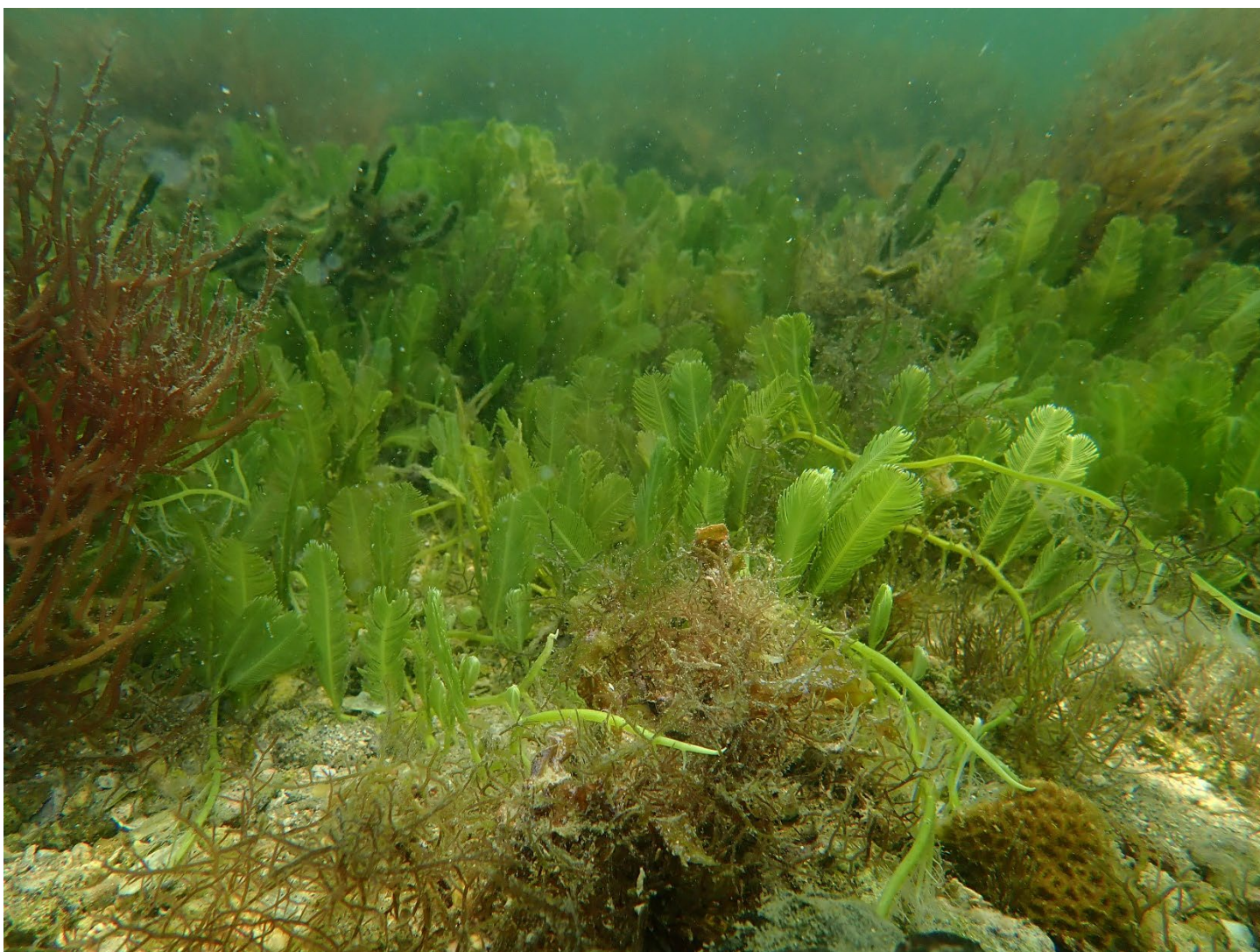




Terra Ceia Aquatic Preserve Management Plan - DRAFT



Florida Department of Environmental Protection
Office of Resilience and Coastal Protection
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Photo 1 / At least two species of octocorals can be found in Terra Ceia Aquatic Preserve

Mission Statement

The Office of Resilience and Coastal Protection's mission statement is:

Conserving, protecting, restoring, and improving the resilience of Florida's coastal and aquatic resources for the benefit of people and the environment.

The four long-term goals of the Office of Resilience and Coastal Protection's Aquatic Preserve Program are to:

1. Protect and enhance the ecological integrity of the aquatic preserves;
2. Restore areas to their natural condition;
3. Encourage sustainable use and foster active stewardship by engaging local communities in the protection of aquatic preserves; and
4. Improve management effectiveness through a process based on sound science, consistent evaluation, and continual reassessment.

Executive Summary

Terra Ceia Aquatic Preserve Management Plan

Lead Agency: Florida Department of Environmental Protection's (DEP) Office of Resilience and Coastal Protection (ORCP)

Common Name of Property: Terra Ceia Aquatic Preserve (TCAP)

Location: Manatee County, Florida

Acreage: 20,394 acres

Management Agency: DEP's ORCP

Designation: Aquatic Preserve

Aquatic Preserve Significance

By virtue of its location along southeast Tampa Bay, Terra Ceia represents much of the remaining undeveloped shoreline of one of Florida's most densely populated watersheds. With increasing urbanization, it is becoming more important that residents and visitors be able to drive a short distance down I-75 or I-275 and experience Tampa Bay in its natural state. For many, visiting the Terra Ceia area is like "stepping back in time" to experience the natural beauty that attracted early settlers to the Tampa Bay area. Such experiences create a public appreciation for the natural functions of ecosystems that do so much to provide clean water, clean air and abundant seafood for people. The preserve contains a considerable amount of Tampa Bay's seagrass and much of the bay's hardbottom acreage. In addition to four species of mangroves and five species of seagrasses, over 30 species of algae have been identified. Approximately 300 species of invertebrates and 70 species of birds and fishes have been identified within the preserve boundary.

The Terra Ceia ecosystem is a major driver for the economy and quality of life in the Tampa Bay area. Tampa Bay alone contributes more than \$5 billion annually from trade, tourism, development and fishing, and boasts three major seaports. More than 110,000 boats are registered to fishing and sailing enthusiasts in Pinellas, Hillsborough and Manatee counties (Florida Department of Highway Safety and Motor Vehicles, 2025). The emergent and submerged habitats of the preserve are critical to many commercial and recreational fish species as well as many bird species. Humans, as a component of the preserve ecosystem, are very important as well. Residents and visitors are inseparable from the function and well-being of the preserve, and TCAP strives to help users understand the responsibility to protect the resources that comes with their use and enjoyment.

Natural Communities

FNAI Natural Community Type	Acreage	% of Area	Global Rank	State Rank	Comments
Salt Marsh	116	0.6%	G4	S4	
Mangrove Swamp	2468	12.1%	G5	S4	

FNAI Natural Community Type	Acreage	% of Area	Global Rank	State Rank	Comments
Blackwater Stream	3	0.0%	G4	S2	Not fully mapped
Mollusk Reef	unknown	unknown	G3	S3	
Unconsolidated Substrate	100	unknown	G2	S2	Not fully mapped
Composite Substrate	unknown	unknown	G3	S3	Not fully mapped
Seagrass Bed	4114	20.2%	G2	S2	Can vary annually

The marine and estuarine communities in TCAP are ecologically important as wildlife habitat, storm protection and land stabilization. Mangrove communities are abundant, hosting all four species of mangroves (red, black, white, and buttonwood). Worth noting are the historic mangroves on the coastlines surrounding Williams Bayou and Clambar Bay, which display extensive prop roots and heights up to 25 feet. Seagrass and algal beds are also found throughout the preserve. Salt marsh communities are few in the preserve, but existing salt marsh is productive in terms of biomass and it provides a transition zone between terrestrial and aquatic habitats. Common vegetative species include black needlerush, saltmarsh hay, and saltgrass. Extensive hardbottom acreage is present within the preserve, but as observed by Ash and Runnels (2005), the existing accounts of acreage, distribution and biota are not accurate. Hardbottom communities at Terra Ceia include hard corals, soft corals, sponges and compound ascidians.

Archaeological/Historical Sites:

The history of the Terra Ceia Aquatic Preserve area extends back thousands of years. Archaeological evidence indicates human use dating back to 8,000 B.C., with subsequent aboriginal occupation leading to the creation of shell middens and mounds spanning from 500 B.C. to the late 1400s. Early European explorers, including Narvaez and Desoto, encountered several indigenous groups inhabiting the Tampa Bay region, including the Tocobaga, Pooy, Uzita, Yagua and Neguarete Indians. By the mid-1700s, the native population had been decimated, and the Tampa Bay area became a hunting ground for the Seminoles who had migrated from Georgia and Alabama. Cuban fishermen also utilized the shoreline around Tampa Bay to establish seasonal camps, though their primary activities were centered around Charlotte Harbor.

Public Involvement: Public support is vital to the success of conservation programs. The goal is to foster understanding of the challenges facing these fragile ecosystems and the steps needed to adequately manage these important habitats. Advisory committee and public meetings are scheduled on Monday, August 18, and Tuesday, August 26, 2026, respectively, to receive input on the draft management plan. An additional public meeting will be held in Tallahassee when the Acquisition and Restoration Council reviews the management plan.

Management:

Issue 1: Water Resources

Goal 1: Improve understanding of water quality status and trends in the aquatic preserve.

- Objective 1: Maintain a strategic long-term water quality monitoring program that includes biotic and abiotic parameters, compile analyzed data to evaluate water quality status and trends and develop a list of priority actions. Compile data, determine long-term water quality status and trends and identify gaps or redundancies.
- Objective 2: Ensure water quality data are available to the public and other agencies.
- Objective 3: Ensure the sustainability of habitats and wildlife of concern through the development of a tiered approach to water quality monitoring that integrates biological assessments and multiple tools to define a core set of baseline indicators. Such indicators may explain causes and/or sources of any impairment within the aquatic preserve.
- Objective 4: Identify influencing factors contributing to water quality degradation and provide support and collaboration to prevent degradation and improve conditions when possible.
- Objective 5: Identify specific and emerging water quality issues related to nutrients, pollution, and environmental contaminants, and with coordination from other agencies, develop a response strategy to these issues.

Goal 2: Maintain and improve water quality of the aquatic preserve.

- Objective 1: Facilitate knowledge and understanding of how activities in the watershed impact the aquatic preserve.
- Objective 2: Implement research, restoration, and enhancement projects throughout the aquatic preserve that focus on improving water quality.
- Objective 3: Support acquisition of lands that would serve to protect or enhance the biological, aesthetic or scientific values of the preserves.
- Objective 4: Reduce water quality impacts caused by stormwater and septic system sources within the watershed.

Issue 2: Submerged Resources:

Goal 1: Monitor, maintain and restore submerged natural resources.

- Objective 1: Maintain an inventory of the current location, composition and abundance of the various habitat types and associated fauna and flora.
- Objective 2: Identify current and potential future threats and impacts to the natural communities within aquatic preserve.
- Objective 3: Maintain and enhance the extent, quality and abundance of submerged and emergent habitats while taking into consideration existing habitat and wildlife use.
- Objective 4: Improve community understanding of submerged resources and factors that impact the aquatic preserve by improving data dissemination and accuracy.
- Objective 5: Track and document factors such as sea level rise, increases in sea surface temperature, storm frequency and intensity and alterations in hydrologic cycles as they pertain to the aquatic preserve's submerged and coastal resources.

