bed	MSPB
Unconsolidated Substrate	MUS
Worm Reef	MWR

ALTERED LANDCOVER TYPES

Abandoned field.....	ABF
Abandoned pasture	ABP
Agriculture.....	AG
Canal/ditch	CD
Clearcut pine plantation.....	CPP
Clearing	CL
Developed	DV
Impoundment/artificial pond	IAP
Invasive exotic monoculture.....	IEM
Pasture - improved	PI
Pasture - semi-improved.....	PSI
Pine plantation	PP
Road.....	RD
Spoil area	SA
Successional hardwood forest.....	SHF
Utility corridor	UC

MISCELLANEOUS

Many Types of Communities.....	MTC
Overflying.....	OF

Addendum 5—Imperiled Species Ranking Definitions

Imperiled Species Ranking Definitions

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

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

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

FNAI GLOBAL RANK DEFINITIONS

- G1..... Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or fabricated factor.
- G2..... Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
- G3..... Either very rare or local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.
- G4..... apparently secure globally (may be rare in parts of range)
- G5..... demonstrably secure globally
- GH of historical occurrence throughout its range may be rediscovered (e.g., ivory-billed woodpecker)
- GX..... believed to be extinct throughout range
- GXC..... extirpated from the wild but still known from captivity or cultivation
- G#?..... Tentative rank (e.g., G2?)
- G#G# range of rank; insufficient data to assign specific global rank (e.g., G2G3)
- G#T# rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1)
- G#Q rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q)

Imperiled Species Ranking Definitions

G#T#Q same as above, but validity as subspecies or variety is questioned.

GU due to lack of information, no rank or range can be assigned (e.g., GUT2).

G? Not yet ranked (temporary)

S1 Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.

S2 Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.

S3 Either very rare or local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.

S4 apparently secure in Florida (may be rare in parts of range)

S5 demonstrably secure in Florida

SH of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)

SX believed to be extinct throughout range

SA accidental in Florida, i.e., not part of the established biota

SE an exotic species established in Florida may be native elsewhere in North America

SN regularly occurring but widely and unreliably distributed; sites for conservation hard to determine

SU due to lack of information, no rank or range can be assigned (e.g., SUT2).

S? Not yet ranked (temporary)

N Not currently listed, nor currently being considered for listing, by state or federal agencies.

LEGAL STATUS

FEDERAL

(Listed by the U. S. Fish and Wildlife Service - USFWS)

LE Listed as Endangered Species in the List of Endangered and Threatened Wildlife and Plants under the provisions of the Endangered Species Act. Defined as any species that is in danger of extinction throughout all or a significant portion of its range.

PE Proposed for addition to the List of Endangered and Threatened Wildlife and Plants as Endangered Species.

LT Listed as Threatened Species. Defined as any species that is likely to become an endangered species within the near future throughout all or a significant portion of its range.

PT Proposed for listing as Threatened Species.

C Candidate Species for addition to the list of Endangered and Threatened Wildlife and Plants. Defined as those species for which the USFWS currently has on file sufficient information on biological

Imperiled Species Ranking Definitions

vulnerability and threats to support proposing to list the species as endangered or threatened.

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

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

EXPE, XE Experimental essential population. A species listed as experimental and essential.

EXPN, XN ... Experimental non-essential population. A species listed as experimental and non-essential. Experimental, nonessential populations of endangered species are treated as threatened species on public land, for consultation purposes.

STATE

ANIMALS .. (Listed by the Florida Fish and Wildlife Conservation Commission - FWC)

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

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

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

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

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

Imperiled Species Ranking Definitions

Addendum 6—Cultural Information

These procedures apply to state agencies, local governments, and non-profits that manage state-owned properties.

A. General Discussion

Historic resources are both archaeological sites and historic structures. Per Chapter 267, Florida Statutes, '*Historic property*' or '*historic resource*' means any prehistoric district, site, building, object, or other real or personal property of historical, architectural, or archaeological value, and folklife resources. These properties or resources may include, but are not limited to, monuments, memorials, Indian habitations, ceremonial sites, abandoned settlements, sunken or abandoned ships, engineering works, treasure trove, artifacts, or other objects with intrinsic historical or archaeological value, or any part thereof, relating to the history, government, and culture of the state."

B. Agency Responsibilities

Per State Policy relative to historic properties, state agencies of the executive branch must allow the Division of Historical Resources (Division) the opportunity to comment on any undertakings, whether these undertakings directly involve the state agency, i.e., land management responsibilities, or the state agency has indirect jurisdiction, i.e. permitting authority, grants, etc. No state funds should be expended on the undertaking until the Division has the opportunity to review and comment on the project, permit, grant, etc.

State agencies shall preserve the historic resources which are owned or controlled by the agency.

Regarding proposed demolition or substantial alterations of historic properties, consultation with the Division must occur, and alternatives to demolition must be considered.

State agencies must consult with Division to establish a program to location, inventory and evaluate all historic properties under ownership or controlled by the agency.

C. Statutory Authority

Statutory Authority and more in depth information can be found at:
<http://www.flheritage.com/preservation/compliance/guidelines.cfm>

D. Management Implementation

Even though the Division sits on the Acquisition and Restoration Council and approves land management plans, these plans are conceptual. Specific information regarding individual projects must be submitted to the Division for review and recommendations.

Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties (revised March 2013)

Managers of state lands must coordinate any land clearing or ground disturbing activities with the Division to allow for review and comment on the proposed project. Recommendations may include, but are not limited to: approval of the project as submitted, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effects.

Projects such as additions, exterior alteration, or related new construction regarding historic structures must also be submitted to the Division of Historical Resources for review and comment by the Division's architects. Projects involving structures fifty years of age or older, must be submitted to this agency for a significance determination. In rare cases, structures under fifty years of age may be deemed historically significant. These must be evaluated on a case by case basis.

Adverse impacts to significant sites, either archaeological sites or historic buildings, must be avoided. Furthermore, managers of state property should make preparations for locating and evaluating historic resources, both archaeological sites and historic structures.

E. Minimum Review Documentation Requirements

In order to have a proposed project reviewed by the Division, certain information must be submitted for comments and recommendations. The minimum review documentation requirements can be found at:

http://www.flheritage.com/preservation/compliance/docs/minimum_review_documentation_requirements.pdf .

* * *

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

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

Phone: (850) 245-6425

Toll Free: (800) 847-7278
Fax: (850) 245-6435

Eligibility Criteria for National Register of Historic Places

The criteria to be used for evaluating eligibility for listing in the National Register of Historic Places are as follows:

- 1)** Districts, sites, buildings, structures, and objects may be considered to have significance in American history, architecture, archaeology, engineering, and/or culture if they possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
 - a)** are associated with events that have made a significant contribution to the broad patterns of our history; and/or
 - b)** are associated with the lives of persons significant in our past; and/or
 - c)** embody the distinctive characteristics of type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; and/or
 - d)** have yielded, or may be likely to yield, information important in prehistory or history.
- 2)** Ordinarily cemeteries, birthplaces, or graves of historical figures; properties owned by religious institutions or used for religious purposes; structures that have been moved from their original locations; reconstructed historic buildings; properties primarily commemorative in nature; and properties that have achieved significance within the past 50 years shall not be considered eligible for the *National Register*. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:
 - a)** a religious property deriving its primary significance from architectural or artistic distinction or historical importance; or
 - b)** a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
 - c)** a birthplace or grave of an historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life; or
 - d)** a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, distinctive design features, or association with historic events; or

Eligibility Criteria for National Register of Historic Places

- e)** a reconstructed building, when it is accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and no other building or structure with the same association has survived; or a property primarily commemorative in intent, if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or
- f)** a property achieving significance within the past 50 years, if it is of exceptional importance.

Preservation Treatments as Defined by Secretary of Interior's Standards and Guidelines

Restoration is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.

Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations and additions while preserving those portions or features that convey its historical, cultural or architectural values.

Stabilization is defined as the act or process of applying measures designed to reestablish a weather resistant enclosure and the structural stability of an unsafe or deteriorated property while maintaining the essential form as it exists at present.

Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project.

Preservation Treatments as Defined by Secretary of Interior's Standards and Guidelines

Silver River State Park

Unit Management Plan

APPROVED PLAN

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Division of Recreation and Parks
December 10, 2010



Florida Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Mimi A. Drew
Secretary

December 10, 2010

Ms. BryAnne White
Office of Park Planning
Division of Recreation and Parks
3900 Commonwealth Blvd.
Tallahassee, Florida 32399-3000

RE: Silver River State Park

Dear Ms. White:

The Division of State Lands, Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, hereby approves the Silver River State Park management plan. The next management plan update is due December 10, 2020.

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

Sincerely,

Marianne

Marianne S. Gengenbach
Office of Environmental Services
Division of State Lands

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INTRODUCTION

Silver River State Park is located in central Marion County about seven miles northeast of downtown Ocala (see Vicinity Map). Access to the park is from Baseline Road (State Road 35) approximately one mile south of State Road 40 (see Reference Map). In addition, the Vicinity Map reflects significant land and water resources existing near the park.

The initial acquisition of the Silver River State Park occurred in 1985, and funded through the Conservation and Recreation Lands (CARL) program. Currently, the park contains 4,230.06 acres. Funds from the CARL, Preservation 2000 (P2000) and Acquisition and Inholdings programs provided for acquisition of additional property. Marion County acquired a 220-acre parcel using funds from the Florida Community Trust. After acquisition, Marion County leased the property to the Division of Recreation and Parks (Division) for management as part of the park (see Addendum 1).

At Silver River State Park, public outdoor recreation and conservation is the designated single use of the property. There are no legislative or executive directives that constrain the use of this property.

PURPOSE AND SIGNIFICANCE OF THE PARK

The purpose of Silver River State Park is to conserve and protect the natural value of the Silver River and its headwaters, Silver Springs, for the benefit of the people of Florida. Silver River State Park is significant due to Silver Springs, one of Florida's largest first magnitude springs and one of the largest limestone springs in the world. Silver Springs has also served as the center of one of Florida's most popular privately operated tourist attractions for over one hundred years.

The uplands surrounding the Silver River contain a striking diversity of highly significant archaeological sites that represent periods of Florida's history from the Paleo-Indian to the Seminole War era. Park lands support a significant population of Florida pinkroot (*Spigelia loganioides*), an endangered plant species and provide important habitat for a variety of other imperiled plants and animals including Florida gopher tortoise (*Gopherus polyphemus*), Florida black bear (*Ursus americanus floridanus*), Silver buckthorn (*Sideroxylon alachuense*) and Godfrey's swamp privet (*Forestiera godfreyi*).

In the Division's unit classification system, Silver River State Park is classified as a state park. The Division seeks balance in the management of a state park, between the goals of maintaining and enhancing natural conditions, and providing public outdoor recreational opportunities. Natural resource management activities involve the management of natural systems. Park development provides public access and recreational facilities that are convenient, safe and compatible with existing resources.

Program emphasis is on interpretation of the park's natural, aesthetic and educational attributes.

PURPOSE AND SCOPE OF THE PLAN

This plan serves as the basic statement of policy and direction for the management of Silver River State Park as a unit of Florida's state park system. It identifies the goals, objectives, actions, criteria and standards that guide each aspect of park administration, and identifies specific measures for implementation of management objectives. The plan meets the requirements of Sections 253.034 and 259.032, Florida Statutes, Chapter 18-2, Florida Administrative Code, and is consistent with the State Lands Management Plan. With approval, this management plan will replace the 2002 approved plan.

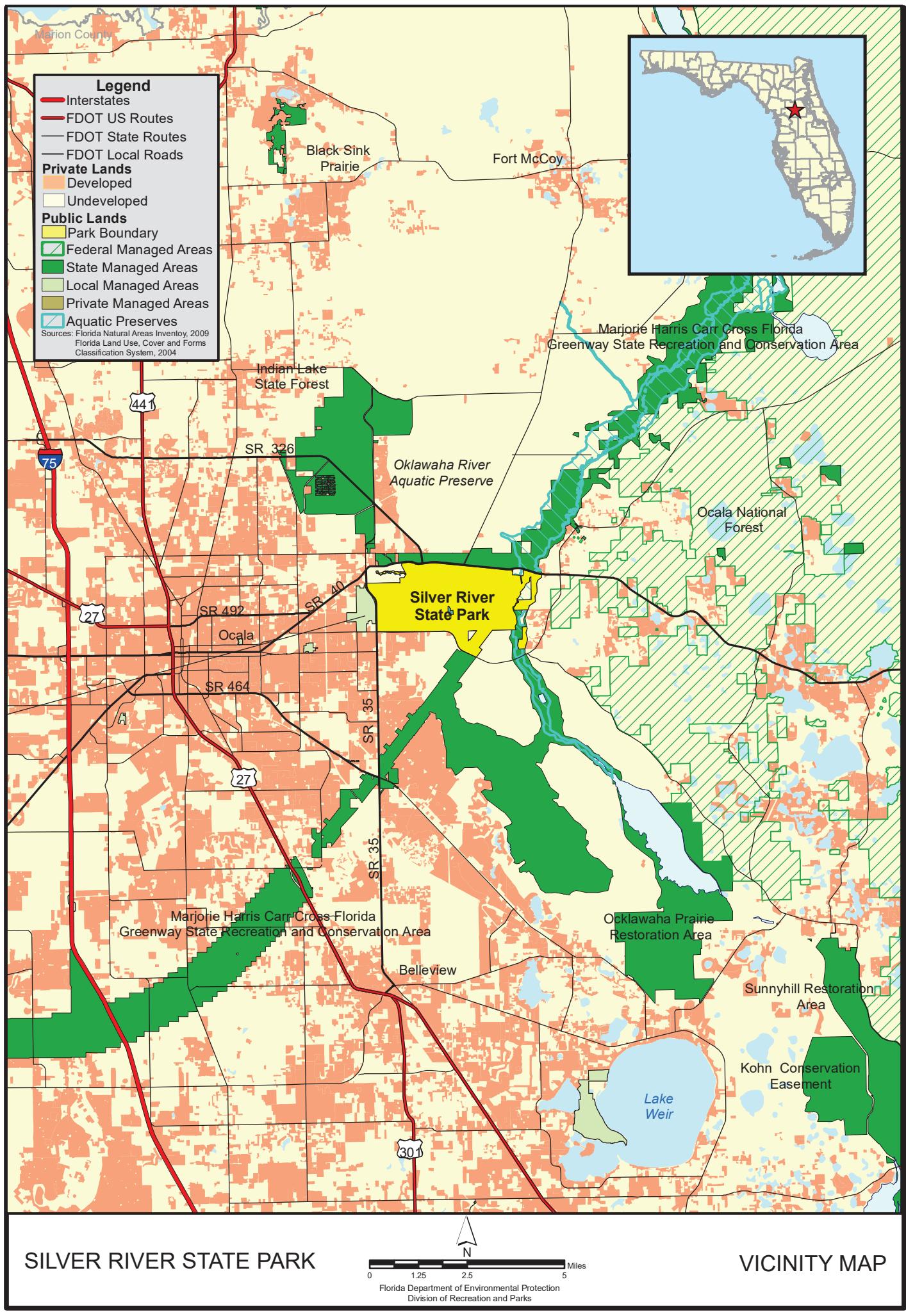
The plan consists of three interrelated components: the Resource Management Component, the Land Use Component and the Implementation Component. The Resource Management Component provides a detailed inventory and assessment of the natural and cultural resources of the park. In addition, this component identifies resource management problems and needs, and establishes measurable management objectives for each of the park's management goals according to resource type. The Resource Management Component also provides guidance on the application of such measures as prescribed burning, exotic species removal, imperiled species management, cultural resource management and restoration of natural conditions.

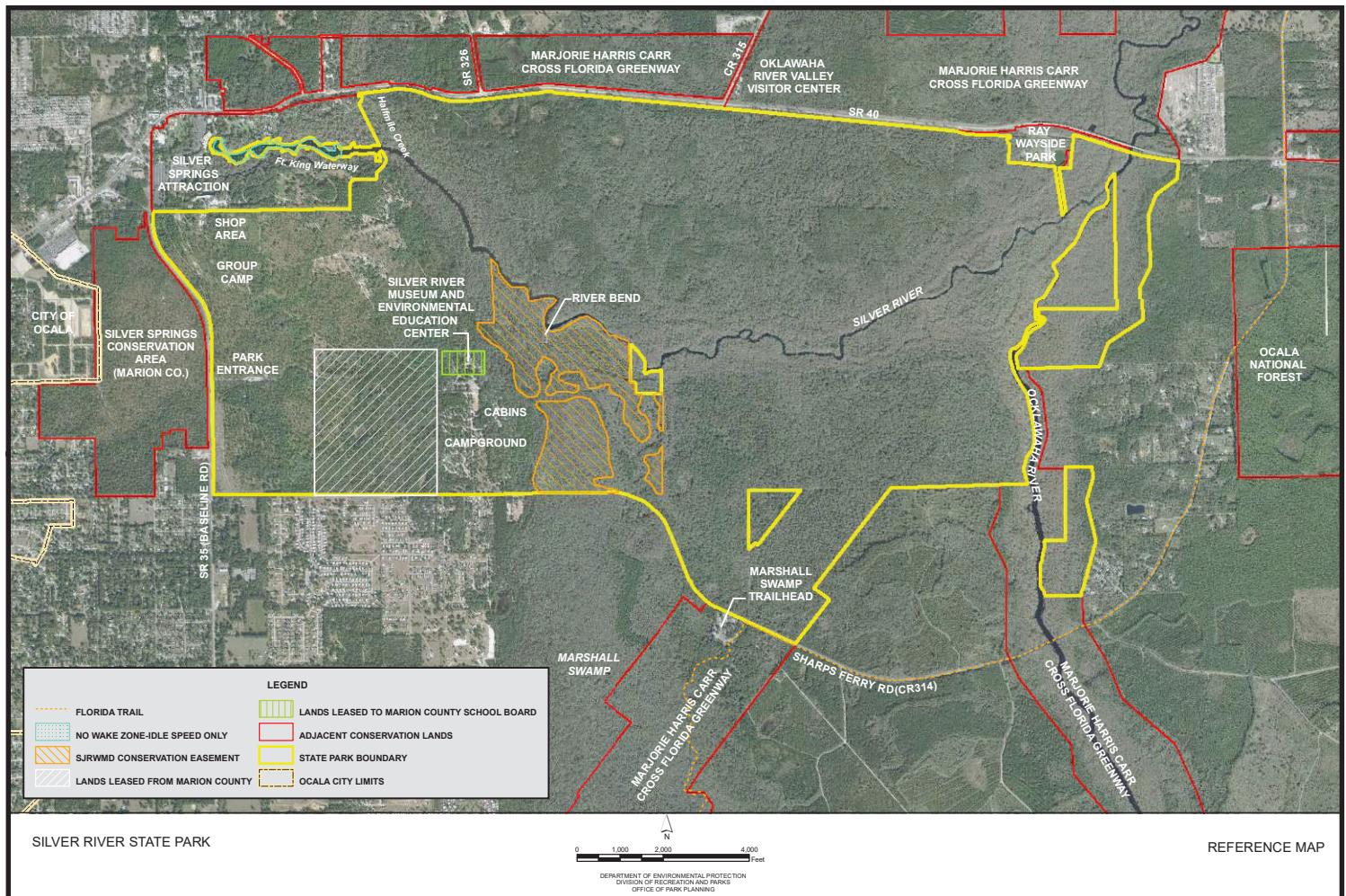
The Land Use Component allocates the park's recreational resources, determines the volume of public use, and develops the park's physical plan. During development of the Land Use Component, intrinsic factors such as access, population, adjacent land uses, natural and cultural resources, current public uses, and existing park development are considered. Measurable objectives are established to expand recreational opportunities and to develop or improve use areas, facilities and programs.

The Implementation Component consolidates the measurable objectives and actions for each of the park's management goals. An implementation schedule and cost estimates are included for each objective and action. Included in the table (1) measures used to evaluate the Division's implementation progress, (2) timeframes for completing actions and objectives, and (3) a general estimate of costs to complete each action and objective.

All development and resource alterations proposed in this plan is subject to the granting of appropriate permits, easements, licenses, and other required legal instruments. Approval of the management plan does not constitute an exemption from complying with appropriate local, state or federal agencies.

In the development of this plan, the Division analyzed the potential and ability to accommodate secondary management purposes within the park. Considerations given to secondary management purposes are within the context of the Division's statutory





responsibilities and the resource needs and values of the park. This analysis considered the park's natural and cultural resources, management needs, aesthetic values, visitor experiences and visitation. For this park, it was determined that no secondary management purposes could be accommodated in a manner that would not interfere with the park's primary purpose of resource-based outdoor recreation and conservation. Uses such as water resource development projects, water supply projects, storm water management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of the park.

Visitor fees and charges are the principal source of revenue generated by the park. The Division analyzed the feasibility of the park to generate revenue to enhance management; however, it was determined that multiple-use management activities would not be appropriate as a means of generating revenues for land management. On a case-by-case basis, the Division evaluates strategies to supplement park funding and include, but are not limited to, fees, concessions and similar measures.

The Division analyzed the use of private land managers to facilitate restoration and management of this park. Decisions regarding this type of management (such as outsourcing, contracting with the private sector, use of volunteers, etc.) are determined on a case-by-case basis as necessity dictates.

MANAGEMENT PROGRAM OVERVIEW

Management Authority and Responsibility

In accordance with Chapter 258, Florida Statutes and Chapter 62D-2, Florida Administrative Code, the Division has the responsibility of developing and operating Florida's recreation and parks system. Administration is in accordance with the following policy:

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

The Board of Trustees of the Internal Improvement Trust Fund (Trustees) has also granted management authority of certain sovereign submerged lands to the Division under Management Agreement MA 68-086 (as amended January 19, 1988). The management area includes a 400-foot zone from the edge of mean high water, where a park boundary borders sovereign submerged lands fronting beaches, bays, estuarine areas, rivers or streams. Where emergent wetland vegetation exists, the zone extends waterward 400 feet beyond the vegetation. The agreement is intended to provide additional protection to resources of the park and nearshore areas and to provide authority to manage activities that could adversely impact public recreational uses.

Many operating procedures, used system-wide, are by Division internal policy. Procedures, outlined in the Division's Operations Manual (OM), cover such areas as personnel management, uniforms and personal appearance, training, signs, communications, fiscal procedures, interpretation, concessions, public use regulations, resource management, law enforcement, protection, safety and maintenance.

Park Management Goals

The following park goals express the Division's long-term intent in managing the state park.

1. Provide administrative support for all park functions.
2. Protect water quality and quantity in the park, restore hydrology to the extent feasible and maintain the restored condition.
3. Restore and maintain the natural communities/habitats of the park.
4. Maintain, improve or restore imperiled species populations and habitats in the park.
5. Remove exotic and invasive plants and animals from the park and conduct needed maintenance control.
6. Protect, preserve and maintain the cultural resources of the park.
7. Provide public access and recreational opportunities in the park.
8. Develop and maintain the capital facilities and infrastructure necessary to meet the goals and objectives of this management plan.

Management Coordination

Management of the park is in accordance with all applicable laws and administrative rules. Identification of agencies having a major or direct role in the management of the park follows.

The Florida Department of Agriculture and Consumer Services, Division of Forestry (DOF), assists Division staff in the development of wildfire emergency plans and provides the authorization required for prescribed burning. The Florida Fish and Wildlife Conservation Commission (FFWCC), assists staff in the enforcement of state laws pertaining to wildlife, freshwater fish and other aquatic life existing within the

park. In addition, the FFWCC aids the Division with wildlife management programs, including imperiled species management and Watchable Wildlife programs. The Florida Department of State, Division of Historical Resources (DHR) assists staff to ensure protection of archaeological and historical sites. The Florida Department of Environmental Protection, Office of Coastal and Aquatic Managed Areas (CAMA) aids staff in aquatic preserves management programs.

