

Thousand Islands Conservation Area Management Plan

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EXECUTIVE SUMMARY

The Thousand Islands Conservation Area Management Plan incorporates multiple islands into one sanctuary management area. The Sanctuary is within the Brevard County Environmentally Endangered Lands Program's Central Region. The Thousand Islands Conservation Area can be seen in [Figure 1](#).

The Thousand Islands Conservation Area is part of the Sanctuary network established by the Environmentally Endangered Lands Program in Brevard County. As stated in the Environmentally Endangered Lands Program's **Sanctuary Management Manual**, one of the goals of the program is to acquire environmentally sensitive lands as a first step "towards long-term protection of essential natural resources, open space, green space, wildlife corridors and maintenance of natural ecosystem functions." The program also establishes a network of public lands to provide passive recreation and environmental education programs to Brevard County residents and visitors.

The City of Cocoa Beach submitted an application to the Florida Communities Trust (FCT) program to acquire this property in June 2001 and again in 2006. The City requested that the Environmentally Endangered Lands Program be the recipient of grant funds from FCT and become the managing entity. The Crawford parcel was acquired in 2006, and the Reynolds parcel was acquired in 2008. Acquisition partners include Brevard County, the City of Cocoa Beach, the Florida Communities Trust (Project number 06-080-FF6) and The Conservation Fund. No further acquisitions are planned for the site. The Environmentally Endangered Lands Program and the City of Cocoa Beach will share responsibility for developing the final approved management plan. The Thousand Islands Conservation Area consists of acreage titled to Brevard County. All islands within the Thousand Islands Conservation Area boundary are managed by the Brevard County Environmentally Endangered Lands Program.

The original management plan was developed to ensure that the Project Site would be managed in accordance with the FCT Grant Award Agreement and in furtherance of the grant application.

The Project Site is adjacent to the City of Cocoa Beach's Ramp Road Park as well as adjacent to mangrove islands owned by the State of Florida. West of the project site are the open waters of the Banana River, while east of the site is the developed area of the City of Cocoa Beach. The optimal management boundary for this site can be seen in [Figure 2](#). These additional conservation lands and those of surrounding existing conservation areas, will provide wildlife areas within the Banana River Lagoon.



Banana River Lagoon

Thousand Islands Conservation Area Site Map

 Thousand Islands Conservation Area Boundary

0 475 950 1,900 Feet



Figure 1 ([Long Description – 1](#))

*Map current as of December 2022



Thousand Islands Conservation Area Optimal Boundary Map

*Shapefiles and map are current as of November 2020

Figure 2 ([Long Description – 2](#))

The Environmentally Endangered Lands Program acquired these properties using Environmentally Endangered Lands funding, the City of Cocoa Beach funding, the Conservation Fund, and funds through the Florida Communities Trust.

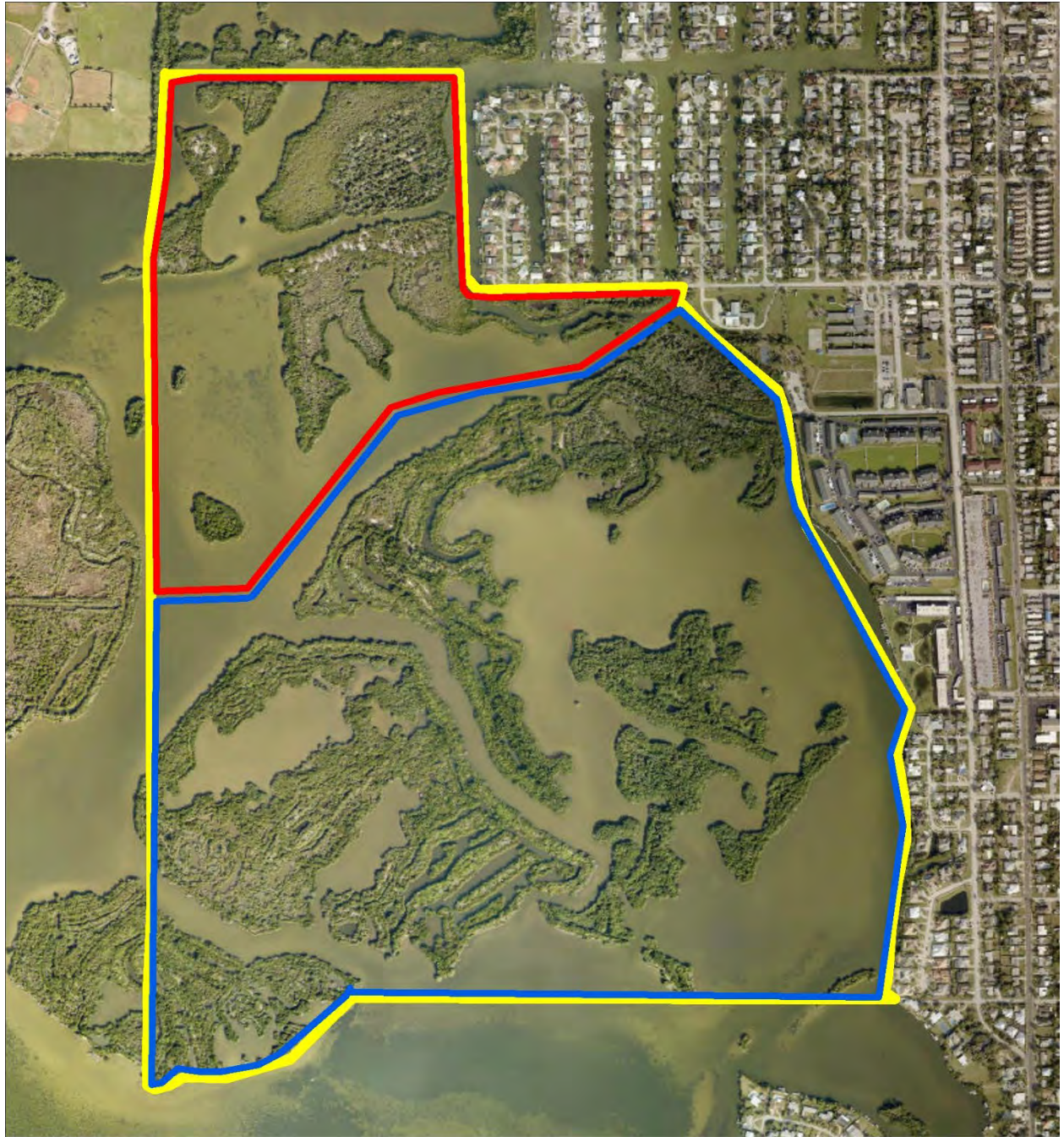
The purchase of the Thousand Island Conservation Area totaled \$4.3 million. The Crawford portion was purchased for \$1.2M of which Cocoa Beach paid \$50,000.00 and Florida Communities Trust contributed \$204,837.75. The Reynolds portion was purchased for \$3.1M of which Cocoa Beach contributed \$100,000.00 and Florida Communities Trust paid \$773,502.30. The Conservation Fund paid \$10,000.00 in total. The Brevard County Environmentally Endangered Lands Program paid the remaining balance. Purchase boundaries can be seen in **Figure 3**.

The Brevard County Environmentally Endangered Lands Program has been funded through three referendums in 1990, 2004 and 2022. In addition to lands acquired with the referendum funding, additional lands have been donated through private development mitigation, interagency land transfers, and state funded projects such as Florida Forever and Florida Communities Trust (FCT).

The Thousand Islands Conservation Area site is open to the public during daylight hours where public access can be safely established and will provide opportunities for scientific research and guided or self-guided interpretive tours featuring the site's ecological diversity. The Brevard County Environmentally Endangered Lands Program does not allow pets within the Sanctuary boundaries due to the potential risk of pet diseases being transferred to wildlife populations and per Brevard County Ordinance 78-116(b). There are no designated camping areas within the Sanctuary boundaries.

Adjacent Conservation Lands

The North Thousand Islands are titled to the State of Florida but is managed by the City of Cocoa Beach through an agreement that expires in 2044. The City's primary goals are to provide habitat for migratory birds, protection of threatened and endangered species, to maintain wildlife diversity, and to provide wildlife-dependent recreational opportunities.



Thousand Islands Conservation Area Purchase Map

-  Sanctuary Boundary
-  Crawford Purchases
-  Reynolds Purchases

*Map is current as of August 2021

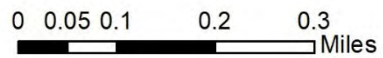


Figure 3 ([Long Description – 3](#))

The islands included within The Thousand Islands Conservation Area Management Plan boundary will be managed as a part of the Environmentally Endangered Lands Program's Central Region Management Area. The primary management goals for these islands are the conservation and restoration of ecosystem function. The collection and documentation of natural and cultural resource data are also important management goals. Public access to these tracts, where possible, will encourage awareness of the County's natural assets, foster a greater understanding of the balance between access and non-consumptive use of the sites' resources, and promote environmental stewardship. This will benefit both the local community and the Environmentally Endangered Lands Program. The Environmentally Endangered Lands Program will provide educational opportunities to the Brevard County school system as well as to homeschooling parents where possible (as staff levels allow) and promote the understanding and appreciation of the unique and valuable resources available in Brevard County and thereby promote long-term preservation.

As described in the Environmentally Endangered Lands Program's **Sanctuary Management Manual**, the Thousand Islands Conservation Area is a Category 2 site. This means that these sites will receive minimal capital improvements that may include limited trails, footbridges, and/or boardwalks. Other management goals include the provision of passive recreation and environmental education.

There are no water resources within the Thousand Islands Conservation Area boundary that are designated as Outstanding Florida Waters. The Sanctuary falls just outside the Banana River Aquatic Preserve and is not a Designated Area of Critical State Concern by the Florida Department of Environmental Protection. The Outstanding Florida Waters Letter can be found within **Appendix B**.

A detailed passive recreation map of the Sanctuary can be seen in **Figure 4**. This map details the trails, trail types, kiosks, and overlooks. Parking is designated at the Ramp Road boat launching site. The parking area is managed by the City of Cocoa Beach.

INTRODUCTION

In the 1990, 2004 and 2022 referendums, Brevard County voters approved funding for the Environmentally Endangered Lands Program. The Program's Mission is to "Protect and preserve biological diversity through responsible stewardship of Brevard County's natural resources." The Program Vision Statement is as follows:

"The Environmentally Endangered Lands Program acquires, protects and maintains



Thousand Islands Conservation Area Trail Map

- Sanctuary Boundary
- Sanctuary Kiosks
- Designated Kayak Trail
- +— 4th Street Trail
- North Crawford Trail
- +— Overlook Trail
- Hiking Trails

0 380 760 1,520 Feet



*Shapefiles and map are current as of November 2020

Figure 4 ([Long Description – 4](#))

environmentally endangered lands guided by scientific principles for conservation and the best available practices for resource stewardship and ecosystem management. The Environmentally Endangered Lands Program protects the rich biological diversity of Brevard County for future generations through acquisition and management. The Environmentally Endangered Lands Program provides passive recreation and environmental education opportunities to Brevard's citizens and visitors without detracting from the primary conservation goals of the program. The Environmentally Endangered Lands Program encourages active citizen participation and community involvement."

The Program established a conceptual framework and funding mechanism to implement an Environmentally Endangered Lands Sanctuary Network in Brevard County. The Environmentally Endangered Lands Program Sanctuary Network represents a collection of protected natural areas that form a regional conservation effort focused upon the protection of biological diversity. Within the Countywide Environmentally Endangered Lands Sanctuary Network, management areas are geographically defined within Brevard County.

A full-time sanctuary manager (Regional Land Management Superintendent) will coordinate all management efforts on Environmentally Endangered Lands Sanctuaries within the regional management area. Environmentally Endangered Lands Sanctuaries in the Central Regional Management Area include Pine Island Conservation Area, The Johnson Property, Kabboord Wildlife Sanctuary, Ulumay Wildlife Sanctuary, Thousand Islands Conservation Area, Cruickshank Scrub Sanctuary, and Capron Ridge Sanctuary. As outlined in the **Environmentally Endangered Lands Sanctuary Management Manual**, the Environmentally Endangered Lands Program will adopt and implement an ecosystem approach to environmental management. Ecosystem management is defined as an integrative, flexible approach to the management of natural resources. Key themes of ecosystem management include the following:

Adaptive Management

Natural areas must be managed in the context of the landscape in which they exist and based on scientific knowledge. Resource managers must adapt to continuing advances in the scientific understanding of ecosystems and changing environmental and human influences on the resources.

Partnerships

Interagency and private sector partnerships are essential to manage and protect ecosystems. Natural resource management is complex and requires multidisciplinary skills and experiences.

Holistic Approach

Ecosystem management includes the maintenance, protection and improvement of both natural and human communities. This systems approach to management considers the "big

picture" of natural resource protection, community economic stability and quality of life.

Land management issues, such as fire management, protection and restoration of natural hydrologic cycles, threatened and endangered species, and removal of invasive exotics must be integrated with issues, such as provisions for public access and levels of human use. The integration of ecosystem protection and human needs should combine to form the foundation of an effective ecosystem management strategy. In situations where conflicts arise between site conservation goals and public use interests, the conservation goals and objectives for which the site was acquired will remain the priority for decision-making and conflict resolution.

