

TEN-YEAR LAND MANAGEMENT PLAN

FOR THE

JOHN M. BETHEA STATE FOREST

BAKER COUNTY, FLORIDA



PREPARED BY

FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

FLORIDA FOREST SERVICE

APPROVED ON

FEBRUARY 19, 2016

TEN-YEAR LAND MANAGEMENT PLAN
FOR THE
JOHN M. BETHEA STATE FOREST



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2.23.16
Date

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LAND MANAGEMENT PLAN EXECUTIVE SUMMARY

LEAD AGENCY: Florida Department of Agriculture and Consumer Services, Florida Forest Service
 COMMON NAME: John M. Bethea State Forest
 LOCATION: Baker County
 ACREAGE TOTAL: 37,736 acres, more or less

<i>Historical Natural Communities</i>	<i>Acreage</i>
Mesic Flatwoods	16,657
Basin Swamp	15,880
Wet Flatwoods	2,789

<i>Historical Natural Communities</i>	<i>Acreage</i>
Dome Swamp	1,473
Floodplain Forest	714
Basin Marsh	289

LEASE / MANAGEMENT AGREEMENT NUMBER: 4358 and 4359
 USE: Single ___ Multiple X

MANAGEMENT AGENCY

Florida DACS, Florida Forest Service
 Florida Fish and Wildlife Conservation Commission
 St. Johns River Water Management District
 Department of State, Division of Historical Resources

RESPONSIBILITY

General Forest Resource Management
 Wildlife Resources and Laws
 Water Resource Protection & Restoration
 Historical & Archaeological Resource Management

DESIGNATED LAND USE: Multiple-Use State Forest

SUBLEASES: Previous Sub-Lease to United States Department of Agriculture (released January 23, 2007)

ENCUMBRANCES: None

TYPE ACQUISITION: Preservation 2000; Save Our Rivers; FFS In-Holdings and Acquisitions; Florida Forever; Land Donations and Exchanges

UNIQUE FEATURES: This is a corridor between the Okefenokee National Wildlife Refuge and the Osceola National Forest; Frontage on the St. Marys River; An example of a large basin swamp

ARCHAEOLOGICAL / HISTORICAL: Twenty – two sites

MANAGEMENT NEEDS: Increase equipment to assist with fire pre-suppression and fire lines; control vandalism; increase law enforcement presence; improve road conditions; funding for additional positions

ACQUISITION NEEDS: Multiple parcels (See II.D.2)

SURPLUS LANDS / ACREAGE: None

PUBLIC INVOLVEMENT: 2009 Land Management Review, Management Plan Advisory Group and Public Hearing, and the Acquisition and Restoration Council Public Hearing

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

ARC Approval Date: _____ BTIITF Approval Date: _____

Comments: _____

I. Introduction

The John M. Bethea State Forest (JMBSF) is located approximately 12 miles north of Glen St. Mary in northern Baker County near the Florida boundary line with Georgia. This 37,736 acre state forest establishes a continuous wildlife corridor between the Okefenokee National Wildlife Refuge and the Osceola National Forest.

A. General Mission and Management Plan Direction

The primary mission of the Florida Forest Service (FFS) is to “protect Florida and its people from the dangers of wildland fire and manage the forest resources through a stewardship ethic to assure they are available for future generations”.

Management strategies for JMBSF center on the multiple-use concept, as defined in sections 589.04(3) and 253.034(2)(a) F.S. Implementation of this concept will utilize and conserve state forest resources in a harmonious and coordinated combination that will best serve the people of the state of Florida, and that is consistent with the purpose for which the forest was acquired. Multiple-use management for JMBSF will be accomplished with the following strategies:

- Practice sustainable forest management for the efficient generation of revenue and in support of state forest management objectives;
- Provide for resource-based outdoor recreation opportunities for multiple interests.
- Restore and manage healthy forests and native ecosystems ensuring the long-term viability of populations and species listed as endangered, threatened or rare, and other components of biological diversity including game and nongame wildlife and plants;
- Protect known archaeological, historical, cultural and paleontological resources;
- Restore, maintain and protect hydrological functions related to water resources and the health of associated wetland and aquatic communities.

This management plan is provided according to requirements of Sections 253.034, 259.032 and 373, Florida Statutes, and was prepared utilizing guidelines outlined in Section 18-2.021 of the Florida Administrative Code. It is not an annual work plan or detailed operational plan but provides general guidance for the management of JMBSF for the next ten-year period and outlines the major concepts that will guide management activities on the forest.

B. Past Accomplishments

A compilation of management activities and public use on JMBSF has been completed monthly and is available from the forest manager. A table has been prepared for this plan that summarizes the accomplishments for each of the past ten years [Exhibit A]. The table does not attempt to account for all activities on the forest, but summarizes major activities. It does not list the multitude of daily activities and public interactions involved in managing the forest.

Since the approval of the previous management plan in 2004, there have been many events, developments and accomplishments. Among the most noteworthy have been the following:

- Over 4.5 million trees were planted on almost 7,000 acres, 80% were longleaf pine.

- An 80 acre land swap was completed.
- Community Wide Protection Plan (CWPP) developed in 2006.
- Forest staff treated 97 acres of invasive, non-native species.
- Over 97,000 tons of trees were harvested on over 1,800 acres, mostly improvement thinnings.
- 36,160 visitors have come to the forest.
- 40 overnight, primitive camping passes have been issued.
- Forest staff has conducted prescribed burning on 27,000 acres.
- 24 wildfires on 25,000 acres were fought.
- Over 1,100 miles of roads have been graded by Forest Staff.
- At the Maple Set Area, a boardwalk, canoe launch, and parking lot were constructed and primitive camping was put in place.
- Forest staff has marked 56 miles of boundaries.
- Trees were planted for shade around the equestrian parking lot.
- Through an Arbor Day Grant, longleaf pines were planted north of State Road 2 in the Eddie Grade area.
- In 2007, forest staff developed a Restoration Plan to mitigate negative impacts from large wildfire events and past hydrological changes.
- Multiple water crossings have been converted to culverts.
- In 2006, the Pinhook Station was constructed by United States Forest Service (USFS) and given to FFS.
- Multiple projects for wetlands restoration and fire suppression have been accomplished.

C. Goals / Objectives for the Next Ten Year Period

The following goals and objectives provide direction and focus management resources for the next ten-year planning period. Funding, agency program priorities, and the potential for wildfire during the planning period will determine the degree to which these objectives can be met. Management activities on JMBSF during this management period must serve to conserve, protect, utilize and enhance the natural and historical resources and manage resource-based public outdoor recreation, which is compatible with the conservation and protection of this forest. The majority of the management operations will be conducted by the FFS, although appropriate activities will be contracted to private sector vendors or completed with the cooperation of other agencies. All activities will seek to enhance the property's natural resource or public recreational value.

The management activities listed below will be addressed within the ten-year management period and are defined as short-term goals, long-term goals or ongoing goals. Short-term goals are goals that are achievable within a two year planning period, and long-term goals are achievable within a ten year planning period. Objectives are listed in priority order for each goal. Cost estimates are provided below for FFS services and contract services 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 and existing staff.

➤ **GOAL 1: Sustainable Forest Management**

Objective 1: Continue to update and implement the Five-Year Silviculture Management Plan including reforestation, harvesting, prescribed burning, restoration, and timber stand improvement activities and goals. (Ongoing Goal)

Performance Measures:

- Completion of the annual updates of the Five-Year Silviculture Management Plan.
- Continued implementation of Silviculture Management Plan (acres treated).

Objective 2: Continue to follow the FFS process for conducting stand descriptions and forest inventory including a GIS database containing forest stands, roads & other attributes (including but not limited to: threatened & endangered species, archaeological resources, non-native invasive species locations, historical areas) The inventory will be conducted according to the State Forest Handbook. (Ongoing Goal)

Performance Measures:

- Complete GIS database and re-inventory all attributes as required by FFS procedures.
- Number of acres inventoried.

Objective 3: Continue thinning over stocked pine plantations as they become merchantable to improve forest health and aesthetics and reforest state forest lands, as necessary.

Performance Measures:

- Prepare one or more timber sales annually.
- Thin 300 acres or more annually.
- Reforest areas, as necessary, with species appropriate to the site and soils.

➤ **GOAL 2: Public Access and Recreational Opportunities**

Objective 1: In order to enhance outdoor public recreation on JMBSF, follow the Five-Year Outdoor Recreation Plan and update annually. (Ongoing Goal)

Performance Measures:

- Completion of the annual updates of the Five-Year Outdoor Recreation Plan.
- Continued implementation of the Five-Year Outdoor Recreation Plan.

Objective 2: Maintain public access and recreational opportunities to allow for a recreational carrying capacity of 148 visitors per day for recreational activities and 1,766 visitors per day during hunting season. (Ongoing Goal)

Performance Measure: Number of visitor opportunities per day.

Objective 3: Continue to engage the liaison panel which consists of a cross section of local residents, community leaders and special interest group representatives (canoe vendors, hunters, trail hikers, military, organized horse groups, etc.), environmental groups, and other public / private entities to establish communication and seek constructive feedback regarding the management of JMBSF. (Ongoing Goal)

Performance Measure: Liaison group continues to meet.

➤ **GOAL 3: Habitat Restoration and Improvement**

Objective 1 Continue to update and implement the Five-Year Prescribed Burning Management Plan. (Ongoing Goal)

Performance Measure: Completion of the annual updates of the Five-Year Prescribed Burning Management Plan.

Objective 2: The JMBSF contains approximately 21,200 acres of fire dependent natural communities. Currently, approximately 18,800 acres are considered “burnable”. In order to achieve an average fire return interval of two to three years across the forest, approximately 5,000 to 8,000 acres will be prescribed burned annually on average. Currently staff estimates approximately 11,000 acres are being maintained within the desired fire frequency. Continue efforts to increase the amount of land considered to be within the desired fire frequency. Based upon the FFS’s contracted burning rate, the average estimated annual cost (including fuel and maintenance) rate is \$150,000 to \$200,000 per year. (Ongoing Goal)

Performance Measures:

- Average number of acres each year.
- Number of acres within target fire return interval.

Objective 3: Utilize both dormant and growing season prescribed fire to reduce fuel levels and enhance restoration of native groundcover. Following efforts to apply dormant / growing season fire, staff will identify and assess any sites where unacceptable level of groundcover cover and/or response is observed. (Long Term Goal)

Performance Measure:

- Number of acres burned in growing and dormant season.

Objective 4 As recommended by the Land Management Review, JMBSF will consult with the FFS State Forest Ecologist to attain an updated natural community map / assessment (given the land traded to USFS since original Florida Natural Areas Inventory (FNAI) mapping and impacts from large wildfires and restoration activities). This mapping would include any depression marshes which are currently in planted pine. (Long Term Goal)

Performance Measures:

- Funding sought for FNAI field assessment / mapping.
- FNAI field assessment/mapping completed.

Objective 5: As recommended by the Land Management Review, JMBSF will coordinate with FFS State Forest Ecologist to develop appropriate priorities and protocols for evaluating groundcover on the forest. The extent and success of these efforts will be dependent on availability of specific contract funding, assistance from Florida Fish and Wildlife Conservation Commission (FWC) biologists, and/or the support of non-profit or volunteer organizations.

(Long Term Goal)

Performance Measures:

- Priorities and protocols developed.
- If funded, groundcover evaluations completed.

➤ **GOAL 4: Listed and Rare Species Habitat Maintenance, Enhancement, Restoration, or Population Restoration**

Objective 1: In cooperation with FWC, incorporate a Wildlife Management Strategy that addresses fish and wildlife species for JMBSF, including imperiled species and associated management prescriptions for their habitats. (Long Term Goal)

Performance Measures:

- Imperiled species management strategy completed.
- Baseline listed and rare species list completed for JMBSF.

Objective 2: In cooperation with FWC and coordination with the FFS State Forest Ecologist, develop appropriate imperiled species survey (plants and animals) and monitoring protocols based on site-specific occurrences, population data, and sustainability potential where survey protocols do not already exist. The extent and success of these efforts will be dependent on availability of specific contract funding, assistance from FWC biologists, and/or support on non-profit or volunteer organizations. (Long Term Goal)

Performance Measure: Number of listed and rare species for which survey plans and monitoring protocols are developed.

Objective 3: In consultation with FWC, implement surveys and monitoring protocols, where feasible, for listed and rare species as identified in Objective 2. (Long Term Goal)

Performance Measure: Number of species for which monitoring is ongoing.

➤ **GOAL 5: Non-Native Invasive Species Maintenance and Control**

Objective 1: Continue to follow and update the Five-Year Ecological Plan for JMBSF to locate, identify, prevent, and control non-native invasive plant species. (Ongoing Goal)

Performance Measures:

- Total number of acres identified and successfully treated.
- Completion of the annual updates of the Five-Year Ecological Management Plan.
- Continued implementation of the Five-Year Ecological Management Plan.

Objective 2: Contact and coordinate with the FWC Upland Invasive Plant Biologist for the area and begin utilization of the FWC herbicide bank to control non-native invasive plant species. (Short Term Goal)

Performance Measures:

- Contact made with FWC Biologist.
- Herbicide bank utilized.

➤ **GOAL 6: Cultural and Historical Resources**

Objective 1: Ensure all known sites are recorded in the Division of Historical Resources (DHR) Florida Master Site file. (Ongoing Goal)

Performance Measure: Number of recorded sites.

Objective 2: Monitor recorded sites and send updates to the DHR Florida Master Site File as needed. (Ongoing Goal)

Performance Measure: Number of sites monitored.

Objective 3: Maintain at least one qualified staff member as an archaeological site monitor. (Ongoing Goal)

Performance Measure: Number of local staff trained.

Objective 4: Increase the number of staff trained by DHR as archaeological site monitors. (Long Term Goal)

Performance Measure: Number of local staff trained increases.

➤ **GOAL 7: Hydrological Preservation and Restoration**

Objective 1: Protect water resources during management activities through the use of Silvicultural Best Management Practices (BMP's) for public lands. (Long Term Goal)

Performance Measure: Percent compliance with state lands BMP's.

