Lee County Board Of County Commissioners
Agenda Item Summary

Blue Sheet No. 20070384

1. ACTION REQUESTED/PURPOSE:

Approve the Columbus G. McLeod Preserve (CGMP) Land Stewardship Plan.

2. WHAT ACTION ACCOMPLISHES:

Approving of the CGMP Plan establishes guidelines for restoration and public use facilities at CGMP.

3. MANAGEMENT RECOMMENDATION: Approve the plan so Land Stewardship staff can begin implementation.

4. Departmental Category: C11B		**5. Meeting Date:** 03.27.07
6. Agenda:	**7. Requirement/Purpose:** *(specify)*	**8. Request Initiated:**
X **Consent**	**Statute**	**Commissioner**
Administrative	X **Ordinance** Lee Plan	**Department** Parks & Recreation
Appeals	**Admin. Code**	**Division**
Public	**Other**	**By: John Yarbrough, Director**
Walk-On		

9. Background:

A Land Stewardship Plan is necessary for appropriate and planned restoration, management and public use facility development of any Conservation 20/20 Preserve. The CLASAC (Conservation Lands Acquisition and Stewardship Advisory Committee) unanimously passed a motion on February 8, 2007, accepting the Columbus G. McLeod Preserve Land Stewardship Plan.

The plan was available for public review on the internet, as well as at the Riverdale Branch Library. A public meeting was held February 28, 2007. Attached is a summary of all written and verbal comments received with responses by staff.

10. Review for Scheduling:

Department Director	Purchasing or Contracts	Human Resources	Other	County Attorney	Budget Services				County Manager/P.W. Director
					Analyst	Risk	Grants	Mgr.	
3-13-07				3/14/07	RK FOR CA 3/15	3/15/07	3/15/07	3/15	

11. Commission Action:

_____Approved
_____Deferred
_____Denied
_____Other

RECEIVED BY COUNTY ADMIN: 3/14/07 noon
COUNTY ADMIN FORWARDED TO: 3/15/07 11:30 pm

Rec. by CoAtty
Date: 3/14/07
Time: 8:40am
Forwarded To: CAO
9:38 am

Summary of Public Comments Received on the Columbus G. McLeod Preserve Land Stewardship Plan

The second draft of the **Columbus G. McLeod Preserve (CGMP) Land Stewardship Plan** was available for public comment from February 8 – February 28, 2007. The plan was made available to the public through the Parks and Recreation website and at the Riverdale Branch Library. Citizens were informed of the plan through a combination of public service announcements, a legal advertisement in the News Press, and a mailing sent to residents in the surrounding neighborhood.

A public meeting was held on February 28, 2007, at 5:00 P.M. at the Lee County Extension Office. A brief presentation was provided and included background on the Preserve, proposed management activities and a timeline to complete these activities. Lee County Parks and Recreation staff received one written response during the public comment period and a couple of verbal comments during the meeting. Attached is a summary of the questions raised during the public comment period.

Any questions on this summary should be directed to:

Cathy Olson
Land Stewardship Supervisor
Conservation 20/20
Lee County Parks & Recreation
3410 Palm Beach Boulevard
Ft. Myers, FL 33916
colson@leegov.com

LEE COUNTY Parks & Recreation

Conservation 20/20 Land Stewardship Plan
Comment Card

Comments:
Thank you so much for the 2020 program!
Name (optional): Affiliation (optional):

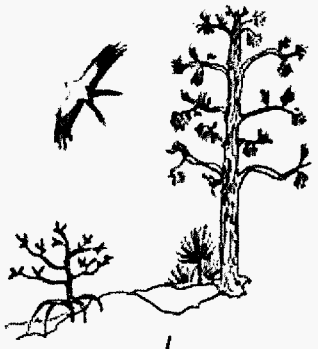
Columbus G. McLeod Preserve

Land Stewardship Plan

Island
Ft. Myers, FL 33905

2nd DRAFT - February 2007

CONSERVATION



20/20
LAND PROGRAM

Prepared by the Land Stewardship Section
Lee County Department of Parks and Recreation

Approved by the Lee County Board of County Commissioners: **(DATE)**

Acknowledgements

We would like to thank the following individuals for their assistance in the development of this document: Roger Clark; Cathy Olson; the Lee County Land Stewardship staff for carefully reviewing the Columbus G. McLeod Preserve (CGMP) Land Stewardship Plan and providing constructive criticism; members of Management Sub-Committee of the Conservation Lands Acquisition and Stewardship Advisory Committee, who were also instrumental in providing valuable suggestions regarding land management issues and the formatting of the plan; Lee County Parks and Recreation and Lee County Library System for making the plan available for public review; Howard Yamataki from USDA Natural Resources Conservation Service for his expert knowledge and collecting soil samples from the island; Lila Schultz, our friendly neighbor who allowed us to launch our canoe from her backyard; and, Rae Ann Wessel and Frank Mann for their historical knowledge.

Sherry Furnari
Laura Wewerka

Table of Contents

List of Exhibits

List of Acronyms

C20/20	Conservation 20/20
CGMP	Columbus G. McLeod Preserve
Corps	United States Army Corps of Engineers
CRP	Caloosahatchee Regional Park
DHR	Division of Historical Resources
FDACS	Florida Department of Agriculture and Consumer Services
FDEP	Florida Department of Environmental Protection
FLEPPC	Florida Exotic Pest Plant Council
FLUM	Future Land Use Map
FNAI	Florida Natural Areas Inventory
FWC	Florida Fish and Wildlife Conservation Commission
IRC	Institute for Regional Conservation
LCDCL	Lee County Division of County Lands
LCDP	Lee County Division of Planning
LCTDC	Lee County Tourist Development Council
LSOM	Land Stewardship Operations Manual
LWCR	Lower West Coast Region
NRCS	Natural Resources Conservation Service
PARI	Piper Archaeological Research, Inc.
SFWMD	South Florida Water Management District
STRAP	Section-Township -Range-Area-Block.Lot
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
WCIND	West Coast Inland Navigation District

Vision Statement

It is the vision of the land stewards in Lee County Department of Parks and Recreation and the Conservation 20/20 Program to restore Columbus G. McLeod Preserve to a productive, functional and viable ecosystem. The primary stewardship objectives for the Preserve will be conservation, protection, removal of invasive exotic plants, and stabilization of the eroding shoreline. The Preserve will provide a peaceful respite from the hectic boat traffic along the Caloosahatchee River for paddlers enjoying the Great Calusa Blueway and an opportunity for a view of what the Caloosahatchee River shoreline was like when Anglo settlers first came to Southwest Florida.

I. EXECUTIVE SUMMARY

Columbus G. McLeod Preserve (CGMP) is an island located in the Caloosahatchee River in Fort Myers, Florida, within Section 20, Township 43 South, Range 26 East. The 9.7 acre Preserve was acquired in 1999 through the Conservation 20/20 (C20/20) Program for $48,000. The Conservation 20/20 Program was established in 1996 after Lee County voters approved a referendum that increased taxes by up to 0.5 mil for the purpose of purchasing and protecting environmentally sensitive lands.

The Gulf of Mexico and Caribbean Sea influence the climate of CGMP creating humid, sub-tropical conditions. Average annual rainfall within the vicinity is almost 52 inches, which is considerably lower than the County's average (66 inches). The majority of the rain falls between June and September. Natural trends and disturbances influencing native communities and stewardship at CGMP include hurricanes, occasional freezes and the cycling of wet and dry seasons. The Preserve has received tropical storm winds from four tropical storms since it was purchased through the Conservation 20/20 Program with no reported damage.

The land where CGMP is located today was created during the Pliocene Epoch between 5.3 million and 1.8 million years ago. The Tamiami Formation contains a mix of fine to coarse-grained sand, sandy clay, fossiliferous sand and fossiliferous limestone. The sea levels rose and fell several times during glacial periods to 15-20 feet above today's levels and up to 300 feet below current sea levels.

The Preserve falls within the Gulf Coastal Lowlands physiographic region, which is found in northwest Lee County as well as most of Charlotte and Sarasota Counties to the north. This region is characterized as a gently southwestward sloping plain composed of deposited sediments. Natural elevations and man-made influences have created topographic features at CGMP that undulate throughout the island. The highest point on the island is approximately 5 feet in the northeast portion of the Preserve.

Before the first dredging of the Caloosahatchee River in 1887, the Preserve would have been part of the north shore of the Caloosahatchee. Land Stewardship staff questioned the accuracy of the soil identified in the Soil Survey of Lee County, Florida for this Preserve and contacted United States Department of Agriculture, Natural Resources Conservation Service staff to visit the Preserve to take soil samples. Several natural soil types were noted while the disturbed soils are likely the result of the 1887 and 1937 dredging of the Caloosahatchee River.

The Preserve falls within a subset of the combined Lower West and East Coast Regions, within the 1,400 square-mile Caloosahatchee Basin (Tidal portion). This portion of the Basin is tidally influenced and has at least some salinity in the water. Numerous tidally influenced creeks flow into the Caloosahatchee River in this

portion of the Basin. In addition to the creeks, numerous canals were constructed throughout the basin to drain surface water.

The Preserve contains five plant communities, most which have grown since dredged spoil soils were deposited on the island. These communities include tidal swamp, mesic and hydric hammocks, and disturbed hydric hammock – Brazilian pepper. CGMP is home to a variety of animal species, including white ibis, little blue heron and red-shouldered hawk. West Indian manatees, American alligators and common moorhens have been noted just offshore in the Caloosahatchee River.

Once exotic plant removal and shoreline erosion control projects are completed, a canoe/kayak landing for paddlers on the Great Calusa Blueway will be installed to allow easier access. Paddlers will be able to stretch their legs as they hike along a trail to enjoy bird watching or nature photography. The proposed ¼ mile nature trail will be marked. A sign with a map of the trail system and Preserve information will be posted at the trailhead.

The goal of this land stewardship plan is to identify Preserve resources, develop strategies to protect those resources and implement restoration activities to restore CGMP to a productive, functional and viable ecosystem while ensuring that the Preserve will be managed in accordance with Lee County Parks and Recreation's Land Stewardship Operations Manual. Restoration and management activities at CGMP will focus on maintaining upland ecosystems by controlling invasive exotic plant and animal species, removing debris, inhibiting shoreline erosion and enhancing wildlife habitat. A Management Action Plan that outlines restoration and stewardship goals is part of this plan. This plan outlines these goals and strategies, explains how the goals will be accomplished, and provides a timetable for completion. This land stewardship plan will be revised in ten years (2017).

II. INTRODUCTION

Columbus G. McLeod Preserve (CGMP) was acquired in September 1999 through Lee County's Conservation 20/20 (C20/20) Program. It was named to honor Columbus G. McLeod, an Audubon warden, charged with protecting the rookeries in northern Charlotte Harbor and surrounding areas, possibly including the Caloosahatchee River. He disappeared and was presumed murdered in November 1908. This second death - the first being Guy Bradley, an Audubon warden based in the Everglades in July 1905 - sparked a national campaign against plume hunting and the fashion of wearing feathers. The Preserve is about 10 acres in size and is located in northeastern Lee County in the Caloosahatchee River. The Preserve consists of five plant communities: tidal swamp and different types of hammocks.

Alterations to the Preserve started in 1887. The Preserve formerly was part of the north shore of the Caloosahatchee, until the Army Corps of Engineers (Corps) was mandated to reduce flooding and improve navigation of the once winding river. The agency achieved these goals through a series of dredging and widening projects.

Land stewardship challenges primarily focus on exotic plant control, stabilizing the banks from further erosion and creating public access. The proposed public recreation amenities include a canoe/kayak landing and a short, primitive nature trail.

The purpose of this stewardship plan is to define conservation goals for CGMP that will address the above concerns. It will serve as a guide for the Lee County Department of Parks and Recreation and the C20/20 Land Stewardship Program to use best management practices to ensure proper stewardship and protection of the Preserve. A significant number of field surveys were conducted along with reviewing scientific literature and historical records to understand how the Preserve functions in the ecosystem, which wildlife and plants are found within its boundaries and how it has been impacted by people. This allows the plan to serve the purpose as a reference guide for those interested in learning more about the Preserve and some of the land stewardship efforts in Lee County.

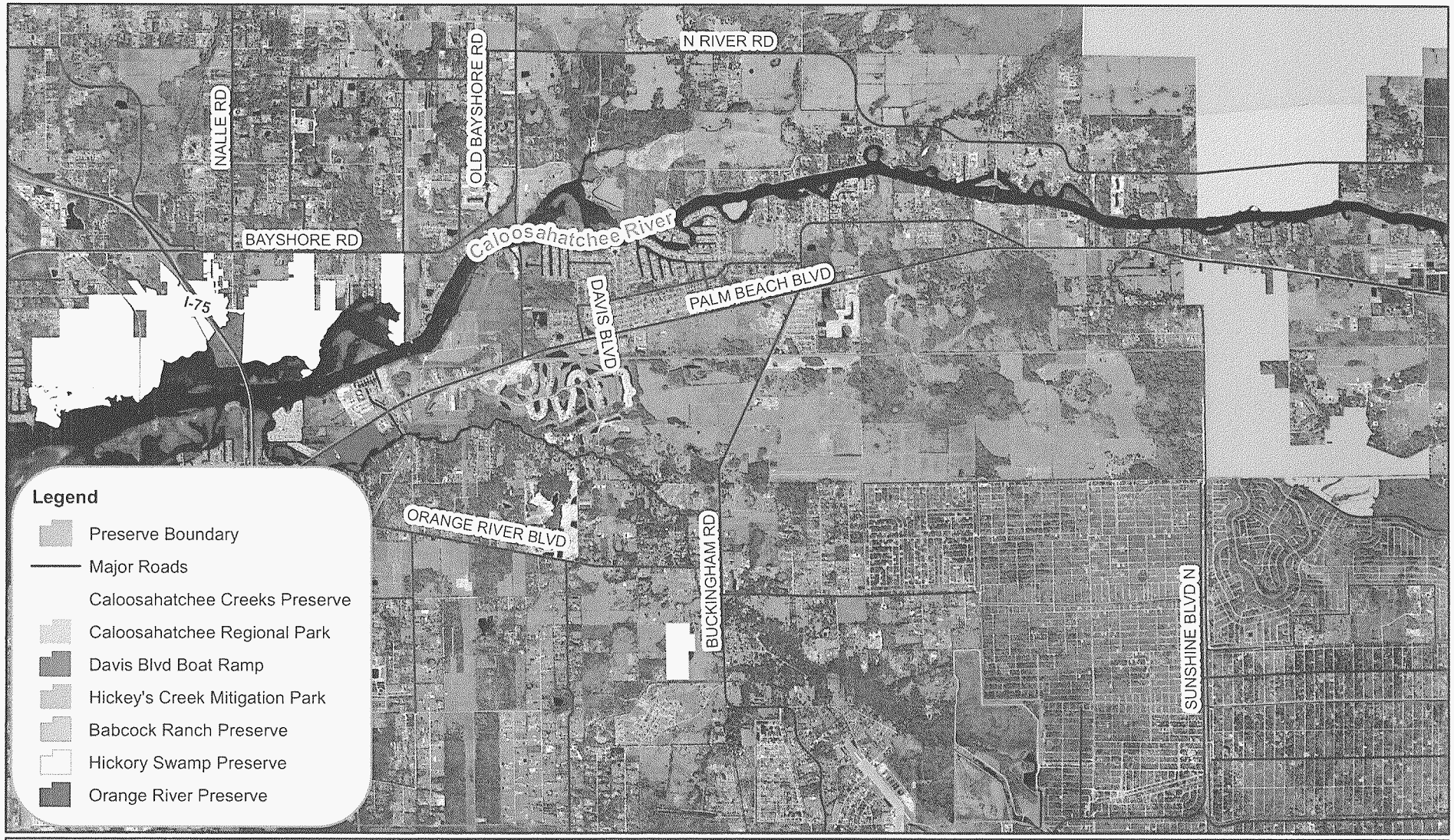
III. LOCATION AND SITE DESCRIPTION

CGMP is an island located along the Caloosahatchee River, in Fort Myers, Florida, within Section 20, Township 43 South, Range 26 East. The area is commonly referred to as Fort Myers Shores. CGMP is located about four miles east of Caloosahatchee Creeks Preserve, about four miles west of Caloosahatchee Regional Park, and two miles east of the Davis Boulevard Boat Ramp (Figure 1). The site is less than ten acres and was acquired in 1999.

CGMP consists of five plant communities: The dominant ones include tidal swamp (mangroves), mesic hammock and hydric hammock. The land, which makes up the Preserve, was once connected to the northern mainland until dredging operations detached it in 1887. Therefore, CGMP is not a true oxbow island, although it is now surrounded by the Caloosahatchee River.

The Preserve's southern boundary is bordered by historic portions of the Caloosahatchee River and single family homes within 200 feet, while the northern boundary receives the majority of boat traffic along newer dredged portions of the river. The north shoreline is about 600 feet from the Preserve with scattered single family homes. Figure 2 identifies the boundaries of CGMP in a 2005 aerial photograph.

Figure 1: Location Map



CONSERVATION 20/20 LAND PROGRAM

Columbus G. McLeod Preserve

0 0.45 0.9 1.8 2.7 3.6 4.5 5.4 Miles

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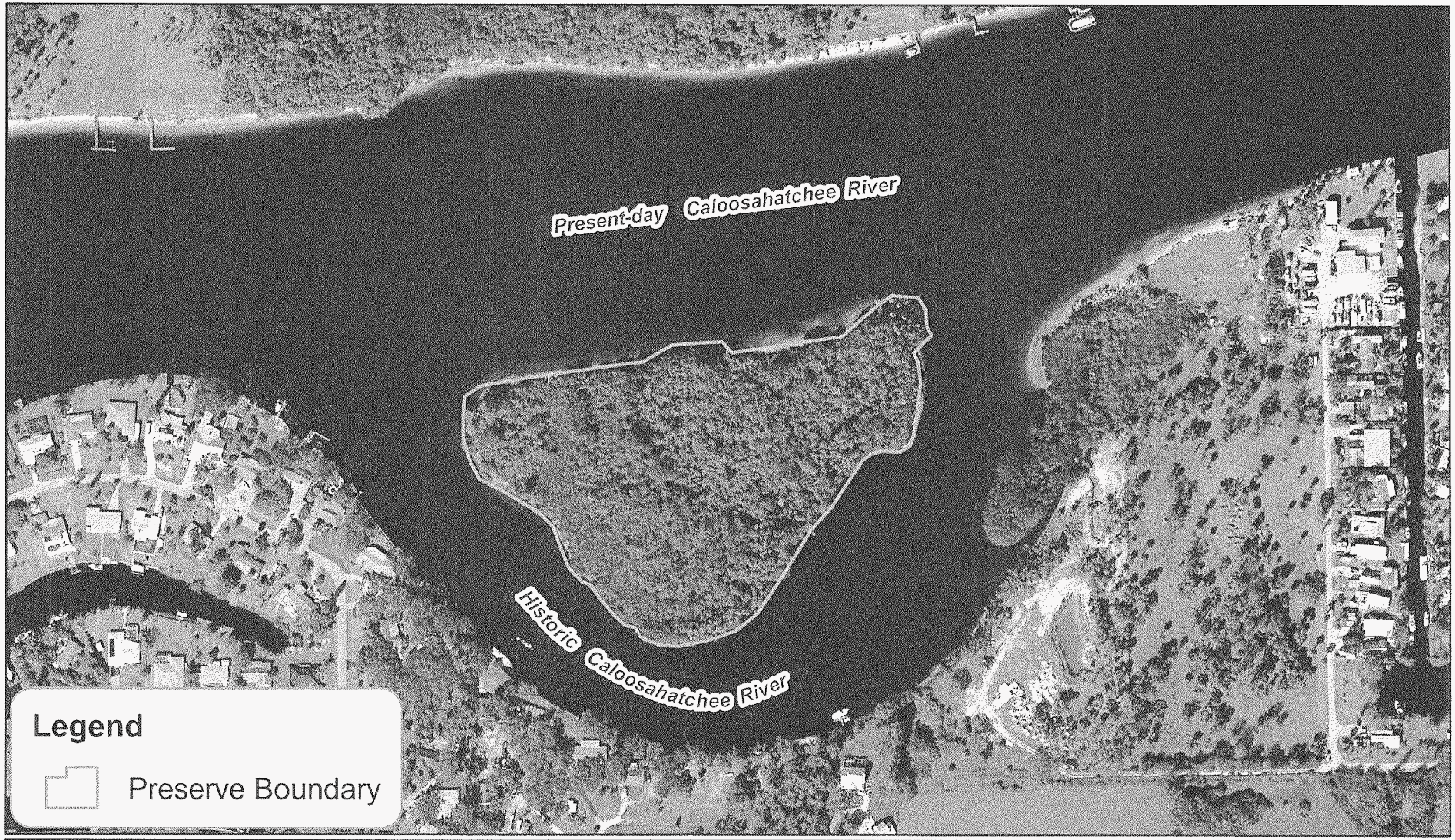
Map Prepared On: 10/17/06 by sfurnari@leegov.com

This is not a survey. Land Stewardship Staff has prepared this map for informational and planning purposes.

