MYAKKA ISLANDS POINT MANAGEMENT PLAN

Prepared by:

Chris Meyer

Sarasota County

Department of Parks, Recreation and Natural Resources

Division of Natural Areas and Trails

January 2021

PRESERVE AT A GLANCE

Size	100 acres
Location	Myakka River at Big Slough in North Port
Management Priority	protect and restore species diversity and richness and protect pristine archaeological sites
Management Challenge	Invasive exotic plant control in a tidal flood plain
Priority Habitats	salt marsh mangrove swamp maritime hammock mesic flatwoods scrubby flatwoods blackwater streams
Imperiled Species	butterfly orchid giant air plant golden leather fern shell mound pricklypear gopher tortoise wood stork roseate spoonbill southeastern American kestral Florida sandhill crane
Cultural Resources	Late Archaic middens (8SO1308A and 8SO1308B)
Land Use	Passive, nature-based public recreation

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Significance, size, location

Myakka Islands Point is a 100-acre preserve located in Sarasota County within the incorporated limits of the City of North Port. The preserve is approximately one mile north of Charlotte Harbor, on the east bank of the Myakka River. This site is the only Sarasota County-owned preserve in North Port. This site is ecologically and historically unique due to its native habitats and communities, elevation, hydrology, species composition, and historical and cultural resources.

Acquisition history

The site was acquired through the Environmentally Sensitive Lands Protection Program on October 4, 2006.

Important habitats and species

The preserve encompasses six habitat types including tidal salt marsh, mangrove swamp, mesic flatwoods, scrubby flatwoods, maritime hammock, and the Myakka River. It is home to ten species of listed flora and fauna. The seasonal island may be the only of its kind of any significant size along the Myakka River.

Myakka Islands Point contains three natural features of note. The Myakka River is a southern blackwater stream that has been designated as a Wild and Scenic River and an Outstanding Florida Waters Class I and II water body. The preserve is a seasonal island composed of Scrubby flatwoods, mesic flatwoods, and maritime hammock surrounded by mangrove swamp and tidal salt marsh. There are two former sand dunes that were part of the coastal berm along the north side of the cove that are colonized primarily by mangroves, buttonwood, red cedar, and live oak.

Natural and cultural resource management goals

Sarasota County aims to restore the preserve to support and improve species diversity and richness through maintenance prescribed burns, continued invasive exotic plant treatment, and mechanical vegetation reduction projects. Sarasota County will also protect the preserve's nearly pristine historical cultural resources by inspecting the site and reporting vandalism to appropriate authorities. The County will request a law enforcement presence during disturbances.

Historical and current uses and facilities

The entire area south of the preserve to Charlotte Harbor and beyond has high probability areas and recorded sites of Native American use. Myakka Islands Point Preserve features two Late Archaic middens. Current uses at the preserve include nature-based public recreation like hiking, bird watching, photography, and enjoying scenic overlooks.

Use and facilities management goals

As of January 2021, there are no plans to alter the use of the preserve or to make significant alterations to the property. The current use of providing passive, nature-based public recreational use without adversely impacting native habitats and communities will be continued.

Purpose of plan

The purpose of this plan is to preserve the health and function of natural systems, protect historical resources that are part of Sarasota County's heritage, and provide appropriate nature-based recreational opportunities for the public. This plan will be updated in 10 years to incorporate the most current methodologies and technological advances. Costs are estimated for current conditions, assuming cost escalations for salary and some known funding opportunities but are not based on future optimal conditions or optimal staffing.

MANAGEMENT STRATEGY OVERVIEW

NATURAL RESOURCES	**GOAL 1**	**Restore and maintain native habitats and communities.**
	OBJECTIVE 1.1	Create a burn plan for management zones annually, based on the natural communities contained or potentially contained in each management zone.
	OBJECTIVE 1.2	Eliminate FLEPPC Category I, II and nuisance plant species, but if not possible, suppress to levels too low to alter native habitat systems.
	OBJECTIVE 1.3	Protect imperiled species.
	OBJECTIVE 1.4	Restore vegetation height and density to accepted levels based on habitat type.
CULTURAL RESOURCES	**GOAL 2**	**Protect, preserve, and maintain cultural resources.**
	OBJECTIVE 2.1	Monitor and protect the two known historical sites.
LAND USES	**GOAL 3**	**Maintain public access and passive recreational opportunities without adversely impacting native habitats and communities.**
	OBJECTIVE 3.1	Assess ways to extend and connect the trail system.
	OBJECTIVE 3.2	Provide and maintain a trail system.
	OBJECTIVE 3.3	Assess impacts of recreational activities to native habitats and communities.
	GOAL 4	**Provide nature-based education and interpretation.**
	OBJECTIVE 4.1	Provide interpretive signs.
	OBJECTIVE 4.2	Provide interpretive programs and nature walks.
OPERATIONS	**GOAL 5**	**Provide administrative and fiscal support.**
	OBJECTIVE 5.1	Continue current day-to-day administrative support.

1 INTRODUCTION

1.1 LOCATION AND SETTING

Myakka Islands Point is a 100-acre preserve located in Sarasota County within the incorporated limits of the City of North Port (Exhibit 1). The preserve is approximately one mile north of Charlotte Harbor on the east bank of the Myakka River. It is bordered by the river on west and south sides, the Myakkahatchee tract of Myakka State Forest to the north, and one private residence including multiple mowed acres to the east (Exhibit 2). This site is the only Sarasota County-owned preserve in North Port.

1.2 SITE SIGNIFICANCE AND PROTECTION PRIORITY

This site is ecologically and historically unique due to its native habitats and communities, elevation, hydrology, species composition, and historical and cultural resources. The seasonal island may be the only of its kind of any significant size along the Myakka River.

Myakka Islands Point Preserve contains three natural features of note:

- The Myakka River, a southern blackwater stream.
- A seasonal island composed of scrubby flatwoods, mesic flatwoods, and maritime hammock surrounded by mangrove swamp and tidal salt marsh.
- There are two former sand dunes that were part of the coastal berm along the north side of the cove. They are colonized primarily by mangroves, buttonwood, red cedar, and live oak.

The entire area south of the preserve to Charlotte Harbor and beyond has high probability areas and recorded sites of Native American use. The preserve features two Late Archaic middens.

LAND ACQUISITION PROGRAMS

The Environmentally Sensitive Lands Protection Program (ESLPP) protects lands through public acquisition of fee simple title and conservation easements from willing sellers. The program is funded by a 0.25 mill ad valorem tax passed by referendum in March 1999. The selection criteria are based on connectivity, water quality, manageability and habitat rarity and quality (Resolution No. 92-272, Criteria for Evaluating Environmentally Sensitive Lands). All proposed acquisitions must be approved by the Board of County Commissioners prior to initiating a contract for purchase.

1.3 ACQUISITION HISTORY

The site was acquired through the Environmentally Sensitive Lands Protection Program on October 4, 2006. See Appendix A for acquisition documents.

1.4 MANAGEMENT AUTHORITY AND RESPONSIBILITY

The Environmentally Sensitive Lands Protection Program Ordinance # 99-004, as amended later by Ordinance # 2013-028 (Appendix C) and the provisions stated within, protects the preserve from development and forbids removal of native flora and fauna. There are no governing land use

agreements or easements for the property. The property is zoned Agricultural use in the City of North Port (Exhibit 3).

GOVERNING DOCUMENTS

Management authority is given by the following County Codes and governing documents (see Appendix C):

1. The Sarasota County Comprehensive Plan (2016)
2. Sarasota County Land Management Master Plan (2004)
3. Ordinance No. 97-024
4. Ordinance No. 98-045
5. Ordinance No. 98-096
6. Ordinance 99-004 and 2013-028

1.5 FUTURE PLANS FOR THE SITE

All current and future activities and construction of public amenities would be planned in an environmentally sensitive manner to minimize impacts to native habitats and communities. Current and continued uses at the preserve include nature-based public recreation like hiking, bird watching, photography, and enjoying scenic overlooks. Since Myakka Islands Point is very ecologically sensitive, there are no plans for large public use amenities in the future, which will further protect the preserve.

Natural Resources Management Philosophy

Sarasota County's habitat management approach seeks to restore and maintain a natural balance which preserves the quality of these diverse landscapes for the benefit of wildlife and visitors. As part of this effort, Sarasota County's environmental professionals apply a variety of specialized methods, including mechanical treatment of vegetation, prescribed fire, invasive plant and animal management, hydrologic restoration, and restoration of native communities. Scientific monitoring, often facilitated by volunteers, enables managers to gauge the effectiveness of management actions and to develop responsive, proactive approaches.

With a focus on native systems management, primary emphasis is placed on restoring and maintaining the natural processes that formed the structure, function, and species composition of Sarasota County's diverse native communities as they occurred in pre-development. Single species management for imperiled species is appropriate in County parks and preserves when the maintenance, recovery, or restoration of a species or population is difficult due to the requirement of long-term restoration efforts, unnaturally high mortality, or insufficient habitat. Single species management should be compatible with the maintenance and restoration of natural processes and should not imperil other native species or compromise the preserve's values.

Prescribed fire is an essential component in natural systems management in Florida. Prescribed fire is used to mimic natural lightning-set fires, which are one of the primary natural forces that shaped Florida's ecosystems. Prescribed burning increases the abundance and health of many wildlife species. Many of Florida's imperiled plant and animal species are dependent on periodic fire for their continued existence. Fire-dependent native communities gradually accumulate flammable vegetation; therefore, prescribed fire reduces wildfire hazards by reducing these wild land fuels. NAT makes every effort to return fire to its natural role in fire-dependent native communities. Sarasota County Fire Mitigation Specialists lead a burn team to restore fire back into the natural system. All prescribed burns in Florida are conducted with authorization from the Florida Department of Agriculture and Consumer Services, Florida Forest Service (FFS). The preserve contains several native communities, including mesic flatwoods, scrubby flatwoods, and scrub, that rely on fire to maintain its plant composition and structure.

Invasive exotic plants and animals are a serious concern for the management of natural systems. Due to Florida's warm climate, non-native plants and animals are able to thrive. Many invasive exotic species outcompete, displace, or inhibit growth of native species and can alter native habitats. If left unchecked without natural controls from their native origin, invasive exotic plants and animals alter the character, productivity, and conservation values of the natural areas they infest. The Florida Exotic Pest Plant Council (FLEPPC) supports the management of invasive exotic plants in Florida's natural areas. FLEPPC compiles invasive species lists that are revised every two years. Invasive exotic plants are termed Category I species when they alter native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives. Category II species have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species (https://www.fleppc.org/). It is the aim of NAT to eliminate, or if not possible, to reduce FLEPPC Category I and II invasive exotic plants to low ecological impact levels. NAT utilizes the FLEPPC classification system to determine management priorities when managing invasive exotic plants.

Exotic animal species include non-native wildlife species, free-ranging domesticated pets or livestock, and feral animals. Because of the negative impacts to native systems attributed to invasive exotic animals, NAT actively removes them from County parks and preserves, with priority being given to those species causing the greatest ecological damage.

2 NATURAL RESOURCE MANAGEMENT COMPONENT

2.1 NATURAL RESOURCE INVENTORY

2.1.1 Topography

Topography of the preserve is mostly flat with a 0–5 feet elevation above mean sea level (Exhibit 4). The highest point on the island occurs in scrubby flatwoods at 6 feet above mean sea level. Approximately 70 percent of the site is tidal, not including storm events which would inundate a larger acreage. Most of the site is 0–2 feet above mean sea level.

2.1.2 Soils

From Myakkahatchee Creek to the Myakka River mouth, soils consist of a tidal marsh and swamp-dunes association, which contain nearly level, very poorly drained soils, including Kesson-Wulfert muck, subject to frequent flooding by tidal waters, and deep droughty soils, such as Eugallie-Myakka fine sands (Exhibit 5, Table 1).

Table 1. Soil types in the preserve.

Soil Type	Associated Habitat	Drainage Characteristics
EuGallie-Myakka fine sands	scrubby flatwoods/ mesic flatwoods	somewhat poorly drained
Kesson-Wulfert muck	tidal marsh/swamp-dunes	very poorly drained

2.1.3 Hydrology

The preserve consists mostly of poorly drained soils and is tidal over a large acreage. As a result, there are temporary flooded and ponded areas particularly from May–October (Exhibit 6).

Myakka River is designated as a Wild and Scenic River under Section 258.501 Myakka River Wild and Scenic Designation and Preservation Act and is also an Outstanding Florida Waters and Class I and II water body.