Objective 2: Close, rehabilitate, or restore those roads and trails having evidence of erosion into water bodies causing alterations to the hydrology. (Long Term Goal)

Performance Measure: Total number of roads and trails closed, rehabilitated, or restored.

➤ **GOAL 8: Capital Facilities and Infrastructure**

Objective 1: JMBSF staff along with help from volunteers and/or user groups will continue maintenance of five primitive camp sites at Maple Set and one seasonal hunt camp; two parking areas / trailheads; all trails; and 230 miles of primary, secondary and tertiary roads. (Ongoing Goal)

Performance Measure: The number of existing facilities, miles of roads, and miles of trails maintained.

Objective 2: Annually update the Five-Year Boundary Survey and Maintenance Plan for the JMBSF and continue maintenance of state forest boundary. The entire boundary will be reworked every five years including harrowing, reposting signage and repainting boundary trees. (Ongoing Goal)

Performance Measures:

- Completion of the annual updates of the Five-Year Boundary Survey and Maintenance Plan.
- Continued implementation of the Five-Year Boundary Survey and Maintenance Plan.
- Percentage of forest boundary maintained each year.

Objective 3: Annually update the Five-Year Road and Bridge Management Plan and continue maintenance of roads and bridges at JMBSF. (Ongoing Goal)

Performance Measures:

- Completion of the annual updates of the Five-Year Road and Bridges Management Plan.
- Continued implementation of the Five-Year Road and Bridges Management Plan.

Objective 4: Cooperate with the Florida Department of Transportation (FDOT) concerning bridge condition and maintenance. (Ongoing Goal)

Performance Measure: Bridge condition and maintenance improves.

Objective 5: Widen road corridors from 20 feet to 30 feet to aid in fire pre-suppression and in fighting wildfires. Approximately fifty percent have been completed. Cost is determined by the number of miles needing to be converted multiplied by the cost per mile to widen the road. (Ongoing Goal)

Performance Measure: Percentage of roads in corridor increased to 30 feet.

Objective 6: Based on a Land Management Review recommendation concerning the maintenance of Eddy Road, the JMBSF manager will contact the Baker County Manager and the Baker County Road Department to discuss developing a Memorandum of Understanding between FFS and Baker County to maintain Eddy Grade corridors. (Short Term Goal)

Performance Measures:

- County contacted.
- Memorandum of Understanding developed.

Objective 7: Improve helicopter dip sites. Increase the acreage around the sites to accommodate equipment, loading zones, and safety issues. Areas should be maintained annually to accommodate equipment and prevent issues. (Long Term Goal)

Performance Measures:

- Areas cleared to appropriate size.
- Areas maintained annually.

II. Administration Section

A. Descriptive Information

1. Common Name of Property

The common name of the property is the John M. Bethea State Forest.

2. Legal Description and Acreage

The JMBSF is comprised 37,736 acres, more or less.

The JMBSF is located in Baker County, Florida. The boundaries and the major parcels are identified in Exhibit B. The legal description is found in lease agreements 4358 and 4359. The property is located in all or part of Sections 23 through 26, and 28 through 36, Township 1 North, Range 19 East; Sections 5 through 9, 16 through 22, and 27 through 35, Township 1 North, Range 20 East; Sections 17 through 23, 25, 26, 30, 31, and 36, Township 2 North, Range 19 East; Sections 26, 28, 29, 32, 35, and 36, Township 2 North, Range 20 East; and Sections 1 through 18, Township 1 South, Range 19 East.

A complete legal description of lands owned by the Board of Trustees of the Internal Improvement Trust Fund (TIITF) and St. John's River Water Management District (SJRWMD) as part of JMBSF is on record at the JMBSF Forestry Station office, Florida Department of Environmental Protection (DEP), and the Florida Forest Service state office in Tallahassee.

3. Proximity to Other Public Resources

There are multiple lands managed by state, federal or local government for conservation of natural or cultural resources that are located within approximately 43 miles of the JMBSF are included in Exhibit F as well as the table below:

Table 1. Nearby Public Conservation Land and Easements

TRACT	AGENCY	DISTANCE
Osceola National Forest	USDA	Adjacent
Okefenokee Swamp, NWR & Wilderness	USFWS	Adjacent
Benton Conservation Area	SRWMD	6 miles west
Big Shoals Public Lands	FFS/DEP/SRWMD	15 miles west
Cary State Forest	FFS	18 miles east
Stephen Foster Folk Culture Center State Park	DEP	19 miles west
Ralph E. Simmons State Forest	FFS	21 miles northeast
Cecil Commerce Center	FFS / JAX	27 miles southeast
Jennings State Forest	FFS / SJRWMD	27 miles southeast
Camp Blanding	FNG	30 miles southeast
Twin Rivers State Forest	FFS	43 miles west

FFS – Florida Forestry Service
 DEP – Department of Environmental Protection
 SJRWMD – St. John’s River Water Management District
 USDA – United States Department of Agriculture
 FNG – Florida National Guard
 JAX – City of Jacksonville
 SRWMD – Suwannee River Water Management District
 USFWS – United States Fish and Wildlife Service

4. Property Acquisition and Land Use Considerations

The JMBSF was purchased through the following land acquisition programs: Two parcels for 34,244.70 acres and 21,873.60 acres were purchased through Preservation 2000 and Save Our Rivers on April 27, 2001; Florida Forestry Service’s In-Holdings and Acquisitions funds and Florida Forever funds were used to purchase four parcels on November 20 and 21, 2003, totaling 136.54 acres.

Additionally, 10 acres was acquired through a donation on February 7, 2002. The Pinhook Land Exchange, dated April 5, 2005 resolved mineral rights issues and released 18,528.75 acres. An additional exchange in 2012 added 80.49 acres.

B. Management Authority, Purpose and Constraints

1. Purpose for Acquisition / Management Prospectus

Management is conducted by The Florida Department of Agriculture and Consumer Services, FFS, with assistance, as warranted, from other agencies. FFS will be the manager of forest resources, recreation, water resource protection, watershed protection, and land use planning on JMBSF.

Revenue derived from timber sales is used to offset incurred expenses, capital improvements, and other personal services (OPS).

Staffing consists of one Forestry Supervisor, a Forester, one Park Ranger, two Senior Forest Rangers, one Forest Ranger, and one Mechanic. Additional resource planning, administrative function and work project coordination support is provided by the Forestry Operations Administrator. Personnel and equipment is utilized from the Suwannee District.

The primary goal of the acquisition was to establish a natural resource corridor between the Okefenokee National Wildlife Refuge and the Osceola National Forest.

Multiple-use management for JMBSF will be accomplished through the integration of the following strategies:

- Practice sustainable forest management for the efficient generation of revenue and in support of state forest management objectives;
- Provide for resource-based outdoor recreation opportunities for multiple interests;
- Restore and manage healthy forests and native ecosystems ensuring the long-term viability of populations and species listed as endangered, threatened or rare, and other components of biological diversity including game and nongame wildlife and plants;
- Protect known archaeological, historical, cultural and paleontological resources;
- Restore, maintain and protect hydrological functions related water resources and the health of associated wetland and aquatic communities;
- To provide research and educational opportunities related to natural resource management.

2. Degree of Title Interest Held by the Board

The Board of Trustees of the Internal Improvement Trust Fund (TIITF) holds an undivided 50% interest and the St. Johns River Water Management District (SJRWMD) holds an undivided 50% interest to all property east of Eddy Grade Road. For the legal description of this property, please reference TIITF Lease Number 4359.

The TIITF holds title to all property west of Eddy Grade Road. For the legal description of this property, please reference TIITF Lease Number 4358.

3. Designated Single or Multiple-Use Management

The JMBSF is managed under a multiple-use concept by the FFS, under the authority of Chapters 253 and 589, Florida Statutes. The FFS is the lead managing agency as stated in Management Lease Number 4358.

Multiple use is the harmonious and coordinated management of timber, recreation, conservation of fish and wildlife, forage, archaeological and historic sites, habitat and other biological resources, or water resources so that they are utilized in the combination that will best serve the people of the state, making the most judicious use of the land for some or all of these resources and giving consideration to the relative values of the various resources. Local demands, acquisition objectives, and other factors influence the array of uses that are compatible with and allowed on any specific area of the forest. This management approach is believed to provide for the

greatest public benefit, by allowing compatible uses while protecting overall forest health, native ecosystems and the functions and values associated with them.

4. Revenue Producing Activities

Numerous activities on JMBSF provide for multiple-use as well as generate revenue to offset management costs. Revenue producing activities will be considered when they have been determined to be financially feasible and will not adversely impact management of the forest. The potential for revenue producing activities is quite varied and include, but are not limited to:

- a. Timber Harvests
- b. Apiaries
- c. Recreational Activities
- d. Non-timber Forest Products

5. Conformation to State Lands Management Plan

Management of the forest under the multiple-use concept complies with the State Lands Management Plan and provides optimum balanced public utilization of the property. Specific authority for the FFS's management of public land is derived from Chapters 589, 259 and 253, Florida Statutes.

6. Legislative or Executive Constraints

There are no known legislative or executive constraints specifically directed towards the JMBSF other than the name of the property which was legislatively mandated.

7. Aquatic Preserve / Area of Critical State Concern

This area is not within an aquatic preserve or an area of critical state concern, nor is it in an area under study for such designation.

C. Capital Facilities and Infrastructure

1. Property Boundaries Establishment and Preservation

The JMBSF boundary lines (70 miles total) are managed by state forest personnel in accordance with the guidelines stated in the State Forest Handbook.

2. Improvements

- a. Office and Facilities Complex [See Exhibit E]
 - Administration Building
 - Pinhook Station
 - Fuel Station
 - Metal Pole Barn
 - USFWS Okeefenokee Pole Barn
- b. Maple Set Recreation Area
- c. Horse Trailer Parking Area

3. On-Site Housing

There is one lot for housing on JMBSF, which is currently unoccupied.

FFS may establish on-site housing (mobile / manufactured home) on JMBSF if deemed necessary to alleviate security and management issues. The need and

feasibility specific for the state forest will be evaluated and established if considered appropriate by the Suwannee District Manager and approved by the FFS Director. Prior to the occurrence of any ground disturbing activity for the purpose of establishing on-site housing, a notification will be sent to the DHR and FNAI for review and recommendations. This type of housing will not exceed three homes per location with the possibility of more than one on-site housing location occurring if considered necessary by the Suwannee District Manager and approved by the Director.

4. Operations Infrastructure

a. Budget

The total annual budget for Fiscal Year 2013-2014 is \$639,357. This amount includes salaries, expenses, contractual service and OPS. A summary budget is contained in Exhibit V.

Implementation of any of the activities within this management plan is contingent on availability of available funding, other resources, and other statewide priorities.

b. Equipment

To carry out the resource management work on the state forest as well as to maintain forest improvements such as trails, roads and facilities the following equipment has been assigned or is immediately available for work on JMBSF:

- International Transport
- Dodge 4x4 Pick-Up
- GMC Sonoma Pick-Up
- GMC Sonoma Pick-Up
- Sterling Road Tractor
- GMC Dump Truck
- Ford F-550 Type 6 Engine
- Ford F-250 4x4 Pick-Up
- Sterling Dump Truck
- Ford F-350 Service Truck
- Ford Ranger 4x4 Pick-Up
- Caterpillar D-5 Dozer
- Caterpillar Posi-Trac Mower
- Case Farm Tractor
- John Deere 750G Dozer
- John Deere 772CH AWD Motor Grader
- John Deere Farm Tractor with Bucket
- Caterpillar 950G Loader
- RT Forklift
- Ford F-550 Stake Body/Dump Truck
- Ford F-250 Extended Cab 4x4 Pick-Up
- Ford F-550 Type 6 Engine
- Military Dump Truck
- International All-Wheel-Drive Road Tractor
- Bucket for Posi-Trac
- Road Packer
- 2- Davco Mower Heads for Posi-Trac
- Tuff-line Harrow
- 6-foot Tilt Trailer
- 16-foot Dual Axle Trailer
- 12-foot Dual Axle Trailer
- Bushhog Scraper Blade
- Bushhog Hole Auger
- Cosmo Fertilizer and Seed Spreader
- Bushhog Back Hoe Attachment
- Terro-Riser Harrow
- Single Gang High Harrow
- Fesco 4-Disc Plow
- Mathis-Modified 4-Disc Plow
- 2-Disc Plow
- Single-Wing Bush Hog Mower
- 5-foot Bush Hog Mower
- Double Gang Harrow
- 300-Gallon Fuel Trailer

- Magnum Mulching Head
- 25-Foot Goose Neck Trailer

Additional equipment from the Suwannee Forestry Center, the Florida Department of Transportation, and surrounding Forestry Districts has been utilized for various projects at JMBSF. Additionally, the US Fish and Wildlife Service provides equipment and the use of a metal pole barn to store equipment.

c. Utilities

The following utilities serve the public and forest staff:

- 4" well for non-potable equestrian horse use and for hunters use while eviscerating wild game next to the check station.
- Electric services for the WMA check station provided by Okeefenokee Rural Electric Membership Cooperative.
- Telephone Service is provided by NEFCOM, long distance service provided by MCI.

d. Staff

Nine staff are currently assigned to JMBSF, including a Forestry Supervisor II, a Forester, one Park Ranger, two Senior Forest Rangers, one Forest Ranger, and one Mechanic. All staff assigned to JMBSF have offices at the state forest office. Additionally, there are two Forest Rangers, stationed at the Pinhook Shop, and a Forest Area Supervisor, stationed at the Macclenny Forestry Station, who frequently assist.

The Forestry Supervisor II will work to achieve the goals outlined in this management plan. Day-to-day resource management (timber cruising, planning, etc) is the responsibility of the Forestry Supervisor. Day to day forest operations (road maintenance, prescribed burning, etc) are the responsibility of the FFS fire control personnel, under the direction of the respective Forest Area Supervisor. Biological support is coordinated through the FFS State Forest Ecologist.