Goal 2: Improve protection and public understanding of submerged natural resources.

- Objective 1: Promote the importance of coastal habitats by generating a variety of informational outlets that target recreational, commercial and scientific user groups operating in the aquatic preserve.
- Objective 2: Reduce physical damage (e.g., propeller scarring, anchor drags) to the aquatic preserve submerged resources through management actions and research projects.
- Objective 3: Coordinate with DEP/WMD regulatory and compliance staff, and support law enforcement to reduce or prevent impacts to water quality, natural and cultural resources, and wildlife.

- Objective 4: Establish processes to track and predict environmental changes to the aquatic preserve's submerged resources to guide adaptive management approaches.

Issue 3: Shoreline and island management

Goal 1: Protect and restore natural shorelines.

- Objective 1: Enhance degraded or altered shorelines to maintain and improve water quality, habitats and address shoreline erosion as appropriate for each site.
- Objective 2: Increase awareness of the ecological and protective importance of nature-based shorelines.

Goal 2: Retain habitat and ecosystem functions of natural and dredged material islands.

- Objective 1: Enhance degraded or altered islands to maintain and improve water quality, habitats, and address shoreline erosion as appropriate for each site.
- Objective 2: Maintain sustainable use on islands.

Issue 4: Listed and Priority Species Management

Goal 1: Protect listed and priority species and their key habitats within the aquatic preserve.

- Objective 1: Establish, implement and build upon existing routine biological monitoring programs for essential habitats, and rare and listed species.
- Objective 2: Improve understanding of bird populations (migratory and year-round residents) that use the aquatic preserve.
- Objective 3: Reassess the status of fisheries within the aquatic preserve.
- Objective 4: Monitor and assess diamondback terrapin populations within the aquatic preserve.
- Objective 5: Annually evaluate status and trends of wading and diving bird populations.
- Objective 6: Improve public understanding of colonial wading birds and nesting island habitat.
- Objective 7: Preserve and improve bird island habitat and function.

Issue 5: Non-native and Invasive Species

Goal 1: Reduce the impacts of invasive and nuisance species in the aquatic preserve.

- Objective 1: Identify the presence and threat of invasive and/or non-native species.
- Objective 2: Reduce the abundance and diversity of invasive and non-native species within the aquatic preserve.

Issue 6: Protection of Cultural Resources

Goal 1: Promote the protection of cultural and historical resources within the aquatic preserve.

- Objective 1: Assess the condition of recorded cultural and historical resources within the aquatic preserve.
- Objective 2: Improve public understanding of archaeological and cultural resources associated with the aquatic preserve.

Issue 7: Marine Debris

Goal 1: Reduce debris at the source.

- Objective 1: Identify implications to the natural resources of the various types of marine debris occurring within the aquatic preserve.
- Objective 2: Reduce marine debris through increased awareness, including the impacts of marine debris.
- Objective 3: Seek methods to reduce debris that enters the aquatic preserve.

Goal 2: Remove debris from the aquatic preserve.

- Objective 1: Coordinate and collaborate in debris removal activities, including derelict vessel removal and derelict trap removal.

Issue 8: Low-Impact Public Use and Access

Goal 1: Enhance public access and public use experiences in the aquatic preserve.

- Objective 1: Maintain and enhance sustainable public access.
- Objective 2: Support low impact recreational opportunities in the aquatic preserve.

Issue 9: Education and Outreach

Goal 1: Increase public involvement, awareness and knowledge of the aquatic preserve.

- Objective 1: Promote awareness of the aquatic preserve and its significance.
- Objective 2: A sense of stewardship is developed among the public by providing volunteer opportunities.

Issue 10: Episodic Events such as Tropical Weather Events, Oil Spills, Red Tide events, etc.

Goal 1: Minimize negative impacts to the aquatic preserve from episodic events.

- Objective 1: Maintain hurricane and other disaster response plans to limit damage, facilitate impact assessments and conduct debris and vessel removals.
- Objective 2: Support other agencies during and after events such as providing monitoring data, manpower, etc., as resources and staffing allows.

Major Accomplishments Since the Approval of the Previous Plan

Terra Ceia Aquatic Preserve is managed under the Tampa Bay Aquatic Preserves (TBAP) office. While TBAP does not duplicate the routine water quality monitoring conducted by Manatee County staff, Terra Ceia Aquatic Preserve offers monitoring opportunities that are relatively unique for Tampa Bay. Because the Frog Creek system is one of the few remaining relatively undeveloped streams, and because Bishop Harbor is also undeveloped, continuous monitoring data within these waterbodies was determined valuable for providing a reference database to study potential land-based sources of impacts in more urban waterbodies. TBAP established continuous water quality datasonde platforms at the mouth of Bishop Harbor and at the Bishop Harbor Road Bridge on Frog Creek. Although no longer active due to capacity limitations, one site has since been transferred to the University of South Florida's Marine Science staff for management and moved into Bishop Harbor.

Much of TBAP's activity, and therefore, accomplishments in the preserve in recent years have been in rapid response to episodic events. Three hurricanes have affected TCAP, and TBAP's staff post-storm role has varied with the command structure used for debris and vessel removal after each event. Following Hurricane Irma, in September of 2017, TBAP operated under the federal Environmental Support Function-10 command structure with the Coast Guard and their contractors to provide consultation as a certified Natural Resource Advisors. While this command structure required TBAP to pause all other projects, it did provide great protection for the habitat areas from which the vessels were being removed.

Because Hurricane Helene, in late September 2024, and Hurricane Milton, in early October 2024, were so close together, the post-storm responses for these events were, in effect, one response. Vessel removal was coordinated through the state Emergency Operations Center. For this response, TBAP

organized training in vessel removal best practices for the state's contractors.

Another episodic event requiring action by TBAP was the Piney Point gypsum stack liner failure in 2021. To avoid catastrophic collapse of the old phosphate plant gypsum stack, over 200 million gallons of acidic, nutrient-rich wastewater was discharged into Tampa Bay. TBAP used its site knowledge and vessel access to the area for monitoring and daily water quality sampling in partnership with DEP's Division of Environmental Assessment and Restoration (DEAR). Also in 2021, TBAP worked with the Florida Fish and Wildlife Conservation Commission (FWC) on routine sampling of a large red tide event that affected Terra Ceia, as well as Tampa Bay, in general.

In addition to all these efforts in response to episodic events, TBAP has been proactively working to establish a monitoring program for the hardbottom habitats of the preserve. Several years of pilot efforts have led to a fairly cohesive suite of field operations that are intended to be part of an ongoing effort to track changes in hardbottom benthos through phototransects, to track changes in fish species and populations through video fish counts and to complement those biotic sampling efforts with abiotic water parameter measurements. This initiative is intended to fill an important knowledge gap through a more scientifically rigorous look at trends in the preserve's hardbottom communities.

A positive development for the overall TBAP program, which has resulted in a considerable extension of the program's capacity, has been the establishment of the Friends of Tampa Bay Aquatic Preserves citizen support organization (CSO). This organization has become active in helping to engage with the public, and it also has become a source of volunteers for field and outreach work. While the organization's focus was initially in Pinellas County, current leadership has expressed an interest in proactively engaging with constituents in other parts of TBAP's geographic range.

Acquisition and Restoration Council approval date:

Acronym List

Abbreviation	Meaning
BMAP	Basin Management Action Plan
BMPs	Best Management Practices
CSO	Citizen Support Organization
DEP	Florida Department of Environmental Protection
DHR	Division of Historical Resources
DNR	Florida Department of Natural Resources
DOH	Florida Department of Health
ERP	Environmental Resource Permit
F.A.C.	Florida Administrative Code
F.A.R.	Florida Administrative Register
FDACS	Florida Department of Agriculture and Consumer Services
FNAI	Florida Natural Areas Inventory
FPAN	Florida Public Archaeology Network
F.S.	Florida Statutes
FWC	Florida Fish and Wildlife Conservation Commission
FWC FWRI	Florida Fish and Wildlife Conservation Commission Fish and Wildlife Research Institute
MFLs	Minimum flows and levels
NERR	National Estuarine Research Reserve
NOAA	National Oceanic and Atmospheric Administration
NWR	National Wildlife Refuge
OFW	Outstanding Florida Water
ORCP	Office of Resilience and Coastal Protection
Project COAST	Coastal Assessment Team
SEACAR	Statewide Ecosystem Assessment of Coastal and Aquatic Resources
SFWMD	South Florida Water Management District
SLR	Sea Level Rise
SWFWMD	Southwest Florida Water Management District
TBAP	Tampa Bay Aquatic Preserves (program)
TCAP	Terra Ceia Aquatic Preserve
Trustees	Board of Trustees of the Internal Improvement Trust Fund

Abbreviation	Meaning
UF/IFAS	University of Florida Institute of Food and Agricultural Sciences
USF	University of South Florida
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey

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Photo 2 / Areas of the preserve delight visitors after a short drive from urban areas.

Chapter 1 / Introduction

The Florida aquatic preserves are administered on behalf of the state by the Florida Department of Environmental Protection's (DEP) Office of Resilience and Coastal Protection (ORCP) as part of a network that includes 43 aquatic preserves, three National Estuarine Research Reserves (NERRs), the Florida Keys National Marine Sanctuary, and the St. Joseph Bay State Buffer Preserve (Map 1). This provides for a system of significant protections to ensure that our most popular and ecologically important underwater ecosystems are cared for in perpetuity. Each of these special places is managed with strategies based on local resources, issues and conditions.

Florida's extensive coastline and wealth of aquatic resources have defined the State as a subtropical oasis, attracting millions of residents and visitors, and the businesses that serve them. Florida's submerged lands play important roles in maintaining good water quality, hosting a diversity of wildlife and habitats (including economically and ecologically valuable nursery areas), and supporting a treasured quality of life for all. In the 1960s, it became apparent that the ecosystems that had attracted so many people to Florida could not support rapid growth without science-based resource protection and management. To this end, state legislators provided extra protection for certain exceptional aquatic

areas by designating them as aquatic preserves.

Title to submerged lands not conveyed to private landowners is held by the Board of Trustees of the Internal Improvement Trust Fund (the Trustees). The Governor and Cabinet, sitting as the Trustees, act as guardians for the people of the state of Florida (§253.03, Florida Statutes [F.S.]) and regulate the use of these public lands. Through statute, the Trustees have the authority to adopt rules related to the management of sovereignty submerged lands (Florida Aquatic Preserve Act of 1975, §258.36, F.S.). A higher layer of protection is afforded to aquatic preserves including areas of sovereignty lands that have been “set aside forever as aquatic preserves or sanctuaries for the benefit of future generations” due to “exceptional biological, aesthetic, and scientific value” (Florida Aquatic Preserve Act of 1975, §258.36, F.S.). Chapter 18-20.001 F.A.C., describes the intent of the aquatic preserves’ designation and management as the following (see Appendix A.3.1 for the complete Chapter 18-20):

18-20.001 Intent.