2.1.4 Natural Communities

Native habitats in the preserve include tidal salt marsh, mangrove swamp, mesic flatwoods, scrubby flatwoods, maritime hammock, and the Myakka River (Table 2, Exhibit 7). Estuarine areas are present in this segment of the river, as the water is brackish to saline. The 54-acre tidal salt marsh includes 15 acres of mangrove swamp which surrounds 99 percent of the seasonal island. Mesic flatwoods comprise the mainland and a fringe around part of the island.

The entire preserve received extensive mulching and chemical retreatments in 2007, 2008, and 2009 to remove Brazilian pepper. Since 2009, staff keeps up with pepper removal through staff teamwork days and small contracts.

There are three maritime hammocks totaling approximately 3 acres. The substrate and elevation in two were formed by human activity in prehistoric times during the Late Archaic, ca 5000 to 3000 B.P.

Table 2. Florida Natural Area Inventory (FNAI) Communities present in the Reserve.

FNAI Communities	Acres	% of Preserve
tidal salt marsh	54	54%
mangrove swamp	15	15%
mesic flatwoods	10	10%
scrubby flatwoods	6	6%
maritime hammock	3	3%
Myakka River/blackwater streams	12	12%

FLORIDA'S NATURAL COMMUNITIES

The Florida Natural Areas Inventory (FNAI) provides a detailed guide to the standard classification system of 81 natural communities (FNAI 2010). The premise of this system is that physical factors such as climate, geology, soil, hydrology, and fire frequency determine the species configuration of an area. Areas that are similar with respect to those factors will tend to have natural communities with similar species compositions. Differences in species composition can occur, however, despite similar physical conditions and the reverse can occur. Some physical influences, such as fire frequency, may vary from FNAI descriptions for certain natural communities in this plan.

2.1.5 Imperiled Species

Flora

Giant airplant (*Tilandsia uticulata*) and butterfly orchid (*Encyclia tampensis*) grow among the tree limbs. Giant airplant is state listed as Endangered, due to the invasion of the Mexican bromeliad weevil (*Matamasius callizona*) whose adults feed on leaves. Larvae tunnel into the base of the bromeliad stem, killing the plant. The weevil was first identified in Florida in 1989 and has no natural enemies in Florida. Butterfly orchid is listed as Commercially Exploited by FDACS. Golden leather fern (Acrostichum aureum) and shell mound pricklypear (Opuntia stricta), which is endemic to Florida, are state listed as Threatened due to habitat loss. Coontie (*Zamia pumila*) is a cycad, growing to 1–3 feet. It grows in hammocks and pinelands and is listed as Commercially Exploited by the Florida Department of Agriculture and Consumer Services (FDACS).

See Appendix D for a full list of plant species. New plant occurrences will geolocated using GPS and stored in a GIS database. Previously undocumented species in the County will be sent as voucher

specimens to the USF collection and added to the UF/IFAS Plant Atlas and reported to the Florida Natural Areas Inventory.

Fauna

New animal occurrences will be reported and documented for the Florida Natural Areas Inventory. See Appendix E for a full list of animal species.

Table 3. Imperiled flora and fauna with documented sightings in the preserve.

	Common Name	Scientific Name	Status
Plant	butterfly orchid	*Encyclia tampensis*	Commercially Exploited (FDACS)
	giant air plant	*Tillandsia utriculata*	Endangered (State)
	golden leather fern	*Acrostichum aureum*	Threatened (State)
	shell mound pricklypear	*Opuntia stricta*	Threatened (State)
Reptile	gopher tortoise	*Gopherus polyphemus*	Threatened (State)
Bird	wood stork	*Mycteria americana*	Threatened (Fed/State)
	roseate spoonbill	*Platalea ajaja*	Threatened (State)
	southeastern American kestral	*Falco sparverius paulus*	Threatened (State)
	tricolored heron	*Egretta tricolor*	Threatened (State)

2.2 Natural Resource Management

This section assesses the current condition of each native community in the reserve and describes their desired optimal condition. Once a natural community reaches the desired optimal condition, it is considered to be in "maintenance condition." Required actions for achieving and sustaining a community's maintenance condition may include: establishing and maintaining optimal fire return intervals for fire dependent communities, ongoing control of non-native plant and animal species, maintaining natural hydrologic functions (including historical water flows and water quality), preserving a community's biodiversity and vegetative structure, protecting viable populations of plant and animal species (including those that are imperiled or endemic), and preserving intact ecotones that link native habitats and communities across the landscape.

2.2.1 Tidal Salt Marsh

There are approximately 54 acres of tidal salt marsh located in the preserve. FNAI describes tidal salt marsh as estuarine wetland on muck, sand, or limestone substrate; inundated with saltwater by daily tides; statewide; occasional or rare fire; treeless, dense herb layer with few shrubs; saltmarsh cordgrass, needle rush, saltgrass, saltwort, perennial glasswort, and seaside oxeye (FNAI 2010).

Table 4. Common plants of tidal salt marshes.

Common Name	Scientific Name
black needle rush	*Juncus roemerianus*
sawgrass	Cladium jamaicense
smooth cord grass	*Spartina alterniflora*
salt meadow cord grass	*Spartina patens*

Christmas berry	*Lycium carolinianum*
golden leather fern	*Acrostichum aureum*
seaside goldenrod	*Solidago sempervirens*

Current Conditions

Tidal salt marsh is in good condition. Brazilian pepper growth is present but stunted due to nutrient deficiency. There is less than one percent cover, so it has been nearly eradicated from this habitat. Mangroves occur along the river tributaries which inundate the salt marsh at high tides and during storms. One area of salt marsh received fire during the initial prescribed burn on the island. The remaining tidal marsh would benefit from cover burns, as described elsewhere in the management plan.

Optimal Conditions

The tidal salt marsh would be in excellent condition if no invasive exotic plants existed. Currently this habitat would benefit from prescribed fire as most acreage does not have a known burn history.

Management Guidelines

Tidal salt marsh habitat is managed with prescribed fire on a 1–5 year rotation. Cover burns are typical and preferred, when there are several centimeters of water above the marsh surface. This approach removes biomass without damaging plant roots, and is a valuable, widely used type of burn (Arthur *et al.* 1995) Prescribed fire in tidal marsh should be limited to fall and winter because burns in the spring and summer can destroy nests or kill young wildlife.

Continue surveying and managing of invasive exotic and nuisance plants.

2.2.2 Mangrove Swamp

There are approximately 15 acres of tidal mangrove swamp in the preserve. FNAI describes mangrove swamp as estuarine wetland on muck, sand, or limestone substrate; inundated with saltwater by daily tides; central peninsula and Keys; no fire; dominated by mangrove and mangrove associate species; red mangrove, black mangrove, white mangrove, and buttonwood (FNAI 2010).

Table 5. Common plants of mangrove swamp.

Common Name	Scientific Name
red mangrove	*Rhizophora mangle*
black mangrove	Avicennia germinans
white mangrove	*Laguncularia racemosa*
green buttonwood	*Conocarpus erectus*
silver buttonwood	*Conocarpus erectus var. sericeus*
giant leather fern	*Acrostichum danaeifolium*
mangrove rubber vine	*Rhabdadenia biflora*

Current Conditions

Mangrove swamp is in good condition. Naturally occurring higher elevation areas in the swamp allow for an herbaceous layer of facultative wetland grasses and forbs. Vegetation consists of an overstory of southern red cedar, live oak, and cabbage palm, with buttonwood, white, red, and black mangroves in

lower elevations. The understory consists of a variety of shrubs, grasses, forbs, and low groundcovers including myrsine, salt bush, marsh elder, Brazilian pepper seedlings and saplings, seaside goldenrod, coinvine, mangrove vine, bluestems, fimbry grass, cordgrasses, bacopa, and sea purslane.

Optimal Conditions

This habitat should have higher species diversity. Complete eradication of Brazilian pepper and other invasive exotic and nuisance plants would help bring this habitat to optimal conditions.

Management Guidelines

Mangrove Swamp is not fire adapted but will allow fire to meander into its edges and burn during prescribed burns. Continue surveying, treating, and removing invasive exotic and nuisance plants.

2.2.3 Mesic Flatwoods

There are approximately ten acres of mesic flatwoods in the preserve. FNAI characterizes mesic flatwoods as an open canopy of tall pines and a dense, low ground layer of low shrubs, grasses, and forbs. Although longleaf pine (*Pinus palustris*) is the principal pine in northern and central Florida, in south Florida the south Florida slash pine (*P. elliottii var. densa*) is usually the dominant overstory tree with a saw palmetto understory in most areas.

Mesic flatwoods have evolved with frequent fire due to lightning strikes. Historically the fire interval is 1–5 years with most fires occurring within 1–3 years during the growing season. Native plants in mesic flatwoods have adaptations that allow them to survive fire and recover quickly. Several species depend on fire to reproduce. (FNAI 2010)

Table 6. Common plants of mesic flatwoods.

Common Name	Scientific Name
South Florida slash pine	*Pinus elliottii var. densa*
saw palmetto	*Serenoa repens*
wire grass	*Aristida stricta*
bluestem grasses	*Andropogon spp.*
blueberries	*Vaccinium spp.*
goldenrod	*Solidago and Euthamia spp.*
narrowleaf silk aster	*Pityopsis graminifolia*
milkweeds	*Asclepias spp.*
beautyberry	*Callicarpa americana*
hypericums	*Hypericum spp.*
coastal plain staggerbush	*Lyonia fruiticosa*
switch grass	*Panicum virgatum*

Current Conditions

Mesic flatwoods range in condition from fair to good, with most acreage in fair condition. Long-term fire suppression has altered much of the upland habitats. Through prescribed burns and mechanical

vegetation reduction projects, vegetation height and density of shrubs and hardwoods have been reduced. The habitat is somewhat weedy and species diversity could ideally be better.

There are two lots covered with invasive exotic Brazilian pepper along the east boundary owned by the same neighbor. The owner has been amicable in treating pepper on their parcels before. They have contacted a firm for quotes.

Optimal Conditions

Ideally there should be greater native species diversity in the preserve. That can be accomplished by planting native species and conducting prescribed burns. Shrub height should be less than three feet and shrub cover around 10– 20 percent. Palmetto height should be less than three feet and palmetto cover less than 40 percent. Herbaceous plant and grasses should cover at least 40–70 percent.

Management Guidelines

Flatwoods should be kept in 2–4-year prescribed fire rotation. Native species diversity should be increased through continued prescribed fire and native species plantings. The optimal height and density of saw palmetto, shrubs, and hardwoods should be maintained using mechanical and other methods. Invasive exotic and nuisance plants should continue to be surveyed and managed.

2.2.4 Scrubby Flatwoods

There are approximately 6 acres of scrubby flatwoods in the preserve. According to FNAI, scrubby flatwoods have an open canopy of widely spaced pine trees and a low, shrubby understory dominated by scrub oaks and saw palmetto, often interspersed with areas of barren white sand (FNAI 2010). Scrubby flatwoods occur often between scrub and mesic flatwoods. It occurs on sites that are slightly lower than scrub, but higher and relatively better drained than mesic flatwoods. Due to this factor, scrubby flatwoods have a combination of species from both habitats. Vegetation consists of an overstory of south Florida slash pine mixed with a few longleaf pine with a shrub layer of oaks, palmetto, and an understory of grasses and low woody shrubs. Scrubby flatwoods are inhabited by many of the same rare animal species living in scrub. These include Florida scrub-jay, eastern indigo snake, gopher tortoise, and associated tortoise commensal species such as the gopher frog. (FNAI 2010)

Table 7. Common plants of scrubby flatwoods.

Common Name	Scientific Name
South Florida slash pine	*Pinus elliottii var. densa*
Chapman's oak	Quercus chapmanii
sand live oak	*Quercus geminate*
myrtle oak	*Quercus myrtifolia*
coontie	*Zamia integrifolia*
Florida paintbrush	*Carphephorus corymbosus*
narrowleaf silk aster	*Pityopsis graminifolia*
saw palmetto	*Serenoa repens*
wire grass	*Aristida stricta*

Current Conditions

Scrubby flatwoods are in fair condition. Mechanical vegetation reduction and prescribed fire have reduced the scrub oak and shrub layer height. Habitat in Zone 1 has been burned three times since 2007. After each burn, native grasses have grown denser and species diversity has increased. Pine density has decreased, but seedling trees are germinating. Since the zone is out of burn rotation, the scrub oak and shrub layers are taller than desired. This habitat and maritime hammock are the only two on site with active gopher tortoise burrows.