At Silver River State Park, it is essential that management coordination extend beyond the current park boundary. The Silver Springs attraction (Smartparks - Silver Springs, Inc) currently manages the uplands surrounding the headsprings of the river under lease from the Trustees of the Internal Improvement Trust Fund. Division staff collaborates with the managers of the attraction on resource management activities and issues affecting the Silver River and the state park. This includes the monitoring and control of exotic plant and animal species, water quality monitoring and improvement efforts, visitor management and other issues affecting both operations. In addition, Division staff will be proactive in coordination and communication on resource protection initiatives throughout the Silver River watershed. This includes participation in the Silver Springs Forever Working Group, consultation and cooperation with the Florida Department of Transportation (FDOT) on future improvements to State Road 40 and regular contact with other citizen and governmental initiatives operating in the river basin.

Public Participation

The Division solicited public input by conducting a public workshop on Wednesday, July 7, 2010. The purpose was to present the draft management plan to the public. On Thursday, July 8, 2010, an Advisory Group meeting is held. The purpose of this meeting was to provide the Advisory Group members an opportunity to review and discuss the draft management plan (see Addendum 2).

Other Designations

Silver River State Park is not within an Area of Critical State Concern as defined in Section 380.05, Florida Statutes, and it is not presently under study for such designation. The park is a component of the Florida Greenways and Trails System, administered by DEP's Office of Greenways and Trails and is a designated stop on the East Section of the Great Florida Birding Trail.

All waters within the park have an Outstanding Florida Waters designation, pursuant to Chapter 62-302, Florida Administrative Code. In addition, the Florida Department of Environmental Protection (Department) classified surface waters in the park as Class III water. Portions of the park are designated as part of the Ocklawaha Aquatic Preserve under the provision of the Florida Aquatic Preserve Act of 1975 (Section 258.35, Florida Statutes).

Marion County has established a no wake-idle speed only zone by resolution (no. 85-R-128) on portions of the Silver River (see Reference Map). In addition, there is a fishing prohibition in the Silver River from the headwaters at Silver Springs to its junction with the Ocklawaha River under Chapter 62D-2 Florida Administrative Code.

RESOURCE MANAGEMENT COMPONENT

INTRODUCTION

In accordance with Chapter 258, Florida Statutes, the Division of Recreation and Parks (Division) has implemented resource management programs for preserving for all time the representative examples of natural and cultural resources of statewide significance under its administration. The resource component describes the natural and cultural resources of the park. In addition, the component identifies methods to manage resources. Management measures identified in this plan are consistent with the Florida Department of Environmental Protection's (Department) overall mission in ecosystem management. Cited references are contained in Addendum 3.

The Division's philosophy of resource management is natural systems management. Primary emphasis is on restoring and maintaining, to the degree possible, the natural processes that shaped the structure, function and species composition of Florida's diverse natural communities as they occurred in the original domain. Single species management for imperiled species is appropriate in state parks when the maintenance, recovery or restoration of a species or population is complicated due to constraints associated with long-term restoration efforts, unnaturally high mortality or insufficient habitat. Single species management should be compatible with the maintenance and restoration of natural processes, and should not imperil other native species or seriously compromise park values.

The Division's management goal for cultural resources is to preserve sites and objects that represent Florida's cultural periods, significant historic events or persons. This goal often entails active measures to stabilize, reconstruct or restore resources, or to rehabilitate them for appropriate public use.

Because park units are often components of larger ecosystems, conditions and events that occur beyond park boundaries can affect proper management of resources. The implementation of an evaluation program of ecosystem management is necessary to assess resource conditions, evaluate management activities and refine management actions. Included is review of local comprehensive plans and development permit applications for park/ecosystem impacts.

Management zones for the entire park are delineated areas that are used to reference management activities (see Management Zones Map). The basis for shape and size of each zone may be determined, for example, by natural community types, burn zones, and the location of existing roads and natural fire breaks. It is important to note that all burn zones are management zones; however, not all management zones include fire-dependent natural communities.

RESOURCE DESCRIPTION AND ASSESSMENT

Natural Resources

Topography

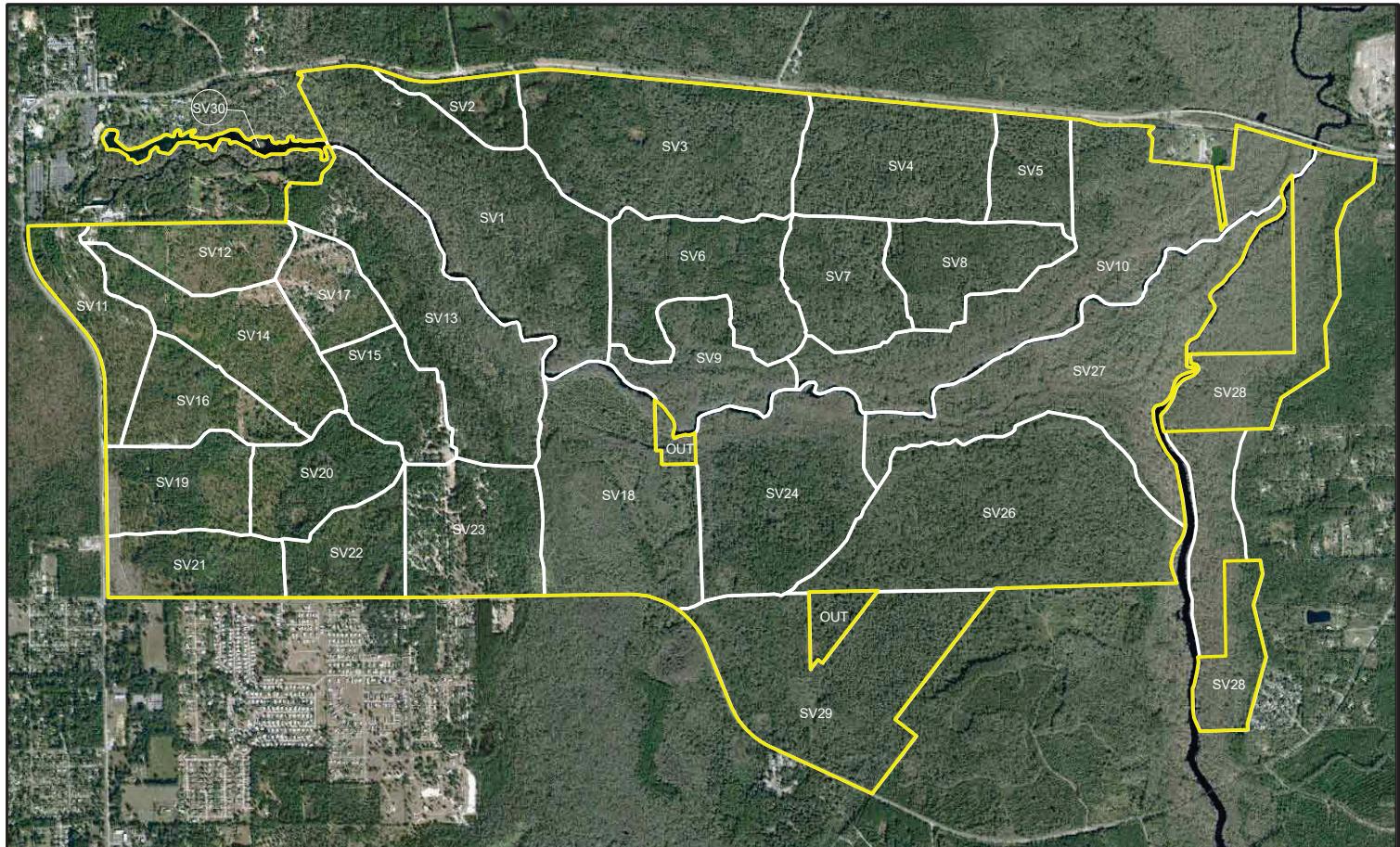
The park is located on the eastern edge of the Ocala Uplift District (Brooks 1981a). Within this district, the western part of the unit lies in the Anthony Hills subdivision of the Marion Hills physiographic division. In this area, low hills developed where Miocene clay was thin or nonexistent and sands and clayey sands of Upper Miocene origin rest directly on limestone. The eastern part of the unit lies in the Ocklawaha Valley physiographic division. This area is an erosional valley partially backfilled with Plio-Pleistocene estuarine sediments and consists of a poorly drained flatwoods terrace bordering the river swamp.

Within the unit (see Topographic Map), relatively flattened uplands gradually slope downward to the floodplain in most areas, although somewhat abruptly in others. A few shallow depressions exist as well. The southwest portion of the park contains the highest elevation of 75 feet. Along the northern boundary of the park, bordered by State Road 40, elevations are 65 feet. The lowest elevations (35 feet) are in the river floodplain found in the northern section along the Ocklawaha River.

Some alteration of the terrain by past activities has affected the topography of the park. Erosion has occurred along the banks of the Silver and Ocklawaha Rivers; and discussed in soils section. Roads, causeways, drainage ditches, borrow pits, past timber harvests and agricultural operations and other notable topographic disturbances on the property have all affected the park in some way or form. Small, shallow borrow pits are scattered through portions of the south side of the park. There is a large borrow pit in the scrubby flatwoods community north of Sharpe's Ferry Road; to some extent, it was recontoured. Another borrow pit occurs in the center of the sandhills and was partially recontoured by park staff. Upon acquisition it was covered with cogongrass (*Imperata cylindrica*), but since then, the cogongrass has been treated with herbicide and native species have begun to seed into the site.

Geology

Underlying the park are three different geological formations. In order from youngest to oldest, these deposits are Holocene deposits, Ocala Limestone and the Hawthorn formation (Brooks 1981b). The Holocene deposits, made up of undifferentiated sand, shell, clay, marl and peat, have an origin less than 4,500 years. The Ocala Limestone is an Eocene deposit made up of skeletons of fossils within silt to sand size matrix. The fossil skeletons were originally aragonite but are now molds. This formation is almost pure calcium carbonate (93-96 percent) and is usually soft, porous and brittle. Massive chert nodules occur near the top portion. The lower portion is rubbly with very small spheroidal fossils being dominant. The Hawthorn formation originated during the Miocene and consists of deeply weathered clayey sand and granular sand with beds of



SILVER RIVER STATE PARK



MANAGEMENT ZONE MAP



kaolinitic clay. The lower portion of this formation is greenish phosphatic sand and sandy clay.

Soils

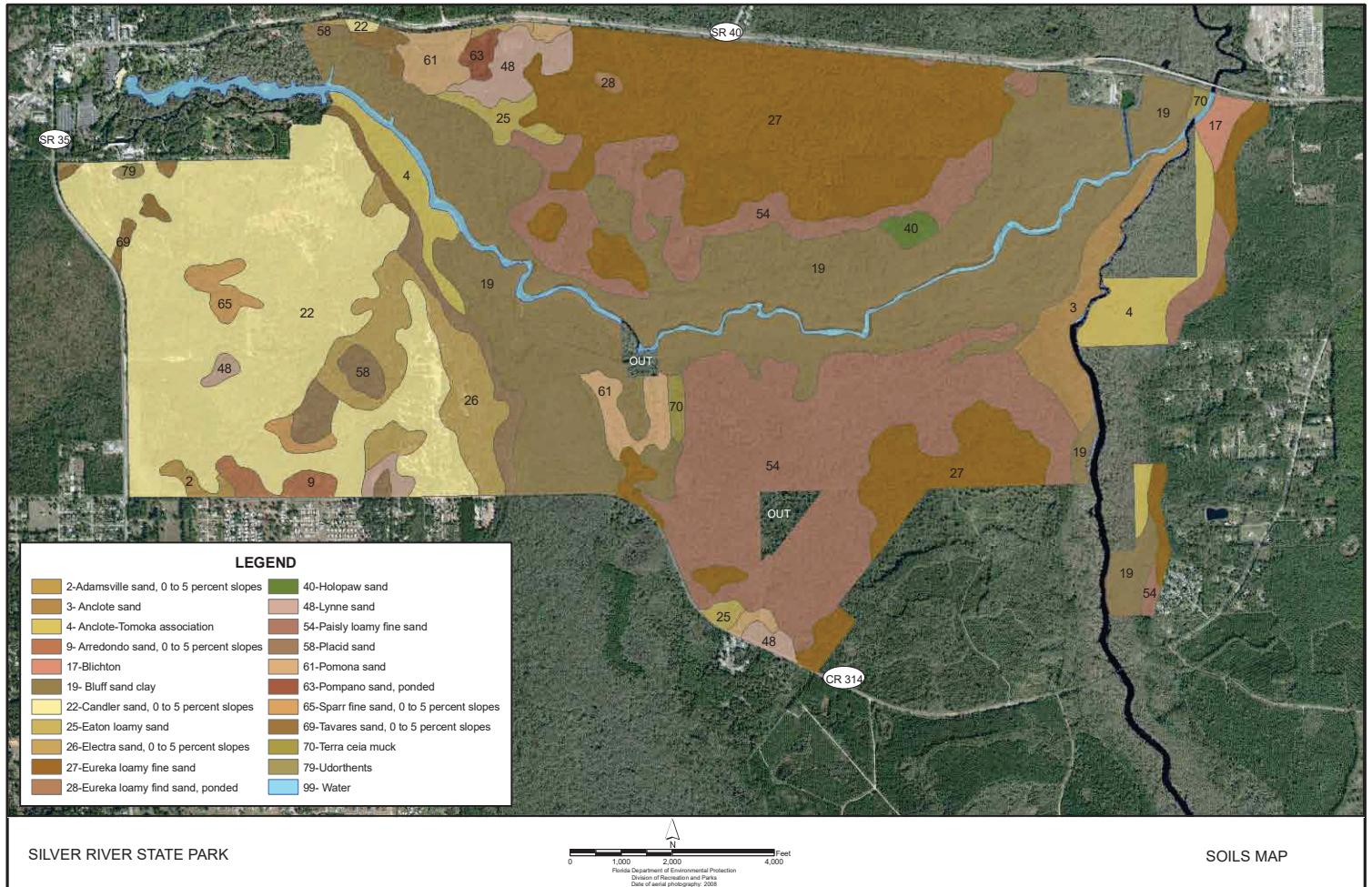
The Natural Resources Conservation Service (NRCS) has identified 23 different soil types (see Soils Map) in the park (Aydelott et al. 1975, Thomas et al. 1979). The NRCS soil survey describes what natural communities typically occur on different soil types. Detailed soil descriptions are contained in Addendum 4. In general, the natural areas of Silver River State Park adhere to the natural community-soil type relationship described by the NRCS. However, differences in elevation and slope, and suppression of fire have caused some deviations from the norm. For example, Bluff Sandy Clay (Bf), a very poorly drained soil typically supports floodplain swamp or floodplain forest communities. However, when the relief is high enough, either upland hardwood forest or upland mixed forest will exist on the site. Placid Sand (Pm) is another very poorly drained soil and characterized by some type of hydric forest. When found on a slope, Placid Sand will support an upland hardwood or upland mixed forest.

At several locations along Silver River, park visitors are pulling their boats up to the shoreline and climbing out onto shore. In these limited high spots along the river, the visitors are causing substantial bank erosion and soil compaction. At one large bend on the south side of the river, the bank eroded several feet in an area extending approximately 30 feet. Staff worked to stabilize the shore and restore the native vegetation. An added boardwalk concentrates visitor traffic with a canoe launch to reduce erosion. These efforts have greatly reduced the shore erosion in this area. There is a similarly eroded area nearby on the north side of the river. This has also eroded several feet but over a much shorter length of river frontage (approximately 15 feet). This eroded shoreline area also needs to be protected.

Another visitor-related issue that contributes to erosion along the river is failure to observe the idle speed regulation. The entire length of Silver River is designated an idle speed zone. Over the years, there has been much improvement in this situation. At present, a few floodplain trees toppled into the river due to loss of soil beneath their root systems; however, many boaters do not observe the idle speed regulation. As boat usage along the river continues to increase, erosion will increase if there is not strong enforcement of idle speed regulation. New signage, both regulatory and interpretive, may afford better protection to the river. All management activities will follow best management practices to prevent soil erosion and to conserve soil and water resources at the park.

Minerals

The removal of sand as fill material for road construction has occurred in several places in the past. No other deposits of commercial value are evident.



Hydrology

The park lies within the Ocklawaha River drainage basin that contains some 850 square miles. The Silver River originates from Silver Springs, a group of artesian springs in the northwestern corner of the park. The river flows through the unit to the east boundary of the park, where it joins the Ocklawaha River, which flows into the St. Johns River. The Silver River has a designation as an Outstanding Florida Water (OFW).

Approximately five miles of the Ocklawaha flows through and forms the eastern boundary of the park in some areas.

There are two aquifers in this region (Hyde 1965). The shallow aquifer is composed of Miocene to Holocene sand and shell beds. This aquifer is often of limited horizontal and vertical extent and generally exists as a water-table aquifer. Occasionally, clay beds that place it under artesian pressure confine the aquifer. Recharge is by rainfall and discharge occurs by way of evapotranspiration and seepage to surface water bodies.

In the immediate area, the Floridan aquifer consists of the permeable parts of the lower Hawthorn formation, the Ocala Limestone, and the underlying Avon Park Limestone and Lake City Limestone. The aquifer has an average thickness of more than 1,000 feet (Fernald and Patton 1984). Its nearness to the surface varies.

East of the springs that give rise to Silver River, the aquifer is confined, particularly in the Ocklawaha River valley, by a mantle of Miocene and perhaps younger deposits. West of the springs, considerable erosion of these confining beds has taken place. Here the aquifer receives direct recharge via permeable, thin surficial deposits. The springs' complex provides a major discharge from the aquifer with a flow that averages 516 million gallons per day (Spechler and Schiffer 1995).

Silver Springs has been the site of an extraordinary amount of ecological research. Dr. Howard T. Odum in the 1950s and Dr. Robert L. Knight in the 1970s conducted biological and ecosystem metabolism studies of Silver Springs. In 2006, Munch et al. completed a Fifty Year Retrospective Study of the Ecology of Silver Springs, which provides an assessment of land use and water quality changes in Silver Springs and a development of cause-and-effect relationships to the spring's ecology (Munch et al. 2006).

The U.S. Geological Survey (USGS), the St. Johns River Water Management District (SJRWMD) and the Florida Department of Environmental Protection's Springs Initiative have conducted considerable hydrologic research along the Silver River. The research by these agencies continues to occur. Of particular note is the record of flow measurement by the U.S.G.S. taken at Silver Springs and the Silver River. It is among the longest in the state, going back to the early 1900s (Baird, written comm.).

The Silver River water quality is very good and meets the criteria for Class III waters (FDEP 1995). West of the unit, there is cause for concern, because the land subjected to commercial, rural and urban development. Since the aquifer is unconfined there, there is potential for contamination by a multitude of existing or future sources. Baseline data shows nitrate concentrations of 0.04 mg/L in 1907 (Munch et al. 2006). There has been a documented increase in nitrate-nitrate levels in the spring-run from approximately 0.463 mg/L in 1953 to an average of 0.81 mg/L in 2000 (Florida Defenders Environment 2000). More than once, the Department (2001) confirmed the high level of nutrient concentrations in water samples from the springs, Ft. King Waterway and the Silver River downstream to Halfmile Creek. The nitrate-nitrite concentration was generally greater than 0.85 mg/L that is higher than the levels found in 90 percent of Florida streams.

A recently completed St. Johns River Water Management District (SJRWMD) special report provides valuable information on the water quality of the spring run and the health of the ecosystem. Findings from this study show an increase of nitrate concentrations as seen in table 1 and table 2 (Munch et al. 2006).

Table 1: Yearly Nitrate Concentrations at Silver Springs (SJRWMD 2006)

Year	Information Source	Nitrate-N Concentrations (Mg/L)
1907	USGS	0.04
1946	USGS	0.29
1953	Odum	0.46 (average)
1957	USGS	0.1
1979	USGS	0.71
1995	USGS	0.90
2005	SJRWMD	1.07
2055 (projected)	SJRWMD	2.02

Table 2: Yearly Silver Springs Nitrate Loading Rates (SJRWMD 2006)

Year	Loading Rate, Pounds/Year
1957	94,400
1979	814,900
1995	956,000
2005	1,058,000
2055 (projected)	1,760,000

This increase is cause for concern due to the unknown impacts that these nutrients are likely having on the natural resources. The trend of elevated nutrient levels occurs throughout the natural springs of the state. The Silver Springs Basin Working Group and FDEP are working to further research this issue.

In addition to the river, hydrological features of the park include semi-permanent ponds and intermittent waterways. In general, the latter drain into the floodplain or other aquatic systems. The ponds vary in size, being marshy or wooded to varying degrees. A small, natural creek enters the river approximately 3/4 mile downstream of the headwater spring (Halfmile Creek). This creek drains several square miles of flatwoods north of State Road 40 and east of the attraction, and in the past has received direct road runoff from State Road 40. During this time, varieties of pollutants were likely to enter the stream before it flowed into the spring run. Since it is the only tributary to Silver River, its potential impact on the water quality of the river is of concern to the park. The tannin colored creek has a minimal discharge except during periods of high rainfall when considerable flow comes through the creek. In testing extending from the head springs to Halfmile Creek, an FDEP (2001) study found the highest bacterial counts in Halfmile Creek, where two (out of four) and four (out of four) of the Class III water quality criterion for fecal and total coliforms, respectively, were observed to have been exceeded. Discharge from Halfmile Creek into the Silver River led to increases in bacterial counts immediately downstream in the Silver River, where one of the total coliform criterions was exceeded. Halfmile Creek also showed higher levels of phosphorus than the other stations sampled. A large drainage pipe exists near the northern boundary of the park and Halfmile Creek. Until 2010, the pipe drained untreated storm water runoff from State Road 40 into a short channel that appears manmade and leads directly into Halfmile Creek. Trash and other pollutants entered Halfmile Creek and subsequently the Silver River at this point. Recently, Marion County explored options for redirecting the untreated storm water runoff entering Half Mile Creek. Marion County, the Office of Greenways and Trails, SJRWMD, Florida Geologic Survey, and Division staff are currently involved in a project, which will divert and capture the untreated storm water runoff of the developed impervious areas along State Road 40 that previously flowed into Halfmile Creek via the large drainage pipe. The project is designed to allow sediment and trash removal from the storm water and then the water will be pumped to a retention pond north of State Road 40 on property leased by the Office of Greenways and Trails where the water will then percolate down into the ground water table. The current storm water infrastructure will remain in place and allow for direct draining of storm water runoff into Halfmile Creek during peak rain events such as a 100-year rain event when more water will be collected than can be pumped to the retention pond. The project to divert the storm water runoff is scheduled to be completed in September of 2010. Marion County is also interested in further restoration of Halfmile Creek. Activities such as impact assessment, exotic plant removal and trash removal may be considered as part of this effort. As opportunities arise to address these issues park staff should continue to work with appropriate partners to seek opportunities to address these issues. The Florida Department of Transportation (FDOT) has widened State Road 35 on the western boundary of the park. The FDOT is currently placing the stormwater retention ponds needed to treat anticipated runoff west of State Road 35. FDOT will also widen State Road 40, along the northern border of the park and this project is still

in the Project Development and Environment (PD and E) phase. Park staff will continue to be involved with the planning process as this project could have a direct impact on the park.

Of the remaining surface water resources, most have been altered in some manner. The waterways were blocked by slash piles and roads from a timbering operation just before state acquisition in 1985. Some of the ponds on the north side were ditched years ago, probably to facilitate the drainage of runoff from State Road 40. These ditches are considerable in depth and drain a substantial amount of storm water through the unit as well as affecting surface water runoff within the unit. During recent construction along State Road 40, the ditches inside the park were disconnected from the roadside swale system. This improvement resulted in less road runoff entering the park. The continued impact of the ditches needs to be determined and wherever feasible, the ditches should either be restored to natural topographic grade or have ditch-blocks installed to stop any flow.

Natural Communities

This section of the management plan describes and assesses each of the natural communities found in the state park. It also describes of the desired future condition of each natural community and identifies the actions that will be required to bring the community to its desired future condition (DFC). Specific management objectives and actions for natural community management, exotic species management, imperiled species management and restoration are discussed in the Resource Management Program section of this component.

