Exhibit 18

Principles for Forest and Wildlife Management of Conservation Units within the West Bay Ecosystem Management Agreement RGP - SAJ 86

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Purpose

To provide an outline for forest and wildlife management within the Conservation Units (CUs) of the West Bay Ecosystem Management Agreement (EMA) , Regional General Permit and Ecosystem Management Agreement (RGP/EMA) areas. This document provides the framework that will guide the development of future land management plans for CUs.

Methodology

Using the *Revised Land and Resource Management Plan for National Forests in Florida* and the *Cecil Field Timber Management Plan* as a framework, the guidelines will prescribe forest and wildlife management strategies that enhance conservation, habitat restoration, and ecological functions within the CUs.

History

The primary land management goal for most of the RGP/EMA area historically has been the production of forest products. Intensive silvicultural management of slash pine (*Pinus elliottii*) and sand pine (*P. clausa*) plantations has occurred on the CUs for the past 30 to 40 years. Silvicultural practices implemented on the area include clear-cutting, roller chopping, site-preparation burning, bedding, planting, and fertilization. Most stands within the RGP/EMA area have been through one or more rotations of planted pine. While forest management practices have degraded the natural habitats of many uplands and wetlands, some wetlands within the CUs have experienced little or no silvicultural impacts.

Prescribed Management

The primary forest management objective for this area is to prescribe management activities that will restore and enhance the vegetative communities and function of historic ecosystems. Restoration forestry practices will replace historical intensive silvicultural practices within the CUs. Harvest operations, controlled burning and other restoration prescriptions will be used to convert the existing even-aged pine monoculture to a mosaic of even and uneven-aged management regimes. Proposed objectives, suggested management prescriptions and benefits are summarized below.

I. Forest Management

A. Objective

To implement harvest, planting, and management operations that restore and maintain the vegetative species composition, stem density, basal area, understory, hydrology, wildlife species diversity, and ecological functions of historically naturally occurring ecosystems.

B. Prescription

All forest management operations will adhere to the latest edition of Silviculture Best Management Practices (BMPs) outlined by the Florida Forest Service (FFS), harvests will be conducted by Florida Master Loggers (FML), and forest management will adhere to guidelines set forth by the Sustainable Forest Initiative Program (SFI). Five forest community types impacted by silviculture occur within RGP-EMA conservation areas: xeric planted uplands, mesic planted uplands, hydric planted flatwoods, upland hardwoods, and wetland hardwoods. Goals and

prescriptions of each community are described below.

1. Xeric Planted Uplands Goal
   Open canopy with appropriate canopy species, longleaf pine, herbaceous ground cover, low density mid-story. The long-term goal is restoration of uneven-aged longleaf pine forests.

   a) Contains FDOT FLUCCS habitat types Upland Coniferous Forest (4100), Coniferous Plantations (4410), and Forest Regeneration Areas (4430).
   b) Conforms to FNAI community types Sandhill, Scrub, and Scrubby Pine Flatwoods (FNAI 2010).
   c) Remove existing stands of sand pine and off site slash pine plantations through clear-cutting following SFI standards. Stands will be candidates for conversion to longleaf once they become merchantable. Existing individual longleaf trees will be left where they are found.
   d) Prepare and maintain sites by control burning, mechanical and or chemical means to accomplish successful longleaf stand establishment and restoration or enhancement of herbaceous ground cover.
   e) Plant longleaf seedlings to ensure capture of site (competition) and provide sufficient needle drop for future control burns.
   f) Periodic burning to promote ecological functions.
   g) Once stands are established, uneven aged management will occur. Thinning operations will typically occur every 10-15 years on a continual basis with the introduction of patch clear-cutting during these operations to facilitate uneven aged management (natural regeneration).
   h) Bedding will not be used.

2. Mesic Planted Uplands Goal
   Uneven age, open canopy, longleaf pine or a mix of slash and longleaf pine, more diverse herbaceous groundcover than current condition, low density mid-story. The long-term goal is restoration of uneven-aged longleaf pine and or mixed longleaf/slash pine forests.

   a) Contains FLDOT FLUCCS habitat types Pine Flatwoods (4110), Coniferous Plantations (4410), and Forest Regeneration Areas (4430).
   b) Conforms to FNAI community type Mesic Pine Flatwoods (FNAI 2010).
   c) Existing slash pine plantations will be managed to a 30 year rotation. Stands will be clear-cut following SFI standards. Existing individual longleaf trees will not be harvested.
   d) Prepare and maintain sites by control burning, mechanical (no bedding) and or chemical means to accomplish successful reestablishment of slash and longleaf pine. Planting densities will ensure adequate stocking for tree selection processes and long-term tree density goals.
   e) Once stands are established, pine canopies will be managed to promote

herbaceous ground cover through thinning operations.

f) Periodic burning to promote ecological functions.

g) Bedding will not be used.