Optimal Conditions

Like scrub, scrubby flatwoods should have 10–50 percent bare sand areas. Canopy cover is best at less than 75 percent. At least 40 percent of the scrub oaks should be between 4–5.5 feet. No more than one acre of vegetation height should be taller than 5.5 feet. On average, there should be no more than one pine tree greater than 15 feet tall per acre.

Management Guidelines

Fire cycle ideally is 4–8 years, but during the average three year burn on the island, fire should be allowed to burn into scrubby flatwoods. Continue mechanical or other methods to reduce height and density of shrubs, hardwood trees, and saw palmetto to optimal conditions. Continue surveying and management of invasive exotic and nuisance plants.

2.2.5 Maritime Hammock

There are approximately three acres of maritime hammock in the preserve. FNAI characterizes maritime hammock as being stabilized coastal dune with sand substrate; xeric-mesic; statewide but rare in Panhandle and Keys; rare or no fire; marine influence; evergreen closed canopy; live oak, cabbage palm, red bay, red cedar in temperate maritime hammock; gumbo limbo, sea grape, and white or Spanish stopper in tropical maritime hammock (FNAI 2010).

Table 8. Common plants of maritime hammock.

Common Name	Scientific Name
coontie	*Zamia integrifolia*
white stopper	Eugenia axillaris
white indigoberry	*Randia aculeata*
snowberry	*Chiococca alba*
Florida privet	*Forestiera segregata*
southern red cedar	*Juniperus virginiana*
cabbage palm	*Sabal palmetto*
live oak	*Quercus virginiana*

Current Conditions

The preserve's three maritime hammocks are in fair condition. Two have rosary pea and Brazilian pepper seedlings that are treated every year, along other occasionally occurring invasive exotic species. If it were not for invasive exotic plants and trash debris that washes up on the south hammock, the maritime hammocks would be in good condition. Large southern red cedars, cabbage palm, and live oak dominate the canopy layer. Shrub and subcanopy layers in two hammocks consist of white stopper,

white indigoberry, Florida privet, and others. Maritime hammocks and scrubby flatwoods are the only two habitats in the preserve where active gopher tortoise burrows exist.

Optimal Conditions

To restore this habitat to optimal conditions, all invasive exotic plants must be removed. Even though the maritime hammocks have been treated, annual maintenance is required. Ideally no trash or other debris would wash up on the south hammock.

Management Guidelines

Maritime Hammock is not fire adapted but will allow fire to meander into its edges during prescribed burns. Continue to survey and manage invasive exotic and nuisance plants. Continue to remove trash debris that washes up from the river. Optimize forage for gopher tortoises by conducting prescribed burns to increase native grass species diversity and density. Plant *Opuntia stricta* pads from existing plants for more fruit production.

2.2.6 Myakka River

There are approximately 12 acres of the Myakka River in the preserve. The river shoreline along the preserve is approximately 1.25 miles.

Table 9. Common plant and animals of the Myakka River.

Common Name	Scientific Name
red mangrove	*Rhizophora mangle*
black mangrove	Avicennia germinans
white mangrove	*Laguncularia racemosa*
cabbage palm	*Sabal palmetto*
live oak	*Quercus virginiana*
black needle rush	*Juncus roemerianus*
sawgrass	Cladium jamaicense
common snook	*Centropomus undecimalis*
spotted seatrout	*Cynoscion nebulosus*

Current Conditions

The section of the Myakka River bordering the preserve is in good shape. Its bank is not heavily eroded due to the presence of a natural vegetation line. Soil binding and building plant species, such as red and black mangroves, black needle rush, and sawgrass, dominate the banks along the preserve. Trash debris occasionally floats onto the banks. As of January 2021, there are no known invasive plants growing along the banks.

Optimal Conditions

Ideally, the river should be free of trash and other debris and it should have little to no invasive exotic species.

Management Guidelines

Continue to remove trash and other debris as it washes up in areas that are accessible. Continue to survey and manage invasive exotic and nuisance plants.

2.2.7 Management Zones

To coordinate management efforts and maintain data history pertaining to prescribed fire and invasive exotic plant control, the preserve is divided into ten management zones (Exhibit 8).

Table 10. Management Zones used to track prescribed fire, invasive control, and other land management activities in the preserve.

Zone	Acres		Zone	Acres
1	10.0		6	13.7
2	4.8		7	20.9
3	4.6		8	4.2
4	2.3		9	7.4
5	9.9		10	8.0

Table 11a. Annual burn plan intervals and targets.

Natural Community	Acres	Burn Interval (years)	Annual Burn Target
mesic flatwoods	10	2–4	TBD
scrubby flatwoods	6	4–8	TBD
tidal salt marsh	54	1–5	TBD
maritime hammock	3	2-4	TBD

Table 11b. Annual IPM intervals and targets.

Invasive Plant Management Treatment Zones	Acres Surveyed and Treated (where needed)	2-year rotation
Zones 2, 3, 4, 1 partial, 8 partial, 6 partial, 7 partial	30	Due: 2021, 2023, 2025, 2027, 2029
Zones 8, 1 partial, 8 partial, 6 partial, 7 partial, 9, 5	30	Due: 2022, 2024, 2026, 2028, 2030

2.2.8 Special Considerations

Sarasota County aims to maintain and enhance species diversity and richness through maintenance prescribed burns, continued invasive exotic species treatment, and mechanical vegetation reduction projects. The major management challenge is working with tidal phases, which influence the timing of all work.

Mechanical vegetation reduction and herbicide projects should only be performed in winter and spring. Two types of mechanical work will be performed by heavy brush mowers and mulchers on tracked machines. Using tracked machines during the dry season will minimize soil disturbance, compaction, and

erosion. Due to the tidal influence onsite, creating ruts must be avoided to prevent unnatural ponding and to enable sheet flow. Roller chopping is not appropriate for this site.

Prescribed burns can be done in either the dormant or growing season with an easterly wind. Due to the rich muck-type soil, invasive exotic plants will continue to need follow-up treatments.

Authorized County and contractor vehicles must stay on trails, except ATVs during prescribed burns. Vehicles should rarely go past trail marker #5 on the south loop, except for during the dry season for travel to the island.

There is approximately 15 percent invasive exotic plant coverage in the preserve. There have been 10 annual workdays focusing on Brazilian pepper suppression since 2006. Treatment of invasive exotic and nuisance plants will continue by way of contracted projects, workdays, and prescribed burns. Three phases of Brazilian pepper mulching by tracked machines during dry season and four follow-up herbicide treatments of re-growth, root systems, and seedlings were undertaken from 2007 to 2009. Subsequent contract work has consisted of three nuisance plant treatment projects suppressing target FLEPPC Category I species, Category II, non-FLEPPC listed species, and aggressive natives such as salt bush, marsh elder, wax myrtles, St. Augustine grass, and cattails.

2.2.9 Research and Monitoring

The initial vegetation survey was performed on May 8, 2008, utilizing the same methodology of previous surveys conducted by Selby Gardens on other Sarasota County preserves (see Appendix D) (Sarasota County 2008). Since then new species have been documented.

Bird surveys have been completed through the annual Christmas bird count and other volunteer events.

Bi-monthly site inspections are performed, and can include:

- Invasive species monitoring to assess treatment success, the need for re-treatments, and early detection of new invasions
- Habitat assessment to determine fuel loads and habitat structure, and to plan land management activities
- Vegetation monitoring to assess the effects of land management and mowing
- Security inspection of fencing, gates, and the condition of other amenities
- Hydrological monitoring of potential impacts from tidal and weather events

Annual coarse filter surveys, such as bio blitzes, should be performed during various times of year to maximize species richness counts.

3 CULTURAL RESOURCE MANAGEMENT COMPONENT

3.1 CULTURAL RESOURCE INVENTORY

3.1.1 Archeological Sites

The preserve was surveyed for archaeological or historical sites in June 2004. Two Late Archaic middens are recorded: 8SO1308A and 8SO1308B. Sarasota County government will not allow any mechanical equipment or vehicles to traverse these sites. Only foot traffic will be allowed to perform land management activities, such as invasive exotic and nuisance plant management. These sites will not be marked on publicly available maps unless a public records request is submitted. This process allows the County to have the requester's contact information in case issues arise.

3.1.2 Historical Structures and Uses

Not applicable.

3.2 CULTURAL RESOURCE MANAGEMENT

3.2.1 Considerations For Protection

Midden 8SO1308A, also known as the processing area, has a looter pit created prior to County purchase. At one time, there was a gap in the mangroves where the public would enter the midden from the river. This gap has since filled in with vegetation. There was one large Brazilian pepper growing on it. The pepper was removed by hand and mulched away from the midden. Other than the looter pit, the midden is in good condition. Midden SO13808B, also known as the kitchen, is in pristine condition. There is a wide swath of tidal salt marsh protecting it from access from the river.

Sarasota County aims to protect these nearly pristine historical cultural resources by conducting site inspections and reporting vandalism to the appropriate authorities, and to request law enforcement presence during those times. The cable gate at the entrance to the island was installed to further protect cultural resources if unauthorized vehicles breech boundary fences or gates.

4 LAND USE COMPONENT

4.1 CURRENT LAND USES, AMENITIES, AND FACILITIES

4.1.1 Agriculture

Not applicable.

4.1.2 Public Access and Recreational Uses

The preserve is open 365 days a year; however, sections of trails can be flooded at high tide. Amenities are limited to marked trails, a rules totem, an informational kiosk, and four benches (Exhibit 9).

Public recreation is passive, nature-based and includes hiking, bird watching, photography, and enjoyment of scenic overlooks. No dogs are allowed on the property.

There is a preserve name sign and totem pole rules sign located near the entrance. The entrance frontage fencing is two-rail board fence with four-line smooth wire on the north and south sides. Four-line barbed fencing completes the east and north boundaries. The shell parking lot is situated west of the access lot and consists of two-rail board fencing with three walk-throughs and two gates, each leading to firebreaks. There is a kiosk with a site map insert and map box. The loop trail starting at the parking lot goes to a raised shell platform with a bench. There are three more benches onsite: one at the south end on a shell platform, and the other two on the loop trail—one overlooking to the north, another to the northeast. The preserve has twenty trail markers, some are at intersections, others are marking areas along the trails.

Table 12. Current condition and maintenance requirements of facilities and amenities.

Type	Improvement	Condition Assessment	Maintenance Goal
Public	parking area	good	maintain parking lot surface with aggregate as needed, maintain parking bumpers
	trails	good	maintain trails with aggregate, mow and trim adjacent shrubs and tree limbs as needed
	kiosk	good	clean and repair or replace as needed
	benches	good	clean and repair or replace as needed
	gates and fences	fair	remove weeds, repair or replace as needed
	interpretative and other signs	good	clean and repair or replace as needed
Support	N/A	N/A	

Table 13. Potential or known unauthorized uses. Potential unauthorized uses and activities are set forth in the County Facility Rules, in addition to applicable rules in Chapter 90 of the Sarasota County Code of Ordinances.

Unauthorized Use	Potential	Known
unauthorized vehicles, ATVs, UTVs, dirt bikes	X	
poaching or hunting		X
cultural resource damage and removal	X	
unauthorized fires	X	
camping	X	
pets, except trained service dogs		X
littering		X

4.1.3 Outreach and Education

There are three interpretative signs along the trail system referencing salt marshes, wetlands, and local songbirds. A publicly available map includes site information. Occasionally there are nature walks led by staff or native plant society members, birdwatching hikes, and bioblitz events to identify fauna and flora.

4.1.4 Land Use on Adjacent Lands

To the east of the preserve is a single residential family home on a large lot (Exhibit 3).

To the north is the Myakkahatchee Tract of the Myakka State Forest, where prescribed fire and some invasive exotic removal occurs. There are no public facilities on the tract as of January 2021.

To the west and south is the Myakka River, where boating, paddling, and fishing occur.

On the west side of the river from Myakka Islands Point is the Myakka State Forest main parcel. There is a river campsite and dock due west from Sand Island. Prescribed fire, invasive exotic plant treatment, mechanical vegetation reduction, and other land management activities occur onsite. Public uses are hiking, biking, camping, horseback riding, and wildlife viewing.

4.2 Proposed Land Uses, Amenities, and Facilities

Future public amenities could include an accessible boardwalk from the loop trail off the parking lot leading to a viewing platform that could provide views of the salt marsh, island, wildlife, and sunsets.

