

TEN-YEAR LAND MANAGEMENT PLAN
FOR THE
BLACKWATER RIVER STATE FOREST
SANTA ROSA AND OKALOOSA COUNTIES



PREPARED BY THE
FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES
FLORIDA FOREST SERVICE

APPROVED ON
APRIL 13, 2026



FLORIDA DEPARTMENT OF Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, FL 32399

Ron DeSantis
Governor

Jay Collins
Lt. Governor

Alexis A. Lambert
Secretary

April 13, 2026

Mr. Brian Camposano
Florida Forest Service
Department of Agriculture and Consumer Services
3125 Conner Boulevard, Room 236
Tallahassee, Florida 32399-1650

RE: Blackwater River State Forest – Lease No. 2346 and 3686

Dear Mr. Camposano:

On **April 10, 2026**, the Acquisition and Restoration Council (ARC) recommended approval of the **Blackwater River State Forest** management plan. Therefore, Division of State Lands, Office of Environmental Services (OES), acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, hereby approves the **Blackwater River State Forest** management plan. The next management plan update is due April 10, 2036.

Pursuant to s. 253.034(5)(a), F.S., each management plan is required to describe both short-term and long-term management goals and include measurable objectives to achieve those goals. Short-term goals shall be achievable within a 2-year planning period, and long-term goals shall be achievable within a 10-year planning period. Upon completion of short-term goals, please submit a signed letter identifying categories, goals, and results with attached methodology to OES.

Pursuant to s. 259.032(8)(g), F.S., by July 1 of each year, each governmental agency and each private entity designated to manage lands shall report to the Secretary of Environmental Protection, via OES, on the progress of funding, staffing, and resource management of every project for which the agency or entity is responsible.

Pursuant to s. 259.036(2), F.S., management areas that exceed 1,000 acres in size, shall be scheduled for a land management review at least every 5 years.

Pursuant to s. 259.032, F.S., and Chapter 18-2.021, F.A.C., management plans for areas less than 160 acres may be handled in accordance with the negative response process. This process requires small management plans and management plan amendments be submitted to OES for review, and ARC for public notification. OES will approve these plans or plan amendments submitted for review through delegated authority unless three or more ARC members request the division place the item on a future council meeting agenda for review. To create better efficiency, improve customer service, and assist

Mr. Brian Camposano

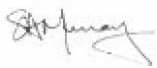
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April 13, 2026

members of the ARC, OES will notice negative response items on Thursdays except for weeks that have State or Federal holidays that fall on Thursday or Friday. OES will contact you on the appropriate Friday to inform you if the item is approved via delegated authority or if it will be placed on a future ARC agenda by request of the ARC members.

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

Sincerely,



Digitally signed by Sine A
Murray
Date: 2026.04.13
08:42:36 -04'00'

Sine Murray
Program Administrator
Office of Environmental Services
Division of State Lands

TEN-YEAR LAND MANAGEMENT PLAN
FOR THE
BLACKWATER RIVER STATE FOREST



Approved by:

A blue ink signature of Richard Dolan, written in a cursive style.

Richard Dolan, Director
Florida Forest Service

4/23/2026

Date

A blue ink signature of James Roberts, written in a cursive style.

James Roberts, Chief
Forest Management Bureau

4/20/26

Date

**TEN-YEAR LAND MANAGEMENT PLAN
BLACKWATER RIVER STATE FOREST
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**TEN-YEAR LAND MANAGEMENT PLAN
BLACKWATER RIVER STATE FOREST
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LAND MANAGEMENT PLAN EXECUTIVE SUMMARY

LEAD AGENCY: Florida Department of Agriculture and Consumer Services (FDACS),
Florida Forest Service (FFS)
COMMON NAME: Blackwater River State Forest (BRSF)
LOCATION: Santa Rosa and Okaloosa Counties
ACREAGE TOTAL: 226,659.52 acres

Historic Natural Communities	Approximate Acreage*
Upland Pine**	141,531
Sandhill**	29,972
Bottomland Forest	29,127
Seepage Slope	7,064
Mesic Flatwoods**	1,848
Baygall	1,487
Wet Flatwoods**	1,005
Blackwater Stream	753

*Acreage discrepancies may occur based on FNAI polygons

**Includes restoration community acreage

Historic Natural Communities	Approximate Acreage*
Upland Hardwood Forest	709
Upland Mixed Woodland	629
Floodplain Swamp	536
Dome Swamp	158
Depression Marsh	79
Shrub Bog	55
Wet Prairie**	38
River Floodplain Lake	1

TIITF LEASE AGREEMENT NUMBER: 3686 and 2346

USE: Single ☐ Multiple ☒

MANAGEMENT AGENCY

FDACS, Florida Forest Service
Florida Fish and Wildlife Conservation Commission
Northwest Florida Water Management District
Department of State, Division of Historical Resources

RESPONSIBILITY

General Forest Resource Management
Wildlife Resources and Laws
Water Resources
Historical and Archaeological Resource Management

DESIGNATED LAND USE:

Multiple-Use State Forest

SUBLEASES:

Okaloosa County, Munson Volunteer Fire Dept., FL
Fish and Wildlife Conservation Commission

ENCUMBRANCES:

Multiple private access and utility easements

TYPE ACQUISITION:

Federal Land Transfer, P2000, Florida Forever, and
Forest Legacy Program

UNIQUE FEATURES:

Blackwater River system and bluffs, seepage slopes
(pitcher plant bogs), depression marshes, mature
longleaf pine forests, red-cockaded woodpeckers

ARCHAEOLOGICAL / HISTORICAL:

Two hundred forty-five (245) known sites

MANAGEMENT NEEDS:

Longleaf pine restoration, erosion and sediment control,
and boundary resolution

ACQUISITION NEEDS:

109,663 Additional acres in the Optimal Management
Boundary with 57,857 acres residing in Santa Rosa
County and 51,806 in Okaloosa County

SURPLUS ACREAGE:

None

PUBLIC INVOLVEMENT:

Blackwater River State Forest Liaison Committee;
2012, 2017 and 2021 Land Management Reviews;

Management Plan Advisory Group and Public Hearing;
and FDEP Acquisition and Restoration Council Public
Hearing

I. Introduction

Blackwater River State Forest (BRSF), Florida's largest state forest, is comprised of approximately 226,659.52 acres located in the western panhandle of Florida in Okaloosa and Santa Rosa Counties. BRSF is named for the Blackwater River, which runs through the forest for approximately 30 miles. The Blackwater River is one of the last remaining shifting sand bottom streams still in its natural state for almost its entire length. BRSF was initially leased from the Federal government in 1938 and purchased in 1954. The original transfer consisted of roughly 183,184 acres. Over the years, through the FDEP Preservation-2000 and Florida Forever Programs, the USFS Forest Legacy Program, and through private donations, along with in-holding and additions funds, 43,325 acres were added to the forest totaling 226,659.52 acres.

BRSF is designated for multiple-use management and is managed by the Department of Agriculture and Consumer Services (FDACS), Florida Forest Service (FFS). The unique features of BRSF include the longleaf pine and wiregrass ecosystems, which, in combination with the Conecuh National Forest and Eglin Air Force Base, forms the largest contiguous tract managed for longleaf pine in the world. This ecosystem once covered over 90 million acres in the southeastern United States. Today, only about 5.2 million acres of this ecosystem remains intact with approximately 2.4 million acres currently in Florida. Longleaf pine communities are some of the richest in plant and animal diversity, including many species classified as threatened or endangered.

Major community groups represented on the forest include upland pine, bottomland forest, floodplain swamp, sandhill, and seepage slopes. Significant species sighted on the forest include the bald eagle, red cockaded woodpecker, gopher tortoise, and reticulated flatwoods salamander. Major recreational activities enjoyed at BRSF include canoeing / kayaking, hiking, horseback riding, camping, fishing, OHV riding, swimming, hunting, wildlife viewing, and mountain bike riding.

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 BRSF center on the multiple-use concept, as defined in Sections 589.04(3) and 253.034(2)(a), Florida Statutes (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 BRSF was acquired. Multiple-use management for BRSF 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 non-game wildlife and plants;
- Protect known archaeological, historical, and cultural resources;
- Restore, maintain, and protect hydrological functions, related water resources, and health of associated wetland and aquatic communities; and
- Provide research and educational opportunities related to natural resource management.

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

B. Past Accomplishments

Data regarding past management activities and public use on BRSF have been compiled monthly and are available from the forest manager. A table has been prepared for this plan that summarizes the accomplishments for each of the past 12 years. See Exhibit A. The table does not attempt to account for all activities on the forest but summarizes major activities. Among the most notable accomplishments have been the following:

- Forest Management
 - Thinned 21,298 acres
 - Salvage thinned approximately 2,029 acres of tornado damage
 - Clearcut 4,137 acres
 - 1,545 acres of loblolly pine
 - 491 acres of slash pine
 - 2,101 acres of sand pine
 - Harvested 617,904 tons of timber
 - Produced 14,712 bushels of longleaf pine green cones
 - Produced 1,348 pounds of pine seed
 - Generated \$10,310,663 of total revenue
 - Planted 4,323 acres of longleaf pine; 231 acres were planted in bareroot
 - Conducted Timber Stand Improvement on 7,313 acres
 - 2,897 acres of pre-merchantable sand pine removal
 - 2,395 acres of hexazinone herbicide for longleaf release
 - 2,021 acres of understory herbicide for underbrush control
 - Completed and implemented annual updates to the silviculture plans
 - Updated forest stands in 2023
 - Created and implemented a systematic forest inventory plan
 - Acquired 16,238.79 acres
 - Certified by Sustainable Forestry Initiative under the Forest Management Standard
- Fire Management
 - Prescribed Burned 769,585 acres since the implementation of the previous plan
 - 434,225 dormant season acres
 - 335,360 growing season acres
- Road / Boundary Management
 - Maintained 7,776 miles of road
 - Installed, replaced, or overhauled 89 bridges
 - Installed or replaced 141 culverts
 - Replaced 25 low water crossings
 - Maintained 364 miles of boundary

- Recreation Management
 - Opened Clear Creek Off-highway Vehicle Riding Area with bathrooms, gatehouse, fencing, and 25 miles of Off Highway Vehicle (OHV) trails
 - Added and fenced 25 additional miles of OHV trail at Clear Creek on westside of Redbird Trail
 - Added two (2) pole barns, one (1) picnic pavilion, four (4) electric campsites, solar panels, and one (1) dump station on the eastern side of Redbird Trail
 - Added a total of 32 unisex bathrooms and two (2) non-unisex bathrooms across six (6) campgrounds
 - Converted one (1) bathhouse at Hurricane North into four (4) unisex bathrooms
 - Converted campsites at Krul Campground 2 from dirt to pavement
 - Increased electric campsites at Hurricane North Recreation Area from 13 to 18
 - Re-decked approximately 250 feet of boardwalk at Bone Creek Recreation Area and re-decked swimming pier
 - Built concrete seawalls at Krul Recreation Area on the north and south sides of the swimming area
 - The FFWCC installed new fishing pier with plastic decking boards at Karick North Recreation Area
 - Removed two (2) deteriorated fishing piers at Hurricane Lake North and Bear Lake
 - Added Camp Host sites and septic tanks at Krul Campground 2, Krul gatehouse, and Clear Creek
 - Converted all campsites in fee areas from an iron ranger payment system to an online reservation system through Reserve America
 - Converted Krul Lake day use parking to an online reservation system
 - Removed old swimming pier without ledger beam construction at Krul and built wider pier with ledger beams throughout the length of the 190' pier
 - Converted approximately 800 ft of Krul Lake Boardwalk from wood decking to concrete.
 - Re-decked approximately 2,650 feet of Krul Lake Boardwalk
 - Volunteers provided an average of 22,960 hours of service across 2021 through 2023
- Biological Management
 - Completed ten-year management plan for red-cockaded woodpeckers
 - Expanded the red-cockaded woodpecker population from 94 potential breeding groups to 176 potential breeding groups
 - Treated a total of 16,125.25 acres of invasive plant species
 - 1,912 acres were cogongrass treatments
- Education / Public Outreach
 - Held 512 events either on the state forest or pertaining to the state forest
 - Hosted the Munson Heritage Festival every October except 2020 and 2021 (pandemic)
 - Operation Outdoor Freedom hosted average of six (6) hunts per year

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 BRSF 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. Most 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 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. 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 Action Plan including reforestation, timber harvesting, prescribed burning, understory restoration, and timber stand improvement activities and goals. (Ongoing objective)

Performance Measures:

- Annual updates of the Five-Year Silviculture Action Plan completed
- Continued implementation of the Five-Year Silviculture Action Plan (acres treated)

Objective 2: Continue to implement the FFS process for developing stand descriptions and conducting forest inventory, including maintaining a GIS database containing forest stands, roads, and other attributes (including but not limited to: rare, threatened, and endangered species, archaeological and historical resources, and invasive species locations). (Ongoing objective)

Performance Measures:

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

Objective 3: Remove merchantable loblolly (*Pinus tadea*) and sand pine (*Pinus clausa*) plantations in stands where soils, historic vegetation, and practical management abilities indicate other pine species, particularly longleaf pine (*Pinus palustris*) or slash pine (*Pinus elliottii*) should dominate. Ensure clearcutting and replanting are in compliance with Sustainable Forestry Initiative (SFI) standards. Focus restoration efforts on the Ates Pasture, Yellow River, and Rayonier acquisition areas first. (Ongoing objective)

Performance Measures:

- Implementation of harvest operations of offsite loblolly and sand pine
- Number of acres planted in longleaf or slash pine

Objective 4: Conduct timber sales at appropriate times to promote forest health and productivity, maximize revenue generation, and ensure sustainability of forest resources.

Planned sales should be available at the beginning of the fiscal that they will be sold in order to best take advantage of good timber markets. (Ongoing objective)

Performance Measure: Conduct timber sales in accordance with the objective

Objective 5: Conduct timber stand improvement operations to reduce hardwood and offsite pine encroachments where longleaf pine has been re-established, when restoration of longleaf pine and/or natural groundcover is imminent, or when the encroachment of such species would cause a negative permanent alteration to the stand. Treatments should be geared to both releasing longleaf pine for maximum sunlight and reduction of shade to live, native groundcover. (Ongoing objective)

Performance Measures:

- Acres treated with timber stand improvement
- Response of longleaf pine and/or ground cover

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

Objective 1: Maintain public access and recreational opportunities that are compatible with multiple-use management. (Ongoing objective)

Performance Measure: Number of visitor opportunities per day

Objective 2: Evaluate the potential for additional public access and recreational areas for public use on BRSF that are compatible with multiple-use management. Recreational opportunities will fall under the scope of multiple-use management in accordance with watershed protection, conservation, ecosystem restoration; and as detailed in the purpose for acquisition. Provide or improve access in the Wolfe Creek acquisition in two (2) locations by constructing and / or moving roads. (Short-term objective)

Performance Measure: List of viable access points and visitor opportunities for consideration

Objective 3: Continue to safely integrate human use into BRSF, follow the Five-Year Outdoor Recreation Plan and update annually. (Ongoing objective)

Performance Measures:

- Continued implementation of the Five-Year Outdoor Recreation Plan
- Annual updates of the Five-Year Outdoor Recreation Plan completed

Objective 4: Continue to involve and meet with the Liaison Committee. The purpose of Liaison Committee meetings is to facilitate communication between the FFS and committee members (and the groups they represent) about state forest management and to obtain feedback from these entities. The Committee consists of residents, community leaders and special interest group representatives (vendors, hunters, and other recreational users, etc.), environmental group representatives, and other public / private entities. (Ongoing objective)

Performance Measures:

- Liaison Committee remains organized
- Semi-annual meetings continue

Objective 5: Maintain cooperation with Florida Fish and Wildlife Conservation Commission (FWC) to develop specific hunting season quotas and bag limits, and to address hunting issues to be agreed upon at annual cooperator meeting between FFS and FWC. (Ongoing objective)

Performance Measures:

- Annual letter on agreed hunting issues
- Updated rules posted and WMA brochures available online at MyFWC.com

Objective 6: Recruit volunteers and volunteer organizations to assist with recreation and / or resource management. (Ongoing objective)

Performance Measure: Number of volunteers and organizations that assist with projects. Volunteers, which include, but are not limited to camp hosts, the Florida Trail Association, and the Southeastern Dog Hunters Association regularly volunteer on the forest to help with campground maintenance, hiking trail maintenance, and to beautify the forest with clean-up activities.

➤ **GOAL 3: Habitat Restoration, Improvement, and Fire Management**

Objective 1: The BRSF currently contains approximately 181,000 acres of fire-dependent communities. BRSF staff will plan and conduct prescribed burns in a manner that benefits these fire-dependent natural communities within the forest. To achieve an average fire-return interval of two (2) to four (4) years for most fire-dependent communities, FFS will attempt to conduct prescribed burns on an average of approximately 45,000 to 90,000 acres per year. Currently FFS staff estimates 139,000 acres at BRSF are within the desired fire-return interval. (Ongoing objective)

Performance Measures:

- Number of acres burned during the dormant and growing seasons
- Number of acres burned within target fire-return interval

Objective 2: Continue to annually update and implement the Five-Year Prescribed Burning Management Plan and the prescribed burning goals. (Ongoing objective)

Performance Measures:

- Annual updates of the Five-Year Prescribed Burning Management Plan completed
- Continued implementation of the Five-Year Prescribed Burning Management Plan (acres treated)

Objective 3: Reduce the threat of wildfire within the wildland urban interface on BRSF and the surrounding community through a comprehensive mitigation strategy that includes evaluating vegetative fuels near residential areas and identifying potential fuel reduction projects, constructing and maintaining firelines, and utilizing prescribed fire to reduce wildfire risk. (Ongoing objective)

Performance Measures:

- Evaluation complete
- Should the evaluation determine that fuel reduction is necessary, number of acres treated for fuel reduction and/or length of new fireline installed

Objective 4: Utilize prescribed fire to enhance restoration of native groundcover. Evaluate areas where native groundcover has been eliminated or heavily impacted from historical land use on a case-by-case basis for alternative methods to address reestablishment of native groundcover plants. Restore native groundcover where practical or heavily impacted from historical land use. (Long-term objective)

Performance Measure: Number of acres restored

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

Objective 1: In cooperation with FWC, maintain the Wildlife Management Strategy addressing the wildlife species for BRSF, with emphasis on imperiled species and associated management prescriptions for their habitats. (Ongoing objective)

Performance Measures:

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

Objective 2: In consultation with FWC, implement survey and monitoring protocols, where feasible, for listed and rare species. (Ongoing objective)

Performance Measure: Number of species for which monitoring is ongoing

Objective 3: Update the Red-cockaded Woodpecker Management Plan focusing on habitat management / enhancement and population sustainability and stabilization. Continue to manage Blackwater's population.

Performance Measures:

- New plan implemented
- Population continues to grow and/or remains stable

➤ **GOAL 5: Invasive Species Maintenance and Control**

Objective 1: Continue to follow and annually update the Five-Year Ecological Plan for BRSF, and continue to locate, identify, and control invasive species. (Ongoing objective)

Performance Measures:

- Total number of acres identified and successfully treated
- Annual updates of the Five-Year Ecological Plan completed
- Continue to maintain BRSF invasive database information annually

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

Objective 1: Ensure all known sites and newly discovered sites are recorded in the Department of State, Division of Historical Resources (DHR) Florida Master Site file. (Ongoing objective)

Performance Measure: Number of recorded sites

Objective 2: Monitor at least 10% of all recorded sites annually and send updates to the DHR Florida Master Site File as needed. Monitoring will be scheduled within one year following prescribed fire to allow for better monitoring. (Ongoing objective)

Performance Measure: Number of sites monitored. Reports submitted to DHR

Objective 3: Maintain at least two (2) qualified staff members as Archaeological Resource Management (ARM) Monitors. (Ongoing objective)

Performance Measure: Number of local staff trained as ARM Monitors

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

Objective 1: Protect water resources during management activities through the implementation of Silviculture Best Management Practices (BMP) that are applicable to forest road maintenance and construction, construction of pre-suppression firelines, timber stand improvement activities, timber harvesting, sinkholes, etc. (Ongoing objective)

Performance Measure: Percent compliance with Silviculture BMP

Objective 2: Close, rehabilitate, or restore those roads, firelines, and trails that have evidence of erosion into surrounding water bodies causing alterations to the hydrology and / or water quality. (Ongoing objective)

Performance Measures:

- Number of roads, firelines, and trails closed, rehabilitated, and / or restored
- Number of culverts installed or maintained
- Number of low water crossings installed or maintained

Objective 3: Conduct or obtain a site assessment / study to identify potential hydrology restoration needs. Active washout sites will be prioritized for this assessment. (Short-term objective)

Performance Measure: Assessment conducted

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

Objective 1: BRSF staff, along with help from volunteers, and/or user groups, will continue maintenance of 10 recreation areas with bathrooms. Nine (9) of these recreation areas allow for camping and day use. One facility is for day use activities only. There are 11 trailheads for hiking, mountain biking, horseback riding and off-highway vehicle riding on approximately 200 miles of trail. (Ongoing objective)

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

Objective 2: Continue to follow the Five-Year Roads and Bridges Management Plan and update annually. (Ongoing objective)

Performance Measures:

- Continued implementation of the Five-Year Roads and Bridges Management Plan
- Annual updates of the Five-Year Roads and Bridges Management Plan completed
- Survey existing roads and bridges for condition to determine any work that is needed
- Identification of any roads and bridges that can be closed or eliminated

Objective 3: Continue to implement the Five-Year Boundary Survey and Maintenance Management Plan and update annually. Approximately 20% of the forest boundary will be re-marked annually as necessary which includes harrowing, reposting signage, and repainting boundary trees. (Ongoing objective)

Performance Measures:

- Continued implementation of the Five-Year Boundary Survey and Maintenance Management Plan
- Percentage of forest boundary maintained annually per the State Forest Handbook guidelines
- Annual updates of the Five-Year Boundary Survey and Maintenance Management Plan completed

Objective 4: Survey parcels within BRSF where encroachments or other boundary disagreements exist to definitively determine proper boundary placement and eliminate inconsistencies. (Ongoing objective)

Performance Measures:

- Identification of all discrepancies
- Surveying boundary lines
- Creation of plan to address discrepancies
- Implementation of plan

II. Administration Section

A. Descriptive Information

1. Common Name of Property

The common name of the property is the Blackwater River State Forest (BRSF).

2. Legal Description and Acreage

BRSF is comprised of 226,659.52 acres, more or less.

BRSF is located in the northern portion of Santa Rosa and Okaloosa Counties. Numerous private land holdings exist within the forest boundaries. Similarly, several parcels of state land are isolated by private property. The property occupies part or most of the following:

- Sections 25, 26, 35, 36; Township 6 North; Range 28 West
- Sections 25-36; Township 6 North; Range 27 West
- Sections 25-36; Township 6 North; Range 26 West
- Sections 25-27, 29-35; Township 6 North; Range 25 West
- Sections 25-26, 35-36; Township 6 North; Range 24 West
- Sections 1, 3, 10-14, 24-26; Township 5 North; Range 28 West
- Sections 1-36; Township 5 North; Range 27 West
- Sections 1-36; Township 5 North; Range 26 West
- Sections 1-36; Township 5 North; Range 25 West
- Sections 1-2, 11-14, 19-35; Township 5 North; Range 24 West
- Sections 6-7, 19; Township 5 North; Range 23 West
- Sections 1, 36; Township 4 North; Range 28 West
- Sections 1-36; Township 4 North; Range 27 West
- Sections 1-36; Township 4 North; Range 26 West

- Sections 1-32; Township 4 North; Range 25 West
- Sections 3-8, 10-12, 26; Township 4 North; Range 24 West
- Sections 1-2, 10-14, 23-26, 35-6; Township 3 North; Range 28 West
- Sections 1-26, 28-32, 36; Township 3 North; Range 27 West
- Sections 1-36; Township 3 North; Range 26 West
- Sections 3, 5-7, 9, 11, 25, 16-22, 27-32; Township 3 North; Range 25 West
- Sections 1, 4-6, 8, 11-15, 22-26, 36; Township 2 North; Range 27 West
- Sections 2-11, 13-15, 17-19, 21-35; Township 2 North; Range 26 West
- Sections 19-20, 30; Township 2 North; Range 25 West
- Sections 3-5; Township 1 North; Range 26 West

For management purposes, the forest is divided into nine (9) management units (tracts). These nine units are: Coldwater, Sweetwater, Rock Creek, Horse Creek, Bone Creek, Juniper Creek, Floridale, West Boundary, and Yellow River. See Exhibit E for a map of the management units. Acreage acquired by funding source is identified in Table 1.

Table 1. BRSF Acreage by Funding Source

Funding Source	Acres
Other / USDA*	183,014.52
Florida Forever	23,893.42
Forest Legacy Program	12,661.57
P2000	6,129.86
Mitigation	609.94
Transfer	279.10
Exchanges	17.81
Donation	53.30

*Other / USDA includes a release of 230 acres to DRP in October 2000.

A complete legal description of lands owned by the Board of Trustees of the Internal Improvement Trust Fund (TIITF) is on record at the Blackwater Forestry Center Office, Florida Department of Environmental Protection (FDEP), and the FFS State Office in Tallahassee.

3. Proximity to Other Public Resources

Lands managed by state, federal, or local government for conservation of natural or cultural resources that are located within approximately 12 miles of the BRSF are mapped in Exhibit F and listed in Table 2.

Table 2. BRSF Proximity to Significant Managed Lands

Tract	Agency	Distance
Blackwater River State Park	FDEP	Within forest boundary
Harold Outlying Field	US Navy	Within forest boundary
Yellow River Water Management Area	NFWWMD	Adjacent to southern border
Conecuh National Forest	USFS	Immediately to the north
NAS Whiting Field	US Navy	Immediately to the southwest
Blackwater Heritage State Trail	FDEP	0.86 miles to the southwest
Eglin Air Force Base	US Air Force	1 mile to the south
Navy Greenways and Trails	FDEP	1 mile to the southwest
Welannee Sandhill Conservation Easement	Conservation Florida, Inc.	2.90 miles to the east
Blackwater River Water Management Area	NFWWMD	4 miles west-southwest
Shoal River Land Acquisition	Okaloosa County	7.4 miles east
Garcon Peninsula Mitigation Bank	Garcon Peninsula Mitigation Bank, LLC	7.8 miles
Escribano Point	FWC	9 miles southwest
Pensacola Bay Mitigation Bank	Southern States Land and Timber	9.8 miles southwest
Yellow River Marsh Preserve State Park	FDEP	10.3 miles southwest
Lower Escambia River Water Management Area	NFWWMA	10.6 miles west
Garcon Point Water Management Area	NFWWMD	11.5 miles southwest

FDEP – Florida Department of Environmental Protection
NFWWMA – Northwest Florida Wildlife Management Area

FWC – Fl. Fish and Wildlife Cons. Commission
NFWWMD – Northwest Florida Water Management District

USFS – United States Forest Service

4. Property Acquisition and Land Use Considerations

a. Federal

BRSF was acquired as a land-use project by the U.S. Government in the mid-1930s. The property was acquired from various individuals and corporations such as the Bagdad Land and Lumber Company and the Okaloosa Land Company. The purpose of this land acquisition project was to resettle people who were attempting to subsist in a sub-marginal economy, thus alleviating the effects of the depression experienced in this area of Florida. Shortly after the U.S. Government acquired the property, it was turned over to the Soil Conservation Service (SCS) for administration. The State of Florida was granted management of the property in November 1938 by a fifty-year lease, with three (3) automatic extensions of fifteen years each.

In 1954, title to the property was transferred from the SCS to the U.S. Forest Service (USFS) which, in 1955, deeded the property to the State of Florida, Board of Forestry. The total size of this original acquisition was 183,184.57 acres.

b. P2000 and Florida Forever Acquisitions

Several parcels have been added to BRSF under the P2000 Acquisition Program, including the 1,249.80-acre Hutton 1 (northern) parcel acquired in April 1997 (located in Santa Rosa County on both sides of Juniper Creek, south of Red Rock Road and has been fully incorporated into the Juniper Creek Tract), and the 4,454.42-acre Hutton 2 Tract acquired in June 1997 (located near the Harold community and is now commonly referred to as the Hutton Unit).

During the mid- to late 2000's, under the Florida Forever Program, the state added the 4,623.80-acre Ates Pasture parcel (located in Santa Rosa County between Munson and Harold), the 11,208.54-acre Yellow River Ravines parcel (located in Santa Rosa and Okaloosa Counties south of US 90 between Harold and Holt), and the 1,026.42-acre TNC Rayonier parcels (located in Okaloosa County northwest of Baker). In 2010, the state purchased the 1,400.63-acre Clear Creek Tract (located northeast of Naval Air Station Whiting Field) under the Florida Forever and T. Mark Schmidt Off-Highway Vehicle programs.

