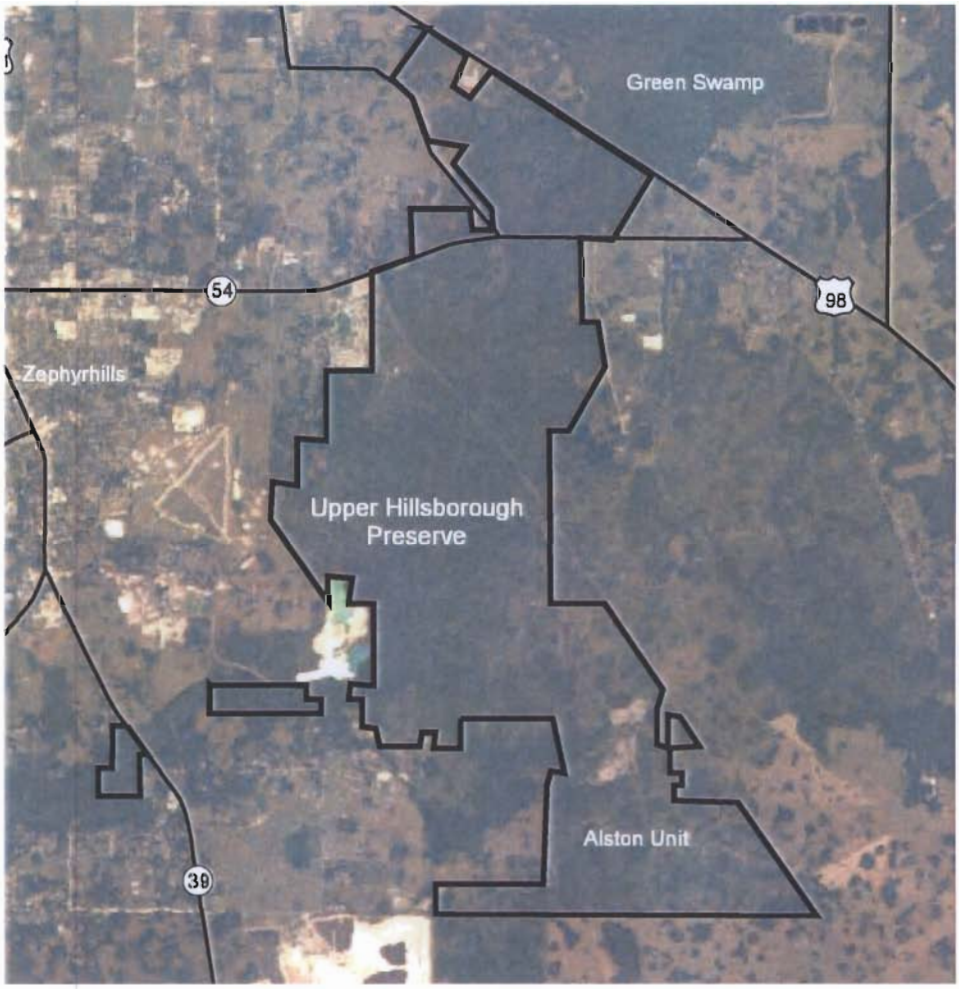
A Plan for the Use and Management of the

Upper Hillsborough Preserve



August 27, 2002

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

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Southwest Florida Water Management District

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Executive Summary

The District has successfully fulfilled a range of water management objectives through the purchase and appropriate management of strategically selected land. These land purchases, financed through a series of state-sponsored land acquisition programs, have also been successful in preserving environmentally significant natural systems. The broad spectrum of water management benefits achieved through such purchases of land includes flood protection, water supply development, maintenance or enhancement of water quality, protection of important recharge areas and wetland systems, and the preservation of sensitive natural areas and wildlife habitat. The District is directed through Chapter 373, Florida Statutes, to manage and maintain these lands in an environmentally acceptable manner and to preserve, restore and protect a natural state and condition. The District is also mandated to accommodate public recreational usage of these lands, provided such usage is compatible with the purposes for which the lands were acquired and with the directive that they be preserved in a natural state.

Working within the constraints imposed by its statutory mandate, the District seeks to provide an array of quality recreational opportunities that are consistent with site-specific resource protection needs for the environmentally significant lands under its stewardship. This plan has been developed to guide the management and public use of the Upper Hillsborough Preserve in a manner that is consistent with resource protection goals.

The total Upper Hillsborough Preserve (Preserve) project area encompasses nearly 23,000 acres in southeast Pasco, northwest Polk, and northeast Hillsborough Counties. Approximately 9,961acres of the project area have been acquired by the District through fee simple (outright ownership) acquisition, and an additional 8,030 acres have been protected through the purchase of conservation easements. As such, approximately 80 percent of the entire project area has been successfully protected through a combination of fee title and less-than-fee title purchases. Two disjunct parcels located a short distance west of the Preserve have also been purchased by the District. These account for a total land area of 265 acres and will be treated as a portion of the Preserve in terms of management and public use. Therefore, this management plan addresses the future management and use of approximately 10,226 acres of land under direct District stewardship and fee title ownership.

The initial acquisition of lands within the Upper Hillsborough Preserve project area began in the early 1960s in association with the District's sponsorship of the Four River Basins (FRB) project. The FRB project was a massive regional flood control initiative under direction of the United States Army Corps of Engineers. Although the Upper Hillsborough components of the FRB project were never constructed, the District had purchased 6,224 acres to accommodate its implementation. These lands served as the nucleus for the current day Preserve.

Natural lands consisting of high quality upland and wetland habitats dominate the Preserve landscape. Approximately 49 percent of the total acreage consists of forested and non-forested wetland plant communities. Forested wetlands dominate the property, consisting primarily of riverine floodplain wetlands associated with the upper reaches or headwaters of the Hillsborough River, the main feature of the property. Other wetland communities include cypress swamps, freshwater marshes and wet prairies. Upland areas comprise the remaining 51 percent of the property, with pine flatwoods accounting for most of the upland land cover. Hardwood

hammocks are also present. Only a small percentage (5 percent) of the property has been altered. These areas consist primarily of improved pastures that were used for cattle grazing prior to acquisition by the District.

The natural character of the property confers a variety of water management benefits, including non-structural flood protection, water quality enhancement, and ancillary contributions to maintaining the Hillsborough River's value as a potable water supply source for the City of Tampa. The preserved natural areas of the property also provide important habitat for a diversity of wildlife. Special Protection Areas have been designated within the property to ensure the protection of: the Hillsborough River floodplain; an historic wading bird rookery; occupied scrub-jay habitat; an extensive network of water resource monitoring sites; and a large number of significant archaeological sites. The approach to management and public use formulated by this plan is designed to preserve these values.

Major management needs and actions for the Upper Hillsborough Preserve include the continuing implementation of a prescribed burning program, the hydrologic restoration of several altered wetlands, and the management and monitoring of resident wildlife to maintain or expand existing biodiversity. Ongoing efforts to control invasive, non-native plant and animal species, and to accommodate compatible recreational usage by the public, will also continue. The following is a list of specific management actions enumerated in this plan. This list is not "all inclusive" as additional management needs and actions are discussed in the text.

Management Actions:

Land Cover

- Implement a formal investigation of the chronic wetland stress and degradation observed in the Upper Hillsborough Preserve, and identify the source of such stress and degradation in order to frame a course of action designed to restore the health of on-site wetlands.

Flood Protection

- Prohibit construction activities within the 100-year floodplain that would require filling, or otherwise reduce on-site floodwater storage. This will not be interpreted to preclude minor operations considered necessary to accommodate resource management needs or passive, resource-based recreational uses.
- Continue ongoing efforts targeting the restoration of on-site wetlands that had been ditched and drained prior to District acquisition in order to restore natural hydroperiods and pre-alteration flood storage capacity.

Water Quality Protection and Enhancement

- Avoid disturbance of native floodplain vegetation to preserve the ability of the floodplain to enhance water quality in the Hillsborough River.
- Maintain natural vegetation in the property's uplands to minimize sedimentation in the Hillsborough River.
- Complete the restoration of altered wetlands by plugging or backfilling existing ditch systems.

Water Supply

- Maintain on-site contributions to the flow of the Hillsborough River.
- Prior to operation of the proposed Cone Ranch wellfield, establish baseline wetland health conditions and implement a wetland monitoring program within the Preserve to determine if current and/or future groundwater withdrawals cause impacts to on-site wetlands.

Special Protection Areas

Hillsborough River

- Design any site improvements and facilities constructed along the Hillsborough River channel, and within the floodplain, to avoid water quality degradation and to minimize the disturbance or alteration of existing native vegetation.
- Implement a water quality monitoring program to discern any changes to OFW baseline conditions. Monitoring sites should include the northern boundary. The sampling should be conducted monthly and during any major cyclic fluctuation, and in response to indications of declining water quality from outside of the property.

Wading Bird Rookery

- Continue to monitor the rookery site for activity and trends in usage, and implement protective measures as necessary.
- Direct recreational uses and other activities that could be disruptive to other portions of the property.
- Preserve the suitability of on-site wetlands as foraging and resting areas for wading birds by maintaining or restoring normal hydroperiods and water levels.

Scrub-Jay Habitat

- Manage the scrubby flatwoods currently occupied by scrub-jays with prescribed fire conducted at intervals designed to maintain conditions suitable for continue habitation by scrub-jays.
- Avoid conducting prescribed fires during the nesting season within, and in the area immediately surrounding the occupied scrub-jay habitat.
- Investigate the status of the scrub-jay population by ascertaining the total number of jays and the cumulative extent of suitable scrub-jay habitat on both Preserve and adjoining private lands.
- Large, overmature scrub oaks may be mechanically reduced in stature on an as needed basis to make them more suitable for foraging by scrub-jays. Pines located immediately adjacent to pockets of scrub will be eliminated.
- Monitor occupied scrub-jay habitat for the presence of jays on a semi-annual cycle.

Monitoring Stations

- Ensure that future land management and maintenance activities, as well as public recreational uses accommodated on the property, will not compromise the collection or interpretation of data from monitoring stations established in the Preserve.

Archaeological and Historic Sites

- All known archaeological and cultural sites will be treated as Special Protection Areas in order to prevent physical disturbance that would compromise archaeological or historical values.
- Archaeological sites will be monitored on an as-needed basis for evidence of looting, and cases of looting will be prosecuted strenuously by the District.
- Proposals to conduct archaeological research on the property will be reviewed by the District on a case-by-case basis, and permitted research must be consistent with any requirements or protocols established

by the Florida Department of State's Division of Historical Resources.
- Any newly discovered archaeological sites will be properly documented and registered in the Florida Master Site File maintained by the Florida Department of State.

Land Use

Recreation

- Make the Upper Hillsborough Preserve available for the compatible, resource-based recreational uses enumerated in this plan. Exclude user-based recreational uses as incompatible with the natural character of the property.

Public Access

- Construct a new entrance facility near County Line Road to enhance access to the Alston segment of the Preserve.

Hiking

- Manage the Alston segments of the designated recreational trail network as a "multi-use" system that is open to both hiking and equestrian use.

Horseback Riding

- Continue to make the existing group campground available for use by equestrians.
- Expand the existing trail network by opening additional multi-use trails in the Alston segment of the property.
- Designate a "ride in" camping area for equestrian use in the Alston segment.
- Require that equestrian users of the Preserve possess evidence of a negative "Coggins" test for each horse in their company while horseback riding on the property.

Camping

- Within the Alston segment of the Preserve, establish a primitive group camping area that will be made available for "ride in" use by equestrians, and an additional primitive campsite that will be reserved for "hike in" use. The sites will be closed to vehicular access and site improvements will be limited to fire rings and tent pads, and hitching posts at the equestrian site.

Hunting

- Coordinate with FWC during the next biannual cycle to prohibit the hunting of bobcat, otter, and mink within the portion of the Preserve designated as the Upper Hillsborough Wildlife Management Area.

Fishing

- Coordinate with the FWC to prohibit fishing in the Preserve, with the exception of the disjunct segment fronting CR39.

Picnicking

- By the end of the 2004 fiscal year, install "rest stations" at several different locations along the property's recreational trail network.

Birding and Other Nature Study

- Conduct an analysis to determine the efficacy of maintaining bird nesting boxes at the Preserve.
- Formulate guidelines for the installation and maintenance of any bird nesting boxes permitted at the Preserve.

Security

- Maintain perimeter fencing to control access and prevent unauthorized activities on the Preserve.
- Restrict public use to daylight hours and limit vehicular access, except as authorized through special use permits or during scheduled hunting periods.
- Maintain an informational kiosk at the Preserve's primary entrance to inform the public of permitted uses and disseminate maps and other informational literature to ensure the

public's safe use of the property. Construct kiosks at secondary entrances, as necessary, if justified by high levels of public use.

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

Land Management

Prescribed Fire

- Continue ongoing implementation of a prescribed burning program at the Preserve to maintain fire-dependent natural communities, and include prescription parameters designed to prevent the escape of fire to adjoining properties and avoid placement of fire-generated smoke over sensitive areas.

Habitat Restoration

- Continue to monitor on-site wetlands for additional evidence of stress related to hydrologic alterations, and correlate with data on water levels collected in association with the establishment of minimum flows and levels for the Hillsborough River.

Wildlife Management

- All areas that provide habitat for endangered or threatened species will be managed to maintain the property's overall biodiversity. Species-specific management actions that compromise habitat value for the full range of species that utilize said habitat shall be avoided unless such actions are deemed critical to the on-site survival of an endangered or threatened species.

Control of Exotic Species

- The Preserve's feral hog population will continue to be monitored for damaging levels of disturbance to native vegetation and wildlife. Intensive hog hunts will be implemented, as necessary, to control hog numbers in the Upper Hillsborough Wildlife Management Area (WMA). Hogs in those portions of the Preserve lying outside the WMA will be controlled through a trapping program, if warranted, but may also be targeted for intensive hunts if trapping methods prove to be inadequate.

Preparation of a Mosquito Control Plan

- Officially designate the lands of the Preserve as "environmentally sensitive and biologically highly productive."
- Coordinate with both the Pasco County and Polk County Mosquito Control Districts in the development of an arthropod control plan for the Preserve.

Table of Contents

List of Figures

Figure

Introduction

Location and History of Property

The Upper Hillsborough Preserve (Preserve) is located in southeastern Pasco County and northwestern Polk County (Figure 1). It currently accounts for a total land area of approximately 9,961 acres. An additional 8,030 acres of neighboring lands, which are located within the approved project area for the Preserve, have also been protected by the District through the purchase of conservation easements. This less-than-fee title approach to the protection of land provides an effective strategy for natural resource protection under certain circumstances, while allowing the land to remain under private ownership and management. Since this plan is designed to provide guidance for the future management and public use of the Preserve, it addresses only that portion of the Upper Hillsborough project area that is owned in fee title by the District. Lands protected via conservation easements will continue to be managed by the private landowners and public usage will not be permitted in those areas.

There are two disjunct parcels of District-owned land located to the west of the Preserve (Figure 1). These account for a total land area of approximately 268 acres and are a portion of the District's Hillsborough River Corridor project. Interim land management and public use considerations for these two parcels are also outlined in this plan, bringing the total land area addressed by this management plan to 10,226 acres. Once land acquisitions within the Hillsborough River Corridor project area have progressed to a stage that is sufficient to justify the preparation of a separate management plan, that plan will supercede this plan in terms of management of these disjunct parcels.

