

A Plan for the Use and Management
of the
Flatford Swamp Preserve



August 26, 2003

Southwest Florida Water Management District
Brooksville, Florida



330675

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Department: 0305005 Title Code: 215.1
RP5584

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EXECUTIVE SUMMARY

The 2,357-acre Flatford Swamp Preserve (Preserve), a.k.a the Upper Myakka River Watershed, is located in southeast Manatee County approximately 3 miles north of Myakka City. The Preserve lands were acquired by the District in 1991 in order to protect the headwaters of the Myakka River. The property encompasses nearly all of the Flatford Swamp wetland system, which is the major surface water feature in the Upper Myakka watershed. This plan is designed to guide the recreational uses and resource management activities on the property to strike a balance between both goals. A preponderance of wetlands, which account for approximately 1,800 acres (76 percent) of the Preserve's entire land area, and fragmented upland areas limit recreational opportunities on the property. The Preserve has been designated a remote parkland on the basis of the low population density of the area surrounding the Preserve (Bureau of Economic and Business Research, 1999), and the high level of intrusion or disturbance attributable to nearby roads that are open to motorized traffic.

Recreational uses of the Preserve include hiking, primitive camping, picnicking, birding, and other forms of nature study. These uses have been permitted since 1991, except for the addition of primitive camping. The property is not considered suitable for hunting, horseback riding, bicycling, or group camping due to its relatively small size and the associated shortage of contiguous upland land areas capable of supporting such activities. The primary entrance has been improved progressively over the years and additional site improvements will be added to enhance the public's recreational enjoyment of the property. Two existing secondary access points, which consist of walk-thru entrances without parking, are provided for bridging gaps among the Preserve's largest patches

of upland land areas in order to link trail usage among these disjunct areas. The District will explore opportunities to partner with Manatee County in the management of recreational use and will also work with others to make the Preserve available for environmental education.

The shortage of upland land areas on the Preserve, and the virtual absence of improved pasture, render infeasible such revenue-generating multiple uses as cattle grazing and timber production. Hence, such uses are not being contemplated for the property.

Water management benefits associated with the property include flood protection and water quality protection and enhancement. Nearly the entire land area lies within the 100-year floodplain as delineated by the Federal Emergency Management Agency. Preservation of this extensive, well-defined floodplain area will play an important role in maintaining flows and water quality in the Myakka River.

The District completed an investigation into the cause of a major tree die-off in Flatford Swamp and has initiated a 3-pronged strategy for reversing this abnormal mortality of vegetation within the swamp. This approach consists of data collection activities, regulatory actions and resource management activities. Data collection efforts consist of aerial mapping, animal abundance assessment, water quality monitoring, water level monitoring, stream flow monitoring and an environmental hydro-biological monitoring program. Regulatory actions consist of compliance reviews, reduced off-site seepage and special conditions aimed at restoring the swamp's natural hydroperiods. Resource management approaches consist of incentive-based projects, best management practice research, conveyance analysis, land acquisition, trend analysis study and

external coordination. In addition to ongoing surface water exchange projects, the Facilitating Agricultural Resource Management Systems Program (FARMS) is being implemented. The FARMS Program is a cost sharing reimbursement initiative that targets reduced groundwater usage from the Upper Florida aquifer, implementation of water quality best management practices, and ecological restoration. Restoration of the impacted areas cannot occur until subsurface seepage from irrigation is brought under control. The management approach outlined by this plan is consistent with the ongoing recovery efforts.

A number of sites within the Preserve have been designated Special Protection Areas. These include Flatford Swamp, an archaeological site, and a series of monitoring sites scattered throughout the

Preserve. Protection of these areas takes precedence over all other land management and public use considerations. All uses and improved facilities that would impact these areas will be directed to other portions of the property. Such management activities as prescribed burning and control of exotic species will be tailored to meet the site-specific needs of all Special Protection Areas.

Major management needs and actions for the Preserve include continuing the ongoing prescribed burning program, the restoration of natural hydroperiods to Flatford Swamp, and management and monitoring of resident wildlife to maintain existing biodiversity. Ongoing efforts to control several invasive, non-native plant species, monitor public use and prevent illegal activities will also be maintained.

INTRODUCTION

The Flatford Swamp Preserve (Preserve) is located in southeastern Manatee County approximately 3 miles north of Myakka City and 20 miles east of the City of Bradenton (Figure 1). It accounts for a total land area of approximately 2,357 acres and encompasses the majority of the Flatford Swamp wetland system, which is formed by the convergence of seven creeks (Ogleby, Boggy, Coker, Taylor, Wingate, Long and Maple Creeks) with the main stem of the Myakka River. Collectively, these creeks and Flatford Swamp comprise much of the headwaters of the Myakka River.

The Preserve was acquired in 1991 as part of the District's Upper Myakka River Watershed Project and was immediately incorporated into the District's land management and public use program. This plan outlines the recreational uses and land management goals of the property.

Management Planning Methodology

In accordance with District Procedure 61-3, a standard methodology is employed in the development of land use plans for District-owned properties (Christianson, 1988). The first step of this systematic process is the identification of Special Protection Areas that occur within the property. These areas may include significant wetlands, floodplains, flood control facilities, potable water sources, or sensitive ecological features. Restrictions on the use of the property are imposed to ensure the protection of these areas. Land

use constraints resulting from the size and configuration of an area are also considered during this phase of the process. Public uses that are compatible with the basic resource protection needs of the property are then identified. These consist generally of resource-based recreational activities, but can potentially include such uses as cattle grazing and timber production as a means of generating revenue to support the District's land management program while also supporting local economies. The ultimate objective is to balance resource protection needs with the public's right to recreational enjoyment and compatible usage of the land. To the extent possible, and in recognition of statutory direction to implement passive recreation, local recreational demands, existing recreational use in the surrounding area, and neighbor's concerns were factored into the design of public use opportunities on the Preserve.

Each property is also evaluated to determine its placement within a classification system. The two factors upon which the property classifications are based are the population density of the area surrounding the property, and the extent to which the property has been developed or altered on the basis of proximity to roads. The classifications have been devised to provide guidance in the formulation of an overall management philosophy for each property. The management philosophy is an expression of the level of development that should be allowed on the property and the types of uses that are appropriate.

