FIVE-YEAR RESOURCE MANAGEMENT PLAN

FOR THE

TWO MILE PRAIRIE TRACT

WITHLACOOCHEE STATE FOREST

CITRUS COUNTY

PREPARED BY

DIVISION OF FORESTRY

FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

FOR THE PERIOD

THROUGH

FIVE-YEAR RESOURCE MANAGEMENT PLAN

FOR THE

TWO MILE PRAIRIE TRACT

WITHLACOOCHEE STATE FOREST

CITRUS COUNTY

Approved by:

L. Earl Peterson, Director
Division of Forestry

October 17, 2000
Date

Charles Maynard, Chief
Forest Management Bureau

October 17, 2000
Date

LAND MANAGEMENT PLAN EXECUTIVE SUMMARY

LEAD AGENCY: Florida Department of Agriculture and Consumer Services, Division of Forestry

COMMON NAME OF THE PROPERTY: Two Mile Prairie Tract, Withlacoochee State Forest

LOCATION: Citrus County

ACREAGE BREAKDOWN:

Land Cover Classification	*Acreage*
Xeric Hammock	900.15
Basin Swamp	87
Sandhill	814
Sandhill-Early Successional	377
Sandhill Upland Lake (Johnson Pond)	24
Scrub	220
Basin Marsh	297
Pine Plantation	177
ACREAGE TOTAL:	**2,896.15**

LEASE/MANAGEMENT AGREEMENT NO. 4145 **USE: Single___ Multiple_X_**

Management Agency	Responsibility
Division of Forestry	General Management of State Forest
Division of Historical Resources	Historical & Archaeological Resources
Florida Fish & Wildlife Conservation Commission	Wildlife Management & Laws

DESIGNATED LAND USE: Multiple-Use State Forest.

SUBLEASE: None **ENCUMBRANCES:** Five Florida Power Corporation Easements.

TYPE ACQUISITION: CARL and P2000

UNIQUE FEATURES: Sandhill, Scrub, Sandhill Upland Lake, Basin Marsh, 1000 ft. frontage on Withlacoochee River.

MANAGEMENT NEEDS: Reforestation, signage, fencing, equipment, plant and animal survey, scrub restoration, brochure, park ranger, prescribed fire management, recreation elements.

ACQUISITION NEEDS/ACREAGE: Two parcels; totaling 35 acres

SURPLUS LANDS/ACREAGE: N/A

PUBLIC INVOLVEMENT: Advisory Group Meeting & Public Hearing -December 15&16, 1999, Southwest Florida Water Management District, and Citrus County.

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

ARC Approval Date: _____BTIITF Approval Date: _____

TWO MILE PRAIRIE TRACT
WITHLACOOCHEE STATE FOREST
FIVE YEAR RESOURCE MANAGEMENT PLAN

TABLE OF CONTENTS

TWO MILE PRAIRIE TRACT
WITHLACOOCHEE STATE FOREST
FIVE YEAR RESOURCE MANAGEMENT PLAN

EXHIBITS

Mission Statement

The primary mission for the Two Mile Prairie Tract is to protect and manage the unique resources of the forest through a stewardship ethic to assure these resources will be available for future generations. This will be accomplished by implementing sound ecosystem management principles which will:

- restore, maintain, and protect in perpetuity all native ecosystems,
- insure long-term viability of populations and species considered rare, endangered, threatened, or of special concern,
- integrate human use through a total resource concept, not emphasizing any particular use over the others or over improvement, maintenance and protection of native ecosystems,
- practice sustainable forest management utilizing sound silvicultural techniques.

This management plan is provided according to requirements of Section 253.034, Florida Statutes, and was prepared using guidelines outlined in Section 18-2.021 of the Florida Administrative Code. It is not an annual work plan or detailed operational plan but provides general guidance for management of the Two Mile Prairie Tract for the next five years and outlines the major concepts that will guide management activities on the forest.

A. COMMON NAME OF THE PROPERTY

The Common name for this forest is the Two Mile Prairie Tract (TMPT), Withlacoochee State Forest. Property was formerly known as Jordan Ranch when acquired.

B. LOCATION, BOUNDARIES AND IMPROVEMENTS

The property is located in northeastern Citrus County (Exhibit A). Improvements include a pole barn, three wells, fencing and bahia grass pasture. Electric service is provided to the pole barn. These facilities were all on site when the property was purchased by the State.

C. LEGAL DESCRIPTION AND ACREAGE

The TMPT is comprised of 2,896.15 acres. See Intergovernmental Lease Agreement #4145 (Exhibit B) for the specific legal description.

D. DEGREE OF TITLE INTEREST HELD BY THE BOARD, INCLUDING RESERVATIONS, EASEMENTS AND ENCUMBRANCES

The Board of Trustees of the Internal Improvement Trust Fund holds an undivided 50% interest in the property. The Southwest Florida Water Management District (SWFWMD) holds the other undivided 50% interest. The Intergovernmental Lease Agreement provides authority for the Division of Forestry (DOF) to manage the TMPT (Exhibit B).

Reservations and easements are summarized in Exhibit C. The Board of Trustees of the Internal Improvement Trust Fund along with the SWFWMD, acquired the TMPT on January 8, 1997.

E. LAND ACQUISITION PROGRAM

The property was purchased as a joint Conservation and Recreation Lands (CARL), and Preservation 2000 (P2000) project, with the CARL funding coming from the Board of Trustees and the P2000 funding coming from the SWFWMD. The goals and objectives include:

1) To conserve, protect, manage, and restore important ecosystems, landscapes and forests, especially if the protection and conservation of such lands is necessary to enhance or protect significant surface water, ground water, coastal, recreational, timber, or fish and wildlife resources which cannot otherwise be accomplished through local and state regulatory programs.
2) To provide areas, including recreational trails, for natural-resource-based recreation.
3) To conserve and protect native species habitat and/or endangered or threatened species. The DOF interprets this to include species of special concern.

Additional goals and objectives identified by SWFWMD include:

1) Water management and the conservation and protection of water and natural resources, as well as protection of natural areas, such as flood plain forests, isolated wetlands and other wetland communities and;
2) To protect, preserve and restore natural ecosystems, while managing timber resources and providing recreational opportunities which are compatible with these purposes.

Management purposes identified in the Intergovernmental Lease Agreement are as follows:

LESSEE shall manage the leased premises only for the conservation and protection of natural and historical resources and resource based public outdoor recreation which is compatible with the conservation and protection of these public lands, as set forth in subsection 259.032(11), Florida Statutes and Section 373.59, Florida Statutes, as amended, along with other authorized uses necessary for the accomplishment on this purpose as designated in the Management Plan required by paragraph 7 of this Lease.

F. DESIGNATED SINGLE-USE OR MULTIPLE-USE INCLUDING MANAGING AGENCIES

The TMPT shall be managed as a unit of Withlacoochee State Forest for the conservation and protection of natural and historical resources and for resource based public outdoor recreation as set forth in sections 259.032, 267.061 and 373.59, Florida Statutes. The DOF will initiate multiple-use management as authorized under Chapters 253.034 and 589.04, Florida Statutes.

Implementation of ecosystem management is the overall goal for multiple-use, which includes, but is not limited to: timber management, recreation management, wildlife management, and watershed management. A balanced program does not necessarily result from an equal division of acreage, funding or staffing for each use. Local demands and geographic factors influence the array of uses to be applied to any area of the forest. Only uses compatible with the forest and its ecosystems and the previously mentioned goals and objectives will be implemented.

The DOF is responsible for the overall management of the forest. According to Article 4, Section 9 of the Florida Constitution, the Florida Fish and Wildlife Conservation Commission (FWC) is responsible for execution of all regulations and executive powers of the state with respect to wild animal life and fresh water aquatic life. The FWC will assist the DOF in providing technical advice on the management of wildlife populations (listed species, game and non-game), inventories, setting hunting seasons, establishing bag limits, and enforcement of rules and regulations related to the management of the wildlife resources. At present there are no plans to hunt this tract, but this is a possibility in the future.

The Division of Historical Resources (DHR) will provide assistance regarding appropriate management practices on historical or archaeological sites as stated in Section 267.061, Florida Statutes.

The SWFWMD and DOF staff will share the responsibility of dealing with water resource issues including flood abatement, hydrologic restoration, etc. SWFWMD staff in coordination with the DOF have developed a plan for hydrologic restoration of the basin marsh community with implementation to begin in 1999 (see section M.2.).

G. PROXIMITY TO OTHER PUBLIC RESOURCES

Lands managed by the state, federal, or local government for conservation of natural or cultural resources that are located within about 20 miles of the TMPT include:

TRACT	AGENCY	DISTANCE
Waccasassa Bay State Preserve	DEP	20 miles WNW
Cross Florida Greenways State Rec. and Conservation Area	DEP	5 miles N
Goethe State Forest	DOF	10 miles NW
Ross Prairie State Forest	DOF	5 miles N
Rainbow Springs State Park	DEP	7 miles WNW
Marion 1	SWFWMD	Adjacent N
Gum Slough	SWFWMD	1 mile E
WSF, Citrus Tract	DOF	10 miles SW
Fort Cooper State Park	DEP	15 miles S
Flying Eagle Ranch/WMA	SWFWMD/FWC	13 miles S
Crystal River State Buffer Preserve	DEP	18 miles WSW
Withlacoochee State Trail	DEP	2 miles S
Potts Preserve	SWFWMD	3 miles ESE
WSF, Jumper Creek Tract	DOF	18 miles SE
Half Moon Wildlife Management Area	SWFWMD/FWC	8 miles SE

SWFWMD - Southwest Florida Water Management District
DOF - Division of Forestry
DEP - Department of Environmental Protection
FWC - Fish and Wildlife Conservation Commission

A map of these public lands is included in Exhibit P.

H. AQUATIC PRESERVE/AREA OF CRITICAL STATE CONCERN

The tract is not within an aquatic preserve or an Area of Critical State Concern.

I. RENEWABLE AND NON-RENEWABLE RESOURCES

1. Soil Types

The Soil Survey of Citrus County, Florida (USDA - Natural Resources Conservation Service) identifies the soil types on the TMPT (Exhibit D).

2. Archaeological and Historical Resources

The DHR has indicated that there are no known archaeological or historical sites recorded on this tract (Exhibit E). See section J.

3. Soil and Water Resources

This tract has no known soil problems or erosion problems that need to be addressed at this time. All activities planned for the tract will be conducted in accordance with Florida□s 1993 or current Silviculture Best Management Practices publication and/or other appropriate measures as deemed necessary by the DOF's Forest Hydrologist and/or Watershed Specialist and SWFWMD staff. In addition, if future soil or water resource problems should arise, they will be immediately assessed and the appropriate action will be proposed and implemented under the direction of the DOF's Forest Hydrologist and/or Watershed Specialist and SWFWMD staff. The DOF, through its Forest Hydrology Section, will work with the SWFWMD to monitor levels and quality of ground and surface water resources and to address hydrological restoration.

The Withlacoochee River borders the northern boundary of the tract and is designated as an Outstanding Florida Water. A water quality classification of III makes the river suitable for fish, wildlife and recreation.

Johnson Pond is approximately 24 acres and is a sandhill upland lake, located in the northeast portion of the tract. Over the past 20-30 years this pond has become weed-choked, possibly due to hydrological changes caused by ditching or even by natural processes.

4. Fish and Wildlife

Much of the tract consists of disturbed habitats including sandhill and oak scrub. Areas cleared for pasture and pine plantations have altered the habitat value for native wildlife. However, some native habitats such as cypress swamps and xeric hammocks remain on the property. The interspersion of these habitat types contributes to a relatively high diversity of wildlife. Quality habitat is provided for a variety of wildlife including: gray squirrel, gray fox, opossum, white-tailed deer, southern pocket gopher, eastern cottontail rabbit, river otter, bobcat, striped skunk, red-bellied woodpecker, pileated woodpecker, bobwhite quail, mourning dove, and a variety of reptiles and amphibians.

According to the previous owner, fish populations have dramatically fallen in Johnson Pond. A contributing factor may be the ditching into Johnson Pond, which may have caused nutrient rich in-flows leading to unwanted aquatic plant growth. Fish species observed include largemouth bass and a variety of panfish.

5. Endangered or Threatened Species and Species of Special Concern

According to the Florida Natural Areas Inventory (FNAI) (Exhibit H) the following listed species are known to occur on this tract:

		Fed.	State	FNAI
gopher tortoise	Gopherus polyphemus		SSC	G3S3
brittle maidenhair fern	Adiantum tenerum		LE	G5S3
scrub bay	Persea humilis			G5S3

DOF staff have also observed the following species:

Sherman's fox squirrel	Sciurus niger		SSC	G5T2S2
eastern indigo snake	Drymarchon corais couperi	LT	LT	G4T3S3
Florida scrub jay	Aphelocoma coerulescens	LT	LT	G3S3
royal fern	Osmunda regalis		CE	

STATUS/RANK KEY
Federal Status (USFWS): LE= Listed Endangered, LT= Listed Threatened, LT(S/A)= Listed Threatened due to similarity of appearance.
State Status (FWC): LE= Listed Endangered, LT = Listed Threatened, SSC= Listed Species of Special Concern, CE = Candidate Endangered
FNAI Global Rank: G1= Critically Imperiled, G2 = Imperiled, G3= Very Rare, G4= Apparently Secure, G5= Demonstrably Secure, T#= Taxonomic (Subgroup; numbers have same definition as G#'s.)
FNAI State Rank: S1= Critically Imperiled, S2= Imperiled, S3= Very Rare, S4= Apparently Secure.

A Citrus County Summary of plant and animal occurrences is provided in Exhibit G.

One of the primary management goals for this tract is to maintain and enhance ecosystems and populations of organisms that are listed as threatened, endangered, or species of special concern. Management and monitoring of these species will be coordinated by the DOF Biologist in cooperation with the FWC Biologist. Because of the large extent of conservation work being conducted in the area by other governmental and non-profit organizations, the DOF will collaborate with other agencies, including the USFWS, concerning listed species. This will add to the body of knowledge of all parties, as well as help the ecosystems being managed. An example of where collaboration is needed and will occur involves planning and implementation of management actions for the scrub jay on the TMPT. DOF personnel will be responsible for development and maintenance of floral and faunal lists for TMPT and for species monitoring.

6. Beaches and Dunes

No beaches or dunes occur on the TMPT.

7. Swamps, Marshes, and Other Wetlands

Basin swamps, basin marshes, and a sandhill upland lake (Johnson Pond) constitute the wetlands distributed throughout the TMPT.

8. Mineral Resources

There are no known commercial mineral deposits on the tract; however, phosphate mining was prevalent on this tract until 1910. The abandoned pits have naturally reforested since that time.

9. Unique Natural Features

The tract is bounded on the north by a portion of the Withlacoochee River, an Outstanding Florida Water, which is designated a Class III water body. Class III waters are intended for recreational use and the propagation of a healthy, well-balanced population of fish and wildlife.

Although its hydrology is somewhat altered, Johnson Pond is an example of a sandhill upland lake. It is located in the northeast portion of the tract.

Several shallow sinkholes exist throughout the tract. They appear to have developed many years ago evidenced by the vegetative reclamation. Old phosphate pits exist in the southwest portion of the tract, which may provide some geological features of interest.

Although the basin marsh habitat has been severely altered, this habitat provides open vistas for wildlife viewing and remains an important water recharge area. The largest basin is known as Two Mile Prairie from which the tract is named.

10. Outstanding Native Landscapes

TMPT contains a large area of the sandhill community. Other features are discussed in section I.9.

11. Insects and Diseases

The TMPT has no history of epidemic and/or managerially important outbreaks of damaging insects or diseases. Given the forest□s current and/or expected biodiversity, structure and management plans, no such outbreak is anticipated. In the event of novel or circumstance generated outbreaks, state forest management staff will interact with the Dof7/8s Forest Health Section to develop and implement appropriate scientifically sound responses and/or management prescriptions.

In compliance with Florida Statute 388.4111 and the Lease Agreement, all lands contained within this lease have been evaluated and subsequently designated as environmentally sensitive and biologically highly productive. Such designation is appropriate and consistent with the previously documented natural resources and ecosystem values and affords the appropriate protection for these resources from arthropod control practices that would impose a potential hazard to fish, wildlife and other natural resources existing on this property.

J. PLANS FOR LOCATING UNKNOWN RESOURCES

Representatives of the SWFWMD, DHR and the FNAI will be consulted prior to the initiation of any significant ground disturbing activity by the DOF or any other public agency. The DOF will make every effort to protect known archaeological and historical resources. Ground disturbing

activities not specifically covered by this plan will be conducted under the parameters of the "List of LMAC /Division of State Lands Approved Interim Management Activities (Exhibit M.).

1. Archaeological Resources

The DOF will arrange for select state forest personnel to attend a DHR Archaeological Monitor Training class. Trained monitors will oversee ground-disturbing activities in which DHR recommends monitoring. The DOF will utilize the services of the DHR CARL archaeologists to locate and evaluate unknown resources, and to make recommendations in the management of these resources. If any archaeological and/or historical sites are discovered they will be reported to DHR and will be identified on maps to aid state forest and law enforcement personnel in patrolling and protecting sites.

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

2. Other Resources

Applicable surveys will be conducted by DOF staff or others during the process of planning and implementing ecosystem management activities. DOF personnel will remain alert for any environmentally or archaeologically significant resources and protective actions will be taken as necessary.

K. NATURAL AREAS INVENTORY

Florida Natural Areas Inventory (FNAI) Managed Area Tracking Records are included as Exhibit H.

L. PAST USES

Sam Jordan settled in Citrus County in the 1920's and purchased 120 acres to operate a hog farm. Soon after, Mr. Jordan purchased Section 26 for $1.25 per acre. For years after, adjacent lands were purchased which increased the size of his farm to nearly 4,000 acres. Several tracts were purchased from the Tennessee Valley Authority which included phosphate pits and tracts planted with slash pine. Mining ceased around 1910 in this area, however, a series of tram roads still exist throughout the property. Sam Jordan would later utilize the tram roads to haul timber to a sawmill on the Withlacoochee River. Remnants of a small sawdust pile remains where Sam Jordan operated the sawmill until 1945.

Several dikes were constructed between prairies to regulate the water flow. Past flooding washed the dikes away from time to time, however, the Jordans would rebuild if necessary. Spike Dike is the largest dike on the property and is located under the Florida Power Transmission Line (Exhibit K).

Located south of Johnson Pond is the Stokes Ferry to Dunnellon Road. This forest road was a major transportation route before the fence laws came to Florida.

M. EXISTING CONDITIONS AND PLANNED USES

The TMPT is managed under the multiple-use concept. Ecosystem management is the guiding concept by which multiple-use is accomplished. Primary emphasis is placed on restoration and maintenance of native systems (section M.2. wetland restoration and M.6. upland restoration).

1. Property Boundaries Establishment and Management

TMPT boundary lines are maintained by state forest personnel. State forest boundary signs along with white blazed trees and a barbed wire fence mark the boundary. Perimeter firelines will be maintained on an annual basis or as needed.

2. Soil, Water and Watershed Management

In accordance with the mission of the DOF and the mission for the TMPT, maintenance and restoration of native ecosystems is a high management priority. Properly managing the soil, water, and watershed resources are an integral part of accomplishing this objective. All silvicultural activities (including timber harvesting and reforestation) will comply with the latest edition of the DOF's publication: Silviculture Best Management Practices (BMP's). Copies of this publication are available from the DOF upon request.

Through an agreement with the DOF, The Nature Conservancy (TNC) has prepared a report providing restoration and long term management recommendations for xeric oak, scrub, sandhill, herbaceous wetland and transition systems for the TMPT (Exhibit O).

The TNC report identifies the most significantly altered ecosystem as the chain of basin marshes in the southeastern quadrant of the forest. The ecological integrity of this historically - wetland ecosystem - has most seriously been altered through regional hydrologic impacts ultimately leading to system xerification. Other impacts such as conversion to pasture, introduction of competitive domestic grasses and heavy grazing have led to a vegetative cover dominance significantly different from the historic basin marsh and wet prairie wetland vegetation. Partial restoration can be achieved and will involve restoration of on-site hydrology, removal of exotic species and reintroduction of native vegetation. This report will serve as a reference document for DOF to prepare an operational scope of work, which will assess and monitor biological communities impacted by restoration activities.

The TMPT falls within the jurisdictional boundaries of the SWFWMD. Water resource protection will be coordinated with the SWFWMD. Any activities requiring water management district permits will be handled accordingly.

SWFWMD staff have reviewed the TNC report and after consultation with DOF staff and field evaluations have prepared a hydrological restoration plan for the TMPT (Exhibit N). This plan has been reviewed by DOF staff and adopted as the course of action regarding the operational

elements necessary to restore natural hydrological functions to the basin marsh. This SWFWMD plan, however, does not attempt to provide details on re-establishment and monitoring of native vegetative communities. To accomplish this component, DOF will initiate a system for biological assessment and monitoring in hydrologically restored communities.
State forest staff will maintain a working relationship with the U.S.D.A. - Natural Resources Conservation Service and the Citrus-Hernando Soil and Water Conservation District, and will solicit their input to insure that the soil and water resources are adequately protected.

3. Roads

There are no improved roads located on the tract, however, numerous forest roads exist. Forest roads consist of existing two-trails, old farm roads and firelines. Many of these roads will be integrated into the recreation program as non-vehicle trails. This practice will significantly reduce the need to create new trails. Parking areas for foot access will be established at designated entrances. Disturbed areas, such as pastures, will be utilized for parking when appropriate. Roads not needed for management and recreational purposes will be abandoned and rehabilitated. Roads not authorized for public use may be designated as firelines.

No new roads are planned for the next five years. All roads and firelines will be maintained by the DOF. Plans for the establishment of any new roads will be reviewed by the State Office of the DOF, SWFWMD and ARC.

Upgrading and maintaining existing roads along with restoration of hydrological functions is a concern. The TMPT personnel will work with the DOF Forest Hydrologist and SWFWMD staff to address maintenance and improvements to the road system and restoration of hydrological functions that might be impacted by the roads.

4. Recreation Management

a. **Existing Facilities and Infrastructure:**
The TMPT is bordered by two primary paved roads, which can provide public access onto the forest. County Road (CR) 39 borders the northern portion of the forest and currently has several forest roads leading from the paved highway into the forest. Public vehicle traffic will not be allowed on forest roads with the following exceptions; the forest road accessing Parking Area #3 and for specific situations accommodating special needs. These special needs will be decided on a case-by-case basis by the lead managing agency. There are several miles of forest roads in fair to poor condition in the interior of the TMPT.

b. **Planned Recreational Activities:**
Public Access and Parking - Primary access onto the forest will be from CR 39 from the north and CR 491 from the south. A small parking area (see Exhibit A) will be established on the north side of CR 39 (Parking Area #1) adjacent to the highway, with a hiking trail for access to the Withlacoochee River. A second parking area (Parking Area

#2) will be established on the south side of CR 39, adjacent to the highway for trail access to Johnson Pond.

A third parking area (Parking Area #3) will be developed off of CR 491 adjacent to the old railroad bed. This parking lot will be developed to allow for the staging of horses and will be the principal parking area for a multiple trail system on the forest.

Recreational Trails - The primary trail head for the TMPT will be established at the south entrance off of CR 491 (Parking Area #3). By utilizing existing forest roads, a system of trails will be developed for hiking, non-motorized bicycling, nature study and horseback riding. Trails are to be looped and will avoid overly wet and sensitive areas. Whereas existing roads will be used for horseback riding trails, non-motorized bicycling trails and hiking trails, additional trails may be blazed for hiking, nature trails and to develop connectors from one trail to another. A trail head and hiking trail will be developed as primary access from Parking Area #1 to the Withlacoochee River. No public vehicle access will be permitted to this section of the forest, except by State Forest Use Permit for persons needing special assistance. A small day use area will be established in an existing disturbed area near the river. The day use area will have picnic tables and bank fishing will be allowed. This area will also allow for canoes to beach for the day, but no overnight camping will be permitted at this site.

A second trail head will be developed at Parking Area #2 for a looped trail around Johnson Pond. A picnic area with a small picnic shelter and observation deck will be built near the lake for wildlife viewing and environmental education.

Camping - There are no improved camping areas proposed for the TMPT. Public campgrounds exist near the tract, limiting the need to construct improved campsites. A primitive camping area will be established for canoe traffic on the Withlacoochee River (Primitive Camping Area #1) and at least one primitive campsite (Primitive Camping Area #2) on the property south of CR 39.

Hunting and Fishing - These activities are regulated by the FWC. Current plans call for no hunting on the TMPT during the next five years. However, as wildlife populations and recreational usages are evaluated, there may be an opportunity to open the area to hunting. This will require coordinating the establishment of the tract as a Wildlife Management Area with the FWC. Emphasis would be placed on limited quota hunts to insure a quality hunt experience and continued healthy game populations. Fishing will be permitted along the Withlacoochee River and in Johnson Pond. Canoes and small non-gas powered boats will be allowed on Johnson Pond. A fishing dock may be constructed on Johnson Pond based on FWC recommendations.

c. Environmental Education

The DOF encourages outdoor educational opportunities and will plan field trips targeting various user groups, the general public, schools and youth groups. Where appropriate, other agencies and volunteers may be enlisted to assist or participate in these field trips.

5. Fire Management

A comprehensive fire management plan is being finalized for the Withlacoochee State Forest, which will include the TMPT, and will be developed within the first year of this five year management plan. All guidelines, as outlined in the Division's fire management policy, will be used on this tract. Following is a brief summary:

The long-term goal of prescribed burning is to simulate, as closely as possible, a natural fire regime in which the majority of acres are burned during the lightning season. Such fires are needed to reduce the height and cover of woody shrubs, stimulate the recovery of native herbaceous and grassy ground cover, promote the regeneration of native pines, and maintain and enhance populations of fire-adapted listed species. Areas with heavy fuel levels will receive one or more dormant season burns until they can safely support growing season burns.

The DOF's fire management program will include input from SWFWMD and FWC biologists to enhance wildlife and ecosystem management. The fire management program will be flexible and responsive to new information and research regarding rotation length and season of burn. Annual prescribed burn plans will also be developed which will identify those areas in which growing season burns and dormant season burns will be implemented.

Primary detection and suppression of wildfires will be the responsibility of the DOF under the direction of the Withlacoochee Forestry Center Manager. Personnel and equipment from the Withlacoochee Forestry Center will be utilized for presuppression practices, maintenance of firelines, rehabilitation of existing firelines, establishment of new firelines (when absolutely necessary), and prescribed burning. The rehabilitation of firelines will be addressed in the fire management plan that is currently being developed for Withlacoochee State Forest. The smoke screening system will be utilized as a smoke management tool and to minimize the impacts of smoke.

Perimeter firelines existed over most of the property at the time of acquisition. A small number of perimeter lines will be installed to close perimeter gaps. Areas slated for perimeter lines will be inspected for listed species by DOF Biologist/Ecologist and submitted to DHR for review prior to installation.

Prescribed fire is the primary tool utilized for resource management. Pre- and post-burn evaluations are essential elements to a successful prescribed fire program and will be conducted by DOF staff. Monitoring levels will vary from burn to burn, based on burn objectives.

6. Forest Resource Management

Objectives

1. Restore native pine species to ecosystems altered by past land use practices.

2. Maintain a sustainable timber management program that enhances the natural diversity with minimal environmental impact.

3. Restore sandhill and scrub communities utilizing established methods including, but not restricted to, prescribed burning, herbicides, etc., and the planting of appropriate species.

4. Maintain the forest over the long term through natural regeneration. Uneven-aged management of longleaf pine stands will be utilized to create an old growth forest component that yields multiple ecological benefits.

5. Improve, maintain and protect in perpetuity all native ecosystems.

6. Insure the long-term viability of populations and species considered rare, endangered, threatened, or of special concern.

7. Maintain ecosystem quality through the use of prescribed burning.

a. Existing Conditions and Management Direction

Following is a brief description of natural communities and other cover types occurring on TMPT along with general recommendations for management. These are identified on the "Existing Vegetation Map" (Exhibit I).

Xeric Hammock - 900.15 acres

Xeric Hammock and associated ecotones separate the majority of wetland habitats found on site from upland sandhill and some scrub communities. The extent of the current xeric hammock can be attributed to ecotonal expansion due to the replacement of natural growing season fire effects with those of grazing and dormant season burning. The dominant species is live oak, together with a mixture of laurel oak, water oak, pignut hickory and other oaks and shrub species typical of this system.

Oak scrubs are found interspersed throughout the xeric hammock and sandhill ecosystems in two basic physical environments. They are found either along small pockets of topographic relief within the sandhill landscape or adjacent to it in areas along slopes leading to more mature Successional xeric habitats.

Areas dominated by saw palmetto groundcover, particularly those associated with significant remnant wiregrass, indicates ecotonal expansion of xeric hardwoods into historically sandhill systems. Restoration of expansion sites to sandhill will require effective growing season fire, or growing season fire along with mechanical treatments. Where wiregrass and palmetto cover is too sparse to carry fire, mechanical treatments

vegetative cover to benefit wildlife. Efforts will be made to maintain these open areas with prescribed fire and/or mowing.

Once the restoration phase has been initiated, the ecosystem will be maintained by simulating natural fire conditions beginning on or before age ten.

Basin Marsh - 297 acres

Past changes to the natural hydrology have turned this community into an arid basin dominated with bahia grass. Physical changes include ditching and diking (Exhibit K) and a canal to the east of the tract. As previously stated, the information gathered from TNC study will be reviewed by DOF and SWFWMD staff and utilized in making management decisions.

Prescribe fire (1-3 year cycle) will be utilized to maintain open herbaceous vegetation.

Scrub - 220 acres

This scrub community is located in the northeast portion of the tract. Lack of growing season fires has allowed an expansion of xeric oak species into this community. Species such as sand live oak, myrtle oak, Chapman's oak, and live oak have established a dense overstory and understory. Characteristic scrub species observed on site include rosemary and staggerbush. Due to the dense understory, ground cover is sparse, consisting of lichens and herbs.

During this five-year period, steps will be taken to specifically identify and evaluate the scrub ecosystem. Scrub jays have been identified in these areas (Exhibit J); therefore, management of this species will be a priority. Along with the basin marsh study, TNC is also providing information to maintain and/or enhance the scrub jay habitat (Exhibit O). This information will be reviewed by DOF and SWFWMD staff and utilized in making management decisions. The DOF will work with the USFWS and the FWC to monitor and make appropriate management decisions for this species.

Management activities will focus on restoration of this delicate ecosystem. Prescribed fire will be the primary tool and will be used as often as necessary; however, succession has progressed to the point where some mechanical treatments will be needed in combination with prescribed fire. Mechanical treatments may include bush-hogging, tree cutting, and shredding. Any proposed treatment will be evaluated to determine the least impact on ground cover.

Photo monitoring is in place throughout this community. Additional monitoring systems will be established to determine the impact of restoration efforts.

Pine Plantations - 177 acres

A 20-acre stand of ten-year old longleaf pine was established by roller chopping, burning and wide-row planting (4'x4'x48'). This technique was used to accommodate cattle grazing.

A 157-acre stand of seven-year old slash pine was established to reforest a previously harvested slash pine plantation. Natural groundcover has been heavily disturbed due to past silvicultural practices and past mining operations that have altered the landscape.

During the five year period of this plan, management activities will consist of harrowing firelines and prescribed burning on a 3-5 year cycle.

Basin Swamp - 87 acres

This is primarily a cypress community found in the northwest portion of the tract. It originates along the Withlacoochee River and protrudes onto the tract. Although selectively harvested in the past, this community appears to be relatively healthy. Due to additional light exposure and low water levels hardwood encroachment has taken place.

Fire is essential for the maintenance of this cypress stand. Fire will be the predominant management activity with no plans for timber harvesting in this community type or in any other wetland areas. Without periodic fires, hardwood invasion and peat accumulation would convert the ecosystem to bottomland forest or bog. The normal fire cycle might be as short as three to five years along the outer edge and as long as 100 to 150 years towards the center. Cypress is very tolerant of light surface fires, but muck fires burning into the peat can kill the trees, lower the ground surface, and transform the swamp into a slough or pond.

b. **Timber Sales**

Normally, timber sales are advertised for competitive bids and sold on a lump sum basis. A sealed minimum acceptable price is set prior to bids being opened. The price is based on the particular class of timber for sale, local stumpage prices, and logging conditions. Salvage sales, where it is necessary to rapidly remove timber damaged due to fire, insects, disease or natural disasters, will normally be sold on a per ton basis. In such sales, the mill receiving the wood furnishes weights of the timber which will be acceptable for payment purposes. No timber sales are planned for the five year period covered by this management plan.

Revenues derived from any timber sales that might occur shall be applied to management and operation costs of the TMPT.

c. **Forest Inventory**

A comprehensive inventory of merchantable pine stands was completed in September 1997 and a hardwood inventory was completed in 1998 fot the Withlacoochee State Forest. The TMPT was included in this inventory. The inventory indicates a low volume of merchantable timber on this tract. The inventory will be updated on five year intervals.

During the period that this five year plan is in effect, a more detailed timber management plan will be developed. The timber plan will outline desired basal areas, size classes, ages and recommended areas for future timber sales.

d. Harvesting Guidelines

Timber harvesting guidelines will be developed for each sale on a site specific basis to minimize damage to sensitive resources. These guidelines will address the importance of snags for wildlife habitat, BMP's, specific needs as related to rare and endangered species, limitations on harvesting in wet periods, machinery use, road systems, protection of ground cover and other items that may be pertinent to a specific site. These items will be addressed in the timber sale contract.

Areas proposed for timber harvest will be surveyed for threatened, endangered or species of special concern prior to marking. Harvesting plans will be developed jointly by state forest staff including a biologist, forester, etc.

All harvesting on lands adjacent to lakes, rivers, and wetlands will be carried out in compliance with the public lands section of the Silviculture Best Management Practices publication and will be conducted so as to meet or exceed these guidelines. The DOF recognizes the importance of snags for wildlife value. As a general rule, hardwood and pine snags will be left alone in their natural environment unless they are deemed to be a potential hazard. Areas with significant pine timber mortality will be harvested as directed by the severity of the situation.

e. Reforestation

Reforestation plans will be developed for each site on a site specific basis. Existing plant communities, threatened and endangered species, stocking levels, species selection, and site preparation techniques will be addressed by state forest staff including a biologist, forester, etc.

7. Research Projects

Research projects may be performed on certain areas of the forest on a temporary or permanent basis for the purpose of obtaining information which expands the knowledge of forestry and ecosystem management. The DOF cooperates with the U.S. Forest Service, the University of Florida, non-profit organizations and other educational institutions and governmental agencies whenever feasible. All proposed research projects will be reviewed by the SWFWMD and authorized in writing by the Chief of Forest Management, DOF. Copies of all reports and articles generated from research projects on the TMPT will be provided to the DOF, SWFWMD and the Division of State Lands.

8. Law Enforcement

Because of recent major increases in state forest acreage, such as the purchase of the TMPT, the enforcement of federal, state and county laws, and state forest rules and regulations can be a

serious problem. Currently, investigators from the Department of Agriculture and Consumer Services, Office of Agricultural Law Enforcement share the task of enforcing laws with local law enforcement agencies, such as the Citrus County Sheriff's Office. FWC Wildlife Officers enforce fish and wildlife regulations and provide assistance in enforcing state forest rules. SWFWMD also staffs law enforcement personnel and they can provide assistance on this tract.

Special rules of the Department of Agriculture and Consumer Services, Division of Forestry were promulgated in 1972 for better control of state forest traffic and camping. These rules are under Chapter 5I-4 of the Florida Administrative Code as revised in 1992, and they now encompass all state forest activities.

9. Wildlife and Fish Management

The native wildlife resources of the TMPT are of major importance, not only to the maintenance of healthy, functioning ecosystems, but to the general public. The DOF provides land management and general supervision and the FWC will provide input for the biological aspects of managing the wildlife and fish populations.

Recreation activities will be monitored during this period to determine the extent of recreational use. Wildlife populations will also have to be inventoried to determine if sustainable game populations exist. At this time, the TMPT is not in the Wildlife Management Area system. The DOF and FWC will then evaluate wildlife populations and recreation usage and other factors to determine if hunting can be compatible with the established recreational uses. Population data and a management proposal will be forwarded to SWFWMD for comment if hunting is recommended. Fishing will be allowed on the Withlacoochee River and Johnson Pond. In order to assist the FWC with sustaining wildlife and fishing activities through ecosystem management, the following guidelines will be used:

a. **Managing Non-Game Species** - Non-game species will be managed and protected through the restoration and maintenance of native ecosystems. Research among state and federal agencies will provide valuable information in determining future management objectives of non-game species.

b. **Sensitive Species** - Specialized forest management techniques will be used as necessary to protect or increase endangered, threatened and species of special concern, as applicable for both plants and animals. Species specific management plans will be developed when necessary. A biological survey should be conducted to determine locations of these species, and efforts will be made to initiate this process during this five year period.

   Threatened or endangered species that may be present on the tract are listed in Section I.5. The following management practices are recommended to protect and preserve all such species:

1. Locate cover, habitat/foraging ranges and breeding areas used by rare and endangered species and include locations on a vegetation map.

2. Protect and properly manage habitat important to rare and endangered species.

3. Implement other specialized management practices for rare and endangered species as deemed necessary.

4. Follow-up and monitor listed species populations and their condition to ensure species are being maintained and to measure success of management practices.

Special management consideration will also be given to the scrub jay during this five year period. Coordination of efforts will be made with other public land managers in the area. Included as Exhibit J is a scrub jay habitat map for this region of the state that was provided by Mr. Bill Pranty, who assisted in the statewide survey for the Archbold Biological Station. This map conveys the scattered distribution of scrub jay habitat in the region. Effective management of this species will require strategically planned restoration of degraded scrub so that disjunct fragments of suitable scrub will ultimately lie within the normal dispersal range for scrub jays.