D. Additional Acquisitions and Land Use Considerations

1. Alternate Uses Considered

During this management period, no uses were considered and determined to be incompatible.

Deadhead logging is not compatible, and is not considered an appropriate use within or adjacent to the state forest boundaries.

Other uses will be considered as requests are made and will be accommodated as appropriate if they are determined to be compatible with existing uses and with the management goals and objectives of the forest.

2. Additional Land Needs

Purchasing of additional land within the optimal management boundary [Exhibit C] would facilitate restoration, protection, maintenance, and management of the resources on JMBSF.

There are numerous parcels of land within and immediately adjacent to the property that should be purchased since they are essential to the management of the property [Exhibit C]. The FFS will work with these property owners, on a willing seller basis, in an effort to acquire these parcels. Highest emphasis for purchase should be given to privately owned property (in-holdings) within the boundaries of the JMBSF. Property to acquire adjacent to the forest includes parcels in the Baxter area and parcels located between the eastern forest boundary and the St. Marys River. Additionally, American Timberland parcels between the Osceola National Forest and JMBSF should be acquired.

3. Surplus Land Assessment

All of the property within JMBSF is suitable for and necessary for the management of JMBSF, and none should be declared surplus.

4. Adjacent Conflicting Uses

During the development of this management plan, FFS staff identified and evaluated adjacent land uses and reviewed current comprehensive plans and future land use maps in making the determination concerning known conflicting adjacent land uses. The following issues were determined:

- a. The train corridor running through JMBSF has an issue with non-native invasive species due to seed and vegetative plant structures unintentionally being carried and spread by train movement.
- b. At Maple Set there is an issue with the access. The entrance road to the primitive camping area may be on private property. FFS will explore solutions to this issue. Additionally, FFS staff will meet with adjacent land owners and maintain liaison with those land owners to ensure that any conflicting future land uses may be readily identified and addressed.

FFS will cooperate with adjacent property owners, prospective owners, or prospective developers to discuss methods to minimize negative impacts on management, resources, facilities, roads, recreation, etc., and discuss ways to minimize encroachment onto the forest.

5. Compliance with Comprehensive Plan

This plan was submitted to the Board of County Commissioners in Baker County for review and compliance with their local comprehensive plans [Exhibit W].

6. Utility Corridors and Easements

There are no known easements on JMBSF.

The FFS does not favor the fragmentation of natural communities with linear facilities - consequently, easements for such uses will be discouraged to the greatest extent practical. The FFS does not consider JMBSF 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 minimize damage to sensitive resources (e.g., imperiled species and archaeological sites), to minimize habitat fragmentation, to limit disruption of management activities, including prescribed burning, and to limit disruption of resource-based multiple use activities, such as recreation.

Collocation of new linear facilities 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 FFS will further encourage the use of underground cable where scenic considerations are desirable. Easements for such utilities are subject to the review and approval of the BOT. Requests for linear facility uses will be handled according to the Governor and the Cabinet's linear facilities policy and coordinated through the State Forest Ecologist.

E. Agency & Public Involvement

1. Responsibilities of Managing Agencies

The FFS is the lead managing agency, responsible for overall forest management and public recreation activities, as stated in Board of Trustees Management Lease Number 4358. Pursuant to the management lease, the lead managing agency may enter into further agreements or to sub-leases on any part of the forest.

The Florida Fish and Wildlife Conservation Commission has law enforcement responsibilities, enforces hunting regulations, cooperatively sets hunting season dates with FFS, and conducts other wildlife management activities with input from FFS.

The SJRWMD is a part owner and cooperator, providing assistance when needed or requested with respect to water management, and the conservation and protection of the water resources.

The FFS will cooperate with the DHR regarding appropriate management practices on historical or archaeological sites on the property as stated in Section 267.061, Florida Statutes. They will be notified prior to the initiation of any qualifying ground disturbing activities by the FFS or any other agency involved with the forest.

The St. John River Water Management District (SJRWMD) will be consulted and involved in matters relating to water resources as appropriate.

2. Law Enforcement

Primary law enforcement responsibilities will be handled by law enforcement officers from the FWC. Rules governing the use of JMBSF are stated in Chapter 5I-4 of the Florida Administrative Code. FWC will enforce fish and wildlife regulations and provide assistance in enforcing state forest rules. The Office of Agricultural Law Enforcement (OALE) will assist with open burning and wildfire investigations as needed.

Primary law enforcement duties revolve around issues with vandalism, theft, and wildlife violations. Additional assistance is provided by the Baker County Sheriff's Offices as needed. In light of the current statewide budget limitations, the FFS feels that law enforcement is adequate on JMBSF. There may be some flexibility in managing the current staff schedules to get better FFS presence on the weekends. Present law enforcement measures are that at least one fire control forest ranger is on duty during the weekends, during normal business hours.

Special rules under Chapter 5I-4 of the Florida Administrative Code were promulgated for Department of Agriculture and Consumer Services, Florida Forest Service, to manage the use of state lands and better control traffic, camping, and other uses in the state forest.

3. Public and Local Government Involvement

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

The FFS responds to public involvement through its Liaison Committees, Advisory Groups, public hearings, and through direct contact with user groups. A Land Management Review Team conducted a review of management plan implementation in 2009 and in October 2014 [Exhibit T]. The review team's recommendations were incorporated into this plan as appropriate.

The plan was developed with input from the JMBSF Management Plan Advisory Group and was reviewed at a public hearing on July 28, 2015. A summary of the advisory group's meetings and discussions, as well as written comments received on the plan, are included in Exhibit X. The Acquisition and Restoration Council (ARC) public hearing and meeting serve as an additional forum for public input and review of the plan.

4. Volunteers

Volunteers are important assets to JMBSF. Depending upon the type of volunteer service needed, volunteer activities may be one-time events or long-term projects. Volunteers have recently assisted with tree planting (Chickasaw Plums) along the entrance road to Maple Set. Additional volunteer recruitment will be encouraged to assist with other activities to further the FFS's mission.

5. Friends of Florida State Forests

Friends of Florida State Forests (FFSF) is a Direct Support Organization (DSO) of the Florida Forest Service. The FFSF supports recreation and reforestation projects on Florida's state forests. FFSF is an organization established by Florida statute that supports programs within Florida's state forests and is governed by a board of directors representing all areas of the state. Through community support, the FFSF assists the Florida Forest Service to expand opportunities for recreation, environmental education, fire prevention, and forest management within Florida's state forests.

III. Archaeological/Cultural Resources and Protection

A. Past Uses

The past uses include: timber management, naval stores production, agriculture, hunting, and fishing. In the early 1900's as many as 10,000 people reportedly lived in the Baxter area in and around the northern portion of the state forest. The land uses during this early time included naval stores production, logging and sawmill operations, agriculture and grazing. A small sawmill was located on an in-holding near Baxter which operated in the 1940's.

In the early 1950's, Hunt Oil Co. owned the property, which was later sold to Continental Can Corporation. Later, the property was acquired by KMI, an English-owned conglomerate, who sold off some of the surrounding properties. The majority of the now state forest lands were kept by the Continental Can Corporation and sold to the US Steel Corporation in the early 1980's. Continental Can Corporation then leased the property back from US Steel. Jefferson Smurfit took over the Continental Can Corporation lease in the late 1980's and then bought the property from US Steel in the mid 1990's. In the late 1990's, Stone Container and Jefferson Smurfit merged to become Smurfit-Stone. Rayonier purchased the property from Smurfit-Stone in 1999. Prior to state acquisition most of this land was leased to hunt clubs.

Prior to state ownership the majority of this forestland was managed for timber production. The Florida Forest Service acquired John M. Bethea State Forest in 2001. This state forest is named in honor of John M. Bethea, a former State Forester for over 17 years. Since state acquisition, John M. Bethea State Forest has suffered catastrophic wildfires which have impacted over 80% of the state forest.

B. Archaeological and Historical Resources

A review of information contained in the DHR's Florida Master Site file has determined that there are 22 known recorded sites on JMBSF: twenty previously recorded archeological sites, one resource group, and one standing structure. [See Exhibit H]

Table 2. Archaeological and Historical Sites on JMBSF

SITE ID	SITE NAME	SITE TYPE
BA00247	USFS OSC 89-7/OSCEOLA A,B,C	AR

SITE ID	SITE NAME	SITE TYPE
BA00264	USFS 89-44 OSC/JACOBS 15 ON DOG ISLAND	AR
BA00265	USFS 89-45 OSC/JACOBS 16 ON LICE ISLAND	AR
BA00266	USFS 89-46 OSC/PINHOOK 17	AR
BA00269	USFS 89-49 OSC/PINHOOK 20	AR
BA00270	USFS 89-50 OSC/JACOBS PINHOOK 21	AR
BA00345	NN	AR
BA00346	NN	AR
BA00351	NORTH OF TAYLOR	AR
BA00535	USFS #02-06 (B) Osc, "Eddy Tower"	AR
BA00595	FIREBREAK I	AR
BA00596	FIREBREAK II	AR
BA00597	FIREBREAK III	AR
BA00598	MOCCASIN CIRCLE	AR
BA00599	BARNWELL I	AR
BA00600	BARNWELL II	AR
BA00601	SAWMILL EAST OF EDDY	AR
BA00602	SAWDUST PILE	AR
BA00603	WEST OF EDDY	AR
BA00604	EDDY	AR
BA00605	BARNWELL VILLA	RG
BA00111	LYONS, WESLEY - CORN CRIB	SS

C. Ground Disturbing Activities

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 FFS or any other public agency. The FFS will make every effort to protect known archaeological and historical resources. The FFS will follow the “Management Procedures for Archaeological and Historical Sites and Properties on State Owned or Controlled Lands” [Exhibit I] and will comply with all appropriate provisions of Section 267.061(2) z12, Florida Statutes. 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”.

D. Survey and Monitoring

Currently, there are 4 local district FFS personnel trained by DHR as archaeological site monitors. FFS will pursue opportunities for getting additional personnel trained. FFS will consult with public lands archaeologists at DHR to determine an appropriate priority and frequency of monitoring at each of the twenty-two listed sites, as well as any

protection measures that might be required. All 22 archaeological and historical sites within the state forest will be monitored at least annually. FFS field staff will monitor the listed sites to note condition and any existing or potential threats.

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. Applicable surveys will be conducted by FFS staff or others during the process of planning and implementing multiple-use management activities. FFS personnel will remain alert for any environmentally significant resources and protective actions will be taken as necessary. In addition, FFS will seek the advice and recommendations of DHR regarding any additional archaeological survey needs. Trained monitors will oversee ground disturbing activities in which DHR recommends monitoring. The FFS will utilize the services of DHR Public Lands archaeologists, when available, to locate and evaluate unknown resources, and to make recommendations in the management of known resources.

IV. Natural Resources and Protection

A. Soils and Geologic Resources

1. Resources

Soils information for JMBSF was obtained from the United States Department of Agriculture Natural Resources Conservation Service (NRCS). Over 30 different soils are listed on the JMBSF. The predominant soils listed by the NRCS include: Mascotte fine sand, Pantego-Pamlico, Pamlico muck, Sapelo fine sand, Leon fine sand and Mascotte-Pamlico complex. For detailed information on all soils present on the State Forest, see Exhibit J.

2. Descriptions

a. Mascotte soils exist in two forms, the Mascotte-Pamilco complex in depressional areas and Mascotte fine sand in the flatwoods.

i. The Mascotte-Pamilco complex is a depressional soil found in basin swamps and wet flatwoods where the water table is either at or above the surface. Overstory species include: cypress (*Taxodium sp.*), pond pine (*Pinus serotina*), slash pine (*Pinus elliottii*), and bays (*Gordonia lasianthus and Magnolia virginiana*). Understory species include: gallberry (*Ilex sp.*), fetterbush lyonia (*Lyonia lucida*), myrtleleaf holly (*Ilex myrtifolia*), swamp cyrilla (*Cyrilla racemiflora*), greenbriers (*Smilax sp.*), and sweet pepperbush (*Clethra alnifolia*).

ii. The Mascotte fine sand is a poorly drained, nearly level pine flatwoods soil located near depressional areas with the water table 6 inches from the soil surface. Overstory species include: slash pine (*Pinus elliottii*), pond pine (*Pinus serotina*), and bays (*Gordonia lasianthus and Magnolia virginiana*). Understory species include: gallberry (*Ilex sp.*), fetterbush lyonia (*Lyonia lucida*), myrtleleaf holly (*Ilex myrtifolia*), swamp gallberry (*Ilex sp.*), cinnamon fern (*Osmunda cinnamomea*), and maidencane (*Panicum hemitomon*).

- b. Pantego-Pamilico complex is a poorly drained, depressional, nearly level soil found in basin swamps and other depressional areas where the water table is slightly below the water surface during dry periods and 1 – 2 feet above the soil surface during wet periods. Overstory species include: blackgum (*Nyssa sylvatica*), red maple (*Acer rubrum*), cypress (*Taxodium sp.*) and bays (*Gordonia lasianthus* and *Magnolia virginiana*). Understory species include: fetterbush lyonia (*Lyonia lucida*), buttonbush (*Cephalanthus occidentalis*) and wax myrtle (*Myrcia cerifera*).
- c. Sapelo fine sand is poorly drained, nearly level soil found in pine flatwoods where the depth to water table is from 6 – 18 inches. Overstory species include: slash pine (*Pinus elliottii*), loblolly bay (*Gordonia lasianthus*), red bay (*Persea borbonia*), water oak (*Quercus nigra*), laurel oak (*Quercus laurifolia*), and sweet bay (*Magnolia virginiana*). Understory species include: saw palmetto (*Serenoa repens*), gallberry (*Ilex sp.*) and grasses.
- d. Leon fine sand is poorly drained, nearly level soil found in pine flatwoods where water permeability is moderately rapid with a normal depth to water table of 12 inches. Overstory species include: slash pine (*Pinus elliottii*), longleaf pine (*Pinus palustris*), water oak (*Quercus nigra*), and laurel oak (*Quercus laurifolia*). Understory species include: blueberry (*Vaccinium elliottii*), wax myrtle (*Myrica cerifera*), chalky bluestem (*Andropogon capillipes*), broomsedge (*Andropogon virginicus*) and wiregrass (*Aristida stricta*).