Figure 2: 2005 Aerial Map



IV. NATURAL RESOURCES DESCRIPTION

A. Physical Resources

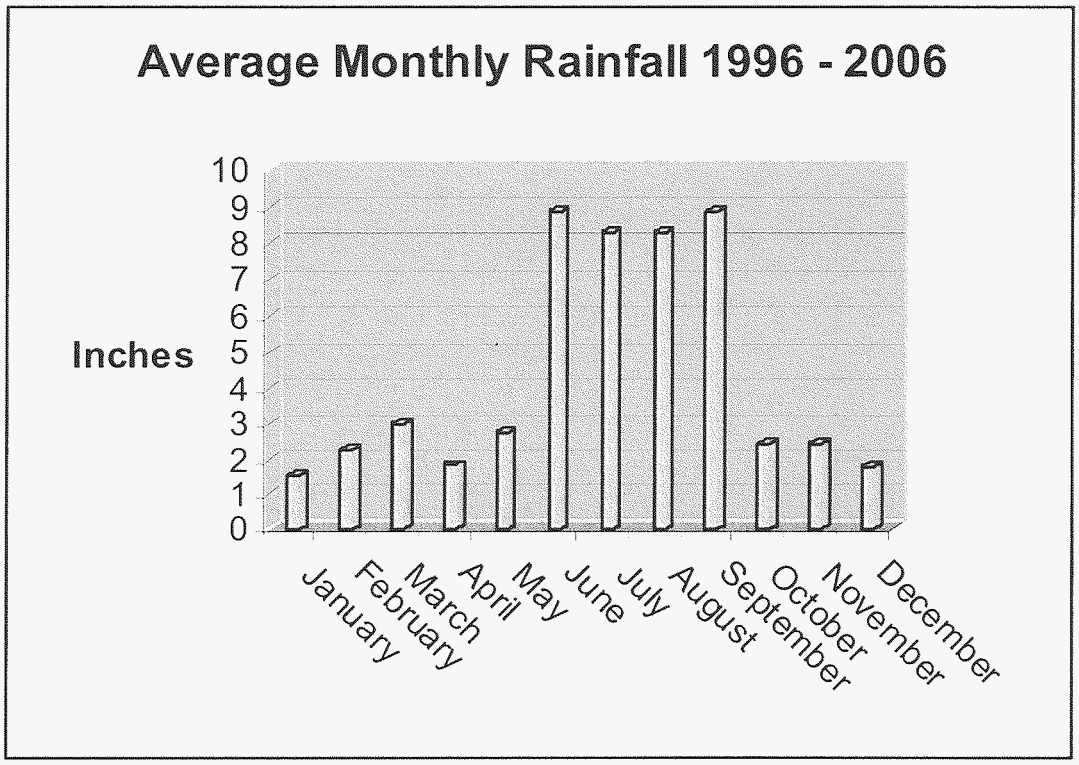
i. Climate

Southwest Florida has a humid, sub-tropical climate due to its maritime influence from the Caribbean Sea and the Gulf of Mexico. The mild temperatures encourage winter residents and tourists to visit the area. Temperate climate influences are exerted as well, with infrequent but significant freezes occurring in December through February. These freezes occasionally damage the subtropical vegetation and prevent some of the more tropical plants from becoming established. Cold fronts regularly push cool, sometimes moist weather from the southeastern United States to Southwest Florida during the winter. Table 1 shows the average high and low temperatures for Fort Myers, Florida, compiled by the Southeast Regional Climate Center from 1931 to 2005.

Table 1: Average High and Low Temperatures for Fort Myers, 1931 - 2005

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
High temperature (°F)	74.7	76.1	79.8	84.2	88.6	90.5	91.2	91.4	89.7	85.7	80.2	75.9
Low temperature (°F)	53.5	54.7	58.4	62.4	67.5	72.4	74.2	74.5	73.9	68.3	60.5	55.1

The following graph depicts the rainfall data collected by Lee County Division of Natural Resources on a daily basis from the Olga Water Plant rain gauge. The gauge is located on Werner Drive, approximately 2 miles east of the Preserve. Average annual rainfall from 1996-2006 was 51.86 inches, considerably lower than the average rainfall for the entire county (66.05 inches).



Occasionally, major hurricanes pass through Southwest Florida impacting natural ecosystems and man-made infrastructure. Although these effects are believed by many to be short-term, long-term consequences may result in plant canopy restructuring, invasive plant introduction and/or further dispersal and increased wildfire severity to communities from increased fuel loads (fallen and dead vegetation). The effect of hurricanes on natural systems is compounded by the already present human impacts. Luckily, during the active 2004 and 2005 hurricane seasons four tropical systems (Charley, Frances, Jeanne and Wilma) brought tropical storm force winds over CGMP with no reported damage.

ii. Geology

For millions of years, the Florida Platform was submerged in the ocean. Sediments accumulated upon it and hardened into sedimentary rock. Thirty-five (35) million years ago, portions of Florida rose above the surface and for the next twelve (12) million years it alternated between emersion and submergence. From twenty-three (23) million years ago to the present, at least a small portion of the Florida Platform was always above the ocean surface (Wilder 2005).

CGMP lies in the Tamiami Formation lithostratigraphic unit. These units are differentiated by the conditions under which they were formed and are formed during a specific interval of geologic time. The Tamiami Formation was created

during the Pliocene Epoch between 5.3 million and 1.8 million years ago. The Tamiami Formation contains a mix of fine to coarse-grained sand, sandy clay, fossiliferous sand and fossiliferous limestone. Phosphate is present throughout, as are fossils, particularly barnacles, mollusks, corals, sea urchins and smaller marine life (Missimer and Scott 2001). The sea levels rose and fell several times during glacial periods from 15-20 feet above today's levels to 300 feet below current sea levels. During the lower sea levels, Florida's land mass was twice as large as it is today and Florida's current west coastline connected to the Caribbean Sea, Mexico and the Yucatan Peninsula (Renz 1999).

Southwest Florida can be divided into ten major physiographic provinces (Figure 3, Map from: SFWMDb 2000). These are broad-scale subdivisions based on physical geography features such as terrain texture, rock type and geologic structure and history. CGMP lies within the Gulf Coastal Lowlands.

The Gulf Coastal Lowlands are found in northwest Lee County as well as most of Charlotte and Sarasota Counties to the north. This region is characterized as a gently southwestward sloping plain composed of deposited sediments. These sediments are aligned parallel to the coastline, which indicates they were formed by marine forces.

Figure 3: Physiographic Regions

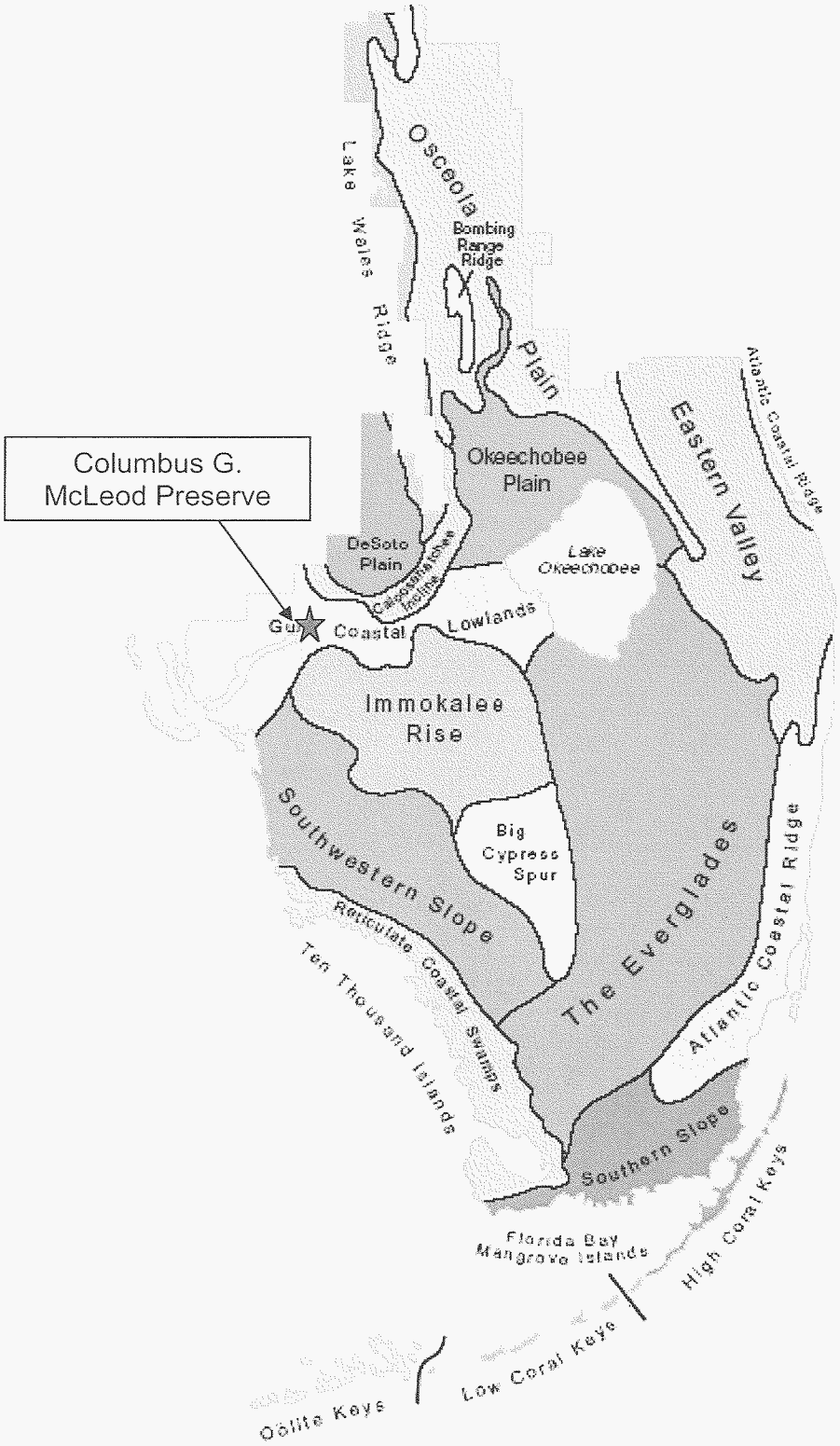
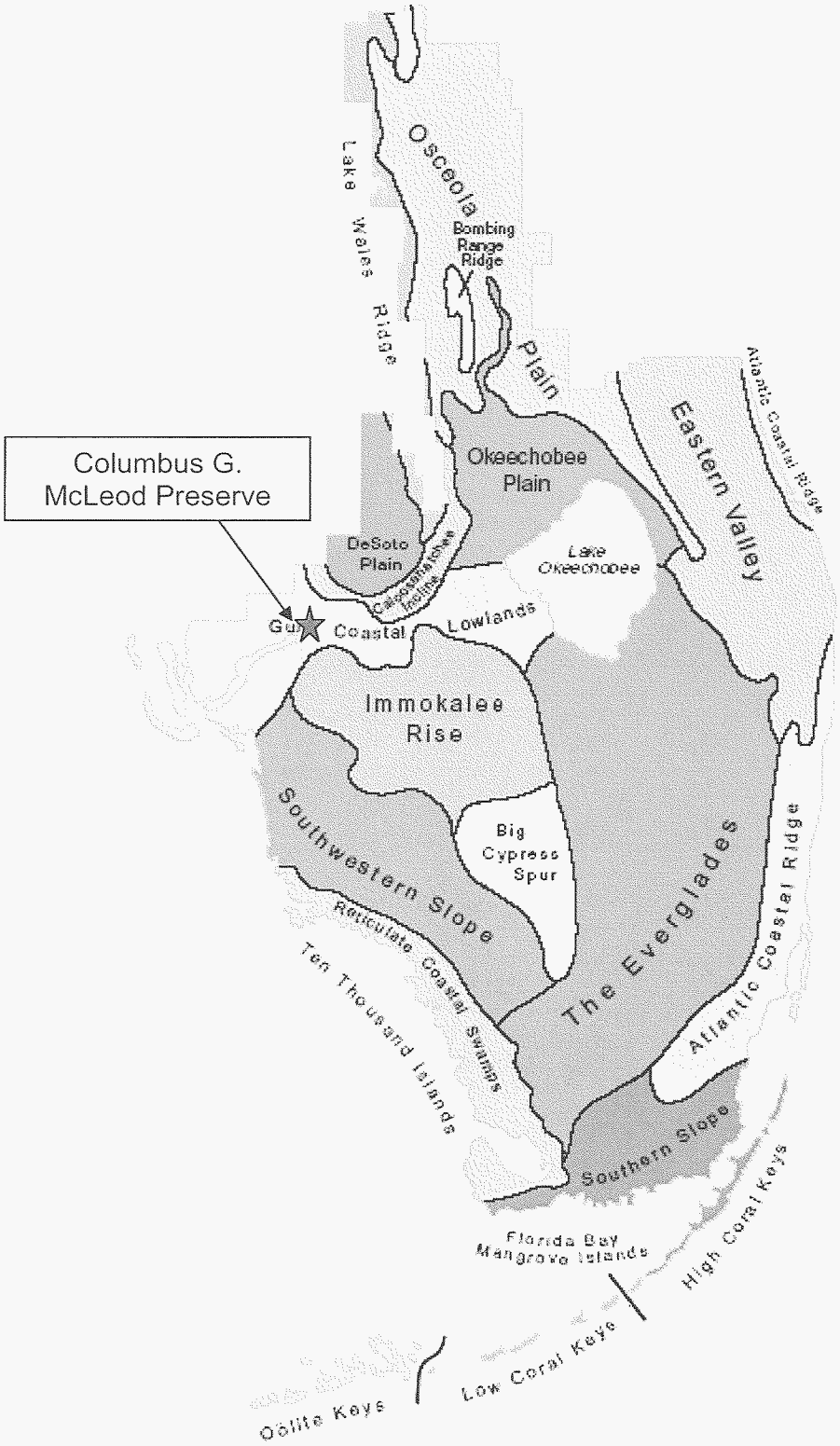


Figure 3: Physiographic Regions



iii. Topography

Lee County is located within the Gulf Coastal Lowlands of Florida that extend around the coastal periphery of the state where elevations are generally below 100 feet (Stubbs 1940; Cooke 1945).

No official elevation data have been recorded for the Preserve, and Land Stewardship staff decided that due to the extremely thick vegetation, having the area surveyed would likely be both time consuming and expensive. While conducting field work for this Stewardship Plan, staff estimated elevations to the best of their ability (Figure 4). The topography undulates throughout the island, due to possible man-made disturbances that are further explained in other sections of this plan: Hydrologic Components (ditches and swales), Land Use History (dredging of the Caloosahatchee) and Internal Influences (possible scavenger pits). These pits are fairly large man-made holes, possibly dug by people searching for artifacts or fossils and their locations are highlighted in Figure 4. The shoreline of the Preserve varies from a low overwash ridge of shells caused by boat wakes to a relatively steep bank resulting from a combination of wakes and the natural erosion that has taken place over time from the Caloosahatchee flowing west to the Gulf of Mexico (Figure 5).

The entire Preserve lies within the Coastal High Hazard Area and storm surge forecasts predict that the Preserve would be inundated during tropical storms (Figure 6).

