

WAKULLA STATE FOREST

TEN YEAR RESOURCE MANAGEMENT PLAN



PREPARED BY

DIVISION OF FORESTRY

**FLORIDA DEPARTMENT OF AGRICULTURE
AND CONSUMER SERVICES**

APPROVED ON

WAKULLA STATE FOREST

WAKULLA AND LEON COUNTIES

TEN YEAR RESOURCE MANAGEMENT PLAN

Approved by:



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6/20/05

Date



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Date

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LAND MANAGEMENT PLAN EXECUTIVE SUMMARY

Lead agency: Florida Department of Agriculture and Consumer Services (FDACS), Division of Forestry (DOF)

Common Name: Wakulla State Forest (WaSF)

Location: Wakulla and Leon Counties, Florida

Acreage Total: 4,218.51

Acreage Breakdown:	<u>Natural Communities</u>	<u>Acreage</u>
	Upland Mixed Forest	751
	Upland Hardwood Forest.....	2,267
	Sandhills	1,008
	Hydric Hammock.....	81
	Floodplain Swamp	58
	Basin Swamp	14
	Dome Swamp.....	36
	Depression Marsh	4
	TOTAL	4,219

Lease/Management Agreement: No. 4287 & 2346 (Woodville Tract)

Use: Single Multiple

Management Agencies

Division of Forestry

Division of Historical Resources

Florida Fish and Wildlife

Conservation Commission

Responsibility

General Forest Resource Management

Historical & Archaeological Resource Management

Wildlife Resources and Laws

Designated Land Use: Multiple-Use State Forest

Sublease(s): None

Encumbrances: None

Type Acquisition: Conservation and Recreation Lands/P2000/Florida Forever Funds (Wakulla Springs Protection Zone). Tax Deed to the Florida Board of Forestry and Parks for Woodville State Forest 1946 – 73.3 acres.

Unique Features: Continuum of sandhills to uplands to slough swamps, along with depression ponds. High degree of biological diversity.

Archaeological/Historical: Four known archaeological sites.

Management Needs: Restoration and maintenance of native ecosystems through prescribed burning, hardwood control, off-site sand pine harvests and/or reforestation with native species. Thin longleaf, slash, and loblolly pine plantations in uplands, to promote forest health and natural regeneration. Complete interpretive/forest education trails and exhibits, evaluate possible primitive camping sites. Replace and improve signage on boundary fence. Purchase equipment and tools for land management. Increase presence of law enforcement agencies. Pursue the development of an equestrian trail system.

Acquisition Needs/Acreage: Adjacent parcels (4,143 acres)

Surplus Lands/Acreage: None

Public Involvement: Public Hearing, Management Plan Advisory Group, Equestrian Groups

(DO NOT WRITE BELOW THIS LINE (FOR DIVISION OF STATE LANDS ONLY))

ARC Approval Date _____ BTIITF Approval Date: _____

Comments: _____

I. INTRODUCTION

Wakulla State Forest (WaSF) is comprised of approximately 4,218.51 acres. The majority of the forest is located in northeastern Wakulla County, with a small tract, the Woodville Tract, located in southeastern Leon County (Exhibit A). The WaSF is designated for multiple use management and is part of the state forest system. Most of the land was acquired under the Conservation and Recreation Lands (CARL) and Preservation 2000 (P2000) programs. The Woodville Tract was acquired by the State in 1946.

The natural community types found on the forest include: upland mixed forest, sandhill, strand swamp, upland pine, depression wetlands and basin wetlands. A notable feature is its location, just north of the Edward Ball Wakulla Springs State Park and the Wakulla River (Outstanding Florida Waterway (OFW)). Also unique is the McBride Slough (400+ acres), which begins on the northeast side of the forest, meanders southward through the forest into the adjacent private property then under State Road (SR) 267 to join the Wakulla River. Presently there have been limited listed species sighted on the WaSF. This is mainly due to the short time the state has owned the property. Major recreational activities enjoyed at WaSF include: picnicking, walking and hiking, horseback riding, off-road bicycling and wildlife observations. The Woodville Tract (73.3 acres) is an outstanding example of a longleaf pine-wiregrass community.

A. General Mission, Goals for Florida State Forests, and Management Plan Direction

The Division of Forestry's (DOF) mission is to protect and manage Florida's forest resources through a stewardship ethic to assure these resources will be available for future generations. Multiple-use management is the overall concept used to perpetuate the sustainability of the forest's natural communities and biodiversity.

The goals of the DOF in managing Florida's state forests are:

- To restore, maintain, and protect all native ecosystems;
- To ensure long-term viability of populations and species considered rare, endangered, threatened, or of special concern;
- To integrate compatible human use, not emphasizing any particular use over the others, or over restoration, maintenance and protection of native ecosystems;
- To protect known archeological and historical resources; and
- To practice sustainable forest management utilizing sound silvicultural techniques.

These overall goals are consistent with the goals for which this property was acquired.

This management plan provides general direction for management of WaSF. It is intended to meet the planning requirements of Florida Statute 253.034 and was prepared using guidelines outlined in Chapter 18-2.021 of the Florida Administrative Code. It is not an annual work plan or a detailed operational plan, but provides strategic guidance for management of WaSF for the next ten years and outlines the major concepts that will guide management activities on the forest.

B. Overview of the State Forest Management Program

The initial purchase (Nemours Parcel 1,431.33 acres) for the WaSF was acquired on 12/29/99. Three additional parcels plus the former Woodville State Forest have been added. WaSF is now comprised of 4,218.51 acres located in northeast Wakulla and southeast Leon Counties. The forest contains many of the naturally occurring vegetative communities found in north Florida. Restoration from primarily a single use, industrial based timber management system (St. Joe

Timberlands) to implementing multiple use management, for managing the ecosystem, will be the focus for the future. The Woodville Tract is primarily a longleaf pine-wiregrass community which will require growing season prescribed fires in the future.

C. Accomplishments, Goals and Objectives

1. Past Accomplishments

The table below has been prepared for this plan and summarizes the past accomplishments.

Table 1. Accomplishment Summary, Wakulla State Forest

PROGRAM	ACTIVITY	FY 2001-02	FY 2002-03	FY 2003-04	FY 2004-05	TOTALS
Reforestation	Site preparation	230	55	200	82	567 acres
	Pine reforestation	27	80		154	261 acres
Fire	Prescribed fire	7	55	1,467	766	2,295 acres
Boundaries	Fencing		960			960 ft
	Boundary marked and/or signed	3	3.5	14	5	25.5 miles
	Surveyed		14.5			14.5 miles
Roads/Trails	Roads graded		4			4 miles
	Road shoulders maintained	2	4	1	5.5	12.5 miles
	Roads Rebuilt		2.6	3	2	7.6 miles
	Low water crossing installed		1		1	2
Recreation/ Visitor Use	Day use/Trail use	Unknown	Unknown	Unknown	Unknown	Unknown
	Signs Installed	1	1	1	3	6
	State Forest Use permits	2	3	1		6
Other Activities	Gates installed	4	6			10
	Exotic Species Control			2		2 acres

2. Future Goals and Objectives

The following goals and objectives provide direction and focus for management resources over the next 10-year planning period. Agency priorities and wildfires (or other natural disasters) will be influential in determining the degree to which these objectives are met.

GOAL 1: Protect, restore and maintain native ecosystems

OBJECTIVE 1: Develop a team Fire Management Plan to address fire prevention, detection, suppression, and prescribed burning.

PERFORMANCE MEASURE:

- *Completion of the Fire Management Plan.

OBJECTIVE 2: Implement prescription burn plans to decrease fuel loads, promote restoration, and maintain native community structure. The long-term objective of prescribed burning is to simulate, as much as possible, a natural fire regime in which the majority of acres are burned during the lightning season. With the exception of the Woodville Tract, the majority of the pine stands on the WaSF are less than 20 years old. These stands have never been prescribed burned and could be severely damaged or killed by a growing season fire. The goal is to re-introduce prescribed fire into the upland sites during the dormant season. After ground fuels have been initially reduced using dormant season burns, a growing season fire regime will be implemented. Areas already in longleaf pine or reforested with longleaf pine will be suitable for growing season fires. Along with the pine stands, other fire dependent communities will be prescribed burned as their needs dictate. The goal is to prescribe burn approximately 1,000 acres annually, which translates into a three year burn rotation.

PERFORMANCE MEASURES:

- *Prescribe Burning Plan updated annually.
- *Number of acres burned during the dormant season & growing season.

OBJECTIVE 3: Harvest off-site sand pine and start restoration of longleaf pine/wiregrass on the sandhill sites.

PERFORMANCE MEASURES:

- *Number of acres of sand pine harvested.
- *Number of acres of longleaf pine/wiregrass planted.

OBJECTIVE 4: Maintain forest boundaries.

PERFORMANCE MEASURE:

- *Number of miles of boundary harrowed and repainted.

OBJECTIVE 5: In conjunction with the Florida Fish and Wildlife Conservation Commission (FWC) and the Florida Natural Areas Inventory (FNAI), conduct faunal and floral inventories to identify presence and distribution of listed species.

PERFORMANCE MEASURES:

- *Animal survey and maps completed.
- *Plant survey and maps completed.

OBJECTIVE 6: Restore ground cover where the native ground layer has been eliminated or heavily impacted from historical land use (electrical transmission line on east side of WaSF).

PERFORMANCE MEASURE:

- *Number of acres restored.

GOAL 2: Encourage and enhance multiple-use management in a manner that is agreeable with other long term goals, especially protection of native ecosystems.

OBJECTIVE 1: Develop an Outdoor Recreation Plan.

PERFORMANCE MEASURE:

*Outdoor Recreation Plan completed.

OBJECTIVE 2: Develop and implement a Road Management Plan to provide fire protection, land management access, and public access for recreational use.

PERFORMANCE MEASURE:

*Road Management Plan completed and implemented.

OBJECTIVE 3: Develop and maintain equestrian trail system in conjunction with interested equestrian groups.

PERFORMANCE MEASURES:

*Miles of equestrian trails established and maintained.

OBJECTIVE 4: Develop hiking trail system and camp sites in conjunction with interested user groups.

PERFORMANCE MEASURES:

*Miles of hiking trails established.

*Number of camp sites developed.

OBJECTIVE 5: Evaluate proposed primitive camping sites to determine need, impact on natural resources, and the value to improving the visitor's recreation experience.

PERFORMANCE MEASURE:

*Primitive camping site assessment completed.

GOAL 3: Practice sustainable forest management utilizing sound silvicultural techniques. Management will produce an even-aged and/or all-aged, naturally regenerating forest.

OBJECTIVE 1: Conduct forest inventory updates each year, according to established criteria.

PERFORMANCE MEASURE:

*Acres inventoried annually.

OBJECTIVE 2: Prepare a 5-Year Silviculture Plan and update annually.

PERFORMANCE MEASURE:

*Plan prepared and annually updated.

OBJECTIVE 3: Protect water resources during management activities through the use of Silvicultural Best Management Practices (BMP's) for public lands.

PERFORMANCE MEASURES:

*Compliance with state lands BMP's.

OBJECTIVE 4: Conduct timber sales at appropriate times to promote forest health and ensure sustainability of the resources.

PERFORMANCE MEASURE:

*Conduct timber sales sustainable to WaSF's timber resources.

GOAL 4: Protect known archaeological and historical resources.

OBJECTIVE 1: Train personnel as archaeological monitors.

PERFORMANCE MEASURE:

*Number of personnel trained as monitors.

GOAL 5: Restore, maintain, and protect hydrologic functions related to the quality and quantity of water resources and the health of associated wetland and aquatic natural communities.

OBJECTIVE 1: Reduce erosion along trails, roads and firelines by planting and encouraging vegetation growth.

PERFORMANCE MEASURE:

*Percentage of trails, roads, and firelines planted with native or non-invasive species.

OBJECTIVE 2: Conduct annual road inspection to determine the need for installation or replacement of culverts and low water crossing.

PERFORMANCE MEASURE:

*Annual inspection and appropriate improvement completed.

II. ADMINISTRATIVE SECTION

A. Descriptive Information

1. Common Name of Property

Wakulla State Forest (WaSF).