10. Exotics

The policy of the DOF is to locate, identify, and control invasive exotic species. When invasive exotic species are discovered, a control plan will be developed and implemented based on the severity of the infestation, its location, native species impacted, and the availability of manpower and funding. Some of the invasive exotic plant species that have been identified on the TMPT include cogongrass (Imperata cylindrica) (est. 8 acres), skunk vine (Paederia foetida) (est. 2 acres), camphor tree (Cinnamomum camphora) (est. 10 specimens), Japanese climbing fern (Lygodium japonicum) (est. < 1 acre) and Chinese tallow (Sapium sebiferum) (est. 5 specimens). These five species are at very low levels. Herbicide application has been used to initiate control of cogongrass and Chinese tallow. Efforts will be made to map and control all exotic species during the time frame of this plan.

Herbicide use to control invasive exotics will be limited to those locations and species where there is no practicable alternative. Prescribed fire and proven mechanical methods will be the preferred method used to control invasive exotics whenever feasible.

Over this five year period feral hog monitoring will continue. This species currently has a small population, however, the number can change over a short period of time. DOF and FWC will collaborate on management decisions concerning this species. Hunting and trapping are two options that will be considered for the control of feral hogs.

All management activities and proposals will be scrutinized for their connection to exotic species. Those activities and proposals found to promote invasive exotics will be eliminated or rejected.

11. Utility Corridors

The use of state forest property for cell towers, utility lines, pipelines, linear facilities and transportation corridors will be discouraged to the greatest extent possible. The placement of these linear facilities in a forest fragments the natural communities. Requests for linear facility uses will be handled according to the Governor and Cabinet's linear facilities policy. Currently, there are five Florida Power Corporation easements on the tract (Exhibit C).

N. MANAGEMENT NEEDS, PRIORITIES & COST ESTIMATES

Management activities on the TMPT for this management period must serve to conserve and protect the natural and historical resources and manage resource-based public outdoor recreation which is compatible with the conservation and protection of this tract.

The management activities listed below will be addressed within the five year management period and are divided by priority levels:

Priority 1 - activities considered as paramount to the carrying out of our mission.
Priority 2 - activities key to furthering the mission.
Priority 3 - activities considered significant to our mission, but less urgent.

We anticipate an annual expense budget, excluding salaries, OCO, and fixed capital projects, of approximately $15,000. Cost estimates are provided below for DOF services where sufficient information is available to make projections. Costs for some activities cannot be estimated at this time. Other activities will be completed with minimal overhead expense and existing staff. An Operational Plan will be developed to address each of these items.

Volunteers can be an important asset to the TMPT and will be used whenever possible. Routinely they assist Withlacoochee State Forest staff with trail maintenance, plant and animal monitoring, educational events, and historical research. Volunteers make it possible to accomplish labor and time intensive tasks with minimal expense.

Priority 1

1. Prescribed Burning - Prescribed fire is the primary management tool for this tract. Approximately 98% of the acreage (roughly 2,800 acres) supports vegetative communities that are fire dependent, most of which will be burned on an average rotation of four years or less. Cost estimates are based on the DOF contract burning rate schedule. Manpower and equipment costs are included.
Average Acreage Per Year: 700
Estimated Annual Cost: $4,400

2. Exotic Species Control - Identifying, mapping, eradication/control and monitoring of exotic species.
Average Acreage Controlled Per Year: 10 acres

Est. Annual Cost: $5,000

3. Recreation - Development and implementation, parking area installation, recreational facility improvements.
Cost estimates are dependent on needs to be identified.

4. Scrub Jay Plan – Development of a management plan for scrub jays and scrub jay habitat within three years.
Est. Cost: $5,000

5. Boundary, Maintenance and Security - Fence maintenance and installation, signs.
Approximately 8 miles of fence to replace.
Average Distance Per Year: 2 miles
Est. Annual Cost: $10,000

6. Equipment - Farm tractor, mower, harrow, and ATV.
Est. Cost; $45,000

Priority 2

1. Sandhill/Scrub Restoration/Scrub Jay Habitat Improvement - Burning, monitoring, fuelwood harvest, pine planting and groundcover restoration. Implementation will be a combination of DOF and contractual services and will be based upon the scrub jay plan mentioned above.
Total Acreage: 1,000
Est. Cost: $25 to $60 per acre

2. Basin Marsh Restoration - Plan development and implementation.
Cost estimates are dependent on needs identified in restoration plan.

3. Firelines/Trails - Improvements and maintenance.
Maintenance will be by volunteers and DOF.
Est. Annual Cost: $600

4. **Floral and Faunal Survey**
Est. Cost: $6,000

5. Brochure Development
Est. Cost: $500

6. Roads - Inventory, plan development and implementation.
Est. Cost: Dependent on needs identified in road plan.

Priority 3

1. Security
On-site residence, utilities already exist.
Est. Cost: $2,000

O. REVENUE GENERATION, ALTERNATE USES, & PRIVATE CONTRACTING

During this plan period, revenues generated will be minimal. Revenues are anticipated through fuelwood sales. Cattle leases have been considered and ruled out due to potential negative impact on restoration efforts and recreational activities. Private contracting may be used for some boundary marking, fencing, tree planting, and restoration projects. Apiaries will be considered as requested.

P. IMPACT OF PLANNED USES ON RESOURCES OF THE PROPERTY

1. Timber - Guidelines outlined in Section M.6. will insure a continuing renewable timber resource and diverse ecological resources for an indefinite time period.
2. Wildlife - The DOF and the FWC protect this resource through ecosystem management techniques, hunting and fishing laws, timber harvesting and regeneration techniques, and prescribed burning. Non-game species will be managed and protected through management of native ecosystems. Species with special status will be managed as appropriate. Details have been outlined in Section M.9.

3. Water - Guidelines and activities outlined in Section M.2. will insure protection of the water resources.

4. Historical/Archaeological - Historical and archaeological resources are protected as outlined in Section J.

5. Recreation - Ecosystem health will be emphasized in all recreation considerations and decisions. Periodic evaluations will be conducted by DOF staff to monitor recreational impacts on the natural system. Modifications to recreational uses will be implemented, should significant negative impacts be identified (Section M.4.).

Q. ADJACENT CONFLICTING USES

None

R. LEGISLATIVE OR EXECUTIVE CONSTRAINTS ON THE USE OF THE PROPERTY

There are no known legislative or executive constraints specifically directed towards the TMPT.

S. CONFORMATION TO STATE LANDS MANAGEMENT PLAN

Management of this tract under the multiple-use concept utilizing ecosystem management principles complies with the State Lands Management Plan and provides optimum balanced

public utilization of the property. Specific authority for the DOF's management of public lands is derived from Chapters 589.04 and 253.034, Florida Statutes.

T. SURPLUS LANDS

All of the land within the tract is suitable for its proposed use and none should be declared surplus.

U. ADDITIONAL LAND NEEDS

Since the tract is surrounded by residential development, few opportunities exist for additional acquisitions. However, adjacent parcels will be evaluated as they become available for purchase. An optimal management boundary map found in Exhibit Q identifies two parcels that will be desirable purchases in order to solidify boundaries.

V. RESPONSIBILITIES OF MANAGING AGENCIES

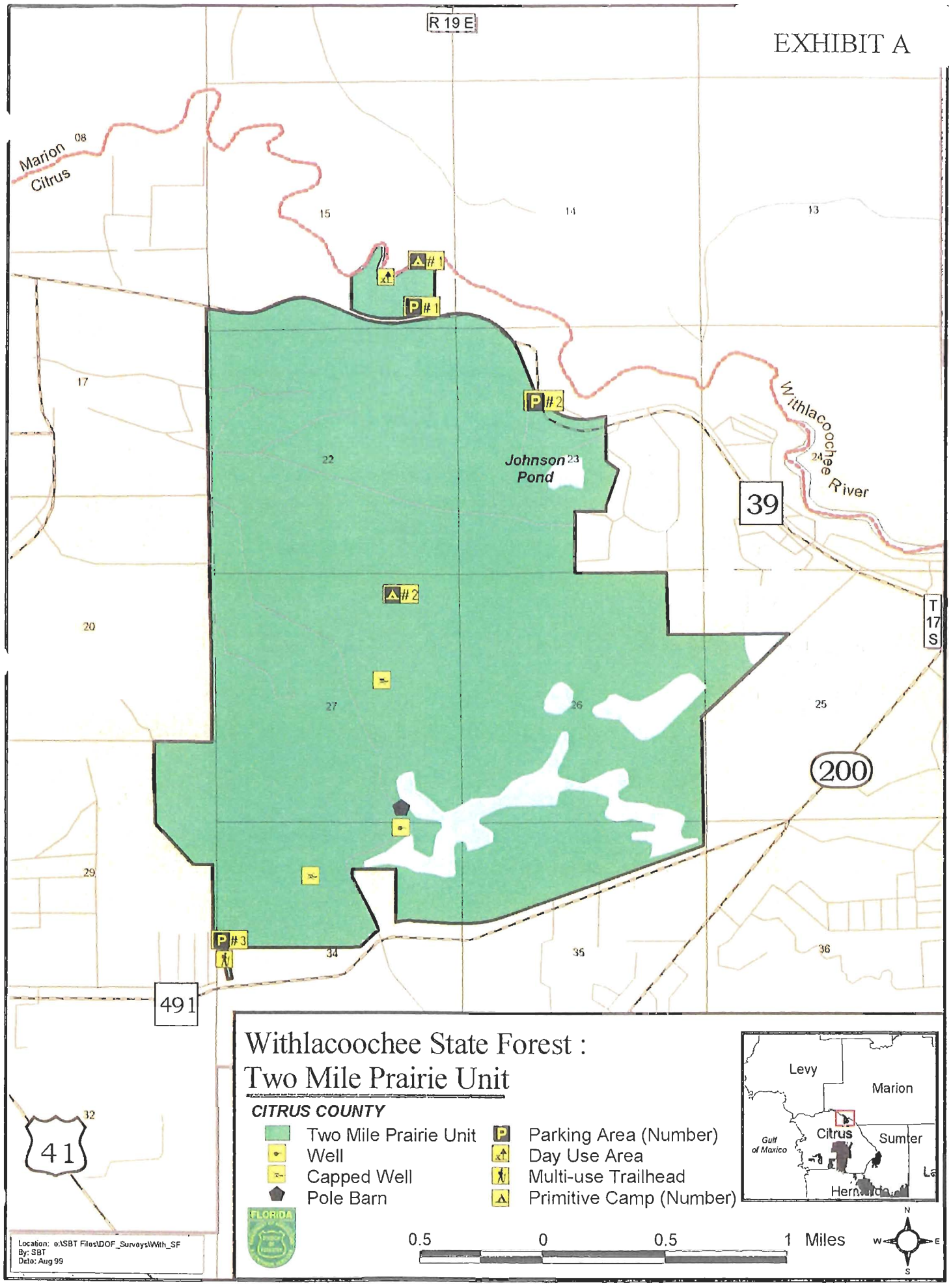
The DOF is responsible for the overall management of the tract. The FWC provides expertise on fish and wildlife resources, manages hunting and fishing activities, and assists with law enforcement. The DHR provides expertise concerning the archaeological and historical resources on the tract. They will be notified prior to the initiation of any significant ground disturbing activity by the DOF or any other agency involved with the management of this tract. SWFWMD provides additional expertise in water resource issues (hydrology, flood abatement, re-hydration, etc.) and prepares, reviews and assists with the implementation of plans involving watershed issues and hydrological restoration. Management activities will be reviewed by the Board of Trustees of the Internal Improvement Trust Fund and SWFWMD as necessary.

W. PUBLIC INVOLVEMENT IN PLAN PREPARATION

This plan has been prepared by the DOF with input from other state agencies, SWFWMD, TNC, the local county planning office and an advisory group. The state forest management plan advisory group helped staff develop the management plan through a process of review and comment. They conducted a public hearing on December 15, 1999 to receive input from the general public. Minutes of these public meetings are found in Exhibit R.

The plan was reviewed by the Citrus County Planning and Development Department. Their staff found the plan to be in compliance with the local comprehensive plan (Exhibit L).

EXHIBIT A



Withlacoochee State Forest : Two Mile Prairie Unit

CITRUS COUNTY

- Two Mile Prairie Unit
- Well
- Capped Well
- Pole Barn
- Parking Area (Number)
- Day Use Area
- Multi-use Trailhead
- Primitive Camp (Number)

0.5 0 0.5 1 Miles

N W E S

Location: e:\SBT Files\DOF_Surveys\With_SF
By: SBT
Date: Aug 99

EXHIBIT B

FB&R

3881

SWF Parcel No. 19-707-101X
Approved by Attorney: Cecil

Intergovernmental Lease Agreement

This Lease is made and entered into this 3rd day of July, 1997, between the BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA (as to its undivided 50% interest) and the SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT (as to its undivided 50% interest), hereinafter collectively referred to as "LESSORS", and the FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES, DIVISION OF FORESTRY, hereinafter referred to as "LESSEE".

WITNESSETH:

For and in consideration of the mutual covenants and agreements hereinafter contained, LESSORS lease the below described premises to LESSEE subject to the following terms and conditions:

1. DESCRIPTION OF LEASED PREMISES: The property subject to this Lease, known as the Two Mile Prairie Unit of the Withlacoochee State Forest, is situated in the County of Citrus, State of Florida and is more particularly described in Exhibit "A" attached hereto and hereinafter called the "leased premises".

2. TERM: The term of this Lease shall be for a period of fifty (50) years, commencing on July 3, 1997, and ending on July 2, 2047, unless sooner terminated pursuant to the provisions of this Lease.

3. PURPOSE: LESSEE shall manage the leased premises only for the conservation and protection of natural and historical resources and resource based public

outdoor recreation which is compatible with the conservation and protection of these public lands, as set forth in subsection 259.032(11), Florida Statutes and Section 373.59, Florida Statutes, as amended, along with other authorized uses necessary for the accomplishment of this purpose as designated in the Management Plan required by paragraph 7 of this Lease.

4. QUIET ENJOYMENT AND RIGHT OF USE: LESSEE shall have the right of ingress and egress to, from and upon the leased premises for all purposes necessary to the full quiet enjoyment by said LESSEE of the rights conveyed herein.

5. AUTHORIZED USES: Authorized uses for the purposes of the Lease shall be defined as those management activities that the LESSEE is authorized to perform under the Lease and the approved Management Plan. The authorized uses shall be consistent with statutory requirements that require that the leased premises be managed and maintained in an environmentally acceptable manner to restore and protect its natural state and condition, including permitting of compatible recreational use. The authorized uses shall at minimum always include essential site management measures including, but not limited to, security, resource protection, public access and recreational use, habitat management and enhancement of land use control.

6. UNAUTHORIZED USES: The LESSEE shall, through its agents and employees, prevent the unauthorized use of the leased premises or any use thereof not in conformance with this Lease.

7. MANAGEMENT PLAN:

A. LESSEE shall submit to the LESSORS for review and approval, within one (1) year from the commencement date of this Lease, a detailed Management Plan that will

describe the essential site management that the LESSEE will implement or initiate during the first five (5) years of this Lease commencing from the effective date of this Lease. Within ninety (90) days from the LESSORS' receipt of the Management Plan, the LESSORS shall provide their comments and recommendation to the LESSEE. If the LESSORS provide comments, the LESSEE shall respond to the LESSORS within thirty (30) days from the receipt of the LESSORS' comments in the following manner:

1. Prepare and provide the LESSORS with a revised Management Plan that incorporates LESSORS' comments;
2. Respond to the LESSORS why it is not feasible to revise the Management Plan to address LESSORS' comments;
3. Request the LESSORS grant additional time to complete the necessary research to respond to LESSORS' comments;
4. Meet with LESSORS to resolve issues presented in LESSORS' comments.

B. If the LESSORS fail to provide comments within the aforementioned ninety (90) day term, it will be deemed that the LESSORS have found the Management Plan to be acceptable and no further comments can be submitted or requested by the LESSORS without the consent of the LESSEE.

C. LESSORS' approval of the Management Plan shall not be unreasonably withheld and the LESSORS will not impose financial requirements that the LESSEE, in the sole opinion of the LESSEE, is not in a position to provide with the exception of essential site management.

D. In the event that the LESSEE is not able to provide a revised Management Plan that addresses the LESSORS' comments before the expiration of the current Management Plan, the LESSEE shall manage the leased premises consistent with the conditions set forth in the expired Management Plan except that there will be no topographical alteration or physical improvements constructed until a revised Management Plan is approved by the LESSORS.

E. The LESSEE shall submit subsequent Management Plans to the LESSORS for approval in the last quarter of the fourth year of the current Management Plan and follow the review and approval procedures aforementioned. If the LESSEE fails to submit a Management Plan, the LESSEE will be in default of terms of this Lease and will be subject to the conditions stipulated in paragraph 23 of this Lease entitled "Default by the LESSEE and Termination by the LESSORS".

F. The LESSEE has the right to amend the Management Plan at any time and incorporate Modified Management Techniques and Activities into the Management Plan at any time during the term of any Management Plan by obtaining LESSORS' review and approval of the amendment prior to initiating and commencing with said Modified Management Techniques and Activities. "Modified Management Techniques and Activities" shall be defined as changes made to the Management Plan by amendment approved by the LESSORS as a result of unanticipated events, changes in management techniques, new information, or new resources for site management, restoration, or recreational uses.

G. The LESSORS will only be responsible for the review and approval of the Management Plan; provided, however, the LESSORS are not prohibited from participating in

any activities associated with the Management Plan, and the LESSORS, at their sole option, may provide resources or participate in any activities associated with the Management Plan.

H. The LESSORS, as owners of the leased premises, will cooperate in the execution of legal documents associated with any permit, funding, or other similar applications, requests, or approvals that are reflected in, required by, or conform with any activities referenced or implied by the Management Plan and any of LESSORS' approved amendments thereto.

8. RIGHT TO INSPECT:

A. The LESSORS or their duly authorized agents and employees shall have the right at any and all times to inspect the leased premises and works and operations thereon of the LESSEE in any matter pertaining to this Lease.

B. The LESSORS or their duly authorized agents and employees shall also have the right, at any and all times, to inspect and audit the books and financial records of the LESSEE and any of its licensees as they pertain to the management or recreational use of the leased premises.

9. INSURANCE REQUIREMENTS: LESSEE shall procure and maintain adequate fire and extended risk insurance coverage for any improvements or structures located on the leased premises in amounts not less than the full insurable replacement value of such improvements by preparing and delivering to the Division of Risk Management, Department of Insurance, a completed Florida Fire Insurance Trust Fund Coverage Form immediately upon erection of any structures as allowed in paragraph 3 of this Lease. Such policies of insurance shall name LESSORS and the State of Florida as co-insureds. A copy of said form

and immediate notification in writing of any erection or removal of structures or other improvements on the leased premises and any changes affecting the value of the improvements shall be submitted to the LESSORS. LESSEE shall be financially responsible for any loss due to failure to obtain adequate insurance coverage, and LESSEE'S failure to maintain such policies in the amounts set forth shall constitute a breach of this Lease.

10. LIABILITY:

A. LESSEE agrees that it shall be solely responsible for the negligent or wrongful acts of its employees and agents. However, nothing contained herein shall constitute a waiver by LESSEE of its sovereign immunity or the provisions of Section 768.28, Florida Statutes

B. The LESSEE agrees to, and does hereby waive all claims of personal injury or property damage and any and all liability claims on the part of the LESSEE which may arise from or be incident to any activity undertaken in a reasonable manner by the LESSORS.

11. ARCHAEOLOGICAL AND HISTORICAL SITES: Execution of this Lease in no way affects any of the parties' obligations pursuant to Chapter 267, Florida Statutes. The collection of artifacts or the disturbance of archaeological and historic sites on the leased premises is prohibited unless prior authorization has been obtained from the Department of State, Division of Historical Resources. The Management Plan shall be reviewed by the Division of Historical Resources to insure that adequate measures have been planned to locate, identify, protect and preserve the archaeological and historic sites on the leased premises.

12. EASEMENTS: All easements including, but not limited to, utility easements are expressly prohibited without the prior written approval of LESSORS. Any easement not approved in writing by LESSORS shall be void and without legal effect.

13. SUBLEASES: This Lease is for the purpose specified herein and subleases of any nature are prohibited, without the prior written approval of LESSORS. Any sublease not approved in writing by LESSORS shall be void and without legal effect.

14. SURRENDER OF LEASED PREMISES: Upon termination or expiration of this Lease, LESSEE shall surrender the leased premises to LESSORS. In the event no further use of the leased premises or any part thereof is needed, written notification shall be made to the LESSORS at least one (1) year prior to the release of all or any part of the leased premises. Notification shall include a legal description, this Lease and parcel number, and an explanation of the release. The release shall be valid only if approved by LESSORS through execution of a release of lease instrument with the same formality as this Lease. Upon release of all or any part of the leased premises or upon expiration or termination of this Lease, all improvements, including both physical structures and modification to the leased premises, shall become the property of the LESSORS, unless LESSORS give written notice to LESSEE to remove any or all such improvements at the expense of LESSEE. The decision to retain any improvement upon termination of this Lease shall be at the LESSORS' discretion. Prior to surrender of all or any part of the leased premises, a representative of the Division of State Lands, Department of Environmental Protection, and the Southwest Florida Water Management District shall perform an on-site inspection and the keys to any buildings or gates shall be turned over to them. If the leased premises and improvements located thereon do not meet all conditions set forth in paragraph 21, LESSEE shall pay all costs necessary to meet the prescribed conditions.

15. BEST MANAGEMENT PRACTICES: The LESSEE shall implement applicable Best Management Practices for all activities conducted under this Lease in compliance with paragraph 18-2.018(2)(h), Florida Administrative Code, which have been selected, developed, or approved for the protection and enhancement of the leased premises.

16. PUBLIC LANDS ARTHROPOD CONTROL PLAN: LESSEE shall identify and subsequently designate to the respective arthropod control district or districts within one year of the effective date of this Lease all of the environmentally sensitive and biologically high-productive lands contained within the leased premises, in accordance with Section 388.4111, Florida Statutes and Chapter 5E-13, Florida Administrative Code, for the purpose of obtaining a public lands arthropod control plan for such lands.

17. QUADRUPLICATE ORIGINALS: This Lease is executed in quadruplicate originals each of which shall be considered an original for all purposes.

18. UTILITY FEES: LESSEE shall be responsible for the payment of all charges for the furnishing of gas, electricity, water and other utilities to the leased premises and for having all utilities turned off when the leased premises are surrendered.

19. ASSIGNMENT: This Lease shall not be assigned in whole or in part without the prior written approval of the LESSORS. Any assignment made either in whole or in part without the prior written consent of LESSORS shall be void and without legal effect.

20. PLACEMENT AND REMOVAL OF IMPROVEMENTS: All buildings, structures, improvements, and signs shall be constructed at the expense of the LESSEE in accordance with plans prepared by professional designers and shall require the prior written approval of the LESSORS as to purpose, location, and design. Further, no trees, other than

non-native species shall be removed or major land alterations done without the prior written approval of LESSORS. Removable equipment and removable improvements placed on the leased premises will remain the property of the LESSEE and may be removed by LESSEE upon termination of this Lease.

21. OPERATION AND MAINTENANCE OF LEASED PREMISES AND IMPROVEMENTS: LESSEE shall maintain the real property contained within the leased premises and any improvements located thereon, in a state of good condition, working order and repair including, but not limited to, keeping the leased premises free of trash or litter, maintaining all planned improvements as set forth in the Management Plan, meeting all building and safety codes in the location situated, and maintaining all existing roads, fences, ditches, culverts, canals, risers and the like in as good condition as the same may be at the date of this Lease and as required and needed to secure the leased premises and provide safe public access. Notwithstanding the foregoing, any removal, closure, etc. of the above improvements shall be acceptable when the proposed activity is consistent with the goals of conservation, protection, and enhancement of the natural and historical resources within the leased premises and the approved Management Plan. All costs for operation and maintenance of the leased premises and improvements shall be at the expense of the LESSEE.

22. ENTIRE UNDERSTANDING: This Lease sets forth the entire understanding between the parties and shall only be amended with the prior written approval of LESSORS.

23. DEFAULT BY THE LESSEE AND TERMINATION BY THE LESSORS. The LESSORS may terminate this Lease if the LESSEE proceeds in a manner that violates the terms of this Lease. Lease violations shall include the following:

A. LESSEE fails to submit a Management Plan in accordance with the terms of this Lease, or

B. LESSEE fails to proceed in a manner that will implement or complete the actions, tasks, or other aspects of the Management Plan for essential site management, or

C. Construction of permanent structures or other improvements by the LESSEE not authorized by the LESSORS, either directly or indirectly through the approval of the Management Plan, or

D. LESSEE'S destruction or degradation of natural systems, rare or endangered habitats that are targeted for preservation, or

E. Violation of Federal, State or local laws, rules, regulations, or ordinances, or

F. Cause the leased premises to be contaminated with hazardous wastes or other pollutants or failure to properly secure the leased premises to prevent or impede illegal dumping or degradation of natural habitats, or other unauthorized uses, or

G. LESSEE'S failure to comply with the other terms of this Lease.

If the LESSORS, in their sole opinion, find that the LESSEE has committed a violation of the Lease, the LESSORS will notify the LESSEE in writing as to the nature of the violation and shall direct the LESSEE on how the LESSEE is to proceed to remedy, resolve, or rectify the Lease violation. The LESSEE will have sixty (60) days from the receipt of the notification in which to perform the following:

H. Proceed in a manner or provide a schedule for the prompt implementation of the LESSORS' corrective action.

I. Advise the LESSORS how the LESSEE will implement its own corrective action, including a schedule for completion, provided it will address the Lease violation.

If the LESSEE fails to respond to the LESSORS' notification regarding a Lease violation or fails to implement corrective action, the LESSEE will be in default of this Lease and the LESSORS may, at their sole option, terminate this Lease and recover from LESSEE all damages LESSORS may incur by reason of the default, including, but not limited to, the cost of recovering the leased premises, or maintain this Lease in full force and effect and exercise all rights and remedies herein conferred upon LESSORS.

24. NO WAIVER OF DEFAULT: The failure of LESSORS to insist in any one or more instances upon strict performance of any one or more of the terms and conditions of this Lease shall not be construed as a waiver of such terms and conditions, but the same shall continue in full force and effect, and no waiver of LESSORS of any one of the provisions hereof shall in any event by deemed to have been made unless the waiver is set forth in writing, signed by the LESSORS.

25. TERMINATION BY THE LESSEE: The LESSEE may terminate this Lease at any time with the mutual consent of the LESSORS. Otherwise, the LESSEE may terminate this Lease by providing the LESSORS with at least one (1) year's notice that LESSEE intends to terminate the Lease. Upon termination of this Lease, the LESSEE will have no further obligations for the management of the leased premises.

26. PROHIBITIONS AGAINST LIENS OR OTHER ENCUMBRANCES: Fee title to the leased premises is held by the LESSORS. LESSEE shall not do or permit anything which purports to create a lien or encumbrance of any nature against the leased premises

including, but not limited to, mortgages or construction liens against the leased premises or against any interest of LESSORS therein.

27. CONDITIONS AND COVENANTS: All of the provisions of this Lease shall be deemed covenants running with the land included in the leased premises, and construed to be "conditions" as well as "covenants" as though the words specifically expressing or imparting covenants were used in each separate provision.

28. DAMAGE TO THE LEASED PREMISES:

A. LESSEE shall not do, or suffer to be done, in, on or upon the leased premises or as affecting said leased premises or adjacent properties, any act which may result in damage or depreciation of value to the leased premises or adjacent properties, or any part thereof.

B. LESSEE shall not generate, store, place, treat, release or discharge any contaminants, pollutants or pollution, including, but not limited to, hazardous or toxic substances, chemicals or other agents on, into, or from the leased premises or any adjacent lands or waters in any manner not permitted by law. For the purposes of this Lease, "hazardous substances" shall mean and include those elements or compounds defined in 42 USC Section 9601 or which are contained in the list of hazardous substances adopted by the United States Environmental Protection Agency (EPA) and the list of toxic pollutants designated by the United States Congress or the EPA or defined by any other federal, state or local statute, law, ordinance, code, rule, regulation, order or decree regulating, relating to, or imposing liability or standards of conduct concerning any hazardous, toxic or dangerous waste, substance, material, pollutant or contaminant. "Pollutants" and "pollution" shall mean those products or substances defined in Chapters 376 and 403, Florida Statutes, and the rules

promulgated thereunder, all as amended or updated from time to time. In the event of LESSEE'S failure to comply with this paragraph, LESSEE shall, at its sole cost and expense, promptly commence and diligently pursue any legally required closure, investigation, assessment, cleanup, decontamination, remediation, restoration and monitoring of (1) the leased premises, and (2) all off-site ground and surface waters and lands affected by LESSEE'S such failure to comply, as may be necessary to bring the leased premises and affected off-site waters and lands into full compliance with all applicable federal, state or local statutes, laws, ordinances, codes, rules, regulations, orders and decrees, and to restore the damaged leased premises to the condition existing immediately prior to the occurrence which caused the damage. LESSEE'S obligations set forth in this paragraph shall survive the termination or expiration of this Lease. Nothing herein shall relieve LESSEE of any responsibility or liability prescribed by law for fines, penalties, and damages levied by governmental agencies, and the cost of cleaning up any contamination caused directly or indirectly by LESSEE'S activities or facilities. Upon discovery of a release of a hazardous substance or pollutant, or any other violation of local, state or federal law, ordinance, code, rule, regulation, order or decree relating to the generation, storage, production, placement, treatment, release or discharge of any contaminant, LESSEE shall report such violation to all applicable governmental agencies having jurisdiction, and to LESSORS, all within the reporting period of the applicable governmental agencies.

29. TAXES AND ASSESSMENTS: If any ad valorem taxes, intangible property taxes, personal property taxes, mechanic's or materialman's liens, or other taxes or assessments of any kind are assessed or levied lawfully on the leased premises based on the

LESSEE'S use thereof during the term of this Lease, the LESSEE shall pay same within thirty (30) days after receiving written notice thereof from the LESSORS. Provided, however, LESSEE shall not be responsible for payments in lieu of taxes required under Section 373.59, Florida Statutes, or any successor statute. In the event the LESSEE fails to pay all the taxes assessed or levied on the leased premises within thirty (30) days after receiving written notice thereof from the LESSORS, the LESSORS may, at their sole option, pay said taxes subject to immediate reimbursement thereof in full together with any interest thereon at the maximum rate allowed by law and any administrative costs thereof incurred by the LESSORS, including reasonable attorneys' fees. Failure of the LESSEE to pay said taxes shall constitute a breach of this Lease.

30. NON-DISCRIMINATION: The LESSEE shall not discriminate against any individual because of that individual's race, color, religion, sex, national origin, age, handicap, or marital status with respect to any activity occurring or conducted on the leased premises.

31. ALCOHOL: The possession, consumption, or other use of any alcoholic beverage, intoxicant and unlawful drug or substance by anyone within or on the leased premises shall be specifically prohibited.

32. FIREARMS: The possession or use of any weapons or firearms on the leased premises shall be prohibited with the exception of law enforcement officials, or security personnel, or uses associated with authorized hunting.

33. HUNTING: Hunting and trapping of wildlife on the leased premises shall be prohibited unless it is approved in writing in connection with exotics and nuisance control or otherwise approved in the Management Plan.

34. SIGNAGE: At all public entrances, public information signage shall be located which shall inform the public of the cooperative project between the LESSEE and the LESSORS and shall advise the public of all permitted opportunities available on the leased lands and the location of said opportunities through an information map. Additionally, the LESSEE shall post appropriate signage along the fence along the leased premises boundaries and in the interior of the leased premises to mark and designate trails, parking areas, restrooms, if any, and any prohibited activities for public safety purposes.

35. FEES AND REVENUE:

A. The LESSEE may charge an entrance or user fee to the visitors and users of the leased premises after receiving prior written approval from the LESSORS. Any such fees charged by the LESSEE shall be used for the sole purpose of reimbursing the LESSEE for actual budgeted expenses incurred or to be incurred in the operation, maintenance and security of the leased premises.

B. The LESSEE may explore revenue-producing initiatives that are compatible with the purposes for which the leased premises were acquired and related statutory directive after obtaining written approval from the LESSORS. Any revenue that is generated by the LESSEE under these initiatives shall be applied to management and operation costs of the leased premises.

36. ACCESS BY LESSORS: The right is reserved to the LESSORS, their officers, employees, agents and assigns to enter upon and travel through and across the leased premises which are the subject of this Lease, any time, for inspection, construction, maintenance, or for any purpose necessary or convenient in connection with water or resource management activities. The LESSORS shall coordinate all construction or maintenance of water management facilities within the leased premises with the LESSEE and shall comment on the need for any such facilities or activities when reviewing the Management Plan required by this Lease.

37. COMPLIANCE WITH LAWS: LESSEE agrees that this Lease is contingent upon and subject to LESSEE obtaining all applicable permits and complying with all applicable permits, regulations, ordinances, rules, and laws of the State of Florida or the United States or of any political subdivision or agency of either.

38. TIME: Time is expressly declared to be of the essence of this Lease.

39. GOVERNING LAW: This Lease shall be governed by and interpreted according to the laws of the State of Florida.

40. SECTION CAPTIONS: Articles, subsections and other captions contained in this Lease are for reference purposes only and are in no way intended to describe, interpret, define or limit the scope, extent or intent of this Lease or any provisions thereof.

41. BINDING EFFECT: This Lease will be binding upon and inure to the benefit of the parties hereto, and their personal representatives, successors, and assigns.

42. AMENDMENTS: This Lease may be amended in writing by mutual consent of the LESSORS and the LESSEE.

43. NOTICES: Any and all notices, requests or other communications hereunder shall be deemed to have been duly given if in writing and if transmitted by hand delivery with receipt therefor, or by registered mail posted prior to the expiration date for such notice, return receipt requested and first class postage prepaid as follows:

To the LESSEE:
Florida Department of Agriculture and Consumer Services
Division of Forestry
3125 Conner Boulevard
Tallahassee, Florida 32399-1650

To the LESSORS:
Southwest Florida Water Management District
2379 Broad Street
Brooksville, Florida 34609-6899
Attention: Director. Land Resources

and

Department of Environmental Protection
Division of State Lands
3900 Commonwealth Boulevard
Mail Station 130
Tallahassee, Florida 32399-3000

44. SOVEREIGNTY SUBMERGED LANDS: This Lease does not authorize the use of any lands located waterward of the mean or ordinary high water line of any lake, river, stream, creek, bay, estuary, or other water body or the waters or the air space thereabove.

45. CONDITION OF LEASED PREMISES: LESSORS assume no liability or obligation to LESSEE with reference to the condition of the leased premises. Management authority is granted for the leased premises in "as is" condition by the LESSORS to LESSEE, with LESSORS assuming no responsibility for the care, repair, maintenance or improvement of the leased premises for the benefit of LESSEE.

46. ADMINISTRATIVE FEE: LESSEE shall pay the Department of Environmental Protection, Division of State Lands an annual administrative fee of $300. The initial annual administrative fee shall be payable within thirty days from the date of execution of this Lease and shall be prorated based on the number of months or fraction thereof remaining in the fiscal year of execution. For purposes of this Lease, the fiscal year shall be for a period extending from July 1 to June 30. Each annual payment thereafter shall be due and payable on July 1 of each subsequent year.

IN WITNESSETH WHEREOF, the parties have caused this Lease to be executed on the day and year first above written.

BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA

Witness

By: _____ (SEAL)
Daniel T. Crabb, Chief
Bureau of Land Management Services
Division of State Lands
Florida Department of Environmental

TRACY PETERS
Print/Type Witness Name

Protection

Witness

"LESSOR"

JOEL FROELICH
Print/Type Witness Name

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 5th day of _____, 1999, by Daniel T. Crabb, as Chief, Bureau of Land Management Services, Division of State Lands, Florida Department of Environmental Protection, acting as agent for and on behalf of the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida. He is personally known to me.

NOTARY PUBLIC STATE OF FLORIDA SEAL
OFFICIAL NOTARY SEAL
PATRICIA TOLODAY
COMMISSION NUMBER
CC545665
MY COMMISSION EXPIRES
APR. 18,2000

Notary Public, State of Florida

Print/Type Notary Name

Commission Number _____

Approved as to Form and Legality
By: _____
DEP Attorney

My Commission Expires:

FLORIDA DEPARTMENT OF
AGRICULTURE AND CONSUMER
SERVICES, DIVISION OF FORESTRY

Ben C. Brown
Witness

By: Mike Gresham
Mike Gresham, Director
Administration

Ben C. Brown
Print/Type Witness Name

"LESSEE"

Susie P. Burch
Witness

Susie P. Burch
Print/Type Witness Name

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 17th day of June, 1997, by Mike Gresham, as Director of Administration, Division of Forestry, Florida Department of Agriculture and Consumer Services. He is personally known to me.

(SEAL)

Karen A. Meyer
Notary Public, State of Florida

Karen A. Meyer
MY COMMISSION # CC588277 EXPIRES
October 20, 2000
BONDED THRU TROY FAIN INSURANCE, INC.

KAREN A. MEYER
Print/Type Notary Name

Commission Number:

My Commission Expires:

Exhibit "A"

That part of the Southwest one-quarter of the Southeast one-quarter of Section 15, Township 17 South, Range 19 East, lying South of the Withlacoochee River less that part of the Southwest one-quarter of the Southeast one-quarter lying north of County Road No. 39 and west of the following described line:

Commence at the Southeast corner of Section 15, Township 17 South, Range 19 East, thence North 00°51'41" East, along the East line of said Section 15, a distance of 412.07 feet to the intersection with the North right-of-way line of County Road No. 39, said intersection being a point on a non-tangent curve concave to the Southeast having a radius of 1482.87 feet, a central angle of 00°29'29", and chord bearing South 82°43'49" West 12.72 feet; thence along said right-of-way and the arc of said curve a distance of 12.72 feet to the end of said curve; thence South 80°18'18" West along the monumented North right-of-way line of County Road No. 39 a distance of 277.52 feet; thence South 80°17'11" West along said monumented North right-of-way line a distance of 637.05 feet to a point on a non-tangent curve concave to the North having a radius of 1856.58 feet, a central angle of 31°33'21", and a chord bearing North 83°53'18" West 1009.64 feet; thence along said right-of-way and the arc of said curve a distance of 1022.51 feet to the Point of Beginning; thence N 00°00'00" East a distance of 897.85 feet more or less to the southerly line of the waters of the Withlacoochee River and the Point of Terminus of this line description.