Figure 4: Topography Map

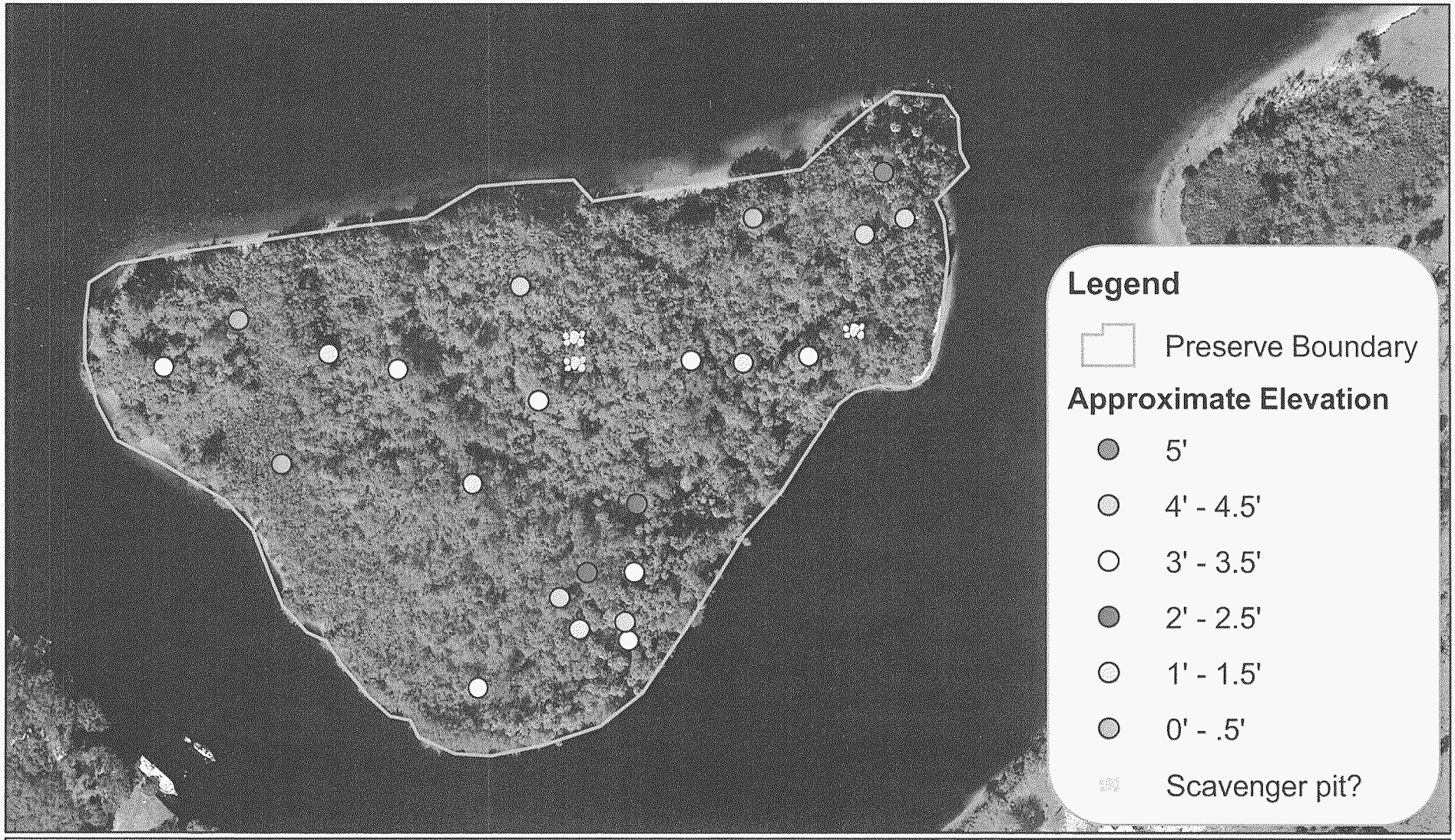
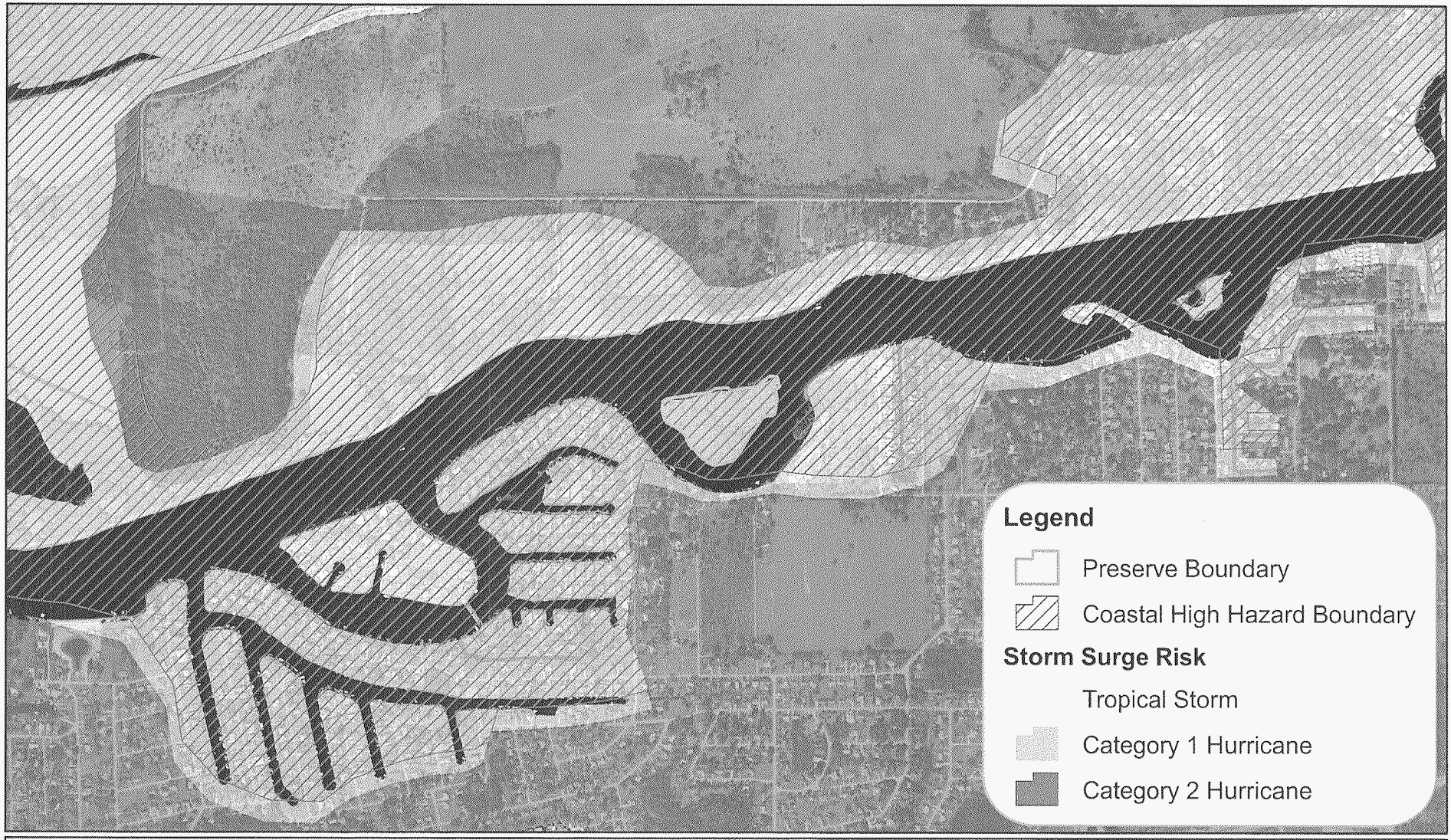


Figure 5: Approximate Shoreline Elevation Map

Figure 6: Coastal High Hazard and Storm Surge Map



CONSERVATION 20/20 LAND PROGRAM

Columbus G. McLeod Preserve

0 750 1,500 3,000 4,500 Feet

S:\esri\C2020 ArcView\Columbus G. McLeod\CGMP_management_plan\CGMP_flooding.mxd

Map Prepared On: 11/28/06 by lwewerka@leegov.com

This is not a survey. Land Stewardship Staff has prepared this map for informational and planning purposes.

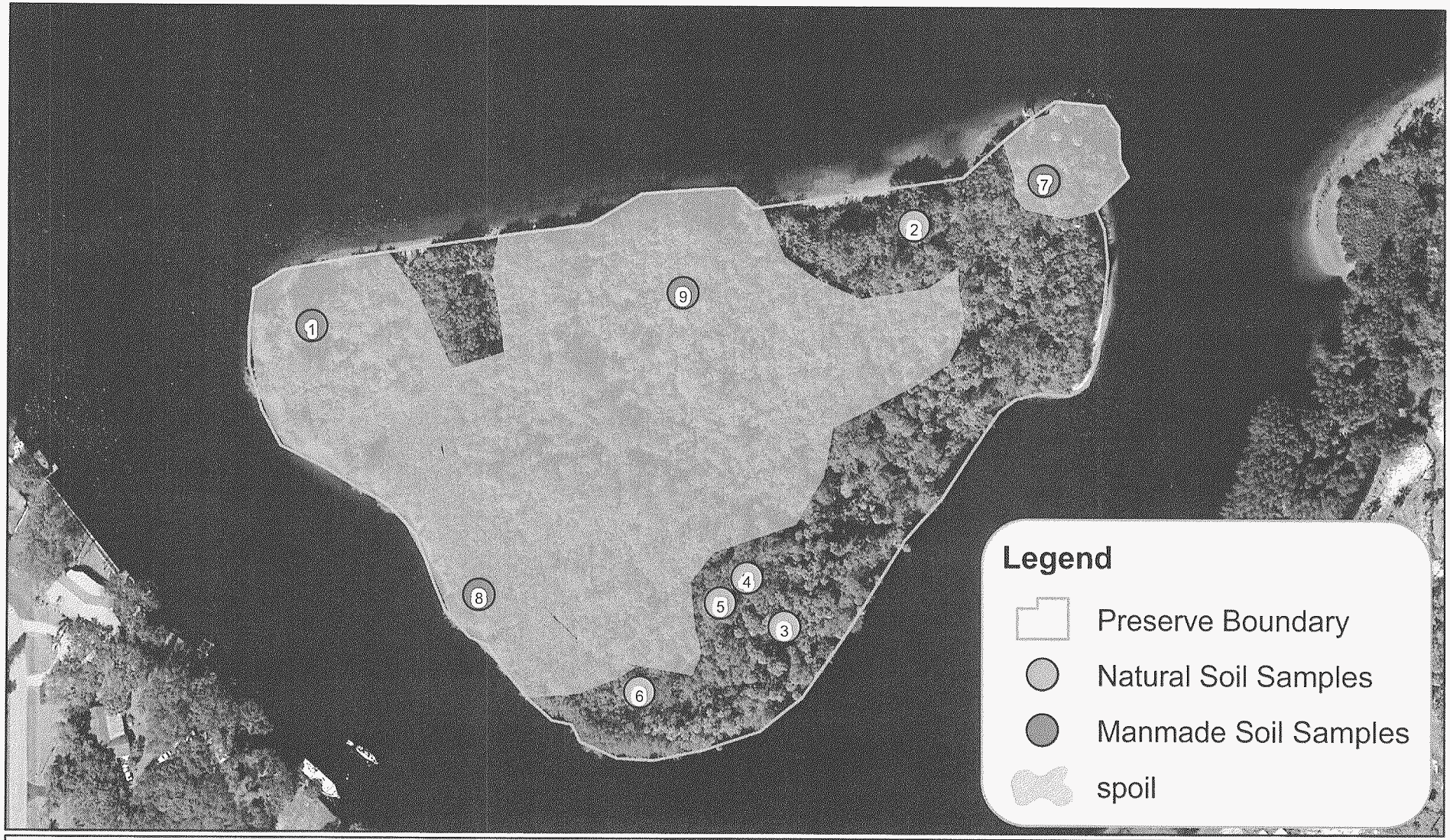
iv. Soils

The Soil Survey of Lee County, Florida, (Henderson 1984) was designed for a diverse group of clients to be able to comprehend soil behavior, physical and chemical properties, land use limitations, potential impacts, and protection of the environment. The soil scientists that created this document gathered hundreds of soil samples to study the soil profile and then used geology, land forms, relief, climate and vegetation to create a predictive model of soil formations throughout the county.

According to the survey, CGMP soils consist of Matlacha soils, which are manmade soils formed as a result of earthmoving operations. This was a logical assumption due to the past dredging of the Caloosahatchee River and the associated spoil that was left on the banks or turned into islands in the River. Land Stewardship staff questioned the accuracy of the survey in this case because of the established native vegetation found on the island as well as historical aerials which only showed spoil on the northwest corner of the Preserve in the 1944 aerials (Figure 13). Staff contacted Howard Yamataki, Resource Soil Scientist for the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), to visit the Preserve on two different occasions to take soil samples.

Samples taken during these site visits suggest a hodgepodge of natural and disturbed soils, with the natural soils predominantly concentrated on the southeast portion of the Preserve as well as in small tidal swamp communities on the north boundary. Matlacha soils were found on one sample, taken in the north-central portion of the Preserve that were approximately 5 feet deep before hitting an underlying muck layer. Another manmade soil, Caloosa, was found in samples on the western side of the Preserve and in the northeast corner. Additional evidence of soil disturbance noted by Mr. Yamataki included numerous limestone rocks at ground level. These disturbed soils are likely the result of the 1887 dredging of the Caloosahatchee River. Figure 7 shows the location of where the soil samples were taken, as well as a theoretical boundary of the disturbed soils, which covers 65 percent of the Preserve. The soil samples are numbered, and can be cross-referenced with Mr. Yamataki's reports located in Appendix A.

Figure 7: Soils Map



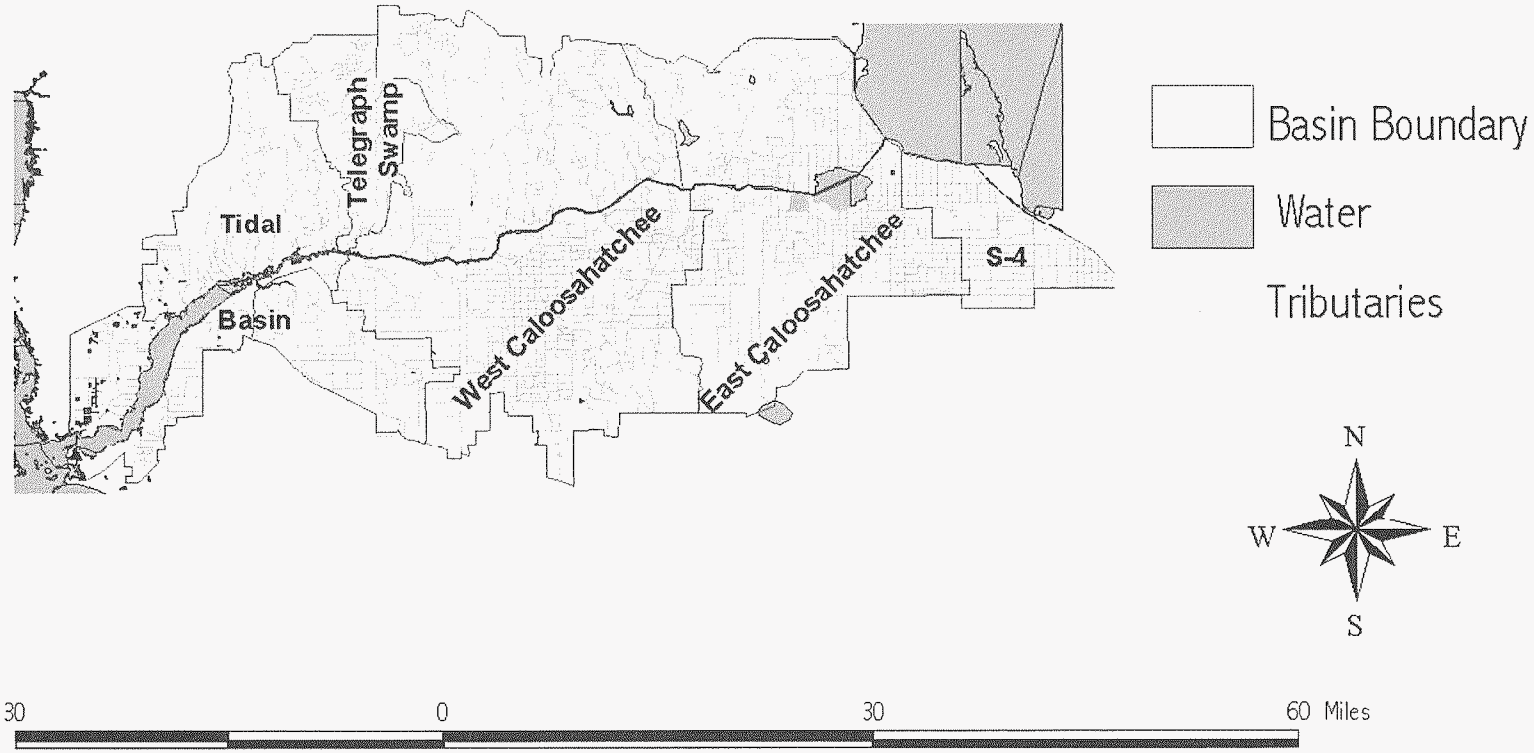
v. Hydrologic Components and Watershed

CGMP is within the north-central portion of the South Florida Water Management District's (SFWMD) Lower West Coast Region (LWCR). CGMP falls within a subset of the combined LWCR and Lower East Coast Region, within the 1,400 square-mile Caloosahatchee Basin (Tidal portion). This portion of the Basin is tidally influenced and has at least some salinity in the water. Numerous tidally influenced creeks flow into the Caloosahatchee River in this portion of the Basin. In addition to the creeks, numerous canals were constructed throughout the basin or watershed to drain surface water (Figure 8).

The Caloosahatchee River has been extensively straightened and dredged (see Land Use History section) and its natural water regime switched from the water levels rising and falling up to 13 feet in nearby Alva (Antonini 2002) with the cycle of wet and dry seasons to a regulated series of freshwater releases by the Corps to accommodate navigational, flood protection, water supply and environmental needs (SFWMDa 2000) that keeps water depth fairly stable year-round.

Before the dredging of the Caloosahatchee River in 1887, the Preserve would have been part of the north shore of the Caloosahatchee (Figure 9). The depth of the river along the historic shoreline, surveyed by the Corps at the same time, was deeper than today. Figure 10 shows the current depths of the oxbow as well as the 1887 depths (in yellow). In the past, heavy rains would have dramatically increased the volume of water flowing downstream, continuously carving out the river bottom. During especially heavy rainfalls, the river waters would have cut across the mainland in some of the curves before returning to the main channel (Antonini 2002). Land Stewardship staff discovered numerous channels and sloughs, particularly in the southern portion of the Preserve that may have been a result of these high-volume events. Three of the soil samples taken from this area indicated that these channels were not man-made. Figure 10 also shows the location of the channels/sloughs.

Figure 8: Major Basins of the Caloosahatchee Map



(SFWMDa 2000)

Figure 9: 1887 Shoreline Map

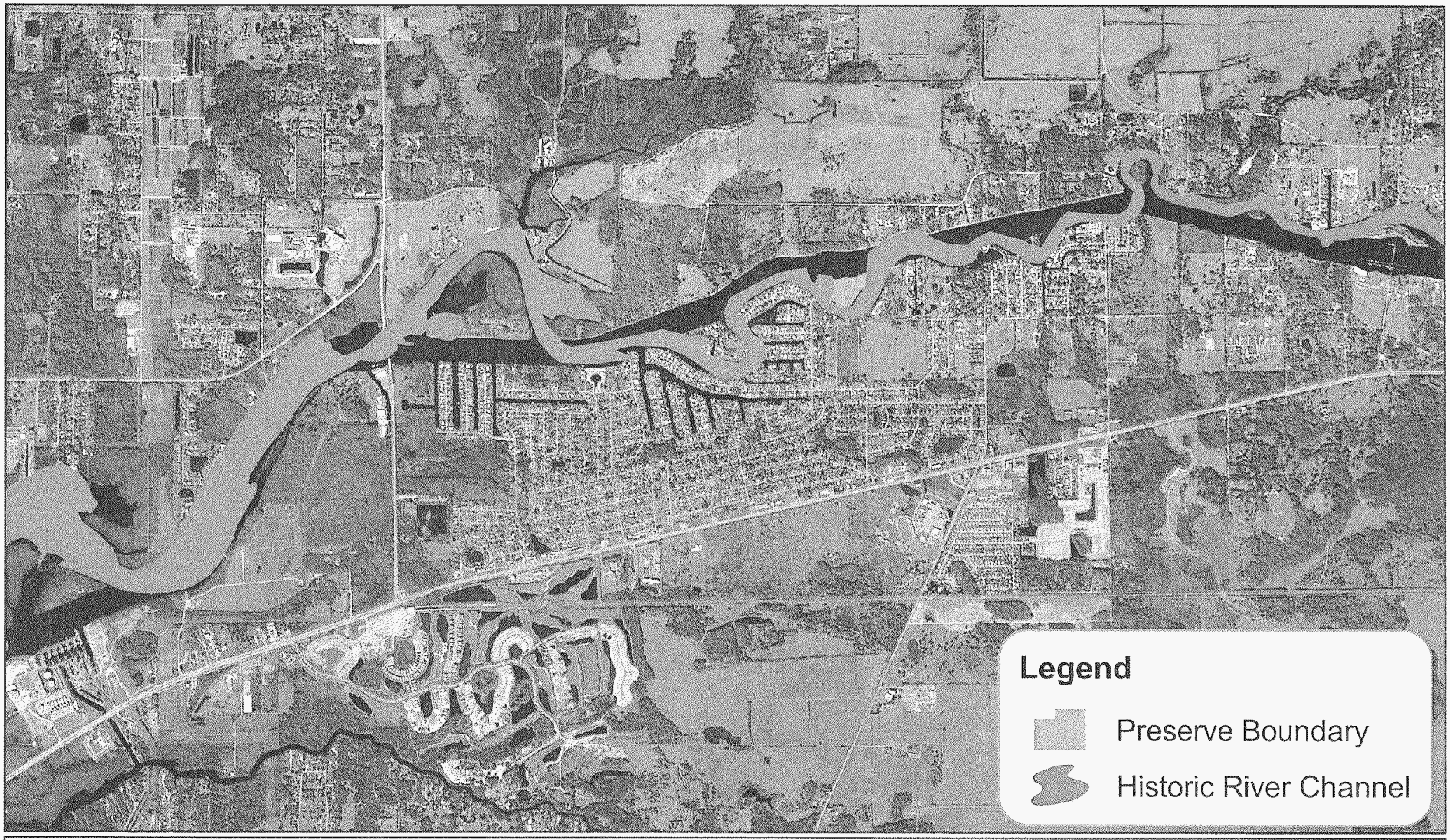
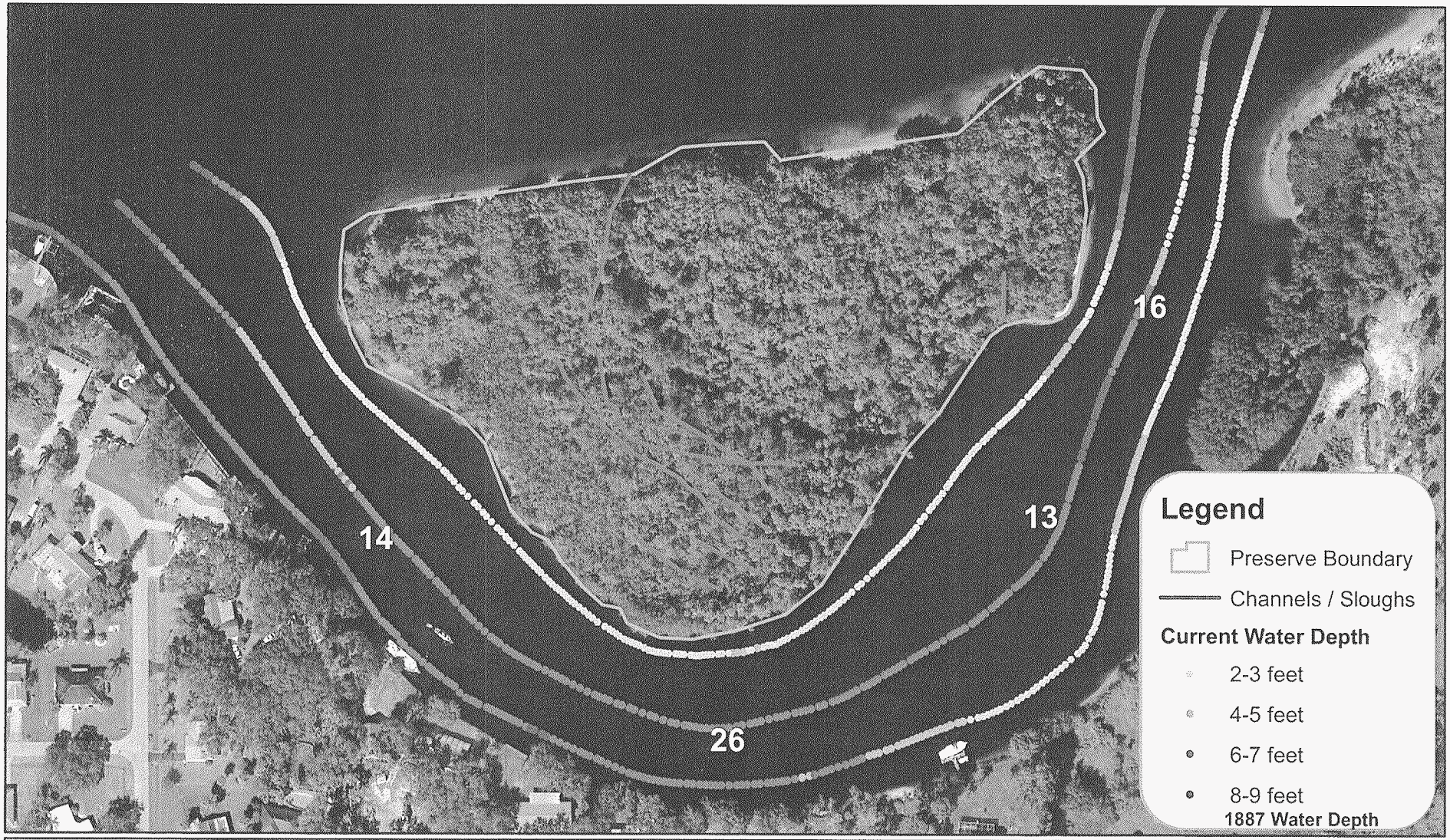