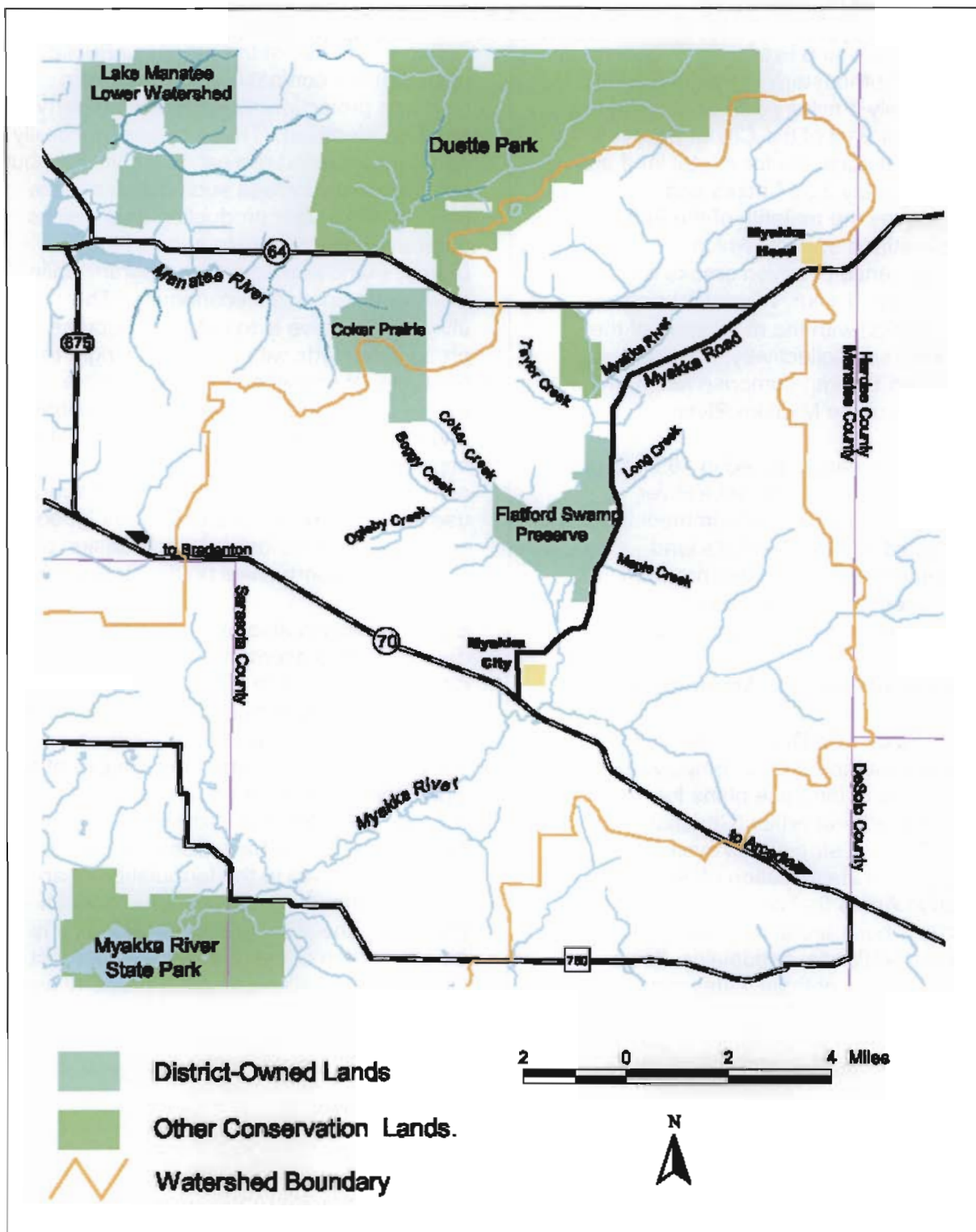


Figure 1. Location Map for the Flatford Swamp Preserve.

The Preserve has been designated a remote parkland on the basis of the low population density of the area surrounding the Preserve (Bureau of Economic and Business Research, 1999), and the high level of intrusion or disturbance attributable to nearby roads that are open to motorized traffic. This designation recognizes the influence that a high level of accessibility will have on the character of the property. Human population within a 10-mile radius of the Preserve, which is used as a barometer for measuring human influence in this type of analysis, falls below the 100,000-person threshold that distinguishes remote sites from urban fringe sites; however, the relatively small size of the Preserve, combined with a high level of accessibility afforded by the proximity of roads, will influence its character and level of isolation.

The planning process is initiated by an interdisciplinary team of District staff. Affected local governments and others with a vested interest in the property are also invited to make recommendations directly to the plan development team. Consistent with this established process, representatives of Manatee County were provided with an opportunity for direct participation in development of this plan. The District also partners regularly with local governments in the management of recreational use and will be open to establishing such a partnership with Manatee County in the future.

Management plans are presented for review by the appropriate Basin Board(s) prior to being presented for approval by the District's Governing Board. Final review and approval of all plans by the Governing Board is conducted in a public hearing during which members of the public may provide comments or recommendations about the future use and management of the property. Comments received at related Basin Board meetings are also summarized for the Governing Board's consideration.

Property Attributes

The Myakka River originates in a marshy area near the unincorporated area of Myakka Head. A short distance downstream of the origin, a series of creeks coalesce to form Flatford Swamp. Flatford Swamp, which accounts for most of the Flatford Swamp Preserve, provides much of the surface flow and baseflow that sustains the upper reaches of the Myakka River system. It serves effectively as the heart of the Myakka River's headwater system.

The segment of the Myakka River extending downstream from County Road 780 to the Sarasota/Charlotte county line was designated a Florida Wild and Scenic River in 1985 by the Florida Legislature via the Myakka River Wild and Scenic Designation and Preservation Act (Florida Statutes, Chapter 258). This designation reflected the Legislature's determination that the Myakka River possesses "... *outstandingly remarkable ecological, fish and wildlife, and recreational values unique in the State of Florida. These values give significance to the river as one which should be permanently preserved and enhanced for the citizens of the State of Florida, both present and future.*" The Wekiva River in central Florida is the only other Florida river to be so designated. The Myakka River Management Coordinating Council was created to preside over development of a management plan for the designated section of the river. The *Myakka Wild and Scenic River Management Plan* was adopted in 1990 and subsequently updated in 2001. The plan provides a framework to guide development in the river corridor and preserve the river's natural and scenic qualities.

Although the Preserve lies approximately 8 miles upstream of the river segment that received the Wild and Scenic designation, the protection of its role as the headwaters

of the river is of fundamental importance to the perpetual protection mandated by the Act. The Flatford Swamp wetland system also helps to maintain water quality in the downstream river by assimilating nutrients and other contaminants that drain into the swamp from the agricultural lands that surround much of the property.

In addition to its water resource values, the Preserve provides significant habitat for wildlife. Figure 2 depicts the occurrence of "hot spots of biological resources" in the Preserve and its surrounding area. These hot spots of biodiversity were delineated by the FFWCC (Cox et. al, 1994) and identify sites that have been predicted to provide suitable habitat for an overlapping array of "focal species." The species chosen for inclusion in the analysis account for a broad range of habitat needs and serve collectively as indicator species for Florida's diverse complement of native wildlife. Nearly the entire Flatford Swamp Preserve falls within the highest category of biodiversity hot spots, reflecting the high wildlife habitat value and expected species richness of this site. Less than 5 percent of Manatee County's land area can claim such highly-ranked habitat value through this analysis. This suggests that the importance of the Preserve to protection of local and regional wildlife populations will remain high in the future, and may eventually increase.

The water management benefits and wildlife habitat values attributed to the property in the preceding discussion hinge upon maintaining natural conditions at the Preserve. The degree of abnormal tree mortality in Flatford Swamp and adjacent areas has adversely affected its hydrological and ecological values. The ongoing restoration effort to re-establish natural hydroperiods to Flatford Swamp is a District priority. This issue is addressed in detail elsewhere in the plan.

Land Cover

The following discussion provides a brief description of the natural vegetation and other land cover types present in the Flatford Swamp Preserve. Figure 3 delineates the extent and configuration of each natural community type.

Wetlands

Wetland vegetation dominates the Preserve landscape due to the presence of Flatford Swamp. The mixed hardwood swamp community that characterizes the Flatford Swamp wetland system accounts for a total land area of approximately 1,475 acres, or more than 62 percent of the Preserve (Figure 3). Numerous occurrences of freshwater marsh are also present within Flatford Swamp. In combination with several small isolated marshes scattered through the Preserve's uplands, freshwater marsh covers a total land area of about 315 acres (13 percent of total). As such, wetland land cover accounts for approximately 1,800 acres (76 percent of total) of the 2,356-acre Preserve.

The mixed hardwood swamp community within the Preserve has been severely degraded by an abnormal die-off of trees across extensive portions of Flatford Swamp. An analysis has estimated that 2,571 acres of the Flatford Swamp canopy exhibit abnormally high levels of mortality and stress (PBS&J, 1999). The analysis concluded that the mortality and stress have been induced by an increase in hydroperiod and/or seasonal high water levels (Coastal Environmental, 1998). The affected trees were concentrated initially along the perimeter of the swamp and at the interface between upland and wetland. The zone of abnormal mortality and stress has now expanded to encompass the entire Flatford Swamp wetland system (PBS&J, 1999).