2. Location, Boundary and Improvements

The main body of the WaSF is located in the northeastern portion of Wakulla County, Florida, approximately five miles northeast of Crawfordville, and six miles south of Tallahassee city limits. The Woodville Tract (formally the Woodville State Forest) of the WaSF is just north of the Town of Woodville and 1.5 miles south of Tallahassee city limits (Exhibit A). Currently the only improvements on the WaSF are: a State Forest Welcome Sign at the northeast corner of SR 61 and SR 267, a small parking lot, kiosk and picnic table at the main forest entrance two miles east of the SR 61 and SR 267 intersection on SR 267. The Woodville Tract has a State Forest Welcome Sign at the entrance on SR 363 just north of the Town of Woodville.

3. Legal Description and Acreage

The total acreage for the forest is 4,218.51 acres. The property is located in Sections 25, 26, 35, 36, Township 2 South and Sections 1, 2, 3, 10, 11, 12, Township 3 South, Range 1 West and Section 30, Township 1 South, and Sections 5, 6, 7, and 8 Township 2 South, Range 1 East, Wakulla County, Florida (Wakulla Tract). The Woodville Tract is located in Section 5, Township 2 North, Range 1 East, Leon County, Florida.

4. Degree of Title Interest Held by the Board

The Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (Trustees) holds fee simple title to the 4,218.51 acres (lease agreement #4287). The Woodville State Forest was acquired by a Tax Deed in 1946. Due to its small size it was combined with the WaSF in June 2002 and renamed the Woodville Tract of the WaSF. The lease agreement can be viewed at the offices of the Department of Environmental Protection (DEP), Division of State Lands, Tallahassee; the DOF, Forest Management Bureau, Tallahassee; and the WaSF office.

TABLE 2. WAKULLA STATE FOREST ACREAGE BY PARCEL

PARCEL NAME	DEED DATE	LEASE DATE	LEASE NO.	AMEND NO.	FUNDING SOURCE	COUNTY	ACRES
Nemours	12/28/99	1/10/01	4287	0	CARL/P2000	Wakulla	1,431.33
Ruby Smith	9/18/02	3/18/02	4287	1	CARL/P2000	Wakulla	86.91
St. Joe Timberlands	12/26/02	3/24/03	4287	2	FL FOREVER	Wakulla	2,527.17
Petrik	12/18/02	12/31/02	4287		FL FOREVER	Wakulla	99.80
Woodville	12/11/46	11/22/68	2346		OTHER	Leon	73.30
TOTAL ACRES							4,218.51

5. Proximity to Other Public Resources

The WaSF is in close proximity to the following public lands (Exhibit B):

<u>TRACT</u>	<u>AGENCY</u>	<u>DISTANCE</u>
Edward Ball Wakulla Springs State Park	DRP	Across SR 267
Apalachicola National Forest	USFS	Adjacent to Woodville Tract
Tallahassee – St. Marks Historic Railroad State Trail	OGT	Adjacent to Woodville Tract
Lake Talquin State Forest	DOF	15 miles northwest
St. Marks National Wildlife Refuge	USFWS	17 miles south
Joe Budd Wildlife Management Area	FWC	18 miles northwest
Ochlockonee River State Park	DRP	23 miles southwest
Tate’s Hell State Forest	DOF	28 miles southwest

- DRP – Florida Division of Recreation and Parks
- DOF – Florida Division of Forestry
- USFS – U.S. Forest Service
- USFWS– U.S. Fish and Wildlife Service, National Wildlife Refuge
- OGT – Office of Greenways and Trails
- FWC – Florida Fish and Wildlife Conservation Commission

6. Aquatic Preserve/Area of Critical State Concern

The WaSF is not within a designated Area of Critical State Concern nor is it being studied for that designation.

B. Acquisition Information

1. Land Acquisition Program

The Nemours Parcel (1,431.33 acres) and the Ruby Smith Parcel (86.91 acres) were purchased with Conservation and Recreation Lands/Preservation 2000 Funds. The St. Joe Timberlands (2,527.17 acres) and Petrik Parcels (99.08 acres) were purchased with Florida Forever Funds. The Woodville Tract was acquired by Tax Deed in 1946 (73.3 acres).

2. Legislative or Executive Constraints

The use of the property is regulated in part by the following:

Section 319 and Section 6217 of the Coastal Zone Act and the Reauthorization Amendment of Public Law 92-500 on the federal level; the Warren S. Henderson Wetlands Protection Act of 1984 on the state level; and the Wakulla Springs Protection Zone Ordinance on the local level (Ordinance 94-22 and 94-28 Wakulla County Planning Department).

The DOF makes every effort to comply with applicable statutes, rules and ordinances when managing the forest. For example, when public facilities are developed on state forests, every effort is made to comply with Public Law 101-336, the Americans with Disabilities Act. As new facilities are developed, the universal access requirements of this law are followed in all cases except where the law allows reasonable exceptions (e.g., where handicap access is structurally impractical, or where providing such access would change the fundamental character of the facility being provided).

3. Purpose of Acquisition

The primary management objective of WaSF (Exhibit C) is to preserve the quality of Wakulla Springs by protecting the land above the ground conduits that supply the springs. The purposes identified by the CARL program for this acquisition are:

- To preserve the quality of ground water leading to Wakulla Springs;
- Restore, maintain and protect in perpetuity all native ecosystems;
- To integrate compatible human use;
- To identify and preserve archaeological and historical sites;
- To insure long-term viability of populations and species considered rare;
- To provide research and educational opportunities related to natural resource and multiple-use management.

4. Designated Single or Multiple-Use Management

The WaSF is designated for multiple-use management by the DOF, under authority of Chapters 589 and 253, Florida Statutes. The DOF is the lead management agency. Sound management of the ecosystem is the overall goal for the property. Management activities will concentrate on restoration, maintenance, and protection of all native ecosystems. The forest will be managed under the multiple-use concept. Multiple-use will include, but is not limited to: silvicultural management, wildlife management, recreation management, archeological and cultural resource protection, ecosystem restoration, research, watershed management and environmental education. The integration of compatible human use with the forest and its

ecosystems will be implemented so that long-term viability of listed species is ensured. Forest management practices that are conducted will promote long-term forest health and ensure sustainability of the resources.

5. Alternate Uses Considered

The following uses were considered and determined not compatible: water resource development projects, water supply projects, storm-water management projects, linear facilities and communication towers and antennas, except as otherwise outlined in this plan.

6. Additional Land Needs

The land adjacent to WaSF on the northern, eastern, and western borders should be considered for acquisition (Exhibit D). These tracts are privately owned and partially cleared for possible development. Acquisition of adjacent lands would extend the boundaries of the Wakulla Springs Protection Zone and the unique forest communities within the state forest.

7. Adjacent Conflicting Land Uses

Residential development of adjacent property and adjoining state roads may hinder prescribed burning due to smoke management concerns.

8. Surplus Land Assessment

This state forest has been reviewed and evaluated to determine if there are any lands that are surplus from a management standpoint. All of the land within this forest is suitable and necessary for state forest management and none is considered surplus.

C. Agency and Public Involvement

1. Responsibilities of Managing Agencies

The DOF is the lead agency for the overall management of WaSF. The FWC cooperates with the DOF regarding development and enforcement of hunting regulations, wildlife monitoring and wildlife management activities even though the state forest is not yet designated as a Wildlife Management Area (WMA). The FWC has permitted limited trapping for feral hogs on WaSF. In the future, consideration will be given to placing WaSF into a Wildlife Management Area.

The Division of Historical Resources (DHR) cooperates with the DOF regarding appropriate management practices on historical or archaeological sites on the property as stated in Section 267.067, Florida Statutes.

2. Public and Local Government Involvement

This plan has been prepared by the DOF and will be carried out primarily by that agency. The DOF responds to public involvement through direct communication with individuals, user groups, and government officials.

The plan was developed with input from the WaSF Management Plan Advisory Group through a process of review and comment. The advisory group conducted a public hearing at the Edward Ball Wakulla Springs State Park on April 12, 2005 to receive input from the general public. The advisory group met the following morning, April 13, 2005, at the same location. A summary of the advisory group's meetings and discussions are included in Exhibit E.

DOF facilitates continual dialog between state forests, local governments and the public through its liaison committees. DOF's liaison committees are composed of representatives from the state forest, co-managing agencies (FWC, DEP, water management districts, etc.), county representatives, user groups (hikers, bird watchers, hunters, etc.), environmental groups, local private property owners and other public/private entities. The group meets regularly (quarterly or semi-annually) to discuss issues related to the state forest. At the time of this writing, WaSF is in the process of organizing such a committee.

3. 3. Compliance with Comprehensive Plan

This plan was submitted to the Board of County Commissioners in Wakulla County (Wakulla Tract) and Leon County (Woodville Tract) for review of compliance with their local comprehensive plan. Letters of compliance are in Exhibit F.

III. RESOURCE SECTION

A. Past Uses

Prior to state ownership: the Nemours Parcel and the St. Joe Timberlands Parcel were intensively managed for timber production by the St. Joe Paper Company; the Ruby Smith Parcel was an agricultural field; and the Petrik Parcel had been cutover and left to grow back in natural hardwoods and pines.

The Woodville Tract is an old platted subdivision formerly known as Woodville Terrace. Most of the subdivision was never developed and title to the property reverted to the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida under provisions of Section 9 of Chapter 18296, Laws of Florida, Acts of 1937. The property was deeded to the Florida Board of Forestry and Parks on December 11, 1946. On April 1, 1947, the property was assigned to the Leon Chapter of Future Farmers of America via a Deed of Dedication. Under terms of the Deed of Dedication, management of the property reverted to the Division of Forestry in February of 1979 because Leon County had ceased using the property for educational purposes. The site was formally designated as the Woodville State Forest on July 27, 1990. Due to its small size and close proximity to WaSF, it was placed under WaSF management in June 2002 and renamed the Woodville Tract of the WaSF. Educational field trips by local schools have been conducted on the tract and plant material has been collected on this site for an annual tree identification class held by the county extension office. Historically, user groups such as horseback riding clubs, Girl Scouts and Boy Scouts have expressed an interest in using the area, but little or no use by these groups has actually occurred. The Woodville Tract has outstanding examples of longleaf pine-wiregrass and dome swamp community types.

B. Renewable and Non-Renewable Resources

1. Soil Types

According to the USDA – Natural Resources Conservation Service “Soil Survey of Wakulla County, Florida” and “Soil Survey of Leon County, Florida” the following soil types are found on WaSF (Exhibits G1 and G2).

Soils of the Sand Ridges

Lakeland sand, 0 to 5 percent slopes. Nearly level to gently undulating, excessively drained soil is on the uplands. Lakeland soil does not have a high water table; it is within 72 inches of the surface. Permeability is rapid. Organic matter content and natural fertility are low. The natural vegetation includes mostly longleaf pine, turkey oak, laurel oak, bluejack

oak, and blackjack oak. The understory includes wiregrass, running oak, and scattered wild lupine.

Ortega sand, 0 to 5 percent slopes. Nearly level to gently undulating, moderately well drained soil is on side slopes or in concave areas on the sandy uplands and is on convex knolls on flatwoods. The water table fluctuates between depths of 60 to 72 inches. Permeability is rapid. Organic matter content and natural fertility are low. The natural vegetation includes mostly longleaf pine, slash pine, and turkey oak. The understory includes wiregrass.

Alpin sand, 0 to 5 percent slopes. Nearly level to gently undulating, excessively drained soil is on the uplands. Alpin soil has a water table at a depth of more than 72 inches. Permeability is moderately rapid in the surface layer. Organic matter content and natural fertility are low. The natural vegetation includes mostly longleaf pine, turkey oak, bluejack oak, laurel oak and blackjack oak. The understory includes honeysuckle, wiregrass, and running oak.

Blanton fine sand, 0 to 5 percent slopes. Nearly level to gently sloping, moderately well drained soil is on the uplands. Blanton soil has a perched water table above the subsoil for less than a month during the wet seasons. In other seasons the water table is below 72 inches. Permeability is rapid in the surface and subsurface layer and medium in the subsoil. Natural fertility is low. The natural vegetation includes longleaf and slash pines, and mixed hardwoods-white oak, live oak, laurel oak, sweetgum, hickory, dogwood, and persimmon trees. The understory includes native grasses and shrubs including huckleberry, briers, and wiregrass.