(1) All sovereignty lands within a preserve shall be managed primarily for the maintenance of essentially natural conditions, the propagation of fish and wildlife, and public recreation, including hunting and fishing where deemed appropriate by the Board, and the managing agency.

(2) Aquatic preserves which are described in Part II of Chapter 258, F.S., were established for the purpose of being preserved in an essentially natural or existing condition so that their aesthetic, biological and scientific values may endure for the enjoyment of future generations.

(3) The preserves shall be administered and managed in accordance with the following goals:

(a) To preserve, protect, and enhance these exceptional areas of sovereignty submerged lands by reasonable regulation of human activity within the preserves through the development and implementation of a comprehensive management program;

(b) To protect and enhance the waters of the preserves so that the public may continue to enjoy the traditional recreational uses of those waters such as swimming, boating, and fishing;

(c) To coordinate with federal, state, and local agencies to aid in carrying out the intent of the Legislature in creating the preserves;

(d) To use applicable federal, state, and local management programs, which are compatible with the intent and provisions of the act and these rules, and to assist in managing the preserves;

(e) To encourage the protection, enhancement or restoration of the biological, aesthetic, or scientific values of the preserves, including but not limited to the modification of existing manmade conditions toward their natural condition, and discourage activities which would degrade the aesthetic, biological, or scientific values, or the quality, or utility of a preserve, when reviewing applications, or when developing and implementing management plans for the preserves;

(f) To preserve, promote, and utilize indigenous life forms and habitats, including but not limited to: sponges, soft coral, hard corals, submerged grasses, mangroves, salt water marshes, fresh water marshes, mud flats, estuarine, aquatic, and marine reptiles, game and non-game fish species, estuarine, aquatic and marine invertebrates, estuarine, aquatic and marine mammals, birds, shellfish and mollusks;

(g) To acquire additional title interests in lands wherever such acquisitions would serve to protect or enhance the biological, aesthetic, or scientific values of the preserves;

(h) To maintain those beneficial hydrologic and biologic functions, the benefits of which accrue to the public at large.

1.1 / Management Plan Purpose and Scope

Florida's aquatic resources are at risk for both direct and indirect impacts of increasing development and recreational use, as well as resulting economic pressures, such as energy generation and increased fish and shellfish harvesting to serve and support the growing population. These potential impacts to resources can reduce the health and viability of the ecosystems that contain them, requiring active management to ensure the long-term health of the entire network. Effective management plans for the aquatic preserves are essential to address this goal and each site's own set of unique challenges. The purpose of these plans is to incorporate, evaluate, and prioritize all relevant information about the site into a cohesive management strategy, allowing for appropriate access to the managed areas while protecting the long-term health of the ecosystems and their resources.

The mandate for developing aquatic preserve management plans is outlined in Section 18-20.013 and Subsection 18-18.013(2) of the Florida Administrative Code (F.A.C.). Management plan development and review begins with the collection of resource information from historical data, research and monitoring, and includes input from individual aquatic preserve managers and staff, area stakeholders, and members of the public. The statistical data, public comment, and cooperating agency information is then used to identify management issues and threats affecting the present and future integrity of the site, its boundaries, and adjacent areas. The information is used in the development and review of the management plan, which is examined for consistency with the statutory authority and intent of the Aquatic Preserve Program. Each management plan is evaluated periodically and revised as necessary to allow for strategic improvements. Intended to be used by site managers and other agencies or private groups involved with maintaining the natural integrity of these resources, the plan includes scientific information about the existing conditions of the site and the management strategies developed to respond to those conditions.

To aid in the analysis and development of the management strategies for the site plans, the Aquatic Preserve Program identified ten management programs generally applicable to aquatic preserves. To address the goals, objectives, integrated strategies and performance measures of these programs, relevant information about the specific site has been collected, analyzed, and compiled to provide a foundation for development of the management plan. While it is expected that unique issues may arise regarding the resource or management needs of a particular site, the following management areas are typical across the resource protection network:

- Water resources
- Restoration and protection of submerged habitat
- Restoration and protection of shorelines and/or islands
- Listed species protection
- Invasive species monitoring and management
- Cultural resources protection
- Marine debris
- Public use
- Awareness of aquatic preserves
- Support during episodic events

[illegible]

also identify the program and facility needs required to meet the goals, objectives, and strategies of the management plan. These components are key elements for achieving the resource protection mission of each aquatic preserve.

1.2 / Public Involvement

The Aquatic Preserve Program recognizes the importance of stakeholder participation and encourages their involvement in the management plan development process. ORCP is also committed to meeting the requirements of Florida's Government-in-the-Sunshine Law (§286.011, F.S.), including:

- Meetings of public boards or commissions must be open to the public;
- Reasonable notice of such meetings must be given; and
- Minutes of the meetings must be recorded.

Several key steps are to be taken during management plan development. First, staff compose a draft plan after gathering information of current and historic uses; resource, cultural and historic sites; and other valuable information regarding the property and surrounding area. Staff then organize an advisory committee comprised of key stakeholders, and conduct, in conjunction with the advisory committee, public meetings to engage the stakeholders for feedback on the draft plan and the development of the final draft of the management plan. An additional public meeting is held when the plan is reviewed by the Acquisition and Restoration Council for approval. For additional information about the advisory committee and the public meetings refer to Appendix C - Public Involvement.



Photo 3 / Seagrasses, like this turtlegrass, are flowering plants, the wildflowers of the bay.

Chapter 2 / The Florida Department of Environmental Protection's Office of Resilience and Coastal Protection

2.1 / Introduction

The Florida Department of Environmental Protection (DEP) protects, conserves and manages Florida's natural resources and enforces the state's environmental laws. DEP is the lead agency in state government for environmental management and stewardship and commands one of the broadest charges of all the state agencies, protecting Florida's air, water and land. DEP is divided into three primary areas: Regulatory Programs, Land and Recreation, and Ecosystem Restoration. Florida's environmental priorities include restoring America's Everglades; improving air quality; restoring and protecting the water quality in our springs, lakes, rivers and coastal waters; conserving environmentally sensitive lands; and providing citizens and visitors with recreational opportunities, now and into the future.

The Office of Resilience and Coastal Protection (ORCP) is the unit within the DEP that manages more

than five million acres of submerged lands and select coastal uplands. This includes 43 aquatic preserves, three National Estuarine Research Reserves (NERRs), the Florida Keys National Marine Sanctuary as well as providing management support through the Florida Coastal Management Program, the Outer Continental Shelf Program, the Coral Reef Conservation Program, the Clean Boating Program, the Florida Resilient Coastlines Program, and the Beach Management Programs. The three NERRs, the Florida Keys National Marine Sanctuary, and the Coral Reef Conservation Program are managed in cooperation with the National Oceanic and Atmospheric Administration (NOAA).

ORCP manages sites in Florida for the conservation and protection of natural and historical resources and resource-based public use that is compatible with the conservation and protection of these lands. ORCP is a strong supporter of the NERR system and its approach to coastal ecosystem management. Florida has three designated NERR sites, each encompassing at least one aquatic preserve within its boundaries. Rookery Bay NERR includes Rookery Bay Aquatic Preserve and Cape Romano-Ten Thousand Islands Aquatic Preserve; Apalachicola NERR includes Apalachicola Bay Aquatic Preserve; and Guana Tolomato Matanzas NERR includes Guana River Marsh Aquatic Preserve and Pellicer Creek Aquatic Preserve. These aquatic preserves provide discrete areas designated for additional protection beyond that of the surrounding NERR and may afford a foundation for additional protective zoning in the future. Each of the Florida NERR managers serves as a program administrator overseeing multiple other aquatic preserves in their region. This management structure advances ORCP's ability to manage its sites as part of the larger statewide system.

Statewide, there are 43 aquatic preserves, totaling more than 2.9 million acres of exceptional sovereign submerged lands. The network of aquatic preserves began in 1966 when the FL legislature designated Estero Bay Aquatic Preserve, and with subsequential designations, the Florida Aquatic Preserve Act of 1975 brought together the existing (and future) aquatic preserves under one management and set of rules. Management of each aquatic preserve is specialized according to their biological and scientific values, habitats and wildlife, as well as their watersheds, anthropogenic and natural stressors.

The Florida Keys National Marine Sanctuary, established in 1990 by Congress, and confirmed by the Board of Trustees of the Internal Improvement Trust Fund, covers 2.3 million acres of state and federal submerged lands. The Florida Keys National Marine Sanctuary contains unique and nationally significant marine resources, including the southern portion of the Florida Reef Tract (the world's third largest barrier coral reef), extensive sea grass beds, mangrove-fringed islands and more than 6,000 species of marine life. ORCP leads state co-management efforts in the Sanctuary in partnership with the Florida Fish and Wildlife Conservation Commission and NOAA.

The Coral Reef Conservation Program coordinates research and monitoring, develops management strategies and promotes partnerships to protect the northern portion of the Florida Reef Tract along the southeast Florida coast, pursuant to the U.S. Coral Reef Task Force's National Action Plan. The Coral Reef Conservation Program also implements Florida's Local Action Strategy, the Southeast Florida Coral Reef Initiative. The program leads response, assessment and restoration efforts and jointly oversees enforcement efforts for non-permitted reef resource injuries (vessel groundings, anchor and cable drags, etc.) in southeast Florida pursuant to the Florida Coral Reef Protection Act (Section 403.93345, F.S.).

The Florida Coastal Management Program is based on a network of agencies implementing 24 statutes

that protect and enhance the state's natural, cultural and economic coastal resources. The goal of the program is to coordinate local, state and federal government activities using existing laws to ensure that Florida's coast is as valuable to future generations as it is today. ORCP is responsible for directing the implementation of the statewide coastal management program. The Florida Coastal Management Program provides funding to promote the protection and effective management of Florida's coastal resources at the local level through the Coastal Partnership Initiative grant program.

The Outer Continental Shelf Program is responsible for coordinating the state's review, oversight, monitoring and response efforts related to activities that occur in federal waters on the Outer Continental Shelf to ensure consistency with state laws and policies and that these activities do not adversely affect state resources. Reviews are conducted under federal laws, including the Outer Continental Shelf Lands Act, Coastal Zone Management Act, National Environmental Policy Act, Deepwater Ports Act, Marine Protection, Research and Sanctuaries Act, Rivers and Harbors Act, Clean Air and Water Acts and the regulations that implement them.

The Clean Boating Program includes Clean Marina designations to bring awareness to marine facilities and boaters regarding environmentally friendly practices intended to protect and preserve Florida's natural environment. Marinas, boatyards and marine retailers receive clean designations by demonstrating a commitment to implementing and maintaining a host of best management practices. Via the Clean Boating Program, the Clean Vessel Act provides grants, with funding provided by the U.S. Fish and Wildlife Service, for construction and installation of sewage pumpout facilities and purchase of pumpout boats and educational programs for boaters.

The Florida Resilient Coastlines Program's mission is synergizing community resilience planning and natural resource protection tools and funding to prepare Florida's coastline for the effects of climate change, especially rising sea levels. This program is working to ensure Florida's coastal communities are resilient and prepared for the effects of rising sea levels, including coastal flooding, erosion, and ecosystem changes. The program is synergizing community resilience planning and natural resource protection tools; providing funding and technical assistance to prepare Florida's coastal communities for sea level rise; and continuing to promote and ensure a coordinated approach to sea level rise planning among state, regional, and local agencies.