From 2018 through 2024, the Florida Forever Program has provided funding for all or part of several acquisitions that are part of the Wolfe Creek Forest Project. A total of six sections of Wolfe Creek Forest were purchased containing a total of 11,293.39 acres. In 2022, Florida Forever provided a portion of the funding for the acquisition of 2,114.97 acres of land within the immediate vicinity of the Wolfe Creek Forest. In 2023, the Knobloch Family Foundation provided a much-needed donation that went toward the purchase of the 1,487.9-acre Wolfe Creek acquisition. Florida Forever provided all of the funding to acquire the 758.26-acre Wolfe Creek Forest Phase VI. This land acquisition provided much needed protection for Big Coldwater Creek and also protected land within close vicinity of NAS Whiting Field.

c. Forest Legacy Program

The Forest Legacy Program has been instrumental in providing all or part of the funding for many acquired parcels in the Wolfe Creek Forest project area in recent years. Program funds have been awarded numerous times in this area of Florida due to the potential for longleaf pine restoration. As of February 2025, Forest Legacy Program funding has been used to acquire nine (9) additional Wolfe Creek Forest project areas, which are now managed as part of BRSF. All acreage acquired with federal Forest Legacy Program funding must be managed in accordance with federal programmatic guidelines. The most current version of this document can be found at the following link: [Forest Legacy Program \(usda.gov\)](https://www.usda.gov/forestlegacy). Any future Forest Legacy Program-funded parcels acquired as part of BRSF will be managed as part of this Land Management Plan and to the Forest Legacy Program requirements.

d. Other Acquisitions

Several smaller parcels have been acquired over the years through mitigation and other means. These parcels range in size from two (2) to eighty (80) acres with a total acquisition of 713.83 acres. All parcel acquisitions 80 acres and above are identified in

Table 3. Major tracts, including those acquired through the Forest Legacy Program, are depicted in Exhibit E.

Table 3. Parcel Acquisition

Parcel Name	Lease Date	Lease No.	Acres
USDA – Okaloosa Co.	11/22/1968	2346 / 3686	60,828.20
USDA – Santa Rosa Co.	11/22/1968	2346 / 3686	122,356.37
Estes	2/8/1994	3686	115.68
Phillips	2/8/1994	3686	120.42
Hutton 1	8/11/1997	3686	1,249.80
Hutton 2	8/11/1997	3686	4,454.42
Barnes / Stump Springs	12/9/1997	3686	150.40
FGT / Sowell	4/6/1999	3686	80.00
Cleavenger, Charles	8/1/2003	3686	237.10
Estes, John Edward	9/2/2003	3686	217.40
Cox, Benjamin	3/22/2004	3686	195.27
IP – Ates Pasture	2/25/2005	3686	4,623.80
TNC / Estes	1/31/2008	3686	358.65
Yellow River Ravines – Santa Rosa Co.	1/31/2008	3686	10,334.89
Yellow River Ravines – Okaloosa Co.	1/31/2008	3686	873.65
TNC / Rayonier	3/18/2009	3686	1,026.42
Falzone, Timothy	6/12/2009	3686	104.25
TNC – Estes	3/3/2010	3686	555.00
TNC	4/22/2010	3686	80.93
TNC	10/15/2012	3686	1,400.63
SSA Developers	10/15/2012	3686	172.59
Kennedy, Bobbie J.	10/15/2012	3686	89.90
Woodall, James	10/15/2012	3686	159.40
FGT Donation	10/15/2012	3686	359.94
TPL From CF Florida, LLC	3/16/2018	3686	626.71
Paradise Bay	1/29/2019	3686	279.10
Legacy Acquisition	11/7/2019	3686	798.64
Legacy Acquisition	9/15/2020	3686	1,272.70
Legacy Acquisition	5/18/2022	3686	2,114.97
Legacy / Donation	5/20/2022	3686	1,699.57
Legacy / Florida Forever	12/5/2022	3686	1,789.77
WCF – Phase V Legacy / Florida Forever	5/4/2023	3686	3,598.87
WCF – Phase VI Florida Forever	5/4/2023	3686	758.26
WCF – Phase VII Florida Forever / Legacy	10/26/2023	3686	1,487.90
WCF – Phase VIII Legacy / Florida Forever	7/12/2024	3686	1,543.62
Pridgeon	2/24/2025	3686	101.66
Peadon	2/24/2025	3686	40.7

B. Management Authority, Purpose, and Constraints

1. Purpose for Acquisition / Management Prospectus

The land that was to become the BRSF was acquired by the Federal Government to revegetate, resettle, and protect the area following extensive deforestation by land and timber companies in the early 1900s. In the late 1930s at the request of Florida's Governor, the land was leased to the State and the restoration process continued.

The Yellow River Tract was acquired to protect a high-quality example of an imperiled natural community and to protect threatened and endangered plant and animal species. Acquisition of this Tract allowed for a continuous corridor of public land from Eglin Air Force Base through the BRSF and to the Conecuh State Forest in Alabama. The acquisition of undeveloped land around the U.S. Navy's Pensacola Naval Air Station satellite airfields enhance military training by preventing encroachment on military reservations.

Several smaller tracts were acquired through FDACS In-holdings and Additions land acquisition program to aid in the management of BRSF by acquisition of essential ownerships that were not acquired in the initial phases of the Florida Forever project. These parcels were identified as integral to the successful management of BRSF by allowing the introduction of prescribed fire to previously inaccessible areas, providing additional public access, and affording additional protections to environmentally sensitive areas.

2. Degree of Title Interest Held by the Board

The TIITF holds fee simple title to all 226,659.52 acres of BRSF. There are many sub-leases, easements, use agreements, and permits executed on the forest. The majority of these are small easements needed for power line access or ingress / egress to private property. Copies of the leases are on file at the Florida Department of Environmental Protection, Division of State Lands' (DSL) office.

3. Designated Single or Multiple-Use Management

BRSF is managed under a multiple-use concept by the FFS, under the authority of Chapters 253 and 589, F.S. The FFS is the lead managing agency as stated in TIITF Management Lease Number 3686 and 2346.

Multiple-use management 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 considering 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 BRSF provide for multiple-use management, 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 BRSF. Current and potential revenue producing activities for the BRSF include, but are not limited to:

- *Timber Harvests* – Timber harvests on BRSF will be conducted on a regular basis to improve forest health, promote wildlife habitat, restore plant communities, and provide other benefits.
- *Recreation Fees* – Fees are currently collected for day use, camping (through an online reservation system), OHV riding on Clear Creek, and miscellaneous commercial vendor permits.
- *Apiary Leases* – Apiary leases may be issued to local vendors as space allows.
- *Miscellaneous Forest Product Sales* – Other miscellaneous forest product sales, including but not limited to, palm fronds and berries, pinecones, pine seed, pine straw and firewood, may be considered.
- *Cell Phone Towers* – Cell phone tower placement will be considered on BRSF should there be interest from a cellular network carrier.

5. Conformation to State Lands Management Plan

Management of BRSF 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 253, 259, and 589, F.S.

6. Legislative or Executive Constraints

There are no known legislative or executive constraints specifically directed toward BRSF. The only known constraint would be the reversion clause when the U.S. Government property was conveyed, which states the property must be used for public purposes. FFS makes every effort to comply with applicable statutes, rules, and ordinances when managing BRSF. For example, when public facilities are developed on state forests, every effort is made to comply with Public Law 101-336, the Americans with Disabilities Act. As new facilities are developed, the universal access requirements of this law are followed in all cases except where the law allows reasonable exceptions (e.g., where handicap access is structurally impractical or where providing such access would change the fundamental character of the facility being provided).

7. Aquatic Preserve / Area of Critical State Concern

The property 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

BRSF has approximately 616 miles of forest boundary that adjoins private or other public ownership. Boundaries are managed by state forest personnel in accordance with the guidelines of the State Forest Handbook. The BRSF boundary lines are to be maintained by periodic clearing, repainting and reposting of state forest boundary signs by FFS personnel. See Exhibit B.

2. Improvements

BRSF has a wide variety of facilities including maintenance and shop facilities, offices, meeting rooms, and recreation facilities to facilitate management and the needs of the public. Perhaps the most unique of these facilities is a 1950s era sawmill used to produce rough cut lumber for use in our bridge and building maintenance program. BRSF contains 131 structures owned by FFS. Included in this are 10 public water systems and six (6) private residences. See Exhibit D for a map of the buildings and improvements at BRSF.

Buildings / Recreation infrastructures present on BRSF include:

- BFC Machine Shop, 2,160 sq. ft.
- BFC Equipment Storage, 2,403 sq. ft.
- BFC Road and Bridge Crew Office, 572 sq. ft.
- BFC Storage Shed – Back Gate, 4,501 sq. ft.
- BFC Volunteer Fire Department (VFD) Building, 400 sq. ft.
- BFC Fuel Island, 169 sq. ft.
- BFC Mechanic Shop, 8,800 sq. ft.
- BFC Ft. Jackie, 1,326 sq. ft.
- BFC Forestry Center Office, 4,160 sq. ft.
- BFC Oil Storage, 140 sq. ft.
- BFC Electronics Shop, 1,232 sq. ft.
- BFC Sawmill, 5,944 sq. ft.
- BFC Equipment Storage / Timber Marker, 2,314 sq. ft.
- BFC Oil Change Facility, 1,155 sq. ft.
- BFC Fire Tower, 64 sq. ft.
- BFC Training Room/Warehouse, 3,960 sq. ft.
- BFC Welding Shop, 2,124 sq. ft.
- BFC Pump House, 360 sq. ft.
- BFC Communication Building, 80 sq. ft.
- BFC Timber Marker Office, 2,340 sq. ft.
- BFC Storage Facility, 1,064 sq. ft.
- BFC Deer Cleaning Facility, 576 sq. ft.
- BFC BW7 Pole Barn, 7,310 sq. ft.
- BFC Inmate Bathroom, 168 sq. ft.
- BFC Road and Bridge Pole Barn, 15,200 sq. ft.
- Coldwater Tower, 64 sq. ft.
- Coldwater Tower Pump House, 49 sq. ft.

- Coldwater Tower Pole Barn, 616 sq. ft.
- Krul Lake Grist Mill, 338 sq. ft.
- Krul Lake Day Use Picnic Cover, 260 sq. ft.
- Krul Lake Concession, 260 sq. ft.
- Krul Lake Pump House, 99 sq. ft.
- Krul Lake Volunteer Shed, 108 sq. ft.
- Krul Lake Residence, 1,943 sq. ft.
- Krul Lake Restrooms, 896 sq. ft.
- Krul Lake Campground #1 Restroom, 520 sq. ft.
- Krul Lake Campground #2 Restroom, 520 sq. ft.
- Krul Lake Air Strip Storage, 64 sq. ft.
- Krul Lake Storage, 63 sq. ft.
- Krul Lake Gate House, 117 sq. ft.
- Krul Lake Smoke House, 112 sq. ft.
- Krul Lake Sugar Kettle Shed, 403 sq. ft.
- Bear Lake Pavilion, 3,726 sq. ft.
- Bear Lake Pump House, 220 sq. ft.
- Bear Lake Residence, 1,860 sq. ft.
- Bear Lake Bathroom #1, 520 sq. ft.
- Bear Lake BBQ Shelter, 110 sq. ft.
- Bear Lake Storage Shed, 198 sq. ft.
- Bear Lake Bathroom #2, 520 sq. ft.
- CWRA Bath House, 858 sq. ft.
- CWRA Stables, 7,260 sq. ft.
- CWRA Kennels, 3,813 sq. ft.
- CWRA Kitchen and Dining, 2,100 sq. ft.
- CWRA Stables / Paddock, 4,238 sq. ft.
- CWRA Pavilion, 2,970 sq. ft.
- CWRA Kiosk, 56 sq. ft.
- CWRA Residence, 1,536 sq. ft.
- CWRA Office / Shop, 4,422 sq. ft.
- CWRA Equipment Shed, 3,224 sq. ft.
- CWRA BBQ Grill Facility, 360 sq. ft.
- CWRA Pump House, 193 sq. ft.
- CRWA Equine Waste Shed, 594 sq. ft.
- CRWA Paddock Stalls, 5,456 sq. ft.
- CWRA Female Bath House, 1,007 sq. ft.
- CWRA New Bath House, 667 sq. ft.
- CWRA New Kiosk, 63 sq. ft.
- CWRA Fire Hose, 12 sq. ft.
- CWRA Volunteer Stalls, 1,023 sq. ft.
- CRWA Barn #5, 3,751 sq. ft.
- Holt Training Center Dormitory #1, 1,380 sq. ft.
- Holt Training Center Dormitory #2, 1,380 sq. ft.

- Holt Training Center Classrooms, 1,380 sq. ft.
- Holt Training Center Kitchen and Dining Hall, 1,716 sq. ft.
- Holt Training Center Teaching Pavilion, 3,017 sq. ft.
- Holt Training Center Residence, 1,608 sq. ft.
- Holt Training Center Restrooms, 456 sq. ft.
- Holt Training Center Dormitory #3, 2,079 sq. ft.
- Holt Training Center Water System, 400 sq. ft.
- Holt Training Center DJJ Offices, 3,600 sq. ft.
- Holt Training Center Resident Storage Building, 80 sq. ft.
- Holt Training Center Resident Covered Swing, 90 sq. ft.
- Holt Training Center Pump House, 210 sq. ft.
- Jackson Trail Shelter #1 – North of Highway 4, 80 sq. ft.
- Jackson Trail Shelter #2 – South of Highway 4, 80 sq. ft.
- Camp Paquette South Bath House, 447 sq. ft.
- Camp Paquette Outdoor Pavilion, 2,470 sq. ft.
- Camp Paquette Pump House, 150 sq. ft.
- Camp Paquette North Bath House, 452 sq. ft.
- Chemical Storage, 600 sq. ft.
- Cold Storage Facility, 1,700 sq. ft.
- Fertilizer Storage, 2,000 sq. ft.
- Seed Orchard Office and Equipment Storage, 4,100 sq. ft.
- Seed Orchard Oil Storage Shed, 100 sq. ft.
- Carpentry Shop and OALE Office, 4,800 sq. ft.
- Seed Orchard Pump House, 100 sq. ft.
- Seed Orchard Residence, 1,610 sq. ft.
- Seed Orchard Storage, 1,230 sq. ft.
- Orchard Seed, 10,500 sq. ft.
- Orchard Shop, 2,000 sq. ft.
- Seed Orchard Storage Building with Side Shed, 420 sq. ft.
- Seed Orchard Storage / Pole Barn, 3,300 sq. ft.
- Seed Orchard Pole Barn – Tree Improvement Section, 3,200 sq. ft.
- Clear Creek OHV Gatehouse, 210 sq. ft.
- Clear Creek OHV Pavilion, 521 sq. ft.
- Clear Creek OHV Bathroom, 546 sq. ft.
- Clear Creek OHV Equipment Pole Barn, 640 sq. ft.
- Clear Creek OHV Camper Pole Barn, 1,004 sq. ft.
- Hurricane Lake North Bath House, 483 sq. ft.
- Hurricane Lake South Bath House, 320 sq. ft.
- Hurricane Lake South Pump House, 220 sq. ft.
- Hurricane Lake North Pump House, 252 sq. ft.
- Hurricane Lake North Storage, 275 sq. ft.
- Hurricane Lake South New Bath House, 520 sq. ft.
- Karick Lake South Restroom, 837 sq. ft.
- Karick Lake South Equipment Storage, 228 sq. ft.

- Karick Lake North Restroom, 837 sq. ft.
- Karick Lake South Storage Shed, 36 sq. ft.
- Karick Lake South Pump House, 210 sq. ft.
- Karick Lake North Pump House, 361 sq. ft.
- Karick Lake Deer Cleaning Facility, 576 sq. ft.
- Karick Lake North New Bath House, 520 sq. ft.
- Bone Creek Picnic Shelter, 1,444 sq. ft.
- Bone Creek Pump House, 190 sq. ft.
- Bone Creek Storage Shed, 117 sq. ft.
- Bone Creek Restroom, 460 sq. ft.
- Bone Creek Storage Building, 81 sq. ft.
- Station and Shop – Okaloosa Forestry Station, 7,650 sq. ft.
- Okaloosa Forestry Station Pump House, 560 sq. ft.

3. On-Site Housing

FFS may establish additional on-site housing (mobile / manufactured home) on BRSF if deemed necessary to alleviate security and management issues. The need and feasibility of additional housing for the state forest will be evaluated and established if considered appropriate by the Center 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 DHR and FNAI for review and recommendations. This type of housing will not exceed three (3) homes per location with the possibility of more than one (1) on-site housing location occurring if considered necessary by the Center Manager and approved by the Director. Housing is prioritized based on FFS policy.

4. Operations Infrastructure

a. Operations Budget

For Fiscal Year 2024-2025, the total annual budget for BRSF was \$1,556,563.58. This amount includes expenses and contractual services. A summary budget for BRSF is contained in Exhibit W. Implementation of any of the activities within this management plan is contingent on availability of funding, other resources, and other statewide priorities.

b. Equipment

To carry out the mission of the FFS, BRSF maintains a diverse assemblage of equipment that includes fourteen (14) tractor / plow units, two (2) heavy tractors, eight (8) farm tractors, three (3) front-end loaders, four (4) dump trucks, eight (8) Type-6 engines, forty four (44) pickup trucks, two (2) SUVs, three (3) vans, four (4) ATVs, six (6) UTVs, and three (3) road graders. Additional equipment can be used from other resources throughout the Blackwater Forestry Center, when needed, for management activities.

c. Staffing

One hundred twenty (120) staff members are assigned to the Blackwater Forestry Center. Staff assigned to BRSF includes, but is not limited to, four (4) Forest Area Supervisors, three (3) Forestry Supervisor IIs, two (2) Forestry Supervisor Is, four (4) Foresters, one (1) Biological Scientist II, two (2) Park Service Specialists, seven (7) Recreation Park

Rangers, ten (10) Road Crew Park Rangers, four (4) Senior Foresters, eight (8) Senior Forest Rangers, and fifteen (15) Forest Rangers.

The Foresters and Park Service Specialists will conduct the forest management activities pertaining to timber harvesting, reforestation, and timber stand improvement. Timber sales will be prepared by the start of the fiscal year that they are to be sold, and the Foresters will oversee harvesting operations on assigned sales. Foresters will also help to plan and oversee timber stand improvement and reforestation operations. The Foresters and Park Service Specialists will also conduct forest inventory every year on approximately 10% of forest land.

The Biological Scientist II and one Park Ranger, under the direction of the Forest Ecology unit, will monitor and conduct management activities for the red-cockaded woodpecker population on the forest. They are also responsible for conducting surveys of seepage slopes, and other areas that may have high concentrations of threatened and endangered species.

The Forest Ecology unit also is responsible for the treatment and control of invasive species on the forest. The Forestry Supervisor II and two OPS Park Rangers carry out these duties year-round. The Forestry Supervisor II also represents the Florida Forest Service in the Six Rivers CISMA and also educates the public on an as-needed basis.

The Operations Section is responsible for prescribed burning, wildfire suppression, and fireline construction/maintenance on BRSF. All fire crews, regardless of assigned county, have an area of responsibility on the state forest.

The Recreation section is responsible for management of trails, primitive recreation sites, and campgrounds and day use areas including but is not limited to Krul, Bear Lake, Coldwater, Clear Creek, Camp Paquette, Hurricane Lake North, Hurricane Lake South, Karick Lake North, Karick Lake South, and Bone Creek. The lakes, boat ramps, and piers at Bear Lake, Hurricane Lake, and Karick Lake are the responsibility of the Florida Fish and Wildlife Conservation Commission.

The Maintenance section is responsible for the upkeep of vehicles and equipment, facilities, and roads. BRSF maintenance has 59 bridges, over 1,000 miles of roads, over 100 buildings, and over 200 pieces of equipment (including trucks) that are under the section's responsibility.

D. Additional Acquisitions and Land Use Considerations

1. Alternate Uses Considered

No alternate uses are being considered at this time. Alternate 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. Uses determined as incompatible include but are not limited to: water resource development projects, water supply projects, storm-water management projects, sewage treatment facilities, linear facilities, off highway vehicle use, dumping, mining, and oil well stimulation

(e.g. hydraulic fracturing / fracking), or as determined by law, regulation, or other incompatible uses as described elsewhere in the management plan. Deadhead logging is not compatible with nor considered appropriate use within or adjacent to the state forest boundaries.

2. Additional Land Needs

There are 109,663 acres adjacent to the property which should receive priority for acquisition because they would benefit the management of the property. The FFS will work with these property owners, on a willing seller basis, to acquire these parcels.

Purchasing of additional land within the optimal management boundary, with focus on the Florida Wildlife Corridor, would facilitate restoration, protection, maintenance, and management of the resources on BRSF. See Exhibit C.

3. Surplus Land Assessment

On conservation lands where FFS is the lead manager, FFS assesses and identifies areas for potential surplus land. This assessment consists of an examination of resource and operational management needs, public access and recreational use, and GIS modeling and analysis.

The evaluation of BRSF by FFS has determined that all portions of the area are being managed and operated for the original purposes of acquisition, as well as, 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. Therefore, no portion of the BRSF is recommended for potential surplus.

4. Adjacent Conflicting Uses

During the development of this management plan, FFS staff identified and evaluated adjacent land uses, reviewed current comprehensive plans, and future land use maps in making the determination that there are currently no known conflicting adjacent land uses. Additionally, FFS staff maintains liaison with adjacent landowners 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 BRSF.

5. Compliance with Local Comprehensive Plans

This plan was submitted to the Board of County Commissioners in Okaloosa and Santa Rosa Counties for review and compliance with their local comprehensive plans. See Exhibit U.

6. Utility Corridors and Easements

Due to the size of BRSF and the existence of a significant acreage of private in-holdings, numerous utility corridors and easements exist on this forest. Included are easements for gas pipelines, power lines, and access. Copies of these easements are available upon request. The use of state forest property for utility lines, pipelines, linear facilities and transportation

corridors has and will continue to be discouraged; however, with hundreds of miles of roads containing numerous private residences, it is inevitable that new easements will ultimately be issued.

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. Currently there are five (5) established utility corridors on BRSF. FFS does not consider BRSF 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., listed species and archaeological sites), minimize habitat fragmentation, limit disruption of management activities, including prescribed burns, and 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. 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 TIITF. Requests for linear facility uses will be handled according to the Governor and the Cabinet's linear facilities policy.

E. Agency and Public Involvement

1. Responsibilities of Managing Agencies

FFS is the lead managing agency, responsible for overall forest management and public recreation activities, as stated in TIITF Management Lease Numbers 3686 and 2346. Pursuant to the management lease, the lead managing agency may enter into further agreements or subleases on any part of the forest.

FFS will cooperate with the DHR regarding appropriate management practices on historical or archaeological sites on the property as stated in Section 267.061, F.S. DHR will be consulted prior to the initiation of ground disturbing activities by the FFS or any other agency involved with the forest as required per DHR guidelines.

FDACS Office of Agricultural Law Enforcement (OALE) assumes law enforcement responsibilities, while FWC enforces hunting regulations, cooperatively sets hunting season dates with FFS, employs a small staff of biologists and technicians to conduct wildlife management activities, with input from FFS.

The NFWFMD will be consulted and involved in matters relating to water resources and hydrological restoration as appropriate.

2. Law Enforcement

Primary law enforcement responsibilities will be handled by FDACS Office of Agricultural Law Enforcement (OALE). Rules governing the use of BRSF are stated in Chapter 5I-4, F.A.C. OALE will also assist with open burning and wildfire investigations as needed.

Officers from FWC will enforce fish and wildlife regulations and aid in enforcing state forest rules. The Okaloosa County and Santa Rosa County Sheriff's Offices provide additional assistance as needed.

Special rules under Chapter 5I-4 of the F.A.C. were promulgated for FDACS, FFS, to manage the use of state lands and better control traffic, and to oversee camping and other uses on BRSF.

3. Wildland Fire

FFS has the primary responsibility for prevention, detection, and suppression of wildfires wherever they may occur. FFS shall provide leadership and direction in the evaluation, coordination, allocation of resources, and monitoring of wildfire management and protection (F.S. 590.01). The FFS also has the responsibility of authorizing prescribed burns (F.S. 590.02 [1][i]).

4. Public and Local Government Involvement

This plan has been prepared and will be implemented by FFS. FFS responds to public involvement through liaison committees, management plan advisory groups, public hearings, and through ongoing direct contact with user groups. Land Management Review Teams, as coordinated by the DSL, have conducted reviews of management plan implementation in 2012, 2017 and 2021. See Exhibit T. The review teams' recommendations are addressed in this plan as appropriate.

A State Forest Liaison Committee of private citizens and representatives of forest user groups meet semi-annually to provide input on forest management activities and share their ideas with FFS staff to improve the forest.

This plan was developed with input from the BRSF Management Plan Advisory Group (MPAG) and was reviewed at a public hearing on December 3, 2025. A summary of the advisory group's meetings and discussions, as well as written comments received on the plan, are included in Exhibit V. The Acquisition and Restoration Council (ARC) public hearing and meeting serve as an additional forum for public input and review of the plan.

5. Volunteers

Volunteers are important assets to BRSF. Volunteer activities may be one-time events or recurring projects and routine maintenance. Additional volunteer recruitment will be encouraged to assist with other activities to further the FFS's mission.

6. Friends of Florida State Forests

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

The FFSF program is referenced in Chapter 589.012, F.S. For more information visit: www.floridastateforests.org.

III. Archaeological / Cultural Resources and Protection

A. Past Uses

Private individuals and land and / or timber companies originally owned the area which is now BRSF. Under such ownership, the land was used in a variety of ways including hunting, logging, cattle grazing, farming, pecan orchards, and naval store operations. The property was extensively logged over in the early 1900s. The original tract of BRSF was acquired in the 1930s from tax delinquent private landowners by the U.S. Land Resettlement Administration in an attempt to provide sustenance farming for the poor. These lands were then leased to the Florida Board of Forestry in 1938, which established BRSF. The original tract from the Federal Government was in a cutover condition. There has been evidence of old logging railroad beds and roads, particularly, the Bagdad Lumber Company railroad that was utilized in the early 1900's. There is also historical recollection of old stagecoach roads that were utilized to cross the forest during the late 19th and early 20th centuries; though there is no documented occurrence that remains today.

The previous owners of the Juniper Creek Tract, Hutton Tract, IP Ates Pasture, Yellow River Ravines, TNC Rayonier parcels, Clear Creek, and Wolfe Creek Tracts were primarily commercial timber and timber investment companies. As such, the land was managed intensively for timber production with the uplands in plantation management consisting of slash, loblolly, and sand pine plantations, although some longleaf pine plantations are present. Hunting leases and food plots were scattered across these tracts.

B. Archaeological and Historical Resources

A review of information contained in the Florida Department of State, DHR, Florida Master Site file has determined there are 236 archaeological sites, three (3) standing structures, two (2) historical bridges, two (2) cemeteries and two (2) archaeological resource groups on BRSF. Florida Forest Service personnel have identified at least 15 other potential sites, as well as 18 manmade logging channels and over 500 possible points of evidence of old logging railroad beds, as well as 10 cemeteries that are not recorded in the Master Site File. Local field staff will work with DHR to confirm or verify whether these sites are archaeological sites or contain archaeological resources. None of the sites are eligible to be listed in the National Register of Historic Places. See Table 4 and Exhibit H for a cultural resource roster.