Figure 10: Hydrologic Components Map



B. Biological Resources

i. Ecosystem Function

A mangrove swamp (tidal swamp), such as the one found primarily on the southern fringe of CGMP, is a significant plant community because it functions as a nursery ground for most of Florida's commercially and recreationally important fish and shellfish. Mangrove swamps also provide breeding grounds for substantial populations of wading birds, shorebirds and other animals (FNAI 1990). There are several wildlife species that are found exclusively in mangrove swamps including at least two butterfly species - the mangrove skipper (*Phocides pigmalion*) and the black mangrove buckeye (*Junonia evarete*) - that depend on mangroves as a larval food source (Postmus, per.comm.). Additionally, mangroves can produce up to 80 percent of the total organic material available in the aquatic food web through the continuous shedding of its leaves and other plant components (FNAI 1990). CGMP's tidal swamp is more freshwater than estuarine, being influenced by Lake Okeechobee water releases and increased regional stormwater runoff from canals and ditches. Because the Caloosahatchee River is predominately fresh water near this location, only red mangroves (*Rhizophora mangle*) are located at the Preserve.

Hammocks are currently found throughout Florida, but their composition varies with the transition from a warm temperate forest flora in the north to a tropical flora in the south. In south Florida, there is a distinct transition to hammocks that contain primarily tropical species of trees, as well as the largest number of epiphytic ferns, bromeliads, and orchids in the continental United States (Myers and Ewel 1990). South Florida hammocks tend to be similar and are dominated by evergreen overstory species such as live oak (*Quercus virginiana*), cabbage palm (*Sabal palmetto*), bay (*Persea palustrus*) and understory species such as saw palmetto (*Serenoa repens*) and *Ilex* species (Myers and Ewel 1990). CGMP contains natural hydric and mesic hammocks that have been identified by their location and vegetation rather than a measure of soil moisture. In 70 years, the western dredge spoil area of the Preserve has succeeded into a hammock like plant community containing native and exotic plant species.

ii. Natural Plant Communities

CGMP consists of five different plant communities (Figure 11); most which have grown since dredged spoil soils were deposited on the island (refer to Soils section). Some plant communities are defined using the Guide to the Natural Communities of Florida (1990) prepared by Florida Natural Areas Inventory (FNAI) and the Florida Department of Natural Resources, while others that have undergone extensive disturbance are defined using terms that best describe the

disturbed communities. The following are descriptions of the dominant plants and characteristic animals found within each community. Appendix B contains an up-to-date list of plant species identified by Land Stewardship staff on numerous site inspections, but not necessarily a comprehensive list for the entire Preserve. This list will be updated seasonally to identify plants in their inflorescence phase.

Mesic Hammock Community – 2.7 acres, 28% coverage of CGMP

The mesic hammock communities are primarily in central and eastern areas of the Preserve. Mesic hammocks are characterized by having an open or closed canopy dominated by live oak with cabbage palm present in the canopy or subcanopy. They can have a dense understory of saw palmetto, American beautyberry (*Callicarpa americana*) and wax myrtle (*Myrica cerifera*) with other tropical shrubs mixed in. They usually occur on the fringes of rivers, swamps, marshes or lakes. The dominant plant species at the Preserve are live oak, cabbage palm, with an understory of ferns, bromeliads, saw palmetto, wild coffee (*Psychotria nervosa*), and poison ivy (*Toxicodendron radicans*).

A variety of animals use this community including red-bellied woodpeckers (*Melanerpes carolinus*), downy woodpeckers (*Picoides pubescens*) and blue-gray gnatcatchers (*Polioptila caerulea)*.

Hydric Hammock Community – 2.4 acres, 24% coverage of CGMP

CGMP has scattered areas that are best described as hydric hammock. Most of these areas received dredge spoil during the 1880s and 1930s. Hydric hammocks are characterized as having well developed hardwoods and cabbage palms with an understory of palmetto and ferns. Typical plant species found on CGMP include cabbage palm, swamp bay, saw palmetto, myrsine (*Rapanea punctata*), poison ivy, white stopper (*Eugenia axillaris*), hackberry (*Celtis laevigata*), and swamp fern (*Blechnum serrulatum*). Brazilian pepper (*Schinus terebinthifolius*) has invaded this plant community.

Wildlife noted in this plant community includes brown anoles (*Anolis sagrei*), great-crested flycatchers (*Myiarchus crinicensis*), great blue herons (*Ardea herodius*), Carolina wrens (*Thryothorus ludovicianus*), and common yellowthroats (*Geothlypis tristis*).

Hydric Hammock - Brazilian pepper Community – .7 acres, 7% coverage of CGMP

These areas of the Preserve are dominated by large Brazilian pepper trees, poison ivy, giant leather ferns (*Acrostichum danaeifolium*), and myrsine.

Tidal Swamp Community – 2.0 acres, 21% coverage of CGMP

Tidal swamps (mangroves) are characterized as dense forests located along shorelines with low wave energy in south Florida. The typical dominant plants in this community are white mangrove (*Laguncularia racemosa*), black mangrove (*Avicennia germinans)*, red mangrove, and buttonwood (*Conocarpus erectus*). The five physical factors that greatly influence this community are water temperature, salinity, tidal fluctuation, substrate, and wave energy.

The dominant species of mangrove found in different areas is dependant on abiotic factors such as tidal flushing and salinity. For this reason, only red mangrove is found at CGMP. Additional plants found include giant leather fern, pond apple (*Annona glabra*), white twinevine (*Sarcostemma clausum*), hottentot fern (*Thelypteris interrupta*), Brazilian pepper and poison ivy. At CGMP, this natural plant community is characterized as an overwash swamp found on an island that is frequently inundated by the tides.

A variety of animals utilize this community including yellow-crowned night herons (*Nyctanassa violacea*), little blue herons (*Egretta caerulea*) and tricolored herons (*Egretta tricolor)*.

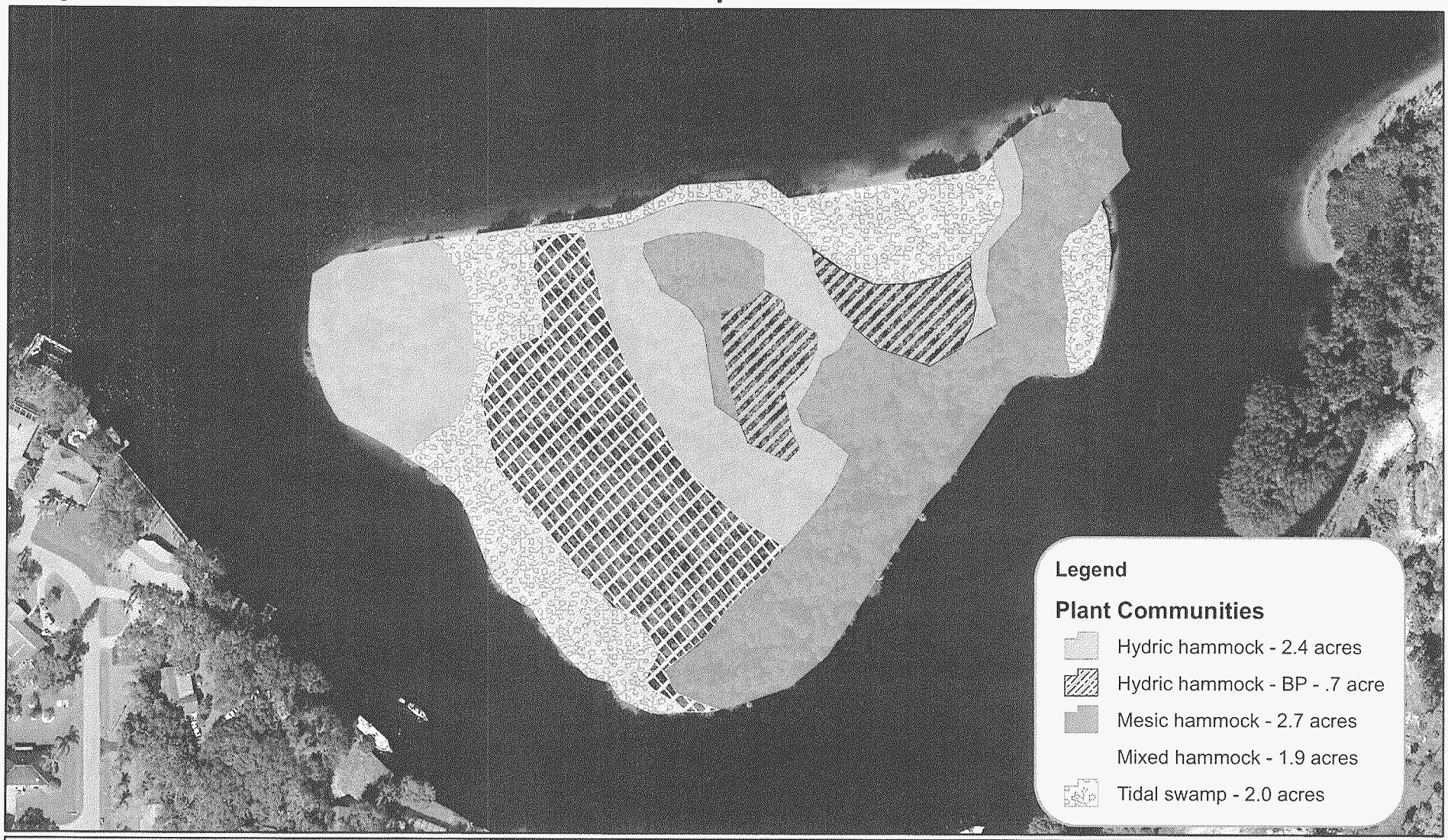
Mixed Hammock Community – 1.9 acres, 20% coverage of CGMP

In newly adapted areas of CGMP's southwestern region, there are several swale-like topographic features that are oriented NW-SE. The elongated, high-to-low physical features mimic both mesic and hydric hammock plant communities that are being classified as mixed hammock.

This mixed hammock community has plants such as live oaks, ferns, saw palmetto, cabbage palms, myrsine, Brazilian pepper, Simpson's stopper (*Myrcianthes fragrans*), and poison ivy.

Wildlife noted in this plant community includes nine-banded armadillos (*Dasypus novemcinctus*), brown anoles and gray catbirds (*Dumetella carolinensis*).

Figure 11: Plant Communities Map



iii. Fauna

The tidal swamps at CGMP provide foraging and nesting grounds for wading birds which will be improved once exotic plant control has been completed. A variety of species, including green herons (*Butorides virescens*), little blue herons and tricolored herons can be seen here. Appendix C shows a list of wildlife documented at the Preserve. Wildlife species were recorded during site inspections and the field work for developing this plan. Future sightings through site inspections and possible Lee County Bird Patrol volunteers will continue to be recorded. To date, the only exotic wildlife noted on the Preserve are brown anoles and nine-banded armadillos. Another exotic animal, the feral hog (*Sus scrofa*), is a concern because hogs can swim out to islands, but none have been noted on the Preserve. If this species becomes a problem, proper management measures will be used to control it.

Typically, a tidal swamp community consists mainly of red, white, and black mangrove, and buttonwood. CGMP's tidal swamp community includes red mangrove, leather fern, pond apple, and Brazilian pepper. It can be a vital habitat to many animals, such as turtles, frogs, snakes, lizards, raccoons (*Procyon lotor*), river otters (*Lutra canadensis*), many birds, and fish. Many fish take advantage of the protection that the mangroves provide for their nurseries.

Wildlife management at the Preserve will focus on providing optimal habitat for native species. Restoration of the disturbed areas, control of invasive exotic plants and reduction of shoreline erosion will be critical restoration components to provide improved habitat for wildlife. CGMP is part of a countywide quarterly site inspection program for all Conservation 20/20 Preserves. A copy of the site inspection form is available in the Land Stewardship Operations Manual (LSOM). These inspections allow staff to monitor for any impacts and/or changes to each preserve and include lists of all animal sightings and new plant species that are found. If, during these inspections, staff finds FNAI listed species, they will be reported using the appropriate forms.

iv. Designated Species

There are a variety of designated animal and plant species (Table 2) found at CGMP. Although all native plant and animal species found at the Preserve have some protection due to the preservation of this property, certain species need additional attention. For stewardship purposes, all plants and animals listed by the United States Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FWC), Florida Department of Agriculture and Consumer Services (FDACS), the Institute for Regional Conservation (IRC) and FNAI will be given special consideration.

Typically, designated species will benefit from proper management of the biological communities in which they occur. However, some species may require additional measures to ensure their protection. Management practices likely to benefit wildlife at the Preserve include exotic plant control, trash removal, wildlife monitoring, shoreline erosion control, exotic animal control, restricting public access to certain areas and enforcement of no littering and no weapons regulations.

Table 2: Listed Species Found at CGMP and Their Designated Status

Scientific Name	Common Name	USFWS	FWC	FNAI	FDA	IRC	Occurrence
REPTILES							
Alligator mississippiensis	American alligator	T (S/A)	SSC	G5/S4			confirmed
MAMMALS							
Trichechus manatus	West Indian manatee	E	E	G2/S2			confirmed
BIRDS							
Egretta caerulea	little blue heron		SSC	G5/S4			confirmed
Egretta tricolor	tricolored heron		SSC	G5/S4			confirmed
PLANTS							
Ferns and their allies							
Campyloneurum phyllitidis	long strap fern					R	confirmed
Thelypteris interrupta	hottentot fern					R	confirmed
Monocots							
Tillandsia balbisiana	northern needleleaf, reflexed wild-pine				T		confirmed
Tillandsia fasciculate var. *densispica*	cardinal airplant, stiff-leaved wild-pine				E		confirmed
Tillandsia utriculata	giant airplant				E		confirmed
Encyclia tampensis	Florida butterfly orchid				CE		confirmed
Smilax bona-nox	saw greenbrier					R	confirmed
Dicots							
Cicuta maculata	spotted water hemlock					I	confirmed
Eupatorium mikanioides	semaphore thoroughwort					R	confirmed
Mikania cordifolia	Florida Keys hempvine					R	confirmed
Campsis radicans	trumpet creeper					CI	confirmed
Morus rubra	red mulberry					R	confirmed
Myrcianthes fragrans	Simpson's stopper				T	R	confirmed
Schoepfia chrysophylloides	graytwig					R	confirmed
Sideroxylon reclinatum	Florida bully					R	confirmed

Key

USFWS - U.S. Fish and Wildlife Service	**FNAI -** Florida Natural Areas Inventory
FWC - Florida Fish and Wildlife Conservation Commission	**G -** Global rarity of the species
FDA - Florida Department of Agriculture and Consumer Services	**S** - State rarity of the species
E - Endangered	**T** - Subspecies of special population
T - Threatened	**1** - Critically imperiled
CE - Commercially Exploited	**2** - Imperiled
SSC - Species of Special Concern	**3** - Rare, restricted or otherwise vulnerable to extinction
IRC - The Institute for Regional Conservation	**4** - Apparently secure
CI - Critically Imperiled	**5** - Demonstrateably secure
I - Imperiled	
R - Rare	

Wildlife Species

The following is a brief summary of each designated wildlife species explaining why they are in decline. Unless stated otherwise, the reasons for the species decline and the management recommendations were obtained from Hipes et al. (2001).

American Alligator

American alligators (*Alligator mississippiensis*) have recovered dramatically from overhunting since the 1960s but remain listed by USFWS as threatened by similarity of appearance to the American crocodile (*Crocodylus acutus*) and by FWC as species of special concern. There are some populations large enough to support limited harvests. Pollution and destruction of wetlands are currently threats to this species. Another threat becoming more prevalent in the southwest Florida area is loss of habitat from the development and uneducated humans either feeding alligators or feeling threatened by their presence. Many alligators are relocated or killed by wildlife officials or authorized trappers because of their size or close proximity to homes adjacent to freshwater wetland ponds.

West Indian Manatee

Manatees are known to swim in the waters of the Caloosahatchee River. Their slow movement to warmer inland waters in the winter makes them susceptible to collisions with boats, which are often fatal. Although the manatee's overall population appears steady, it is threatened by increased boat traffic and expanding development in Florida. In October 2006, staff members noted a manatee as it swam under their canoe along the original portion of the Caloosahatchee on the south side of the Preserve.