Incorporated municipalities near the Preserve include Zephyrhills, which is adjacent to the western boundary, and Dade City, which is located approximately six miles to the northwest (Figure 1). Major highways that intersect the property include US98, which forms the northern boundary of the project, and County Road 54, which traverses the entire width of the property. As the name implies, the Hillsborough River is a major natural feature of the property. The Preserve encompasses a large portion of the headwaters region. The remainder of the property consists primarily of riverine floodplain, natural upland communities, and scattered isolated wetlands. Much of the surrounding land has been altered significantly to accommodate agricultural land uses, and urbanization associated with the growth of Zephyrhills is exerting increasing influence over the property.

The acquisition of lands that now comprise the Preserve began in 1963. Approximately 6,224 acres of the property were purchased in phases to support construction of the Four River Basins Project (FRB). FRB was a regional flood control initiative developed by the United States Army Corps of Engineers (ACOE) in response to flooding in the Tampa Bay region during 1959-1960. The existing Lower Hillsborough Flood Detention Area (LHFDA) and Tampa Bypass Canal, both of which are located in Hillsborough County, were major structural elements of the FRB. Other structural components that were proposed by FRB included an extensive system of levees and water control structures that would comprise the Upper Hillsborough Flood Detention Area (UHFDA) and the Green Swamp Flood Detention Area (GSFDA). The UHFDA, was to encompass the headwaters of the Hillsborough River and a portion of the upper reaches of the Withlacoochee River.

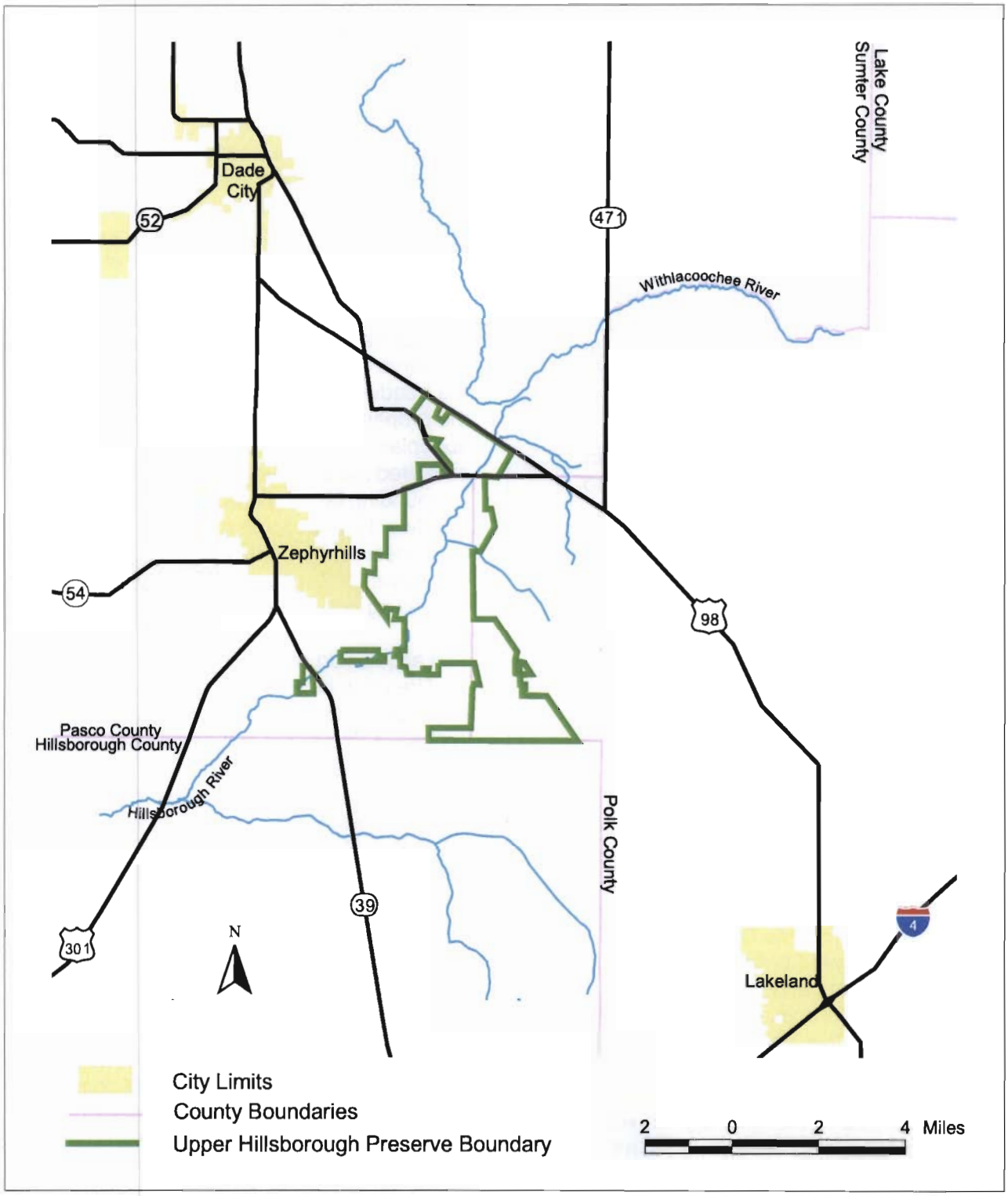


Figure 1. Location Map for the Upper Hillsborough Preserve.

The headwater origin of the Hillsborough River is a natural overflow feature that diverts a portion of flow from the Withlacoochee River into the Hillsborough River during very high flow events. As originally conceived, the UHFDA would have functioned in combination with the GSFDA, which was to be located upstream along the Withlacoochee River, to create a massive flood control system that would impound flood waters and then release them in a controlled manner to the downstream LHFDA and Tampa Bypass Canal. A cost/benefit analysis was conducted by the District to evaluate the economic and environmental costs of the FRB, relative to its flood control benefits. A non-structural approach to flood protection that was dependent on retaining natural floodplains was ultimately adopted by the District, and the remaining elements of FRB were subsequently deauthorized by the Federal government. Most of the lands comprising the current day Upper Hillsborough Preserve land area were originally acquired to accommodate creation of the UHFDA.

Planning Process

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 wetlands, floodplains, flood control facilities, potable water sources, and significant 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 supporting local economies and rural traditions. The ultimate objective is to balance resource protection needs with the public's right to appropriate use of these lands. This is accomplished by concentrating land uses in appropriate areas and preventing incompatible or conflicting uses from occurring within a property.

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 natural character and significance of the property, the level of development and access that is appropriate, and the types of public uses that are compatible with site-specific resource protection priorities. On the basis of this evaluation, the Preserve has been designated a *remote parkland*.

The planning process is initiated by an inter-disciplinary team of District staff. Affected local governments and others with a vested interest in the property may also be invited to provide input during plan development. Prior to presenting the plan for approval of the District's Governing Board and the appropriate Basin Board, management plans must are reviewed by those staff members that assigned various roles in directing the management and use of District-held lands. 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 regarding the plan.

Natural Significance

Although the original purpose of acquiring the UHDFA land area was to support the FRB flood control project, the official deauthorization of that project opened the door to permanent protection of a significant natural area. The resource protection benefits of public ownership of the Upper Hillsborough Preserve extend far beyond the simple preservation of on-site resources, and of the water management values described in a subsequent section of this plan. The Preserve is part of a large network of conservation lands that protect a vast natural area of statewide significance (Figure 2).

Progressing northward from the Preserve, this network of conservation lands consists of: the District-owned Green Swamp Wilderness Preserve (110,502 acres); the Little Gator Creek Wildlife and Environmental Area (566 acres), which is managed by the Florida Fish and Wildlife Conservation Commission (FWC); and the state-owned Richloam Tract (60,768 acres) of the Withlacoochee State Forest, which is managed by the Florida Division of Forestry (DOF). Protected lands to the south of the Preserve include the Cone Ranch property (14,230 acres) and the Blackwater Creek Preserve (1,980 acres), which are owned and managed by Hillsborough County. When combined with those adjoining lands that have been protected by the District through the purchase of conservation easements (14,027 acres), a contiguous land area of approximately 212,300 acres will be protected in perpetuity. An additional 28,374 acres of land in the Green Swamp have been protected through the less-than-fee title purchase of development rights by the Green Swamp Land Authority (GSLA). A portion of these lands adjoin the eastern boundary of the Green Swamp Wilderness Preserve, effectively increasing the total size of the protected network to more than 220,000 acres.

The network of conservation lands described above protects a large portion of the Green Swamp, which serves as the headwater origin for five major rivers, including both the Hillsborough and Withlacoochee Rivers. It also protects a diverse mixture of natural communities that provide wildlife habitat of statewide significance. A study by the FWC (Cox, et al., 1994), which distinguished areas of habitat in Florida that can support high biodiversity, alludes strongly to the habitat value of this network (Figure 3). The Hillsborough River floodplain in the Preserve is distinguished as an area of especially high habitat value. The value of these lands for resource-based recreational use is also noteworthy and enhances the overall natural significance of the property and other segments of the entire network.

Management Philosophy and Emphasis

The Preserve has been designated a remote parkland on the basis of the low population density of the area surrounding the property, and the high level of intrusion or disturbance attributable to nearby roads that are open to unrestricted motorized traffic. This designation reflects the conflicting influences of a low population density combined with a high level of vehicular access. Human population within a 10-mile radius of the property, 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 small human population of the area is served by a dense network of roadways or travel corridors that either border the property (US Highway 98 and

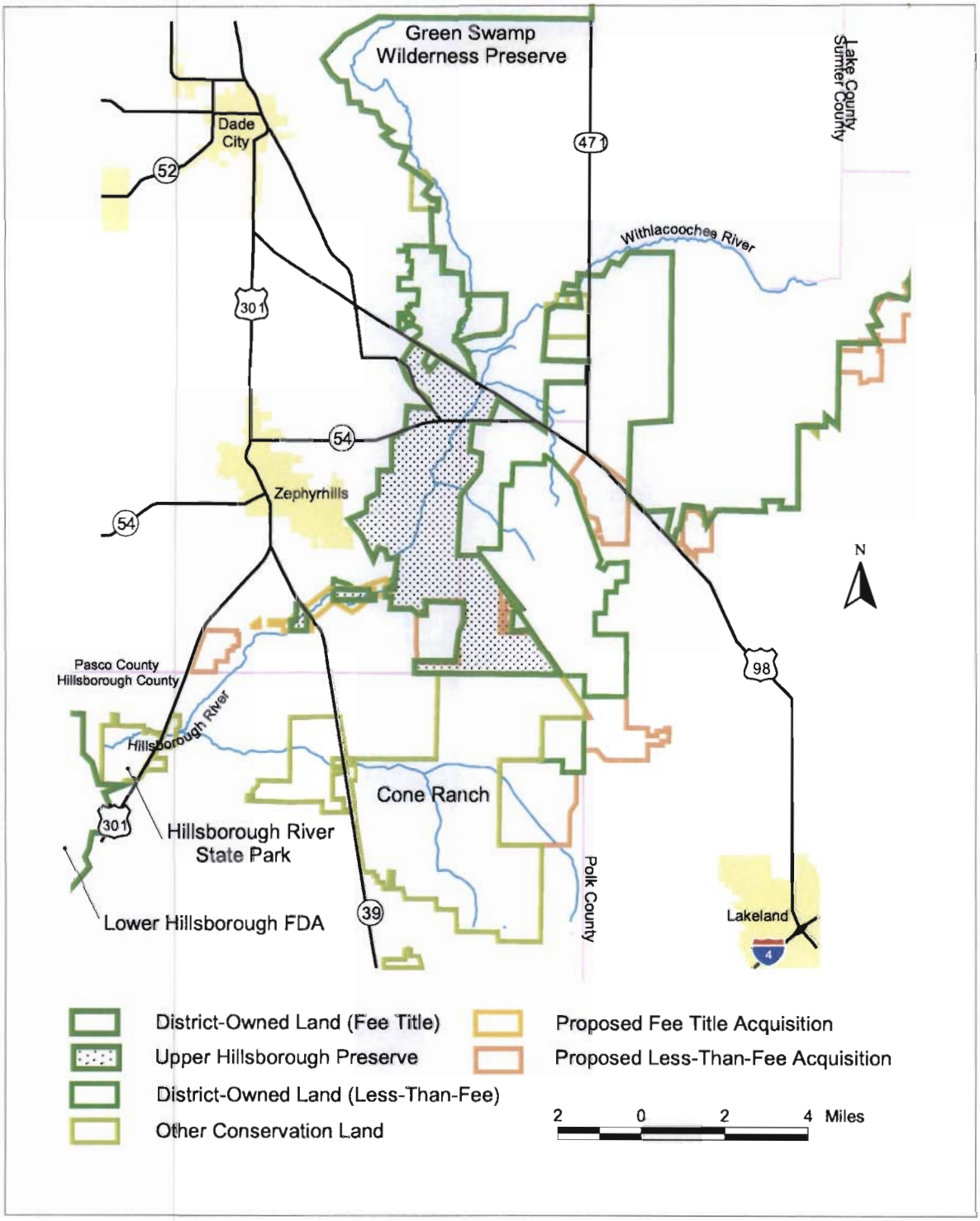


Figure 2. Network of Conservation Lands for Upper Hillsborough Preserve and Vicinity.

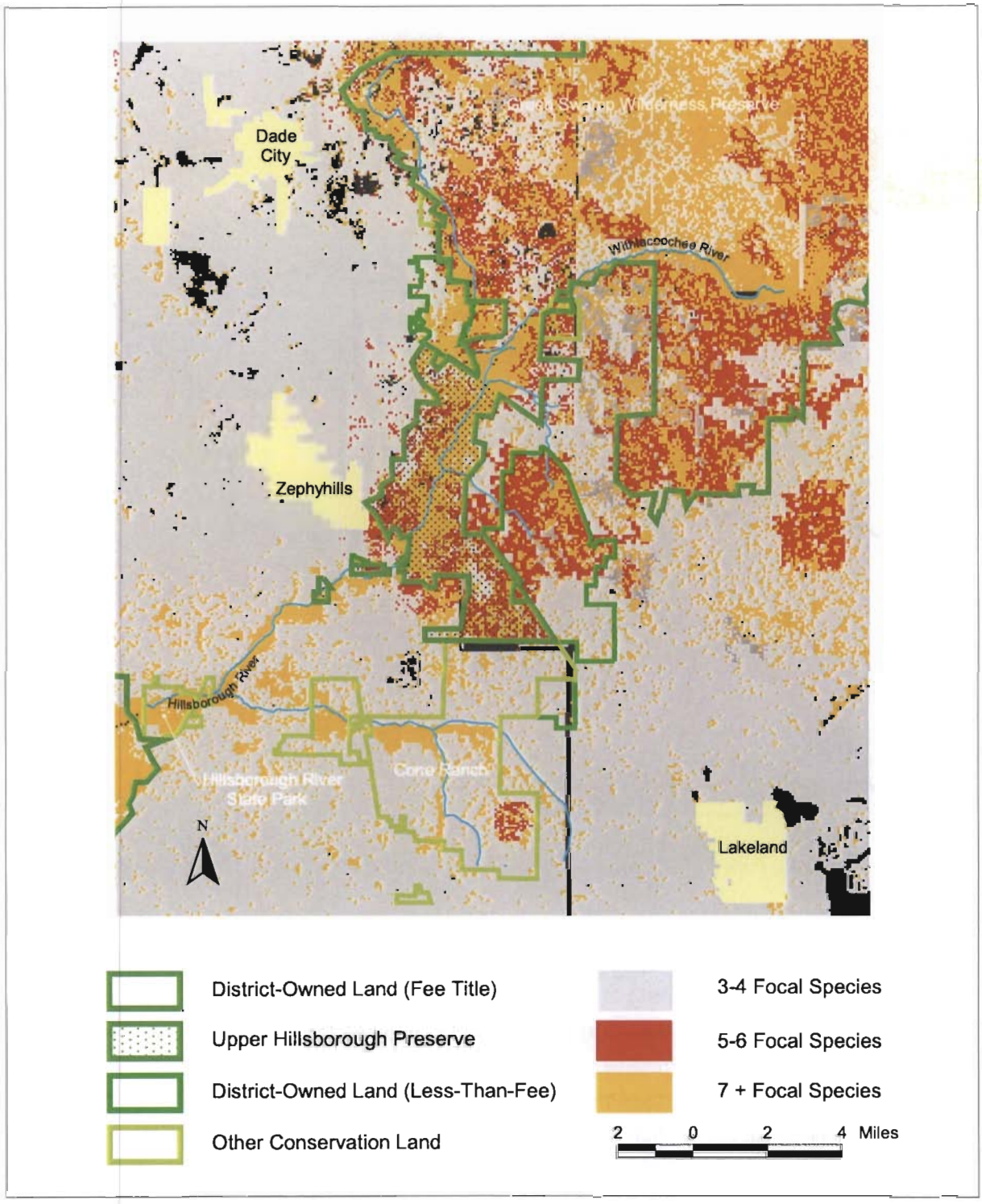


Figure 3. Hot Spots of Biological Resources for the Upper Hillsborough Preserve and Vicinity. Data provided by the Florida Fish and Wildlife Conservation Commission.