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

At the point in time when the park's natural communities have reached their desired future condition, they are considered to be in a maintenance status and share certain basic characteristics and management requirements. These include the maintenance of the optimal fire return intervals for fire dependant communities, the maintenance control of non-native plant and animal species, the maintenance of natural hydrological

functions (including historic water flows and water quality), the maintenance of proper vegetative structure that represents the natural diversity of the community, the maintenance of healthy populations of plant and wildlife species (including those that are imperiled or endemic), and the maintenance of intact ecotones between natural communities across the landscape.

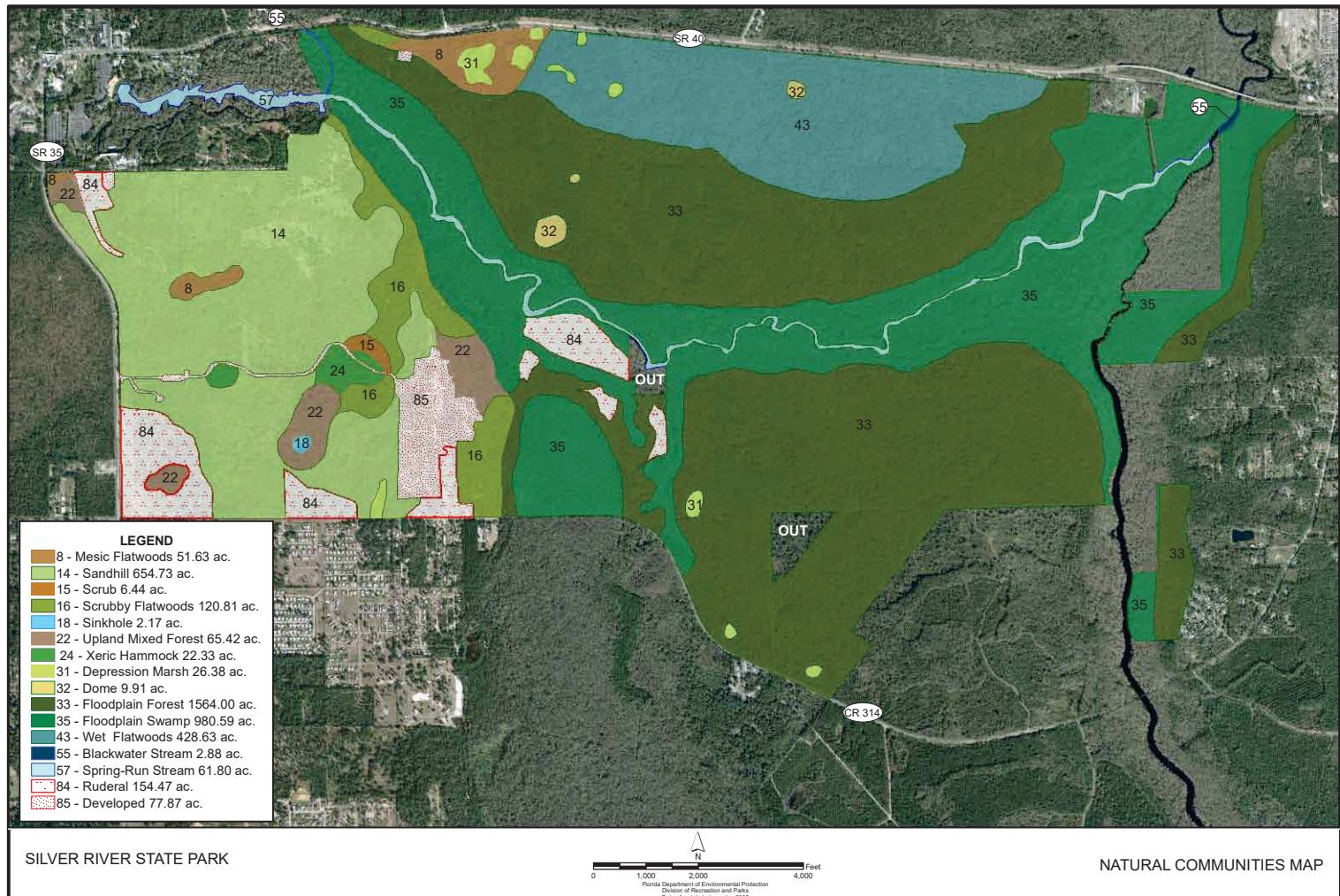
The park contains 14 distinct natural communities as well as ruderal and developed areas (see Natural Communities Map). A list of plants and animals occurring in the park is contained in Addendum 5.

MESIC FLATWOODS

Desired future condition: An overstory of longleaf pine (*Pinus palustris*) should be present with slash pine intermixed in wetter areas of the community type. Native herbaceous groundcover is over at least 50 percent of the area and is less than three feet in height. Saw palmetto (*Serenoa repens*) shrub component comprises no more than 50 percent of total shrub species cover, and are also less than three feet in height. Shrub species include saw palmetto, gallberry (*Ilex glabra*), fetterbrush (*Lyonia lucida*), runner oak (*Quercus elliottii*), dwarf live oak (*Q. minima*), shiny blueberry (*Vaccinium myrsinites*), and dwarf huckleberry (*Gaylussacia dumosa*). Shrubs are generally knee-high or less, and there are few if any large trunks of saw palmetto along the ground. The Optimal Fire Return Interval for this community is 2-5 years.

Description and assessment: This community occurs on the north side of the river near the northwest corner, primarily in management zone 2 and south of the river, primarily in management zones 16 and 14. This community is considered to be in fair condition. On the north side of the river, in the absence of fire this community has been invaded by species not typically found in this community such as sweetgum (*Liquidambar styraciflua*), laurel oak (*Q. laurifolia*), and water oak (*Q. nigra*). Also, past timbering (1984/85 for the northern piece, much earlier for the southern piece) has reduced the amount of pine and possibly other components of this community. It is probable that longleaf pine originally occurred in the mesic flatwoods, although due to the close association with loblolly pine (*Pinus taeda*) in adjoining communities, there may have been a mixture of longleaf and loblolly pine as well as pond pine (*Pinus serotina*). A small portion of the northern flatwoods was hand-planted with loblolly pines in 1986, using a scattered pattern. The seed source of these loblolly pines is unknown. South of the river, the mesic flatwoods are in better shape and have received fire more frequently. Palmetto densities in this flatwoods are higher than desired, but the overall tree density and species composition is desirable.

General management measures: The long-term restoration of this community will require the regular application of prescribed fire and may require some planting of longleaf pine. Firebreaks within and adjacent to the mesic flatwoods may need to be widened and fuel heights along firebreaks reduced to manageable levels. If the duff



layer is deep, adequate duff moisture should exist before burning in an effort to remove fuel accumulations gradually and not ignite deep layers of duff that could result in tree mortality. Monitoring and treatment of exotic plants will continue for this area.

SANDHILL

Desired future condition: Dominant pines are usually longleaf pine. Herbaceous cover is 80 percent or greater, and is less than 3 feet in height. In addition to groundcover and pines characteristics, there are scattered individual trees, clumps or ridges of onsite oak species (usually turkey oaks (*Q. laevis*), sand post oak (*Q. margarettae*), and blue-jack oak (*Q. incana*)). In old growth conditions, sand post oaks are commonly 150-200 years old, and some turkey oaks are over 100 years old. The Optimal Fire Return Interval for this community is 1-3 years.

Description and assessment: This community occurs in the western portion of the park south of the river. It is contained in management zones 11, 12, 13, 14, 15, 16, 17, 19, 20, 21, 22. Most of this community is considered to be in fair to good condition where the community exists in a relatively undisturbed state. Some portions of the sandhill community are in poor condition due to previous plantings of off-site slash and sand pines (*P. elliottii*, *P. clausa*) and the invasion of cogongrass.

The relatively undisturbed portion of the sandhill community has numerous, well-distributed longleaf pines. These pines average 90 years in age and range from 60 to 100 feet tall. The groundcover is intact in these areas of the sandhill and is dominated by wiregrass (*Aristida stricta* var. *beyrichiana*). Due to infrequent burning, these sandhills have a very dense understory layer of turkey oaks. Although turkey oak is a natural component of the sandhill community, its density needs to be reduced by aggressive application of prescribed fires. Fires should focus on the spring and summer seasons, although fires during the dormant season will also benefit the community. Prescribed fire is the primary method to be used to control densities of sandhill-occurring oak species, including turkey oak, sand post oak and bluejack oak. However, due to the extended drought conditions and the SPB outbreaks that have hampered the prescribed fire program, minimal impact mechanical removal and herbicide applications to sandhill oak species will also be considered.

In the relatively undisturbed sandhills that adjoin more mesic areas, offsite hardwoods including laurel and water oaks, and sweetgum have heavily invaded the sandhill community. In some areas, the heavy shading has greatly reduced the herbaceous groundcover. This invasion of off-site hardwoods is due to infrequent burning. Because these offsite hardwoods produce much heavier shade and have a thicker, less flammable leaf cover than the onsite sandhill oak species, a more aggressive management strategy to remove the off-site species of hardwoods is necessary. In the areas with off-site hardwoods, mechanical treatments, including girdling, mowing and herbicide application will open the canopy so that fire can fully penetrate the

community and restore native groundcover.

The previous landowner logged a portion of the sandhills in the late 1970s to early 1980s and planted these areas with slash pine. Limited site preparation was done so most of the understory species and a few longleaf pines remain. The most concentrated area of slash pine in a natural community was harvested by Marion County before leasing their 200-acre parcel to the State. Most of the area harvested by the county was replanted with tubeling longleaf pine in 1999.

One small area of sandhill was harvested during the SPB outbreak of 1996-1998. This area was replanted with longleaf pine tubelings in the summer of 2000. The slash pine plantation that was planted in the southwest corner of the park on the park boundary near State Road 35 and Sharpe's Ferry Road was harvested in 2007. This area will be converted to longleaf pines and native groundcover will be allowed to seed in from adjacent seed sources. If necessary, park staff will collect seed from native sandhill vegetation and spread it throughout the area to assist in groundcover restoration. There is one small area near the Group Camp where sand pines were planted in rows. Some of the sand pines have been removed. Over time, all of these off-site pines will be replaced with longleaf pine.

North of Sharpe's Ferry Road, three areas of former sandhills were converted to pasture, including the removal of native groundcover and replacement with exotic bahia grass (*Paspalum notatum*). These pastures were established when the property was owned by the Tracy family, beginning in the early 1930s. In the westernmost portion, adjoining Baseline Road, the previous owners planted a slash pine plantation in 1977/78. This area needs to be considered for a restoration harvest and reforested with longleaf pine and replanted with wiregrass groundcover. Adjoining the pine plantation area, there is a portion of pasture that was formerly used as a dirt bike course. This area was smoothed out and replanted with widely scattered longleaf pines in 1988. There is sufficient longleaf pine regeneration in this pasture area that additional plantings may not be necessary. The remaining two pasture areas were randomly planted with longleaf pine in 1987/88. The easternmost pasture area was further planted with longleaf pines in 1994 and 1999. All pasture areas should be considered for groundcover restoration and for inclusion in the prescribed burning program.

In the sandhill areas around Paradise Road, there are still a few dense patches of cogon grass despite treatment efforts. The previous landowner supposedly seeded cogon grass in certain areas for soil stabilization or groundcover forage for cattle. Whatever the reason for its occurrence, cogon grass has now replaced native groundcover species in portions of the sandhill community. Control efforts are ongoing. Once control is accomplished, revegetation with native groundcover species may be needed.

The sandhill community is fragmented into many small sections due to the many jeep

trails throughout the community. Over time, many of these roads will be removed and restored to sandhill community.

General management measures: The sandhills at Silver River need to be burned once every 1-3 years. Most of the sandhill zones are too heavily stocked with turkey oaks. A combination of chemical and/or mechanical removal of oaks and prescribed fire is appropriate for some zones, while others are close to maintenance condition requiring only fire. Off-site slash and sand pine should be removed and longleaf pine planted as needed to achieve natural densities. Cogon grass infestation should continue to be treated and retreated as necessary and monitoring should continue for new infestations. Large areas where cogon grass has been eliminated may need to be seeded with native groundcover species to restore these areas.

Please refer to the Restoration objective in the Resource Management Program section of the plan.

SCRUB

Desired future condition: Dominant species over the vast majority of scrub acres include sand live oak (*Q. geminata*), myrtle oak (*Q. myrtifolia*), Chapman's oak (*Q. chapmanii*), saw palmetto and rusty staggerbush (*Lyonia ferruginea*). Scrub oak canopy varies in height from 3 – 8 feet. There is a variety of oak age classes/heights between different scrub patches. There are scattered openings in the canopy with bare patches of sand that support many imperiled or endemic plant species; these species are regularly flowering and replenishing their seed banks. Sand pine, where present, is usually not dominant in abundance, percent cover or height. The Optimal Fire Return Interval for this community is regionally variable; typically, 4-7 years when aiming to achieve a mosaic of burned and unburned areas.

Description and assessment: Scrub occurs in one area on the south side of the river. It is located in a narrow swath in management zone 17. The community is considered to be in fair to poor condition. The scrub area located in the center of the park is succeeding to a xeric hammock community due to a lack of burning, and it is questionable whether the community should be designated as scrub or xeric hammock. At present, the community has been designated as scrub to encourage restoration efforts through the application of prescribed fire. The midstory is quite tall (20-30 feet) with sand live oak and myrtle oak as the dominant species with rusty staggerbush and saw palmetto also being common. Other scrub plants such as sand pine, Chapman's oak, and scrub palmetto (*Sabal etonia*), a threatened species, are widely scattered. Florida rosemary (*Ceratiola ericoides*) occurs occasionally. Efforts will be made to burn this area in order to determine whether it can be restored to a better condition scrub community. Mechanical treatment may also be warranted in order to reestablish a burn regime suitable for maintaining scrub instead of xeric hammock.

General management measures: Fire should be applied to this area to see if it will burn on its own. If unsuccessful, the area should be considered for mechanical treatment followed by prescribed fire. This scrub portion of the management zone may not burn every time the zone is treated with prescribed fire as it has a longer fire return interval than the more pyric portion of the zone. Ideally, the scrub should be managed as early succession scrub and not allowed to succeed back to a more challenging to manage late succession phase of scrub. Firebreaks around the zone may need widening and fuel heights adjacent to firebreaks reduced. Exotic plant species removal will continue.

SCRUBBY FLATWOODS

Desired future condition: Dominant tree species of the interior should be longleaf pine. Mature sand pines are typically not present. There is a diverse shrubby understory often with patches of bare white sand. Scrub oak “canopy” varies in height from 3 – 8 feet and there is a variety of oak age classes/heights across the landscape. Dominant shrubs include sand live oak, myrtle oak, Chapman’s oak, saw palmetto, rusty staggerbush and tarflower (*Befaria racemosa*). Cover by herbaceous species is often well below 40 percent. The Optimal Fire Return Interval for this community is regionally variable, typically, 3-5 years when aiming to achieve a mosaic of burned and unburned areas.

Description and assessment: This under-represented community exists in two small areas. It remains in relatively good condition; however, it needs periodic burning. Most, if not all, of the typical plant species expected in this region are present.

One area is found in the upper western most corner of management zone 2. Here longleaf pines occur in the community with a few loblolly pines around the periphery. Although the pine species have been manipulated by human influences, the system is structurally functional, as it now exists. Care will be needed to minimize the impacts to this community since it is so limited in its occurrence at the park.

The second area of scrubby flatwoods occurs in a narrow band between sandhill/pasture and upland mixed forest just north of Sharpe’s Ferry Road to the east of the old entrance road in management zone 23. It occurs along the upper margin of the slope that leads into the western edge of Marshall Swamp. Some of this scrubby flatwoods may have been removed when the improved pasture was established, although it is difficult to assess whether scrubby flatwoods or sandhill was removed to create the pasture. Most of the pasture is thought to be former sandhills due to the presence of wiregrass to the east of the pasture. There is also a borrow pit in this area of scrub near Sharpe’s Ferry Road. The borrow pit was discussed in the topography section. Inclusion in an active burn regime will restore this scrubby flatwoods area. This piece of scrubby flatwoods is tending towards xeric hammock due to lack of fire. Fire should be applied from the upland edge and be allowed to burn down slope to the east so that the sandhill and scrubby flatwoods xeric upland community types can

reestablish themselves.

General management measures: This community will require the regular application of prescribed fire and possible fuel reduction such as mowing to reduce fuel heights adjacent to firebreaks and within the zone itself. If the duff layer is deep, adequate duff moisture should exist before burning in an effort to remove fuel accumulations gradually and not ignite deep layers of duff that could result in tree mortality. Exotic plant species removal will continue.

UPLAND MIXED FOREST

Desired future condition: Mature, closed canopy hardwood forest that typically occurs on slopes and rolling hills with generally mesic conditions. Overstory tree species may consist of southern magnolia (*Magnolia grandiflora*), sweetgum, live oak (*Q. virginiana*), laurel oak, Florida maple (*Acer barbatum var. floridanum*), white oak (*Q. alba*), and swamp chestnut oak (*Q. michauxii*) and American beech (*Fagus grandifolia*). Understory species include trees and shrubs such as American holly (*Ilex opaca*), flowering dogwood (*Cornus florida*), redbud (*Cercis canadensis*), red bay (*Persea borbonia*), horse sugar (*Simplocos tinctoria*), and beautyberry (*Callicarpa americana*). Ground cover is comprised of shade tolerant herbaceous species, sedges and vines.

Description and assessment: Upland mixed forest occurs south of the river, running north and south as a transitional zone between the floodplain swamp and sandhill. It is located in management zones 13 and 23. A more typical representation of the upland mixed forest occurs in the southern center section of the park around a sinkhole depression area and a few pockets in the sandhills because of fire exclusion/shadowing. These areas are dominated with mesic hardwoods and a few pines. Many of the mesic hardwood species found in this area have encroached into the adjoining sandhill areas due to lack of fire.

General management measures: For the most part this natural community is in maintenance state requiring little management other than protection from visitor impacts. For the portions of upland mixed forest that border a pyric community type, fire will be allowed to burn into the upland mixed forest as needed for fire management. Exotic plant species removal will continue in this community.

XERIC HAMMOCK

Desired future condition: Typically considered a late successional stage of scrub or sandhill that generally occurs in small isolated patches on excessively well drained soils. Vegetation consists of a low closed canopy dominated by live oak that provides shady conditions. Typical plant species may also include Chapman's oak, and laurel oak. Sand pine, slash pine or longleaf pine may also be a minor component. The understory will typically include saw palmetto, fetterbush, myrtle oak, yaupon (*Ilex vomitoria*), Hercules' club (*Aralia spinosa*) and Florida rosemary. Sparse groundcover

layer of wiregrass and other herbaceous species may exist but typically absent. A continuous leaf litter layer may be present. Overgrown scrub in need of fire and/or mechanical treatment should not be confused with true xeric hammock.

Description and assessment: The xeric hammock community occurs in an area of sandhills just north and a bit south of the large curve on the main park drive in management zones 17 and 20. This area was originally scrub or scrubby flatwoods. The community is largely comprised of sand live oaks and is considered in good condition. At least perimeter areas of the xeric hammock may still be restorable to scrub, scrubby flatwoods or sandhill (see discussion under scrub).

General management measures: For the most part this natural community is in maintenance state requiring little management other than protection from visitor impacts. For the portions of xeric hammock that border a pyric community type, fire will be allowed to burn into the xeric hammock as needed for fire management. Exotic plant species removal will continue.

DEPRESSION MARSH

Desired future condition: Emergent herbaceous and low shrub species are dominant over most of the area, and there is an open vista. Trees are few and if present occur primarily in the deeper portions of the community. There is little accumulation of dead grassy fuels due to frequent burning; one can see often the soil surface through the vegetation when the community is not inundated. Dominant vegetation in basin marsh and depression marsh include maidencane (*Panicum hemitomon*), switchgrass (*Panicum* spp.), common reed (*Phragmites australis*), pickerelweed (*Pontederia cordata*), arrowheads (*Sagittaria* spp.), buttonbush (*Cephalanthus occidentalis*), St. John's wort (*Hypericum* spp.), and coastal plain willow (*Salix caroliniana*). Floodplain marsh dominants also typically include sand cordgrass and sawgrass. The Optimal Fire Return Interval for this community is 3-5 years depending on fire frequency of adjacent communities.

Description and assessment: The Park contains a number of shallow depression marshes located in management zones 2, 3, 24, and 29. Until recently, some of the marshes north of the Silver River received runoff from State Road 40. Following roadwork on State Road 40, the roadside drainage swales were disconnected from discharging into the park. This will improve the quality of the water in these northern depression marshes. The northern marshes have also been connected by ditches to facilitate their drainage. This ditching, and its resultant drainage, is probably what have allowed the expansion of woody plant species into the marshes. If this ditching is causing the marshes to dry out more quickly by expediting water drainage to the river, remedial action may be necessary to stop and reverse changes in community structure and composition. The condition of the depression marshes varies from fair to good for marshes impacted by drainage to excellent for marshes not so affected.

General management measures: The ditches connecting the depression marshes should be filled or blocked if feasible to restore the natural hydrology of the depression marshes. The depression marshes should not be excluded from prescribed fire when the zone they are in is burned if possible. Duff and muck levels and moisture content within them should be assessed prior to burning. Non-ground disturbing mechanical removal of encroaching vegetation should be considered if depression marsh rims are overgrown with vegetation due to altered hydrology or lack of fire. Exotic plant species removal will continue.

DOME SWAMP

Desired future condition: Isolated, forested, depression wetland occurring within a fire maintained matrix such as mesic flatwoods. The characteristic dome appearance is created by smaller trees that grow on the outer edge (shallow water and less peat) and the larger trees that grow in the interior. Pond cypress (*Taxodium ascendens*) typically dominates but swamp tupelo (*Nyssa sylvatica* var. *biflora*) may also form a pure stand or occur as a co-dominant. Other subcanopy species can include red maple (*Acer rubrum*), dahoon holly (*Ilex opaca*), swamp bay (*Persea palustris*), sweetbay (*Magnolia virginiana*) and loblolly bay (*Gordonia lasianthus*). Shrubs can be absent to moderate (a function of fire frequency) and can include Virginia willow (*Itea virginica*), fetterbush (*Lyonia lucida*), buttonbush, wax myrtle (*Myrica cerifera*) and titi (*Cyrilla racemiflora*). Herbaceous component can be absent to dense and include ferns, maidencane, sawgrass (*Cladium jamaicense*), sedges, lizards tail (*Saururus cernuus*), and sphagnum moss (*Sphagnum* spp.). Vines and epiphytes are often common. Maintaining the appropriate hydrology and fire frequency is critical for preserving the structure and species composition of the community.

Description and assessment: The domes are restricted in their distribution to locations near the river in Management Zones 1 and 9. While bald cypress (*Taxodium distichum*) was cut in the late 1800s and early 1900s, many large individual cypress trees remain. The swamp is typical both in community structure and species composition. No detrimental conditions have been observed thus far in this community. The community is considered to be in excellent condition.

General management measures: Dome swamps should be allowed to burn on the same frequency as the adjacent fire type community, allowing fires to naturally burn across ecotones. Fires should be appropriately planned to avoid high severity fuel consumption within the dome swamp. Exotic plant species removal will continue.

FLOODPLAIN FOREST

Desired future condition: This is a seasonally flooded, closed canopy, hardwood forest that occurs on ridges or slight elevations within the floodplain of alluvial rivers. Typical overstory trees may include overcup oak (*Q. lyrata*), water hickory (*Carya aquatica*), American elm (*Ulmus americana*), laurel oak, and red maple. The floodplain forest north

of the Silver River will also contain scattered loblolly pine. Understory species may include swamp dogwood (*Cornus foemina*), willow species, and American hornbeam (*Carpinus caroliniana*). Presence of groundcover is variable. Species such as netted chain fern (*Woodwardia aerolata*) and other shade tolerant herbaceous species may be present.