And less right of way for County Road No. 39.

AND

That part of the Southeast one-quarter of the Southeast one-quarter of Section 15, Township 17 South, Range 19 East, lying South of the Withlacoochee River less that part of the Southeast one-quarter of the Southeast one-quarter lying north of County Road No. 39 and east of the following described line:

Commence at the Southeast corner of Section 15, Township 17 South, Range 19 East, thence North 00°51'41" East along the East line of said Section 15, a distance of 412.07 feet to the intersection with the North right-of-way line of County Road No. 39, said intersection being a point on a non-tangent curve concave to the Southeast having a radius of 1482.87 feet, a central angle of 00°29'29", and a chord bearing South 82°43'49" West 12.72 feet; thence along said right-of-way and the arc of said curve a distance of 12.72 feet to the end of said curve; thence South 80°18'18" West along the monumented North right-of-way line of County Road No. 39 a distance of 277.52 feet to the Point of Beginning; thence North 00°19'52" East a distance of 1227.52 feet more or less to the southerly line of the waters of the Withlacoochee River and the Point of Terminus of this line description.

And less right of way for County Road No. 39.

AND

Commence at the Southeast corner of the Northwest one-quarter of Southeast one-quarter of Section 15, Township 17 South, Range 19 East, thence South 89°53'15" West along the South line of said Northwest one-quarter of Southeast one-quarter a distance of 388.75 feet to the Point of Beginning, thence continue South 89°53'15" West along said South line a distance of 81.3 feet more or less to the waters of the Withlacoochee River, thence along said waters the following courses and distances: thence North 37°51'51" East 190.01 feet, thence North 12°43'10" East 227.74 feet, thence North 36°03'20" East 121.37 feet, thence South 40°05'30" East 149.39 feet, thence South 19°18'14" West 170.27 feet, thence South 40°08'36" West 173.46 feet, thence South 3°27'01" West 62.58 feet to a point on said South line, said point bearing North 89°53'15" East from the Point of Beginning, thence South 89°53'15" West along said South line a distance of 81.3 feet more or less to the Point of Beginning.

AND

That part of the Northeast one-quarter of the Southeast one-quarter of Section 15, Township 17 South, Range 19 East lying South of the Withlacoochee River; Less that part lying East of the West boundary line of that parcel described in Official Records Book 976, Page 1987, of the public records of Citrus County, Florida.

AND

That part of the Southwest one-quarter of Section 15, Township 17 South, Range 19 East, lying South of County Road No. 39;

AND

That part of the South one-half of the Southwest one-quarter of Section 14, Township 17 South, Range 19 East, lying South of County Road No. 39;

AND

All of Section 22, Township 17 South, Range 19 East.

AND

That part of Section 23, Township 17 South, Range 19 East, lying South of County Road No. 39 except that part recorded in Official Records Book 350, Page 507, public records of Citrus County, Florida.

AND

That part of the West half of Section 25, Township 17 South, Range 19 East, that lies North and

West of the Southeasterly line of a 420-foot wide Florida Power Corporation easement recorded in Official Records Book 180, Page 266, public records of Citrus County, Florida.

Less the North one-half of the Northwest one-quarter of said Section 25.

AND

Section 26, Township 17 South, Range 19 East, less the East one-half of the Northeast one-quarter of the Northeast one-quarter, also less the East 25 feet of the Northwest one-quarter of the Northeast one-quarter of the Northeast one-quarter, and also less the East 25 feet of the Southwest one-quarter of the Northeast one-quarter of the Northeast one-quarter of said Section 26;

AND

All of Section 27, Township 17 South, Range 19 East.

AND

That part of the East one-half of the Northeast one-quarter of Section 29, Township 17 South, Range 19 East, that lies North and East of the Northeasterly right-of-way line of the abandoned Seaboard Coast Line Railway;

AND

That part of the North one-half of Section 34, Township 17 South, Range 19 East, lying North of County Road No. 491, less railroad R/W as described in Official Records Book 618, Page 927, public records of Citrus County, Florida.

And less the following described parcel:

Commence at the Southeast corner of the Northwest one-quarter of the Northeast one-quarter of Section 34, Township 17 South, Range 19 East, for a Point of Beginning; thence North 00°08'14" East along the East line of that parcel described in Official Records Book 1038, Page 1737, Citrus County, Florida, a distance of 358.38 feet; thence North 89°51'34" West along the North line of that parcel described in Official Records Book 1038, Page 1737, Citrus County, Florida, a distance of 963.31 feet; thence South 03°18'36" East along the West line of that parcel described in Official Records Book 1038, Page 1737, Citrus County, Florida, a distance of 165.19 feet; thence South 29°52'42" East along the West line of that parcel described in Official Records Book 1038, Page 1737, Citrus County, Florida, a distance of 45.85 feet; thence South 26°21'27" East, a distance of 171.85 feet; thence South 27°09'43" East along the West line of that parcel described in Official Records Book 1050, Page 726, Citrus County, Florida, a distance of 822.82 feet; thence South 22°27'10" East along the West line of that parcel described in Official Records Book 1038, Page 1737, Citrus County, Florida, a distance of 80.45 feet;

EXHIBIT

RESERVATIONS AND EASEMENTS

1. Mineral reservations in favor of United States of America, as contained in Patent, dated March 3, 1948 and recorded March 29, 1948 in Deed Book 89, page 368, of the Public Records of Citrus County, Florida. As to Section 25, Township 17 South, Range 19 East.

2. Easement in favor of Florida Power Corporation contained in instrument dated March 19, 1965 and recorded March 19, 1965 in Official Records Book 176, page 196, of the Public Records of Citrus County, Florida, as to Sections 26 and 35, Township 17 South, Range 19 East.

3. Easement in favor of Florida Power Corporation contained in instrument dated April 7, 1965 and recorded April 27, 1965 in Official Records Book 178, page 495, of the Public Records of Citrus County, Florida, as to Section 35, Township 17 South, Range 19 East.

4. Easement in favor of Florida Power Corporation contained in instrument dated May 13, 1965 and recorded July 19, 1965 in O.R. Book 183, page 298, of the Public Records of Citrus County, Florida, as to a portion of the SE1/4 of NE1/4 of Section 34, Township 17 South, Range 19 East.

5. Boundary Line Agreement by and between The Deltona Corporation, a Delaware corporation and J. Thomas Jordan and Scott Jordan, as contained in Boundary Line Agreement dated May 22, 1981 and recorded July 5, 1981 in O.R. Book 580, page 546, of the Public Records of Citrus County, Florida. As to Sections 17 and 20, Township 17 South, Range 19 East.

6. Easement in favor of Florida Power Corporation contained in instrument dated December 30, 1996 and recorded January 3, 1997 in O.R. Book 1164, page 2193, of the Public Records of Citrus County, Florida.

7. Easement in favor of Florida Power Corporation contained in instrument dated December 30, 1996 and recorded January 3, 1997 in O.R. Book 1164, page 2197, of the Public Records of Citrus County, Florida.

8. Ingress and egress easement by and between Joseph T. Jordan, a/k/a J. Thomas Jordan and as Thomas J. Jordan, and T. Scott Jordan and Edna M. Jordan, husband and wife, and Harold A. Stearns and Blanche A. Stearns, husband and wife, and Mary Louise Haddad, a single woman contained in Non-exclusive Perpetual Easement dated December 30, 1996 and recorded December 30, 1996 in O.R. Book 1164, page 721, of the Public Records of Citrus County, Florida.

SOILS (from Soil Survey of Citrus County, Florida)

2 - Adamsville fine sand. This soil is nearly level and somewhat poorly drained. It is on low ridges in the coastal swamps and on the flatwoods and is at the base of the lower slopes on the uplands. This soil is in a transitional position in the drainage pattern. It gradually releases water to more poorly drained soil in natural drainageways, swamps, ponds and marshes. The mapped areas are irregular in shape or somewhat circular and range from about 5 to 150 acres. The slopes are 2 percent or less.

Typically, the surface layer is dark grayish brown fine sand about 7 inches thick. The underlying material to a depth of 80 inches is light yellowish brown and very pale brown fine sand. The water table is between depths of 20 and 40 inches for 2 to 6 months. It may rise to a depth of less than 20 inches for 2 weeks during very wet weather. During dry seasons, the water table generally recedes to a depth of more than 40 inches.

Typically, this soil is in the South Florida Flatwoods range site. This site can be identified by scattered pine trees that have an understory of saw palmetto and grasses.

3 - Candler fine sand, 0 to 5 percent slopes. This soil is nearly level to gently sloping and excessively drained.

Typically, the surface layer is dark grayish brown fine sand about 4 inches thick. The subsurface layer, to a depth of 72 inches, is very pale brown or light yellowish brown fine sand. The water table is more than 80 inches below the surface throughout the year.

Typically, this soil is in the Longleaf Pine-Turkey Oak Hills range site. This site is on rolling land that is nearly level to strongly sloping. It is easily recognized by the landform and dominant vegetation of longleaf pine and turkey oak.

5 - Basinger fine sand. This soil is nearly level and poorly drained. It is in poorly defined drainage ways and sloughs throughout the county. The mapped areas are irregular in shape, following the local drainage patterns. These areas range from 5 to about 100 acres. The slopes are less than 2 percent.

Typically, the surface layer is black fine sand 3 inches thick. The subsurface layer, to a depth of 8 inches, is light gray fine sand. The water table is at a depth of less than 10 inches for 2 to 6 months. During dry seasons, it recedes to a depth of 30 inches or more.

This site can be identified by an open expanse of grasses, sedges and rushes in an area that is saturated during the rainy season.

6 - Basinger fine sand, depressional. This soil is nearly level and poorly drained. It is in depressions and is adjacent to some bodies of water. The mapped areas are irregular in shape, long and narrow, or nearly circular and range from 3 to 50 acres. The slopes are less than 2 percent.

Typically, the surface layer is black fine sand 5 inches thick. The subsurface layer, to a depth of 24 inches, is light gray fine sand. This soil is ponded for periods of 3 to 9 months. In slightly elevated positions around the margins of the ponded areas, the water table is within 10 inches of the surface, and these areas are ponded in years of heavy rainfall. In dry periods, the water table recedes to a depth of 10 inches or more.

Typically, this soil is in the Freshwater Marshes and Ponds range site. This site can be

identified by an open expanse of grasses, sedges, rushes and other herbaceous plants in an area that is generally saturated or covered by surface water during most of the growing season.

10 - Pompano fine sand, depressional. This soil is nearly level and poorly drained. It is in depressions on the flatwood and in the river valley lowland parts of the county. The mapped areas are irregular in shape or somewhat circular and range from about 5 to 150 acres. The slopes are 2 percent or less.

Typically, the surface layer is a dark gray fine sand about 9 inches thick. The underlying material to a depth of 80 inches or more is light brownish gray, gray and light gray fine sand. This soil is ponded for 3 to 9 months. In slightly elevated positions around the margins of the ponded areas, the water table is within 10 inches of the surface, and these areas are ponded in years of heavy rainfall. The water table is rarely at a depth of more than 10 inches.

Typically, this soil is in the Freshwater Marshes and Ponds range site. This site can be identified by an open expanse of grasses, sedges, rushes and other herbaceous plants in an area that is generally saturated or covered by surface water for 2 or more months during the year.

11 - Tavares fine sand, 0 to 5 percent slopes. This soil is nearly level to gently sloping and moderately well drained. It is on knolls and ridges throughout the county and on lower ridges on the uplands. The mapped areas are long and narrow or somewhat circular and range from about 5 to 200 acres.

Typically, this soil is fine sand throughout. The water table is between depths of 40 and 72 inches for up to 6 months. The soil becomes droughty during periods of low rainfall.

Typically, this soil is in the Longleaf Pine-Turkey Oak Hills range site. This site is on rolling land that is nearly level to strongly sloping. It is easily recognized by the landform and dominant vegetation of longleaf pine and turkey oak.

14 - Lake fine sand, 0 to 5 percent slopes. This soil is nearly level to gently sloping and excessively drained. It is on the upland ridges. The mapped areas are irregular in shape or somewhat circular and range from about 5 to 500 acres.

Typically, the surface layer is dark brown fine sand about 7 inches thick. The underlying material to a depth of 80 inches or more is yellowish brown and brownish yellow fine sand. The water table is more than 80 inches below the surface throughout the year.

Typically, This soil is in the Longleaf Pine-Turkey Oak Hills range site. This site is on rolling land that is nearly level to strongly sloping. It is easily recognized by the landform and dominant vegetation of longleaf pine and turkey oak.

20 - Pits. This map unit consists of irregularly shaped, open Pits from which the soil and other materials have been mined or excavated. The mined material was mainly limestone and phosphate; but in some areas, sand and other soil material were removed.

A succession of vegetation by various plant species native to the area are in abandoned Pits. Initial vegetation generally consist of scattered annual weed species and grasses. Over time, a population of trees and shrubs develops. The plants in the drier Pits are similar to plants on well drained to excessively drained landscapes. Wetter Pits have a vegetation of more water tolerant species.

27 - Pomello fine sand, 0 to 5 percent slopes. This soil is nearly level to gently sloping and moderately well drained. It is on low ridges and knolls on the flatwoods and also occurs in areas adjacent to some streams and water areas.

Typically, the surface layer is dark gray and light brownish gray fine sand 5 inches thick. The subsurface layer, to a depth of 31 inches, is white fine sand. The water table is at a depth of 2 to 3.5 feet for one month to four months and between depths of 3.5 and 5 feet for 8 months.

This Pomello soil is in the Upland Hardwood Hammock range site. This site is readily identified by the dense canopy of oaks, magnolias and hickories.

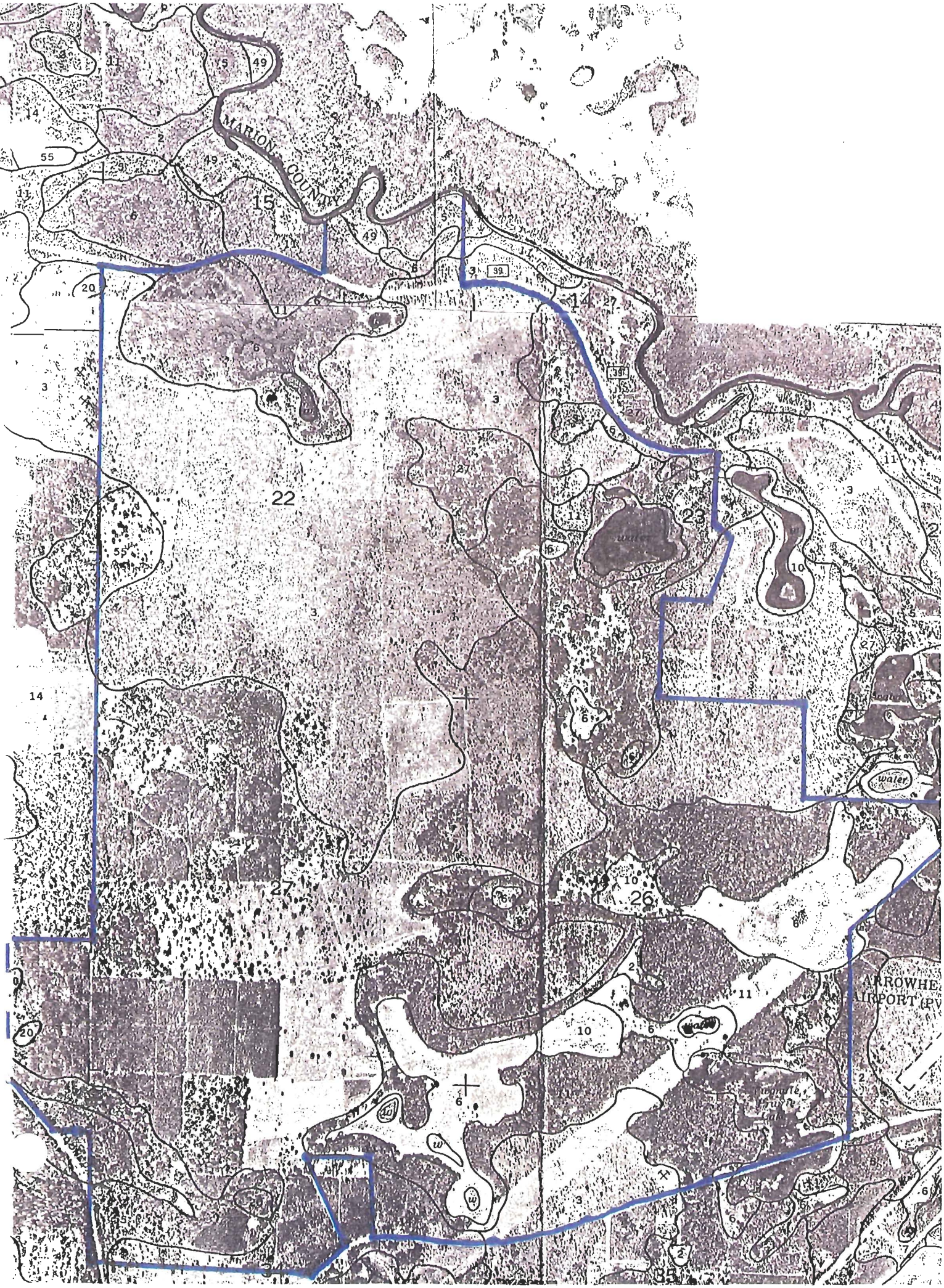
49 - Terra Ceia-Okeelanta association, frequently flooded. This association consists of nearly level, very poorly drained, organic soils. These soils are along the edges of freshwater rivers and lakes. Terra Ceia soil is adjacent to open water and are bounded on the inland side by Okeelanta soil. Okeelanta soil is adjacent to the upland areas. The mapped areas are mainly long and narrow and range from 20 to 50 acres.

Typically, Terra Ceia soil has a surface layer of black muck about 10 inches thick. Below that layer, black and dark reddish brown muck extends to a depth of 80 inches or more. Typically, Okeelanta soil has a surface layer of black muck about 10 inches thick. Below that layer, dark brown muck extends to a depth of about 27 inches. During low tide, the soils in this association are covered by shallow water from the adjacent freshwater rivers. The floodwaters are not saline as they come from the freshwater streams and rivers. Flood waters are generally 2 to 3 feet above the surface at high tide.

The native vegetation of this map unit is dominated by cypress, sweetbay, blackgum, large gallberry, summersweet clethra, titi and scattered pine.

55 - Udorthents, 0 to 5 percent slope. Consisting of nearly level to gently sloping manmade soils. These soils are mainly in the central part of the county and generally are adjacent to pits. Most of these soils are in areas that have been mined. These soils are a highly variable mixture of sandy and loamy overburden material (removed to obtain the phosphate or limestone deposits), geologic material from mining operations, and colloidal clay material. Each area and parts of each area of these soils differ.

The thickness of the Udorthents is commonly 80 inches or more but ranges from 20 to more than 80 inches. If adandoned, these soils have been vegetated by a succession of plant species adapted to the soil properties of a particular area. Species adapted to soils that are better drained have become established in the better drained areas. More poorly drained areas have species adapted to wetter conditions. In most areas, the dense vegetation provides an excellent habitat for many wildlife species.


MARION COUNTY
15
22
23
14
27
26
water
water
ARROWHE
AIRPORT (PV
85

DIVISIONS OF FLORIDA DEPARTMENT OF STATE
Office of the Secretary
Office of International Relations
Division of Elections
Division of Corporations
sion of Cultural Affairs
sion of Historical Resources
vision of Library and Information Services
Division of Licensing
Division of Administrative Services

MEM
Trustee
Administration Commission
Florida Land and Water Adjudicatory Commission
Siting Board
Division of Bond Finance
Department of Revenue
Department of Law Enforcement
Department of Highway Safety and Motor Vehicles
Department of Veterans' Affairs

EXHIBIT E

FLORIDA DEPARTMENT OF STATE
Katherine Harris
Secretary of State

DIVISION OF HISTORICAL RESOURCES

Ms. Joann Phillips
Division of Forestry
Forest Management Bureau
3125 Conner Blvd., C-25
Tallahassee, Florida 32399-1650

July 8, 1999

RE: DHR Project File No. 990823
Request for Land Management Plan Information
Two Mile Prairie Unit - Withlacoochee State Forest
Citrus County, Florida

Dear Ms. Phillips:

In accordance with this agency's responsibilities under Sections 253.034(4) and 259.032, *Florida Statutes*, we have reviewed the information in the Florida Master Site File to determine whether any historic properties are recorded in the referenced management areas, and also to determine the potential for such resources which are presently unrecorded to be located within it.

A review of the Florida Master Site File indicates that there are no archaeological or historic sites recorded within the forest. However, the lack of recorded sites is not considered significant because the area has never been subjected to a systematic, professional survey to locate such sites. Data from environmentally similar areas indicate that archaeological and historic sites are likely to occur in the forest. It is, therefore, the opinion of this office that there is a reasonable probability of historic properties potentially eligible for listing in the National Register of Historic Places, or otherwise of historical or archaeological value, to occur within the forest.

It is, therefore, the recommendation of this office that, prior to initiating any land clearing or ground disturbing activities within the institution property, the proposed project activities should be submitted to this agency for review and comment to determine the impact of the proposed project(s) on historic properties.

In addition, we have enclosed for your use a copy of Management Procedures for Archaeological and Historic Sites and Properties on State-Owned or Controlled Lands. This document should be referred to where appropriate in your land management plan, and attached to it.

If you have any questions concerning our comments, please contact Scott Edwards, Historic Preservation Planner, at 850-487-2333 or 800-847-7278. Your interest in protecting Florida's historic properties is appreciated.

Sincerely,

Laura A. Kammerer

for George W. Percy, Director
Division of Historical Resources and
State Historic Preservation Officer

GWP/Ese

Enclosure

MANAGEMENT PROCEDURES FOR ARCHAEOLOGICAL AND HISTORICAL SITES AND PROPERTIES ON STATE - OWNED OR CONTROLLED LANDS
(revised August, 1995)

A. GENERAL DISCUSSION

Archaeological and historic sites are defined collectively in 267.021(3), F.S., as "historic properties" or "historic resources". They have several essential characteristics which must be recognized in a management program.

First of all, they are a finite and non-renewable resource. Once destroyed, presently existing resources, including buildings, other structures, shipwreck remains, archaeological sites and other objects of antiquity, cannot be renewed or revived. Today, sites in the State of Florida are being destroyed by all kinds of land development, inappropriate land management practices, erosion, looting, and to a minor extent even by well-intentioned professional scientific research (e.g., archaeological excavation). Measures must be taken to ensure that some of these resources will be preserved for future study and appreciation.

Secondly, sites are unique because individually they represent the tangible remains of events which occurred at a specific time and place.

Thirdly, while sites uniquely reflect localized events, these events and the origin of particular sites are related to conditions and events in other times and places. Sites can be understood properly only in relation to their natural surroundings and the activities of inhabitants of other sites. Managers must be aware of this "systemic" character of historic and archaeological sites. Also, it should be recognized that archaeological sites are time capsules for more than cultural history; they preserve traces of past biotic communities, climate, and other elements of the environment that may be of interest to other scientific disciplines.

Finally, the significance of sites, particularly archaeological ones, derives not only from the individual artifacts within them, but equally from the spatial arrangement of those artifacts in both horizontal and vertical planes. When archaeologists excavate, they recover, not merely objects, but also a record of the positions of these objects in relation to one another and their containing matrix (e.g., soil strata). Much information is sacrificed if the so-called "context" of archaeological objects is destroyed or not recovered, and this is what archaeologists are most concerned about when a site is threatened with destruction or damage. The artifacts themselves can be recovered even after a site is heavily disturbed, but the context - the vertical and horizontal relationships - cannot.

Historic structures also contain a wealth of cultural (socio-economic) data which can be lost if historically sensitive maintenance, restoration or rehabilitation procedures are not implemented, or if they are demolished or extensively altered without appropriate documentation. Lastly, it should not be forgotten that historic structures often have associated potentially significant historic archaeological features which must be considered in land management decisions.

B. STATUTORY AUTHORITY

Chapter 253, Florida Statutes ("State Lands") directs the preparation of "single-use" or "multiple-use" land management plans for all state-owned lands and state-owned sovereignty submerged lands. In this document, 253.034(4), F.S., specifically requires that "all management plans, whether for single-use or multiple-use properties, shall specifically describe how the managing agency plans to identify, locate, protect and preserve, or otherwise use fragile non-renewable resources, such as archaeological and historic sites, as well as other fragile resources..."

Chapter 267, Florida Statutes is the primary historic preservation authority of the state. The importance of protecting and interpreting archaeological and historic sites is recognized in 267.061(1)(a), F.S.:

> The rich and unique heritage of historic properties in this state, representing more than 10,000 years of human presence, is an important legacy to be valued and conserved for present and future generations. The destruction of these nonrenewable historic resources will engender a significant loss to the state's quality of life, economy, and cultural environment. It is therefore declared to be state policy to:
>
> 1. Provide leadership in the preservation of the state's historic resources; [and]
> 2. Administer state-owned or state-controlled historic resources in a spirit of stewardship and trusteeship;...

Responsibilities of the Division of Historical Resources in the Department of State pursuant to 267.061(3), F.S., include the following:

1. Cooperate with federal and state agencies, local governments, and private organizations and individuals to direct and conduct a comprehensive statewide survey of historic resources and to maintain an inventory of such responses.

2. Develop a comprehensive statewide historic preservation plan.

3. Identify and nominate eligible properties to the National Register of Historic Places and otherwise administer applications for listing properties in the National Register of Historic Places.

4. Cooperate with federal and state agencies, local governments, and organizations and individuals to ensure that historic resources are taken into consideration at all levels of planning and development.

5. Advise and assist, as appropriate, federal and state agencies and local governments in carrying out their historic preservation responsibilities and programs.

6. Carry out on behalf of the state the programs of the National Historic Preservation Act of 1966, as amended, and to establish, maintain, and administer a state historic preservation program meeting the requirements of an approved program and fulfilling the responsibilities of state historic preservation programs as provided in subsection 101(b) of that act.

7. Take such other actions necessary or appropriate to locate acquire, protect, preserve, operate, interpret, and promote the location, acquisition, protection, preservation, operation, and interpretation of historic resources to foster an appreciation of Florida history and culture. Prior to the acquisition, preservation, interpretation, or operation of a historic property by a state agency, the Division shall be provided a reasonable opportunity to review and comment on the proposed undertaking and shall determine that there exists historic authenticity and a feasible means of providing for the preservation, interpretation and operation of such property.

8. Establish professional standards for the preservation, exclusive of acquisition, of historic resources in state ownership or control.

9. Establish guidelines for state agency responsibilities under subsection (2).

Responsibilities of other state agencies of the executive branch, pursuant to 267.061(2), F.S., include:

1. Each state agency of the executive branch having direct or indirect jurisdiction over a proposed state or state-assisted undertaking shall, in accordance with state policy and prior to the approval of expenditure

of any state funds on the undertaking, consider the effect of the undertaking on any historic property that is included in, or eligible for inclusion in, the National Register of Historic Places. Each such agency shall afford the division a reasonable opportunity to comment with regard to such an undertaking.

2. Each state agency of the executive branch shall initiate measures in consultation with the division to assure that where, as a result of state action or assistance carried out by such agency, a historic property is to be demolished or substantially altered in a way which adversely affects the character, form, integrity, or other qualities which contribute to [the] historical, architectural, or archaeological value of the property, timely steps are taken to determine that no feasible and prudent alternative to the proposed demolition or alteration exists, and, where no such alternative is determined to exist, to assure that timely steps are taken either to avoid or mitigate the adverse effects, or to undertake an appropriate archaeological salvage excavation or other recovery action to document the property as it existed prior to demolition or alteration.

3. In consultation with the division [of Historical Resources], each state agency of the executive branch shall establish a program to locate, inventory, and evaluate all historic properties under the agency's ownership or control that appear to qualify for the National Register. Each such agency shall exercise caution to assure that any such historic property is not inadvertently transferred, sold, demolished, substantially altered, or allowed to deteriorate significantly.

4. Each state agency of the executive branch shall assume responsibility for the preservation of historic resources which are owned or controlled by such agency. Prior to acquiring, constructing, or leasing buildings for the purpose of carrying out agency responsibilities, the agency shall use, to the maximum extent feasible, historic properties available to the agency. Each agency shall undertake, consistent with preservation of such properties, the mission of the agency, and the professional standards established pursuant to paragraph (3)(k), any preservation actions necessary to carry out the intent of this paragraph.

5. Each state agency of the executive branch, in seeking to acquire additional space through new construction or lease, shall give preference to the acquisition or use of historic properties when such acquisition or use is determined to be feasible and prudent compared with

available alternatives. The acquisition or use of historic properties is considered feasible and prudent if the cost of purchase or lease, the cost of rehabilitation, remodeling, or altering the building to meet compliance standards and the agency's needs, and the projected costs of maintaining the building and providing utilities and other services is less than or equal to the same costs for available alternatives. The agency shall request the division to assist in determining if the acquisition or use of a historic property is feasible and prudent. Within 60 days after making a determination that additional space is needed, the agency shall request the division to assist in identifying buildings within the appropriate geographic area that are historic properties suitable for acquisition or lease by the agency, whether or not such properties are in need of repair, alteration, or addition.

6. Consistent with the agency's mission and authority, all state agencies of the executive branch shall carry out agency programs and projects, including those under which any state assistance is provided, in a manner which is generally sensitive to the preservation of historic properties and shall give consideration to programs and projects which will further the purposes of this section.

Section 267.12 authorizes the Division to establish procedures for the granting of research permits for archaeological and historic site survey or excavation on state-owned or controlled lands, while Section 267.13 establishes penalties for the conduct of such work without first obtaining written permission from the Division of Historical Resources. The Rules of the Department of State, Division of Historical Resources, for research permits for archaeological sites of significance are contained in Chapter 1A-32, F.A.C.

Another Florida Statute affecting land management decisions is Chapter 872, F.S. Section 872.02, F.S., pertains to marked grave sites, regardless of age. Many state-owned properties contain old family and other cemeteries with tombstones, crypts, etc. Section 872.05, F.S., pertains to unmarked human burial sites, including prehistoric and historic Indian burial sites. Unauthorized disturbance of both marked and unmarked human burial sites is a felony.

C. MANAGEMENT POLICY

The choice of a management policy for archaeological and historic sites within state-owned or controlled lands obviously depends upon a detailed evaluation of the characteristics and conditions of the individual sites and groups of sites within those tracts. This includes an interpretation of the

significance (or potential significance) of these sites, in terms of social and political factors, as well as environmental factors. Furthermore, for historic structures architectural significance must be considered, as well as any associated historic landscapes.

Sites on privately owned lands are especially vulnerable to destruction, since often times the economic incentives for preservation are low compared to other uses of the land areas involved. Hence, sites in public ownership have a magnified importance, since they are the ones with the best chance of survival over the long run. This is particularly true of sites which are state-owned or controlled, where the basis of management is to provide for land uses that are minimally destructive of resource values.

It should be noted that while many archaeological and historical sites are already recorded within state-owned or controlled-lands, the majority of the uplands areas and nearly all of the inundated areas have not been surveyed to locate and assess the significance of such resources. The known sites are, thus, only an incomplete sample of the actual resources - i.e., the number, density, distribution, age, character and condition of archaeological and historic sites - on these tracts. Unfortunately, the lack of specific knowledge of the actual resources prevents formulation of any sort of detailed management or use plan involving decisions about the relative historic value of individual sites. For this reason, a generalized policy of conservation is recommended until the resources have been better addressed.

The generalized management policy recommended by the Division of Historical Resources includes the following:

1. State land managers shall coordinate all planned activities involving known archaeological or historic sites or potential site areas closely with the Division of Historical Resources in order to prevent any kind of disturbance to significant archaeological or historic sites that may exist on the tract. Under 267.061(1)(b), F.S., the Division of Historical Resources is vested with title to archaeological and historic resources abandoned on state lands and is responsible for administration and protection of such resources. The Division will cooperate with the land manager in the management of these resources. Furthermore, provisions of 267.061(2) and 267.13, F.S., combined with those in 267.061(3) and 253.034(4), F.S., require that other managing (or permitting) agencies coordinate their plans with the Division of Historical Resources at a sufficiently early stage to preclude inadvertent damage or destruction to known or potentially occurring, presently unknown archaeological and historic sites. The provisions pertaining to human burial sites must

also be followed by state land managers when such remains are known or suspected to be present (see 872.02 and 872.05, F.S., and 1A-44, F.A.C.)

2. Since the actual resources are so poorly known, the potential impact of the managing agency's activities on historic archaeological sites may not be immediately apparent. Special field survey for such sites may be required to identify the potential endangerment as a result of particular management or permitting activities. The Division may perform surveys, as its resources permit, to aid the planning of other state agencies in their management activities, but outside archaeological consultants may have to be retained by the managing agency. This would be especially necessary in the cases of activities contemplating ground disturbance over large areas and unexpected occurrences. It should be noted, however, that in most instances Division staff's knowledge of known and expected site distribution is such that actual field surveys may not be necessary, and the project may be reviewed by submitting a project location map (preferably a 7.5 minute U.S.G.S. Quadrangle map or portion thereof) and project descriptive data, including detailed construction plans. To avoid delays, Division staff should be contacted to discuss specific project documentation review needs.

3. In the case of known significant sites, which may be affected by proposed project activities, the managing agency will generally be expected to alter proposed management or development plans, as necessary, or else make special provisions to minimize or mitigate damage to such sites.

4. If in the course of management activities, or as a result of development or the permitting of dredge activities (see 403.918(2)(6)a, F.S.), it is determined that valuable historic or archaeological sites will be damaged or destroyed, the Division reserves the right, pursuant to 267.061(1)(b), F.S., to require salvage measures to mitigate the destructive impact of such activities to such sites. Such salvage measures would be accomplished before the Division would grant permission for destruction of the affected site areas. The funding needed to implement salvage measures would be the responsibility of the managing agency planning the site destructive activity. Mitigation of historic structures at a minimum involves the preparation of measured drawings and documentary photographs. Mitigation of archaeological resources involves the excavation, analysis and reporting of the project findings and must be planned to occur sufficiently in advance to avoid project construction

delays. If these services are to be contracted by the state agency, the selected consultant will need to obtain an Archaeological Research Permit from the Division of Historical Resources, Bureau of Archaeological Research (see 267.12, F.S. and Rules 1A-32 and 1A-46 F.A.C.).

5. For the near future, excavation of non-endangered (i.e., sites not being lost to erosion or development) archaeological sites is discouraged. There are many endangered sites in Florida (on both private and public lands) in need of excavation because of the threat of development or other factors. Those within state-owned or controlled lands should be left undisturbed for the present - with particular attention devoted to preventing site looting by "treasure hunters". On the other hand, the archaeological and historic survey of these tracts is encouraged in order to build an inventory of the resources present, and to assess their scientific research potential and historic or architectural significance.

6. The cooperation of land managers in reporting sites to the Division that their field personnel may discover is encouraged. The Division will help inform field personnel from other resource managing agencies about the characteristics and appearance of sites. The Division has initiated a cultural resource management training program to help accomplish this. Upon request the Division will also provide to other agencies archaeological and historical summaries of the known and potentially occurring resources so that information may be incorporated into management plans and public awareness programs (See Management Implementation).

7. Any discovery of instances of looting or unauthorized destruction of sites must be reported to the agent for the Board of Trustees of the Internal Improvement Trust Fund and the Division so that appropriate action may be initiated. When human burial sites are involved, the provisions of 872.02 and 872.05, F. S. and Rule 1A-44, F.A.C., as applicable, must also be followed. Any state agent with law enforcement authority observing individuals or groups clearly and incontrovertibly vandalizing, looting or destroying archaeological or historic sites within state-owned or controlled lands without demonstrable permission from the Division will make arrests and detain those individuals or groups under the provisions of 267.13, 901.15, and 901.21, F.S., and related statutory authority pertaining to such illegal activities on state-owned or controlled lands. County Sheriffs' officers are urged to assist in efforts to stop and/or prevent site looting and destruction.

In addition to the above management policy for archaeological and historic sites on state-owned land, special attention shall be given to those properties listed in the National Register of Historic Places and other significant buildings. The Division recommends that the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (Revised 1990) be followed for such sites.

The following general standards apply to all treatments undertaken on historically significant properties.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.

2. The historic character of a property shall be retained and preserved. The removal of historic materials or alterations of features and spaces that characterize a property shall be avoided.

3. Each property shall be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.

4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.

5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.

6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.

7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

8. Significant archaeological resources affected by a project shall be protected and preserved. If such

resources must be disturbed, mitigation measures shall be undertaken.

9. New additions, exterior alterations, or related new construction shall not destroy materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired. (see Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings [Revised 1990]).

Division of Historical Resources staff are available for technical assistance for any of the above listed topics. It is encouraged that such assistance be sought as early as possible in the project planning.

D. MANAGEMENT IMPLEMENTATION

As noted earlier, 253.034(4), F.S., states that "all management plans, whether for single-use or multiple-use properties, shall specifically describe how the managing agency plans to identify, locate, protect and preserve, or otherwise use fragile non-renewable resources, such as archaeological and historic sites..." The following guidelines should help to fulfill that requirement.

1. All land managing agencies should contact the Division and send U.S.G.S. 7.5 minute quadrangle maps outlining the boundaries of their various properties.

2. The Division will in turn identify site locations on those maps and provide descriptions for known archaeological and historical sites to the managing agency.

3. Further, the Division may also identify on the maps areas of high archaeological and historic site location probability within the subject tract. These are only probability zones, and sites may be found outside of these areas. Therefore, actual ground inspections of project areas may still be necessary.

4. The Division will send archaeological field recording forms and historic structure field recording forms to

representatives of the agency to facilitate the recording of information on such resources.

5. Land managers will update information on recorded sites and properties.

6. Land managers will supply the Division with new information as it becomes available on previously unrecorded sites that their staff locate. The following details the kind of information the Division wishes to obtain for any new sites or structures which the land managers may report:

   A. Historic Sites

      (1) Type of structure (dwelling, church, factory, etc.).

      (2) Known or estimated age or construction date for each structure and addition.