Principals of Conservation

The Sanctuary Management Manual also establishes a general framework for management of specific sites and establishes ten Principles of Conservation. These principles are designed to achieve the following:

- Maintain all sites in a natural state and/or restore sites to enhance natural resource values.
- Protect natural resource values by maintaining biological diversity and using conservation as a primary goal for decision-making.
- Balance human use with the protection of natural resources.
- Apply the most accurate scientific principles to strategies for conservation.
- Collect and use the most accurate data available for developing site management plans.
- Consider the interests and values of all citizens by using scientific information to guide management policy making.
- Promote effective communication that is interactive, reciprocal, and continuous with the public.
- Promote the value of natural areas to Brevard County residents and visitors through the maintenance of the quality of resource values, public services, and visitor experiences.
- Promote the integration of natural resource conservation into discussions of economic development and quality of life in Brevard County.
- Provide a responsible financial strategy to implement actions to achieve long-term conservation and stewardship goals.

Principle 1

Maintain all sites in a natural state and/or restore sites to enhance natural resource values pursuant to management plans as approved by the Board of County Commissioners. All sites in the EEL Sanctuary Network shall be maintained in a desirable natural state or restored to enhance natural resource values for species, natural communities and ecosystems.

The EEL Program shall:

- a. Make management decisions recommendations to ensure that natural resource values are maintained, restored or enhanced as natural assets for future generations.

Principle 2

Protect natural resource values by maintaining biological diversity and using conservation as a primary goal for decision-making. The EEL Program will strive to maintain biological diversity at genetic, species, natural community, and ecosystem levels to secure present and future natural resource values and options.

The EEL Program shall:

- a. Make resource management decisions with the understanding that resource conservation was the primary goal of the voter-approved referenda (1990, 2004, and 2022).
- b. Manage and monitor total impacts on ecosystems and sites within the natural areas network.
- c. Work to preserve essential natural features of the ecosystem.
- d. Identify natural communities, species and processes that are particularly important to the maintenance of an ecosystem, and make special efforts to protect them.
- e. Manage and monitor in ways that do not further fragment natural areas.
- f. Maintain, mimic or enhance patterns of natural processes; including disturbances at scales appropriate to the natural system.
- g. Avoid disruption of food webs, especially removal of top or basal species.
- h. Avoid significant genetic alteration within populations.
- i. Recognize that biological processes are often nonlinear, are subject to critical thresholds and synergism's, and that these issues must be identified, understood and incorporated into management strategies.
- j. Recognize that events, like hurricanes, damaging wildfires, or epidemics are unpredictable and potentially devastating to species viability. The EEL sanctuary network should be developed with consideration for the probability of uncontrolled natural events.

Principle 3

Balance human access to EEL Sanctuary sites and public use with the protection of natural resources.

The EEL Program shall:

- a. Recognize that an acceptable balance can be attained between resource protection and public use. Land management practices and sanctuary development plans will use spatial, temporal, visual or auditory controls (like elevated boardwalks, scenic overlooks, specific trail location and educational signage) to provide appropriate public access and use, rather than to exclude the public from EEL sanctuaries.

- b. Recognize that the total impact of humans on natural resources is the product of human population size, per capita consumption, extent of public access, incidental taking of habitats, and habitat degradation caused by human activities.
- c. Recognize that public interest in recreation on protected natural areas is high and that public interest is projected to increase over time.
- d. Take appropriate actions to successfully meet the conservation needs of a natural area site with provisions for responsible public access and use.
- e. Recognize that natural resource conservation by private landowners on private lands is an important part of the statewide conservation effort in Florida and Brevard County.

Principle 4

Apply the best most accurate current scientific principles to strategies for conservation. Strategies to conserve and manage living resources should be formulated and implemented using the best available scientific and natural resource management principles. The full range of knowledge and skills from both the natural and social sciences is required to achieve a balance between resource conservation and human use.

The EEL Program shall:

- a. Identify the local and regional pool of scientific and resource management experts and provide opportunities for their active participation with the EEL Selection and Management Committee and EEL Staff.
- b. Establish formal financial partnerships through contracts with interested scientific and land management agencies and institutions, as approved by the Board of County Commissioners, to apply local, regional and national expertise to EEL Program initiatives.
- c. Recognize that science is a vital part of natural resource conservation. Science can be used to describe resource inventories, understand natural processes, and provide predictive capabilities.
- d. Identify a local and regional pool of individuals recognized for their expertise and knowledge in social sciences (i.e., education, recreation, individuals with special needs, art, literature, tourism, etc.). Encourage their active participation in the EEL Program projects through active participation in the EEL Volunteer Programs.
- e. Encourage EEL Staff to consult with a wide range of knowledgeable individuals and institutions recognizing that all conservation issues have biological, economic, and social implications. Ignoring any of these may lead to conflicts that will impair effective conservation.
- f. Encourage public participation in land management and stewardship through active community involvement in EEL sanctuary programs and projects.

Principle 5

Collect and use the best data available for developing site management plans. Resource inventories, ecological surveys, and land management assessments should precede and guide

the provision of public access and use. The information should be made available for critical scientific and public review.

The EEL Program shall:

a. Develop Interim Management Plans within 90 days and Management Plans within one year after the acquisition of a management unit or sanctuary site. In cases where a management unit may be composed of multiple properties, a management plan would not be required until one year after all the essential properties are assembled. Interim Management Plans can be developed for individual management units within large multi-parcel projects.

In cases where property ownership is to be transferred to the State of Florida Board of Trustees of the Internal Improvement Trust Fund as part of Multi-Party Acquisition Agreements in the Conservation and Recreational Lands (CARL) Program, Management Plans or Interim Management Assignment Letters will be completed within one year of the property transfer to the State as directed in §259.032 F.S. and §253.034 F.S. The EEL Program will comply with future amendments to the Florida Statutes and state land management policies as applicable to joint CARL Projects.

b. Prepare Interim Management Plans, Management Plans or Interim Management Assignment Letters to the Board of County Commissioners for review and ratification to allow for public comment and discussion.

c. Identify uncertainties and assumptions regarding natural history, size and productivity of site resources.

d. Identify major ecological and sociological uncertainties and assumptions regarding resource uses and visitor impacts.

e. The EEL Program shall ensure that the level of resource use does not risk degradation of the resource nor allow expansion of public use at rates that exceed the known vulnerability of the resource and its relationship with other ecosystem components.

f. Evaluate human use impacts through on-going visitor impact analyses. The results of these observations shall guide all resource management decisions.

g. Encourage private sector - public sector partnerships to implement site management or specific programs so that: 1. the partnership shall not result in the exclusion of the public from acceptable resource uses defined in the Management Plan, and 2. the partnership shall result in a net economic and/or resource management benefit to the EEL Program, the sanctuary site and the citizens of Brevard County.

Principle 6

Consider the interests and values of all citizens by using scientific information to guide management policy making.

The EEL Program shall:

a. Whenever possible, provide positive incentives to the users of living resources that correspond to the values those resources have to society. Ensure that these incentives

promote conservation, and constrain uses that do not promote, or are inconsistent with, the conservation objectives of the EEL Program.

- b. Implement conflict resolution mechanisms to minimize conflicts over resource uses among competing stakeholders.
- c. Encourage the integration of science and best management practices with policy making, independent of resource users and special interests.
- d. Require that policy makers and resource managers be held accountable for the use of the best possible data and analysis in establishing policy and management decisions.
- e. Use the criteria and procedures in the EEL Land Acquisition Manual and EEL Sanctuary Management Manual to guide policy and conservation decisions.
- f. Ensure that formal institutions responsible for resource management decisions have temporal and spatial perspectives consistent with the ecological character of the resources and organizational structures.

Principle 7

Promote communication that is interactive, reciprocal and continuous.

The EEL Program shall:

- a. Ensure that communication is provided to the general public and is based on mutual respect and sound information.
- b. Require external and internal review of all reports and analyses to verify objectivity and results.
- c. Inform and motivate the public regarding conservation, land stewardship and responsible use of the EEL Program natural areas network.
- d. Encourage inter-disciplinary communication to inform decision makers, land managers and the general public.
- e. Promote enhanced public understanding and awareness of Brevard's rich biological diversity through programs that support public use of the EEL Program Sanctuary Network, environmental education and responsible nature-based tourism.

Principle 8

Promote the value of natural areas to Brevard County residents and visitors through the maintenance of the quality of resource values, public services and visitor experiences. The environmental and economic values of the EEL Program sanctuary network depends upon high quality natural resources and the provision of exceptional visitor experiences.

The EEL Program shall:

- a. Develop public-use facilities and programs that create a positive visitor experience.
- b. Hire sufficient EEL Program staff or contract outside land management services as approved by the Board of County Commissioners to ensure that conservation objectives are achieved and quality passive recreation and environmental education are provided.

- c. Implement a long-term economic plan that provides sufficient funding for resource protection, public access and environmental education.
- d. Encourage the development of programs that provide natural or human transportation corridors or connections to the surrounding landscape and community. The EEL Program shall ensure that all public access points or trails are compatible with the conservation goals of EEL Sanctuary sites. Examples of connectors include greenways, pedestrian trails, bicycle paths, horse trails and wildlife corridors.
- e. Ensure that Sanctuary site design and development contribute to environmental and cultural protection and interpretation.
- f. Integrate cultural, archaeological, historical and architectural considerations into site protection, site design and interpretive programs.
- g. Develop environmental education programs with support from local and regional educators, education programs, nature-based tourism interests, non-profit groups, private corporations and other interested organizations.

Principle 9

Promote the integration of natural resources conservation into community discussions of economic development and quality of life.

The EEL Program shall:

- a. Initiate and enhance communication and cooperation with local governments, chambers of commerce, economic development councils, tourist development councils, school boards and other community programs within Brevard County and Florida.
- b. Actively participate in local, State and national discussions and planning efforts to expand and promote responsible nature-based tourism in Florida.
- c. Recognize that the EEL Sanctuary Network is an integral part of the local community and Brevard County. Public use of a sanctuary site and development within a site shall be compatible with the interests of the local community.
- d. Encourage public recognition and understanding of the value of history, natural resource protection and human community development to promote a common vision, pride and respect for Brevard County and Florida.
- e. Encourage public sector/private sector partnerships for conservation, education and nature-based tourism.

Principle 10

Provide a responsible financial strategy to support implementation of management actions to achieve long-term conservation and stewardship goals.

The EEL Program shall:

- a. Recognize that conservation, passive recreation and environmental education are long-term EEL Program responsibilities that require a financial commitment extending beyond the sunset date of the EEL Program ad valorem revenue collection.

- b. Identify and implement a financial strategy that provides sufficient funds for conservation, passive recreation and environmental education programs.
- c. Provide a long-term financial plan to the Board of County Commissioners that allows the EEL Program to be economically self-sufficient. The plan shall decrease the future need for increased taxes above and beyond the 1990 EEL Referendum.
- d. Acknowledge that all lands acquired by the EEL Program will require varying levels of management and experience varying levels of public use.

In addition to the conservation principles, this management plan provides specific goals, strategies, and actions to guide management of the Sanctuaries in terms of the objectives of the Environmentally Endangered Lands Program. The plan is divided into the following sections:

Executive Summary

This section identifies the location, size, general natural resource features, and primary management goals for the site.

Introduction

A brief introduction to the Environmentally Endangered Lands Program as well as a description of the structure of the management plan.

Site Description and Location

Provides a detailed site location and description.

Natural Resource Descriptions

Includes physical resources (climate, geology, topography, soils, and hydrology), biological resources (ecosystem function, flora, fauna, special concern species, and biological diversity), and cultural resources (archeological, historical, land-use history, and public interest).

Factors Influencing Management

Includes natural trends, human-induced trends, external influences, legal obligations and constraints, management constraints, and public access and passive recreation.

Management Action Plans

Include specific goals, strategies and actions.

Financial Consideration

This section discusses funding mechanisms and projected management costs.

Bibliography

Citation of original research and publications used to develop the Management Plan.

Appendices

Section includes supplemental information.

SITE DESCRIPTION AND LOCATION

The Thousand Islands Conservation Area Management Plan complies with the City of Cocoa Beach's comprehensive plan. All letters relating to compliance can be found in **Appendix C**. The Environmentally Endangered Lands Selection and Management Committee considered site

location, natural communities, biological diversity, habitat quality, and contributions to functional ecological integrity to determine if the acquisition of The Thousand Islands Conservation Area met the Environmentally Endangered Lands Program's conservation goals. The islands within this plan are all under shared ownership of Brevard County, the City of Cocoa Beach and the Florida Communities Trust and managed by the Environmentally Endangered Lands Program. No portion of the Thousand Islands Conservation Area should be declared surplus.

The Thousand Islands Conservation Area consists of a total of 336 acres of upland and submerged lands and was purchased on (Crawford 61 acres) December 15, 2006 and (Reynolds 275 acres) on April 10, 2008. The entire Sanctuary is located within the Cocoa Beach city limits. The purchase was packaged by combining the Crawford Homes Property 25-37-15-00-26 (Parcel ID number) and the Reynolds Property 25-37-15-00-750 and 25-37-22-00-2 (Parcel ID number). These individual parcels within the Thousand Islands Conservation Area can be viewed on the Brevard County Property Appraisers website using the Tax Identification numbers or Account Numbers. The following Account Numbers will also provide a link to the parcel's legal descriptions: 2518163, 2518167, 251955.

The last management plan for this property was revised in December 2008. That plan was approved by the Brevard Board of County Commissioners on February 3, 2009.

Management and public access for the site is available from Fourth Street or the Ramp Road boat launching area. There are no locked gates onsite. The address for this site is 599 Ramp Road, Cocoa Beach, Florida, 32931.

NATURAL RESOURCE DESCRIPTIONS

This section provides descriptions of natural resources, including physical resources such as climate, geology, topography, soils, hydrology, and biological resources which include ecosystem function, flora, fauna, special concern species, and biological diversity, as well as cultural resource information such as archeological, historical, land-use history, and public interest.