A healthy beach and dune system provide protection for upland development and critical infrastructure, preservation of critical wildlife habitat for threatened and endangered species, and a recreational space that drives the state's tourism industry and economy. In order to protect, preserve and manage Florida's valuable sandy beaches and coastal systems, the Legislature adopted the Florida Beach and Shore Preservation Act, Chapter 161, Florida Statutes, in 1964. The Act provides for the creation of a statewide, comprehensive beach management program that integrates coastal data acquisition, coastal engineering and geology, biological resource protection and analyses, funding initiatives and regulatory programs designed to protect Florida's coastal system both above and below the mean high-water line. This comprehensive approach allows DEP's Beach Management Programs to collaborate with coastal communities to address critical erosion caused by altered and managed inlets, imprudent construction, rising seas and storm impacts. DEP's Beach Management Programs consist of the following: Beach Field Services, Coastal Engineering and Geology Group, the Coastal Construction Control Line Program, the Beaches and Inlets Ports Program and the Beaches Funding Group.

2.2 / Management Authority

Established by law, aquatic preserves are exceptional areas of submerged lands and associated waters that are to be maintained in their natural or existing conditions. The intent was to forever set aside submerged lands with exceptional biological, aesthetic, and scientific values as sanctuaries, called aquatic preserves, for the benefit of future generations.

The laws supporting aquatic preserve management are the direct result of the public's awareness of and interest in protecting Florida's aquatic environment. The extensive dredge and fill activities that occurred in the late 1960s spawned this widespread public concern. In 1966, the Board of Trustees of the Internal Improvement Trust Fund (Trustees) created the first offshore reserve, Estero Bay, in Lee County.

In 1967, the Florida Legislature passed the Randall Act (Chapter 67-393, Laws of Florida), which established procedures regulating previously unrestricted dredge and fill activities on state-owned submerged lands. That same year, the Legislature provided the statutory authority (§253.03, Florida Statutes [F.S.]) for the Trustees to exercise proprietary control over state-owned lands. Also in 1967, government focus on protecting Florida's productive water bodies from degradation due to development led the Trustees to establish a moratorium on the sale of submerged lands to private interests. An Interagency Advisory Committee was created to develop strategies for the protection and management of state-owned submerged lands.

In 1968, the Florida Constitution was revised to declare in Article II, Section 7, the state's policy of conserving and protecting natural resources and areas of scenic beauty. That constitutional provision also established the authority for the Legislature to enact measures for the abatement of air and water pollution. Later that same year, the Interagency Advisory Committee issued a report recommending the establishment of 26 aquatic preserves.

The Trustees acted on this recommendation in 1969 by establishing 16 aquatic preserves and adopting a resolution for a statewide system of such preserves. In 1975, the state Legislature passed the Florida Aquatic Preserve Act of 1975 (Act) that was enacted as Chapter 75-172, Laws of Florida, and later became Chapter 258, Part II, F.S. This Act codified the already existing aquatic preserves and established standards and criteria for activities within those aquatic preserves. Additional aquatic preserves were individually adopted at subsequent times up through 2024.

In 1980, the Trustees adopted the first aquatic preserve rule, Chapter 18-18, Florida Administrative Code (F.A.C.), for the administration of the Biscayne Bay Aquatic Preserve. All other aquatic preserves are administered under Chapter 18-20, F.A.C., which was originally adopted in 1981. These rules apply standards and criteria for activities in the aquatic preserves, such as dredging, filling, building docks and other structures that are stricter than those of Chapter 18-21, F.A.C., which apply to all sovereignty lands in the state.

This plan complies with the Conceptual State Lands Management Plan, adopted March 17, 1981, by the Board of Trustees of the Internal Improvement Trust Fund and represents balanced public utilization, specific agency statutory authority, and other legislative or executive constraints. The Conceptual State Lands Management Plan also provides essential guidance concerning the management of sovereignty lands and aquatic preserves and their important resources, including unique natural features,

seagrasses, endangered species, and archaeological and historical resources.

Through delegation of authority from the Trustees, the DEP and ORCP have proprietary authority to manage the sovereignty lands, the water column, spoil islands (which are merely deposits of sovereignty lands), and some of the natural islands and select coastal uplands to which the Trustees hold title.

Enforcement of state statutes and rules relating to criminal violations and non-criminal infractions rests with the Florida Fish and Wildlife Conservation Commission and DEP law enforcement as well as federal local law enforcement agencies. Enforcement of administrative remedies rests with ORCP, the DEP Districts, and Water Management Districts. The Florida Fish and Wildlife Conservation Commission (FWC) represents the main enforcement authority for many issues occurring within Terra Ceia Aquatic Preserve (TCAP), including fishing and boating violations, and plays a significant role in the execution of TCAP management objectives. However, DEP also plays a role in the enforcement of environmental laws and regulations. In 2019, DEP reestablished their enforcement program that now includes both the Office of Emergency Response and Environmental Crimes Unit, which was transferred from FWC to DEP. This office is responsible for ensuring compliance with environmental laws through inspection and enforcement as well as responding to reports of incidents that result in environmental impacts.

2.3 / Statutory Authority

The fundamental laws providing management authority for the aquatic preserves are contained in Chapters 258 and 253, F.S. These statutes establish the proprietary role of the Governor and Cabinet, sitting as the Board of Trustees of the Internal Improvement Trust Fund, as Trustees over all sovereignty lands. In addition, these statutes empower the Trustees to adopt and enforce rules and regulations for managing all sovereignty lands, including aquatic preserves. The Florida Aquatic Preserve Act was enacted by the Florida Legislature in 1975 and is codified in Chapter 258, F.S.

The legislative intent for establishing aquatic preserves is stated in Section 258.36, F.S.: "It is the intent of the Legislature that the state-owned submerged lands in areas which have exceptional biological, aesthetic, and scientific value, as hereinafter described, be set aside forever as aquatic preserves or sanctuaries for the benefit of future generations." This statement, along with the other applicable laws, provides a foundation for the management of aquatic preserves. Management will emphasize the preservation of natural conditions and will include lands that are statutorily authorized for inclusion as part of an aquatic preserve.

Chapter 2026-1, Laws of Florida protects the Terra Ceia Aquatic Preserve by restricting the dredging or filling of submerged lands within the Aquatic Preserve, except under specific conditions approved by the Board of Trustees. Conditions allowed under the new statutory provision include:

- Public navigation projects or dredging/spoiling for public necessity.
- Alterations to enhance the quality and utility of the preserve.
- Dredging, clearly demonstrated in the public interest, to eliminate hazards to public health or to eliminate stagnate waters, islands and spoil banks to enhance environmental quality and utility of the preserve.
- Minimum dredging/filling for the creation and maintenance of marinas, public boat ramps, piers and docks, if assurance is provided to the Board of Trustees that these activities will not adversely affect water quality or utility of the preserve.

The legislation ensures that any future changes to the preserve must go through a transparent, state-level approval process and be publicly noticed.

Management responsibilities for aquatic preserves may be fulfilled directly by the Trustees or by staff of the DEP through delegation of authority. Other governmental bodies may also participate in the management of aquatic preserves under appropriate instruments of authority issued by the Trustees. ORCP staff serves as the primary managers who implement provisions of the management plans and rules applicable to the aquatic preserves. ORCP does not “regulate” the lands per se; rather, that is done primarily by the DEP Districts (in addition to the Water Management Districts) which grant regulatory permits. The Florida Department of Agriculture and Consumer Services (DACS) through delegated authority from the Trustees, may issue proprietary authorizations for marine aquaculture within the aquatic preserves and regulates all aquaculture activities as authorized by Chapter 597, Florida Aquaculture Policy Act, F.S. Staff evaluates proposed uses or activities in the aquatic preserve and assesses the possible impacts on the natural resources. Project reviews are primarily evaluated in accordance with the criteria in the Act, Chapter 18-20, F.A.C., and this management plan.

Comments of ORCP staff, along with comments of other agencies and the public are submitted to the appropriate permitting staff for consideration in their issuance of any delegated authorizations in aquatic preserves or in developing recommendations to be presented to the Trustees. This mechanism provides a basis for the Trustees to evaluate public interest and the merits of any project while also considering potential environmental impacts to the aquatic preserves. Any activity located on sovereignty lands requires a letter of consent, a lease, an easement, or other approval from the Trustees.

Florida Statutes that authorize and empower non-ORCP programs within DEP or other agencies may also be important to the management of ORCP sites. For example, Chapter 403, F.S., authorizes DEP to adopt rules concerning the designation of “Outstanding Florida Waters” (OFWs), a program that provides aquatic preserves with additional regulatory protection. Chapter 379, F.S., regulates saltwater fisheries, and provides enforcement authority and powers for law enforcement officers. Additionally, it provides similar powers relating to wildlife conservation and management. The sheer number of statutes that affect aquatic preserve management prevents an exhaustive list of all such laws from being provided here.

2.4 / Administrative Rules

Chapters 18-18, 18-20 and 18-21, F.A.C., are the three administrative rules directly applicable to the uses allowed in aquatic preserves specifically and sovereignty lands generally. These rules are intended to be cumulative, meaning that Chapter 18-21 should be read together with Chapter 18-18 or Chapter 18-20 to determine what activities are permissible within an aquatic preserve. If Chapter 18-18 or Chapter 18-20 are silent on an issue, Chapter 18-21 will control; if a conflict is perceived between the rules, the stricter standards of Chapter 18-18 or Chapter 18-20 supersede those of Chapter 18-21. Because Chapter 18-21 concerns all sovereignty lands, it is logical to discuss its provisions first.

Originally codified in 1982, Chapter 18-21, F.A.C., is meant “to aid in fulfilling the trust and fiduciary responsibilities of the Board of Trustees of the Internal Improvement Trust Fund for the administration,

management and disposition of sovereignty lands; to ensure maximum benefit and use of sovereignty lands for all the citizens of Florida; to manage, protect and enhance sovereignty lands so that the public may continue to enjoy traditional uses including, but not limited to, navigation, fishing and swimming; to manage and provide maximum protection for all sovereignty lands, especially those important to public drinking water supply, shellfish harvesting, public recreation, and fish and wildlife propagation and management; to insure that all public and private activities on sovereignty lands which generate revenues or exclude traditional public uses provide just compensation for such privileges; and to aid in the implementation of the State Lands Management Plan.”

To that end, Chapter 18-21, F.A.C., contains provisions on general management policies, forms of authorization for activities on sovereignty lands, and fees applicable for those activities. In the context of the rule, the term “activity” includes “construction of docks, piers, boat ramps, boardwalks, mooring pilings, dredging of channels, filling, removal of logs, sand, silt, clay, gravel or shell, and the removal or planting of vegetation” (Rule 18-21.003, F.A.C.). In addition, activities on sovereignty submerged lands must be not contrary to the public interest (Rule 18-21.004, F.A.C.). Chapter 18-21 also sets policies on aquaculture, geophysical testing (using gravity, shock wave and other geological techniques to obtain data on oil, gas or other mineral resources), and special events related to boat shows and boat displays. Of particular importance to ORCP site management, the rule also addresses spoil islands, preventing their development in most cases.