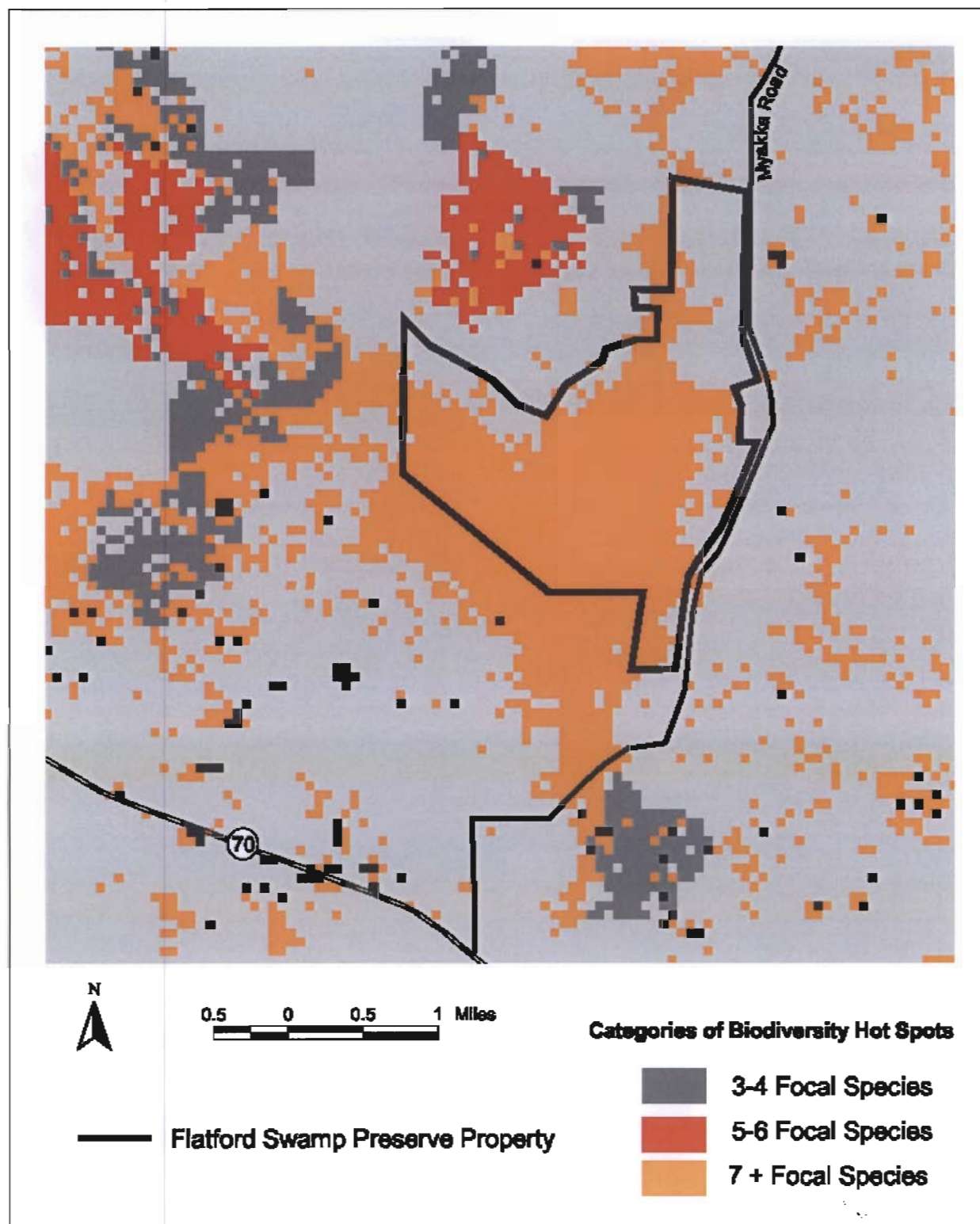


Figure 2. Hot Spots of Biological Resources for the Flatford Swamp Preserve and Vicinity. Data provided by the Florida Fish and Wildlife Conservation Commission (Cox et al., 1994).

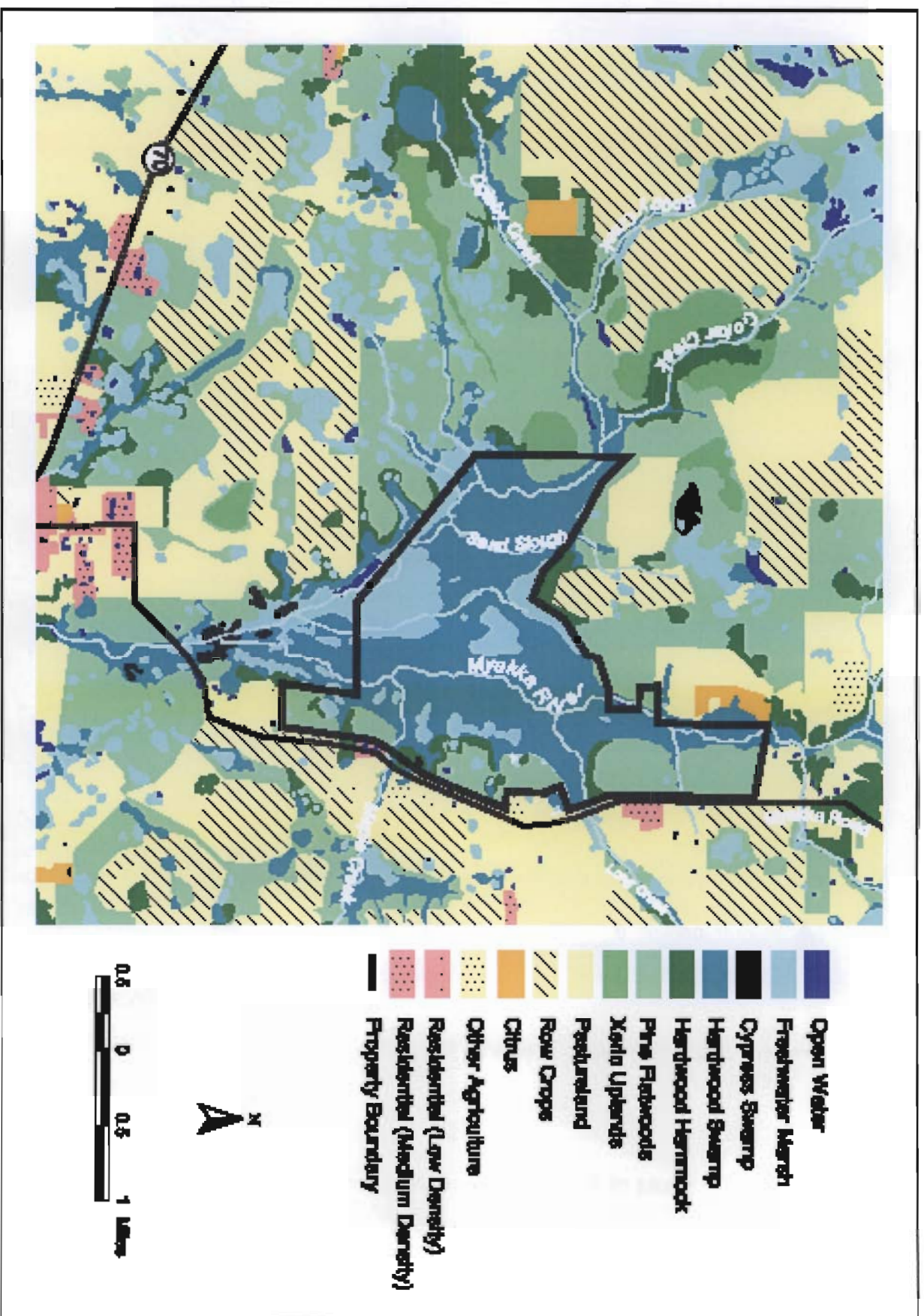


Figure 3. Vegetation Map for the Flatford Swamp Preserve and Vicinity.

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The restoration of a natural hardwood canopy to the affected portions of Flatford Swamp will be the primary resource management objective for the Preserve. This will entail implementation of a range of actions designed to both restore natural hydroperiods and promote regeneration of characteristic canopy species. Current conditions in some affected areas may favor the establishment of freshwater marsh over regeneration of a mixed hardwood swamp; however, to the extent possible, the District's land management strategies will be designed to promote recovery of swamp vegetation. The implementation of these measures is being administered by other departments within the District.