      (3) Location of building (identify location on a map of the property, and building placement, i.e., detached, row, etc.).

      (4) General Characteristics: (include photographs if possible) overall shape of plan (rectangle, "L" "T" "H" "U", etc.); number of stories; number of vertical divisions of bays; construction materials (brick, frame, stone, etc.); wall finish (kind of bond, coursing, shingle, etc.); roof shape.

      (5) Specific features including location, number and appearance of:

         (a) Important decorative elements;
         (b) Interior features contributing to the character of the building;
         (c) Number, type, and location of outbuildings, as well as date(s) of construction;
         (d) Notation if property has been moved;
         (e) Notation of known alterations to building.

   B. Archaeological Sites

      (1) Site location (written narrative and mapped location).

      (2) Cultural affiliation and period.

(3) Site type (midden, burial mound, artifact scatter, building rubble, etc.).

(4) Threats to site (deterioration, vandalism, etc.).

(5) Site size (acreage, square meters, etc.).

(6) Artifacts observed on ground surface (pottery, bone, glass, etc.).

(7) Description of surrounding environment.

7. No land disturbing activities should be undertaken in areas of known archaeological or historic sites or areas of high site probability without prior review by the Division early in the project planning.

8. Ground disturbing activities may proceed elsewhere but land managers should stop disturbance in the immediate vicinity of artifact finds and notify the Division if previously unknown archaeological or historic remains are uncovered. The provisions of Chapter 872, F.S., must be followed when human remains are encountered.

9. Excavation and collection of archaeological and historic sites on state lands without a permit from the Division is a violation of state law and shall be reported to a law enforcement officer. The use of metal detectors to search for historic artifacts shall be prohibited on state lands except when authorized in a 1A-32, F.A.C., research permit from the Division.

10. Interpretation and visitation which will increase public understanding and enjoyment of archaeological and historic sites without site destruction or vandalism is strongly encouraged.

11. Development of interpretive programs including trails, signage, kiosks, and exhibits is encouraged and should be coordinated with the Division.

12. Artifacts found or collected on state lands are by law the property of the Division. Land managers shall contact the Division whenever such material is found so that arrangements may be made for recording and conservation. This material, if taken to Tallahassee, can be returned for public display on a long term loan.

E. ADMINISTERING AGENCY

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

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

Contact Person: Susan M. Harp
Historic Preservation Planner

Telephone (904) 487-2333
Suncom 277-2333
FAX (904) 922-0496

FLORIDA NATURAL AREAS INVENTORY
1018 Thomasville Road, Suite 200-C, Tallahassee, FL 32303 (904) 224-8207

March 5, 1997

EXHIBIT G

Citrus County Summary

Occurrence Records currently in the FNAI database

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	# FNAI Recorded Locations
AMPHIBIANS						
Rana capito	gopher frog	G4	S3	N	LS	2
REPTILES						
Alligator mississippiensis	American alligator	G5	S4	T(S/A)	LS	1
Crotalus adamanteus	eastern diamondback rattlesnake	G5	S?	N	N	6
Drymarchon corais couperi	eastern indigo snake	G4T3	S3	LT	LT	14
Gopherus polyphemus	gopher tortoise	G3	S3	N	LS	12
Pituophis melanoleucus mugitus	Florida pine snake	G5T3?	S3	N	LS	1
Pseudemys concinna suwanniensis	Suwannee cooter	G5T3	S3	N	LS	2
Stilosoma extenuatum	short-tailed snake	G3	S3	N	LT	5
BIRDS						
Ammodramus maritimus peninsulae	Scott's seaside sparrow	G4T2	S2	N	LS	2
Aphelocoma coerulescens	Florida scrub-jay	G3	S3	LT	LT	6
Ardea alba	great egret	G5	S4	N	N	6
Egretta caerulea	little blue heron	G5	S4	N	LS	4
Egretta thula	snowy egret	G5	S4	N	LS	5
Egretta tricolor	tricolored heron	G5	S4	N	LS	5
Eudocimus albus	white ibis	G5	S4	N	LS	4
Falco sparverius paulus	southeastern American kestrel	G5T3T4	S3?	N	LT	2
Haematopus palliatus	American oystercatcher	G5	S3	N	LS	2
Haliaeetus leucocephalus	bald eagle	G4	S3	LT	LT	24
Nyctanassa violacea	yellow-crowned night-heron	G5	S3?	N	N	1
Nycticorax nycticorax	black-crowned night-heron	G5	S3?	N	N	2
Pandion haliaetus	osprey	G5	S3S4	N	LS*	1
Pelecanus occidentalis	brown pelican	G4	S3	N	LS	2
Picoides borealis	red-cockaded woodpecker	G3	S2	LE	LT	5
Rynchops niger	black skimmer	G5	S3	N	LS	1
Speotyto cunicularia floridana	Florida burrowing owl	G4T3	S3	N	LS	1
Sterna antillarum	least tern	G4	S3	N	LT	2
Sterna maxima	royal tern	G5	S3	N	N	1
Sterna sandvicensis	sandwich tern	G5	S2	N	N	1
MAMMALS						
Mustela frenata peninsulae	Florida long-tailed weasel	G5T3	S3?	N	N	1
Myotis austroriparius	southeastern bat	G3	S3	N	N	2
Podomys floridanus	Florida mouse	G3	S3	N	LS	4
Sciurus niger shermani	Sherman's fox squirrel	G5T2	S2	N	LS	5
Trichechus manatus	manatee	G2?	S2?	LE	LE	1
Ursus americanus floridanus	Florida black bear	G5T2	S2	C	LT*	1
INVERTREBRATES						
Cincinnatia helicogyra	helicoid spring siltsnail	G1	S1	N	N	1
Crangonyx hobbsi	Hobbs' cave amphipod	G2G3	S2S3	N	N	1

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	# FNAI Records Locations
INVERTREBRATES - cont.						
Procambarus lucifugus	light-fleeing cave crayfish	G2G3	S2S3	N	N	1
Troglocambarus maclanei	north Florida spider cave crayfish	G2	S2	N	N	1
VASCULAR PLANTS						
Adiantum tenerum	brittle maidenhair fern	G5	S3	N	LE	2
Agrimonia incisa	incised groove-bur	G3	S2	N	N	3
Asplenium pumilum	dwarf spleenwort	G4G5	S1	N	LE	2
Asplenium x curtissii	Curtiss' spleenwort	HYB	S1	N	N	1
Centrosema arenicola	sand butterfly pea	G2G3Q	S2S3	N	N	1
Cheilanthes microphylla	southern lip fern	G5	S3	N	LE	1
Chionanthus pygmaeus	pygmy fringe tree	G3	S3	LE	LE	1
Glandularia tampensis	Tampa vervain	G1	S1	N	N	1
Matelea floridana	Florida spiny-pod	G2	S2	N	LE	1
Monotropsis reynoldsiae	pigmy pipes	G1Q	S1	N	LE	1
Pavonia spinifex	yellow hibiscus	G4G5	S2S3	N	N	1
Peperomia humilis	terrestrial peperomia	G5	S2	N	LE	1
Persea humilis	scrub bay	G3	S3	N	N	1
Pharus parvifolius	creeping-leaf stalkgrass	G3G5	S1	N	N	1
Physostegia leptophylla	slender-leaved dragon-head	G4?	S3S5	N	N	1
Pteroglossaspis ecristata	wild coco	G2G3	S2	N	LT	1
iranthes polyantha	green ladies'-tresses	G3G5	S1S2	N	LE	4
Stylisma abdita	scrub stylisma	G2G3	S2S3	N	LE	2
Triphora craigheadii	Craighead's nodding-caps	G1	S1	N	LE	1
NATURAL COMMUNITIES						
Aquatic Cave		G3	S2	N	N	1
Basin Marsh		G?	S4?	N	N	1
Basin Swamp		G4?	S3	N	N	1
Depression Marsh		G4?	S3	N	N	1
Floodplain Swamp		G?	S4?	N	N	1
Hydric Hammock		G?	S4?	N	N	2
Marine Tidal Marsh		G4	S4	N	N	6
Marine Tidal Swamp		G3	S3	N	N	1
Maritime Hammock		G4	S2	N	N	2
Sandhill Upland Lake		G3	S2	N	N	1
Sandhill		G2G3	S2	N	N	8
Scrub		G2	S2	N	N	9
Shell Mound		G3	S2	N	N	2
Sinkhole		G?	S2	N	N	1
Terrestrial Cave		G3	S1	N	N	6
Upland Hardwood Forest		G?	S3	N	N	1
Upland Mixed Forest		G?	S4	N	N	1
Xeric Hammock		G?	S3	N	N	2
OTHER						
Bird rookery				N	N	9
Geological feature				N	N	1
Manatee aggregation site				N	N	4

EXHIBIT H

FLORIDA NATURAL AREAS INVENTORY

1018 Thomasville Road, Suite 200-C · Tallahassee, Florida 32303 · (904) 224-8207

1998 February 3

Jim Grubbs, State Lands Operations Coordinator
Division of Forestry
3125 Conner Blvd.
Tallahassee, Florida 32399-1650

RE: **Two-Mile Prairie**

Dear Jim,

This letter is in reference to your request for information from the Florida Natural Areas Inventory (FNAI). You requested data required for inclusion in the management plans for the Two-Mile Prairie Tract of the Withlacoochee State Forest (WSF).

The results from a search of our maps and computerized database are summarized on the enclosed *Managed Area Tracking Record* (MATR). There are four elements on Two-Mile Prairie for which we have records; three are natural communities and the forth is a gopher tortoise associated with the sandhill. Those occurrences are identified in the directions field as occurring on the new tract.

I believe that with a small amount of additional survey work in the sandhill one would also find Sherman's fox squirrel, eastern indigo snake, gopher frog, and short-tailed snake. Protection and restoration of the sandhill through the continued use of prescribed fire, especially initiating growing season fires is highly recommended and we would like to see that addressed in the plan. Our records indicate an overabundance of large turkey oaks inhibiting fire intensity and ground cover vigor that could receive special consideration in your management.

The depression marsh and swamp are very important breeding grounds for herpetofauna especially striped newt and gopher frogs, as well as feeding areas for wading birds. For those reasons, and because of the wetlands' relatively large footprint on this tract, we are anxious to see the plan specifically address the protection and enhancement of the marsh and swamp.

If I can be of further assistance please contact me at 850 224 8207 or jblanchard@FNAI.ORG

Sincerely,

Jon Blanchard

Jon Blanchard,
Managed Areas Biologist/Chief Scientist

enclosures
H:\MAREAS\DATAREQS\DOF\TWOMILE.WPD

Scientific Name: *Gopherus polyphemus* Common name: gopher tortoise Grank/SRank/Fed/State: G3/S3/N/LS

TRS: 017S019E22, 017S019E14, 017S019E15, 017S019E17, 017S019E22, 017S019E23, 017S019E26 ;T#40 017S019E27

Directions: on the two mile prairie tract of the withlacoochee state forest. jordan ranch can be entered (via locked gates) from cr-39 on north, sr-200 on east, and cr-491 on south (see map attached to sandhill .105).

Area Description: principal habitat on ranch is sandhill that has been disturbed by cattle ranching activities; pasture grasses have encroached into groundcover. turkey oaks are large, longleafs are abundant though mostly small, wiregrass is widespread though sparse. substantial acreage has been converted to improved pasture and pine plantation.

Element Occurrence #: 879 EO Rank: B EO Rank Comments:

Protection comments: enforcement of legal protection may be needed, as at least one local person may pull tortoises on-site.

Management comments: recommend removal of cattle from ranch, restoration of growing-season burns, reconversion of pastures and plantations to longleaf; maintain locked/gated fence around periphery; restore natural hydrology by plugging nearby canal.

Date Last Observed: 1994-05-12 Element Occurrence Data: 1994-05-11, 12: jackson and printiss observed many active burrows; each of 4 burrows probed with 1 burrow camera contained an adult tortoise; one contained a gopher lly.

Scientific Name: *Basin Swamp* Common name: Grank/SRank/Fed/State: G4?/S3/N/N

TRS: 017S019E15, 017S019E17 ;T#40 017S019E22 Directions: two mile prairie tract of the withlacoochee state forest. south side of sr 39 (road not indicated on map) ca. 5 miles east of us 41 (see attached map).

Area Description: basin swamp surrounded by sandhill.

Element Occurrence #: 020 EO Rank: B EO Rank Comments: hydrology possibly disturbed by north-south canal to the east and highway along north edge.

Protection comments:

Management comments:

Date Last Observed: 1994-05-11 Element Occurrence Data: large (ca. 300 ac.) aesthetic swamp with permanent water; surrounded and dominated by tall pond cypress (taxodium ascendens); abundant emergent, floating, and shoreline vegetation: maidencane (panicum), pickerel weed (pontederia cordata), buttonbush (cephalanthus occidentalis), royal (osmunda regalis) and chain (woodwardia) ferns, abundant salvinia (salvinia minima); abundant frogs and birds of many species.

Scientific Name: *Depression Marsh* Common name: Grank/SRank/Fed/State: G4?/S3/N/N

TRS: 017S019E22 Directions: two mile prairie tract of the withlacoochee state forest. south side of sr 39 (road not indicated on map) ca. 5 miles east of us 41 (see attached map).

Area Description: depression marsh surrounded by pine plantation.

Element Occurrence #: 054 EO Rank: B-C EO Rank Comments: good biota diversity but surrounding uplands disturbed.

Protection comments:

Management comments: restore surrounding sandhill.

Date Last Observed: 1994-05-11 Element Occurrence Data: surrounding habitat disturbed (plantation); water 1"-24" with abundant floating and submerged vegetation (especially water shield, some nuphar) some emergent (e.g., buttonbush); fish-free, abundant insect and frog larvae; slash pine plantation on south was being harvested 12 may 1994.

Scientific Name: *Sandhill* Common name: Grank/SRank/Fed/State: G2G3/S2/N/N

TRS: 017S019E22, 017S019E14, 017S019E15, 017S019E17, 017S019E22, 017S019E23, 017S019E26 ;T#40 017S019E27

Directions: two mile prairie tract of the withlacoochee state forest, ca. 2 air miles ne of holder (junction of sr 491 and us 41) (see attached map).

Area Description: moderate-highly disturbed sandhill bordered by and/or containing basin swamp, depression marshes and xeric hammock/scrubby flatwoods.

Element Occurrence #: 105 EO Rank: B-C EO Rank Comments: good longleaf-turkey oak association but disturbed ground cover.

Protection comments:

Management comments: prescribe growing season fire on regular schedule and removal of large turkey oaks.

Date Last Observed: 1994-05-11

Element Occurrence Data: groundcover includes many native species, including wiregrass (aristida stricta), though pasture grasses have encroached; according to t. j. jordan, has been burned typically during the winter every 4 or 5 years; abundant turkey oaks (quercus laevis) and longleaf pine (pinus palustris); excellent natural regeneration of longleaf pine where larger pines have been harvested; probably in need of growing-season fire and possible girdling (or herbicide injection) of some of large turkey oaks (as tall as 30 ft. with dbh of 1 ft. in some places). groundcover varies from sparse to moderately dense; wiregrass is patchy and sparse but nonetheless still widespread; other plants in groundcover include pasture grasses (centipede), saw palmetto (serenoa repens), wild buckwheat (eriogonum tomentosum), (milkpea), galactia sp., spiderwort (cuthbertia), queen's root (stillingia sylvatica), dropseed (sporobolus sp.), rattlebox (crotalaria), and roserush (lygodesmia aphylla). supports abundant gopher tortoises (gopherus polyphemus) and pocket gophers (geomys pinetis), sherman's fox squirrel (sciurus niger shermani), and many other species. some inclusions of live oak/palmetto hammock in depressions.

EXHIBIT I

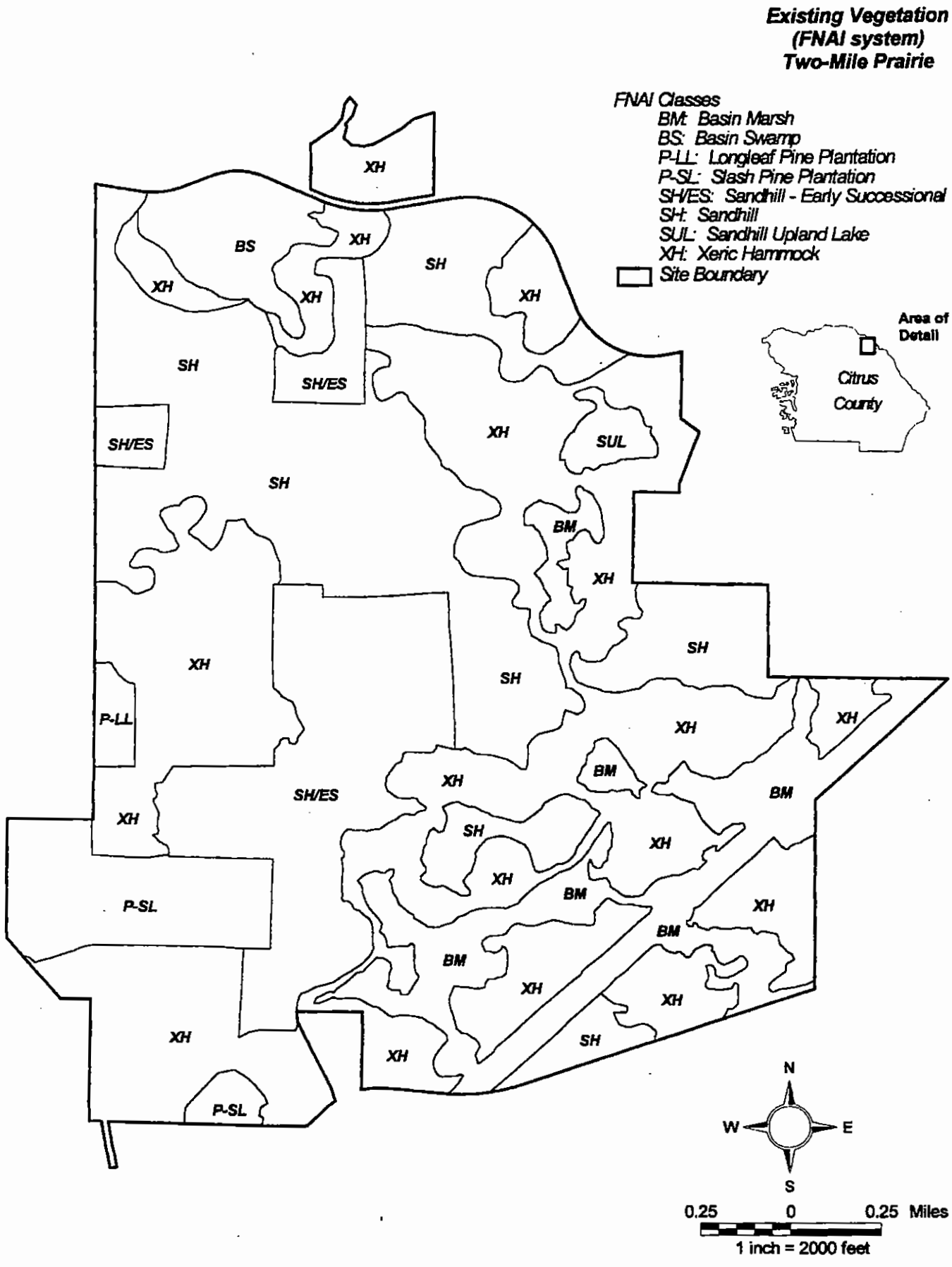

Existing Vegetation
(FNAI system)
Two-Mile Prairie
FNAI Classes
BM: Basin Marsh
BS: Basin Swamp
P-LL: Longleaf Pine Plantation
P-SL: Slash Pine Plantation
SH/ES: Sandhill - Early Successional
SH: Sandhill
SUL: Sandhill Upland Lake
XH: Xeric Hammock
Site Boundary
Area of Detail
Citrus County
N
W
E
S
0.25 0 0.25 Miles
1 inch = 2000 feet

EXHIBIT J

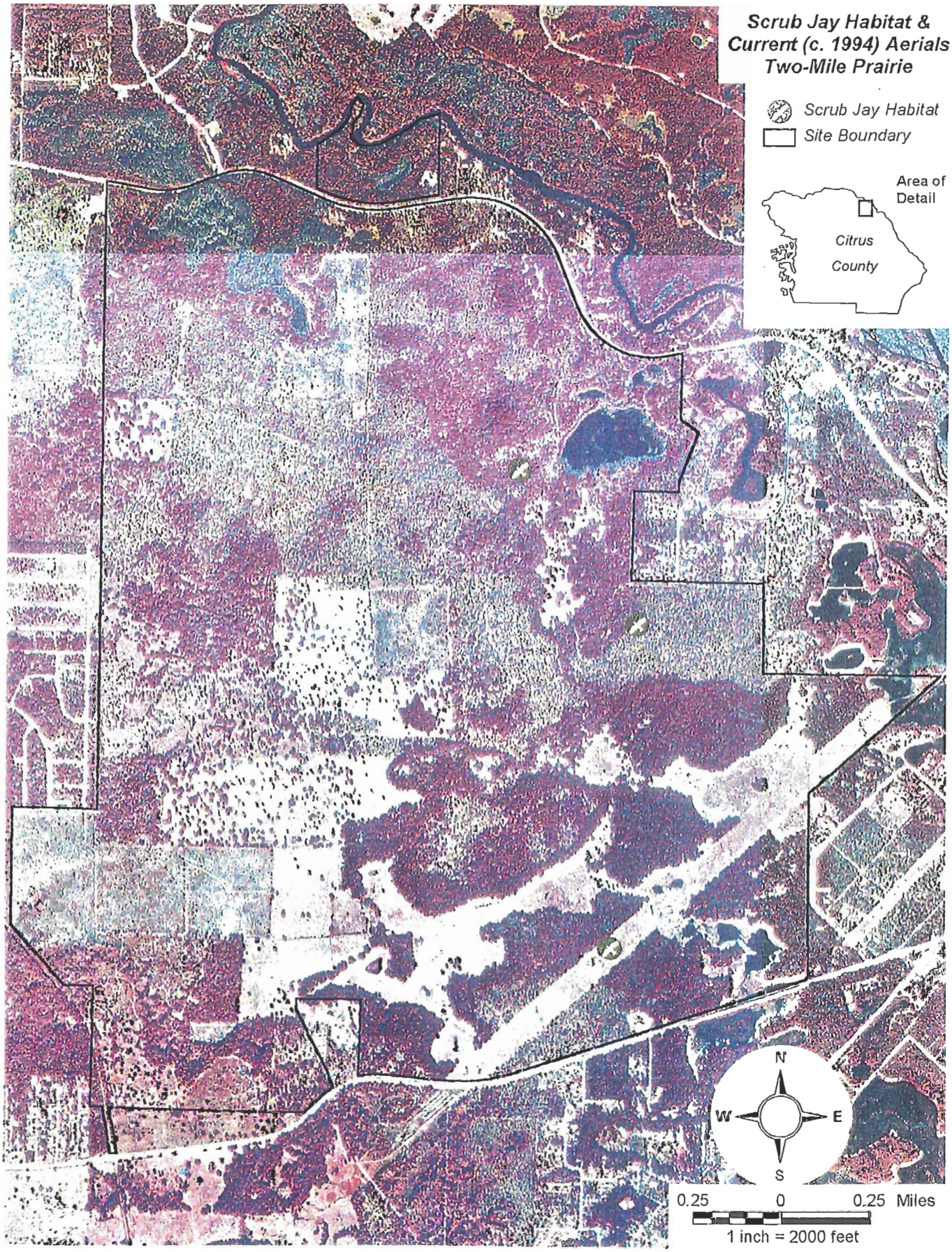

Scrub Jay Habitat &
Current (c. 1994) Aerials
Two-Mile Prairie
Scrub Jay Habitat
Site Boundary
Area of
Detail
Citrus
County
N
W
E
S
0.25 0 0.25 Miles
1 inch = 2000 feet

EXHIBIT K

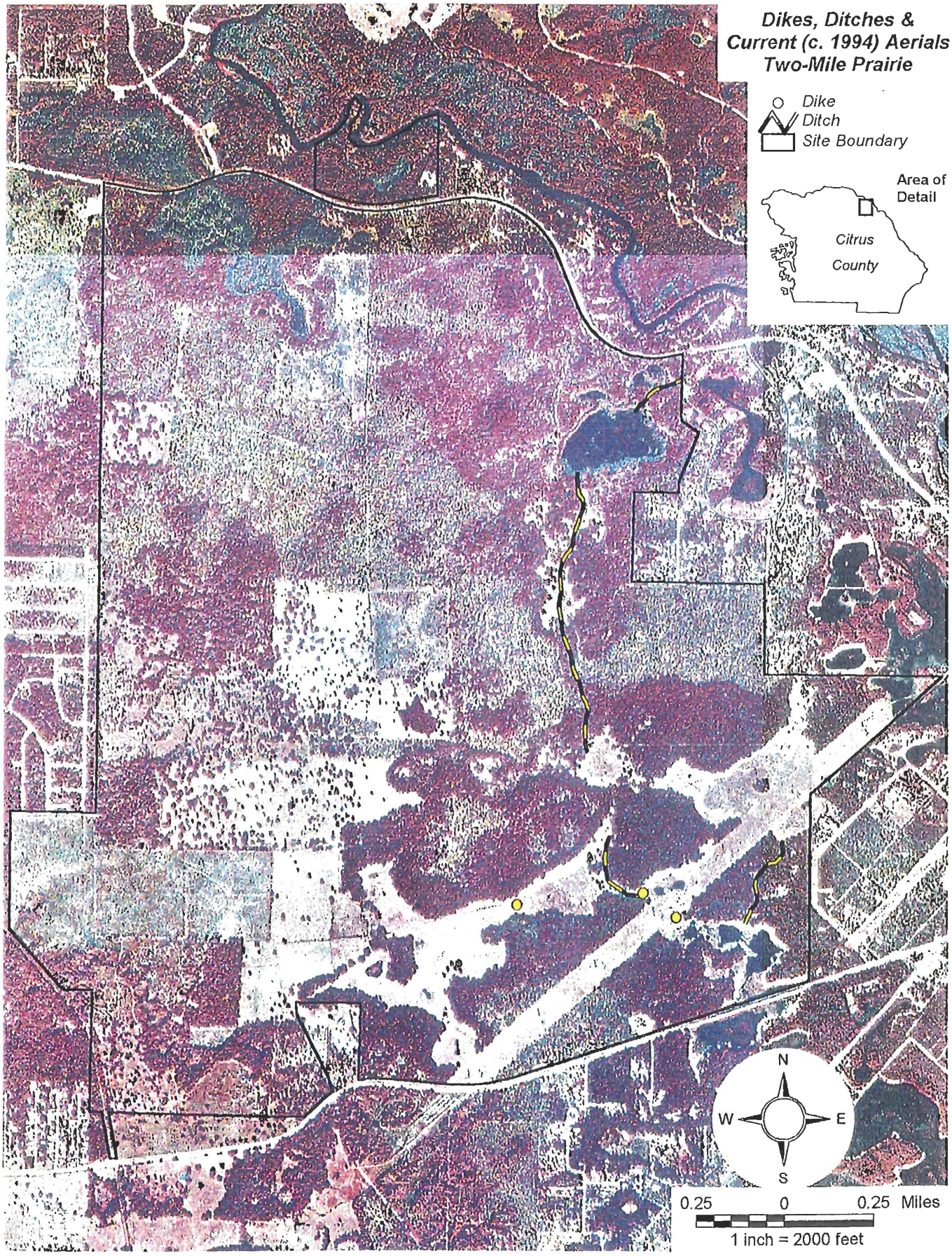

Dikes, Ditches &
Current (c. 1994) Aerials
Two-Mile Prairie
Dike
Ditch
Site Boundary
Area of
Detail
Citrus
County
N
W
E
S
0.25
0
0.25 Miles
1 inch = 2000 feet

EXHIBIT L

Board of County Commissioners

DEPARTMENT OF DEVELOPMENT SERVICES

3600 W. Sovereign Path, Lecanto, FL 34461-8070

In reply, refer to: PL2-99-286

November 30, 1999

Wilbur C. Priest, Senior Forester
Division of Forestry
7940 South Suncoast Boulevard
Homosassa Springs, Florida 34446

RE: FIVE-YEAR RESOURCE MANAGEMENT PLAN FOR THE TWO-MILE PRAIRIE TRACT

Dear Mr. Priest:

The Community Development Division has reviewed the final draft of the Two-Mile Prairie Resource Management Plan and finds that it is in accord with the goals and objectives of the Citrus County Comprehensive Plan (CP).

The plan has been reviewed in regard to three elements of the CP: Coastal, Lakes and Rivers Management; Recreation and Open Space; and Conservation. The proposed modifications and management of the land appear to be in line with our objectives regarding protection of flood storage areas, water quality, and the protection of native vegetative communities (in particular, the Sandhills areas). The proposed improvements on the property fulfill the important objectives of providing increased public access to lake and river shorelines and increased opportunities for natural resource based recreation.

A Community Development Division staff member will attend the Advisory Group and Public Hearing meetings to provide additional input and to coordinate with the agencies involved.

Sincerely,

L Phemister

Lou Phemister
Environmental Planner
Community Development Division

LP/crm

CC: Gary W. Kuhl, County Administrator
Gary W. Maidhof, Director; Department of Development Services
Charles S. Dixon, AICP, Director; Community Development Division
Larry P. Frey, AICP, Community Development Manager; Community Development Division

3/10/97

LIST OF LMAC/DIVISION OF STATE LANDS APPROVED INTERIM MANAGEMENT ACTIVITIES

The attached list describes activities that an agency may initiate on state-owned uplands without either review of the Land Management Advisory Council (LMAC) or any further approval from the Division of State Lands. This list applies to agencies that have either executed a lease with the Board of Trustees, or have submitted an executed Interim Management Letter for new acquisitions. These activities are considered approved in concept by Chapter 253, Florida Statutes, and are accepted as necessary for routine custodial care and maintenance of a site between its acquisition and approval of its land management. In some cases, the applicable water management district, the Florida Natural Areas Inventory (FNAI), or the LMAC representative from either the Department of State's Division of Historical Resources (DHR) or the Department of Environmental Protection (DEP), may review a proposed activity prior to its initiation. The agency requiring such additional review has been indicated following the activity. Where review has been requested by a specific water management district, that district has also been indicated. (District review applies only when land subject to the interim management activities list is located within the jurisdiction of the requesting district.) Each interim management activity has been designated as follows:

A No review required.

B DEP, WMD, DHR, or FNAI review required.

Any activity not specifically listed must be submitted to both the Division of State Lands and LMAC for review.

1. Posting.

   A Posting areas that are deemed by the manager to be potentially hazardous to the public, and posting those areas where public use may result in damage to state-owned lands.

2. Law enforcement and protection.

   A Providing appropriate law enforcement and resource protection.

3. Management plan development.

   A Developing a property's land management plan.

4. Bridge or culvert replacement and/or repair.

   B Repair or replacement of any wooden trestle bridge or poured culvert, regardless of age, or any bridge built after 1945 (WMD).

   B Repair or replacement of any other bridges or culverts (DOS/WMD).

5. Road repairs.

   A Repairing existing roadbeds, when such repairs are minor and necessary to assure safe and reasonable public. Upgrading roads (widening, paving, etc.) is not authorized by this letter.

6. Establishing parking areas.

   A Establishing temporary parking areas along existing accessways when a disturbed area is available and subsurface ground disturbance will not exceed 6 inches. Such parking should represent the minimum square footage necessary to provide public access.

   B Establishing temporary parking locations along existing accessways when a disturbed area is available and subsurface ground disturbance will exceed 6 inches (DOS). Such parking should represent the minimum square footage necessary to provide public access.

7. Exotic or off-site species control.

A Controlling invasive, exotic, or off-site species using methods that do not require ground disturbance, such as prescribed burning, girdling, sale, or herbicide injection. (Note: removal of exotic pasture grasses represents an approved exception to the ground disturbance prohibition.)

8. Prescribed burning.

A Implementing prescribed burning using existing firelines. Improvement of existing lines is limited to reworking with a re-work harrow.

B Implementing prescribed burning using new firelines (DOS/DEP/WMD/FNAI).

9. Fences and gates.

A Installing fences and gates or removing deteriorated or unneeded fences, gates or signs.

10. Removal of structures.

B Removal of old, deteriorated, or unsafe structures (DOS).

11. Replacing existing water control structures or devices.

B Removing or replacing existing water control structures, including culverts, wellheads, flashboard risers, etc. provided that the activity is properly permitted and clearly consistent with the project assessment or design documents prepared during the land acquisition process (WMD).

12. Wildlife habitat enhancement.

A Enhancing wildlife habitat using methods that do not include alteration of native habitat. Such activities shall include installing nest structures or towers for raptors such as osprey or eagles. Installation of food plots is not authorized.

13. Trash.

A Removal of trash and debris.

14. Personnel.

A Establishing personnel on site in existing facilities.

Activities requiring review by the Department of State (DOS) should be directed to:

Susan Harp, Historic Preservation Planner
Department of State
Division of Historical Resources
R. A. Gray Building, Room 423
Tallahassee, Florida 32399 (904) 487-2333.

Activities requiring review by the Florida Natural Areas Inventory (FNAI) should be directed to:

Jon Blanchard, Managed Areas Biologist
Florida Natural Areas Inventory
1018 Thomasville Road, Suite 200-C
Tallahassee, Florida 32302 (904) 224-8207

Activities requiring review by the Department of Environmental Protection (DEP) should be directed to:

Jim Stevenson, Environmental Administrator
Office of Ecosystem Management and Planning
Department of Environmental Protection
Mail Station 45
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000 (904) 488-4892

Activities requiring review by a water mangement district should be sent to the senior land resources planner in that water management district.

Please provide copies of all correspondence to:

Hank Vinson, Planner
Bureau of Land Management Services
Division of State Lands
Department of Environmental Protection
Mail Station 130
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000 (904) 488-2291

The authority granted herein in no way waives the authority or jurisdiction of any governmental entity. Implementation of upland activities may require permits or authorizations from other federal or state agencies with jurisdiction over those particular activities. Please forward a copy of all permits for our files upon issuance.

HYDROLOGICAL RESTORATION PLAN
TWO MILE PRAIRIE TRACT - SWF PARCEL 19-707-101

1.0 PROJECT DESCRIPTION

The project involves the restoration (enhancement) of the conveyance way located between the Van Ness Outfall Structure from the Hernando Pool of the Tsala Apopka Chain of Lakes and the depressional areas located on the Two Mile Prairie Tract (TMPT) formerly known as Jordan Ranch. The tract is jointly owned by the Southwest Florida Water Management District (District) and the State of Florida. The proposed conveyance enhancements will allow the District to move excess waters from the Hernando Pool more efficiently to the storage/recharge areas located on the TMPT. Expected ecosystem benefits include wetland restoration, flood protection, and increased groundwater recharge.

1.1 Project Location

The project is located within the vicinity of the intersection of S.R. 200 and C.R. 491 in northeastern Citrus County. The TMPT is bounded by C.R. 39 to the north and C.R. 491 to the south. Additional work is proposed on private property located in the vicinity of S.R. 200.

1.2 Background

The Tsala Apopka Chain of Lakes is comprised of three pools whose levels are controlled by canals and operable control structures. The pools are operated at different levels according to previously adopted schedules. Levels within the pools are affected by local rainfall and diversions from the Withlacoochee River. When excess waters are available from the river, water can be diverted through the Leslie Heifner Canal and Structure into the lake chain to bring levels up. Occasionally, lake levels exceed the adopted schedule as a result of hydrologic conditions whereby excess waters are conveyed to the river through structure S-353 and the outfall canal C-331. These structures were constructed by the United States Army Corps of Engineers (USACE) and are now operated and maintained by the Southwest Florida Water Management District (SWFWMD). S-353 is a 4-gated structure located on the north end of the Hernando Pool.

The Withlacoochee River Work Group, which is comprised of citizens from the Tsala Apopka area, suggested that waters typically released through S-353 should be diverted onto the TMPT as a water conservation measure. As a result, the SWFWMD embarked on an analysis to determine the feasibility of such a project. The Van Ness structure controls the release of waters to downstream marshes and Two Mile Prairie.

1.3 Emergency Authorization

During the recent flood conditions on the Withlacoochee River resulting from El Niño, emergency authorization was obtained from the Florida Department of Environmental Protection (FDEP) to restore (enhance) the conveyance system downstream of the Van Ness structure to provide an alternate outfall for the lake chain. Releases through the USACE structures (S-353 and C-331) could not be made due to the flood situation that existed at Arrowhead Estates adjacent to the canal. Under the authorization, the District removed several and replaced one structure which restricted flow to the TMPT area. Now the District is requesting authorization for installation of several permanent structures.

2.0 GENERAL DESCRIPTION OF PROPOSED WORK

2.1 Conveyance Enhancement to Two Mile Prairie

The restoration (enhancement) portion of the project involves the installation of several higher capacity structures, removal of a berm, channel clearing, installation of a dam, and maintenance work on an existing access berm. Structure installation will be limited to culverts and culverts with risers. No operable structures are proposed.

2.1.1 Proposed Offsite Work (Not on TMPT)

Some restoration work is necessary for offsite areas that are part of the conveyance system to the TMPT. Removal of vegetation along the conveyance way just downstream of the Van Ness structure is proposed due to its restrictive effects. Spraying and mechanical cutting will be used to remove the excess vegetation. Dredging of material should not be necessary. In addition, maintenance work on an existing access berm located in the area of the Van Ness Structure along the section line between Sections 1 and 36 will be required. The low level berm ensures that runoff waters are conveyed to the west.

Two sets of culverts with risers are proposed for installation in man-made berms located between the Van Ness Structure and S.R. 200. The combination culvert and riser system provides increased conveyance, and maintains the hydroperiods within the existing marshes and other wetlands. In addition, access along the berms is maintained. The last offsite structure to be enhanced is a culvert located just downstream of S.R. 200. The culvert will be upsized to handle the increased flow.

The District has given these offsite properties a high priority classification on its list of lands for acquisition under the SOR/P2000 programs. If the lands can be purchased in a timely manner, the District may install wet crossings in lieu of the culvert systems.