4.3 Current and Proposed ADA Components

Two walk throughs from the parking lot are currently accessible to small mobility devices for persons with disabilities. The loop trail off the parking lot is shelled and leads to a bench. Other trails are composed of natural soil substrate and are subject to ground disturbance through erosion, wildlife activity, and use. The County will continue to look for opportunities to provide reasonable accessibility while balancing the need for security and maintaining the integrity of the natural environment.

4.4 Visitor Use Management And Carrying Capacity

The preserve has a few different user groups that have potential for conflict. Complaints will be addressed as they arise. If a specific use or activity has a negative impact on the native habitat, wildlife, or the experience of other preserve visitors, that use or activity will be reviewed and may be deemed

inappropriate for the preserve. If this occurs, there may be limitations placed on the use or activity or it may no longer be permitted in the preserve. As of 2020, the carrying capacity of the preserve for visitor use has not been identified. Understanding carrying capacity is useful for avoiding negative impacts to native plants and animals and the visitor experience.

5 Operations Component

Land management activities are accomplished using a combination of County staff, County resources, and contractors. Sarasota County is responsible for all property maintenance activities onsite. Key activities include administration, trash removal, trail and fence maintenance, recreational amenities upkeep, and habitat management. Staff of PRNR or their designee will conduct these activities weekly.

5.1 Current Staff

Sarasota County is responsible for staffing the operation and maintenance of the preserve. Myakka Islands Point is assigned an environmental specialist position as land manager. Currently, the attention of the manager is divided among six sites. In addition to the manager, the NAT Division employs an operations team with a staff of six people to service NAT areas. Operations team responsibilities include, but are not limited to, fence installation and repair, gate installation and repair, invasive exotic plant management, assistance with prescribe fire, and fire-line preparation. In 2017, a new full time staff member was hired to assist with surveys and maintenance of southern NAT properties. The staff member conducts weekly visits to assess the preserve's needs and takes management actions.

5.2 Optimal Staff

More management staff time is necessary to address maintenance, natural resource management, and security of the preserve. NAT staff requires four additional staff members for the Operations Section. Additional staff will also augment the prescribe fire team and the invasive exotic plant management team. To have an in-house invasive exotic treatment team that can work with each land manager on planned workdays would provide benefits of cost savings, greater accuracy in treatment, and increased workdays to eradicate target species.

5.3 Agency and NGO Partners

None.

5.4 Volunteers

None.

5.5 Law Enforcement and Security

Sarasota County is responsible for providing security at the preserve with possible assistance from Charlotte County and the City of North Port. It is hoped that vandalism is deterred by the presence of County personnel during the course of visits and activities. Signs informs the public about hours of operation and County ordinances governing appropriate use and behavior in the preserve. Illegal activities are immediately reported to the Sarasota County Sheriff, which is the entity responsible for providing regular patrols and enforcing trespass ordinances.

5.6 FUNDING

Primary funding for site maintenance of the preserve comes from the ESLPP, which provides about $500,000 annually for management.

5.7 COSTS

The costs listed in the tables below are rough estimates taken from current actual expenditures in August 2020 (see Appendix F). In all but the salaries, costs were slightly increased to account for inflation, but escalators were not applied. Salaries are fully loaded, and escalators are built in for the 10-year estimates. Site managers estimated the amount of time each staff position would spend on the natural area and divided annual salary accordingly to determine salary costs for given natural areas. See Appendix F for the annualized cost schedule for NAT.

	ACTIVITY	ESTIMATED 10-YR COST ($)
NATURAL RESOURCES	prescribed fire preparation	5000
	prescribed fire	30000 - 40000
	prescribed fire monitoring	6000
	integrated pest management surveying	5100
	integrated pest management treatment	225000
	hydrologic restoration	0
	mechanical vegetation management	63000
	TOTAL COSTS	**344100**
CULTURAL RESOURCES	surveying	1000
	monitoring	0
	TOTAL COSTS	**1000**
LAND USES	*Maintenance*	
	fencing	32980
	trail markers	640
	benches	1280
	tools	4000
	parking lots	600
	road repairs	10000
	restrooms	0
	portable toilets	0
	grills	0
	tables	0

	pavilions	0
	camp sites	0
	grounds mowing	41400
	power washing	0
	building maintenance	0
	Recreation and Visitor Services	
	kiosks	1220
	brochures	0
	maps	300
	programs, guided and self-guided	0
	events	0
	playgrounds	0
	nature center	0
	trails	0
	TOTAL COSTS	**92420**
OPERATIONS	salary of land manager	48880
	salary of supervisor	6000
	salary of administrative assistant	3600
	office equipment	0
	utilities	0
	offices	0
	security	0
	alarm monitoring	0
	fleet	4000
	TOTAL COSTS	**62480**

Notes:

1. Current loaded salary is based on FY 21.
2. Salary multiplier is 2.5%.
3. Average hourly rate for salary is based on 2080 total hours per year.

6 GOALS, OBJECTIVES, AND ACTIONS IMPLEMENTATION MATRIX

	GOALS / OBJECTIVES / ACTIONS		MEASURE (metric)	TARGETS 2021	2022	2023	2024	2025
NATURAL RESOURCES	**GOAL 1**	**Restore and maintain native habitats and communities.**						
	OBJECTIVE 1.1	Create a burn plan for management zones annually, based on the natural communities contained or potentially contained in each management zone.						
	Action	Prescribe burn ten acres per year.	#acres burned per year	10	10	10	10	10
	Action	Maintain ten acres per year within target fire return interval.	# acres within fire return interval target	10	10	10	10	10
	Action	Prescribe burn salt marsh in management zones at natural frequencies as needed.	# acres of salt marsh burned	TBD	TBD	TBD	TBD	TBD
	OBJECTIVE 1.2	Eliminate FLEPPC Category I, II and nuisance plants, but if not possible, suppress to levels too low to alter native habitat systems.						
	Action	Annually treat at least 20 acres of FLEPPC Category I and Category II invasive exotic plant species.	# acres treated	20	20	20	20	20
	Action	Implement control measures on at least 18 invasive exotic and nuisance plant species.	# species controlled	18	18	18	18	18
	Action	Write work scopes and manage contractors.	% of known exotic areas treated with contractor	TBD	TBD	TBD	TBD	TBD

	OBJECTIVE 1.3	Protect imperiled species.						
	Action	Identify newly discovered imperiled flora and fauna.	Update management plan as needed	X	X	X	X	X
	Action	Conduct bioblitz.	# bioblitzes		1		1	
	OBJECTIVE 1.4	Restore vegetation height and density to accepted levels based on habitat type.						
	Action	Restore native habitats and communities.	# acres restored	10	10	10	10	10
CULTURAL RESOURCES	**GOAL 2**	**Protect, preserve, and maintain the cultural resources.**						
	OBJECTIVE 2.1	Monitor and protect the two known historical sites.						
	Action	Ensure all known sites are recorded in the Sarasota Historical Resources Master Site file.	# sites recorded	2				
	Action	Ensure all known historical site locations are not interpretated to the public.	No posted signs	X	X	X	X	X
	Action	Monitor recorded sites and send updates to HR Master Site file.	# sites monitored and reports submitted	2	2	2	2	2
	Action	Restore recorded sites and cultural resources to good condition.	# sites in good condition	2	2	2	2	2
	Action	Maintain locked cable gate leading to the Island to further protect recorded sites from illegal entry of vehicles, ATVs, and such on the mainland.	locked gate maintained	X	X	X	X	X

LAND USES	**GOAL 3**	**Maintain public access and passive recreational opportunities without adversely impacting native habitats and communities.**						
	OBJECTIVE 3.1	Assess ways to extend and connect the trail system.						
	Action	Within one year after an aquatic recreation area is constructed on the Myakkahatchee Tract of the Myakka State Forest, install a walkthru in the boundary fence to extend the trail system.	One walk thru installed					
	OBJECTIVE 3.2	Provide and maintain a trail system.						
	Action	Maintain and improve or repair existing trails.	# miles of trails maintained or improved	1	1		1	1
	OBJECTIVE 3.3	Assess impacts of recreational activities to native habitats and communities.						
	Action	Maintain public access and recreational opportunities to allow for a recreational carrying capacity of 30 visitors per day.	# visitor opportunities per day	TBD	TBD	TBD	TBD	TBD
	GOAL 4	**Provide nature based educational and interpretation.**						
	OBJECTIVE 4.1	Provide interpretive signs.						
	Action	Assess and repair interpretative signs on nature trails.	# signs improved, repaired or replaced			3		
	Action	Update parking lot kiosk.	One kiosk					

	OBJECTIVE 4.2	Provide interpretive programs and nature walks.						
	Action	Continue to provide 0–2 interpretive and education programs per year.	# interpretive and education programs	0–2	0–2	0–2	0–2	0–2
OPERATIONS	**GOAL 5**	**Provide administrative and fiscal support.**						
	OBJECTIVE 5.1	Continue current day-to-day administrative support.						
	Action	Maintain GIS database of physical improvements and public use amenities.		TBD	TBD	TBD	TBD	TBD
	Action	Identify infrastructure maintenance and additional needs annually.		TBD	TBD	TBD	TBD	TBD

7 REFERENCES

Arthur et al. 1995. *Fire in Coastal Marshes*. Tall Timbers Research Station. 141 pp.

FNAI (Florida Natural Areas Inventory). 2010. *Guide to the natural communities of Florida: 2010 edition.* Florida Natural Areas Inventory, Tallahassee, FL, 278 pp.

Sarasota County. 2008. *Resource Management*. Natural Resources, Sarasota County Government, Sarasota, FL.

Wunderlin, RP. 1998. *Guide to the Vascular Plants of Central Florida*. University Press of Florida, Gainesville, FL, 806 pp.