Chapters 18-18 and 18-20, F.A.C., apply standards and criteria for activities in the aquatic preserves that are stricter than those of Chapter 18-21. Chapter 18-18 is specific to the Biscayne Bay Aquatic Preserve and is more extensively described in that site’s management plan. Chapter 18-20 is applicable to all other aquatic preserves. It further restricts the type of activities for which authorizations may be granted for use of sovereignty lands and requires that structures that are authorized be limited to those necessary to conduct water dependent activities. Moreover, for certain activities to be authorized, “it must be demonstrated that no other reasonable alternative exists which would allow the proposed activity to be constructed or undertaken outside the preserve” (Paragraph 18-20.004(1)(g), F.A.C.).

Chapter 18-20, F.A.C., expands on the definition of “public interest” by outlining a balancing test that is to be used to determine whether benefits exceed costs in the evaluation of requests for sale, lease, or transfer of interest of sovereignty lands within an aquatic preserve. The proposed application must meet this public interest criteria or the applicant can propose or demonstrate additional benefits for public interest. must be demonstrated Typically, this could be a project implemented by the applicant or it could be funds distributed to the aquatic preserve’s Citizen Support Organization to implement strategies in the approved management plan. Public interest is required by rule and is separate from mitigation which makes up for direct loss of a habitat. The rule also provides for the analysis of the cumulative impacts of a request in the context of prior, existing, and pending uses within the aquatic preserve, including both direct and indirect effects. The rule directs management plans and resource inventories to be developed for every aquatic preserve. Further, the rule provides provisions specific to certain aquatic preserves and indicates the means by which the Trustees can establish new or expand existing aquatic preserves.

Aquatic preserve management relies on the application of many other DEP and outside agency rules. Perhaps most notably, Chapter 62-302, F.A.C., concerns the classification of surface waters, including criteria for OFW, a designation that provides for the state’s highest level of protection for water quality.

All aquatic preserves contain OFW designations, except the Kristin Jacobs Coral Aquatic Preserve. No activity may be permitted within an OFW that degrades ambient water quality unless the activity is determined to be in the public interest. Once again, the list of other administrative rules that do not directly address ORCP's responsibilities but do affect ORCP-managed areas is too long to include within the context of this management plan.

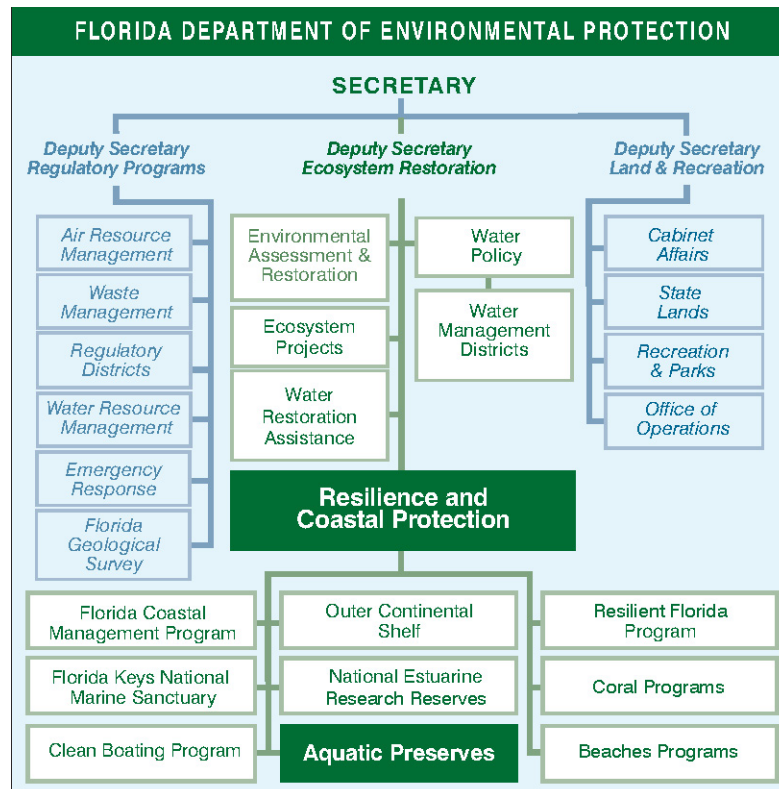


Figure 1/ State management structure.



Photo 4 / Tropical weather systems sometimes bring new visitors to the preserve, such as this flamingo.

Chapter 3 / Terra Ceia Aquatic Preserve

3.1 / Introduction to Terra Ceia Aquatic Preserve

3.1.1 / Designation

Terra Ceia Aquatic Preserve (TCAP) was officially designated as an aquatic preserve by the legislature on June 24, 1984, amended on June 25, 1985, for the addition of language to the legal description, and most recently, updated to include added protections in statute on March 19, 2026.

As part of Tampa Bay, TCAP is characterized by the inlets and embayments of a drowned shoreline. The preserve has open water, several inlet bays, and tidally influenced creeks and rivers. Inlet bays include Bishop Harbor, Miguel Bay and Terra Ceia Bay. Adjacent to Bishop Harbor, two additional inlets can be found: Williams Bayou and Clambar Bay. Miguel Bay is formed from the mainland and Rattlesnake Key. The largest inlet, Terra Ceia Bay is bisected by the U.S. 19 bridge. The open water of the preserve is bisected by the Sunshine Skyway and its southern causeway approach. The Terra Ceia River/Frog Creek and McMullen Creek provide freshwater to the system. The tidally influenced portions of these water

bodies are part of the preserve.

International/National/State/Regional Significance

By virtue of its location along southeast Tampa Bay, Terra Ceia represents much of the remaining undeveloped shoreline of one of Florida's most densely populated watersheds. With increasing urbanization, it is becoming more valuable that residents and visitors are able to experience Tampa Bay in its natural state. For many, visiting the Terra Ceia area is like "stepping back in time" to experience the natural beauty that attracted early settlers to the Tampa Bay area. Such experiences create a public appreciation for the natural functions of ecosystems that do so much to provide clean water, clean air and abundant seafood for people.

The preserve contains a considerable amount of Tampa Bay's seagrass and much of the bay's hardbottom acreage. As a temperate/subtropical climatic transition zone, the area provides a natural workshop for the study of effects of environmental change and urbanization that is yielding science-derived information of gulf-wide significance. This site provides a unique opportunity to study the effects of environmental change, in regard to genetic adaptation, diversity, interaction, dominance shifts due to parasite/disease interaction, and changes in reproduction trends.

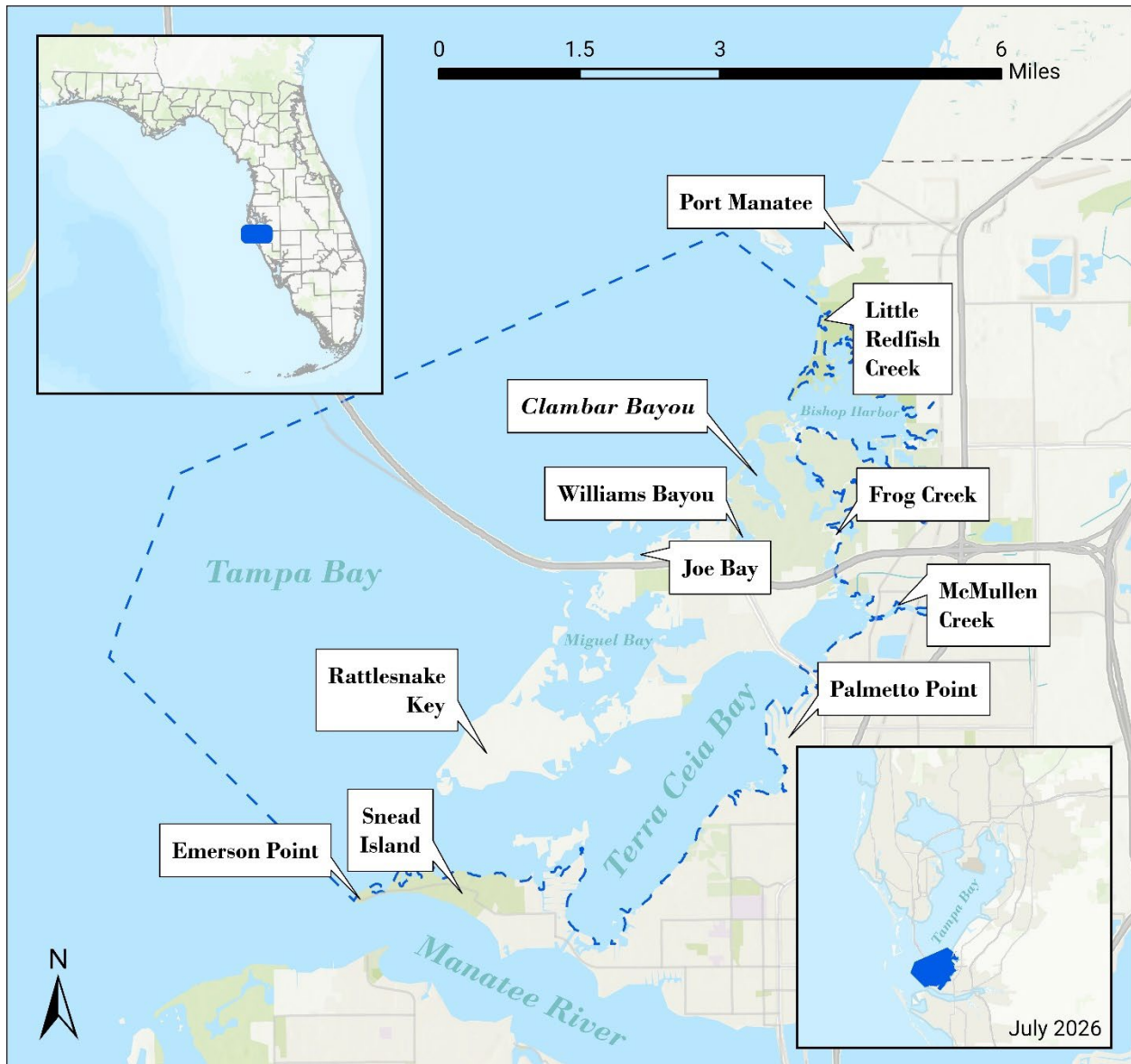
In placing resource management emphasis on the Terra Ceia area, the state of Florida is providing protection for resources under unique threats as well as facilitating research with implications far beyond the geographic boundaries of the preserve.

TCAP is managed by the Tampa Bay Aquatic Preserves (TBAP) program and is housed at the Clearwater Historical Society Museum and Cultural Center in Clearwater, FL. The Tampa Bay Aquatic Preserves program manages three other aquatic preserves in addition to TCAP, including Cockroach Bay Aquatic Preserve, Pinellas County-Aquatic Preserve, and Boca Ciega Bay Aquatic Preserve.