Freshwater marsh occurs in several portions of the Flatford Swamp system. The Flatford Swamp marshes conform with the floodplain marsh community as described by the Florida Natural Areas Inventory (FNAI and DNR, 1990)). Floodplain marshes are associated with riverine floodplains and are perpetuated through the dual action of long hydroperiod and regular, if infrequent, fire. It has been estimated that natural fire intervals in floodplain marsh systems approach once every 1-5 years (FNAI and DNR, 1990), and that such fires maintain a preponderance of herbaceous vegetation by precluding the establishment of woody shrubs and trees. Most of the freshwater marsh within Flatford Swamp is distributed around the perimeter of the system. This configuration would have exposed those marsh sites historically to the relatively frequent fires originating in the adjoining upland areas.

The remainder of the Preserve's freshwater marsh habitat consists of several small depression marshes enmeshed within pine flatwoods. An important ecological distinction between the floodplain marshes of Flatford Swamp and the smaller, isolated depression marshes of the flatwoods is the

greater likelihood of the latter to dry up on a seasonal basis. Such ephemeral wetlands provide critically important habitat for many amphibian species because they are free of fish and other predators that make it difficult for such species to reproduce successfully. Like the peripheral depression marshes of Flatford Swamp, these marshes have probably burned regularly through exposure to fires that erupted in adjoining uplands. Continued exposure to fire through the District's prescribed burning program will be essential to maintaining these depression marshes and their contribution to the habitat values and heterogeneity of the Preserve landscape. The same is true of those floodplain marshes located along the periphery of Flatford Swamp. Marshes in the interior of Flatford Swamp have not historically been subject to such fire, and they will not be incorporated into the Preserve's prescribed burning program. Natural processes alone will be allowed to determine the future successional status of the interior floodplain marshes. The ongoing hydro-biological environmental monitoring program will also assist in management of the Preserve's wetland systems.

Management Actions:

- **Continue the incentive-based strategies in place to restore natural hydroperiods to Flatford Swamp in order to promote recovery of a natural hardwood canopy to affected portions of the swamp.**

Uplands

Mesic pine flatwoods is the most extensive upland land cover type on the property (Figure3), accounting for approximately 470 acres, or 20 percent of the total land area. The Preserve's flatwoods support a canopy of longleaf pine (*Pinus palustris*). The

groundcover, in contrast to the pine-dominated canopy, is quite diverse and reflects the fire history and relative availability of moisture. Hardwood hammock is the only other natural community occurring in the upland portions of the Preserve. This community is present as narrow bands located along the periphery of Flatford Swamp, occupying the transitional zone between the wetlands of the swamp system and the pine flatwoods that occupy the higher elevations of the property. Located generally at elevations of approximately 40 feet above sea level, hardwood hammock accounts collectively for a total land area of approximately 65 acres, or 2 percent of the Preserve.

In some cases, the hardwood hammock sites may actually represent pine flatwoods in which live oak has become established due to long-term suppression of fire. The District's prescribed burning program will progressively return such areas to typical pine flatwoods vegetation.

Management Actions:

- **Continue to use prescribed fire, as necessary, to restore flatwoods along peripheral portions of Flatford Swamp.**

Areas of Responsibility

The acquisition of land important to the management of water resources is an important element in the District's effort of meet its four primary Areas of Responsibility (AORs). These AORs are flood protection, water supply, water quality, and natural systems protection. The Preserve's contribution to the protection of natural systems has been discussed elsewhere in this plan under Property Attributes. The property does not provide significant water supply benefits; however, it provides

valuable flood protection, water quality, and natural systems protection benefits. The following describes the flood protection and water quality benefits associated with protection of the Preserve.

Flood Protection

About two-thirds of the Preserve's 2,357-acre land area is located within the 100-year floodplain, or otherwise recognized as flood prone (Figure 4). As such, the Preserve provides considerable natural flood protection benefits. Of the natural communities present at the Preserve, the extensive floodplain wetlands of Flatford Swamp make the most significant contribution to flood protection. The headwater system of the Myakka River, with its extensive network of tributaries and floodplain wetlands, has historically stored and conveyed large volumes of floodwaters. The flood protection benefits of the Preserve will be maintained by simply preserving the natural floodplain. The property's ability to attenuate flooding during the dry season has been reduced by the abnormally high dry season water levels. The strategies being implemented to restore natural hydroperiods will also re-establish Flatford Swamp's flood attenuation ability.

Water Quality Protection and Enhancement

The protection and enhancement of water quality is a significant water management benefit to the District's protection of Flatford Swamp. The Preserve's ability to protect or improve water quality lies in its large area of unaltered floodplain. A land area of approximately 55,000 acres, or 15 percent of the entire Myakka River watershed, drains through the Flatford Swamp system. The great majority of this upper watershed land area has been converted for agricultural use. Drainage from agricultural lands often contributes a variety of

pollutants to downstream waterbodies and wetlands. Flatford Swamp and its tributaries have been the subject of an intensive program of water quality monitoring since 1997. This program was implemented to establish background data and gauge progress in restoring natural hydroperiods to the swamp; to determine the effectiveness of resource development projects; and to identify hot spots in order to focus recovery efforts. In addition to noting elevated levels of sulfate and calcium, which are indicative of a groundwater origin for much of the water entering the swamp, the monitoring has detected various pesticides and herbicides. Water samples collected below the Flatford Swamp outfall have not contained detectable amounts of these chemicals, alluding to the ability of the swamp to assimilate or sequester these contaminants. This ability will be maintained by preserving the property in its natural state.