County Road 54A) or traverse it entirely (County Road 54 and an active CSX railway corridor) and greatly influence the property's character and isolation. The high level of accessibility afforded by this transportation network has also promoted high-density residential development on adjoining and nearby lands. Such close proximity to population centers necessitates special consideration when identifying compatible pubic uses and implementing certain land management actions, particularly prescribed burning.

It is also reasonable to assume that future growth within 10 miles of the property will eventually exceed the 100,000-person threshold that distinguishes a *remote parkland* from an *urban fringe parkland*. The City of Lakeland is approximately 12 miles southeast of the Preserve and is expanding rapidly in size and population. The municipality of Temple Terrace in Hillsborough County lies just beyond the 10-mile zone, as does the unincorporated area of Wesley Chapel in Pasco County. This future growth, which will be concentrated largely to the west and south of the property, will precipitate an increase in demand for recreational access to the Preserve and place even greater constraints on future management. The management philosophy for the Preserve must emphasize protection from the intrusive influence of surrounding development in order to preserve both the habitat values and recreational values of the property. As noted in a discussion of preserve design considerations in a subsequent section of this plan, the acquisition of strategic parcels of adjoining land may be critically important step toward ensuring that the property can be managed effectively in the future.

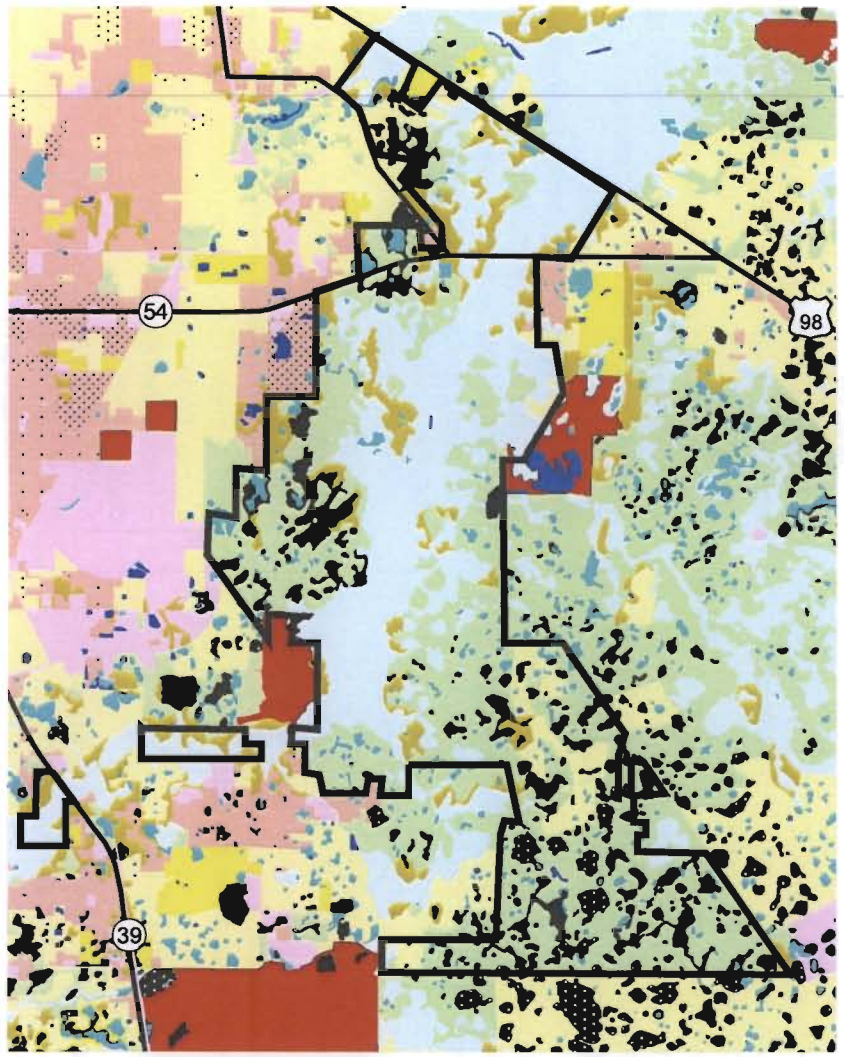
Land Cover

The following discussion provides a brief description of the natural vegetation occurring on the Preserve. Figure 4 delineates the extent and configuration of each natural community type. Altered lands, consisting almost entirely of improved pasture, account for only 500 acres, or less than 5 percent of the total Preserve land area. These areas are dominated by a carpet of bahia grass (Paspalum sp.). They are now fallow and are being recolonized by native species. These areas supported pine flatwoods prior to their conversion to pasture, and the ongoing recolonization by flatwoods species will be allowed to progress.

Wetlands

Riverine swamp associated with the floodplain of the Hillsborough River is the predominant natural vegetative community on the property, accounting for over 3,500 acres (about 34 percent of total) of the property. Other wetland communities represented on the property include cypress swamp (1,000 acres, or 10 percent of total), mixed hardwood and coniferous forests (150 acres, or 1 percent of total), and herbaceous wetlands (265 acres, or 3 percent of total). Cumulatively, wetlands account for a combined land area of approximately 4,900 acres, or nearly half of the total land area of the Preserve.

The property's riverine swamp generally occurs as one large, continuous expanse. This community is associated with frequently flooded soils along stream channels. Water levels can rise and fall rapidly in response to rainfall events. Depressional areas within the floodplain may retain water for longer periods of time. Dominant tree species include those that are tolerant of frequent flooding, such as bald cypress *(Taxodium distichum)*, water tupelo *(Nyssa aquatica)*, American elm *(Ulmus americana)*, water ash *(Fraxinus caroliniana)*, red maple *(Acer rubrum)*, water hickory *(Carya aquatica)* and water oak *(Quercus nigra)*. A tremendous variety of reptiles and amphibians inhabit riverine



Vegetation and Land Use Categories

- Residential (High Density)
- Residential (Medium Density)
- Residential (Low Density)
- Mining
- Other Developed or Altered Land
- Improved Pasture
- Citrus
- Other Agricultural Land
- Open Water
- Riverine Swamp
- Herbaceous Wetland
- Cypress Swamp
- Mixed Hardwood Wetland Forest
- Pine Flatwoods
- Mesic Hammock

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Figure 4. Vegetation and Land Use Map for the Upper Hillsborough Preserve and Vicinity.

swamps, as well as bobcat (*Lynx rufus*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*) and Florida black bear (*Ursus americanus floridanus*).

The cypress swamps are characterized by a canopy in which pond cypress (*Taxodium ascendens*) or bald cypress (*Taxodium distichum*) are the dominant species. In contrast to the riverine swamp, the property's cypress swamps are generally isolated systems that receive most of their water as overland flow from surrounding uplands (Florida Natural Areas Inventory and Department of Natural Resources, 1990). They account for nearly 1,000 acres, or 10 percent, of the total Preserve land area. Like the riverine swamp system, cypress swamps provide important habitat for wildlife, particularly such bird species as wood duck (Aix sponsa), swallow-tailed kite (*Elanoides forficatus*), barred owl (*Strix varia*), pileated woodpecker (*Dryocopus pileatus*) and great-crested flycatcher (*Myiarchus crinitus*). The greatest diversity of vegetation is found within the outer wet meadow edges of these wetlands, which support a wide variety of wetland grasses, sedges and rushes. Maintenance of the Preserve's cypress swamps will be dependent upon maintaining hydroperiods and the proper management of surrounding uplands. Prescribed burning of adjoining uplands will help to prevent invasion of the cypress swamps by hardwood tree species.

Another type of forested wetland found that is often found in a landscape context similar to that of cypress swamps is the mixed hardwood wetland forest. Although cypress can be a significant vegetative component of these forests, the canopy also supports a wide variety of hardwood tree species that are adapted to wetland conditions. These include red maple (*Acer rubrum)*, sweetgum *(Liquidambar styraciflua*), loblolly bay (*Gordonia lasianthus*), and several species of oak (*Quercus spp.*). Mixed hardwood wetland forests sometimes represent cypress swamps that were logged of their cypress canopy and are undergoing a transitional recovery during which hardwood species become established and initially dominate the canopy. Mixed hardwood wetland forests account for only about 150 acres of the Preserve, and they are concentrated in the Alston management unit at the southern end of the property. It is suspected that these were cypress dome swamps that are undergoing such a transitional recovery. Their value for wildlife is analogous to that of cypress swamps, or may somewhat exceed that of cypress swamps due to mast production.

The Preserve also supports two types of non-forested wetlands: freshwater marshes and wet prairies. These have been combined on the vegetation map (Figure 4) under the category of herbaceous wetlands. They account for a total combined land area of approximately 265 acres, or 2.5 percent of the property. Freshwater marsh (155 acres) is distinguished from wet prairie (105 acres) by a longer hydroperiod. The longer duration of flooding in marshes allows them to support such species as water lily *(Nymphaea odorata)*, pickerel weed *(Pontederia cordata)* and arrowhead *(Sagittaria latifolia)* within the deep-water central pools of the wetland. Moving upgradient from the deeper marsh, a fringe of wet prairie characterized by St. John's wort *(Hypericum fasciculatum)*, maidencane *(Panicum hemitomon)* and saw grass *(Cladium jamaicense)* typically surrounds the marsh. The wetland edges, which may remain saturated but are rarely inundated, support a variety of wetland grasses, including beakrush *(Rhynschospora spp.)*, spikerush *(Eleocharis spp.)*, flat sedge *(Cyperus spp.)*, yellow-eyed grass *(Xyris spp.)*, pipewort *(Eriocaulon spp.)*, redroot *(Lachnanthes caroliana)*, blue maidencane *(Amphicarpum muhlenbergianum)* and sand cordgrass *(Spartina bakeri)*. Within the northern half of the Preserve, wet prairies are commonly found along the exterior

fringe of freshwater marshes. They also occur as individual wetland systems in shallow depressions dispersed within the property's pine flatwoods, particularly within the southern half of the property.

Uplands

Pine flatwoods constitute the most prevalent upland community at the Preserve. They occur up-gradient of the riverine swamp and account for a total land area of approximately 3,800 acres, or about 37 percent of the property. As the name implies, pine trees are the dominant component of the overstory in this plant community. A moderately open overstory of longleaf pine *(Pinus palustris)*, with occasional slash pine *(Pinus elliottii)* in wetter areas, is characteristic of the flatwoods at the Preserve. The understory is composed of a variety of shrubs and herbs. The most common include saw palmetto *(serenoa repens)*, gallberry *(Ilex glabra)*, fetterbush *(Lyonia lucida)* and wax myrtle *(Myrica cerifera)*. Wiregrass *(Aristida stricta)* is a common groundcover species.

Pine flatwoods is the predominant terrestrial natural community in Florida. They have suffered a significant reduction in total coverage during the last several decades due to urban and agricultural development. As development pressures continue due to projected growth in population, the loss of pine flatwoods will also continue (Myers and Ewel, 1990). This trend is evident within the region surrounding the property, ensuring that the Preserve's flatwoods will be of increasing importance to regional wildlife populations.

Like most forested plant communities in Florida, pine flatwoods have been subjected to a long history of timbering. This history of timber harvest is often reflected by a pine canopy that is either immature, very sparse, or absent entirely. Much of the Preserve's flatwoods were harvested of pines shortly before the District acquired the property. The flatwoods in the Alston management unit at the southern end of the property are especially lacking in a pine overstory. Pine flatwoods that lack a normal pine canopy due to timber harvest are often referred to as "native range" or "shrub and brushland" and account for about 2,700 acres, or nearly 75 percent, of the total acreage of pine flatwoods at the Preserve. District ownership and management of the property will promote the progressive regeneration of a normal pine overstory in these areas.

Forested uplands that support a mixed canopy dominated by oaks *(Quercus spp.)* and other hardwoods are distinguished as mesic hammock and account for a total land area of approximately 750 acres. Some of these areas also support a component of pine in the overstory. Such sites may be artifacts of a long-term history of fire suppression that allowed hardwoods to gradually invade areas that once supported pine flatwoods. The species composition of pine flatwoods is maintained by relatively frequent fires, which eliminate invading trees and shrubs. In the prolonged absence of fire, such trees and shrubs as live oak (*Quercus virginiana*) and wax myrtle become established, changing the character of these uplands. Within the Preserve, these hardwood forests are located, adjacent to pine flatwoods or occur as islands within the riverine floodplain at sites of higher elevation.

Open water areas, excluding the river, are almost entirely absent from the property and are not reflected on the vegetation map (Figure 4). Open water features consist of a few small borrow pits, totaling approximately 3 acres in total area, within the southern Alston management unit of the property. The borrow areas were probably used to provide fill for the maintenance of interior roads, and also created watering areas for grazing cattle.

Hydrologic Impacts to Vegetation

Indications of moderate to severe stress have been observed in many of the Preserve's wetland systems. These observations date to an investigation conducted by District staff in 1998 to prioritize altered on-site wetlands for restoration activities. The investigation found that many of the Preserve's unaltered wetlands also exhibited symptoms of altered hydrology, including: moss collars and lichen lines, normally indicative of seasonal high water levels, located at ground surface; extensive limb breakage and tree fall, indicative of moisture stress and soil subsidence through oxidation; increased vulnerability to fire; and encroachment of upland vegetation. This suite of impacts parallels those observed in wellfields where groundwater withdrawals have produced severe hydrological alterations in surrounding wetlands due to declines in groundwater levels. It has also been suggested that similar indications of stress are manifested in wetland systems throughout the region surrounding the Upper Hillsborough Preserve. Long-term monitoring will be essential to document either a continuing decline or progressive recovery within on-site wetlands. Such monitoring will also be essential to distinguish regional impacts from those that are local in origin.