Table 4. Archaeological and Historical Sites on BRSF

Site ID	Site Name	Site Type
OK00110	Kennedy Bridge	Archaeological Site
OK00113	Burnhill Plantation Mill	Archaeological Site
OK00118	West Horse Creek	Archaeological Site
OK00119	East Horse Creek	Archaeological Site
OK00120	North Panther Creek	Archaeological Site
OK00121	Middle Panther Creek	Archeological Site
OK00122	Mare Creek	Archeological Site
OK00123	Lower Panther Creek	Archeological Site
OK00127	E H & A Okaloosa 25	Archeological Site
OK00128	E H & A Okaloosa 5	Archeological Site
OK00479	Boundary Line	Archeological Site
OK00507	NN	Archeological Site
OK00508	NN	Archeological Site
OK00509	NN	Archeological Site
OK00510	NN	Archeological Site
OK00511	NN	Archeological Site
OK00512	NN	Archeological Site
OK00513	NN	Archeological Site
OK00514	NN	Archeological Site
OK00515	NN	Archeological Site
OK00526	LM90-58	Archeological Site
OK00527	LM90-59	Archeological Site
OK00528	LM90-60	Archeological Site
OK00529	LM90-61	Archeological Site
OK00530	LM90-62	Archeological Site
OK00531	LM90-68	Archeological Site
OK00532	LM90-69	Archeological Site
OK00541	LM 92-4	Archeological Site
OK00542	LM 92-516	Archeological Site
OK00543	LM 92-7	Archeological Site
OK00544	LM 92-8	Archeological Site
OK00545	LM 92-9/11	Archeological Site
OK00546	LM 92-10/12	Archeological Site
OK00547	LM 92-13	Archeological Site
OK00548	LM 92-14	Archeological Site
OK00550	LM 92-17	Archeological Site
OK00551	LM 92-18	Archeological Site
OK00552	LM 92-19	Archeological Site
OK00553	LM 92-20	Archeological Site

Site ID	Site Name	Site Type
OK00554	LM 92-21	Archeological Site
OK00559	LM 92-26	Archeological Site
OK00566	LM 92-33	Archeological Site
OK00567	LM 92-34	Archeological Site
OK00569	LM 92-36	Archeological Site
OK00570	LM 92-37	Archeological Site
OK00571	LM 92-38	Archeological Site
OK00572	LM 92-39	Archeological Site
OK00573	LM 92-40	Archeological Site
OK00574	LM 92-41	Archeological Site
OK00575	LM 92-42	Archeological Site
OK00576	LM 92-43	Archeological Site
OK00577	LM 92-44	Archeological Site
OK00610	LM 92-46	Archeological Site
OK00611	LM 92-47	Archeological Site
OK00613	Left Field Hammock	Archeological Site
OK00614	LM 92-50	Archeological Site
OK00615	LM 92-51	Archeological Site
OK00616	LM 92-52	Archeological Site
OK00617	LM 92-53	Archeological Site
OK00618	LM 92-54/55	Archeological Site
OK00619	LM 92-56	Archeological Site
OK00620	LM 92-58	Archeological Site
OK00621	LM 92-59	Archeological Site
OK00622	LM 92-60	Archeological Site
OK00624	LM 92-61	Archeological Site
OK00625	LM 92-62	Archeological Site
OK00626	LM 92-63	Archeological Site
OK00627	LM 92-64	Archeological Site
OK00628	LM 92-65	Archeological Site
OK00629	LM 92-66	Archeological Site
OK00630	LM 92-67	Archeological Site
OK00633	LM 92-70	Archeological Site
OK00634	92-71	Archeological Site
OK00684	Karick Lake	Archeological Site
OK00901	P19-1	Archeological Site
OK00902	P19-2	Archeological Site
OK00908	SITCO #23	Archeological Site
OK00909	SITCO #24	Archeological Site
OK00910	SITCO #25	Archeological Site

Site ID	Site Name	Site Type
OK00911	SITCO #26	Archeological Site
OK00924	SITCO #33	Archeological Site
OK00925	SITCO #34	Archeological Site
OK00926	SITCO #35	Archeological Site
OK01659	Guest Lake Landing	Archeological Site
OK01660	Floridale #2	Archeological Site
OK01661	Floridale #3	Archeological Site
OK02248	Deer Toe Site	Archeological Site
OK02695	8OK2695	Archeological Site
OK02913	Bone Creek Road / Bone Creek #3	Bridge
OK02915	Peacock Road / Bailey Branch	Bridge
OK02942	Blackwater River Pilings	Archeological Site
OK02957	Logging Railroad R17	Archeological Site
SR00078	EH & A Santa Rosa 25	Archeological Site
SR00079	Coral Snake	Archeological Site
SR00242	NN	Archeological Site
SR00246	NN	Archeological Site
SR00247	NN	Archeological Site
SR00248	NN	Archeological Site
SR00249	Camp Lowery	Archeological Site
SR00250	NN	Archeological Site
SR00761	Sweetwater Creek 1	Archeological Site
SR00762	Sweetwater Creek 2	Archeological Site
SR00789	NN	Archeological Site
SR00797	NN	Archeological Site
SR00801	NN	Archeological Site
SR00803	NN	Archeological Site
SR00808	NN	Archeological Site
SR00809	NN	Archeological Site
SR00810	NN	Archeological Site
SR00811	NN	Archeological Site
SR00812	NN	Archeological Site
SR00813	NN	Archeological Site
SR00814	NN	Archeological Site
SR00815	NN	Archeological Site
SR00816	NN	Archeological Site
SR00817	NN	Archeological Site
SR00818	NN	Archeological Site
SR00822	NN	Archeological Site
SR00823	NN	Archeological Site

Site ID	Site Name	Site Type
SR00824	NN	Archeological Site
SR00825	NN	Archeological Site
SR00826	NN	Archeological Site
SR00828	SITCO Survey 2	Archeological Site
SR00829	NN	Archeological Site
SR00832	NN	Archeological Site
SR00833	NN	Archeological Site
SR00834	NN	Archeological Site
SR00835	NN	Archeological Site
SR00836	NN	Archeological Site
SR00837	NN	Archeological Site
SR00838	NN	Archeological Site
SR00839	Sweetwater Creek Mill	Archeological Site
SR00849	Long Branch GV	Archeological Site
SR00865	LM90-12	Archeological Site
SR00866	LM90-13	Archeological Site
SR00868	LM90-15	Archeological Site
SR00869	LM90-16	Archeological Site
SR00870	LM90-17	Archeological Site
SR00871	LM90-18	Archeological Site
SR00872	LM90-19	Archeological Site
SR00876	LM90-23	Archeological Site
SR00877	LM90-24	Archeological Site
SR00878	LM90-25	Archeological Site
SR00879	LM90-26	Archeological Site
SR00880	LM90-27	Archeological Site
SR00881	LM90-28	Archeological Site
SR00882	LM90-29	Archeological Site
SR00883	LM90-30	Archeological Site
SR00884	LM90-31	Archeological Site
SR00885	LM90-32	Archeological Site
SR00886	LM90-33	Archeological Site
SR00887	LM90-34	Archeological Site
SR00888	LM90-35	Archeological Site
SR00889	LM90-36	Archeological Site
SR00890	LM90-37	Archeological Site
SR00891	Concord / Simmons Cemetery	Cemetery
SR00892	LM90-39	Archeological Site
SR00893	LM90-40	Archeological Site
SR00894	LM90-41	Archeological Site

Site ID	Site Name	Site Type
SR00895	LM90-42	Archeological Site
SR00896	LM90-43	Archeological Site
SR00897	LM90-44	Archeological Site
SR00903	LM90-50	Archeological Site
SR00904	LM90-51	Archeological Site
SR00905	LM90-52	Archeological Site
SR00906	LM90-53	Archeological Site
SR00907	LM90-54	Archeological Site
SR00910	LM90-57	Archeological Site
SR00911	LM90-63	Archeological Site
SR00912	LM90-64	Archeological Site
SR00913	LM90-65	Archeological Site
SR00915	LM90-67	Archeological Site
SR00916	LM90-70	Archeological Site
SR00918	LM90-72	Archeological Site
SR00919	LM90-73	Archeological Site
SR00922	LM90-76	Archeological Site
SR00923	LM90-77	Archeological Site
SR00927	BW3-D	Archeological Site
SR01018	Springhill Transect 3	Archeological Site
SR01019	Springhill Transect	Archeological Site
SR01021	MCLELLAN Transect 3	Archeological Site
SR01028	Munson Post Office	Standing Structure
SR01031	Spears House	Standing Structure
SR01175	Floridale Transect 1	Archeological Site
SR01176	Floridale Transect 2A	Archeological Site
SR01177	Floridale Transect 2B	Archeological Site
SR01178	MCLELLAN Transect 2	Archeological Site
SR01194	LM91-1	Archeological Site
SR01196	LM91-3	Archeological Site
SR01197	LM92-2	Archeological Site
SR01198	LM92-3	Archeological Site
SR01199	Gum Landing Hammock 1	Archeological Site
SR01200	Gum Landing Hammock 2	Archeological Site
SR01201	Gum Landing Hammock 3	Archeological Site
SR01215	NN	Archeological Site
SR01216	Sellersville Cemetery	Cemetery
SR01217	NN	Archeological Site
SR01218	NN	Archeological Site
SR01221	NN	Archeological Site

Site ID	Site Name	Site Type
SR01222	NN	Archeological Site
SR01226	Big Juniper Mill	Archeological Site
SR01227	Reedy Creek Dam	Archeological Site
SR01231	Cotton's Chop Mill	Archeological Site
SR01233	Ates Creek Mill	Archeological Site
SR01237	Coon Camp Mill	Archeological Site
SR01240	Dixon Wasteway	Archeological Site
SR01243	Coldwater Creek Dam	Archeological Site
SR01264	P11-1	Archeological Site
SR01265	P11-2	Archeological Site
SR01266	P11-3	Archeological Site
SR01267	P16-1	Archeological Site
SR01269	SITCO #1	Archeological Site
SR01270	SITCO #2	Archeological Site
SR01271	SITCO #3	Archeological Site
SR01272	SITCO #4	Archeological Site
SR01273	SITCO #5	Archeological Site
SR01281	S3-15-1	Archeological Site
SR01285	S3-21-1	Archeological Site
SR01288	SITCO #8	Archeological Site
SR01290	SITCO #10	Archeological Site
SR01298	SITCO #11	Archeological Site
SR01299	J5SR001	Archeological Site
SR01300	J5SR002	Archeological Site
SR01301	SITCO #12	Archeological Site
SR01305	SITCO #16	Archeological Site
SR01306	SITCO #17	Archeological Site
SR01307	SITCO #18	Archeological Site
SR01308	SITCO #19	Archeological Site
SR01338	Wolftrap Branch	Archeological Site
SR01339	Darryl	Archeological Site
SR01368	NN	Archeological Site
SR01382	Dixon Creek Log Ditch	Archeological Site
SR01399	Julian Mill	Archeological Site
SR01501	Miller Bluff West	Archeological Site
SR01502	Harold SE #2&3	Archeological Site
SR01503	West Pitts River Boat Ramp	Archeological Site
SR01915	Shop	Archeological Site
SR01916	Fish Hatchery Bridge	Archeological Site
SR02125	Louisville and Nashville (L&N) Railroad	Resource Group

Site ID	Site Name	Site Type
SR02126	Bagdad Lumber Co. Railroad	Resource Group
SR02143	Herty Cup Cluster	Archeological Site
SR02144	Metal Cup Cluster	Archeological Site
SR02600	J22	Archeological Site
SR02722	Lighter Knot Dam	Archeological Site

C. Ground Disturbing Activities

Representatives of DHR and FNAI will be consulted prior to the initiation of proposed ground disturbing activity as required per DHR guidelines. FFS will make every effort to protect known archaeological and historical resources. FFS will follow the “Management Procedures for Archaeological and Historical Sites and Properties on State Owned or Controlled Lands” and will comply with all appropriate provisions of Section 267.061(2)(a,b) F.S. See Exhibit I. Any significant ground disturbing activity proposal will be submitted to DHR’s Compliance and Review office for review prior to undertakings and allow the Division a reasonable opportunity to comment. 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, six (6) local district FFS staff are trained by DHR as ARM Monitors. FFS will pursue opportunities for additional personnel to receive ARM Monitor training. FFS will consult with public lands archaeologists at DHR as necessary to determine an appropriate priority and frequency of monitoring at each of the listed sites, and any protection measures that might be required. Unless required on a more frequent basis, approximately 10% of all archaeological and historical sites within the forest will be monitored at least annually. FFS field staff will monitor the listed sites to note condition and any existing or potential threats.

Any known archaeological and historical sites will be identified on maps to aid state forest personnel and if necessary, law enforcement personnel in patrolling and protecting sites. Applicable surveys will be conducted by trained FFS staff or contracted archaeologists during the process of planning and implementing multiple-use management activities. FFS personnel will remain alert for any environmentally significant resource discoveries 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 limited types of ground disturbing activities in which DHR recommends monitoring. 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

The primary purpose for FFS management of BRSF is protection of upland and wetland and natural communities through a stewardship ethic to assure these resources will be available for future generations. Management activities will be executed in a manner to minimize soil erosion, maintain and protect / enhance the hydrological resources, and protect and sustain groundcover on BRSF. If problems arise, corrective action will be implemented by FFS staff under the direction of FFS’s

Forest Hydrology Section. Efforts will be made to monitor and protect BRSF's waterbodies and their associated water quality and native plants and animals.

BRSF falls within the jurisdiction of the NFWFMD. FFS will coordinate with NFWFMD and / or FDEP, as necessary, on activities pertaining to water resource protection and management. Any activities requiring water management district permits will be handled accordingly. FFS will work with NFWFMD to ensure that levels and quality of ground and surface water resources are appropriately monitored.

A. Soils and Geologic Resources

1. Resources

Soil information for BRSF was obtained from the United States Department of Agriculture Natural Resources Conservation Service (NRCS). The predominant soils listed by the NRCS include: Lakeland sand; Troup loamy sand; Bibb-Kinston association; Dothan fine sandy loam; Kinston, Johnston, and Bibb soils; and Dorovan muck. Detailed information on all soils present on BRSF may be found in Exhibit J.

2. Soil Protection

In the 1930s, soil conservation was a stated reason for reserving the original parts of what is now BRSF. Logging, farming, and other human activities had removed much of the vegetation covering the highly erosive soils in the Blackwater River watershed. Sheet and rill erosion as well as many large gullies filled the streams with sediment.

Reforestation and careful management have stopped most of the erosion, however, there are ongoing issues. Unpaved forest roads continue to erode, washing sediment into streams and hundreds of turnout ditches, which require frequent cleaning. Unauthorized OHV use has damaged fragile vegetation and led to new erosion. Newly acquired lands, particularly the steep, sandy hills of the Yellow River Ravines Unit, have ongoing issues with OHV use. A large, active gully in the Julian Mill Creek drainage pours sediment into a wetland. There are also several other active gullies on Blackwater River State Forest; particularly in the Bone Creek and Juniper Tracts. Logging on steep slopes has the potential for soil compaction and erosion.

Management activities will be executed in a manner to minimize soil erosion. Silvicultural Best Management Practices (BMPs) will be strictly enforced. Primary and secondary roads, particularly those on steep slopes, will be paved or rocked when funding is available. Roads that are not necessary for public access and forest management will be closed. When necessary, closed roads will be stabilized with berms and/or vegetation; otherwise, they will be allowed to naturally revegetate. If 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. Unauthorized OHV and vehicular use will be discouraged by various methods, including signage, education, fences and gates, barrier construction, and law enforcement by OALE and FWC.

To provide necessary materials for road maintenance, a series of borrow pits are maintained across the forest. Currently, only four (4) borrow pits are being actively used across the forest. Many have been closed permanently due to the pits being exhausted of desirable soil, and others are closed due to vandalism and illegal dumping. See Exhibit Y. Pits that are permanently closed have had access closed off in order to allow natural revegetation of the site. If natural revegetation is not sufficient in a manner that reestablishes vegetative ground cover, the Florida Forest Service will reintroduce vegetation to the site.

B. Water Resources

The water resources on BRSF 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 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. See Exhibit L for a map of the water resources at BRSF.

1. Resources

The headwater tributaries of the Blackwater River lie in the Conecuh National Forest in southern Alabama, and the river proper begins just north of the Alabama-Florida state line. The Blackwater River and its three (3) major tributaries, Sweetwater Creek, Juniper Creek and Coldwater Creek, flows south through BRSF towards the Gulf of Mexico. The Blackwater River empties into Blackwater Bay in Milton, Florida.

In the BRSF area, practically the entire Blackwater River watershed has been protected in its natural state since the mid-1930s. Presently, there are some holdings along the river and its tributaries that are under private ownership. These holdings are generally used for recreational or agricultural purposes. The remaining river front property is within BRSF and administered by FFS.

2. Water Classification

The FDEP's Standards Development Section reports there are no waters on or near the site listed as exceptions to Class III in Subparagraphs 62-302.400, F.A.C.; therefore, all of the surface waters on or adjacent to the site are classified as Class III waters (Fish Consumption; Recreation, Propagation and Maintenance of a Healthy, Well-Balanced Population of Fish and Wildlife), which is the statewide default classification under Subsection 62-302.400, F.A.C.

There are no Outstanding Florida Waters (OFWs) on BRSF. However, parts of the state forest are covered by the Blackwater River State Park OFW, per subparagraph 62-302.700(9)(c)9, F.A.C., and the Blackwater River Special Water OFW, per subparagraph 62-302.700(9)(i)3, F.A.C. There are other OFWs downstream of BRSF, however, they are over 5 miles away from the nearest boundary of the state forest.

Other important managed areas that are within or adjacent to BRSF include the Blackwater Wildlife Management Area. See Exhibit K.

The Yellow River is among the swiftest flowing rivers in Florida and drains about 1,300 square miles of mostly forested land. The river is narrow with clear tan water and a sand bottom resulting in a “yellow” appearance. It discharges through an extensive delta system into the northern portion of Blackwater Bay. The lower river is part of the Yellow River Marsh Aquatic Preserve and is designated an Outstanding Florida Water.

3. Water Protection

An objective for the acquisition and management of this public land was to optimize ecological restoration, protect and manage existing natural resources, and facilitate sensible public use. Concern over a continuous usable source of fresh water requires emphasis on protecting this vital resource. Water resource protection measures, at a minimum, will be accomplished using BMP guidelines as described in the most current version of Silviculture BMP Manual.

BRSF is cooperating with other agencies in monitoring water resources including groundwater quality and quantity. FFS will coordinate with NFWMD, as necessary, on activities pertaining to water resource protection and management. Any activities requiring water management district permits will be handled accordingly. FFS will work with NFWMD to monitor levels and quality of ground and surface water resources and to address hydrological restoration. NFWMD has seven (7) groundwater monitoring wells of varying depths along the eastern and southeastern sides of the forest.

In addition, BRSF Resource Section staff has and will continue to work closely with FDEP on biological assessments of the water quality of the Blackwater River and its tributaries. According to the most recent assessment, Yellow River was previously classified as impaired due to several analytes being detected at higher levels but has since been delisted. The Blackwater River and its tributary, Coldwater Creek, are presently classified as impaired under section 303(d) of the Clean Water Act. Water bodies that do not meet applicable water quality standards are placed on the section 303(d) list of water bodies not meeting federal Clean Water Act standards. Water bodies on the 303(d) list require development of a Total Maximum Daily Load (TMDL) for each analyte found to not meet standards. TMDLs were developed for Yellow River, which allowed it to be removed from the 303(d) list.

Sedimentation is one of the primary reasons several of the forest’s water bodies are classified as being impaired. The majority of the sediment produced on the forest is from unpaved roads, user established roads, and primitive recreation sites. BRSF staff continues to address these issues by closing unneeded roads, surfacing other roads, installing rock at low-water stream crossings, and restricting vehicle access to the more sensitive primitive recreation sites. Roads and primitive recreation sites are closed permanently or seasonally through installation of signs, gates, fencing, and traffic barricades. Since January 2014, FFS staff at Blackwater have overhauled 783 miles of roads, installed or replaced 135 culverts, and installed or repaired 24 low water crossings. FFS will continue to monitor and make necessary repairs and take proactive measures to prevent and reduce erosion when possible.

4. Swamps, Marshes, and Other Wetlands

In addition to the waterways, BRSF currently contains approximately 40,000 acres in ten hydric communities: baygall, blackwater stream, bottomland forest, depression marsh, dome swamp, floodplain swamp, river floodplain lake, seepage slope, shrub bog, and wet prairie. Maintenance of naturally occurring wetlands communities is a high priority and will be accomplished through appropriate management activities, including prescribed fire, adherence to Silviculture BMPs, and treatment of invasive species.

5. Wetlands Restoration

Wetland restoration objectives on BRSF include erosion control, restoration of hydrology and / or hydro-period, 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, invasive species control, hardwood removal and nuisance vegetation management, 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, BRSF with assistance from the FFS Forest Management Bureau, may pursue funding to develop and implement wetlands restoration projects. Additionally, cooperative research among FFS, other state agencies, and the federal government will provide valuable information in determining future management objectives of wetlands restoration.

6. Florida Department of Environmental Protection Basin Management Action Plan (BMAP)

Currently, BRSF does not reside in an active BMAP zone.

A Basin Management Action Plan (BMAP) is a "blueprint" for restoring impaired waters by reducing pollutant loadings to meet the allowable loadings established in a Total Maximum Daily Load (TMDL). It represents a comprehensive set of strategies, including, but not limited to: permit limits on wastewater facilities, urban and agricultural best management practices, conservation programs, financial assistance, and revenue generating activities, all designed to implement the pollutant reductions established by the TMDL. These broad-based plans are developed with local stakeholders, as they rely on local input and local commitment, and are adopted by Secretarial Order to be enforceable.

The BMAP provides for phased implementation under Subparagraph 403.067(7)(a)1, F.S. The phased BMAP approach allows for the implementation of projects designed to achieve incremental reductions, while simultaneously monitoring and conducting studies to better understand the water quality dynamics (sources and response variables) in the watershed.

C. Flora and Fauna Resources

1. Rare, Threatened, and Endangered Species

BRSF is part of an important wildlife corridor that includes Eglin Air Force Base, Conecuh National Forest, and the Yellow River Wildlife Management Area. The intent of FFS is to manage BRSF in a fashion that will minimize the potential for wildlife species to become imperiled. FFS employees continually monitor the forest for threatened or endangered species while conducting management activities. Specialized management techniques may be used, as necessary, to protect or increase protection of rare, threatened, and endangered species, as applicable for both plants and animals. See Table 5.

Table 5. Rare, Threatened, or Endangered Species Documented on BRSF

Common Name	Scientific Name	FNAI Global Rank*	FNAI State Rank*	Federal Status*	State Status*
<i>Plants</i>					
Pine barren false foxglove	<i>Agalinis georgiana</i>	G1	S1	N	E
Incised groove-bur	<i>Agrimonia incisa</i>	G3G4	S2	N	T
Hairy wild indigo	<i>Baptisia hirsuta</i>	G3T3	S3	N	T
Sweet-shrub	<i>Calycanthus floridus</i>	G5	S2	N	E
Naked-stemmed panic grass	<i>Dichanthelium nudicaule</i>	G3Q	S3	N	T
Florida thread-leaf sundew	<i>Drosera filiformis</i> var. <i>floridana</i>	G4TNR	S1	N	E
Trailing arbutus	<i>Epigaea repens</i>	G5	S2	N	E
Dwarf witch-alder	<i>F. milleri</i>	G2	S1	N	E
Mountain laurel	<i>Kalmia latifolia</i>	G5	S3	N	T
Pineland bogbutton	<i>Lachnocaulon digynum</i>	G3G4	S3	N	T
Panhandle lily	<i>Lilium iridollae</i>	G3	S3	N	E
Boykin's lobelia	<i>Lobelia boykinii</i>	G2?	S1	UR	E
Hummingbird flower	<i>Macranthera flammea</i>	G3	S2	N	E
Narrowleaf hornpod	<i>Mitreola angustifolia</i>	G4G5	S2	N	N
Piedmont jointgrass	<i>Mnesithea tuberculosa</i>	G3	S3	N	T
Narrowleaf Naiad	<i>Najas filifolia</i>	G3	S2	UR	T
West Florida cowlily	<i>Nuphar ulvacea</i>	G5T2T3	S2	N	N
Primrose-flowered butterwort	<i>Pinguicula primuliflora</i>	G3G4	S3	N	E
Little club-spur orchid	<i>Plantanthera clavellata</i>	G5	S1	N	E
Yellow fringeless orchid	<i>Plantanthera integra</i>	G3G4	S2	N	E
Arkansas oak	<i>Quercus arkansana</i>	G3	S3	N	T
Small-flowered meadowbeauty	<i>Rhexia parviflora</i>	G2G3	S2	UR	E
Florida flame azalea	<i>Rhododendron austrinum</i>	G3	S3	N	E
Hairy-peduncled beaksedge	<i>Rhynchospora crinipes</i>	G3	S3	N	E
Longbeak arrowhead	<i>Sagittaria australis</i>	G4	S2	N	N
Wherry's redflower pitcherplant	<i>Sarracenia alabamensis</i> ssp. <i>wherryi</i>	G3T1?	S1	UR	T

Gulf coast redflower pitcherplant	<i>Sarracenia rubra</i> ssp. <i>gulfensis</i>	G3G4T2T3	S2S3	UR	T
Chaffseed	<i>Schwalbea americana</i>	G2	S1	E	E
Florida ladies'-tresses	<i>Spiranthes floridana</i>	G1	S1	N	N
Gulf coast silvery aster	<i>Symphotrichum concolor</i> var. <i>devestitum</i>	G5T2	S2	N	N
Harper's yellow-eyed grass	<i>Xyris scabrifolia</i>	G3	S3S4	N	T
<i>Invertebrates</i>					
A stonefly	<i>Acroneuria evoluta</i>	G5	S1	N	N
Spring-loving psiloneuran caddisfly	<i>Agarodes libalis</i>	G3	S3	N	N
Zigzag Blackwater River caddisfly	<i>Agarodes ziczac</i>	G2	S2	N	N
Small pocket gopher aphodius beetle	<i>Alloblackburneus aegrotus</i>	G3G4	S3?	N	N
Gopher tortoise aphodius beetle	<i>Alloblackburneus troglodytes</i>	G2G3	S2	N	N
Lace-winged roadside skipper	<i>Amblyscirtes aesculapius</i>	G4	S3S4	N	N
Dusky roadside-skipper	<i>Amblyscirtes alternata</i>	G3G4	S2	N	N
Reversed roadside-skipper	<i>Amblyscirtes reversa</i>	G3	S1	N	N
Arogos skipper	<i>Atrytone arogos arogos</i>	G2G3T1T2	S2	N	N
A mayfly	<i>Baetisca becki</i>	G2G3	S2	N	N
Humpback mayfly	<i>Baetisca gibbera</i>	G5	S1S2	N	N
A mayfly	<i>Baetisca rogersi</i>	G4	S3	N	N
Brown elfin	<i>Callophrys augustinus</i>	G5	S2	N	N
Hessel's hairstreak	<i>Callophrys hesseli</i>	G3	S2	N	N
Frosted elfin	<i>Callophrys irus</i>	G3	S1	N	N
Spring azure	<i>Celastrina ladon</i>	G4G5	S2?	N	N
Peters' cheumatopsyche caddisfly	<i>Cheumatopsyche petersi</i>	G3	S2	N	N
Floridian finger-net caddisfly	<i>Chimarra florida</i>	G4	S3S4	N	N
Amber pocket gopher aphodius beetle	<i>Cryptoscatomaseter gambrinus</i>	G2	S1S2	N	N
Hubbell's pocket gopher aphodius beetle	<i>Cryptoscatomaseter hubbelli</i>	GNR	S3?	N	N
White-sand tiger beetle	<i>Ellipsotera wapleri</i>	G3G4	S2	N	N
Say's spiketail	<i>Zoraena sayi</i>	G3	S3	N	N
Rare pocket gopher aphodius beetle	<i>Cryptoscatomaseter pholetus</i>	G1G2	S1	N	N
Broad-sided pocket gopher aphodius beetle	<i>Cryptoscatomaseter platypleurus</i>	G2G3	S2	N	N
Eastern tailed blue	<i>Cupido comyntas</i>	G5	S2	N	N
Large pocket gopher aphodius beetle	<i>Dellacasiellus laevigatus</i>	G3G4	S3?	N	N
American sand-burrowing mayfly	<i>Dolania americana</i>	G4	S2	N	N

Southeastern spinyleg	<i>Dromogomphus armatus</i>	G4	S3	N	N
White-sand tiger beetle	<i>Ellipsoptera wapleri</i>	G3G4	S2	N	N
Wild indigo duskywing	<i>Erynnis baptisiae</i>	G5	S2S3	N	N
Mottled duskywing	<i>Erynnis martialis</i>	G3	SH	N	N
Pocket gopher flower beetle	<i>Euphoria discicollis</i>	G2	S1S2	N	N
Gopher tortoise burrow fly	<i>Eutrichota gopheri</i>	G2	S2S3	N	N
Narrow pigtoe	<i>Fusconaia escambia</i>	G1G2	S1	T	FT
Gopher tortoise hister beetle	<i>Geomysaprinus xerobatis</i>	G2G3	S1S2	N	N
Selys' sunfly	<i>Helocordulia selysii</i>	G4	S4	N	N
A stonefly	<i>Helopicus subvarians</i>	G4	S3	N	N
Seminole skipper	<i>Hesperia attalus slossonae</i>	G3G4T3	S3	N	N
Eastern meske's skipper	<i>Hesperia meskei straton</i>	G3G4T3	S2S3	N	N
A mayfly	<i>Hexagenia bilineata</i>	G5	S2	N	N
A stonefly	<i>Hydroperla phormidia</i>	G3	S2	N	N
Twin-striped clubtail	<i>Hylogomphus geminatus</i>	G3G4	S3	N	N
A mayfly	<i>Isonychia bernerii</i>	G2G3	S1S2	N	N
A stonefly	<i>Leuctra cottaquilla</i>	G2	S2	N	N
A mayfly	<i>Macdunna brunnea</i>	G3G4	S2S3	N	N
Gopher tortoise robber fly	<i>Machimus polyphemi</i>	G2	S1S2	N	N
Elfin skimmer	<i>Nannothemis bella</i>	G4G5	S2	N	N
Smoky shadowfly	<i>Neurocordulia molesta</i>	G4	S2S3	N	N
Mourning cloak	<i>Nymphalis antiopa</i>	G5	S2	N	N
Smooth gopher tortoise onthophagus beetle	<i>Onthophagus polyphemi sparsisetosus</i>	G3G2?	S1	N	N
Surprising pocket gopher aphodius beetle	<i>Oxyomoides dyspistus</i>	G3G4	S3?	N	N
Elerob's microcaddisfly	<i>Oxyethira elerobi</i>	G3G4	S2S3	N	N
Novasota oxyethiran microcaddisfly	<i>Oxyethira novasota</i>	G4G5	S2	N	N
Pescador's bottle-cased caddisfly	<i>Oxyethira pescadori</i>	G4	S3	N	N
A stonefly	<i>Perlinella zwicki</i>	G4	S2	N	N
Hodges' clubtail	<i>Phanogomphus hodgesi</i>	G3	S3	N	N
Westfall's clubtail	<i>Phanogomphus westfalli</i>	G2	S2	N	N
Oval June beetle	<i>Phyllophaga ovalis</i>	G1G2	S1S2	N	N
Slender polyphyllan scarab beetle	<i>Polyphylla gracillis</i>	G2G3	S2	N	N
Belle's sanddragon	<i>Progomphus bellei</i>	G3	S3	N	N
Elongate pocket gopher ptomaphagus beetle	<i>Ptomaphagus geomysi</i>	G2G3	S1S2	N	N
Schwarz' pocket gopher ptomaphagus beetle	<i>Ptomaphagus schwarzi</i>	G3	S3	N	N
Purple pigtoe	<i>Pustulosa succissa</i>	G3G4	SNR	N	N
King's hairstreak	<i>Satyrrium kingi</i>	G3G4	S2	N	N
Baker's pocket gopher beetle	<i>Scabrostomus bakeri</i>	G2G3	S2	N	N

Long-clawed pocket gopher aphodius beetle	<i>Scabrostomus tanytarsus</i>	G2G3	S2S3	N	N
Santa rosa cebrionid beetle	<i>Selonodon santarosae</i>	G1	S1	N	N
Miccosukee mayfly	<i>Sparbarus miccosukee</i>	G1G2	S1S2	N	N
A mayfly	<i>Stenacron floridense</i>	G3G4	S3S4	N	N
Yellow-sided clubtail	<i>Stylurus potulentus</i>	G2	S2	UR	N
Bronze clubtail	<i>Stylurus townesi</i>	G3	S2	N	N
Southeastern roachfly	<i>Tallaperla cornelia</i>	G4	S1	N	N
Gulf lilliput	<i>Toxolasma sp.</i>	G2	S2	N	N
Fish					
Blacktip shiner	<i>Lythrurus atrapiculus</i>	G4	S2	N	N
Amphibians					
Reticulated flatwoods salamander	<i>Ambystoma bishopi</i>	G1	S1	E	FE
Eastern tiger salamander	<i>Ambystoma tigrinum</i>	G5	S3	N	N
One-toed amphiuma	<i>Amphiuma pholeter</i>	G4	G3	N	N
Spotted dusky salamander	<i>Desmognathus conanti</i>	G4	S2S3	N	N
Eglin ravine dusky salamander	<i>Desmognathus sp. 1</i>	G4	S2S3	N	N
Bog dwarf salamander	<i>Eurycea sphagnicola</i>	G1G2	S1S2	N	N
Pine barrens treefrog	<i>Hyla andersonii</i>	G3	S2S3	DL	N
Gopher frog	<i>Lithobates capito</i>	G2G3	S3	UR	N
Florida bog frog	<i>Lithobates okaloosae</i>	G2	S2	N	ST
Reptiles					
Eastern copperhead	<i>Agkistrodon contortix</i>	G5	S2	N	N
Spiny softshell	<i>Apalone spinifera</i>	G5	S3	N	N
Eastern diamondback rattlesnake	<i>Crotalus adamanteus</i>	G3	S3	UR	N
Eastern indigo snake	<i>Drymarchon couperi</i>	G2G3	S2?	T	FT
Gopher tortoise	<i>Gopherus polyphemus</i>	G3	S3	N	ST
Escambia map turtle	<i>Graptemys ernsti</i>	G2	S2	SAT,PDL	N
Southern hognose snake	<i>Heterodon simus</i>	G2G3	S2S3	PT	N
Northern mole kingsnake	<i>Lampropeltis rhombomaculata</i>	G4	S2	N	N
Alligator snapping turtle	<i>Macrochelys temminckii</i>	G3	S3	PT	N
Common watersnake	<i>Nerodia sipedon</i>	G5	S2	N	N
Mimic glass lizard	<i>Ophisaurus mimicus</i>	G2	S1S2	N	N
Pine snake	<i>Pituophis melanoleucus</i>	G4	S3	PS	ST
Coal skink	<i>Plestiodon anthracinus</i>	G5	S3	N	N
Eastern river cooter	<i>Pseudemys concinna concinna</i>	G5T5	S3	N	N
Southeastern crowned snake	<i>Tantilla coronata</i>	G5	S2S3	N	N
Birds					
Red-cockaded woodpecker	<i>Leuconotopicus borealis</i>	G3	S2	T	FT
Swallow-tailed kite	<i>Elanoides forficatus</i>	G5	S2	N	N
Bald eagle	<i>Haliaeetus leucocephalus</i>	G5	S3	N	N

Bachman's sparrow	<i>Peucaea aestivalis</i>	G3	S3	N	N
<i>Mammals</i>					
Southeastern weasel	<i>Neogale olivacea frenata</i>	G5T4	S3?	N	N
Southeastern fox squirrel	<i>Sciurus niger niger</i>	G5T5	S3	N	N
Eastern chipmunk	<i>Tamias striatus</i>	G5	S3	N	N

*** STATUS / RANK KEY**

FNAI Global Rank: G1= Critically Imperiled, G2= Imperiled, G3= Rare, G4= Secure, G5= Demonstrably Secure, G#Q= Rare but questionable whether it is species or subspecies, G#T#Q= Rare but questionable whether it is species or subspecies, but validity as subspecies or variety is questioned, GU= Unrankable, GNA= Ranking not applicable, GNR= Temporarily not yet ranked, GNRTNR= Neither element nor taxonomic subgroup has yet been ranked.