8 EXHIBITS

EXHIBIT 1 – LOCATION MAP

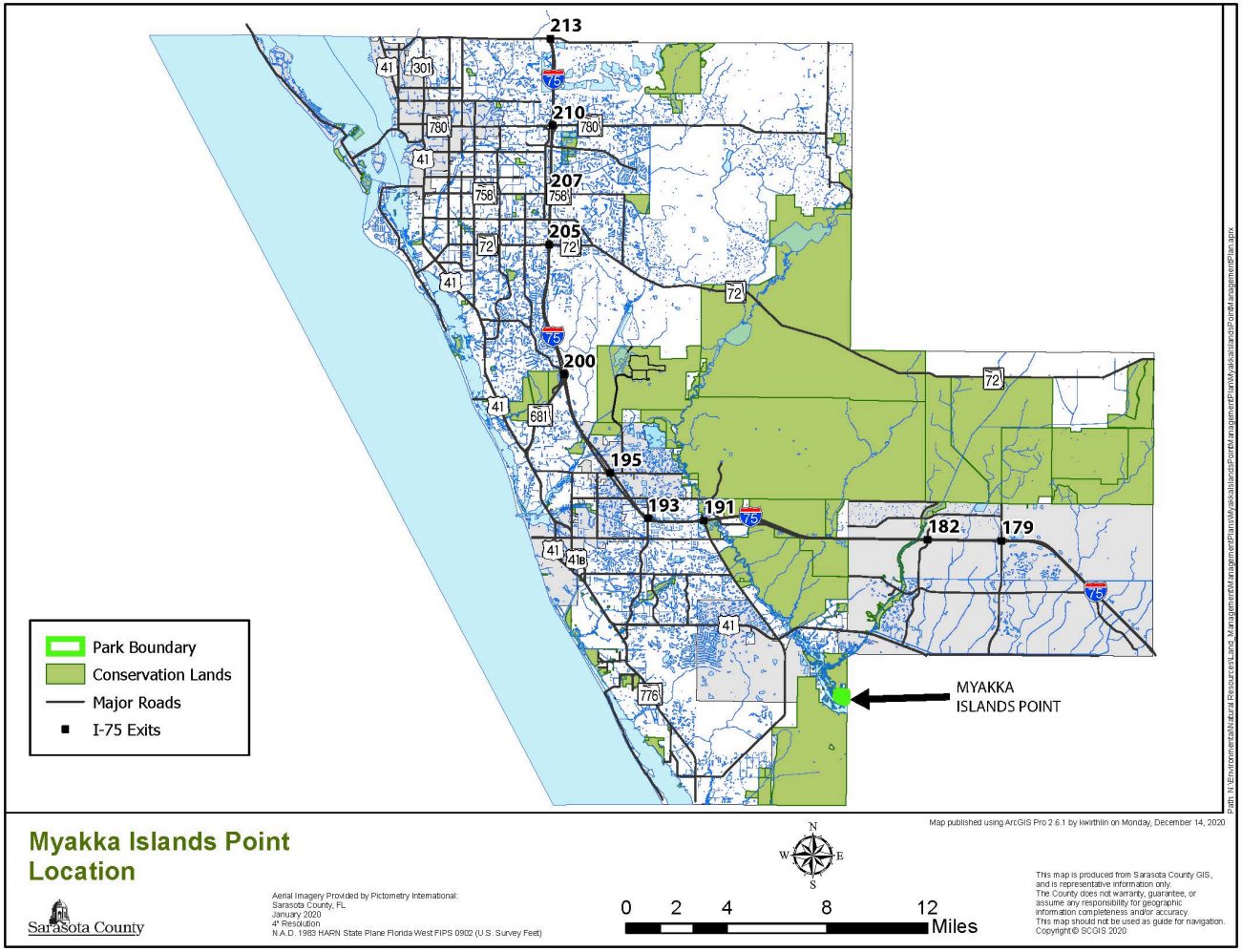


EXHIBIT 2 – BOUNDARY MAP

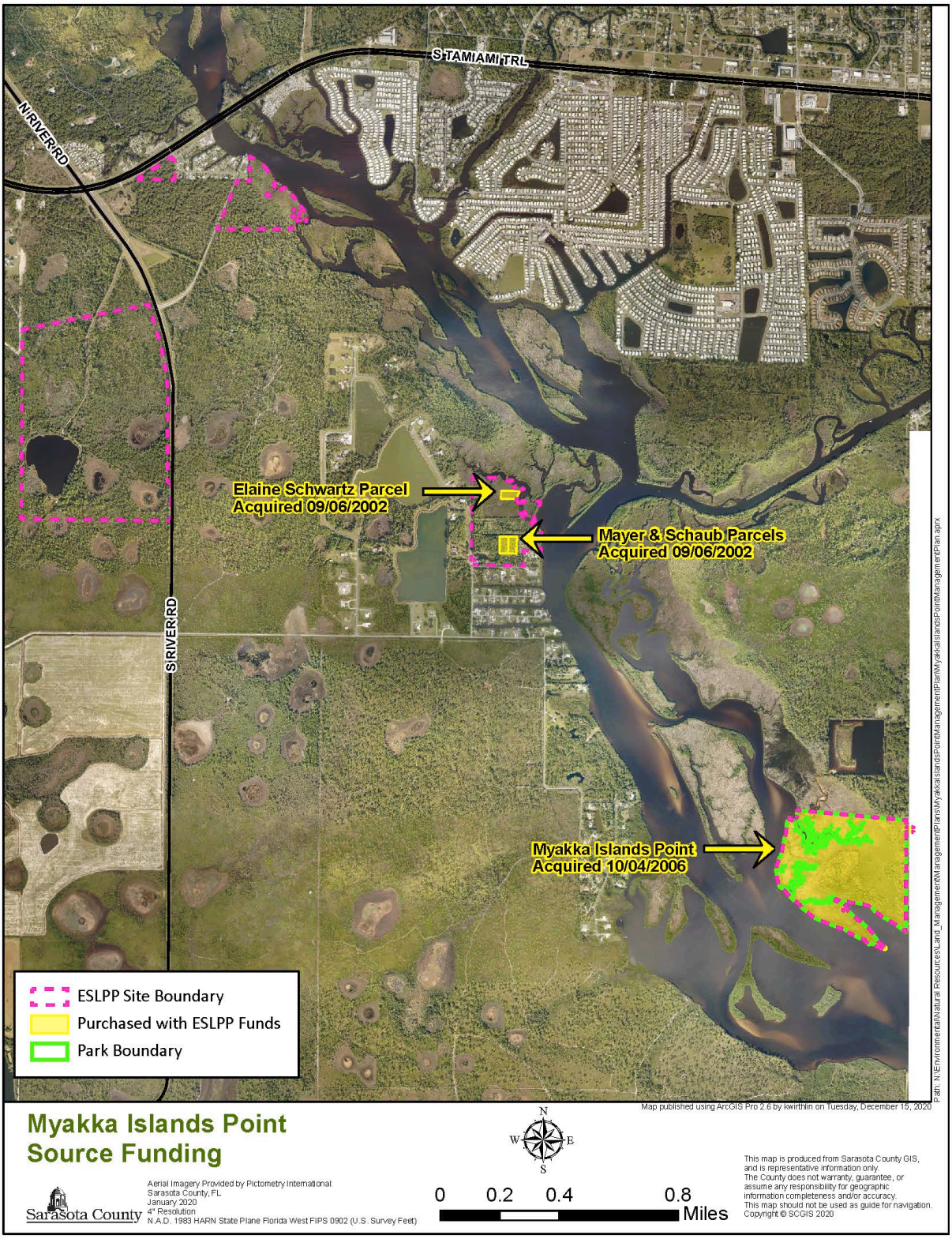


EXHIBIT 3 – ZONING MAP

EXHIBIT 4 – ELEVATION MAP

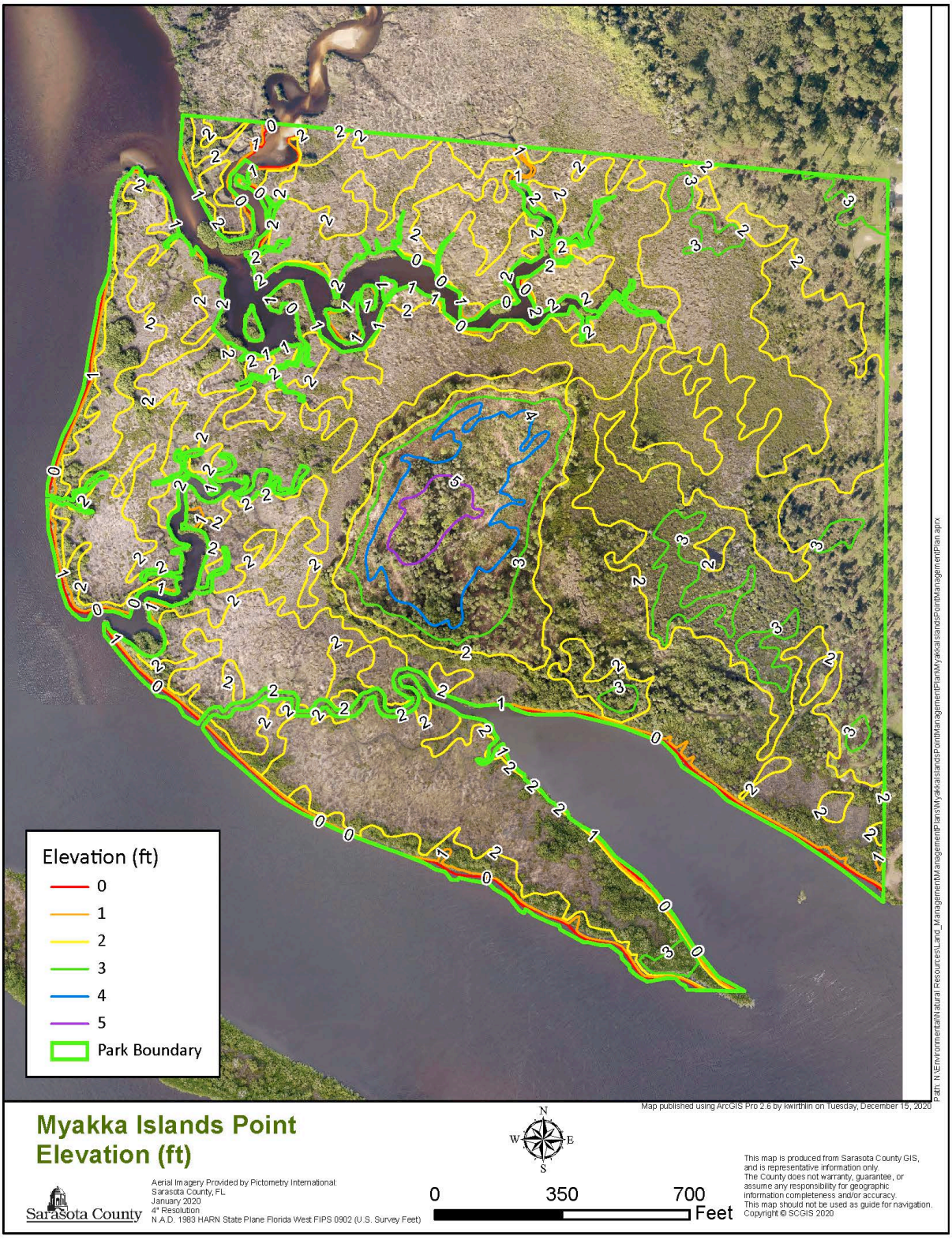


EXHIBIT 5 – SOILS MAP

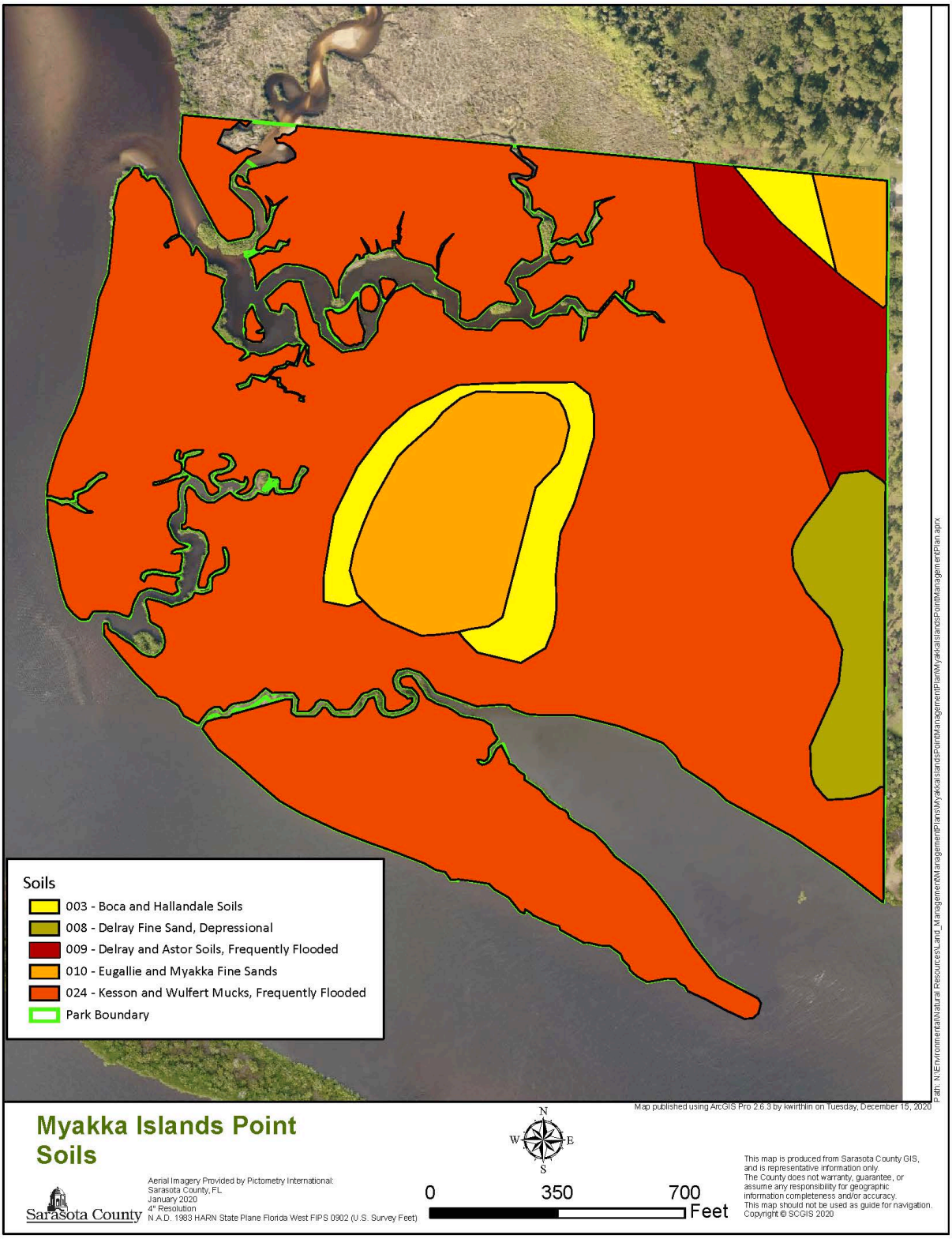