Soils of the Low Uplands

Albany loamy sand, 0 to 5 percent slopes. Nearly level to gently undulating, excessively drained soil is on the lower elevations of the uplands. Albany soil has a water table 12 to 30 inches below the surface most of the year. Permeability is rapid in the surface layer and medium in the subsoil. Natural fertility is low. The natural vegetation includes longleaf and slash pine, and mixed hardwoods: white oak, live oak, laurel oak, sweetgum, hickory, dogwood, and persimmon trees. The understory includes native grasses and shrubs including huckleberry, briers, and wiregrass.

Ridgewood fine sand, 0 to 5 percent slopes. Nearly level to gently sloping, somewhat poorly drained soil is on uplands and on slightly convex knolls in the higher flatwoods areas. Ridgewood soil has a seasonal high water table at a depth of 24 to 42 inches for 2 to 4 months of the year, and at a depth of 30 to 72 inches for most of the remainder of the year. Permeability is rapid. Organic matter content and natural fertility are low. The natural vegetation includes mostly slash pine, longleaf pine, and mixed hardwoods. The understory includes wiregrass.

Otela fine sand, 0 to 5 percent slopes. Nearly level to gently sloping, moderately well drained soil is on knolls and broad uplands. This Otela soil has a perched water table above the subsoil during wet periods. Generally the water table is at a depth of more than 72 inches. Permeability is rapid. Organic matter content and natural fertility are low. The natural vegetation includes mainly slash pine, loblolly pine, longleaf pine, bluejack oak, red oak, and live oak. The understory includes dwarf huckleberry and wiregrass.

Otela fine sand, 5 to 8 percent slopes. Moderate sloping, moderately well drained soil is on low knolls and side slopes adjacent to stream channels in the uplands. This Otela soil has a perched water table above the subsoil during wet periods. Generally the water table is at a depth of more than 72 inches. Permeability is rapid. Organic matter content and natural fertility are low. The natural vegetation includes mainly slash pine, loblolly pine, longleaf pine, bluejack oak, red oak, and live oak. The understory includes dwarf huckleberry and wiregrass.

Lutterloh fine sand, 0 to 5 percent slopes. Nearly level to gently sloping, somewhat poorly drained soil is on low uplands and in high areas on flatwoods. Generally the water table is at a depth of 18 to 30 inches for 2 to 4 months of the year and at a depth of 30 to 72 inches most of the remainder of the year. Permeability is rapid. The organic matter content is moderately low, and natural fertility is low. The natural vegetation includes: longleaf pine, slash pine, and mixed hardwoods such as white oak, live oak, laurel oak, sweetgum, hickory, dogwood and persimmon. The understory includes native grasses and shrubs, such as huckleberry, briers, and wiregrass.

Moriah-Pilgram fine sands. Nearly level and somewhat poorly drained soils are in broad areas on flatwoods. Permeability is rapid. Organic matter content and natural fertility are low. The natural vegetation includes mainly longleaf pine, slash pine, and turkey oak. The understory includes wiregrass.

Shadeville fine sand, 0 to 5 percent slopes. Nearly level to gently undulating, moderately well drained soil is in moderately broad areas on low uplands and on broad knolls on flatwoods. In most years, Shadeville soil has a seasonal high water table that fluctuates between depths of 60 to 72 inches for more than 6 months and is at a depth of 42 to 60 inches for 1 to 3 months during periods of heavy rainfall. Permeability is rapid. Organic matter content and natural fertility are low. The natural vegetation includes: live oak, laurel oak, slash pine, cabbage palm and red maple. The understory includes huckleberry and chalky bluestem.

Soils in the Depressions and Drainageways

Tooles-Nuttall fine sands depressional. Nearly level poorly drained soil in depressions on flatwoods. Slopes are concave and less than one percent. In most years the Tooles soil is ponded for 4 to 6 months and has a seasonal high water table with a depth of 20 inches for most of the remainder of the year. Permeability is rapid in the surface layer and subsurface layer and is slow in the subsoil. The organic matter content and natural fertility are low. The natural vegetation includes: red maple, sweetgum, cabbage palm, tupelo, baldcypress and water oak.

Plummer fine sand and Plummer muck fine sand depressional. Poorly drained nearly level soil in: low areas, poorly defined drainage ways and swamps on upland. Slopes are concaved and less than one percent. In most years the Plummer soil is ponded for about 10 months and has a water table about 10 inches below the surface the remaining 2 months. Permeability is rapid in the surface layer and subsurface layer and is moderate in the subsoil. Natural fertility is low. The natural vegetation includes: slash pine, cypress, sweetgum, blackgum, black willow, bayberry and tupelo. The understory includes: inkberry, waxmyrtle, fern species, huckleberry, buttonbush, elderberry, dahoon holly and wiregrass.

2. Archaeological and Historical Resources

There are four known archaeological sites on WaSF; one on the Woodville Tract and three on the Wakulla Tract. Records of the sites are on file at DHR, the DOF Tallahassee District office and the DOF state office. The DOF will comply with all appropriate provisions of Chapter 267.061(2), Florida Statutes and with the procedures outlined in “Management Procedures for Archaeological and Historical Sites on State-Owned and Controlled Lands” (Exhibit H). The forester assigned to WaSF will be trained as an archeological site monitor through DHR’s training program for land managers.

3. Water Resources

McBride Slough, which is the major watershed drain through the forest, forms on the north and east sides of WaSF (Exhibit I1). It meanders generally to the south through the forest coming out on the southeast side of the forest. It combines with two small springs then flows under SR 267 and joins the Wakulla River in just over a mile. The Nemours Parcel has three cypress ponds, and numerous sinkholes and springs in Section 6, and several wet season depressional ponds. The Woodville Tract has a small cypress pond (Exhibit I2). A notable aquatic feature less than a ½ mile south of the forest is Wakulla Springs.

A portion of this forest is part of the critical watershed groundwater recharge area for Wakulla Springs, the largest single vent freshwater spring in the world. The DOF will coordinate with NFWFMD and/or DEP, as necessary, on activities pertaining to water resource protection and management.

4. Fish and Wildlife

Management on WaSF will be directed toward the maintenance of biological diversity and species composition consistent with existing natural community types. Such communities will be restored and/or maintained through habitat management. Many game and non-game species inhabit the natural communities found throughout the forest (Exhibit J). A list of species observed by the DOF, FNAI and FWC will be kept and updated as needed.

5. Listed Species

A survey is to be conducted by the FNAI for rare animals, plants, and natural communities on WaSF. The survey will include a list of species, maps, and management recommendations for listed species on WaSF. Specialized forest management techniques will be used as necessary to protect or increase habitat for listed species. Species specific management plans will be developed when necessary. Technical assistance will be solicited from other governmental agencies and private interests to provide expertise for further surveys and identification of species. If any endangered species are found to occur in the future, measures for protection of such species will be implemented. The current FNAI Summary of Occurrence Records and list of endangered and threatened species possibly occurring on Wakulla State Forest are in Exhibit K.

None of the flora or fauna found in the Wakulla River, which is down stream from the WaSF, should be affected by the DOF’s proposed management activities. Prescribed burning may bring back fire dependent species on the forest.

The **gopher tortoise** and **Sherman’s fox squirrel** are listed as species of special concern. The habitat of these upland species will be enhanced by sandhill restoration and regular prescribed burning. These practices may also benefit many other sandhill species which although not observed on WaSF, may migrate in and increase in numbers as their habitat is restored.

6. Beaches and Dunes

No beaches or dunes occur on the WaSF.

7. Swamps, Marshes, and Other Wetlands

Most of the wetlands located on the WaSF are associated with the McBride Slough. However, there are several other small isolated wetlands found within the forest. Maintenance of these wetland communities is a high priority and will be accomplished through prescribed fire when necessary and a cautious avoidance of activities that would threaten the natural hydrology of these areas.

8. Mineral Resources

No known mineral deposits of commercial value are known to exist on this property.

9. Unique Natural Features

The wetlands and springs associated with McBride Slough are WaSF's most unique natural feature. The unique natural feature of most importance to WaSF is its close proximity to Wakulla Springs. Wakulla Springs is a first magnitude spring and has a flow rate of 250,000 to 400,000 (960,000 peak) gallons per hour.

10. Outstanding Native Landscape

The WaSF has a continuous gradient of natural communities from sand ridges, low upland pine and mixed forest to the major watershed drainage-way of the McBride Slough.

11. Timber Resources

The DOF will implement silvicultural practices, including timber harvesting, prescribed burning and reforestation, in an attempt to establish a healthy forest with an age distribution that best duplicates old growth conditions. Well timed and executed timber harvests play an integral role in the health of forest ecosystems. Thinning dense forest stands helps improve understory composition, improves forest health and allows for less damaging prescribed burns. Timber harvesting is also used in reestablishing native species by removing off-site species.

Within the State Forest System, the annual harvest volume on each forest will be determined by the health of the forest. Good stewardship and resource sustainability are essential goals for any proposed silvicultural activity. The health of the forest ecosystem is paramount in importance.

An inventory of timber on WaSF was completed in March 2001 (timber appraisal for purchase). The merchantable pine (1,215 acres) inventory was approximately 91,390 tons. The pre-merchantable planted pine acreage was 948. The annual growth for both merchantable and pre-merchantable pine (2,163 acres) is estimated to be approximately 8,825 tons per year (4.08 tons/acre/year). Inventories will be updated on a continual basis according to guidelines established by the DOF's Forest Management Bureau.

The DOF practices sustainable timber management in the state forest system, which means annual harvest volume on each state forest is not to exceed the annual growth rate. This is accomplished by maintaining and updating accurate estimates of standing timber in order to assure that the timber resources retain their sustainability.

IV. MANAGEMENT CONCEPTS BY NATURAL COMMUNITIES/COVER TYPES

A. Existing and Planned Uses

The forest will be managed under the multiple-use concept. Management activities will include: restoration, maintenance, and protection of all native ecosystems (prescribed burning, silvicultural management, wildlife management, soil and water resources protection, etc.); integration of compatible human uses (recreation management); and ensuring long-term viability of populations and species considered endangered, threatened or of special concern. Existing and planned uses are as follows:

1. Property Boundary Establishment and Preservation

The WaSF has over 16 miles of boundaries which were marked as part of the initial acquisition survey. The state forest boundary lines are to be maintained by periodic clearing and repainting, and the initial placement of state forest boundary signs by DOF personnel. Metal gates have been purchased to replace the existing cable gates. This will provide better control of access to the forest and eliminate the hazard of the cable gates.

2. Soil And Water Protection

Wakulla County is in the Gulf Coastal Lowland physiographic province which is subdivided to the east into the Woodville Karst Plain. A section of the Wakulla Tract of WaSF is contained in the Wakulla Springs Protection Zone (Ordinance 94-22 and 94-28 Wakulla County Planning Department).

The primary reason for the purchase and establishment of the WaSF was to provide a buffer to protect the unique water resource of Wakulla Springs. Currently there are no known soil or erosion problems present on WaSF. Management activities will be executed in a manner to minimize soil erosion. If problems arise, corrective action will be implemented by DOF staff under the direction of DOF's Forest Hydrology Section.

Efforts will be made to monitor and protect WaSF's ponds and springs and their associated water quality, discharge and native plants and animals. All forest management activities relating to timber harvesting practices will comply with the BMP's for public lands. Copies of this publication are available upon request from the DOF.

The WaSF falls within the jurisdiction of the Northwest Florida Water Management District (NFWFMD). The DOF will coordinate with NFWFMD and/or DEP, as necessary, on activities pertaining to water resource protection and management. Any activities requiring water management district permits will be handled accordingly. The DOF will work with NFWFMD to ensure that levels and quality of ground and surface water resources are appropriately monitored. Herbicides will be target specific and primarily used for restoration and exotics control.

3. Roads

The WaSF is bounded by SR 267 on the south, SR 61 on the west, and Cooperwood Road (county maintained dirt road) which bisects a portion of the forest on the north. The interior portion of WaSF is accessed by approximately 17 miles of woods roads (Exhibit L). Vehicular traffic by the public is currently not allowed on WaSF. Plans are to allow public access through the forest from SR 267 and SR 61. All other roads will be closed to vehicular traffic except through special-use permits. A total of 4.5 miles of road, Rosa Shingles (E-W), Chattin (N-S), and McBride Slough (E-W), have been brushed out, leveled, and rocked. As service roads are brushed out and leveled they will also serve as firebreaks and/or recreation

trails. Over this ten year period, roads will be evaluated and some (especially those around sensitive areas) possibly selected for closure. All state forest roads will be maintained by the DOF. Mr. Edgar Chattin owns a seven acre inholding within the forest and has an easement designated as that portion of Chattin Road north and west of his property. Assistance will be requested from the Forest Hydrology Section involving road work that crosses McBride Slough or other wetland areas.