FNAI State Rank: S1= Critically Imperiled in Florida, S2= Imperiled in Florida, S3= Rare in Florida, S4= Secure in Florida, S5= Demonstrably secure in Florida, SH= Of historical occurrence in Florida, SU= Unrankable, SNA= State ranking not applicable, SNR= Element not yet ranked

Federal Status (USFWS): 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, E= Endangered, E,T= Endangered in a portion of its range, E,PDL= Endangered but proposed for delisting, E,PT= Endangered but proposed to be listed as threatened, E,XN= Endangered but tracked population is non-essential, N= Not currently listed, T= Threatened, PDL= Proposed for delisting, PE= Proposed as endangered, PS= Population of species has federal status but entire species is not federally listed, PS= An infraspecific taxon or population has federal status but the entire species does not – status is only a portion of the species range, PT= Proposed as threatened, SAT= Treated as Threatened due to similarity of appearance, SC= Species of concern; not listed, DL= Delisted, UR= Under review.

State Status (FWC): C= Candidate for listing, FE= Listed as Endangered Species at the Federal level by the USFWS, FT= Listed as Threatened Species at the Federal level by the USFWS, FT(S/A)= Federal Threatened due to similarity of appearance, N= Not currently listed, nor currently being considered for listing, ST= State population listed as Threatened by the FWC.

2. Florida Natural Areas Inventory

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

a. Element Occurrences

FNAI reports several documented element occurrences of rare or endangered species within the vicinity of the property. Documented species are listed in Table 5.

Documented habitat includes baygall, blackwater stream, bottomland forest, depression marsh, dome swamp, floodplain swamp, mesic flatwoods, sandhill, seepage slope, shrub bog, upland hardwood forest, upland mixed woodland, upland pine, wet flatwoods, and wet prairie.

b. Likely and Potential Habitat for Rare Species

In addition to documented occurrences, other rare species and natural communities may be identified on or near the BRSF. Rare species and communities that have not been documented but that are likely or potential at the site are listed in Exhibit M.

c. Land Acquisition Projects

Portions of the site appear to be located within the Clear Creek / Whiting Field Phase I & II, Coastal Headwaters Longleaf Forest, Welannee Watershed Forest, and Wolfe Creek Forest Florida Forever Projects. See Exhibit G.

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 expansions or alterations are made to any facilities.

3. Florida Fish and Wildlife Conservation Commission

The FWC Fish and Wildlife Research Institute (FWRI) reports numerous records of listed species occurrences or critical habitats within the confines of the property. This includes state and federally listed endangered or threatened species.

Other findings by the FWC include:

- a. Records of the Eastern indigo snake (*Drymarchon couperi*), gopher tortoise (*Gopherus polyphemus*), red-cockaded woodpecker (*Dryobates borealis*), reticulated flatwoods salamander (*Ambystoma bishopi*), Florida pine snake (*Pituophis melanoleucus mugitus*), and the Florida black bear (*Ursus americanus floridanus*) are found on or within one mile of BRSF.
- b. Strategic Habitat Conservation Areas (SHCAs) within one mile of the property for the Eastern indigo snake (*Drymarchon couperi*), gopher tortoise (*Gopherus polyphemus*), red-cockaded woodpecker (*Dryobates borealis*), reticulated flatwoods salamander (*Ambystoma bishopi*), Florida pine snake (*Pituophis melanoleucus mugitus*), and the Florida black bear (*Ursus americanus floridanus*).
- c. BRSF is located within an area of significant species richness which indicates the total number of species within potential habitat identified in a specific location.
- d. BRSF is within priority wetlands, which are wetlands significant to listed wetland-dependent vertebrates.

These data represent 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 are not entered into the database on a site-specific basis. Therefore, one should not assume that an absence of occurrences in their database indicates that species of significance do not occur in the area. See Exhibit N.

The FWC recommends the review of management guidelines in the published FWC Gopher Tortoise Management Plan to guide management actions for the gopher tortoise (*Gopherus polyphemus*) on the area. The FWC Gopher Tortoise Management Plan provides beneficial resource guidelines for habitat management and monitoring of the gopher tortoise. For reference, the FWC Gopher Tortoise Management Plan can be accessed at MyFWC.com.

The FWC further recommends the review of management guidelines in FWC's published Species Action Plans for the management of imperiled, rare, and focal species. The FWC Species Action Plans provide beneficial resource guidelines for habitat management and monitoring of the respective species. For reference, the FWC Species Action Plans can be accessed at MyFWC.com.

4. Game Species and Other Wildlife

Wildlife management plays an important role in the management of resources on BRSF. FWC provides cooperative technical assistance in managing the wildlife and fish populations, setting hunting seasons, establishing bag and season limits, and overall wildlife and fish law enforcement on the forest.

BRSF currently makes up all or part of the following Wildlife Management Areas (WMAs): Blackwater WMA, the Yellow River WMA, the Blackwater Carr Unit, and the Blackwater Hutton Unit.

The Uplands Ecosystem Restoration Program (UERP) is a multi-agency demonstration on 14,919 acres where researchers and managers are examining the effects of forest management techniques on wildlife and other resources. The Quail Enhancement Area (QEA) consists of 18,366 acres and is managed to increase quail populations. This area has modified hunting regulations for quail in order to enhance the population.

FWC establishes wildlife food plots for utilization by deer, quail, dove, and non-game species. FFS and FWC cooperatively maintain 243 acres of wildlife openings, acres of planted food plots, and 169 acres of dove fields on BRSF ranging in size from 0.1 to 15.4 acres. Wildlife openings and food plots will be established and maintained in accordance with Chapter 5 of the FFS State Forest Handbook.

Hunting is allowed across most of BRSF. Separate parcels of land have been designated as fishing, still hunt, dog hunt, fox hunt, and field trial areas. General gun hunting with and without dogs, muzzleloading gun, archery and falconry are allowed. Game animals on the various WMAs on BRSF include deer, wild hog, turkey, gray squirrel, quail, rabbit, raccoon, opossum, armadillo, beaver, coyote, skunk, nutria, bobcat, otter, fox, game fish, frogs, and migratory birds including waterfowl, woodcock, crow, and dove. Persons using wildlife management areas are required to follow all regulations. Visit MyFWC.com for released quail permit information and hunting dates.

Other notable wildlife species found on BRSF include bald eagle (*Haliaeetus leucocephalus*), red-cockaded woodpecker (*Dryobates borealis*), gopher tortoise (*Gopherus polyphemus*), reticulated flatwoods salamander (*Ambystoma bishopi*), and Florida bog frog (*Lithobates okaloosae*).

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

5. Survey and Monitoring

FFS may implement species-specific management plans developed by FWC and other agencies as applicable. FFS will cooperate with FWC and other agencies in the development of new wildlife management plans and monitoring protocols, as necessary. Such plans will be consistent with rule and statute promulgated for the management of such species.

Survey and restoration needs and locations will be determined through consultation with the FFS and FWC Biologists, FFS Foresters, and if there is public concern for specific species, local environmental organizations such as the Nature Conservancy or the Audubon Society. FFS and FWC biologists will work together to analyze data obtained from surveys and restoration to evaluate the effects of management practices on wildlife communities and revise ineffective management techniques.

Specialized forest and species management techniques will be used as necessary to protect and augment flora and fauna populations of, and habitat for, state- and federally-listed threatened and endangered species, and candidates for listing. FFS and FWC staff, guided by USFWS and FNAI biologists and species recovery plans, will coordinate to provide adaptive management and protection of sensitive species in the BRSF/BWMA. Volunteers, interns, and valid researchers may be utilized to help with management and protection of non-game species when necessary. FWC conducted drift fence surveys of herpetofauna in the BWMA and YRWMA from 2016 through 2022, and a survey of gopher tortoises is ongoing. In addition, FWC conducts annual surveys of the tiger salamander, flatwoods salamander, and Florida bog frog on the forest.

a. Red Cockaded Woodpecker

The federally threatened red-cockaded woodpecker (RCW; *Dryobates borealis*; recently downlisted from endangered) is perhaps the most closely monitored wildlife species on BRSF. The FFS is the primary manager of the RCW population on BRSF, with assistance from FWC and the Longleaf Alliance. Surveying is done year-round utilizing morning nest checks, surveying and checking cavity condition and activity status, and keeping count of hatchlings and fledglings. Spot checks to listen for presence of RCW's are periodically done in areas where there are no known RCWs but contain potential habitat. The Blackwater timber unit also surveys for RCW cavities while conducting timber inventory on approximately 20,000 acres each year.

In 2024, and in combination with Conecuh National Forest, the recovery goal of 250 potential breeding groups between both properties was finally reached. This significant milestone was reached due to the incredible effort and dedication exerted by staff on both properties, as well as numerous collaborators and volunteers. Future efforts with RCW management will involve proper forest management, monitoring, and limited human intervention when necessary.

b. Reticulated Flatwoods Salamander

The reticulated flatwoods salamander (*Ambystoma bishopi*) has only been known to occur in a series of ephemeral ponds in the Yellow River Ravines Tract near Garner Landing Road, which is located near the Santa Rosa-Okaloosa County line. The last documented presence was in the 1990's; long before the state took acquisition of the property. The FFS and FWC have been working in collaboration to improve the habitat in and around the ponds. The FWC monitors the area for activity.

c. Tiger Salamander

The tiger salamander (*Ambystoma tigrinum*) is a far more widespread salamander species on BRSF and is a species of concern for FWC. The FWC has identified 133 ephemeral ponds where the salamander is either known to be or contain potential for good quality habitat. The tiger salamander is very similar to flatwoods salamander in that it prefers ephemeral ponds that have sparse overstory maintained by fire. The FWC monitors all tiger salamander ponds on a 3-year rotation, typically using dipnet surveys to capture specimens. The FFS also works with FWC to improve habitat on the most productive salamander ponds.

d. Bog Frog

The Florida bog frog (*Lithobates okaloosae*) is found along two streams in the Yellow River Ravines Tract. Each stream has a transmission line that crosses them, and the vegetation management of the right-of-way has resulted in good quality habitat for the frogs. The FWC and FFS have worked together to enhance habitat on both creeks going south from the transmission line, with moderate success. The primary methods of habitat enhancement are mechanical, herbicide, and burning. The Florida Forest Service Follows all applicable Wildlife Best Management Practices when conducting silvicultural operations around known bog frog locations.

e. Eastern Indigo Snake

The eastern indigo snake (*Drymarchon couperi*) has not been seen on BRSF for many years, though habitat seems to be good for this species. Efforts to reintroduce the snake to the adjacent Conecuh National Forest may result in this federally threatened species appearing once again on BRSF.

f. Gopher Tortoises

Comprehensive gopher tortoise burrow surveys have been conducted by FFS and FWC staff since 2007 and include all potential gopher tortoise habitats on BRSF delineated by vegetative and soil characteristics. These comprehensive burrow surveys involve using FFS forest units and completing surveys within each unit. This systematic approach ensures all suitable gopher tortoise habitats are surveyed to determine presence / absence of burrows and enables FFS to more easily interpret management recommendations submitted by FWC staff. Additionally, FWC conducted a full Line Transect Distance Sampling (LTDS) survey on the West Boundary Unit of BRSF in 2016. The survey covered roughly 2,829 hectares (6,991 acres) and documented 284 tortoises, therefore estimating the population density within that unit at 0.10 tortoises per hectare (0.04 tortoises per acre, or 1 tortoise every 25 acres). FWC labeled this as a primary support population but do not intend to resurvey unless there are significant changes to the habitat or population due to the low density. Pilot LTDS surveys were also conducted on the Juniper Creek and Sweetwater Units, but no full surveys were conducted due to very low densities.

The FFS follows and utilizes the Best Management Practices for gopher tortoises to assist in meeting management objectives for both the species and the communities in which it is found.

g. Florida Black Bear

FFS will continue to cooperate with FWC to implement FWC's state-wide Florida Black Bear Management Plan, with an emphasis on maintaining sustainable black bear populations in suitable habitats throughout Florida for the benefit of the species and people.

h. Listed Plant Species

Pitcher plant bogs (seepage slopes) can be found scattered throughout the forest. They occur in isolated depressions of somewhat poorly drained soils. These natural communities contain a high diversity of rare plants. Steps being taken to preserve and protect these areas include the following:

- 1) Locating the pitcher plant bogs on a forest wide map. A map has been produced, and it is updated when additional information is obtained (Exhibit Z).
- 2) Periodic burning of the bogs to reduce competing vegetation and promote community health.
- 3) Exclusion of all heavy equipment and vehicular traffic to ensure they are not mechanically disturbed.

American chaffseed (*Schwalbaea americana*), a federally endangered species, has been documented at two (2) locations near two of the many seepage slopes on the forest. This is a recent discovery on BRSF; one of only two occurrences in Florida, and the only occurrence on state-owned conservation land. Once known historically from the Atlantic coastal plain, extending from Massachusetts to Florida, the species is now mainly found in the Carolinas and Georgia. Further surveys are needed to determine the location and extent of this and other rare plants on the forest.

All known locations of listed or rare flora are GIS mapped, and location data are shared with FNAI.

i. Other Rare Biota Surveys

Surveys are done as time and staffing allow. High quality plant communities continue to incur ad hoc surveys for both listed plants and animals. FFS will utilize FWC Species Action Plans for guidance both monitoring populations and for habitat management recommendations for rare and imperiled species, where appropriate.

Most of the isolated BRSF wetlands have received a cursory biological survey, with rare and significant plant and animal species observed and documented. Assistance will be offered to FWC for gopher tortoise burrow commensals monitoring, as well as monitoring for other rare species, as appropriate.

During routine management activities, incidental sightings of rare animals and plants are GIS-mapped by FFS staff. All rare species data is collected and sent to FNAI annually.

Surveys conducted by university researchers and students and knowledgeable naturalists on BRSF augment information provided by formal surveys conducted by FWC and other

cooperating agencies. The FFS will seek assistance from citizen science, colleges, universities, and other agencies to gather data on plant and animal species.

6. Gopher Tortoise Recipient Site Feasibility Assessment

The FFS has assessed the feasibility of establishing a gopher tortoise recipient site on BRSF. BRSF is comprised primarily of upland pine, sandhill, and bottomland forest communities, interspersed with 13 other natural community types across the forest. Despite the fact a vast majority of BRSF has soils with high clay content, and a naturally low gopher tortoise population, staff have identified roughly 629 acres which could be compatible with establishing a gopher tortoise recipient site. Specifically, the site is located along the southern boundary of the Juniper Tract, roughly a mile north of Interstate 10, and contains sandhill with a few embedded dome swamps. The overstory is longleaf pine, with a well-burned understory of diverse native groundcover. Soils across the sites range from well drained to excessively drained, except for about 3% of the area where dome swamps are located. A site-specific survey would need to be completed in order to determine the current stocking density of the site. No formal Line Transect Distance Sampling (LTDS) survey has been conducted on BRSF to date as the survey was deemed unwarranted due to the level of effort required, as indicated by low encounter rates during the pilot survey. A pilot survey is conducted to determine the effort necessary to complete a full survey. Gopher tortoise density across a site cannot technically be estimated until a full LTDS survey has been completed. .

Operational budget, staffing levels, and technical capacity considerations preclude the FFS from installing a gopher tortoise recipient area on BRSF. The FFS would require financial and technical assistance from FWC to establish a recipient site on BRSF. Should that assistance be available, the FFS would be amenable to partnering and establishing a gopher tortoise recipient site.

D. Sustainable Forest Resources

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 the FFS Forest Management Bureau.

E. Beaches and Dune Resources

No beaches occur on BRSF.

F. Mineral Resources

Gas and oil resources have been extracted from BRSF for over five decades. There were 19 permitted drilling sites on BRSF. Of those sites, eight (8) were never drilled, seven were dry holes which never produced oil or gas, and four (4) were productive wells. There are currently no active oil or gas wells on the forest. All sites are permanently closed and have been replanted with natural vegetation for reclamation.

At this time, DEP's Division of State Lands oversees, for the BOT, the execution of leases pertaining to oil, natural gas, etc. The BOT reviews and approves requests for activities such as oil exploration before surface activities are allowed on BRSF in accordance with Chapter 18-2, Florida Administrative Code. In 2011, seismic exploration for geological structures was successfully accomplished on the northern third of the forest with no impact to the resources or public use. Other parts of the forest may be explored in coming years. Another seismic exploration event occurred in 2015 in the northwestern corner of the forest. Oil and gas operations and any seismic testing activities will be closely monitored by FFS to ensure compliance with the appropriate forest land use or lease agreement. FFS recognizes the importance of managing and protecting sensitive resources and takes steps to ensure that such resources are not adversely impacted by oil and gas operations. This includes areas such as known archaeological, fossil, and historical sites, ecotones, wetlands, and sensitive species. FFS will also ensure that proper reclamation of the sites is completed when the leases are closed. Reclamation will be such that the areas of operation will be returned to a condition as close as possible to their original.

Sand, clay, and gravel have been excavated from borrow pits on the forest and used exclusively for improvements or construction of roads on the forest. See Exhibit Y.

G. Unique Natural Features and Outstanding Native Landscapes

The entire forest is part of an outstanding native landscape that consists of BRSF, Conecuh National Forest, and Eglin Air Force Base, and constitutes the largest contiguous area of mature longleaf pine forest ecosystem remaining in the world.

BRSF has the largest population of red-cockaded woodpeckers in state ownership. When considered together with Conecuh National Forest and Eglin Airforce Base, BRSF has a significant role in the long-term conservation and protection of this threatened species. Communication and cooperation between the three land managers concerning management of red-cockaded woodpeckers and the longleaf ecosystem is fostered by the Gulf Coastal Plan Ecosystem Partnership. Additional support and cooperation from partners such as The Nature Conservancy, The Longleaf Alliance, and NFWFMD will result in higher quality of management for all of the resources in this region, including red-cockaded woodpeckers. Management of longleaf pine ecosystems will be conducted in a manner to maintain and improve favorable conditions for the recovery of the red-cockaded woodpecker.

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. FFS cooperates with other governmental agencies, non-profit organizations, and educational institutions, whenever feasible, on this type of research. FFS will consider assisting with research projects when funds and staffing are available.

All research proposed on BRSF must be considered in accordance with the guidelines stated in the State Forest Handbook. Any requests for research shall be submitted in writing to the appropriate field staff and forwarded to the Forest Management Bureau for approval. Requests must include: a letter outlining the purpose, scope, methodology, and location of the proposed research. 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 any research to the FFS and the BRSF 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 within the last 12 years include:

- FWC / FWRI (Scheick). September 9, 2014. Conduct research estimating Florida black bear (*Ursus americanus floridanus*) abundance in Florida.
- Smithsonian Conservation Biology Institute (Baker). 2015 & 2016. Conduct monitoring of faunal biodiversity using stationary mounted camera traps on BRSF.
- US EPA (Dr. Awkerman). 2015, 2016 & 2017. Conduct research assessing the suitability of juvenile fish data as a surrogate for juvenile amphibians in toxicology studies on BRSF.
- University of Florida (Dr. Bohn). July 21, 2015. Conduct research on *Lygodium japonicum* on BRSF.
- FNAI (Almquist). September 21, 2015. Study obligate invertebrate commensals (OICs) of gopher tortoises (*Gopherus polyphemus*) and collect voucher specimens of non-listed (state or federal) OICs.
- UNC Greensboro (Dr. Knapp). December 3, 2015. Use longleaf pine tree-ring data in combination with longleaf pine cone-mast data to determine the influence on cone crop on climate reconstructions.
- FWC / FWRI (Winchester & Gore). May 6, 2016. Conduct research on long-tailed weasels on BRSF.
- Oklahoma State University (Dr. Fishbein & Ksepka). May 19, 2016. Conduct tissue sampling for genetic research on species within the genus *Asclepias* (milkweeds).
- Clemson University (Dr. DeWalt). July 27, 2016. Collect fruit from goat's rue (*Tephrosia virginiana*) for genetic studies.
- University of Florida (Dr. Duncan). August 15, 2016. Conduct research on the ecology, natural history, distribution, and population dynamics of the southeastern pocket gopher (*Geomys pinetis*).
- USDA (Dr. Scheffer). March 31, 2017. Conduct research on the systematics and evolution of leafminer insects (genus *Phytomyza*) and their host hollies (genus *Ilex*).

- University of Florida, IFAS (Dr. Burkett-Cadena & Sloyer). June 2, 2017. Conduct research on spatial and temporal distributions of biting midges (*Culicoides spp.*).
- FSU (Dr. Anderson). 2018, 2019, 2021 & 2022. Collect herbarium specimens of plants not currently vouchered in a county, or plants in need of research material.
- University of Florida (Dr. Miller & Gott). 2018, 2019 & 2020. Conduct research on the biology and systematics of the Florida duskywings (Lepidoptera:Hesperiidae:Erynnis).
- UNC (Dr. Weakly & Schoonover). March 27, 2018. Investigate *Trichostema* mint taxonomy.
- Dr. Pau & Zampieri. March 30, 2018. Conduct research on the population dynamics of longleaf pine in Florida.
- Northland Environmental Services (Dr. Bess). May 2, 2018. Conduct status surveys for the rattlesnake master borer moth (*Papaipema eryngii*) in the Southeast Region.
- UNC Greensboro (Dr. Knapp & Mitchell). July 23, 2018. Use dendrochronological methods to examine the potential causal factors and spatiotemporal variability of anomalous growth in longleaf pine in western Florida.
- US National Arboretum (Conrad). July 25, 2018. Conduct research on the genetic diversity of state-endangered Ashe's magnolia (*Magnolia ashei*).
- New York Botanical Garden (Naczi & Naczi). August 10, 2018. Conduct research systematics of sedges (Family: Cyperaceae) and associated beetles (Order: Coleoptera).
- UGA (Long & Dr. Bennetzen). September 24, 2018. Conduct research on ants that are prey for different pitcher plant species (*Sarracenia spp.*) and to collect fluid samples from the pitcher plants and water samples.
- University of Florida (Dr. Warren). 2019, 2021, 2022 & 2023. Renewal to collect insect voucher specimens – Lepidoptera / Coleoptera / Diptera / Hymenoptera
- FWC (Teets, Doonan & Gillikin). 2019, 2020, 2021 & 2022. Conduct Long Term Bat Monitoring Program on five (5) state forests.
- Boise State University (Rosentreter). 2020, 2021 & 2023. Collect specimens of lichens not currently vouchered in a county, or to collect lichen species where additional research material is needed.
- University of Texas, El Paso (Dr. Lieb). March 3, 2020. Collect voucher specimens of amphibians and reptiles.
- University of Florida, McGuire Center (Dr. Slotten). 2020 & 2022. Collect voucher specimens of moths.
- Atlanta Botanical Garden (Smith). July 1, 2020. Investigate the role of hybridization and mycorrhizal fungal use in speciation patterns in terrestrial orchids (*Platanthera sp.*).
- Smithsonian Institution (Dr. Strong). 2020, 2021 & 2022. Renewal to collect plant materials at BRSF as herbarium specimens and as materials for future research.
- University of Florida, IFAS (Beiriger). 2020, 2022 & 2023. Investigate effects of non-native wood boring beetles.
- Florida Public Archaeology Network (Dr. Lees & Meyers). December 2, 2020. Conduct archaeological research at BRSF and update Florida Master Site File forms.
- FNAI (Price & Gundy). January 2, 2021. Conduct surveys for Westfall's clubtail (*Phanogomphus westfalli*) on BRSF.
- FNAI (Hill). 2021, 2022 & 2023. Surveys for Frosted Elfin, Arogos skipper, sawgrass skipper, and Duke's skipper.

- US EPA (Dr. Awkerman). March 5, 2021. Conduct acoustic research to monitor frog populations on BRSF.
- Northwest Florida State College (Dr. Bigham-Stephens). April 3, 2021. Investigate properties of the gulf pitcher plant (*Sarracenia rosea*) on BRSF.
- Clemson University (Sears & McTernan). 2021, 2022 & 2023. Climate change effects on fence lizard genetics.
- Mississippi State University (Hill). 2021, 2022 & 2023. Collect voucher specimens of insects.
- Atlanta Botanical Garden (Smith). May 3, 2021. Collect seed of hairy peduncled beakrush (*Rhynchospora crinipes*) from one population on BRSF for seed banking.
- Polly Hill Arboretum (Boland & Thomas). June 6, 2021. Collect seed from wild populations of *Stewartia malacodendron* to grow as part of an ex-situ living collection at Polly Hill Arboretum.
- University of Florida (Daniels & Kimmel). 2021 & 2022. Conduct research on multiple state forests regarding the giant scrub plasterer bee (*Caupolicana floridana*) and closely related *C. electa*.
- University of Florida (Dr. Hulcr & LeMay). August 2, 2021. Investigate ambrosia beetle (*Xyleborus ferrugineus*) taxonomy and genetics.
- UNC (Dr. Weakly & Schoonover). October 2, 2021. Investigate *Trichostema* mint taxonomy and phylogeny.
- University of Kentucky (Dr. DeWald). November 4, 2021. Collection of white oak acorns for genetics study.
- Texas Tech University (Wojtysiak & McIntyre). 2021 & 2022. Conduct research regarding Calvert's emerald dragonfly (*Hylogomphus geminatus*) on seven (7) state forests.
- ESS Group (Treacy). 2021 & 2022. Conduct research for the US EPA regarding streamflows on BRSF.
- Green Geophysics, Inc. (Smith). January 1, 2022. Conduct geophysical sampling on BRSF to investigate the risks to the nation's electric power grids throughout the lower conterminous U.S.
- University of Massachusetts, Boston (Dr. Moyers). March 3, 2022. Genetics of sundial lupine for habitat restoration.
- Adventure Scientists (Toshack). April 2, 2022. Genetics of white oak (*Quercus alba*) to combat poaching.
- Mississippi State University (Dr. Polinko). May 5, 2022. Investigation of how the longleaf pine ecosystem behaves across its native range with respect to silviculture treatment.
- Avon Park AFB (Orzell). May 8, 2022. Plant voucher collection, with a focus on grasses, sedges, and yellow fringeless orchid.
- New York Botanical Garden (Naczi). May 9, 2022. Plant voucher collection for pitcher plants and sedges for phylogenetic and taxonomic research.
- USDA (Conrad). July 2, 2022. Ashe magnolia seed collection.
- University of Florida (Torhorst & Dr. Wisely). October 3, 2023. Conduct research regarding soft-bodied ticks (*Ornithodoros turicata*) on eleven (11) state forests.
- Texas Tech University (Girgente & McIntyre). October 6, 2022. Renewal to conduct research regarding the twin-striped clubtail dragonfly (*Hylogomphus geminatus*) on seven (7) state forests.