EXHIBIT 6 – FLOOD MAP

EXHIBIT 7A – NATURAL COMMUNITIES MAP

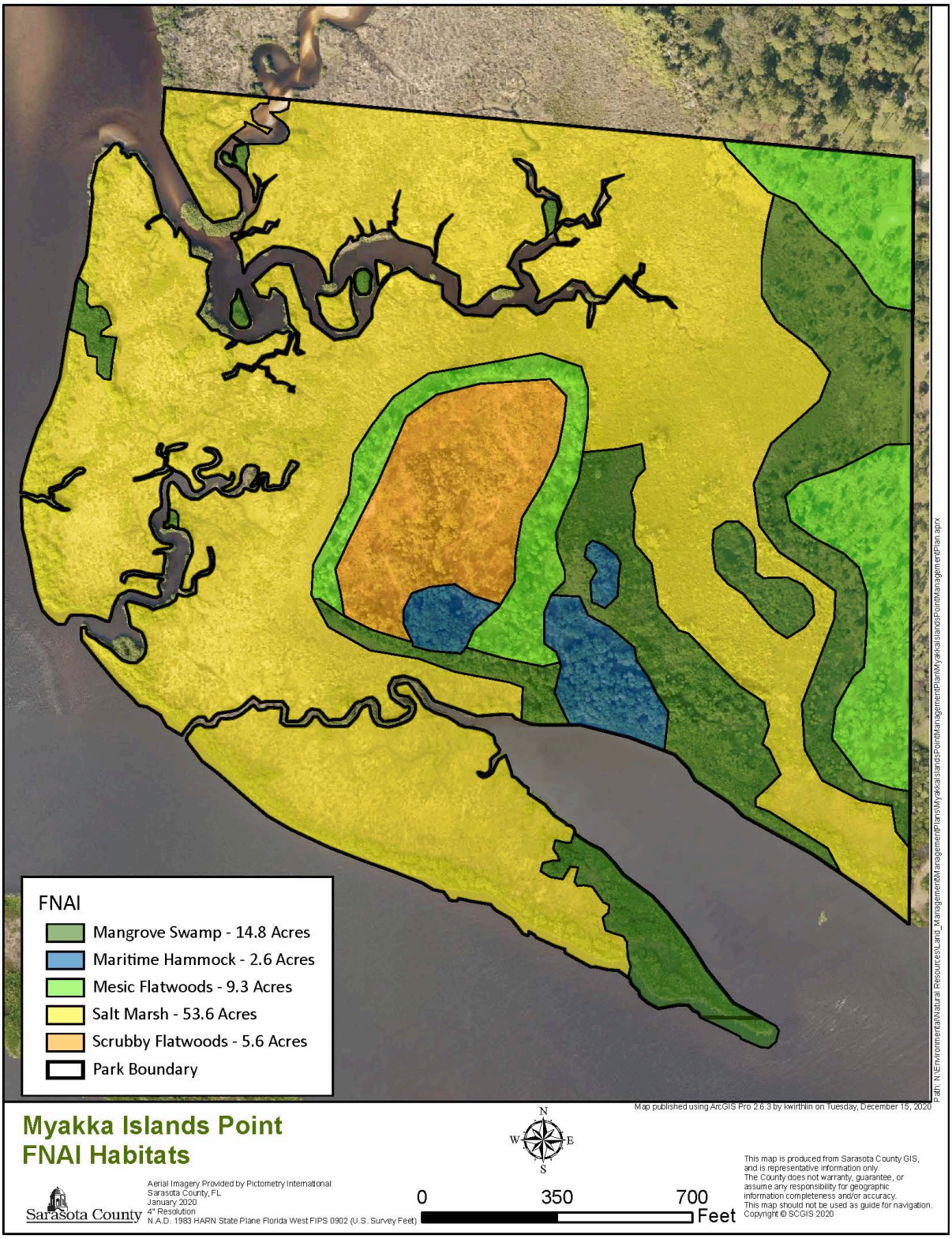


EXHIBIT 7B – HISTORICAL AERIAL

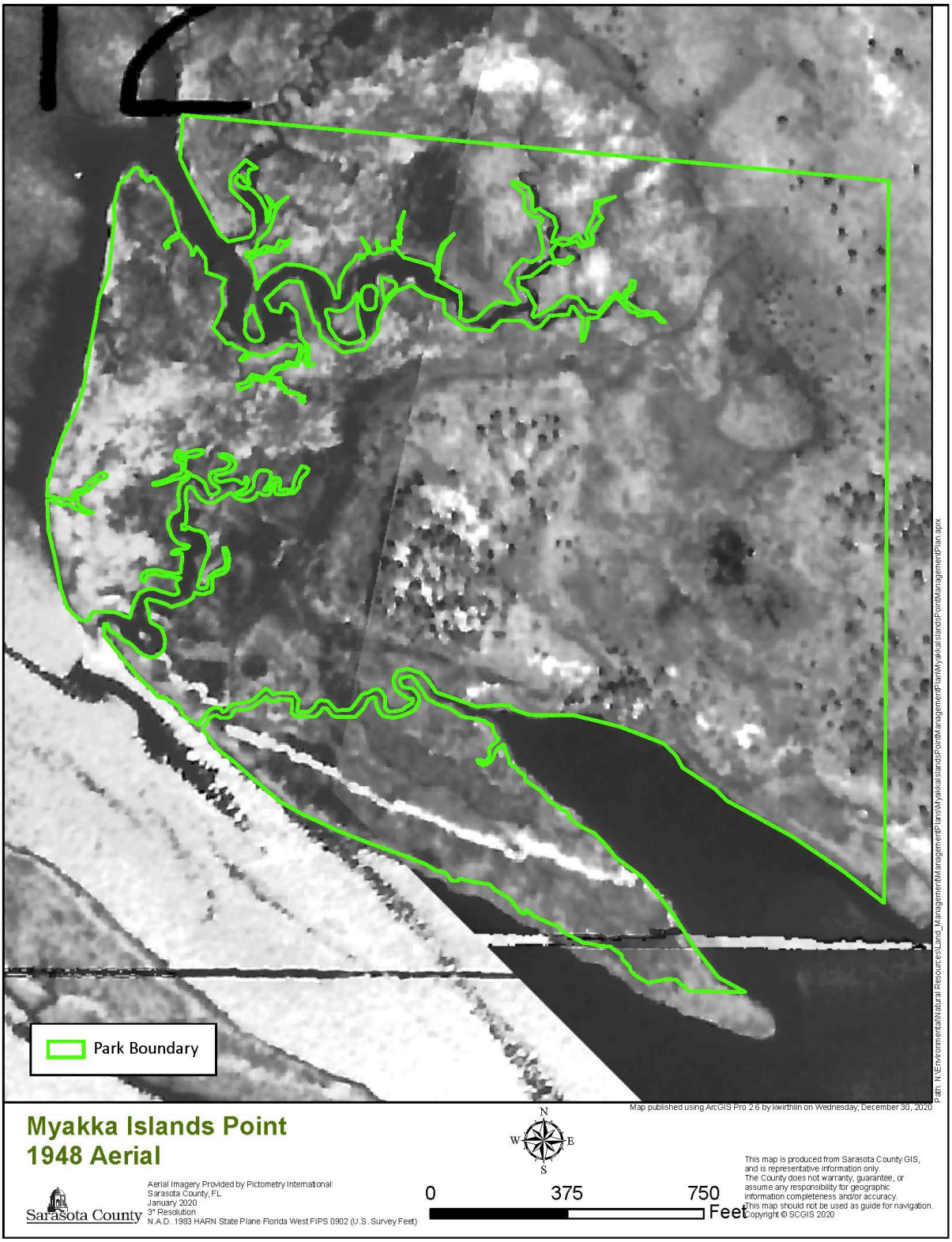


EXHIBIT 8– MANAGEMENT ZONE MAP

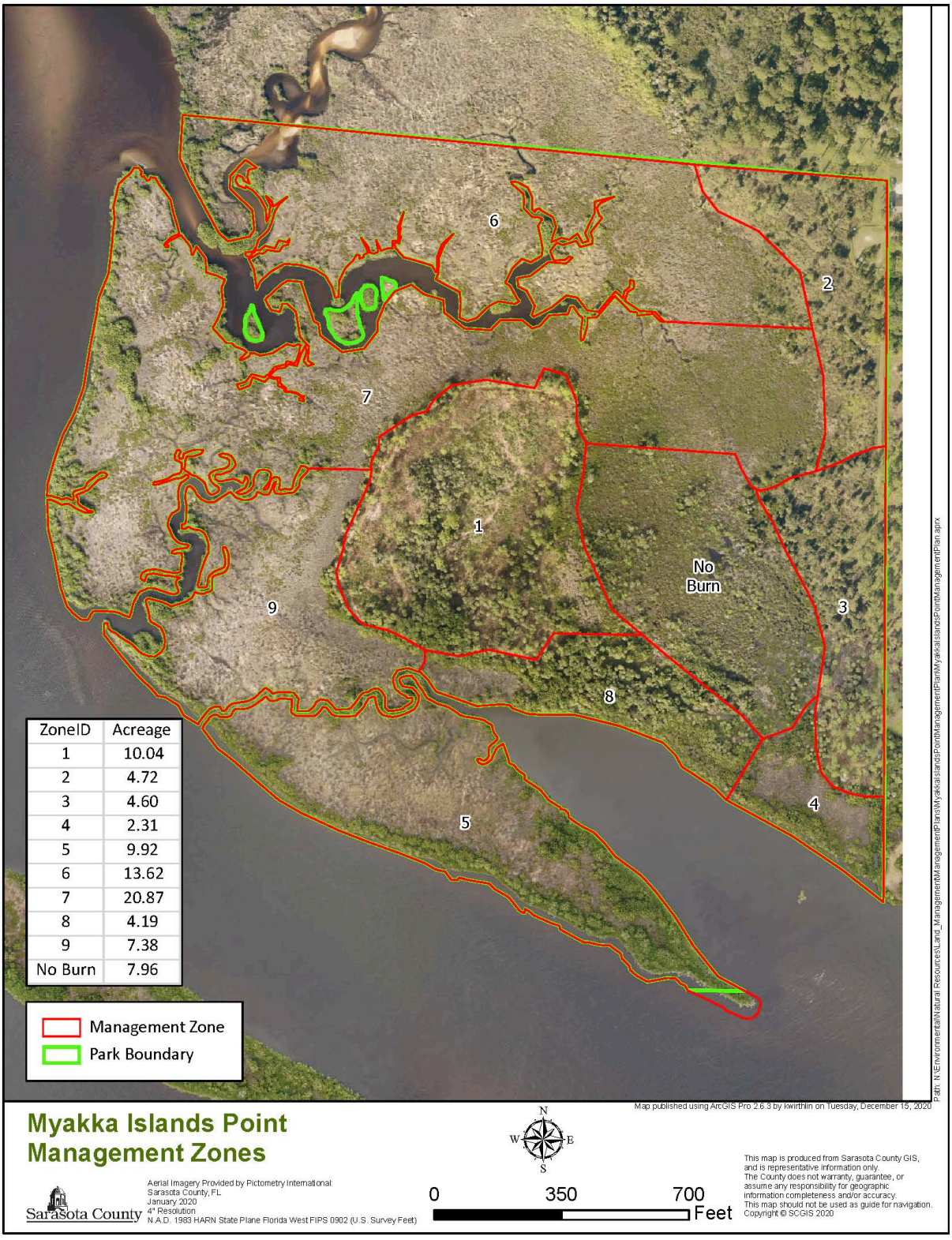
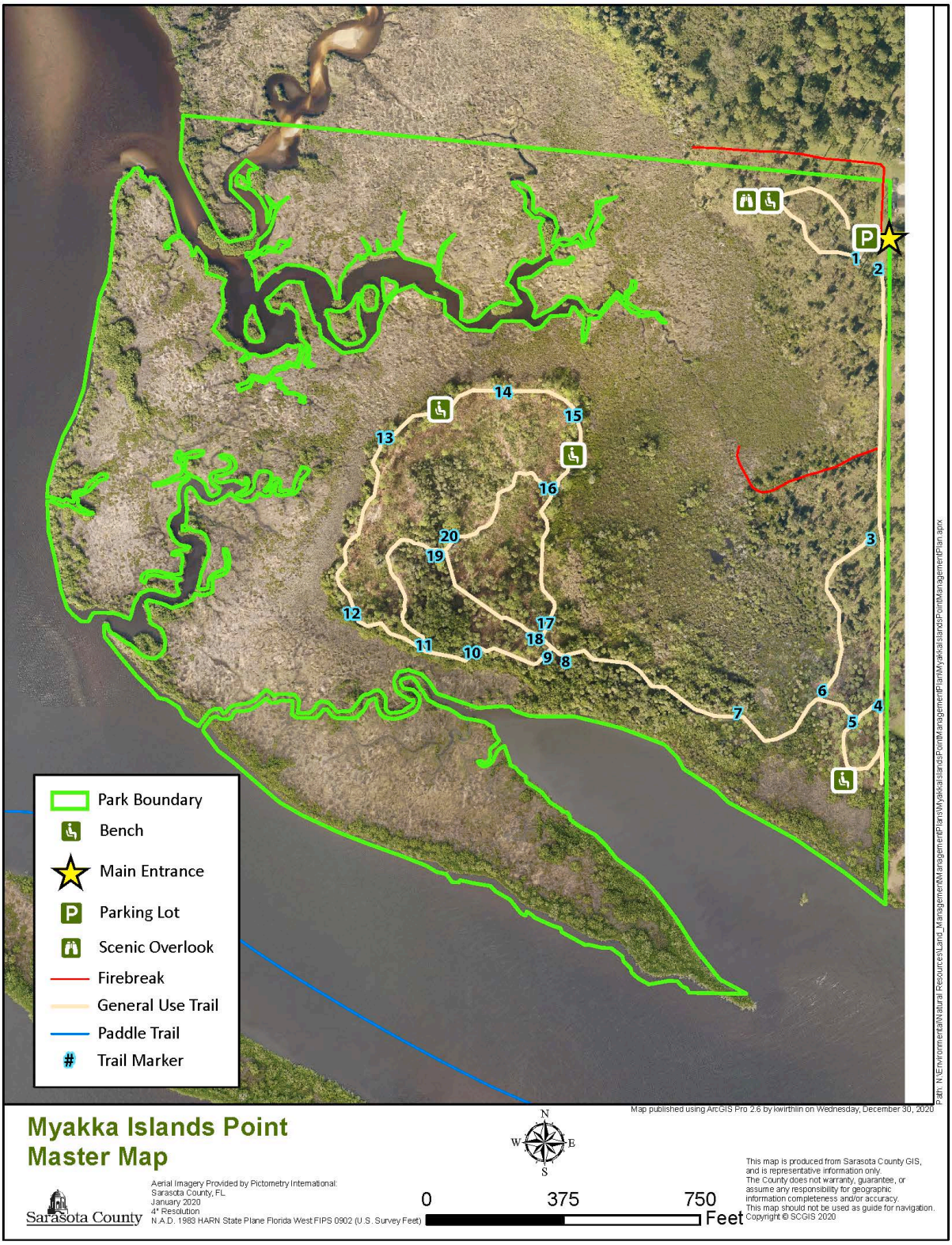