Physical Resources

Climate

The Thousand Islands Conservation Area is located in east central Florida in Cocoa Beach. It falls within the subtropical climatic zone and is just southeast of the isothermal junction with the temperate climatic zone. Temperature data from the **National Oceanic and Atmospheric**

Administration's (NOAA) 1991-2020 Temperature Normals based on the Melbourne Weather Prediction Office indicate an average annual temperature of 72.9° F. The warmest month is July with an average maximum of 90.2° F, and the coolest month is January with an average minimum of 52.4° F (**National Oceanic and Atmospheric Administration, 2021**). Summer temperatures are moderated by frequent afternoon thunderstorms. Periods of extreme cold weather are infrequent due to the site's latitude and proximity to the Atlantic Ocean and Indian River Lagoon. There are reliable rainfall records from Titusville that span approximately 100 years, and have recorded an average of 55.28 inches of rain per year. This data is consistent with the data collected by staff around the area for the past decade. Wet and dry seasons are typically well defined, with the wet season occurring between May and October and the dry season between November and April. Annual and seasonal rainfall is subject to large variations in both amount and distribution. During spring and summer, Brevard County experiences numerous thunderstorms often coupled with frequent lightning strikes.

Prevailing winds are generally from the north to northeast during the dry season (November-April) and from the east-southeast during the wet season (May-October). Weather patterns such as cold fronts and thunderstorms will affect local wind direction depending upon the time of year (**Eastern Space and Missile Center, 1989**).

Geology

According to **Dr. Randy Parkinson (personal communication, previous management plan)**, geologically the site is unique along the Banana River, as the many islands are arranged in a pattern indicative of a relict flood tidal delta. Several sediment cores recovered on these islands contained a sedimentological and stratigraphic pattern consistent with this interpretation. While historical photography of the eastern coast of Florida indicates the presence of numerous relict flood tidal deltas, urbanization of the coastline has resulted in the loss of most of these features as a result of development and landscape-scale change. The Thousand Islands thus represent one of the last relatively undisturbed geomorphic features that contains clues as to the origin and evolution of Florida's east coast barrier island system.

Topography

Elevations for The Thousand Islands Conservation Area fall below 5 feet National Geodetic Vertical Datum. Surrounding neighborhoods are higher, especially along roads. The highest elevations are along the dunes on the beach. Due to the similar topography within the site, there is not a topography map contained within this management plan.

Soils

The soil types within the Thousand Islands Conservation Area, defined by the Natural Resource Conservation Service (formally the Soil Conservation Service), are as follows:

Bessie muck – tidal

This series of soil are very deep, very poorly drained, slow or very slow permeable organic soils in coastal mangrove swamps that are subject to daily or periodic flooding by high tides. They formed in marine deposits of organic materials over clayey and sandy sediments. The majority of the site was comprised of this soil type before any alterations were made through human actions. Most of the islands are covered in spoil composition and do not predominantly show the characteristics of this series at the present time.

Canaveral Complex

This series of soil are very deep, somewhat poorly to moderately well drained, very rapidly permeable soils on side slopes of dune-like ridges bordering depressions and sloughs along the coast. They formed in thick marine deposits of sand and shell fragments. This soil type was historically found in the northern portions of the islands in limited coverage. Most if not all these areas are now covered in spoil compositions and do not resemble the historical characteristics of this survey.

Due to the coverage of spoil on the islands within the boundary area, there is not a soil map for this management plan.

Hydrology

The Thousand Islands Conservation Area lies within parcel numbers 12009C0461H and 12009C0445H, of the FEMA Flood Insurance Rate Maps dated 1/29/2021. One hundred percent of the property falls within flood zone A which is within the 100-year floodplain elevation. Flood zone A is flood prone and subject to erosion. There are no major hydrological features within the property.

Biological Resources

Protection of the resources depends upon five key items: Restoration of any historical hydrological processes that have drastically altered plant communities, removal of invasive exotic species, limiting recreational impacts, reintroduction of a fire regime where appropriate, and monitoring all of the above items.

Ecosystem Function

The Thousand Islands Conservation Area is made up of mainly spoil island material and small wetland systems. The islands were originally formed as tidal deltas from a historic ocean inlet that have since been buried in most places by historic dredging projects. Protection and management of this property lies in the management of vegetative succession. The habitats contain salt-tolerant systems with upland habitat. Restorations and plantings were done in 3 phases. Exotic species are monitored and treated as needed.

Vegetation

This section describes the plant communities identified within the Sanctuary. The identified vegetative communities in **Figure 5** can be seen and are described on the following pages using the **Florida Natural Areas Inventory's Guide to the Natural Communities of Florida (2010)**. These figures were put together by staff using Geographic Information Systems (GIS) based on historical aerials, data from the Florida Natural Areas Inventory, the cooperative land cover map, soil data from the Natural Resources Conservation Service, and field observations by staff.

The Florida Natural Areas Inventory Letter for the Thousand Islands Conservation Area Management Plan was received on January 14, 2021. A copy of that letter can be found in **Appendix D**.

Most of the Thousand Islands Conservation Area are submerged lands. The remainder of the site includes upland habitats consisting mainly of spoil islands, with small areas of pocket wetlands making up 66 acres.

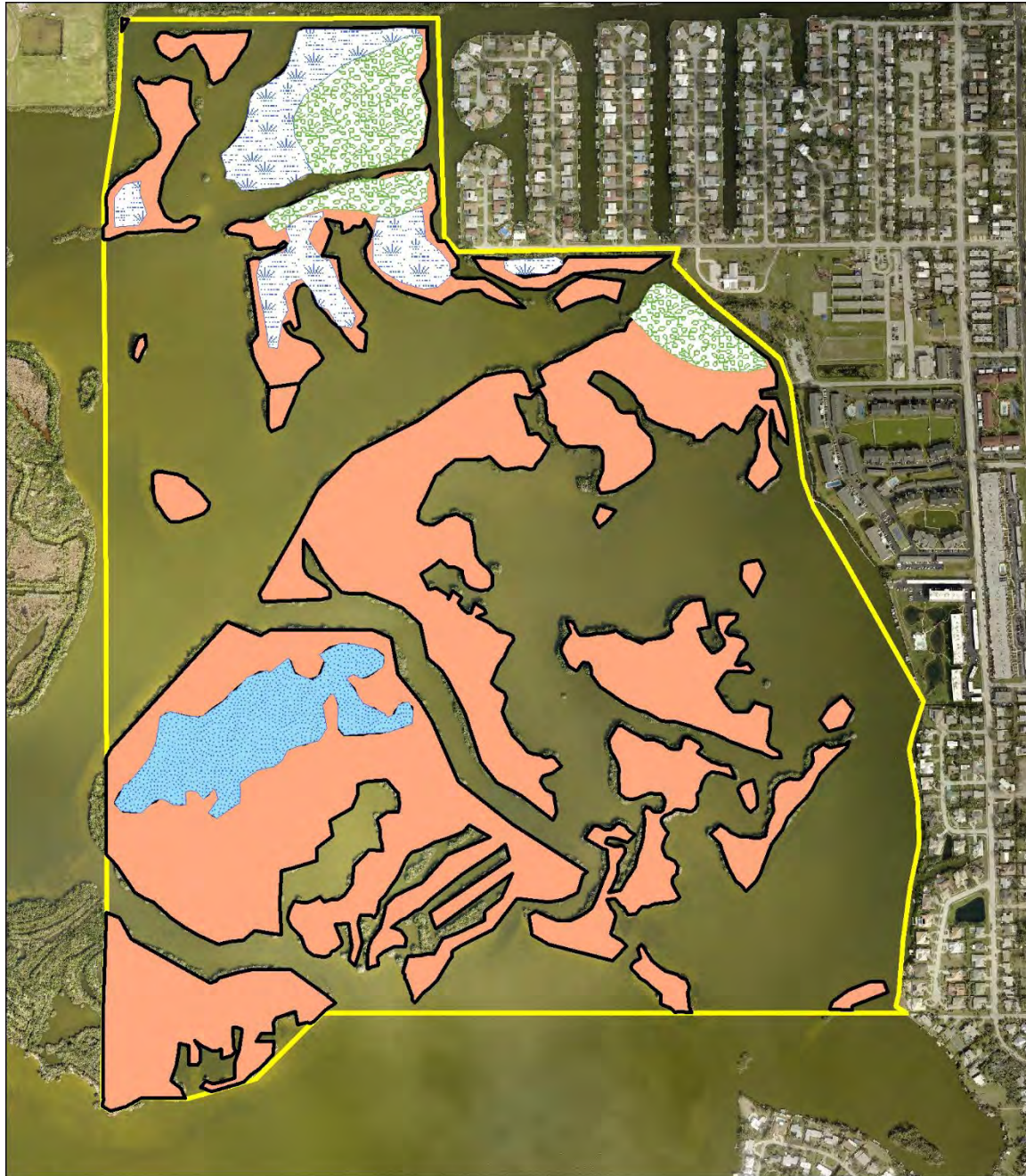
The flora and fauna descriptions that follow are based on the Florida Natural Areas Inventory classification and are generic and not specific to the Thousand Islands Conservation Area Management Plan. Staff has surveyed these managed areas and confirmed that these habitats are present in the general locations noted.

Depression Marsh/ Saltwater Marsh/ Wetland Systems (17 Acres)

Depression marshes are the seasonally wet ponds scattered throughout the islands and along the 4th Street portion of the conservation area. These wetlands are essential for the conservation of many of the site's amphibians. These wet, but not submerged, habitats represent a natural community fast disappearing to development and rising water levels in Brevard County.

Restoration Areas (18 Acres)

These restoration areas were chosen due to the extreme amounts of exotics present on the



1000 Islands Conservation Area Natural Communities Map



Figure 5 ([Long Description – 5](#))

*Map current as of December 2022

upland habitat and their potential for restoration. The three-phased approach was agreed upon by all parties involved in the purchase of the property. Large Australian pines (the three species found in Brevard County are *Casuarina equisetifolia*, *Casuarina glauca*, and *Casuarina cunninghamiana*) and Brazilian pepper (*Schinus terebinthifolia*) were removed and replaced with a variety of native plants.

Berms/ Spoil Island Areas (31 Acres)

This habitat acreage is predominantly covered with mangroves. The berms provide a variety of elevations and all three mangrove species are present within the Sanctuary boundary. Exotic plant treatments have reduced the amount of Brazilian pepper found along these bermed systems, and ongoing exotic maintenance occurs in order to provide open areas for native plant growth.

The list of flora for this management plan is not a complete floristic inventory. A plant species table generated through the compilation of data collected by members of the Environmentally Endangered Lands staff and volunteers is included in **Appendix E**.

Historic aerial photographs were reviewed to determine changes to vegetative community type and structure, as well as man-induced changes mentioned previously. Photographs from 1943, 1958, 1975, 2000, and present day were inspected and observations of significant changes are noted below. Historical aerials can be seen in **Figure 6 (1943)**, **Figure 7 (1958)**, **Figure 8 (1979)**, and **Figure 9 (2000)**.

1943: The management area is relatively pristine. Channels are not present.

1958: Spoil can be seen as ditching and channeling has started.

1979: New developments and roads are present.

2000: The more recent developments can be seen.

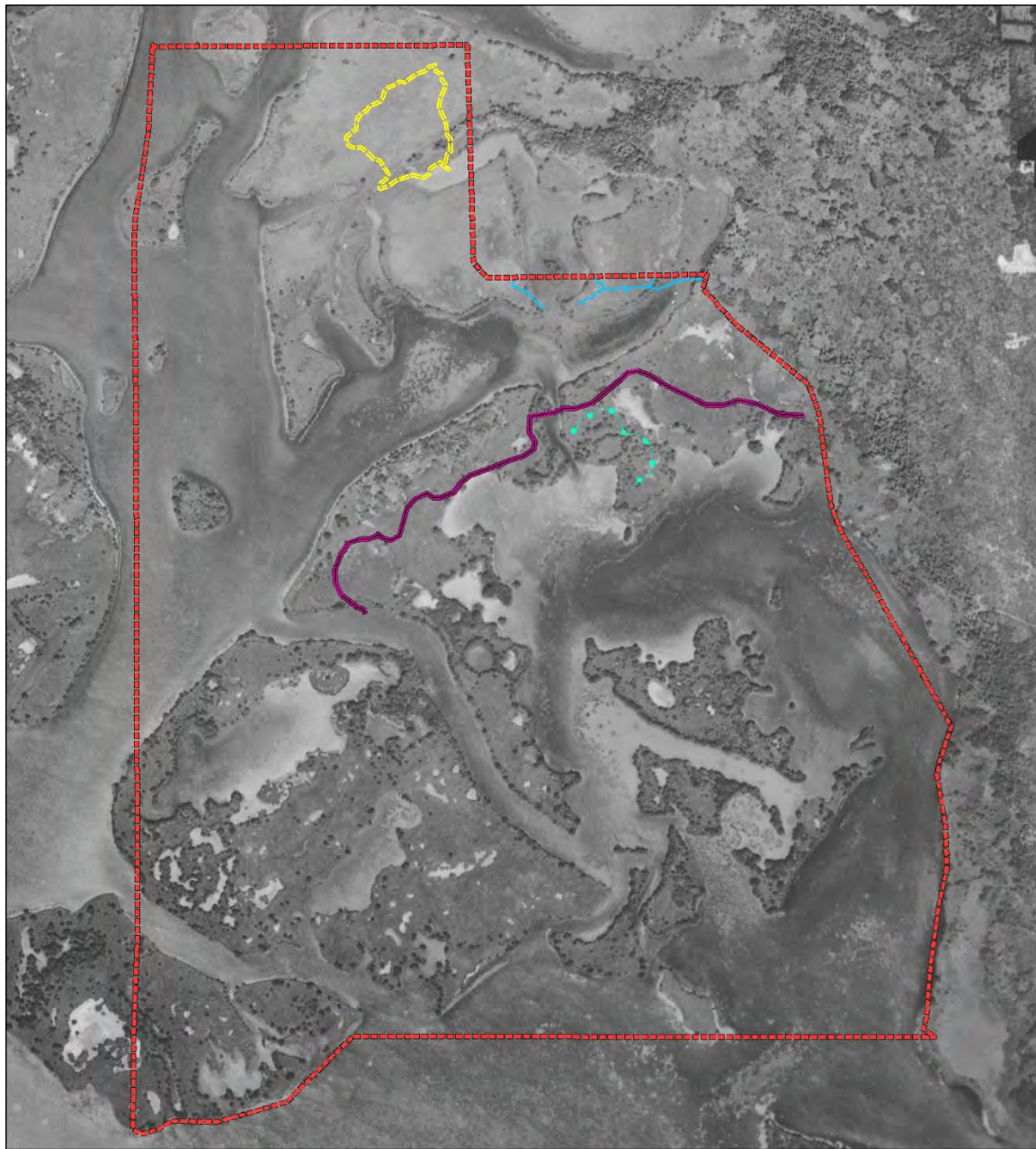
Fauna

The size and diversity of natural communities found within the Thousand Islands Conservation Area should support a high number of animal species. There is a need for extensive faunal surveys performed within the Sanctuary. These surveys will be done as resources allow and will initially try to establish a baseline of data that can be built upon in the next ten years before the updated plan is due again.