3.1.2 / Location

TCAP is in Tampa Bay, entirely within northwestern Manatee County. The preserve encompasses several inlets of southeastern Tampa Bay, as well as much of the southeastern Tampa Bay shoreline. Situated on either side of the Sunshine Skyway, the preserve is central to the Bradenton/St. Petersburg/Tampa area. The preserve's northern boundary begins just south of the mouth of Little Redfish Creek at SeaPort Manatee. The southern boundary lies between the mouths of Terra Ceia Bay and the Manatee River at Emerson Point on Snead Island. The boundary extends northwesterly from these points out to the Manatee-Hillsborough County line and the Intracoastal Waterway respectively, which then crosses and forms the outermost corner of the preserve. Except for the city of Palmetto and the Palmetto Point subdivision, most of the adjacent uplands are within the Terra Ceia Florida Forever project. Bishop Harbor, Clambar Bay, Williams Bayou and Terra Ceia River are bordered by state-owned uplands. Palmetto is the only incorporated city bordering the preserve.

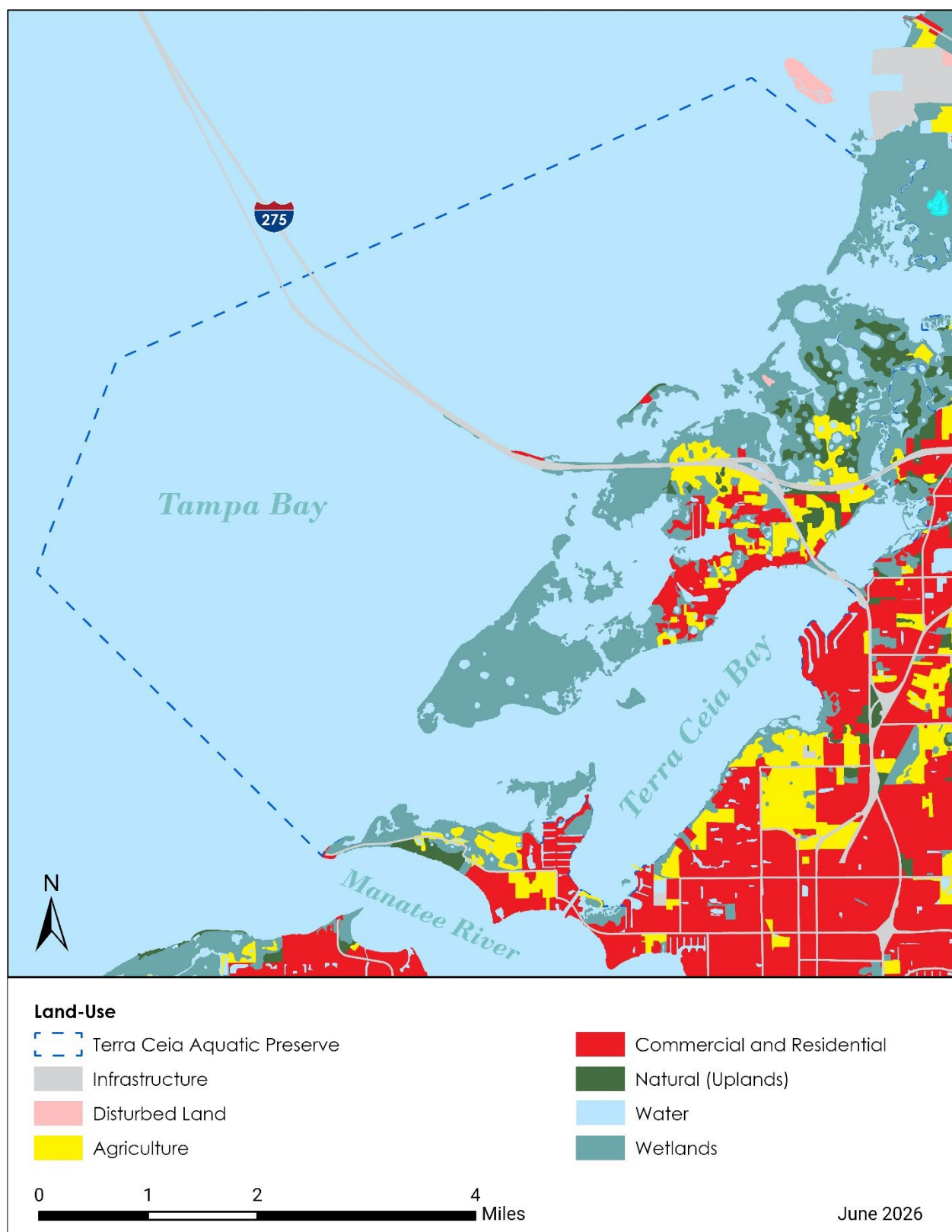
The preserve is comprised of an area of state-owned submerged lands totaling 20,394 acres of predominately pristine submerged and wetland areas within Tampa Bay, Terra Ceia Bay, Miguel Bay, Joe Bay, Bishop Harbor and tidal waters of all tributaries including Frog Creek/Terra Ceia River and



Map 2 / Terra Ceia Aquatic Preserve

McMullen Creek. TCAP has open water, several inlet bays, and tidally influenced creeks and rivers and contains a diverse variety of natural communities, including seagrass, mangroves, salt marsh, tidal flats, hardbottom, oyster bars and clam beds.

TCAP is in close proximity to other publicly owned sites, including Terra Ceia Preserve State Park (managed by the Florida Department of Environmental Protection's (DEP) Division of Recreation and



Map 3 / Land use surrounding Terra Ceia Aquatic Preserve

Parks), Emerson Point Nature Park (managed by Manatee County), and the Madira Bickel Mound State Archaeological Site (also managed by the Florida Department of Environmental Protection's (DEP) Division of Recreation and Parks). Additionally, rookery islands such as the Nina Washburn Sanctuary and the Ann and Rich Paul Little Bird Key are located within the preserve (owned and managed by the Florida Audubon Society). Near TCAP is another small preserve, The Felts Audubon Preserve, located in Palmetto and managed by the Manatee County Audubon Society. TCAP is also adjacent to and within a Strategic Habitat Conservation Class Area as designated by the Florida Fish and Wildlife Conservation Commission (FNAI, 2026).

The variety of ownerships and management entities for conservation lands in southeast Tampa Bay add administrative boundaries into an otherwise ecologically contiguous area. This makes it especially important for managing agencies and organizations to maintain effective mechanisms for planning, collaboration and communication.

3.1.3 / Surrounding Land Use

Much of the land adjacent to TCAP is state-owned conservation land acquired to act as a buffer from coastal development. Several commercial nurseries are near the preserve, and a number of shoreline homes and housing developments are clustered in various locations adjacent to or near the preserve shoreline. SeaPort Manatee lies immediately adjacent to the northern boundary of the preserve. Several specialized facilities near the preserve include a commercial riding stable and a small racing test track. All of these enterprises must be encouraged to minimize impermeable ground cover and to retain stormwater, nutrients and sediments on-site.

3.1.4 / Population Data and Future Projected Changes

Manatee County's population has increased significantly over the past several years, reflecting broader growth trends in Florida's Gulf Coast region. According to the United States Census Bureau, the county's population has expanded 17%, from approximately 399,710 in 2020 to 468,200 in 2025 (U.S. Census Bureau, 2026) and has increased 51.4% from the 2000 census of 264,002 people. Planning projections indicate that Manatee County population may exceed 500,000 residents by 2045 under projected growth scenarios (SWFWMD, 2025). This growth places additional pressure on coastal and estuarine resources, through expanded residential and commercial development, increased recreational boating activity, and greater demand for wastewater treatment and replacement of aging infrastructure. This growth in population, however, presents opportunities for environmental improvements including; replacement of aging infrastructure, such as septic-to-sewer conversions and upgrades to wastewater treatment systems that could improve nutrient removal.

3.1.5 / Adjacent Conservation Lands

Terra Ceia Preserve State Park serves as a buffer preserve for the protection of the aquatic preserve. It totals over 2,000 acres, including freshwater and saltwater wetlands, uplands, and mangrove forests (Florida Department of Environmental Protection (DEP), 2026c). The park is part of the larger Terra Ceia Florida Forever project which is a joint acquisition project between the state of Florida and the Southwest Florida Water Management District Infrastructure development (Department of Environmental Protection, 2012). Activities within Terra Ceia Preserve State Park, including recreation, resource management and habitat restoration may affect the resources of the aquatic preserve. It is



Map 4 / Conservation lands near Terra Ceia Aquatic Preserve

important for these activities to be coordinated with the aquatic preserve and to be planned and executed in a manner that mutually benefits both the park and the preserve, while avoiding or minimizing any harmful effects.

The Florida Audubon Society manages several islands, including some within Terra Ceia Bay. One of which is the Nina Washburn Sanctuary (also known as Terra Ceia Bird Key). The Florida Coastal Islands Sanctuaries has managed it since 1939, and the Florida Audubon Society took official ownership of it in 1968 (J. Leichty, personal communication, May 26, 2026). Although this island was once a productive nesting colony for waterbirds such as pelicans, egrets, and herons, no nesting activity has taken place on this island within the last decade. However, another island, the Ann and Rich Paul Little Bird Key (also known as Terra Ceia Little Bird Key) has done quite well in recent years. The island was acquired by the Florida Audubon Society in 2015 and is regularly home to roughly 100-250 pairs of nesting birds ranging from 12 different species, some of which are state threatened. TCAP staff has supported management activities in this area and must continue to help protect this important component of the Terra Ceia ecosystem.

The nearby Felts Audubon Preserve is a small 28-acre preserve managed by the Manatee County Audubon Society (Manatee County Audubon Society, 2026a). It was acquired in 2002 and in 2020 with the help of the Conservation Foundation of the Gulf Coast, it was granted as a conservation easement. This preserve is about one mile east of TCAP and includes footpaths through fields, ponds, forests and bay swamps. Though TCAP staff do not work directly with this preserve, this preserve gives critical habitat for the nesting waterbirds that utilize TCAP.

Emerson Point Preserve is a 365-acre site acquired as public conservation lands by the state of Florida and Manatee County (Manatee County Audubon Society, 2026b). It is managed by Manatee County for public use as a passive recreation, conservation, and education park. This preserve is located at the tip of Snead Island, and its northern shoreline borders the aquatic preserve. The site has a combination of cultural and natural resources with multiple shell mounds and middens, a 19th century plantation settlement, hardwood hammocks, extensive mangroves, and saltwater marsh areas (Manatee County Board of County Commissioners Parks and Natural Resources Department, 2013). In addition to providing valuable wildlife habitat and water quality maintenance functions, this site provides an archaeological context within which the pre-Columbian history of the Terra Ceia area can be better understood.

Madira Bickel Mound State Archeological Site was the first site to be designated a State Archaeological Site in Florida (DEP, 2026a). The flat-topped ceremonial mound and neighboring property were donated by Karl and Madira Bickel to the state in 1948. The mound itself is composed of shell, village debris, and sand that measures 100 feet by 170 feet at its base and is about 20 feet in height. Through archaeological excavations, at least three periods of Native American cultures were discovered, with the earliest dating back 2,000 years. In addition to providing valuable insights into the pre-Columbian history of Terra Ceia Island, the site contains several acres of mangrove and upland habitat.