3. Soil Protection

There are no known soil erosion problems other than roadway issues at JMBSF. The terrain is extremely flat, but occasionally there are impacts to the road system due to heavy rains. Water crossings are being converted to culverts in many areas and staff rectifies issues as quickly as possible.

Management activities will be executed in a manner to minimize soil erosion. As problems arise, corrective action will be implemented by FFS staff under the direction of the FFS Forest Hydrology section in conjunction with recommendations as contained in the most current version of the Florida Silviculture Best Management Practices Manual.

4. Ground Cover

At JMBSF there is a long history of agriculture and industrial silviculture on the site and subsequent diminishment of native groundcover. The Forest Manager assesses the groundcover prior to site-preparation recommendations and depending on the quality of the existing groundcover, modifies site-preparation treatments accordingly. This assists in determining the presence of remnant sensitive native species, reduces soil disturbances, and reduces impacts to native groundcover and associated fauna. However, any detailed critical assessment of native groundcover quality will require the funding of additional botanical expertise to complete field analysis and mapping.

B. Water Resources

The resources on JMBSF perform essential roles in the protection of water quality, groundwater recharge, flood control and aquatic habitat preservation. In the interest of maintaining these valuable resource functions, state forest management personnel will work with the FFS's Hydrology Section to incorporate wetland restoration into the overall resource management program as opportunities arise, particularly where wetland systems have been impaired or negatively impacted by previous management activities or natural disasters.

For a map of the Water Resources on JMBSF, see Exhibit L.

1. Resources

The JMBSF has numerous streams, lakes, and ponds within its boundaries. Most notably river frontage on the St. Marys River; Ellis Bay; Swamp Creek, Little River; Lake Holes Branch; Moccasin Creek; Cross Branch; and Moccasin Bay.

One of the objectives of the SJRWMD in acquiring this property is the protection of the St. Marys River watershed. The JMBSF contains about 2.9 miles of frontage on the St. Marys River. Seasonal water also flows from several large basin swamp systems including Moccasin Swamp, Pinhook Swamp and the Okefenokee Swamp. Two capped wells exist on the property, which were parts of hunting camps when the property was industry land.

2. Water Classification

The Department of Environmental Protection, Standards Development Section reports the Okefenokee National Wildlife Refuge, which is immediately north of the JMBSF, has been designated as Outstanding Florida Waters. Any surface waters on the site are classified as Class III waters, which is the statewide default classification. [See Exhibit K]

3. Water Protection

Water resource protection measures, at a minimum, will be accomplished through the use of Best Management Practices as described in the most current version of Silviculture Best Management Practices Manual.

4. Wetlands Restoration

Wetland restoration objectives on the state forest include erosion control; restoration of hydrology and/or hydroperiod and restoration of wetland plant and animal communities. To achieve these objectives, restoration activities may involve road and soil stabilization, water level control structure removal or installation, non-native invasive species control, site preparation and re-vegetation with native wetland species, and project monitoring. These activities may be conducted individually or concurrently; implemented by FFS personnel or by non-FFS personnel under mitigation or grant contractual agreements. Wetland restoration projects should be conducted in conjunction with other restoration activities indicated elsewhere in this plan.

Where applicable, JMBSF, with assistance from the Division's Hydrology Section, will pursue funding to develop and implement wetland restoration

projects. In addition, cooperative research among the FFS, other state agencies, and the federal government will provide valuable information in determining future management objectives of wetland restoration.

a. Previous Restoration Activities

In 2005, in response to concerns of an adjacent landowner, the John M. Bethea State Forest management team installed earthen ditch plugs on old firelines and re-located several culverts on Road 6 in the northeastern part of the JMBSF to restore natural sheet flow towards the St. Marys River.

Except for restoration and rehabilitation work conducted on the Forest after the swamp fires of 2004, no formal wetland restoration activities had previously been implemented on JMBSF. Post-fire activities focused on the improvement of primary access roads, involving the replacement of damaged / inadequate culverts with either new culverts or low-water crossings. Rehabilitation was also done on major firebreaks that impacted natural drainage and/or wetland vegetation communities on the forest. In certain areas these activities enhanced surface drainage on the forest, though to what extent is uncertain.

Many of the large (60+ feet) pushed firelines and their berms established during the "Bugaboo" fire suppression effort in 2007 have been rehabilitated and stabilized to restore hydrology and wetland plant communities in the affected areas on the forest.

b. Current, Planned, Proposed Restoration Activities

A portion of JMBSF is typed as basin swamp (43%) and wet flatwoods (7%). Historically, these natural communities were intermixed with formerly classified basin marshes that, along with the mesic and wet flatwoods and basin swamps, have been altered due to past land management activities by previous owners, including lack of frequent fire and alterations in hydrology. Due to these past management practices, these basin marshes have succeeded into shrub bogs. In an effort to recover as many of these areas as possible through wetland restoration, a proposal by the JMBSF management team in 2005 involved the restoration of a 300-acre area located in the northeastern part of the forest within an existing slash pine plantation. The proposal called for restoration of the site's hydroperiod through the installation of ditch plugs and elevated culverts and involves the use of mechanical treatments and prescribed fire for vegetative conversion.

Although the hydrology of the site has to some extent been improved due to work adjacent to the project area, additional restoration work is not anticipated until the slash pine is harvested.

c. Groundwater Monitoring

The St. Johns River Water Management District has a ground water monitoring well at Eddy Tower. JMBSF and FFS cooperate whenever needed for access and

information regarding any groundwater monitoring. This addresses a Land Management Review (LMR) Checklist item.

d. Wetland Restoration Needs Assessment

In April 2007, field data was collected on the part of JMBSF that extends north from State Highway 2 to the Georgia line. This area represents approximately 10,000 acres of the entire forest. One hundred and thirty (130) assessment points were established during this field data collection, representing approximately 80% of the roads, trails, and firelines in that portion of the JMBSF.

In July 2007, an additional hydrological assessment was conducted on the forest as part of the post-Bugaboo Wildfire assessment for the comprehensive John M. Bethea Restoration Plan finalized in 2008. The goal of this assessment was to determine the restoration needs as a result of the Bugaboo Wildfire which occurred in May 2007. The wildfire burned approximately 79% of the forest, including much of the northern portion of the forest that had been assessed previously.

Between the two assessments, over 350 site points were established and 60% of the roads, trails, and firelines were evaluated. The assessment evaluated 61 improved and unimproved low water crossings, 56 culvert crossings, 49 cross-drain culverts, 86 fireline sections, including "potato patch" and major pushed lines, 18 ditches, and 54 service roads that appeared to impact surface drainage.

The following items were considered significant findings as a result of the assessments.

1. Several areas of the forest have been protected by a fireline construction technique referred to as "potato patching", in which narrow firelines are established between planted rows within a pine stand. These plow-lines may connect to road ditches or other plow-lines which increases the potential of accelerating surface drainage from an area, or diverting it away from wetlands to which it would naturally flow. As a result of the post Bugaboo Wildfire assessment, FFS is in the process of rehabilitating many of these areas.
2. The few areas on JMBSF identified as basin marshes in FNAI's Historic Natural Community inventory have been altered as a result of intensive forest management practices implemented by previous landowners. The FFS is interested in restoring as many of these areas to their natural state as possible.
3. Hydrological restoration was identified as crucial to making JMBSF more resistant to devastating wildfires, such as the Bugaboo Wildfire, in the future.
4. Large pushed firelines and their resulting berms established during the Bugaboo Wildfire suppression efforts were identified for rehabilitation. Since the assessment, most sections of pushed lines on JMBSF have been rehabilitated by removing the berms, reworking the footprint of the fireline, and stabilizing the reworked areas by planting or seeding with native species.

5. Surface drainage was impeded by above-grade roads and accelerated by below-grade roads and firelines in many places throughout the forest. Strategic placement of culverts or low-water crossings and earthen plugs is important to restoring the natural hydrology across the landscape.
6. As in the case of any public land adjacent to private land ownerships, there is a concern among state forest managers for off-site hydrological impacts. During restoration activities on the JMBSF, every effort is made to avoid such off-site impacts.

Additional information about the assessment is available upon request from the Hydrology Section of the Florida Forest Service.

C. Wildlife Resources

1. Rare, Threatened, and Endangered Species

The intent of the FFS is to manage JMBSF in a fashion that will minimize the potential for wildlife species to become imperiled. FFS employees continually monitor the forest for rare, threatened, and endangered species while conducting management activities. Specialized management techniques will be used, as necessary, to protect or increase rare, threatened, and endangered species and species of special concern, as applicable for both plants and animals.

Presence of listed species is based on information compiled from FNAI tracking records, FWC, and field observations by SJRWMD and FFS. The following listed species were identified:

Table 3. Rare, Threatened, Endangered, or Species of Special Concern on JMBSF

Common Name	Scientific Name	Federal Status *	State Status *	FNAI Global Rank *	FNAI State Rank *
Large Rosebud Orchid	<i>Cleistes divaricata</i>	N	LT	G4	S1
Hartwrightia	<i>Hartwrightia floridana</i>	N	LT	G2	S2
Spotted Turtle	<i>Clemmys guttata</i>	N	N	G5	S3?
Gopher Tortoise	<i>Gopherus polyphemus</i>	C	ST	G3	S3
Carolina Gopher Frog	<i>Lithobates capito</i>	N	SSC	G3	S3
Okefenokee Zale Moth	<i>Zale perculata</i>	N	N	G2	S1
Little-entrance Oxyethiran Microcaddisfly	<i>Oxyethira janella</i>	N	N	G5	S4S5
Red-Cockaded Woodpecker (1983)	<i>Picoides borealis</i>	LE	FE	G3	S2
Great Egret	<i>Ardea alba</i>	N	N	G5	S4
Little Blue Heron	<i>Egretta caerulea</i>	N	SSC	G5	S4
Wood Stork**	<i>Mycteria americana</i>	LE	FT	G4	S2

Common Name	Scientific Name	Federal Status *	State Status *	FNAI Global Rank *	FNAI State Rank *
Blackbanded Sunfish	<i>Enneacanthus chaetodon</i>	N	N	G3G4	S3
Mud Sunfish	<i>Acantharchus pomotis</i>	N	N	G4G5	S3

*** STATUS/RANK KEY**

Federal Status (USFWS): LE= Listed Endangered, LT= Listed Threatened, N= Not currently listed, C = Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened.

State Status (FWC): Animals: FE = Listed as Endangered Species at the Federal level by the USFWS, FT = Listed as Threatened Species at the Federal level by the USFWS, F(XN) = Federal listed as an experimental population in Florida, FT(S/A) = Federal Threatened due to similarity of appearance, ST = State population listed as Threatened by the FWC, SSC = Listed as Species of Special Concern by the FWC, N = Not currently listed, nor currently being considered for listing.

Plants: LE = Endangered: species of plants native to Florida that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue; includes all species determined to be endangered or threatened pursuant to the U.S. Endangered Species Act; LT = Threatened: species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in number as to cause them to be Endangered; N = Not currently listed, nor currently being considered for listing.

FNAI Global Rank: G1= Critically Imperiled, G2 = Imperiled, G3= Very Rare, G4= Apparently Secure, G5= Demonstrably Secure, GNR = Element not yet ranked (temporary), G#? = Tentative rank, T#= Taxonomic Subgroup; numbers have same definition as G#'s.

FNAI State Rank: S1= Critically Imperiled, S2= Imperiled, S3= Very Rare, S4= Apparently Secure, S5 = Demonstrably secure in Florida, S#?= Tentative Rank.

**Wood Stork are not on the FNAI list of documented species but have been seen on JMBSF. Staff will report the sighting to FNAI.

2. Florida Natural Areas Inventory

The Florida Natural Areas Inventory is the single most comprehensive source of information available on the locations of rare species and significant ecological resources. FNAI has reported the following:

- a. **Element Occurrences:** The Florida Natural Inventories reports several documented Element Occurrences of rare or endangered species within the vicinity of the property. [See Exhibit M]
Documented species are listed in Table 3, Page 24.
- b. **Likely and Potential Habitat for Rare Species:** The JMBSF may be located near other rare species and natural communities. Likely Species include: Wood Stork (*Mycteria americana*), Red-Cockaded Woodpecker (*Picoides borealis*), and Florida Black Bear (*Ursus americanus floridanus*). Likely habitat for rare species includes: Mesic Flatwoods.
- c. **Land Acquisition Projects:** Portions of the site appear to be located within the Pinhook Swamp Florida Forever Project of the State of Florida's Conservation and Recreation Lands Acquisition Program. (See Exhibit G)
- d. **FNAI recommends special care be taken in the southwest portion of the property.** It appears to be a significant region of natural areas and habitat for several rare species [See Exhibit M].

FNAI recommends that professionals familiar with Florida's flora and fauna conduct a site specific survey to determine the current presence or absence of rare, threatened or endangered species before any expansions or alterations are made to the property.

3. Florida Fish and Wildlife Conservation Commission

The Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute reports numerous records of listed species occurrences or critical habitats within the confines of the property. This includes state and federally threatened or endangered species. [See Exhibit N]

Other findings by the FWC include:

- a. The JMBSF is located within Primary Black Bear Range.
- b. The property is adjacent to multiple Strategic Habitat Conservation Areas and multiple Prioritized Strategic Habitat Conservation Areas.
- c. The JMBSF is located within an area of Species Richness.
- d. Multiple Priority Wetlands are located in close proximity to the JMBSF.

This data represents only those occurrences recorded by FWC staff and other affiliated researchers. The database does not necessarily contain records of all listed species that may occur in a given area. Also, data on certain species, such as gopher tortoises, is not entered into the database on a site-specific basis. Therefore, one should not assume that an absence of occurrences in our database indicates that species of significance do not occur in the area. [See Exhibit N]

4. Game Species and Other Wildlife

Wildlife management will play an important role in the management of resources on JMBSF. The state forest currently makes up all or part of the following Wildlife Management Areas: Osceola WMA. The FWC provides cooperative technical assistance in managing the wildlife and fish populations, setting seasons, establishing bag and season limits and overall law enforcement.