Mining along the boundary of the Preserve represents an adjoining land use that can potentially affect local groundwater levels and, by extension, the hydrologic status of the Preserve's wetlands. The Plaza Materials Corporation (PMC) and CFE Materials operate limerock mines on the Preserve's western and eastern boundaries, respectively. Modifications to the PMC mine have already been implemented in order to both monitor and mitigate the impacts of mining on nearby wetlands. An extensive network of monitoring wells and staff gages have been installed at the Preserve to support the establishment of minimum flows and levels for the Hillsborough River and will function in combination with those installed by both PMC and CFE to track groundwater impacts attributable to the mining operations. A formal analysis of wetland conditions on the Preserve, and of the source of any hydrologic impacts discerned by the analysis, must be implemented by the District in order to develop a strategy to halt and/or reverse any declines in wetland health.

Management Actions:

- **Implement a formal investigation of chronic wetland stress and degradation observed in the Upper Hillsborough Preserve, and identify the source of such stress and degradation in order to frame a course of action designed to restore the health of on-site wetlands.**

Water Management Benefits

The acquisition of lands that play an important role in the protection and management of water resources is a key District function. Benefits of this approach to water management are wide-ranging and include: the protection and development of public water supply sources; maintenance of the flood protection afforded by natural floodplains and wetlands; protection or enhancement of water quality; preservation of water conveyances; and the preservation of functional natural systems.

The significant proportion of the Preserve that lies within the 100-year floodplain allows these natural lands to serve as a buffer against flooding. The property's unaltered riverine floodplain and depressional wetlands attenuate the discharge of water to and from the Hillsborough River during periods of flood.

The natural character of the property also makes it possible to maintain good water quality in the water that discharges to the river from the property, and to enhance water quality in the Hillsborough River as it traverses the property. The importance of this function may increase as the level of development and intensity of land use increases in the upstream portion of the watershed. Expansion of current agricultural use and continuing urbanization in the watershed will likely contribute pollution to the river in the form of stormwater runoff, ultimately affecting all downstream areas, including the City of Tampa's reservoir and the Tampa Bay estuary. The water management benefits associated with protection of the property are discussed in greater detail below.

Flood Protection

Flood protection has historically depended upon a structural approach to protect lives and property in flood-prone areas. Unfortunately, such protection has often been achieved at the expense of natural lands. It has also proven to be very expensive. As noted in a preceding discussion of the history of the Preserve, much of the property was originally purchased to accommodate construction of a series of levees and water control structures that would have converted the site into a large, artificial impoundment for the storage of flood waters.

The need to provide flood protection through alternative means that would reduce impacts to natural areas was recognized prior to construction of the planned facilities. A non-structural approach to flood protection has been adopted as a more environmentally benign, cost-effective method in areas where such an approach is feasible. The District's primary flood protection strategy depends on identifying and preserving natural floodplains and other lands that can serve as storage areas for storm-generated flood waters. The benefits of this approach include: reduced cost borne by the public in the construction and maintenance of flood control structures; increased public safety achieved by eliminating breach or failure concerns inherent in those structures; and the preservation of natural lands that would otherwise be lost or altered through the implementation of structural flood control measures.

The Hillsborough River originates just north of the Preserve as overflow from the Withlacoochee River. When the Withlacoochee River reaches a stage of 78.5 NGVD (National Geodetic Vertical Datum) at the overflow point, part of its flow spills over into the Hillsborough River. The overflow results in a natural diversion of flood waters which is very important to the flow characteristics of both rivers. For example, during the extreme flooding of 1960, about 2,000 cfs (cubic feet per second) of flow was diverted from the Withlacoochee River to the Hillsborough River during peak flows. At high stages, more than one-fourth of the flow from the upper Withlacoochee River is diverted through the overflow. No flow occurs through the overflow about 65 percent of the time (SWFWMD, 1980).

In addition to the flood protection the Hillsborough River provides by diverting a portion of high flows from the upper Withlacoochee River, the storage capacity of the Hillsborough River floodplain also provides important flood protection benefits within the Hillsborough watershed by detaining flood waters. This detention of flood waters within the floodplain reduces the peak flows of the river and allows flood waters to be released over a longer period of time. It also reduces the peak flood elevation downstream, which could reduce or possibly eliminate damage to private property within the floodplain. A large portion of the Preserve lies within the 100-

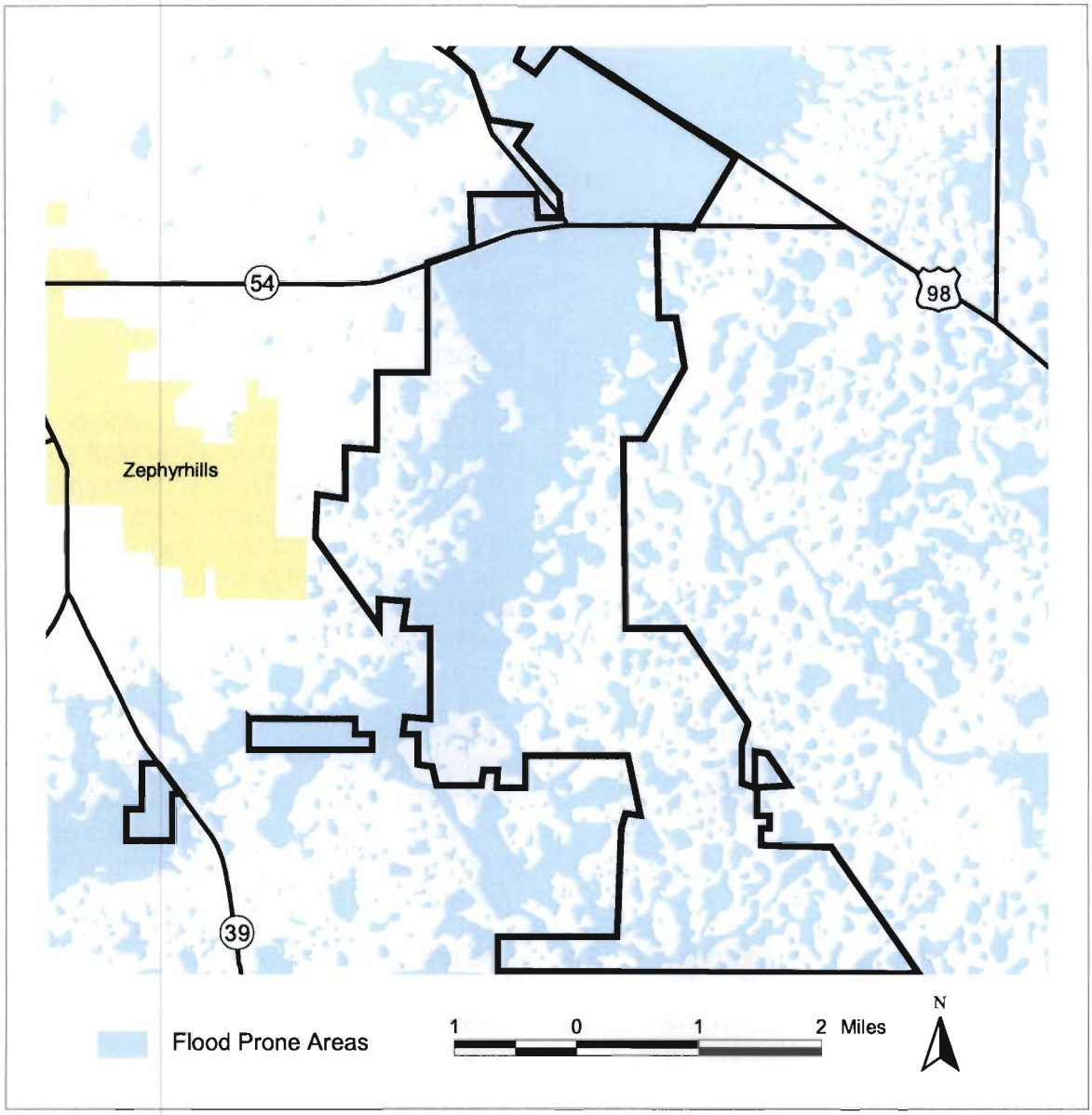

Figure 5. Flood Prone Areas in the Upper Hillsborough Preserve and Vicinity. Areas distinguished as flood prone include wetlands and the 100-year floodplain as delineated by the Federal Emergency Management Agency.

year floodplain, or is otherwise considered to be flood prone (Figure 5). Preservation of the property will ensure that the flood storage capabilities of the property will be maintained.

Preservation of the natural flood protection benefits associated with the Hillsborough riverine floodplain will also depend upon maintaining normal surface flows and hydroperiods within the entire system. Structural improvements in the floodplain will be limited to boardwalks and other minor structures considered necessary to facilitate land management activities or accommodate approved, compatible recreational uses. Any structures placed in the floodplain shall be designed such that they will not alter hydroperiods or flood storage capabilities or impede surface flows. Exceptions to this general management guideline include structures designed to restore altered hydrology or assist in environmentally appropriate management of critical wildlife habitat areas.

Management Actions:

- **Prohibit construction activities within the 100-year floodplain that would require filling, or otherwise reduce on-site floodwater storage. This will not be interpreted to preclude minor operations considered necessary to accommodate resource management needs or passive, resource-based recreational uses.**

- **Continue ongoing efforts targeting the restoration of on-site wetlands that had been ditched and drained prior to District acquisition in order to restore natural hydroperiods and pre-alteration flood storage capacity.**

Water Quality Protection and Enhancement

Wetland vegetation has a natural ability to filter suspended sediments from the water column and to assimilate certain water-borne pollutants. The wetlands of the Preserve, especially the forested wetlands of the floodplain, may substantially improve the quality of surface waters that enter the property from adjoining or nearby upgradient areas. This, in turn, helps to assure that water exiting the property through the Hillsborough River is of good quality. Existing land use within the region surrounding the property consists primarily of pasturelands and other agricultural uses, but there is a rapid conversion to urban development taking place. Surface water quality conditions in the upper Hillsborough River, including the stretch within the Preserve, are showing signs of degradation. The Florida Department of Environmental Protection (FDEP) monitors water quality in rivers throughout the state, and currently ranks water quality conditions in the upper reaches of the Hillsborough River as"fair" (FDEP, 1996).

The portion of the river extending upstream from Fletcher Avenue (S.R. 582A) in Hillsborough County to the Withlacoochee River overflow in Pasco County, which includes the entire on-site stretch of the river, was designated an Outstanding Florida Water (OFW) by the Florida Department of Environmental Protection (FDEP) in 1995. Waters with this designation are afforded the highest level of protection by the state based on exceptional recreational or ecological significance. The OFW designation prohibits point source discharges that would result in any diminution of water quality and requires a higher level of treatment for stormwaters that drain to the system. This designation will help to ensure that water quality within the Preserve will not be degraded by off-site drainage into the property. Drainage

originating from within the natural uplands of the property should not diminish water quality in river, provided that natural land cover is maintained in order to prevent sedimentation.

The large, on-site expanse of unaltered floodplain vegetation will continue to provide the property's most significant contribution to water quality enhancement. The natural plant communities associated with the riverine floodplain will assimilate some of the pollutants generated by land uses in the upper watershed, thereby enhancing water quality in both the channel of the Hillsborough River and in the downstream Tampa Bay estuary.

Some wetland alterations occurred on the lands of the Preserve prior to District acquisition. These consist primarily of ditching that linked isolated wetland systems with the channel of the Hillsborough River in order to enhance the drainage of adjoining uplands and more effectively accommodate surrounding agricultural uses. In one case, off-site drainage from a chicken farm was discharged into the Preserve during periods of high rainfall and ultimately drained into the Hillsborough River. While improving the drainage of surrounding uplands, these ditching activities: 1) reduced the hydroperiods of affected wetlands; 2) compromised the ability of the property to protect downstream areas from flooding by effectively reducing the volume of water that could be stored or detained by the affected wetlands; and 3) reduced the ability of the ditched wetlands to intercept overland flow and thereby provide natural water quality treatment and enhancement. Ongoing restoration efforts are aimed at plugging or backfilling these ditch systems to redress these negative impacts. Completing restoration of these altered wetlands will be an important land management priority.

Management Actions:

- **Avoid disturbance of native floodplain vegetation to preserve the ability of the floodplain to enhance water quality in the Hillsborough River.**
- **Maintain natural vegetation in the property's uplands to minimize sedimentation in the Hillsborough River.**
- **Complete the restoration of altered wetlands by plugging or backfilling existing ditch systems.**

Water Supply

The Preserve does not serve as a potable water supply source, nor is it projected to serve as one in the future. However, the Hillsborough River itself is the primary water supply source for the City of Tampa. The downstream withdrawals of water that service the people of Tampa are directly dependent on maintaining upstream contributions to the river's flow. In this respect, the protection of the Preserve assists in maintenance of both the quality and quantity of an important water supply source.

There are additional water supply implications associated with the Preserve. Cone Ranch, which is contiguous with the southern property line, is being evaluated as a potential water supply source. Cone Ranch encompasses a total land area of approximately 14,230 acres and includes major portions of both Blackwater Creek, a tributary to the Hillsborough River, and Itchepackesassa Creek, which is major source of flow to Blackwater Creek. Tampa Bay Water has proposed the development of new wellfield at Cone Ranch in their Master Water Plan. Initial plans call for the withdrawal of approximately 8 million gallons per day (mgd) from the site, with

and additional 4 mgd withdrawn from individual production wells dispersed along a pipeline route that would connect Cone Ranch to the Brandon Urban Dispersed wellfield (Thompson et al., 1998 Draft).

The development of a new water supply source from already stressed ground water resources raises concerns, primarily because of the effects of past and current ground water withdrawals on surface water systems in the region. Monitoring of groundwater levels and wetland vegetation within and surrounding major groundwater withdrawal areas (wellfields) in the northern Tampa Bay region indicate wellfield operations have caused serious declines in groundwater levels and related impacts to wetlands. Wetland impacts have been associated with declines in the water table in response to groundwater withdrawals from the wellfields. A combination of chronically low water levels and abbreviated hydroperiods have resulted in low soil moisture, shifts in vegetational composition, soil subsidence, treefall, fire damage and the disappearance of wetland-dependant wildlife (Rochow, 1994). Monitoring of wetlands within the Preserve will be important because impacts to wetlands have also been documented in wetlands and lakes located beyond wellfield boundaries.

Management Actions:

- **Maintain on-site contributions to the flow of the Hillsborough River.**
- **Prior to operation of the proposed Cone Ranch wellfield, establish baseline wetland health conditions and implement a wetland monitoring program within the Upper Hillsborough Preserve to determine if current and/or future groundwater withdrawals cause impacts to on-site wetlands.**

Conceptual Land Use Plan

Special Protection Areas

Certain areas within the Preserve will warrant special protection efforts in order to effectively preserve water management functions and/or other outstanding natural values. Any 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, will 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 channel of the Hillsborough River and its associated floodplain; an on-site wading bird rookery; a stand of scrub habitat that is occupied by Florida scrub-jays; a series of monitoring stations that have been established to track water levels, river flow, and wetland conditions; and a number of documented archaeological and historical sites. Additional information on these sites or features is provided below. Additional Special Protection Areas may be designated in the future on the basis of colonization or regular use by an imperiled species, or in recognition of other significant resource values or concerns.