Description and assessment: The floodplain forest occurs on both sides of the river bordering the floodplain swamp in management zones 1, 9, 10, 18, 24, 29, 26, 27 and 28. The area covered by this community is seasonally inundated. The community supports temperate vegetation consisting of mixed hardwood species and cabbage palm. The plant association identified as floodplain forest is very unusual in some areas, and in this form, it may be unique to the Silver River area. Whether this expression of the floodplain forest community type occurs because of past manipulative disturbances is unknown. In 1915, Roland M. Harper related, "In the extreme eastern part of the Ocala area, within a few miles of Silver Springs, is a peculiar type of vegetation in which short-leaf pine [(actually loblolly pine)] and cabbage palmetto are the dominant trees." Harper goes on to state, "The wetter parts look much like some of the low hammocks and swamps..., and the drier parts pass gradually into open pine woods a few miles northeast of Silver Springs." He further notes that trees outnumber the herbs. Vines are rather abundant, but the only grass that is mentioned is woodsgrass (*Oplismenus hirtellus*). Harper also stated, "Fire must be very rare, as in other damp shady forests."

Most of the forest above the 40-foot contour line along the edges of Silver River has been mapped as floodplain forest. It is characterized by the unusual plant association described by Harper. This community has been dramatically manipulated by past owners, which further complicates community typing. Much of it, especially on the north side of the river, was cleared for farming and cattle by the 1850s (Mickey Summers, pers. comm.). Harper (1915) commented that much of the virgin pine forest was mostly gone by 1915. However, other than the clearing of several fields on the south side near the river in the 1930s as part of the Tracy Farm, there does not appear to have been much logging until 1984/85 when mostly loblolly pines, but a few pond and longleaf pine as well, were cut from the north side of the river. The community was in a good state of recovery with some replanting of loblolly pines in the late 1980s when, beginning in 1996, extending into 1998, and reoccurring in 2001, there was an outbreak of SPB that necessitated a harvest of all infected loblolly pines. This SPB outbreak resulted in timber harvesting both north and south of the river in most of the drier areas of this community type.

The two timber harvests since 1985 have damaged large areas of this community with considerable groundcover disturbance by both harvests. In addition, on the north side of the river, cogon grass forms a monotypic groundcover through portions of the community. Accordingly, the condition of this community, depending on the amount of groundcover disturbance and the coverage of cogongrass, is rated as being in poor to good condition. Since loblolly pine produces many seeds, natural regeneration of pine

will probably be sufficient for these forests. However, if there are areas where the regeneration potential was negatively impacted by the harvest, replanting of loblolly pine may be necessary.

At least four rare plants, silver buckthorn (*Sideroxylon alachuense*), Godfrey's privet (*Forestiera godfreyi*), Florida crabgrass (*Digitaria floridana*), and pinkroot (*Spigelia loganioides*), are known to occur in this community type and will be discussed more thoroughly in the Imperiled Species section.

General management measures: Because loblolly pine is particularly susceptible to southern pine beetle (SPB) attack, resource management will need to focus on keeping the regenerating forest in a low SPB hazard condition. Such management will involve the infrequent application of prescribed fire that will act to thin loblolly pines. A SPB trap for early detection has been placed at Ray Wayside Park and is maintained and checked regularly by the Marion county forester. Should SPB be detected the county forester will notify the park staff to be on the look out for infestations in the park so action can be taken sooner and hopefully keep the infestation small. A longer inter-fire interval will favor the growth of the hardwood component over the pine component, letting the community regenerate into a mixed hardwood stand with scattered loblolly pine. Widely scattered loblolly of varying ages mixed with hardwoods and cabbage palms fit with Harper's original description of this particular community association. Exotic plant species removal will continue.

FLOODPLAIN SWAMP

Desired future condition: Frequently or permanently flooded community in low-lying areas along streams and rivers. Soils consist of a mixture of sand, organics and alluvial materials. Closed canopy typically dominated by bald cypress but commonly includes tupelo species as well as water hickory, red maple, and overcup oak. Tree bases are typically buttressed. Understory and groundcover are typically sparse.

Description and assessment: The floodplain swamp occurs along both sides of the river from the edge of the river to about 40 feet in elevation in management zones 1, 9, 10, 13, 18, 24, 27 and 28. While bald cypress was cut decades ago, it is still common. The species composition is quite diverse, with large individuals of many tree species being present. At the edge of the floodplain swamp community, several distinctive trees have been found. These include the national co-champion cedar elm (*Ulmus crassifolia*) and a state champion shumard oak (*Q. shumardii*). Previously, exotic plants, especially taro (*Colocasia esculentum*), were introduced upstream and spread down river into the edge of the floodplain swamp. Removal of these exotics needs to continue to insure they do not spread throughout the swamp. Taro occurs at the Silver Springs attraction. Until taro is removed from the attraction, there will be a continuous source of infestation. There are scattered areas of bank erosion and soil compaction in the floodplain forest due to boats pulling up and parking in certain areas. These eroded areas need to be

restored. The condition of the floodplain swamp is considered to vary from fair to good to excellent depending on the impact of erosion and the impacts of exotic plants.

General management measures: The floodplain swamp will require little direct management. Monitoring for human caused bank erosion should continue and the shore restored as appropriate. Because this community is primarily maintained by hydrology, hydrologic disturbances affecting the Silver Springs and Silver River such as flow and level changes will affect this community within the park. Input from the division, district and park staff regarding area aquifer withdrawal and other hydrologic disturbances will continue. Monitoring and treatment for new taro and other exotic plant infestations will continue.

WET FLATWOODS

Desired future condition: An over story of loblolly pine will be present. Pond cypress may reach into the canopy in some locations. The canopy is open, with pines being widely and of different age classes. This particular wet flatwoods will have a cabbage palm (*Sabal palmetto*) component unusual for most wet flatwoods. Native herbaceous cover is at least 50 percent. Pitcher plants and other carnivorous plant species may be present and abundant in some areas. Common shrubs include sweet pepperbush (*Clethra alnifolia*), fetterbush, large gallberry (*Ilex coriacea*) and wax myrtle. The Optimal Fire Return Interval for this community is 3-5 years.

Description and assessment: Wet flatwoods are found in management zones 3, 4, 5, 6, 7, 8 and 10. A rather unusual association of loblolly pine and cabbage palm comprise the dominant species in this community. Harper described this association in 1915. It is reportedly restricted to poorly drained clayey soils, chiefly the Eureka series, where the water table is within ten inches of the surface from two to six months during most years. Since loblolly pine is not particularly fire tolerant, there is a possibility that longleaf pine and/or slash pine may have been cut out of the wet flatwoods in the past. Loblolly pine may have occurred in lower numbers and expanded, or possibly, it dispersed into the wet flatwoods in the absence of other pine species.

There is also the possibility that the area designated as wet flatwoods is simply the drier end of the community type as described by Harper (see floodplain forest). Much of this community was clear-cut just prior to state acquisition in 1985. The regenerated loblolly pines and large, older loblollies along STATE ROAD 40 that had not been cut in 1985 were harvested beginning in 1996 due to an outbreak of SPB. Outbreaks and harvesting have occurred since 1996 to 2001. By 2001, most of the loblolly pines were harvested. Long-term restoration will involve maintaining an uneven-aged low-density loblolly stand. Restoration may require some planting of longleaf pine to diversify the forest. In addition, cogongrass is scattered throughout in extensive stands. Finally, that portion of the community left somewhat intact has an increasing number of hardwoods because of the long absence of fire.

General management measures: Prescribed fire should be applied to this community every three to five years. This community has been disturbed in the past due to timber harvests, exotic plant infestations and possibly by altered hydroperiod. Portions of this community are thick with regenerating loblolly pine. Mechanical thinning of the stand may be required if prescribed fire is not effective at naturally thinning the stand (see Natural Community Improvement section). Cogongrass treatment and monitoring will continue for this area.

BLACKWATER STREAM

Desired future condition: Characterized as perennial or intermittent watercourses originating in lowlands where extensive wetlands with organic soils collect rainfall and runoff, discharging it slowly to the stream. The stained waters are laden with tannins, particulates, and dissolved organic matter derived from drainage through adjacent swamps resulting in sandy bottoms overlain by organic matter. Emergent and floating vegetation (including golden club (*Orontium aquaticum*), smartweed (*Polygonum* sp.), grasses and sedges) may occur but is often limited by steep banks and dramatic seasonal fluctuations in water levels. Desired conditions include minimizing disturbance and alterations and preserving adjacent natural communities.

Description and assessment: The Ocklawaha River runs through a portion of the park south of State Road 40. Currently, the future of the river appears to have greatly improved with the deauthorization of the Cross Florida Barge Canal; however, the impacts of the barge canal on the Ocklawaha will remain evident until the Rodman Dam is removed. In addition to the impacts of the dam, there are also major threats to the quality of the blackwater stream associated with the water quality of lakes Apopka, Dora, Eustis and Griffin that drain into the Ocklawaha River. The portion of the Ocklawaha River along Delks Bluff Bridge (State Road 40) has bank erosion and compaction due to people fishing along the banks on the east shoreline of the river. The water quality of the Ocklawaha River is rated as fair by the Central Florida District Water Quality 1996 305(b) Technical Index.

Halfmile Creek appears to be fed partly by seepage but is primarily a blackwater stream. Residential development occurs upstream of the park. Trash and possibly additional pollutants enter the stream in this area. Petroleum and other chemical residues are washed into the stream from State Road 40 where the road crosses the stream. In July 2001 FDEP's Central District conducted a yearlong quarterly sampling of water quality, including Halfmile Creek, in order to quantify pollutant inputs to the Silver River. See the Hydrology section for a complete description. Halfmile Creek was identified as a site of elevated bacteria counts and phosphorus levels.

General management measures: Monitoring for human caused bank erosion should continue and the damage restored as appropriate. Because this community is primarily maintained by hydrology, hydrologic disturbances affecting the Silver Springs and

Silver River such as flow and level will affect this community within the park. Input from the division, district and park staff regarding hydrologic disturbances will continue.

SPRING-RUN STREAM

Desired future condition: Perennial watercourses that derive most, if not all, of their water from limestone artesian openings from the underground aquifer. The waters are typically cool, clear, and circumneutral to slightly alkaline. These factors allow for optimal sunlight penetration and minimal environmental fluctuations that promote plant and algae growth. However, the characteristics of the water can change significantly downstream as surface water runoff becomes a greater factor. Areas of high flow typically have sandy bottoms while organic materials concentrate around fallen trees and limbs and slow moving pools. Typical vegetation includes eel grass (*Vallisneria Americana*), arrowheads, southern naiads (*Najas guadalupensis*), and pondweeds (*Potamogeton* spp.).

Description and assessment: The Silver River runs through the center of the park. According to information published in the Central Florida District Water Quality 1996 305(b) Technical Index, the water quality of the river is good. However, there is concern over the unknown types of, sources of, and quantities of pollutants that may be entering the river by way of Halfmile Run, the spring boil and Silver Springs attraction. Increased inputs of nitrates are a concern. Silver Springs drains a very large basin, and inputs from great distances away have the potential to affect the quality of Silver River. Impacts from the attraction, such as pollutants from landscape maintenance and exotic impacts could negatively affect the Silver River. The Silver Springs attraction is located on state owned property and leased to a company to operate it as an attraction. The attraction is required to monitor all runoff into the headspring as well as implement removal efforts for invasive exotic plants and animals. The lease agreement requires a continual removal of all invasive exotic plants listed as Category I and II by the Florida Exotic Pest Plant Council (FLEPPC) from the attraction property and all waterways. The attraction is also in the process of replacing the filtering system around their animal exhibits due to concerns about contaminated runoff entering the river from that location. Taro and other exotic plants have been reduced to relatively minor infestations, but there are taro plants growing at the attraction that will continue to float down the river and infest new areas along the banks and in the floodplain forest.

The Silver River also receives a great deal of recreational use, particularly on weekends. Bank erosion is being caused by boat wakes and by visitors getting out of their boats and canoes on the few high spots that exist along the stream.

General management measures: Monitoring for human caused bank erosion should continue and the damage restored as appropriate. Because this community is maintained by hydrology, hydrologic disturbances affecting the Silver Springs and

Silver River such as flow and level will affect this community within the park. Input from the division, district and park staff regarding area aquifer withdrawal and other hydrologic disturbances will continue. Monitoring and treatment for new taro and other exotic plant infestations will continue. If problems within the Silver Springs attraction area are noted park staff will work with the attraction to resolve impacts to the headsprings due to attraction operations.

SINKHOLE

Desired future condition: A naturally contoured sink shaped by natural process free of human made debris is desired. Native vegetation will occur within and around the sink. Invasive exotic plants and animals will be removed from the area.

Description and assessment: A rather large sinkhole exists south of Main Park Drive and west of the campgrounds in management zone 20. It is located in the pocket of upland mixed forest that is surrounded by sandhill. The sinkhole is located at the southern end of the mixed forest community. It is not currently holding water. It was historically used as a trash dump and some in-park work has been done to remove visible debris. It is unknown how much trash remains in the sinkhole as dirt covers a lot of the area. Efforts to secure funding for more debris removal are on going. Mixed hardwoods and shrubs are the main vegetative cover. Exotic plants, mainly air potato (*Dioscorea bulbifera*), have been found here and removed.

General management measures: This community should be protection from visitor impacts and monitored for unauthorized foot traffic to minimize erosion. Efforts will continue to have trash removed from the sinkhole. The Division of Historical Resources will be consulted prior to ground disturbing activities. Exotic plant species removal will continue.

RUDERAL AREAS

Description and assessment: The ruderal areas have been included in the community types in which they occur. These ruderal areas are in the process of being restored. Ruderal areas include the former pasture areas on the south side of the park, the old fields along the south side of the Silver River, and an old dump area in the center of the park.

Desired future conditions: The ruderal areas within the park will be managed to remove FLEPPC Category I and II priority invasive exotic plant species. Other management measures include limited restoration efforts designed to minimize the effect of the ruderal areas on adjacent natural areas. Cost-effectiveness, return on investment and consideration of other higher priority restoration projects within the park will determine the extent of restoration measures in ruderal areas.

General management measures: Control of EPPC Category I and II invasive plant

species in ruderal areas will be on going. Prescribed fire may be applied for vegetative fuel management.

DEVELOPED AREAS

Description and assessment: Developed areas include the ranger station, family campground, Group Camp, picnic area with pavilion, office and shop area, cabins, four resident sites, and parking lots. A portion of the park is leased to Marion County for its Environmental Education facility and the Silver River Museum; this area is largely developed.

Desired future conditions: The developed areas within the park will be managed to minimize the effect of the developed areas on adjacent natural areas. Priority invasive exotic plant species (FLEPPC Category I and II species) will be removed from developed areas. Other management measures include proper stormwater management and development guidelines that are compatible with prescribed fire management in adjacent natural areas.

General management measures: Staff will continue to control invasive exotic plant species in developed areas of the park. Defensible space will be maintained around all structures in areas managed with prescribed fire or at risk of wildfires.

Imperiled Species

Imperiled species are those that are (1) tracked by FNAI as critically imperiled (G1, S1) or imperiled (G2, S2); or (2) listed by the U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FFWCC) or the Florida Department of Agriculture and Consumer Services (FDACS) as endangered, threatened or of special concern.

A population of pinkroot (*Spigelia loganioides*), an endangered plant species, is known to occur in the park. Within Silver River State Park, pinkroot is widely distributed throughout the floodplain forests. It also occurs in the field areas south of the river. The fields are slowly succeeding to upland mixed forest which will help shade out some of the exotic pasture grasses that pinkroot now must compete with for light and water.

A listed species of Florida crabgrass (*Digitaria floridana*) occurs in an improved pasture area near the river along with pinkroot. FNAI has records of it from only three locations throughout the state. Little is currently known about its status.

A species of silver buckthorn (*Sideroxylon alachuense*) listed as endangered by the FDACS occurs at the park on a knoll in a floodplain forest. FNAI notes that silver buckthorn is known from only two locations in the state, Silver River State Park and Paynes Prairie Preserve State Park. There are only five individual plants, one in poor condition, known to occur in one location at the park. The shrubs have been impacted

in the past by deer that rub their antlers on the trucks, but no recent rubbing was noted during the recent resource management evaluation. Management should include propagating more plants and placing them in similar habitats within the park boundaries, as well as in landscaped areas, and annual monitoring. On the same knoll with the buckthorn, there is also an endangered wood spurge, (*Euphorbia commutata*).

Godfrey's privet (*Forestiera godfreyi*), another endangered plant, occurs within the park. One specimen was found on the south side of the park in 1991. A small number of individuals of this shrub were found in the park in 2001, in the same location as the original plant record.

Gopher tortoises (*Gopherus polyphemus*) occur in some of the pasture areas as well as in the sandhill communities. Management practices include prescribed fire and habitat restoration. Gopher tortoises will benefit from the reduction of on-site and off-site hardwood species in the sandhill community.

There are several old records of gopher frogs (*Rana capito*) occurring in what is most likely Silver River State Park. There is one record with no date but recorded as Silver Springs, a second record recorded as 1955 also as Silver Springs, and a third record from 1954 recorded as Halfmile Creek, 0.5 mile northeast of Silver Springs (Franz and Smith 1993). There are no recent records of gopher frogs; however, the habitat still exists, and the frog may be rediscovered at the park.

Sherman's fox squirrels (*Sciurus niger shermanii*) occur in the pasture areas as well as in the sandhill communities. Fox squirrels are observed often in the park, but the park does not support a large population.

Previous land managers reported southeastern kestrels (*Falco sparverius paulus*) nesting around the Group Camp area of the sandhill community. There are no recent records of kestrels nesting in the area. This may be due to a lack of snags for nesting or may be related to the increasingly closed-canopy nature of the sandhill community due to lack of fire. Currently, a few kestrel nest boxes are located at the park in the sandhill community. These boxes are monitored by park staff. No kestrels have been documented using the boxes. Consideration may be given to expanding the nest box program. However, habitat restoration may be more the key to the kestrel's use of the area.

The Florida Manatee (*Trichechus manatus*) historically utilized the Silver and Ocklawaha Rivers. They are still occasionally documented in the rivers. A state of the art pressure detection and laser grid system has been integrated into the Rodman Dam locks to prevent manatee mortalities and facilitate their movements (Bowman, pers. comm.).

The bluenose shiner (*Pteronotropis welaka*) and southern tessellated darter (*Etheostoma*

olmstedi maculaticeps) also occur in the Ocklawaha River. The bluenose shiner is listed as a species of special concern, and the southern tessellated darter is listed as a threatened species by the State. The bluenose shiner has not been collected from the Ocklawaha River main channel or its tributaries since 1949. The southern tessellated darter has not been collected from the main channel since 1949 but has been regularly collected from Orange Creek at State Road 315 since 1975. It appears that the bluenose shiner is extremely rare in, or may have been extirpated from, the Ocklawaha River. It also appears that the southern tessellated darter has been eliminated from the main channel of the Ocklawaha River. Removal of Rodman Reservoir and the restoration of the Ocklawaha River could potentially benefit the bluenose shiner and the southern tessellated darter. Removal of the reservoir would increase tributary flow and greatly increase the availability of stream habitat suitable for the darter. Since the bluenose shiner may be extinct within the system, restoration efforts and a re-introduction program may be necessary to restore this species.

If issues concerning imperiled species and their management arise, staff will coordinate with FFWCC to ensure that management and monitoring of imperiled animal species is consistent with statewide recovery goals.

Table 3 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 Division staff or others, and identifies the current level of monitoring effort. The codes used under the column headings for management actions and monitoring level are defined following the table. Explanations for federal and state status as well as FNAI global and state rank are provided in Addendum 6.

Table 3: Imperiled Species Inventory

Common And Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FFWCC	USFWS	FDACS	FNAI		
PLANTS						
Florida crabgrass <i>Digitaria floridana</i>				G1, S1	10	Tier 2
Wood spurge <i>Euphorbia commutata</i>			LE	G5, S2	10	Tier 1
Godfrey's swamp privet <i>Forestiera godfreyi</i>			LE	G2, S2	10	Tier 2
Silver buckthorn <i>Sideroxylon alachuense</i>			LE	G1, S1	10	Tier 2
Pinkroot <i>Spigelia loganioides</i>			LE	G2Q, S2	10	Tier 2

Common And Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FFWCC	USFWS	FDACS	FNAI		
FISHES						
Blue Nose Shiner <i>Pteronotropis welaka</i>	LS			G4,S4		Tier 1
Southern Tessellated Darter <i>Etheostoma olmstedi</i> <i>maculaticeps</i>	LS			G5,S1		Tier 1
AMPHIBIANS						
Gopher frog <i>Rana capito</i>	LS			G3,S3	10	Tier 1
REPTILES						
Gopher Tortoise <i>Gopherus polyphemus</i>	LT			G3, S3	1,2,6,7 , 10	Tier 3
American Alligator <i>Alligator mississippiensis</i>	LS	LT(S/A)		G5, S4	4, 10	Tier 1
Eastern Indigo Snake <i>Drymarchon corais couperi</i>	LT	LT		G3, S3	1, 6, 7, 10	Tier 1
Florida Pine Snake <i>Pituophis melanoleucus mugitus</i>	LS			G4T3, S3	1, 6, 7, 10	Tier 1
Short-tailed Snake <i>Stilosoma extenuatum</i>	LT			G3, S3	1	Tier 1
BIRDS						
Snowy Egret <i>Egretta thula</i>	LS			G5, S3	10	Tier 1
Little Blue Heron <i>Egretta caerulea</i>	LS			G5, S4	10	Tier 1
Tricolored Heron <i>Egretta tricolor</i>	LS			G5, S4	10	Tier 1
White Ibis <i>Eudocimus albus</i>	LS			G5, S4	10	Tier 1
Wood Stork <i>Mycteria americana</i>	LE	LE		G4, S2	10	Tier 1
Osprey <i>Pandion haliaetus</i>	LS			G5, S3S4	10	Tier 1
Southeastern American Kestrel <i>Falco sparverius paulus</i>	LT			G5T4,S 3	1, 5, 6, 7, 10	Tier 1
Limpkin <i>Aramus guarauna</i>	LS			G5, S3	10	Tier 1
Bald Eagle <i>Haliaeetus leucocephalus</i>	LS			G5, S3		Tier 1

Common And Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FFWCC	USFWS	FDACS	FNAI		
MAMMALS						
Sherman's Fox Squirrel <i>Sciurus niger shermani</i>	LS			G5T3, S3S3	1, 6, 7, 10	Tier 2
Florida Black Bear <i>Ursus americanus floridanus</i>	LT			G5T2, S2	13	Tier 1
Florida Manatee <i>Trichechus manatus</i>	LE	LE		G2, S2		Tier 1

Management Actions:

1. Prescribed Fire
2. Exotic 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.

Detailed management goals, objectives and actions for imperiled species in this park are discussed in the Resource Management Program section of this component and the Implementation Component of this plan.

Exotic Species

Exotic species are plants or animals not native to Florida. Invasive exotic species are able to out-compete, displace or destroy native species and their habitats, often because they have been released from the natural controls of their native range, such as diseases, predatory insects, etc. If left unchecked, invasive exotic plants and animals alter the character, productivity and conservation values of the natural areas they invade.

The sandhills, upland mixed forest, mesic and wet flatwoods, floodplain swamp and spring-run stream are subject to the aggressive spread of exotic plants. Where highly competitive exotic plants have become established, annual removal plans will be developed to eliminate them from the natural communities they have invaded.

Several highly invasive exotic plants are currently being treated at Silver River State Park including cogongrass, air potato, camphor tree, Chinaberry, mimosa, tropical soda apple and water hyacinth. Taro and cat's claw vine, both Category I plants, and bamboo also occur in the park. As listed in the species list, two additional Category I species, shrub lantana and water-lettuce occur in the park. There are also several Category II species, including alligator weed, umbrella sedge, rose natalgrass, Caesar-weed, Chinese wisteria, and elephant-ear.

All the exotic plant species are a threat to the integrity of the unit's natural communities and are in conflict with the Division's goal of preserving and maintaining examples of the natural Florida. Park staff has successfully obtained several grants to treat exotic plants; these efforts will continue. There are several upland and aquatic exotic plant species that pose a grave threat to the biological integrity of the unit. Some of the exotics are encroaching from the attraction parcel that is not managed as part of Silver River State Park.