Little Blue Heron and Tricolored Heron

The little blue heron's and tricolored heron's decline are due to loss of freshwater wetlands and alteration of their natural hydroperiod. Both are listed by FWC as species of special concern. There is also some indication that pesticides and heavy metal contamination may affect this heron. These herons are declining throughout their range, and have been since the 1950s. Scientists believe the main reason for this decline is the loss and alteration of wetlands where they forage.

Plant Species

In addition to designated wildlife, CGMP provides habitat for several listed plant species. There are at least five state listed plant species at CGMP. The following is a brief summary of each designated plant species explaining why

they are in decline, typical plant communities where they are located and management recommendations.

Northern Needleleaf, Cardinal and Giant airplants

The northern needleleaf (*Tillandsia balbisiana*) is a threatened species listed by FDA that is occasionally found in a variety of habitats including pinelands, hammocks and mangroves. Cardinal airplant or stiff-leaved wild pine, (*Tillandsia fasciculata* var. *densispica*) is an endangered species listed by FDA. Giant airplant or giant wild-pine (*Tillandsia utriculata*) is a bromeliad considered to have been quite common in Florida before the arrival of the Mexican bromeliad weevil (*Metamasius callizana*) and is now also listed as endangered by FDA. These bromeliads have been documented throughout tidal swamp and hammock areas of the Preserve.

Threats to these bromeliads include illegal collecting, the exotic Mexican bromeliad weevil and habitat destruction (Save 2003). Currently, scientists are researching biological control agents for the exotic Mexican bromeliad weevil. Staff will keep current with the research developments and work with scientists in the future if it is determined that the weevils are affecting epiphytes and the United States Department of Agriculture (USDA) is in need of release sites.

During exotic plant removal or construction of any public use areas, staff will survey the area before work commences to look for and mark, if necessary, areas to avoid. Plants growing on invasive exotic vegetation to be destroyed will be relocated on-site if economically feasible.

Florida Butterfly Orchid

Although locally abundant (Brown 2002), the Florida butterfly orchid (*Encyclia tampensis*) is designated as commercially exploited by the FDA. Butterfly orchids can be found in tidal swamps and hydric hammocks in the Preserve.

Simpson's Stopper

Simpson's stopper was said to originally be used by Native Americans and early settlers as an anti-diarrheal treatment (hence the name "stopper") (IFAS 2006). These trees are found scattered in hammock communities of the Preserve and are listed as threatened by FDA.

The majority of the designated plant species (see Table 2) was provided by IRC, which is not a regulatory agency. IRC's designation was either received from its book (Gann 2002) or Internet website (http://www.regionalconservation.org/ircs/database/search/QuickSearch.asp). Scientists working for this Institute have conducted a tremendous amount of field

work and research documenting plants occurring in conservation areas in the 10 southernmost counties of Florida. This initial floristic inventory allowed the IRC to rank plant species to indicate how rare/common these plants are in protected areas. At CGMP, nine Rare, one Imperiled and one Critically Imperiled plants have been identified.

Rare plants are defined as:

- 21-100 occurrences, or less than 10,000 individuals in south Florida or found locally in a restricted range
- fewer than 100,000 individuals

Imperiled plants are defined as:

- 6-20 occurrences, or less than 3,000 individuals in south Florida or because of vulnerability to extinction due to some natural or human factor
- fewer than 10,000 individuals

Critically Imperiled plants are defined as:

- 5 or fewer occurrences, or fewer than 1,000 individuals in south Florida or because of extreme vulnerability to extinction due to some natural or human factor
- If 2-5 occurrences, less than 3,000 individuals
- If a single occurrence, less than 10,000 individuals

In their book, Rare Plants of South Florida: Their History, Conservation and Restoration (Gann 2002), the authors provide an entire chapter of recommendations to help restore south Florida's rare plant diversity. Several of these recommendations, particularly those that protect plants on the Preserve and relate to stewardship practices, will be followed. More information on the specific techniques used will be discussed in the Management Action Plan. The following list highlights those recommendations by IRC that will be incorporated into the management of CGMP:

- Ensure that park improvements and management activities do not needlessly threaten or destroy rare plant populations.
- Prevent illegal poaching of rare plants.
- Prosecute poachers to the fullest extent of the law.
- Implement an ongoing exotic pest plant control program.
- Educate exotic plant control crews about the rare plants to ensure they avoid non-target damage.

All exotic plant control and restoration activities at the Preserve will ensure that designated wildlife and plant species are protected. If additional listed species are documented on the Preserve they will be added to the lists in Appendices B or C. When any of the designed species' nests are discovered on the Preserve, a map will be created - for staff use only - to assist with planning for restoration activities.

v. Biological Diversity

Biodiversity at CGMP varies depending on the community, but should increase after stewardship activities have been put into practice (i.e. invasive exotic plant and debris removal). The plant communities range from drier mesic hammocks to tidally influenced mangrove swamps. This range of plant communities contributes to the diversity across this small Preserve. Protection of native plants across the landscape and throughout the wetlands will enhance the overall biodiversity of the Preserve.

The island provides significant breeding and roosting habitat for migratory and resident wading birds. Along the sloping banks of the disturbed shoreline are oak trees, American beautyberry, mangroves, Brazilian pepper, leather fern, pond apple, and poison ivy. Rare bird species such as tricolored and little blue herons were observed along the open mangrove shoreline, while woodpeckers and Carolina wrens made their way through densely vegetated interior locations. Many species of animals not only inhabit, but also frequently visit the Preserve. Currently 93 plant species (18 exotic) and 29 animal species (2 exotic) have been documented. Sixteen of the 18 exotic plant species (88 percent) are on the Florida Exotic Pest Plant Council's 2005 List of Invasive Species (FLEPPC 2005).

The integrity and diversity of CGMP must be protected when and where possible. Land Stewardship staff will perform the following actions in this regard:

- Control of invasive exotic vegetation followed by annual maintenance to provide more suitable habitat for native aquatic and terrestrial species.
- Maintain boundaries with signs to eliminate illegal access to the Preserve and protect fragile ecosystems.
- Reduce shoreline erosion by planting wetland plants which will stabilize the shoreline and creating one access point for visitors and staff.
- Remove any debris and prevent future dumping on site.
- Control invasive exotic animal populations to reduce their impacts on the herbaceous plants, native animals and soils.
- Conduct on-going species surveys using volunteers and staff to catalog and monitor the diversity that is present.

C. Cultural Resources

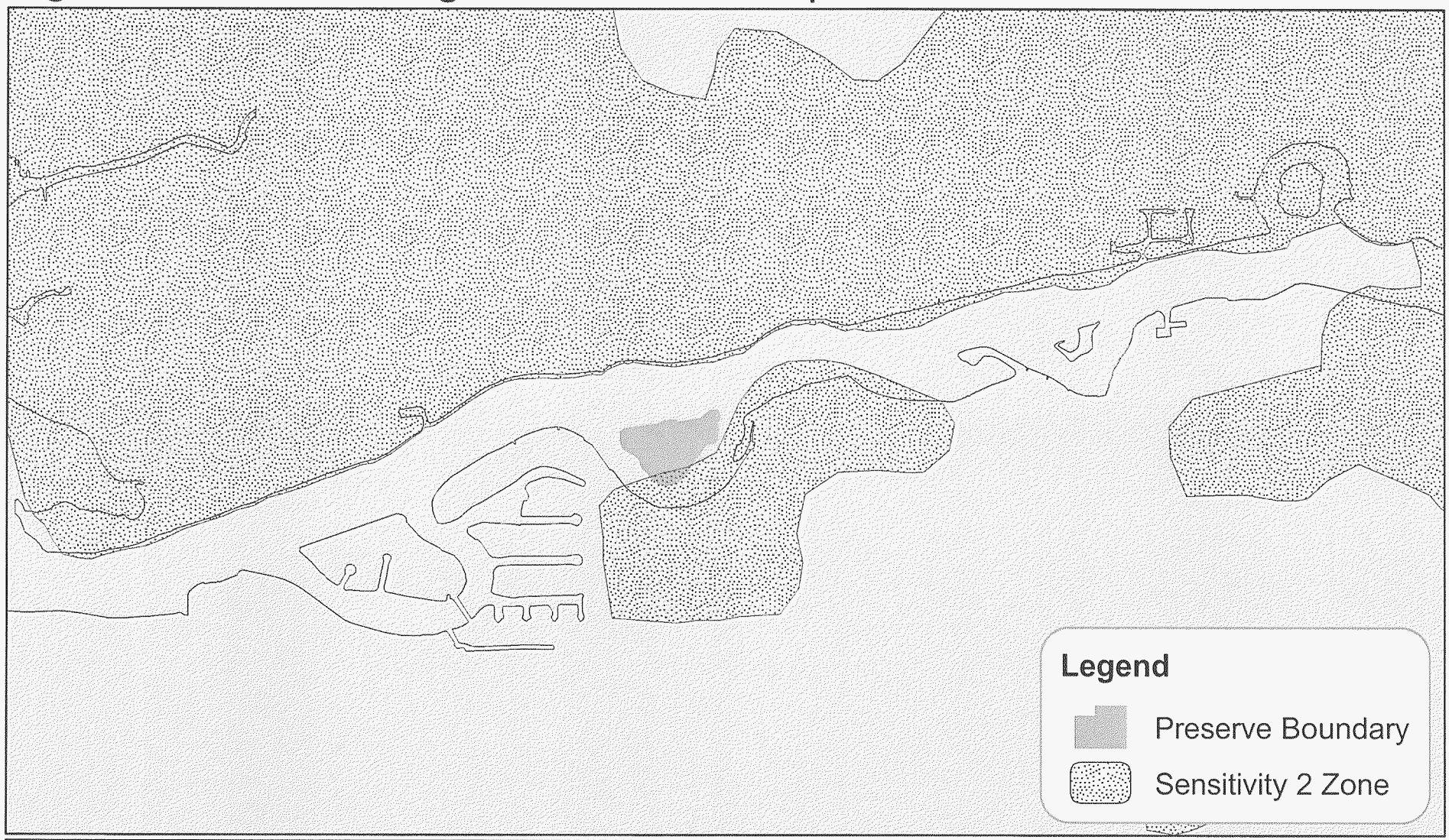
i. Archaeological Features

In 1987, Piper Archaeological Research, Inc. (PARI) conducted an archaeological site inventory of Lee County. The company was able to identify an additional 53 sites increasing the total number of known archaeological sites in Lee County to 204. PARI created a site predictive model and archaeological sensitivity map for the county that highlighted potential areas likely to contain additional archaeological sites. A small portion of CGMP lies within the study's "Sensitivity Level 2" area (Figure 12). The study defines this level as "areas that contain known archaeological sites that have not been assessed for significance and/or conform to the site predictive model in such a way that there is a high likelihood that unrecorded sites of potential significance are present. If these areas are to be impacted, then they should be subjected to a cultural resource assessment survey by a qualified professional archaeologist in order to 1) determine the presence of any archaeological sites in the impact area and/or 2) assess the significance of these sites" (Austin 1987).

Unfortunately, in developing the map, PARI failed to consider the dredging that had occurred in the Caloosahatchee River in 1887. When the Calusa tribes lived in the region, the Preserve was part of the mainland. For this reason, Land Stewardship staff will treat the entire Preserve as if it were within the Sensitivity Level 2 area. In the unlikely event of a restoration project at CGMP requiring any major soil disturbance, a professional archaeologist will be hired to conduct a survey of the area to be impacted. If evidence of shell middens or other artifacts are found in the area, the Division of Historical Resources (DHR) will be immediately contacted and protection procedures will comply with the provision of Chapter 267, Florida Statutes, Sections 267.061 2(a) and (b). Collection of artifacts and/or any disturbance of the archaeological site will be prohibited unless prior authorization has been obtained from the DHR. Any potential site will be managed in coordination with recommendations from the DHR and, if necessary, the site will be kept confidential with periodic monitoring for impacts. If any significant archaeological resources are found and confidentiality is not found to be necessary, they may be incorporated into a public education program.

As mentioned in the Topography section, there are three fairly large pits that Land Stewardship staff found while conducting field work for this Stewardship Plan. It is possible that they were scavenger pits dug by people looking for artifacts. No evidence of any artifacts was found by staff.

Figure 12: Archaeological Features Map



ii. Land Use History

"Perhaps nowhere else in Florida are manmade alterations to the natural landscape more visible than in the Southwest" (Antonini 2002).

Of all Lee County Preserves, CGMP may be the best to illustrate this quote. As mentioned in the Physical Resources section of this plan, the Preserve was originally not even an island, but part of the mainland along the north bank of the Caloosahatchee River until 1887.

There is minimal evidence of "Land Use" at the Preserve, so this section will primarily focus on general information about the Caloosahatchee River and surrounding land between Fort Myers and Alva.

The Calusas were the first people to inhabit southwest Florida. Their arrival was about 3,500 years ago and they had almost disappeared by the 1780's (Powell 1997). Although they primarily lived along the coast, they had inland camps along the river. According to Powell, temporary hunting and fishing camps would have been set up along the banks of the river that may have been used during periods when less food was available on the coast. Another hypothesis is that they may have also traveled inland after hurricanes. Evidence of shell middens and remnant canals still exist much further upstream between LaBelle and Moore Haven.

Occasional Anglo settlers lived in Southwest Florida when the Calusas still controlled the land, but they started arriving in larger numbers in the mid 1800s. Abundant food, productive soils and pleasant weather were all attractive for settlers. For hundreds of years, the Caloosahatchee River was the only way for the Calusas and settlers to travel inland. Travel was challenging. The 44-mile stretch between Fort Myers and LaBelle had 82 bends in the river. The channel was very narrow in spots and covered by a canopy of trees. It was challenging if not impossible for larger boats to travel the river. In addition to navigation, flooding was a problem for early settlers and inhibited permanent agricultural and residential development inland (Antonini 2002).

Flooding and navigation concerns started the first of many attempts by the Corps to "improve" the Caloosahatchee. They surveyed the Caloosahatchee River between 1887-1893 and completed the first federal project to dredge the river channel between Fort Myers and Fort Thompson (east of LaBelle) four feet deep and 35 feet wide. In addition, all snags and overhanging trees were removed. With help from USDA-NRCS, Land Stewardship staff documented evidence from this 120-year old project when taking soil samples on two different occasions.

Two devastating hurricanes in the 1920s motivated the Federal Government to initiate another round of flood control efforts. Between 1930 and 1937 the river was dredged again. In 1935, dredging began on the "Cross-Florida Waterway,"

which included dredging a seven-foot deep channel between Fort Myers and Fort Thompson. "By 1937, the date of the official opening of the waterway, the Caloosahatchee River was unrecognizable. Little resemblance to the original river remains, except for a few off channel oxbows" (Powell 1997) like the one where CGMP is located. In the 1944 aerial (Figure 13) and the 1953 aerial (Figure 14) the spoil is still visible in the northwest corner of the Preserve.

According to more recent aerials between 1958 (Figure 15) and 1966, the Caloosahatchee River was enlarged again from about 250 feet to a quarter-mile. The only other slight change visible in historic aerials is the gradual filling in by vegetation of the two wetlands located on the north boundary in the 1980s.

In addition to researching the "improvements" and looking at aerial photographs, Land Stewardship staff was lucky to have Rae Ann Wessel, local advocate for the Caloosahatchee River, lead a boat tour to the area. Her particular interest in the oxbows helped to fill in the holes for some of the more recent history.

Two of the more prominent names in Fort Myers history have ties to the area where the Preserve is located, the Manns and the Fergusons. At one time, the Preserve's oxbow was known as the "Ferguson Oxbow." It was named after John C. Ferguson, who emigrated from Scotland to the east coast of Florida in the 1920s. In 1952, he moved his business (St. George Packing Company) to Fort Myers Beach and was one of the founders of an "untouched shrimping industry" (WGCU 2006). From the early 1970s Mr. Ferguson owned some of the mainland on the south side of the oxbow across from the Preserve. During hurricane threats, some of the shrimp boats would be brought up the oxbow and anchored for safety (Mann 2006). John Ferguson's youngest daughter, Mary Lee, met and eventually married Fort Myers native Frank Mann. Frank and Mary Lee Mann hosted many campaign barbeques on the Ferguson property in the 1970s and '80s during his 8 years as a member of the Florida House of Representatives and 4 years in the Florida Senate.

Although there is no record or evidence of anyone using the island, Ms. Lila Schultz, another long-time resident across the oxbow from the Preserve, remembers her son camping on the island.

Figure 13: 1944 Aerial

CONSERVATION 20/20 LAND PROGRAM

Columbus G. McLeod Preserve

0 337.5 675 1,350 2,025 Feet

S:\esri\C2020 ArcView\Columbus G. McLeod\CGMP_management_plan\CGMP_1944.mxd

Map Prepared On: 09/18/06 by lwewerka@leegov.com

This is not a survey. Land Stewardship Staff has prepared this map for informational and planning purposes.

Figure 14: 1953 Aerial

CONSERVATION 20/20 LAND PROGRAM

Columbus G. McLeod Preserve

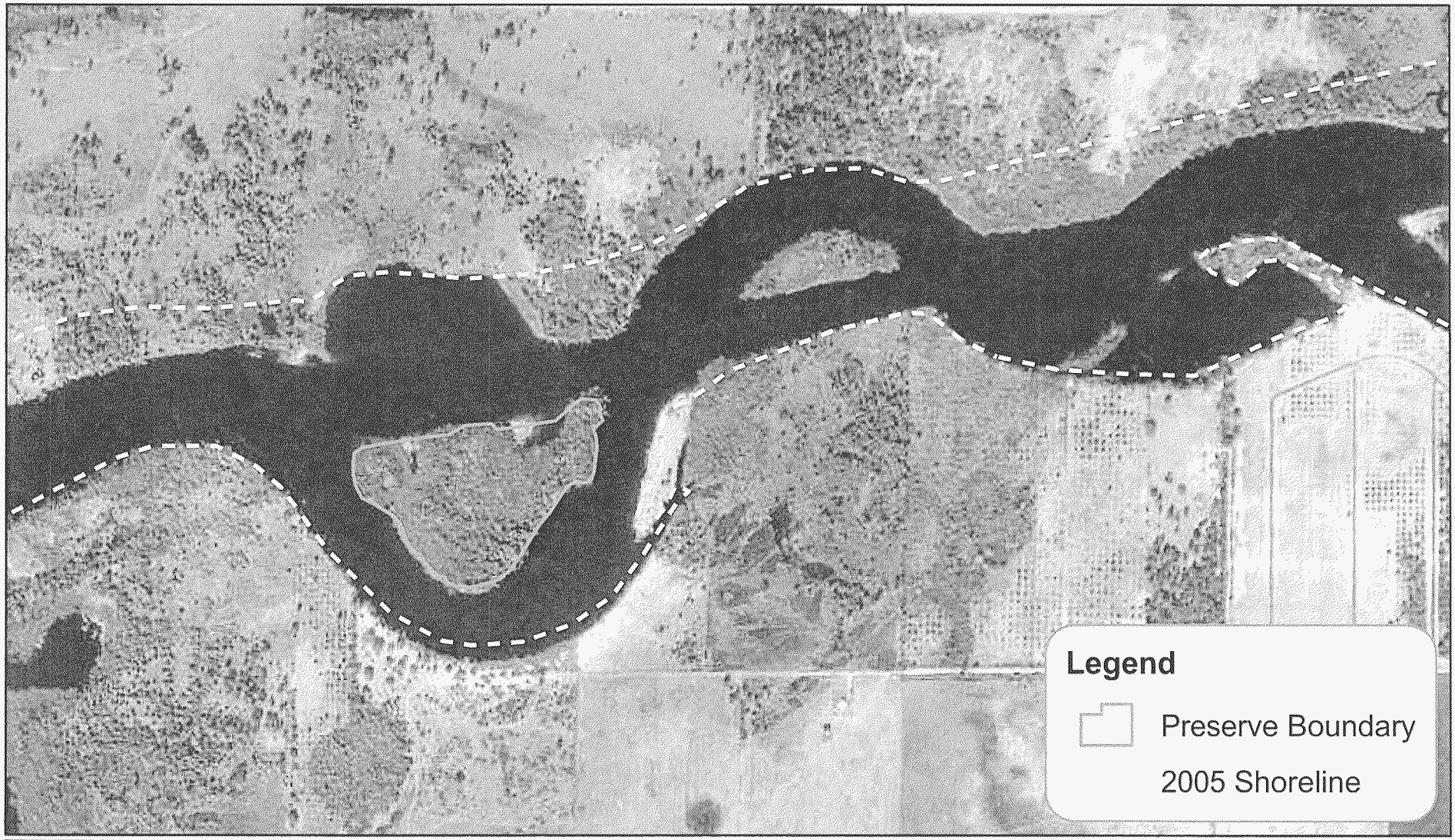
0 337.5 675 1,350 2,025 Feet

S:\esri\C2020 ArcView\Columbus G. McLeod\CGMP_management_plan\CGMP_1953.mxd

Map Prepared On: 09/18/06 by lwewerka@lcegov.com

This is not a survey. Land Stewardship Staff has prepared this map for informational and planning purposes.