2.1.2 Proposed Work On TMPT

The first structure encountered as one moves onto the TMPT is the culvert system through a berm, known as Spike Dike, located at the powerline. The existing culvert was removed and replaced with two culverts of identical size during the emergency authorization. Some additional work is proposed to dress up the berm for maintenance and aesthetics purposes. Within the same berm, but at a different location, a culvert was plugged to prevent the conveyance of water into a more upland area. It is proposed that the culvert will be removed to insure berm integrity. The next major structure to be replaced is a culvert through a road crossing just downstream of the powerline berm. This system will be comprised of a culvert and riser system. Also within the general area is a berm that divides the lower portion of Two Mile Prairie. A gated culvert passes

through the berm that regulates flow through it. It is proposed that the culvert and a portion of the berm be removed to reestablish the historical configuration of the system.

Next, a man-made creek system that conveys water to the north contained a plugged culvert that was removed. This culvert will be replaced with an upsized structure to reestablish needed access. The last item to be installed is a small dam located in a natural channel which conveys water further to the north on the tract. The dam will be used to segregate the northern drainage system from the southern drainage system for most conditions except for an extreme flood (greater than 10-year on the Withlacoochee River). The dam will impound at most about 1 to 1.5 feet of water.

Other minor work will be performed onsite to replace material that was removed in other channels and berms located on the property. Field observations during the El Niño revealed that these expected conveyance enhancements were not necessary.

3.0 PROJECT JUSTIFICATION

3.1 Jordan Ranch (TMPT) Acquisition

The Jordan Ranch, now known as the Two Mile Prairie Tract (TMPT), was purchased because it met several of the public interest tests regarding water supply, natural systems, and flood protection. In the area of water supply, the TMPT provides significant recharge benefits to the Floridan Aquifer system. Based on hydrologic information for the area, it has a recharge capacity of approximately 11 inches per year. This recharge rate is indicative of the high infiltration and percolation capability of the area. Based on observations made during El Niño, certain areas of Two Mile Prairie can recharge this amount of water or more in a few weeks.

The tract is comprised of a system of berms that were created to impound waters to promote pasture grasses for cattle. With the acquisition of the property, the impacts of these berms can now be removed so that a partial restoration of the historical system is possible. Based on recent observations resulting from the emergency authorization, Two Mile Prairie is exhibiting reestablishment of wetland type vegetation. The restoration of historic wetland areas is a goal of this project.

Hydrologic analysis of the area revealed that the TMPT is not an isolated system. It is actually part of a watershed system that is approximately two to three times the area of the TMPT. Excess water from adjacent areas are transported to the tract thus providing some level of flood protection for them. A key element of the project is determining the balance between rehydration and the flood protection aspects of the area. Observations made during the recent El Niño event revealed that significant amounts of water can be diverted to the TMPT and still maintain flood protection for the surrounding areas.

3.2 Alternative Discharge for the Hernando Pool

The adopted regulation schedule for the Hernando Pool of the Tsala Apopka Chain prescribes a fluctuation range between 36.75 feet (low management level) to 38.75 feet NGVD (maximum desirable level), with a minimum flood elevation of 39.0 feet NGVD. Specific legal authority for establishing levels and guidelines that must be followed by the District are located in F.A.C. Chapter 40D-8.

Since the Tsala Apopka Chain of Lakes are also regulated by USACE structures (S-353 and C-331), specific operational schedules for the pools have to be followed . The Flood Control Act of 1962 allowed for the establishment of the Four-River Basins Project (PL87-874) Federal Register. This act gave the USACE legal authority to construct the structures and establish operational schedules for the Lake Chain. For the Hernando Pool, the schedule requires that it be operated so that its normal level will not exceed 38.75' NGVD from November 1 to December 31. From January 1 to the end of February, the levels are to be lowered until an elevation of 38.5' is attained and then can be maintained until mid-May. After mid-May further lowering of the pool is to

occur until an elevation of 37.5 feet is attained by June 30. The intent of the lowering is to provide storage for flood protection. After June 30, levels are allowed to increase steadily until an elevation of 38.75' is attained by November 1. See Figure 3-2.

The operation schedule allowed by the USACE are target levels that are not to be exceeded under normal weather conditions. For example, during normal wet conditions only minor adjustments (releases) may be required to maintain the target levels. And during dry conditions, no releases may be necessary because the levels cannot be attained. During flood events, the levels can be exceeded but they must be returned to schedule as the system allows.

An analysis of the historical discharges (C-331 flow) from the Hernando Pool of the Tsala Apopka lake chain revealed that releases on average last about 57-days with an average discharge of 117 cubic feet per second. Part of this discharge can be made through the Van Ness Structure to provide benefits to the ranch. In addition, the excess discharge capacity provides some degree of flood protection to those living on the Hernando Pool and along C-331.

4.0 DETAILED DESCRIPTION OF TMPT / VAN NESS OUTFALL

4.1 Project Boundaries

The marsh system's access crossings downstream of the Van Ness Outfall and the TMPT Acquisition represent the project limits. Work to be performed downstream of Van Ness will occur on privately owned property. For these properties, access and easement agreements have been acquired so that the necessary work can be performed. The easement agreements include two culvert crossings through access berms downstream of the Van Ness structure and one culvert crossing just downstream of the S.R. 200 bridge. It is crucial that the conveyance capacity through the berms be improved to decrease the amount of time required to transfer water to Two Mile Prairie.

The TMPT (SWF Parcel No. 19-707-101) is a 2,899.63 acre parcel of land located in northeastern Citrus County. The tract was jointly purchased by the Southwest Florida Water Management District and the State of Florida on January 8th, 1997. Subsequent to the acquisition, it was leased to the Florida Department of Agriculture and Consumer Service's Division of Forestry on July 3 of the same year for management as a State Forest. Prior to the acquisition, it was primarily used as a ranch for cattle production. Conveyance system and storage enhancements are proposed for the TMPT to complete the restoration project.

4.1.1 Existing Conveyance System (Prior to the Emergency Authorization)

The first structure proceeding from an upstream to downstream fashion that influences water levels on the TMPT is the Van Ness Structure. The Van Ness Structure controls the releases of water from the Hernando Pool. First, the Van Ness Structure is a 6'x14' box culvert located under E. Marsh Lake Dr. that has an upward moving gate to control the flow of water. The Van Ness structure, including the culvert, was built by the Tsala Apopka Basin Recreation and Water Conservation Construction Authority on land deeded to it by P.B. Gignac and his wife. The Southwest Florida Water Management District took over the structure on December 31, 1962 with the assurance that Van Ness will be opened last and only under extreme flood conditions. However, the operating policy was amended due to the desire of the District to recharge the aquifer wherever possible by giving Two Mile Prairie all "excess" water from the Hernando Pool that downstream residents felt it could handle.

Downstream of the Van Ness structure water cascades through a series of marshes that were connected by 24 inch diameter culverts through 2 existing berms. These berms are manmade and were probably constructed in the 1970s. Below the marshes the conveyance system becomes a more defined channel system where it conveyed under S.R. 200. via box culverts. Just downstream of the box culverts the surface water was conveyed through a 30 inch diameter culvert at a road crossing. Downstream of the 30 inch culvert the conveyance system becomes a creek that meanders through a hammock. At the terminal end of the creek begins the upper portion of Two Mile Prairie which is bisected by S.R. 491.

On the north side of S.R. 491 begins the TMPT property. Surface water accumulates in the upstream portion of Two Mile Prairie until it reaches the 30 inch diameter culvert in Spike Dike, the berm that parallels the Florida Power electrical transmission lines. Water is conveyed through this culvert into a small marsh. From this marsh, water is then conveyed through another 30-inch culvert where it enters a meandering creek before discharging into the lower portion of the Two Mile Prairie area. Here, there are several depressional areas that fill and cascade into the next. A berm with a 24 inch culvert and gate segregates these depressions. Once the depressions reach an elevation of about 33 feet NGVD, water is conveyed in a northern direction through a manmade channel before entering another depression. Under severe flood situations, this depressional area will receive overflow from a marsh located in Section 25. When this basin attains an elevation of 33 feet, water it is then conveyed further north by what appears to be a natural creek through a more upland area. The creek terminates into another depression located south of Johnson Pond. This depression receives water from the creek feeding in from the south and from Johnson pond to the north which is connected to the drainage system of the adjacent Cedar Cove development.

In the Johnson Pond area, surface runoff is predominantly from the Cedar Cove subdivision. Surface waters generated from this development flows through a 12-inch diameter culvert and manmade channel into the pond. Johnson Pond continues to fill until it overflows through a culvert and ditch system to the south into the depression area just mentioned above. Also, overflow from Johnson Pond can go west to Blue Sink. Water is conveyed through a small culvert, overland for a short distance, and then into a well defined creek system that discharges to the sink. Blue Sink appears to be connected to the Floridan Aquifer.

Under severe flood conditions on the Withlacoochee River (greater than a 10-year return frequency), this conveyance system will flood up and begin discharging back to the river at the north end of the TMPT. During such an event, the river will overflow into the Tsala Apopka Chain of Lakes and surrounding marsh areas. Roadways and berms will be overtopped yielding uncontrolled flow throughout the area. This condition will fill all depression storage areas on TMPT and then establish a northerly flow pattern based on the flow gradient in the Withlacoochee River. Outflow from the TMPT would occur through an overland process to three box culverts located under C.R. 39 at the northeast corner of the ranch. These three box culverts will convey water to and from the Withlacoochee River depending on depending on the water surface elevations.

4.1.2 Site Hydrogeology

Soil, sand, and other undifferentiated deposits with some clay form a laterally discontinuous surficial system (Ground-Water Resource Availability Inventory, Citrus County, SWFWMD, 1987). These deposits range in thickness from zero to greater than 100 feet. Below the surficial deposits are the Hawthorne and Alachua Formations which consist of sand, limestone, phosphatic clay, marl, calcareous sandstone, and limestone residuum. These units can range in thickness from zero to greater than 100 feet. When present they function as a confining layer that retards the vertical movement of water. Areas of sufficient thickness may be evidenced by wetland

systems or dense hammocks. Below the confining deposits of the Hawthorne and Alachua is the Upper Floridan Aquifer. This aquifer system is solution-riddled and faulted limestone comprised of chemically precipitated limestones and dolomites that contain shells and shell fragments of marine origin. This aquifer is the principal storage and water conveying component of the hydrologic system.

The aquifer system in the TMPT area is generally classified as unconfined. As a result, water that infiltrates into the surficial deposits can recharge the Floridan aquifer provided that the Hawthorne or Alachua Formations are not present. Recharge in the area is classified as high with an average estimate of 11 inches per year. Data collected during the recent emergency authorization suggests that certain areas of the ranch may exceed that value while other areas exhibited very little recharge. Areas that exceeded the value were the depressions and sinks located throughout Two Mile Prairie.

4.2 Proposed Enhancements for Rehydration

To determine the amount of water available for rehydrating the TMPT, statistical analyses were performed on the historical levels and release scenarios for the Hernando Pool of the Tsala Apopka Chain. The analyses revealed that the releases averaged 57 days in duration with an average discharge of 117 cubic feet per second (cfs), and the Hernando Pool levels during the releases averaged around 38.6 feet. An elevation of 38.0 feet on the Hernando Pool was used as a lower limit for selecting the sample used in performing the statistics concerning rehydration potential. Little to no transfer can occur with a water elevation below 38.0 feet on the Hernando Pool. Release rates were based on historical discharges from S-353.

Enhanced hydraulic capacity evaluations were performed at each site (Table 4-1) using an average elevation of 38.6 feet on the Hernando Pool until a discharge between 25 and 30 cfs was achieved. The existing flow for the system was around 4 cfs for the specified elevation. A description of the conveyance upgrade that is proposed at each site is provided in the following sections.

4.2.1 Sites 1 & 2 - Wet Crossing & Culvert Installation

The enhancements at sites 1 & 2 along North Natural Trail Road do not provide any restoration or rehydration benefit for the marsh systems located downstream of the Van Ness structure. Their installation is for maintaining usability of the North Natural Trail Road. The road provides access to the C-331 canal and structure S-353. Without the improvements, the road acts as a berm blocking the natural flow to the canal. Due to this situation, the road is frequently washed out by water flowing over the top of the roadway. The installation of a wet crossing at site 1 and a small culvert at site 2 will provide conveyance through the road to existing inlets along the C-331 canal. Elevation of the road is not proposed so that flood elevations will not be increased on the upstream side of the road.

4.2.2 Site 3 & 3a - Berm Restoration & Wet Crossing

Just northeast of the Van Ness structure is an existing berm across a marsh that provides road access and prevents surface waters from going east toward the inlets along the C-331 canal. Ground survey information for the berm suggests that it was originally constructed to an elevation of 40 feet NGVD. Portions of the berm have been eroded down to an elevation of 38.5 feet. It is proposed that the berm crest elevation be restored along its length to a minimum of 40 feet NGVD.

At site 3a, the access road has deteriorated and subsided due to traffic and the lack of a proper road base. It is now constantly inundated and rutted to the point where access to the eastern sites on the property is not possible. It is proposed to stabilize the road base with a geotextile underlayment and 6" to 8" of 3/4" limerock while allowing this area to remain a wet crossing in order to maintain the existing conveyance capabilities.

4.2.3 Site 4 - Clearing of Excess Vegetation

Just downstream of the Van Ness Structure is a marsh system characterized by dense stands of grass and shrub like vegetation that impedes flow through the area. It is proposed that a 20-foot swath approximately 1000 feet long be cut, not dredged, through the area to provide enhanced conveyance.

4.2.4 Site 5 - Replacement of Single Culvert with a Multiple Culvert System with Risers

At this location an existing single 24- inch diameter culvert was placed through an earthen berm that allows access between islands. During the emergency authorization, the culvert and part of the berm was removed to enhance the conveyance. It is proposed that the previous system be upsized with a multiple culvert system with risers so that conveyance can be enhanced while maintaining the existing hydroperiod. Multiple culverts are proposed rather than removing the man-made berm because the owner wants to maintain access.

4.2.5 Site 6 - Replacement of Single Culvert with a Multiple Culvert System with Risers

This site is similar to the Site-5 proposal. An existing 24 inch diameter culvert that was removed will be replaced with a multiple culvert system with risers to enhance the conveyance capacity while preserving the hydroperiod. Again, access is a key concern for this site.

4.2.6 Site 7 - Upsizing of An Existing Culvert

An existing 30 inch diameter culvert which was removed will be upsized to a 38"x57" arched culvert to increase the conveyance capacity through this section of the system. The culvert allows access across the creek just downstream of S.R. 200 that leads to Two Mile Prairie.

4.2.7 Site 8 - Existing Single Culvert Replaced by Two 30-inch Culverts with Risers

During the emergency authorization, two additional 30-inch culverts were placed within a berm (Spike Dike) that controls flow onto the TMPT and provides access across a marsh adjacent to the Florida Power Transmission Easement. The combinational effect of increasing discharges through the Van Ness Structure and the concurrent rainfall necessitated the addition of the culverts. The existing 30-inch diameter culvert did not have the capacity to keep upstream levels from rising beyond what was considered acceptable levels. A little later, the existing 30-inch culvert was removed due to piping which was compromising the berm. Most of the bottom section of the culvert had rusted away. Only minor reshaping of Spike Dike is required to complete work at this location.

4.2.8 Site 9 - Removal of a Deteriorated Culvert within Spike Dike

During the Emergency Authorization another small culvert was found through Spike Dike along its northern portion which was highly deteriorated and partially plugged by sand and other debris. As water levels began to rise in the Two Mile Prairie area just downstream of C.R. 491, the culvert began to seep carrying berm material with it. As a result, fill material was added to the upstream side to fully plug the culvert. The culvert apparently allowed the passage of water to the north eventually connecting to a conveyance system that parallels the eastern boundary of the property. It was concluded that the culvert would only aggravate an existing flooding condition in the Twelve Oaks subdivision located along the eastern boundary of the TMPT Thus, it is proposed that the plug material and remaining culvert material be removed from the berm and the berm restored without the culvert.

4.2.9 Site 10 - Replacement of Existing Single Culvert with Multiple Culverts with Riser

An existing 30-inch diameter culvert that provided road access across a creek will be replaced with multiple culverts with risers to enhance the conveyance capacity and increase the elevation of the pool just upstream. It was concluded that maintaining a higher water surface elevation in the wetland would enhance its habitat. A portion of the road fill that was removed will be restored.

4.2.10 Site 11 - Berm and Culvert Removal

An existing berm and 24-inch diameter culvert currently traverses the lower portion of Two Mile Prairie located in the southwestern portion of the TMPT. It is proposed that all or part of the berm be removed to restore its original characteristics.

4.2.11 Site 12 - Replacement of a Culvert Crossing that was Removed

A culvert crossing in a man-made channel that connects Two Mile Prairie with a depression located to the north was removed during the emergency authorization. The culvert was plugged with pieces of concrete and other debris. Since access across the creek is required, it is proposed

that an upsized culvert be installed and the stockpiled fill be restored.

4.2.12 Site 13 - The Creation of a Permanent Dam

The former owner of TMPT (Jordan Ranch) had installed a earthen dam at the location of the proposed permanent dam. The purpose of the dam was to maximize upstream storage before waters are conveyed to the pool area to the north. It is speculated that this was done to prevent over utilization of storage in the northern part of the ranch in the vicinity of Johnson Pond. Johnson Pond and the adjacent depressions are used as a receiver of runoff generated from the Cedar Cove Subdivision. Blue Sink is also located within the area which allows runoff to enter the Floridan aquifer.

4.2.13 Site 14 & Site 15- Replacement of Fill In Existing Channel and Berm

A small man-made channel about 1 to 1½ feet deep exists in this location that was plugged by the original owner. During the emergency authorization, removal of plug was performed anticipating that waters transported to the TMPT from the Hernando Pool would flow through the channel leading to the marsh area located in the eastern portion of section 26. However, this was not the case. Actually, overflow from a lake marsh system located to the north in section 25 filled the marsh area located in section 26. Water levels in the section 25 marsh attained a sufficient level to overtop a natural earthen saddle spilling over into the section 25 marsh. As a result, the plug will be reinstalled in the man-made channel to maximize storage within the area.

Also, within the marsh located in section 25 are a series of berms that maximize storage. A small section of one of the berms was removed anticipating that flow through the man-made channel above would flow into this area. Since the area receives discharge from the section 26 rather than the man-made channel, the berm section will be replaced to reestablish the storage characteristics.

4.3 Summary of Activities in Jurisdictional Areas

4.3.1 Excavation for Culvert Installation

Most of the dredge and fill activities within or bordering jurisdictional areas are limited to road crossings located in the marsh areas and the TMPT. The amount of disturbance of wetland vegetation in these locations will be minimal. Primary work will be performed within the berms or the existing road crossings and not within wetlands.

4.3.2 Vegetation Removal & Maintenance Downstream of the Van Ness Structure

A swath of vegetation 20 feet wide and approximately 1000 feet long will be removed in the marsh system just downstream of Van Ness. Removal of the excess vegetation will aid in the transfer of water to the TMPT. This work is considered maintenance and therefore should not require mitigation.

4.4 Detailed Description of Construction Sequence

All construction will proceed from downstream to upstream to ensure that the hydraulic capacity of the conveyance system is maintained. Prior to the commencement of construction activities, turbidity and erosion controls will be installed as needed. It is expected that most construction can take place under dry conditions in the Two Mile Prairie area. Silt screens will be staked along the berms immediately inside the limits of construction. Floating turbidity barriers will be installed upstream and downstream of the proposed work. Silt screens and floating turbidity barriers shall be constructed and maintained in accordance with FDOT standards. The limits of construction and locations of turbidity and erosion control systems are shown on the drawings for each site.

Temporary excavation and/or fill may be required for the installation of the proposed structures. During culvert installation it may be necessary to construct temporary bypass systems. Erosion fabrics will be installed in the temporary bypasses when required. Upstream and downstream ends of the fabric will be held in place with sand bags. Any temporary fill or excavated areas will be regraded to original elevations and stabilized following construction.

After culverts are installed, minor regrading and excavation of the roadway or berm surface will be necessary to reestablish existing grades. Surplus material from excavation activities will be transported and stored in an upland area offsite that has appropriate sediment and erosion control features or be spread so as to prevent erosion. All exposed soil areas will be sodded and/or seeded with Pensacola Bahia or rye grass.

All construction will be performed by SWFWMD personnel. The type of equipment used may include a backhoe, front end loader, dump truck, and a small dozer. All work areas will have the necessary easements to carry out the installation of the proposed structures not located on state or sovereign lands. During non-working hours, all construction machinery will be stored on nearby upland areas.

4.5 Summary of Wetland Impacts (Restoration)

The installation of the enhanced structures will result in localized, temporary impacts to wetlands. Most of the wetlands in the vicinity of the proposed structures consist primary of grasses and herbaceous plants that will reestablish following the cessation of construction. Tree removal is not expected. In the case of the proposed 20 foot swath through an existing marsh, approximately 0.5 acres or 20,000 square feet of wetland vegetation will be removed by mechanical cutting or spraying. If mechanical equipment is used, some tree removal may be required for maneuvering. Most of the vegetation in this area is characterized by saw grass and willows.

5.0 HYDROLOGIC / HYDRAULIC ANALYSIS

Delineation of the Van Ness/TMPT watershed area was necessary so that the effects of the proposed conveyance enhancements could be evaluated. Watershed delineations were derived from 1"=200' aerial topographic maps of the area. Subbasin boundaries were digitized into the Geographic Information System ARCINFO coverage. The subbasin boundary cover was then overlaid onto the SWFWMD's 1990 land use cover and soil cover from the National Resource Conservation Service (NRCS) to develop runoff characteristics using the NRCS's Curve Number procedure as detailed in Technical Release No. 55.

Hydraulic characteristics of conveyance systems were determined primarily from field surveys. Field surveys of the channels, culverts, and berms were performed by certified District land surveyors. 'As-built' drawings of the C-331 canal were used to define the hydraulic characteristics of the side inlets to the canal.

Storage characteristics of the watershed were based on contour information available on the 1"=200' aerial topographic maps. Contours were digitized into a coverage so that subsequent analysis could be performed. A Triangular Irregular Network (TIN) was performed on the digitized information to develop stage area tables for each of the subbasins.

A schematic of the hydraulic connections for the watershed was also digitized into an ARCINFO coverage. A link node concept was used to develop the digital database system. The links represent the actual conveyance structures such as culverts, channels, or weirs while the nodes represent termination ends between conveyances structures which include lakes and boundary type nodes. Boundary nodes were used to establish conditions for the receiving and outflow points of the watershed area modeled.

Boundary conditions for inlets and outlet connections to the watershed are controlled by the Withlacoochee River and the Van Ness Structure. A review of historical river and Hernando Pool levels was performed to determine the most appropriate boundary conditions for the hydrologic/hydraulic analyses performed. Existing and enhanced conveyance system configurations were simulated so that comparisons could be made between the two conditions regarding transfer rates from the Hernando Pool and the effects on flood levels. Recharge for the major depressions located on the TMPT was also included in the models based on observed information collect during the recent El Niño event.

5.1 Comparison Between Existing and Enhanced Hydraulic Conditions

An important consideration of this project is the comparison of the resultant water surface elevations between the existing and enhanced systems. Simulations of the existing conditions are based on the structures that where in place prior to the emergency authorization. Survey information is available on the lengths, types of material, sizes, and invert elevations of the

structures. CHAN, from Aquarian Software, Inc., was the modeling software used to perform all simulations. CHAN performs the hydrologic and hydrodynamic calculations to determine flows and associated stage information.

Several scenarios were developed to evaluate the feasibility of enhancing the conveyance system to Two Mile Prairie. Each scenario was evaluated by comparing the enhanced conveyance system proposal to the existing system. One scenario was developed to determine the amount of flow increase and reduction in time for rehydration that would result from the proposed enhancements. Remaining scenarios were used to develop the operating schedule of the Van Ness Structure and establish rehydration levels so that the flood protection aspects of the surrounding property owners would not be reduced. Flood protection analyses were performed using 100-year rainfall events superimposed on specific hydrologic settings. Scenarios specifically developed to address these concerns are as follows:

1. Rehydration comparisons of the TMPT using existing and enhanced conditions.

2. Water surface comparisons (existing and enhanced) for the 100-year, 24-hour rain event under dry conditions throughout the watershed and the Van Ness structure closed.

3. Water surface comparisons (existing and enhanced) for the 100-year, 24-hour rain event under wet conditions (hydrated) and the Van Ness structure closed.

4. Water surface comparisons (existing and enhanced) for a 5-day, 100-year rain event concurrent with a 100-year flood condition on the river and the Van Ness structure closed.

5. Water surface comparisons for the enhanced condition with Van Ness in an opened and closed configuration for a 5-day, 100-year rainfall event concurrent with a 100-year flood on the Withlacoochee River.

6. Water surface comparisons after 5 days with the Van Ness structure open and then closed at the beginning of a 100-year, 24-hour rain event.

5.1 Summary of Results

To simplify the presentation of results, an elevation profile of the major conveyance system is provided for each scenario. Water surface elevations for the existing and enhanced conditions will be overlaid for direct comparison. The profiles presented are based on the following nodes from the Schematic Diagram of the network system (Figure 4.5) which are provided in the table below. In addition to the profile comparisons, stage hydrographs are provided at certain nodes so that direct comparisons can be made for times for rehydration between existing and enhanced conditions. These results are, including the conveyance diagram, are located in the Appendix.

Table 5.1, Profile Description Through Jordan Ranch:

Node	Description
BN01	Hernando Pool
NVN1000	Marsh system elevation just downstream of the Van Ness structure
NVN1010	Next large marsh system from first downstream berm
NVN1130	Upstream pool from S.R. 200
NVN3029	Downstream point just below S.R. 200
NVN3025	Elevation along creek between S.R. 200 and C.R. 491
NVN3020	Marsh located on upstream side of C.R. 491
NJRA2100	Marsh just upstream of the Florida Power Berm or Spike Dike
NJRA2120	Small marsh system located just downstream of the Florida Power Berm
NJRA2150	Two Mile Prairie
NJRB1000	Second pool located in the central portion of the tract
NJRD1000	Depressional area located south of Johnson Pond
NJRJ1000	Johnson Pond
NJRJ1010	Pond located within the Cedar Cove subdivision
BN05	Withlacoochee River near the 3-box culverts located under C.R. 39

5.1.1 Rehydration Time Comparisons for the TMPT

As previously stated, the reason for enhancing the conveyance system is to transfer more water in less time. Having this extra capacity provides the District with the ability to transfer water even when the Hernando Pool may not be at an optimum height. A review of the historical discharge information for the Hernando Pool indicates there were 23 out of 28 years reviewed that releases were made through the S-353 structure at an elevation above 38.0 feet. Out of the 23 years with releases, 16 years had more than two weeks where releases occurred. Thus, enhancement of releases is important for maximizing rehydration and promoting water conservation.

Simulations of the two conditions (existing and enhanced) using the same starting water levels provides information concerning relative hydraulic performance. Figure 5A provides the water surface elevations for the enhanced and existing system after 336 hours of simulated transfer. For the enhanced condition and a Hernando Pool elevation of 38.6 feet, rehydration progressed to the northern end of the TMPT (Node NJRD1000) after two weeks of simulation. For the existing system, Two Mile Prairie (Node NJRA2150) had not filled to prescribed levels within the 2 weeks of simulated transfer. As a result, none of the depressions down gradient of Two Mile Prairie had received simulated transfer waters (Figures 5B, 5C, 5D). These hydraulic analyses suggest that it may take less than 2-weeks to hydrate the Two Mile Prairie area to two feet below the seasonal high established by District environmental staff under the proposed enhanced condition.

5.1.2 Elevation Comparison for the 100-Year, 24-Hour Rain Event Under Dry Conditions (Van Ness Structure Closed)

This scenario compares the water surface response to a significant rainfall event as if the system functioned independent of the Hernando Pool (Van Ness Structure closed). Initial water surface elevations were generally based on the topographic elevations available from the SWFWMD's 1"=200' aerial topographic maps. In the marsh areas located near the Van Ness structure, initial water surface elevations slightly below the invert of the existing culverts through the berms were used. For the Two Mile Prairie area and other depressions along the main conveyance way, starting elevations were the bottom of the depressions indicated on the aerials.

The analysis results (Figure 5E) predicted decreases in water surface elevations for the enhanced condition until just upstream of the S.R. 200 bridge (Node NVN1130). A 0.26 feet increase in water surface elevation was simulated for this node. This suggested that the culvert downstream of the S.R. 200 bridge was undersized. As a result, an up-sized culvert from that modeled is proposed. An additional run was performed to verify this conclusion. Regarding Two Mile Prairie (beginning at Node NJRA2100), simulated water surface elevations exhibited slight increases. However, the largest increase, about 0.68 feet, occurred within the depressions of Two Mile Prairie located in the southwest portion of the TMPT. This is expected since the enhanced conveyance system will transfer water more quickly to the TMPT than the existing system. The increased water surface elevations predicted for these conditions should have no adverse impact on adjacent residences since all elevations are well below the 100-year flood level established for the area.

5.1.3 Elevation Comparison for the 100-Year, 24-Hour Rain Event Under Wet Conditions (Van Ness Structure Closed)

The wet condition scenario compares the water surface response to a significant rainfall event as if the TMPT had already been hydrated. This scenario is similar to the previous dry condition scenario in that the Van Ness structure is closed defining a system independent of the Hernando Pool. Initial conditions are based on anticipated hydration levels of about 33-34 feet depending on location within the TMPT. The marshes just downstream of Van Ness structure were initialized slightly above the inverts of the pipes or above the weir crest depending on the system modeled (existing or enhanced). The invert of the existing pipes and the crest elevation of the proposed weirs are at the same elevation. A 100-year, 24-hour rainfall was superimposed onto these conditions to determine the resulting water level responses throughout the system.

The wet condition simulations demonstrated results (Figure 5F) similar to the dry conditions except that the overall water surface elevations were higher. Again, a slight comparative increase in water surface elevations (0.22 feet) was manifested beginning just upstream of S.R. 200 for the enhanced condition while decreases in water surface elevations were realized upstream of that area. The proposed up-sized culvert will reduce this elevation. The predicted water surface elevation at S.R. 200 was 38.76 feet which is similar to the highest water surface observed during

El Niño at the same location, 38.79 feet. The TMPT exhibited similar increases with the largest increase in water surface elevations of 0.43 feet above the existing conveyance levels. The enhanced transfer rate is the reason for the increases simulated. Again, the increased water surface elevations predicted for these conditions should have no adverse impact on adjacent residences since all elevations are well below the 100-year flood level established for the area.

5.1.4 Water Surface Comparisons for a 5-day, 100-year Rain Event Concurrent with 100-year Water Levels on the River

The Federal Emergency Management Agency has established 100-year based flood elevations for Two Mile Prairie area. The one hundred-year water surface elevations for the Two Mile Prairie Tract watershed vary from 42 feet NGVD near the Hernando Pool to 41 feet NGVD in the vicinity of Johnson Pond located at the north end of the TMPT. These elevations are the result of the Withlacoochee River flood waters overflowing into the project area.

To simulate the expected river impact on the TMPT, stage hydrographs were used from the March-April 1960 flood event for the Hernando Pool of the Tsala Apopka Chain and the Withlacoochee River at Holder. These hydrographs were used as boundary conditions because the peaks were very close to the established one-hundred year flood levels for the area. Only minor adjustments to the hydrographs were required so that the peaks matched the 100-year flood levels established for the Withlacoochee River and the Hernando Pool. The Holder stage hydrograph was applied to other locations where the study area connected to the river. Adjustments were made in the hydrographs according to the expected water surface elevations downstream of the Holder Gaging Station using the 100-year profile established by the USACE (1976). In addition to these boundary conditions, a 5-day 100-year storm event was applied to the watershed at the beginning of the simulation.

Two analyses were performed to determine the relative impact of the proposed system enhancements on the one-hundred year flood levels for the project area. One analysis compared the resulting flood levels between the existing system and the enhanced system with the Van Ness Structure closed. The other analysis compared the enhanced system with the Van Ness Structure in an opened and closed configuration. The results of the existing/enhanced analysis (Figure 5G) suggests that the simulated 100-year water surface elevations would be higher by a tenth of a foot on the TMPT as a result of the enhancements. It should be noted that the simulated elevations for the TMPT were 1 to 1½ foot lower than the FEMA one-hundred year flood elevations for the area.

Lastly, the enhanced condition analysis that compared water surface elevations between a Van Ness open and closed configuration resulted in no significant difference in the water surface elevations. This suggests that a magnitude flood condition on the river will be the primary factor that dictates the 100-year flood levels on the TMPT and surrounding areas.

5.1.5 Water Surface Comparisons after 5 days with the Van Ness Structure Open and Then Closed at the Beginning of a 100-year, 24-hour Rain Event.

Previous scenarios presented did not combine a lake transfer with a significant rainfall event except for the100-year river flood condition analysis. In the 100-year river flood condition analysis, river overflows overwhelmed the 5-day rainfall and operational effects of the Van Ness structure. Thus another scenario was formulated to simulate the water level response if a significant event occurred while the transfer of water was in progress under wet, but not flooding, conditions. In this particular scenario, the transfer of water was allowed to progress for 5-days to establish a uniform hydraulic gradient through the upper portion of the system before the onset of the event. Initial conditions for this scenario were wet with most pool areas staged up and the hydration near completion. Simultaneous to the beginning of the rainfall event, the gate was closed. Simulated gate closure prevented the flow of runoff waters back into the Hernando Pool which would tend to reduce water surface elevations throughout the project area.

Results from this particular scenario (Figure 5H) indicated that increases would occur in water surface elevations for the enhanced condition over the existing condition. For the marsh areas located between the Van Ness structure and S.R. 200, water surface elevations increased a maximum of eight-tenths of a foot. While this appears substantial, no flooding of dwelling structures is expected. The largest predicted increase in water surface elevations would occur just upstream of S.R. 200 with a calculated surface elevation of 39.1 feet NGVD. This elevation is about three feet below the FEMA 100-year flood level for the area and a three tenths higher than the maximum water surface elevation achieved during the recent El Niño event.

6.0 ENVIRONMENTAL ASSESSMENT

Historic drainage and flood routing activities in the vicinity of Two Mile Prairie and the Hernando Pool area of Lake Tsala Apopka has resulted in prolonged and sustained absence of surface flows to the Two Mile Prairie basin, or at the very least resulted in very infrequent (and short-term) flooding of only small portions of the marshes and wet prairies within the historic Two Mile Prairie basin. In fact, the resultant reductions in hydroperiod facilitated the conversion of these wetland areas to agricultural uses. While under private ownership as part of cattle operations within Jordan Ranch, the wetland habitats formerly occupying the Two Mile Prairie basin were actively managed as improved pastures. Ground cover was maintained as a monoculture of bahia (*Paspalum notatum*) and bermuda (*cynodon dactylon*) grasses for grazing and haying purposes. Former wetland habitats, along with their functions and values were for the most part eliminated.

In the winter of 1997-98 as part of emergency flood abatement efforts undertaken during heavy and widespread regional rainfall brought on by El Niño conditions, flood waters were diverted and stored within the historic Two Mile Prairie basin. These waters were routed through the Van Ness Structure. Remedial work to culverts and erosion control measures were undertaken to maintain the structural integrity of berms and culvert areas.

A preliminary assessment (1998) of the emergency flood abatement activities revealed that the structural or construction components of the emergency work did not cause any direct or indirect adverse effects to natural habitats, in particular no adverse impacts to endangered or threatened species or their habitat were noted. The areas where erosion repairs were needed were relatively small and localized. Most (if not all) repairs were in areas of prior construction activity (i.e. existing berms and culvert areas) and did not involve natural habitats.

Re-flooding of the Two Mile Prairie basin during and following the El Niño event has resulted in the return of conditions favorable for the establishment of wetland vegetation. Evidently, from viable on-site seed banks and through dispersal via the flood waters, pioneer wetland plant species became established along the now inundated shores of the Two Mile Prairie basin. Stands of maidencane (*Panicum hemitomon)* and expanded "littoral" coverage by a variety of sedges became evident in many areas which were formerly improved pasture. Open water areas were observed to support fish re-introduced by the flood waters. Improved habitat opportunities for wetland wildlife species was noted in the weeks following the re-flooding, as evidenced by observations of large numbers of wading birds foraging within the newly emerging wetlands. The fringes of some low-lying upland areas likely experienced short-term flooding; however, the flooding was not sufficient in extent and duration to cause permanent damage. Flood impacts to upland fringes were believed to be within the range of conditions experienced throughout the region as a result of prevailing El Niño conditions.

For the proposed project, which will attempt to return hydroperiods and consequently more typical wetland conditions to the Two Mile Prairie basin, the anticipated progression (i.e. succession) is that of establishing marshes, wet prairies and open water areas throughout the area.

The availability of water discharges for rehydration of the Two Mile Prairie is based on a review of historic discharges from the Hernando Pool of Lake Tsala Apopka (C-331 flow). Releases are calculated to be an average of 57 discharge days with an average discharge of 117 cubic feet per second. Part of this discharge can be made through the Van Ness Structure to re-flood Two Mile Prairie.

Based on the response and establishment of wetland vegetation from viable seed banks during the last months, no vegetation planting is proposed. Natural plant successional processes will be allowed to take place. In the event that nuisance or exotic vegetation becomes a problem, management and eradication will be handled under the tract's overall management plan. It is anticipated that maintained surface water releases to the Two Mile Prairie basin will allow for the establishment of viable wetland habitats. Control elevations will maintain and protect upland habitats.

7.0 OPERATIONAL GUIDELINES FOR THE VAN NESS STRUCTURE

The ability to release water through the Van Ness Structure to the downstream marshes and the TMPT is dependent upon water levels within the Hernando Pool. As previously discussed the water levels on the Hernando Pool are regulated where periodic releases are required to maintain the adopted schedule. Typically, releases are made through the S-353 structure located at the north end of the lake. With the proposed enhancements, additional releases can be made through the Van Ness Structure to provide enhanced water conservation and flood protection.