3. <u>Hydric Planted Flatwoods Goal</u>
   Open canopy with appropriate canopy species, low density slash pine, more diverse ground cover, low density mid-story.

   a) Contains FLDOT FLUCCS habitat types Hydric Pine Flatwoods, (6250), Freshwater Marsh (6410), and Wet Prairies (6430).
   b) Conforms to FNAI community types Hydric Pine Flatwoods, Seepage Slopes, and Wet Prairies (FNAI 2010).
   c) Clear-cut existing slash pine plantations and convert to savannahs.
   d) Any existing longleaf pine individuals will not be harvested.
   e) Periodic burning will promote restored ecological function.
   f) Periodic harvesting of natural regeneration will be utilized, when economically feasible, to promote uneven-aged stand composition and maintain ecosystem integrity.
   g) Bedding will not be used.

4. <u>Upland Hardwood Goal</u>
   Retain current core conditions and enhance wetland/upland ecotones.

   a) Contains FLDOT FLUCCS habitat types: Upland Hardwood Forests (4200), Zeric Oak (4210), Hardwood-Conifer Mixed (4340), and Upland Scrub- Pine and Hardwoods (4360).
   b) Conforms to FNAI community types Scrub, Scrubby Flatwoods, and Sandhill (FNAI 2010).
   c) Control burns conducted in adjoining areas will be allowed to burn into these stands. Suitable mechanical methods may be used when necessary to promote initial ecotone restoration and maintain restored desirable conditions.
   d) Limited use of herbicides targeting undesirable shrub species is permissible.
      i. Herbicides will be prohibited in wetlands identified as potentially supporting federal/state-listed fauna. FNAI GIS point data will be employed to determine restricted areas.
   e) Bedding will not be used.

5. <u>Wetland Hardwood Goal</u>
   Retain current conditions except allow for more clearly defined edges.
   a) Contains FLDOT FLUCCS habitat types Wetland Hardwood Forests (6110), Gum Swamps (6130), Mixed Wetland Hardwoods (6170), and Cypress (6210).
   b) Conforms to FNAI community types Mesic Pine Flatwoods, Basin Swamps, Blackwater Stream, and Seepage Stream (FNAI 2010).
   c) Control burns conducted in adjoining areas will be allowed to burn into these stands. Implement mechanical control measures to promote initial ecotone restoration and maintain if necessary.
   d) Limited use of herbicides targeting undesirable shrub species is permissible.
      i. Herbicides will be prohibited in wetlands identified as potentially supporting federal/state-listed fauna. FNAI GIS point data will be employed to determine restricted areas.
   e) Salvage harvests are only permissible following severe storm events, disease/insect events, or wildfires.
   f) Bedding will not be used.
      i. Thinning operations are not economically feasible until stands reach merchantable age. Therefore, harvest prescriptions will not be implemented until stands attain minimum volume specifications.
      ii. Harvest activities in all wet pine flatwoods and other jurisdictional wetlands will adhere to FFS BMPs.
      iii. Silvicultural activities deemed detrimental to ecosystem function (herbicide application, fertilization, bedding, roller-chopping, row planting) will be excluded except where appropriate to meet restoration objectives.
      iv. Clear-cutting combined with longleaf reestablishment will be used to convert even-aged slash and sand pine stands to uneven-aged longleaf stands over time. Clear-cutting will be used only for longleaf restoration and salvage cutting of storm, fire, disease, or insect damaged timber.
      v. Limited use of herbicides also will be used to complement prescribed burning to create uneven-aged slash pine stands.

C. Benefits

1. Reduction in stand density will promote the restoration and establishment of a naturally occurring under-story vegetative community and restoration of natural hydrology.
2. Harvest, planting, and prescribed burning operations will promote and maintain longleaf pine restoration within CUs.
3. Thinning will reduce tree density and promote canopy development, restoration and establishment of a naturally occurring under-story vegetative community and increase the aesthetics and natural beauty of the CUs.
4. Thinning operations also will reduce mid-story fuel levels and improve conditions for the use of prescribed fire.

5. Prescribed fire return intervals of 2-5 years within CUs will maintain desirable herbaceous vegetation at fuel loads that reduce the threat of catastrophic wildfires to surrounding areas.

II. Groundcover Management

A. Objective

To establish a groundcover management regime that restores and maintains the ecological functions of naturally occurring upland and wetland communities in the CUs, through prescribed fire, mechanical, and chemical means.

B. Prescription

Establish fire-lines that minimize impacts to the landscape and maximize inclusion of fire into formerly fire-suppressed areas.