4. Recreation Management

The demand for dispersed resource-based outdoor recreation in Florida is expected to continue to grow in the next ten years. Because of its location just south of Tallahassee, WaSF's natural environment should make the forest an increasingly important recreation destination for people seeking passive, dispersed, recreational opportunities. The DOF will continue to promote and encourage recreational use by the public while protecting resources and practicing multiple-use management. Recreational activities occurring on WaSF include: hiking, off-road bicycling, horseback riding, primitive camping, picnicking, bird watching, and nature study. The WaSF staff will work to promote nature-based tourism in the area. The ponds located within WaSF are not conducive to recreation development because of their small size.

a. Public Access and Parking

Access to WaSF is available to recreational users through an entrance and associated parking area, kiosk, and picnic area off SR 267 (Exhibit A). The parking and picnic area off SR 267 is currently being expanded to include a larger parking area, pavilion and vault-type restroom facility on this site. Dispersed recreation is encouraged from the parking area, which serves as the trail head for hiking, horseback riding, and bicycling. In the near future, visitors will have vehicular access to the central part of the forest from the south via Rosa Shingles Road to Chattin Road off SR 267 and from the west via Chattin Road off SR 61. A parking area will be established halfway between the two entrances to allow visitors to disperse from there as well. Within this ten year planning cycle other parking and access points will be evaluated. Additional signage for both the Woodville Tract and the Wakulla Tract are planned. Currently no user fees are collected for day use activities.

b. Recreational Trails

Currently the WaSF's interior road system and firebreaks provide the trails for hikers, off-road bicyclists, and horseback riders (Exhibit L). Equestrians are restricted to trails, fire lines and woods roads. Bicycling is allowed on all roads. Suitable locations are being explored for additional hiking trails. The construction, maintenance and improvements of nature and hiking trails will be on-going.

c. Camping

Primitive campsite(s) are proposed for WaSF, including at least one youth only camp site. Campsites will be equipped with fire rings and a large campfire circle for the youth area. The need for additional primitive campsites will be looked into as demand dictates.

d. Hunting

The DOF and FWC have recommended archery, small game and primitive weapons hunting opportunities to begin on this forest in the 2006-2007 hunting season. Currently, due to the limited size of the forest, a general gun season has not been established for this Wildlife Management Area. In the future, DOF and FWC may consider special opportunity hunts that will allow for general guns to be used.

e. Environmental Education

The WaSF environmental education program will include: guided tours, self-guided tours and hands-on events.

f. Bird Watching

A birding checklist for WaSF will be developed in the future. The Wakulla Springs State Park and the St. Marks National Wildlife Refuge checklists will be used as guides.

5. Fire Management

Prescribed fire is the primary tool utilized for resource management on this forest. The WaSF contains approximately 3,500 acres of vegetative communities that are fire dependent. The long-term goal of prescribed burning is to simulate, as closely as possible, a natural fire regime. Such fires are needed to reduce the height and cover of woody shrubs, stimulate the recovery of native herbaceous and grassy ground cover and promote the regeneration of native pines. Areas with heavy fuel levels will receive one or more dormant season burns until they can safely support growing season (April to August) burns. The Woodville Tract is the only area which has a history of recent prescribed burning.

A comprehensive fire management plan is being developed for WaSF. This plan will be reviewed annually and amended as needed, based on current resource and burning conditions. Pre- and post-burn evaluations, essential elements to a successful prescribed fire program, will be conducted by state forest staff. Monitoring levels will vary from burn to burn, based on burn objectives.

The DOF utilizes a total fire management program on state forests that includes prevention, detection, suppression and prescribed burning. This program is the responsibility of the DOF's Tallahassee District. Emphasis will be placed on prescribed burning, wildfire prevention and education to help reduce wildfire occurrence on the forest. The Incident Commander responding to wildfires on WaSF has three paramount considerations, listed in priority order: protection of human lives, both the firefighter's and the publics, protection of improvements, and protection of natural resources.

The DOF has one fire tower and two tractor plow units located in Wakulla County. Additional support is available from Leon and Franklin Counties. Personnel and equipment from Crawfordville and Newport Forestry Stations will be used for pre-suppression practices, establishment of firebreaks, rehabilitation of existing firelines, construction of new firelines (when absolutely necessary), maintenance of perimeter firebreaks, and prescribed burning.

New and existing firelines are to be harrowed. Any new firelines will meet state BMP's and every effort will be made to avoid disturbing areas with intact ground cover. New pre-suppression lines will not be created in wetlands or transition areas. The average three to four year fire return interval forest-wide translates into an annual prescribe burning goal of 1,000 – 1,200 acres per year. Initially, more than 3,600 acres of dormant season burning may be required, to facilitate converting more of the forest's ground cover to the maintenance stage. Perimeter firebreaks need to be established around most of the WaSF.

In using prescribed fire in the various fire dependent communities on this forest, it is important to understand the ecological richness of the ecotones that divide them, especially those margins between wetland and upland communities. Every effort will be made to avoid the construction and/or maintenance of firelines in these environmentally sensitive areas

(Exhibit I). Staff will be trained to recognize sensitive areas and will be provided with guidelines for fireline construction. The biological diversity of these ecotones will benefit from prescribed fire being allowed to burn uninterrupted into the edges of the adjacent hydric communities. In this manner, fire also serves to limit the invasion of less fire-adapted, hydric species into the adjacent, more mesic communities.

Wetland communities such as sloughs and seasonal ponds, benefit from occasional fire, where it serves to limit peat accumulation and invasion of woody vegetation and helps to prevent undesired transition to plant species associated with more mesic conditions. In addition, moderately intense fires in swamps can benefit cypress and retard invasion of less fire-adapted hardwood species. Where these wetland communities are not sufficiently hydrated to prevent undesirable fire intensity, consideration should be given to delaying prescribed fire. When proceeding with burning in these conditions and firelines are required, they should be located well out of the ecotone and up in the more mesic community type. Pre-suppression or prescribed fire control lines should avoid sensitive areas adjacent to swamps and any other area that would disrupt the natural hydrology. Such control lines would be harrowed.

6. Silvicultural Guidelines

a. General Conditions and Guidelines

The WaSF consists of stands of natural and planted pines (longleaf, slash, loblolly, sand and spruce pines) and natural hardwoods (Exhibit M). Prior to state acquisition WaSF was managed exclusively to maximize timber production. As a result, only a few older trees are left standing on the site. Most of the uplands have been planted to pine species which currently range in age from 7 to 19 years old. They were previously managed as commercial pine plantations on an even-age basis.

Portions of the mesic flatwoods and sandhill communities were clear cut in the past and the residual stand is lacking a pine component. Efforts are ongoing to restore longleaf pine to these sites.

Several small off-site slash and sand pine plantations still exist on longleaf pine sites. These will also eventually be restored to longleaf pine. A cutover site of approximately 25 acres has already been planted back to longleaf pine. Another 55 acres of old agricultural fields were planted to longleaf pine in FY 2002-03. Whenever possible, prescribed fires are the preferred method of site preparation prior to tree planting. Both growing season and dormant season burns will be conducted to adequately control undesirable vegetation. Tree planting will be done to effectively establish stocking densities that allow for future sustainable silvicultural objectives.

Pine stands with good survival rates will be thinned as needed to maintain forest health. Future timber sales will be conducted to eliminate this situation. A regular prescribed burning program will be followed to ensure that off-site species are controlled. These sites will continue to be prescribed burned in both the winter and spring season to reduce hardwood encroachment, promote healthy ground cover, and to encourage natural regeneration of longleaf pine.

Uneven-aged and even-aged management are methods utilized for managing pines on state forest lands. Where appropriate, uneven-aged management will gradually be implemented on WaSF. This does not prohibit the option of continuing to manage

existing stands under the even-aged system. In either case, managing to increase the old growth component will be emphasized particularly in the short time.

There are no plans to harvest any hardwood or cypress timber during this ten-year planning period.

b. Harvest and Reforestation Procedures

Timber is a valuable economic resource and will be harvested for the purposes of ecosystem maintenance, biological restoration and improving forest health during the ten-year period covered by this management plan.

Timber harvesting guidelines will be developed for each sale on a site specific basis to minimize damage to sensitive resources. These guidelines will address: the importance of snags for wildlife habitat, BMP's, specific needs of listed species, limitations on harvesting in wet periods, machinery use, road systems, protection of ground cover, and other items that may be pertinent to a specific site. These items will be addressed in the timber sale contract. Silvicultural prescriptions will favor the development of larger and older trees. The use of natural regeneration will depend on the site and species characteristics.

Harvesting plans will be developed by state forest staff. All harvesting on lands adjacent to sinkholes and wetlands will be carried out in compliance with the public lands section of the BMP's, and will be conducted so as to exceed these guidelines.

During the period that this ten-year plan is in effect, a more detailed *Silviculture Management Plan* will be developed. This plan will outline desired basal areas, size classes, ages and silvicultural prescriptions for specific timber stands.

Reforestation plans as part of an uneven-aged system will be developed for each under stocked site on a site-specific basis. Natural regeneration is the preferred method of reforestation but artificial regeneration will be used when there is an inadequate seed source. Stocking levels, species selection, and site preparation techniques will be addressed in the Silviculture Management Plan. Reforestation will be a key component in restoring the natural ecosystems. In preparing restoration areas for reforestation, site preparation techniques will be selected that have the least damaging impact on existing desired ground cover species. Fire will be the preferred technique; however, herbicide applications, mowing and roller-chopping or combinations of the above may be necessary. Private vendors will be used whenever possible to implement silvicultural prescriptions.

c. Timber Sale Administration

Timber sales are advertised for competitive bids and normally sold on a lump sum basis. A sealed minimum acceptable price is set prior to bids being opened. This price is based on the particular class of timber for sale, local stumpage prices, and logging conditions. Salvage sales, where it is necessary to rapidly remove timber damaged by fire, insects, disease or other natural disasters, or specific areas where it is impractical to mark/cruise timber, will be sold on a per ton basis. In such sales, the mill receiving the wood furnishes the weight of the timber, which will be acceptable for payment purposes.

7. Research Projects/Specimen Collection

Research projects may be performed on WaSF for the purpose of obtaining information, which expands the knowledge of and assists in ecosystem and forest management. The DOF cooperates with other governmental agencies, non-profit organizations, and educational institutions, whenever feasible on this type of research.

All research projects and specimen collections must be approved by the DOF's Forest Ecologist before they are initiated. Any requests for research projects should be submitted in writing to the WaSF Senior Forester, who will forward the request through the Tallahassee District Manager to the Forest Management Bureau for approval. Requests must include a letter outlining the scope, methodology, and location of the proposed project. Requests are subject to review by DOF foresters, biologists, Forest Entomologist, and/or Forest Pathologist, as appropriate. Permission to conduct research will require that the investigator provide copies of any reports or studies generated from research projects to the WaSF staff.

8. Law Enforcement

Primary law enforcement responsibilities will be handled by law enforcement officers from the Florida Department of Agriculture and Consumer Services, Office of Agriculture Law Enforcement (OALE). Assistance is provided by officers of the FWC, Wakulla County Sheriff's Office, and the DEP.

Special rules (Chapter 5I-4, Florida Administrative Code) of the Department of Agriculture and Consumer Services have been promulgated for the public use of state lands and control of forest traffic and camping.

9. Fish and Wildlife Management

Wildlife management will play an important role in the management of resources on WaSF. Currently, due to the limited size of the forest, a general gun season has not been established for this Wildlife Management Area. However, DOF and FWC have recommended archery, small game and primitive weapons hunting opportunities. In the future, DOF and FWC may consider special opportunity hunts that will allow for general guns to be used. The forest is monitored by the FWC for overall wildlife law enforcement. The FWC also provides technical support when needed in the biological aspect of managing wildlife populations. The DOF and FWC will coordinate land management plans and procedures in such a manner that the objectives of ecosystem restoration and management may be met.

The DOF recognizes the importance of snags for their wildlife value. As a general rule, hardwood and pine snags will be left alone in their natural environment, unless they are deemed to be a potential hazard. Areas with significant pine mortality will be salvaged as required to protect the surrounding resources.