Figure 15: 1958 Aerial



CONSERVATION 20/20 LAND PROGRAM

Columbus G. McLeod Preserve

0 335 670 1,340 2,010 Feet

S:\esri\C2020 ArcView\Columbus G. McLeod\CGMP_management_plan\CGMP_1958.mxd

Map Prepared On: 09/18/06 by iwewerka@ilcegov.com

This is not a survey. Land Stewardship Staff has prepared this map for informational and planning purposes.

iii. Public Interest

CGMP was purchased because of its location as an oxbow island in the Caloosahatchee River. Although no development plans existed, the majority of the Preserve was zoned for residential housing. Its purchase reduced development in the Coastal High Hazard zone.

It is expected that the Preserve will become a stopping point for people paddling The Great Calusa Blueway.

V. FACTORS INFLUENCING MANAGEMENT

A. Natural Trends and Disturbances

Natural trends and disturbances influencing native communities and stewardship at CGMP include hurricanes, occasional freezes, and the cycling of wet and dry seasons. Implementation of the Management Action Plan will take each of these factors and their influence on projects at the Preserve into consideration.

Stewardship activities (invasive exotic plant control, shoreline enhancement, trash removal, etc.) of CGMP are more tidally influenced than by seasonal hydroperiods. The LSOM's exotic plant prescription form will be used to define the conditions for control activities. Care shall be taken to prevent herbicide from running off during a typical summer thunderstorm so as not to affect non-target plants. Only herbicides approved for aquatic application will be used for treatment of vegetation in standing water or where flooding may occur. Only hand crews will be used for all exotic plant control projects on the island.

B. Internal Influences

Although human influences have impacted CGMP, they occurred so long ago that trying to restore them would not bring ecological benefits to the Preserve. The plant communities located in the spoil areas are well established and there would be a tremendous amount of soil disturbance to fill the scavenger pits. Instead, restoration of the preserve will primarily focus on invasive exotic plant removal. Hand crews will be used to avoid further disturbance.

C. External Influences

The Caloosahatchee River serves as a conduit for a few of the external influences that impact the Preserve. Spoil soils from past dredging operations cover approximately 65 percent of CGMP. Modern day boat traffic along the Caloosahatchee River generates high-energy waves that causes the island's

upland shoreline to erode. Several trees have either fallen into the river or are in the process falling of due to this wake induced erosion. Litter and invasive aquatic plants (i.e. water-hyacinth, alligatorweed and water lettuce) are on-going problems that will continue to wash up or persist along the island's shoreline. During site inspections, staff may use a canoe or boat to pick up any debris that is found.

Although not noted yet because the island is overrun with Brazilian pepper trees and poison ivy, it is probable that after restoration work occurs sporadic illegal public use of the Preserve may take place. Staff from other restored natural areas along the Caloosahatchee has documented unauthorized uses including littering, cook outs, camping, party hangouts, and a make-shift latrine. If these problems are noted, the C20/20 Rangers will begin routine site inspections.

D. Legal Obligations and Constraints

i. Permitting

CGMP is under the jurisdiction of the Corps because it is located in navigable waters used for interstate commerce. Land Stewardship staff will need to apply for permits with the Corps for activities on the Caloosahatchee River (Intracoastal Waterway – Tributary Channel Okeechobee Waterway) shoreline. If necessary, permits will be obtained for the removal of exotic/non-native vegetation, planting of shoreline native vegetation as well as for the construction, use, maintenance, removal and repair of a canoe/kayak landing. This landing will be used for both public enjoyment of the Preserve as well as for management access. In addition, exotic plant removal projects may require obtaining a de minimis permit from the Florida Department of Environmental Protection (FDEP) due to the scattered mangroves growing along the shoreline that may unintentionally be damaged.

ii. Relationship to Other Plans

The Lee Plan, Lee County's comprehensive plan, is designed to depict Lee County as it will appear in the year 2020. Several themes have been identified as having "great importance as Lee County approaches the planning horizon" (Lee County 2004). These themes are:

- The growth patterns of the County will continue to be dictated by the Future Land Use Map.
- The continued protection of the County's natural resource base.
- The diversification of the County's traditional economic base.
- The expansion of cultural, educational and recreational opportunities.
- A significant expansion in the County's physical and social infrastructure.

The entire Lee Plan can be found on the Internet at: http://www.lee-county.com/dcd1/Leeplan /Leeplan.pdf. The three chapters that affect the management of CGMP are **Chapter II – Future Land Use, Chapter V – Parks, Recreation and Open Space** and **Chapter VII – Conservation and Coastal Management**. Included below are goals, objectives and policies, citied directly from the Lee Plan, which further affect C20/20 preserves.

Chapter II, Policy 1.4.6 states that Conservation Lands includes uplands and wetlands that are owned and used for long range conservation purposes. Upland and wetland conservation lands will be shown as separate categories on the FLUM. Upland conservation lands will be subject to the provisions of this policy. Wetland conservation lands will be subject to the provisions of both the Wetlands category described in Objective 1.5 and the Conservation Lands category described in this policy. The most stringent provisions of either category will apply to wetland conservation lands. Conservation lands will include all public lands required to be used for conservation purposes by some type of legal mechanism such as statutory requirements, funding and/or grant conditions, and mitigation preserve areas required for land development approvals. Conservation Lands may include such uses as wildlife preserves; wetland and upland mitigation areas and banks; natural resource based parks; ancillary uses for environmental research and education, historic and cultural preservation, and natural resource based parks (such as signage, parking facilities, caretaker quarters, interpretive kiosks, research centers, and quarters and other associated support services); and water conservation lands such as aquifer recharge areas, flow ways, flood prone areas, and well fields. 2020 lands designated as conservation are also subject to more stringent use provisions of the 2020 Program or the 2020 ordinances. (Added by Ordinance No. 98-09, Amended by Ordinance No. 02-02)

Chapter II, Goal 21: CALOOSAHATCHEE SHORES: Objective 21.5: Community Facilities/Parks. Lee County will work with the Caloosahatchee Shores Community to provide and facilitate the provision of a broad mix of Community Facilities (Added by Ordinance No. 03-21). **Policy 21.5.1:** The Caloosahatchee Shores Community will work with Lee County, the State of Florida and the National Parks Service to provide appropriate passive recreational opportunities…potentially enhanced by public/private partnerships. (Added by Ordinance No. 03-21).

Chapter V provides that Land Stewardship staff will insure that any public use facilities and recreational opportunities will comply with **Goal 85: PARK PLANNING AND DESIGN**, which requires that parks and recreation sites are planned, designed, and constructed to comply with the best professional standards of design, landscaping, planning, and environmental concern. Staff will also work to meet **Goal 86: ENVIRONMENTAL AND HISTORICAL PROGRAMS, Objective 86.1** to provide information and education programs

regarding its cultural history and its environment at appropriate facilities. (Amended by Ordinance No. 94-30, 00- 22)

Chapter VII, Objective 104.1: ENVIRONMENTALLY CRITICAL AREAS provides that within the coastal planning area, the county will manage and regulate, on an ongoing basis, environmentally critical areas to conserve and enhance their natural functions. Environmentally critical areas include wetlands (as defined in Goal 114) and Rare and Unique upland habitats. Rare and Unique upland habitats include, but are not limited to: sand scrub (320); coastal scrub (322); those pine flatwoods (411) which can be categorized as "mature" due to the absence of severe impacts caused by logging, drainage, and exotic infestation; slash pine/midstory oak (412); tropical hardwood (426); live oak hammock (427); and cabbage palm hammock (428). The numbered references are to the Florida Land Use Cover and Forms Classification System (FLUCFCS) Level III (FDOT, 1985). (See also Policy 113.1.4.) The digitization of the 1989 baseline coastal vegetation mapping (including wetlands and rare and unique uplands, as defined above) will be completed by 1996. (Amended by Ordinance No. 94-30, 00-22)

Chapter VII, OBJECTIVE 105.1: DEVELOPMENT IN COASTAL HIGH HAZARD AREAS includes **POLICY 105.1.4:** Through the Lee Plan amendment process, land use designations of undeveloped areas within coastal high hazard areas will be considered for reduced density categories (or assignment of minimum allowable densities where density ranges are permitted) in order to limit the future population exposed to coastal flooding. (Amended by Ordinance No. 92-35, 94-30, 00-22). In accordance to this policy, Land Stewardship staff will direct the Community Development Department to change the zoning of CGMP to Environmentally Critical.

Chapter VII, Goal 107: RESOURCE PROTECTION provides to manage the county's wetland and upland ecosystems so as to maintain and enhance native habitats, floral and faunal species diversity, water quality, and natural surface water characteristics. **Objective 107.1: RESOURCE MANAGEMENT PLAN** provides the county will continue to implement a resource management program that insures the long-term protection and enhancement of the natural upland and wetland habitats through the retention of interconnected, functioning, and maintainable hydroecological systems where the remaining wetlands and uplands function as a productive unit resembling the original landscape. (Amended by Ordinance No. 94-30, 00-22) Under **Policy 107.1.1.4e** the county (or other appropriate agency) will prepare a management plan for each acquired site for the long-term maintenance and enhancement of its health and environmental integrity.

Chapter VII, Objective 107.3: WILDLIFE provides the county will maintain and enhance the fish and wildlife diversity and distribution within Lee County for the benefit of a balanced ecological system. (Amended by Ordinance No. 94-30)

Policy 107.3.1: encourages upland preservation in and around preserved wetlands to provide habitat diversity, enhance edge effect, and promote wildlife conservation. Initiating a prescribed fire regime and removing invasive exotics will follow this policy.

Chapter VII, Objective 107.4: ENDANGERED AND THREATENED SPECIES IN GENERAL provides Lee County will continue to protect habitats of endangered and threatened species and species of special concern in order to maintain or enhance existing population numbers and distributions of listed species. **Policy 107.4.1** states to identify, inventory, and protect flora and fauna indicated as endangered, threatened, or species of special concern in the "Official Lists of Endangered and Potentially Endangered Fauna and Flora of Florida," Florida Fish and Wildlife Conservation Commission (FWC), as periodically updated. Lee County's Protected Species regulations will be enforced to protect habitat of those listed species found in Lee County that are vulnerable to development.

Chapter VII, Goal 113: COASTAL PLANNING AREAS, Objective 113.1: COASTAL PLANNING AREA IN GENERAL provides that Lee County will manage the coastal planning area to provide a balance among conservation of resources, public safety capabilities, and development. (Amended by Ordinance No. 94-30, 00-22) **Policy 113.1.5** provides that Lee County will protect and conserve the following environmentally sensitive coastal areas: wetlands, estuaries, mangrove stands, undeveloped barrier islands, beach and dune systems, aquatic preserves and wildlife refuges, undeveloped tidal creeks and inlets, critical wildlife habitats, benthic communities, and marine grass beds. (Amended by Ordinance No. 00-22)

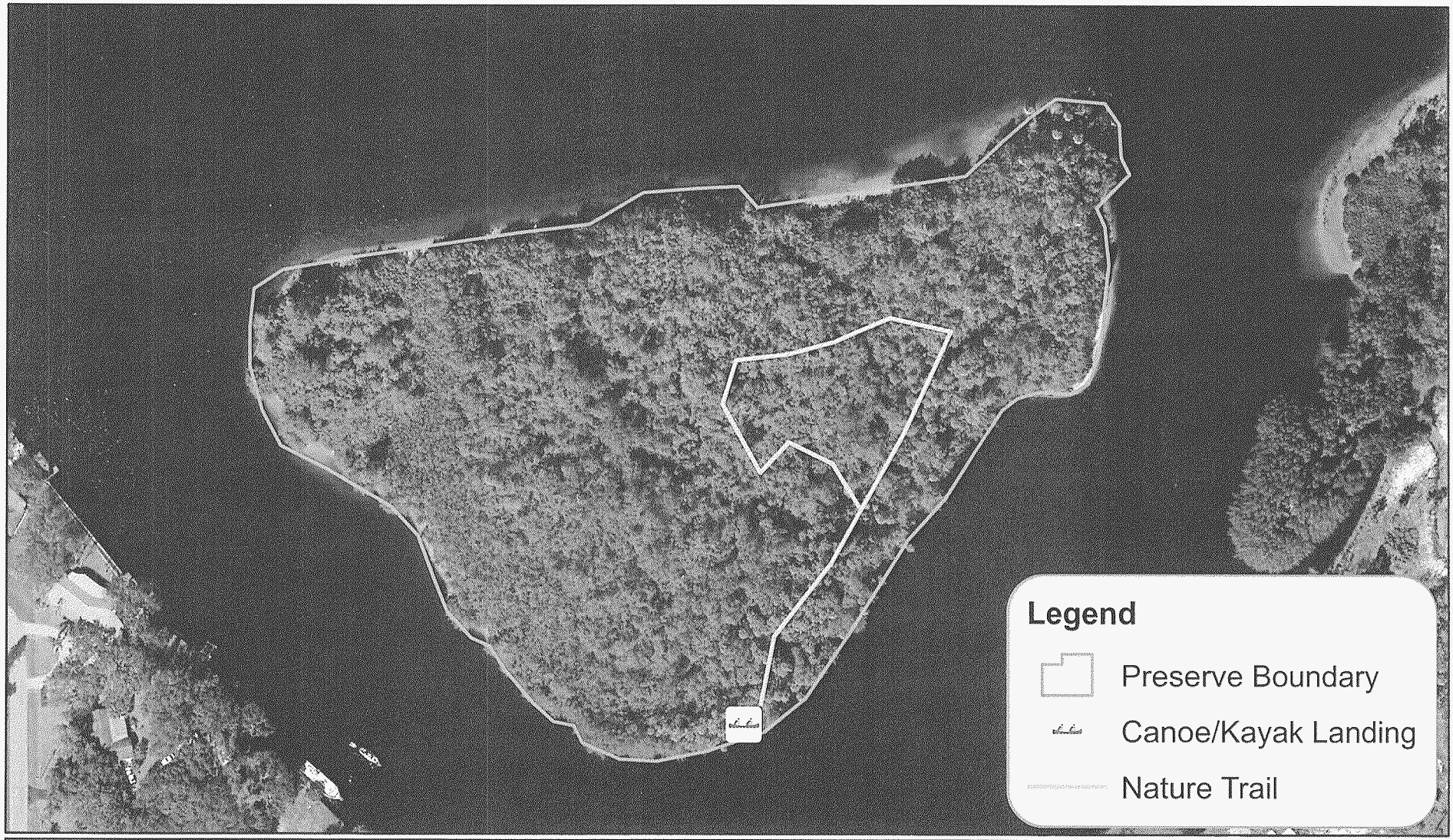
Chapter VII, Goal 114: WETLANDS provides that the county maintains and enforces a regulatory program for development in wetlands that is cost-effective, complements federal and state permitting processes, and protects the fragile ecological characteristics of wetland systems. (Amended by Ordinance No. 94-30) **Objective 114.1** provides that the natural functions of wetlands and wetland systems will be protected and conserved through the enforcement of the county's wetland protection regulations and the goals, objectives, and policies in this plan. "Wetlands" include all of those lands, whether shown on the Future Land Use Map or not, that are identified as wetlands in accordance with F.S. 373.019(17) through the use of the unified state delineation methodology described in FAC Chapter 17-340, as ratified and amended by F.S. 373.4211. (Amended by Ordinance No. 94-30, 00-22)

E. Management Constraints

The principle stewardship constraints for CGMP include limited funding and no vehicular access. Although C20/20 has a management fund, it is inadequate to fulfill the restoration activities for this and the other preserves. Efforts to obtain additional funding through various grants will be pursued. These funds will be used to supplement the operations budget to meet the restoration goals in a timely manner.

Access to CGMP is limited to boats. The nearest public boat ramp access is two miles west of the Preserve off Davis Blvd. (Figure 1). Suitable access points onto the island are limited due to the sensitivity of the mangroves and the elevated upland areas along most portions of the shoreline. Tidally influenced communities such as tidal swamps remain wet year-round, while the edges along upland areas are susceptible to erosion from high energy waves and/or disturbances from foot or boat traffic. Land Stewardship staff has carefully chosen an appropriate access point for staff and/or contractors to gain access to the island to conduct all future stewardship activities (Figure 16). In addition, the access point is located in a protected area where future canoeists/kayakers can gain access to the island, in the southeast region of CGMP, away from large boats' wakes along the Caloosahatchee.

Figure 16: Proposed Master Site Plan Map



F. Public Access and Resource-Based Recreation

In accordance with the Land Stewardship Operations Manual (LSOM), CGMP is classified as a Category 3 Limited Use Preserve. Due to its small size, sensitive wetlands, thick vegetation and location, staff does not propose additional recreational activities beyond the usual hiking, bird watching, nature photography and nature study that are allowed at all Conservation 20/20 preserves, with the exception of a canoe/kayak landing to allow for access.

The Preserve will become a stretching spot along Phase III of The Great Calusa Blueway, Lee County's paddling trail that provides an ecological tour of the bays, rivers, backwaters and shorelines of Southwest Florida. Information on Phases I and II can be found at www.greatcalusablueway.com. To concentrate shoreline impacts, a small canoe/kayak landing, to accommodate 2-3 vessels, will be placed on the southern shore of the Preserve. This area was selected because the shoreline elevation is fairly low, it is sheltered from the wakes of boats traveling on the Caloosahatchee and minimal native vegetation will be damaged. This landing may be constructed using geo webbing specifically designed for bank and shoreline stabilization while providing a "friendlier" texture for canoes and kayaks than rip-rap or other hard surface.

A short, primitive nature trail will be marked to allow visitors to enjoy the Preserve. The path will be placed in upland portions of the Preserve and will avoid the wetlands, ditches and sloughs to lessen erosion and impacts to these communities. The nature trails will be marked with colored blazes on existing trees or posts from interior fence line removed on other C20/20 preserves. Amenities will not be created until after exotic plant removal has occurred and the Preserve is on a maintenance schedule. The trail location will not be determined until after the exotics have been removed so that Land Stewardship staff can place it where the most disturbance has occurred. Information about the Preserve and its public use will be available through both The Great Calusa Blueway and Conservation 20/20 websites and brochures. A sign will also be posted near the landing to let the public know that this is a Conservation 20/20 preserve as well as provide information about allowable uses. The Preserve will also be posted with a sign for the Great Calusa Blueway.

No additional amenities are proposed at this time since the Preserve is located between two much larger and more developed facilities, Caloosahatchee Regional Park (CRP) and Caloosahatchee Creeks Preserve (Figure 1). Both of these areas have easy access from the mainland. See Figure 16 for the Proposed Master Site Plan. Land Stewardship staff hopes to partner with the Southwest Florida Paddling Club or similar organization(s) to create and maintain the public use amenities.