Hillsborough River

A 23-miles segment of the Hillsborough River, extending from Fletcher Avenue (S.R. 582A) in Hillsborough County upstream to the Withlacoochee River overflow in Pasco County, has been designated an Outstanding Florida Water (OFW). This

includes the portion of the river within Upper Hillsborough. The designation was conferred in recognition of the potential for increasing urban encroachment to threaten the river's water quality, regional importance to native wildlife, and significant recreational value (Hillsborough River Greenways Task Force, 1995). Through compliance with the provisions of the OFW designation, an expanded level of water quality protection is afforded so that current recreational, fisheries and wildlife values and ecological integrity can be maintained.

Protection of the Hillsborough River's headwaters through preservation of a natural state at the Preserve will contribute substantially to efforts to maintain the river's ecological and recreational values. The ability of natural vegetation in the river channel and associated floodplain to maintain or enhance water quality was discussed previously. Public ownership of the Preserve will also preclude intensive, large-scale development, which ensures that the wildlife and recreational values of these lands will also be maintained. Development in the floodplain and along the river channel of the Preserve will be limited to the minimum necessary to accommodate land management needs and approved recreational uses. Such development will be designed to avoid water quality degradation and minimize disturbance and alteration of existing native vegetation.

Management Actions:

- **Design any site improvements and facilities constructed along the Hillsborough River channel, and within the floodplain, to avoid water quality degradation and to minimize the disturbance or alteration of existing native vegetation.**
- **Implement a water quality monitoring program to discern any changes to OFW baseline conditions. Monitoring sites should include the northern boundary. The sampling should be conducted monthly and during any major cyclic fluctuation, and in response to indications of declining water quality from outside of the property.**

Wading Bird Rookery

The site of a colonial wading bird rookery is located west of the on-site railroad trestle near the channel of the Hillsborough River. As such, the site is located within, and is completely subsumed by, the Hillsborough River Special Protection Area discussed previously. However, there are special strategies that must be implemented to ensure protection of such sensitive nesting areas, apart from those that will be employed to protect the Hillsborough River, so a separate Special Protection Area has been designated to protect the rookery.

Populations of most wading bird species have declined greatly in recent decades. A considerable amount of biological research has focused on identifying the reasons for the declines. Many of these studies have attempted to identify the suite of site conditions that are required for establishment of successful wading bird rookeries. The research has confirmed that rookeries are very susceptible to man-induced disturbance (Tremblay and Ellison, 1979; Buckley and Buckley, 1976). In recognition of the sensitivity of rookery sites, and of the imperiled status of several of the species that use such sites, the on-site rookery location will be managed as a Special Protection Area.

Water levels play an important role in determining the success of a rookery site. A successful rookery must have a fairly large and dependable food source within reasonable distance of the site. Most wading birds depend upon the fish and amphibians available in nearby wetlands. If

water levels are too high in the wetlands where the birds must feed, then the food source may not be sufficiently concentrated to permit the necessary level of harvest. Conversely, if water levels are too low within the actual site of the rookery, then the eggs and nestlings serve as easy prey for raccoons, snakes, and other major land predators. Some researchers have noted a correlation between high water levels within rookery sites, the presence of alligators and cottonmouth snakes to ward off land based predators, and the success of wading bird rookeries (Jenni, 1969).

Nesting in the rookery was monitored historically by the Florida Fish and Wildlife Conservation Commission. Monitoring is now conducted by the District on an annual basis, and indicates that the rookery has been inactive for the past four years. This period of inactivity coincides with an extended period of drought, and it is suspected that low water levels and/or a reduced duration of flooding at the rookery site are responsible for the inactivity. The District will continue to monitor the site annually for signs of renewed activity, and future monitoring results will be documented in the District's annual monitoring report. This monitoring will permit land management staff to discern changes or trends in nesting activity so that management actions can be planned accordingly. Snowy egrets and little blue herons, the two species that have nested at the rookery, have both been designated species of special concern by the State of Florida (FGFWFC, 1997). These designations place additional emphasis on the need to carefully protect the property's rookery site.

Protection of the rookery site will require that recreational uses and other potentially disruptive land uses be directed to other areas of the property (Tremblay and Ellison, 1979). The species using the rookery site are typically more sensitive to disturbance during the courtship, nest-building and early-nesting stages of the nesting season. This includes the time period extending generally from February through July for most species, and extra precautions may be required during this period to avoid inducing possible abandonment of the sites. The birds are often reluctant to abandon eggs or young, and thus may be somewhat more tolerant of minor disturbance in later parts of the nesting season. Prescribed fires and other land management activities conducted in the vicinity of active rookeries should be restricted whenever possible during this normal period of activity. Smoke from nearby prescribed fires may also disturb or stress birds in the rookery if there is inadequate allowance for smoke dissipation, and this factor will be considered in determining prescription parameters for prescribed fires at the Preserve.

Preservation of the extensive wetland communities of the property through District ownership and management will help to ensure that the area remains suitable for continued use as a rookery, and for the establishment of new rookeries. Several other rookeries occur in close proximity to the Preserve, and it is presumed that the property serves as a potential foraging and resting area for birds nesting at the other sites. This use is not confined to discrete areas and its continuation cannot be assured through designation of additional Special Protection Areas. However, the continued habitat value of the Preserve for this purpose will be ensured through preservation of a natural condition in the property's wetland areas.

Management Actions:

- **Continue to monitor the rookery site for activity and trends in usage, and implement protective measures as necessary.**

- **Direct recreational uses and other activities that could be disruptive to other portions of the property.**
- **Preserve the suitability of on-site wetlands as foraging and resting areas for wading birds by maintaining or restoring normal hydroperiods and water levels.**

Scrub-Jay Habitat

The Florida scrub-jay (Aphelocoma coerulescens) is an imperiled bird species known to depend upon habitat provided by the Preserve. It is designated a threatened species by both the State of Florida and the United States Fish and Wildlife Service (FGFWFC, 1997), and as such is protected under the Endangered Species Act. Like the colonial wading bird rookery discussed above, sites that serve as habitat for scrub-jays are discrete and readily defined. However, in contrast to wading bird rookeries, scrub-jay sites are inhabited on a year-round basis, are not typically ephemeral or irregular in nature, and are much more exacting in terms of management needs.

Scrub-jays are extremely habitat specific, occurring only in immature stands of scrub or scrubby flatwoods. Sites that have become overgrown or over-mature due to long-term absence or suppression of fire will not support jays. As a stand of scrub or scrubby flatwoods becomes progressively more dense since the last incidence of fire, it also becomes progressively more difficult for jays to forage for food. The high, dense canopy and shrub growth also makes it difficult for jays to spot and avoid such major predators as the sharp-shinned hawk (Accipiter striatus) and Cooper's hawk (Accipiter cooperii), both of which are known to occur in the Preserve. This specificity for a habitat type that has always been relatively rare, and has become increasingly rare due fire suppression and man's development activities, has led to the scrub-jay's elimination across much of its original range and to its current status as a threatened species (Cox, 1987).

Scrub-jays have evolved a number of adaptive behavioral traits that have important implications for their long-term management and preservation. They live in family groups within strictly defined territories that they defend from other jays. There is only one breeding pair, mated for life, within any given territory; other jays residing within a territory are usually offspring of the mated pair that assist in raising of the family's young. Territories are often inherited, usually by a male, after the demise of the breeding pair. Dispersal distances for jays are very short. Although some jays have dispersed distances of several miles in search of habitat suitable for the establishment of new territories, most will never venture more that several hundred meters from the site at which they were fledged. As a result, jays will not readily recolonize a site from which they have been eliminated.

One family of jays has been documented in scrubby flatwoods habitat that straddles the property boundary. The overall extent of this habitat type at the Preserve is extremely limited, and is not reflected on the vegetation map (Figure 3). The District's Land Management section will monitor the known scrub-jay habitat for continued habitation, and will conduct prescribed fires in this area in a manner designed to be compatible with scrub-jay habitat needs. Generally, prescribed fires should be conducted such that no more than 60 percent of any known scrub-jay territory will be consumed by a fire. Jays will not abandon a territory following fire provided that about 40 percent of the stand remains intact (John Fitzpatrick, Archbold Biological Station, pers. comm.). This reduces stress among the birds by allowing them to remain within familiar territories and will reduce the

likelihood of forced emigration to areas that provide unsuitable habitat, which will not support them. Consideration should also be given to avoiding fires during the nesting season, which normally extends from March through June. Natural fire intervals for scrubby flatwood communities in which scrub-jays are found are estimated at once every 8-25 years (FNAI and FDNR, 1990), although return frequencies in the Preserve area may tend toward the shorter end of this range. The moist conditions at the Preserve will generally allow burned vegetation to regenerate more quickly. As such, prescribed fires in the scrubby flatwoods will be conducted on an "as needed" basis.

The extremely limited extent of scrubby flatwoods at the Preserve will complicate management efforts to perpetuate scrub-jays because the majority of the occupied habitat is located on neighboring privately owned property. In addition, the pattern of scrub-jay occupation on the neighboring land is unknown. The District will attempt to learn the status of this population; however, it is unlikely that a self-sustaining population is present in the local area. It may be difficult to justify extraordinary measures to manage the site for scrub-jays. Until more is known, prescribed fires will be designed to maintain the property's scrubby flatwoods in a condition that will continue to be suitable for scrub-jays, and fires in this area will be avoided during the nesting season.

Management Actions:

- **Manage the scrubby flatwoods currently occupied by scrub-jays with prescribed fire conducted at intervals designed to maintain conditions suitable for continue habitation by scrub-jays.**
- **Avoid conducting prescribed fires during the nesting season within, and in the area immediately surrounding the occupied scrub-jay habitat.**
- **Investigate the status of the scrub-jay population by ascertaining the total number of jays and the cumulative extent of suitable scrub-jay habitat on both Preserve and adjoining private lands.**
- **Large, overmature scrub oaks may be mechanically reduced in stature on an as needed basis to make them more suitable for foraging by scrub-jays. Pines located immediately adjacent to pockets of scrub will be eliminated.**
- **Monitor occupied scrub-jay habitat for the presence of jays on a semi-annual cycle.**

Monitoring Stations

A large number of monitoring stations have been established at the Preserve (Figure 6). These stations help the District fulfill a broad range of resource monitoring needs. They currently total 38 in number, and it is possible that additional stations will be established in the future. Much of the network of monitoring stations will help the District set minimum flows and levels for the upper Hillsborough River and underlying groundwater aquifers. It was stated previously in this plan that stations to monitor vegetation in on-site wetlands will also be established to document baseline conditions and allow the District to discern any adverse impacts attributable to future off-site withdrawals of groundwater from the proposed Cone Ranch wellfield. Several of the monitoring locations were established by a neighboring limerock mine to satisfy conditions for issuance of a water use permit, in order to monitor for hydrologic impacts associated the mining activities. All existing and future on-site monitoring stations will be treated as Special Protection Areas throughout the duration of their use. Land management and maintenance

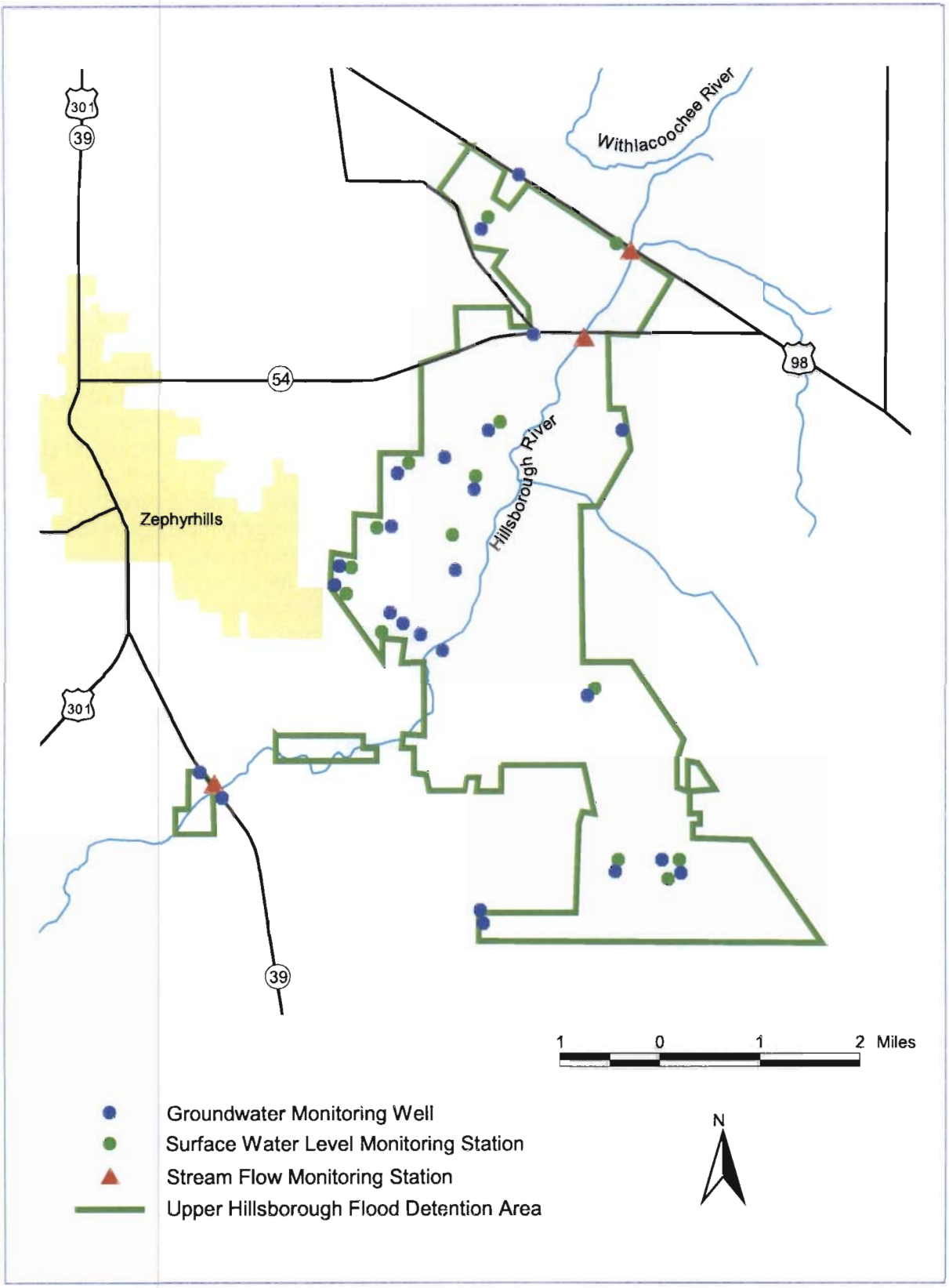

Figure 6. Hydrologic Monitoring SIte s at the Upper Hillsborough Flood Detention Area.

A Plan for the Use and Management
of the Upper Hillsborough Preserve

activities, and improvements to accommodate the public's recreational use of the property, will be designed to avoid any alterations or anthropogenic changes at the monitoring stations that would confound interpretation of monitoring data collected from the sites.

Management Actions:

- **Ensure that future land management and maintenance activities, as well as public recreational uses accommodated on the property, will not compromise the collection or interpretation of data from monitoring stations established at the Preserve.**

Archaeological and Historic Sites

When the initial portions of the Preserve were purchased to accommodate construction of the Four River Basins flood control project, surveys were conducted to identify sites of archaeological or historical significance prior to the large-scale disturbance that was to occur through construction of the flood control facilities.