Insects

General insect surveys will include the use of yearlong methods, such as Malaise and pitfall

traps. These quantifiable methods of surveying will document any listed insect species and provide a survey of insects through the season. In accordance with Florida Statutes Section



Thousand Islands Conservation
Area 1943 Aerial Map

0 0.05 0.1 0.2
Miles



- Sanctuary Boundary
- Designated Kayak Trail
- Hiking Trails
- 4th Street Trail
- North Crawford Trail
- Overlook Trail

Figure 6 ([Long Description – 6](#))



Thousand Islands Conservation
Area 1958 Aerial Map

0 0.05 0.1 0.2
Miles



- Sanctuary Boundary
- Designated Kayak Trail
- + Hiking Trails
- 4th Street Trail
- North Crawford Trail
- Overlook Trail

Figure 7 ([Long Description – 7](#))



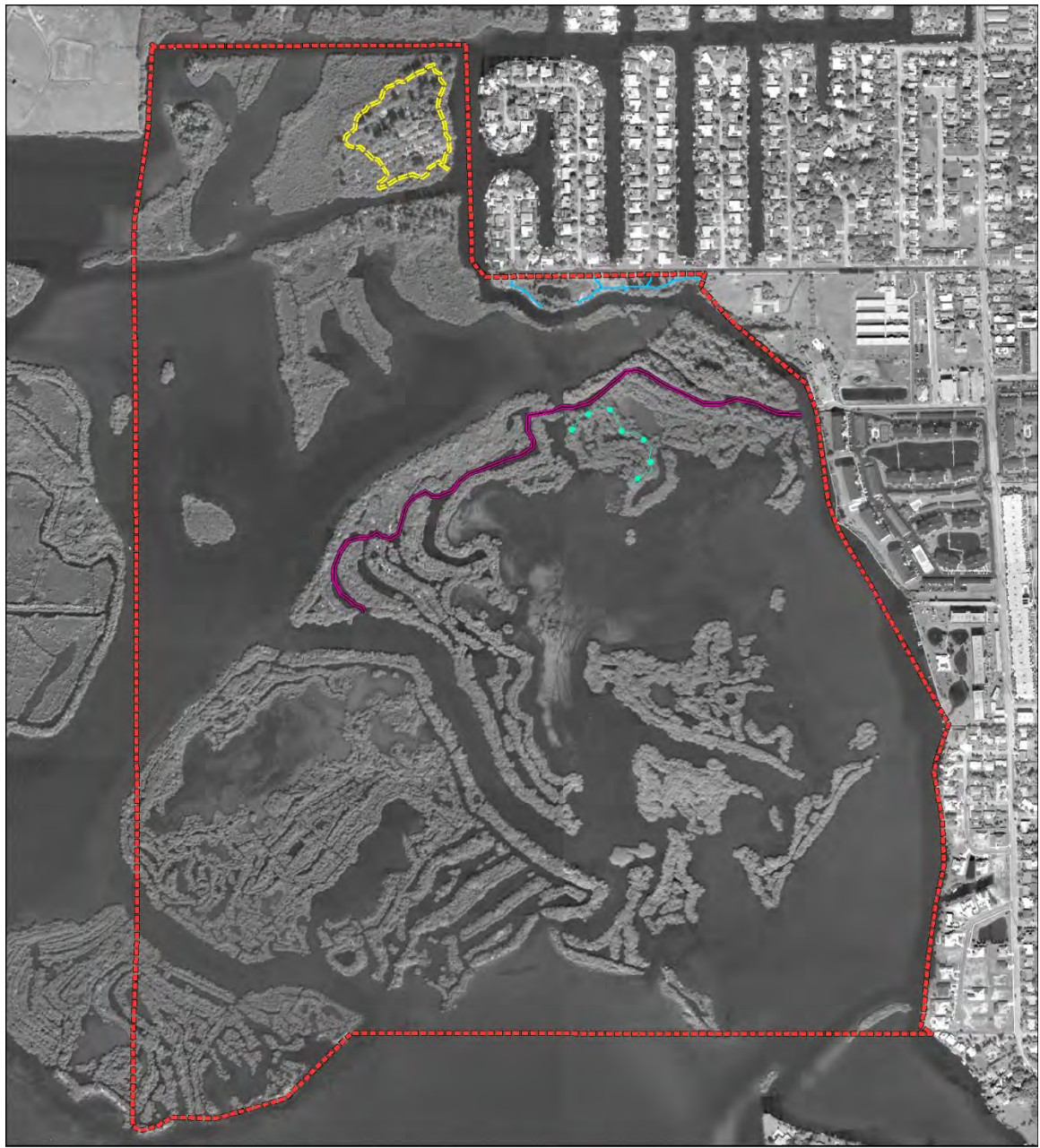
Thousand Islands Conservation
Area 1979 Aerial Map

0 0.05 0.1 0.2
Miles



- Sanctuary Boundary
- Designated Kayak Trail
- + Hiking Trails
- + 4th Street Trail
- North Crawford Trail
- Overlook Trail

Figure 8 ([Long Description – 8](#))



Thousand Islands Conservation
Area 2000 Aerial Map

0 0.05 0.1 0.2
Miles



- Sanctuary Boundary
- Designated Kayak Trail
- North Crawford Trail
- Overlook Trail
- Hiking Trails
- 4th Street Trail

Figure 9 ([Long Description – 9](#))

388.4111, all environmentally sensitive and highly biologically productive lands are required to submit an arthropod control plan. The Thousand Islands Conservation Area Management Plan arthropod control plan and the known history of spraying within The Thousand Islands Conservation Area can be found in **Appendix F**. Brevard County Mosquito Control will adulticide only when populations exceed the landing rate thresholds, or when a potential for a mosquito-borne disease outbreak become sufficient for disease transmission or a quantifiable increase in numbers of pestiferous mosquitoes or other arthropods. Treatments will be in upland areas only.

Birds

Staff has done an initial survey of avian species. Birds observed within the Thousand Islands Conservation Area are listed in **Appendix G**. Birds such as the bald eagle (*Haliaeetus leucocephalus*) have been observed in the area though no nests have been located within the conservation area.

Reptiles and Amphibians

The reptiles and amphibians noted within the Thousand Islands Conservation Area are listed in **Appendix H**. There is a need for a more extensive species survey throughout the Sanctuary.

Mammals

The mammals recorded on-site are listed in **Appendix I**. There is a need for more surveys, especially for small rodents. Environmentally Endangered Lands staff use game cameras within the Sanctuary to help identify additional species. A more extensive survey would need to be conducted in order to estimate numbers of an individual species.

Designated Species

Plants

The United States Fish and Wildlife Service (USFWS) and the Florida Department of Agriculture and Consumer Services (FDACS), compile lists of protected plant species. The USFWS classifies protected plants as either endangered or threatened. The FDACS lists plants that are considered State Endangered, Threatened, or Commercially Exploited.

Although there have been plant surveys conducted within the Thousand Islands Conservation Area, these were conducted primarily to determine the presence or absence of species. The next step is the generation of maps and photographic series detailing the extent of coverage of these designated species. Once a baseline has been established, monitoring of land management practices can occur. The location of designated plant and animal species have been considered during the creation of public access trails and during other management

efforts including exotic species removal. All planned trails from the original management plan have been installed and there are no other plans for additional pathways for public use in the future.

Animals

The United States Fish and Wildlife Service and the Florida Fish and Wildlife Conservation Commission also compile lists of wildlife species considered to be under the possible threat of extinction. These species are categorized as either Endangered or Threatened. The Florida Fish and Wildlife Conservation Commission utilizes an additional category, called Species of Special Concern, for several animal species that may ultimately be listed as endangered or threatened. This classification provides the Species of Special Concern listed animal with a particular level of protection that varies from species to species.

Any translocation of plant or animal species into the sanctuary covered in this plan must follow the Environmentally Endangered Lands Program's Species Translocation Policy. There are several protected avian species on or around the site including the bald eagle, wood stork (*Mycteria americana*), and sandhill crane (*Grus canadensis*).

Reptiles and Amphibians

The gopher tortoise (*Gopherus polyphemus*) is currently listed as a threatened species by the Florida Fish and Wildlife Conservation Commission (FFWCC). The gopher tortoise is locally (FFWCC) protected as a threatened (T) species. Gopher tortoises can be found in a variety of upland habitats including scrub, scrubby flatwoods, and flatwoods. Protections for these threatened species in endangered habitats are critical for species survival.

Biological Diversity

The collection of data relating to biodiversity studies is needed within the Thousand Islands Conservation Area starting with basic, complete inventories. Levels of richness and evenness (the two measures of overall diversity) should vary naturally among community types. Richness refers to the number of species found within a particular community, while evenness refers to the distribution of individuals among species.

A comprehensive sampling protocol (i.e. sampling each stratum of the community) is typical, but practicality and specific use dictate that the sampling should be limited to the sub-canopy/scrub layer, and to the herbaceous/ground cover layer, where the stronger indications of change in species diversity will be noted. Sampling these layers will provide useful management data regarding the effects of use on the plant communities. Sampling for small mammals, avian species, and herptiles will also be useful to staff in future decisions regarding

trail selection and carrying capacity of the site.

Examples of sampling methodology may be found in:

Brower, J.E. and J.H. Zar. 1984. *Field and Laboratory Methods for General Ecology*, 2nd Ed. Wm. C. Brown Publishers, Dubuque, Iowa.

Campbell, H.W. and S. P. Christman. 1982. Field techniques for herpetological community analysis. In N.J. Scott, ed.: *Herpetological Communities*, pp. 193-200. Fish and Wildlife Service Wildlife Research Report 13.

Corn, P.S. 1994. Straight-line drift fences and pitfalls. Pp. 109-117. in Heyer, M., A. Donnelly, R.W. McDiarmid, L.C. Hayek, and M.S. Foster. *Measuring and Monitoring Biological Diversity. Standard Methods for Amphibians*. Smithsonian Institution Press. Washington, D.C.

Fitch, H.S. 1992. Methods of sampling snake populations and their relative success. *Herpetol. Rev.* 23: 17-19.

Grant, B.W., et al. 1992. The use of coverboards in estimating patterns of reptile and amphibian biodiversity. In D. McCollough and R.H. Barrett (eds): *Wildlife 2001: Populations*, pp. 379-403. Elsevier Science Pub. London, England.

Gysel, L.W. and L.J. Lyon. 1980. Habitat analysis and evaluation. *Wildlife Techniques Manual*. Pp. 305-327. S.D. Schemnitz (ed.). The Wildlife Society. Washington, D.C.

U.S. Fish and Wildlife Service. 1980. *Habitat Evaluation Procedures (HEP)*. Ecological Services Manual 102. U.S. Department of Interior, Fish and Wildlife Service, Division of Ecology Services, Government Printing Office. Washington, D.C.

Cultural

Archaeological

In response to the request for a review of Florida Master Site Files, the department replied in an email on 1/14/2021 that within The Thousand Islands Conservation Area, they “do not have anything listed in the area.” In the future, the Environmentally Endangered Lands staff will continue to consult with the Division of Historical Resources (DHR) before taking actions that may adversely affect archaeological resources.

Historical

People have inhabited Florida for 10,000 years, perhaps even longer. Paleo-Indians, the earliest Floridians, were nomadic hunters of mammoths, bison, camel and giant tortoise (**Myers and Ewel, 1990**). Brevard is one of east-central Florida’s oldest counties, established in 1855. “A boundless land of oaks, palm and pines flanked by a clean, pristine lagoon, the county was largely without claim or improvement at the time of its creation. Marine life within the lagoon

was the early resident's main source of food. By the turn of the industrial revolution, development and opportunities arose for many. Forests were cleared for agriculture. Citrus, cattle raising, timber, and lumber production were mainly chosen" (Eriksen J., 1994).