1. Implement dormant-season fire in all fire-dependent upland and wetland ecosystems to reduce fuel loads.
2. Implement growing season fires in CUs whenever practical after fuel reduction is accomplished.
3. Return intervals of 2-4 years for growing-season burns is the desired condition of restored CUs. Dormant-season burns will be utilized when growing-season burns are impractical (due either to location or weather conditions), or when return intervals exceed established growing-season schedules.
4. Use site-preparation fire, where practical before reestablishing longleaf pine.
5. Mechanical and/or chemical prescriptions may be used where fire prescriptions are not feasible.
    a) Herbicide prescriptions will target woody species to conserve herbaceous species present in restoration CUs.

C. Benefits

1. Groundcover treatments in wetlands will reduce woody vegetation and restore and maintain the natural under-story and ground cover plant communities.
2. Dormant-season prescriptions will reduce fuel loads, the risk of catastrophic fire, and prepare sites for implementation of growing-season fire.
3. Growing-season prescriptions will mimic natural fire regimes which will enhance and maintain fire-dependent ecosystems, under-story plant communities, and restored ground cover.
4. Growing-season fire will improve habitat for many species of wildlife and rare plants.
5. Groundcover treatments will promote successful natural regeneration of longleaf pine, prepare sites for restoration planting, and control noxious vegetation.
6. Groundcover treatments will promote and enhance the aesthetic value and outdoor recreational opportunities in CUs.

III. Wildlife Management

A. Objective

To prescribe and implement wildlife habitat and population management strategies that enhances species diversity and population levels.

B. Prescription

1. Where appropriate, determine the presence, location, and population status of threatened, endangered, and other protected species.
2. GIS location data obtained from FNAI for Florida protected species and species of concern will be used to map potential presence within conservation units.
3. When deemed necessary, monitor and evaluate responses of protected species to habitat management activities.
4. Where appropriate, identify and implement habitat and population management measures that improve the recovery and status of protected species.
    a) Promote and develop inter-agency partnerships that will enhance the management of protected species in the CUs, when appropriate.
5. Identify, promote and establish protocol for public recreational consumptive and non-consumptive uses of wildlife species in the CUs.
6. Promote and establish educational and public outreach opportunities related to wildlife species in the CUs.

C. Benefits

1. Species monitoring will help ensure permit compliance, increase public outreach opportunities, and assist in evaluating management efforts.
2. Species-specific management prescriptions and development of partnerships will promote population growth and recovery of protected species, and improve communication and relationships with regulators.
3. Promotion of recreational opportunities will encourage public participation and improve attitudes about and acceptance of land management objectives.
4. Restoration efforts will create and maintain diverse and healthy biotic communities that will serve as keystone ecosystems for evaluating future management decisions.
5. Restoration efforts will enhance CU suitability and value as wildlife corridors within the RGP - SAJ 86 areas and adjacent natural areas.

IV. Exotic Vegetation Management

A. Objective

Promote control and eradication of exotic and nuisance plant and animal species.

B. Prescription

Monitor vegetation and wildlife in the CUs to identify the occurrence, location and severity of exotic plant and animal infestations.

1. Develop and implement an exotic plant control and eradication plan.
2. Implement herbicide, fire, and other management prescriptions to meet eradication objectives.

3. Implement lethal and non-lethal measures to control exotic animals.
4. Monitor infestation sites and evaluate the success of control measures to determine ecological lift.

C. Benefits

1. Control of exotic plants will improve habitat quality and reduce competition with native species.
2. Control of exotic wildlife species will reduce habitat degradation and competition with native wildlife species.

V. Standards Cited in Document

A. **Silviculture Best Management Practices**, Florida Division of Forestry, Florida Department of Agriculture, DACS-P-01284 (provides guidelines for Timber harvesting, access, crossings, site prep and planting.

B. **Florida Master Logger Program**, sponsored by the Florida Forestry Association and the Florida Sustainable Forestry Initiative State Implementation Committee (professional loggers must complete a three day class in safety, timber harvesting, and environmental regulations. Must complete six hours of continuing education yearly to maintain their certification.)

C. **Florida Natural Areas Inventory (FNAI). 2010**, Guide to the Natural Communities of Florida: 2010 Edition. Florida Natural Areas Inventory, Tallahassee, FL.

D. **Florida Exotic Pest Plant Council (FLEPPC). 2013,** List of Invasive Plant Species. Fort Lauderdale, FL.

E. **Sustainable Forestry Initiative (SFI), Inc.,** Independent, charitable organization that is dedicated to promoting sustainable forest management. Principals include measures to protect water quality, biodiversity, wildlife habitat, species at risk and forests with Exceptional Conservation Value. Reviewed and updated every 5 years.