In order to enhance the wildlife habitat, the following general forest management guidelines are observed to best meet the needs of both the wildlife and forest resource:

a. Prescribed Burning

Prescribed burning provides numerous benefits to the forest. Many plant and wildlife species are adapted to frequent fires. Wiregrass in particular is dependent on fire.

Burning improves wildlife habitat by promoting the growth of tender new vegetation.

This new vegetation is utilized by deer, rabbits, and many other animals, while quail and other birds prefer the seeds produced by recently burned plants. Burning opens up the

forest and helps control competing vegetation. Prescribed burning also reduces the chances of harmful wildfires by reducing the buildup of fuels.

Portions of the forest will be prescribed burned every 3 to 5 years. Areas to be burned will be distributed throughout the forest in a mosaic pattern. An all-season burning program will be established utilizing existing information concerning prescribed fire practices. Whenever possible, roads and natural breaks will be utilized to contain and control prescribed and natural fires.

b. Timber Harvesting

Timber harvesting will be conducted on the forest for forest health, multiple-use management and restoration purposes. Timber harvesting on land adjacent to sinkholes, ponds, and/or intermittent streams (McBride Slough) will be carried out in compliance with BMP's for public lands.

c. Managing Non-Game Wildlife Species

Non-game wildlife species will be managed and protected through the maintenance and restoration of the native ecosystems. Research by other state agencies, institutions and/or the federal government will provide valuable information in determining future management objectives for non-game wildlife species.

d. Listed Species

Specialized forest management techniques will be used, as necessary, to protect or increase endangered and threatened species and species of special concern, as applicable for both plants and animals. Species-specific management plans will be developed when necessary. Biological surveys will be conducted as needed to determine locations of these species. Management needs of listed species will be carried out as directed in the "Listed Species" section (III.B.5.) of this plan. The management goals that are outlined in the "Existing Conditions and Management Direction" section (IV.B.1.) will benefit sensitive species by improving, restoring or maintaining native communities that provide critical habitat.

The following management practices are recommended to protect listed species that are present on the forest:

- (1) Locate and map cover, food, critical resources, and breeding places for all listed species;
- (2) Protect and properly manage habitat important to rare and endangered species;
- (3) Implement other specialized management practices for listed species as deemed necessary. This includes designation of buffers for aquatic and wetland resources;
- (4) Establish a monitoring plan to ensure species populations are being maintained and to measure success of management practices.

10. Non-native Invasive Species

The practice of the DOF is to locate, identify and eradicate or control non-native invasive species. When these species are discovered, an eradication plan will be developed with the assistance of the DOF's Pest Plant Specialist. The plan will be implemented based upon the severity of the infestation and the availability of personnel and funding. Adjacent landowners who are known to have these species on their property will be approached in an effort to cooperate on control measures. The DOF will enlist support from the FWC in the effort to control non-native invasive animals. Feral hogs (*Sus scrofa*) are present on the WaSF. The

FWC has permitted limited trapping for feral hogs and DOF will encourage hog removal on WaSF.

Despite the lack of invasive plant populations on WaSF, training in the identification and control of invasive species will be scheduled for personnel as time and resources permit. Training concerning non-native invasive plants will be coordinated with the DOF's Pest Plant Specialist. Control of exotics will be target specific and use a variety of methods including herbicide.

Non-native invasive plant species:

Scientific Name	Common Name	Occurrence Status
<u>Trees</u>		
<i>Albizia julibrissin</i>	Mimosa	Confirmed
<i>Sapium sebiferum</i>	Chinese tallow tree	Potential
<u>Shrubs</u>		
<i>Ligustrum japonicum</i>	Japanese privet	Confirmed
<u>Ferns</u>		
<i>Lygodium japonicum</i>	Japanese climbing fern	Potential
<u>Grasses</u>		
<i>Imperata cylindrica</i>	Cogongrass	Potential
<i>Panicum repens</i>	Torpedo grass	Potential

11. Insects, Disease and Forest Health

Forest management practices will be conducted in such a way as to avoid insect and disease problems. If outbreaks do occur, operational and strategic plans will be implemented to control any infestations. Specific long range strategies to avoid and/or minimize losses to such outbreaks in the future will be the management objective. State forest staff will consult with the Forest Health Section to develop scientifically sound responses and/or management prescriptions.

In compliance with Chapter 388.4111, Florida Statutes, all lands contained within this lease have been evaluated and subsequently designated as environmentally sensitive and biologically highly productive. Such designation is appropriate and consistent with the previously documented natural resources and ecosystem values and affords the appropriate protection for these resources from arthropod control practices that would impose a potential hazard to fish, wildlife and other natural resources existing on this property. After approval of this plan, the local arthropod control agency will be contacted and will be provided a description of the management objectives for WaSF. The local arthropod control agency must then prepare a public lands control plan that is subsequently approved by the DOF, prior to conducting any arthropod control activities on WaSF.

12. Utility Corridors/Easements

The use of state forest property for utility lines, pipelines, linear facilities and transportation corridors will be discouraged to the greatest extent possible. The placement of these linear facilities in a forest fragments the natural communities. Requests for linear facility uses will be handled according to the Governor and Cabinet's linear facilities policy which can be found in Chapter 2 of the State Forest Handbook. The City of Tallahassee has a large electric transmission power line that currently runs along the east boundary of WaSF and bisects a 1

mile section of the tract. Also, a residential electrical line runs ½ mile into an inholding (Chattin property) from the west side of the forest. These are the only recorded easements.

The DOF does not favor the fragmentation of natural communities with linear facilities; consequently, easements for such uses will be discouraged. The DOF does not consider WaSF suitable for any new linear facilities. When such encroachments are unavoidable, previously disturbed sites will be the preferred location. The objectives, when identifying possible locations for new linear facilities, will be to cause no damage to sensitive resources (e.g., listed species and archaeological/historical sites), to avoid habitat fragmentation, and to limit disruption of management activities and resource-based recreation.

Collocation with existing corridors will be considered but will be used only where expansion of existing corridors does not increase the level of habitat fragmentation and disruption of management and multiple-use activities. The DOF will further encourage the use of underground cable where scenic considerations are desirable. Easements are subject to approval by the Trustees and will follow the procedure outlined in Chapter 18-2, Florida Administrative Code covering easements.

13. Ground Disturbing Activities

Although the DOF's approach to handling ground disturbing activities is identified in various sections of this plan, the DOF's overall approach to this issue is summarized here. The DOF recognizes the importance of managing and protecting sensitive resources and will take all necessary steps to insure that ground disturbing activities will not adversely impact sensitive resources. This includes areas such as archaeological and historical sites, ecotones, wetlands, and areas containing sensitive species.

The construction of new pre-suppression fire lines will be limited to the greatest extent practicable. When new pre-suppression firelines, recreational trails or other low-impact recreational site enhancements are necessary their placement will be carefully reviewed by state forest staff and will be developed so as to avoid sensitive areas. For other ground disturbing activities such as construction of buildings, parking lots and new roads the DOF will consult with the DHR and FNAI.

14. Ground Cover

Management activities will be designed and conducted to protect and enhance the condition and integrity of the native ground cover. Management techniques, such as prescribed fire in the growing season, will be used to restore, recover and maintain a diversity of native ground cover to the greatest extent practical.

15. Restoration

Like many areas in Florida, fire and hydrology represent the key ecosystem processes. Thus, the WaSF restoration vision focuses on fire and hydrologic patterns.

This restoration philosophy has produced three classes of restoration goals: restoring proper fire, hydrology, and species composition. These goals often interact and build upon each other. Specific actions to accomplish these goals are outlined in the natural community management section (IV.B.) of this plan.

a. Fire

Prior to European settlement, fires in Florida generally burned on a landscape scale until stopped by rain, a body of water, or other natural fire barrier. These fires were frequent

and burned most often in the lightning season. The combination of pronounced wet/dry seasons and nutrient poor soils produced a pyrogenic flora rich in one-hour and waxy fuels.

Management techniques to mirror ancient fire processes include: conducting growing season prescribed burns at frequent intervals, burning across ecotones and transition zones, and restoring fuels to carry fire where the understory has been eliminated.

b. Hydrology

A marked wet and dry season coupled with permeable soils and lack of topographic relief results in great extremes of flooding and drought in Florida. Human habitation has made Florida rich in roads, canals, and retention ponds but has altered historic water flows. With the assistance of the DOF Hydrology Section, WaSF staff will evaluate the need for hydrologic management or restoration. Small-scale restoration of individual roads and fire lines on the forest is achievable and productive.

c. Species Composition

Ensuring that species vital to ecosystem processes are in place on WaSF is a restoration priority. A continuous pyrogenic ground cover in fire-adapted systems is important, as is the presence of longleaf pine. Juvenile longleaf pine tolerates fire earlier than other woody vegetation allowing a shorter fire return interval to coexist with silviculture.

The multiple-use management approach used will maintain habitat conditions suitable for the array of species typically found within the various ecosystems. As restoration proceeds and habitat on the forest is improved, monitoring will be conducted to determine whether these species return on their own.

There are no current plans to reintroduce any species that are thought to have been extirpated from WaSF. However, habitat conditions for key species will be monitored and, if habitat conditions become suitable, the case for reintroduction will be examined and attempted if it makes sense ecologically and from the standpoint of species recovery.

Restoration also aspires to control non-native invasive species. Long-term monitoring is vital and will be conducted as staffing and funding allow.

This ten-year resource management plan represents the best knowledge of the DOF at this time. Since restoration is inherently experimental, it is important to periodically monitor and evaluate land management to ensure it meets our mission statement. Evaluation will both highlight unsatisfactory management practices and practices that have succeeded.

B. Natural Communities/Cover Types and Proposed Management Activities

1. Existing Condition and Management Direction

Florida Natural Areas Inventory (FNAI) completed an inventory and natural community mapping project in 2004 for the Wakulla Tract of WaSF (FNAI 2004). The natural community type map for the Wakulla Tract (Exhibit N1) was created using data from the 2004 FNAI survey. The natural community type map for the Woodville Tract (Exhibit N2) was created based on interpolating existing vegetation and soil layers. Listed below are the communities found on WaSF, their existing conditions, desired future conditions, and the management actions to restore

them to their desired condition. Data from the FNAI survey was incorporated below, where appropriate.

a. Upland Mixed Forest (0 acres currently; 751 acres historically)

Desired Future Conditions

Upland mixed forest, or high hammock, should be a mix of sandhill and upland hardwood forest communities. This upland mixed forest is an atypical form of the upland mixed forest described in FNAI's Guide to Natural Communities of Florida (FNAI 1990). The canopy should be a mosaic of closed canopy hardwood areas with southern red oak (*Quercus falcata*), water oak (*Quercus nigra*), live oak (*Quercus virginiana*), white oak (*Quercus alba*), laurel oak (*Quercus hemisphaerica*), mockernut hickory (*Carya alba*), and pignut hickory (*Carya glabra*), and open canopy areas of longleaf pine (*Pinus palustris*). The subcanopy should also be patchy and have flowering dogwood (*Cornus florida*), turkey oak (*Quercus laevis*), American holly (*Ilex opaca*), and sassafras (*Sassafras albidum*). Shrubs should be moderately dense with some open areas and consist of sparkleberry (*Vaccinium arboretum*), Chickasaw plum (*Prunus angustifolia*), southern crabapple (*Malus angustifolia*), running oak (*Quercus pumila*), gopher apple (*Licania michauxii*), American beautyberry (*Callicarpa americana*), yaupon (*Ilex vomitoria*), and blackberries (*Rubus* spp.). Herbs would be frequent in the open areas and consist of wiregrass (*Aristida stricta*), narrowleaf silkgrass (*Pityopsis graminifolia*), braken fern (*Pteridium aquilinum*), queen's delight (*Stillingia sylvatica*), and anisescented goldenrod (*Solidago odora*). In the closed canopy hardwood areas herbs would be sparse and consist of wood oats (*Chasmanthium* spp.), switch cane (*Arundinaria gigantea*), partridgeberry (*Mitchella repens*), and witch grasses (*Dicanthelium* spp.). Vines would be occasionally found and consist of catbriers (*Smilax* spp.), yellow jessamine (*Gelsemium sempervirens*), and grapevines (*Vitis* spp.).