A timber assessment report has not been completed for the Sanctuary due to the habitat and lack of pine trees.

Land-Use History

The Thousand Island Conservation Area has been used and manipulated throughout the recent past. From fishing and bird hunting to land manipulation for mosquito control, this property has gone through a variety of human induced changes as well as geologically historical events and processes. The biggest alteration was from the ditching of the area for mosquito control. Some of these lines now provide kayaking opportunities and habitats for a variety of marine animals. This management plan does not include any plans for the filling in of some of these ditches, but the Environmentally Endangered Lands Program has completed the required restoration from the first 10-year agreement and management plan and will continue to look for restoration opportunities to improve the habitats within the Sanctuary.

Public Interest

Prior to Brevard County's management, several areas within the Sanctuary were popular duck hunting sites. Recreational hunting is not allowed on Environmentally Endangered Lands Properties. There are no wild hog or feral cat populations within the Sanctuary boundary. The use of off-road vehicles are not authorized within the Environmentally Endangered Lands Sanctuary boundaries. A fence was installed on the Fourth Street boundary line to delineate the area and the line is posted with signs that detail the rules for the Sanctuary.

All fishing must follow current Florida Fish and Wildlife Conservation Commission regulations. It is the responsibility of the user to know and understand the updated regulations when fishing onsite. Failure to follow these regulations will be enforceable by the proper authority onsite at the time of any infractions. The Environmentally Endangered Lands (EEL) Program encourages passive recreation use in the form of hiking, birding, fishing, and kayaking, within The Thousand Islands Conservation Area. The EEL Program's **Sanctuary Management Manual** defines passive recreation as "a recreation type of use, level of use combination of uses that do not

individually, or collectively, degrade the resource values, biological diversity, and aesthetic or environmental qualities of a site."

FACTORS INFLUENCING MANAGEMENT

Natural Trends

The main natural trends influencing the diversity of this Sanctuary are fire frequency (from lightning or arson), hydroperiod, and water quality. In the absence of fire, invasion by native and non-native woody species occurs rapidly. Within the Thousand Islands Conservation Area, there is no natural fire regime due to the habitat. Prescribed fire is a management option on the islands. Fire is critical in Florida ecosystems, as it creates openings for fire dependent species and removes others that cannot resist fire. Fire breaks down complex organic molecules, which when added to the soil, enhance seed germination and regrowth of vegetation.

Human-Induced Trends

Human influences on-site include:

Invasion of Exotic species

Invasive species such as Brazilian pepper (*Schinus terebinthifolia*), Australian pine (*Casuarina equisetifolia*, *Casuarina glauca*, *Casuarina cunninghamiana*), cogon grass (*Imperata cylindrica*), melaleuca (*Melaleuca quinquenervia*), and Guinea grass (*Urochloas maxima*) are mostly located along the bermed portions of the Sanctuary. An initial mechanical and chemical treatment of exotic plants over the property has taken place and maintenance projects are ongoing. Maintenance treatments by Environmentally Endangered Lands staff will continue. Staff will look for additional grants and funding through State and Federal Departments and will continue to designate decontamination areas to ensure exotic species are not brought into the Sanctuary.

Drainage canals

The Thousand Islands Conservation Area contains mosquito ditches which affect the hydrology of the site and the importance of correcting their impact is critical. The history and future plans for these canals will be discussed in the habitat restoration section.

Hunting

Hunting had been occurring throughout the Thousand Islands Conservation Area for many decades. Hunting is not permitted within the non-sovereign waterways and wetlands that exist within the conservation area boundary. Staff has installed boundary signs with rules and regulations posted. The Environmentally Endangered Lands Program will work with local law enforcement to monitor the area for illegal hunting.

Illegal dumping

The site reviews for the Thousand Islands Conservation Area show evidence of the dumping of various types of debris. This activity has been minimized with the posting of boundaries. Boundaries along the mainland have been fenced and pass throughs have been installed to further control illegal or unwanted activities. Any dump sites within the Thousand Islands Conservation Area Management Plan boundaries that have been located by staff, have been cleaned up.

External Influences

There is a constant invasion of exotic plants from outside of this conservation area boundary. The Sanctuary is surveyed as often as scheduling allows and Staff will continue to treat exotics.

Waterfowl hunting has occurred in the past within the Sanctuary boundary. The Environmentally Endangered Lands Program has responded to these illegal activities by meeting with local law enforcement to review specific problem areas. Boundary signs have been posted along the fence line along 4th Street, along shorelines, and at designated entrances/ landings. These boundary signs are monitored due to vandalism and theft. When damaged or taken, staff replaces the signs. This allows law enforcement to ticket individuals for illegal activities. There are no known encroachments from adjoining property owners at the time of this management plan revision.

Legal Obligations and Constraints

Permitting

The following is a summary of permitting agencies and permits that have been required for past activities or may be required in the future.

United States (U.S.) Army Corps of Engineers

The U.S. Army Corps of Engineers regulates wetlands connected to “Waters of the United States” and isolated wetlands pursuant to Section 404 of the Clean Water Act. Wetlands are defined as “those areas inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas” (33 CFR Part 328.3). Dredge and fill activities within “Waters of the United States” will require either an Individual Permit or verification under the General or Nationwide permit program. Wetland impacts less than one-third acre will typically qualify for a General Notice Permit or can be authorized with no “Pre-Discharge Notification.” The permittee will be required to provide the U.S. Army Corps of

Engineers with a copy of the State 401 water quality certification documents or waiver prior to commencement of the fill activity. Wetland impacts between one-third and three acres involving isolated wetlands or wetlands “above the headwaters” will generally qualify for verification under Nationwide Permit Number 26 (NWP 26). Impacts to wetlands connected to flowing and/or navigable waters, or wetland impacts greater than three acres will generally require a Section 404 – Individual Permit. U.S. Army Corps of Engineers guidelines further require that all impacts “reasonably related” to a particular project be submitted for consideration under one permit application.

In reviewing the proposed activity for permit approval, U.S. Army Corps of Engineers biologists consider the impacts to wetland function, such as water quality benefits, wildlife utilization, groundwater recharge, etc. In instances where loss of wetland function is proposed, the U.S. Army Corps of Engineers may, and often does, require measures to compensate for such losses. Mitigation may be required by the U.S. Army Corps of Engineers for proposed wetland impacts. Should mitigation be required, the U.S. Army Corps of Engineers most likely will accept the mitigation that ultimately will be proposed to the St. Johns River Water Management District.

In addition, United States (U.S.) Army Corps of Engineers regulations require that an investigation must be conducted, prior to permit issuance, to evaluate whether or not the proposed activity is likely to jeopardize the continued existence of any Federally threatened or endangered species as listed or proposed for listing under the Endangered Species Act.

Finally, U.S. Army Corps of Engineers regulations require that the State Historic Preservation Office (SHPO) of the Division of Historical Resources must be contacted regarding the presence of any archaeological or historic properties in the area that may be impacted by the proposed development. The Compliance Review Section in the SHPO Office should also see all permits so that they can check for not only recorded archaeological and historical sites, but also so that they may check for any potential sites that may occur on the property.

Saint Johns River Water Management District (SJRWMD)

The Saint Johns River Water Management District regulates impacts to wetlands and other surface waters pursuant to Part IV, Chapter 373 of the Florida Statutes and in accordance with Chapters 62-330 of the Florida Administrative Code (F.A.C.). The 1995 Florida Wetlands Delineation Manual defines jurisdictional wetlands. The Saint Johns River Water Management District requires an Environmental Resource Permit (ERP) for work in a wetland unless the activity meets an exemption. Mitigation is required if the project is determined to have an adverse impact to wetland and other surface water functions. In considering wetland impacts, SJRWMD considers not only direct impacts to wetlands, but also secondary impacts that may affect wetland dependent wildlife. To minimize secondary wetland impacts, SJRWMD generally requires that applicants preserve a buffer of undisturbed upland habitat with a 15-foot minimum width and 25-foot average width around preserved wetlands [Sec. 12.2.7(a)].

Prior to submitting an application for dredging or filling within waters of the State, it is recommended that the areas proposed for impact be delineated in accordance with the Unified Wetland Delineation Methodology for the State of Florida dated 1 July, 1994 and then reviewed by St. Johns River Water Management District staff.

Florida Forest Service, formally known as the Florida Division of Forestry

The Florida Forest Service issues permits for prescribed fires to Environmentally Endangered Lands Staff that possess certified burn numbers.

Other Legal Obligations

Brevard County

Brevard County Mosquito Control holds interests within the Sanctuary boundary and surrounding lands.

Private Ownership

There is no private ownership within the Thousand Islands Conservation Area.

Florida Fish and Wildlife Conservation Commission (FWCC)

Cooperation with FWCC is ongoing though no formal agreement with the Environmentally Endangered Lands Program has been enacted in the Central Region.

St Johns River Water Management District

The District does not have a conservation easement within the Sanctuary. Any easements or mitigations through the District would be approved by the Board of County Commissioners for these County-owned Sanctuaries. Permitting for projects close or in the waterways throughout the Sanctuary are done through St. Johns River Water Management District.

Management and Constraints

Fire

Utilizing prescribed fire within the Thousand Islands Conservation Area Management Plan area benefits ecosystems and species that have evolved under the influences of this natural process in Florida. Due to the amount of acreage and goals of the site, prescribed fire is an option, but not a priority management action. Any plans to burn on the islands will be brought through the staff level, the Selection and Management Committee, and the City of Cocoa Beach before taking place. Authorization would then come through the Florida Forest Service.

Exotic Species Control

Exotic or non-indigenous species are terms used to describe plants and animals that are foreign

in origin. These species may persist, thrive, harm or displace native species. These plants and/or animals alter native species habitats and ecosystem functions.

Plants

Exotic plant species within these tracts are concentrated along disturbed areas created by canals, ditching, berms, and adjacent roads. The primary invasive exotics on-site are Brazilian pepper, cogon grass, Australian pine, melaleuca, and Guinea grass.

The Environmentally Endangered Lands Program typically uses State funds from the Florida Fish and Wildlife Conservation Commission's (FFWCC) Invasive Plant Management (IPM) program to hire contractors for larger treatment areas. The funding also provides chemicals to retreat these areas using existing Program Staff. Smaller areas not treated through the IPM program are handled in house using County employees and funding.

Environmentally Endangered Lands Staff uses GIS to map out exotic areas as they are found. These areas are then sprayed and monitored for re-growth. Continued monitoring will be needed to ensure that these invasive exotics are kept under control.

Animals

The control of the red imported fire ant is an on-going task with spot treatment using Amdro or another similar chemical. They prefer to nest in disturbed habitats such as berms cross canals, and firebreaks.

Exotic and non-indigenous animal species also have the potential to adversely affect ecosystem function, and to significantly alter population levels of native animals through predation or displacement. The brown anole (*Anolis sagrei*) has become ubiquitous in central Florida, and is found within the Sanctuary boundary.

Due to the proximity of residential homes to the Sanctuary, the impacts from cats as well as from other domestic pets is monitored (see Feral Cats Ordinance: Section 14-64 of Brevard County Ordinance 99-39 and Parks and Recreation Ordinances 98-53 and 96-31). Entities currently implementing exotic animal control programs such as the Florida Fish and Wildlife Conservation Commission, the United States Fish and Wildlife Service, and the Water Management Districts, should be contacted for guidance on the development of control protocols.

Habitat Restoration

Since the 1950's, hydrological alterations have taken place within the boundary of the Thousand Islands Conservation Area. Berms and mosquito drag ditches disrupt the natural sheet flow of water throughout the entire Sanctuary. As ditches were constructed, large amounts of spoil were placed on either side of these canals. The natural communities suffered due to the reduction in hydroperiod and natural sheet flows that occurred before the ditches

were installed. Ditches vary in depth averaging from a few feet up to 10 feet deep.

The restoration of natural upland communities on-site is primarily focused upon the higher ground habitat in three phases. Additional restoration activities may occur in phases as schedules and funding allow. In the case where government entities are mitigating on Environmentally Endangered Lands managed properties, monitoring will be conducted by Consultants/ Project Leaders associated with any wetland mitigation project for a minimum of 5 years. Mitigation photo points will be taken by the Contractor as the projects take place.

Public Access and Passive Recreation

Public access and opportunities for passive recreation is provided within the Sanctuary pursuant to public use and recreational policies of the Environmentally Endangered Lands Program's **Sanctuary Management Manual** which was originally adopted by the Brevard County Board of County Commissioners in 1997. It has been determined that passive recreational activities best support the Environmentally Endangered Lands Program's goals. The Environmentally Endangered Lands Program Sanctuary Management Manual defines passive recreation as follows:

"a recreational type of use, level of use, and combination of uses that do not individually or collectively, degrade the resource values, biological diversity, and aesthetic or environmental qualities of a site."

A series of public meetings were held to gather input for this management plan. A recreational assessment for all sites has been completed in order to determine the best placement of passive recreation resources. An initial public meeting for this management plan took place on **June 25, 2019**. An advertised, public meeting of the Recreation and Education Advisory Committee regarding the Thousand Islands Conservation Area Management Plan took place on **August 8, 2019**. The first advertised, public meeting before the Selection and Management Committee regarding this plan took place on **August 20, 2021**.

The Thousand Islands Conservation Area Management Plan has gone through its 30-day public review.

Hiking

This management plan includes three existing hiking trails located within the conservation area. Informative signs are placed along the trail, and any research or restoration projects that may be ongoing will be included in the signage. No additional trails are planned for this site. An observation platform overlook is located at the end of the hiking trail on the Reynolds tract.