Determining the amount and frequency of available rehydration waters required a statistical analysis of the historical Hernando Pool levels and releases through the S-353 structure. The analysis was limited to information when the Hernando Pool was at or above 38.0 feet NGVD. Thirty-eight feet was chosen as the cut off level because this was deemed as the lower elevation whereby the transfer of water could be effected through the Van Ness Structure. The analysis indicated that between the years 1968 through 1996 that transfer of water could have occurred during 23 out of the 28 years. The average number of days within a year that transfer could occur was 57 with an average available flow of 117 cubic feet per second (cfs). The number of release days within any given year ranged from 1 to a maximum of 199 with release rates varying between 5.5 to 410 cfs. Hernando Pool stages when releases could be made ranged from 38.0 feet to 39.4 feet for the years presented with an average stage of 38.65 feet. Table 7.0 provides more detailed information about the number of days and release rates during any given year.

Table 7.0 General Information for the Hernando Pool by Year

			S-353 Releases (cfs)			Hernando Pool Levels (feet)		
Obs	Year	Days	Minflow	Avgflow	Maxflow	Minstg	Avgstg	Maxstg
1	1968	43	28.0	172.93	410	38.18	38.64	39.22
2	1969	133	30.0	120.23	378	38.12	38.71	39.34
3	1970	105	55.0	170.45	212	38.16	38.45	38.76
4	1971	6	69.0	105.50	122	39.06	39.19	39.30
5	1973	199	9.6	60.07	360	38.22	38.77	39.26
6	1974	111	8.4	99.96	318	38.02	38.39	38.68
7	1975	3	5.5	8.50	10	38.32	38.36	38.40
8	1976	48	8.5	75.07	164	38.00	38.23	38.46
9	1977	10	19.0	36.80	40	38.34	38.40	38.48
10	1978	29	28.0	114.52	234	38.10	38.59	38.80
11	1979	12	122.0	284.17	360	38.68	38.78	38.90
12	1980	45	9.3	112.52	192	38.00	38.48	38.96
13	1982	87	41.0	178.37	290	38.54	39.09	39.38
14	1983	128	19.0	118.64	272	38.00	38.63	39.14
15	1984	115	15.0	106.46	236	38.08	38.64	39.40
16	1985	4	32.0	60.75	85	39.18	39.20	39.20
17	1986	54	39.0	122.17	232	38.16	38.85	39.50
18	1987	78	24.0	101.97	360	38.26	38.63	38.94
19	1988	51	17.0	137.49	330	38.00	38.43	38.92
20	1989	6	79.0	136.67	164	38.60	38.67	38.84
21	1991	1	129.0	129.00	129	38.78	38.78	38.78
22	1995	20	106.0	250.30	276	38.94	39.21	39.40
23	1996	15	24.0	86.07	95	38.55	38.79	39.03
Sample average		57		117.27		38.65		

7.1 Environmental Considerations (Hernando Pool and Withlacoochee River)

Proposed releases of water through the Van Ness Structure will only occur when the Hernando Pool is above its adopted schedule. Thus, no environmental impacts are expected on the Hernando Pool since there will be no additional variation in levels. In regards to river flows, only minor reductions will occur as a result of the diversion. Diversions through the Van Ness Structure will result in the reduction of releases through the S-353 structure which in turn effect river flows. The expected diversions through the Van Ness Structure should average about 30 cfs or about 1.7% of the average concurrent river flows at Holder (1,717 cfs). Therefore, environmental effects should be inconsequential.

7.2 Van Ness Operating Schedule

The Van Ness Structure is a single gate attached on the Hernando Pool Side of a box culvert under Marsh Road. The gate used to regulate the flow is an upward rising gate. As a result, most of the flow through the system will be characterized as orifice flow unless the bottom of the gate is raised above the water surface. Flow through the culvert is dependent upon the water

surface elevation of the Hernando Pool, the gate opening, and the downstream water surface elevation which is affected by the downstream conveyance. For most conditions, the downstream conveyance will dictate the flow through the structure.

7.2.1 Operation of the Van Ness Structure During Rehydration

Section 5.1.1 of the report provides results concerning the rehydration times for Two Mile Prairie under the existing and the enhanced conditions. Using an average water surface elevation of 38.6 feet NGVD on the Hernando Pool yielded an average flow through the existing system of only 4.22 cfs with the Van Ness Structure opened 4 feet. For the enhanced condition, the average flow through the system will be about 25-30 cfs. Higher flow rates can be achieved provided that the Hernando Pool is at a higher elevation. However, the Van Ness Structure should be operated so that the immediate downstream water surface elevation does not exceed 38.5 feet. Regulating the discharge to 25-30 cfs should ensure that a 38.5 foot elevation is maintained. The gate openings for maintaining 25-30 cfs when the Hernando Pool exceeds 38.6 feet can be calculated using the orifice equation. This protocol will provide adequate flood protection storage for a localized 100-year, 24-hour rainfall event downstream of the Van Ness structure.

The operational time required to bring the Two Mile Prairie up to the recommended levels (33.0-34.0 feet) will very depending on the existing water levels of the system. If the Hernando Pool is at an elevation of 38.6 feet or greater and the system downstream of the Van Ness Structure is in a dry condition, it should take about 1-2 weeks to reach the desired levels. Once this level is achieved, then the Van Ness Structure should be closed. The Van Ness structure should also be closed during rainfall events to allow compensation for the volumetric contribution of rainfall.

7.2.2 Operation of the Van Ness Structure During Flood Conditions

The Tsala Apopka Lake Chain system is a very unique system in that flooding on the chain can result from localized rainfall and/or high river conditions. The United States Army Corps of Engineers (USACE) constructed the S-353 outfall structure and the C-331 canal system to provide flood protection resulting from a rainfall event with a magnitude up to a 10-year return frequency. Nonetheless, this system can only function provided that the river is at a level whereby releases can be effected. Under low river conditions, releases can be made through the Van Ness and the S-353 Structure to lower levels on the Hernando Pool. However, operation of the Van Ness structure should be limited to the hydration levels and flows previously specified.

Under rare circumstances (less than 10% probability for any given year), the water surface elevations in the river can rise to a sufficient elevation to spill over into the Tsala Apopka Lake Chain and the Two Mile Prairie area in an uncontrolled fashion. Flood levels during these events typically last for several weeks. An example of this phenomenon occurred in April 1960 and to a limited degree during the recent El Niño event. Overflow into the area from the river begins when stages exceed the 10-year flood levels. River water will spill over berms (natural and man-made) surrounding the lake chain causing uncontrolled rise in levels. In addition, roadways and berms in

the vicinity of the Van Ness Structure can be overtopped inundating areas downstream of the structure and portions of the TMPT. Therefore, if it is known that flood conditions of this magnitude are imminent, it is recommended that emergency management actions be taken and that the Van Ness Structure be opened to allow controlled equalization of water levels throughout the system .

EXHIBIT O

WITHLACOOCHEE STATE FOREST

TWO MILE PRAIRIE ADDITION

(Citrus County Florida)

Basin Marsh/Prairie and Xeric Oak Habitat Restoration/Management Recommendations

A Report Prepared For:
The Florida Division of Forestry
Withlacoochee District

By:

The Nature Conservancy
Altamonte Springs, Florida

January 14, 1998

TWO MILE PRAIRIE

Habitat Restoration / Management Recommendations

Introduction

The Two Mile Prairie addition to the Withlacoochee State Forest was acquired by the state of Florida on January 8th, 1997 through a joint venture of the state's Conservation and Recreational Lands and Save Our Rivers Programs. The property, formerly known as The Jordan Ranch Tract, was subsequently leased to the Florida Department of Agriculture and Consumer Service's Division of Forestry on July 3 of the same year for management as a State Forest.

Totaling 3,218 acres, the Two Mile Prairie Tract is located in northeast Citrus County adjacent to the southwestern bank of the Withlacoochee River. The tract's southern boundary lies adjacent to State Road 491 for a 1.5 mile segment between Holder and Stokes Ferry, Florida. The tract's northern boundary abuts County Road 39 separating it for a short distance from the floodplain of the Withlacoochee River. The tract is located in all or portions of Township 17 South, Range 19 East, Sections 14,15,17, 22, 23, 25-27, 29, 34, and 35. Refer to Appendix B and C for boundary graphics.

Management purpose for The Two Mile Prairie addition, as specified in the lease agreement and mandated in subsections 259.032(11) and 373.59 establishes natural and historical resource conservation, coupled with compatible resource-based public recreation as priority for this site. Primary acquisition and management goals and objectives for the site, as provided in the Land Acquisition Advisory Committee's Project Assessment and Project Design, also emphasize conservation of natural resources through protection and management of important ecosystems, landscapes and forests.

It is the purpose of this document, as described in the Letter of Understanding between The Nature Conservancy and the Florida Division of Forestry (FDOF) (Appendix A) to assist the management staff of the Withlacoochee State Forest by providing restoration and long term management recommendations for xeric oak, scrub, sandhill, herbaceous wetland and transition systems at this site, together with the specified GIS based mapping products. To accomplish the goals of this partnership, TNC staff performed two site inspections to evaluate existing ecosystem structure and vegetative condition. Staff at TNC's Disney Wilderness Preserve GIS laboratory produced the necessary GIS-based graphics for this document and the FDOF Withlacoochee State Forest management plan addendum.

Habitat Description

The Two Mile Prairie Tract harbors a variety of natural upland and wetland plant communities together with a series of altered vegetative systems. The latter were created either directly by the effects human manipulation or indirectly through alteration of natural hydrologic and fire processes. Currently nine distinct plant communities have been identified. Predominant community types represented on this site are floodplain forest, basin swamp, basin marsh, depression marsh, xeric hammock, scrub, sandhill, disturbed sandhill, sandhill lake, improved pasture, other agricultural land as well as pine plantation. The spatial distribution of these community types is shown on the vegetation map in Appendix D. Acreage details are listed in the following table and complete FNAI descriptions are provided in Appendix G. Community spatial distribution was determined using GIS FLUCFS (Florida Land Use, Cover and Forms developed by the Florida Department of Transportation) Level 3 classification mapping provided by the South West Florida Water Management District. These data were subsequently converted to FNAI classifications to meet Division of Lands planning requirements.

Table 1. FNAI community types with acreages.

FNAI Community Type	Acreage:
Sandhill	1,101
Xeric Hammock/Scrub	1,113
Basin and Depression Marsh	297
Basin Swamp	87
Sandhill Upland Lake	24
Pine Plantation	280
Other	316

Sandhill and sandhill-transitional systems represent the dominant community type found on this site. Approximately 1,101 acres of this community are found on the forest addition, primarily at higher elevations on sandy soils. The second most abundant community type is xeric oak hammock. Its acreage is inflated in many areas, due to partial or near complete succession to the former vegetation type. Currently, this community occupies approximately 1,113 acres and is found primarily within sandhill areas in topographic knolls or depressional pockets and along down-slopes adjacent to relic depression/basin marsh systems. The latter (depression of basin marsh) is the

least abundant of these three dominant community types, occupying only 297 acres, and is found in the southeastern portion of the forest addition at significantly lower elevations. The remainder of the site, approximately 707 acres, is represented by intact habitats such as sandhill-upland lake, basin/floodplain swamp and altered habitats such as upland pasture and pine plantation.

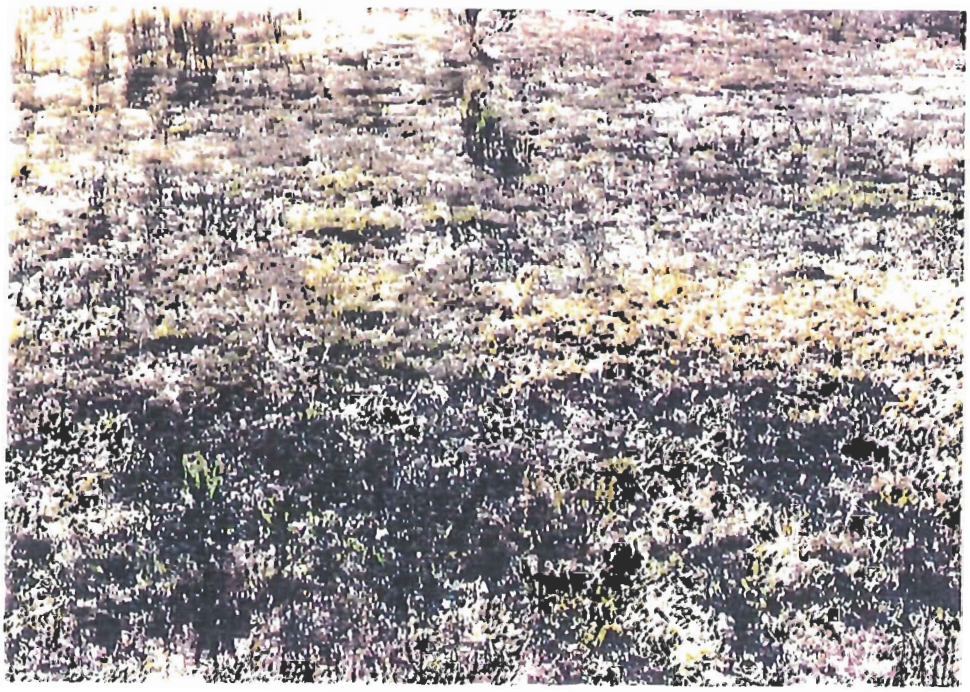
Site inspections determined that the three primary natural vegetative community types described above have been significantly altered, either indirectly by interruption of natural processes or by direct physical manipulation. Herbaceous wetland systems, such basin and depression marshes have been altered through the impacts of regional and on-site drainage and pasture conversion, compounded by intensive grazing. Upland systems, primarily sandhill community and their associated down-slope xeric oak ecotones, have been altered either completely through pasture conversion, partially through past silvicultural activities such as site preparation and mechanical harvesting techniques, grazing, and alteration of natural growing season fire processes. In order to address inventory, restoration, long term management and monitoring recommendations for enhancement and restoration of altered systems on the forest addition, each habitat type will be discussed independently. A detailed description of current ecological condition will be presented, together with restoration and management goals, inventory/monitoring needs, and treatment actions and options together with some cost estimates.

Basin/Depressional Marshes

Little of the natural character of this community type remains on the forest addition. What small remnants of natural vegetation remain are found in topographic depressions in the center of what were historically much larger wetland basins, located along the southeastern portion of this site. Severe alteration of natural hydrology through drainage, both on and off-site, coupled with excessive grazing pressure and the introduction of domestic pasture grasses has transformed what were once herbaceous wetlands, into vastly different and substantially dryer, grassland systems. A landscape view typical of the vegetation occupying these relic marshlands is shown in Figure 1. Figure 2. shows a closer view of grass species cover. In many areas, exotics grasses completely dominate. Typical cover dominants in these areas are bahia grass (Paspalum notatum), centipede grass (Eremochloa ophiuroides) and carpet grasses (Axonopus spp.) together with a variety of native old-field weed species such as broomsedges (Andropogon spp.), dog fennel (Eupatorium capillifolium and E. compositifolium) and flat-top golden rod (Euthamia minor). Various old-field legumes such as Sesbania spp. were also observed. Some pockets of favorable mesic-hydric species were noted such as maidencane (Panicum hemitomon), blue maidencane (Amphicarpum muhlenbergianum) and cordgrass (Spartina bakeri). The latter represent a remnant suite of native mesic herbaceous grassland species that should be encouraged with future management actions.

Figure 1: Two Mile Prairie Lake, panoramic view of basin or depression marsh habitat.

Figure 2: Two Mile Prairie Lake, close up of typical herbaceous/grass cover.



Restoration Goals: The most critical impact to this system has been the dramatic alteration of regional hydrology. In order to improve regional drainage for agricultural and development purposes, a large canal designed to divert Lake Tsala Apopka's high water stages was constructed over two decades ago. Downstream, Lake Rousseau drainage bypasses the lower segment of the Withlacoochee through a massive water control canal system, to the Withlacoochee Bay in the Gulf of Mexico. This man made system has functioned to significantly alter the hydrology of the lower Withlacoochee basin by moderating natural high water stages and altering seasonal periodicity. The ditch network draining the Two-Mile Prairie Lakes system and other on-site basin wetlands (Appendix E), has exacerbated the effect regional drainage with the net result being a significantly drier basin marsh system on the forest addition.

Complete restoration of the on-site basin marsh system will require the reversal of both regional and on-site drainage impacts. Politically, only the restoration of on-site hydrologic impacts may be possible. Restoration of regional impacts is not practicable due to current levels of development within the Withlacoochee Basin's historic flood plain. During the last site visit, after a 10 inch December rainfall (normally a 2" rainfall month), the Withlacoochee River was observed at flood stage and well beyond its banks. Local private property was clearly flooded. During the inspection of the basin system on the same day, all basin marshes were found to be relatively dry, except for small ponded areas centrally located at lowest elevations. Inter-connecting drainage ditches were flowing, but volume was minimal (under 15CFS). Clearly, this recent floodstage of the Withlacoochee and lake Tsala Apopka had little effect on the Two-mile Prairie marsh system. Restoring regional drainage to the extent required to significantly effect this marshland would most likely also seriously exacerbate regional flooding. Therefore, restoration of regional hydrology is not deemed a realistic option in the development of a restoration prescription for the basin marsh system.

The second greatest historic impact to this system was the reduction of diversity and cover of native herbaceous marsh and wet prairie species by mechanical conversion and the introduction of competitive exotic grass species coupled with heavy grazing pressure. Depending on density and composition of native cover, several mechanical treatments were historically used to remove existing vegetation. Roller chopping was used exclusively or in tandem with other techniques such as harrowing. Often sites were root raked or bladed off to remove native cover. The latter typically would leave evidence of windrows or debris piles. After removal of native competition exotic pasture grasses such as Pensacola bahia were seeded or species such as centipede grass and others were inoculated as sprigs. Fertilizer or lime, depending on soil type, was also often applied to improve success.

Recognizing historic system impacts, the following represent core elements that will be required for successful improvement of this degraded marsh/prairie ecosystem to the pre-disturbance natural situation (restoration), or, to enhance it to a more desirable matrix of desirable native herbaceous and grassland species. Implementation

of elements 1a, 1b, and 2-4 should achieve near complete system restoration. Implementation of elements 1b - 4 can only achieve system enhancement.

Core Restoration/Enhancement Elements:

1. Restoration of marsh ecosystem hydrology

    a. Restoration of regional hydrology (Lake Tsala Apopka, and Withlacoochee basins)

    b. Restoration of on-site hydrological impacts via the elimination of interconnecting basin marsh ditch works. (Appendix E.)

2. Elimination and control of existing exotic grass and pest herbaceous species cover competition.

3. Introduction and successful establishment of appropriate target vegetation.

4. Control of post restoration invasive disturbance loving exotics.

Recognizing the aforementioned core restoration elements, four possible goals and outcomes stand out. They are sequentially listed below, based a scale of increasing cost and time resources. As already mentioned, it is clear that complete restoration is not recognized as a realistic option. Again, this is due to the requirement for reversal of regional historic hydrologic alterations. It must then be accepted that any future condition facilitated through restoration or enhancement actions will result at best in a much dryer altered ecosystem. Complete restoration as a desired goal and the associated strategies and actions are still addressed in order to complete the full spectrum of alternatives. Goals, strategies and implementation actions are also offered in three timing phases. Items marked by asterisk represent recommended strategies based on probability of implementation. Cost assessments for various strategies such as earth moving, removal of exotics and native species planting and actions are found in subsequent tables 2, 3 and 4.

Phase 1 (Year 1)

Goal 1: Allow the existing systems to succeed to future old-field condition.

Strategy: No action

Note: Research indicates that exotic pasture grasses may continue to dominate groundcover vegetation. Undesirable, exotic herbs and grasses native woody species will invade. These may become a significant seed source for degradation through invasion, of

adjacent upland systems. The longer this strategy is applied, the more difficult and expensive it will be to implement future enhancement or restoration actions.

Phase 2 (Years 1 -3)

Goal 2*: Retain status-quo with existing mesic disturbance vegetation and hydrology.

Strategy: Maintain system in near existing condition using grazing, light mechanical, and prescribed fire treatments

Action #1*: Retain cattle for grazing at significantly reduced stocking rate in order to maintain existing vegetation cover and diversity. Stocking rate is reduced to increase fine fuel density for more positive prescribed fire effects.

Action #2*: Maintenance mow and or prescribed burn vegetation to optimize herbaceous/grass vegetation and to eliminate hardwood/shrub invasion.

Action#3*: (For phase II) Inventory existing system vegetative diversity and map cover dominance. It is important to know what sites are dominated by what species, native or exotic. Future treatment actions should optimize favorable natives and select against undesirable exotic or pest species.

Action#4*: (For phase II) Analyze physical environment e.g., soils type, pH, moisture relations. This information will be necessary to select suitable target native grass/herb cover composition.

Action#5* (For phase II) Determine most effective exotic pest species removal strategy based on results from Action #3 and best known removal methods.

Action #6*: (For Phase II) Based on results from actions 3 and 4, and anticipated future moisture conditions, determine target cover species composition and cover dominance. Select seed harvesting source areas. Native seed banks in altered sites over 30 years old usually no longer exist. Adjacent on-site sources or more realistically local off-site sources should be evaluated during this period.

Phase III (year 4 - 10 or longer)

Goal 3*: Partly restore system hydrology. Enhance marsh system vegetation towards a more desirable native species dominated herbaceous and grass matrix.

Strategy 1*: Restore historic natural inter-basin swale topography on site.

Action 1*: Re-contour ditch works between interconnecting marsh basins using re-construction protocol in Table 5 established for the DWP.

Strategy 2*: Eliminate old-field exotic vegetative competition and re-vegetate with desirable target species (determined in phase II)

Action 1*: Relative to cover dominance by species, select and implement appropriate removal treatment. Refer to Table 2, treatment alternatives for cover removal on maintained and old-field pastures.

Action 2*: Plant or seed native target vegetation into pre-treated sites. See planting cost analysis in Table 4 and planting protocol in the following sections.

Action 3*: Monitor treatments for post treatment re-planting or re-seeding needs and (or) post treatment exotics infestation

Action 4*: Re-plant, re-seed and (or) spot treat exotics infestations.

Phase IV (Years 1 - ?)

Goal 4: Restore completely, historic ecosystem hydrology, through reversal of regional hydrologic impacts.

Strategy: Negotiate with regional water management and regulatory authorities to facilitate the restoration of regional hydrology.

Actions: To be determined.

Site Preparation (Removal of Exotic, Pest and Old-field Species Competition)

Site preparation should only be initiated in sections or plots where planting or direct seeding can accomplished soon after treatment. The following represents a list of recommended treatment options for the removal of problem pasture and old-field species cover. These techniques are currently being tested at TNC's Disney Wilderness preserve on a series of improved (bahia dominated) pastures, pine flatwoods, scrubby flatwoods and wet prairie soils. Asterisk-marked treatments indicate those that may be most effective and represent the recommended options for the removal of existing cover vegetation.

Table 2. Cover removal treatments

Treatment Series:	Success:
Single Harrowing/Direct Seeding	Least Effective
Single Herbiciding/Direct Seeding	Least Effective
*Harrowing and Herbiciding/Direct Seeding	Third Most Effective
*Multiple Harrowing/Direct Seeding	Second Most Effective
*Multiple Herbiciding	Most Effective

Cost of these treatments are offered in the following table. It is important to note that these are estimates based on trends in the Central Florida region and may be significantly lower or higher in other areas for a variety of reasons. Using existing agency equipment and staff may significantly reduce actual costs.

Table 3. Site preparation treatment and cost estimates.

Site Preparation Treatment:	Cost Estimate:
Single Harrowing	$20.00/Acre
Single Herbiciding	$30.00/Acre
Harrowng and Herbiciding	$50.00/Acre
Double Harrowing	$40.00/Acre
Double Herbiciding	$60.00/Acre
Mowing	$20.00/Acre
Prescribed Burning	$15.00/Acre

Target Species, Basin/Depressional Marshlands:

It is recommended that the target species matrix selected for the enhancement of this hydrologically altered (xerified) ecosystem represent a more xeric shift to suites of mesic species typically found on dryer sites such as wet prairie, mesic/hydric

flatwoods, fresh water marsh rim or even possibly dry prairie systems. Target species should be similar to those found in undisturbed systems of their types in near localities.

It is doubtful that a significant seed bank of adequate diversity exists in the current system. It has been reported that seed banks of pasturized sites over 20 - 30 years old retain few native propagules. Seed for growing plantings or for direct seeding will have to be harvested from local habitats that are free of exotics and have been recently burned during the previous early growing season. Also, harvesting times vary for different species. Wiregrass seed, for example, produced from growing season fire typically ripens during the November following the fire (Central Florida). Optimum seed ripening times also varies significantly with annual differences in local climate.

A suggested list of preferred species is offered in table in Appendix H. This list is not comprehensive and in no way is exclusive of other species that may be desirable and could to function well in this system. It is important to note, that the species matrix selected must also have a significant component of pyric (fire adapted, fire encouraging) grasses. The ability of an enhanced system to carry fire will be tantamount to its long term success. Wire grasses, such as Aristida spp. particularly A. beryrichiana as well as Sporobolus juncueus, cord grass (Spartina bakeri), and Andropogon species particularly chaulky bluestem (A. brackystachyus) and creeping bluestem (A. stoloniferum) together with maidencane (Panicum hemitomon) are just a few examples of recommended fire supporting species.

Mechanical seed harvesters such as those produced by Ag-Renewal, Inc. are highly recommended for gathering the required seed volume. Models for small scale harvesting are available that adapt well to large all-terrain vehicles. Agricultural tractor mounted models are the most efficient, however. They allow for the harvesting of large amounts of seed but also provide good species selectivity through the ability to raise and lower the unit with the tractor bucket. Harvesters range from $4,000.00 to $12,000.00 in cost relative to size, power supply type, and mounting configuration.

Seed storage can be a issue. Typically seed should be used shortly after harvesting, either in a direct seeding application or for the production of containerized material. Long term storage may be difficult and may require refrigeration.

Direct seeding applications may prove to be the most effective and most efficient for large treatment areas. Bail choppers have been used at The Nature Conservancy's Apalachicola Bluffs and Ravines Preserve (ABRP) near Bristol, Florida on disturbed sandhill habitats, and have been found to be a moderately tools for spreading seed. ABRP is also working currently with very inexpensive seed blowers. Bail choppers rent for about $200.00 per day. Hydro-seeding by contract is effective but very costly (approximately $350.00/acre).

Contract growing plants for re-vegetation requires the use of local nurseries for the growing of cuttings or plants from seed harvested on the forest addition. Cost varies by specimen size. The following table gives a cursory overview of general costs.

Table 4. Plant material costs.

Plant Material:	General Cost/Unit:
Grasses (6" Tube size)	$.50 ea.
Forbs (1 Quart Size)	$.90 ea.
Small Shrubs (1 Gallon Size)	$2.00 ea.
Wiregrass (FDOF)	$270/1000 ea.

Monitoring: Monitoring the success of re-vegetation by species is extremely important, as certain species may establish much more successfully than others. As monitoring data yield which species provide greatest success, the seed species matrix can be altered to generate more efficient results. Monitoring is also important to quickly detect, undesirable invasive exotic species that have the potential to overwhelm restoration sites.

Potential problems: Contingency planning is an extremely important component of any restoration project. Contingency planning should be designed to deal with potential issues before or as they occur. The following represent typical issues and challenges that should be anticipated.

Exotics: Invasive exotic species tend to strongly favor disturbed habitats. Any activities that have the potential to significantly disrupt native groundcover vegetation on adjacent sites or on restored sites, should be discouraged. Due to historic disturbance activities, much of the intact upland native cover vegetation is already infested, in may areas, with invasive pasture grasses. The following represent other notorious exotics that could present a problem on the forest addition.

Cogon grass (Imperata cylindrica): This is an extremely invasive species particularly in areas with sandy soils. Cogon grass has already infested many agricultural, roadside and old-field landscapes in the region and is a ripe candidate species for invasion of this particular site. Fire favors this species and herbicide treatments, though successful, are considerably expensive. Inadvertent introduction via livestock, horses or management/restoration equipment and material should be avoided.

Tropical Soda Apple (Solanum varium): A recent invasive exotic to Florida, this species has become a problem on grazed native range and improved pasture lands. Like cogon grass, soda apple appears to be disturbance loving. Cattle and wildlife may spread seeds of this exotic. Care should be taken to quarantine any grazing animals introduced to the site in a confined area, in order to clear their enteric systems, before release into the larger landscape.

Feral Hogs: Feral hogs are notorious tillers of agricultural land and native range. They can do tremendous damage to recently restored sites and exacerbate the spread of exotics by disturbing native ground cover vegetation through rooting. Their populations should be eliminated or kept very low through harvesting.

Cattle: The spread of exotic pasture grass seed through cattle has only been found to be a significant problem in areas of previous soil disturbance. Cows do not seem to readily spread pasture grasses into healthy native ranges, particularly when stocking levels are kept reasonable. If cattle are maintained on site, problems associated with vegetation trampling or cows "keying" to restoration areas may need to be addressed.

Potential Restoration Funding Sources:

Restoration is expensive. Mitigation represents one of the best potential funding sources for restoration of altered ecosystems. Florida Department of Transportation (FDOT) may be a direct mitigation funding resource through regional road improvement programs. Currently, FDOT is also funding grants for the research of potential roadside stabilization (native) turf grasses for the replacement of bahia grass. Both funding sources should be explored to offset site restoration costs.

Topographic Restoration (Inter-Basin Ditch Works) On-Site Hydrology

In order to fulfill the implementation of core element 2. B., "restoration of on-site hydrologic impacts", inter-basin ditch works should be restored to natural or pre-disturbance topography. This will involve filling ditches using adjacent spoil berms, and recontouring to a natural swale grades. The net effect of these actions will have much less a positive gain hydrologically than restoring regional impacts. The following table outlines the ditch restoration protocol established for the Disney Wilderness Preserve Mitigation Wetlands Restoration Project. Specific elements addressing pre-existing cover vegetation removal on spoil berms may not be necessary at this site due to the sparse cover on some spoil berms. A critical element in the following protocol is the removal of vegetation or organics in the ditch bottoms prior to filling. Failure to first remove this material before subsequent filling may lead to significant "hydraulic piping". The most efficient coupling of heavy equipment for ditch filling has proven to be the use of a track-hoe with a D4-5 size bulldozer. Contractors with experience in this type of construction work are available upon request. Specific DWP hydrologic unit site plan examples are also available upon request.

Table 5. Ditch restoration protocol, DWP.

DWP Ditch Restoration Protocol, HU31/32
1. All existing vegetation on ditch spoil berms will be reduced mechanically (bush-hog, tree-cutter, hydro-axe, or clear-more).
2. Sub-surface vegetation will be grubbed with a loader or bulldozer root-rake.
3. All grubbed and chipped/mower mulch material will be raked aside from the ditch bottom alignments and spoil berms.
4. Organics will be removed from ditch bottoms and stored in a similar manner.
5. A track-hoe, bulldozer team will fill ditch alignment to historic grade using spoil berms as fill.
6. Extra fill may be garnered through the construction of low swale ponds along the ditch alignment.
7. Larged stumps, grubbed during vegetative clearing, may be placed in pocked pond basins.
8. Chipping and mowing debris will be scattered, after ditch filling, over disturbed surfaces for soil stabilization.
9. Organic materials, including wetland plant propagules, will be placed and spread in pocket pond basins.
10. All heavy equipment operation will occur only within the ditch and spoil berm footprint (boundaries marked by management staff).
11. Required (regulatory) silt/turbidity screening will be placed in necessary locations, along work project area(s), to minimize downstream wetland impacts.

Oak Scrubs and Xeric Oak Forest

Scrub/Sandhill:

Oak scrubs on the Two Mile Prairie Forest Addition are found interspersed throughout the greater sandhill ecosystem in two basic physical environments. They are found either in along small pockets of topographic relief within the sandhill landscape or adjacent to it in areas along down-slopes leading to more mature successional xeric/mesic oak habitats.

Some of the scrubs on the site are primarily dominated by xeric sclerophyllus oaks, predominantly scrub live oak (Quercus geminata), myrtle oak (Q. myrtifolia), Chapman's oak (Q. chapmanii) and Virginia live oak (Q. virginiana) where as others exhibit a preponderance of mature oaks typical of senescent sandhill. Species such as turkey oak (Q. incana) and post oak (Q. stellata), are also dominate in these habitats. Other species found in sandhill, indicating transition from sandhill to scrub, were sparse relic wiregrasses and bear grass or Adam's needle (Yucca filamentosa). Most of the scrub habitats observed appear to have been previously dominated by sandhill

where as others, typically on whiter sands, exhibit vegetation such as staggerbushes (Lyonia ferruginea) and other species most often found on true scrub sites. Sandpine (Pinus clausa) may or may not be a significant element in any particular scrub on site, but it is commonly found invading sandhill habitats from adjacent scrubs.

All scrubs that were observed, either due to the effect of infrequency of growing season fire or the past repetitive use of dormant season fire coupled with grazing, are well into senescence. Lack of growing season fire in the sandhills, has also led to the expansion of scrub oak habitats and to the widening of xeric oak ecotones separating sandhill communities from various basin wetlands. The immediate reintroduction of growing season fire will have a demonstrative effect on reversing this trend, both in true scrubs and those that are actually successional sandhills. Because of these conditions, prescribed growing season fire is highly recommended. It is important to note that available fine fuels in many of the sandhill habitats adjacent to scrub sites are relatively sparse. It is therefore not recommended that these sites receive fuel reduction dormant season burning prior to the implementation of a growing season program. The existing fuel loading is too sparse and too valuable. All available fine fuel will be required as a critical element to produce the appropriate fire intensity and severity necessary to have a significant ecological effect relative to top-kill of sandhill invasive and scrub system oak vegetation.

Figure 3. Successional scrub ecosystem

Many scrubs are too far into succession to treat exclusively with prescribed fire. These sites will require mechanical treatments followed by prescribed fire. Scrubs in

two stages of successional maturity are shown in Figures 3 and 4. Figure 3 above, represents a fuel structure too far gone for effective fire only treatment. This figure is also representative of a scrub at the threshold where even mechanical treatment is cost effective. Figure 4 represents a scrub that has nearly succeeded to a xeric oak hammock and is an example where restoration treatment is not warranted.

Figure 4. Xeric oak hammock (successional)

Xeric/Mesic Oak Forest, Ecotones and Sandhill

Xeric/mesic oak forest, and associated ecotones separate the majority of wetland habitats found on site from upland sandhill and some scrub communities. The spatial extent of the current oak forest is a function of historic natural wetland "fire shadowing", and ecotonal expansion due to the replacement of natural growing season fire effects with those of grazing and dormant season burning. The dominant species of this habitat type is Virginia live oak, together with a mixture of laurel oak (Q. hemispherica), some water oak (Q. nigra), pignut hickory (Carya glabra) and other oaks and shrub species typical of this system.

Areas dominated by saw palmetto (Serenoa repens) groundcover, particularly those associated with significant cover of remnant wiregrass, indicate ecotonal

expansion of xeric hardwoods into historically sandhill systems. Like scrub ecosystem, restoration of the sites to sandhill will require effective growing season fire, or growing season fire along with mechanical treatments. Where wiregrass and palmetto cover (volatile fine fuel) is too sparse, mechanical will be required. In areas where there is no hope of restoring ground cover through mechanical treatments, no action is recommended.

Mechanical treatment is expensive and time consuming. Scrubs and xeric oak systems with average oak stem diameter greater than 8 - 12 inches are probably too far gone particularly when considering the absence of a strong grass or palmetto component in the ground cover layer. Probability of success contrasted with cost to benefit ratios must also be critically evaluated. It may be more efficient, recognizing the availability of resources, to focus on larger landscapes with less intense treatment needs.

The following treatment focuses on core elements as well as goals, strategies and actions for the restoration of both scrubs and sandhills where xeric oak and scrub vegetation has invaded. It should be emphasized that prescribed growing season fire is the most effective tool for the recycling or rejuvenation of senescent scrubs and the reversal of successional trends in sandhills. Mechanical treatments should only be considered where fire is predicted to be ineffective either by cost or time scale, and where the resources expended for this tool will not bear a heavy burden on the management of the greater landscape.

Scrub/Xeric Oak Forest, Core Restoration/Management Elements:

1. Restoration of near natural landscape fire processes and fire regimes.

2. Reversal of the trends of senescence in historic scrub habitats, the succession of sandhills to xeric oak system and the broadening of xeric oak forest ecotones

Goals strategies and actions are based on the two aforementioned core elements for scrub and xeric oak forest ecotone restoration and management. Following this treatment, protocols and cost analysis for restoration treatment are also presented.

Goal 1: Recreate the natural processes that maintained the spatial extent and ecological health of scrub, sandhill and xeric oak forest ecosystems on the Two Mile Prairie Forest Addition landscape.

Strategy 1: Develop and implement growing season fire program that attempts to mimic the role of natural fire at the community level.

Action 1: Map existing Florida Scrub Jay locations and clan territories. (Appendix F)

Action 2: Develop a prescribed fire plan for implementation of growing season fire program emphasizing appropriate fire regimes including inter-fire intervals for the sandhill, scrub and successional xeric oak community types.

Action 3: Prescribe burn all senescent scrub habitats (indicated by no jay occupation) having no mechanical treatment needs. Maintain on a 12 to 15 year inter-fire interval.

Action 4: Prescribe burn (growing season) all xeric oak forest ecotones that have invaded historic sandhill sites that do not require mechanical treatment. Maintain a 2- 5 year inter-fire interval after first treatment.

Action 5: Prescribe burn (growing season) annually, a mosaic of sandhill burn units as defined by the site fire management plan and annual site evaluations, following an appropriate inter-fire interval of 2 - 5 years

Action 6: Monitor post treatment effects. Adapt strategies based on monitoring results where warranted.

Goal 2: Recycle/rejuvenate senescent scrub habitats and reclaim successional sandhill edges degraded by expansion of xeric oak forest ecotones.

Strategy 1: Develop and implement a mechanical treatment program in concert with the previously mentioned prescribed fire plan for sites where such treatment can provide a reasonable opportunity for success.

Action 1: Inventory and rank all senescent scrubs and sandhill ecotones for mechanical treatment needs.