Notable game species include: wild turkey (*Meleagris gallopavo*), deer (*Odocoileus virginianus*), squirrel (*Sciurus carolinensis*), hogs (*Sus scrofa*), raccoon (*Procyon lotor*), bobcat (*Lynx rufus*), and quail (*Colinus virginianus*).

The FFS and FWC cooperatively maintain approximately 45.8 acres of permanent wildlife openings and planted food plots on the JMBSF ranging in size from 0.29 acres to 4.89 acres and averaging 1.48 acres. Wildlife openings and food plots will be established and maintained in accordance with the FFS State Forest Handbook.

Non-game species will be managed and protected through the restoration and maintenance of native ecosystems found on the forest. The current State Forest Handbook gives additional details for such things as snag management and retention.

5. Survey and Monitoring

Species-specific management plans will be developed when necessary, with assistance from FWC. Such plans will be consistent with rule and statute promulgated for the management of such species. JMBSF uses wildlife observation sheets that all staff keep in forest vehicles to track wildlife species observed during daily operations. When needed, staff may contact the State Forest Ecologist or District personnel for information concerning specific species and identification.

a. 2014 Land Management Review

The LMR team recommended that FFS continue to identify priority imperiled species on JMBSF and develop and implement monitoring strategies. Personnel at JMBSF will coordinate with FFS State Forest Ecologist to develop appropriate priorities and protocols for surveying and monitoring imperiled species on this forest. The extent and success of these efforts will be dependent on availability of specific contract funding, assistance from FWC biologists, and/or the support of non-profit or volunteer organizations.

Additionally, the LMR team recommended that FFS continue to develop its inventory of plant and animal species. JMBSF personnel will coordinate with the FFS State Forest Ecologist to develop appropriate priorities and protocols to inventory plant and animal species on the forest.

b. Red-Cockaded Woodpecker (RCW)

The FNAI report of RCW (*Picoides borealis*) is dated pre-1983. There are no mature pine stands at JMBSF, the oldest current age of a stand being 30 to 35 years, due to previous management. RCW populations require a substantial area of old growth pine suitable for cavity construction, as well as associated habitat necessary for a sustainable population. If any RCWs are observed, FFS personnel will contact the State Forest Ecologist, FWC, and FNAI with the species location.

c. Gopher Tortoises

Gopher tortoises (*Gopherus polyphemus*) have been observed on JMBSF by FFS personnel near the turkey oaks north of Eddy Tower and on several blocks near Taylor in the southeast corner of the forest. Burrow activity status, locations, and observed commensals will be maintained in a GIS data base. Future surveys will be done in cooperation with FWC or private contractors as time, personnel, and budget allow.

Where gopher tortoise burrows occur, FFS staff will attempt to schedule management activities, such as mowing or roller chopping, during the winter months when gopher tortoises are dormant and less susceptible to injury from equipment. If timber harvests are scheduled in these areas, FFS staff will work with the logging crew to ensure deck locations and skid trails avoid burrows to the greatest extent practicable. As applicable, FWC monitoring protocols for gopher tortoise (*Gopherus polyphemus*) will be implemented on the area in concert with resource management actions recommended in the Wildlife BMP Manual.

d. Florida Black Bear

FFS will continue to cooperate with FWC to implement FWC's 2012 Florida Black Bear Management Plan. JMBSF is located in the North Bear Management Unit (BMU) designated by the Bear Management Plan. The North BMU encompasses the primary range of the Osceola sub-population of the Florida black bear (*Ursus americanus floridanus*) and is part of a larger subpopulation that includes bears in the Okefenokee Swamp National Wildlife Refuge in Georgia, which has an estimated 700 to 800 bears (Greg Nelms, Georgia Department of Natural Resources, personal communication, 2010). JMBSF is part of a corridor that connects the Okefenokee / Osceola sub-population to the Ocala / St. Johns sub-population. This corridor is considered vital to conservation of the Florida black bear.

A population estimate conducted in 2002 estimated 200-313 bears in this BMU, but FWC is currently conducting a new population estimate using hair snares and DNA analysis. Field work for the North BMU was completed in 2014 and a preliminary DNA analysis has been conducted and indicates a 30% increase in the Osceola sub-population to approximately 500 bears. The final report is due in the Fall of 2015. During field work, Florida black bears were confirmed on JMBSF with over 100 hair samples collected from snares located on the forest.

e. Listed Plant Species

The goal is for all known locations of listed or rare flora to be mapped. GIS data will be maintained in the JMBSF rare flora shape-file and shared with FNAI. A visual estimate of population numbers and nearby non-native invasive species will be recorded for each location when the most imperiled species (Federal listed, FNAI, G1) are encountered. This information will be maintained in the rare flora shape-file table data.

Large rosebud orchid (*Cleisthes divaricata*) is the only species located on JMBSF that is federally listed or has a FNAI Global Rank of G1. All known populations of these species are visited annually while conducting nearby non-native invasive plant eradication work. During these field visits, any obvious threats are noted that might result from illegal activities, erosion, invasive plants or natural disturbances.

An additional species, Hartwrightia (*Hartwrightia floridana*), was last found in October 1929 with no concrete location given according to the FNAI tracking document in Exhibit M. Multiple efforts by JMBSF staff have been made to locate and confirm the presence of this species with no success.

f. Other Rare Biota Surveys

Surveys are done as time and staffing allow. Exemplary plant communities with high potential for rare flora are surveyed for both invasive weeds and listed plants.

D. Sustainable Forest Resources

The FFS practices sustainable multiple-use forestry to meet the forest resource needs and values of the present without compromising the similar capability of the future.

Sustainable forestry involves practicing a land stewardship ethic that integrates the reforestation, managing, growing, nurturing, and harvesting of trees for useful products with the conservation of soil, air and water quality, wildlife and fish habitat, and aesthetics. This is accomplished by maintaining and updating accurate estimates of standing timber in order to assure that the timber resources retain their sustainability. Forest inventories will be updated on a continual basis according to guidelines established by FFS's Forest Management Bureau.

E. Beaches and Dune Resources

No beaches or dunes occur on the JMBSF.

F. Mineral Resources

There are no known significant mineral deposits of commercial value on JMBSF.

G. Unique Natural Features and Outstanding Native Landscapes

Based on available historical information and the Florida Natural Area Inventory, the primary natural forest community on the state forest is mesic flatwoods. Prior to state ownership, the majority of this forestland was managed for timber production and some alteration of natural forest communities has occurred. However, some of the historical natural forest communities such as basin swamp, dome swamp, wet flatwoods and bottomland forest remain intact.

Located along the east boundary the state forest are three miles of river frontage on the St. Mary's River which is ecologically important and provides river access for recreation activities. This part of the river was acquired under the Conservation and Recreation Lands program and the Save Our Rivers program to protect the river's watershed.

The JMBSF is located between the Osceola National Forest and the Okefenokee Swamp and provides a large scale wildlife corridor for species such as Florida black bear (*Ursus americanus floridanus*). Moccasin Swamp provides significant ecological, recreational, and archaeological value.

H. Research Projects / Specimen Collection

Research projects may be performed on the forest, on a temporary or permanent basis, for the purpose of obtaining information that furthers the knowledge of forestry and related fields. The FFS cooperates with other governmental agencies, non-profit organizations, and educational institutions, whenever feasible, on this type of research. The FFS will consider assisting with research projects when funds and manpower are available.

All research projects to be considered on JMBSF must be considered accordance with the guidelines stated in the State Forest Handbook. Any requests for research should be submitted in writing to the appropriate field staff to be forwarded to the State Forest Ecologist in the Forest Management Bureau for approval. Requests must include: a letter outlining the purpose, scope, methodology, and location of the proposed research project. Requests are subject to review by FFS Foresters, Biologists, the Forest Health Section, and the Forest Hydrology Section, as appropriate. Authorization to conduct research will

require that the investigator provide copies of any reports or studies generated from research to the FFS and JMBSF staff. Other special conditions may be applicable and the authorization may be terminated at any point if the study is not in compliance.

Research projects / specimen collections that have been initiated on the property include:

- a. Butterfly research project conducted by the University of Florida in May 2005.
- b. Tall Timbers Research conducted fire effects monitoring after the 2007 Bugaboo Scrub Wildfire.
- c. The Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute (FWRI), is currently conducting a Black Bear Abundance Study in 11 counties in central and northern Florida. FWRI has collected 8,000 tufts of hairs this year, including gathering samples of bear hair in and around Ocala and Osceola National Forests. Results should be available by the summer of 2015. FWRI is conducting the study to create population models and generate an estimate of bear numbers.

The following surveys were conducted on the forest for endangered / threatened / game species:

- a. In 2005, FNAI conducted a survey of native plants and animals and a survey to determine historic natural communities.
- b. In 2007, FFS conducted an invasive species survey.
- c. FWC conducts white-tailed deer track counts annually in the fall.
- d. FWC and USFWS have conducted bear studies on the JMBSF.

I. Ground Disturbing Activities

Although the FFS's approach to handling ground disturbing activities is identified in other sections of this plan, the FFS's overall approach to this issue is summarized here. The FFS recognizes the importance of managing and protecting sensitive resources and will take steps to ensure that such resources are not adversely impacted by ground disturbing activities. This includes areas such as known sensitive species locations; archaeological, fossil, and historical sites; ecotones and wetlands.

When recreational trails, or other low-impact recreational site enhancements are necessary, their placement will be reviewed by state forest field staff to avoid sensitive areas. For ground disturbing activities such as construction of buildings, parking lots, new pre-suppression firelines, and new roads, the FFS will consult with the FNAI, DHR, and when necessary, the Acquisition and Restorations Council (ARC).

V. Public Access and Recreation

The primary recreation objective is to provide the public with dispersed outdoor recreational activities that are dependent on the natural environment. The FFS will continue to promote and encourage public access and recreational use by the public while protecting resources and practicing multiple-use management. Recreation activities available on JMBSF include: hiking, primitive camping, canoeing, fishing, picnicking, hunting, and limited horseback riding.

Periodic evaluations will be conducted by FFS staff to monitor recreational impacts on resources. Modifications to recreational uses will be implemented, should significant negative impacts be identified. New recreation opportunities and facilities, which are compatible with the primary goals and responsibilities of the FFS, will be considered only after the FFS determines their compatibility with other forest uses and forest resources.

A. Existing Recreational Opportunities

A 13 mile equestrian trail was developed that utilizes primary forest roads and several permanently established fire lines. To support the horse riding trail, a designated horse trail parking lot has been installed at the trailhead on the south end of the forest. Equestrian use of the fire lines and forestry roads is permitted. A hand pump for water has been installed at the parking lot. Proof of a current negative Coggins test is required for all horses.

Overnight primitive camping areas are available year round by permit.

B. Planned Recreational Opportunities

FFS will continue to assess plans for additional recreational opportunities based on demand, carrying capacity, demographics, and impact to the resources on the forest. Both terrestrial and aquatic resources and relative activities will be evaluated. Any specific plans will be incorporated into the Five-Year Recreational Plan on file at JMBSF.

Research on the term “Maple Set” will be done and results of the research will be interpreted at the appropriate locations. FFS will determine the feasibility of adding a vault toilet to serve the Maple Set Day Use Area and nearby campground. If feasible, the FFS will install this structure based on funding availability.

C. Hunter Access

Hunting season dates, limits, and methods are established annually by FWC, in consultation with FFS. John M. Bethea State Forest is open to regulated hunting and fishing in cooperation with the Florida Fish and Wildlife Conservation Commission, and is managed as a part of the Osceola Wildlife Management Area. Small ponds are scattered throughout John M. Bethea State Forest providing enjoyable fishing areas in addition to the St. Marys River. Non-hunting recreationists are encouraged to check the Wildlife Management Area regulations and season dates before visiting the forest.

D. Forest Kiosks

Given the remote location of the forest, the primary recreational users on the forest are hunters. There is an on-going problem with educational kiosks being vandalized, especially with bullet holes. Replacement signs are quite costly. Any new signs and sign locations must be able to be monitored by a small forest staff. Therefore, kiosks are placed in central locations.

VI. Habitat Restoration & Management Practices

A. Prescribed Fire

Timber management practices on John M. Bethea State Forest are important in the restoration and maintenance of forest ecosystems and provide a variety of socio-economic benefits to Floridians. Management practices on John M. Bethea State Forest include a prescribed fire program that is an effective tool in controlling the growth of hardwood trees, limiting fuel accumulation to prevent wildfires, stimulating the recovery of native herbaceous and grassy ground cover, and promoting the regeneration of native pines.

The FFS utilizes a fire management program on state forests that includes wildfire prevention, detection and suppression, and prescribed burning. This program is the responsibility of the FFS's Suwannee Forestry Center and is detailed in the Five-Year Prescribed Burning Management Plan. Emphasis will be placed on prescribed burning, wildfire prevention, and education to help reduce wildfire occurrence on the forest.

A Fire History spreadsheet detailing the recent history of prescribed burns and wildfires at JMBSF is available in Exhibit O.

1. Prescribed Burning Plan

The annual forest prescribed burning program produces multiple benefits. The purposes of prescribed burning on JMBSF are to facilitate forest management operations and enhance wildlife and listed species habitat, to decrease fuel loading, consequently enhancing public safety, and to restore, maintain, and protect all native ecosystems, ecotones, and their ecological processes. FFS personnel are responsible for planning and implementing the annual prescribed burn program for JMBSF, which will consist of growing and dormant season burns. Burns are planned by the JMBSF staff with input from cooperating agencies as appropriate. An annual Prescribed Burn Plan is developed each year, which identifies the individual burn unit prescriptions, whether the unit is on a growing or dormant season rotation, map of burn unit, and other information specific to that burn unit. The FFS smoke screening system will be used as a smoke management tool to minimize the adverse impact of smoke that may affect residential communities, public roads, schools, and other smoke sensitive areas.