The species most prevalent on the property is cogongrass. It occurred in hundreds of acres within the sandhills, upland mixed forest and mesic and wet flatwoods at Silver River State Park. There are reports that it was seeded into areas by the former owners. Numerous dense patches of cogongrass both north and south of the Silver River have been treated and retreated by both park staff and contractors. Park staff currently retreat existing patches as resources allow and monitor for new occurrences.

Monitoring and treatment efforts for invasive exotic plant species are on going. Efforts

are underway to GPS and map all known locations of exotic plants in the park. Since 2002, 2,249 acres of invasive exotic plants have been treated at the park.

Table 4 contains a list of the FLEPPC Category I and II invasive, exotic plant species found within the park (FLEPPC, 2009). The table also identifies relative distribution for each species and the management zones in which they are known to occur. An explanation of the codes is provided following the table. Addendum 5 contains an inventory of all exotic species within the park.

Table 4: Inventory of FLEPPC Category I and II Exotic Plant Species

Common And Scientific Name	FLEPPC Category	Distribution	Management Zone
Mimosa <i>Albizia julibrissin</i>	I	2	18
Alligator weed <i>Alternanthera philoxeroides</i>	II	2	30
Camphor tree <i>Cinnamomum camphora</i>	I	2	1, 18, 23, 29
Wild taro <i>Colocasia esculenta</i>	I	3	30
Umbrella plant <i>Cyperus involucratus</i>	II	2	1
Air Potato <i>Dioscorea bulbifera</i>	I	1	13, 20
Durban crowfootgrass <i>Dactyloctenium aegyptium</i>	II	2	9, 18
Cogongrass <i>Imperata cylindrical</i>	I	3	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 19, 21, 29
Glossy privet <i>Ligustrum lucidum</i>	I	0	2, 1
Chinese privet <i>Ligustrum sinense</i>	I	0	13, 1
Japanese climbing fern <i>Lygodium japonicum</i>	I	0	2, 1
Shrub lantana <i>Lantana camara</i>	I	1	9, 18, 23
Cat's claw vine <i>Macfadyena unguis-cati</i>	I	1	1, 9, 10,
Chinaberry <i>Melia azedarach</i>	II	1	13, 18, 22, 23, 24, 29

Common And Scientific Name	FLEPPC Category	Distribution	Management Zone
Rose Natalgrass <i>Melinis repens</i>	I	6	11, 19, 21
Water-lettuce <i>Pistia stratiotes</i>	I	4	30
Caesar's weed <i>Urena lobata</i>	II	2	1, 9, 10, 13, 18, 24, 29

Distribution Categories (FNAI):

- 0.....No current infestation: All known sites have been treated and no plants are currently evident.
- 1Single plant or clump: One individual plant or one small clump of a single species.
- 2Scattered plants or clumps: Multiple individual plants or small clumps of a single species scattered within the gross area infested.
- 3.....Scattered dense patches: Dense patches of a single species scattered within the gross area infested.
- 4.....Dominant cover: Multiple plants or clumps of a single species that occupy a majority of the gross area infested.
- 5Dense monoculture: Generally, a dense stand of a single dominant species that not only occupies more than a majority of the gross area infested, but also covers/excludes other plants.
- 6.....Linearly scattered: Plants or clumps of a single species generally scattered along a linear feature, such as a road, trail, property line, ditch, ridge, slough, etc. within the gross area infested.

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

In some cases, native wildlife may also pose management problems or nuisances within state parks. A nuisance animal is an individual native animal whose presence or activities create special management problems. Examples of animal species from which nuisance cases may arise include raccoons, gray squirrels, venomous snakes and alligators. Nuisance animals are dealt with on a case-by-case basis.

Nine-banded armadillos (*Dasypus novemcinctus*) and feral hogs (*Sus scrofa*) are commonly found in the park. Hog rooting can devoid large areas of vegetation, create extensive ground disturbance, disrupt surface water flow, inhibit fire from moving across the landscape, decimate the arthropod community and compete with native wildlife species for food resources. Evidence of hog disturbance can easily be found in

the floodplain forest and flatwoods communities both north and south of the Silver River. Armadillos create the same disturbances on a smaller scale. Armadillo disturbances can be found throughout the park. Park staff currently removes armadillos and feral hogs. Park staff monitor for the animals and their ground disturbance. Since 2002, park staff efforts have resulted in the removal of 130 feral hogs and 29 armadillos. USDA Wildlife Services has been hired to perform aggressive removal of hogs during times when populations are elevated. This contract will continue until funds are depleted. Detailed management goals, objectives and actions for management of invasive exotic plants and exotic and nuisance animals are discussed in the Resource Management Program section of this component.

Asian rhesus monkeys (*Macaca mulatta*) are currently found in the floodplain swamps adjacent to the Silver and Ocklawaha Rivers. They were introduced to the Silver Springs attraction area in the 1930s and have ranged freely since that time. Removal of the monkeys will proceed according to the lease agreement between the Department and the attraction.

Coyotes (*Canis latrans*), Sika deer (*Cervus nippon*) and fallow deer (*Cervus dama*) have been occasionally seen on the property. A sika deer was observed as recently as 2007. Direct impacts to the park resources from these animals have not been documented, though these species compete with native species for resources.

Armored catfish (*Pterygoplichthys* sp.) now inhabit the Silver River. The type of this species is not known. Negative effects of this species on the park's water resources are not yet known, though their burrowing activities have led to shore erosion problems in other waterways.

Special Natural Features

The former (prior to blowdown in 1993) national champion cedar elm (*Ulmus crassifolia*), the current national co-champion cedar elm (shared with a tree in Texas), and a current state champion shumard oak (*Quercus shumardii*) are found in the unit. An exceptionally large swamp chestnut oak (*Quercus michauxii*) also occurs in the unit. These large trees all occur on the north side of the river just above the floodplain forest.

Several listed species that occur in the park are restricted in both range and numbers. Two rarely encountered shrubs, silver buckthorn and Godfrey's privet occur on the property. Additionally, pinkroot, a small herbaceous perennial listed as endangered by FDACS, occurs in large numbers at Silver River. This may constitute the largest protected population of this plant. Florida crabgrass also occurs in large numbers but has a limited distribution within the park.

A number of tree species reportedly reach the southern limit of their continuous distributions along the Silver River. These include box-elder (*Acer negundo*), white ash

(*Fraxinus americana*), hop-hornbeam (*Ostrya virginiana*), bluff oak (*Quercus austrina*), swamp chestnut oak (*Quercus michauxii*), shumard oak, and cedar elm.

A large freshwater shrimp, (*Macrobrachium carcinus*), has been reported from the springs (Martin 1966). There is also a site record from Silver Glen Springs in the Ocala National Forest (Williams 1984). The shrimp was regarded as rare in the spring but not infrequently seen in deep holes and under large rock outcrops. Whether this interesting species still occurs in Silver Springs is unknown.

The Silver Springs that form the Silver River are special natural features. According to Munch et al., Silver Springs discharges approximately 766 cubic feet per second (cfs) (514 million gallons per day [mgd]) from the Floridan aquifer, and is one of the largest first magnitude springs in the world. It has the largest discharge of all inland first-magnitude springs in Florida (Walsh et al. 2009). In addition to the main boil, there are several springs located along the river including Catfish Reception Hall, Ladies Parlor, Devil's Kitchen, Blue Grotto, Christmas Tree Springs, First Fishermans Paradise, Second Fishermans Paradise and Timber Springs. The Silver Springs constitutes a complex aquatic ecosystem displaying most of the structural and functional features identified in aquatic ecology (Munch et al. 2006).

Cultural Resources

This section addresses the cultural resources present in Silver River State Park that may include archaeological sites, historic buildings and structures, cultural landscapes and collections. The Florida Department of State (FDOS), Division of Historical Resources (DHR) maintains the master inventory of such resources through the Florida Master Site File (FMSF). State law requires that all state agencies locate, inventory and evaluate cultural resources that appear to be eligible for listing in the National Register of Historic Places. Addendum 7 contains the management procedures for archaeological and historical sites and properties on state-owned or controlled properties, the criteria used for evaluating eligibility for listing in the National Register of Historic Places and the Secretary of Interior's definitions for the various preservation treatments (restoration, rehabilitation, stabilization and preservation). For the purposes of this plan, significant archaeological site, significant structure and significant landscape means those cultural resources listed or eligible for listing in the National Register of Historic Places. The terms archaeological site, historic structure or historic landscape refer to all resources that will become 50 years old during the term of this plan.

Condition Assessment

Evaluating the condition of historic structures and landscapes is accomplished using a three-part evaluation scale, expressed as good, fair and poor. These terms describe the present condition, rather than comparing what exists to the ideal condition. Good describes a condition of structural stability and physical wholeness, where no obvious deterioration other than normal occurs. Fair describes a condition in which there is a

discernible decline in condition between inspections, and the wholeness or physical integrity is and continues to be threatened by factors other than normal wear. A fair assessment is usually a cause for concern. Poor describes an unstable condition where there is palpable, accelerating decline, quickly compromising the physical integrity of the resource. A resource in poor condition suffers obvious declines in physical integrity from year to year. A poor condition suggests the need for immediate action to reestablish physical stability.

Level of Significance

Applying the criteria for listing in the National Register of Historic Places involves the use of contexts as well as an evaluation of integrity of the site. Every cultural resource's significance derives from historical, architectural or archaeological contexts. Evaluation will result in a designation of NRL (National Register or National Landmark Listed or located in an NR district), NR (National Register eligible), NE (not evaluated) or NS (not significant) as indicated in the table at the end of this section.

For collections, there are no criteria for use in determining the significance of collections or archival material. Usually, significance of a collection is based on what or whom it may represent. For instance, a collection of furniture from a single family and a particular era in connection with a significant historic site would be considered highly significant. In the same way, a high quality collection of artifacts from a significant archaeological site would be of important significance. A large herbarium collected from a specific park over many decades could be valuable to resource management efforts. Archival records are most significant as a research source. Any records depicting critical events in the park's history, including construction and resource management efforts, would all be significant.

The following is a summary of the FMSF inventory. In addition, this inventory contains the evaluation of significance.

Pre-Historic and Historic Archaeological Sites

Desired future condition: All significant archaeological sites within the park that represent Florida's cultural periods or significant historic events or persons are preserved in good condition in perpetuity, protected from physical threats and interpreted to the public.

The FMSF lists 26 sites within the park. Of these, 25 are archeological sites and one is a historic bridge. There are five recorded sites on state land within the Silver Springs Attraction and outside the park's current management responsibility. They are 8MR59, 8MR83, 8MR92, 8MR93 and 8MR1082 (Edwards pers. comm., FDOS, LaMont pers. comm.).

North and east central Florida have a rich cultural prehistory and history. The Silver

River area saw occupation and/or utilization by a cultural sequence of Paleo Indian, Archaic, Mount Taylor, Orange, Transitional, St. Johns, First Spanish Period, British Period, Second Spanish Period, Territorial and Seminole (Milanich and Fairbanks 1980).

Silver River State Park encompasses highly significant prehistoric cultural resources. Several archaeological surveys and studies have been undertaken at the park this quarter century. 8MR130, the Guest Mammoth Kill Site also known as the Silver Run Mammoth Site, is a significant Paleo Indian site located 1.5 miles downstream from the head-spring of Silver River, on the south bank. Northern Arizona University conducted underwater excavations in 1973-74 (FDOS, 8MR130, Rayl 1974, Hoffman 1982, Warzeski 2000). In addition to important Paleo Indian sites such as the Guest Mammoth Kill Site, there are important Archaic and Woodland period sites represented. The Paradise Park site (8MR92, on state property but currently outside the park boundary) contains successive layers of occupation, which date from Paleo-Indian times (12,000-10,000 B.P.) through the Woodland tradition. It is rare for a single archaeological site to yield such a long continuous sequence of occupation (FDOS: 8MR92, 8MR130, Hemmings 1975). 8MR1081 is a prehistoric burial mound, of undetermined cultural association (FDOS, 8MR1081). Its condition assessment is good, although its location is accessible enough that unauthorized access is a threat to its condition. Therefore, park development and visitor use should avoid the general area of the site.

In addition to the prehistoric sites, the park contains significant historic sites. Beginning in the 1820s, the Silver River was utilized to transport military supplies to Fort King and Fort Brooke. Supplies were shipped up the river then carried overland to the forts located south of the springs (FDOS: 8MR1084, Baker 1990, Gannon 1996).

The earliest historic occupation of the Silver River valley dates to the Second Seminole War era. In accordance with the Armed Occupation Act of 1842, Lewis Ballard was granted a permit to settle the northeast quarter of Sec. C, T15S and R23E on 11 March. His homestead, and that of Param Moody, is evident on the original survey plat of the area, dated 6 May 1844 (Warzeski 2000). 8MR1084, Franklin 93, was initially believed to be the remains of a Seminole War era American Army fort, Fort Brooke, but subsequent archeological and historical investigations have placed Fort Brooke in present-day Tampa (FDOS: 8MR1084, 8H10013). Its condition assessment is fair, although its location is accessible enough to be potentially threatened by unauthorized access. Therefore, park development and visitor use should avoid the general area of the site.

In 1852, George Pasteur experimented with raising oranges and cotton. In 1855, he built the Marshall Plantation, containing a sugar mill, which burned in 1868. A rubble pile containing limerock foundation blocks from the Marshall Plantation has been identified on park property. The park also contains sites dating to the late 19th and early 20th centuries, including a 1930s structure, a 1950s structure and an unidentified concrete structure that may have been a watering trough or cattle dip vat (Warzeski 2000) as well

as two cattle dipping vats.

The park needs to have an archaeological predictive model created to guide future development and survey work. Portions of the park have been subjected to survey; however, these surveys were single purpose. For example, in 1991, Denson surveyed the Ocklawaha River sites; Weisman recorded the Boardwalk site as part of a project clearance, and Wisenbaker (1999) found an unexpected Seminole site while monitoring construction of a park camping area. Wilburn A. Cockrell conducted a subsequent archaeological and historical survey within the cabin area at each of the cabin sites and the museum parking area. A Phase II survey of the cabin area is recommended. This future survey will help determine the sites eligibility for listing on the National Register of Historic Places.

A cultural resources evaluation was conducted at Silver River State Park in March 2000. Areas inspected during the evaluation included sites that reportedly showed disturbance, from either human activity or natural occurrences. The areas inspected included the following sites: MR33 (Mound near Silver Springs), MR83 (NN), MR532 (Silver River 2), MR533 (Silver River 3), and MR1922 (Canoe Launch).

A local historian (Mickey Summers) has reported finding evidence of historic roadways in areas of the park. His findings are still being researched and have not yet been recorded. The roadways, including a portion of the Fort King Military Road, are especially evident in the area immediately north of Sharpe's Ferry Road and south of Silver River. These findings are preliminary and only hand drawn maps of the roads have been created. It is very likely that a comprehensive survey of the park would yield both additional information about recorded sites and the location of new sites.

Level of Significance: Applying the criteria for listing in the National Register of Historic Places involves the use of contexts as well as an evaluation of integrity of the site. Every significant archaeological site's significance derives from historical or archaeological contexts. Evaluation will result in a designation of NRL (National Register or National Landmark Listed or located in an NR district), NR (National Register eligible), NE (not evaluated) or NS (not significant) as indicated in the table at the end of this section.

Three archaeological sites on park property are recorded in the FMSF as potentially eligible for the National Register of Historic Places: Cactus Flower Site (8MR1878), Oak Hammock (8MR1920) and Canoe Launch Site (8MR1922). The Cactus Flower Site (8MR1878) is considered to be of local, regional and statewide significance as part of a complex of sites associated with Silver Springs. Phase I and Phase II archaeological investigations yielded materials that determined that the site was utilized during the Archaic, Post-Archaic and possibly the Paleo Periods, and as such, have the potential to provide information about changing "settlement patterns, resource exploitation, and

other patterns of temporal and intraregional variation." (Chance and Smith 1991, p. 113) The Oak Hammock (8MR1920 site is considered significant for its high density of artifacts showing evidence of occupation for eight to ten thousand years during the Alachua and Orange periods. (Baker 1990, pp.8, 23) The structural ruins at Canoe Launch Site (8MR1922) were identified as possibly being associated with the Lewis Ballard homestead dating from the 1840s. Preliminary investigations of the area indicate that subsurface feature relative to the early home site remain in the ground. (Baker 1990, pp.16, 24) All Three of these sites are considered significant under National Register Criteria D: Information Potential.

General management measures: Today, river erosion, vegetation growth, vandalism and animal burrowing threaten some of the recorded sites. Many of the sites are further threatened by their remote location from frequent staff work locations, easy access by unauthorized visitors, and the resulting difficulties maintaining a park staff presence. Park staff should backfill open pot-hunting pits, animal burrows and erosion channels with sterile sand and close and re-vegetate unauthorized access trails.

There is much woody vegetation on top of the midden at 8MR53/8MR533, Silver Springs Run Midden or Silver River 3, including trees over 4 inches in diameter. Careful consideration should be made as to whether the larger trees should remain or be removed, and if so, when. Their roots may have become part of the structure of the midden and removing the trees may result in the surrounding area slumping or receding as the roots rot. Trees of less than four inches in diameter should be removed by cutting the tree at ground level and then applying an approved herbicide to the stump to prevent re-sprouting. No attempt should be made to remove the roots or grind the stump. Large dead or dying trees should be removed by cutting the tree at ground level in a manner that will not affect the earthworks.

Site 8MR1925 Concrete Structure may warrant further evaluation to determine if it was a cattle-dipping vat. The verification of this past use may warrant testing and treatment of the surrounding area for chemical contamination.

Site 8MR1878, the Cactus Flower Site, was heavily impacted during State Road 40 construction. The condition assessment for this site was poor. This site currently suffers from erosion problems and is located in a highly visible area. As a protective measure, the park staff has fenced off access to the site in an effort to keep the public from looting it. The park has consulted with experts who have recommended stabilization by means of silt fence instillation, replacing eroding sediment, and ground cover plantings to prevent further erosion.

Evaluation of sites that do not currently have significance determined will be required and will help guide the management of these sites. All other archaeological sites should receive preservation treatments, which are essentially monitoring and maintenance.

Historic Structures/Sites

Desired future condition: All significant historic structures and landscapes that represent Florida's cultural periods or significant historic events or persons are preserved in good condition in perpetuity, protected from physical threats and interpreted to the public.

Description: A 1950s cottage style building is located on the property near the shop/group camp area and is currently used as a ranger residence. It has been remodeled and is maintained as a residence. It has not been documented in the FMSF, but will be within this plan cycle. A 1938 farmhouse was also built on the property prior to state purchase and is located near the cracker village and day use area. The shed located behind the house served as temporary living quarters for the family while they built the house. The shed is also maintained and protected by park staff. The farmhouse has served as a residence in the past but is currently used as a storage facility and meeting room. This structure is not currently documented in the FMSF but will be within the current plan cycle.

Condition Assessment: The 1938 farmhouse is in good condition as of December 2009. It is inspected and maintained by park staff regularly. The shed associated with the house is in need of a new roof and replacement doors. There are no discernable threats to the structure that require management action at this time.

The 1950s cottage is in good condition as of December 2009. It is currently a ranger residence. It is inspected and maintained regularly by park staff. Some of the windows and the back porch are in need of repair or replacement. There are no discernable threats to the structure that require management action at this time.

Level of Significance: Applying the criteria for listing in the National Register of Historic Places involves the use of contexts as well as an evaluation of integrity of the site. Every significant historical or cultural resource's significance derives from historical contexts. Evaluation will result in a designation of NRL (National Register or National Landmark Listed or located in an NR district), NR (National Register eligible), NE (not evaluated) or NS (not significant). The historical significance of these two houses will need to be evaluated based on the National Register of Historic Places criteria.

General management measures: The two historic houses should be inspected regularly, to identify potential threats or damage, and necessary rehabilitation treatments. The DHR should be consulted for guidance with rehabilitation treatments.

Collections

Desired future condition: All historic, natural history and archaeological objects within the park that represent Florida's cultural periods, significant historic events or persons,

or natural history specimens are preserved in good condition in perpetuity, protected from physical threats and interpreted to the public.

The park itself does not currently maintain any collections of archeological artifacts or archival materials. Collections do exist within the park but are loaned to and managed by Marion County for use in their museum and environmental center located within the park.

Exhibits concerning archaeology and history are found at the Silver River Museum and Environmental Education Center. The facility is located on park property and is owned and managed by the Marion County School Board. Collection objects are on loan from DHR and managed by the school board. The exhibits show careful research and professional exhibit design and appear to be in good condition.

Level of Significance: Criteria do not exist which helps in the evaluation of the significance of collections or archival material. Usually, significance of a collection is based on what or whom it may represent. For instance, a collection of furniture from a single family and a particular era in connection with a significant historic site would be considered highly significant. In the same way, a high quality collection of artifacts from a significant archaeological site would be of important significance. A large herbarium collected from a specific park over many decades could be valuable to resource management efforts. Archival records are most significant as a research source. Any records depicting critical events in the park's history, including construction and resource management efforts, would all be significant.

Detailed management goals, objectives and actions for the management of cultural resources in this park are discussed in the Cultural Resource Management Program section of this component. Table 5 contains the name, reference number, culture or period, and brief description of all the cultural sites within the park that are listed in the FMSF. The table also summarizes each site's level of significance, existing condition and recommended management treatment. An explanation of the codes is provided following the table.

Table 5: Cultural Sites Listed in the Florida Master Site File

Site Name And Fmsf #	Culture/Period	Description	Significance	Condition	Treatment
Delks Landing Mound 8MR32	unknown	Archaeological Site	NE	Unknown	P

Mound near Silver Springs 8MR33	St. Johns 1a and 1b	Archaeological Site	NE	Poor	P
Silver Springs Run Midden/Silver Site River 3) 8MR53/8MR533	Prehistoric	Archaeological Site	NE	Unknown	P
Silver Springs 8MR59	Paleoindian	Archaeological Site	NE	Unknown	P
Guest Mammoth Kill Site 8MR130	Paleoindian	Archaeological Site	NE	Unknown	P
Silver River 2 8MR532	Weeden Island, A.D. 450-1000	Archaeological Site	NE	Good	P
F 65 8MR1081	Indeterminate	Archaeological Site	NE	Good	P
F 67 8MR1083	Indeterminate	Archaeological Site	NE	Unknown	P
Fort Brooke / Franklin 93 8MR1084	Nineteenth century American 1821-1899	Archaeological Site	NE	Fair	P
Cactus Flower Site 8MR1878	Alachua A.D. 1250-A.D. 1600 Archaic, 8500 B.C. -1000 B.C. Middle Archaic Orange Paleoindian 10,000B.C.-8500B.C. St.Johns 700B.C. - A.D.1500 Transitional 1000B.C.-700B.C.	Archaeological Site	NR	Poor	S
Oak Hammock 8MR1920	Alachua A.D., 1250-A.D. 1600. Orange	Archaeological Site	NR	Good	P
Silver River State Park 8MR1921	Twentieth century American, 1900-present	Archaeological Site	NE	Unknown	P
Canoe Launch Site 8MR1922	Nineteenth century American, 1821-	Archaeological Site	NR	Unknown	P

	1899. Twentieth century American, 1900- present Prehistoric				
Junk Car Site 8MR1923	Modern, 1950- present. World War II and Aftermath 1941-1950	Archaeological Site	NE	N/A	n/a
Trash Dump Site 8MR1924	Modern, 1950- present. World War II and Aftermath 1941-1950	Archaeological Site	NS	Unknown	P
Concrete Structure Site 8MR1925	Twentieth century American, 1900- present	Archaeological Site	NE	Unknown	P
Boardwalk Site 8MR2195	Prehistoric lacking pottery	Archaeological Site	NE	Unknown	P
Friendly Tortoise 8MR2451	Prehistoric lacking pottery	Archaeological Site	NS	Unknown	P
Suburban Sanctuary 8MR2452	St. Johns, 700 B.C. – A.D. 1500	Archaeological Site	NS	Unknown	P
Ishti Semoli 8MR2703	Twentieth century. American 1900- present. Late Archaic. Cades Pond 300B.C.-A.D.800. Orange. Seminole 1716- present. St.Johns 700B.C.- A.D.1500. St.Johns I 700B.C.-A.D.800	Archaeological Site	NE	Unknown	P
Silver River Run Canoe 8MR3173	Prehistoric	Archaeological Site	NE	Unknown	P
Marshall Plantation 8MR3214	Nineteenth century American 1821-	Archaeological Site	NE	Unknown	P

	1899				
Mystery Snail Midden 8MR3266	Prehistoric	Archaeological Site	NE	Unknown	P
Delk's Bluff Midden 8MR3377	Twentieth century American 1900- present, Prehistoric	Archaeological Site	NE	Unknown	P
State Road 40/326 Site 8MR3477	Prehistoric lacking pottery	Archaeological Site	NS	Unknown	P
Old Ocklawaha Bridge 8MR3507	unknown	Historic Bridge	NS	Ruinous	P
Farm House (FMSF # pending)	c. 1938	Historic Structure	NE	Good	RH
Shed (FMSF# pending)	c. 1930s	Historic Structure	NE	Fair	RH
Ranger Residence (FMSF# pending)	c. 1950s	Historic Structure	NE	Good	RH

Significance:

NR.....National Register eligible

LS.....locally significant

NE.....not evaluated

NS.....not significant

Recommended Treatment:

RSRestoration

RHRehabilitation

STStabilization

PPreservation

RESOURCE MANAGEMENT PROGRAM

Management Goals, Objectives and Actions

Measurable objectives and actions have been identified for each of the Division's management goals for Silver River State Park. Please refer to the Implementation Schedule and Cost Estimates in the Implementation Component of this plan for a consolidated spreadsheet of the recommended actions, measures of progress, target year for completion and estimated costs to fulfill the management goals and objectives of this park.