EXHIBIT 9 – FACILITIES, IMPROVEMENTS AND PUBLIC ACCESS AMENITIES MAP



9 APPENDICES

APPENDIX A – ACQUISITION DOCUMENTS

Deeds of Sales

Purchase date 10/04/06

https://secure.sarasotaclerk.com/viewTiff.aspx?intrnum=2006178814

https://secure.sarasotaclerk.com/viewTiff.aspx?intrnum=2006178813

https://secure.sarasotaclerk.com/viewTiff.aspx?intrnum=2006178812

APPENDIX B – LAND USE AGREEMENTS AND EASEMENTS

None.

APPENDIX C – GOVERNING DOCUMENTS AND ORDINANCES

1. The Sarasota County Comprehensive Plan (2016) to provide for the protection and management of the county's native habitats balanced with the need for public resource-based, ecologically benign, and non-consumptive recreation.
   https://www.scgov.net/government/planning-and-development-services/planning-and-zoning/planning/

2. Sarasota County Land Management Master Plan (2004) to provide guidelines to those managing natural areas for conservation or preservation in Sarasota County.
   https://www.scgov.net/Home/ShowDocument?id=1306

3. Ordinance No. 99-004: Adopted 1999, to create 9-member Environmentally Sensitive Lands Oversight Committee to submit proposed protection priority sites to the Board for approval and provide recommendations to the Board on the management, restoration and/or public use of each property; to provide policies for such lands. (Environmental Sensitive Lands Protection Ordinance)
   https://library.municode.com/fl/sarasota_county/codes/code_of_ordinances?nodeId=PTIICOOR_CH54ENNARE_ARTIVENSELA

4. Ordinance No. 98-096: Adopted 1998, to increase up to .25 mill in ad valorem taxes for 20 years and authorize general obligation bonds up to $53,000,000 (maturity deadline date, 31 December 2019), both subject to referendum, to acquire, protect and manage environmentally sensitive lands.

5. Ordinance No. 98-045: Adopted 5 May 1998 with sunset provision 31 May 2005, to prohibit unauthorized removal or destruction of property on parks, beaches, recreation areas, or other public lands with a second-degree misdemeanor penalty for violations. (Use of Parks, Beaches, and Public Land)
   https://library.municode.com/fl/sarasota_county/codes/code_of_ordinances?nodeId=PTIICOOR_CH90PAREPULA_ARTIIUSPABEPULA

6. Ordinance No. 97-024: Adopted 11 March 1997, amending Ordinance 90-01 to include carrotwood, Chinese tallow and beach naupaka as invasive exotic plant species to be controlled. (Sarasota County Invasive Plant Species Ordinance)
   https://library.municode.com/fl/sarasota_county/codes/code_of_ordinances?nodeId=PTIICOOR_CH54ENNARE_ARTXIXEXPL

APPENDIX D – LIST OF PLANT SPECIES

The preliminary plant list has been compiled for the preserve as a partial listing of currently known species. As new species are discovered, their identification will be confirmed according to Wunderlin (1998) and added to the existing species list. Survey information on the occurrence of listed plant species will be forwarded to the Florida Natural Areas Inventory (FNAI) in accordance with their procedures.

Family	Scientific name	Common Name	Status
Acanthaceae	*Avicennia germinans*	black mangrove	
Agavaceae	*Yucca aloifolia*	Spanish bayonet; aloe yucca	
Aizoaceae	*Sesuvium portulacastrum*	shoreline seapurslane	
Amaryllidaceae	*Crinum americanum*	seven-sisters; string-lily	
Anarcardiaceae	*Rhus copallinum*	winged sumac	
Anarcardiaceae	*Schinus terebinthifolius*	brazilian pepper	exotic Cat I
Anarcardiaceae	*Toxicodendron radicans*	eastern poison ivy	
Annonaceae	*Asimina reticulata*	netted pawpaw	
Apiaceae	*Centella asiatica*	spadeleaf	
Apiaceae	*Ptilimnium capillaceum*	mock bishopsweed; herbwilliam	
Apocynaceae	*Asclepias curassavica*	scarlet milkweed; bloodflower	exotic
Apocynaceae	*Asclepias pedicellata*	savannah milkweed	
Apocynaceae	*Echites umbellatus*	devil's potato; rubbervine	
Apocynaceae	*Rhabdadenia biflora*	rubbervine; mangrovevine	
Aquifoliaceae	*Ilex cassine*	dahoon	
Aquifoliaceae	*Ilex glabra*	inkberry; gallberry	
Areceae	*Sabal palmetto*	cabbage palm	
Areceae	*Serenoa repens*	saw palmetto	
Asteraceae	*Ambrosia artemisiifolia*	common ragweed	
Asteraceae	*Baccharis angustifolia*	saltwater falsewillow	
Asteraceae	*Baccharis halimifolia*	groundsel tree; sea myrtle	
Asteraceae	*Bidens alba*	beggarticks; romerillo	
Asteraceae	*Carphephorus corymbosus*	coastalplain chaffhead; florida paintbrush	
Asteraceae	*Cirsium nuttallii*	nuttall's thistle	
Asteraceae	*Conyza canadensis*	canadian horseweed	
Asteraceae	*Eclipta prostrata*	false daisy	
Asteraceae	*Elephantopus elatus*	tall elephantsfoot	
Asteraceae	*Emilia fosbergii*	florida tasselflower	exotic
Asteraceae	*Emilia sonchifolia*	lilac tasselflower	exotic
Asteraceae	*Erechtites hieraciifolius*	american burnweed; fireweed	
Asteraceae	*Erigeron quercifolius*	oakleaf fleabane	
Asteraceae	*Eupatorium capillifolium*	dogfennel	
Asteraceae	*Euthamia caroliniana*	slender flattop goldenrod	
Asteraceae	*Flaveria linearis*	narrowleaf yellowtops	
Asteraceae	*Heterotheca maritima*		
Asteraceae	*Iva frutescens*	bigleaf sumpweed	
Asteraceae	*Mikania cordifolia*	florida keys hempvine	
Asteraceae	*Mikania scandens*	climbing hempvine	
Asteraceae	*Pityopsis graminifolia*	narrowleaf silkgrass	

Asteraceae	*Pluchea odorata*	sweetscent	
Asteraceae	*Pseudognaphalium sp.*	cudweed	
Asteraceae	*Pterocaulon pycnostachyum*	blackroot	
Asteraceae	*Solidago fistulosa*	pinebarren goldenrod	
Asteraceae	*Solidago odora var. chapmanii*	Chapman's goldenrod	
Asteraceae	*Solidago sempervirens*	seaside goldenrod	
Asteraceae	*Sonchus asper*	spiny sowthistle	exotic
Blechnaceae	*Telmatoblechnum serrulatum*	toothed midsorus fern; swamp fern	
Blechnaceae	*Woodwardia virginica*	virginia chain fern	
Bromeliaceae	*Tillandsia recurvata*	ballmoss	
Bromeliaceae	*Tillandsia setacea*	southern needleleaf	
Bromeliaceae	*Tillandsia usneoides*	spanish moss	
Bromeliaceae	*Tillandsia utriculata*	giant airplant; giant wild pine	E-FL
Cactaceae	*Opuntia stricta*	erect pricklypear; shell-mound pricklypear	T-FL
Clusiaceae	*Hypericum cistifolium*	roundpod st.john's-wort	
Clusiaceae	*Hypericum tetrapetalum*	fourpetal st.john's-wort	
Combretaceae	*Conocarpus erectus*	green buttonwood	
Combretaceae	*Conocarpus erectus var. sericeus*	silver buttonwood	
Combretaceae	*Laguncularia racemosa*	white mangrove	
Commelinaceae	*Commelina diffusa*	common dayflower	exotic
Cucurbitaceae	*Melothria pendula*	creeping cucumber	
Cupressaceae	*Juniperus virginiana*	red cedar	
Cyperaceae	*Cyperus ligularis*	swamp flatsedge	
Cyperaceae	*Cyperus odoratus*	fragrant flatsedge	
Cyperaceae	*Cyperus sp.*	flatsedge	
Cyperaceae	*eleocharis sp. or rhynchospora sp.*	spikerush or beaksedge	
Cyperaceae	*Fimbristylis sp.*	fimbry	
Cyperaceae	*Rhynchospora colorata*	starrush whitetop	
Cyperaceae	*Scleria reticularis*	netted nutrush	
Dennstaedtiaceae	*Pteridium aquilinum var. ?*	bracken	
Ebenaceae	*Diospyros virginiana*	common persimmon	
Ericacea	*Lyonia fruticosa*	coastalplain staggerbush	
Ericaceae	*Vaccinium darrowii*	Darrow's blueberry	
Ericaceae	*Vaccinium myrsinites*	shiny blueberry	
Ericaceae	*Vaccinium stamineum*	deerberry	
Fabaceae	*Amorpha herbacea*	clusterspike false indigobush	
Fabaceae	*Canavalia rosea*	baybean; seaside jackbean	
Fabaceae	*Centrosema virginianum*	spurred butterfly pea	
Fabaceae	*Chamaecrista nictitans*	sensitive pea	
Fabaceae	*Crotalaria rotundifolia*	rabbitbells	
Fabaceae	*Dalbergia ecastaphyllum*	coinvine	
Fabaceae	*Desmodium incanum*	zarzabacoa comun	exotic
Fabaceae	*Desmodium sp*	ticktrefoil	
Fabaceae	*Galactia elliottii*	Elliott's milkpea	
Fabaceae	*Macroptilium sp.*	bushbean	exotic
Fabaceae	*Sesbania sp.*		
Fabaceae	*Vicia acutifolia*	fourleaf vetch	
Fabaceae	*Vigna luteola*	hairypod cowpea	