Additionally, the FFS has developed an innovative, strategic prescribed fire plan that incorporates four fire corridors to be placed on a two-year fire return interval and outlines a personnel management strategy to meet the burning needs of the forest. Aerial burns have been incorporated into the prescribed fire plan. The 2007 Restoration Plan is included in Exhibit U. This plan is critical in reducing fuels strategically within JMBSF, thus decreasing the threat of large catastrophic wildfires moving from one large Federal ownership to another.

Prescribed burning activities are done in conjunction and close cooperation with USFS, USFWS, and Greater Okefenokee Association of Landowners (GOAL). Specific cooperation takes place between staff from FFS, Okefenokee National

Wildlife Refuge (ONWR), and Osceola National Forest (ONF). This is of particular importance in landscape management across geopolitical boundaries.

2. Fire Return Intervals

Historic, fire dependent natural communities on JMBSF are estimated to have occupied approximately 21,208.9 acres, and to have burned at approximately 3 to 10 year intervals. Past land uses have left some of these historically fire dependent communities in a condition unable to carry prescribed fire. Recently, substantial progress has been made by local staff to increase the amount of prescribed burning completed each year. Over the past five years, JMBSF personnel have averaged over 4,000 acres burned per year. This has served to increase the amount of the forest that is considered to be within the desired fire return interval to around 11,000 acres.

Based on current conditions and management objectives, staff considers approximately 18,800 acres to be burnable. In order to achieve an average fire return interval of two to three years across the forest, JMBSF will plan to conduct prescribed burns on 5,000 to 8,000 acres, on average, each year. Restoration of areas, by removal of the off-site species and reforestation, will increase prescribed burn acreage goals over time. Meeting prescribed fire goals will be largely dependent on favorable weather conditions, available personnel, and statewide emergency situations such as wildfires, hurricanes and other natural disasters requiring JMBSF staff involvement to respond and provide needed relief.

3. Community Outreach and Education

The JMBSF is a participant in the Firewise community program, which includes both public and private landowners, and holds multiple outreach programs each year to educate the public and area land owners. JMBSF was a major supporter of Baker County becoming a county-wide Firewise Adapted Community.

Baker County has a Community Wide Protection Plan (CWPP) developed in 2006 through the efforts of FFS, USFS, the Baker County Fire Department, and the Community of Taylor. This plan was designed to help protect the rural community of Taylor, which is surrounded by hundreds of thousands of acres of federal, state and private wild lands and has been affected by many large wildfires in the past.

4. Cooperation with USFS and USFWS

JMBSF personnel are constantly vigilant for wildfires and have developed continuous communications with personnel at Okefenokee National Wildlife Refuge, USFWS, and Osceola National Forest, USFS. Such cooperation is essential in efforts to suppress and fight wildfires.

The FFS and USFS have participated in a multi-state grant program to plant longleaf pine. The Okefenokee and Osceola Longleaf Pine Implementation Team (O₂LIT) provides assistance with prescribed burning of state, federal, and private lands.

Additionally, JMBSF is a member of GOAL, the Greater Okefenokee Association of Landowners. GOAL serves as a unified team managing, protecting, and promoting forest resources in and around the Okefenokee Swamp. During the past several years, GOAL has addressed a number of fire-related issues. Landowners cooperate on maintenance of the Okefenokee Swamp's Perimeter Road, compile and maintain a resource list of fire equipment and personnel, constructed 80 helicopter dip-sites surrounding the Okefenokee Swamp, and share radio frequencies and cellular phone numbers of members.

The U.S. Forest Service and the U.S. Fish and Wildlife Service contributed a total of \$550,000.00 to the construction of the John M. Bethea State Forest Joint Work Center. The Georgia Forestry Commission is also partnering in this important cooperative venture, which is located in Baxter, Florida. The work center is designed to decrease the response time to wildland fires in the adjoining GOAL area.

B. Wildfires, Prevention, Fire / Prescribed Fire Strategies

The FFS utilizes a comprehensive wildfire management approach on state forests that includes an ongoing program of wildfire prevention, detection and suppression, and aggressive prescribed burning. Implementation of this program is the responsibility of the FFS's Suwannee Forestry Center. Emphasis will be placed on consistent accomplishment of prescribed burning goals and community outreach to increase public understanding of wildfire prevention and the benefits of prescribed fire.

The FFS has three paramount considerations regarding wildfires, and these are listed in priority order:

1. Protection of human lives, both that of the firefighter and the public.
2. Protection of improvements.
3. Protection of natural resources.

All procedures regarding wildfire will follow the State Forest Handbook and the 5-Year JMBSF Fire Management Plan.

1. Suppression Strategies

If a wildfire occurs on JMBSF there are two alternative suppression strategies as defined below:

- a. **Contain** is defined as a suppression strategy where a fire is restricted to a specific pre-determined area by using natural or constructed barriers that stop the fires spread under the prevailing and forecasted weather until dead out . This strategy allows the use of environmentally sensitive tactics that achieve desired ecological benefits while monitoring for smoke and fuel conditions that would warrant more aggressive control tactics, described below.
- b. **Control** is defined as a suppression strategy where aggressive suppression tactics are used to establish firelines around a fire to halt its spread and to extinguish all hotspots. This alternative is used whenever there is a threat to human life, property, private lands, and/or critical natural or cultural resources. This strategy should also be used when the total field unit fire load dictates that crews not be involved with individual fires for any longer than absolutely necessary.

Appropriate suppression action will be that which takes into account the three paramount considerations listed above, provides for the most reasonable probability of minimizing fire suppression cost and critical resource damage by taking into consideration probable fire behavior, total fire load, potential resource and environmental impacts, and smoke management issues. The Incident Command System (ICS) will be used for all suppression actions.

2. Smoke Management

Caution will be exercised to prevent a public safety or health hazard from the smoke of any prescribed burn or wildfire. Prescribed burns must pass the smoke screening procedure and be conducted by a certified burner. If smoke threatens to cause a safety hazard or public nuisance then direct immediate suppression action will be taken.

3. Fire Breaks and Firelines

A system of permanent fire breaks will be developed and maintained around and within the boundaries of JMBSF to guard against fires escaping from and entering the forest. Such fire breaks will consist of natural barriers, roads, trails, permanent grass strips and where appropriate, well maintained harrowed lines. All fire breaks will meet the established Silvicultural Best Management Practices (BMP) criteria.

During wildfire suppression, the use of water and foam, permanent fire breaks, natural barriers and existing roads and trails for firelines can be used when human life safety, property, and resource considerations allow. Plowed and/or bulldozed lines will be used for initial installation of approved firelines in heavy fuels and in cases where it's considered necessary to protect life, property, or resources and/or to minimize threats to fire fighters. Plow and bulldozed lines will be rehabilitated and BMPs implemented as soon as practical after the fire is suppressed.

4. Sensitive Areas

The JMBSF has on file in the state forest headquarters an Environmentally Sensitive Area Map that identifies protected sites such as critical wetlands and archaeological and historical sites known to occur on the state forest. Personnel are aware of these areas in the event of a wildfire. Special precautions will be followed when prescribed burning or fighting wildfires in sensitive areas on JMBSF. When possible, fire staff will avoid line construction in wetland ecotones throughout the forest.

5. Past Ownership Practices and FFS Changes

Former private ownership of the property has resulted in long-term issues at JMBSF. Repeated bedding of rows, tight row spacing, and the altering of native landscapes has caused issues with fire suppression and fire-fighter safety. JMBSF has worked to realign the row directions of planted trees perpendicular to the prevailing winds; widened roads and fire breaks; and widened the planted rows. These practices assist in wildfire suppression and with fire-fighter safety.

6. Adjacent Neighbor Contacts

The staff at JMBSF maintains a list of neighbors that have requested they be notified in advance of prescribed burns. These families are contacted by telephone or email with potential sites and dates of anticipated prescribed burns.

7. Post-Burn Evaluations

A post-burn evaluation is required for each wildfire and prescribed burn on the state forests to assess impacts on timber and habitat. Based on the evaluations, decisions will be made on timber salvage operations. An historical fire record for all fires and prescribed burns will be maintained. This will be accomplished through the burn plans in the Forestry Supervisor's files, and through maintenance of GIS data; these records are intended to provide data for future management decisions.

C. Sustainable Forestry & Silviculture

Timber is a valuable economic and ecological resource, and timber harvesting for the purposes of generating revenue, improving stand viability, forest health, and ecological restoration and maintenance, is critical to the silvicultural objectives on the state forest.

1. Strategies

The following silvicultural strategies will apply to silvicultural practices on JMBSF:

- a. To restore and maintain forest health and vigor through timber harvesting, prescribed burning, and reforestation, both naturally and artificially, with species native to the site.
- b. To create, through natural regeneration, uneven-aged, and even-aged management, a forest with both young and old growth components that yields sustainable economic, ecological, and social benefits.

2. Silvicultural Operations

Silvicultural operations on JMBSF will be directed toward improving forest health, wildlife habitat, ecological and economical sustainability, as well as recovery from past management practices by former landowners that are not in accordance with the objectives of this plan. Stands of off-site species with merchantable volume will be scheduled for harvest, followed by a subsequent reforestation with the appropriate native tree species. Herbicide applications may be necessary to control woody competition and to re-establish desired natural species of both overstory and ground cover. Site preparation methods may include prescribed fire, mechanical or chemical vegetation control.

Prescribed fire is the most desirable method of vegetation control in fire dependent ecosystems. However, due to the existence of areas where fuel loads have reached dangerous levels or urban interface dictates prescribed fire is not suitable, mechanical or chemical vegetation control may be used. Mechanical or chemical vegetation control will be utilized where appropriate as determined by FFS staff for wildlife enhancement, fuel mitigation and reforestation.

Maintenance and restoration of timber stands and natural communities through timber harvesting will include thinning for maintenance, natural regeneration harvests, and clear-cutting to remove off site species.

As was suggested in the 2014 Land Management Review, FFS staff will assess proposed reforestation sites prior to planting to determine if any depression marsh areas are present. Planting areas may be modified to keep reforestation activities out of these identified depressions.

All silvicultural activities (including timber harvesting and reforestation) will meet or exceed the standards in the FFS's Silviculture Best Management Practices and the State Forest Handbook, and will follow the Five-Year Silviculture Management Plan.

3. Timber Inventory Control

The purpose of a forest inventory is to provide FFS resource managers with information and tools for short and long range resource management and planning. Ten percent of JMBSF forest will be re-inventoried annually to provide an accurate estimation of the standing timber and to ensure that stands will be managed sustainably.

4. Timber Sales

Timber sales are generally advertised for competitive bids and sold on a per unit or lump sum basis. All timber sales are conducted according to guidelines specified in the State Forest Handbook.

D. Non-Native Invasive Species Control

FFS employees continually monitor the forest for non-native invasive species while conducting management activities. FFS will locate, identify, and apply control measures with the intent to eradicate or control non-native invasive species. When these species are discovered, an eradication or management plan will be developed with the assistance of the Forest Management Bureau's Forest Health Section as needed. This plan will be implemented based upon the severity of the infestation and the availability of personnel and funding. A map of invasive species is found in Exhibit P.

On-going maintenance and monitoring strategies are outlined in the Five-Year Ecological Management Plan which is developed to prevent, locate, identify, and control non-native invasive plant species.

State forests are periodically surveyed by FFS staff, and detection of populations of non-native invasive species are noted and prioritized for appropriate control action. Known occurrences of non-native invasive species are prioritized and treated as funding and personnel allow, with the intention of ultimately eradicating such species. These occurrences are recorded in the GIS database and updated as new plants are discovered. Adjacent landowners who are known to have these species on their property will be approached in an effort to cooperate on control measures.

FFS works to control the spread of non-native invasive species by decontaminating internal equipment and equipment used by private contractors according to the State Forest Handbook.

The FFS will enlist support from the FWC in efforts to control non-native invasive animals. Feral hogs (*Sus scrofa*) are present on some tracts of the JMBSF. The FWC has issued a feral hog control permit to FFS for all state forests and the FFS will encourage hog removal on JMBSF through trapping and hunting.

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 Forest Management Bureau’s Forest Health Section. Control of non-native invasive species will be target specific and use a variety of methods including appropriately labeled and efficacious herbicides.

Table 4. Non-Native Invasive Plant Species Occurring on JMBSF

Scientific Name	Common Name	Treatment Strategy	Acres Impacted	Status
<i>Imperata cylindrica</i>	Cogongrass	Herbicide Spray	1/40 acre	Decreasing
<i>Lygodium japonicum</i>	Japanese Climbing Fern	Herbicide Spray	7 small spots that are approximately 1/10 acre or less	Decreasing
<i>Panicum repens</i>	Torpedo Grass	Herbicide Spray	Road Shoulders	Stabilized
<i>Sapium sebiferum</i>	Chinese Tallow	Cut and spray stump	Approximately 30 trees	Decreasing
<i>Sesbania punicea</i>	Purple Sesban	Herbicide Spray	5 small spots that are approximately 1/10 acre or less	Stabilized
<i>Ligustrum japonicum</i>	Japanese Privet	Herbicide Spray	1/10 acre	Decreasing
<i>Albizia jublibrissin</i>	Mimosa	Herbicide Spray	Approximately 15 Trees covering 1/20 acre or less	Decreasing
<i>Pueraria montana</i>	Kudzu	Herbicide Spray	1/20 acre or less	Decreasing
<i>Phyllostachys aurea</i>	Golden Bamboo	Cut Low and Herbicide Spray	1/40 acre	Increasing
<i>Sesbania Vesicaria</i>	Elliot Bagpod	Herbicide Spray or Manual Removal	Railroad Track & Road Shoulders	Stabilized

E. Insects, Disease and Forest Health

Currently, there are no insect or disease problems on JMBSF, except for laurel wilt (*Raffaelea lauricola*). However, there is an on-going issue with bark beetles after wildfires and prescribed burns. In the event of an outbreak of bark beetle, consultation with the Forest Management Bureau’s Forest Health Section will be sought to formulate an appropriate and effective response.