Comparing historic aerial photos and 1854 survey notes, FNAI believes the upland mixed forest on WaSF was a mixture of upland hardwood forest and sandhill. The dominant species were red oak, mockernut hickory and dogwood, with patches of longleaf pine, turkey oak and wiregrass scattered throughout.

Existing Conditions

Currently, there are no areas mapped as upland mixed forest by FNAI, though the areas mapped as historically upland mixed forest may be considered that community presently. Most of this area has been recently cleared, but some is either a mix of young slash pine (*Pinus elliottii*) and hardwoods or just young hardwoods.

Most of the upland mixed forest communities on the WaSF are presently occupied by planted slash and loblolly pine stands with establishment dates ranging from 1984 to 1994. These timber stands are generally of high quality. Groundcover diversity has been limited due to the density of the canopy and the absence of fire. Due to the lack of sunlight and buildup of pine needle litter there are very few herbaceous species in the understory. Most of these stands are currently overstocked. The basal areas are high enough to where the stands could run the risk of major forest health problems in the near future if they are not thinned soon.

Fire Requirements

Fire should be applied to this community every 2-4 years. Fires should be ignited in adjacent sandhills and allowed to spread into this community, or in patches of longleaf pine and wiregrass within the community. Fires, which occasionally entered areas where upland hardwood forest and sandhill meet, are the origin of this community in north Florida.

Restoration

Restoration projects should focus on achieving this delicate balance between upland hardwood forest and sandhill by prescribing growing season and winter burns to try to create a mosaic of open and forested areas. A thorough inventory should be conducted to determine if any longleaf pine-wiregrass patches are present. Where there are gaps in longleaf pine-wiregrass areas, managers can plant patches of these two species throughout the area to help facilitate a patchy burn, which will create this mosaic pattern.

Short Term – Thin those stands that are old enough to market as pulpwood and small sawtimber products. Care will be taken to retain any residual longleaf pines occurring in this community. Reduce the understory fuel loads with dormant season burns in stands that have reached sufficient height so as not to cause severe injuries or mortality. Follow the initial burns with growing season burns approximately 18 months later, if sufficient fuel is present to carry a fire.

Long Term – Continue periodic thinnings to create openings for natural regeneration. Where the sites are judged to be more suitable for slash and loblolly pine, they will be maintained as even-aged stands until they begin to exhibit senescence and need to be liquidated. By then, sufficient natural regeneration would exist to replace the predominant overstory. Forest managers will decide when to convert suitable stands of slash and loblolly pine to longleaf pine. Waiting until the understory consists mainly of herbaceous vegetation will make this conversion easier from both a biological and cost-effectiveness standpoint.

Groundcover

Groundcover restoration projects should focus on thoroughly inventorying the area to find any intact areas of wiregrass and, based on the findings of the inventory, establish patches of wiregrass throughout the area mapped as historically upland mixed forest.

Hydrology

With very few exceptions, hydrologic restoration is not required in this community.

Silviculture

This community type will have limited use for long-term timber management due to the mosaic structure of upland hardwood forest and sandhill. Managers should focus on un-even aged management of longleaf pines. Basal area should be managed to allow for adequate sunlight to reach the groundcover (30-60 basal area). The mosaic community structure may make harvesting more difficult. Existing longleaf pines should be retained to allow for natural regeneration.

b. Upland Hardwood Forest (2,267 acres)

Desired Future Condition

Upland hardwood forest should have a closed canopy dominated by hardwood trees such as southern magnolia (*Magnolia virginiana*), American beech (*Fagus grandifolia*), live oak (*Quercus virginiana*), swamp chestnut oak (*Quercus michauxii*), water oak (*Quercus nigra*), white oak (*Quercus alba*), southern red oak (*Quercus falcata*), mockernut hickory (*Carya alba*), pignut hickory (*Carya glabra*), spruce pine (*Pinus glabra*), sweetgum (*Liquidambar styraciflua*), American ash (*Fraxinus americana*), and Florida maple (*Acer saccharum*) with a subcanopy of flowering dogwood (*Cornus florida*), redbud (*Cercis canadensis*), Hercules club (*Zanthoxylum clava-herculis*), American holly (*Ilex opaca*), hackberry (*Celtis laevigata*), cabbage palm (*Sabal palmetto*), and red bay (*Persea borbonia*), among others. Shrubs dominate the understory due to the closed canopy. Shrub species should include hophornbeam (*Ostrya virginiana*), common sweetleaf (*Symplocos tinctoria*), devil's walking stick (*Aralia spinosa*), small flower pawpaw

(*Asimina parviflora*), chinquapin (*Castanea pumila*), and American beautyberry (*Callicarpa americana*). Though sparse, herbs should include wood oats (*Chasmanthium* spp.), switch cane (*Arundinaria gigantea*), partridgeberry (*Mitchella repens*), woods grass (*Oplismenus hirtellus*), and witch grasses (*Dichantheium* spp.). Vines should be occasional to common and include catbriers (*Smilax* spp.), Virginia creeper (*Parthenocissus quinquefolia*), pepper vine (*Ampelopsis arborea*), and grape vines (*Vitis* spp.).

Existing Conditions

Most of the currently mapped upland hardwood forest on WaSF has been severely disturbed by silvicultural activities. Some areas are currently planted in slash pine (*Pinus elliottii*) and loblolly pine (*Pinus taeda*) plantations dating from 1994 to 1984, others are in some stage of regeneration; either a mix of young slash pine and young hardwoods, or just young hardwoods, and other areas have recently been cleared. Where the tree canopy has closed there is an almost total lack of ground cover. In the younger stands there is some scattered residual wiregrass groundcover, blackberry, huckleberry and chalky bluestem. There are three existing areas that are mature examples of upland hardwood forest.

Fire Requirements

Fire is not required to maintain this community when mature.

Restoration

Restoration projects should focus on 1) conversion of existing pine plantations to hardwood forest by harvesting the slash pine once it reaches a stage where it will be marketable then either planting native hardwoods or allowing natural revegetation of the harvested area, and 2) allowing the areas with young hardwoods present to mature by selective hand thinning of weedy species such as laurel oak (*Quercus hemisphaerica*) to decrease competition with more desirable hardwoods such as southern red oak, flowering dogwood, mockernut hickory, southern magnolia, and American beech.

Groundcover

Groundcover restoration projects are not a priority in this community. Herbs are sparse in this community and development of a mature hardwood canopy should be the first priority for this community.

Hydrology

Hydrological restoration projects are not a priority in this community. Soil erosion will decrease with the development of a mature hardwood canopy.

Silviculture

This community type has been greatly affected by past silvicultural activities. The existing pine plantations should be allowed to reach a marketable age and after harvesting, should be restored to upland hardwood forest. For conservation of this unique community, all areas mapped as historically upland hardwood forest should be managed to return to its natural condition.

Short Term – Thin those stands that are old enough to market as pulpwood and small sawtimber products. Care will be taken to retain any residual longleaf pines occurring in this community. Reduce the understory fuel loads with dormant season burns in stands that have reached sufficient height so as not to cause severe injuries or mortality. Follow the initial burns with growing season burns approximately 18 months later, if sufficient fuel is present to carry a fire.

Long Term – Continue periodic thinnings to create openings for natural regeneration. Where the sites are judged to be more suitable for slash and loblolly pine, they will be maintained as even-aged stands until they begin to exhibit senescence and need to be liquidated. By then, sufficient natural regeneration would exist to replace the predominant overstory. Forest managers will decide when to convert suitable stands of slash and loblolly pine to longleaf pine.

c. **Sandhill (1,008 acres)**

Desired Future Condition

Sandhills of WaSF should have an open canopy cover of longleaf pine (*Pinus palustris*) with an open subcanopy of turkey oak (*Quercus laevis*). The understory should be a mix of shrubs and herbs with some patches of bare sand. Shrubs should include running oak (*Quercus pumila*), gopher apple (*Licania michauxii*), winged sumac (*Rhus copallinum*), huckleberry (*Gaylussacia* spp.), Darrow's blueberry (*Vaccinium darrowii*), and slimleaf pawpaw (*Asimina angustifolia*). Typical herbs should include wiregrass (*Aristida stricta*), narrowleaf silkgrass (*Pityopsis graminifolia*), bracken fern (*Pteridium aquilinum*), queen's delight (*Stillingia sylvatica*), aniscented goldenrod (*Solidago odora*), wild indigo (*Baptisia* spp.), milk peas (*Galactia* spp.), whitetop aster (*Aster tortifolius*), tall ironweed (*Vernonia angustifolia*), summer farewell (*Dalea pinnata*), greeneyes (*Berlandiera pumila*), gayfeather (*Liatris* spp.), pinweeds (*Lechea* spp.), frostweeds (*Helianthemum* spp.), and pineywoods dropseed (*Sporobolus junceus*). Vines should be found occasionally and consist of earleaf greenbrier (*Smilax auriculata*) and yellow jessamine (*Gelsemium sempervirens*).

Short Term – Existing longleaf pine stands would have a basal area of 60-70 square feet per acre, with the larger trees retained during thinning. Sand pine stands would have been liquidated and a sufficient stocking of longleaf pine seedlings re-established on all cutover acreage. The understory would contain a variety of species indigenous to this community type, primarily herbaceous, including honeysuckle, wiregrass, running oak and wild lupine. The midstory would be limited to scattered individual saplings or clumps of small trees.

Long Term – The diversity of the understory would be enhanced over time through repeated growing season prescribed burns. The overstory would consist of large, mature longleaf pines. Repeated thinnings would have stimulated natural regeneration to where at least three age classes exist in each of these stands, making them truly uneven-aged.

Existing Conditions

There is a good quality sandhill community on the Woodville Tract. Only one sandhill on the Wakulla Tract was mapped by FNAI and occurs in the east-central part of the forest, north of McBride Slough. This area has been subject to timber harvesting operations and years of fire suppression. Currently there are few longleaf pines present and red oak (*Quercus falcata*) is prevalent; wiregrass is scattered through the area. Historically, sandhill occurred in other areas of the forest; these areas are currently slash pine (*Pinus elliottii*) or longleaf pine plantations, or ruderal communities.

The Wakulla Tract's xeric uplands presently have less than 200 acres of natural and planted longleaf pines, all less than 20 years old. The remainder of the sandhill community is planted in sand pine, slash pine or loblolly pine, or has been cutover. These stands range from age ten (1994) to age 20 (1984). There is some scattered residual wiregrass groundcover in these stands.

A portion of the Wakulla Tract contains 212 acres of cutover land that is suspected to be sandhill community. This area had grown up into an oak thicket upon acquisition, and has since been

single roller chopped and burned in 2001. Subsequently, it was single chopped in 2002, and then unsuccessfully burned to prepare the site for planting containerized longleaf pine seedlings. Twenty five acres were planted in January 2003 as a test which resulted in marginal success. Due to the significant hardwood competition on this tract, the remaining area will need to have some type of effective hardwood control treatment, such as herbicide application, before planting longleaf pine seedlings. There is also some residual wiregrass on this area.

Fire Requirements

Fire should be applied to this community every 2-4 years. Growing season burns may favor the sandhill species that still exist in the area.

Restoration

Restoration of this community should focus on the use of frequent prescribed burns which will decrease abundance of weedy species, such as laurel oak (*Quercus hemisphaerica*), crabapple (*Malus angustifolia*), and hog plum (*Prunus umbellata*). Existing plantations in historically sandhill sites should be thinned or planted as needed and managed as uneven-aged stands.

Short Term – As they become merchantable, existing longleaf pine stands will be thinned to a desired basal area. Following the thinning, periodic prescribed burns (every 2-4 years) will be conducted. In areas where the fuel is too thick for safe growing season burns, a dormant season burn will first be conducted to reduce fuel buildup.

The sand pine stands (112 acres) will be harvested as soon as they become merchantable. Care will be taken to protect the residual longleaf pine trees during timber harvesting operations. Suitable ground cover for a sandhill community will be established through growing season burns. Residual sand pine seedlings will be eradicated.

At this time, it is uncertain how to proceed to restore the cutover and chopped areas. Some type of additional mechanical and/or chemical treatment may be used.

Long Term – All stands in this community type will be burned on a 2-4 year cycle, primarily during the growing season. Timber stands will be selectively harvested to maintain a desirable basal area, and create openings for natural regeneration and the creation of multiple age classes.