- UGA (Long & Dr. Bennetzen). November 4, 2022. Conduct research regarding the population genetics and diversity of yaupon holly (*Ilex vomitoria*).
- University of New Mexico (Barrow & McDaniels). December 1, 2022. Collect amphibians and reptiles as voucher specimens and for research purposes on thirteen (13) state forests.
- Miami University (Moore & Bednar). February 2, 2023. Gulf sweet pitcherplant status and genetic diversity.
- Atlanta Botanical Garden (Coffey & Smith). March 1, 2023. Collect seeds, leaf tissue samples, and voucher specimens for Center for Plant Conservation's Florida Rare Plant Rescue Initiative.
- University of Florida (Willis & Dr. Smith). April 3, 2023. Investigate exobasidium fungal pathogen on ericaceous plants.
- University of Florida, FMNH (Dr. D. Soltis, Dr. P. Soltis & White). May 5, 2023. Conduct research regarding the phylogeography of four (4) species of yellow-eyed grasses (*Xyris* ssp.) at BRSF.
- Adventure Scientists (Eggers). July 2, 2023. Collect tuliptree samples for genetic research.
- Avon Park AFB (Orzell). July 3, 2023. Conduct study of yellow fringeless orchid.
- FWC / FWRI (Hassler). July 5, 2023. Conduct research investigating long-tailed weasel (*Mustela frenata*) and Eastern spotted skunk (*Spilogale putorius*) occurrence, habitat use, and diet composition within the Florida Wildlife Corridor study areas in North Florida.
- FWC / FWRI (Smith). September 4, 2023. Conduct research regarding the tri-colored bat (*Perimyotis subflavus*).

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. 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. Sensitive resources include areas such as known sensitive species locations; archaeological, fossil, and historical sites; ecotones, wetlands, and water resources. The process for evaluating and obtaining approval for ground disturbing activities is outlined in Appendix 2.A.6. of the State Forest Handbook.

When new pre-suppression firelines, 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, and new roads, the FFS will consult with FNAI, DHR, NFWFMD, and the ARC, as appropriate.

V. Public Access and Recreation

The primary recreation objective is to provide the public with passive outdoor recreational activities that are dependent on the natural environment. FFS will continue to promote and encourage public access and recreational use by the public while protecting resources and practicing multiple-use management.

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 FFS determines their compatibility with other forest uses and forest resources. Assessment of visitor impacts, outdoor recreation opportunities and facilities, and proposed changes will all be addressed in the Five-Year Outdoor Recreation Plan updates.

A. Existing Recreational Opportunities

A variety of recreational opportunities are available on BRSF. Recreation activities include hiking, camping, horseback riding, wildlife viewing, picnicking, bicycling, off-highway vehicle riding, swimming, fishing, and hunting. BRSF is part of the Florida National Scenic Trail, the FFS Trailwalker Program, and the FFS Trailtrotter Program. See Exhibit D for a map of the recreation, facilities, and improvements.

BRSF currently operates 10 developed recreation areas. These areas have conveniences such as flush toilets, running water, picnic tables and grills. Okaloosa County operates the Wilderness Landing Recreational Area and Guest Lake Boat Ramp on BRSF. Wilderness landing has similar facilities to BRSF's developed recreation areas. Guest Lake has picnic tables, outhouse, and pavilions but no running water. There are also approximately 75 primitive recreation sites throughout the forest with no potable water or electricity and little to no infrastructure. They are used as picnic areas and primitive camping spots. These recreation sites are typically located near a sandbar or site next to a large creek such as Blackwater River, Coldwater Creek, or Juniper Creek.

1. Recreation Areas

Bear Lake Recreation Area - Bear Lake is a 107-acre artificial impoundment located on Bear Creek. The lake is characterized by flooded timber. The dam was constructed in 1959 and first opened to fishing in the spring of 1961. Bear Lake has 32 electric campsites, eight (8) non-electric campsites, boat ramp, hiking trail, mountain bike trail, dining hall with pavilion, and ten restrooms; eight (8) with showers.

Bone Creek Recreational Area - Bone Creek is a day use area with a swimming and fishing lake. There is a picnic area and pavilion with a 1.3 mile hiking trail. There are two boardwalks along the trail totaling approximately 700' through wetlands. Trees such as the Florida anise are found along this hiking trail. There are two restrooms near the trailhead.

Camp Paquette - Camp Paquette is a group camping facility for youth with four large camping sites. The facility offers group primitive camping, swimming, fishing, and hiking. There is a pavilion and two (2) restroom facilities with showers.

Coldwater Recreational Area - The Coldwater Recreational Area, bordered to the north by Coldwater Creek, was opened in 1974. The facility has been a prized recreation area for bird dog and fox hound field trial participants and horseback riders. It offers 56 electric campsites, horse stables, horse trails, dining hall, pavilion, and six (6) restrooms with showers.

Hurricane Lake Recreation Areas - Hurricane Lake is a 318-acre man-made lake located on Hurricane Creek. Hurricane Lake was constructed in 1971 and opened for fishing in 1973. It has two (2) improved recreation areas located on the north and south sides of the lake. The

North Hurricane Lake Recreation Area has 18 electric campsites, boat ramp, four (4) restrooms with showers, and a primitive camping area for youth groups. The Florida National Scenic Trail can also be accessed from the North campground. The South Hurricane Lake Recreation Area has 18 non-electric campsites, boat ramp and four (4) restrooms with showers and one restroom without a shower.

Karick Lake Recreation Areas - Karick Lake is a 65-acre artificial impoundment on Deadfall Creek in northern Okaloosa County. A considerable amount of flooded timber provides fish habitat. The lake was constructed in 1965 and open to fishing in 1966. Karick Lake has two (2) improved camping areas located on the north and south sides of the lake with a hiking trail. The Karick Lake North Recreation Area has 15 electric campsites, and a boat ramp. The Karick Lake South Recreation Area also has 15 electric campsites, two (2) restrooms with showers, and a boat ramp.

Krul Recreation Area - Krul campgrounds are built next to a 6.5-acre man-made lake that is recharged from springs located on the north end of the lake. The recreation area has 45 electric campsites, swimming lake, day use picnic area, 2,900-foot boardwalk, suspension bridge over Sweetwater Creek, and ten (10) bathrooms; eight (8) with showers.

Clear Creek OHV Riding Area - Clear Creek OHV Riding Area is Blackwater River State Forest's newest recreation area opened in 2015. The facility has helped fill the demand for off-highway vehicle trail riding in northwestern Florida and southern Alabama. There are 52.9 miles of trails dedicated to off-highway vehicle riding. Motorcycles, all-terrain vehicles (ATVs), and utility task vehicles (UTVs) 65 inches or less in width are allowed to ride at the facility. The trails east of Redbird Trail are narrower and more challenging; designed for machines no larger than 50 inches in width. The trails west of Redbird Trail are wider and appropriate for machines 65 inches or less in width. There is a gatehouse for check-in, two (2) bathrooms, four (4) electric campsites, and a dump station.

Unimproved Recreation Sites – There are many opportunities to enjoy picturesque unimproved sites along watercourses. These locations are great for swimming, fishing, picnicking, and nature study. These sites are often uninhabited and are great places to enjoy the space and solitude of BRSF. These primitive sites include Kennedy Bridge, Red Rock, Bryant Bridge, Indian Ford, Camp Lowery, Juniper Creek Primitive Area, Jernigan Bridge, and Wilderness Landing.

Canoe Launch Sites – BRSF has access points along various waterways which allow the public to launch canoes and other non-motorized watercraft to enjoy the forest from the water. Approximately 47 miles of sand-bottom streams run through BRSF. The three (3) waterways that get the most usage are Blackwater River, Juniper Creek, and Coldwater Creek. The northern portions of Coldwater and Juniper Creeks have a large amount of blow down in the river. They are kept in their natural state and provide a large watershed sanctuary for wildlife. There are eight (8) primary canoe launches and / or pick up sites on BRSF used by canoe liveries as well as private canoe owners. Access to Blackwater River can be found at Kennedy Bridge, Bryant Bridge, and Johnson Float. Access to Coldwater Creek can be found at the Highway 4 Bridge and Jernigan Bridge adjacent to the Coldwater Recreation

Area. Access to Juniper Creek can be found at Dewey Hardy Landing, Red Rock, and the Indian Ford pickup site.

2. Hiking Trails

BRSF offers abundant opportunities for day hikers and backpackers on 75.8 miles of established trails. 52.8 miles of the Florida National Scenic Side Trail and 11.3 miles of the Florida National Scenic Main Trail pass through BRSF. 11.7 miles are not part of the Florida National Scenic Trail and are typically loop trails near campgrounds. Most of the length of the Florida National Scenic Trail through BRSF is maintained by the Florida Trail Association. Other trails are spurs off of the Florida National Scenic Trail or are scenic loops near recreation areas.

Bear Lake Jackson Connector Trail – This is a 2.4-mile connector trail whose purpose is to bring together the Sweetwater Trail and Bear Lake Loop Trail with the Jackson Trail.

Bear Lake Loop Trail – This 3.5-mile loop trail begins at the Bear Lake campground and travels around the perimeter of the lake. It is part of the FFS's Trailwalker Program and the Great Florida Birding and Wildlife Trail and receives considerable use.

Blackwater River Trail – This trail is 6.4 miles and begins at the north boundary line of the Blackwater River State Park. It travels through the state park, the Hutton Unit Wildlife Management Area, and BRSF, eventually connecting to Highway 90. It is a segment of the Florida National Scenic Trail.

Bone Creek Trail – This 1.3-mile loop passes through uplands and crosses wetlands around a lake at the Bone Creek Recreation Area.

Camp Paquette Loop Trail – This is a 1-mile trail that travels around the lake a portion of which travels over the water dam.

Jackson Trail – This is a 21.6-mile trail which begins at North Karick Lake and ends at Red Rock Road. Andrew Jackson traveled parts of this route during the First Seminole War in the early 1800s. It is part of the Florida National Scenic Side Trail.

Juniper Creek Trail – This 6.6-mile trail follows the east side of Juniper Creek for most of its length. Its northern trailhead is on Red Rock Road where the Jackson Trail ends. It is part of the Florida National Scenic Trail. Approximately one mile south of Red Rock Road is a hiking shelter along the trail. The trail ends at the boundary with Blackwater River State Park, and the start of the Blackwater River Trail.

Karick Lake Loop Trail – This 3.6-mile trail begins at North Karick Lake campground. A portion of its length, 1.4 miles, is shared by the Jackson Trail. This trail travels around the lake and is part of the FFS's Trailwalker Program and the Great Florida Birding and Wildlife Trail.

Sweetwater Trail – This trail begins at Krul Recreational Area and is 1.3 miles in length. Along the trail is a gristmill and a suspension bridge over Sweetwater Creek. Over half a mile of the trail's length is on a boardwalk, with the remainder traveling through the woods to Bear Lake. This trail is part of the FFS's Trailwalker Program.

Wiregrass Trail – The trail is 12.9 miles in length and is part of the Florida National Scenic Side Trail. Its northern terminus joins the Conecuh National Forest in Alabama, and its southern terminus connects with the Jackson Trail. It makes its way through beautiful stands of longleaf pine and wiregrass.

Yellow River Ravines Trail – Constructed in 2010, the newest section of the Florida National Scenic Side Trail in BRSF is 3.9 miles in length and connects the Blackwater River Trail with the 11.3-mile section of the Florida National Scenic Trail that runs through the state forest to Eglin Air Force Base.

3. Equestrian Trails

The Coldwater Recreation Area is the starting point for the forest's horse trail system. Fifty-nine (59) miles of horse trails are available for riding. Two of these trails are on the FFS's statewide Trailtrotter Program. The trails are all interconnected. The 56 campsites near Coldwater Creek on the north end of the campground make this area extremely popular for horseback riding. Most of the horse trails are located within the Blackwater Field Trial Area which is managed for quail habitat.

4. Mountain Biking Trails

BRSF has 14.6 miles of mountain bike trails. The Bear Lake Mountain Bike Trail travels 5.9 miles around Bear Lake and crosses Bear Creek. The 8.7 mile Red-Rock Mountain Bike Trail system was built in 2007-2008 by the Pensacola Off-Road Cyclists, a local volunteer organization that is a part of the Southern Off-Road Bicycle Association (SORBA). Through resources sharing, SORBA and its chapters carry out the mission to promote trail development and maintenance. The Red Rock Mountain Bike Trail is located in the Juniper Tract south of Red Rock Road and west of Juniper Creek.

5. Field Trial Events

The Field Trial Area is a part of the forest set aside for bird-dog field trial events. It was originally 6,217 acres in size and was established in 1974 as a cooperative agreement between FFS and FWC. The Field Trial Area increased in size in 2023 to 9,682 acres. This has allowed for greater opportunities for field trial events and added additional archery hunting days. The aggressive burning program by FFS has significantly reduced hardwood competition. Since its inception, the Field Trial Area has grown into a popular location for equestrian events and for individual families to come to the forest to camp and ride horses. The open stands of longleaf pine are very conducive to horseback riding. Along with horseback riding, bird dog and fox dog trials occur each year at the Coldwater Recreation Area. There are 124 dog kennels for bird dogs and fox hounds. For the past 15 years, fox hound trials have been the dominant field trial type in the forest. Limited hunting is also available in the Field Trial Area. In recent years, the number of dog trials has averaged five (5) per year, and there are approximately six (6) organized trail rides annually.

6. Fishing

There are three (3) creek fed fishing lakes located on BRSF. Hurricane Lake is 318 acres in size, Bear Lake is 107 acres, and Karick Lake is 65 acres. Largemouth bass, bluegill, red-ear sunfish, and channel catfish are located in all of these lakes, which are managed by FWC.

7. Environmental Education / Ecotourism

Environmental education is provided through tours of BRSF as well as school programs that teach fire prevention and forest management principles and techniques. FFS also hosts the Munson Community Heritage Festival at Krul Lake Recreation Area. The festival is organized by the not-for-profit Munson Community Heritage Festival Committee and showcases local music, historical and cultural exhibits, demonstrations, arts, crafts, and foods. FFS and FWC have exhibits that explain forestry and wildlife components. The Munson gristmill is in operation to demonstrate how the pioneers in the area made grits and cornmeal as well as the Riley sawmill where boards are cut from tree logs. This event is part of Santa Rosa County's Beaches to Woodlands Tour sponsored by the Tourist Development Council. The Tourist Development Council presently advertises the forest through various magazines and websites.

B. Planned Recreational Opportunities

The FFS will continue to assess plans for additional recreational opportunities based on demand, suitability, carrying capacity, demographics, and impact to the resources on the forest. All planned improvements may be completed as staff and funding permits. Both terrestrial and aquatic resources, as well as related activities will be evaluated. Any plans will be incorporated into the Five-Year Outdoor Recreational Plan on file at BRSF.

The outdoor recreation plan for BRSF for the next ten years will continue to emphasize dispersed outdoor recreational opportunities that require a minimal facility development. Trail maintenance will continue to be a recreation priority. On lands that are newly acquired, the recreation plan will call for minimal facilities such as unpaved parking lots, trailheads, hiking trails, mountain biking trails, equestrian trails, birding areas, and primitive camping. Where there are existing developed recreation areas, facilities will continue to be upgraded. New bathrooms or improvements to existing ones will be a priority for campgrounds. Site density will continue to be reviewed to balance customer satisfaction and revenue.

1. Public Access and Parking

Parking and public access will be evaluated for established state forest property as well as newly acquired acquisitions. BRSF staff will continue to provide adequate access for the public to utilize the forest through a maintained road system. In heavily used parking areas, asphalt or concrete surfacing may be needed. In these areas, striping will be added as usage dictates. Striping is presently used at the Bear Lake Recreation Area parking lot, the kitchen/pavilion parking lot, and the Krul Recreation Area parking lot. At Bone Creek, a large parking lot is available, but current usage does not warrant striping. If there are significant changes to usage patterns at this facility, the parking lot will be assessed and striped as conditions change.

Parking is available at all fee areas and various primitive recreation sites. When parking is generally not adequate due to higher usage, parking areas will be enlarged if the area can

sustain increased usage. If the area cannot sustain more usage due to ecological reasons, guardrails or other obstacles to deter additional parking may need to be added.

Parking reservations can also be incorporated in some instances. A good example of an effective parking reservation system can be found at the Krul Recreation Area. The demand for use of the Krul swimming area in the swimming season can easily exceed the carrying capacity of the parking lot on weekends. A gatehouse attendant was assigned to control the flow of vehicles into the parking lot and there were often many vehicles waiting to enter along the highway. A parking reservation system was incorporated in 2022, which ensures parking for visitors who have a reservation and allows the customers to see if there is availability online before driving the long distance from population centers. This is a model we will look to potentially incorporate at other high-use recreation facilities on BRSF.

In order to provide better access for the public, BRSF staff intend to re-route approximately 550 feet of road around an inholding in the Wolfe Creek acquisition. This road will prevent the possibility of road closure by the private landowner and also serve as a fire line for prescribed burning.

The Florida Forest Service also intends to connect two roads in the Wolfe Creek Acquisition by way of crossing Ernest Mill Creek. Due to the steep banks of Ernest Mill and potential for high water flow, a bridge may be built in order to cross the creek. The bridge will likely be constructed by FFS staff, using bridge materials already in stock, thereby saving money. Approximately 700 feet of road will be needed to connect from a road north of the creek to the nearest road south of the creek. This would allow public access to approximately 600 acres of forest land and improve access for FFS staff. See Exhibit D.

2. Trail / Walkway Improvements

There are several planned recreational trail projects. BRSF recently refurbished 448 feet of boardwalk on the Bone Creek Loop Trail. A similar project will occur on the Bear Lake Loop Trail during the 2025-26 fiscal year. Stringers will be replaced, new curbing added, and composite boards will replace deteriorated wooden decking boards. Wooden walkways at the Coldwater Recreation Area will be replaced with concrete walkways between the kitchen and bathhouses. Boardwalk replacement and removal will also occur along the Karick Lake Loop Trail. The Karick Lake Loop Trail will be rerouted to reduce wooden boardwalks across wetlands. Dirt will continue to be added to Off-Highway Vehicle trails as needed through the length of the ten-year management plan.

Kiosks will be replaced at various campgrounds based on structural integrity within the next ten-year cycle. Staff will review kiosk structures and renovate or replace as needed. A new kiosk was built by Blackwater staff at the Krul Recreation Area in the 2024-25 fiscal year to replace a kiosk damaged from tornadoes in May of 2024. The same plans and design will be incorporated into new kiosks. Benches and signage along trails will be reviewed periodically and replaced when needed.

FFS staff will evaluate and if feasible, establish trails and other primitive recreation activities/areas in the Wolfe Creek acquisition.

3. Pier Improvements

Pier renovations will occur at Camp Paquette within the next five (5) years. The Bone Creek pier will also be refurbished with new decking boards. The smaller boat launching piers next to the boat ramps at Bear Lake, Hurricane Lake, and Karick Lake will continue to be maintained by the FFWCC.

4. Recreational Area Resurfacing

Concrete surfacing additions have occurred at some of the Bear Lake campsites in prior years. These concrete additions next to the asphalt pads increased the width of the pads for a portion of their length. This extra pad width is a welcome addition for visitors with recreation vehicles. These concrete pad additions are planned to continue at Bear Lake and other campgrounds with similar needs. Maintenance of camping pads and campground roads will be evaluated each year at all of the recreation areas and improvements will continue as needed. During the review of resurfacing maintenance, campsites should be monitored for campsite leveling and approach angles for parking large rigs.

5. Campground Construction

BRSF is focusing on improving the present infrastructure in the existing recreation areas. Quality bathrooms are one of the main attributes that the forest visitor expects to have in improved recreation areas. The remaining recreation areas that need new or refurbished bathrooms include Camp Paquette, Krul Day Use, Bone Creek, and Karick South. Additional projects that are planned include: constructing a bathroom for the Coldwater office; replacing the first Coldwater barn stall with covered paddocks; replacing wooden fencing and wooden horse stalls/paddocks at Coldwater; repairing and replacing field fence at Clear Creek, renovating Bear Lake kitchen and dining room; adding fine crushed lime rock or topsoil and sod around erodible campsites; replacing leaning 40+ year-old concrete retaining wall at Bone Creek with wider wall; building new Coldwater dog kennels across Gordon Land Road; monitoring electric pedestals for replacement; upgrading breaker panels at campgrounds as needed; level camping pads that are not conducive for camping rigs; and replacing the gatehouse at Krul with a building containing additional office space and bathroom accommodations.

C. Hunter Access

Hunting season dates, limits, and methods are established annually by FWC, in consultation with FFS. Access, season dates, limits, and methods are outlined in the regulations summary and area map brochures for the Blackwater Wildlife Management Area (WMA), Hutton Unit, Carr Unit, and the Yellow River WMA. The Hutton Unit is gated to restrict illegal hunting activities. Parts of the Yellow River WMA are gated to limit road damage and allow for ecological restoration.

D. Education

The FFS may create partnerships with local K-12 schools and / or universities for the development and implementation of educational opportunities on BRSF. The Five-Year Outdoor Recreation Plan will guide management activities as they pertain to future educational opportunities BRSF may provide to the public.

VI. Forest Management Practices

A. Prescribed Fire

Forest management practices on BRSF are important in the restoration and maintenance of forest ecosystems and provide a variety of socio-economic benefits to Floridians. Management practices on BRSF include a prescribed fire program which is an effective tool in controlling the encroachment of shrubs and off-site hardwoods, stimulating the recovery of native herbaceous groundcover, and promoting the regeneration of native pines.

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 FFS's Blackwater 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 graph detailing the recent history of prescribed burns and wildfires at BRSF is available in Exhibit O.

The FFS has access to 16 tractor-plow units, eight (8) Type-6 engines, two (2) heavy dozers, and two (2) large engines that are available to BRSF, as well as the remainder of the three-county district. Additional support is available from neighboring Chipola District if the need arises. Personnel and equipment stationed at BRSF will be used for pre-suppression practices, establishment of firebreaks, rehabilitation of existing firelines, construction of new firelines, maintenance of perimeter firebreaks, and prescribed burning.

The annual forest prescribed burning program produces multiple benefits. The purposes of prescribed burning on BRSF are to facilitate forest management operations; enhance wildlife and listed species habitat; decrease fuel loading; enhance public safety; and 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 BRSF, which will consist of dormant and growing season burns. An update to the Five-Year Prescribed Burning Management Plan is developed each year by FFS staff. All burns conducted on BRSF are executed by Florida Certified Prescribed Burn Managers in accordance with 590.125, F.S. and Chapter 5I-2, F.A.C.

According to forest stand data, historic fire-dependent natural communities on BRSF are estimated to have occupied approximately 181,000 acres. The majority of these communities would have exhibited fire-return intervals ranging from 2 to 4 years. Current fire-dependent communities encompass 173,019 acres. Based on current conditions and management objectives, BRSF will plan for 45,000 to 90,000 acres to be prescribed burned annually. Meeting prescribed fire goals will be largely dependent on weather conditions, available personnel, and statewide emergency situations such as wildfires, hurricanes, and other natural disaster response and relief. Currently it is estimated that approximately 139,000 acres of BRSF are within the desired fire-return interval.

1. Fire Management

The fire management plan will serve as a working tool and an informational document for BRSF. The plan will provide guidelines regarding wildfire suppression and prescribed fire management. It will specify burn units, burn unit prescriptions, appropriate fire-return intervals, and fire suppression planning. The plan may be reviewed and amended as necessary.

The use of prescribed fire in the management of timber, wildlife, and ecological resources on BRSF is necessary if the FFS is to fulfill the goals and objectives stated in this plan including: enhancing and restoring native plant communities, managing protected species, managing timber, recreation, historical, and other resource values. The fire management plan and its objectives shall reflect and incorporate these multiple-resource objectives.

- a. Prescribed Fire:** Prescribed fire is the most important land management tool, both ecologically and economically, for managing vegetation and natural communities, and perpetuating existing wildlife populations in Florida. Forest operation records and staff experience should be combined with the FNAI inventory and assessment (2022) to identify areas that may require mechanical or chemical treatments in conjunction with prescribed fire to restore a more natural vegetative structure.
- b. Burn Unit Plans:** Each prescribed fire will be conducted in accordance with FFS regulations and state law (Chapter 5I-2, F.A.C., Chapter 590, F.S.) and have a burn unit plan (or prescription). Each prescription will contain, at a minimum, the information, as required by Section 590.125(3), F.S., needed to complete the FFS Prescribed Burn Plan Form FDACS 11461.

Aerial ignition may be considered for large burn units where this tactic can be cost effective for larger acreages. Aerial ignition has historically been done with a helicopter, however there are plans to utilize drones to provide aerial ignition which will be more cost effective and safer than utilizing a helicopter. Consideration should be given to rotating burn units between dormant and growing season burns over time with the understanding that historically, most natural fires occurred during the growing season or the transition to the growing season. Fire-return intervals for a burn unit are recommended to fall within the natural, historic range for the dominant natural community or communities within a given burn unit.

Based upon available species survey data, burn units within a prescription that have listed wildlife species shall explicitly state their presence and any restrictions or requirements relative to prescribed burning in proximity to these species or habitats. These may include time of year, pre-burn preparation, fire-return intervals, and other burn parameters.

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 prescribed burning. Implementation of this program is the responsibility of FFS's Blackwater 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.

FFS has three (3) paramount considerations regarding wildfires and are established in priority order:

- 1) Protection of human lives
- 2) Protection of improvements
- 3) Protection of natural resources

All procedures regarding wildfire will follow the State Forest Handbook and the BRSF Fire Management Plan.

1. Suppression Strategies

If a wildfire occurs on BRSF, there are two (2) alternative suppression strategies as defined below:

- a. **Contain and Control** is defined as a suppression strategy where a fire is restricted to a certain area by using existing natural or constructed barriers that stop the fire's spread under the prevailing and forecasted weather until it is out. This strategy allows the use of environmentally sensitive tactics based on fuels, fire behavior, and weather conditions that keep a wildfire from burning a large area or for a long duration.
- b. **Direct Suppression** 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 district fire load dictates that crews not be involved with individual fires for any longer than absolutely necessary.

Appropriate suppression action will be that which provides for the most reasonable probability of minimizing fire suppression cost and critical resource damage, consistent with probable fire behavior, total fire load, potential resource and environmental impacts, safety, and smoke management considerations. 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, then direct immediate suppression action will be taken.

3. Firebreaks and Firelines

A system of permanent fire breaks has been developed and maintained around and within the boundaries of BRSF 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 pre-suppression fire breaks will meet the established Silvicultural 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 bladed lines will be used for initial installation of firelines in heavy fuels and in cases where it's considered necessary to protect life, property, or resources and / or to minimize threats to firefighters. Plowed and bladed lines will be rehabilitated, and BMPs implemented as soon as practical after the fire is suppressed.

4. Sensitive Areas

The BRSF 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. FFS personnel are aware of these areas in the event of a wildfire. Special precautions will be followed when prescribed burning in sensitive areas on BRSF. When possible, fire staff will avoid line construction in wetland ecotones and other areas throughout the forest.

5. Firewise Communities

FFS has implemented a Firewise community approach for wildfire prevention statewide. Specifically, in the area adjacent to or nearby BRSF, efforts in this regard will continue to identify communities at risk and facilitate communication with their representatives.

6. Adjacent Neighbor Contacts

The staff at BRSF 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 prescribed burn on the state forest to assess impacts on timber and habitat. Based on the evaluations, decisions will be made on the effectiveness of the prescribed burn and improvements that can be made in the future. A historical fire record for all significant fires and prescribed burns will be maintained. This will be accomplished using completed burn plans and through the maintenance of GIS data. These records are intended to provide data for future management decisions.

C. Sustainable Forestry and Silviculture

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

1. Strategies

The following strategies will apply to silvicultural practices on BRSF:

- 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 or artificial 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 BRSF will be directed toward improving forest health, wildlife habitat, ecological and economical sustainability, and recovery from past management practices 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 reforestation with the appropriate tree species. Herbicide applications may be necessary to control woody competition and to re-establish desired natural species of both overstory and groundcover. Site preparation methods may include prescribed fire, mechanical vegetation control, and/or herbicide applications. Herbicides used will be registered for forestry use by the U.S. Environmental Protection Agency (EPA) and will not adversely affect water resources.

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 and/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, regeneration harvests applicable to the species present and clear-cutting to remove off-site species.

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

3. Forest Inventory

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 BRSF forest will be re-inventoried annually to provide an accurate estimation of the standing timber and to ensure that stands will be managed sustainably.

Commercial forest resources available on the property include pine species such as slash pine, longleaf pine, and sand pine. Cypress, cedar, and most hardwood species are generally not harvested from BRSF since most are in wetland or Special Management Zone (SMZ) areas.

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 and in accordance with FFS Policies and Procedures.

5. Cattle Grazing

Cattle grazing activities assist in maintaining pastures and controlling invasive plants, support the maintenance of fences and gates, and provide a source of income to the forest.

There are currently no (0) cattle leases on BRSF.