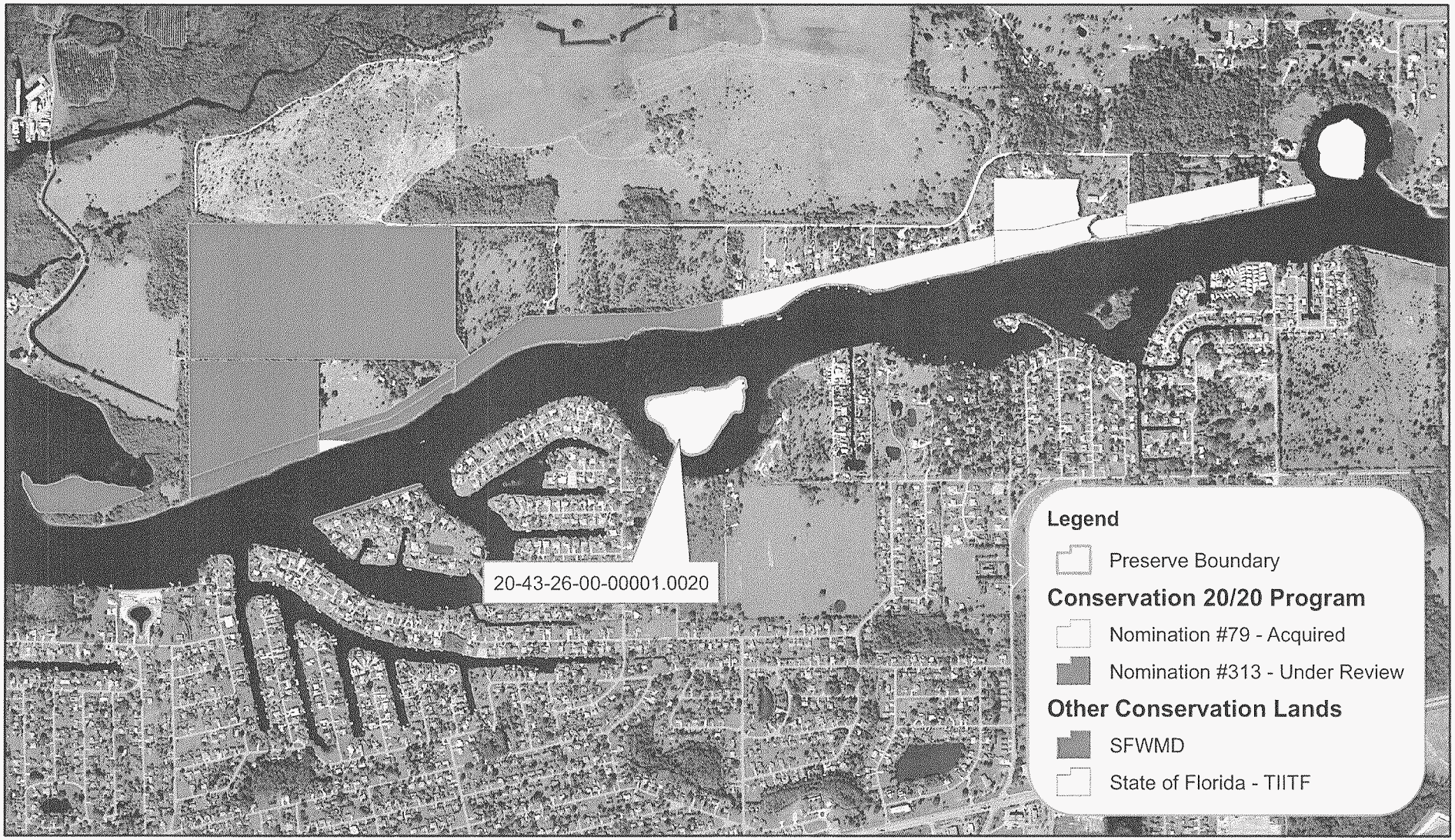
G. Acquisition

CGMP was purchased through the C20/20 Program for $48,000 in September 1999 after being nominated to the Program in April 1998.
This 9.7-acre nomination (#79) was purchased from the Southwest Florida Council Boy Scouts of America, who called it Fantasy Island.

Although there were originally four STRAP (Section-Township-Range-Area-Block.Lot) numbers associated with nomination #79, the Lee County Property Appraiser combined them into one STRAP number; 20-43-26-00-00001.0020 once C20/20 acquired the property. There is only one nomination to the C20/20 Program in the vicinity, nomination #313 that is less than 1 mile west of CGMP. Nomination #313, approximately 27 acres, was nominated in August 2006 and is currently active in the Lee County Division of County Lands (LCDCL) selection process (Figure 17).

CGMP's future land use category was recently changed to "Conservation Lands - Wetlands" (Figure 18). While most of the island is zoned as residential single family "RS-1," the eastern tip is zoned as agriculture "Ag-2," (Figure 19). Land Stewardship staff will work with the Lee County Division of Planning (LCDP) to change these designations to "Environmentally Critical."

Figure 17: Acquisition and Nominations Map



CONSERVATION 20/20 LAND PROGRAM

Columbus G. McLeod Preserve

0 850 1,700 3,400 5,100 Feet

S:\esri\C2020 ArcView\Columbus G. McLeod\CGMP_management_plan\CGMP_acquisition.mxd

Map Prepared On: 10/12/06 by sfurnari@leegov.com

This is not a survey. Land Stewardship Staff has prepared this map for informational and planning purposes.

Figure 18: Future Land Use Map

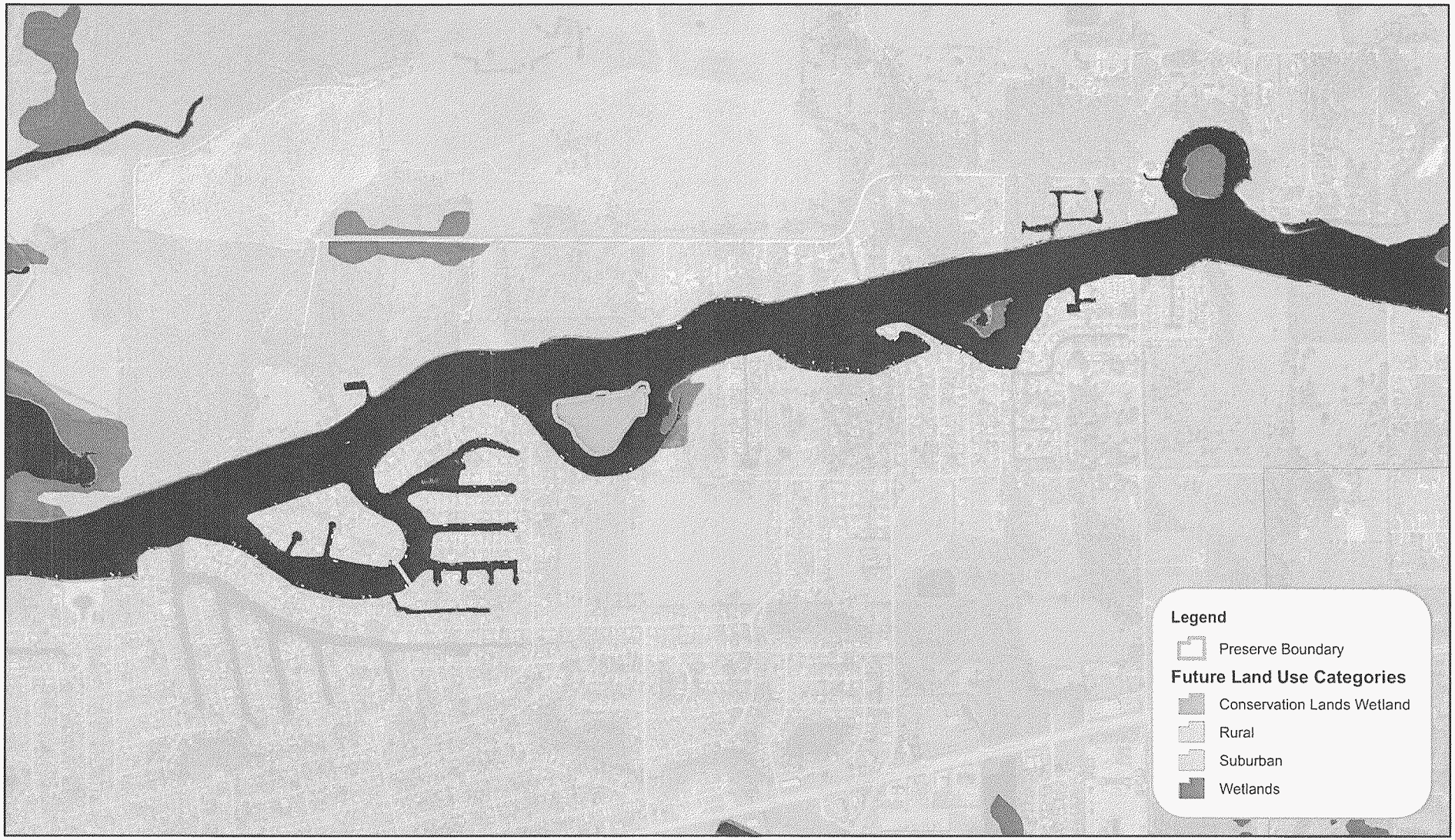
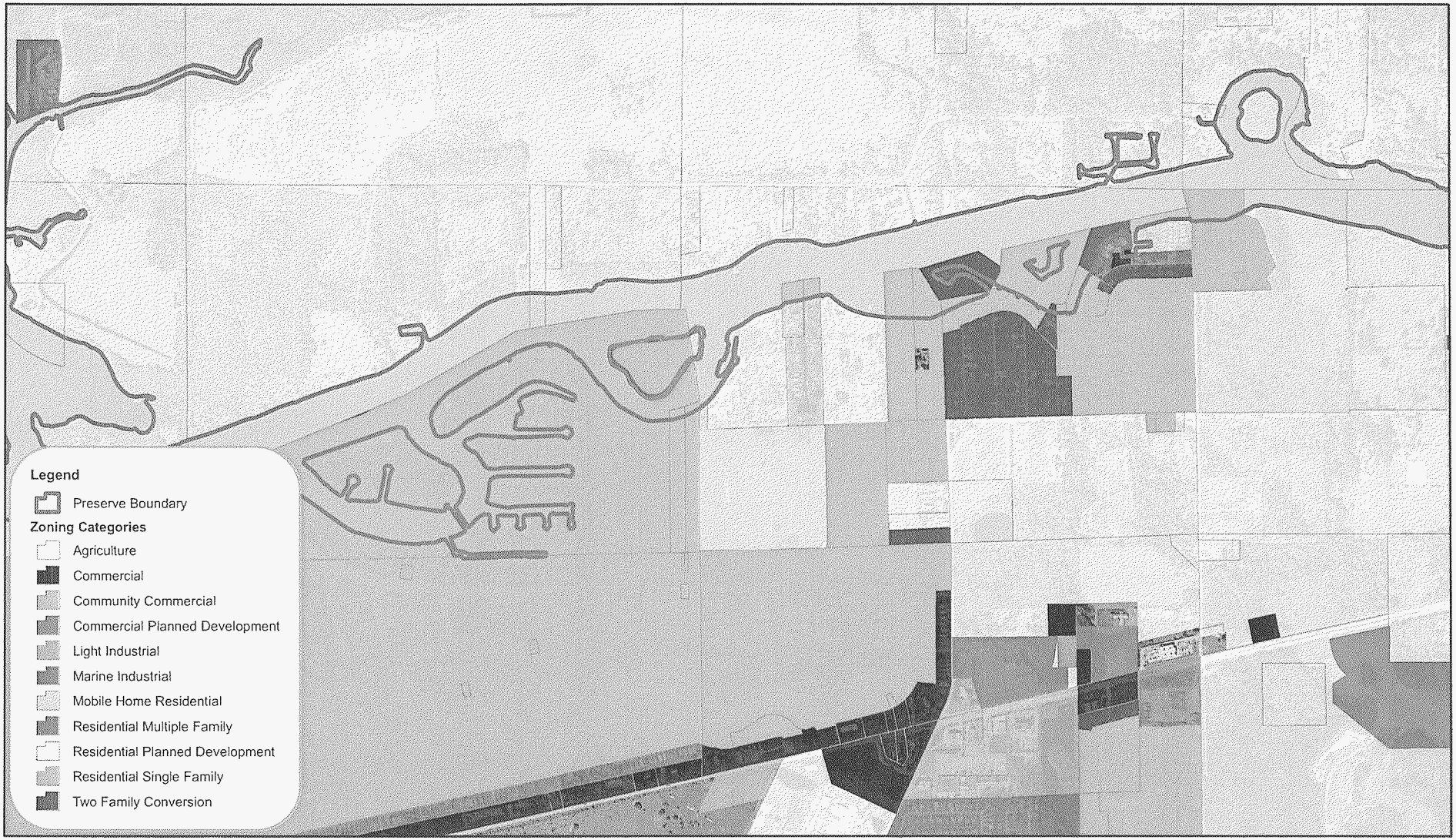


Figure 19: Zoning Map



VI. MANAGEMENT ACTION PLAN

A. Management Unit Descriptions

Due to its small size (9.7 acres), Columbus G. McLeod Preserve will not be divided into separate Management Units. The Preserve consists primarily of hammock and tidal swamp plant communities. Invasive exotic plant coverage varies from scattered individuals to dense monocultures of Brazilian pepper. Stewardship activities will focus on exotic plant removal, shoreline plantings, periodic debris removal and the installation of a canoe/kayak landing.

B. Goals and Strategies

While the following are our long-term goals for the Preserve, funding is currently not available to conduct all of these activities. Grants and/or monies budgeted for mitigation of governmental infrastructure projects will be used to supplement our operations budget to meet our goals in a timely manner.

Natural Resource Management

- ✓ Exotic plant control and maintenance
- ✓ Monitor and protect listed species
- ✓ Exotic and feral animal removal

Outside Consultants

- ✓ Environmental/engineering

Overall Protection

- ✓ Shoreline erosion control
- ✓ Debris removal and prevention of dumping
- ✓ Boundary and Preserve sign installation
- ✓ Change zoning categories

Public Use

- ✓ Infrastructure for public access
- ✓ Trail maintenance

Volunteers

- ✓ Assist volunteer groups

The following is a description of how each of these goals will be carried out, the success criteria used to measure each goal and a projected timetable outlining when and where each activity will take place.

Natural Resource Management

Exotic plant control and maintenance

The most current Florida Exotic Pest Plant Council's List of Invasive Species will be consulted in determining the invasive exotic plants to be controlled on the island. The goal is to remove/control these exotic species, followed with semi-annual or as needed treatments of resprouts and new seedlings. This goal will bring the entire Preserve to a maintenance level, defined as less than 5 percent invasive exotic plant coverage.

Prior to each invasive exotic plant control project at CGMP, a Prescription Form (located in the LSOM) will be filled out by Land Stewardship staff, reviewed by the contractor(s) and filed appropriately. Contractors involved in these projects will be required to fill out the Daily Report Control Form (located in the LSOM), which will be filed appropriately by staff.

- Wetlands with light to moderate exotic species infestations:

  Hand crews will either hand pull, basal bark, girdle, foliar, or cut-stump treat the exotics with the appropriate herbicide during the dry season and/or periods of extreme low tide. Follow-up treatments will be conducted on an annual basis and may eventually decrease to every two years. No replanting will be needed due to significant presence of native vegetation and native seed bank.

- Uplands with light to moderate exotic species infestations:

  In areas where invasive exotics are sporadic and below 50 percent of the vegetation cover, handwork will be utilized for control. Specific methodology will depend on stem size, plant type and season, but general methodologies will be one of the following. The stem/trunk will be cut near ground and the stump sprayed with appropriate herbicide, the trunk will be basal bark sprayed or a foliar application will be applied to the entire plant. Hand pulling will be utilized when possible and with appropriate species to minimize herbicide use. Cut stems will be piled as necessary to facilitate future burning or chipping. No replanting will be needed in these areas due to significant presence of native vegetation and native seed bank.

- Uplands with heavy Brazilian pepper infestations:

The technique that will be used to perform initial exotic control treatment in areas where Brazilian pepper trees occur as monotypic stands or are greater than 50 percent of the vegetation cover will depend on the complexity of obtaining permits and/or final costs of removal techniques. These areas may be done during suitable seasonal conditions. Figure 11 (Plant Communities Map) illustrates most of the dense Brazilian pepper tree locations. Potential exotic plant removal technique options include:

- The contractor may barge in a smaller Gyrotrac-type equipment to mulch down large trees and follow-up spraying stumps from regrowth. Although not a major factor since soils at these locations are dredged spoil soils, this type of equipment will minimize soil disturbance and compaction.
- The contractor may barge in a small/medium sized chipper and small vehicle to pull it. Hand crews will cut and chip stems and leave sprayed stumps in place. Vegetation debris too large for chipping will be stacked and burned or left to decay.

Follow-up treatment for either method used in the upland areas will consist of an application of an appropriate herbicide mixture to the foliage of any resprouts or seedlings. Land Stewardship staff will replant areas with similar existing native vegetation if necessary.

Monitor and protect listed species

As discussed in the Designated Species section, there are several listed species that have been documented on the Preserve including Simpson's stopper, cardinal airplant and tricolored herons. These species will benefit from exotic plant control activities. During stewardship activities, efforts will be made to minimize any negative impact to listed species.

CGMP is part of a countywide quarterly site inspection program conducted for all Conservation 20/20 Preserves. A copy of the site inspection form is available in the Land Stewardship Operations Manual. These inspections allow staff to monitor for any impacts and/or changes to each preserve and includes lists of all animal sightings and new plant species that are found. If, during these inspections, staff finds FNAI listed species, they will be reported using the appropriate forms.

Exotic and feral animal removal

Only two exotic animal species have been recorded on CGMP. While feral hogs have not been observed, they are known to and capable of swimming short distances. If practical, a methodology will be established and implemented against unwanted exotic animal species.

Although not noted at CGMP, this Preserve, like other C20/20 preserves, does not contain nor will it support feral cat colonies. FWC's Feral and Free Ranging Cats policy is *"To protect native wildlife from predation, disease, and other impacts presented by feral and free-ranging cats"* (FWC 2003). Any feral cats will be trapped and taken to Lee County Animal Services.

Outside Consultants

Environmental/engineering

As funds become available, C20/20 staff will hire an environmental and/or engineering consultant to perform all or most aspects concerning the canoe/kayak landing and shoreline erosion control projects. Additional efforts by this or another hired firm will include the design, permitting, and installation of the recommended shoreline remedial methodology and landing area.

Overall Protection

Shoreline erosion control

The main objective for erosion control is to prevent or reduce vegetation and soils from falling into the river. This will reduce turbidity, reduce the receding shoreline, save native plants and increase foraging opportunities for wading birds while also providing more suitable habitat for other wildlife.

Once funding for the shoreline erosion control project has been secured, an environmental/engineering consultant firm will need to be contracted to provide specific recommendations for restoration and implementation efforts. A restoration proposal will be presented to SFWMD, FDEP, and/or USACOE to determine the feasibility of the project and decide what permits are required.

Debris removal and prevent dumping

CGMP has a small amount of debris on interior portions of the island. Along the shoreline, debris readily accumulates as it washes in during tides or waves generated by boats. Debris removal will be an ongoing effort at CGMP. During quarterly site inspections, small objects that are encountered will be removed. Conservation 20/20 Rangers will also assist with removing small items when they are on patrol at the Preserve.

Land Stewardship staff recognizes that new debris may be dumped or washed up periodically and depending on the nature of this debris it will be dealt with accordingly.

Boundary and Preserve sign installation

Boundary signs have been installed to further protect and delineate the Preserve, although some have fallen due to bank erosion. Missing or damaged signs will be replaced. C20/20 Rangers or staff will check for boundary signs during the patrols and replace them immediately if possible or report the problem to the C20/20 Supervisor. Boundary signs will be placed every 500 feet along the shoreline. A sign will be installed at the future public landing that will inform the public of the Preserve's name, acquisition information, public use category, Lee County Parks and Recreation website address and contact information.