Parking and public access

The parking area for the Sanctuary is located at the Ramp Road boat launch site.

Hunting

Hunting is not allowed within the Thousand Island Conservation Area unless it is required for species management. Waterfowl hunting is not permitted within the man-made canal systems or the open water areas that are not classified as sovereign waters of the State.

Fishing

Fishing is permitted within the non-sovereign water areas of the sanctuary boundary.

Paddling (kayaking, canoeing and Stand-Up Paddleboards)

Paddling activities are permitted within non-sovereign water areas of the sanctuary boundary.

Environmental Education

Environmental education for the Central Region is based out of the Sams House Management and Education Center at Pine Island Conservation Area in Merritt Island, Florida. It provides a holistic approach to the habitats and history of the diverse ecosystems, their related histories and dynamic changes, while demonstrating the relationships of natural communities as support systems to a vast array of species within the Conservation Area, other Central Region Sanctuaries, and Indian River Lagoon system. Relative historic study highlights the changes to land and anthropomorphic contributions relating paleontology, archaeology, anthropology, and agriculture to the natural history of Florida and land use within the Region. Curriculum contains relevant Sunshine State Standard requirements supporting varying grades inclusive of VPK through Sixth Grade. Special education programs are adapted from the standard curriculum to accommodate students on diverse levels of the spectrum of learning. Advanced curriculum for Secondary programs expands Earth Sciences with a focus on life in and around the Indian River Lagoon system. Homeschool programs provide a diverse subject matter experience, with mastered marketing, enhancing attendance and ensuring exposure to many of the curriculum driven programs offered to the public, private, and charter schools.

The Environmentally Endangered Lands staff will work with area schools, school boards, homeschooling groups, and any agencies or organizations in offering environmental education programs to assist in the environmental education of Brevard County citizens as staffing and operational funding allows. The long-term success of the Environmentally Endangered Lands Program and the Environmentally Endangered Lands Sanctuary network is directly linked to the level of citizen support, active participation and commitment to conservation. The Environmentally Endangered Lands Program actively recruits volunteers from diverse backgrounds and promotes the involvement of disabled citizens. Once-a-month events will be held at the Sanctuary.

Prohibited Activities:

Due to the small size of the sites and limited availability of upland areas, horseback riding, bicycling and camping are not permitted.

General Site Rules:

- No pets
- Day use only
- No smoking
- No fires
- No fireworks
- No hunting or target shooting
- No dumping of trash or yard waste
- No commercial activity without a permit
- No removal of plants, animals or other natural resources
- No relocation of wildlife to the sanctuary
- No alcoholic beverages
- No unlawful carry of firearms
- No motorized vehicles (electric or gas)

MANAGEMENT ACTION PLANS

Although much of the proposed resource management and public access strategies have been discussed, the following is a comprehensive outline of the goals, strategies and actions necessary to manage the Thousand Islands Conservation Area.

Goals

The Sanctuary Management Manual of the Environmentally Endangered Lands Program provides the following management goals for all Sanctuaries within the Environmentally Endangered Lands Program:

- Documentation of historic public use
- Conservation of ecosystem function
- Conservation of natural (native) communities
- Conservation of species (including endemic, rare, threatened and endangered species)
- Documentation of significant archeological and historic sites
- Provision for public access and responsible public use
- Assessment of carrying capacity of natural resources with public use
- Provision for environmental education programs
- Opportunities for multiple uses and compatibility

- General upkeep and security of the property

Strategies and Actions

The following is an outline of specific management strategies and actions that are needed to meet each management goal for the Thousand Islands Conservation Area. A timetable is included after each action to denote if the action is “Completed (Year),” “Ongoing” (work will continue indefinitely), or “5 years or 10 years” (to be accomplished within the next five or ten years).

GOAL: DOCUMENTATION OF HISTORIC PUBLIC USE

Strategy 1: Document historic public use

Actions:

- Collect historic information (such as aerials, historic photos, interviews with previous landowners) regarding the types of activities that have occurred on-site. **(Completed 2010)**
- Evaluate how historic public use impacted the site’s natural resources. **(Completed 2010)**
- Consider historic public use patterns in planning future public uses. **(Completed 2010)**
- Map all existing trails using GIS/GPS. **(Completed 2010)**

GOAL: CONSERVATION OF ECOSYSTEM FUNCTION

Strategy 2: Protect, maintain, and restore native diversity, ecological patterns, and the processes that maintain diversity.

Actions:

- Research and monitor baseline conditions of natural systems. **(Completed 2016)**
- Research the connection of on-site natural resources with adjacent resources. **(Completed 2016)**
- Research hydrologic patterns on and off-site. **(Completed 2016)**
- Restore natural communities to improve efforts on enhancing native diversity. **(Completed 2020)**

Strategy 3: Ensure that natural upland-wetland interfaces are protected and enhanced.

Actions:

- Collect data to analyze the existing community interfaces. **(5 years)**
- Restore/enhance natural communities where and when possible. **(Ongoing)**
- Protect communities from deleterious impacts deriving from external influences. **(Ongoing)**

GOAL: CONSERVATION OF NATURAL (NATIVE) COMMUNITIES

Strategy 4: Restore degraded, disturbed, or altered wetlands within the Sanctuary.

Actions:

- Establish baseline conditions within wetlands. **(5 years)**
- Use native plants for restoration efforts. **(Ongoing)**

- Prioritize the wetland communities in need of restoration based upon ease of accomplishment, expected habitat value yield, or financial considerations. **(Ongoing)**
- Assess possible impacts of proposed restoration on adjacent communities and offsite properties. **(Ongoing)**
- Implement the selected restoration activities (i.e. remove exotic species, restore natural hydrologic flood, etc.). **(Ongoing)**
- Monitor the effects of the restoration activities, evaluate the success of the restoration projects, and revise the restoration plan, as necessary. **(Ongoing)**
- Manage invasive exotic plant species at a maintenance level (0-5%), continue to treat FLEPPC cat 1 & 2 invasive exotic plant species. **(Ongoing)**

Strategy 5: Design and implement a “natural” fire management program.

- Identify natural communities that require prescribed fire management. **(Completed 2012)**
- Document listed species within Sanctuary that require fire for their propagation. **(Completed 2012)**
- Identify and evaluate individual proposed burn management units. **(Completed 2012)**
- Identify the goal of the application of fire to each proposed burn unit. **(Completed 2012)**
- Develop and implement public education campaigns including programs and literature regarding the need for prescribed fires in Florida. **(Completed 2012)**
- Meet with local citizens to help educate neighbors to the prescribed fire program. **(Ongoing)**

GOAL: CONSERVATION OF SPECIES (INCLUDING ENDEMIC, RARE, THREATENED AND ENDANGERED SPECIES)

Strategy 6: Protect on-site populations of endemic, rare, threatened and endangered species through the utilization of existing habitat management and species recovery plans.

Actions:

- Develop a methodology and work plan to accomplish the identification of designated plant and animal species. **(Completed 2012)**
- Survey for, and identify, designated plant and animal species. **(Ongoing)**
- Plot the location of identified designated species within and/or adjacent to the Sanctuary for use in the implementation, or redistribution, of amenities or site improvements. **(Completed 2012)**
- Periodically update these baseline survey data to determine possible changes in designated species distribution or density. **(Ongoing)**
- Map gopher tortoise burrows once every five years. **(Ongoing)**
- Implement habitat restoration activities for listed species (i.e. removal of exotic/nuisance species, restoration of ecosystem function). **(Ongoing)**
- Establish periodic monitoring of habitat suitability (where indices are available for a given species), species population levels, diversity levels, and exotic/nuisance species, as a means

of evaluating the success of management strategies. (10 years)

GOAL: DOCUMENTATION OF SIGNIFICANT ARCHAEOLOGICAL AND HISTORIC SITES

Strategy 7: Survey for archaeological and historic sites within the Thousand Islands Conservation Area.

Actions:

- Contact the State Division of Historic Resources to conduct a Phase I survey of the site. **(Completed 2011)**
- Review available maps and historic records for indications of past usage of the site. **(Completed 2011)**
- Map all archaeological and historic sites for future reference. **(Completed 2011)**

GOAL: PROVISION FOR PUBLIC ACCESS AND RESPONSIBLE PUBLIC USE

Strategy 8: Establish and enforce specific policies and management techniques for public access and responsible public use.

Actions:

- Perform Public Access Site Assessment. **(Completed 2010)**
- Minimize unauthorized trail expansion by establishing sufficient trails, along with the development of written guidelines. **(Completed 2010)**
- Install educational signs along approved trails. **(Completed 2010)**
- Install an informational kiosk at the sanctuary entrance of Ulumay to inform visitors. **(Completed 2010)**

GOAL: ASSESSMENT OF CARRYING CAPACITY OF NATURAL RESOURCES WITH PUBLIC USE

Strategy 9: Establish a monitoring program to assess effects of public usage on natural resources.

Actions:

- Establish a methodology and record keeping system to document public use. **(Completed 2012)**
- Conduct regular monitoring to assess impacts of public use on natural habitats. **(Ongoing)**
- Conduct regular “walk-throughs” over frequently used sites to assess the need for changes in routing/user types, or user intensity. **(Ongoing)**
- Re-route users from sensitive areas or popular sites on a regular or as-needed basis. **(Completed 2012)**
- Re-align public use to avoid areas which observations or data indicate are too sensitive for the level of use originally planned. **(Completed 2012)**

GOAL: PROVISION FOR ENVIRONMENTAL EDUCATION PROGRAMS

Strategy 10: Develop a plan to provide on-going environmental education programs to Brevard County residents and visitors.

Actions:

- Determine target audiences and types of programming best suited to those groups. **(Completed 2017)**
- Design and develop signs and printed materials. **(Ongoing)**
- Provide a trail brochure to visitors of the Sanctuary. **(Completed 2017)**
- Include educators, friends' groups, and other organizations in the design, development, and delivery of programs. **(On-going)**
- Develop criteria and process of evaluation for program review and refinement. **(Completed 2018)**
- Provide scheduled guided hike opportunities annually. **(Ongoing)**
- Provide a "special collection" of books and other materials specifically related to the environmental and cultural character of the Thousand Islands Conservation Area. **(Completed 2020)**
- Coordinate outreach and on-site programs for school-aged children with school board and area schools. **(Ongoing)**

GOAL: OPPORTUNITIES FOR MULTIPLE USES AND COMPATIBILITY

Strategy 11: Provide opportunities for multiple use and compatibility when practical.

Actions:

- Create/ Reroute trails to provide improved access. **(Completed 2020)**
- Include multiple benefits of natural community restoration efforts in education program. **(Completed 2012)**

GOAL: GENERAL UPKEEP AND SECURITY OF THE PROPERTY

Strategy 12: Secure and maintain the Sanctuary to the highest degree possible using Environmentally Endangered Lands staff, Parks and Recreation staff, contract employees, and volunteers.

Actions:

- Install perimeter fencing or signs clearly marking the site's boundary. **(Completed 2010)**
- Employ full-time Land Management Staff. **(Completed 2017)**
- Develop a specific maintenance plan identifying specific tasks, frequency, and the responsible entities or individuals. **(Completed 2010)**
- Based on the maintenance, security, and resource management plan -develop an annual budget for the Thousand Islands Conservation Area. **(Ongoing)**

FINANCIAL CONSIDERATIONS

The Brevard County Environmentally Endangered Lands Program receives land acquisition and management revenues from ad valorem revenues collected pursuant to the 1990, 2004 and 2022 voter approved Environmentally Endangered Lands Referendums. The Environmentally Endangered Lands Program allocates bond funds to capital land acquisition and one-time capital expenditures. Ad valorem revenues collected during each fiscal year that are not required for bond debt services can be used for any legal purpose within the Environmentally Endangered Lands Program pursuant to 200.181 and 125.013 of the Florida Statutes. The Environmentally Endangered Lands Program collected ad valorem revenues from the 1990 referendum until 2011. Revenues from the 2004 referendum will be collected until 2024, the sunset date of that ad valorem collection. The 2022 referendum will continue for 20 years. Based on financial projections, the Environmentally Endangered Lands Program shall annually appropriate a portion of the Environmentally Endangered Lands Program ad valorem millage not required for bond debt services to fund annually Environmentally Endangered Lands Program capital and non-capital expenditures. The Environmentally Endangered Lands Program budget will be reviewed and adopted annually as part of the Brevard County budget process and as authorized by the Board of County Commissioners.

The annual estimated expenses for the land management operations related to the Thousand Islands Conservation Area, as well as past and future expenditures related to capital improvements for management and passive recreation are listed below.

Annual land management for the Pine Island Conservation Area is estimated at \$19,675.

| | |
|-----------------------------|----------|
| Exotic Species Control: | \$3,324 |
| Boundary Fence Maintenance: | \$127 |
| General Security: | \$3,360 |
| Trail Management: | \$10,794 |
| Site Monitoring: | \$2,070 |

Completed Capital Improvements:

| | |
|---------------------|----------------|
| Frontage fencing: | \$5,000.00 |
| Kiosks: | \$3,000.00 (5) |
| Interpretive signs: | \$ 5,000.00 |

Future Public Access Improvements:

Composting toilet and primitive campsite (estimated cost \$20,000).