While, the Division of Recreation and Parks utilizes the ten-year management plan to

serve as the basic statement of policy and future direction for each park, a number of annual work plans provide more specific guidance for Division staff to accomplish many of the resource management goals and objectives of the park. Where such detailed planning is appropriate to the character and scale of the park's natural resources, annual work plans are developed for prescribed fire management, exotic plant management and imperiled species management. Annual or longer-term work plans are developed for natural community restoration and hydrological restoration. The work plans provide the Division with crucial flexibility in its efforts to generate and implement adaptive resource management practices in the state park system.

The work plans are reviewed and updated annually. Through this process, the Division's resource management strategies are systematically evaluated to determine their effectiveness. The process and the information collected is used to refine techniques, methodologies and strategies, and ensures that each park's prescribed management actions are monitored and reported as required by Chapters 253.034 and 259.037, Florida Statutes.

The goals, objectives and actions identified in this management plan will serve as the basis for developing annual work plans for the park. Since the plan is based on conditions that exist at the time the plan is developed, the annual work plans will provide the flexibility needed to adapt to future conditions as they change during the ten-year management planning cycle. As the park's annual work plans are implemented through the ten-year cycle, it may become necessary to adjust the management plan's priority schedules and cost estimates to reflect these changing conditions.

Natural Resource Management

Hydrological Management

Goal: Protect water quality and quantity in the park, restore hydrology to the extent feasible and maintain the restored condition.

The natural hydrology of most state parks has been impaired prior to acquisition to one degree or another. Florida's native habitats are precisely adapted to natural drainage patterns and seasonal water level fluctuations, and variations in these factors frequently determine the types of natural communities that occur on a particular site. Even minor changes to natural hydrology can result in the loss of plant and animal species from a landscape. Restoring state park lands to original natural conditions often depends on returning natural hydrological processes and conditions to the park. This is done primarily by filling or plugging ditches, removing obstructions to surface water "sheet flow," installing culverts or low-water crossings on roads, and installing water control structures to manage water levels.

Objective: Monitor and analyze water resources of the park.

Several management concerns at the park pertain to hydrology. The SJRWMD is

responsible for water control in the unit as well as in the surrounding drainage basin. Minimum Flows and Levels (MFL) have not been set for Silver Springs but are scheduled for 2011. Collaboration between USGS, SJRWMD and FPS should continue to insure water flow and level measurement activities can be maintained and expanded if needed. Currently, the water quality in the unit has been shown to be declining. Groundwater nutrient levels are increasing, and the springs collect water from an extremely large area, at least some of which is unconfined. Aquifer connections run in several directions towards the headsprings and cover a large geographic area. The capture zone for Silver Springs extends almost 20 miles north and south and nearly ten miles east and west of the main spring boil. This includes the cities of Ocala and Belleview. Accordingly, activities in the surrounding uplands can potentially affect the water quality and quantity of the unit even if activities occur at some distance from the park. In 2005, the annual nitrate-loading rate for Silver Springs was 529 tons per year (SJRWMD 2006). Nitrate nitrogen is not a naturally occurring compound in the aquifer. This synthetic compound has been shown to damage aquatic life at very low levels (2 mg/l). There is great reason to be concerned about the Florida aquifer in the area around Silver Springs as the springs watershed covers a vast area, as the aquifer is unconfined just west of the park, and as development is steadily increasing in the area. Since the headsprings collect water from a large surrounding area, any projects that threaten the quality of the groundwater are of concern to the park. FDEP (2001) completed a yearlong water quality sampling effort attempting to quantify where pollutant inputs were arising from in the upper portion of the river. The nitrate input is predominantly in the groundwater while high bacterial and phosphorus levels were detected in Halfmile Creek.

In addition to concern about the spring's water quality, there is need for a qualitative investigation of the surface water entering the park. The largest area of concern is the input from the Halfmile Creek drainage. This creek receives direct runoff from State Road 40 that travels for only a short distance before emptying into the spring-run at about 0.75 mile downstream of the spring boil. Redirection of storm water runoff received from State Road 40 is scheduled for completion in September 2010; however, Halfmile Creek may still receive direct runoff during extreme rainfall.

The Division should stay involved in area development planning. Properties in the spring recharge basin should be acquired when possible to protect spring water quality. The Division staff will continue to participate in the Silver Springs Basin Working Group to protect the long-term quality of the Silver River. Effort should be made to encourage and participate in a comprehensive, basin-wide hydrological study to document historic conditions and model recent trends in surface and ground water level regimes and water quality when the opportunity presents itself. The FPS District staff reviews all water consumptive use permits submitted to the SJRWMD within the vicinity of Silver Springs and its basin and provides comments to SJRWMD regarding issues that will negatively impact Silver River State Park's hydrological resources. The

SJRWMD monitors surface and groundwater levels on and around Silver Springs. Water quality information is collected periodically and made available.

Objective: Conduct/obtain an assessment of the park's hydrological restoration needs.

In some instances, roads and debris from logging operations have altered natural drainage. Changes in the water regime, brought about through a series of ditches, may have led to encroachment of woody species into the depression marshes. Conversely, the damming effect of roads and woody debris in drainage systems could eventually alter the species composition in other communities.

As funds become available a hydrological study of the park's current surface water features including ditches needs to be conducted. Historical sheet flow of the property needs to be determined. The feasibility of restoration needs to be determined and the impact of the restoration evaluated. Negative impacts, such as flooding developed areas should be assessed and mitigated for if possible. A sequential and prioritized hydrological restoration plan should then be developed and used as a tool to aid park management in the restoration of the park's hydrology.

Objective: Restore natural hydrological conditions and functions to approximately five acres of Depression Marsh.

The feasibility of filling or plugging approximately 1 mile of ditch running from the northern park boundary through the park and emptying into the Silver River should be investigated. This ditch may be impeding natural surface flow from depression wetlands as well as affecting Silver River's water quality depending on the source of the drainage.

Management actions are needed to address the vegetative encroachment the depression marshes within the park are experiencing due to a lack of fire and possibly altered hydrology. Off-site trees that are invading the depression marshes should be girdled or cut down. The vegetated edges of the wetlands may require mechanical treatment to lower vegetation height and to facilitate fire into edges better. A tractor and tree cutter type mower could be used to mow thick shrubs and small trees down around edges of ponds. Such mechanical work should be planned for dry periods when soils around depression marshes will be less susceptible to tire rutting.

Objective: Analyze impacts of park roads on surface drainage and provide corrective measures.

In the unit, topographic and soil disturbances include nonfunctional or inappropriate roads and ditches, as well as adverse visitor impacts. These pose a problem as they alter natural systems and interfere with management goals. Appropriate actions for restoring topographic and soil disturbances may include closing roads, filling ditches, reshaping contours, rerouting foot traffic and establishing plantings as needed.

Areas where interior service roads are obstructing or altering the surface drainage need to be determined. Culverts or low water crossings, comprised of geo-web and inert material such as granite, need to be installed to reduce damage to waterways where crossings are required. Culverts, appropriate in size, may be suitable where sheet flow does not occur and the drainage is narrow. Ditches, roads, and any logging debris, which are unnaturally draining some wetlands and impeding surface flow in other areas will be dealt with as soon as possible to prevent further undesirable changes in the park's natural communities. Unauthorized trails and their use in this area is causing adverse impacts to resources should be closed. Roads need to be closed if they serve no purpose. Areas currently identified as possible locations for low water crossings or culverts are the ditch crossing on the northern perimeter break of the park in management zone 2 that prevents access to the remainder of the eastern portion of the park via the north perimeter break. Other ephemerally wet areas along the northern perimeter break exist in management zones 3 and 4 where the northern perimeter break is too wet and impassable at times due to outside runoff into the park. In addition, an area exists along the southern boundary of the park in management zone 22 south of a depression pond that during times of high water levels is impassable.

Objective: Improve or restore approximately 40 feet of the disturbed riverine shoreline.

In the past, boat wakes posed a serious threat to the shoreline of the river, eroding substrate from the floodplain and banks along the river. With the institution of a no-wake zone, damage has decreased; however, boats are still accelerating erosion in several areas where they stop and pull up to the bank along the river. Park staff should work with law enforcement to insure they are aware of the threat to the resources due to unauthorized use along the river. Park staff should monitor known sites of shore erosion and document new sites as necessary. As funds become available it may be necessary to stabilize and replant eroded river shoreline areas.

Natural Communities Management

Goal: Restore and maintain the natural communities/habitats of the park.

As discussed above, the Division practices natural systems management. In most cases, this entails returning fire to its natural role in fire-dependent natural communities. Other methods to implement this goal include large-scale restoration projects as well as smaller scale natural community improvements. Following are the natural community management objectives and actions recommended for the state park.

Prescribed Fire Management: Prescribed fire is used to mimic natural lightning-set fires, which are one of the primary natural forces that shaped Florida's ecosystem. Prescribed burning increases the abundance and health of many wildlife species. A large number of Florida's imperiled species of plants and animals are dependent on periodic fire for their continued existence. Fire-dependent natural communities gradually accumulate flammable vegetation; therefore, prescribed fire reduces wildfire

hazards by reducing these wild land fuels.

All prescribed burns in the Florida State Park system are conducted with the authorization of the DOF. Wildfire suppression activities in the park are coordinated with the DOF.

Objective: Within ten years, have 800 fire type acres of the park maintained within the optimum fire return interval.

Some of the natural communities at Silver River State Park are fire adapted or at least fire influenced. The sandhills require frequent burning to maintain their natural diversity and to prevent invasion by non-fire tolerant species. The scrub and flatwoods areas require burning for long-term maintenance of the natural community. Even communities such as the mixed hardwood forest and xeric hammock are affected by fire along ecotones with fire-adapted communities. The maintenance of natural ecotones between these communities is important for those plant and animal species that are adapted to fringe areas. For this reason, the use of hard firebreaks, such as roads and disked lines, between community types is discouraged.

The park is divided into zones based on existing firebreaks and roads (see Management Zones Map). Pre-burn preparation is an important consideration when applying fire to areas that have had fire excluded for long periods. Perimeter and internal firebreaks should be maintained and established according to agency policy. They should provide for adequate park protection and safe prescribed fire application. The complexity of the burn unit including the structure and height of the fuel within the zone and the receptiveness of fuels adjacent to the zone should be taken into account when preparing the firebreaks. Fire lines twice as wide as the fuel heights adjacent to the fireline is a general guideline for fire line preparation (ten foot fuel heights adjacent to line = 20 foot wide firebreak). Mechanical treatment of fuels adjacent to the firebreak may be needed to burn the zone safely. Perimeter lines need to be wide enough for defense and to allow a type 6 fire engine to move safely down the line. When widening the firebreaks, the vegetation along the boundary/fence line should be removed first to allow the perimeter break to function as such (the presence of wetlands, large native trees or protected plant species that pose no line defense threat may be an exception). Any additional widening can then be made on the zone side of the firebreak. There is currently a need for approximately 1 mile of fire line widening to allow fire equipment to pass safely. These areas consist of the northwester perimeter break of the park in management zone 11 (approximately 0.2 miles). The southern perimeter break south of the depression pond in management zone 22 (approximately 0.1 miles) needs to be widened as well. In addition, the southern perimeter break in management zone 18 beginning where the existing perimeter break ends and continuing eastward until the plant community transitions into wet floodplain forest (approximately 0.5 miles).

In sandhill and flatwoods areas, the buildup of leaf litter or duff beneath large pines can

endanger those pines if fires burn during periods of low humidity or drought. Raking duff away from the bases of these trees will help prevent destruction of surface feeder roots and will minimize the danger of cambium damage from a smoldering subsurface fire.

Some of the old pines in the park may have been turpentined prior to park acquisition. The cat-faces left by the turpentine practices greatly increase the risk of killing these older trees during prescribed burns due to gaps left in the protective bark. These trees are also somewhat of a cultural resource as they depict a previous land use and are relicts of the turpentine industry. Before burning, underbrush and leaf litter should be raked from the canopy zones of cat-faced pines where reasonably feasible to do so. If located near firebreaks, cat-faced pines can be hosed down with water prior to ignition.

Preparation and planning for wildfires or escaped prescribed burns within the park should also be a component of the park's prescribed burn plan. Preferred fire suppression techniques and guidelines should be identified and discussed with the local DOF staff prior to the need for fire suppression within the park. Sensitive resources such as wetlands, imperiled species and cultural sites should be identified and mapped and that information conveyed to DOF prior to any suppression activities.

In developing prescribed burn plans for the fire-adapted communities in the park, every effort should be made to mimic natural fire regimes in both timing and technique. In most natural fires, flank fires and head fires probably burned the majority of acres. Care should be taken during prescribed burns to avoid creating the hot spots that occur when two fire lines rapidly converge. To minimize the intensity of the fire convergence, narrow strip-head fires, point source ignition fires or flanking fires are preferred over a single backing fire that converges with a head fire.

Fire season and fire-return interval are both critical components of a fire regime. In most cases after initial fuel reduction burns have been completed during the non-growing season, all burns should then be conducted during the natural lightning season, given staffing and weather constraints. However, non-growing season burns are favorable as a last resort to prevent the zone from going into backlog.

The scrub should be burned in the growing season ideally, but dormant season burning may be required for fuel reduction and desired burning weather conditions. Lower humidity and live fuel moisture content may be needed to ensure combustion of the shrub layer. The small amount of scrub that exists within the park may require mowing to reduce fuel heights and reduce shading of fuels beneath the canopy to get it to burn.

In order for prescribed fire to meet its objective in the scrubby flatwoods areas, the appropriate mechanical means may need to be employed to lower the height of the fuel and facilitate fire. A fuel reduction burn should be conducted in the scrubby flatwoods

prior to burning them in the growing season.

The wet flatwoods and mesic flatwoods will require a fuel reduction burn to remove accumulated fuel. These areas may also need mechanical treatment to open up the stand to reduce shading and allow wind penetration prior to burning. Consideration for duff moisture content in these communities is important. Ground-truthing for moisture content in the duff layer throughout the zone should be conducted prior to the burn to insure adequate moisture content. If the duff is dry pine kill could result when the fine roots growing in this organic layer are killed. Duff ignition could also result in prolonged smoking and hazardous amounts of residual smoke being produced. State Road 40, State Road 35 and County Road 314 are within close proximity to the park. Accumulated duff should be burned off gradually. Burns should be planned for periods when deeper duff deposits are wet and only manageable amounts of duff are dry enough to burn. The flatwoods zones should be burned during the growing season once fuel reduction burns have been conducted. The depression marshes should be incorporated into the burn when the zones they are contained within are burned. If heavy muck and duff deposits are present in the ponds then they should not be burned due to prolong smoking risks.

Fire management within the sandhill community of the park will focus on reducing the total amount of hardwood cover, encouraging native herbaceous groundcover and restoring the community to an earlier successional stage.

The sandhill within the park would benefit from a spring burn timed to stress and kill sprouting oaks that have become too dense throughout most of the sandhill in the park. Girdling, tree cutter mowing, and herbicidal removal of invading oaks would also benefit this community.

The sandhill located north of main park drive are the best quality sandhill in the park concerning longleaf pine densities and age classes as well as ground cover diversity and continuity. Relatively young oaks are invading these areas, and frequent burning should still be an effective management tool for restoration to natural plant compositions, however the combination of burning plus mechanical or herbicide treatments that target the oaks will expedite the restoration.

The sandhill located south of the main park drive are currently more degraded due to thick oak intrusion and ground cover shading. Growing season fire and mechanical or herbicidal oak removal will be required to restore this community. In order to facilitate fire into succeeding sandhill zones in the southwestern portion of the park, herbicide should be applied to off site hardwoods, primarily laurel oak, water oak and sweetgum. It is not recommended that soil active herbicides be used in this area, as they will be taken up by non-target species such as turkey oak, bluejack oak, post oak, southern red oak, and mockernut hickory. If soil active herbicides are used, they must be used

sparingly and applied in spots or a grid like pattern that would be approved by district biological staff. The project should be planned to begin in the interior of the zones and proceed outward to areas that are more visible to the public. Interpret the intent of the project to the public. Ground cover restoration may be necessary in areas heavily shaded by oaks and in the clearcut slash pine area near County Road 35 and the park boundary. The clearcut area will also need to be replanted with longleaf pine seedlings at densities of 200-300 trees per acre.

It is important that the results of management practices be monitored. Post burn evaluations, that include review of established photo points, should be conducted to determine progress towards restoration goals and if adaptations to management practices are needed. Table 6 contains a list of all fire-dependent natural communities found within the park, their associated acreage and optimal fire return interval.

Table 6: Prescribed Fire Management

Natural Community	Acres	Optimal Fire Return Interval (Years)	Acres To Burn Per Year (Min - Max)
Sandhill	656	1-3	219 - 656
Wet Flatwoods	429	3-5	86 - 143
Mesic Flatwoods	52	2-5	10 - 26
Depression Marsh	26	3-5	5 - 9
Scrubby Flatwoods	124	3-5	25 - 41
Scrub	3	4-7	0.4 - 0.75
Totals	1,290		345 - 876

The park is partitioned into management zones, and burn prescriptions are implemented on the prescribed burn cycle for each zone (see Management Zones Map). The park's burn plan is updated annually because fire management is a dynamic process. To provide adaptive responses to changing conditions, fire management requires careful planning based on annual and very specific burn objectives. Each annual burn plan is developed to support and implement the broader objectives and actions outlined in this ten-year management plan.

Based upon the fire return intervals and acreage figures for the natural communities within the park, optimally at least 345 acres should be burned each year to maintain the natural communities within their target fire return intervals. Park staffing, funding and weather conditions will influence the ability of the park to keep natural communities within their optimal fire return intervals. Not all zones will be burned within the maximum recommended fire return intervals, while others may be burned more frequently. Some fire type acres will be unavailable for burning until conditions within the management zone allow.

In order to track fire management activities, the Division maintains a statewide burn database. The database allows staff to track various aspects of each park's fire management program including individual burn zone histories and fire return intervals, staff training/ experience, backlog, if burn objectives have been met, etc. The database is also used for annual burn planning which allows the Division to document fire management goals and objectives on an annual basis. Each quarter the database is updated and reports are produced that track progress towards meeting annual burn objectives.

Natural Community Restoration: In some cases, the reintroduction and maintenance of natural processes is not enough to reach the natural community desired future conditions in the park, and active restoration programs are required. Restoration of altered natural communities to healthy, fully functioning natural landscapes often requires substantial efforts that include mechanical treatment of vegetation or soils and reintroduction or augmentation of native plants and animals. For the purposes of this management plan, restoration is defined as the process of assisting the recovery and natural function of degraded natural communities to desired future condition, including the re-establishment of biodiversity, ecological processes, vegetation structure and physical characters.

Examples that would qualify as natural community restoration, requiring annual restoration plans include large mitigation projects, large-scale hardwood removal and timbering activities, roller-chopping and other large-scale vegetative modifications. The key concept is that restoration projects will go beyond management activities routinely done as standard operating procedures such as routine mowing, the reintroduction of fire as a natural process, spot treatments of exotic plants, small-scale vegetation management and so forth.

Following are the natural community/habitat restoration and maintenance actions recommended to create the desired future conditions in the sandhill community at Silver River State Park.

Objective: Conduct habitat/natural community restoration activities on 20 acres of the sandhill community.

A sandhill restoration plan will be developed for the park to guide yearly restoration work. Aggressive removal of turkey oak, laurel oak, sandpine and other off-site and/or invading tree species should be encouraged. Several sandhill areas have been heavily invaded by hardwoods and off-site sandpine. The sandpine are mainly located in the northern portion of the park near the shop area in management zones 12 and 14. Turkey oaks can be found in thick densities in the sandhills both north and south of the Main Park Drive. Laurel oaks are found south of Main Park Drive in very thick densities, so thick much of the ground cover has been completely shaded. These areas will require special attention to restore a natural fire regime and to recover the groundcover species

that are being suppressed. In some areas, a tree cutter or girdling may be useful in reducing the stems of offsite hardwoods. The use of herbicide treatments may be needed to control resprouting from rootstocks. Mature sandpines can be removed by chainsaw. Options for removal include contract treatments of large areas or small-scale treatments using park staff and volunteers. The selected option will depend upon future funding levels, and will influence the number of acres removed on an annual basis. A removal plan for these areas will be developed and implemented as part of the annual work plan. Some progress has already been made by park staff to cut down several of the mature off site sandpines that are invading the sandhills near the shop in management zone 14.

The small offsite slash pine plantation, approximately 20 acres in size, in management zones 19 and 21 was clearcut in 2007. As funds become available, this area needs to be replanted in longleaf pines at natural densities. Ground cover plantings will be required to augment the very sparse native ground cover already existing. Wiregrass tubelings should be planted throughout the area to facilitate fire spread across the area. This area will also require fire and possibly herbicide treatments to control sprouting oaks.

Maintenance of the restored areas will require application of prescribed fire within the recommended fire return interval. Long-term monitoring will be accomplished as part of the burn photo point process. Control of offsite hardwoods in areas with intact, but suppressed, groundcover (particularly wiregrass) will receive the highest priority. Those areas requiring groundcover restoration will be a secondary priority.

Natural Community Improvement: Improvements are similar to restoration but on a smaller, less intense scale. This typically includes small-scale vegetative management activities or minor habitat manipulation. Following are the natural community/habitat improvement actions recommended at the park.

Objective: Conduct natural community/habitat improvement activities on 40 acres of the wet flatwoods community.

Portions of the wet flatwoods community that exists on the north side of the park could be improved by conducting a mechanical thinning of its regenerating loblolly pines. Following previous timber harvests for removal of SPB infested trees, several large gaps were created in the stand. These gaps are now densely filled with regenerating pines. The pines are so thick in places that fire would not progress through the stand unless under very dry and extreme fire behavior conditions. Such conditions could result in a very high intensity fire. It is recommended that the stand be evaluated and thinned to more manageable natural densities. Thinning operations should be timed to occur when soil conditions are dry enough that rutting from timbering equipment is minimized. Soil disturbance should be minimized and equipment checks for exotic plant material should be conducted prior to equipment entering the site. Photopoints should be established in the project area to monitor project success over time.

Imperiled Species Management

Goal: Maintain, improve or restore imperiled species populations and habitats in the park.

The Division strives to maintain healthy populations of imperiled plant and animal species primarily by implementing effective management of natural systems. Single species management is appropriate in state parks when the maintenance, recovery or restoration of a species or population is complicated due to constraints associated with long-term restoration efforts, unnaturally high mortality or insufficient habitat. Single species management should be compatible with the maintenance and restoration of natural processes, and should not imperil other native species or seriously compromise park values.