6. Sustainable Forestry Initiative (SFI)

The SFI 2022 Forest Management Standard promotes sustainable forestry practices based on 13 Principles and 17 Objectives, 41 Performance Measures, and 141 Indicators. These requirements include measures to protect water quality, biodiversity, wildlife habitat, species at risk, and forests with exceptional conservation value. The SFI Forest Management Standard applies to any organization in the United States or Canada that owns or manages forestlands.

The SFI Program is committed to continuously improving responsible forest management. SFI Program Participants must meet or exceed applicable water quality laws and regulations, with measures to manage and protect wetlands and riparian zones on certified lands. Participants must continuously evaluate habitat, and biodiversity impacts from forest activities which leads to improved habitat quality and protection of imperiled or critically imperiled species.

D. Invasive Species Control

FFS employees continually monitor the forest for invasive species while conducting management activities. FFS will locate, identify, and apply control measures with the intent to control invasive species. Table 6 lists the general treatment, acres impacted, and population stability trend for invasive plant species occurring on BRSF. Also see Exhibit P.

On-going maintenance and monitoring strategies are outlined in the Five-Year Ecological Management Plan which is developed to locate, identify, and control invasive plant species. Occurrences of invasive species are recorded in the BRSF GIS database and are monitored and treated annually as funding permits. The GIS database is updated as new infestations 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 invasive species by decontaminating agency equipment and equipment used by private contractors according to the State Forest Handbook.

FFS will enlist support from FWC in efforts to control invasive animals. Feral hogs (*Sus scrofa*) are present on BRSF and the population is increasing over time. FWC has issued a feral hog

control permit to FFS for all state forests and FFS will allow for feral hog removal on BRSF through trapping and hunting as necessary.

Training in the identification and control of invasive species will be scheduled for personnel as time and resources permit. Training concerning invasive plants will be coordinated with the Forest Management Bureau's Forest Health Section. Control of invasive species will be target-specific and use a variety of methods including appropriately labeled and efficacious herbicides.

Table 6. Invasive Plant Species Occurring on BRSF

Common Name	Scientific Name	Treatment Strategy	Acres Impacted	Increasing / Decreasing
Air potato	<i>Dioscorea bulbifera</i>	Foliar	0.1	Stable
Autumn olive	<i>Elaeagnus umbellata</i>	Basal and Foliar	17.7	Decreasing
Callery pear	<i>Pyrus callereyana</i>	Basal and Cut Stem	1,220.0	Increasing
Camphortree	<i>Cinnamomum camphora</i>	Basal and Cut Stem	1.2	Increasing
Chinaberry	<i>Melia azedarach</i>	Basal and Cut Stem	8.9	Stable
Chinese tallow	<i>Triadica sebifera</i>	Basal and Cut Stem	2,448.5	Increasing
Chinese privet	<i>Ligustrum sinense</i>	Basal and Foliar	163.0	Stable
Chinese wisteria	<i>Wisteria sinensis</i>	Foliar/Cut Stem	19.3	Stable
Cogongrass	<i>Imperata cylindrica</i>	Foliar	1,019.7	Decreasing
Earleaf acacia	<i>Acacia auriculiformis</i>	None Found	0	n/a
Golden bamboo	<i>Phyllostachys aurea</i>	Foliar and Mechanical	12.7 stable	Stable
Japanese climbing fern	<i>Lygodium japonicum</i>	Foliar	1,767.0	Increasing
Japanese honeysuckle	<i>Lonicera japonica</i>	Foliar	6.6	Stable
Kudzu	<i>Pueraria montana</i>	Foliar	32.1	Decreasing
Mimosa	<i>Albizia julibrissin</i>	Basal and Cut Stem	95.3	Stable
Multiflora rose	<i>Rosa multiflora</i>	Foliar	0.1	Stable
Nandina	<i>Nandina domestica</i>	None Found	0	n/a
Showy croton	<i>Crotalaria spectabilis</i>	Foliar	72.0	Stable
Silverthorn	<i>Elaeagnus pungens</i>	None Found	0	n/a
Skunk vine	<i>Paederia foetida</i>	Foliar	14.7	Increasing
Sword fern	<i>Polystichum munitum</i>	None Found	0	n/a
Torpedograss	<i>Panicum repens</i>	Foliar	92.4	Decreasing
Trifoliate orange	<i>Citrus trifoliata</i>	None Found	.2	Stable
Tropical soda apple	<i>Solanum viarum</i>	Foliar and Hand-Pulling	107.0	Decreasing
Tung oil tree	<i>Vernicia fordii</i>	Basal and Cut Stem	27.2	Decreasing

E. Insects, Disease and Forest Health

Currently there are no insect or disease problems on BRSF. State forest staff monitor for incidental outbreaks of pine bark beetles (*Ips* spp.) throughout the forest. These outbreaks typically affect no more than a couple of acres. Aerial surveys are conducted every summer, typically between June and August, for southern pine beetle (*Dendroctonus frontalis*) outbreaks. In the event of an outbreak of any disease or insects, 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, F.S. 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. The local arthropod control agencies in Okaloosa and Santa Rosa Counties will be notified of the approval of this plan, documenting this designation.

As a result, prior to conducting any arthropod control activities on BRSF, 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 BRSF. This public lands control plan must be in compliance with FDACS guidelines and utilize the appropriate FDACS form. The plan must then be approved and mutually adopted by the county, FFS, and FDACS, prior to initiation of any arthropod control activities. Should the local mosquito control district not propose any arthropod control operations on the property, no arthropod control plan is required. See Exhibit X.

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 BRSF. This may require the use of contractors to achieve the needed goals, while also complying with Best Management Practices. The opportunities for outsourcing land management work may include, but is not limited to:

1. Herbicide applications
2. Ecosystem restoration
3. Site Preparation
4. Reforestation
5. Timber harvesting
6. Biological assessments and mapping
7. Fixed capital and infrastructure improvements

VII. Proposed Management Activities for Natural Communities

In 2023, FNAI completed an inventory and natural community mapping project on BRSF. Current and historic natural community cover types can be found in Exhibits Q and R, and Table 7. This inventory included managed and altered community types which are habitats that have been impacted by humans and do not fit into FNAI's Natural Community Classification. See Tables 8 and 9.

Table 7. Natural Community Types

Community Type	Historic Acres*	Current Acres*
Baygall	1,487	1,426
Blackwater stream	753	808
Bottomland forest	29,127	28,562
Depression marsh	79	72
Dome swamp	158	157
Floodplain swamp	536	532
Mesic flatwoods**	1,848	1,741
River floodplain lake	1	1
Sandhill**	29,972	24,321
Seepage slope	7,064	5,092
Shrub bog	55	55
Upland hardwood	709	562
Upland mixed woodland	629	426
Upland pine**	141,531	121,590
Wet flatwoods**	1,005	609
Wet prairie**	38	32
Managed and Altered landcover types***	0	29,005
TOTAL	214,992	214,991

* Acreage discrepancies may occur based on FNAI polygons

** Includes restoration community acreage

*** See Tables 8 and 9

Table 8. Managed Landcover Types

Community Type	Current Acres*
Improved Pasture	26
Pine plantation	17,643

* Acreage discrepancies may occur based on FNAI polygons

Table 9. Altered Landcover Types

Landcover Type*	Current Acres**
Agriculture	982
Artificial pond	2
Borrow area	136
Canal / ditch	3
Clearing	796
Developed	243
Food Plot	411
Impoundment	685
Road	1,371
Successional hardwood forest	4,023
Successional hydric shrubland / forest	1,874
Utility Corridor	810
TOTAL	10,115

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

** Acreage discrepancies may occur based on FNAI polygons

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, representative species present, and hydrology. Management during this ten-year period will begin with a forest-wide assessment of the fuel loading, timber densities, reforestation needs, and groundcover in order to develop a five-year comprehensive operational plan for prescribed burning and other management activities across the forest. Strategies may include thinning pine plantations, mowing or chopping in areas of heavy fuel buildup, application of both dormant and growing season fires, and / or the use of herbicides to control hardwoods and / or hardwood regeneration. Site preparation and reforestation may be required to increase pine stocking in stands with very poor stocking or in restoration efforts. Fire-return intervals are included as a guide and may vary depending upon specific conditions and are intended to attain desired forest and resource management goals. See Table 10.

Table 10. Prescribed Fire Interval Guide on BRSF

Habitat Type	Historic Fire-Return Interval**	BRSF Fire Frequency Goal (Local)	Comments
Baygall	Rare	N/A	Baygall burns infrequently, perhaps only a few times each century in the deepest baygalls.
Blackwater Stream	N/A	N/A	Fire can occasionally reach the edge of the stream, particularly where pine dominated stands go to the edge of the stream.
Bottomland Forest	N/A	N/A	When surrounding uplands are burned, the fire is allowed to go into the bottomland forest. Amount of bottomland burned is dependent on the season and soil/duff moisture.
Depression marsh	Varies	2 – 10 years	Frequency of fire in depression marshes is dependent on the fire-return interval of the surrounding community.
Dome swamp	Varies	2 – 10 years	Dome swamps are generally small, and it is likely that natural fires during the spring and early summer creep through the entire swamp.
Floodplain swamp	N/A	N/A	Floodplain swamps are usually too wet to support fires. However, fires in surrounding uplands that creep into the swamp edges are important to reduce pine and bay species invasion.
Mesic flatwoods*	2 – 4 years	2 – 3 years	Mesic flatwoods depend on frequent, low-intensity fires to maintain diverse herbs and short-statured shrubs.
River Floodplain Lake	N/A	N/A	These lakes are found deep within bottomland forests or floodplain swamps. Fire getting to these lakes would be extremely rare.
Sandhill*	1 – 5 years	2 – 3 years	Sandhills are burned with the same frequency as other upland pine ecosystems. Burning can take place year-round with spring-summer burning providing the greatest effect. Many areas in the Yellow River Ravines tract have difficulty burning due to lack of fine fuels.

Habitat Type	Historic Fire-Return Interval**	BRSF Fire Frequency Goal (Local)	Comments
Seepage Slope	2-3 years	2 – 3 years	Seepage slopes are most often found along the edges of upland pine areas and as such, they receive fire when adjacent uplands burn and typically carry fire very well.
Shrub Bog	10-20 years	N/A	Shrub bogs will receive fire when surrounding uplands are burned. Burns usually do not carry across a bog unless it is during a drought period.
Upland Hardwood Forest	Varies	2 – 3 years	Stands will be on a 3-year burn rotation alongside surrounding upland mixed woodland and upland pine stands. Fires are not expected to burn as thoroughly or as intensively as upland pine stands.
Upland Mixed Woodland	2-10 years	2 – 3 years	These stands are burned with the same frequency as upland pine stands. These stands typically have a mixture of pine with pyrogenic oaks such as southern red oak. Fires will readily move across the stand, but with less intensity than upland pine.
Upland Pine*	1-3 years	2 – 3 years	The most prevalent community type on BRSF. Stands are typically burned every 2-3 years with spring and summer burns providing the greatest control of broadleaf species. These areas are often flanked by seepage slopes and bottomland forests.
Wet flatwoods*	3 – 10 years	3 – 10 years	Wet flatwoods require frequent, low intensity fires to maintain an herbaceous dominated understory.
Wet prairie*	2 – 3 years	2 – 3 years	Frequent fires prevent the invasion of weedy shrubs and trees that shade out the herbaceous species.

* Includes restoration community acreage

** As determined by FNAI

The following community descriptions, existing condition descriptions, and management recommendations are taken from a 2023 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 BRSF.

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

A. **Baygall**

Description:

Baygalls at BRSF are found at the edges of floodplains, along seepage streams and drainages from surrounding upland pine and sandhill communities, and in large, forested wetland mosaics near the Yellow River. They are generally shrubby or forested seepage areas dominated by sweetbay (*Magnolia virginiana*), swamp bay (*Persea palustris*), black titi (*Cliftonia monophylla*), titi (*Cyrilla racemiflora*), and large gallberry (*Ilex coriacea*). Seepage from surrounding uplands maintains a saturated substrate with peat moss (*Sphagnum* spp.) often forming mats. The baygalls at BRSF are most commonly interlaced with bottomland forests,

and many intermediate areas can be found throughout the broader floodplains. Baygalls may also occur included in broad grassy wet flatwoods communities, at the bases of seepage slopes, and forming narrow baygall “stringers” along seepage streams.

A study of natural communities on Eglin Air Force Base by FNAI (Kindell et al., 1997) noted a variety of baygall associations occurring there, including the Atlantic white cedar-sweetbay-buckwheat tree (black titi) association, the Florida anise association, and the buckwheat tree (black titi) association. The Atlantic white cedar-sweetbay-buckwheat tree (black titi) association is most similar to bottomland forest on BRSF and is usually found along seepage streams. The canopy consists of Atlantic white cedar (*Chamaecyparis thyoides*) and/or slash pine (*Pinus elliottii*), with tuliptree (*Liriodendron tulipifera*) occasional and a shrubby understory of sweetbay, black titi, and swamp bay. The Florida anise association is distinguished from other baygalls by its abundance of Florida anise (*Illicium floridanum*) along with other typical baygall species. This association was noted at Eglin to occur at the base of steephead ravines, although at BRSF, it seems to be common on steeper slopes. Lastly, the buckwheat tree (black titi) association, characterized as a dense shrubby thicket of mainly black titi that may reach into the canopy along with slash pine and sweetbay, occurs mainly in broad low areas of floodplains or encroaching into seepage slopes due to fire suppression. These communities may intergrade with shrub bogs completely dominated by titi, and the mosaic of baygall/shrub bog may shift over time depending on the time since fire.

Where baygalls can be distinguished on historic aerial photography, they show a uniform, almost black signature. The historic photographs indicate that most of the baygalls had well-defined edges bordering higher elevation areas, probably as a result of growing season fires that reduced the intrusion of shrubby species into upland communities.

Current Conditions:

Bay and titi dominated communities are currently forming a much larger component of the total area than in the past. This seems mainly attributable to the conversion of historically open, herbaceous wet flatwoods and seepage slopes to shrubby titi thickets and young bay forests. Many lower slope areas are currently either completely converted to woody communities or in the process of woody encroachment with only remnant herbaceous cover. These are usually labeled as successional hydric shrubland/forest in the current map.

The baygall canopy at Blackwater is typically dominated by a dense cover of sweetbay (*Magnolia virginiana*), slash pine (*Pinus elliottii*), swamp tupelo (*Nyssa biflora*), red maple (*Acer rubrum*), and Atlantic white cedar (*Chamaecyparis thyoides*). The subcanopy is dominated by black titi (*Cliftonia monophylla*), sweetbay, red maple, and titi (*Cyrilla racemiflora*). The dense shrubby midstory is dominated by hydrophilic shrubs such as large gallberry, titi, black titi, sweetbay, yaupon (*Ilex vomitoria*), Florida anise (*Illicium floridanum*), and swamp bay (*Persea palustris*). The herbaceous understory is sparse containing mostly netted chain fern (*Woodwardia areolata*), Virginia chain fern (*Woodwardia virginica*), spadeleaf (*Centella asiatica*), cinnamon fern (*Osmunda cinnamomea*), royal fern (*Osmunda regalis* var. *spectabilis*), sphagnum moss (*Sphagnum* sp.), and pinewoods bluestem (*Andropogon arctatus*).

In former seepage slopes encroached with baygall vegetation, various remnant carnivorous plants such as Tracy’s sundew (*Drosera tracyi*), yellow pitcherplant (*Sarracenia flava*), whitetop

pitcherplant (*Sarracenia leucophylla*), parrot pitcherplant (*Sarracenia psittacina*), Gulf purple pitcherplant (*Sarracenia rosea*), and redflower pitcherplant (*Sarracenia rubra*) may persist. Vines such as laurel greenbrier (*Smilax laurifolia*) and muscadine (*Vitis rotundifolia*) are occasional. Open baygall edges and narrow seepage stream baygall “stringers” are important habitat for several rare plant species occurring at BRSF, i.e., dwarf witchalder (*Fothergilla gardenii*), flameflower (*Macranthera flammea*), and spoonleaf sundew (*Drosera intermedia*).

Rare species observed in the baygalls of BRSF include pinewoods bluestem (*Andropogon arctatus*), primrose-flowered butterwort (*Pinguicula prumuliflora*) and naked-stemmed panic grass (*Dichanthelium nudicaule*).

Disturbances from roads and clearings have encouraged the growth of the invasive plants Chinese privet (*Ligustrum sinense*), Japanese honeysuckle (*Lonicera japonica*), Japanese climbing fern (*Lygodium japonicum*), and Chinese tallow tree (*Triadica sebifera*). Many areas near roads have ditches running from the uplands that may be altering the hydrology in the baygalls.

Fire Regimes:

Although baygalls rarely dry out enough to burn, usually igniting only every 50-100 years or more, the drier edges of these communities must be maintained by growing season fires that are allowed to burn into the baygall. Narrow stringers of baygall often found in BRSF likely burned more regularly with the surrounding upland pine or sandhill vegetation. Generally, a lack of these hot fires has contributed to the gradual expansion of the baygall community into wet flatwoods and seepage slopes.

Management Needs:

Management activities should focus on restricting baygalls roughly to historic boundaries and maintaining open edges between baygall and upland communities. Hydrologic alterations in baygalls, such as ditches, should be restored to return natural hydrology where practical, and the current effort to limit road access throughout the forest should be continued. Since non-native plant invasion is most severe along roads in baygalls and bottomland forest communities, removal efforts should be focused on these disturbances.

B. Blackwater Stream

Description:

Coldwater Creek, Blackwater River, Juniper Creek, Sweetwater Creek, Panther Creek, and Penny Creek are all mapped as blackwater streams. These are perennial or intermittent seasonal watercourses with sandy bottoms originating deep in sandy lowlands. The tea-colored waters are laden with tannins and are generally acidic. Emergent and floating aquatic vegetation growth is often reduced because of typically steep banks and considerable seasonal fluctuations in water level. Plant communities along these streams are usually either bottomland forest dominated by Atlantic white cedar (*Chamaecyparis thyoides*), or floodplain swamp dominated by pond cypress (*Taxodium ascendens*).

The larger blackwater streams are clear on the historic photos due to the bright white sands deposited at bends in the streams. It is important to note that the streams have apparently

undergone minor changes in their courses and so do not always align with the current photographs.

Current Conditions:

Existing conditions are similar to desired future condition. Numerous seepage streams drain into the blackwater streams all along their courses.

Fire Regimes:

Blackwater streams are not fire adapted natural communities.

Management Needs:

Blackwater streams in the forest are major recreation areas, so management concerns should focus on reducing impacts from those activities. Another primary management issue lies with preventing sediment from entering the streams. BRSF staff have worked hard to reduce sediment by restricting vehicular access to streamside areas, placing rock on low-water crossings, and closing roads that are eroding sediment into the river. These efforts will continue into the future due to the public's desire to access these streamside areas.

C. Bottomland Forest

Description:

Bottomland forests are diverse communities occurring on floodplain terraces or shallow depressions and may be flooded for a portion of the dormant season. Most blackwater streams and larger seepage streams in BRSF have bottomland forests forming borders along the high sandy banks. There is a gradual transition to baygall as elevation increases. In broad floodplain areas, narrow swamps may develop along trough-like areas with swamp tupelo (*Nyssa sylvatica* var. *biflora*) becoming more common in the canopy.

In BRSF, these forests have a tall canopy of mainly Atlantic white cedar (*Chamaecyparis thyoides*) with slash pine (*Pinus elliottii*) and/or loblolly pine (*Pinus taeda*) common. There is a well-developed sub-canopy/tall shrub layer of various combinations of red maple (*Acer rubrum*), sweetbay (*Magnolia virginiana*), tuliptree (*Liriodendron tulipifera*), black titi (*Cliftonia monophylla*), dahoon (*Ilex cassine*), American holly (*Ilex opaca*), swamp laurel oak (*Quercus laurifolia*), water oak (*Quercus nigra*), sourwood (*Oxydendrum arboreum*), and swamp bay (*Persea palustris*). Short shrubs may be abundant with mostly coastal sweetpepperbush (*Clethra alnifolia*), blue huckleberry (*Gaylussacia frondosa* var. *tomentosa*), St. Andrew's cross (*Hypericum hypericoides*), mountain laurel (*Kalmia latifolia*), coastal doghobble (*Leucothoe axillaris*), and possumhaw (*Viburnum nudum*). Herbs are sparse except in occasional sunny areas.

In the far northeastern section of BRSF, bottomland forests become dominated by water oak, loblolly pine, and swamp laurel oak. However, the understory remains similar.

Bottomland forests are virtually indistinguishable on aerial photographs from baygalls with similar structure, and these communities are mapped together in most instances. The rough texture seen on the historic photographs due to the tall Atlantic white cedars may sometimes help to differentiate this community from surrounding baygall.

Current Conditions:

In addition to the dominant species noted above, other trees and shrubs noted included hazel alder (*Alnus serrulata*), American beautyberry (*Callicarpa americana*), titi (*Cyrilla racemiflora*), large gallberry (*Ilex coriacea*), gallberry (*Ilex glabra*), Florida anise (*Illicium floridanum*), Virginia willow (*Itea virginica*), sweetgum (*Liquidambar styraciflua*), fetterbush (*Lyonia lucida*), evergreen bayberry (*Morella caroliniensis*), wax myrtle (*Morella cerifera*), red chokeberry (*Aronia arbutifolia*), spruce pine (*Pinus glabra*), mountain azalea (*Rhododendron canescens*), American snowbell (*Styrax americanus*), and sawtooth blackberry (*Rubus pensilvanicus*). Common herbs included clustered sedge (*Carex glaucescens*), spadeleaf (*Centella asiatica*), longleaf woodoats (*Chasmanthium laxum* var. *sessiliflorum*), partridgeberry (*Mitchella repens*), cinnamon fern (*Osmunda cinnamomea*), royal fern (*Osmunda regalis* var. *spectabilis*), primroseleaf violet (*Viola primulifolia*), netted chain fern (*Woodwardia areolata*), Virginia chain fern (*Woodwardia virginica*), and yelloweyed grasses (*Xyris* spp.). Vines are common, with crossvine (*Bignonia capreolata*), muscadine (*Vitis rotundifolia*), laurel greenbrier (*Smilax laurifolia*), sarsaparilla vine (*Smilax pumila*), coral greenbrier (*Smilax walteri*), eastern poison ivy (*Toxicodendron radicans*), climbing hydrangea (*Decumaria barbara*), and swamp jessamine (*Gelsemium rankinii*).

Rare species observed in the bottomland forests include mountain laurel (*Kalmia latifolia*), palegreen orchid (*Platanthera flava*), Coville's rush (*Juncus gymnocarpus*), primrose-flowered butterwort (*Pinguicula primuliflora*), and hairy-peduncled beaksedge (*Rhynchospora crinipes*).

Recent hurricanes have had a large impact on bottomland forest canopies, mainly due to the toppling of countless large Atlantic white cedars. This has also had the effect of increasing light penetration to the understory, and herbaceous vegetation may increase in the future. More severe alteration of baygall/bottomland forest communities has taken place with the damming of some drainages to form recreation lakes and hunting areas. Hurricane Lake, Karick Lake, and Bear Lake are all converted seepage streams and bottomland forests. There are also several smaller areas usually dammed by old roads that are being maintained for waterfowl. These areas often have standing dead cedars in several feet of water with aquatic herbs such as watershield (*Brasenia schreberi*), stream bogmoss (*Mayaca fluviatilis*), and yellow pondlily (*Nuphar advena* subsp. *ulvacea*). Beavers have also altered hydrology and species composition in many areas of bottomland forest. However, this is generally only a management concern in areas where beaver dams cause flooding, erosion, or other degradation to forest roads and trails.

Fire Regimes:

Bottomland forest is not a fire-maintained natural community, although fires in adjacent uplands will enter the area.

Management Needs:

Management should focus on removing invasive plant species, especially at disturbed road crossings, and controlling feral hog populations, whose foraging is highly damaging to groundcover. Where possible, smaller dams should be removed to allow a natural hydrology. Unauthorized vehicular access also leads to erosion problems thereby negatively affecting the hydrology. Beaver dam issues will be mitigated where dam construction causes flooding or other issues to forest roads.

D. Depression Marsh

Description:

Depression marshes are small, usually circular basins primarily located in sandhill communities on BRSF. These may have been formed as a result of wind scouring which created hollows in the substrate that could then fill with water, although they may be almost dry during drought conditions. These depressions are open and dominated by herbaceous vegetation (mostly graminoids) with shrubs and trees being only infrequent elements around the edges. These occasional shrubs and trees mark the generally swift transition to either upland pine or sandhill. In some marshes, an acidic peat layer of sphagnum moss (*Sphagnum sp.*) may also develop.

Depression marshes are smooth, very dark circles on the historic aerial photographs. They are uncommon on BRSF.

Current Conditions:

Most marshes at BRSF are intact, although several have been impacted by forestry operations in surrounding communities, as well as by fire suppression activities. Depression marshes are dominated by a dense herbaceous layer made up of mostly graminoids such as maidencane (*Panicum hemitomon*), longleaf threeawn (*Aristida palustris*), southern beaksedge (*Rhynchospora microcarpa*), Tracy's beaksedge (*Rhynchospora tracyi*), clustered sedge (*Carex glaucescens*), spikerushes (*Eleocharis sp.*), and witchgrasses (*Dichanthelium sp.*), along with other herbs such as flattened pipewort (*Eriocaulon compressum*), Carolina redroot (*Lachnanthes caroliniana*), combleaf mermaidweed (*Proserpinaca pectinata*), Virginia chain fern (*Woodwardia virginica*), and yelloweyed grasses (*Xyris sp.*). Shrubs and trees are sparse, typically along the shallow margins of the community and may include red maple (*Acer rubrum*), peelbark St. John's wort (*Hypericum fasciculatum*), myrtle dahoon (*Ilex cassine* var. *myrtifolia*), gallberry (*Ilex glabra*), swamp tupelo (*Nyssa sylvatica* var. *biflora*), and slash pine (*Pinus elliottii*).

In a few areas, marshes have formed from seepage streams that have been dammed. These artificial areas are generally very weedy depending on water depth and are mapped as impoundments on the current natural community map.

Fire Regimes:

Because of their small size and shallow depth, depression marshes often burn through along with the surrounding upland community. Occasional spring and early summer burns are needed to ensure that shrubby vegetation does not become established and reduce the diversity of the herb layer.

Management Needs:

Fires should be allowed to burn completely across depression marshes. Off-highway vehicle traffic and other recreational uses should be restricted to limit impact. In cases where it is feasible to remove dams from seepage streams, artificial marshes should be returned to historic conditions (usually seepage slope or baygall).

E. Dome Swamp

Description:

Dome swamps are small, forested depressions occurring at BRSF within areas of upland pine and sandhill. Dome swamps contain up to three concentric zones: a central area with a dense canopy of hydrophytic trees, a shallow intermediate zone with decreasing canopy allowing for a ring of shrubs and young trees, and an outermost, narrow edge dominated by herbs that forms an ecotone between the surrounding upland community and the canopied swamp.

The center of the dome swamp has a closed canopy of swamp tupelo (*Nyssa biflora*) and/or Ogeechee tupelo (*Nyssa ogeche*), although some swamps in the southernmost part of the forest are dominated by pond cypress (*Taxodium ascendens*). Tall shrubs and small trees, such as myrtle dahoon (*Ilex cassine* var. *myrtifolia*), swamp bay (*Persea palustris*), sweetbay (*Magnolia virginiana*), fetterbush (*Lyonia lucida*), and large gallberry (*Ilex coriacea*) are common on the edge of the mature dome. Herbs are mostly sparse in the middle of the swamp but resemble dense wet prairies on the ecotonal edge with the surrounding upland.

For the most part, dome swamps are easy to distinguish on the historic aerial photographs. They are mostly circular and darker than the surrounding area. They are similar in size and shape to depression marshes and some shrubby baygalls but can be separated by their slightly lighter color and evident canopy.

Current Conditions:

Existing conditions for dome swamps in BRSF are similar to desired future conditions. In addition to the species listed above, other common trees and shrubs include red maple (*Acer rubrum*), slash pine (*Pinus elliottii*), titi (*Cyrilla racemiflora*), and possumhaw (*Viburnum nudum*). Vines are occasional and include laurel greenbrier (*Smilax laurifolia*) and coral greenbrier (*Smilax walteri*).

There is an intact wet prairie edge around many of the dome swamps surveyed, and this area of small shrubs and herbs included broomsedge bluestem (*Andropogon virginicus*), lined sedge (*Carex striatula*), spadeleaf (*Centella asiatica*), threeway sedge (*Dulichium arundinaceum*), Baldwin's spikerush (*Eleocharis baldwinii*), flattened pipewort (*Eriocaulon compressum*), tenangle pipewort (*Eriocaulon decangulare*), peelbark St. John's wort (*Hypericum fasciculatum*), myrtleleaf St. John's wort (*Hypericum myrtifolium*), Carolina redroot (*Lachnanthes carolina*), foxtail club-moss (*Lycopodiella alopecuroides*), combleaf mermaidweed (*Proserpinaca pectinata*), bunched beaksedge (*Rhynchospora cephalantha*), narrowfruit horned beaksedge (*Rhynchospora inundata*), grassy arrowhead (*Sagittaria graminea*), sphagnum moss (*Sphagnum* sp.), humped bladderwort (*Utricularia gibba*), Virginia chain fern (*Woodwardia virginica*), and yelloweyed grasses (*Xyris* spp.) The rare plant small-flowered meadowbeauty (*Rhexia parviflora*) may be found in these grassy edges.

Swamps that have been surrounded by development from agricultural and silvicultural activities generally lack the wet prairie ecotone edge and can be invaded with invasive plants, especially Chinese privet (*Ligustrum sinense*), Chinese tallow, (*Triadica sebifera*) and Japanese honeysuckle (*Lonicera japonica*).