Fagaceae	*Quercus chapmanii*	Chapman's oak	
Fagaceae	*Quercus geminata*	sand live oak	
Fagaceae	*Quercus myrtifolia*	myrtle oak	
Fagaceae	*Quercus virginiana*	live oak	
Juancaeae	*Juncus roemerianus*	needle rush; needlegrass rush; black rush	
Juncaginaceae	*Triglochin striata*	arrowgrass	
Lamiaceae	*Callicarpa americana*	american beautyberry	
Lamiaceae	*Ipomea sp.*		
Lythraceae	*Ammannia sp*	redstem	
Melastomataceae	*Rhexia nuttallii*	nuttall's meadowbeauty	
Myricaeae	*Myrica cerifera*	southern bayberry; wax myrtle	
Myrsinaceae	*Myrsine cubana*	myrsine; colicwood	
Myrtaceae	*Eugenia axillaris*	white stopper	
Oleaceae	*Forestiera segregata*	Florida swampprivet	
Onagraceae	*Ludwigia peruviana*	Peruvian primrosewillow	exotic Cat I
Onagraceae	*Ludwigia sp.*	primrosewillow	
Orchidaceae	*Encyclia tampensis*	florida butterfly orchid	
Orchidaceae	*Habenaria floribunda*	toothpetal false reinorchid; mignonette orchid	
Passifloraceae	*Passiflora suberosa*	corkystem passionflower	
Phytolaccaceae	*Phytolacca americana*	american pokeweed	
Pinaceae	*Pinus elliottii*	slash pine	
Plantaginaceae	*Bacopa monnieri*	herb-of-grace	
Plantaginaceae	*Mecardonia acuminata*	axilflower	
Plantaginaceae	*Scoparia dulcis*	sweetbroom; licoriceweed	
Poaceae	*Andropogon glomeratus*	bushy bluestem	
Poaceae	*Andropogon glomeratus var. glaucopsis*	purple bluestem	
Poaceae	*Andropogon virginicus*	broomsedge bluestem	
Poaceae	*Aristida stricta var. beyrichiana*	wiregrass	
Poaceae	*Dichanthelium sp*	witchgrass	
Poaceae	*Dichanthelium spp (2)*	witchgrass	
Poaceae	*Dichanthelium spp (4)*	witchgrass	
Poaceae	*Panicum virgatum*	switchgrass	
Poaceae	*Paspalum urvillei*	vaseygrass	exotic
Poaceae	*Sorghastrum secundum*	lopsided indiangrass	
Poaceae	*Spartina alterniflora*	saltmarsh cordgrass; smooth cordgrass	
Poaceae	*Spartina bakeri*	sand cordgrass	
Poaceae	*Spartina patens*	marshhay cordgrass; saltmeadow cordgrass	
Poaceae	*Sporobolus indicus*	smutgrass	
Poaceae	*Sporobolus virginicus*	seashore dropseed	
Poaceae	*Tripsacum dactyloides*	eastern gamagrass; fakahatcheegrass	
Polygalaceae	*Polygala rugelii*	yellow milkwort	
Polypodiaceae	*Phlebodium aureum*	golden polypody	
Polypodiaceae	*Pleopeltis polypodioides var. michauxiana*	resurrection fern	
Pteridaceae	*Acrostichum aureum*	golden leather fern	T-FL

Pteridaceae	*Acrostichum danaeifolium*	giant leather fern	
Pteridaceae	*Vittaria lineata*	shoestring fern	
Rhizophoraceae	*Rhizophora mangle*	red mangrove	
Rubiaceae	*Chiococca alba*	snowberry; milkberry	
Rubiaceae	*Diodia virginiana*	Virginia buttonweed	
Rubiaceae	*Galium hispidulum*	coastal bedstraw	
Rubiaceae	*Randia aculeata*	white indigoberry	
Salicaceae	*Salix caroliniana*	Carolina willow; coastalplain willow	
Samolaceae	*Samolus valerandi subsp. parviflorus*	pineland pimpernel; seaside brookweed	
Scrophulariaceae	*Agalinus maritima var. grandiflora*	saltmarsh false foxglove	
Smilaceae	*Smilax auriculata*	earleaf greenbrier	
Solanaceae	*Lycium carolinianum*	christmasberry; carolina desert-thorn	
Solanaceae	*Solanum chenopodioides*	black nightshade	
Verbenaceae	*Phyla nodiflora*	turkey tangle fogfruit; capeweed	
Verbenaceae	*Verbena halei*	texas vervain	
Vitaceae	*Parthenocissus quinquefolia*	virginia creeper; woodbine	
Vitaceae	*Vitis rotundifolia*	muscadine	
Zamiaceae	*Zamia integrifolia*	Florida arrowroot; coontie	

APPENDIX E – LIST OF WILDLIFE SPECIES

The preliminary animal list has been compiled for the Preserve as a partial listing of currently known species.

	FAMILY	SCIENTIFIC NAME	COMMON NAME	STATUS
REPTILES				
	Colubridae	*Coluber constrictor priapus*	southern black racer	
	Dactyloidae	*Anolis carolinensis*	green anole	
	Dactyloidae	*Anolis sagrei*	Cuban brown anole	exotic
	Emydidae	*Pseudemys peninsulatis*	peninsular cooter	
	Hylidae	*Hyla squirrella*	squirrel treefrog	
	Testudinidae	*Gopherus polyphemus*	gopher tortoise	SSC (FWC) C2 (USFWS) S3 (FNAI)
BIRDS				
	Accipitridae	*Buteo lineatus*	red-shouldered hawk	
	Accipitridae	*Haliaeetus leucocephalus*	bald eagle	
	Accipitridae	*Buteo jamaicensis*	red-tailed hawk	
	Anatidae	*Dendrocygna autumnalis*	black bellied whistling duck	
	Anatidae	*Aix sponsa*	wood duck	
	Anatidae	*Anas fulvigula*	mottled duck	
	Anatidae	*Mergus serrator*	red-breasted merganser	
	Anatidae	*Lophodytes cucullatus*	hooded merganser	
	Anhingidae	*Anhinga anhinga*	anhinga	
	Ardeidae	*Ardea herodias*	great blue heron	
	Ardeidae	*Ardea alba*	great egret	
	Ardeidae	*Egretta thula*	snowy egret	
	Ardeidae	*Egretta caerulea*	little blue heron	T (FWC)
	Ardeidae	*Egretta tricolor*	tricolored heron	
	Ardeidae	*Butorides virescens*	green heron	
	Ardeidae	*Nycticorax nycticorax*	black-crowned night-heron	
	Caprimulgidae	*Chordeiles minor*	common nighthawk	
	Caprimulgidae	*Antrostomus carolinensis*	Chuck-will's-widow	
	Cardinalinalidae	*Cardinalis cardinalis*	northern cardinal	
	Cathartidae	*Coragyps atratus*	black vultures	
	Cathartidae	*Cathartes atratus*	turkey vultures	
	Ciconidae	*Mycteria americana*	wood stork	
	Columbidae	*Columbina passerina*	common ground dove	
	Columbidae	*Zenaida macroura*	mourning dove	
	Corvidae	*Cyanocitta crisata*	blue jay	

	Corvidae	*Corvus brachyrhynchos*	American crow	
	Falconidae	*Falco peregrinus*	peregrine falcon	
	Falconidae	*Falco sparverius*	American kestrel	T (FWC); S3 (FNAI)
	Icteridae	*Agelaius phoeniceus*	red-winged blackbird	
	Icteridae	*Molothrus ater*	brown-headed cowbird	
	Icterids	*Quiscalius major*	boat-tailed grackle	
	Mimidae	*Mimus polyglottos*	northern mockingbird	
	Mimidae	*Toxostoma rufum*	brown thrasher	
	Odontophoridae	*Colinus virginianus*	northern bobwhite	
	Pandionidae	*Pandion haliaetus*	osprey	
	Paridae	*Baeolophus bicolor*	tufted titmouse	
	Parulidae	*Setophaga pinus*	pine warbler	
	Phalacrocoracidae	*Phalacrocorax auritus*	double-crested cormorant	
	Picidae	*Melanerpes carolinus*	red-bellied woodpecker	
	Picidae	*Dryocopus pileatus*	pileated woodpecker	
	Picidae	*Dryocopus pubescens*	downy woodpecker	
	Picidae	*Colaptes auratus*	northern flicker	
	Picidae	*Sphyrapicus varius*	yellow-bellied sapsucker	
	Rallidae	*Gallinule galeata*	common gallinule	
	Rallidae	*Fulica americana*	American coot	
	Strigidae	*Bubo virginianus*	great horned owl	
	Strigidae	*Strix varia*	barred owl	
	Threskiomithidae	*Eudocimus albus*	white ibis	
	Threskiomithidae	*Plegadis falcinellus*	glossy ibis	
	Threskiomithidae	*Platalea ajaja*	roseate spoonbill	
	Troglodytidae	*Thryothorus ludovicianus*	Carolina wren	
	Troglodytidae	*Archilocus colubris*	ruby-throated hummingbird	
	Turdidae	*Turdus migratorius*	American robin	
	Tyrannidae	*Myiarchus crinitus*	great-crested flycatcher	
MAMMALS				
	Dasypodidae	*Dasypus novemcinctus*	nine-banded armadillo	naturalized
	Didelphidae	*Didelphis virginiana*	opossum	
	Felidae	*Lynx rufus*	bobcat	
	Mustelidae	*Lontra canadensis*	river otter	
	Procyonidae	*Procyon lotor*	raccoon	
	Sciuridae	*Sciurus carolinensis*	grey squirrel	

KEY TO WILDLIFE LISTED STATUS		
FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION (FWC) DESIGNATIONS	E	endangered
	T	threatened
	SSC	species of special concern
UNITED STATES FISH AND WILDLIFE SERVICE (USFWS) DESIGNATIONS	E	endangered
	T	threatened
	C2	candidate for listing with some evidence of vulnerability, but for which not enough information exists to justify listing
CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA (CITES) DESIGNATIONS	I	Appendix I species
	II	Appendix II species
FLORIDA NATURAL AREAS INVENTORY (FNAI) DESIGNATIONS	S2	imperiled within the state because of rarity (6 - 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor
	S3	either very rare and local throughout its range (21 - 100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction because of other factors
	S4	apparently secure within the state (may be rare in parts of state)

APPENDIX F – ANNUALIZED COST SCHEDULE

RESOURCE MANAGEMENT	Units	Cost per unit
prescribed fire preparation	per mile	$ 250.00
prescribed fire	per acre	$ 40.00
prescribed fire monitoring	per hour	$ 50.00
integrated pest management surveying	avg per acre	$ 30.00
integrated pest management treatment	avg per acre	$ 125.00
hydrologic restoration	per mile	$ 8,000.00
mechanical vegetation management	per acre	$ 150.00
cultural resource management	per site	$ 500.00
ADMINISTRATION and OPERATIONS		
salary of land manager	per hour	$ 47.00
salary of supervisor	per hour	$ 50.00
salary of administrative assistant	per hour	$ 30.00
annual cost of computers, printers, phone	per year	varies
utilities	per year	varies
offices	per year	varies
security	per year	$ 13,000.00
fleet	per year	$ 4,000.00
MAINTENANCE		
fencing - board	1 linear foot	$ 29.00
fencing - wire	1 linear foot	$ 12.00
trail markers	1 marker	$ 16.00
benches	1 bench	$ 160.00
tools	1 site	$ 4,000.00
parking lots - aggregate material	cost per parking spot	$ 60.00
parking lots - grass	cost per parking spot	$ 10.00
road repairs	1/2 mile	$ 20,000.00
restrooms	cost per toilet	$ 750.00
portable toilets	cost per toilet	$ 1,440.00
grills	1 grill	$ 400.00
tables	1 table	$ 250.00
pavilions	square foot	$ 1.00
camp sites	per campsite	$ 300.00
grounds mowing (x12 events per year)	per acre	$ 600.00
power washing	per hour	$ 100.00
building maintenance	per structure	$ 500.00
RECREATION and VISITOR SERVICES		
kiosks and signs - replacement costs	per unit	$ 1,000.00
brochures	per brochure	$ 5,000.00

events (Firefest)	per event	$	3,500.00
visitors center (staffing and contents)	per year	$	4,000.00
camping	per campsite	$	200.00
permitted events	per event	$	320.00

Notes:

1. Current Loaded Salary is based on FY 21.
2. Assumed 2.5% multiplier for salary.
3. Divided salary total hours by 2080 for average hourly rate.