In compliance with Section 388.4111, Florida Statutes and in Section 5E-13.042, F.A.C., all lands 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. Upon the approval of this plan documenting this designation, the local arthropod control agency in Baker County will be notified of this designation.

As a result, prior to conducting any arthropod control activities on JMBSF, the local agency must prepare a public lands control plan that addresses all concerns that FFS may have for protecting the natural resources and ecosystem values on the state forest. In this regard, FFS will provide the local agency details on the management objectives for JMBSF. This public lands control plan must be in compliance with FDACS guidelines and using the appropriate DACS form. The plan must then be approved and mutually adopted by the county, FFS, and FDACS, prior to initiation of any mosquito control work. Should the local mosquito control district not propose any mosquito control operations on the property, no arthropod control plan is required (See Exhibit Y).

F. Use of Private Land Contractors

The forest manager makes ongoing evaluations of the use of private contractors and consultants to facilitate the total resource management activities of this state forest. The opportunities for outsourcing land management work include or are anticipated to include:

- a. Reforestation
- b. Site Preparation
- c. Timber Harvests
- d. Borrow Pit Construction
- e. Road Surveying
- f. FNAI for Species Surveying

VII. Proposed Management Activities for Natural Communities

In 2005, FNAI completed an inventory and natural community mapping project on 37,803.5 acres of JMBSF and a historic natural community type map [Exhibit R] was created. Current natural communities and cover types can be found in Exhibit Q.

For the purposes of this management plan, restoration is defined as the process of returning ecosystems to the appropriate structure and species composition, based on soil type. Management during this ten-year period will begin with a forest wide assessment of the fuel loading, timber densities and groundcover in order to develop a five year comprehensive operational plan for prescribed burning across the forest. Strategies may include thinning of overly dense pine plantations, mowing or chopping in areas of heavy fuel buildup and/or application of cool dormant season fires. The results of these initial efforts will be monitored and more refined and detailed restoration plans will be made. Fire return intervals are included as a guide and may vary depending upon specific conditions. The intention is to use fire in a manner, intensity, and frequency that will attain the desired goals. Fire frequency is generally increased or decreased depending upon the conditions of the specific area.

Table 5. Natural Communities Found on JMBSF

Natural Communities	Acres Mapped (Historical)	Acres Mapped (Current)	Acres Mapped Current Pine Plantation	Historical Burn Interval (Years)
Mesic Flatwoods	16,657	15,866**	15,704	2 – 5
Basin Swamp	15,880	16,811	0	5 – 150*
Wet Flatwoods	2,789	2,671**	1,554	2 – 5
Dome Swamp	1,473	1,605	0	3 – 150*
Alluvial Forest (Floodplain Forest)	714	688	0	N/A
Basin Marsh***	289		0	1 – 10
Shrub Bog		289	4	10 – 20
Other (See Table 6)	N/A	897		

* Infrequent, dependent upon drought.

** Includes extensive amounts of wet and mesic flatwoods that were in the past converted to pine plantation which, following continued effort at thinning harvests, conversion to longleaf pine (*Pinus palustris*), and increase frequency of prescribed fire, is now in varying degrees of restoration to desired pine species and native groundcover.

*** Basin Marsh is now typed as Shrub Bog.

Table 6. Altered Landcover Types Found on JMBSF

Altered Landcover Type*	Current Acres Mapped
Roads	844
Old Borrow Pits	40
Dip Sites	13

* Protocol as described in Exhibit 2 of FNAI's "Guide to the Natural Communities of Florida", 2010 Edition.

The following desired future conditions, existing condition descriptions, and management recommendations are taken from this FNAI mapping project report and the Guide to the Natural Communities of Florida (FNAI 2010), as well as from the knowledge and experience gained by FFS during forest inventory efforts and routine field work on JMBSF.

The Historic Natural Communities were typed by FNAI in 2005 (see Exhibit R). The Current Natural Communities were also typed by FNAI in 2005 (see Exhibit Q). The areas still needing to be typed for the Current Natural Communities are shown in Exhibit S. FFS is working with FNAI to determine the cost of the typing and the schedule for completion. All Natural Communities discussed in this management plan are based on the FNAI data and work completed by FFS personnel to determine the current natural communities on JMBSF where FNAI work has not been completed.

To achieve the objectives outlined in this plan, the following management activities will be performed in the natural communities at JMBSF during the next ten year planning period. Goals, desired future conditions, standards, and guidelines provide management area direction. These goals and desired future conditions may take many planning cycles to attain.

The following, utilizing JMBSF staff knowledge and the 2010 FNAI Guide to the Natural Communities of Florida, describes the desired future condition for the Natural Communities at JMBSF:

A. MESIC FLATWOODS

Description: Mesic flatwoods is characterized by a canopy of tall, mature pines and a dense, low ground layer of low shrubs, grasses, and forbs. Longleaf pine (*Pinus palustris*) is the principal canopy tree in northern Florida, although slash pine (*Pinus elliottii*) is currently more common than longleaf pine (*Pinus palustris*) in mesic flatwoods in northern Florida. Early accounts mention slash pine predominantly in wet flatwoods sites. Characteristic shrubs include saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), coastal plain staggerbush (*Lyonia fruticosa*), and fetterbush (*Lyonia lucida*). Rhizomatous dwarf shrubs, usually less than two feet tall, are common and include dwarf live oak (*Quercus minima*), runner oak (*Q. elliottii*), shiny blueberry (*Vaccinium myrsinites*), Darrow's blueberry (*V. darrowii*), and dwarf huckleberry (*Gaylussacia dumosa*). The herbaceous layer is predominantly grasses, including wiregrass (*Aristida stricta* var. *beyrichiana*), drop-seeds (*Sporobolus curtissii*, *S. floridanus*), panic grasses (*Dichanthelium* spp.), and broomsedges (*Andropogon* spp.), plus a large number of showy forbs.

Mesic flatwoods is the most widespread natural community in Florida, covering the flat sandy terraces left behind by former high stands of sea level during the Plio-Pleistocene. Soils are acidic, nutrient-poor fine sands with upper layers darkened by organic matter. Mascotte, Pantego, and Sapelo fine sands are common examples. Drainage in this flat terrain can be impeded by a loosely cemented organic layer (spodic horizon) formed within several feet of the soil surface. The soils are alternately droughty during dry periods and saturated, or even inundated, after heavy rains.

Existing Conditions: Most of these areas have been bedded and planted with slash pine prior to state ownership. The mesic flatwoods community is intermingled with dome swamps, basin swamps, and wet flatwoods. Many acres in this community have either been harvested by previous landowners or salvage harvested as a result of the devastating Impassable Wildfire in 2004 and Bugaboo Wildfire in 2007. Many clearcut stands have been replanted with longleaf pine and on the wetter sites, slash pine. These reforestation efforts have converted 7,197 acres from intensely managed slash pine plantations to longleaf pine. Several years after planting, prescribe fire has been used to improved mesic flatwoods restoration efforts. Many of these young longleaf pine stands will continue improving over time as more frequent prescribe fire is used to manage these stands (See Exhibit Z). Although reforestation of longleaf pine is a priority, especially in

stands where it historically existed, the amount of gallberry coverage is hampering this effort. In many pine stands, the understory gallberry coverage makes prescribed burning these areas difficult. In such areas, light disking or other practices may be necessary to suppress the gallberry and allow native grasses to manifest and allow for the use of prescribed fire without causing excessive damage to the overstory.

Fire Requirements (Maintenance): 2 – 5 years.

Restoration: Long term, restoration of this community will focus on both un-even aged and even-aged management regime, where practical. In the interim, periodic thinning and frequent low-intensity prescribed burns will serve to promote native groundcover and pine species appropriate to the community and site.

Groundcover: Growing season prescribed burns at a 2-5 year interval will be the most effective way of altering and maintaining the groundcover to a more pyrogenic suite of groundcover species. Dormant season fires will be used in fire excluded areas to prepare for growing season burns.

Hydrology: Many areas, mainly along the Okefenokee Swamp on the north and the Osceola National Forest on the south and west, have been impacted by fire pre-suppression and suppression efforts due to large scale wildfires in recent years. Many of these stands have been potato patched by plowing the entire stand between the tree rows. Restoring the hydrology is a long-term process. FFS will make improvements as the opportunities present.

Silviculture: This community will be the primary focal area for long term silvicultural management on JMBSF. Management should focus on the goal of a healthy mixed pine forest consisting of both slash and longleaf pine canopies. Currently, some slash pine plantations exist on areas with remnant plants associated with longleaf pine communities. These stands will be prescribed burned at more frequent intervals prior to a final harvest to facilitate woody vegetation control and retain favorable site conditions prior to ultimate conversion to longleaf pine.

B. BASIN SWAMP

Description: Basin swamp is a basin wetland vegetated with hydrophytic trees and shrubs that can withstand an extended hydroperiod. Basin swamps are highly variable in size, shape, and species composition. While mixed species canopies are common, the dominant trees are pond cypress (*Taxodium ascendens*) and swamp tupelo (*Nyssa sylvatica* var. *biflora*). Other typical canopy and sub-canopy trees include slash pine (*Pinus elliottii*), red maple (*Acer rubrum*), dahoon (*Ilex cassine*), swamp bay (*Persea palustris*), sweet bay (*Magnolia virginiana*), loblolly bay (*Gordonia lasianthus*), swamp laurel oak (*Quercus laurifolia*), sweetgum (*Liquidambar styraciflua*), water oak (*Quercus nigra*), green ash (*Fraxinus pennsylvanica*), American hornbeam (*Carpinus caroliniana*), and American elm (*Ulmus americana*). Depending on the hydrology and fire history, shrubs may be found throughout a basin swamp or they may be concentrated around the perimeter. Common species include Virginia willow (*Itea virginica*), swamp dogwood

(*Cornus foemina*), swamp dog hobble (*Leucothoe racemosa*), coastal sweet pepperbush (*Clethra alnifolia*), myrtle dahoon (*Ilex cassine* var. *myrtifolia*), fetterbush (*Lyonia lucida*), wax myrtle (*Myrica cerifera*), titi (*Cyrilla racemiflora*), black titi (*Cliftonia monophylla*), and common buttonbush (*Cephalanthus occidentalis*). The herbaceous layer is also variable and includes a wide array of species including maidencane (*Panicum hemitomon*), Virginia chain fern (*Woodwardia virginica*), arrowheads (*Sagittaria* spp.), lizard's tail (*Saururus cernuus*), false nettle (*Boehmeria cylindrica*), beaksedges (*Rhynchospora* spp.), bladderworts (*Utricularia* spp.), and royal fern (*Osmunda regalis* var. *spectabilis*). Sphagnum moss (*Sphagnum* spp.) often occurs in patches where the soil is saturated but not flooded. Vines may be present, particularly coral greenbrier (*Smilax walteri*), laurel greenbrier (*S. laurifolia*), and eastern poison ivy (*Toxicodendron radicans*). Epiphytic species such as resurrection fern (*Pleopeltis polypodioides* var. *michauxiana*), Spanish moss (*Tillandsia usneoides*), and Bartram's air-plant (*T. bartramii*) are common, especially in older, more mature examples of basin swamp.

This natural community typically occurs in any type of large landscape depression such as old lake beds or river basins, or ancient coastal swales and lagoons that existed during higher sea levels. Basin swamps exist around lakes and are sometimes headwater sources for major rivers, such as the Suwannee. Soils are generally acidic, nutrient-poor peats often overlying a clay lens or other impervious layer.

Existing Conditions: The basin swamps on the JMBSF range from relatively intact to those impacted either by wetland harvests by the previous landowners or by devastating wildfires of recent years. Some of the basin swamps located along the border with the Okefenokee Swamp have been impacted by large scale wildfires in relatively recent droughts and have lost the majority of their overstory, leaving a thick, impenetrable understory of vines and herbaceous shrubs.

Fire Requirements: 5 - 150 years.

Restoration: Restoration will focus on restoring natural hydrology in fire impacted areas and prescribed burning in the ecotones when the adjacent stands are burned.

Hydrology: Existing Firelines will be disked and the junction of firelines with road side ditches will be bermed to reduce the likelihood of increased conveyance of surface waters.

Silviculture: No silvicultural activities will occur in these areas aside from some burning with adjacent stands. These areas may slightly grow in size when adjacent stands are harvested and reforested due to the minimization of planting acres historically typed as basin swamp. During the previous 20 years, many wetland margins were bedded to grow more pine trees. During state led reforestation efforts, no bedding will be utilized, thus hydric areas adjacent to wetland areas will not be planted.

C. WET FLATWOODS

Description: Wet flatwoods are pine forests with a sparse or absent midstory and a dense groundcover of hydrophytic grasses, herbs, and low shrubs. The pine canopy typically consists of one or a combination of longleaf pine (*Pinus palustris*), slash pine (*P. elliottii*), or pond pine (*P. serotina*). The sub-canopy, if present, consists of scattered sweet bay (*Magnolia virginiana*), swamp bay (*Persea palustris*), loblolly bay (*Gordonia lasianthus*), pond cypress (*Taxodium ascendens*), dahoon (*Ilex cassine*), titi (*Cyrilla racemiflora*), and/or wax myrtle (*Myrica cerifera*). Shrubs include large gallberry (*Ilex coriacea*), fetterbush (*Lyonia lucida*), titi, black titi (*Cliftonia monophylla*), sweet pepperbush (*Clethra alnifolia*), red chokeberry (*Photinia pyrifolia*), and azaleas (*Rhododendron canescens*, *R. viscosum*). Saw palmetto (*Serenoa repens*) and gallberry (*I. glabra*), species also found in mesic flatwoods sites, may be present. Herbs include wiregrass (*Aristida stricta* var. *beyrichiana*), blue maidencane (*Amphicarpum muhlenbergianum*), and/or hydrophytic species such as toothache grass (*Ctenium aromaticum*), Curtiss' sandgrass (*Calamovilfa curtissii*), cutover muhly (*Muhlenbergia expansa*), coastal plain yellow-eyed grass (*Xyris ambigua*), Carolina redroot (*Lachnanthes caroliana*), beaksedges (*Rhynchospora chapmanii*, *R. latifolia*, *R. compressa*), and pitcher plants (*Sarracenia* spp.), among others.