REFERENCES

- Brevard County Environmentally Endangered Lands Program. Sanctuary Management Manual. Adopted by the Board of County Commissioners on September 23, 1997.
- Eastern Space and Missile Center (ESMC). 1989. Weather Meteorological Handbook ESMC pamphlet 105-1. Department of the Air Force. Eastern Space and Missile Center - Patrick Air Force Base, Florida. in Mailander, J.L.
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- Myers, R.L. and J.J. Ewel. 1990. Ecosystems of Florida. University of Central Florida Press, Orlando, Florida.
- National Oceanic and Atmospheric Administration. 2021. U.S. Climate Normals Product Suite (1981-2010). National Centers for Environmental Information. Asheville, NC.
- Parkinson, R.W. 1995. Managing Biodiversity from a Geological Perspective. Bulletin of Marine Science. Vol 57 (1): 28-36.

**Thousand Islands Conservation Area
Management Plan
October 2022 Draft
Appendices Section**

Appendices

- A. Section 508 Compliance Documentation
- B. Outstanding Florida Waters Letters
- C. Compliance Letters
- D. Florida Natural Areas Inventory Letter
- E. Flora related to Thousand Islands Conservation Area
- F. Arthropod Plan
- G. Avian species related to Thousand Islands Conservation Area
- H. Reptile and Amphibian species related to Thousand Islands Conservation Area
- I. Mammal species related to Thousand Islands Conservation Area
- J. Public Meeting Minutes and comments related to Thousand Islands Conservation Area
- K. Land Management Plan Compliance Checklist and Review (needs to be at the beginning)

Appendix A
Section 508 Compliance Documentation
Required by the Americans with Disabilities Act
for Figures and Tables found within the
Thousand Islands Conservation Area Management Plan

Long Description Figure 1

Figure One is the Site Map for the Thousand Islands Conservation area. The boundary line is represented by a dotted red line and a green image of the State of Florida is in the top right-hand corner of the map. The area of the Sanctuary has a red box around it in that image. There are numerous neighborhoods to the east of the site with the southwest portion of the map showing the Banana River Lagoon.

[Back to Figure 1](#)

Long Description Figure 2

Figure Two is the Optimal Boundary Map. The boundary line for the Thousand Islands Conservation Area is represented by a dotted red line and the boundary line for the islands surrounding that are not managed by the County are represented by a solid blue line. These other managed lands are owned by the State of Florida.

[Back to Figure 2](#)

Long Description Figure 3

Figure Three is the Purchasing Map. The Thousand Island Conservation Area is represented with a solid yellow line. The two separate purchases are shown on the map as a red solid line for the Crawford purchase and a solid blue line for the Reynolds purchase.

[Back to Figure 3](#)

Long Description Figure 4

Figure Four is the Trail Map for the Thousand Island Conservation Area. The Thousand Island Conservation Area is represented with a dotted red line. The kayak trail is represented with a dotted purple line. The Fourth Street trail is represented with a light blue line with perpendicular hashes along that line. The North Crawford trail is represented with a dotted yellow line. The Overlook Trail, located on south Crawford Island, is represented with an aqua line that has solid circles along that line. Kiosk locations are represented by solid green hexagons. The site has Five kiosks located throughout the site.

[Back to Figure 4](#)

Long Description Figure 5

Figure Five is the Natural Communities Map for the Thousand Island Conservation Area. The property consists of mainly spoil island, represented by the peach colored overlay. The restoration portions of the site are represented by a white overlay with green plant symbols throughout. The more natural wetland system is represented by a white overlay with blue plant symbols throughout.

[Back to Figure 5](#)

Long Description Figure 6

Figure Six is the management plan aerial for 1943. The Thousand Island Conservation Area is represented with a dotted red line. The kayak trail is represented with a solid purple line. The Fourth Street trail is represented with a light blue line with perpendicular hashes along that line. The North Crawford trail is represented with a dotted yellow line. The Overlook Trail, located on south Crawford Island, is represented with an aqua line that has solid circles along that line. The aerial description of the area is found in the text.

[Back to Figure 6](#)

Long Description Figure 7

Figure Seven is the management plan aerial for 1958. The Thousand Island Conservation Area is represented with a dotted red line. The kayak trail is represented with a solid purple line. The Fourth Street trail is represented with a light blue line with perpendicular hashes along that line. The North Crawford trail is represented with a dotted yellow line. The Overlook Trail, located on south Crawford Island, is represented with an aqua line that has solid circles along that line. The aerial description of the area is found in the text.

[Back to Figure 7](#)

Long Description Figure 8

Figure Eight is the management plan aerial for 1979. The Thousand Island Conservation Area is represented with a dotted red line. The kayak trail is represented with a solid purple line. The Fourth Street trail is represented with a light blue line with perpendicular hashes along that line. The North Crawford trail is represented with a dotted yellow line. The Overlook Trail, located on south Crawford Island, is represented with an aqua line that has solid circles along that line. The aerial description of the area is found in the text.

[Back to Figure 8](#)

Long Description Figure 9

Figure Nine is the management plan aerial for 2000. The Thousand Island Conservation Area is represented with a dotted red line. The kayak trail is represented with a solid purple line. The Fourth Street trail is represented with a light blue line with perpendicular hashes along that line. The North Crawford trail is represented with a dotted yellow line. The Overlook Trail, located on south Crawford Island, is represented with an aqua line that has solid circles along that line. The aerial description of the area is found in the text.

[Back to Figure 9](#)

[\(Return to Text – A\)](#)

Appendices Descriptions and Links

Long Description Appendix B

Appendix B contained the letter from the Florida Department of Environmental Protection (DEP). As stated in the text, there are some classified waterways in the Sanctuary's immediate location. The letter was written on February 2, 2021 and was signed by Janet Klemm from the Standards Development Section of DEP. An original document was presented in this Plan's appendix as it was received from the respective agency. To access this entire document in a Section 508 compliant format, please request it through Brevard County's Public Request Process.

[\(Return to Text - B\)](#)

Long Description Appendix C

Appendix C contained the letter from the City of Cocoa Beach. As stated in the text, all activities comply with the City's Zoning, Regulations, etc. The letter was written on November 10, 2021 and was signed by James McKnight, the City Manager. An original document was presented in this Plan's appendix as it was received from the respective agency. To access this entire document in a Section 508 compliant format, please request it through Brevard County's Public Request Process.

[\(Return to Text – C\)](#)

Long Description Appendix D

Appendix D contained the letter from the Florida Natural Areas Inventory. As stated in the text, this letter details occurrences, rarities, etc. of flora and fauna species found and recorded within Thousand Islands Conservation Area boundary. The letter was written on January 20, 2021 and was signed by Kerri Brinegar from GIS and Data Services. An original document was presented in this Plan's appendix as it was received from the respective agency. To access this

entire document in a Section 508 compliant format, please request it through Brevard County's Public Request Process.

[\(Return to Text – D\)](#)

Long Description Appendix F

Appendix F contained the letter from Brevard County. As stated in the text, this letter details arthropod management that Brevard County does in and around the Thousand Islands Conservation Area boundary. The letter was signed on January 13, 2010 and January 22, 2010 by the then director of Mosquito Control and the current Program manager of the Environmentally Endangered Lands Program. An original document was presented in this Plan's appendix as it was received from the respective agency. To access this entire document in a Section 508 compliant format, please request it through Brevard County's Public Request Process.

[\(Return to Text – F\)](#)

Appendix B
Thousand Islands Conservation Area Management Plan
Outstanding Florida Waters Letter



**FLORIDA DEPARTMENT OF
Environmental Protection**

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Noah Valenstein
Secretary

February 2, 2021

Mr. David DeMeyer
Brevard County Environmentally Endangered Lands (EEL) Program
Central Region Land Management Superintendent
6195 North Tropical Trail
Merritt Island, FL, 32953

RE: Brevard County's Thousand Islands Conservation Area

Dear Mr. DeMeyer,

This is in response to your inquiry regarding Outstanding Florida Waters (OFW) within or near Brevard County's Thousand Islands Conservation Area (Conservation Area). The nearest OFW to the Conservation Area is the Banana River Aquatic Preserve, [see subparagraph 62-302.700(9)(h)3., Florida Administrative Code (F.A.C.)]. This OFW is adjacent to the southwest corner of the Conservation Area near Sprig Point (see enclosed figure).

The surface waters adjacent to the southwest corner of the Conservation Area are Class II (Shellfish Harvesting or Propagation) according to subparagraph 62-302.400(17)(b)5., F.A.C., while the surface waters within the Conservation Area are Class III waters (Fish Consumption; Recreation, Propagation and Maintenance of a Healthy, Well-Balanced Population of Fish and Wildlife). The enclosed figure shows the OFW and surface water classifications relative to the Thousand Islands Conservation Area.

If you have any questions or need additional information about this response, please feel free to contact either me via E-mail at Janet.Klemm@FloridaDEP.gov or by phone at 850-245-8427 or contact Talia E. Smith via E-mail at Talia.E.Smith@FloridaDEP.gov or by phone at 850-245-8068.

Sincerely,

Janet Klemm
Standards Development Section
DEP Division of Environmental Assessment and Restoration

[\(Long Description Appendix B\) \(Return to Text – B\)](#)

Appendix C
Thousand Islands Conservation Area Management Plan
Cocoa Beach City Compliance Letter



**City of Cocoa
Beach**

P.O. Box 322430, 2 South
Orlando Avenue Cocoa Beach,
Florida 32932-2430
www.cityofcocoabeach.com



November 10, 2021

David DeMeyer
Brevard County Environmentally Endangered Lands Program
Central Region Land Management Superintendent
6195 North Tropical Trail,
Merritt Island, FL 32953

RE: Thousand Islands Conservation Area Management Plan

Mr. DeMeyer,

The Thousand Islands Conservation Area is located within the City limits of Cocoa Beach and the City shares ownership over the lands with Brevard County and the Florida Communities Trust. The lands of the Thousand Islands Conservation Area are managed by the Brevard County Environmentally Endangered Lands Program. Because of this shared ownership, the City reviews all management plans associated with the area prior to their approval and adoption.

The City of Cocoa Beach Land Management Committee has reviewed and approved the proposed updates to the Thousand Islands Conservation Area Management Plan. The Land Management Committee found the plan to comply with the City's Comprehensive Plan and zoning classification of the area (future land use is protected for conservation). Please allow this letter to serve as the City's support for the 2021 updates to the Thousand Islands Conservation Area Management Plan.

Sincerely,

A handwritten signature in black ink that reads "James McKnight".

James McKnight
City Manager

[\(Long Description Appendix C\)](#) [\(Return to Text – C\)](#)

Appendix D
Thousand Islands Conservation Area Management Plan
Florida Natural Areas Inventory Letter



6100 Thomaxville Road
Suite 200-C
Tallahassee, FL 32313
850-224-0307
fax 850-681-9364
www.fnai.org

January 20, 2021

David DeMeyer
Brevard County Environmentally Endangered Lands Program
6195 North Tropical Trail
Merritt Island, FL 32953

Dear Mr. DeMeyer,

Thank you for requesting information from the Florida Natural Areas Inventory (FNAI). At your request we have produced the following report for your project area.

The purpose of this Standard Data Report is to provide objective scientific information on natural resources located in the vicinity of a site of interest, in order to inform those involved in project planning and evaluation. This Report makes no determination of the suitability of a proposed project for this location, or the potential impacts of the project on natural resources in the area.

Project: The Thousand Islands Conservation Area
Date Received: 1/14/2021
Location: Brevard County

Element Occurrences

A search of our maps and database indicates that we currently have a couple of element occurrences mapped in the vicinity of the study area (see enclosed map and element occurrence table). Please be advised that a lack of element occurrences in the FNAI database is not a sufficient indication of the absence of rare or endangered species on a site.

The element occurrences data layer includes occurrences of rare species and natural communities. The map legend indicates that some element occurrences occur in the general vicinity of the label point. This may be due to lack of precision of the source data, or an element that occurs over an extended area (such as a wide ranging species or large natural community). For animals and plants, element occurrences generally refer to more than a casual sighting; they usually indicate a viable population of the species. Note that some element occurrences represent historically documented observations which may no longer be extant. Extirpated element occurrences will be marked with an 'X' following the occurrence label on the enclosed map.

Likely and Potential Rare Species

In addition to documented occurrences, other rare species and natural communities may be identified on or near the site based on habitat models and species range models (see enclosed Biodiversity Matrix Report). These species should be taken into consideration in field surveys, land management, and impact avoidance and mitigation.

FNAI habitat models indicate areas, which based on land cover type, offer suitable habitat for one or more rare species that is known to occur in the vicinity. Habitat models have been developed for approximately 300 of the rarest species tracked by the Inventory, including all federally listed species.



Florida Resources
and Environmental
Analysis Center

Institute of Science
and Public Affairs

The Florida State University

Tracking Florida's Biodiversity

FNAI species range models indicate areas that are within the known or predicted range of a species, based on climate variables, soils, vegetation, and/or slope. Species range models have been developed for approximately 340 species, including all federally listed species.

The FNAI Biodiversity Matrix Geodatabase compiles Documented, Likely, and Potential species and natural communities for each square mile Matrix Unit statewide.

CLIP

The enclosed map shows natural resource conservation priorities based on the Critical Lands and Waters Identification Project. CLIP is based on many of the same natural resource data developed for the Florida Forever Conservation Needs Assessment, but provides an overall picture of conservation priorities across different resource categories, including biodiversity, landscapes, surface waters, and aggregated CLIP priorities (that combine the individual resource categories). CLIP is also based primarily on remote sensed data and is not intended to be the definitive authority on natural resources on a site.

For more information on CLIP, visit <http://www.fnai.org/clip.cfm>.

Managed Areas

Portions of the site appear to be located within the Thousand Islands Conservation Area, managed by the Brevard County.

The Managed Areas data layer shows public and privately managed conservation lands throughout the state. Federal, state, local, and privately managed conservation lands are included.