Fire Regimes:

Fire is essential for the maintenance of dome swamps. The fire frequency is greatest at the periphery of the dome swamp where a normal fire cycle might be as short as 3 to 5 years, compared to the 100-year fire cycle for the interior portions where moisture is greater. Fires from surrounding upland communities should be allowed to burn into dome swamp edges to maintain the herbaceous ecotone and prevent shrubby and invasive plant encroachment.

Management Needs:

Good quality dome swamp edges should be maintained with growing season fires that are allowed to burn into the edges of these communities. Disturbed swamps with severe invasive plant infestations around the edges may require treatment or removal, especially if fire is not a possible treatment.

F. Floodplain Swamp**Description:**

Floodplain swamps are located along streams mostly in the southern portion of BRSF. These occur on the lowest parts of the floodplain and have a well-developed canopy of buttressed trees dominated by either pond cypress (*Taxodium ascendens*) in the south or mostly swamp tupelo (*Nyssa sylvatica* var. *biflora*) in the north. Small areas of swamp occur within the bottomland forests, however, in the southern portion of the forest, cypress dominated swamps become gradually more frequent and larger. In addition to the dominant trees, red maple (*Acer rubrum*), Atlantic white cedar (*Chamaecyparis thyoides*), sweetbay (*Magnolia virginiana*), and slash pine (*Pinus elliotii*) may also occur as occasional canopy species. Some shrubs such as coastal sweetpepperbush (*Clethra alnifolia*), titi (*Cyrilla racemiflora*), wax myrtle (*Morella cerifera*), and fetterbush (*Lyonia lucida*), and hydrophytic herbs such as goldenclub (*Orontium aquaticum*) and common arrowhead (*Sagittaria latifolia*) may be sporadic.

Although there is a slight difference in signature on the historic aerial photographs between floodplain swamps and forests, all swamps were delimited using recent aerial photography. The swamps have a gray color and a smoother texture than the bottomland forests.

Current Conditions:

In addition to the above species, floodplain swamps also include myrtle-leaved holly (*Ilex cassine* var. *myrtifolia*), common buttonbush (*Cephalanthus occidentalis*) and black titi (*Cliftonia monophylla*) in the shrub layer. Additional herbs include southern longedge (*Carex lonchocarpa*), spoonleaf sundew (*Drosera intermedia*), stream bogmoss (*Mayaca fluviatilis*), and cinnamon fern (*Osmunda cinnamomea*). Vines include sarsaparilla vine (*Smilax pumila*) and coral greenbrier (*Smilax walteri*). The floodplain swamps at Blackwater River SF appear to be in good condition with few disturbances.

Fire Regimes:

Floodplain swamps are not fire maintained communities.

Management Needs:

Maintain natural hydrology to keep floodplain swamps in good condition. Recreational activities (e.g., camping, canoeing, etc.) along the river should be monitored to reduce impact to the community.

G. Mesic Flatwoods (Including Restoration Areas)

Description:

Mesic flatwoods are forests of variable density, southern pine species, most notably longleaf pine (*Pinus palustris*) and/or slash pine (*Pinus elliottii*), with little or no mid-story and a fairly dense low shrub and herb layer. Most occur on relatively flat terrain with moderate to poor drainage. At BRSF, mesic flatwoods occur adjacent to floodplains and are similar to nearby upland pine and sandhills but are distinguished by an abundance of runner oak (*Quercus elliottii*), dwarf live oak (*Quercus minima*), hairy laurel (*Kalmia hirsuta*), and false rosemary (*Conradina canescens*) in the short shrub and herb layers. Also, saw palmetto (*Serenoa repens*), which is absent in almost every other part of the forest, can be occasional too common in mesic flatwoods. These areas are well-drained compared to mesic flatwoods in other parts of the state.

Mesic flatwoods generally appear identical to upland pine and sandhills on the historic aerial photographs, although they may be darker with a denser canopy. Mapping was mostly based on ground-truthing and position in relation to the Blackwater River and Yellow River floodplains. Almost all mesic flatwoods were found adjacent to this bottomland forest with a very gradual transition to upland pine or sandhill. However, a few more well-defined mesic flatwoods were found in the same areas on higher plateaus surrounded completely by bottomland forest/baygall communities.

Current Conditions:

Although the canopy of mesic flatwoods at BRSF is usually dominated by longleaf pine, other pines such as slash pine (*Pinus elliottii*) and loblolly pine (*Pinus taeda*) may also be common, and fire suppression and proximity to the floodplain may encourage the growth of other more hydrophytic trees. In addition to the species listed above, other trees include red maple (*Acer rubrum*), chinquapin (*Castanea pumila*), swamp bay (*Persea palustris*), southern red oak (*Quercus falcata*), laurel oak (*Quercus hemisphaerica*), water oak (*Quercus nigra*), and live oak (*Quercus virginiana*). Shrubs include American beautyberry (*Callicarpa americana*), dwarf huckleberry (*Gaylussacia dumosa*), blue huckleberry (*Gaylussacia frondosa* var. *tomentosa*), St. Andrew's cross (*Hypericum hypericoides*), large gallberry (*Ilex coriacea*), gallberry (*Ilex glabra*), wax myrtle (*Morella cerifera*), sand live oak (*Quercus geminata*), winged sumac (*Rhus copallinum*), horse sugar (*Symplocos tinctoria*), highbush blueberry (*Vaccinium corymbosum*), Elliot's blueberry (*Vaccinium elliottii*), and shiny blueberry (*Vaccinium myrsinites*). Herbs include broomsedge bluestem (*Andropogon virginicus*), wiregrass (*Aristida stricta*), switchcane (*Arundinaria gigantea*), soft greeneyes (*Berlandiera pumila*), vanillaleaf (*Carphephorus odoratissimus*), tall elephantsfoot (*Elephantopus elatus*), yankeeweed (*Eupatorium compositifolium*), comfortroot (*Hibiscus aculeatus*), narrowleaf silkgrass (*Pityopsis graminifolia*), orange milkwort (*Polygala lutea*), candyroot (*Polygala nana*), bracken fern (*Pteridium aquilinum*), savannah meadowbeauty (*Rhexia alifanus*), little bluestem (*Schizachyrium scoparium*), whitetop aster (*Sericocarpus tortifolius*), Virginia chain fern (*Woodwardia virginica*), and yelloweyed grasses (*Xyris* spp.). Common vines are yellow jessamine (*Gelsemium sempervirens*), earleaf greenbrier (*Smilax auriculata*), cat greenbrier (*Smilax glauca*), sarsaparilla vine (*Smilax pumila*), and muscadine (*Vitis rotundifolia*).

As noted above, many of these mesic flatwoods have gradual transitions to upland pine and sandhill communities. Those flatwoods closest to the floodplain, especially those surrounded by

bottomland forest, often show the most disturbance from fire suppression, in some cases becoming densely overgrown with tall shrubs.

In areas south of the Blackwater River, particularly in the Yellow River Ravines tract, slash pine plantations were planted in historic mesic flatwoods. Where recent management activities have begun the process of thinning these stands and re-introducing fire into the landscape, these areas are designated as “restoration.” The years of fire exclusion and soil disturbance from forestry activities have drastically reduced species richness in these stands. The groundcover is generally a shrub-dominated layer of saw palmetto, gallberry, yaupon (*Ilex vomitoria*), horse sugar, and/or Elliot’s blueberry. Herbs are usually weedy and include bluestems, witchgrasses, fireweed (*Erechtites hieracifolius*), dogfennel (*Eupatorium capillifolium*) yankeeweed (*Eupatorium compositifolium*), and rustweed (*Polypremum procumbens*), but a few clumps of remnant wiregrass and bracken fern persist. Weedy vines, particularly yellow jessamine and muscadine, scramble over the ground, and taller trees and shrubs of sweetbay (*Magnolia virginiana*), laurel oak, water oak, and sand live oak (*Quercus geminata*) may be scattered or moderately dense. These areas intergrade with former wet flatwoods. Disturbances make the distinction between former wet and mesic flatwoods very difficult and stands near the Yellow River may have always had small pockets of baygall vegetation inclusions.

Fire Regimes:

The fire return for mesic flatwoods is every 2 to 4 years, primarily in summer when thunderstorms generate numerous lightning strikes, and as fuel loading and weather conditions permit. Restoration areas should be burned closer to the 2-year interval to reduce shrubs and promote an open, grassy understory. These fires are essential for maintaining the structure of the flatwoods, preventing encroachment from bordering baygall, and reducing weedy competition.

Management Needs:

Because of the proximity of mesic flatwoods to floodplains in BRSF, more effort should be made to ensure that these areas are allowed to burn frequently. Flatwoods that have been converted to pine plantations should be gradually thinned and burned to encourage good quality ground cover.

H. River Floodplain Lake

Description:

River floodplain lakes are generally characterized as shallow open water zones, with or without floating and submerged aquatic plants, that are surrounded by basin swamp or floodplain swamp. They are generally permanent water bodies, although water levels often fluctuate substantially, and they may become completely dry during extreme droughts.

Except for the fringe of hydrophytic trees, shrubs, and scattered emergent species, plants may be absent altogether, or they may almost completely cover the water surface.

Current Conditions:

Two river floodplain lakes are mapped on BRSF. One lake is mapped along Blackwater River, within floodplain swamp. The other lake is mapped along Juniper Creek, within bottomland forest.

Fire Regimes:

River floodplain lake is not a fire-maintained natural community.

Management Needs:

River floodplain lakes are important breeding areas for many terrestrial and semi-aquatic amphibians, as well as feeding areas for many wading birds, ducks, and reptiles. These lakes are extremely vulnerable to hydrological manipulations which lower the water levels and hasten successional processes. Land clearing and timber harvest operations should be avoided/minimized within the surrounding swamps and adjacent uplands.

I. Sandhill (Including Restoration Areas)**Description:**

Sandhills are forests of southern pine tree species with a sparse understory of deciduous oaks and a fairly dense ground cover of grasses and herbs on rolling hills of well-drained sands. The most typical associations are dominated by longleaf pine (*Pinus palustris*), turkey oak (*Quercus laevis*), and wiregrass (*Aristida stricta*). Other typical plants include bluejack oak (*Quercus incana*), sparkleberry (*Vaccinium arboreum*), common persimmon (*Diospyros virginiana*), and gopher apple (*Geobalanus oblongifolius*). At BRSF, sandhills are the most abundant community in the southernmost region south of the Blackwater River. They also occur further north and grade into upland pine with many areas appearing intermediate between the two communities. In landscapes dominated by upland pine, hills may be “capped” with deeper, more well-drained sands that support sandhill communities, although sandhills were occasionally noted on hillsides of upland pine as well.

Sandhill and upland pine both appear as large, light-colored areas in which widely spaced large trees can normally be seen on historic aerial photographs. In a few areas, a slightly different, lower, closed canopy is evident and probably represents an abundance of oaks in those areas.

Current Conditions:

Most sandhills at BRSF are in good condition, although dense pines and insufficient fire in some stands may limit groundcover diversity. In addition to the species noted above, other trees and shrubs noted in sandhill communities of BRSF were flowering dogwood (*Cornus florida*), common persimmon (*Diospyros virginiana*), dwarf huckleberry (*Gaylussacia dumosa*), gallberry (*Ilex glabra*), blackgum (*Nyssa sylvatica*), shortleaf pine (*Pinus echinata*), southern red oak (*Quercus falcata*), sand live oak (*Quercus geminata*), sand post oak (*Quercus margarettae*), blackjack oak (*Quercus marilandica*), water oak (*Quercus nigra*), post oak (*Quercus stellata*), sand blackberry (*Rubus cuneifolius*), sassafras (*Sassafras albidum*), horse sugar (*Symplocos tinctoria*), eastern poison oak (*Toxicodendron pubescens*), highbush blueberry (*Vaccinium corymbosum*), Darrow's blueberry (*Vaccinium darrowii*), Elliot's blueberry (*Vaccinium elliotii*), and deerberry (*Vaccinium stamineum*).

Common herbs in addition to wiregrass include pinewoods milkweed (*Asclepias humistrata*), gopherweed (*Baptisia lanceolata*), soft greeneyes (*Berlandiera pumila*), scarlet calaminth (*Calamintha coccinea*), tread softly (*Cnidioscolus stimulosus*), silver croton (*Croton argyranthemus*), downy danthonia (*Danthonia sericea*), tall elephantsfoot (*Elephantopus elatus*), dogtongue wild buckwheat (*Eriogonum tomentosum*), greater Florida spurge (*Euphorbia floridana*), stiff sunflower (*Helianthus radula*), comfortroot (*Hibiscus aculeatus*), hairy puccoon

(*Lithospermum caroliniense*), sensitive briar (*Mimosa quadrivalvis*), narrowleaf silkgrass (*Pityopsis graminifolia*), orange milkwort (*Polygala lutea*), candyroot (*Polygala nana*), bracken fern (*Pteridium aquilinum*), savannah meadowbeauty (*Rhexia alifanus*), royal snoutbean (*Rhynchosia cytisoides*), kidneyleaf rosinweed (*Silphium compositum*), lopsided indiagrass (*Sorghastrum secundum*), queensdelight (*Stillingia sylvatica*), scurf hoarypea (*Tephrosia chrysophylla*), and tall ironweed (*Vernonia angustifolia*). Vines are infrequent and include earleaf greenbrier (*Smilax auriculata*), cat greenbrier (*Smilax glauca*), sarsaparilla vine (*Smilax pumila*), and muscadine (*Vitis rotundifolia*).

Past disturbances in sandhill include clearings and silvicultural activities that have disturbed the pine canopy, and in some cases partially converted the sandhill to oak-dominated successional hardwood forests. Also, much of the historic sandhill extent on the Yellow River Ravines tract was planted with sand pine (*Pinus clausa*) before acquisition by the state and will require long term management to restore a more natural structure. Longleaf pine regeneration is good throughout the sandhills, however, in some areas volunteer longleaf pine seedlings are unnaturally dense. Past hurricanes have caused significant disturbances, and remains of salvage operations are evident throughout the forest.

In planted sand pine stands, management activities have included clearcutting, prescribed burning, and planting of longleaf pine. These areas are designated as “restoration sandhill.” Currently, prescribed burning under sand pine plantations has been stopped due to high mortality. There is also an aggressive plan to clearcut sand pine and restore longleaf and fire to these restoration sandhills. Although remnant sandhill vegetation such as turkey oak, sand post oak, and wiregrass persist in some of these stands, the usual state is similar to the planted sand pine stands with a high cover of yaupon (*Ilex vomitoria*), laurel oak (*Quercus hemisphaerica*), and water oak (*Quercus nigra*), an herbaceous cover of mostly weedy witchgrasses (*Dichanthelium* spp.) and bluestems (*Andropogon* spp.), and a frequent occurrence of vines, particularly yellow jessamine (*Gelsemium sempervirens*) and earleaf greenbrier.

Fire Regimes:

Sandhills are a fire climax community, being dependent on frequent ground fires every 1-3 years to reduce hardwood competition and to perpetuate pines and grasses. Without frequent fires, sandhills may eventually succeed to xeric hammock, and dense pine seedlings may become more problematic in creating unnaturally shaded, mesic situations.

Management Needs:

Prescribed burning is the primary management tool for sandhills, and regular burns are conducted in BRSF. More growing season burns may need to be applied to areas of dense pine and oak regeneration to ensure that a closed canopy does not form. Current efforts to close or limit traffic on many of the small roads should also continue to decrease disturbance and erosion. Sandhills that have been converted to pine plantations should be gradually thinned and burned to return normal sandhill conditions.

J. Seepage Slope

Description:

Seepage slopes are grass and sedge dominated communities occurring on slopes with constant seepage from a perched water table where the ground is usually saturated but rarely inundated. These communities have very few trees and only occasional shrubs. At Blackwater River SF, the broad areas mapped as seepage slopes are historically open slopes dominated by a dense groundcover of wiregrass (*Aristida stricta*) and toothachegrass (*Ctenium aromaticum*). In many of these slopes, smaller clay pockets may support pockets of carnivorous bog plants, especially pitcher plants (*Sarracenia* spp.) and sundews (*Drosera* sp.). These slopes are adjacent to bottomland forest/baygall communities, and historic photographs indicate that there were very few shrubs and a sharp border separating the open lower slope from the adjoining baygall.

Seepage slopes are light colored, smooth areas on the historic aerial photographs. Based on photo interpretation, it is difficult to predict which of these slopes support pockets of bog plants, so any such slopes that were ground-truthed in this or previous studies by FNAI or FFS were noted in the comments field of the natural community shapefile as having “pitcher plant area(s) included.”

Current Conditions:

Currently, most seepage slopes that were open and herbaceous in the historic photographs have been invaded by woody species from adjacent baygalls, especially black titi (*Cliftonia monophylla*), titi (*Cyrilla racemiflora*), myrtle dahoon (*Ilex cassine* var. *myrtifolia*), large gallberry (*Ilex coriacea*), fetterbush (*Lyonia lucida*), sweetbay (*Magnolia virginiana*), swamp tupelo (*Nyssa sylvatica* var. *biflora*), swamp bay (*Persea palustris*), red chokeberry (*Aronia arbutifolia*), and red maple (*Acer rubrum*). A few slopes have a dense cover of switchcane (*Arundinaria gigantea*). On recently added parcels with a history of silvicultural use, old seepage slopes may be heavily altered. On one such parcel, a likely historic seepage slope was densely planted with slash pine (*Pinus elliottii*). The heavily shaded understory contains few remnants, but openings do have some herbaceous species.

Despite encroachment of successional hydric shrubland/forest into most seepage slopes, many slopes are well-maintained with a very sparse canopy of longleaf pine (*Pinus palustris*) or slash pine (*Pinus elliottii*) and a diverse ground cover including longleaf threeawn (*Aristida palustris*), oneflower honeycombhead (*Balduina uniflora*), pineland daisy (*Chaptalia tomentosa*), coastal woolly witchgrass (*Dichanthelium scabriusculum*), pink sundew (*Drosera capillaris*), Tracy's sundew (*Drosera tracyi*), early whitetop fleabane (*Erigeron vernus*), flattened pipewort (*Eriocaulon compressum*), tenangle pipewort (*Eriocaulon decangulare*), southeastern sneezeweed (*Helenium pinnatifidum*), Carolina redroot (*Lachnanthes carolina*), golden crest (*Lophiola aurea*), southern club-moss (*Lycopodiella appressa*), yellow-flowered butterwort (*Pinguicula lutea*), southern butterwort (*Pinguicula primuliflora*), grassleaf goldenaster (*Pityopsis oligantha*), procession flower (*Polygala incarnata*), orange milkwort (*Polygala lutea*), starrush whitetop (*Rhynchospora colorata*), giant whitetop (*Rhynchospora latifolia*), yellow pitcherplant (*Sarracenia flava*), whitetop pitcherplant (*Sarracenia leucophylla*), parrot pitcherplant (*Sarracenia psittacina*), Gulf purple pitcherplant (*Sarracenia rosea*), redflower pitcherplant (*Sarracenia rubra*), narrowleaf blue-eyed grass (*Sisyrinchium angustifolium*), sphagnum moss (*Sphagnum* sp.), crowpoison (*Stenanthium densum*), coastal false asphodel (*Tofieldia racemosa*), zigzag bladderwort (*Utricularia subulata*), netted chain fern (*Woodwardia*

areolata), yelloweyed grasses (*Xyris* spp.), and sandbog deathcamas (*Zigadenus glaberrimus*). Shrubs are low and sparse, including woolly huckleberry (*Gaylussacia mosieri*), coastalplain St. John's wort (*Hypericum brachyphyllum*), roundpod St. John's wort (*Hypericum cistifolium*), peelbark St. John's wort (*Hypericum fasciculatum*), bayberry (*Myrica caroliniensis*), and odorless bayberry (*Myrica inodora*).

Higher quality examples of this natural community often have rush featherling (*Pilea tenuifolia*), hairawn muhly (*Muhlenbergia capillaris*), wiregrass (*Aristida stricta*), pinewoods bluestem (*Andropogon arctatus*), toothachegrass (*Ctenium aromaticum*), coastal false asphodel (*Tofieldia racemosa*), and Tracy's sundew. Where these communities have a noticeable slope from the uplands, small, mucky seepages emerge and gently flow downslope. It is often the case you find southern butterwort along these braided seepages and where sphagnum moss (*Sphagnum* sp.) is abundant, the state listed as threatened naked-stemmed panic grass (*Dichanthelium nudicaule*). In these excellent examples, a "miniature landscape" exists underneath the grass-dominated strata with small species such as the state listed as threatened pineland bogbutton (*Lachnocaulon digynum*) only visible after moving aside the dense grass blades.

Fire Regimes:

Seepage slopes are maintained by frequent fires, and these communities should be allowed to burn along with the surrounding upland pine or sandhill every 1-3 years. Growing season burns are critical for maintaining a dominant herb layer by reducing woody encroachment from adjacent baygalls where fuel and weather conditions allow. Those areas with significant bay species intrusion may require fires to be set within the community to achieve a significant burn. However, annual winter fires may be deleterious to pitcher plant reproduction, killing plants before they can set fruit.

Management Needs:

Prescribed fire should be the primary management tool for seepage slopes, as described in the previous section. Also, soil disturbance from vehicles or feral hog activity should be reduced as much as possible.

K. Shrub Bog

Description:

Shrub bogs are dense stands of broadleaved evergreen shrubs, vines, and short trees, one to five meters tall depending on time since fire, with or without an overstory of scattered pine, 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 (*Morella cerifera*), and sweet pepperbush (*Clethra alnifolia*), often laced together with laurel greenbrier (*Smilax laurifolia*). 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.). Soils of shrub bogs frequently have an organic

muck layer of varying depth at the surface underlain by sand or loamy sands. Sphagnum moss (*Sphagnum* spp.) is common on the ground surface.

On BRSF, bottomland flats and stringers appear to be a mosaic of shrub bog (titi shrubs lacking a hardwood canopy), baygall (bay tree dominated), and bottomland forest (mixed hardwoods, bays, and white cedar). The distinction between these communities is difficult, and the pattern has likely shifted over the last century due to changing hydrology and fire patterns. Basin wetlands with a smooth gray signature were assumed to be historic shrub bogs. These are currently only mapped on the Yellow River Ravines tract. However, many baygalls on the forest may have included areas of shrub bog.

Current Conditions:

The pattern of shrub bogs and baygalls on BRSF have likely shifted somewhat in response to fire. On the Yellow River Ravines tract, some of the historic shrub bog extent has been planted with slash pine. These areas were mapped as current shrub bog since the understory is relatively unchanged and only minimal active management is required to restore them.

The remaining shrub bogs are dense thickets of black titi (*Cliftonia monophylla*) and/or titi (*Cyrilla racemiflora*), sweet pepperbush (*Clethra alnifolia*), fetterbush (*Lyonia lucida*), sometimes reaching 20 feet tall or more. Other shrubs include red chokeberry (*Aronia arbutifolia*) and swamp doghobble (*Eubotrys racemosus*). Scattered trees of sweetbay (*Magnolia virginiana*), swamp tupelo (*Nyssa sylvatica* var. *biflora*), slash pine (*Pinus elliottii*), and/or pond cypress (*Taxodium ascendens*) are often present. Vines, particularly laurel greenbriers (*Smilax laurifolia*), are common and often dense and interlaced with shrubs. Herbs are uncommon, usually only found in openings where a road or other disturbance intersects the bog.

Fire Regimes:

Fires starting in the surrounding pinelands burn to the edges of shrub bogs, but burn through them only during drought periods, probably on the order of every 10-20 years. The shrubs and bay trees respond to fire by re-sprouting, either from root crowns or rhizomes. During droughts, the peat may become dry enough to burn completely.

Management Needs:

Management should focus on hydrology restoration. Remaining planted pines in shrub bogs could be clearcut but will likely not be detrimental to the bog over time. If possible, fires should be allowed to burn into shrub bog edges to limit titi encroachment into surrounding communities.

L. Upland Hardwood Forest

Description:

Upland hardwood forests are well-developed, closed-canopy forests of upland hardwoods on rolling hills. At BRSF, these forests are mostly sporadic on rich hillsides. In the northeast corner of the forest, hardwood forests were probably more common. The canopy is a mixture of deciduous species, mostly oaks (*Quercus* sp.) and occasionally American beech (*Fagus grandifolia*) and southern magnolia (*Magnolia grandiflora*). Subcanopy and shrub layers are also well-developed with a diversity of temperate species. These communities grade gradually into upland pine on upper slopes and bottomland forest/baygalls/floodplain swamps on lower

slopes. Varying fire frequency on these slopes can have a dramatic effect on community structure, and well-developed hardwood forests may take many years to develop.

Because there is no clear signature on historic aerial photography, upland hardwood forests were mostly mapped in locations that were ground-truthed and also showed a possible closed oak canopy in the historic photographs. However, upland hardwood forests were likely more abundant along the many slopes at BRSF than has been mapped in this project. Upland mixed woodlands have a similar aerial signature, and the two communities are difficult to distinguish from one another where fire exclusion has increased hardwood cover.

Current Conditions:

Most upland hardwood forests at BRSF have a past history of clearing, and some have been replaced by planted pine stands. Furthermore, hardwoods have invaded historically pine dominated communities in many places. These are mapped as successional hardwood forests for recently acquired parcels, but the distinction between naturally occurring hardwood forests and hardwood-invaded areas can be difficult to draw, usually relying on some indication of a canopy on 1949 aerials and the current presence of a diversity of hardwoods rather than just weedy laurel oaks.

Well-developed historic upland hardwood forests generally have American beech, sourwood (*Oxydendrum arboreum*), southern magnolia, and a diversity of temperate shrubs and small trees. In addition to the canopy trees listed above, other common tree species include red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), tuliptree (*Liriodendron tulipifera*), blackgum (*Nyssa sylvatica*), longleaf pine (*Pinus palustris*), loblolly pine (*Pinus taeda*), slash pine (*Pinus elliotii*), southern red oak (*Quercus falcata*), swamp laurel oak (*Quercus laurifolia*), water oak (*Quercus nigra*), live oak (*Quercus virginiana*), and white oak (*Quercus alba*). Subcanopy trees and shrubs are diverse and included red buckeye (*Aesculus pavia*), common serviceberry (*Amelanchier arborea*), American beautyberry (*Callicarpa americana*), wild olive (*Carthagen americanum*), chinquapin (*Castanea pumila*), coastal sweetpepperbush (*Clethra alnifolia*), black titi (*Cliftonia monophylla*), flowering dogwood (*Cornus florida*), American witchhazel (*Hamamelis virginiana*), St. Andrew's cross (*Hypericum hypericoides*), American holly (*Ilex opaca*), yaupon (*Ilex vomitoria*), Florida anise (*Illicium floridanum*), sweetbay (*Magnolia virginiana*), wax myrtle (*Morella cerifera*), black cherry (*Prunus serotina*), flatwoods plum (*Prunus umbellata*), winged sumac (*Rhus copallinum*), sassafras (*Sassafras albidum*), horse sugar (*Symplocos tinctoria*), sparkleberry (*Vaccinium arboreum*), highbush blueberry (*Vaccinium corymbosum*), and Elliot's blueberry (*Vaccinium elliotii*). Herbs are sparse, and include broomsedge bluestem (*Andropogon virginicus*), wiregrass (*Aristida stricta*), longleaf woodoats (*Chasmanthium laxum* var. *sessiliflorum*), witchgrasses (*Dichanthelium* spp.), and bracken fern (*Pteridium aquilinum*). A variety of vines may also occur, including earleaf greenbrier (*Smilax auriculata*), cat greenbrier (*Smilax glauca*), sarsaparilla vine (*Smilax pumila*), lanceleaf greenbrier (*Smilax smallii*), Virginia creeper (*Parthenocissus quinquefolia*), eastern poison ivy (*Toxicodendron radicans*), and muscadine (*Vitis rotundifolia*).

In disturbances caused by roads and nearby clearings, invasive plants such as mimosa (*Albizia julibrissin*), Chinese privet (*Ligustrum sinense*), Japanese honeysuckle (*Lonicera japonica*), and Japanese climbing fern (*Lygodium japonicum*) may infest upland hardwood forests.

Fire Regimes:

Mature hardwood forests create naturally fire-resistant conditions through shading, reduction of herbaceous ground cover, and buildup of oak leaf litter, so fires should naturally extinguish at the edges of these forests.

Management Needs:

Invasive plant removal and limits to road travel through these communities should be of highest priority. If prescribed burns are applied to the adjacent upland pine community, those fires should be allowed to burn to the edge of the upland hardwood forest and extinguish naturally.

M. Upland Mixed Woodland**Description:**

Upland mixed woodlands are somewhat closed to moderately open woodlands with a mixture of evergreen and deciduous fire-tolerant tree species. Within BRSF, these natural communities typically occur on higher ridges, where clay is likely a more substantial part of the soil profile. The upland mixed woodland communities appear to occur sporadically, but greater evidence of this community is found in the northern portion of the property towards the Alabama line, where clay-based uplands with greater topographic relief become more common. The canopy of upland mixed woodland at BRSF is composed of longleaf pine (*Pinus palustris*), southern red oak (*Quercus falcata*), sand post oak (*Quercus margarettae*), mockernut hickory (*Carya tomentosa*), post oak (*Quercus stellata*), and shortleaf pine (*Pinus echinata*). These communities grade gradually into upland pine on upper slopes and bottomland forest/baygalls on lower slopes. Varying fire frequency on these slopes can have a dramatic effect on community structure.

Upland mixed woodlands have a similar signature to upland hardwood forest on the 1940s aerial photographs, and the two communities are difficult to distinguish from one another where fire exclusion has increased hardwood cover.

Current Conditions:

Many upland mixed woodlands at BRSF have a past history of clearing and fire exclusion leading to hardwood invasion. These are mapped as successional hardwood forests and are dominated by weedy laurel oaks (*Quercus hemisphaerica*).