These original surveys encompassed a project area that included lands extending northward of the Preserve, as it is currently delineated. As explained previously, a large section of the original Preserve project area was located north of US98. That section has been incorporated into the District's Green Swamp Wilderness Preserve, which adjoins the Preserve along the northern boundary. A total of fifty-five archaeological sites were documented in the surveys and described in a series of reports prepared for the District (Wharton 1984; Wharton 1979). Thirty-three of the sites are located within the present-day boundary of the Preserve, and two of these were described as significant cultural resources (Wharton, 1984). It has been estimated that the sites range in age from approximately 10,000 years before present to 500 years before present. Generally, the individual sites correspond with seasonal visitation by aboriginal inhabitants that resided along the coast. The Green Swamp and Upper Hillsborough Preserve areas served as seasonal hunting grounds and were an important source of rocky chert outcrops. Chert was used by aboriginal inhabitants as a material for the manufacture of various tools.

All archaeological sites at the Preserve will be treated as Special Protection Areas. Land management activities, the construction of recreational improvements, and other activities that could result in physical disturbance of archaeological sites will not be permitted. Although the District does not generally provide funding to support archaeological investigations and assessments, the property's sites will be made available for supervised study by professional archaeological researchers. Proposals to conduct such research will be reviewed on a case-by-case basis and must satisfy any requirements or protocols dictated by the Division of Historical Resources of the Florida Department of State.

Management Actions:

- **All known archaeological and cultural sites will be treated as Special Protection Areas in order to prevent physical disturbance that would compromise archaeological or historical values.**
- **Archaeological sites will be monitored on an as-needed basis for evidence of looting, and cases of looting will be prosecuted strenuously by the District.**
- **Proposals to conduct archaeological research on the property will be reviewed by the District on a case-by-case basis, and permitted research must be consistent with any**

requirements or protocols established by the Florida Department of State's Division of Historical Resources.

- **Any newly discovered archaeological sites will be properly documented and registered in the Florida Master Site File maintained by the Florida Department of State.**

Land Use

Recreation

It is the policy of the District (Board Policy 610-3) that appropriate public recreational usage 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."*

Recreational activities that are not dependent on the natural resource values of the site will not normally be allowed. Such "user-based" activities generally consist of those in which a natural setting is not an essential element for their enjoyment, e.g. baseball and other sports requiring a playing field. Although such facilities could be constructed in a natural setting, and the aesthetics of such a site could enhance the enjoyment of the facility, the activity and facility could be accommodated adequately in an altered, human-dominated landscape. Many user-based recreational activities require improved facilities that would displace natural features if accommodated in natural areas. Some also generate noise or produce other incidental secondary impacts that could be incompatible with resource protection goals and with the public's enjoyment of approved "resource-based" activities.

User-based recreational activities have occasionally been permitted on District lands that have been altered from a natural state, and where such activities are not inconsistent with the protection of natural resources. This has typically been limited to structural flood control facilities and other highly altered sites in urban or urban-fringe areas. There are no such sites at the Preserve and the enjoyment of resource-based uses approved for this property would be diminished by the occurrence of intensive user-based recreational activities.

As explained previously, much of the Preserve has been protected through District ownership for many years. This longstanding District ownership is reflected in a concomitant history of public recreational usage. The ongoing, established patterns of recreational use will be continued at the property. Some modifications to the management of these uses, consisting primarily of expanded opportunities and new amenities in the Alston segment, are also proposed in order to enhance the public's enjoyment of these lands. The ongoing use and proposed enhancements are consistent with the policies and mandates that guide the

management and public use of District-owned lands.

Recreational activities that will be permitted at the Preserve include hiking, horseback riding, bicycling, hunting, primitive camping, group camping, picnicking, canoeing, kayaking, fishing, birdwatching, and various forms of nature study. Virtually all of the historic recreational uses of the property will continue without interruption, and some of the new measures proposed in this plan will enhance such usage.

Management Actions:

- **Make the Preserve available for the compatible, resource-based recreational uses enumerated in this plan. Exclude user-based recreational uses as incompatible with the natural character of the property.**

Public Access — Public access to the property will continue to occur via a number of existing entrances (Figure 7). The primary entrance, which is located on County Road 54, provides vehicular access to an existing group campground and to the hunting check station. During hunting season, the gate at this location is opened to allow vehicular access to these entrance facilities and to a series of loop roads that are opened seasonally to provide access for hunters. During the remainder of the year, vehicular access through this entrance requires a special permit. Absent a special permit, users must park in an area provided outside the gate, and enter via a walk-thru entrance. There are four "secondary" access points that also provide a small area for parking and walk-thru entrances. Although vehicular access through these entrances may also be permitted by special use permits, they are generally limited to providing foot access from the point of entry.

A new entrance, which is to be developed near County Line Road, will provide direct access to the Alston segment of the property. This segment of the Preserve has been relatively inaccessible due to the presence of the Hillsborough River, which bisects the property and makes it difficult to access the Alston segment from the north during periods of high water. It is also the most recently acquired portion of the property, having been purchased in 1994. The District expects that the Alston entrance will receive considerable use, so a parking area of suitable size will be provided. As with the northern segment of the property, vehicular access to interior portions of the Alston segment may be permitted by special permit.

The District recognizes the profound 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 basis for a policy that generally limits vehicular access to the minimum level necessary to accommodate permitted public uses. Limitations on public vehicular access through the property, as outlined by this conceptual recreational plan, will allow Upper Hillsborough to maintain wilderness conditions within close proximity of the "urban fringe" surrounding the Tampa Bay region. The public will enjoy access to virtually the entire land area of the property given the extensive network of trails open to recreational use. The District will remain amenable to allowing vehicular access to interior portions of the property to accommodate special activities or needs. Requests for such access will be reviewed on a case-by-case basis.

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

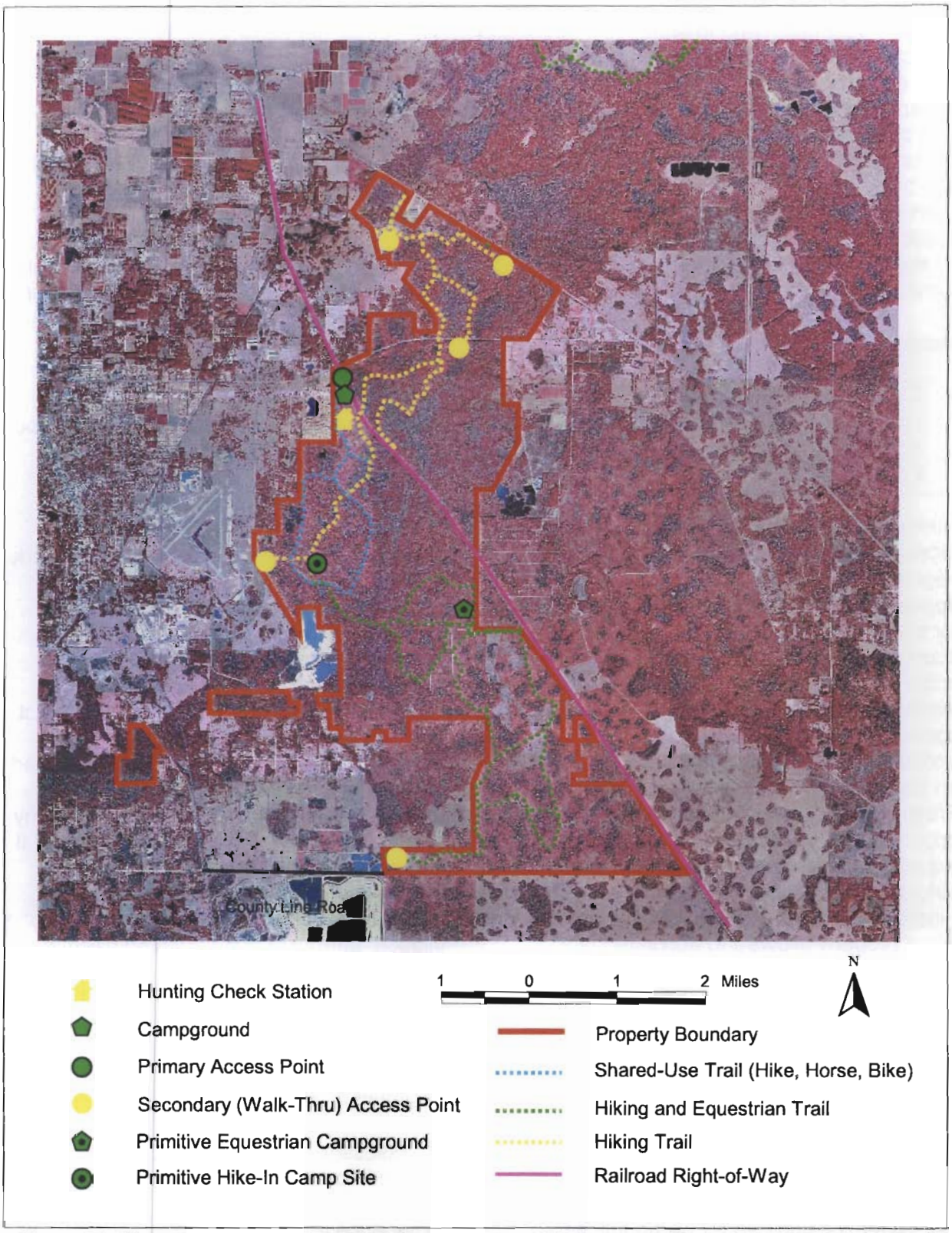

Figure 7. Conceptual Land Use Plan for the Upper Hillsborough Preserve. Overlain on 1999 color infrared aerial photography.

of native vegetation and to enhance their attractiveness and potential for future recreational and wildlife usage. Measures to enhance the designated network of trails will also be undertaken, including the construction of rest shelters, installation of interpretive signs at appropriate points of interest, and construction of a kiosk at the public entrances to provide central locations for the dissemination of informational literature.

Management Actions:

- **Construct a new entrance facility near County Line Road to enhance access to the Alston segment of the Preserve.**

Hiking — Hiking is a low-impact recreational activity that appeals to a broad segment of the public. Part of its broad appeal may be related to the limited need for specialized equipment or other accouterments. A comfortable pair of shoes and a daypack loaded with some drinking water and snacks (and ideally a map and compass) are all that's needed. The unobtrusive qualities of hiking also make it an ideal vehicle for observing wildlife. The Preserve provides an outstanding opportunity for those seeking an outdoor experience in a large, relatively isolated natural area that showcases the Hillsborough River floodplain. The large size of the property allows it to accommodate both short day hikes, and longer "over-night" hikes. The conceptual trail network delineated in Figure 6 provides an extensive length of trail, including loops of various lengths, that will allow hikers to tailor their hike to personal preferences of both hike duration (distance) and the variety of landscapes to be traversed.

Approximately two-thirds (22 miles) of the trail system designated for hiking follows existing trail roads that are also made available to other recreational user groups. The remainder consists of 11 miles of narrow, primitive trail that was developed by the Florida Trail Association (FTA) and is reserved for foot traffic only. Collectively, these trails provide 33 miles of trail for hiking. It is projected that the FTA trail will eventually be expanded to provide connectivity to off-site trail systems.

The District generally favors multi-use trails as a strategy for minimizing the impacts of recreational trail use while maximizing the length of trail available for public use. Although the future development of new hiking trails 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 FTA, who will assist with trail delineation, construction, and long-term maintenance needs. The extensive network of existing 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 in the areas proposed to be traversed by new trail segments. 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 trail will result in a minimum of adverse environmental impacts.

An assessment of outdoor recreation needs in Florida predicts that the Tampa Bay region, which includes Pasco County, will experience an 860-mile deficit in hiking trails by the year 2010 (Florida Department of Environmental Protection, 2002).

Establishment of the County Road entrance proposed in this plan will open the Alston segment of the Preserve to public use and provide an additional 11 miles of trail for both hikers and equestrians, thereby helping to address the projected deficit. Although the Alston segment is located almost entirely in Polk County, which lies outside the Tampa Bay region, its proximity to the Tampa Bay region and contiguity with the Pasco County portion of the Preserve suggest that the Alston trails will effectively serve the Tampa Bay region. There is no projected deficit in hiking trails for the Central Florida region that encompasses Polk County.

The District will consider offering guided interpretive walks that highlight the natural landscape and diverse wildlife habitat traversed by the trail system. These walks may be sponsored by District personnel or other experienced naturalists, or through development of a volunteer naturalist program or environmental education program. The walks should be scheduled to take advantage of seasonal variations in vegetation and wildlife. The subject matter of the walks should describe the ecology of the property, explain land management goals, and emphasize the natural values that served as the motive for preservation of the property.

Horseback Riding — The Upper Hillsborough Preserve is popular among equestrian trail users, and continued popularity among this traditional user group is anticipated. The 12 miles of shared-use trail already designated at the property are available to equestrian users, and the shared-use trails to be opened in the Alston segment will provide an additional 11 miles of trail to equestrians.

The group campground adjacent to the primary entrance (Figure 6) will continue to be open for use by equestrians, provided a special permit has been secured in advance from the District. An additional campground will be established in the Alston segment of the property (Figure 6). This site is more isolated and primitive than the existing campground, and is intended to serve as a "ride in" camping area. As such, vehicular access will not be allowed. The site is not as large as the existing site, so it will not accommodate large groups, but it will provide a very different kind of user experience.

Most equestrians maintain a close affinity and personal attachment with their horses. In order to provide equestrian users of the Preserve with a reasonable assurance that they can safely explore the property's trail system with their horses, the District will require that all equestrian users possess current evidence of a negative Coggins test while riding on the property.

Management Actions:

- **Manage the Alston segments of the designated recreational trail network as a "multi-use" system that is open to both hiking and equestrian use.**
- **Continue to make the existing group campground available for use by equestrians.**
- **Expand the existing trail network by opening additional multi-use trails in the Alston segment of the property.**
- **Designate a "ride in" camping area for equestrian use in the Alston segment.**
- **Require that equestrian users of the Preserve possess evidence of a negative "Coggins" test for each horse in their company while horseback riding on the property.**

Bicycling — A five-mile segment of the shared-use trail system at the Preserve is

open for bicycling. This loop system corresponds with the shared-use trail segment that is open to vehicular access during hunting season and which receives the highest level of recreational use. It is also one of the most scenic segments of the trail network.

The popularity of bicycling as a recreational activity has increased greatly in recent years, due in large part to the emergence of off-road bicycling or "mountain biking." The emergence of off-road bicycling has posed a challenge to the managers of publicly owned conservation lands. One aspect of this challenge is related to occasional conflicts between the "historic" trail user groups, i.e. hikers and equestrians, and the "new" bicycling constituency. Another element of the challenge concerns divergent preferences in trail configuration and design. Equestrians require more vertical clearance in order for a trail to be passable, and often enjoy wide trails that allow them to travel side-by-side. The trail roads that comprise the designated trail network are ideal for such use. In contrast, many off-road bicyclists favor the use of "single track" trails over "double track" trail roads, and prefer various obstacles and impediments to easy passage, because such trails can present a more physically demanding and challenging experience. The shared-use trail network designated at the Preserve, as stated previously, follows existing double track trail roads and was delineated to follow those road segments that are least subject to flooding following major rain events.