Action 2: Develop a mechanical treatment based habitat restoration plan incorporating inventory data from Action 1.

Action 3: Mechanically treat using optimum technique and prescribe burn all senescent scrub habitats (indicated by no jay occupation) having no mechanical treatment needs. Maintain a 12 to 15 year inter-fire interval.

Action 4: Mechanically treat using optimum technique and prescribe burn (growing season) all xeric oak forest ecotones that have invaded historic sandhill sites that do not require mechanical treatment. Maintain a 2- 5 year inter-fire interval after first treatment.

Action 5: Monitor post treatment effects. Adapt strategies based on monitoring results where warranted.

Mechanical Treatments Solutions and Operational Protocols

The use of mechanical treatment to reduce woody invasives and reverse successional trends is expensive. Ecosystem maintenance with prescribed fire in the appropriate season is far more cost effective. Costs per acre for different mechanical treatment techniques range substantially based on the size and cost of the contractors equipment and the rate (acres/hr) at which the machinery can operate. Equipment operation efficiency varies significantly relative to site-based characteristics, such as tree size and forest density. The following table lists various mechanical treatment equipment types, operation efficiencies and general costs per acre.

Table 5. Mechanical treatment costs, and operational ranges.

Treatment Type:	Operational Range:	General Cost Per Acre:
Bush-Hog (Medium Mowing)	Zero - 2" diameter	$25.00/acre
Tree-cutting (medium)	2" - 4" diameter	$190.00/acre
Shredding (FMM-225)	2" - 8" diameter	$400.00/acre
*Roller-Chop	2" - 6" diameter	$50.00/acre
Hydro-Axe	4" - 12" diameter	$1,500 - $2,800/acre
Clear-More	8" - any diameter	$2,300 - $2,500/acre

*Roller chopping is least recommended due root tip up soil disturbance

Treatment by-product quality is also a very important consideration when selecting the appropriate treatment tool - particularly when fire is used in conjunction with the treatment. Shredding with an Alamo FMM-225 and the Clear-More produce small (2" - 6") chips of good consistency that burn easily when dry. The by-products from tree-cutting and hydro-axeing are much coarser and do not burn nearly as well as that of shredders under similar moisture conditions.

Summary

The Two Mile Prairie Forest Addition has two habitat systems in need of restoration level management. The most significantly altered ecosystem is the chain of basin marshes in the southeastern quadrant of the forest addition. The ecological integrity of this historically - wetland ecosystem - has most seriously been altered through regional hydrologic impacts ultimately leading to system xerification. Other impacts such as pasturization, introduction of competitive domestic grasses and heavy grazing have led to a vegetative cover dominance significantly different from historic basin marsh and wet prairie wetland vegetation. Partial restoration can be achieved, and will involve restoration of on-site hydrology, removal of competitive exotic cover, and reintroduction of more mesic a native target cover vegetative matrix.

Scrub habitats, particularly those within and adjacent to sandhills are extremely senescent. Restoration of younger sites relative to successional trends, can be achieved exclusively with prescribed fire treatment. Older sites will require mechanical treatments and prescribed fire. Sandhill adjacent to xeric oak forest ecotones are also senescing due to lack of periodic growing season fire. These sites should receive similar restoration treatments as senescent scrubs (either fire only or mechanical and fire) but should have a shorter inter-fire interval of prescribed growing fire after the initial restoration treatment.

BIBLIOGRAPHY

Two Mile Prairie

Restoration/Management Recommendations

1. Anonymous, 1996. The Disney Wilderness Preserve, HU-12 Mechanical Restoration Cost Analysis. 4pp.

2. Anonymous, 1996. The Disney Wilderness Preserve, HU-31/32 Restoration Project Site Plan. 10pp.

3. Anonymous, 1996. The Disney Wilderness Preserve, Brensola Oaks (HU-41) Restoration Project Site Plan. 4pp.

4. Anonymous, 1994. LAAC/FNAI Jordan Ranch Project Assessment. 12pp.

5. Anonymous, 1994. LAAC/FNAI Jordan Ranch Design Assessment. 7pp.

6. Anonymous, 1990. DNR/FNAI Guide to The Natural Communities of Florida. 111pp.

7. Stout, I. J. and M. Leonard, 1997. Xeric Upland Monitoring of the Disney Wilderness Preserve: Status of The Florida Scrub Jay (Aphelocoma coerulescens). 25pp.

8. Wertschnig, E., et al. 1996. Upland Restoration Plan, The Disney Wilderness Preserve: Conceptual Plan and Assessment of Pasture Restoration Sites. 105pp.

LIST OF APPENDICES

The Nature Conservancy®

rida Chapter

December 4, 1997

Winnie Schreiber
Resource Administrator
Florida Department of Forestry
15019 Broad Street
Brooksville, FL 34601

Dear Ms. Schreiber:

It was good speaking with you Monday regarding the implementation of our habitat restoration and management recommendations project for the Jordan Ranch site. As we discussed, Wilbur Priest and I toured the site together and agree that our best service to you would be informal restoration and management recommendations for the xeric oak and prairie lake habitats. These recommendations would be based primarily on field habitat evaluations and GIS mapping.

I understand that your management plan completion deadline has been moved up from July 31, 1998 to January 31, 1998, and that time is critical. To assist with your planning, and this aggressive time frame, we will attempt to deliver the following to you by January 14, 1998:

Deliverables:

1. Restoration and management recommendations - scrub and xeric oak habitats
2. Restoration and management recommendations - seasonal prairie lake habitats
3. Plant community map (Flucs Level III, GIS based)
4. Aerial Boundary Map(s)
5. Xeric oak systems map
6. Prairie lakes systems map
7. Ditchwork alignment map
8. Road network map
9. Scrub Jay location map

In order to complete the above, we will need to get our GPS technician on site for 1 - 2 days and schedule a site visit with our grassland restoration specialist and a SWFWMD hydrology expert.

Again, we appreciate the opportunity to work with your and your team on this project. Please call if there are any questions or concerns.

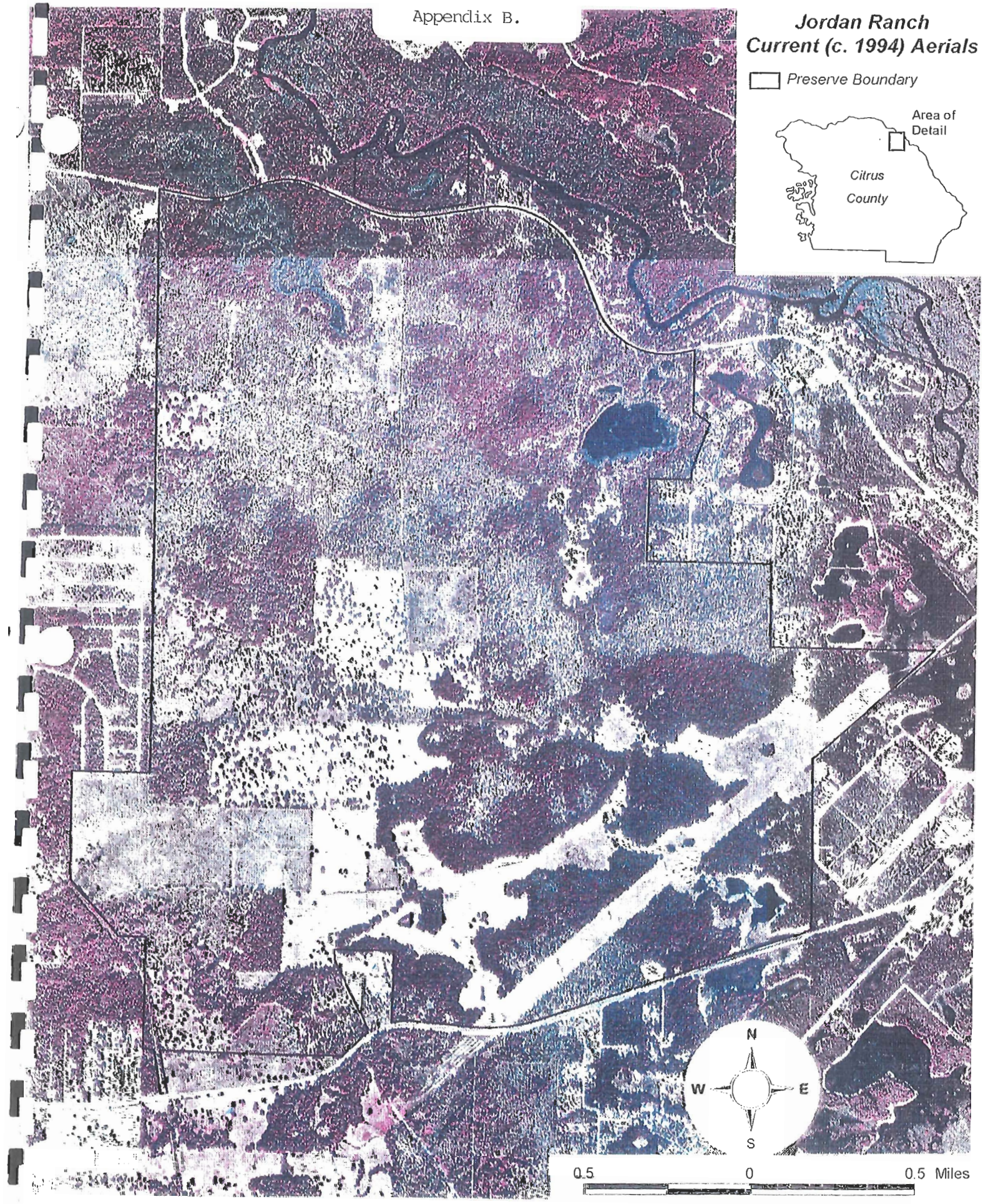
Sincerely,

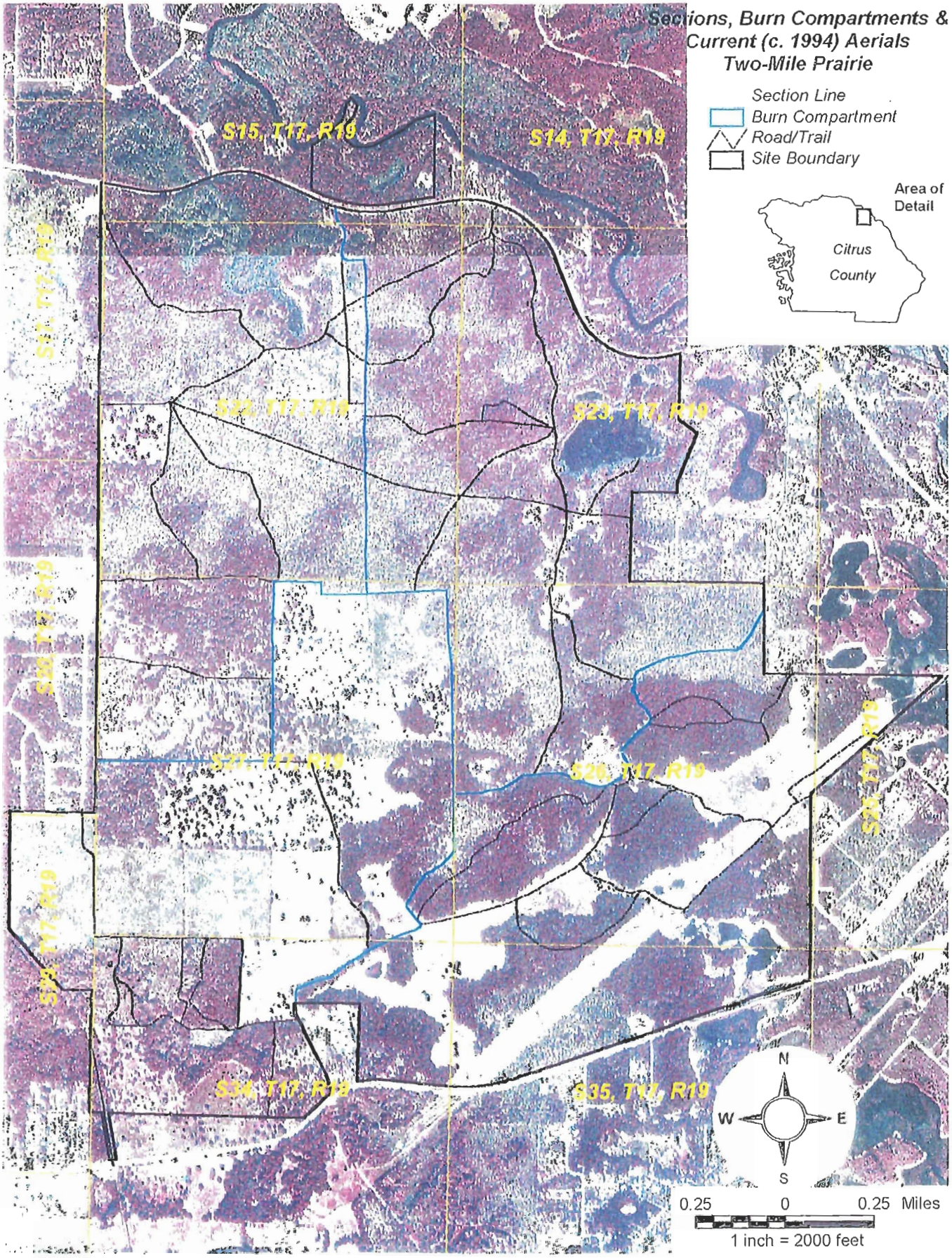
Walter M. Thomson

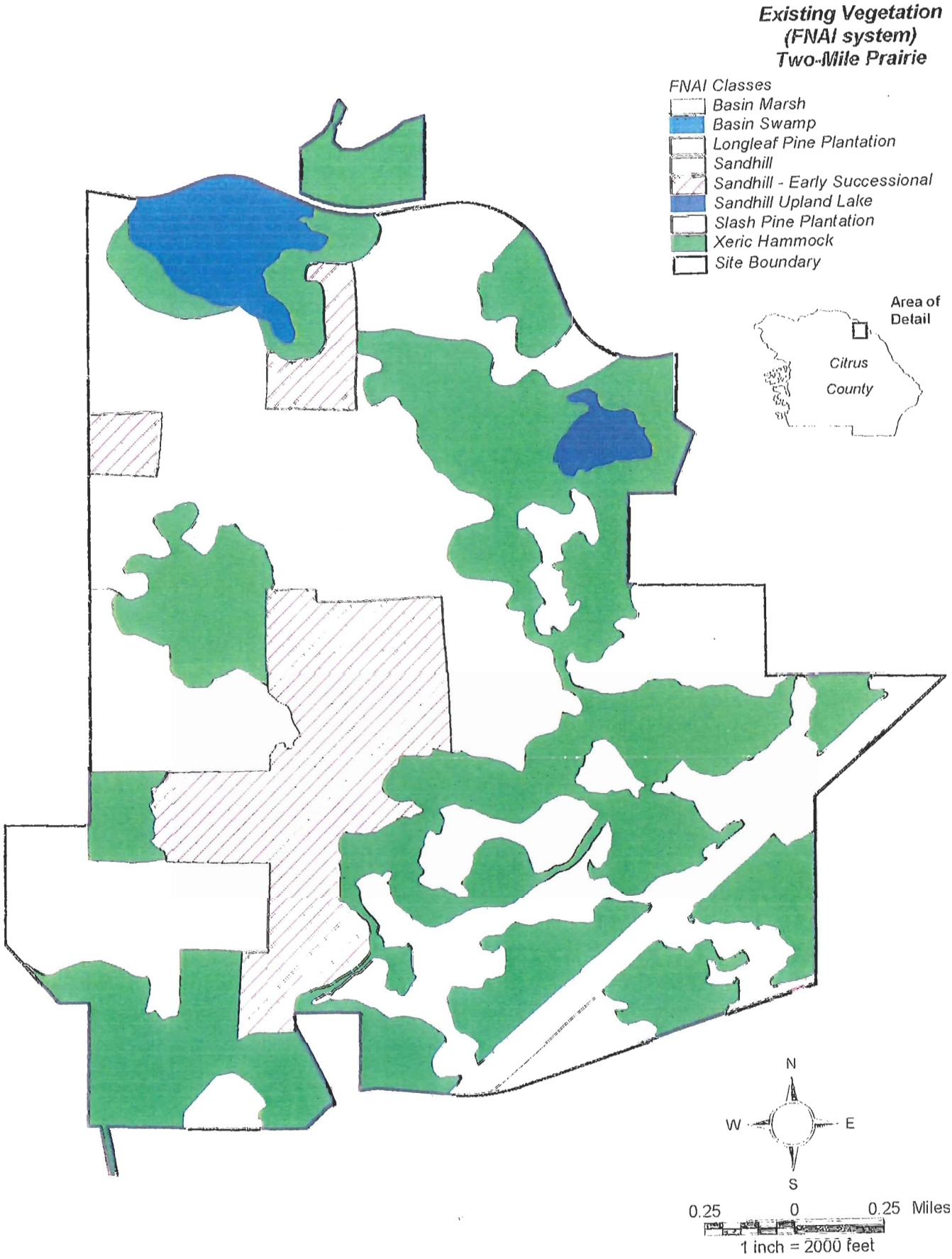
Walter Thomson
Assistant Director of Stewardship

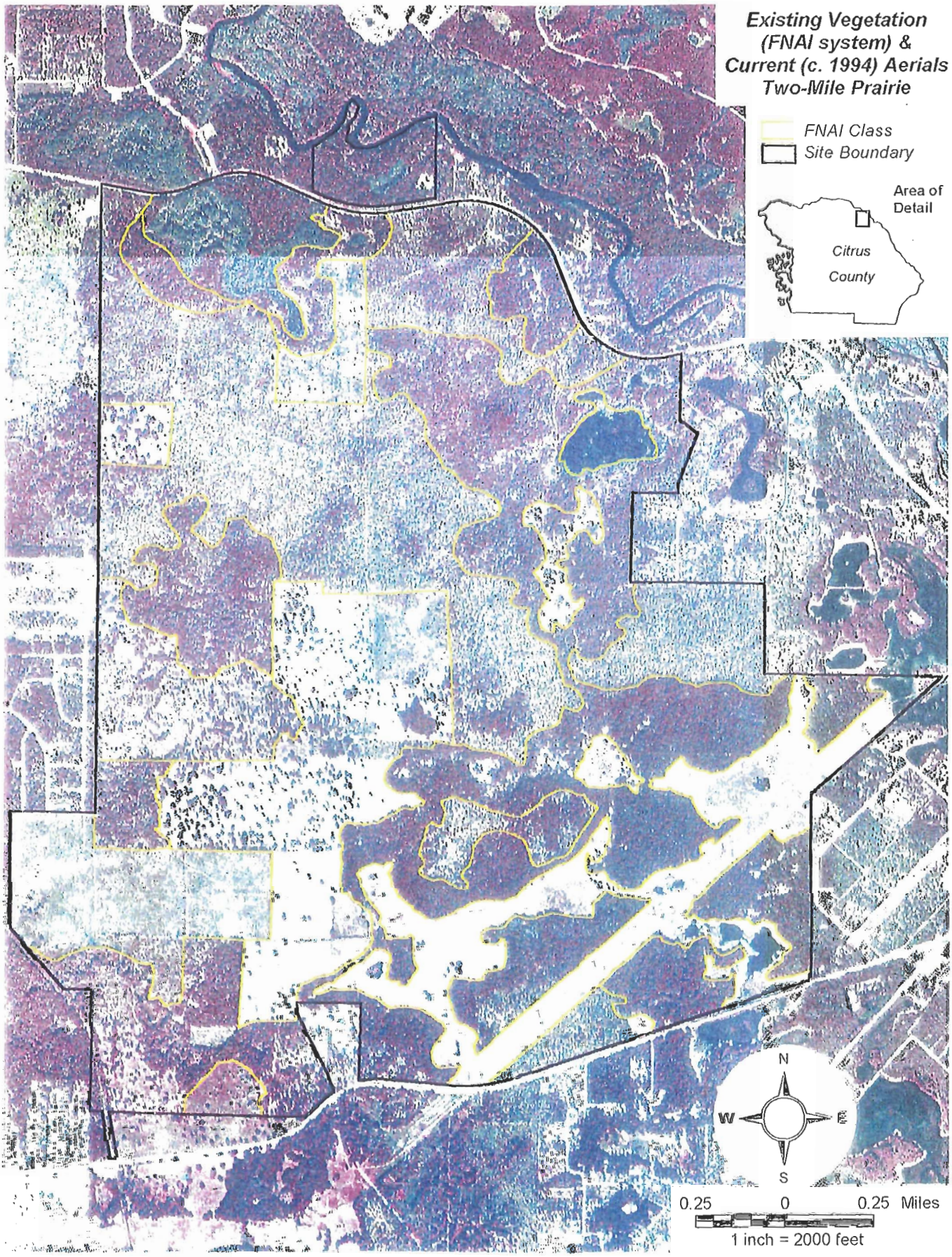
222 S. Westmonte Drive, Suite 300 • Altamonte Springs, Florida 32714 • 407 682-3664 • FAX 407 682-3077

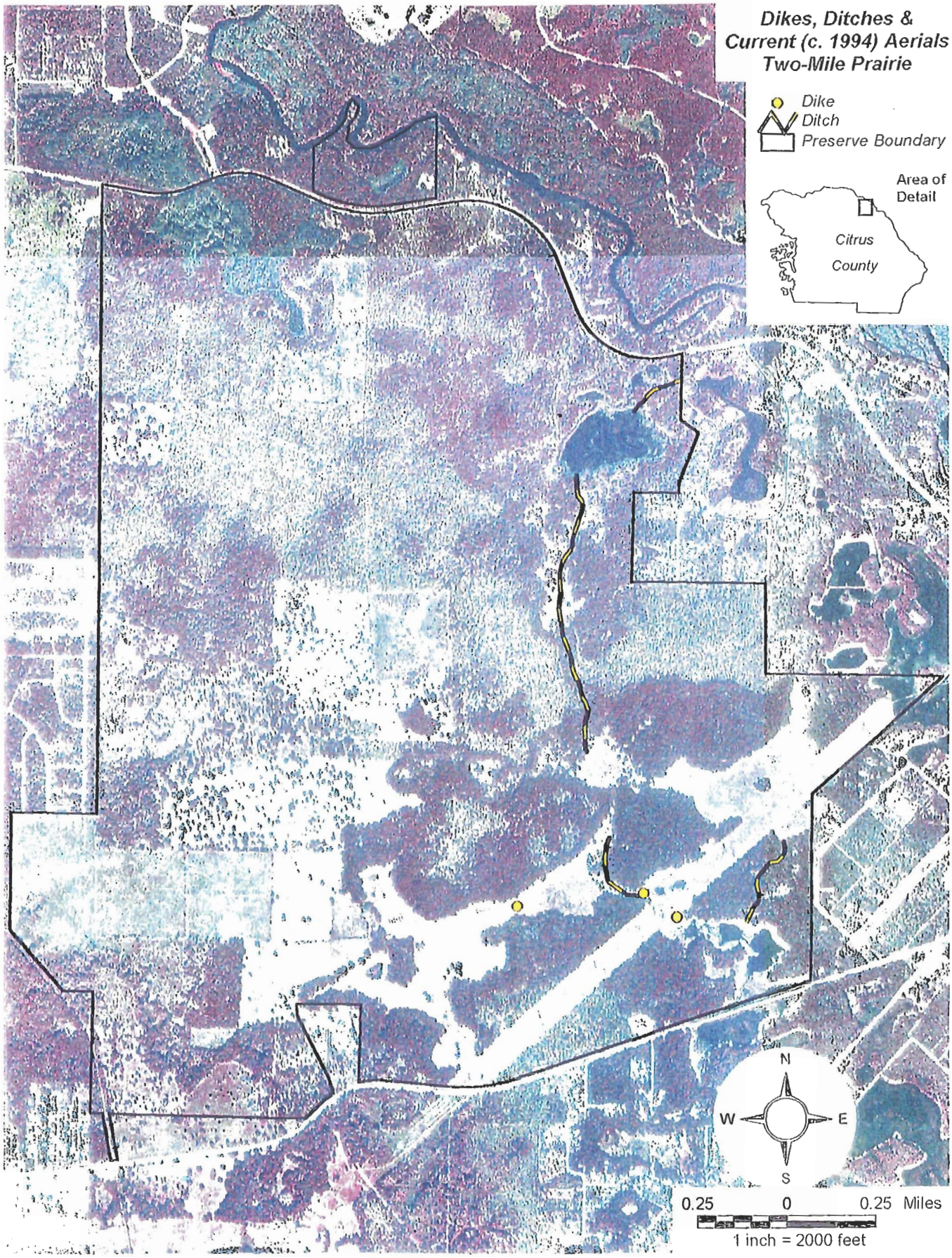
Appendix B.

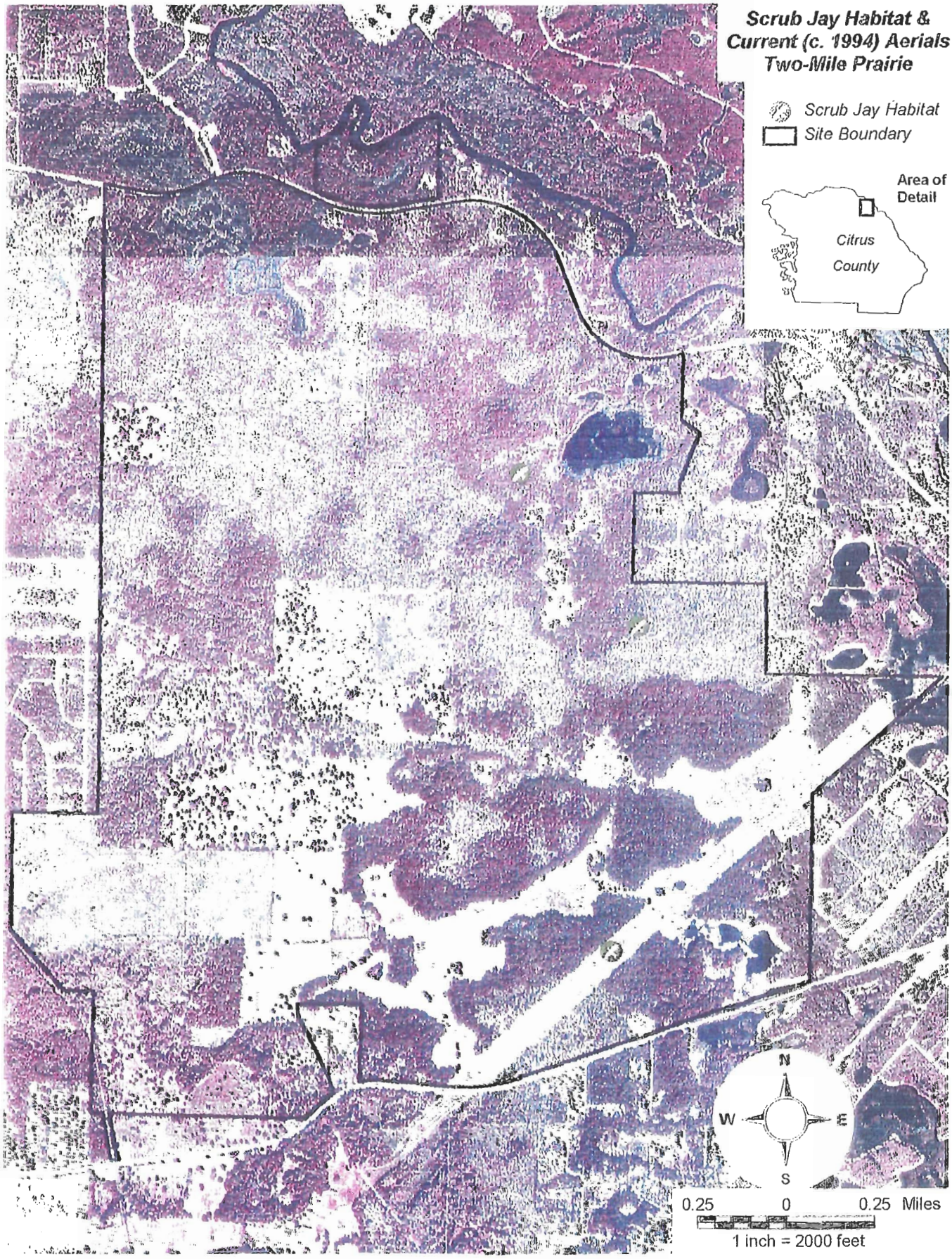

Jordan Ranch
Current (c. 1994) Aerials
Preserve Boundary
Area of Detail
Citrus County
N
W
E
S
0.5
0
0.5 Miles


Sections, Burn Compartments & Current (c. 1994) Aerials
Two-Mile Prairie
Section Line
Burn Compartment
Road/Trail
Site Boundary
Area of Detail
Citrus County
S15, T17, R19
S14, T17, R19
S22, T17, R19
S23, T17, R19
S27, T17, R19
S26, T17, R19
S34, T17, R19
S35, T17, R19
N
W
E
S
0.25 0 0.25 Miles
1 inch = 2000 feet


Existing Vegetation
(FNAI system)
Two-Mile Prairie
FNAI Classes
Basin Marsh
Basin Swamp
Longleaf Pine Plantation
Sandhill
Sandhill - Early Successional
Sandhill Upland Lake
Slash Pine Plantation
Xeric Hammock
Site Boundary
Area of Detail
Citrus County
N
W
E
S
0.25 0 0.25 Miles
1 inch = 2000 feet


Existing Vegetation
(FNAI system) &
Current (c. 1994) Aerials
Two-Mile Prairie
FNAI Class
Site Boundary
Area of
Detail
Citrus
County
N
W
E
S
0.25 0 0.25 Miles
1 inch = 2000 feet


Dikes, Ditches &
Current (c. 1994) Aerials
Two-Mile Prairie
Dike
Ditch
Preserve Boundary
Area of
Detail
Citrus
County
N
W
E
S
0.25
0
0.25 Miles
1 inch = 2000 feet


Scrub Jay Habitat &
Current (c. 1994) Aerials
Two-Mile Prairie
Scrub Jay Habitat
Site Boundary
Area of
Detail
Citrus
County
N
W
E
S
0.25 0 0.25 Miles
1 inch = 2000 feet

APPENDIX G

FLORIDA NATURAL AREAS INVENTORY
Community Descriptions

Sandhill - (synonyms: longleaf pine - turkey oak, longleaf pine - xerophytic oak, longleaf pine - deciduous oak, high pine). Sandhills are characterized as a forest of widely spaced pine trees with a sparse understory of deciduous oaks and a fairly dense ground cover of grasses and herbs on rolling hills of sand. The most typical associations are dominate by longleaf pine, turkey oak, and wiregrass. Other typical plants include bluejack oak, sand post oak, sparkleberry, persimmon, winged sumac, pinewoods dropseed, Indian grass, wild buckwheat, queen's delight, yellow foxglove, bracken fern, runner oak, goats rue, partridge pea, milk pea, dollarweeds, wild indigo, gopher apple, and golden-aster. Typical animals include tiger salamander, barking treefrog, spadefoot toad, gopher frog, gopher tortoise, worm lizard, fence lizard, mole skink, indigo snake, coachwhip snake, pine snake, short-tailed snake, crowned snake, eastern diamondback rattlesnake, bobwhite, ground dove, red-headed woodpecker, rufous-sided towhee, fox squirrel and pocket gopher.

Sandhills occur on hilltops and slops of gently rolling hills. Their soils are composed of deep, marine-deposited, yellowish sands that are well-drained and relatively sterile. The easily leached soil nutrients are brought back to the surface by the burrowing habits of some sandhill animals. Sandhills are important aquifer recharge areas because the porous sands allow water to move rapidly through with little runoff and minimal evaporation. The deep sandy soils help create a xeric environment that is accentuated by the scattered overstory, which allows more sunlight to penetrate and warm the ground. The absence of a closed canopy also allows Sandhills to cool more rapidly at night and to retain less air moisture. Thus, temperature and humidity fluctuations are generally greater in Sandhills than in nearby closed canopy forests.

Fire is a dominant factor in the ecology of this community. Sandhills are a fire climax community, being dependent on frequent ground fires to reduce hardwood competition and to perpetuate pines and grasses. The natural fire frequency appears to be every 2 to 5 years. Without frequent fires, Sandhills may eventually succeed to Xeric Hammock. Unburned or cutover Sandhill may dominated by turkey oak.

Sandhills are often association with and grade into Scrub, Scrubby Flatwoods, Mesic Flatwoods, Upland Pine Forest, or Xeric Hammock. Sandhills were widespread throughout the Coastal Plain, but most have been degraded by timbering, overgrazing, plowing, fire exclusion, and other disturbances. Much of Florida's Sandhill communities have been converted to citrus groves, pastures, pine plantations, or residential and commercial developments. Thus, the importance of properly managing the remaining tracts is accentuated.

Scrub - (synonyms: sand pine scrub, Florida scrub, sand scrub, rosemary scrub, oak scrub). Scrub occurs in many forms, but is often characterized as a closed to open canopy forest of sand pines with dense clumps or vast thickets of scrub oaks and other shrubs dominating the understory. The ground cover is generally very sparse, being dominated by ground lichens, or rarely, herbs. Open patches of barren sand are common. Where the overstory of sand pines is widely scattered or absent altogether, the understory and barren sands are exposed to more intense sunlight. Typical plants include sand pine, sand live oak, myrtle oak, Chapman's oak, scrub oak, saw palmetto, rosemary, rusty lyonia, ground lichens, scrub hickory, scrub palmetto, hog plum, silk bay, beak rush, milk peas, and stagger bush. Typical animals include red widow spider, scrub wolf spider, oak toad, Florida scrub lizard, blue-tailed mole skin, sand skink, six-lined racerunner, coachwhip, ground dove, scrub jay, loggerhead shrike, yellow-rumped warbler, rufous-sided towhee, Florida mouse, and spotted skunk. Scrubs of the Lake Wales Ridge are notable for the large number of narrowly endemic plants and animals that occur in them.

Scrub occurs on sand ridges along former shorelines. Some of the sand ridges originated as wind-deposited dunes, others as wave-washed sand bars. Some Scrub soils are composed of well-washed, deep sands that are brilliant white at the surface; some Scrubs occur on yellow sands. The loose sands drain rapidly, creating very xeric conditions for which the plants appear to have evolved several water conservation strategies.

Scrub is essentially a fire maintained community. Ground vegetation is extremely sparse and leaf fall is minimal, thus reducing the chance of frequent ground fires. As the sand pines mature, however, they retain most of their branches and build up large fuel supplies in their crowns. When a fire does occur, this fuel supply, in combination with the resinous needles and high stand density, ensures a hot, fast burning fire. Such fires allow for the regeneration of the Scrub community which might otherwise succeed to Xeric Hammock. The minerals in the vegetation are deposited on the bare sand as ashes, and the heat of the fire generally facilitates the release of pine seeds. As discerned from the life histories of the dominant plants, scrub probably burns catastrophically once every 20 to 80 years or longer.

Scrub is associated with and often grades into Sandhill, Scrubby Flatwoods, Coastal Strand, and Xeric Hammock. Some Xeric Hammocks are advanced successional stages of Scrub, making intermediate stages difficult to classify. Scrub occurs almost exclusively in Florida, although coastal shrubs extend into adjacent Alabama and Georgia.

Because Scrub occurs on high ground and is not an aesthetically pleasing habitat, at least to the uninitiated, this ecosystem and is many endangered and threatened species are rapidly being lost to development. Scrub is also readily damaged by off-road vehicle traffic or even foot traffic, which destroys the delicate ground cover and allows the loose sand to erode. Ground lichens may require 50 years or more to recover.

Xeric Hammock - (synonyms : xeric forest, sand hammock, live oak forest, oak woodland, oak hammock). Xeric hammock is characterized as either a scrubby, dense, low canopy forest with little understory other than palmetto, or a multi-storied forest of tall trees with an open or closed canopy. Several gradations between these extremes exist. Typical plants include live oak, sand live oak, laurel oak, turkey oak, blackjack oak, red oak, sand post oak, staggerbush, saw palmetto, sparkleberry, pignut hickory, southern magnolia, redbay, American holly, wild olive, black cherry, fox grape, beautyberry, bluejack oak, Chapman's oak, persimmon, and yaupon. Typical animals include barking treefrog, spadefoot toad, gopher tortoise, worm lizard, fence lizard, black racer, red rat snake, hognose snake, crowned snake, screech-owl, turkey, blue jay, eastern mole, gray squirrel, and eastern flying squirrel.

Xeric Hammock is an advanced successional stage of Scrub or Sandhill. The variation in vegetation structure is predominantly due to the original community from which it developed. In all cases, however, the soils consist primarily of deep, excessively-drained sands that were derived from old dune systems. The sparsity of herbs and the relatively incombustible oak litter preclude most fires from invading Xeric Hammock. When fire does occur, it is nearly always catastrophic and may revert Xeric Hammock into another community type. Xeric Hammock only develops on sites that have been protected from fire for 30 or more years.

Xeric Hammocks are often associated with and grade into Scrub, Sandhill, Upland Mixed Forest or Slope Forest. The species composition of Xeric Hammock is also often similar to Prairie Hammock and Maritime Hammock. Xeric Hammock is often considered the climax community on sandy uplands.

Xeric Hammock occurs generally as isolated patches that rarely cover extensive areas. Mature examples are rare, and scrub derived types have always been scarce. Because of its general location on high ground with big trees, Xeric Hammock is prime residential property, especially when near the coast. Remaining tracts of Xeric Hammock require protection from fire and development.