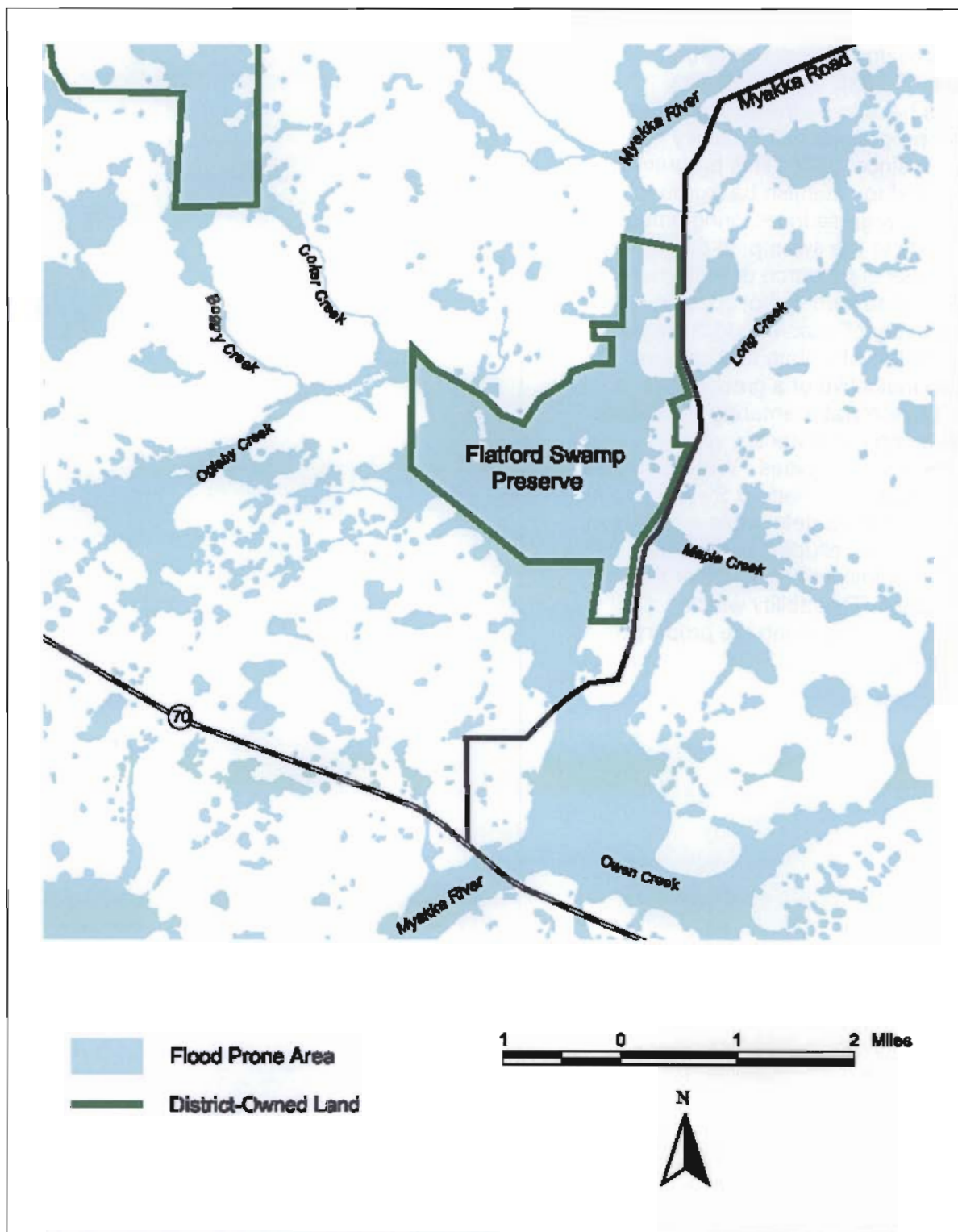


Figure 4. Flood Prone Areas in the Flatford Swamp Preserve and Vicinity. Areas distinguishes as flood prone include wetlands and the 100-year floodplain as delineated by the Federal Emergency Management Agency.

CONCEPTUAL LAND USE PLAN

Land Use Recreation

It is the policy of the District (Board Policy 610-3) that appropriate public recreational use of District lands be permitted, provided that the usage is compatible with natural resource management and protection needs. Recreational activities that are not "resource-based" will not normally be allowed. Resource-based activities generally consist of those outdoor recreational or educational pursuits in which natural surroundings are a fundamental requirement for engaging in the activity. This approach to recreational use is consistent with that mandated in Chapter 373, Florida Statutes, which states that "... *Lands titled to the governing boards of the districts shall be managed and maintained, to the extent practicable, in such a way as to ensure a balance between public access, general public recreational purposes, and restoration and protection of their natural state and condition.*" Additional context is provided through direction that the District evaluate these lands "... *for their resource value for the purpose of establishing which parcels, in whole or in part, annually or seasonally, would be conducive to general public recreational purposes.*"

The Flatford Swamp Preserve was made available for passive recreational use immediately following acquisition. A walk-thru entrance was constructed to allow access by those on foot and the property was listed in the guide to recreational use of District-held lands (SWFWMD, 1994). However, a combination of factors will continue to impose unavoidable constraints on recreational use of the Preserve. First among these is the predominance of wetlands, which account for over 76 percent of the total Preserve land area (Figure 3). Flatford Swamp is the dominant natural

feature of the property and, although high in natural values, it is also subject to virtually year-round saturation or inundation by water and cannot support recreational trail use. Secondly, the eastern edge of the Preserve is the only portion of the property that can be accessed directly from a public right-of-way. The location and configuration of Flatford Swamp will limit public usage to upland areas immediately accessible from Myakka Road (Figure 5). Finally, the upland land area along the eastern boundary is divided into small segments by several of the tributary streams that discharge to Flatford Swamp. The individual segments cannot provide a trail network of sufficient length to satisfy the needs of either equestrian users or cross-country hikers.

Recreational activities that will be permitted at the Preserve include hiking, primitive camping, picnicking, birding, and other forms of approved nature study. The property has been available for these uses, with the exception of primitive camping, since 1991; however, a variety of enhancements are detailed in the discussion that follows. These enhancements (see Appendix A) will make the Preserve more attractive for recreational use and result in an overall expansion of recreational opportunities.

Management Actions:

- **Continue to make the Flatford Swamp Preserve available for the compatible resource-based recreational uses enumerated in this plan, provide enhancements that will make the Preserve more attractive for such activities, and monitor public usage, as appropriate.**

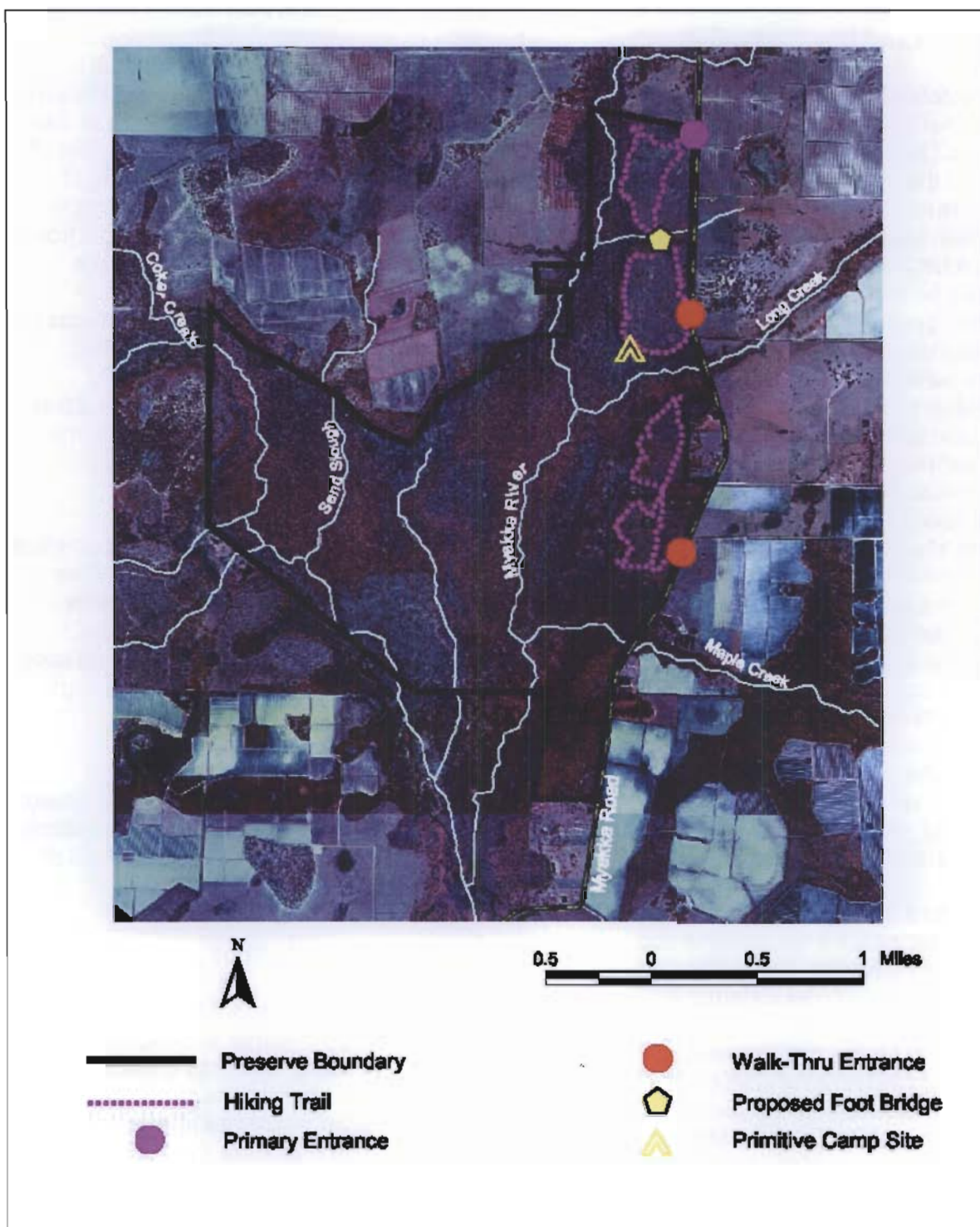


Figure 5. Conceptual Land Use Plan for the Flatford Swamp Preserve.