User demand and the current mix of recreational alternatives available in the local area were other factors considered in identifying the recreational uses that will be permitted at the Preserve. The property receives regular use by equestrians, while there has been no pressing demand in the local area for off-road bicycling opportunities. The current availability of five miles of shared-use trail that is open for bicycling appears adequate to satisfy the local demand for such use. The Lower Hillsborough Flood Detention Area (LHFDA), which is a larger District-owned property located approximately 6 miles southwest of the Preserve, provides a 35-mile network of off-road trails for bicycling. Nearly the entire network of bicycle trails consists of the single-track trails favored by off-road bicyclists. As a result, LHFDA has become a major destination for bicyclists and experiences a very high level of use. Therefor, the District will not open the remainder of the Preserve's trail network to bicycling on the basis of a rationale that aims to optimize the experience of recreational users by precluding a use that is well accommodated elsewhere, and that may conflict with other uses within the property. The District will remain open to amending the approach to recreational use of the Preserve, as currently outlined in this plan, in response to future changes in user demand or other circumstances.

Camping — An existing group campground located near the primary entrance on CR54 is reserved for use by hunters during hunting season. During the remainder of the year, the campground can be used by equestrians and other recreational users provided they secure a permit from the District. Permits are available free of charge, and provide for vehicular access into the campground.

There is a primitive backcountry campsite on the hiking trail that is maintained by the Florida Trail Association, and an additional "hike in" campsite will be established in the Alston segment of the property. The additional primitive site will provide: a fire ring or other enclosure designed to safely contain campfires; a picnic table; and pads for several tents. If the future demand for primitive hike-in camping exceeds any carrying capacities established for the sites, or if use levels begin to degrade them, then

a third primitive camp site may be designated so that use can be rotated among sites or otherwise managed to minimize physical disturbance and ensure a quality camping experience for visitors to the property.

A new group campground designed for "ride in" use by equestrians will also be established in the Alston segment of the property. A minimum of improvements, including fire rings, tent pads and hitching posts, will be provided. As a primitive site, vehicular access will not be permitted. Although this group campground will be designed to meet the needs of equestrians, it will also be open for use by non-equestrians.

Management Actions:

- **Within the Alston segment of the Preserve, establish a primitive group camping area that will be made available for "ride in" use by equestrians, and an additional primitive campsite that will be reserved for "hike in" use. The sites will be closed to vehicular access and site improvements will be limited to fire rings and tent pads, and hitching posts at the equestrian site.**

Hunting — A 5,178-acre portion of the Preserve has been designated the Upper Hillsborough Wildlife Management Area (UHWMA) and is open to public hunting on a seasonal basis. The UHWMA, which was established as a Type 1 Wildlife Management Area in 1981, excludes all Preserve lands located north of County Road 54, as well as the Alston segment. Hunting in the UHWMA is managed by the FWC, consistent with a formal agreement between the District and FWC. Populations of game species are monitored by FWC in order to set appropriate, sustainable bag limits and to track the general health of the resident populations.

Species designated as game species that are legal to take during hunting season include: white-tailed deer, wild turkey, feral hog, gray squirrel, quail, rabbit, opossum, raccoon, skunk, bobcat, otter, mink, and various migratory bird species. Game species are legal to take under specific seasons established for the area. Non-game species that may be harvested include coyote and armadillo, which are non-native species that have established reproducing populations in Florida. The various forms of hunting accommodated on the property, each during its own established season, include: archery, muzzle loading gun, small game, and spring turkey hunts. Hunters utilizing the UHWMA must have appropriate licenses, stamps and quota permits. Frogging, for which there are no licensing requirements, is permitted year-round. Fishing, which is also permitted year-round, requires a valid Florida fishing license and must comply with current Florida regulations governing size and possession limits. A summary of hunting regulations for the property is published by FWC and is available upon request.

On a biannual cycle, the District can coordinate with FWC to amend the regulations that govern hunting in the UHWMA. Although there is no indication that bobcats, otters or minks are threatened with extirpation from the property, or that large numbers are being taken during the annual hunts, these predatory species typically occur in very low densities. On a property as small as the Preserve, their populations could be severely degraded through the loss of only a few individuals. Although the property is contiguous with other natural lands that can support these species, and potentially serve as a source of immigration to replenish degraded populations, the important role of such predators in maintaining healthy natural systems argues against their designation as game species. As discussed below, the on-

site riverine system also cannot support an actively fished sport fishery. The District will coordinate with FWC during the next biannual cycle to amend hunting regulations for the property such that fishing, and the hunting of bobcat, otter, and mink, will be prohibited.

Management Actions:

- **Coordinate with FWC during the next biannual cycle to prohibit the hunting of bobcat, otter, and mink within the UHWMA.**

Fishing — The physical nature of the Hillsborough River within the Preserve, and seasonal fluctuations in its flow, do not allow this section of the river to support a fishery that would make it conducive to recreational fishing. However, the disjunct segment of the property fronting on CR39 (Figure 6) is occasionally used by local fisherman. A small parking area will be constructed at the site to accommodate this use, in addition to serving other visitors that may wish to explore this small, but easily accessible, portion of the property.

There are no lakes or other waterbodies on the property that can support recreational fishing. In order to protect the small, depauperate fishery that exists within the main body of the Preserve, the District will coordinate with the FWC to prohibit fishing in the main body of the property. The disjunct segment on CR39 would continue to be open for fishing. Anyone fishing in the segment of the Preserve open to such use must be properly licensed and must comply with established laws governing fishing in the State of Florida.

Management Actions:

- **Coordinate with the FWC to prohibit fishing in the Preserve, with the exception of the disjunct segment fronting CR39.**

Boating, Canoeing and Kayaking — The Preserve protects an approximately 6-mile length of the Hillsborough River. This portion of the river lies immediately downstream of the river's origin and is too narrow, shallow, and ill-defined to support boating, canoeing, or kayaking. In order to protect the river from the physical disturbance that would be associated with someone attempting these activities under normal circumstances, and to preclude a negative user experience, the District will not provide facilities to support such use. These activities are much better suited to the downstream section of the river, much of which has been designated a canoe trail within the state's official recreational trail system. The upstream end of the canoe trail is located at the river's confluence with Crystal Springs, approximately 5 miles downstream of the Preserve. The input of water from Crystal Springs, which contributes approximately 40 million gallons of water per day to the flow of the river, is the defining factor that makes the downstream section of the river conducive to canoeing and kayaking. Boating is practical only within river segments located downstream of Hillsborough River State Park, approximately 15 miles downstream of the Preserve.

Picnicking — Picnicking will be permitted anywhere on the property. However, in order to better accommodate such use, the District will provide small "rest stations" at several locations along the designated trail network. These stations will be consistent with a backcountry setting, consisting of little more than a covered picnic table where recreational users can rest, seek shelter from the sun or rain, or eat lunch.

Management Actions:

- **By the end of the 2004 fiscal year, install "rest stations" at several different locations along the property's recreational trail network.**

Birding and Other Nature Study — 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. In contrast, sport hunting generated $341 million, or only 20 percent of the spending attributed to wildlife viewing (United States Department of the Interior, 1997). The FWC is currently in the process of designating a statewide birding trail in response to the tremendous popularity of birding. In recognition of this popularity and of the low-intensity, highly compatible nature of the activity, the District will coordinate with local birding groups to develop an interpretive guide to birding on the property and will consider implementing other measures designed to enhance the site for birding.

A number of nesting boxes have been installed on the property by volunteers in order to promote nesting by bluebirds and wood ducks. These are in various stages of disrepair and do not appear to be actively maintained. Before allowing continued maintenance and installation of bird nesting boxes on the property, the District will require an analysis of the need for such boxes, and outline requirements for regular maintenance. Refer to the wildlife management section of this plan for additional discussion regarding bird nesting boxes.

Most people who are attracted to visiting a natural area like the Preserve enjoy an outdoor experience in unspoiled surroundings, and are committed to protecting the area and the natural communities it sustains. However, some visitors may be relatively unfamiliar with the natural environment and the ecological processes at work within the property. Educational displays related to the site's ecology, resident wildlife, and water management values will be incorporated into displays exhibited at the primary entrance whenever possible in order to enhance the public's study and enjoyment of nature on the property. The District will also consider offering guided interpretive walks that highlight the natural landscape and diverse wildlife habitat traversed by the Preserve's trail system. These walks may be sponsored by District personnel or other experienced naturalists, or through development of a volunteer naturalist program or environmental education program. The walks should be scheduled to take advantage of seasonal variations in vegetation and wildlife. The subject matter of the walks should describe the ecology of the property, explain land management goals, and emphasize the natural values that served as the motive for preservation of the site.

Management Actions:

- **Conduct an analysis to determine the efficacy of maintaining bird nesting boxes at the Preserve.**
- **Formulate guidelines for the installation and maintenance of any bird nesting boxes permitted at the Preserve.**

Opportunities for Environmental Education

Organized, professional instruction that is consistent with a curriculum tailored specifically to the natural attributes of the Preserve would be the ideal way to capitalize on the outdoor classroom the property represents. Such instruction should emphasize the various water management benefits associated with the property and explain how these benefits are retained through its preservation. The District is committed to promoting and partnering in environmental education programs and will assist interested local educators in making the Preserve available for structured environmental education. Close coordination will be required to ensure that any field trips, and associated activities, are designed to maximize educational benefits while avoiding negative impacts to the property's resources. The District will also assist, to the extent possible, in the development of a site-specific curriculum.

The District will also be amenable to accommodating requests for field trips from private groups interested in capitalizing on the availability of this natural classroom. Typically, the District's role in such trips will be limited to organizational matters, including arrangements for necessary vehicular access and guidance on educational content or curriculum. Interpretive tours conducted by knowledgeable staff may be also be arranged depending on the availability of appropriate staff, compatibility with resource protection goals, and liability concerns. The District's approach to environmental education will emphasize cooperation and coordination with local school districts, non-profit environmental groups or clubs, and any nearby private schools.

Multiple Use Potential

The State of Florida's landmark land acquisition programs have successfully protected a large portion of natural Florida from development and are conserving an amazing diversity of natural resources for future Floridians. A direct result of this aggressive approach to land protection has been a concomitant increase in the amount of lands for which the District, and other public agencies, must accept management responsibility. While the public acquisition of land for conservation purposes will eventually reach a conclusion, the management of lands so protected will remain a continuing responsibility.

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 (TMZs) where sustainable silviculture will be practiced to provide a continuous revenue stream to support land management. Approximately 660 acres of the Upper Hillsborough Preserve have been designated as TMZs.

For additional discussion of TMZs on the Preserve, please refer to the discussion of timber management in a subsequent section of this plan. The analysis of fallow improved pastures in the Preserve did not attribute multiple use potential to these sites. It was also determined that such practices would be incompatible with the ongoing and anticipated public use of the Preserve.

Security

Security will be maintained on the Preserve through a combination of 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 controlling public access through designated access points and by 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 apprizing 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, or to use during hunting season, which will occur under supervision of the FWC.

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

Management Actions:

- **Maintain perimeter fencing to control access and prevent unauthorized activities on the Preserve.**
- **Restrict public use to daylight hours and limit vehicular access, except as authorized through special use permits or during scheduled hunting periods.**
- **Maintain an informational kiosk at the Preserve's primary entrance to inform the public of permitted uses and disseminate maps and other informational literature to ensure the public's safe use of the property. Construct kiosks at secondary entrances, as necessary, if justified by high levels of public use.**
- **Provide additional security through contractual agreements with private or public sector parties or through cooperative, as necessary, to ensure adequate protection of the Preserve's natural resources and recreational users.**

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 to be employed at the Preserve.

Prescribed Fire

Prescribed fire is the most important management tool available to public land managers in Florida. The pine flatwoods, herbaceous wetlands, and cypress swamps at the Preserve are fire-maintained systems that are dependent upon recurring fire for their long-term maintenance and viability. These areas account for approximately 5,000 acres of the Preserve's 10,226-acre land area, or 50 percent of the total property. In the prolonged absence of fire, the vegetative structure and species composition of these communities would gradually change and be of reduced value to wildlife. Given the degree to which the natural Florida landscape has been altered, and the need to prevent fires from escaping to adjoining private lands, the natural mechanism of lightening-induced fires cannot be expected to fulfill the fire needs of these communities. The use of prescribed fire is necessary to achieve many of the land management objectives established for this property. Long-term fire management will be critical to preserving the fire-dependent communities in a natural, biologically productive state and to maintaining low fuel loads that will pose less risk of spawning catastrophic wildfires.

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. Generally, prescribed fires at the Preserve are designed to mimic natural, lightening-induced fires. Appropriate burn seasons and fire return frequencies have been established for each fire-maintained community and are adhered to whenever possible.

Smoke management is one of the most problematic issues associated with implementation of the Preserve's prescribed burning program due to proximity of residential development and several heavily traveled transportation corridors. The prescription parameters used to plan and guide individual prescribed fires at the Preserve rely on appropriate combinations of wind speed and wind direction to avoid placing smoke over these sensitive areas. Fire breaks have already been established along those portions of the property's perimeter that adjoin privately owned lands, and these fire breaks are maintained through regular discing or other mechanical means to prevent the escape of fire onto surrounding properties. The Hillsborough River floodplain, which bisects the property lengthwise, provides a broad and relatively secure natural, internal fire break. It can also serve as a buffer zone for the dissipation of fire-generated smoke.

Management Actions:

- **Continue ongoing implementation of a prescribed burning program at the Preserve to maintain fire-dependent natural communities, and include prescription parameters designed to prevent the escape of fire to adjoining properties and avoid placement of fire-generated smoke over sensitive areas.**

Habitat Restoration

Altered sites at the Preserve are primarily a result of historic ditch excavations which served to increase hydrologic connections between isolated wetland systems in order to connect such wetlands to the Hillsborough River and accelerate drainage of associated uplands used for cattle grazing. As part of an initiative to assess and prioritize altered sites for restoration on all land owned and managed by the District,

six separate ditch systems were evaluated in 1997. These sites were designated UH 1, UH 2, UH 3, UH 4, UH 5, and UH 6. Two sites ranked high in the Surface Water Restoration category: UH 5 ranked second and UH 1 ranked sixth. The remaining sites were not targeted for either restoration or additional evaluation in the 10-Year Restoration Plan. The following is a description of each site:

UH 1 - This site consists of an excavated linear ditch, approximately 10' wide x 3' deep, extending from a westerly cypress strand to the Hillsborough River floodplain through a variety of habitats including cypress strand, emergent marsh, bottomland hardwood, and pine flatwoods. The site is surrounded by natural habitats and has one at-grade road with a culvert at a ditch crossing. Five wetlands have been severely impacted by the ditch, exhibiting encroachment of upland vegetation, soil oxidation, soil subsidence, and canopy tree fall.

UH 2 – This site is also an excavated ditch, approximately 5 feet wide x 2 feet deep. It extends from a cypress strand on the east through a variety of different habitats to the Hillsborough River floodplain on the west. Excavation of the ditch directly affected nearby pine flatwoods, cypress swamp, and herbaceous marsh. The natural connection between two wetlands was deepened to accelerate drainage and five previously isolated wetlands were connected to the Hillsborough River. The majority of the on-site wetlands exhibit signs of decreased water levels, expressed by various levels of tree fall, limb breakage, soil subsidence, species shifts among wetland vegetation, encroachment by upland species, soil erosion, and fire scars. Three wetlands display moderate to severe impacts and six wetlands exhibit low to moderate impacts.