Upland Hardwood Forest and Upland Mixed Forest - (synonyms: mesic hammock, climax hardwoods, upland hardwoods, beech-magnolia climax, oak-magnolia climax, pine-oak-hickory association, southern mixed hardwoods, clay hills hammocks, Piedmont forest). Upland Hardwood Forests and Upland Mixed Forests are characterized as well-developed, closed-canopy forests of upland hardwoods on rolling hills. These communities have quite similar physical environments and share many species, including southern magnolia, pignut hickory, sweetgum, Florida maple, devil's walking stick, American hornbeam, redbud, flowering dogwood, Carolina holly, American holly, eastern hophornbeam, spruce pine, loblolly pine, live oak, and swamp chestnut oak, among others. The primary difference between these communities is that Upland Mixed Forests generally lack shortleaf pine, American beech and other more northern species that typically occur in Upland Hardwood Forests. This is predominantly a result of minor climatic differences, Upland Hardwood Forests being most common northern panhandle Florida, and Upland Mixed Forests being most common in northern and central peninsula Florida. Other typical plants include gum bumelia, hackberry, persimmon, red cedar, red mulberry, wild olive, redbay, laurel cherry, black cherry, bluff oak, water oak, cabbage palm, basswood, winged elm, Florida elm, sparkleberry, Hercules' club, slippery elm, beautyberry, partridgeberry, sarsaparilla vine, greenbrier, trilliums, beech drops, passion flower, bedstraw, strawberry bush, silverbell, caric sedges, fringe tree, horse sugar, white oak, and blackgum. Typical animals include slimy salamander, Cope's gray treefrog, bronze frog, box turtle, eastern glass lizard, green anole, broadhead skink, ground skink, red-bellied snake, gray rate snake, rough green snake, coral snake, woodcock, barred owl, pileated woodpecker, shrews, eastern mole, gray squirrel, wood rat, cotton mouse, gray fox, and white-tailed deer.

Upland Hardwood and Mixed Forests occur on rolling hills that often have limestone of phosphatic rock near the surface and occasionally as outcrops. Soils are generally sandy-clays or clayey sand with substantial organic and often calcareous components. The topography and clayey soils increase surface water runoff, although this is counterbalanced by the moister retention properties of clays and by the often thick layer of leaf mulch which helps conserve soil moisture and create decidedly mesic conditions. Furthermore, the canopy is densely closed, except during winter in areas where deciduous trees predominate. Thus, air movement and light penetration are generally low, making the humidity high and relatively constant. Because of these conditions Upland Hardwood and Mixed Forests rarely burn.

Upland Hardwood Forests and Upland Mixed Forests are climax communities for their respective geographic locations. They are often associated with and grade into Upland Pine Forest, Slope Forest or Xeric Hammock. Occasionally, Upland Mixed Forests may also grade into Maritime Hammock or Prairie Hammock. During early states of succession, Upland Hardwood and mixed Forest may be difficult to distinguish from Upland Pine Forests that have not been burned for several years. Disturbed sites may require hundreds of years to reach full development with species compositions representative of climax conditions.

Silvicultural, agricultural, industrial, and residential developments have already eliminated the vast bulk of these communities. These activities are continuing at an accelerated pace in many areas, such that the few remnant mature examples are in urgent need of protection and proper management.

Upland Pine Forest - (synonyms: longleaf pine upland forest, loblolly-shortleaf upland forest, clay hills, high pineland). Upland Pine Forest is characterized as a rolling forest of widely spaced pines with few understory shrubs and a dense ground cover of grasses and herbs. Pristine areas are dominated by longleaf pine and wiregrass, while areas that suffered agricultural disturbances are dominated generally by shortleaf and loblolly pines and old field grasses and herbs. Other typical plants include southern red oak, runner oak, bluejack oak, post oak, sassafras, black cherry, gallberry, persimmon, mockernut hickory, twinflower, huckleberry, dangleberry, goldenrod, Indian grass, partridge pea, goats rue, winged sumac, blueberry, dog fennel, snakeroot, golden-aster, yellow jessamine, broomsedge, asters, pencil flower, bracken fern, greenbrier, fox grape, flowering dogwood, sweetgum, and blackgum. Typical animals include gopher tortoise, eastern fence lizard, eastern diamondback rattlesnake, bobwhite, red-bellied woodpecker, fox squirrel, cotton rate, cotton mouse, gray fox, bobcat, and white-tailed deer.

Upland Pine Forest occurs on the rolling hills of extreme northern Florida. The soils are composed of sand with variable, sometimes substantial, amounts of Miocene clays. The resultant prevalence of clays helps retain soil moisture, creating more mesic conditions than originally would have occurred. Thus, many plants which previously were restricted to valleys and other low areas may not inhabit the Upland Pine Forests.

Fire is a dominant fact in the ecology of this community because it reduces hardwood encroachment and facilitates pine and wiregrass reproduction. Without relatively frequent fires, Upland Pine Forest succeeds to Upland Mixed Forest and eventually to Upland Hardwood Forest. The natural fire frequency appears to be every 3 to 5 years. More frequent fires would likely eliminate pine recruitment, especially when loblolly and shortleaf pines are dominate species.

Upland Pine Forest is a fire climax community that is associated with and often grades into Upland Mixed Forest or Upland Hardwood forest. Gradations between these communities are frequently so subtle that distinctions are usually arbitrary. Upland Pine Forest is often confused with Sandhill. The primary differences between them reside in their soil characteristics and some species of plants and animals.

Upland Pine Forests have been substantially degraded throughout their range. The sandy clay soils were prime agricultural lands for plantations as well as for American Indian. Thus, the longleaf pines were logged, the soil was turned, and the wiregrass disappeared. Only isolated tracts of the original longleaf pine-wiregrass association remain, the bulk being replaced by loblolly-shortleaf pine associations. Much of the latter has further succeeded to Upland Mixed or Hardwood Forest because of fire exclusion. The restoration of Upland Pine Forest to its original condition is impeded by the current inability to propagate wiregrass where it has been extirpated.

Scrubby Flatwoods - (synonyms: xeric flatwoods, dry flatwoods). Scrubby Flatwoods are characterized as an open canopy forest of widely scattered pine trees with a sparse shrubby understory and numerous areas of barren white sand. The vegetation is a combination of Scrub and Mesic Flatwoods species; Scrubby Flatwoods often occupy broad transitions or ecotones between these communities. Typical plants include longleaf pine, slash pine, sand live oak, Chapman's oak, myrtle oak, scrub oak, saw palmetto, staggerbush, wiregrass, dwarf blueberry, gopher apple, rusty lyonia, tarflower, golden-aster, lichens, silkbay, garberia, huckleberry, goldenrod, runner oak, pinweeds, and frostweed.

Scrubby Flatwoods generally occur intermingled with Mesic Flatwoods along slightly elevated relictual sandbars and dunes. The white sandy soil is several feet deep and drains rapidly. However, the water table is unlikely to be very deep. Scrubby Flatwoods normally do not flood even under extremely wet conditions. Temperatures and humidities of air and soil in Scrubby Flatwoods fluctuate substantially more than in most other communities because the scattered overstory, sparse understory, and barren sands of Scrubby Flatwoods do not ameliorate daily and seasonal changes very well.

Although the elevated, deeper sandy siols of Scrubby Flatwoods engender a drier environment than the surrounding mesic flatwoods, the general sparsity of ground vegetation and the greater proportion of relatively incombustible scrub-oak leaf litter reduces the frequency of naturally occurring fires. Only after a long absence of fire and during periods of drought does the leaf litter become sufficiently combustible and concentrated enough to support an ecological burn. Several species of plants in Scrubby Flatwoods are typical scrub plants which endure only when long intervals between fire occur. Thus a periodicity of approximately 8 to 25 years between fires appears to be natural for this community.

Scrubby Flatwoods are associated with and often grade into Mesic Flatwoods, Scrub, Dry Prairie or Sandhills. This community is essentially a Mesic Flatwoods with a Scrub understory.

Floodplain Forest - (synonyms: bottomland hardwoods, seasonally flooded basins or flats, oak-gum-cypress, elm-ash-cottonwood, second bottom, levee forest, river terrace, river ridge). Floodplain Forests are hardwood forests that occur on drier soils at slight elevations within floodplains, such as on levees, ridges and terraces, and are usually flooded for a portion of the growing season. Floodplain Forests are largely restricted to the alluvial rivers of the panhandle. The dominant trees are generally mixed mesophitic hardwoods, such as overcup oak, water hickory, diamond-leaf oak and swamp chestnut oak. The understory may be open and parklike or dense and nearly impenetrable. Other typical plants include bluestem palmetto, willow oak, green ash, Florida elm, sweetgum, hackberry, water oak, American hornbeam, tulip poplar, coastal plain willow, black willow, eastern cottonwood, swamp cottonwood, river birch, red maple, silver maple, box elder, American sycamore catalpa, sweetbay magnolia, hawthorn swamp azalea., pink azalea, gulf sebastiana, lanceleaf greenbrier, poison ivy, peppervine, rattanvine, indigo bush, white grass, plum grass, redtop panicum, caric sedges, silverbells, crossvine, American wisteria and wood grass.

Floodplain Forests harbor a diverse array of animals including both temporary residents and permanent residents. Typical animals include marbled salamander, mole salamander, two-toed amphiuma, Alabama waterdog, Southern dusky salamander, two-lined salamander, three-lined salamander, dwarf salamander, slimy salamander, rusty mud salamander, sirens, southern toad, cricket frog, bird-voiced treefrog, gray treefrog, bullfrog, river frog, Southern leopard frog, alligator, river cooter, stinkpot, Southeastern five-lined skink, broadhead skink, mud snake, rainbow snake, redbelly watersnake, brown water snake, glossy crayfish snake, black swamp snake, cottonmouth, yellow-crowned night-heron, wood duck, Mississippi kite, swallowtail kite, pileated woodpecker, Acadian flycatcher, Carolina wren, veery, white-eyed Swainson's warbler, hooded warbler, cardinal, twohee, opossum, southeastern shrew, short-tailed shrew, beaver, wood rats, rice rats, cotton mouse, golden mouse, bear, and raccoon.

Soils of Floodplain Forests are variable mixtures of sand, organics, and alluvials, which are often distinctly layered. Hydroperiod is the primary physical feature of Floodplain Forests, which are inundated by flood waters nearly every year for 2 to 50% of the growing season. The organic material accumulating on the Floodplain Forests floor is picked up during floods and redistributed in the floodplain or is washed downriver to provide a critical source of minerals and nutrients for downstream ecosystems, in particular estuarine systems. These floods also replenish soil minerals through deposition on the floodplain. Floodplain Forests usually do not have standing water in the dry season.

Floodplain Forests are often associated with and grade into Floodplain Swamp, Bottomland Forest, Baygall, or Slope Forest. The species composition is frequently similar to that of Hydric Hammock and Bottomland Forest communities.

The maintenance of natural hydrologic regimes is critical to the health of Floodplain Forests and to the downstream systems with which they are connected. Species composition and the functional relationships throughout a river system are negatively impacted by hydrological alterations such as artificial impoundments, river diversion projects, pesticide use, forest clearcutting, or intensive agriculture.

Basin Swamp - (synonyms: gum swamp, bay, bayhead swamp). Basin Swamp is generally characterized as a relatively large and irregularly shaped basin that is not associated with rivers, but is vegetated with hydrophytic trees and shrubs that can withstand an extended hydroperiod. Dominant plants include blackgum, cypress, and slash pine. Other typical plants include red maple, swamp redbay, sweetbay magnolia, loblolly bay, Virginia willow, fetterbush, laurel greenbrier, Spanish moss, wax myrtle, titi, sphagnum moss, and buttonbush. Typical animals include southern dusky salamander, cricket frog, little grass frog, chicken turtle, striped mud turtle, ringneck snake, scarlet kingsnake, crayfish snake, cottonmouth, wood duck, hawks, turkey, great horned owl, barred owl, pileated woodpecker, songbirds, gray squirrel, black bear, raccoon, mink, river otter, bobcat, and white-tailed deer.

Soils in Basin Swamps are generally acidic, nutrient poor peats, often overlying a clay lens or other impervious layer. The resulting perched water table may act as a reservoir releasing groundwater as adjacent upland water tables drop during drought periods. The typical hydroperiod is approximately 200-300 days. Basin Swamps are thought to have developed in oxbows of former rivers or in ancient coastal swales and lagoons that existed during higher sea levels.

Infrequent fire is essential for the maintenance of cypress dominated Basin Swamps. Blackgum and hardwood dominated Basin Swamps burn less often, while pine dominated Basin Swamps burn more frequently . Without fire, hardwood invasion and peat accumulation will eventually create a Bottomland Forest or Bog. Typical fire intervals in Basin Swamps may be anywhere from 5 to 150 years. Cypress and pines are very tolerant of light surface fires, but muck fires burning into the peat can kill the trees, lower the ground surface, and transform a swamp into a pond or lake.

Small Basin Swamps may be difficult to distinguish from large Dome Swamps. Basin Swamps are often associated with and may grade into Wet Flatwoods, Hydric Hammock, or Bottomland Forest. The species composition of Basin Swamps frequently overlaps with Floodplain Swamp, Strand Swamp, and Baygall.

Like other wetland communities, normal hydroperiods must be maintained in Basin Swamps. If water levels must be artificially manipulated, somewhat deeper than normal water is not likely to do much harm, but extended hydroperiods will limit tree growth and prevent reproduction. Shortened hydroperiods will permit invasion of mesophytic species and change the character of the understory or will allow a devastating fire to enter which would drastically alter the community. Occasional fire are necessary to maintain the cypress and pine components.

Basin Swamps are unsuitable for construction because of their extended hydroperiods and peaty soils. Most have been degraded by timber harvests, and many have been drained or polluted. Thus, very few pristine examples of Basin Swamps communities exist. Those that remain should be adequately protected and properly managed.

Depression Marsh - (synonyms - isolated wetland, flatwoods pond, St. John's wort pond, pineland depression, ephemeral pond, seasonal marsh). Depression Marsh is characterized as a shallow, usually rounded depression in sand substrate with herbaceous vegetation often in concentric bands. Depression Marshes are similar in vegetation and physical features to, but are generally smaller than, Basin Marshes. Typical plants include St. John's wort, spikerush, yellow-eyed grass, chain fern, willows, maidencane, wax myrtle, swamp primrose, bloodroot, buttonbush, fire flag, pickerelweed, arrowheads, and bladderwort.

Larger and more permanent Depression Marshes may have many of the same plants and animal listed as typical of Basin Marshes. However, because of their isolation and small size, many Depression Marshes support a very different assemblage of species than that found in larger, more permanent wetlands. Depression Marshes are considered extremely important in providing breeding or foraging habitat for such species as the flatwoods salamander, mole salamander, tiger salamander, dwarf salamander, striped newt, oak toad, cricket frog, pinewoods treefrog, barking treefrog, squirrel treefrog, little grass frog, southern chorus frog, ornate chorus frog, narrowmouth toad, eastern spadefoot toad, gopher frog, white ibis, wood stork and sandhill crane. Depression Marshes occurring as isolated wetlands within larger upland ecosystems are of critical importance to many additional wetland and upland animals.

Depression Marshes are typical of karst regions where sand has slumped around or over a sinkhole and thereby created a conical depression subsequently filled by direct rain fall, runoff, or seepage from surrounding uplands. The substrate is usually acid sand with deepening peat toward the center. Some depressions may have developed or be maintained by a subsurface hardpan. Hydrological conditions vary, with most Depression Marshes drying in most years. Hydroperiods range widely from as few as 50 days or less to more than 200 days per year.

Fire is important to maintaining this community type by restricting invasion of shrubs and trees and the formation of peat. Fire frequency is often greatest around the periphery of the marsh and least toward the center. A severe peat fire can lower the ground surface and create a pond at the center of the marsh.

Depression Marshes are often associated with and grade into Wet Prairie, Seepage Slope, Wet Flatwoods, Mesic Flatwoods, Dome Swamp or Bog. They also may occur in association with various types of lakes, such as Sandhill Lake or Flatwoods Lake.

Depression Marshes are threatened by drainage, agriculture, pollution, fire suppression, and invasion of exotic species. Depression Marshes may be filled and converted to other uses. A regional lowering of the water table as a result of overuse may eliminate many Depression Marshes. Depression Marshes on some public lands have been deepened by explosives to allow for stocking with game fish. By preying upon the eggs and larvae of frogs and salamanders, these fish may eliminate the amphibians that depend on such seasonal wetlands for successional reproduction. Likewise, many species of invertebrates not adapted to predation by fishes may be eliminated.

Source: Guide to the Natural Communities of Florida, Florida Natural Areas Inventory and Florida Department of Natural Resources, 1990

APPENDIX H

Suggested Plant Species List for Marsh Basin Restoration

Grasses & Forbs

A. glomeratus var. hirsutior	Bushybeard bluestem
A. glomeratus var. hirsutior	Bushybeard bluestem
A. virginicus var. virginicus	Broomsedge bluestem
A. virginicus var. glaucus	Broomsedge bluestem
A. gyrans var. gyrans	none
Andropogon perangustatus	none
Andropogon tenarius	none
Andropogon capillipes	Chalky bluestem
Andropogon brachystachyus	none
Aristida speciformis	none
Aristida beyrichiana	Wiregrass
Asclepias tuberosa	Butterfly weed
Aster concolor	none
Aster reticulata	none
Aster walteri	Walter's aster
Carphephorus carnosus	none
Carphephorus corymbosus	Florida paintbrush
Carphephorus odoratissimus	Vanilla plant
Carphephorus paniculatus	none
Chysopsis scabrella	Golden asters
Ctenium aromaticum	Toothache grass
Elephantopus spp.	Elephant foot
Flaveria spp.	Yellowtop
Helianthus angustifolius	Narrowleaf sunflower
Helianthus radula	Rayless sunflower
Justicia angusta	none
Liatris spp.	Blazing star
Lilium catesbaei	Pine lily
Lobelia spp.	Lobelia
Monarda punctata	Horsemint
Palafoxia integrifolia	none
Panicum abscissum	Cut-throat grass
Phoebanthus grandiflorus	Phoebanthus
Piriqueta caroliniana	Pirequeta
Pityosis graminifolia	Golden aster
Rhexia spp.	Meadow beauty
Rhynchospora spp.	White-top sedges
Rudbeckia hirta	Black-eyed Susam
Salvia lyrata	Lyre-leaf sage
Salvia azurea	none
Schizachyrium stoloniferum	Creeping bluestem
Sisyrinchium atlanticum	Blue-eyed grass
Solidago spp.	Goldenrod
Sorghastrum secundum	Lop-sided Indiangrass
Vaccinium myrsinites	Shiny blueberry
Vaccinium darrowii	Blueberry
Venonia angustofolia	Ironweed
Xyris spp.	Yellow-eyed grass
Zamia pumila	Coontie
Zephyranthes spp.	Rain lily

This list is by no means a complete list of suggested plants for revegetation

APPENDIX I

Current Research in Pasture Restoration

Anonymous. Collect initial stand information prior to restoration efforts in a virgin, old-growth longleaf pine stand that has not been prescribed burned since the late 1940's. USDA Forest Service, SOFES Auburn.

Blanchard, J. Restoration of wiregrass to a flatwoods site by broadcast seeding. Florida Division of Forestry.

Boyer, W. Long-term development of regeneration under longleaf pine seedtree and shelterwood stands. USDA Forest Service, SOFES Auburn.

Brockway, D. et. al. Restoration of longleaf pine/wiregrass ecosystems using low-rate herbicide applications. USDA Forest Service, SEFES, Florida.

Glitzenstein, J. et. al. Vegetation recovery in small scale natural and artificial disturbances. Florida Game and Fish.

Michener, W. Impacts of land use changes on habitat fragmentation in the longleaf pine-wiregrass ecosystem. Joseph Jones Ecological Research Center, Georgia.

Mitchell, R. et. al. Regeneration of primary structure and establishment of ecosystem function. Joseph Jones Ecological Research Center, Georgia.

Morrison, S. et. al. Restoration of wiregrass on disturbed sites at Tiger Creek Preserve. The Nature Conservancy, Florida.

Myers, R. et. al. Reproductive response of wiregrass to month of burn. The Nature Conservancy, Florida.

Myers, R. et. al. Wiregrass regeneration and community restoration. The Nature Conservancy, Florida.

Myers, R. et. al. Wiregrass restoration by planting seeds and seedlings. The Nature Conservancy, Florida.

Outcalt, K. Effect of cultural treatments, overstory density, and site on the growth rate of underplanted wiregrass in longleaf stand sin Savannah River site Georgia

Outcalt, K. Site preparation systems for restoration of longleaf-wiregrass sites. USDA Forest Service, SEFES, Florida.

Platt., W. A vegetation study of the ground layer component of longleaf pine communities on the Kisatchie National Forest. USDA Forest Service, Louisiana.

Seamon, G. Effect of fertilization on establishment, growth, and seed production of wiregrass from seeds and plugs. The Nature Conservancy, Florida.

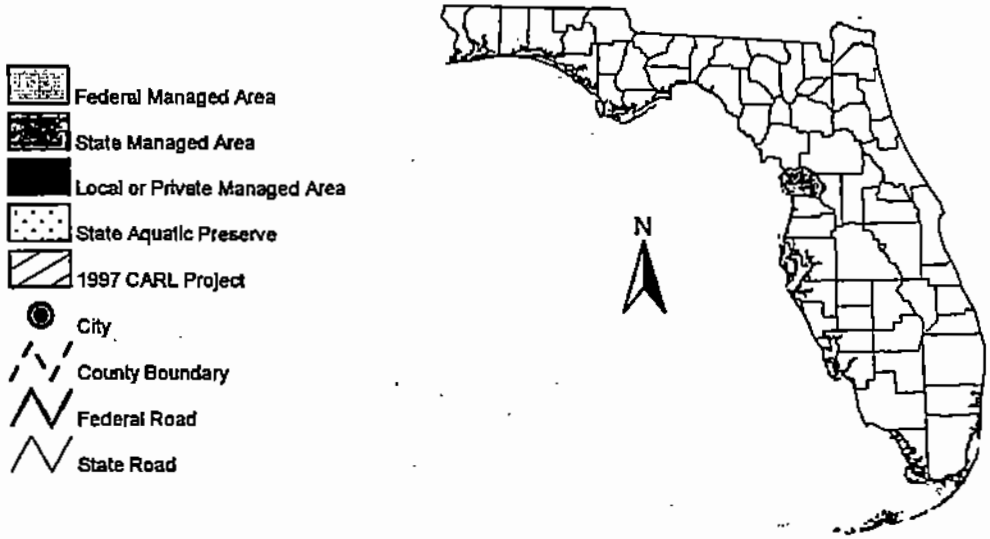
Streng, D. et. al. An experimental approach to restoration of longleaf pine savanna communities in the Francis Marion National Forest. USDA Forest Service, South Carolina.

Uridel, et. al. Restoration of four herbaceous species in old bahia pastures. University of Florida, Gainesville.

Walker, J. Effects of different treatments on native vegetation in longleaf system. USDA Forest Service, SEFES, South Carolina.

EXHIBIT P

Citrus County



Becker Sanctuary *
Chassahowitzka National Wildlife Refuge
Chassahowitzka River and Coastal Swamps
Cross Florida Greenway State Recreation and Conservation Area
Crystal River National Wildlife Refuge
Crystal River State Archaeological Site
Crystal River State Buffer Preserve
Flying Eagle Ranch
Fort Cooper State Park
Homosassa Springs State Wildlife Park
Potts Preserve
St. Martins Marsh Aquatic Preserve
Whispering Pines Park
Withlacoochee State Forest
Withlacoochee State Trail
Yulee Sugar Mill Ruins State Historic Site

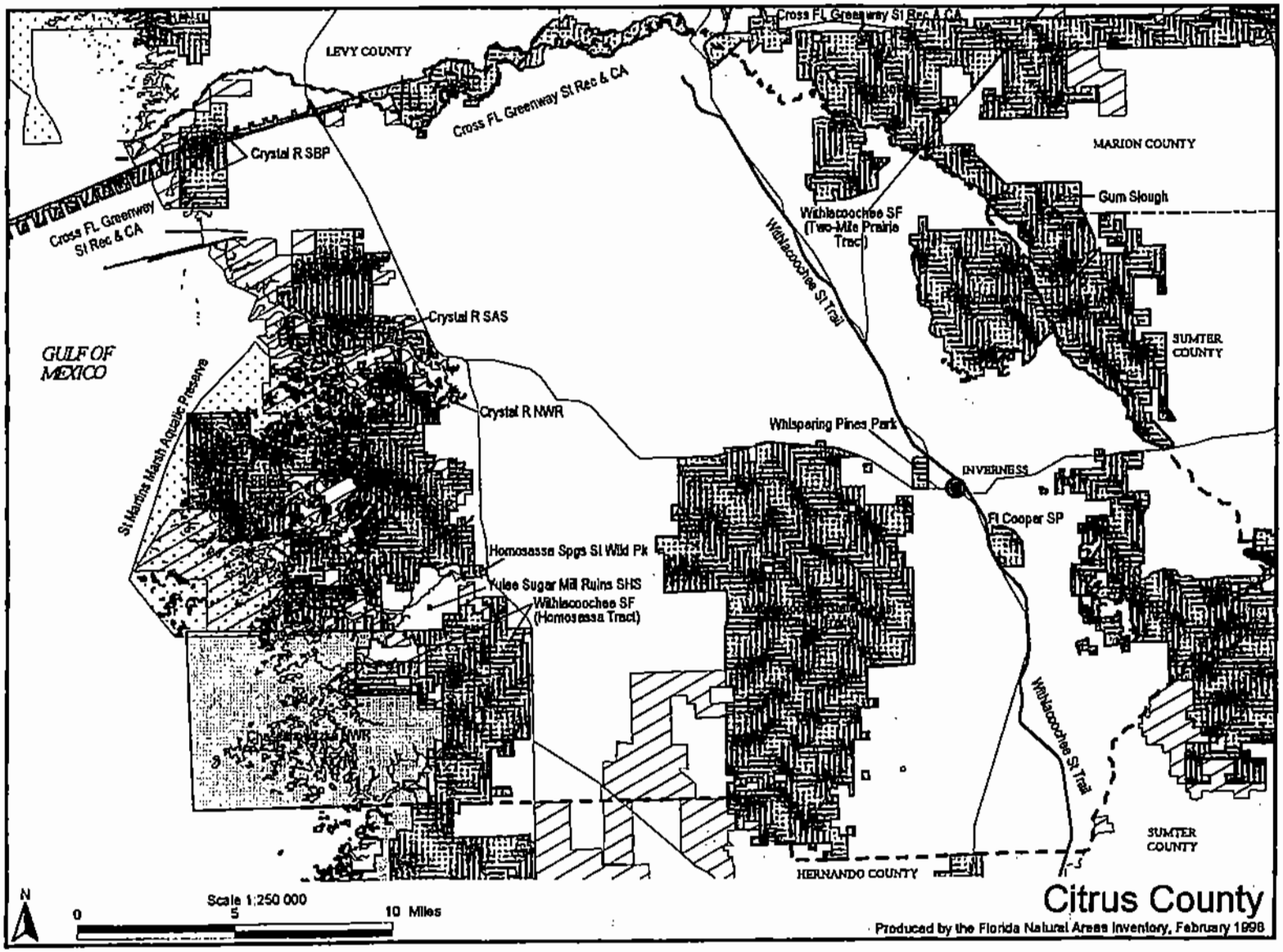

LEVY COUNTY
Cross FL Greenway St Rec & CA
Crystal R SBP
Cross FL Greenway St Rec & CA
Cross FL Greenway St Rec & CA
MARION COUNTY
Gum Slough
Withlacoochee SF (Two-Mile Prairie Tract)
Withlacoochee St Trail
Crystal R SAS
GULF OF MEXICO
SUMTER COUNTY
St Martins Marsh Aquatic Preserve
Crystal R NWR
Whispering Pines Park
INVERNESS
Ft Cooper SP
Homosassa Spgs St Wild Pk
Yulee Sugar Mill Ruins SHS
Withlacoochee SF (Homosassa Tract)
Withlacoochee St Trail
SUMTER COUNTY
HERNANDO COUNTY
N
Scale 1:250 000
0
5
10 Miles
Citrus County
Produced by the Florida Natural Areas Inventory, February 1998

EXHIBIT Q


Two Mile Prairie
Optimal Management Boundary Map
5 acre parcel
30 acre parcel

EXHIBIT R

TWO MILE PRAIRIE
MANAGEMENT PLAN ADVISORY GROUP
PUBLIC MEETING

December 15, 1999 - 6:00 P.M.

The meeting of the Withlacoochee State Forest Two Mile Prairie Tract Management Plan Advisory Group was started at 6:00 P.M. at the Holder Community Center, Citrus County. Members present were:

Winnie Schreiber	Division of Forestry
Doug Franke	Fish and Wildlife Conservation Commission
Lou Phemister	Citrus Board of County Commissioners
Ron Miller	Audubon Society
John Holzaephel	Private Property Owner/ Timber Interests
Mary Ellen Shoemaker,	Sierra Club/ Recreation User
Colleen Kruk	Southwest Florida Water Management District

Members absent and excused:

Richard Stuart	Private Property Owner/ Youth Organizations

Staff present were:

Bill Korn	DOF-Forest Management Bureau
Wilbur Priest	DOF-Withlacoochee SF (WSF)
Wendell Vaught	DOF-WSF
Keith Mousel	DOF-WSF
Sheila Smith	DOF-WSF
Harry Downing	SWFWMD
Dale Ravencraft	SWFWMD
Joe Bishop	DOF-Seminole SF

The introduction was done by Bill Korn. He explained the purpose of the meeting was to discuss how to handle the Public Hearing following at 7:30 P.M. He defined the role of the group as representing the public and different user groups and to help assist the land manager with the plan before it goes to LMAC. Two Mile Prairie is a tract of land co-managed by two agencies, DOF and SWFWMD. It is having a stand alone plan now but it will roll over into the Withlacoochee State Forest 5 year plan when it is rewritten in 2-3 years.

It was agreed those wishing to speak at the Public Hearing meeting would be limited to five minutes. There will be no electronic recording or debating. Questions and requests for clarification will be allowed after Wilbur Priest's presentation. Mr. Korn informed the group to be aware of the Sunshine Law.

The Public Hearing notice was posted on the property (11/11/99) and at several businesses, announced at a County Commissioners meeting (11/17/99), and published in the local newspaper (11/21/99). The newspaper (Citrus Chronicle) in an article they prepared, erroneously printed the wrong information on the meeting and because of that it was agreed that written comments will be accepted till 1:00 P.M., December 16, 1999. The paper agreed to do a follow-up story Thursday morning to confirm this.

Bill let the group know that at the meeting tomorrow they each will be asked to share their comments and evaluation of the management plan and tonight's hearing. Meeting was adjourned at 6:35 P.M.

TWO MILE PRAIRIE
MANAGEMENT PLAN ADVISORY GROUP
PUBLIC HEARING

December 15, 1999 - 7:30 P.M.

The Public Hearing opened at 7:30 P.M. in the Holder Community Center, Citrus County with a brief explanation by Forestry Center Manager and Advisory Group member, Winnie Schreiber, explaining the purpose of the hearing, followed by an introduction of the Management Advisory Group members (the same seven attending the 6:00 PM public meeting were also in attendance for the hearing). Wilbur Priest did a short slide presentation on Two Mile Prairie outlining the history and giving a description of the property as well as a summary of management activities proposed in the resource management plan working draft.

The hearing was then opened for questions or clarifications on the presentation or the plan itself. A summary of those questions/clarifications raised by the public are as follows:

- Clarification was provided that only non-motorized bikes would be allowed.
- In the future reforestation may lead to timber harvesting
- Fishing would be allowed in the pond and non-motorized boats (eg. jon boat) could be carried in.
- Vehicles could only go as far as the parking lots and then the public would have to walk in.
- Hunting will not be recommended for the first five years, then it will be reevaluated. If approved down the road, access would be evaluated but would probably allow vehicle access to one or more parking areas on the perimeter of the tract.
- An adjacent homeowner was concerned that since the parcel surrounds his property, people would impact him. Wilbur offered that signs and fencing could be erected.
- SWFWMD addressed a question about drainage patterns in the area to confirm that rehydration of the priarie would in no way cause flooding at Twelve Oaks Air Estates.
- It was questioned what agency could patrol and monitor Two Mile Prairie. Fish & Wildlife Commission, Sheriff Office, DOF Office of Law Enforcement could all assist in violations.

Eight DOF/SWFWMD staff attended. Nine citizens were present. In addition, Mr. Josh Zimmer from the Citrus Times newspaper was in attendance. Seven comment forms from nine citizens were turned in with only one person electing to speak. Comments from these forms are summarized as follows:

- The one speaker said he was comfortable with everything he had heard. His concerns on hunting and fishing were answered during the question period of the program.
- Two had no comments.
- Two were present to see what was going on and just observe.
- One husband/wife were concerned about the fence line being maintained and worried of the danger of hunting if it was allowed. They also asked that no dirt bikes/motorized vehicles be allowed.
- One was interested in land use development for recreational purposes, especially Scouting groups and projects. She was also concerned about water level to prevent flooding in Twelve Oaks Air Estates.

The meeting closed at approximately 8:30 pm.

TWO MILE PRAIRIE
MANAGEMENT PLAN ADVISORY GROUP

PUBLIC MEETING

December 16, 1999
1:00 P.M.

The meeting of the Withlacoochee State Forest Two Mile Prairie Tract Management Plan Advisory Group was started at 1:07 P.M. at the Holder Community Center, Citrus County. Members present were:

Winnie Schreiber	Division of Forestry
Doug Franke	Fish and Wildlife Conservation Commission
Lou Phemister	Citrus Board of County Commissioners
Ron Miller	Audubon Society
Mary Ellen Shoemaker	Sierra Club/ Recreation User
Colleen Kruk	Southwest Florida Water Mgt District

Members absent and excused were:

Richard Stuart	Private Property Owner/ Youth Organizations
John Holzaepfel	Private Property Owner/ Timber Interests

Staff present were:

Bill Korn	DOF-Forest Management Bureau
Wilbur Priest	DOF-Withlacoochee SF (WSF)
Wendell Vaught	DOF-WSF
Keith Mousel	DOF-WSF
Sheila Smith	DOF-WSF
Ernie Ash	DOF-Goethe SF
Joe Bishop	DOF-Seminole SF

One citizen observer was also present.

Members were given a written summary of the public meeting and public hearing that was held the previous evening. Except for one typographical error it was accepted. The meeting then proceeded by allowing each member to voice their comments.

Doug Franke - would like to clarify who will be involved with the plant and animal survey. He would like to see FNAI provide the survey for inventory ASAP. After discussion, he agreed no written change in the plan is needed because it might limit contract vendors. He did request a copy of the summary by TNC. He is whole heartedly behind habitat restoration and glad to see it addressed a few times in the plan. FWC would like small game hunting considered during the next five years. He asked about possibility of a road being provided to users that would give public access to a parking area in the center of the tract. After discussion it was the consensus that this was not

necessary at this time. Suggested that if hog hunting is required we will need to arrange for vehicle access to the interior. Hunters would not want to carry hogs out because of their weight. A commercial hog trapping contract might be an alternative to hunting They do approve of the fishing dock. Doug addressed the condition of the scrub habitat and was glad to see that the plan was addressing restoration needs (eg. mechanical site preparation). Doug asked that we try to provide for small areas of low cover (eg. grasses) for wildlife in the areas where we were reforesting. He suggested we add the camphor tree under the heading of exotics. Suggested we change wording in plan regarding acquisition needs as there are some adjacent properties that if they become available might be desirable as additions to the forest. Thought the plan was good and it stressed what should be stressed.

Ron Miller - his general impression of the plan is excellent and outstanding, and he was very impressed. He expecially liked the detailed natural community descriptions and the efforts to manage it as a great birding recreation area. Would like to clarify the reference to jeep trail leading to the pond sentence. He's concerned that by allowing boating access it will encourage trespassing on private land to shorten the walk in. Stated it was a good report.

Lou Phemister - had plan reviewed by different departments of the county for compliance with the Citrus County Comprehensive Plan and other local guidelines. All proposals and policies were addressed satisfactorily.

Mary Ellen Shoemaker - thought it was an excellent plan- she was excited about it and thought the sections on restoration were terrific. The slide show was excellent. Suggested that in the future it would be good to plan a visit to each area for members prior to the meetings. She expressed concern that too many user groups will be sharing the trails. She pointed out an inconsistency in the plan when justifying under what conditions hunting might be approved in the future. One area of the plan suggests that compatibility with recreation use was the key factor and in another place in the plan we suggest that wildlife population should be the key factor in determining if hunting should be allowed. Would like to see it printed under hunting that no vehicle roads will be added. Everywhere it says off-road bicycles it would be wise to replace it with "non-motorized bicycles". Mary Ellen was concerned over the size of the parking lots. She asked if the trailheads be expanded to accommodate parking needs as they increased. Yes they could but the size of parking areas provided an excellent opportunity to monitor and control over use related to acceptable carrying capacity of the trail systems.

Colleen Kruk - no comment. Said it was an excellent plan and she was fine with it.

Winnie Schreiber - thought it was an excellent plan. She questioned if it was the intent to put the picnic area and shelter at the CR 39 trailhead or at Johnson Pond. She suggested a change to read that the fire mgt plan is "being finalized". She asked if the plan should incorporate and make current information on the planting that has occurred.

John Holzaepfel - was absent but sent in written comments. His overall impression on the plan was quite favorable, and Wilbur Priest should be commended for his efforts. Encourages Wilbur to collaborate with Ross Prairie due to close geographic proximity and similar management issues. Would like to see "pitcher pumps" by some of the primitive camp sites. It was explained while great for the camper that it wasn't an acceptable practice as far as health department requirements for "public drinking water". He supports aggressive prescribed burning and planned future use of timber sales as a management tool.

Richard Stuart - was absent but verbally had spoke with Wilbur letting him know he had no comments, and no concerns.

Bill Korn thanked all the members for their time, ideas and suggestions and that except for the request to consider hunting during this five year period- it was likely that most of the suggestions that had been made to improve the plan would be included.

Bill explained that from here, Division of Forestry (DOF) staff over the next few days would evaluate all public input and advisory group comments and edit the resource management plan as DOF staff find appropriate. The rewrite of the working draft would then be submitted through the Forest Management Bureau to the Division Director for his review and approval. Once approved by the Director, DOF would send each advisory group member the revised plan as well as the minutes of this meeting. If any advisory group member wished to comment further - the next opportunity would be when the revised plan is reviewed by the Land Acquisition and Management Council (LAMAC) staff and subsequently by LAMAC itself. At the earliest - this would be in February 2000 .

The meeting was adjourned at 2:54 P.M.