Change zoning categories

Staff will coordinate with LCDP staff to update the zoning designation of CGMP. The zoning categories will be changed to "Environmentally Critical" from "Agriculture" and "Residential Single Family."

Public Use

Infrastructure for Public Access

Amenities discussed in the recreation section of this plan, include a canoe/kayak landing and hiking trail. A permanent sign will contain an illustration of the trail system and its' length. Trail maintenance will be coordinated with staff as needed.

Volunteers

Assist volunteer groups

The LSOM identifies the Land Stewardship Volunteer Program's mission statement as:

> *To aid in the management and preservation of Lee County resource-based public parks and preserves and to provide volunteers with rewarding experiences in nature.*

If there is interest from the community to form a volunteer group, staff will work with them to assist with the diverse stewardship activities that will be associated with this Preserve, such as trail maintenance, wildlife monitoring, debris removal and other land stewardship projects.

The following "Prioritized Projected Timetable for Implementation" is based on obtaining necessary funding for numerous land stewardship projects. Implementation of these goals may be delayed due to changes in staff, extreme weather conditions or a change in priorities on properties managed by Lee County.

VII. PROJECTED TIMETABLE FOR IMPLEMENTATION

Prioritized Projected Timetable for Implementation of the Management Action Plan (Mar 2007 – Dec 2011)

Management Activity	Mar-07	Jun-07	Sep-07	Dec-07	Mar-08	Jun-08	Sep-08	Dec-08	Mar-09	Jun-09	Sep-09	Dec-09	Mar-10	Jun-10	Sep-10	Dec-10	Mar-11	Jun-11	Sep-11	Dec-11	2012 or later
Natural Resource Management																					
Exotic Plants																					
Initial exotic plant control																					x
Maintenance (On-going/Annual)																					
Exotic plant control																					x
Exotic animal monitor &/or removal	ongoing project																				
Outside Consultants																					
Environmental/engineering firm																	x				
Overall Protection																					
Shoreline erosion control														x - seek funding							
Install boundary signs			x																		
Install Preserve's identification sign																					x
Debris removal	ongoing project																				
Change zoning categories							zoning														
Public Use																					
Create trails and trail markers																					x
Install sign with trail information																					x
Install canoe/kayak landing																					x
Trail maintenance																					x
Volunteers																					
Assist volunteer group	at anytime there is interest																				

Timetable is based on obtaining necessary funding for numerous land stewardship projects.

Implementation of these goals may also be delayed due to changes in staff, extreme weather conditions or a change in priorities on properties managed by Lee County.

VIII. FINANCIAL CONSIDERATIONS

There is a perpetual management fund established for all Conservation 20/20 preserves. Monies from this fund primarily serve to meet the operational needs of the Management section of the C20/20 Program, but a certain amount of this fund will be set aside for planned restoration projects. There is currently no outside funding available for this preserve. Monies will be supplemented through grants from agencies such as FDEP, Lee County Tourist Development Council (LCTDC), West Coast Inland Navigation District (WCIND), SFWMD and USFWS as well as pursuing mitigation opportunities from Lee County and other public entities. Projected costs and funding sources are listed in Appendix D.

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X. APPENDICES

Appendix A: USDA-NRCS Soil Reports for CGMP

Appendix B: Plant Species List

Appendix C: Wildlife Species List

Appendix D: Projected Costs and Funding Sources

Appendix A: USDA-NRCS Soil Reports for CGMP

USDA NRCS
Natural Resources Conservation Service

3434 Hancock Bridge Parkway
Suite 209B
North Fort Myers, Florida 33903
Phone: (941) 995-5678, option #3
Fax: (941) 997-7551

Date: October 17, 2006

To: Ms. Sheryl Furnari

From: Howard Yamataki, Resource Soil Scientist

Subject: Columbus G. MacLeod Preserve

On September 29, I accompanied you and Ms. Laura Wewerka to assess the soils within the above named preserve. According to the Lee County Soil Survey, this preserve is composed of soils within the 69 Matlacha map unit. We made 7 observations and I did not find Matlacha soils.

Below are notes beside numbers used on a digital image constructed by Ms. Wewerka,

1 – Caloosa soils – silty clays and shell.
2 – Wulfert muck – a tidal soil.
3 – Myakka or Smyna soils with a very weakly defined stain layer.
4 - Low bowl-like area soils resembles Copeland or Chobee.
5 – High berm area with no shells and appears to be natural between the bowl and a ditch like area.
6 – Raised area between two ditches with no shells.
7 – Has small shell fragments in the upper 12 inches, then there appears to be a natural surface starting around three feet.

I have studied all historic images (1944, 1953, and 1958) in an effort to find some continuity and uniformity for possible landscape or landform lines. The 1953 imagery (DCT – 3H – 5) seems to offer the best definition of lines. There appears to be about at least 4 polygons that are defined by vegetative breaks and potential soil differences. Point 1 defines an obvious area of fill on the west side of the island. Point 3 defines another area which is very clear too. Points 3, 5, and 7 appear to be somewhat related and also might include 6. I found the vegetative configurations of plant communities intriguing.

In addition to the above effort, I requested a meeting with Mr. Victor Karick, Education Associate/Research Assistant of the SW Florida Museum of History in order to research their archives, hoping to find some specific information about the Island. I was unsuccessful, but found something which might support a reason for the strange, but somewhat natural looking polygons on the island. I have concluded that more observations are needed.

The attached image from a newspaper clipping Victor found might help explain the above phenomena. If the area of concern was dredged in a linear fashion across a meandering low landscape populated with oxbows and intermittent rises, it would leave us with the strange puzzle piece that is named site 79.

I would very much like to schedule another time to observe the soils in the central part of the island from the north side and the southwest portion.

It is too bad we do not have elevations to help us at least define relative positions, but we might have some success given future soil observations. Please let me know if it would be possible for me to see the areas I have mentioned. I am open to later this month or sometime in November.

Cc: Ms. Laura Wewerka

USDA NRCS
Natural Resources Conservation Service

3434 Hancock Bridge Parkway
Suite 209B
North Fort Myers, Florida 33903
Phone: (941) 995-5678, option #3
Fax: (941) 997-7551

Date: November 16, 2006

To: Ms. Sheryl Furnari

From: Howard Yamataki, Resource Soil Scientist

Subject: Columbus G. MacLeod Preserve

On November 13, I accompanied you and Ms. Laura Wewerka to assess the soils within the above named preserve again. I requested this because of the need for me to qualify some of my suspicions after our initial October visit. According to the Lee County Soil Survey, this preserve is composed of soils within the 69 Matlacha map unit. We made 7 observations during our initial visit and I did not find Matlacha soils, but found this soil on the second visit on the island's north central portion. It also seemed to occupy the majority of a vegetative polygon on a map you showed me before going to the field. Another observation on the south side was similar to a very wet version of the Caloosa soil.

Both observations confirmed my suspicion that much (60 to 70 %) of this island was filled, or altered before the 1944 image. Both site observations lacked natural horizons produced by pedogenic processes and were over natural surfaces. The most obvious being muck layers below the central filled area.

If you have any questions or would like to request more field time, please my office.

Cc: Ms. Laura Wewerka, Kendal Hicks – Lee DC

Appendix B: Plant Species List

Appendix B: Plant Species List at Columbus G. McLeod Preserve

Scientific and Common names from this list were obtained from Wunderlin 2003.

Scientific Name	Common Name	Native Status	EPPC	FDA	IRC
Family: Blechnaceae (midsorus fern)					
Blechnum serrulatum	swamp fern	native			
Family: Dennstaedtiaceae (cuplet fern)					
Pteridium aquilinum	bracken fern	native			
Family: Polypodiaceae (polypody)					
Campyloneurum phyllitidis	long strap fern	native			R
Pleopeltis polypodioides	resurrection fern	native			
Polypodium spp.	polypody	native			
Family: Pteridaceae (brake fern)					
Acrostichum danaeifolium	giant leather fern	native			
Family: Thelypteridaceae (marsh fern)					
Thelypteris interrupta	hottentot fern	native			R
Thelypteris kunthii	widespread maiden fern	native			
Family: Vittariaceae (shoestring fern)					
Vittaria lineata	shoestring fern	native			
Family: Agavaceae (agave)					
Yucca aloifolia	Spanish bayonet	native			
Family: Alismataceae (water plantain)					
Sagittaria latifolia	broadleaf arrowhead	native			
Family: Amaryllidaceae (amaryllis)					
Crinum americanum	string-lily	native			
Family: Araceae (arum)					
Colocasia esculenta	wild taro	exotic	I		
Lemna obscura	little duckweed	native			
Pistia stratiotes	water lettuce	exotic	I		
Family: Arecaceae (palm)					
Roystonea regia	Florida royal palm	exotic			
Sabal palmetto	cabbage palm	native			
Serenoa repens	saw palmetto	native			
Family: Bromeliaceae (pineapple)					
Tillandsia balbisiana	reflexed wild-pine, northern needleleaf	native		T	
Tillandsia fasciculata var. *densispica*	cardinal airplant, stiff-leaved wild-pine	native		E	
Tillandsia recurvata	ballmoss	native			
Tillandsia setacea	southern needleleaf	native			
Tillandsia usneoides	Spanish moss	native			
Tillandsia utriculata	giant airplant	native		E	
Family: Cyperaceae (sedge)					
Cyperus involucratus	umbrella plant	exotic	II		
Cyperus odoratus	fragrant flatsedge	native			
Family: Orchidaceae (orchid)					
Encyclia tampensis	Florida butterfly orchid	native		CE	
Family: Poaceae (grass)					
Dichanthelium ensifolium var. ensifolium	cypress witchgrass	native			
Oplismenus hirtellus	woodsgrass	native			
Phragmites australis	common reed	native			
Family: Pontederiaceae (pickerelweed)					
Eichhornia crassipes	water-hyacinth	exotic	II		

Appendix B: Plant Species List at Columbus G. McLeod Preserve (continued)

Scientific Name	Common Name	Native Status	EPPC	FDA	IRC
Family: Smilacaceae (smilax)					
Smilax auriculata	earleaf greenbrier	native			
Smilax bona-nox	saw greenbrier	native			R
Family: Amaranthaceae (amaranth)					
Alternanthera philoxeroides	alligatorweed	exotic	II		
Amaranthus hybridus	pigweed	exotic			
Atriplex cristata	crested saltbush	native			
Family: Anacardiaceae (cashew)					
Schinus terebinthifolius	Brazilian pepper	exotic	I		
Rhus copallinum	winged sumac	native			
Toxicodendron radicans	eastern poison ivy	native			
Family: Annonaceae (custard-apple)					
Annona glabra	pondapple	native			
Family: Apiaceae (carrot)					
Cicuta maculata	spotted water hemlock	native			I
Family: Apocynaceae (dogbane)					
Sarcostemma clausum	white twinevine	native			
Family: Araliaceae (ginseng)					
Hydrocotyle spp.	marshpennywort	native			
Schefflera actinophylla	Australian umbrella tree	exotic	I		
Family: Asteraceae (aster)					
Ambrosia artemisiifolia	common ragweed	native			
Baccharis halimifolia	groundsel tree	native			
Eupatorium mikanioides	semaphore thoroughwort	native			R
Mikania cordifolia	Florida Keys hempvine	native			R
Pluchea odorata	sweetscent	native			
Sphagneticola trilobata	creeping oxeye	exotic	II		
Family: Bignoniaceae (trumpet creeper)					
Campsis radicans	trumpet creeper	native			CI
Famiy: Celtidaceae (hackberry)					
Celtis laevigata	hackberry	native			
Family: Euphoribiaceae (spurge)					
Bischofia javanica	Javanese bishopwood	exotic	I		
Family: Fabaceae (pea)					
Abrus precatorius	rosary pea	exotic	I		
Canavalia rosea	baybean	native			
Dalbergia ecastaphyllum	coinvine	native			
Erythrina herbacea	coralbean	native			
Leucaena leucocephala	white leadtree	exotic	II		
Senna pendula var. *glabrata*	valamuerto	exotic	I		
Family: Fagaceae (beech)					
Quercus laurifolia	laurel oak	native			
Quercus virginiana	live oak	native			
Family: Lamiaceae (mint)					
Callicarpa americana	American beautyberry	native			
Trichostema dichotomum	forked bluecurls	native			
Family: Lauraceae (laurel)					
Persea palustrus	swamp bay	native			

Appendix B: Plant Species List at Columbus G. McLeod Preserve (continued)

Scientific Name	Common Name	Native Status	EPPC	FDA	IRC
Family: Malvaceae (mallow)					
Taliparitti tiliaceum var. *tiliaceum*	sea hibiscus	exotic			
Urena lobata	caesarweed	exotic	II		
Family: Moraceae (mulberry)					
Ficus aurea	strangler fig	native			
Morus rubra	red mulberry	native			R
Family: Myricaceae (bayberry)					
Myrica cerifera	wax myrtle	native			
Family: Myrsinaceae (myrsine)					
Ardisia escallonioides	marlberry	native			
Rapanea punctata	myrsine	native			
Family: Myrtaceae (myrtle)					
Eugenia axillaris	white stopper	native			
Melaleuca quinquenervia	punktree	exotic	I		
Myrcianthes fragrans	Simpson's stopper	native		T	R
Psidium guajava	guava	exotic	I		
Family: Olacacae (olax)					
Schoepfia chrysophylloides	graytwig	native			R
Ximenia americana	hog plum	native			
Family: Oleaceae (olive)					
Fraxinus caroliniana	pop ash	native			R
Family: Polygonaceae (buckwheat)					
Polygonum punctatum	dotted smartweed	native			
Family: Rhizophoraceae (mangrove)					
Rhizophora mangle	red mangrove	native			
Family: Rubiaceae (madder)					
Chiococca alba	snowberry	native			
Psychotria nervosa	wild coffee	native			
Psychotria sulzneri	shortleaf wild coffee	native			
Randia aculeata	white indigoberry	native			
Family: Rutaceae (citrus)					
Zanthoxylum fagara	wild lime	native			
Family: Sapindaceae (soapberry)					
Cupaniopsis anacardioides	carrotwood	exotic	I		
Family: Sapotaceae (sapodilla)					
Sideroxylon celastrinum	saffron plum	native			
Sideroxylon reclinatum	Florida bully	native			R
Family: Urticaceae (nettle)					
Boehmeria cylindrica	false nettle	native			
Family: Vitaceae (grape)					
Ampelopsis arborea	peppervine	native			
Cissus verticillata	possum grape	native			
Parthenocissus quinquefolia	Virginia creeper	native			
Vitis cinerea var. *floridana*	Florida grape	native			
Vitis rotundifolia	muscadine	native			

Key

Florida EPPC Status

I = species that are invading and disrupting native plant communities

II = species that have shown a potential to disrupt native plant communities

FDA (Florida Department of Agriculture and Consumer Services)

E = Endangered

T = Threatened

CE = Commercially Exploited

IRC (Institute for Regional Conservation)

I = Imperiled

R = Rare

CI = Critically Imperiled

Appendix C: Wildlife Species List

Appendix C: Wildlife Species List at Columbus G. McLeod Preserve

		Designated Status		
Scientific Name	**Common Name**	**FWC**	**FWS**	**FNAI**
BIRDS				
Family: Phalacrocoracidae (cormorants)				
Phalacrocorax auritus	double-crested cormorant			
Family: Anhingidae (anhingas)				
Anhinga anhinga	anhinga			
Family: Ardeidae (herons, egrets, bitterns)				
Ardea herodius	great blue heron			
Egretta caerulea	little blue heron	SSC		G5/S4
Egretta tricolor	tricolored heron	SSC		G5/S4
Butorides virescens	green heron			
Nyctanassa violacea	yellow-crowned night heron			
Family: Accipitridae (hawks, kites, accipiters, harriers, eagles) ***Subfamily: Buteoninae (buzzard hawks)***				
Buteo lineatus	red-shouldered hawk			
Family: Rallidae (rails)				
Gallinula chloropus	common moorhen			
Families: Strigidae and Tutonidae (owls)				
Otus asio	eastern screech owl			
Strix varia	barred owl			
Family: Picidae (woodpeckers)				
Droyocopus pileatus	pileated woodpecker			
Melanerpes carolinus	red-bellied woodpecker			
Picoides pubescens	downy woodpecker			
Family: Tyrannidae (tyrant flycatchers)				
Myiarchus crinicensis	great-crested flycatcher			
Family: Troglodytidae (wrens)				
Thryothorus ludovicianus	Carolina wren			
Family: Sylviidae ***Subfamily: Polioptilinae (gnatcatchers)***				
Polioptila caerulea	blue-gray gnatcatcher			
Family: Mimidae (mockingbirds and thrashers)				
Dumetella carolinensis	gray catbird			
Mimus polyglottos	northern mockingbird			
Family: Corvidae (crows, jays, etc.)				
Corvus brachyrhyncos	American crow			
Cyanocitta cristata	blue jay			
Family: Parulidae (wood-warblers)				
Geothlypis tristis	common yellowthroat			
Families: Fringillidae, Emberizidae, Cardinalidae (grosbeaks, finches, sparrows, buntings)				
Cardinalis cardinalis	northern cardinal			
Family: Icteridae (blackbirds, orioles, etc.)				
Quiscalus quiscula	common grackle			
REPTILES				
Family: Alligatoridae (alligator and caiman)				
Alligator mississippiensis	American alligator	SSC	T	G5/S4
Family: Polychridae (anoles)				
Anolis sagrei	brown anole *			

Appendix C: Wildlife Species List at Columbus G. McLeod Preserve (continued)

		Designated Status		
Scientific Name	**Common Name**	**FWC**	**FWS**	**FNAI**
MAMMALS				
Family: Trichechidae (manatees)				
Trichechus manatus	West Indian manatee	E	E	G2/S2
Family: Dasypodidae (armadillos)				
Dasypus novemcinctus	nine-banded armadillo *			
SHELLFISH				
Family: Donacidae (donax clam)				
Donax variabilis	variable coquina			

KEY:

FWC = Florida Fish & Wildlife Conservation Commission
FWS = U.S. Fish & Wildlife Service
E - Endangered
T - Threatened
SSC - Species of Special Concern

FNAI = Florida Natural Areas Inventory
G - Global rarity of the species
S - State rarity of the species
T - Subspecies of special population
1 - Critically imperiled
2 - Imperiled
3 - Rare, restricted or otherwise vulnerable to extinction
4 - Apparently secure
5 - Demonstratebly secure

Appendix D: Projected Costs and Funding Sources

Appendix D: Projected Costs and Funding Sources Table

Resource Enhancement and Protection

Item	Possible Funding Sources	Estimated Costs
Invasive exotic plant control	DEP-BIPM, C20/20, USFWS, LCTDC	$30,000
Replant (if necessary)		$1,500
Total		$31,500

Overall Protection

Item	Possible Funding Sources	Estimated Costs
Hire Consultant for Design, Permit & Installation - Shoreline erosion control	C20/20, LCTDC, WCIND, SFWMD	$40,000
Minor debris removal	C20/20	in-house
Preserve & Boundary signs		$200
Total		$40,200

Public Access

Item	Possible Funding Sources	Estimated Costs
Hire Consultant for Design, Permit & Installation - Canoe/Kayak Landing	C20/20, LC P&R, LCTDC, and other	$25,000
Clearing for trail		in-house
10 Trail markers		in-house
Informational Sign		$300
Total		$25,300
TOTAL COST ESTIMATE		**$97,000**

Site Management and Maintenance

Item	Possible Funding Source	Estimated Costs
Exotic Plant Control	C20/20	$1,000
Trail maintenance		in-house
Yearly Maintenance Estimate		**$1,000**

All costs are rough estimates based on information currently available.
Every effort will be made to not exceed this budget by more than 10%.