UH 3 – This site consists of an excavated ditch approximately 5 feet wide x 2 feet deep. It extends from a cypress strand on the east through cypress strands and pine flatwoods, and eventually discharges into the Hillsborough River floodplain on the west. The ditch includes a culvert near the eastern boundary of the property where it is intersected by a jeep trail. Historical connections have been deepened between three wetland systems and at least two previously isolated wetlands have been connected to the Hillsborough River via construction of the ditch. The majority of the site's wetlands show signs of decreased water levels; however, only two of the wetlands appear to have been effected severely by the ditching.

UH 4 – This site consists of two raised tram roads and an excavated linear ditch system, approximately 5 feet wide by 2 feet deep. The ditch drains a marsh system on the west through improved pasture, and then discharges into a cypress strand on the east. Creation of the ditch has directly affected both the marsh and cypress strand systems. Three other on-site wetlands appear to be moderately affected by reduced water levels resulting from the drainage modification.

UH 5 – This site consists of a raised tram road, an excavated linear ditch system approximately 15 feet wide x 4 feet deep, and two borrow pits associated with the construction of the tram road. The ditch extends from a cypress strand on the west through pine flatwoods, cypress swamp, and improved pasture to the Hillsborough River floodplain to the east. Drainage improvements resulted in the enhancement of historic wetland connections and the connection of previously isolated wetlands to waters of the state. The majority of the site's thirteen wetlands exhibit signs of reduced water levels, with impacts ranging from moderate to severe.

The Zephyr Egg Farm, located to the north of the ditch alteration, has occasionally

been the source of illegal discharges into the ditch system. The farm uses a system of unlined wet lagoons to treat wastewater, and during storm events and high water periods, deliberate pumping and inadvertent breaches of berms have occurred. Production has been reduced to an operation using 70,000 free range hens since April 2000. According to Florida Department of Environmental Protection (FDEP), the farm is in the process of switching from disposal of manure in wet treatment ponds to the use of dry disposal methods that consist of removing the manure from the site and selling it for fertilizer. Representatives from FDEP and Zephyr Farms are currently investigating the feasibility of improving surficial groundwater quality via one of two methods: 1) converting the lagoons to a wetland polishing pond; and 2) reconfiguring the lagoons and installing wetland and upland tree species to assimilate additional nutrients, e.g., nitrates.

UH 6 – This site consists of an excavated pond and two excavated ditches, each approximately 5 feet wide by 2 feet deep. The eastern linear ditch originates off-site in improved pasture and empties into the excavated pond. The northern ditch extends northward from the excavated pond through floodplain swamp and then discharges into the Hillsborough River floodplain. Only one wetland appears to have suffered significant effects as a result of the accelerated drainage. Based on the comprehensive environmental assessment, the restoration of UH 6 does not appear warranted.

Current Status of Habitat Restoration — Both UH 4 and UH 5 have been restored to compensate for 13.55 acres of wetland impacts associated with the improvement of Interstate-4 from County Line Road to Memorial Highway via the FDOT mitigation program. Peninsula Design and Engineering is currently under contract to the District to complete design and permitting of the project, and recently submitted 4 design alternatives to the District. UH 4 was restored by removing wetland fill, a culvert and a road segment; recontouring; and re-vegetating with soft rush. UH 5 was restored by backfilling the entire ditch segment to restore natural wetland drainage patterns and hydroperiods. Ditch fill elevations were matched to existing grades in both the wetlands and uplands. Construction was completed in September 2001.

Altered sites UH 1, UH 2, and UH 3, designated collectively as the Tri Ditch restoration project, were selected for restoration to mitigate for wetland impacts associated with road construction and improvement projects. However, during the initial design phases, an evaluation of the affected wetlands and other on-site wetlands indicated that offsite mining operations could be contributing to wetland degradation. The District evaluated both ditched and unaltered wetlands on the Preserve for indications of altered hydrology in early 1999 and found significant impacts in many of these wetlands.

No conclusions have been drawn regarding the cause of declining conditions in so many of the wetlands; however, there are several factors that have been identified as potentially contributing to wetland distress, including: long-term drought; development of roads and residential areas around the Preserve; disruptions of natural surface water flows by County Road 54, the Zephyrhills Bypass (County Road 54A), the CSX Railroad right-of-way, local mining for limerock (Plaza, Howard Brothers, C.F. Industries); and on-site ditching. The Preserve's wetlands will continue to be monitored for qualitative change. Quantitative monitoring of water levels in the surficial and Floridan aquifers will also be conducted by the District in conjunction with the establishment of minimum flows and levels for the Hillsborough River.

Management Actions:

- **Continue to monitor on-site wetlands for additional evidence of stress related to hydrologic alterations, and correlate with data on water levels collected in association with the establishment of minimum flows and levels for the Hillsborough River.**

Wildlife Management

Upper Hillsborough contains a number of plant communities that provide or may provide important habitat for listed wildlife species. These habitats include the mesic flatwoods and associated hardwood hammocks, which are utilized by gopher tortoises. Listed wading bird species capitalize on numerous wetland communities for feeding areas. The Gopher frog is dependent on seasonal ponds that do not support fish for breeding habitat and they reside in gopher burrows for the remainder of the year. The probability of occurrence of listed wildlife is listed in Table 1.

Table 1. Probability of Occurrence of Listed Wildlife Species Found at Upper Hillsborough Preserve.

Scientific Name	Common Name	Status		Probability of Occurrence				Comments
		GFC	USFWS	1	2	3	4	
Birds								
Aphelocoma coerulescens	Florida scrub-jay	T	T	X				marginal habitat on-site
Aramus guarauna	Limpkin	SSC		X				river swamp
Egretta caerulea	Little Blue Heron	SSC		X				wetland habitat
Egretta thula	Snowy egret	SSC		X				wetland habitat
Egretta tricolor	Tricolored heron	SSC		X				wetland habitat
Eudocimus albus	White ibis	SSC		X				wetland habitat
Falco sparverius paulus	Southeastern American kestral	T		X				open flatwoods, pastures
Grus canadensis pratensis	Florida sandhill crane	T		X				freshwater marsh, pastures
Haliaeetus leucocephalus	Bald eagle	T	T			X		observed over site
Mycteria americana	Wood stork	E	E	X				wetland habitat
Speotyto cunicularia	Burrowing owl					X		observed near airport

Scientific Name	Common Name	Status		Probability of Occurrence				Comments
		GFC	USFWS	1	2	3	4	
Mammals								
Podomys floridanus	Florida mouse	SSC				X		habitat on site
Sciurus niger shermani	Sherman's fox squirrel	SSC		X				open flatwoods
Amphibians								
Rana capito	Gopher frog	SSC				X		habitat on site
Reptiles								
Alligator mississippiensis	American alligator	SSC	T(S/A)	X				wetland habitat
Drymarchon corais couperi	Eastern indigo snake	T	T	X				oak hammock, flatwoods
Gopherus polyphemus	Gopher tortoise	SSC		X				oak hammock, flatwoods
Stilosoma extenuatum	Short-tailed snake	T				X		flatwoods

1-observed, 2-expected, 3-possible, 4 unlikely

GFC-Florida Game and Freshwater Fish Commission, USFWS-United States Fish and Wildlife Service
Status: T=Threatened/Similarity of Appearance, E= Endangered, SSC= Species of special Concern
Source: GFC, Florida's Endangered Species, Threatened Species and Species of Special Concern

No projected expense for feral hog control. Trapping will be no expense to the District. Only manpower or manday of effort will be used to monitor program. Wildlife management (hunt program) expense will be FWC. Exotic species control cost to District FY 1999 $ 6,000, FY 2000 $700, FY 2001 $4,300. Long-range projection of exotic cost is unknown.

Management Actions:

- **All areas that provide habitat for endangered or threatened species will be managed to maintain the property's overall biodiversity. Species-specific management actions that compromise habitat value for the full range of species that utilize said habitat shall be avoided unless such actions are deemed critical to the on-site survival of an endangered or threatened species.**

Control of Exotic Species

The invasion of native communities and ecosystems by non-native or "exotic" species of plant life and wildlife is widely recognized as one of the primary threats to the integrity of Florida's remaining natural areas. Non-native species, growing in an environment that is free of the population controls typically imposed by their natural predators and pathogens, can often displace native species and greatly diminish the habitat value of affected natural areas. 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. 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 area 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 — Three species of invasive, non-indigenous plants have become established at the Preserve. Cogan grass (Imperata cylingrica) is usually found in sites that have experienced soil disturbance. District staff have been treating these sites and the grass appears to be under control or eradicated in the isolated spots where treatment has occurred. Tropical soda apple (Solanum vararum) is found primarily in improved and semi- improved pasture areas. The spread of this species can be traced to habitat disturbance from cattle that previously grazed the area. These plants are persistent, since the fruit of the plant has over 700 seeds and are approximately 80 percent viable after it has been passed through the digestive tract of cattle. Skunk vine is the largest threat to the river swamp habitat and associated wetlands were cypress trees occur. The District has funded two research programs to study the plant. A two-year study with the University of Florida was conducted to determine the feasibility of control, and best management practices, to use in fragile environments. The second study, conducted cooperatively with the United States Department of Agriculture, is a feasibility study to determine if there is a biological control agent that can be safely introduced to Florida from the species' native range. Pending the outcome of these studies, the District will investigate the feasibility of control which may include large expenditures in the future.

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*). Spanish explorers are credited with introducing the hog into Florida during the 16th Century. Since then, this exotic species has flourished in an environment that effectively lacks any natural predators. Feral hogs now represent a significant land management problem in many natural areas. The disturbance caused by hog rooting activities can severely damage natural vegetation in floodplain swamps, hammock, pinelands, and herbaceous

wetlands. Hog rooting also creates conditions that promote invasion by exotic plant species, can significantly affect surface drainage or sheetflow through wetlands or low-lying uplands, and can damage archaeological sites. Hogs are also prone to feed on acorn mast. Competition for the mast produced in the property's hardwood hammocks may reduce the value of these sites for native species that rely heavily on acorns and other mast products as a food source during the winter and early spring months.

Trapping methods are not usually effective as a sole means of controlling hog populations due to the high reproductive rate of the species, the tendency of individual animals to become trap-shy, and the ability with which they can move between neighboring properties. The hunting program administered on the property by the FWC currently appears to be adequate for controlling the on-site hog population. In order to maintain the success of this method of control, the rules for the UHWMA will continue to impose no bag limits or size limits on feral hogs. In the event that hog damage increases to unacceptable levels, a more aggressive control program will be implemented.

Management Actions:

- **The Preserve's feral hog population will continue to be monitored for damaging levels of disturbance to native vegetation and wildlife. Intensive hog hunts will be implemented, as necessary, to control hog numbers in the Upper Hillsborough Wildlife Management Area (WMA) Hogs in those portions of the Preserve lying outside the WMA will be controlled through a trapping program, if warranted, but may also be targeted for intensive hunts if trapping methods prove to be inadequate.**

Timber Management

As noted in a preceding discussion of multiple use potential, the District has designated Timber Management Zones (TMZs) at the Preserve. These are sites where the District will practice sustainable silviculture in order to produce marketable pine timber. Revenues generated by the sale of such timber will be used to support the District's land management program. TMZs are established on altered sites that were determined capable, via comprehensive site assessments, of supporting sustainable silviculture. Natural stands of pine and other native overstory species will not be harvested as a source of revenue, but will be managed to maintain or restore environmental function and viability.

There are currently four TMZs on the Upper Hillsborough Preserve, encompassing a total land area of approximately 660 acres. Three of these sites were planted from 1988-1992 as part of a habitat restoration project. These longleaf pine stands will be managed with prescribed fire and will be subjected to several interim thinnings before restoration of a natural longleaf pine canopy, characteristic of natural pine flatwood ecosystems, has been completed. At that time, these TMZs will be retired from the District's timber management program.

The fourth TMZ site is a 135-acre stand that was planted across a series of interconnected pastures in the Alston (Polk County) segment of the Preserve. This site, planted in pine in 2000, will be managed in perpetuity as a pine plantation.

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 the preparation of site-specific "arthropod control plans" can be required for publicly owned conservation lands (Section 388.4111, F.S.). A tract must be officially declared "environmentally sensitive and biologically highly productive" by the managing agency to initiate the process. This designation requires that an arthropod control plan be developed that offers adequate levels of protection to the natural systems and flora and fauna that occupy the site. The mosquito (i.e. "arthropod") control district having jurisdiction over the area is responsible for preparation of the required site-specific arthropod control plan. The process is administered by the Florida Department of Agriculture and Consumer Services.

The District will coordinate with the Pasco County and Polk County Mosquito Control Districts to develop arthropod control plans that will ensure protection of the Preserve's natural resources while also ensuring protection of the public's health.

Management Actions:

- **Officially designate the lands of the Upper Hillsborough Preserve as "environmentally sensitive and biologically highly productive."**
- **Coordinate with both the Pasco County and Polk County Mosquito Control Districts in the development of an arthropod control plan for the Preserve.**

Sale of Surplus Lands

The legislation governing Florida's conservation land acquisition programs provides for the sale, or "surplussing," of those lands that are no longer considered necessary for conservation purposes. Consistent with Chapter 373.089, Florida Statutes, the District's Board Policy 610-4 and Procedure 61-4 provide criteria that can serve as the basis for surplussing of lands, including: 1) the lands are no longer required for present or foreseeable future operation and/or maintenance of District facilities or Works of the District; and 2) they have no present or foreseeable future utility in the District land management program; and 3) they are no longer needed for water management, water supply, the conservation and protection of fish and wildlife, or water and land-related resources including but not limited to archaeological and historical resources; or 4) they have been declared surplus by the Governing Board in the overall best interest of the District. At present, there are no lands within the Preserve that are presumed to qualify for surplussing. Any future surplussing of lands at the Preserve will be consistent with all guidelines established in the Florida Statutes and District policies and procedures.

Administration

The District coordinates with many outside public agencies and public interest groups to effectively manage its properties. This section identifies those 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 know to occur on the property, or that colonizes the site in the future.

Florida Fish and Wildlife Conservation Commission (FWC)

The FWC, 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 FWC in the management and monitoring of state-listed wildlife and critical habitat areas occurring on the Preserve. The FWC is also responsible for the management of hunting in the Preserve's Upper Hillsborough Wildlife Management Area. The District will continue to coordinate with FWC in order to make the Preserve available for this use.

Florida Department of Environmental Protection (DEP)

DEP has wide-ranging regulatory authority over a number of activities. The District will coordinate with DEP, as necessary, to receive permits that would be required in conjunction with habitat restoration activities, the development of recreational facilities, or any other projects that may affect wetlands on the Preserve.

Florida Department of State (DOS)

The Division of Historical Resources of the DOS maintains the Florida Master Site File and oversees the management and protection of listed archaeological sites. The large number of archaeological sites that have been documented at the Preserve require that the District coordinate with DOS to ensure the appropriate management and protection of these sites. Proposals to conduct archaeological surveys or related archaeological research at the Preserve will be welcomed by the District, provided that such proposals satisfy requirements and protocols dictated by DOS for the investigation of sites on state-owned lands and do not conflict with the District's management objectives.

Pasco and Polk Counties

Pasco and Polk Counties exercise land use authority over all lands located within their jurisdiction. As such, the District will work closely with these counties to prevent incompatible land uses from occurring on adjoining lands. These local governments will also have a compelling interest in the future management and use of the Preserve and the District will, to the extent possible, be responsive to their needs and interests.

Various Private Interests

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

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