Groundcover

Groundcover restoration projects should focus on practices that will increase wiregrass abundance. This will involve growing season burns at 2-4 year intervals, transplanting wiregrass, and seeding of native groundcover. Roller chopping should be avoided to protect the native groundcover and to prevent weedy competition.

Hydrology

With very few exceptions, hydrologic restoration is not required in this community.

Silviculture

On WaSF, sandhills will be the primary community type practical for long-term timber management. Managers should focus on uneven-aged management of longleaf pines. Basal area should be managed to allow for adequate sunlight to reach the groundcover (30-60 basal area). Existing longleaf pines should be retained to allow for natural regeneration.

d. **Hydric Hammock (81 acres)**

Desired Future Condition

Hydric hammocks should have a closed canopy of mixed hardwoods dominated by swamp laurel oak (*Quercus laurifolia*), American elm (*Ulmus americana*), swamp tupelo (*Nyssa sylvatica* var. *biflora*), green ash (*Fraxinus pennsylvanica*), swamp chestnut oak (*Quercus michauxii*), water oak (*Quercus nigra*), sweetgum (*Liquidambar styraciflua*), and water locust (*Gleditsia aquatica*). The subcanopy should be moderately dense and consist of dahoon (*Ilex cassine*), swamp dogwood (*Cornus foemina*), cabbage palm (*Sabal palmetto*), muscle wood (*Carpinus caroliniana*) and young canopy saplings. The shrub layer should be open to moderately dense and is typically dominated by bluestem palmetto (*Sabal minor*), wax myrtle (*Myrica cerifera*), yaupon (*Ilex vomitoria*), and buttonbush (*Cephalanthus occidentalis*). Herbs are sparse due to the closed canopy, but typically include wood oats (*Chasmanthium* spp.), millet beaksedge (*Rhynchospora miliacea*), lizard's tail (*Saururus cernuus*), swamp leather flower (*Clematis crispa*), royal fern (*Osmunda regalis*), cinnamon fern (*Osmunda cinnamomea*), and Virginia chain fern (*Woodwardia virginica*). Vines should be common and consist of rattan vine (*Berchemia scandens*), poison ivy (*Toxicodendron radicans*), peppervine (*Ampelopsis arborea*), catbriers (*Smilax* spp.), and climbing hydrangea (*Decumaria barbara*).

Existing Conditions

One hydric hammock occurs on WaSF and is located in the northernmost arm of McBride Slough. Currently this community seems to be headed towards the desired future condition. One water crossing is found in the northeast Nemours Parcel and was not observed during time of high water, though it does not seem to be causing much impoundment of water flow. The uplands surrounding the northernmost part of this community have been converted to pine plantation and may be affecting hydrology.

Fire Requirements

Fire is not required to maintain this community. Fires are rare in hydric hammocks due to the generally saturated soils and scarcity of groundcover.

Restoration

Restoration projects should focus on maintaining current conditions, monitoring water quality parameters (such as increased acidity due to surrounding pine plantation), and restoring the surrounding uplands to upland hardwood forest.

Groundcover

Groundcover restoration projects are not required for this community.

Hydrology

Hydrological restoration projects should focus on monitoring the effect of the water crossing during periods of high water, making sure that impoundment of water flow is not occurring, and monitoring water quality parameters.

Silviculture

This community is not well suited for timber management. Most species growing in this community have limited or no marketability, and high soil moisture and low soil stability would make harvests impractical.

e. **Floodplain Swamp (58 acres)**

Desired Future Condition

Floodplain swamps should have a closed canopy of pond cypress (*Taxodium ascendens*), bald cypress (*Taxodium distichum*) and swamp tupelo (*Nyssa sylvatica* var. *biflora*), with hardwoods such as red maple (*Acer rubrum*) and green ash (*Fraxinus pensylvanicus*) occasionally reaching canopy heights. The subcanopy should be open to moderately dense and consist of younger canopy species as well as pop ash (*Fraxinus caroliniana*) and swamp dogwood (*Cornus foemina*). The shrub layer should be open to moderately dense and include Virginia willow (*Itea virginica*), American strawberry bush (*Euonymus americanus*), wax myrtle (*Myrica cerifera*), and swamp rose (*Rosa palustris*), as well as canopy and subcanopy saplings. Ferns, grasses and sedges should be found, though typically not in great abundance due to the moderately closed overstory. Herb species include royal fern (*Osmunda regalis*), Virginia chain fern (*Woodwardia virginicus*), lizard's tail (*Saururus cernuus*), swamp leather flower (*Clematis crispa*), millet beaksedge (*Rhynchospora miliacea*), and false hop sedge (*Carex lupuliformis*). Epiphytes and vines should be common and include Spanish moss (*Tillandsia usneoides*), resurrection fern (*Pleopeltis polypodioides*), Bartram's airplant (*Tillandsia bartramii*), poison ivy (*Toxicodendron radicans*), laurel greenbrier (*Smilax laurifolia*), and climbing hydrangea (*Decumaria barbara*).

These areas can be allowed to succeed into mature hardwood stands. Prescribed burning of adjacent stands would encourage growth of desirable vegetation in the ecotones, and limit subcanopy encroachment along the stand margins.

Existing Conditions

One floodplain swamp occurs on WaSF and characterizes McBride Slough proper. Though the swamp has been disturbed in the past, as evidenced by large, cut cypress stumps, and a water crossing is present where the swamp briefly flows underground, present conditions are in line with the desired future conditions. This water crossing should be used in a way that minimizes erosion and impaction of the underlying rock.

Most of the large hardwoods in McBride Slough were cut when the uplands were logged 20-30 years ago. Individual areas vary in width from broad (1/8 mile) to narrow (100 ft). The shallow channel only has water flow during the wet season and after periods of heavy rainfall. The Slough is densely forested with deciduous trees, such as bald cypress, swamp tupelo, red maple, black gum, laurel and water oak. The forest floor is more or less flat and open with a sometimes muddy peat floor.

Fire Requirements

Fire is not required to maintain this community. Floodplain swamps are usually too wet to support fire, but may burn during droughts.

Restoration

Restoration of this community should focus on water quality and maintenance of the community. Restoration of surrounding uplands should aid in improving water quality.

This community could require fire protection during periods of drought if the peat on the forest floor becomes dry, since severe or recurrent fires may change them into a different community. If sufficiently hydrated, however, prescribed fire will be allowed to burn into the margins of this community from adjacent upland communities in order to retard undesirable migration of hardwood species into uplands.

Any intensive uses will be kept out of this fragile community. An additional low water hard-surface crossing was installed on McBride Slough Road (Exhibit L – Interior Roads). The integrity of the hydrological conditions in these stands will be maintained during all management activities.

Groundcover

Groundcover restoration projects are not required for this community.

Hydrology

Hydrological restoration projects should focus on minimizing impact of the underlying limestone at the water crossing by reducing vehicle traffic, especially heavy traffic, minimizing erosion, and monitoring water quality parameters (such as effects of increased acidity due to conversion of upland hardwood forest to pine plantation).

Silviculture

Floodplain swamps are not well suited for timber management. High soil moisture and low soil stability would make harvests impractical, and BMP's would not allow intensive management in this area since it is considered a special management zone. Areas that have been harvested should be allowed to regenerate naturally and standing timber should not be harvested.

f. Basin Swamp and Dome Swamp (14 and 36 acres)

Desired Future Condition

Basin swamps and dome swamps should have a nearly closed canopy of pond cypress (*Taxodium ascendens*) and/or swamp tupelo (*Nyssa sylvatica* var. *biflora*) with hardwoods such as red maple (*Acer rubrum*) and green ash (*Fraxinus pennsylvanicus*) occasionally reaching canopy heights. Slash pine (*Pinus elliottii*) may infrequently be found on hummocks within the swamp. The subcanopy should be open to moderately dense and consist of younger canopy species as well as pop ash (*Fraxinus caroliniana*) and swamp dogwood (*Cornus foemina*). The shrub layer should be open to moderately dense and include Virginia willow (*Itea virginica*), parsley hawthorn (*Crataegus marshallii*), and swamp rose (*Rosa palustris*), as well as canopy and subcanopy saplings. Ferns, grasses and sedges should be found throughout, with greater density near the outer edge through the ecotones. Herb species include royal fern (*Osmunda regalis*), Virginia chain fern (*Woodwardia virginicus*), millet beaksedge (*Rhynchospora miliacea*), and false hop sedge (*Carex lupuliformis*). Epiphytes and vines should be common and include Spanish moss (*Tillandsia usneoides*), resurrection fern (*Pleopeltis polypodioides*), poison ivy (*Toxicodendron radicans*), laurel greenbrier (*Smilax laurifolia*), and climbing hydrangea (*Decumaria barbara*).

These areas can be allowed to succeed into mature hardwood and cypress stands. With hydrological conditions much like the Slough, fire is important for maintaining the basin wetland ecosystems. Prescribed burning of adjacent stands would encourage growth of desirable vegetation in the ecotones, and limit tree encroachment along the stand margins.

Existing Conditions

Most of the basin swamps and dome swamps occurring on WaSF meet the desired future conditions for those natural communities. One basin swamp in the Nemours Parcel of the forest has a water crossing, but the design of the crossing does not seem to cause much impoundment of water flow. Many of the dome swamps are surrounded by dense pine plantations, which may be affecting the amount of water flow and quality.

Fire Requirements

Fire is important in limiting hardwood encroachment and peat buildup, while encouraging herbaceous growth in basin/dome swamps. In large basins, fire may be limited to outer edges.

Restoration

Restoration of basin swamps and dome swamps of WaSF should focus on reestablishment of a frequent fire return interval to be determined by the needs of the surrounding community.

Any intensive uses will be kept out of this fragile community. The integrity of the hydrological conditions in these stands will be maintained during all management activities.

Groundcover

Groundcover restoration projects are not required in basin swamps and dome swamps.

Hydrology

Hydrology projects should focus on minimizing impoundment of water flow at water crossings by designing and constructing culverts according to BMP's, minimizing erosion, and monitoring water quality parameters (such as effects of increased acidity due to conversion of upland hardwood forest to pine plantation).

Silviculture

Basin swamps and dome swamps are not well suited for timber management. Excluding cypress, most species growing in these communities have limited marketability, and high soil moisture and low soil stability would make harvests impractical. Furthermore, BMP's would not allow intensive management in these areas since most of them are considered special management zones. Areas that have been harvested should be allowed to regenerate naturally and standing timber should not be harvested, or limited to selective cutting.

g. Depression Marsh (3.5 acres)

Desired Future Conditions

Only one depression marsh was characterized by FNAI as occurring on the Wakulla Tract. The depression was found in a slump within the surrounding landscape. Historically, this depression may have simply been a low area within the upland hardwood forest that did not become saturated to its current levels because surrounding vegetation absorbed some of the water. A larger depression marsh occurs on the Woodville Tract. Depression marshes should be dominated by grasses and herbs, with a low woody species density.

Existing Conditions

Currently, the depression marsh on the Wakulla Tract has a mix of herbaceous and woody species including red maple (*Acer rubrum*), buttonbush (*Cephalanthus occidentalis*), Carolina willow (*Salix caroliniana*), parsley hawthorn (*Crataegus marshallii*), St. Andrew's cross (*Hypericum hypericoides*), false hop sedge (*Carex lupuliformis*), knotweed (*Polygonum* spp.), and pepper vine (*Ampelopsis arborea*). The amount of standing water currently in the Wakulla Tract depression may be an effect of the surrounding area being cleared.

The depression marsh on the Woodville Tract is a seasonal wet weather sand pond depression. The pond has a sandy bottom and becomes grassy as it dries up.

Fire Requirements

Historically fire may not have occurred at the Wakulla Tract location because it was surrounded by upland hardwood forest, which is not a fire-maintained community. However, in its existing condition, this depression marsh may benefit from a 2-3 year fire interval so a buildup of peat is prevented. Depression marshes typically burn during fires that spread from surrounding, fire-maintained uplands.

Restoration

Restoration of the Wakulla Tract depression marsh should focus on the restoration of the surrounding uplands to upland hardwood forest. Once a mature upland hardwood forest is established, it may be found that this area will become a low area of more hydrophytic species such as muscle wood (*Carpinus caroliniana*), hackberry (*Celtis laevigata*), bluestem palmetto (*Sabal minor*), and sweetgum (*Liquidambar styraciflua*). Until the surroundings are restored, infrequent fires may help prevent a buildup of peat.