Public Access

The District recognizes the influence that vehicular access through natural areas can exert on wildlife, and on the wilderness character and sense of solitude that attracts recreational users to District-managed lands. This recognition serves as the basis for a policy that generally limits vehicular access to the minimum level necessary to accommodate permitted public uses. Vehicular access beyond the primary entrance facilities is not permitted, although special permits may be granted on a case-by-case basis to allow vehicular access to the interior of the Preserve for certain activities or to accommodate special circumstances.

As noted previously, Myakka Road is the only public right-of-way that provides direct access to the Preserve. The primary point of entry will be via the existing parking area and walk-thru entrance located at the northeastern corner of the property (Figure 5). This primary access point will be enhanced through construction of an informational kiosk. Two additional, existing walk-thru entrances will be maintained at sites on Myakka Road lying south of the primary entrance. These entrances enhance access along the eastern boundary of the property (Figure 5) and help to bridge the gap between the northern and southern segments of the recreational area.

Hiking

Those segments of the Preserve that are readily accessible from maintained roads have been (SWFWMD, 1994), and will continue to be, made available for hiking. The conceptual trail network delineated in Figure 5 provides a series of loop trails that will allow hikers to tailor their hike to personal preferences of hike duration. All of the trails follow existing trail roads, thereby minimizing disturbance to the property and allowing recreational users to enjoy virtually

immediate access. The small size of the Preserve's recreational area lends itself to short day hikes, although the full 5.3-mile network may also be sufficient to entertain those who are interested in a longer hike.

Development of a footbridge over a small tributary to Flatford Swamp will be necessary to provide connectivity among the main trail loops in the northern segment of the recreation area (Figure 5). An additional tributary bisects the southern segment of the recreation area; however, a footbridge will not be installed at this site. Hikers opting to traverse the entire on-site trail network will be required to ford this tributary on foot. It is an unnamed, low-flow drainage feature that is subject to drying on a seasonal basis and usually will not represent a serious impediment to hiking on the Preserve.

The northern segment of the recreation area features two trail loops, each approximately 1.4 miles in length. This may be adequate to satisfy most day-hikers. The southern segment will feature an additional 2.5-mile loop system to supplement the trail that is available in the northern segment. In order to provide access to the southern segment, which lacks a separate parking area, the District will continue to maintain the two pre-existing walk-thru entrances located at: 1) the southern end of the northern segment; and 2) at a location along the southern segment's Myakka Road frontage. As such, a continuous hike of the Preserve's trail network will necessitate a 1-mile walk along Myakka Road to bridge the gap between the northern and southern segments. This will produce a trail network with a cumulative one-way length of approximately 6.3 miles.

Although the future development of new recreational trails in the area is not precluded entirely, the development of such trails typically must be conducted in

partnership with a local government and/or organized user group, e.g., the Florida Trail Association, that will assist with trail delineation, construction, and long-term maintenance needs. The network of existing trail roads is a legacy of past agricultural use and the creation of new trails through undisturbed sections of the property will be discouraged. The development of any new trails through undisturbed portions of the property will not be contemplated until appropriate wildlife surveys and research have been completed. Information provided by such surveys and research will be essential to guiding future decisions regarding any expansion of public use. In summary, prerequisites to creation of new trails will include: formation of a partnership with a local government and/or established user group; confirmation that a clear need or demand exists for additional trails; and wildlife surveys and other research that suggest the additional trails will result in a minimum of adverse environmental impacts.

Existing trail roads that are not projected to be needed for future land management purposes, or that traverse wetlands or other sensitive natural features, will be retired from vehicular use to promote the recovery of native vegetation and to enhance their attractiveness and potential for future recreational enjoyment and wildlife usage. Measures to enhance the designated network of trails will also be undertaken, including the installation of interpretive signs at appropriate points of interest, and construction of a kiosk at the primary entrance to provide a central location for the dissemination of informational literature.

Camping

Primitive camping appeals to a segment of the public that is seeking a high degree of solitude in a very natural setting. These campers typically practice a "leave no trace"

philosophy that is consistent with protecting sensitive natural areas like the Preserve. A primitive campsite will be designated for hike-in use. The site to be selected will be located in the narrow band of hardwood hammock sandwiched between the pine flatwoods and hardwood swamp of the southern recreation unit (Figure 5) in order to maximize distance from the primary access point and provide conditions conducive to a quality recreational experience. The exact location will also be pinpointed to avoid impacts to a nearby Special Protection Area. If an appropriate site cannot be found in the southern recreation unit, then the primary unit will be evaluated for this use. The final site will be reserved for "hike in" campers only. Amenities will be limited to a fire ring or other enclosure designed to safely contain campfires, and a covered picnic table, i.e., picnic shelter, that will permit the site to also be enjoyed as a picnic area by day-use visitors.

Picnicking

Picnicking, like hiking, can be a low-intensity recreational activity that would allow the public to enjoy the Preserve's natural landscape while minimizing disturbance of the site. A small picnic shelter will be installed at a suitable location on the property to provide a sheltered area where hikers and other recreational users can rest, seek shelter from the sun or rain, or eat lunch. The station will be consistent with a backcountry setting, consisting of little more than a covered picnic table.

Birding

Bird watching is the most popular form of "non-consumptive" wildlife viewing in the United States, and Florida has become a major destination for out-of-state birders. It has been estimated that 796,000 visitors to Florida engaged in wildlife viewing

recreation during 1996, and that they spent approximately \$1.7 billion in trip-related expenditures (United States Department of the Interior, 1997). These figures rank Florida first in the United States as a destination for out-of-state wildlife viewers, and third in terms of total economic impact from wildlife viewing. Bird watching at the Corkscrew Swamp Sanctuary alone, which is located approximately 60 miles south of the Preserve, accounted for approximately \$9.5 million in local sales and services during 1993-1994 (Jay Yingling, pers. comm.).

The sub-tropical climate of the Preserve, the mixture of natural communities present at the site, and its occurrence along the migratory path of many neotropical migrants results in the seasonal presence of a great diversity of bird species. The network of recreational trails on the Preserve will provide convenient access for birders and other wildlife-viewing enthusiasts. In recognition of the popularity of birding, and of the low-intensity, highly compatible nature of the activity, the District will consider coordinating with local birding groups to develop an interpretive guide to birding on the Preserve. The District will also consider the implementation of other measures designed to enhance the site for birding.

Opportunities for Environmental Education

The District is committed to promoting and partnering in environmental education programs and will be amenable to accommodating requests for field trips or other educational exercises from local schools. However, organized professional instruction that is consistent with a curriculum tailored specifically to the natural attributes of the Preserve is the ideal way to

capitalize on the outdoor classroom the property represents. Typically, the District's role in environmental education at the Preserve will be limited to organizational matters, including arrangements for necessary vehicular access and guidance on educational content or curriculum. The District's approach to environmental education will emphasize cooperation and coordination with the Manatee County School Board and any interested, nearby private schools or organizations. Educational displays related to the ecology of the Preserve, its resident wildlife, and water management values will also be incorporated into displays exhibited at the entrance kiosk whenever possible.

Management Actions:

- **Coordinate as appropriate with the Manatee County School Board and other groups or organizations to facilitate interpretive educational tours of the Preserve.**

Multiple Use Potential

In 1996, the District began to evaluate various alternatives for generating revenue on District-held lands in order to assure a continuous source of funding to support land management. Legislative constraints on the use of lands held in trust by the District limited the range of options to those that would be compatible with resource protection needs. As a result, the District considered only those alternatives that would capitalize on existing resources and not result in the alteration of natural, undisturbed lands. Fallow improved pastures were analyzed to determine viability for revenue-generating cattle leases, harvesting of hay, or timber production (Fox and Tully, 1996a; SWFWMD, 1997). Likewise, existing stands of planted pine on District lands were

evaluated to project their long-term capability to support continuous, sustainable timber harvests (Fox and Tully, 1996). As a result of this comprehensive analysis of District-held lands, more than 8,000 acres have been designated as Timber Management Zones where sustainable silviculture will be practiced to provide a continuous revenue stream to support land management. Additional pastures have been, or will be, leased to private citizens to serve as grazing sites for cattle or as sites for the harvest of hay.