Wet flatwoods often occur in the ecotones between mesic flatwoods and shrub bogs, wet prairies, dome swamps, or strand swamps. Wet flatwoods also occur in broad, low flatlands, often in a mosaic with these communities. The relative density of shrubs and herbs varies greatly in wet flatwoods. Shrubs tend to dominate where fire has been absent for a long period or where cool season fires predominate; herbs are more abundant in locations that are frequently burned. Soils and hydrology also influence relative density of shrubs and herbs. Soils of shrubby wet flatwoods are generally poorly to very poorly drained sands and include such series as Rutledge/Osier; these soils generally have a mucky texture in the uppermost horizon. Examples of typical soils in grassy wet flatwoods are loamy sands of the Pelham and Pantego Series.

Existing Conditions: The Wet Flatwoods Community is differentiated from the Mesic Flatwoods only by the amount of gallberry and fetterbush and the amount of water in the area. Therefore, like Mesic Flatwoods, most of these areas have been bedded and planted with slash pine prior to state ownership. The wet flatwoods community is intermingled with dome swamps, basin swamps, and mesic flatwoods. Many acres in this community have either been harvested by previous landowners or salvage harvested as a result of the devastating Impassable Wildfire in 2004 and Bugaboo Wildfire in 2007. Many clearcut stands have been replanted with longleaf pines and slash pines on the wetter sites. Although reforestation of longleaf pine is a priority, especially in stands where historically it likely existed, the amount of gallberry coverage is hampering this effort. In many stands the understory gallberry coverage is a significant problem in prescribed burning these areas.

Fire Requirements (Maintenance): 2 – 5 years.

Restoration: Restoration of this vegetative type will focus on an un-even aged management regime, reforestation of harvested areas and frequent prescribed burns.

Groundcover: Early spring prescribed burns at a 2-5 year interval will be the most effective way of altering and maintaining the groundcover to a more fire tolerant mix of groundcover species. Dormant season fires will be used in fire excluded areas to prepare for growing season burns.

Hydrology: Many areas mainly along the Okefenokee Swamp on the North and the Osceola National Forest on the South and West have been impacted by fire pre-suppression and suppression efforts due to large scale wildfires in recent years. Many of these stands have been potato patched by plowing the entire stand between the tree rows. Restoring the hydrology is a long-term process. FFS will make improvements as the opportunities present.

Silviculture: This vegetation type will be the primary area for long term silvicultural management on JMBSF. Management should focus on the goal of an un-even aged mixed pine forest consisting of both Slash and Longleaf pine over-stories. Some current slash pine plantations exist on areas with remnant longleaf pine plant communities, these stands will be prescribed burned at a more frequent interval prior to final harvest and conversion to longleaf pine.

D. DOME SWAMP

Description: Dome swamp is an isolated, forested, depression wetland occurring within a fire-maintained community such as mesic flatwoods. These swamps are generally small, but may also be large and shallow. The characteristic dome shape is created by smaller trees that grow in the shallower waters of the outer edge, while taller trees grow in the deeper water in the interior of the swamp. Pond cypress (*Taxodium ascendens*) often dominates, but swamp tupelo (*Nyssa sylvatica* var. *biflora*), may also form pure stands or occur as a co-dominant. Other canopy or sub-canopy species include red maple (*Acer rubrum*), dahoon (*Ilex cassine*), swamp bay (*Persea palustris*), slash pine (*Pinus elliotii*), sweetbay (*Magnolia virginiana*), and loblolly bay (*Gordonia lasianthus*). Shrubs are typically sparse to moderate, but often are absent in dome swamps with a high fire frequency or dense in swamps where fire has long been absent. Shrubs common in dome swamps include Virginia willow (*Itea virginica*), fetterbush (*Lyonia lucida*), common buttonbush (*Cephalanthus occidentalis*), coastal plain willow (*Salix caroliniana*), wax myrtle (*Myrica cerifera*), titi (*Cyrilla racemiflora*), and St. John's wort (*Hypericum* spp.). Herbaceous species can be dense or absent and include a wide variety of ferns, graminoids, and herbs including Virginia chain fern (*Woodwardia virginica*), royal fern (*Osmunda regalis* var. *spectabilis*), cinnamon fern (*Osmunda cinnamomea*), toothed midsorus fern (*Blechnum serrulatum*), maidencane (*Panicum hemitomom*), sawgrass (*Cladium jamaicense*), various species of beaksedge (*Rhynchospora* spp.), lizard's tail (*Saururus cernuus*), Carolina redroot (*Lachnanthes caroliana*), taper leaf water horehound (*Lycopus rubellus*), false nettle (*Boehmeria cylindrica*), and knotweeds (*Polygonum* spp.). Sphagnum moss (*Sphagnum* spp.) often occurs in patches where the soil is saturated but not flooded. Vines such as eastern poison ivy (*Toxicodendron*

radicans), white twine vine (*Sarcostemma clausum*), laurel greenbrier (*Smilax laurifolia*), epiphytes such as Spanish moss (*Tillandsia usneoides*), several species of wild pine (*Tillandsia* spp.), and orchids can be common in dome swamps. The center of the dome swamp contains the largest cypress trees and the understory can be open with deeper water and floating and emergent species such as alligator flag (*Thalia geniculata*), big floating heart (*Nymphoides aquatica*), floating water spangles (*Salvinia minima*), duckweeds (*Lemna*, *Spirodela*, and/or *Landoltia*), and bulltongue arrowhead (*Sagittaria lancifolia*).

Dome swamps are most often found on flat terraces, where they develop when the overlying sand has slumped into a depression in the underlying limestone, creating a rounded depression connected to a shallow water table. In uplands with clay sub-soils, dome swamps may occupy depressions over a perched water table. Soils in dome swamps are variable but are most often composed of a layer of peat, which may be thin or absent at the periphery, becoming thicker toward the center of the dome. This peat layer is generally underlain with acidic sands or marl and then limestone or a clay lens. Common soil types include Pantego, Pamlico, and Mascotte.

Existing Conditions: The dome swamps on JMBSF are intermingled with mesic flatwoods and wet flatwoods. Most of these areas have lost diversity in plant composition due to management practices prior to state ownership including: bedding of flatwoods surrounding these swamps, select harvesting, and excluding prescribed fire.

Fire Requirements: Variable, burn in rotation with surrounding stands 3-10 years.

Restoration: Restoration in this community will focus on restoring hydrology and prescribed burning with adjacent stands. FFS is burning the dome swamps with the mesic flatwoods and wet flatwoods and restoring the ecotones around the edges of these communities.

Hydrology: Existing firelines should be rehabilitated and eliminated whenever possible, and new firelines will be established / maintained only in extreme situations.

Silviculture: No silvicultural activities will occur in these areas aside from some burning with adjacent stands. These areas may slightly grow in size when adjacent stands are harvested and reforested due to the minimization of planting acres historically typed as dome swamp. During the previous 20 years, many wetland margins were bedded to grow more pine trees . During state led reforestation efforts, no bedding will be utilized, thus hydric areas adjacent to wetland areas will not be planted.

E. ALLUVIAL FOREST

Description: Alluvial forest is a hardwood forest found in river floodplains on low levees, ridges and terraces that are slightly elevated above floodplain swamp and are regularly flooded for a portion of the growing season. The physical environment is greatly influenced by ongoing disturbances created by a fluctuating river bed which is both eroding and depositing substrates. Primary trees found include over-cup oak

(*Quercus lyrata*), swamp laurel oak (*Q. laurifolia*), water hickory (*Carya aquatica*), American elm (*Ulmus americana*), green ash (*Fraxinus pennsylvanica*), water locust (*Gleditsia aquatica*), river birch (*Betula nigra*), and red maple (*Acer rubrum*). A great diversity of less flood-tolerant hardwoods or swamp species such as cypress (*Taxodium* spp.) and tupelo (*Nyssa* spp.) may also be present, but not dominant elements. Shrubs, small trees, and vines are usually sparse or moderate in abundance with green hawthorn (*Crataegus viridis*), swamp dogwood (*Cornus foemina*), eastern swamp privet (*Forestiera acuminata*), dwarf palmetto (*Sabal minor*), coastal plain willow (*Salix caroliniana*), black willow (*S. nigra*), American hornbeam (*Carpinus caroliniana*), *Hypericum* spp., possum haw (*Ilex decidua*), and laurel greenbrier (*Smilax laurifolia*) common. Groundcover is variable in abundance with false nettle (*Boehmeria cylindrica*), butterweed (*Packera glabella*), netted chain fern (*Woodwardia areolata*), redtop panicum (*Panicum rigidulum*), and big carpet grass (*Axonopus furcatus*) among the herbs most commonly encountered. The ability of both adult plants and seedlings to withstand specific flooding regimes throughout the “ridge and swale” topography of the floodplain often creates a mix of mesophytic and hydrophytic tree species.

Floodplain forest occurs in river floodplains and occupies low levees along channels, expansive flats located behind levees, low ridges alternating with swamps, and successional point bars. It is usually intermixed with lower areas of floodplain swamp and higher areas of bottomland forest, baygall, or upland hardwood forest. This forest develops along tertiary or higher order streams where deposition of alluvium becomes a significant factor in floodplain development (rather than simply erosion forces). Soils are variable mixtures of sand and alluvial sediments that have been deposited by the current drainage system and are often distinctly layered. Alluvial forest occupies an elevation within the broader floodplain that is inundated seasonally from river bank overflow for one to four months of the year during the growing season.

Existing Conditions: The alluvial forests on JMBSF have been largely unaffected by management practices prior to state ownership and are essentially in maintenance condition. They exist along the Moccasin Creek and North Prong of the St. Marys River and their tributaries.

Fire Requirements: Not fire dependant.

Restoration: Maintenance of floodplain forests will include prescribed burning ecotones with adjacent uplands, hydrological restoration, and recreation activities that minimize the negative effect on hydrological and ecological resources.

Hydrology: Existing fire breaks should be rehabilitated whenever possible, and new fire breaks will be established / maintained only in extreme situations.

Silviculture: No silvicultural activities will occur in these areas aside from some burning with adjacent stands.

F. SHRUB BOG

Description: Shrub bog consists of dense stands of broadleaved evergreen shrubs, vines, and short trees, three to fifteen feet tall depending on time since fire, with or without an overstory of scattered pine or bay trees, growing in mucky soil where water is usually less than a foot deep. Characteristic shrubs include titi (*Cyrilla racemiflora*), black titi (*Cliftonia monophylla*), fetterbush (*Lyonia lucida*), large gallberry (*Ilex coriacea*), gallberry (*I. glabra*), wax myrtle (*Myrica cerifera*), and sweet pepperbush (*Clethra alnifolia*), often laced together with laurel greenbrier (*Smilax laurifolia*). Other shrubs that may be present include red chokeberry (*Photinia pyrifolia*), Virginia willow (*Itea virginica*), swamp doghobble (*Leucothoe racemosa*), and myrtle dahoon (*Ilex cassine* var. *myrtifolia*). Taller pines, either pond (*Pinus serotina*), slash (*P. elliottii*), or loblolly (*P. taeda*), may be present. Dense clumps of slash pine may be present in long unburned stands. Other occasional trees that may extend above the shrub layer are loblolly bay (*Gordonia lasianthus*), sweetbay (*Magnolia virginiana*), swamp bay (*Persea palustris*), pond cypress (*Taxodium ascendens*), and stunted red maple (*Acer rubrum*). Herbs are sparse and patchy, confined to sunny openings, and often include tenangle pipewort (*Eriocaulon decangulare*), Virginia chain fern (*Woodwardia virginica*), and pitcher plants (*Sarracenia* spp.). Small areas of open water have floating bladderworts (*Utricularia* spp.).

Shrub bog is found on the border of swamps, in streamhead drainages, and in flat, poorly drained areas between rivers. It often forms the border between the mesic or wet flatwoods communities and dome swamp, basin swamp, or hydric hammock communities. Soils of shrub bogs frequently have an organic muck layer of varying depth at the surface underlain by sand or loamy sands. Characteristic soil series include Dasher, Dorovan, and Mascotte-Pamlico depressional. Sphagnum moss (*Sphagnum* spp.) is common on the ground surface.

Existing Conditions: The shrub bogs on JMBSF appear like overgrown wetlands due to fire exclusion and altered hydrology created by road ditches that were established by management practices prior to state ownership. Firelines created during wildfire suppression efforts have also altered these communities. These shrub bogs are slowly becoming dominated with pines and bays.

Fire Requirements: Variable, burn in rotation with surrounding stands 10-20 years.

Restoration: Restoration on these sites will focus on restoring hydrological damage and the return of prescribed burning to limit the colonization of these sites by slash pine and bay trees.

Hydrology: Existing fire breaks around adjacent mesic flatwoods stands should be rehabilitated whenever possible and new fire breaks will be established / maintained only in extreme situations.

Silviculture: No silvicultural activities will occur in these areas aside from some burning with adjacent stands.

VIII. References

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IX. Glossary of Abbreviations

- ARCAcquisition and Restoration Council
- BMPBest Management Practice
- CARL.....Conservation and Recreation Lands
- DACS.....Department of Agriculture and Consumer Services
- DEP.....Department of Environmental Protection
- DHRDivision of Historical Resources
- DRP.....Division of Recreation and Parks
- FFSFlorida Forest Service
- FNAIFlorida Natural Areas Inventory
- FWC.....Florida Fish and Wildlife Conservation Commission
- FWRI.....Florida Fish & Wildlife Conservation Commission, Fish & Wildlife Research Institute
- GOALGreater Okefenokee Association of Landowners
- JMBSFJohn M. Bethea State Forest
- OFWOutstanding Florida Water
- ONF.....Osceola National Forest
- ONWROkefenokee National Wildlife Refuge
- SJRWMD.....St. Johns River Water Management District
- TIITF.....Board of Trustees of the Internal Improvement Trust Fund
- USFSUnited States Forestry Service
- USFWSUnited States Fish and Wildlife Service
- WMAWildlife Management Area