The Inventory always recommends that professionals familiar with Florida's flora and fauna conduct a site-specific survey to determine the current presence or absence of rare, threatened, or endangered species.

Please visit www.fnai.org/trackinglist.cfm for county or statewide element occurrence distributions and links to more element information.

The database maintained by the Florida Natural Areas Inventory is the single most comprehensive source of information available on the locations of rare species and other significant ecological resources. However, the data are not always based on comprehensive or site-specific field surveys. Therefore this information should not be regarded as a final statement on the biological resources of the site being considered, nor should it be substituted for on-site surveys. Inventory data are designed for the purposes of conservation planning and scientific research, and are not intended for use as the primary criteria for regulatory decisions.

Information provided by this database may not be published without prior written notification to the Florida Natural Areas Inventory, and the Inventory must be credited as an information source in these publications. **The maps contain sensitive environmental information, please do not distribute or publish without prior consent from FNAI.** FNAI data may not be resold for profit.

Thank you for your use of FNAI services. If I can be of further assistance, please contact me at (850) 224-8207 or at kbrinegar@fnai.fsu.edu.

Sincerely,

Kerri Brinegar

Kerri Brinegar
GIS / Data Services

Encl

Tracking Florida's Biodiversity

[\(Long Description Appendix D\) \(Return to Text – D\)](#)

Appendix E

Thousand Islands Conservation Area Management Plan Plant Species List

The following is a list of species that staff and volunteers have come across while on the Islands included within the Thousand Islands Conservation Area. An official survey needs to be done.

| Common Name | Scientific Name |
|--------------------|------------------------|
|--------------------|------------------------|

| | |
|----------------------|---------------------------------|
| White Mangrove | <i>Laguncularia racemosa</i> |
| Black Mangrove | <i>Avicennia germinans</i> |
| Red Mangrove | <i>Rhizophora mangle</i> |
| White Stopper | <i>Eugenia axillaris</i> |
| Southern Red Cedar | <i>Juniperus virginiana</i> |
| Spanish Stopper | <i>Eugenia foetida</i> |
| American Beautyberry | <i>Callicarpa americana</i> |
| Buttonwood | <i>Conocarpus erectus</i> |
| Bluestem | <i>Andropogon sp.</i> |
| Wild Coffee | <i>Psychotria nervosa</i> |
| Cabbage Palm | <i>Sabal palmetto</i> |
| Saw Palmetto | <i>Serenoa repens</i> |
| Seagrape | <i>Coccoloba uvifera</i> |
| Peppervine | <i>Ampelopsis arborea</i> |
| Strangler Fig | <i>Ficus aurea</i> |
| Smilax | <i>Smilax sp.</i> |
| Ballmoss | <i>Tillandsia recurvata</i> |
| Poke Weed | <i>Phytolacca americana</i> |
| Dog Fennel | <i>Eupatorium capillifolium</i> |
| Winged Sumac | <i>Rhus copallinum</i> |
| Gumbo-Limbo | <i>Bursera simaruba</i> |
| Leather Fern | <i>Acrostichum danaeifolium</i> |
| Saltwort | <i>Batis maritima</i> |
| Saltgrass | <i>Distichlis spicata</i> |
| Spanish Moss | <i>Tillandsia usneoides</i> |
| Poison Ivy | <i>Toxicodendron radicans</i> |
| Button Sage | <i>Lantana involucrata L.</i> |

Appendix F
Thousand Islands Conservation Area Management Plan
Arthropod Control Plan



Florida Department of Agriculture and Consumer Services
Division of Agricultural Environmental Services



ARTHROPOD MANAGEMENT PLAN - PUBLIC LANDS

Chapters 388.4111, F.S. and 5E-13.042(4)(b), F.A.C.
Telephone: (850) 922-7011

For use in documenting an Arthropod control plan for lands designated by the State of Florida or any political subdivision thereof as being environmentally sensitive and biologically highly productive therein.

Name of Designated Land: Brevard County EELS Program – Sites include the following impoundments: From C-2 North, C-2 South, C-2A, Jefferson Marsh area, Crystal Lakes area, to Honest Johns Area.

Specific sites include:

- | | |
|-----------------------------|-------------------------------------|
| 1. Ocean Ridge Sanctuary | 15. Grant Flatwoods |
| 2. Coconut Point | 16. Indian Mound |
| 3. Hog Point Cove | 17. Indian River Sanctuary |
| 4. Washburn Cove | 18. Johnson (Hall Road) |
| 5. Maritime Hammock area | 19. Jordan Scrub Sanctuary |
| 6. Barrier Island Sanctuary | 20. Kabboord |
| 7. Hardwood Hammock | 21. Kings Park |
| 8. 1000 Islands | 22. Malabar Scrub Sanctuary |
| 9. Capron Ridge area | 23. Micco Scrub Sanctuary |
| 10. Crane Creek | 24. North Buck Lake Scrub Sanctuary |
| 11. Cruickshank | 25. Pine Island Conservation Area |
| 12. Dicerandra Scrub | 26. Scottsmoor Flatwoods Sanctuary |
| 13. Enchanted Forest | 27. Southlake Conservation Area |
| 14. Fox Lake | 28. Sykes Creek |

Is Control Work Necessary: Yes No

Location: Brevard County Florida

Land Management Agency: Environmentally Endangered Lands Program
Mike Knight, Program Manager
91 East Drive
Melbourne, FL 32904

Are Arthropod Surveillance Activities Necessary? Yes No
If "Yes", please explain:

According to the Florida Administrative Code 5E-13 surveillance shall be conducted to determine the species and numbers of both pestiferous and disease bearing arthropods. Our surveillance program provides information as to species and amounts of mosquitoes which may require larviciding and adulticiding.

DACS-13668 07/08

Which Surveillance Techniques Are Proposed?
Please Check All That Apply:

- Landing Rate Counts Light Traps Sentinel Chickens
 Citizen Complaints Larval Dips Other

If "Other", please explain:

Arthropod Species for Which Control is Proposed: *Aedes taeniorhynchus*
Aedes sollicitans
Culex nigripalpus (ground treatment only)
Culex salinarius

Proposed Larval Control:

- Number of dips per site: 3+ per location at specific site.
Proposed larval monitoring procedure: When 10% or more of the dips are positive for mosquito larvae, control action will typically be taken
Are post treatment counts being obtained: Yes No

Biological Control of Larvae:

- Might predacious fish be stocked: Yes No
Other biological controls that might be used:

Material to be Used for Larviciding Applications:

(Please Check All That Apply:)

- Bti (*Bacillus thuringiensis israeliensis*)
 Bs (*Bacillus sphaericus*)
 Methoprene (Altosid)
 Non-Petroleum Surface Film
 Other, please specify:

DACS-13668 07/06

- 2 -

2.2.3

Please specify the following for each larvacide:

Chemical or Common name: BTI =VectoBac, Bs = Vectolex, (S) methoprene = Altosid

Ground Aerial

Application rate/s must be according to applicable, site specific label rates and conditions for each product; for example:

Rate/s of application: 12 lb-18lb/acre = VectoBac (BTI) Granules

5lb-20lb/acre = Vectolex (BS) Granules

2.5lbs-10lb/acre = Altosid pellets [(s) methoprene]

7-21.5lb/acre = Agnique MMF G (non-petroleum surface film)

Method of application: liquid by hand, or granular by air.

Proposed Adult Mosquito Control:

Aerial adulticiding Yes No

Ground adulticiding Yes No

Please specify the following for each adulticide: N/A

Chemical or common name: Dibrom/ Permethrin

Rate of application: 0.6 oz/acre (Dibrom), 0.5 oz/acre (Permethrin)

Method of application: Ultra low volume

Adult mosquito population controls are determined by Brevard Mosquito Control District (BMCD) thresholds that are legally based, including: Florida Administrative Code 5E-13.036 requirements, with adult landing rate surveillance counts in surrounding urban areas, triggering at 3 mosquitoes per minute and for surrounding rural areas, triggering at 5-7 per minute. Also, aerial application of adulticides within the areas defined as "Beaches and Bay shores" (areas within 1,500 feet landward of high tide mark), require a three-fold confirmed increase to adult mosquito population backgrounds in order to commence adulticide applications.

Proposed Modifications for Public Health Emergency Control:

BMCD may request special exception to this plan during a threat to public or animal health declared by State Health Officer or Commissioner of Agriculture.

Proposed Notification Procedure for Control Activities: Approval of this plan is intended as notification.

Records:

Are records being kept in accordance with Chapter 388, F.S.:

Yes No

Records Location: In District office Titusville.

DACS-13668 07/08

- 3 -

224

How long are records maintained: 5+ Years

Vegetation Modification: Yes No

What trimming or altering of vegetation to conduct surveillance or treatment is proposed?
Minor trail trimming for surveillance and for ground larviciding will be done as needed.
Some herbiciding with AquaStar, Reward or Rodeo for control of exotic vegetation will be carried out only as needed.

Proposed Land Modifications: Yes No

Is any land modification, *i.e.*, rotary ditching, proposed: Yes No

The Brevard Mosquito Control District policy is to operate all managed impoundments, when possible, on a Rotational Impoundment Management (RIM) program. RIM, essentially, is elevating the water levels inside the impoundment to an elevation adequate to inundate the high marsh areas during mosquito breeding seasons. This action eliminates the egg laying sites for the salt marsh mosquito and controls mosquito breeding in an environmentally friendly manner. This elevated water level number is ~1.50 feet above mean sea level. This water level elevation action takes place from approximately May 15th through October 15th. This activity requires yearly pumping and constant monitoring of water levels within the impoundment network. The impoundments are left open, to decrease water elevations, during other yearly times.

Chronologically, the Brevard Mosquito Control District activities are as follows:

- January- Mowing the deck and bush hogging the side growth.
- January through May- Repairing storm damage if any. Larviciding as necessary.
- May 15th- All boards in, culverts and flaps closed. Begin pumping if Lagoon level is adequate. (>.5 ft mean sea level).
- May 15th through October 15th- Pump in order to maintain 1.3-1.5 ft mean sea level inside impoundment. Larvicide as necessary (helicopter monitoring). Monitor culverts for tampering three days per week.
- June- Mow deck and bush hog side growth.
- October 15th- Pumping stops. Boards removed and flap gates opened."

List any periodic restrictions, as applicable, for example peak fish spawning times: NA

Proposed Modification of Aquatic Vegetation: Yes No

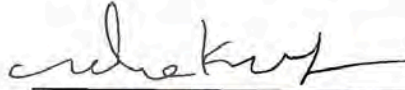
Land Manager Comments:

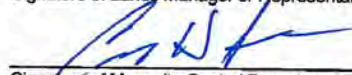
Arthropod Control Agency Comments:

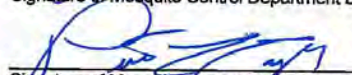
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 1/22/10
Signature of Lands Manager or Representative Date

 1-13-10
Signature of Mosquito Control Department Director Date

 1-13-10
Signature of Mosquito Control District Director Date

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[\(Long Description Appendix F\)](#) [\(Return to Text – F\)](#)

Appendix G
Thousand Islands Conservation Area Management Plan
Avian Species Survey

| Common Name | Scientific Name |
|---------------------|---------------------------------|
| Wood stork | <i>Mycteria americana</i> |
| Belted kingfisher | <i>Megaceryle alcyon</i> |
| Roseate spoonbill | <i>Platalea ajaja</i> |
| Snowy egret | <i>Egretta thula</i> |
| Red-shouldered hawk | <i>Buteo lineatus</i> |
| Great blue heron | <i>Ardea herodias</i> |
| Tricolored heron | <i>Egretta tricolor</i> |
| Osprey | <i>Pandion haliaetus</i> |
| Black vulture | <i>Coragyps atratus</i> |
| Northern cardinal | <i>Cardinalis cardinalis</i> |
| Blue jay | <i>Cyanocitta cristata</i> |
| White ibis | <i>Eudocimus albus</i> |
| Mourning dove | <i>Zenaida macroura</i> |
| Bald eagle | <i>Haliaeetus leucocephalus</i> |

Appendix H
Thousand Islands Conservation Area Management Plan
Reptile and Amphibian Species Survey

| Common Name | Scientific Name |
|----------------------|-------------------------------------|
| Black Racer | <i>Coluber constrictor priapus</i> |
| Diamondback Terrapin | <i>Malaclemys terrapin tequesta</i> |

Appendix I
Thousand Islands Conservation Area Management Plan
Mammal Species Survey

The following is a list of species staff and volunteers have come across. An official survey needs to be done. All sightings have been on the 4th Street Mainland portion of the site.

| Common Name | Scientific Name |
|---------------------------|------------------------------|
| Nine-banded Armadillo | <i>Dasyus novemcinctus</i> |
| Virginia Opossum | <i>Didelphis virginiana</i> |
| Raccoon | <i>Procyon lotor</i> |
| Eastern Cottontail Rabbit | <i>Sylvilagus floridanus</i> |
| Eastern Gray Squirrel | <i>Sciurus carolinensis</i> |

Appendix J
Thousand Islands Conservation Area Management Plan
Meeting Minutes, Announcements, and Comments

The following public meetings occurred relative to the development and approval of this management plan. To request meeting minutes, contact the EEL Program Office at 321-255-4466 or EEL-Info@BrevardParks.com

Stakeholder Meeting

June 25, 2019

Recreation and Education Advisory Committee

August 8, 2019

EEL Selection and Management Committee Meeting

August 20, 2021

EEL Selection and Management Committee Meeting

June 25, 2021

EEL Selection and Management Committee Meeting

October 21, 2022