SeaPort Manatee is located along the northern border of the preserve and separates TCAP from the

Cockroach Bay Aquatic Preserve. The channel into the port is 2.95 miles in length with a width of 400 feet, and a depth of 40 feet (SeaPort Manatee, 2026b). Over the years, SeaPort Manatee has contributed significantly to environmental projects in the bay. In addition to their seagrass transplantation project in 2001, the port worked with Audubon of Florida and the Gulfstream Natural Gas System to create Manbirdtee Key Bird Sanctuary (SeaPort Manatee, 2026a). This dredged material island was a result of the port's dredging in the 1960s and has hosted over 120 bird species since 2003. In addition to the island, port-owned land, in conservation easement, extends south around Peanut Lake and toward Hells Half-Acre, north of Bishop Harbor. Activities and development at the port have the potential to adversely impact preserve resources, and the conservation easement provides a valuable buffer between preserve resources and port operations.

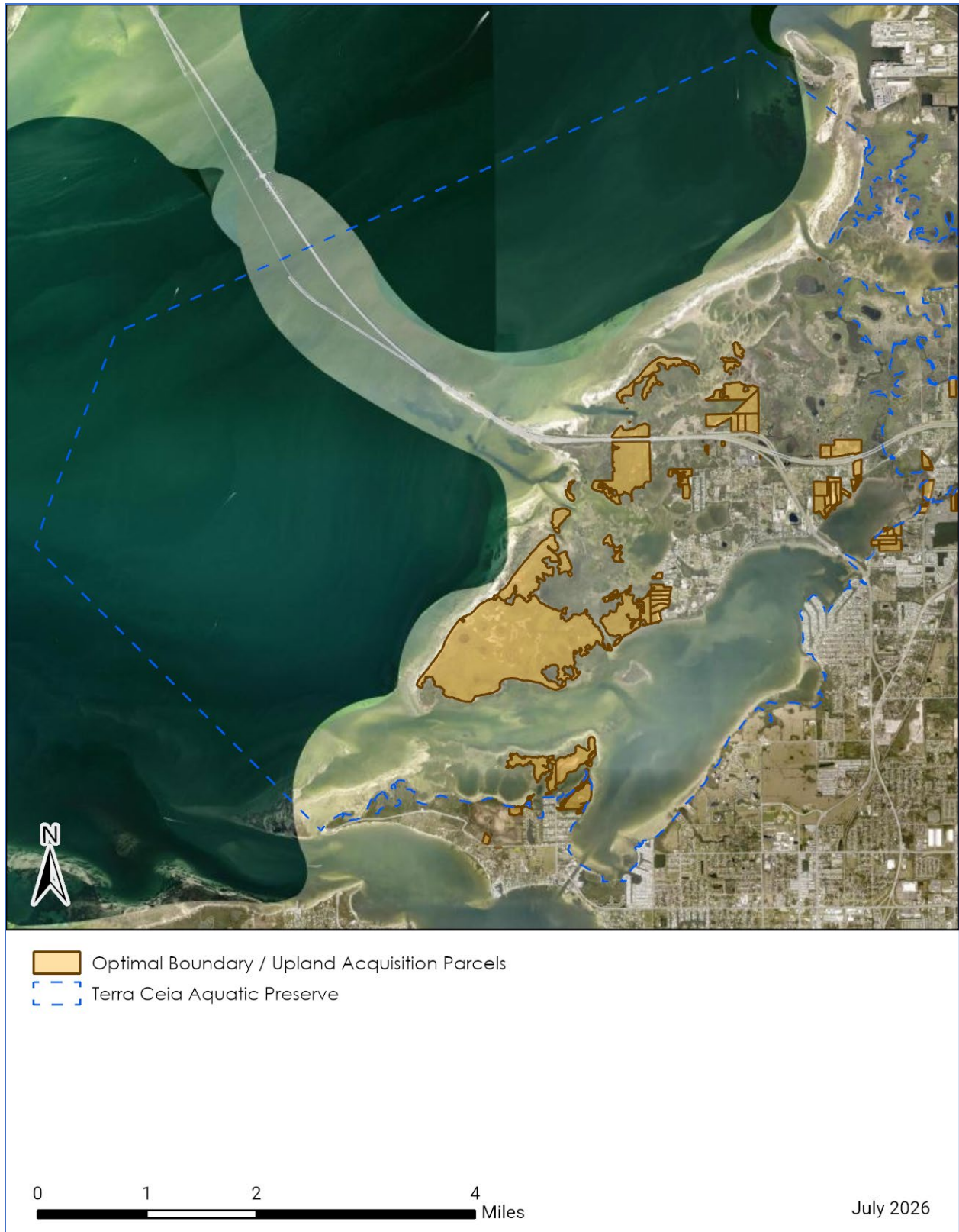
The Sunshine Skyway Bridge and Skyway Fishing Pier State Park bisect the preserve. Traveling south on the Skyway, TCAP is the first thing one sees after the high point of the bridge. The undeveloped beauty of the aquatic preserve and the state park is further highlighted by its urban counterpart in Pinellas County. The fishing pier provides structure to attract a variety of game fishes such as sea bass, snapper, mackerel, cobia, sheepshead, tarpon, snook, pompano and grouper (DEP, 2026b). The pier also allows access to the preserve without the associated boating impacts. Because of degradation of the 1960s and 1970s reinforced concrete structure of the pier, it is in the process of being removed in stages, and DOT is working with TBAP on replacements, which will be on a smaller scale than the existing structures.

3.1.6 / Optimum Upland Acquisition Boundary

One of the most important means to ensure the water quality of an aquatic preserve and protect its natural resources is maintaining a natural buffer around the aquatic preserve whenever possible. This natural buffer continues the connectivity of submerged natural habitats, shoreline natural habitats, and upland natural habitats, and has numerous other benefits. Natural areas can increase the resilience of adjacent urban areas by protecting them from storms and flooding and can help mitigate against the effects of sea level rise. There are many protected natural areas adjacent to aquatic preserves already including several state parks which were specifically designated for the purpose of buffering aquatic preserves. However, there are also privately-owned natural lands adjacent to aquatic preserves which may benefit from permanent protection. Many of these privately-owned natural lands are already identified within Florida Forever project boundaries, and ORCP supports their acquisition and management by the agency designated in those Florida Forever projects. There may be additional lands that are not yet within Florida Forever boundaries. ORCP will work with interested landowners and potential managing agencies to add those lands to Florida Forever projects or other land acquisition programs.

Because the land that presently makes up Terra Ceia Preserve State Park was originally acquired as a buffer preserve for Terra Ceia Aquatic Preserve, TBAP has played a special role in determining the parcels that have been acquired and those in the Terra Ceia Florida Forever Project Boundary yet to be acquired. The local community, as well, has a long history of actively supporting land acquisition around the aquatic preserve.

Parcels not yet in conservation that are directly adjacent to preserve waters are the highest priority, as the ecotones, or habitat transition zones, between land and water are especially important to



Map 5 / Optimum upland acquisitions for Terra Ceia Aquatic Preserve

maintaining the area's species richness. Additionally, those parcels that border tributaries like Frog Creek and McMullen Creek lessen the likelihood of increased pollution and other impacts from future development directly on their banks. Parcels along the upstream reaches of these creek systems also help preserve the low-salinity shoreline vegetation of which so much has been lost around other areas of Tampa Bay.

Some areas that remain in private ownership have little development potential while providing high habitat value from an ecosystem perspective. If these are not available as public lands, then TBAP and other local conservation entities should work with the owners to see that these areas are managed to complement the ecological landscape of the public lands.

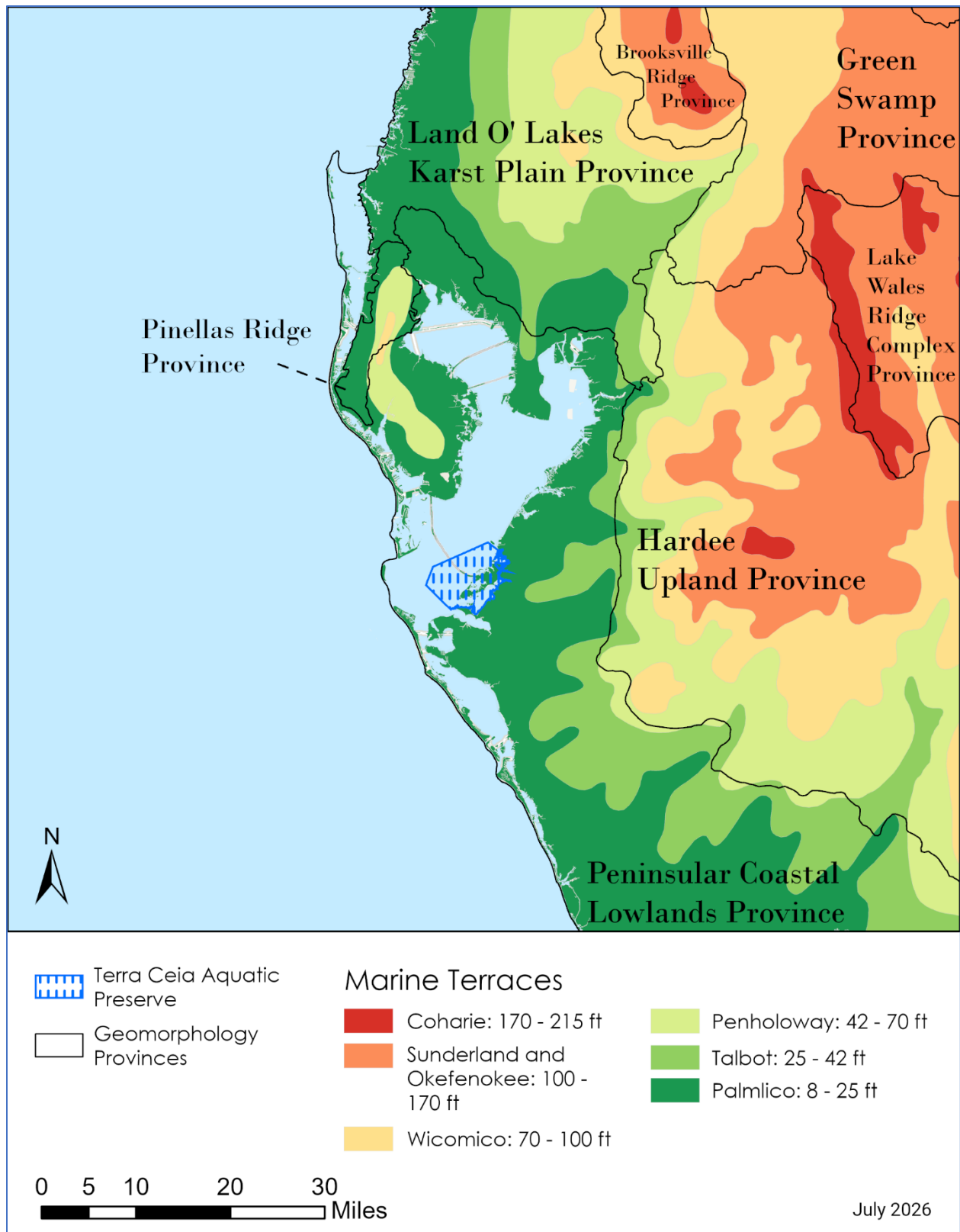
At present, most public land near TCAP is owned by the state or by the Southwest Florida Water Management District, with some owned by Manatee County. TCAP will maintain regular communications to ensure that management goals and actions of those entities are ecologically complementary, and, therefore, beneficial to the TCAP. Likewise, TBAP will work with Port Manatee to support the management goals for their conservation easements.