In the preparation of this management plan, Division staff consulted with staff of the FFWCC's Imperiled Species Section or its Regional Biologist and other appropriate federal, state and local agencies for assistance in developing imperiled animal species management objectives and actions. Likewise, for imperiled plant species, Division staff consulted with FDACS. Data collected by the FFWCC, USFWS, FDACS and FNAI as part of their ongoing research and monitoring programs will be reviewed by park staff periodically to inform management of decisions that may have an impact on imperiled species at the park.

Ongoing inventory and monitoring of imperiled species in the state park system is necessary to meet the Division's mission. Long-term monitoring is also essential to ensure the effectiveness of resource management programs. Monitoring efforts must be prioritized so that the data collected provides information that can be used to improve or confirm the effectiveness of management actions on conservation priorities.

Monitoring intensity must at least be at a level that provides the minimum data needed to make informed decisions to meet conservation goals. Not all imperiled species require intensive monitoring efforts on a regular interval. Priority must be given to those species that can provide valuable data to guide adaptive management practices. Those species selected for specific management action and those that will provide management guidance through regular monitoring are addressed in the objectives below.

Objective: Update baseline imperiled species occurrence inventory lists for plants and animals.

Objective: Monitor and document seven selected imperiled animal species in the park.

Park and District staff will survey and monitor the park's gopher tortoise population per the Division's established guidelines. All attempts will be made to survey for gopher tortoises following prescribed burns. Survey transects will be used to sample at

least ten percent of the zone. Protection of the gopher tortoises and their burrows, along with prescribed burning, should suffice to maintain populations of burrow commensals such as Florida mice and gopher frogs.

Additional surveys for Florida mice, gopher frogs and Sherman's fox squirrel should be conducted. It should be determined if Florida mice and gopher frogs currently exist within the park. Sherman's fox squirrels are seen often. Staff will develop a list of prioritized management zones for initial surveys.

The park is located near the Ocala National Forest that has a large bear population. The park will continue to document the occurrences of Florida black bear that are occasionally seen within the park. The park will document occurrences of indigo snakes and wood storks within the park if they occur.

The Division will continue to depend upon the partnerships with other agencies and academic institutions in the monitoring other imperiled species that have been documented at the park.

Objective: Monitor and document three selected imperiled plant species in the park.

Park and District staff will survey known and locations of silver buckthorn, pinkroot and Godfrey's swamp privet and establish a monitoring protocol for each plant species. A monitoring protocol currently does not exist for these three plant species and needs to be developed. Areas not known to contain the plants will be incorporated into the surveying efforts as resources allow.

Exotic Species Management

Goal: Remove exotic and invasive plants and animals from the park and conduct needed maintenance control.

The Division actively removes invasive exotic species from state parks, with priority being given to those causing the ecological damage. Removal techniques may include mechanical treatment, herbicides or biocontrol agents.

Objective: Annually treat approximately 20 acres of exotic plant species in the park.

An exotic plant removal plan is recommended that maps infested areas by management zone and determines priorities for treatment. The plan will provide guidance for subsequent annual work plans. The number of acres of exotic plants treated per year is likely to vary widely depending on the status of current infestations and any new infestations that might arise during the life of this management plan. Cogongrass will continue to be treated promptly and repeatedly. All infestations of rose natalgrass must be located and herbicided. Priority should be given to FLEPPC Category I and II species when treating exotic plant species in the park. Non-invasive exotic plants that occur

within the park will be removed whenever possible; however, ornamentals that are known to be non-invasive and occur in landscaping around residences may remain. All other scattered invasive exotic plant species will be treated upon detection and mapped for follow-up treatments. Any cut stumps will be treated with appropriate herbicide to prevent resprouting.

A plan and schedule that complies with the Division of Recreation and Parks standards for scouting and mapping invasive exotics in every zone within the park should be developed. Areas that have sources of particularly aggressive species, such as cogongrass, may need to be scouted more frequently. Finding new populations of invasive exotic plants before they become established will help prevent larger infestations and reduce the cost and effort needed to control them. The focus should be on FLEPPC Category I and II plant species.

Though many of the large cogongrass patches have been reduced by herbicide treatments to smaller more manageable areas, efforts should remain ongoing to retreat known infestations and scout new infestations. All known and newly detected locations of exotic plants should be GPSed and mapped. The park should develop an exotic plant management plan to outline procedures for scouting, marking, treatment scheduling, treatment progress, retreatment, herbicide use procedures, as well as herbicide use and needs. As funds become available, contract herbicide treatments should be considered.

Objective: Practice preventative measures to avoid accidental introduction and spreading of exotics within the park.

Guidelines for clean sod, fill dirt, limerock, mowing, as well as cleaning and inspecting equipment that enters the park are recommended. New infestations of exotics can be prevented by ensuring that contractors such as mowers and loggers clean their equipment before entering the park and do not spread exotics by moving from a contaminated area within the park without cleaning their equipment.

Objective: Implement control measures on four nuisance and exotic animal species in the park.

Control activities will focus on areas where feral hogs and armadillos are causing the most damage. Park staff actively removes hogs from the property. Contractual services to remove feral hogs should be investigated to increase the number of hogs removed. The park also occasionally has to remove feral or stray cats and dogs from the property. These animals should be turned over to the county animal control facility. Removal of the Asian rhesus monkeys will proceed according to the lease agreement #4022A between the Trustees and Smartparks - Silver Springs, Inc., dated December 2005.

Special Management Considerations

Timber Management Analysis

Chapters 253 and 259, Florida Statutes, require an assessment of the feasibility of

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

During the development of this plan, an analysis was made regarding the feasibility of timber management activities in the park. It was determined that the primary management objectives of the unit could be met without conducting timber management activities for this management plan cycle. Timber management will be re-evaluated during the next revision of the management plan.

Additional Considerations

Throughout much of the park, the park owns both sides of the shoreline and the river. In portions of the Ocklawaha River where the park does not manage both sides of the river, the park also manages a 400-foot strip of sovereign submerged land. This portion is managed to maintain the natural character of the Ocklawaha River.

Approximately 106 acres of the park is subject to a conservation easement with the SJRWMD. Within this portion of the park, the easement language restricts such activities as the construction of facilities, the building of roads or firebreaks and the removal of trees and vegetation, without the prior written consent of the SJRWMD. The Division will consult with the staff of the SJRWMD when planning resource management activities or recreational development within the boundaries of the conservation easement.

Cultural Resource Management

Cultural resources are individually unique, and collectively, very challenging for the public land manager whose goal is to preserve and protect them in perpetuity. The Division of Recreation and Parks is implementing the following goals, objectives and actions, as funding becomes available, to preserve the cultural resources found in Silver River State Park.

Goal: Protect, preserve and maintain the cultural resources of the park.

The management of cultural resources is often complicated because these resources are irreplaceable and extremely vulnerable to disturbances. The advice of historical and archaeological experts is required in this effort. All activities related to land clearing, ground disturbing activities, major repairs or additions to historic structures listed or eligible for listing in the National Register of Historic Places and collections care must be submitted to DHR for review and comment before undertaking the proposed project.

Recommendations may include, but are not limited to concurrence with the project as submitted, pre-testing of the project site by a certified archaeological monitor, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effect. In addition, any demolition or substantial alteration to any historic structure or resource must be submitted to DHR for consultation and the Division of Recreation and Parks must demonstrate that there is no feasible alternative to removal and must provide a strategy for documentation or salvage of the resource. Florida law further requires that the Division of Recreation and Parks consider the reuse of historic buildings in the park in lieu of new construction and must undertake a cost comparison of new development versus rehabilitation of a building before electing to construct a new or replacement building. This comparison must be accomplished with the assistance of DHR.

Objective: Assess and evaluate 26 of 26-recorded cultural resources in the park.

The park intends to have 26-recorded cultural sites evaluated and condition assessments updated during the plan period. Park staff will attempt to locate sites and provide information to include but not limited to any threats to the site's condition such as natural erosion; vehicular damage; horse, bicycle or pedestrian damage; looting; construction including damage from firebreak construction; animal damage; plant or root damage or other factors that might cause deterioration of the site. Site assessments should be documented on appropriate forms and a copy sent to the Division of Historical Resource to be filed in the Silver River State Park master files. A copy of this information should also be maintained at the park and district offices. The park will prioritize preservation projects identified by the assessments/evaluations.

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

The park has not had a comprehensive archaeological survey and needs to have an archaeological predictive model developed. This model will provide for high, medium and low areas or probability for the occurrence of pre-historic sites. The model will provide guidance for future development as well as Phase 1 surveys.

A Scope of Collections will need to be developed should the park acquire any collection items. An administrative history is needed for the park that will help interpret the history of the park. Oral histories of local historians and park staff need to be done to help document the park's history.

The park needs to develop and implement a monitoring plan to prepare yearly condition assessments of the parks cultural resources. Consequently, the FMSF should be updated as needed.

The primary cultural management need for Silver River State Park is to locate the known resources. This is a problem at the park because archaeologists and other

resource surveyors have rarely made marking the locations of recorded resources a product of their activities. Because park management must undertake protection as a strategy for preserving recorded resources, it will be necessary to map site locations. This is a survey product and can be performed as a part of a Level I survey. It must be noted in light of communications with a local historian that a specific goal of such activity should be locating and identifying historic roads and trails.

Once having physically located the resources, park management should develop patrol and monitoring plans that will permit them to issue an annual condition report and summary for the resources. Such monitoring measures should include training personnel to review resource conditions and establishing photo points.

Mitigation of both natural and human imposed impacts is the final aspect of cultural resource management at Silver River. Denson (1991) reported several Ocklawaha River sites that had been looted and several others that were affected by diversions of the river's current. Sites should be evaluated for damages and, whatever the cause, measures should be planned and implemented either to ameliorate the adverse effects or to salvage important sites. Park management must be aware that as cultural resource laws are enforced in the nearby Ocala National Forest, pothunters may respond by transferring their activities to the park. Therefore, one element of mitigation will be to establish and to continue close links with Ocala National Forest's cultural resource managers.

The general objective for the management of the cultural resources of Silver River State Park is to protect, preserve and interpret the prehistoric and historic resources. Park management will ensure adequate staff, materials and administrative support so that cultural resources management activities are conducted.

As the composition of park staff changes over time, efforts should be made to insure that there is always at least one staff member who is a certified archaeological monitor. Management should ensure that park personnel are adequately trained in cultural resource management and establish a park library to support the training. Unit staff will ensure that any ground disturbing activities shall be conducted in accordance with DHR guidelines and monitored by appropriately trained personnel. Management should develop professional relationships with area university archaeologists, National Forest cultural resource specialists, Water Management District land managers and area law enforcement officials to discuss cultural resource management issues and opportunities.

Because of the recorded archaeological sites in the park, management measures for cultural resources should include monitoring of identified archaeological sites. A periodic monitoring program for the parks' prehistoric and historic cultural resource sites should be developed and implemented by establishing photo points and other

appropriate cultural resource monitoring protocols. In accordance with the monitoring program, updated site file information should be provided to DHR. Management should retain professional archaeological assistance in marking the recorded sites within the park, including GPS locations and datum points. Management should identify funding needs and initiate planning for submission of grant applications to support a Level I comprehensive cultural resources survey of the entire park.

Division staff should document the history of the park and the surrounding area. The available information should be analyzed and synthesized to develop recommendations for additional research and survey actions. These recommended additional research and survey actions should be conducted. Management should develop and implement patrol and monitoring routines that enable personnel to report on the condition (level of integrity) of the recorded cultural resources.

Objective: Bring one of 26-recorded cultural resources into good condition.

A cyclical maintenance plan should be developed and implemented to help guide the park with needed preservation of its sites. Park staff should develop and implement a preservation and maintenance plan for all cultural resources. Management measures for cultural resources should include development of a phased plan for managing the currently identified recorded sites in the context of their surroundings. This should include developing a workable written plan for the physical management of the identified cultural resources. The plan should outline approved methodologies for executing the plan and training staff and volunteers in managing the cultural resources of the park. Management should arrange for a Level I survey in all areas planned for development and utilize development project funds to accomplish the survey. Such surveys aim to identify and record features (including historic roads and trails) to be avoided during construction. Park management will continue the partnership with Marion County School Board for interpretation, protection of cultural resources on the School Board's leased property.

Site 8MR1878, the Cactus Flower Site, is a cultural site that could potentially be in need of stabilization if not rehabilitation as well. This site suffers from erosion problems and was heavily disturbed during the construction of State Road 40. As a protective measure, the park has fenced off access to the site. The park has consulted with experts who have recommended stabilization by means of silt fence instillation for stabilization and backfilling eroded areas of the site to conceal artifacts that are washing out and prevent further erosion.

Resource Management Schedule

A priority schedule for conducting all management activities that is based on the purposes for which these lands were acquired; and to enhance the resource values, is located in the Implementation Component of this management plan.

Land Management Review

Section 259.036, Florida Statutes, established land management review teams to determine whether conservation, preservation and recreation lands titled in the name of the Board of Trustees are being managed for the purposes for which they were acquired and in accordance with their approved land management plans. The managing agency shall consider the findings and recommendations of the land management review team in finalizing the required update of its management plan.

Silver River State Park was subject to a land management review on March 21, 2007 (see Addendum 8). The review team made the following determinations:

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

LAND USE COMPONENT

INTRODUCTION

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

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

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

EXTERNAL CONDITIONS

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

Silver River State park is located within Marion County. The park is seven miles northeast of downtown Ocala in the north central part of the state. Significant resource-based recreation opportunities occur within the vicinity of the park (see reference map).

Existing Use of Adjacent Lands

State Road 40 runs along the northern park boundary, State Road 35 (Baseline Road) parallels the park's western boundary and County Road 314 (Sharps Ferry Road) is aligned with the park's southern boundary. Land uses surrounding the park include commercial development associated with the Silver Springs attraction at the

intersection of State Roads 35 and 40. Residential development occurs to the west and south of the park. The Marshall Swamp, floodplain of the Ocklawaha River and adjacent conservation lands (Silver Springs Conservation Area and Marjorie Harris Carr Cross Florida Greenway) provide some buffer from development pressures immediately adjacent to the park (see Reference Map).

A boat ramp and basin owned by the Florida Department of Transportation (FDOT) and leased to Marion County (Ray Wayside Park) is located at the State Road 40 Bridge on the Ocklawaha River. This facility generates a large amount of motorized boat use of both the Ocklawaha and Silver Rivers, especially during the weekends. Vehicular traffic on highways surrounding the park, high levels of motorized boat traffic and the input of untreated stormwater runoff into the Silver River are the primary impacts from adjacent land uses on the park's resources and visitor experience.

Planned Use of Adjacent Lands

Over 1.35 million people reside within 50 miles of the park, which includes the incorporated areas of Ocala, Sanford, Daytona Beach, Gainesville and Palm Coast (U.S Bureau of the Census, 2000). As lands near the park become more urbanized, concerns arise related to changes in surface and groundwater quality and quantity, additional fragmentation of wildlife habitat, complication of prescribed fire management activities, traffic congestion and degradation of the aesthetic character of the surrounding land. Marion County has taken steps to address land use impacts on the Silver Springs system by establishing a Springs Protection Overlay Zone in the Land Development Code. The Code prohibits certain uses and establishes development standards related to impervious surfaces and wastewater treatment that are designed to protect groundwater within this vulnerable karst system. Marion County has also passed a new ordinance to restrict fertilizer use on developed lots in the unincorporated sections of the county. Despite the provisions in the County's Land Development Code and Comprehensive Plan, it will still be important for Division staff to participate in the review of all Comprehensive Plan amendments, proposed zoning changes and development plans within the vicinity of the park to ensure that protection of park resources is given due consideration.

Marion County is ranked sixteenth and thirtieth out of Florida's 67 counties in terms of total population and population density, respectively. The estimated 2007 population was just over 325,000 and is projected to grow another 32 percent by 2015. The adjacent city of Ocala (population 49,943) accounts for 16 percent of the county's population. It is anticipated that growth from the Ocala metro area will continue to drive the conversion of adjacent lands to increasingly higher intensity uses. While there were no significant land use changes being pursued on adjacent lands at the time of the writing of this plan, additional medium density residential development is likely to the northwest and to the southwest of the park (Marion County Planning,

pers. communication, February 2009).

The projected increase in population and land use density will also generate changes in the area's transportation network. State Road 35 that runs along the park's western boundary is currently being widened to four lanes from County Road 464 to State Road 40. This project is slated for completion in 2011. The design of this project locates all stormwater management facilities west of State Road 35 from Sharps Ferry Road to State Road 40. State Road 40 that runs along the park's northern boundary will be widened to four lanes from Silver Springs Attraction east to SE 183rd Avenue (Levy Hammock Road). This project is funded for design in fiscal year 2011/12. A Project Development and Environmental Study for this project is currently underway. The State Road 40 project will impact the park, due to the road widening and the design and location of stormwater management facilities. Marion County has also recently constructed a large stormwater management facility near the intersection of State Road 40 and State Road 326 to prevent direct stormwater discharge into Half Mile Creek. Further discussion of potential impacts from these projects is provided in the resource management component of this plan. Division staff will continue to work with Marion County and FDOT to ensure that the protection of park resources is a planning and design priority.

PROPERTY ANALYSIS

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

Recreation Resource Elements

This section assesses the unit's recreation resource elements, those physical qualities that, either singly or in certain combinations, can support various resource-based recreation activities. Breaking down the property into such elements provides a means for identifying the individual recreation activities that could be developed within the unit and an analysis of the existing spatial factors that either favor or limit the provision of each activity.

Land Area

The Silver River bisects the park. To the north of the Silver River the park is heavily forested, and slopes gently from State Road 40 towards the wide river floodplain. Numerous pre-existing jeep trails are available for recreational trail use, although certain areas can be seasonally inaccessible due to high water.

The portion of the park south of the Silver River provides extensive recreational opportunities. Natural communities, like sandhill, xeric hammock and mixed upland

forest can support a broader range of recreational activities than the wetter areas of the park.

By virtue of its size, natural community composition and proximity to other conservation lands, the park provides significant habitat for a range of imperiled plant and animal species. Opportunities for wildlife observation are excellent.

In addition to creating significant wildlife habitat, the park's proximity to the Marjorie Harris Carr Cross Florida Greenway, Marion County's Silver Springs Conservation Area, the Ocala National Forest, and Indian Lake State Forest, provides a valuable opportunity for recreational trail connections to over 100,000 acres of additional conservation lands outside of park boundaries. Division staff will continue to work with federal, state, and local agencies to develop opportunities for regional trail connections between adjacent conservation lands.

Water Area

The Silver River is the primary scenic attraction of the park and a popular boating destination. The river is a clear, spring run stream, varying in width from 75 to 150 feet with a broad forested floodplain. The river bisects the state park, flows approximately six miles east to its junction with the Ocklawaha River and is contained entirely within the park boundary.

The Ocklawaha River, a blackwater stream, runs along the park's eastern boundary for approximately six miles and separates two park parcels from the main body of the park. The Ocklawaha River provides additional high quality scenery, boating and fishing recreation and connects the park with Lake Griffin to the south (upstream) and Rodman Reservoir to the north (downstream). Like the Silver River, the Ocklawaha's wide floodplain limits opportunities for direct public access to the waterway.

The Silver River is accessible to private and commercially operated boats from the Ocklawaha River. The nearest boat ramp is located at Ray Wayside Park. Both rivers experience high levels of motorboat traffic during weekends and holidays. This detracts from the wilderness experience within the park and creates potentially hazardous conditions. Marion County Resolution 85-R-128 establishes a "no wake-idle speed only" zone on a portion of the river that extends about .5 miles from the head spring (see Reference Map). In addition, fishing is prohibited in the Silver River from the headwaters at Silver Springs to its junction with the Ocklawaha River under Rule 62D-2. The Division does not actively manage or restrict powerboat access on the rivers, but does manage potential impacts to adjacent park property from the boating public.

The forested floodplain of the Silver River provides a beautiful scenic backdrop and

wildlife viewing is excellent along the river corridor. The river is most accessible near its mid-point along the south shore. Known as River Bend, this is a wide bend in the river with a cleared shoreline and bank that has traditionally supported recreational use. It is also a known archaeological site and within a SJRWMD conservation easement (see Reference Map). As noted in earlier sections, considerable erosion from high water, boat landings and visitor traffic had occurred at this site before use patterns were altered and improvements made. Although the site has road access the easement limits opportunities for public use by prohibiting such activities as construction of facilities, building of roads, or removal of trees and vegetation, without the written consent of the SJRWMD.

Natural Features

Silver Springs, the Silver River and its floodplain and the increasingly rare sandhills found in the surrounding uplands are the outstanding natural features of this park. Scattered sinkholes found throughout the uplands are also significant features that require special management and protection. A third group of notable features are the national co-champion cedar elm, the state champion Shumard oak and other exceptionally large trees discussed earlier in the Resource Management Component.

Archaeological and Historical Features

As previously noted, human beings have used the Silver River and its surrounding environment for thousands of years. The park contains numerous significant prehistoric and historic cultural resources. This cultural record provides abundant opportunities for interpretive programming. The natural and cultural history of the region is effectively interpreted at the park's Silver River Environmental Education Center and Museum, operated by the Marion County School Board.

Assessment of Use

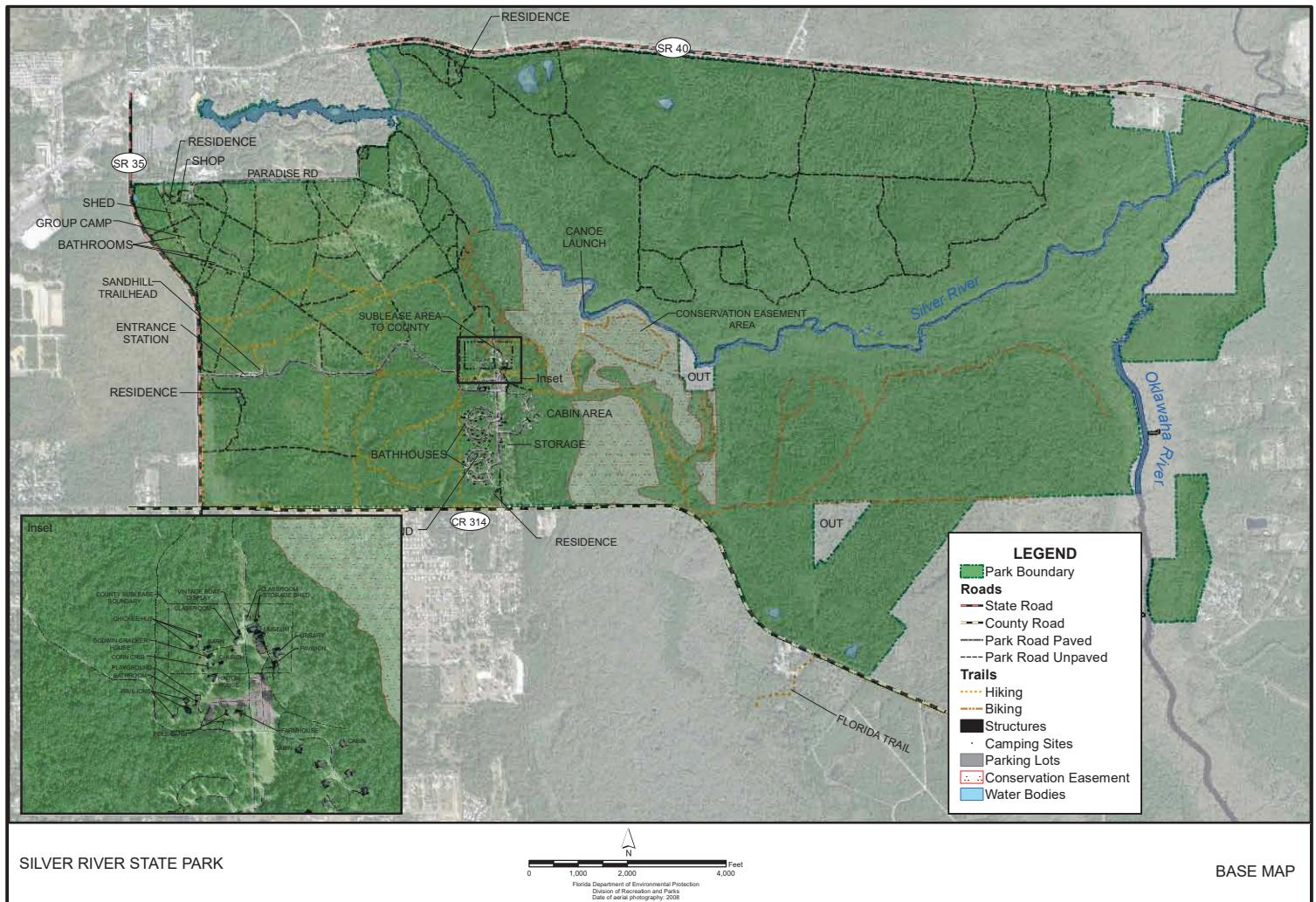
All legal boundaries, significant natural features, structures, facilities, roads and trails existing in the unit are delineated on the base map (see Base Map). Specific uses made of the unit are briefly described in the following sections.