Well-developed historic upland mixed woodland communities include longleaf pine (*Pinus palustris*) and southern red oak (*Quercus falcata*), similar to upland pine, but also have occasional sand post oak (*Q. margarettae*), mockernut hickory (*Carya tomentosa*), post oak (*Quercus stellata*) and shortleaf pine (*Pinus echinata*), although these are very rarely encountered as full-grown trees. Within the subcanopy, the abundance of flowering dogwood (*Cornus florida*) is a strong indicator of this natural community. Shrub species may include yaupon (*Ilex vomitoria*), gallberry (*I. glabra*), sparkleberry (*Vaccinium arboreum*), Elliott's blueberry (*V. elliotii*), horse sugar (*Symplocos tinctoria*), and common persimmon (*Diospyros virginiana*). Herbaceous species include creeping little bluestem (*Schizachyrium stoloniferum*), tailed bracken (*Pteridium aquilinum* var. *pseudocaudatum*), slender bluestem (*Schizachyrium tenerum*), downy dantonchia (*Danthonia sericea*), fringed nutrush (*Scleria ciliata*), eastern poison oak (*Toxicodendron pubescens*), pineland silkgrass (*Pityopsis aspera*), clasping milkweed (*Asclepias amplexicaulis*), eggleaf witchgrass (*Dichanthelium ovale*), and dogtongue wild buckwheat (*Eriogonum tomentosum*).

Fire Regimes:

Upland mixed woodlands are well adapted to less frequent fire than upland pine or sandhill natural communities and maintain their ecological integrity with fire return intervals ranging from 2-20 years. The Florida Forest Service will burn these areas with adjacent upland stands.

Management Needs:

Invasive removal and limits to road travel through these communities should be of highest priority. Off-highway vehicles and poor road construction may lead to significant erosion and gullies being formed within these communities. A lack of prescribed fire or longer fire return intervals may negatively affect high quality groundcover persistence.

N. Upland Pine (Including Restoration Areas)**Description:**

Upland pine occurs on high, rolling clay hills and has variable spacing of southern pine tree species, with few shrubs and a dense cover of herbs. This is the most common community type at BRSF, particularly on the more clayey soils that predominate north of the Blackwater River, and often intergrades with sandhill, with many areas appearing intermediate between the two types. On lower slopes, upland pine may become oak dominated and resemble or grade into upland hardwood forest.

The dominant canopy tree is longleaf pine (*Pinus palustris*), with oaks scattered in the subcanopy dominated by southern red oak (*Quercus falcata*) or blackjack oak (*Quercus marilandica*), although bluejack oak (*Quercus incana*) or turkey oak (*Quercus laevis*) may be common, especially in areas overlapping with sandhill communities. Flowering dogwood (*Cornus florida*) may also be a dominant small tree, although this species can also indicate an upland mixed woodland community. The more mesic clay soils of upland pine support a sparse, open, low cover of shorter shrubs such as dwarf huckleberry (*Gaylussacia dumosa*), gallberry (*Ilex glabra*), winged sumac (*Rhus copallinum*), Darrow's blueberry (*Vaccinium darrowii*), sparkleberry (*Vaccinium arboreum*), highbush blueberry (*Vaccinium corymbosum*), and Elliot's blueberry (*Vaccinium elliotii*). Herbs are dense and dominated by wiregrass (*Aristida stricta*), with a diversity of forbs.

Upland pine and sandhills both have a light signature on the historic aerial photographs with scattered trees and a slightly rough texture to the ground cover. Some areas seem to have a more closed canopy, although whether this is due to a predominance of understory oaks, a dense cluster of pines, or a conversion to upland hardwood forest is difficult to determine.

Current Conditions:

Upland pine communities are generally in excellent condition with many large longleaf pine trees and well-developed southern red oak sub-canopies. In addition to the trees listed above, other species commonly encountered are mockernut hickory (*Carya tomentosa*), common persimmon (*Diospyros virginiana*), American holly (*Ilex opaca*), sweetgum (*Liquidambar styraciflua*), southern magnolia (*Magnolia grandiflora*), blackgum (*Nyssa sylvatica*), sourwood (*Oxydendrum arboreum*), shortleaf pine (*Pinus echinata*), slash pine (*Pinus elliotii*), loblolly pine (*Pinus taeda*), sand live oak (*Quercus geminata*), laurel oak (*Quercus hemisphaerica*), water oak (*Quercus nigra*), and post oak (*Quercus stellata*).

A few other shrubs are common such as red buckeye (*Aesculus pavia*), chinquapin (*Castanea pumila*), littleleaf buckbrush (*Ceanothus microphyllus*), yaupon (*Ilex vomitoria*), sand blackberry (*Rubus cuneifolius*), sassafras (*Sassafras albidum*), horse sugar (*Symplocos tinctoria*), eastern poison oak (*Toxicodendron pubescens*), and Adam's needle (*Yucca filamentosa*).

Most upland pine at BRSF has a dense groundcover of wiregrass along with these other common herbs: broomsedge bluestem (*Andropogon virginicus*), gopherweed (*Baptisia lanceolata*), soft greeneyes (*Berlandiera pumila*), coastalplain chaffhead (*Carphephorus corymbosus*), vanillaleaf (*Carphephorus odoratissimus*), sensitive pea (*Chamaecrista nictitans*), tread softly (*Cnidioscolus stimulosus*), greater tickseed (*Coreopsis major*), toothache grass (*Ctenium aromaticum*), downy danthonia (*Danthonia sericea*), dwarf sundew (*Drosera brevifolia*), tall elephantsfoot (*Elephantopus elatus*), dogtongue wild buckwheat (*Eriogonum tomentosum*), button rattlesnakemaster (*Eryngium yuccifolium*), roundleaf thoroughwort (*Eupatorium rotundifolium*), greater Florida spurge (*Euphorbia floridana*), stiff sunflower (*Helianthus radula*), comfortroot (*Hibiscus aculeatus*), Leggett's pinweed (*Lechea pulchella*), Eustis Lake beardtongue (*Penstemon australis*), downy phlox (*Phlox pilosa*), blackseed needlegrass (*Piptochaetium avenaceum*), narrowleaf silkgrass (*Pityopsis graminifolia*), candyroot (*Polygala nana*), bracken fern (*Pteridium aquilinum*), savannah meadowbeauty (*Rhexia alifanus*), royal snoutbean (*Rhynchosia cytisoides*), dollarleaf (*Rhynchosia reniformis*), creeping little bluestem (*Schizachyrium stoloniferum*), kidneyleaf rosinweed (*Silphium compositum*), sweet goldenrod (*Solidago odora*), lopsided indiagrass (*Sorghastrum secundum*), pineywoods dropseed (*Sporobolus junceus*), crowpoison (*Stenanthium densum*), queensdelight (*Stillingia sylvatica*), scaleleaf aster (*Symphyotrichum adnatum*), squarehead (*Tetragonotheca helianthoides*), and Small's noseburn (*Tragia smallii*).

Isolated patches of disturbed upland pine may develop thickets of sassafras and shortleaf pine. In the area south of SR 4 and west of CR 191, previous efforts to remove oaks were quite effective, and large southern red oaks are rare. Longleaf pine seedlings are weedy in some areas, forming dense patches of tall, narrow, young trees.

Some historic upland pine communities have been converted to pine plantation, and areas disturbed by past silviculture activities are often similar to xeric hammock, with reduced ground cover and large oaks becoming dominant. On several recently acquired parcels, management activities have included clearcutting or thinning of planted pines and the re-introduction of longleaf pine, as well as the application of prescribed fire. These stands are mapped as "restoration upland pine." The years of fire exclusion and soil disturbance from forestry activities have drastically reduced species richness in these stands. The groundcover is generally a shrub-dominated layer of mostly yaupon (*Ilex vomitoria*), laurel oak (*Quercus hemisphaerica*), sand blackberry (*Rubus cuneifolius*), and sparkleberry (*Vaccinium arboreum*). Herbs are usually weedy bluestems and witchgrasses, but a few clumps of remnant wiregrass and scattered herbs such as button rattlesnakemaster (*Eryngium yuccifolium*), roundleaf thoroughwort (*Eupatorium rotundifolium*), bracken fern (*Pteridium aquilinum*) and savannah meadowbeauty (*Rhexia alifanus*) persist. Weedy vines, particularly yellow jessamine, scramble over the ground.

Fire Regimes:

Fires should be frequent in upland pine, usually every 1-3 years, utilizing a combination of growing season and dormant season burns. Areas of dense pine seedling recruitment may especially need growing season fires to thin these stands.

Management Needs:

In addition to the above recommendations for prescribed burning, management concerns should focus on reducing impact to this community through the continued closure of many of the small roads crisscrossing the landscape in order to reduce erosion and invasive plant establishment. Timber thinning and timber stand improvement are utilized in order to improve habitat, groundcover and the growth of longleaf and other native pines.

O. Wet Flatwoods (Including Restoration Areas)**Description:**

Wet flatwoods are forests of southern pine species with a thick shrubby understory and very sparse ground cover, or a fire maintained, sparse understory and dense ground cover of hydrophytic herbs. This community often occurs in the ecotones between mesic flatwoods and wetlands. Wet flatwoods also occur in broad, low flatlands, often in a mosaic with these communities. At BRSF, historic wet flatwoods is mapped in the flatlands associated with the Yellow River and Big Coldwater Creek. These flatwoods were generally surrounded by baygall and bottomland forest communities and intergraded with these wetlands as well as with mesic flatwoods and wet prairie.

Wet flatwoods occur on relatively flat, poorly drained land with soils that are generally 1 to 3 feet of acidic sands overlying an organic hardpan or clay layer. The hardpan substantially reduces the percolation of water below and above its surface and therefore the wet flatwoods can be inundated for 1 or more months per year.

The pine canopy typically consists of one or a combination of longleaf pine (*Pinus palustris*), slash pine (*P. elliottii*), and pond pine (*P. serotina*). The subcanopy contains scattered sweetbay (*Magnolia virginiana*), swamp bay (*Persea palustris*), loblolly bay (*Gordonia lasianthus*), cabbage palm (*Sabal palmetto*), pond cypress (*Taxodium ascendens*), dahoon (*Ilex cassine*), and/or wax myrtle (*Morella cerifera*). In addition to subcanopy species, the moderate shrub layer includes large gallberry (*Ilex coriacea*), gallberry (*Ilex glabra*), fetterbush (*Lyonia lucida*), and occasional saw palmetto (*Serenoa repens*). Some typical herbs include wiregrass (*Aristida stricta*), blue maidencane (*Amphicarpum muhlenbergianum*), and/or hydrophytic species such as coastalplain yellow-eyed grass (*Xyris ambigua*), Carolina redroot (*Lachnanthes caroliniana*) and beaksedges (*Rhynchospora chapmanii*, *R. latifolia*, *R. compressa*).

Wet flatwoods appear on the 1949 aerial photographs as smooth, light gray areas dotted with scattered black dots (trees). These are in contrast to the nearby shrub bogs that have a textured appearance due to the dense woody vegetation. The wet flatwoods are nearly impossible to distinguish from mesic flatwoods, and more open areas may have actually been treeless wet prairies.

Current Conditions:

Wet flatwoods on the Yellow River Ravines and newer acquisitions in the West Boundary tracts of BRSF have mostly been converted to stands of planted slash pine and loblolly pine. There are existing wet flatwoods that do not appear to have been planted, at least recently. These are generally found in close association with baygall and bottomland communities or as low drainage areas in sand pine plantations.

The extant wet flatwoods at BRSF are generally in poor to fair condition. These areas are a mix of natural pines – longleaf pine and slash pine – and occasionally invasive pines – sand pine (*Pinus clausa*) – from adjacent planted areas. The groundcover generally consists of tall, dense shrubs and small trees of red maple (*Acer rubrum*), switchcane (*Arundinaria gigantea*), sweet pepperbush (*Clethra alnifolia*), black titi (*Cliftonia monophylla*), titi (*Cyrilla racemiflora*), large gallberry, woolly huckleberry (*Gaylussacia mosieri*), sweetbay, saw palmetto, American snowbell (*Styrax americanus*), and possumhaw (*Viburnum nudum*). Remnant herbaceous groundcover persists in a few areas, mostly in old ecotones and in possible historic wet prairie inclusions. These are areas of wiregrass, ovateleaf Indian-plantain (*Arnoglossum ovatum*), flattened pipewort (*Eriocaulon compressum*), rough boneset (*Eupatorium pilosum*), foxtail club-moss (*Lycopodiella alopecuroides*), cinnamon fern (*Osmunda cinnamomea*), royal fern (*Osmunda regalis* var. *spectabilis*), handsome herry (*Rhexia virginica*), and Virginia bunchflower (*Veratrum virginicum*).

In planted stands of slash or loblolly pines, recent management has thinned pines and reintroduced fire into the landscape. These areas are designated as “restoration wet flatwoods,” but remain highly altered with major soil disturbances from forestry operations. Shrubs and weedy vines are often dense, and diversity is low in any given area. Shrubs include red chokeberry (*Aronia arbutifolia*), black titi, woolly huckleberry (*Gaylussacia mosieri*), coastalplain St. John's wort (*Hypericum brachyphyllum*), large gallberry, gallberry, yaupon (*Ilex vomitoria*), sweetgum (*Liquidambar styraciflua*), sweetbay, swamp bay (*Persea palustris*), laurel oak (*Quercus hemisphaerica*), sawtooth blackberry (*Rubus pensilvanicus*), saw palmetto, horse sugar (*Symplocos tinctoria*), and highbush blueberry (*Vaccinium corymbosum*). Scrambling vines of yellow jessamine (*Gelsemium sempervirens*), and cat greenbrier (*Smilax glauca*) are common to abundant. Herbs include bluestems (*Andropogon* spp.), woolly witchgrass (*Dichanthelium scabriusculum*), Carolina redroot (*Lachnanthes carolina*), roundleaf thoroughwort (*Eupatorium rotundifolium*), foxtail club-moss (*Lycopodiella alopecuroides*), handsome herry (*Rhexia virginica*), flattened pipewort (*Eriocaulon compressum*), orange milkwort (*Polygala lutea*), savannah meadowbeauty (*Rhexia alifanus*), fringed meadowbeauty (*Rhexia petiolata*) and coastalplain yellow-eyed grass (*Xyris ambigua*). In ecotonal areas, in particular, some good quality herbaceous cover persists, including sparse wiregrass and foxtail club-moss. Disturbances make the distinction between former wet and mesic flatwoods very difficult and stands near the Yellow River may have always had small pockets of baygall vegetation inclusions.

Fire Regimes:

Historically, the fire return interval in wet flatwoods is 3 to 10 years. For management purposes, prescribed fires may be more advisable on a 2 to 5-year cycle. This reduces woody encroachment, sustains herbaceous species, and aids in preventing heavy fuel loads that can lead to catastrophic wildfires.

Management Needs:

Prescribed burns of the surrounding mesic flatwoods should be allowed to burn across these areas every 2 to 5 years, primarily in April through June. Use of heavy equipment should be avoided as this can eliminate herbaceous groundcover and alter hydrology. Some wet flatwoods need to be converted from loblolly to slash or longleaf pine.

P. Wet Prairie (Including Restoration Areas)**Description:**

Wet prairie is an herbaceous community found on continuously wet, but not inundated, soils on somewhat flat or gentle slopes between lower lying depression marshes, shrub bogs, or dome swamps and slightly higher wet or mesic flatwoods. Trees and shrubs are absent or very sparse. It is typically dominated by dense wiregrass (*Aristida stricta*) in the drier portions, along with foxtail club-moss (*Lycopodiella alopecuroides*), cutover muhly (*Muhlenbergia expansa*), yellow butterwort (*Pinguicula lutea*), and savannah meadowbeauty (*Rhexia alifanus*). In the wetter portions, wiregrass may occur with, or be replaced by, species in the sedge family, such as plumed beaksedge (*Rhynchospora plumosa*), featherbristle beaksedge (*R. oligantha*), Baldwin's nutrush (*Scleria baldwinii*), or slenderfruit nutrush (*S. georgiana*), plus longleaf threeawn (*Aristida palustris*). Also common in wetter areas are carnivorous species, such as pitcher plants (*Sarracenia* spp.), sundews (*Drosera* spp.), butterworts (*Pinguicula* spp.), and bladderworts (*Utricularia* spp.). Other characteristic species in this community include toothache grass (*Ctenium aromaticum*), pineland rayless goldenrod (*Bigelovia nudata*), flattened pipewort (*Eriocaulon compressum*), water cowbane (*Tiedemannia filiformis* ssp. *filiformis*), and coastalplain yellow-eyed grass (*Xyris ambigua*).

BRSF has a few areas on the Yellow River Ravines tract that appear to have historically been wet prairie with few trees and currently has some remnant vegetation that supports this conclusion, including a few scattered pitcherplants and clumps of wiregrass. Some of these could possibly be considered seepage slopes, but they mostly occur in relatively flat landscapes, usually in a matrix with flatwoods type communities. Other wet prairies may have been associated with the baygalls and bottomlands in these areas, but these are difficult to distinguish from historic wet flatwoods and may have been smaller inclusions within these flatwoods.

Current Conditions:

The historic wet prairie on the Yellow River Ravines tract was planted with slash pine, and bedding is still evident. This area is now designated as "restoration wet prairie," since recent activities have removed much of this pine, returned fire to the landscape, and planted some longleaf pine (*Pinus palustris*). Seedlings of longleaf pine have suffered a high mortality rate and appear to be struggling in the saturated soil as compared to the surrounding mesic flatwoods. Dense stands of shrubs remain, and some portions of the area may have been shrub bogs in the past. These thickets are formed from black titi (*Cliftonia monophylla*), sweetbay (*Magnolia virginiana*), and other hydrophytic shrubs. Remnant areas of herbaceous cover consist of wiregrass, flattened pipewort, tenangle pipewort (*Eriocaulon decangulare*), smallflower thoroughwort (*Eupatorium semiserratum*), pale meadowbeauty (*Rhexia mariana*), white-top pitcherplant (*Sarracenia leucophylla*), and parrot pitcherplant (*Sarracenia psittacina*). The restoration area is in fair condition with respect to its historic condition. The components of the community are present, but restoration will take many years. There is also a small inclusion of

wet prairie in restoration mesic flatwoods on the east side of the Yellow River Ravines tract. This area is open and grassy and was recently burned.

Historic wet prairies on the Wolfe Creek acquisitions appear to be overgrown successional hydric shrubland/forests. There is one small area surrounding a dome swamp as well as an area flanked by mesic flatwoods and baygall that may retain some natural characteristics of wet prairie.

Fire Regimes:

Historically, the fire return interval in wet prairie is 2 to 3 years.

Management Needs:

Management of the restoration wet prairie at the Yellow River Ravines tract should focus on returning a more natural fire regime to historic wet prairie and restoring hydrology. Prescribed burning should be applied to historic wet prairie on a 2-to-3-year cycle, with frequent growing season burns as fuel and weather conditions allow. This will reduce woody encroachment, sustain herbaceous species, and aid in prevention of catastrophic wildfires.

Q. Managed Landcover Types

Pine plantations and pastures represent vegetative communities that the FFS manages as integral components of the agency's multi-use management approach. These managed communities provide both ecological benefits, such as wildlife habitat for gopher tortoises and ground and surface water filtration, as well as opportunities for generating revenue that can be used to help offset management costs. Management of plantations and pastures within BRSF is conducted to further ensure compatibility with other management goals and objectives.

1. Pine Plantation

Description:

Pine plantations mapped at BRSF are mostly converted sandhill, upland pine, and pine flatwoods, and have desired future conditions (DFC) matching those communities. A few smaller areas of planted pines occupy what are believed to be former upland hardwood and bottomland forests.

Many planted pine stands and clearcuts are classified as either successional hardwood forests or restoration natural communities, depending on the current status of the stand.

Current Conditions:

On BRSF, pine plantations on historic sandhill sites are mostly planted in sand pine (*Pinus clausa*). These stands have a variable understory of turkey oak (*Quercus laevis*), laurel oak (*Quercus hemisphaerica*), sand live oak (*Quercus geminata*), yaupon, (*Ilex vomitoria*), and American holly (*Ilex opaca*). Other sandhill remnants such as gopher apple (*Geobalanus oblongifolius*) and wiregrass (*Aristida stricta*) are found in more open stands. Some densely planted longleaf pine stands may also be included in the mapped pine plantations.

On historic upland pine sites mostly located on the Wolfe Creek and Clear Creek acquisitions and on smaller parcels on the northern side of BRSF, planted stands are typically loblolly pine (*Pinus taeda*). These usually have a dense understory of yaupon, gallberry, laurel, and water oaks, but occasionally have some remnant southern red oak (*Quercus falcata*).

On the Yellow River Ravines tract, former pine flatwoods, prairies, and occasionally bottomlands are usually planted in slash pine (*Pinus elliottii*) or loblolly pine. Although most of these areas are in a phase of restoration, some remaining areas still have dense stands, again with a dense shrubby understory that usually includes yaupon and black titi (*Cliftonia monophylla*) or may have only recently been clearcut. The Yellow River area also has thinned planted pine stands on what is believed to be former upland hardwood forest. These stands are mapped as pine plantation.

Fire Regimes:

Refer to the historic community. If the goal is restoration of the historic pyrogenic community, more frequent fire may be required than is typical for the historic community in order to reduce woody cover.

Management Needs:

Thinning of pines in historically pyrogenic sites would promote restoration to desired future conditions but planting of native species such as longleaf pine and wiregrass, as well as frequent prescribed burns, would provide the greatest benefit. In loblolly and slash plantations, prescribed fire is typically introduced after the first thinning to reduce pine mortality while reducing woody competition well before it is time to clearcut and replant. In areas with good quality ground cover, especially where wiregrass is present, ensure proper herbicides and rates are utilized to reduce shrub and grass competition when planting longleaf pines. Priority should be given to burning areas of higher quality groundcover, using frequent growing-season fires to encourage herbaceous species, especially wiregrass, to reproduce naturally.

Thinning or removal of pines in historically upland hardwood forest sites could promote the restoration to upland hardwood forest.

2. Improved Pasture

Description:

Dominated by planted non-native or domesticated native forage species and evidence of current or recent pasture activity and/or cultural treatments (mowing, grazing, burning, fertilizing; Agro-Ecology Grazing Issues Working Group 2009). Improved pastures have been cleared of their native vegetation. Most improved pastures in Florida are planted with bahiagrass (*Paspalum notatum*) and to a lesser extent with Bermudagrass (*Cynodon dactylon*) or pangolagrass (*Digitaria eriantha*). Weedy native species are often common in improved pastures in Florida and include dogfennel (*Eupatorium capillifolium*), many species of flatsedge (*Cyperus* spp.), carpetgrasses (*Axonopus* spp.), crabgrasses (*Digitaria* spp.), and rustweed (*Polypremum procumbens*) among many others.

Current Conditions:

Improved pasture on Blackwater River State Forest occupies areas that have been stripped of most or all native vegetation and replanted in pasture grasses. This community has heavy disturbance from cattle, hydrology alterations, ditching, clearing and non-native invasive plant establishment. Most such areas appear to be GIS boundary overlaps with private lands. Refer to the community description heading for each of these communities individually.

Fire Regimes:

Refer to the fire regimes for the appropriate historic natural community in which the improved pasture is located.

Management Needs:

Improved pastures have undergone enormous alteration from the natural state. Intensive groundcover restoration would be needed if the goal is to return these to sandhill or upland mixed woodland. Currently, the improved pastures are not leased and are maintained by mowing and invasive plant control.

R. Altered Landcover Types**Description:**

Altered landcover types are areas where the natural community has been overwhelmingly altered as a result of human activity. The ruderal areas described in this section are often not appropriate areas for restoration. If restoration is desired, the target future condition of the ruderal habitat is dependent on the historic community. Please refer to the appropriate community type for a more specific explanation of the desired future condition.

Current Conditions:

At BRSF, ruderal areas include agriculture, artificial pond, borrow areas, canal / ditch, clearings, developed areas, impoundments, roads, successional hardwood forests, successional hydric forests / shrubland, utility corridors, and wildlife food plots.

Agriculture (982 acres) – Row crops, citrus groves, and sod fields that are generally being maintained to grow products for human or domesticated animal use. On BRSF, areas of tree farms, fish hatcheries, and GIS boundary overlaps with private agriculture fields are included in this category.

Artificial pond (2 acres) – Water retention ponds, cattle ponds, etc. A single pond is mapped on the forest, but this may be an impoundment or borrow area.

Borrow area (136 acres) – Several abandoned sand pits occur on the property with the largest found on the Clear Creek acquisition. Some smaller depressions that appear to be artificial in origin are mapped as inclusions within larger areas of former sandhill and wet flatwoods. These could be described as successional hydric shrubland/forest with some open water and young red maple (*Acer rubrum*), black titi (*Cliftonia monophylla*), and sweetbay (*Magnolia virginiana*).

Canal/ditch (3 acres) – Artificial linear drainage ways. Blackwater River State Forest has several large erosion gullies. These are mostly mapped as inclusions with larger areas, but one particularly large gully is apparent on aerial photographs and mapped separately.

Clearing (796 acres) – The forestry activities necessary to thin or remove off-site pines on former pine plantations require staging areas throughout these portions. Such clearings were mapped where evident on current aerial photography but are known to be more numerous based on field surveys. Other clearings of unknown origin were delineated as well, some of which may be wildlife food plots.

Developed (243 acres) – Multiple areas with existing structures and associated cleared land were mapped as developed areas.

Impoundment (685 acres) – Small seepage streams that are blocked by roads or dammed by beaver activity may form shallow ponds. There are also several recreational lakes created by artificial dams.

Road (1,371 acres) – All forest roads and some service roads (> 5m wide) are mapped. Additional vehicle trails are located throughout the forest.

Successional Hardwood Forest (4,023 acres) – Successional hardwood forests are defined as closed-canopied forests dominated by fast growing hardwoods such as laurel oak (*Quercus hemisphaerica*), water oak (*Quercus nigra*), and/or sweetgum (*Liquidambar styraciflua*), often with remnant pines. These forests are either invaded natural habitat (i.e., mesic flatwoods, sandhill, upland pine, upland mixed woodland) due to lengthy fire-suppression or old fields that have succeeded to forest.

Successional Hydric Forest / Shrubland (1,847 acres) – Successional hydric shrubland/forest is a dense stand of shrubs or a closed-canopy forest dominated by fast growing hydrophilic hardwoods such as titi (*Cyrilla racemiflora*), black titi (*Cliftonia monophylla*), sweet gallberry (*Ilex coriacea*), sweet gum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), water oak (*Quercus nigra*), swamp laurel oak (*Quercus laurifolia*), wax myrtle (*Morella cerifera*), blackberry (*Rubus pensilvanicus*), and groundsel tree (*Baccharis halimifolia*). These shrubland/forests may invade herbaceous habitats (i.e., wet prairie, wet flatwoods, seepage slope, marsh) due to lengthy fire-suppression and/or hydrological alterations or forested wetlands (dome swamp, basin swamp, strand swamp) that have been cleared and are not succeeding to swamp but to highly disturbed shrubland or forest dominated by hydrophilic hardwoods.

Utility corridor (810 acres) – Gas transmission corridors and powerline right of ways. Vegetation in these areas is kept mowed and is a mix of usually weedy native species.

Wildlife food plot (411 acres) – Planted or unplanted areas to benefit wildlife or game species; includes dove fields; if not maintained these areas are often dominated by weedy native and non-native species.

Fire Regimes:

Refer to the historic community. Implementing a 2-to-4-year fire rotation with the surrounding communities would be beneficial where fuels are appropriate.

Management Needs:

It may not be practical or desirable to restore some of the altered landcover types (e.g., developed land, roads, etc.) to the historic natural community. However, long term hydrology restoration that includes the removal of certain roadbeds and ditches would be highly beneficial to the natural communities on the site.

VIII. References

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IX. Glossary of Abbreviations

ARC.....	Acquisition and Restoration Council
ARM.....	Archeological Resource Management
BMAP.....	Basic Management Action Plan
BMP.....	Best Management Practice
BOT.....	Board of Trustees
BRSF.....	Blackwater River State Forest
DFC.....	Desired Future Condition
DHR.....	Division of Historical Resources
DOT.....	Department of Transportation
DSL.....	Division of State Lands
DSO.....	Direct Support Organization
EEA.....	Environmental Enhancement Area
EPA.....	Environmental Protection Agency
F.A.C.	Florida Administrative Code
FDACS	Florida Department of Agriculture and Consumer Services
FDEP	Florida Department of Environmental Protection

FFS	Florida Forest Service
FFSF	Friends of the Florida Forest Service
FNAI.....	Florida Natural Areas Inventory
F.S.....	Florida Statutes
FWRI.....	FWC Fish and Wildlife Research Institute
FWC	Florida Fish and Wildlife Conservation Commission
ICS.....	Incident Command System
NAS.....	Naval Air Station, Whiting Field
NRCS.....	Natural Resources Conservation Service
NWFWMD	Northwest Florida Water Management District
OALE	DACS Office of Agricultural Law Enforcement
OFW	Outstanding Florida Waters
OHM.....	Off-Highway Motorcycle
OHV.....	Off-Highway Vehicle
OOF	Operation Outdoor Freedom
SCS.....	Soil Conservation Service
SFI.....	Sustainable Forestry Initiative
SHCA	Strategic Habitat Conservation Area
SMZ.....	Special Management Zone
TIITF	Board of Trustees of the Internal Improvement Trust Fund
TMDL.....	Total Maximum Daily Load
UERP.....	The Uplands Ecosystem Restoration Program
USFS.....	U.S. Forest Service
WMA.....	Wildlife Management Area