No planted pine occurs on the Preserve property and the high quality of its pine flatwoods precludes thinning harvests to restore natural pine densities. Areas presently supporting natural land cover will not be considered for conversion to planted pine stands. There is also a complete absence of improved pasture in the Preserve. The District has established a minimum size threshold of 100 acres of pasture for cost-effective silviculture or cattle leasing operations (SWFWMD, 1997). These practices are also precluded by the anticipated public use of the Preserve's limited upland land area. As such, the District does not attribute any multiple-use potential to the Preserve and these revenue-generating uses will not be implemented on the property.

Utilities and Other Public Facilities

Consistent with legislation that was adopted by the State of Florida in 1999, lands acquired through state-funded acquisition programs can be used for a variety of public facilities. These include utility lines and other linear facilities; stormwater management projects; and water supply development projects. Approval of such uses is contingent upon a number of criteria, including: the use must be

compatible with the natural resource values of the property; reasonable compensation must be provided to the titleholder of said lands; the proposed use must be in the public interest; the use must be located appropriately on the lands, with due consideration given to use of other lands; and the proposed use must not be inconsistent with the management plan for the property.

Currently, there are no such uses accommodated on the property, although the future installation of such facilities cannot be ruled out. The District will ensure that any future proposal to construct utility lines or other public infrastructure on the Preserve complies with statutory directives.

Management Actions:

- **Ensure that any utilities or other public facilities permitted to locate on the Preserve property are consistent with statutory guidelines established for permitting such uses of publicly owned conservation land.**

Security

Security will be maintained on the Preserve through several means. The District's Land Resources staff, and to a limited extent the staff of other departments, will provide security by maintaining a regular daytime presence on the property through the course of conducting normal land management activities. Supplemental security will be provided by limiting access points and restricting vehicular traffic. In accordance with District policy 610-3, perimeter fencing will be placed and/or maintained around the perimeter of the property. Maintaining appropriate perimeter fencing and other barriers to unauthorized access will remain a priority of the District's Land Resources Department. Informational

signage can aid in providing security by apprising the public of permitted and prohibited activities. Limiting public use to daylight hours will also help to reduce both security concerns and concerns related to public safety. Vehicular access and nighttime use of the property will remain limited to those users holding special permits for camping and other activities, as issued by the District on a case-by-case basis.

If serious breeches of security occur, then the District will consider entering into a contractual agreement with a certified law enforcement officer or other party that will provide for patrolling of the property during "off hours." Such patrols would confer a measure of security that cannot be attained solely by District staff patrolling the site during work hours. See Appendix A for a complete list of security-related tasks.

Special Protection Areas

Areas that are extremely sensitive to disturbance; that harbor unique or regionally significant natural features; or that play a critical role in maintenance of the water management values attributed to the property, merit designation as a Special Protection Area. Typically, Special Protection Areas must be discrete features that can be readily defined. Although public access to such sites is not normally prohibited, protective measures will take precedence over most other land use and management considerations. Special Protection Areas designated for the Preserve include the Flatford Swamp wetland system, an archaeological site, hydro-biological monitoring stations, and the monitoring stations that have been established on the property to track rainfall, groundwater levels, and changes in the distribution of vegetation. More detailed information on these sites or features is provided below. Additional Special

Protection Areas may be designated in the future in recognition of other significant resource values or concerns.

Flatford Swamp

Habitat or environmental restoration sites are typically treated as Special Protection Areas. As noted in preceding discussions, a significant portion of Flatford Swamp has been severely affected by large-scale mortality in its canopy of hardwood trees (Coastal Environmental, 1998; PBS&J, 1999). Restoration of normal hydroperiods to the swamp is a necessary prerequisite to restoration of the trees and other swamp vegetation that have been lost. Monitoring of water levels in the swamp, discharge through the Myakka River, and vegetative response to restored hydroperiods will be continuing needs in order to gauge the long-term success of this restoration effort. In the event that natural regeneration does not occur, an active strategy to restore swamp vegetation will be formulated and implemented.

Management Actions:

- **Continue the incentive-based approaches with the agricultural community to develop and implement irrigation best management practices to reduce or eliminate offsite irrigation seepage and restore natural hydroperiods.**

Archaeological Sites

An archaeological site of undetermined age has been documented on the Preserve and the management and public use of the property is tailored to avoid disturbance of the site. The site will also be monitored periodically in order to discern any evidence of looting or other unauthorized disturbance. Additional measures will be adopted, as necessary, to protect the site from disturbance or vandalism.

Management Actions:

- **Tailor land management and land usage activities to avoid disturbance of the existing archaeological site.**

Monitoring Stations

There are a number of sites within the Preserve that fulfill a role in the District's resource monitoring program. These include a rainfall monitoring station, gaging sites that monitor stream flow in the tributaries and main stem of the Myakka River, water quality monitoring sites, and several transects through wetlands where vegetation will be monitored in association with efforts to restore Flatford Swamp. These sites must be protected from disturbances that would compromise their continued value for resource monitoring. Trails and other amenities to accommodate recreational use will be designed to avoid disturbance of monitoring sites and land management personnel will be apprized of these locations to ensure that management-related work will not disrupt the District's resource monitoring activities.

Management Actions:

- **Treat on-site monitoring stations as Special Protection Areas to prevent physical disturbances that would compromise their continued value as resource monitoring sites.**

Land Management

The District engages in a variety of land management activities designed to protect or enhance the natural resource values of its properties and to ensure public safety. The following is a discussion of some of the management practices and resource protection measures (see Appendix A) to be employed at the Flatford Swamp Preserve.

Prescribed Fire

The inclusion of a detailed prescribed burning strategy is beyond the scope of this plan. Burn plans are developed for each District-held property individually, and independently of site-specific land management plans such as this. The District's land management staff has extensive experience in the use of prescribed fire and a burning program has already been implemented on the property. The program was initiated with a prescribed fire conducted during FY93. All but one of the six burn units designated at the Preserve has been subjected to at least three fires since District acquisition. The exception (burn unit 6) has been burned only once to date, owing to its inaccessibility. This unit corresponds to a small stand of pine flatwoods located on the western boundary of the Preserve that can only be approached via private property.

Generally, prescribed fires on the Preserve will continue to be designed to mimic natural, lightning-induced fires. Appropriate burn seasons and fire return frequencies will be established for each fire-maintained community and will be adhered to whenever possible. Burns will attempt to create a natural mosaic of burned and unburned patches to maximize heterogeneity of the landscape.

Smoke management will continue to be one of the most problematic issues associated with implementation of the prescribed burning program due to proximity of residential development and a publicly traveled transportation corridor. Fire breaks have already been established along those portions of the Preserve perimeter that adjoin privately owned lands, and these fire breaks will be maintained through regular discing or other mechanical methods to prevent the escape of fire onto surrounding properties. The Flatford Swamp wetland system, which occupies the entire central portion of the Preserve, provides a broad and relatively secure natural firebreak, and can also serve as a buffer zone for the dissipation of fire-generated smoke.

Management Actions:

- **Continue implementation of the prescribed burning plan for the Preserve's fire-dependent natural communities and continue to emphasize prescription parameters designed to prevent the escape of fire to adjoining properties and minimize the potential for placement of fire-generated smoke over sensitive areas.**
- **Conduct prescribed fires during the growing season, to the greatest extent practicable, in order to most effectively mimic the effects of natural fire.**

Habitat Restoration

District policy directs that sites on District-managed land that have been altered from a natural state and condition must be restored to a natural condition whenever practical. It has also been a standard District practice to locate site improvements on altered portions of a property whenever possible in order to avoid altering undisturbed sites. The Flatford Swamp Preserve is noteworthy for the presence of its namesake: the Flatford Swamp wetland system.