Past Uses

Several large areas of the southern half of the park property were cleared for pasture and other agricultural uses in the past. A historic use of the property was hunting, and numerous jeep trails remain in certain sections of the park from that period. A mid-point bend in the river that is within a SJRWMD conservation easement was traditionally used as a boat landing and swimming area.

Future Land Use and Zoning

The Division works with local governments to establish future land use (FLU) and zoning designations that provide both consistency between comprehensive plans and land development codes and permit typical state park uses and facilities necessary for the provision of resource-based recreation opportunities. FLU and



zoning designations not clearly related to state park uses generally reflect patterns of previous ownerships or a lack of specific options dedicated to accommodate such uses.

The current FLU designation for Silver River State Park is Natural Reservation (NR). NR covers the all park property, including the existing facilities as well as areas identified for future development, and is reserved for lands that are managed by state agencies for conservation purposes. The current land use designation for all park lands is Rural Preservation (RP). Park zoning includes, Single Family Dwelling (R-1), Government Use (GU) and General Agriculture (A-1). A-1 applies to the majority of park lands and areas in the northern portion of the park identified for future development. Government Use (GU) includes most existing facilities and areas identified for future development. Additionally park lands are included within the Environmentally Sensitive Overlay Zone (ESOZ) and the Springs Protection Overlay Zone (SPOZ). Typical state park uses and facilities are currently permissible within current land use categories, zoning and zoning overlays however, specific development standards may be applicable to future park development.

Current Recreational Use and Visitor Programs

The recreational uses available at this time include hiking, off-road biking, canoeing, kayaking, nature observation, camping, picnicking and museum visitation. Power boating and paddling are popular on the Silver River and Ocklawaha River. Cabins are also available for extended stays at the park. Visitor use is carefully monitored to avoid unacceptable impacts to sensitive resources and management action initiated, if necessary. Trail hardening or rerouting, area closure and prohibition of certain uses may be considered to address resource impacts.

Ranger programs include bird walks, star-gazing events and tours of the Cracker Village. Tram tours are also offered for seniors by the park citizen support organization. Additional ranger guided talks and tours and offsite educational programs are provided by the park on a request basis. The park hosts the Marion County Springs Festival and Ocala Country Days. The latter event is sponsored by Marion County School Board and is the main fundraiser for the Silver River Museum. The Museum also hosts all fourth and seventh grade classes in the Marion County School System, with more than 15,000 student visits annually.

The park experienced its highest level of visitation on record in fiscal year 2008/09 with 262,688 visitors recorded. Peak visitation for both day and overnight visitors occurs in spring and fall. Overnight visitation is at its lowest during the summer months. Total visitation has increased dramatically over the previous ten-year period as facilities have been constructed at the park. Fiscal year 2006/07 visitation was the highest on record for the park.

By Division estimates, visitors during the FY 2008/2009 contributed nearly \$11 million in direct economic impact and the equivalent of 218 jobs to the local economy (Florida Department of Environmental Protection, 2009).

Other Uses

The Marion County School Board has constructed, through a lease with the Division, an Environmental Education Center and Museum in the park. Opened in 1991, this complex includes a museum, classroom, office, library and meeting room structures, a well house, a reconstructed Florida Cracker Village, a nature trail and river overlook.

Protected Zones

A protected zone is an area of high sensitivity or outstanding character from which most types of development are excluded as a protective measure. Generally, facilities requiring extensive land alteration or resulting in intensive resource use, such as parking lots, camping areas, shops or maintenance areas, are not permitted in protected zones. Facilities with minimal resource impacts, such as trails, interpretive signs and boardwalks are generally allowed. All decisions involving the use of protected zones are made on a case-by-case basis after careful site planning and analysis.

At Silver River State Park the blackwater and spring-run streams, depression marsh, dome swamp, floodplain forest, floodplain swamp, wet flatwoods, sandhill, and scrub have been designated as protected zones and delineated on the Conceptual Land Use Plan. Protected zones encompass approximately 3,237 acres or over 76 percent of the park.

Existing Facilities

Recreation Facilities

The majority of park recreational facilities are located in close proximity to one another. These include the Silver River Museum, Cracker Village, picnic area, campground and cabins. The main parking area serves as the trailhead for the Sinkhole, River and Swamp Trails. Access to a canoe/kayak launch on the Silver River is via the 1.2 mile River Trail. The Sandhill Trailhead is located just east of the ranger station. The park has 12.5 miles of trails that are open to hiking and biking, although soft sands in some areas are not ideally suited for the latter. A large primitive group camping area is accessible from Paradise Road, just south of the park shop.

Support Facilities

Park operations are supported by a Ranger Station that includes the park's administrative offices, a four bay shop that includes an office, two storage buildings, including one for flammable storage, an old farmhouse that is being temporarily

used for storage, four on-site residences, two of which are used by the park manager and assistant park manager, the park entrance drive, and multiple service roads. All support facilities are in good condition. Thanks to the generosity of the park's citizen support organization recent upgrades were made to interior of the ranger station including, new office furniture and floor coverings. The following is a listing of recreation and support facilities at the park:

Environmental Education Center and Museum

Museum
Classrooms
Library
Pavilion
Glass-bottom boat exhibit

Cracker Village

Goodwin Family Home
School House / Church
Hinton Family Home
Cane Syrup Kettle and Mill
Blacksmith Shed
Cracker Barn / Pantry
Silver Springs School
Chickee Huts (2)
Paved parking (47 standard, 4 handicap, 8 RV)

Picnic Area

Restroom
Pavilion with BBQ pit (15 tables)
Pavilion (2, 10 tables each)
Playground
Paved parking (57 standard, 4 handicap)

Primitive Group Camp

Nine group sites
Composting restrooms (3)

Fire rings

Overnight Facilities

Standard Campground (59 sites)
Developed cabins (10)

River Bend Paddling Facilities

Canoe/kayak launch/landing
Tram stop
Kiosk

Sinkhole, River and Swamp Trailhead

Sinkhole Trail (2.1 miles)
River Trail and (1.2 miles)
Swamp Trail and boardwalk (1.8 miles)
Bike Trail (5.8 miles)

Sandhill Trailhead

Kiosk
Paved parking (15 standard, 2 handicap)
Sandhill Trail (1.6 miles)

Support Facilities

Ranger Station
4-bay shop and administrative office
Storage shed
Flammable storage shed
Residences (4)
Old farmhouse
Park drive (1 mi.)
Service roads (29 mi.)

CONCEPTUAL LAND USE PLAN

The following section presents the current conceptual land use plan for this park. The conceptual land use plan (see Conceptual Land Use Plan) may be amended to address new information regarding the park's natural or cultural resources,

changes in recreational usage, or as new land is acquired. A detailed development plan for the park and a site plan for specific facilities will be developed based on this conceptual land use plan, as funding becomes available.

During the development of the management plan, the Division assesses the potential impacts of proposed uses or development on park resources and applies that analysis to decisions on the physical plan of the park as well as the scale and character of proposed development. Potential impacts are more thoroughly identified and assessed as part of the site planning process once funding is available for facility development. At that stage, design elements (such as existing topography and vegetation, sewage disposal and stormwater management) and design constraints (such as designated species or cultural site locations) are more thoroughly investigated. Municipal sewer connections, advanced wastewater treatment or best available technology systems are applied for on-site sewage disposal. Stormwater management systems are designed to minimize impervious surfaces to the greatest extent feasible, and all facilities are designed and constructed using best management practices that limit resource impacts. Federal, state and local permit and regulatory requirements are met during the final design and facility development. All new park facilities are consistent with the universal access requirements of the Americans with Disabilities Act (ADA). After new facilities are constructed, the park staff monitors the surrounding conditions to ensure that resource impacts remain within acceptable levels.

Potential Uses

Public Access and Recreational Opportunities

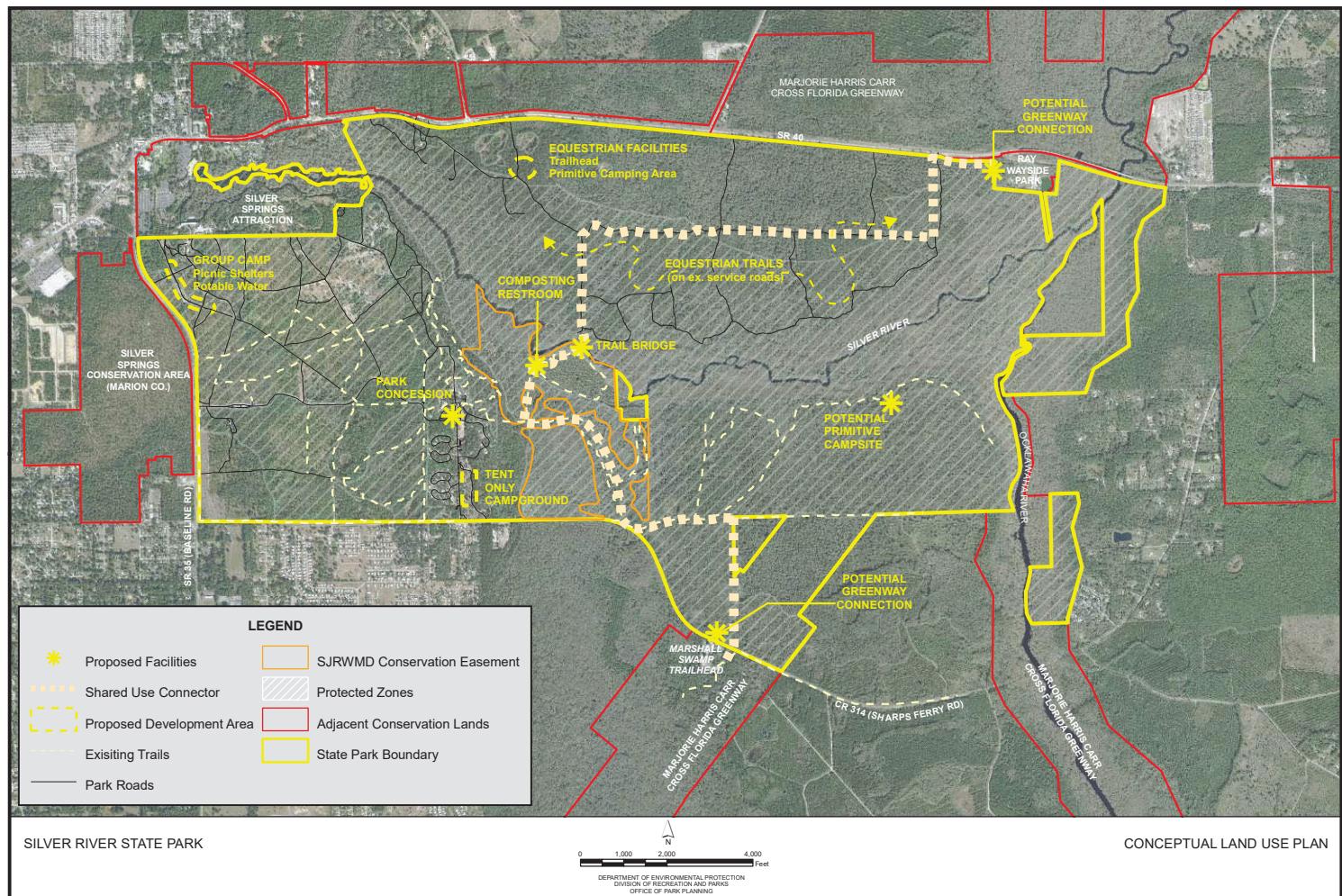
Goal: Provide public access and recreational opportunities in the park.

The existing recreational activities and programs of this state park are appropriate to the natural and cultural resources contained in the park and will be continued. New and/or improved activities and programs are also recommended and discussed below.

Proposed improvements focus on enhancing connectivity to adjacent conservation lands, providing additional trail and camping opportunities, establishing more convenient access to the Silver River and achieving the full potential for interpretive programming at the park. If implemented, the potential uses and proposed facilities in this plan will introduce horseback riding to the park, expose more visitors to the wonders of paddling the Silver River, diversify the types of camping available and provide expanded opportunities to learn about the resources of the park.

Objective: Maintain the park's current recreational carrying capacity of 1,332 users per day.

The park will continue to provide opportunities for hiking, nature observation, camping, cabin lodging, canoeing and picnicking. Interpretive exhibits and



programs will continue to be offered at the museum.

Objective: Expand the park's recreational carrying capacity by 162 users per day.

Hiking opportunities within the park will be expanded with the proposed construction of a pedestrian bridge over the Silver River. Camping opportunities will be expanded with the addition of a tent-only campground. Canoeing and kayaking opportunities will be expanded once a concessionaire is established. Equestrian opportunities will be added with the creation of an equestrian trailhead with trailer parking, designated equestrian trails and primitive group camp. New and expanded recreational opportunities are discussed in further detail below.

Objective: Continue to provide the current repertoire of three interpretive/educational programs on a regular basis.

Two interpretive programs are currently offered to park visitors. These programs include a guided hike led by a local birding expert on the different birds that inhabit the natural communities within the park. Visitors can also discover what life was like in Florida at the turn of century by participating in a ranger-led tour of the Cracker homestead and kitchen that is part of the Silver River Museum. The local astronomy club also invites parks visitors to join them on the second Saturday of every month to learn about the stars, planets, and other facts about the night sky.

The park is also host to one of Marion County's most popular local festivals, the Ocala Country Days. This festival is the annual fund-raiser for the Silver River Museum and Educational Center. The festival includes two days of exhibits and demonstrations that include flintnapping, woodworking, basket making and sugar cane syrup making.

Objective: Develop three new interpretive/educational programs.

There is potential for improving interpretive programs and nature and heritage based tourism at Silver River State Park. The programs should build on the resources and facilities of the state park and the diverse range of natural and cultural sites in the Ocala region. Interpretive content should focus on the ecosystem of the relatively unspoiled spring run stream, the Division's restoration efforts in the sandhill community of the park, the important need for control of invasive exotic plants in natural areas such as this, the need for protection of surface and groundwater in the river basin, and the significance of cultural sites located in and around the park. The Silver River Museum and its staff could provide unique educational and interpretive resources for this effort. Activities available at the Silver Springs attraction, the Marjorie Harris Carr Cross Florida Greenway, the Ocala National Forest and other locations convenient to the state park could support a wide range of additional interpretive program and tour opportunities. Division staff should expand the frequency and content of existing programming, as resources allow, and encourage the involvement of other land managing agencies, public and private sector interests and citizen volunteers in the

development and delivery of interpretive programs at the state park.

Objective: Educate park visitors about the importance of proper food and garbage storage to prevent the habituation of Florida black bears to humans.

Visitor education and interpretation regarding the proper storage and disposal of food and garbage will be conducted to prevent the habituation of bears to humans. Though it is not currently a problem, efforts should be made to obtain bear-proof garbage cans and dumpsters when funds become available as a preventative measure. The FFWCC will be consulted for recommendations regarding bear management measures to be taken at the park.

Proposed Facilities

Capital Facilities and Infrastructure

Goal: Develop and maintain the capital facilities and infrastructure necessary to implement the recommendations of the management plan.

The existing facilities of this state park are appropriate to the natural and cultural resources contained in the park and should be maintained. New construction, as discussed further below, is recommended to improve the quality and safety of recreational opportunities, to improve the protection of park resources, and to streamline the efficiency of park operations. The following is a summary of improved renovated and/or new facilities needed to implement the conceptual land use plan for Silver River State Park:

Objective: Maintain all public and support facilities in the park.

All capital facilities, trails and roads within the park will be kept in proper condition through the daily or regular work of park staff and/or contracted help. The Division is responsible for ensuring an appropriate level of public access and visitor safety at the River Bend use area. Picnicking, swimming, boat launching and scenery appreciation are activities that have occurred at this site for decades, as people arrived either from the river or from the jeep trail leading to Sharps Ferry Road. Basic public facilities have been established to protect the resources of the park and to manage the existing public uses.

Objective: Improve three existing facilities.

Major repair projects for park facilities may be accomplished within the ten-year term of this management plan, if funding is made available. These include the modification of existing park facilities to bring them into compliance with the Americans with Disabilities Act (a top priority for all facilities maintained by the Division). The following discussion of other recommended improvements and repairs are organized by use area within the park.

Canoe/Kayak Facilities: A composting restroom should be located at the existing River Bend Use Area. Since private vehicle access is not allowed to the River Bend area, the

Division is pursuing a private vendor to provide a shuttle service, and/or canoe carts to transport canoes and kayaks to the launch point.

Park Concession: The historic farmhouse building adjacent to the main parking area is to be adaptively reused as a concession facility operated by a vendor. The vendor will provide canoe, kayak and bicycle rentals as well as snack foods, groceries, and picnic and camping supplies. Since private vehicle access is not allowed to the River Bend area, the Division is pursuing a private vendor to provide a shuttle service to transport canoes and kayaks to the launch point.

Camping Facilities: Facilities at the primitive group camp are currently limited to composting restrooms. It is recommended that potable water eventually be provided in this area and up to four picnic shelters constructed to provide gathering places for groups and shelter during inclement weather.

Objective: Construct five new facilities.

Trails: The 2007 Marjorie Harris Carr Cross Florida Greenway Land Management Plan proposes a continuous trail through public lands of the Silver River area, including Silver River State Park. Trail connections to link the Greenway to the north and south sections of the park would provide enhanced recreational opportunities. A trail connection from the northern portion of the park through Ray Wayside Park and under the Ocklawaha River Bridge would allow hikers to avoid crossing four lanes of traffic on State Road 40. The logical point of connection to the Greenway in the southern portion of the park is near the Greenway's Marshall Swamp Trailhead on Sharps Ferry Road. Trail information kiosks/sign-in stations should accompany the new entry points into the park, and additional pedestrian safety improvements may be necessary to ensure a safe crossing of Sharps Ferry Road.

The primary challenge to completing a Greenway connection is a required crossing of the Silver River. A rustic bridge could provide this important trail connection while minimizing impacts to natural resources and the visual landscape. The Florida Department of Transportation has agreed to construct a pedestrian and equestrian bridge within the park and across the Silver River as part of a Memorandum of Agreement concerning the widening of State Road 40. Additional study will be necessary to determine the appropriate location, design and resource impacts of the proposed bridge. The Department will approve the final design and location of the bridge.

Equestrian Facilities: An equestrian camping area and trail system is proposed north of the Silver River with access from State Road 40. The site is a transitional area between mesic/wet flatwoods and floodplain forest and will offer seasonal recreational opportunities depending on rainfall patterns. There is the potential to create approximately ten miles of trails using the existing network of service roads. The

feasibility of connecting this trail system with the Greenway in the future should be explored with the Office of Greenways and Trails. Recommended facilities include trailhead parking for up to 15 vehicles with trailers, small primitive camping area (a 12-person capacity), hand pump for watering horses and a small restroom. Water and restroom facilities should be sited to service both trail users and campers. Adequate separation between the trailhead parking and campers should be established in the design of this area. Care will be taken in the design and management of these facilities to protect the resources of the park from unacceptable impacts. The conditions of soils and wildlife impacts from trail use will be monitored. The equestrian trail may be closed during rainy seasons or re-routed to protect specific resources or areas, as necessary.

Camping Facilities: A tent only camping area of up to twelve sites is proposed for the area directly east of the existing campground. This area is former pasture and contains scattered clusters of live oaks and pines. These sites would be unimproved but provide room for two large family size tents, a picnic table and a fire ring. Potable water would be available at two or three central locations and all twelve sites would be served by a four-fixture two-shower bathhouse. A stabilized unpaved access road and stabilized unpaved parking will also need to be provided. These sites should be clustered between existing stands of trees to provide an effective buffer between the tent sites. Parking spaces should likewise be distributed in order to provide parking within easy walking distance of each campsite.

Facilities Development

Preliminary cost estimates for these recommended facilities, improvements are provided in the Ten-Year Implementation Schedule, and Cost Estimates located in the Implementation Component of this plan. These cost estimates are based on the most cost-effective construction standards available at this time. The preliminary estimates are provided to assist the Division in budgeting future park improvements, and may be revised as more information is collected through the planning and design processes. The following is a summary of facilities needed to implement the conceptual land use plan for Silver River State Park:

Trails

Silver River pedestrian bridge
Trail kiosks/sign-in stations (2)

Equestrian Facilities

Equestrian trail (8-10 miles)	Water pump
Equestrian camping area	Trailhead parking (12 vehicles with trailers)
Restroom	

Canoe/Kayak Facilities

Composting Restroom

Concession and shuttle service

Camping Facilities

Group picnic shelters (4) and potable water

Primitive campsite

Tent-only Campground

Existing Use and Recreational Carrying Capacity

Carrying capacity is an estimate of the number of users a recreation resource or facility can accommodate and still provide a high quality recreational experience and preserve the natural values of the site. The carrying capacity of a unit is determined by identifying the land and water requirements for each recreation activity at the unit, and then applying these requirements to the unit's land and water base. Next, guidelines are applied which estimate the physical capacity of the unit's natural communities to withstand recreational uses without significant degradation. This analysis identifies a range within which the carrying capacity most appropriate to the specific activity, the activity site and the unit's classification is selected (see Table 7).

Table 7.--Existing Use And Recreational Carrying Capacity

Activity/Facility	Existing Capacity		Proposed Additional Capacity		Estimated Recreational Capacity	
	One Time	Daily	One Time	Daily	One Time	Daily
Museum/Education Ctr.	100	200			100	200
Trails						
Hiking & biking	40	80	6	12	46	92
Horseback riding			24	24	24	24
Picnicking	140	280			140	280
Overnight Facilities						
Cabins	60	60			60	60
Campground	472	472	48	48	520	520
Group camp	400	400			400	400
Equestrian camping			12	12	12	12
Primitive camping			6	6	6	6
Boating						
Canoeing/kayaking	20	40	30	60	50	100
TOTAL	1,132	1,332	126	162	1,258	1,494

*Note: Recreational capacity for canoeing/kayaking determines number of boats launched from within park boundaries.

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

Optimum Boundary

The optimum boundary map reflects lands identified for direct management by the Division as part of the park. These parcels may include public as well as privately owned lands that improve the continuity of existing park lands, provide additional natural and cultural resource protection and/or allow for future expansion of recreational activities.

As additional needs are identified through park use, development, research, and as adjacent land uses change on private properties, modification of the unit's optimum boundary may occur for the enhancement of natural and cultural resources, recreational values and management efficiency.

Identification of lands on the optimum boundary map is solely for planning purposes and not for regulatory purposes. A property's identification on the optimum boundary map is not for use by any party or other government body to reduce or restrict the lawful right of private landowners. Identification on the map does not empower or require any government entity to impose additional or more restrictive environmental land use or zoning regulations. Identification is not for use as the basis for permit denial or the imposition of permit conditions.

The current optimum boundary includes Ray Wayside Park, and one outparcel located in the interior of the park and a large parcel to the southeast that would align the park boundary with Sharps Ferry Road and the Ocklawaha River. Existing park lands east of the Ocklawaha River are recommended for release to be managed as part of the Marjorie Harris Carr Cross Florida Greenway by the Office of Greenways and Trails.