Restoration of the Woodville Tract depression marsh will focus on prescribed burning in conjunction with prescribed burning of the surrounding sandhill. Vehicles and heavy equipment should be kept out of this area during both wet and dry periods.

Groundcover

Groundcover restoration projects for this community should focus on minimizing woody species, such as Carolina willow, by periodically applying fire.

Hydrology

Hydrologic restoration of the Wakulla Tract site should focus on establishing an upland hardwood forest community around it. A greater density of trees in the surrounding area will help restore the natural drainage and flow patterns.

Silviculture

Depression marshes are not well suited for timber management. Most species growing in this community have limited or no marketability, and high soil moisture and low soil stability would make harvests impractical.

2. Forest Resource Management Strategies

- a.** Maintain and protect water quality and aquatic resources.
- b.** Maintain and restore ecosystem quality through the use of prescribed fire on an average rotation of 3 to 5 years.
- c.** Restore native pine species to ecosystems currently dominated by off-site species.
- d.** Restore sandhill communities utilizing established methods and methods developed through research.
- e.** Maintain the forest over the long-term through natural regeneration and uneven-aged management when feasible. Even-aged management through artificial or natural regeneration will be conducted when the above is not feasible. Longleaf pine stands will be managed to create a forest that exhibits old-growth characteristics and that yields multiple ecological benefits.
- f.** Improve, maintain and protect all native ecosystems.
- g.** Ensure the long-term viability of populations and species considered rare, endangered, threatened, or of special concern.
- h.** Maintain a sustainable silvicultural management program that enhances the natural diversity of the state forest with minimal environmental impact.

C. Impact of Planned Uses on Property Resources

The renewable resources will be protected as follows:

1. **Silviculture** – Guidelines outlined in previous sections of this plan will ensure a sustainable timber resource and diverse ecological resources for perpetuity.
2. **Wildlife** – Wildlife resources, both game and non-game species will be protected through multiple-use management techniques coordinated between the DOF and the FWC. The DOF and the FWC manage these resources through law enforcement, silviculture, restoration techniques, and prescribed burning. Wildlife will be managed and protected through the maintenance of native ecosystems.
3. **Water** – Water resources will be protected through the use of BMP's and/or other appropriate measures as deemed necessary by the DOF's Forest Hydrologist and/or Watershed Specialist. This plan will ensure and protect a continuing renewable water resource.
4. **Historical/Archaeological** – In the event of any significant ground disturbing activity not listed in this plan, the DHR will be contacted for review and comment. The DOF will follow the management procedures outlined in Exhibit H and will comply with all appropriate provisions of Section 267.061(2), Florida Statutes.
5. **Recreation** – Recreational uses will be monitored to evaluate impacts on the natural systems. Modifications to recreational uses will be implemented should significant negative impacts be identified.

V. MANAGEMENT SUMMARY

A. Operations Infrastructure

The current annual budget (2004-05) for WaSF is \$138,104. This amount includes salaries, expense and operating capital outlay and is broken down as follows:

- Salary & Benefits \$27,900 **Senior Forester** – this is for 60% of the Senior Foresters time. The other 40% is spent on County Forestry activities.
- Expense \$110,204 for routine road/trail/equipment maintenance, vehicle operation, resource management, and utilities.

To carry out resource management activities on the state forest as well as to maintain forest improvements such as trails, roads and facilities the equipment from Lake Talquin State Forest, Tate's Hell State Forest and the Crawfordville and Newport work sites are available.

Currently there is no office facility on WaSF. The WaSF Senior Forester has an office he shares with area DOF Forest Rangers in the U.S. Forest Service Crawfordville Ranger Station. Utilities are provided in agreement with U.S. Forest Service. This site is approximately 10 miles west of WaSF. The WaSF Senior Forester also serves as the Wakulla County Forester.

Plans have been conceptually approved by Wakulla County for the new WaSF headquarters site (Exhibit L). The well has been installed and funding has been approved for the septic tank/drain

field for this site. The site is in a highly disturbed area (agriculture field). The office facility, when fully staffed, will house around six people, several of which have a large percentage of responsibility outside of the office.

In order to supplement the staff assigned to WaSF, the senior forester will recruit volunteers for assistance in furthering the DOF's mission. A WaSF liaison committee composed of private citizens, representatives of forest user groups, elected county officials, and other governmental bodies is being formed.

B. Management Needs, Priority Schedule and Cost Estimates

A priority list of management activities and the estimated cost is listed below. The majority of the management operations will be conducted by the DOF, although appropriate activities will be contracted to private sector vendors. All activities will enhance the property's natural resource or public recreational value.

Cost estimates are provided where sufficient information is available to make projections. Costs for some activities cannot be estimated at this time. Other activities will be completed with minimal overhead expense by utilizing existing staff. An Operational Plan will be developed to address each of these items.

Priority 1

1. **FNAI Survey** – Initial survey of WaSF.
Estimated Total Cost for approximately 4,219 acres **\$10,000**

2. **Building Forest Headquarters/Educational Center/Ranger Site** – The beginning of construction is contingent on the availability of funding.
Estimated Total Cost: **\$300,000**

3. **Reforestation (establishing longleaf pine and wiregrass stand) on cutover Sand Ridge/Low Uplands Communities** – Initiate a silvicultural management plan that maps and identifies appropriate site preparation for hardwood control, prescribed burning, and reforestation. One hundred acres of Sand Ridge/Low Uplands (chopped site) to be reforested to longleaf pine.
Estimated Total Cost: **\$30,000**

4. **Prescribed Burning** – Prescribed burning is the primary management tool for the forest. Approximately 85% of the acreage (roughly 3,500 acres) supports vegetative communities that are fire dependent, most of which will be burned on an average rotation of every 3 to 4 years. The *Fire Management Plan* will be updated as necessary. Eventually, the annual goal will be to prescribe burn 900 to 1,200 acres with the majority of the burning during the growing season. If conditions allow, more than 1,000 acres will be burned in the winter of 2003/04. This will convert more acreage from the restoration stage to the maintenance stage. Cost estimates are based on the DOF's contract burning rate. Manpower and equipment costs are included:
Estimated Annual Cost: **\$15,000**

5. **Begin First and Second Thinning of Planted Pines.**
No costs are estimated at this time.

6. **Park Ranger Position and Vehicle** – A park ranger position is needed to assist the Senior Forester in implementing resource management activities as well as staffing for the recreation program.

Estimated Annual Salary & Benefits:	\$31,800
Estimated cost for vehicle with tank, pump and radio:	\$25,000

7. **Forest Boundary Marking and Fencing** – Post boundary with state forest boundary signage and initiate repainting of 14 miles of boundary line.

Average Length Completed per Year:	1,500 ft
Estimated Annual Cost:	\$1,500

8. **Road/Trail Restoration** – Continue to maintain and upgrade roads and forest trails and to restore wetland and intermittent stream crossings.

Road upgrades and maintenance	\$50,000
Trail establishment and maintenance	\$ 5,000

9. **Forestry Tools/Heavy Equipment and Budget Items** – Various tools and equipment necessary for the active management of WaSF are listed below. Due to limited storage space most of the needed equipment is as follows:

15 gal. ATV power sprayer	\$ 340.00
4 GPM @ 3000 PSI Pressure Washer	\$ 900.00
Portable Radios (2).....	\$ 2,000.00
8 Picnic Tables	\$ 1,600.00
Brown tree cutter.....	\$ 6,000.00
Finish mower.....	\$ 2,500.00
Total	\$13,340.00

Priority 2

1. **Listed Species Survey, Occurrence Records and Mapping** – Follow-up to the FNAI survey needs to be a cooperative, ongoing effort – employing private contractors, volunteers, FWS, etc. Biological surveys will include monitoring of listed species.

No costs are estimated at this time.

2. **Law Enforcement/Security** – Increase efforts to involve county sheriffs, FWC officers, and OALE officers to patrol the forest to monitor and enforce hunting rules, forest rules, stop illegal dumping, etc.

No costs are estimated at this time.

Priority 3

1. **Forest Education/Forest Recreation Improvements** – Following evaluation of visitor needs and resource compatibility, provide various recreation improvements and facility construction as discussed earlier in the plan.

Estimated Total Costs:	
1. Small forest education building/exhibits	\$10,000
2. Hiking Trail signs/interpretative brochure	\$ 1,000
3. Establishment of primitive campsite w/fire rings	\$ 2,000

TABLE 3- Estimated Expenditures Organized by Uniform Cost Accounting Council Categories

CATEGORY	PRIORITY 1	PRIORITY 2	PRIORITY 3	TOTAL
Resource Management:				
-Prescribed Burning	\$15,000			\$15,000
-Timber Management	\$45,900			\$45,900
-Other	\$10,000	no estimate		\$10,000
Support:				
-Vehicle Purchase	\$25,000			\$25,000
-Other	\$13,340			\$13,340
Capital Improvements:				
-New Facility Construction	\$300,000			\$300,000
-Facility Maintenance	\$50,000			\$50,000
Visitor Services/Recreation:				
-Information/Education Programs			\$11,000	\$11,000
-Operations	\$22,400			\$22,400
TOTAL	\$481,640	no estimate	\$11,000	\$492,640

C. Plans to Locate Fragile, Nonrenewable Natural and Cultural Resources

Representatives of DHR and FNAI will be consulted prior to the initiation of any proposed significant ground disturbing activity, not listed in this plan, by DOF or any other public agency. The DOF will make every effort to protect known archaeological and historical resources. Ground disturbing activities not specifically covered by this plan will be conducted under the parameters of the “List of ARC/Division of State Lands Approved Interim Management Activities”.

Trained monitors will oversee ground disturbing activities in which DHR recommends monitoring. The DOF will utilize the services of DHR archaeologists, when available, to locate and evaluate unknown resources, and to make recommendations in the management of known resources. As information becomes available, and as staffing allows, any known archaeological and historical sites will be identified on maps to aid state forest and law enforcement personnel in patrolling and protecting sites.

As mentioned above, all significant ground disturbing projects that are not specifically identified in an approved management plan will be sent to the DHR for review. Recommendations outlined in “Management Procedures for Archaeological and Historical Sites and Properties on State Owned or Controlled Lands” (Exhibit H) will be followed whenever and wherever appropriate.

Applicable surveys will be conducted by DOF staff or others during the process of planning and implementing multiple-use management activities. DOF personnel will remain alert for any environmentally significant resources (Exhibit I) and protective actions will be taken as necessary.

D. Conformation to State Lands Management Plan

Management of the forest under the multiple-use concept, utilizing multiple-use management principles, complies with the State Lands Management Plan and provides optimum balanced public utilization of the property.

Specific authority for the DOF's management of public lands is derived from Chapters 253 and 589, Florida Statutes.

E. Multiple-Use Potential - Income Producing Activities

Recreation – No honor fees are currently collected for day use activities. Sites for collection boxes will be addressed as road work, trails and campsites are completed.

Grazing - There are no appropriate sites for a commercial cattle lease.

Rentals - There are no buildings or sites currently available for rental income.

Timber Sales - Amounts received from timber sales will vary due to product class, tract size, and market conditions. Several stands need thinning and most will reach thinning stage within the ten years covered by this plan. This will result in numerous timber sales being conducted on WaSF during the next ten years.

Apiaries - There have been no requests for apiary use of the state forest.

F. Potential Use of Private Land Managers

The forest manager makes ongoing evaluations of use of private land managers, consultants, and/or contractors to facilitate the restoration or management of the forest. The opportunities for outsourcing land management work includes or is anticipated to include:

Site preparation - private equipment/forestry operations company hired to site prepare approximately 216 acres of double drum chopping.

Seedling planting - private equipment/forestry operations company hired to hand plant 80 acres with containerized longleaf pine seedlings.

Biological assessments - FNAI (non-profit) hired to survey WaSF. Anticipate contracting for follow-up monitoring.

VI. References

Florida Natural Areas Inventory. 1990. Guide to the Natural Communities of Florida. Prepared by Florida Natural Areas Inventory and Florida Department of Natural Resources.
<http://www.fnai.org/products.cfm>.

Florida Natural Areas Inventory. 2004. Wakulla State Forest Natural Community Mapping Project. Report includes disk containing 8-page written natural community description and ArcView shape files. Report is on file at the Division of Forestry's Tallahassee District Office and at the Division of Forestry's State Office.