The hardwood swamp that comprises the majority of the wetland has been degraded by abnormal tree mortality. Promoting recovery of the Flatford Swamp canopy is the only habitat restoration need for the Preserve and is considered the primary resource management need for the property. The District has initiated a 3-pronged strategy for reversing this abnormal mortality within the swamp's canopy by restoring normal hydroperiods. This strategy has been described in previous discussions. Restoration of the impacted areas cannot occur until subsurface seepage from irrigation is brought under control. The management approach outlined by this plan is consistent with the ongoing recovery efforts. Additional actions to restore Flatford Swamp will be formulated and implemented if natural regeneration does not occur after normal hydroperiods have been restored.

Control of Exotic Species

The District has adopted a formal procedure (Board Procedure 61-9) to address the control of exotic species in response to the severity of this threat to natural systems. The ultimate goal of the land management program is eradication of the most invasive species. At a minimum, those invasive exotic species occurring at the Preserve will be maintained below current densities and

areal coverage. No encroachment into natural systems will be tolerated, and spot treatment of exotic species that have invaded the property will occur immediately upon observation.

Plants

Invasive, non-native plant species known to be present in the Preserve include: cogongrass (*Imperata cylindrical*), Japanese climbing fern (*Lygodium japonicum*), lantana (*Lantana camara*) and air potato (*Dioscorea bulbifera*). All have been designated Category I exotic pest plants by the Exotic Pest Plant Council (Florida Exotic Pest Plant Council, 2001). This designation is reserved for those species that have clearly demonstrated a propensity to invade and disrupt Florida's native plant communities. Control of exotic plants at the Preserve has been initiated and has reduced the scale of infestation by these species to levels that can be easily managed through routine maintenance. Management will continue to be focused on the eradication or control of these species. The District will also remain alert for the appearance of any other invasive, non-native plant species and will implement appropriate eradication or control measures.

Animals

Non-native animal species also pose a threat to Florida's natural communities. The only such animal that has been noted on the property is the feral hog (*Sus scrofa*). Feral hogs represent a significant land management problem in many natural areas. In order to control hog numbers and minimize the adverse impacts associated with their presence on the property, the District will implement an aggressive trapping program.

Management Actions:

- **Eradicate or control the growth of invasive, non-native species consistent with the direction provided in Board Procedure 61-9.**

Preparation of a Mosquito Control Plan

Chapter 388 of the Florida Statutes provides sweeping authority for local governments to form mosquito control districts and to implement mosquito control programs. This authority was granted in recognition of the potential health threat associated with major swarms of mosquitoes, in addition to the annoyance they can pose in developed areas. The statute also acknowledges the possibility for adverse environmental impacts resulting from mosquito control activities.

A process has been established whereby local governments prepare site-specific "arthropod control plans" for publicly owned conservation land (Section 388.4111, F.S.) when a tract is officially declared "environmentally sensitive and biologically highly productive" by the managing agency. This designation requires that an arthropod (i.e., mosquito) control plan be developed that offers adequate levels of protection to the natural systems and flora and fauna that occupy the site. The mosquito control district having jurisdiction over the area is responsible for preparation of the required site-specific arthropod control plan. The entire process is administered by FDACS. By virtue of this plan, the Flatford Swamp Preserve is designated an "environmentally sensitive and biologically highly productive" property. In the event that Manatee County develops an arthropod control plan for the Preserve, the District will review and/or revise it to ensure the Preserve's natural resources are protected while also ensuring protection of the public's health.

Projected Cost of Management

The cost of future land management activities has been projected based on the cost of management-related expenses during three preceding fiscal years (FY2000-FY2002). Based on this analysis, the average annual cost of recurring expenses will be approximately \$5.43 per acre, or a total of \$12,798 for the entire Preserve. Recurring expenses are those typically incurred on an annual basis and include such activities as prescribed burning, control of exotic species, maintenance of recreational facilities and fencelines, and wildlife monitoring.

It is more difficult to predict the cost of non-recurring needs, which are often one-time expenditures that cover such activities as habitat restoration, well plugging and fence construction. These expenses can fluctuate greatly from year to year. Habitat restoration activities associated with restoring natural hydroperiods to Flatford Swamp have been the primary non-recurring management activity at the Preserve. It is anticipated that most such expenses have already been incurred.

ADMINISTRATION

External Coordination

The District coordinates with many outside public agencies and public interest groups to effectively manage its properties. This section identifies some management and land use activities that cross, or potentially cross, the limits of jurisdictional authority and interest and will require outside coordination.

United States Fish and Wildlife Service (USFWS)

The USFWS is the agency with primary responsibility for protecting the nation's wildlife resources. This responsibility includes the administration of the Endangered Species Act (ESA). The USFWS will be consulted regarding special management needs of any species protected under the provisions of the ESA that is known to occur on the property, or that colonizes the site in the future.

Florida Fish and Wildlife Conservation Commission (FFWCC)

The FFWCC, known formerly as the Florida Game and Freshwater Fish Commission, is the agency with primary responsibility for protecting and managing Florida's wildlife resources. As such, the District will coordinate closely with the FFWCC in the management and monitoring of state-listed wildlife and critical habitat areas occurring on the Preserve.

Manatee County

As the local government having jurisdiction over the area in which the Preserve is located, Manatee County has a compelling interest in the future management and use of the Preserve. It will also exercise control over land use decisions for lands surrounding the property. In addition, the Manatee County School Board may serve as a potential partner in the development of an environmental education program that would use the Preserve as an outdoor classroom. The District will work closely with the county to: prevent incompatible land uses on adjoining lands; accommodate recreational needs of the county's residents; and develop an environmental education program that will complement the scholastic needs of the local community.

Private Interests

There are various private interests that may eventually play a role in the future management and use of the Preserve. The District has worked with the Florida Trail Association, Inc., and other organizations that represent recreational user-groups to enhance recreational opportunities on other District-managed lands. The District will be prepared to work with these and other stakeholder groups in the development and enhancement of recreational uses of the Preserve.

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APPENDIX A

The following list summarizes the specific tasks that will be undertaken by the District to implement the public use and land management approach proposed by the plan.

Recreation

- 1) Construct an informational kiosk at the existing entrance to the Preserve.
- 2) Maintain the additional walk-thru entrances to help bridge gaps among the non-contiguous upland tracts of the recreational area.
- 3) Construct a footbridge across the unnamed tributary that bisects the northern recreational area in order to allow unhindered, year-round access by hikers.
- 4) Establish a primitive hike-in campsite with a covered picnic table, fire ring, and appropriate signage to serve recreational users of the Preserve.
- 5) Install a covered picnic table at an interior location accessible to the hiking trail so it can serve as a picnicking site for day-use visitors to the Preserve.
- 6) Develop an interpretive guide to birding at the Preserve and consider other enhancements to accommodate birding.
- 7) Coordinate as appropriate with the Manatee County School Board and other groups or organizations to facilitate interpretive educational tours of the Preserve.
- 8) Incorporate environmental education themes into the informational kiosk constructed at the entrance to the Preserve.
- 9) Amend the guide to recreational use of District lands to reflect the enhancements to public use enumerated in this plan.

Land Management

- 1) Continue implementation of the prescribed burning plan for the Preserve's fire-dependent natural communities and emphasize growing season burns to the greatest extent practicable.
- 2) Continue ongoing efforts to eradicate or control the growth of invasive, non-native species consistent with the direction provided in Board Procedure 61-9.
- 3) Formally designate the lands of the Flatford Swamp Preserve as "environmentally sensitive and biologically highly productive" consistent with requirements of Chapter 388, F.S., to initiate the requirement for development of a site-specific mosquito control plan for the Preserve.

4) Coordinate with the Manatee County Mosquito Control District in the development of a mosquito control plan for the Preserve if the County expresses a need to implement control measures.

Security

1) Maintain perimeter fencing to control access and prevent unauthorized activities on the Preserve.

2) Restrict public use to daylight hours and limit vehicular access, except as authorized through special use permits.

3) Ensure that the informational kiosk installed at the Preserve entrance clearly informs the public of permitted uses and provides maps and other informational literature to ensure the public's safe use of the property.

4) Provide additional security through contractual agreements with private or public sector parties or through cooperative agreements, as necessary, to ensure adequate protection of the Preserve's natural resources and recreational users.