3.2 / Physical Resources

3.2.1 / Topography and Geomorphology

Within the preserve, submerged land of open Tampa Bay is largely unconsolidated sediments with sand as the predominant grain size at the sediment surface. Often less than 3 feet (1m) below grade, a mixture of silicoclastic and weathered carbonate clay forms a distinct hardpan layer. Arcadia limestone of the Hawthorne group forms a low-relief trend roughly parallel to the Tampa Bay shoreline, and hardbottom habitat patches of varying sizes are found where shoaling of sediment does not cover the limestone. Mosquito ditching, agricultural berms and remnants of dredge and fill projects have altered the geomorphology of the area. In many cases, historical sheet flow patterns have been channelized, and freshwater areas have been connected to tidal flushing. Most of these impacts are confined to upland areas, but they affect the hydrology and sediment influx of the aquatic preserve.

Bishop Harbor is in the north portion of the preserve and is a 1.5-mile (2.5 km) bay-like waterbody with depths of 1 to 5 feet (0.3 to 1.7 meters), referenced to National Geodetic Vertical Datum (NGVD). The substrate is sandy/organic. Hell's Half Acre is a shallower waterbody with a number of small mangrove islands formed off Bishop Harbor to the north. Williams Bayou and Clambar Bay are finger-like lagoons, approximately 1 to 1.5 miles (1.6 to 2.4 km) long. They are located between Joe's Island and Mariposa Key on the west coast of the preserve. Depths range from -3 feet (.9 m) NGVD in Williams Bayou to 5 feet (1.5 m) NGVD in Clambar Bay. Both have sand/silt substrates, but Clambar Bay has an additional organic component. Except for the open water of Tampa Bay, Terra Ceia Bay is the largest waterbody in the aquatic preserve boundary. It spans approximately six miles (9.7 km) long and one mile at its widest point. Bay channel depths are more than 5 feet (1.5 m) NGVD, with surrounding depths of 1 to 3 feet (.9 m) NGVD. Silty sands with some organics comprise the substrate.



Map 6 / Geomorphologic zones and marine terraces of Terra Ceia Aquatic Preserve

3.2.2 / Hydrology, Watershed, and Watershed Geology

Like most estuaries, Tampa Bay is a product of the fluctuations in sea level caused by glaciation. During times of lowered sea level, the river valley of Tampa Bay was cut into underlying limestone by its tributary rivers. As sea level rose during glacial retreat, the area was flooded and became Tampa Bay. Underlying Tampa Bay are limestone and dolomite. The Hawthorn Formation, a gray-greenish clay layer, is present at the surface throughout two-thirds of Tampa Bay, including TCAP. The Hawthorn Formation is moderately thick to thin in some portions of the preserve which is evident by the occurrence of hardbottom communities off Rattlesnake Key and by the approximately 50 karst depressions located in the adjoining state park. The geomorphological landscape of Terra Ceia is a classic karst coastal terrain. Submerged lands and uplands are punctuated by relict sinkholes from past times when lower groundwater levels encouraged active karst processes. These deeper areas may serve as warm water refugia for overwintering fishes. Within the preserve, large areas of exposed limestone from the Arcadia Formation provide attachment areas for numerous hard substrate species. Clastic unconsolidated sediments form productive open bottom, and where depths and light penetration are appropriate, they support vast seagrass and algal beds. Surface sediments are composed of fine to very fine quartz sand with varying amounts of organic muds and coarse carbonates, mostly in the form of mollusk shells. A band of phosphate-bearing rock runs parallel to the shore of the preserve. The sand-size sediments in Tampa Bay were probably derived from the major river tributaries during the last rise in sea level. At the present time, essentially no sand size material is being added to the system from the rivers but input from the Gulf may occur in the Terra Ceia area. Streams carry only small loads of fine sediments, but considerable amounts of fine materials can be added through surface runoff. As development in the area increases, the contribution of fine silt materials into TCAP will also increase.

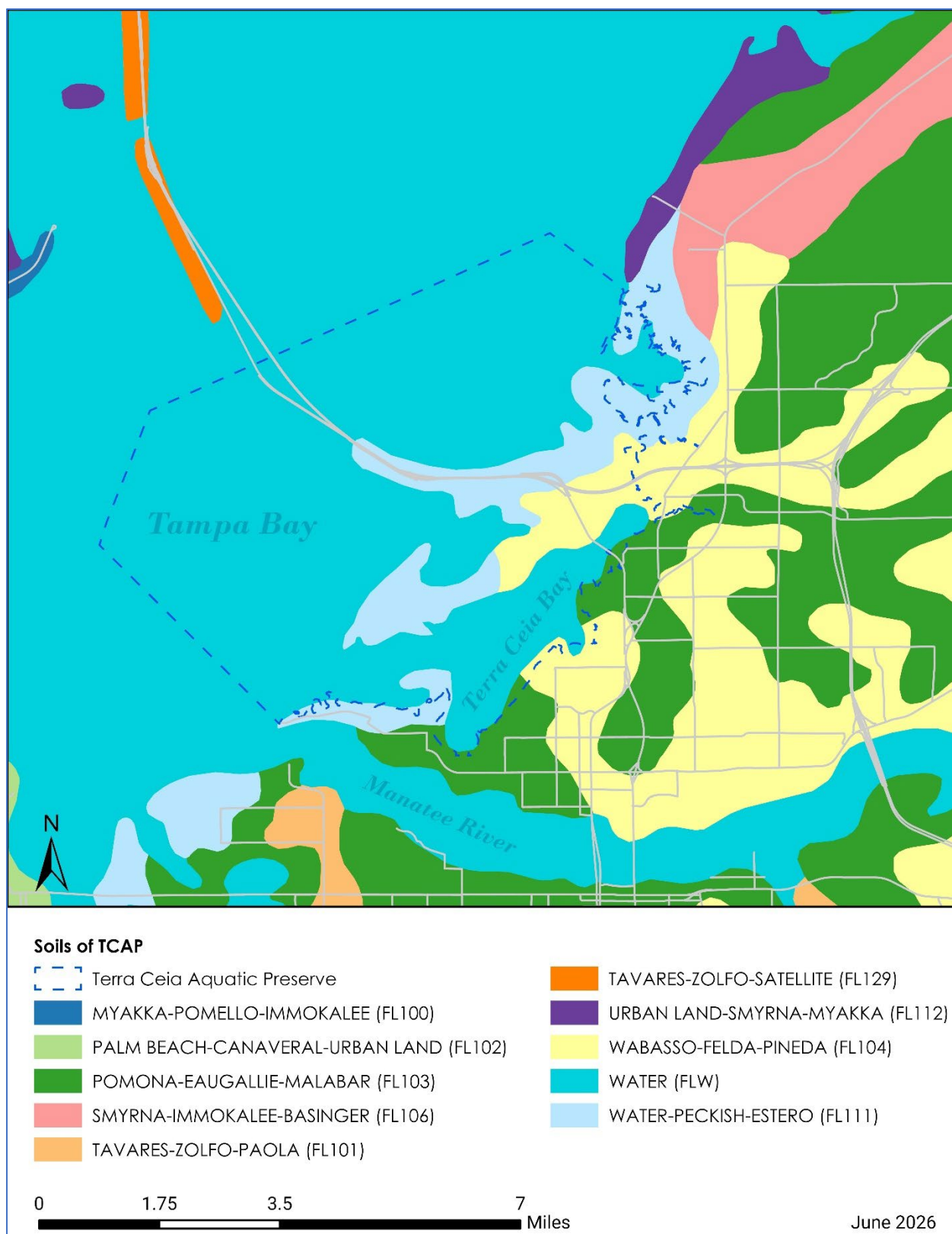
With its mouth located at the northern end of Terra Ceia Bay, the Terra Ceia River/Frog Creek extends in a north/northeast direction for approximately two miles (3.2 km), then continues east approximately five miles (8.1 km). The tidally influenced portion of the river is part of the aquatic preserve. The headwaters are a wetland complex located north of Moccasin Wallow Road. Unfortunately, the unimpeded, undeveloped nature of Frog Creek that supports such a great diversity of wildlife and fisheries species has become very uncommon in the Tampa Bay watershed. Even its tributaries - Cabbage Slough, Buffalo Canal, and Cedar Drain - are channelized systems. These systems efficiently drain large agricultural areas. The creek banks are incised and lack a developed floodplain. Depths range from one to three feet (.3 to .9 m) NGVD in the lagoons and two to six feet (.6 to 1.8 m) NGVD in the creek proper. A few lagoons branch off from the creek in estuarine waters, and are characterized by shallow depths, mangrove perimeters, and hammock ridges. The lagoons appear to be collapsed limestone (karst) formations which have been connected to the main waterway. (DEP, 2001)

3.2.3 / Climate

The preserve is located along mid-peninsular Florida, and, therefore, the overall climate borders between temperate and subtropical. Hurricanes have impacted the area in 1938 and most recently with Hurricane Irma in 2017 and the back-to-back Hurricanes Helene and Milton in 2024. Hurricane Irma made Florida landfall on Cudjoe Key and Marco Island on September 10, 2017, as a Category 4 and 3 respectively. Even though this landfall was south of TCAP, there was some flooding and widespread wind damage. Hurricane Helene made landfall north of TCAP in the Big Bend area as a Category 4 on September 26, 2024. Two weeks later, Hurricane Milton made landfall on October 9, 2024, as a Category



Map 7 / Drainage basins for Terra Ceia Aquatic Preserve



Map 8 / Soils of Terra Ceia Aquatic Preserve

3 hurricane at Siesta Key, Sarasota County. Helene and Milton caused major structural damage to 100 major structures within the Coastal Building Zone of Manatee County. This included 57 single-family dwellings, 30 multifamily dwellings and 13 other major structures (DEP, 2025a).

In addition, widespread nonstructural damage was caused by the storm surge flooding of up to 4 feet, and sand overwash throughout Anna Maria Island and Longboat Key (DEP, 2025a).

Climate data for the nearby City of Palmetto reasonably reflects that of the aquatic preserve. The average low temperature is 54° F (12° C) and generally occurs in January; the average high is 89° F (32° C) and occurs in July/August (weatherspark.com, 2026). The average low precipitation is 1.6 inches (4.1 cm) in November; the average high is 6 inches (15.2 cm) in August. The average low wind speed is 6.4 miles per hour (10.3 km per hour) and occurs in July; the average high is 10.4 miles per hour (16.7 km per hour) in February (weatherspark.com, 2026). The Gulf significantly affects the climate of the area. Summer thunderstorms are frequent. The area's historical tornado activity is slightly higher than the Florida average and is 23% greater than the overall U.S. average (City-Data.com, 2026).

3.3/ Natural Resources

3.3.1 / Natural Communities

The natural community classification system used in this plan was developed by the Florida Natural Areas Inventory (FNAI) and the Florida Department of Natural Resources, now the Florida Department of Environmental Protection (DEP) in 1990 and updated in 2010. The community types are defined by a variety of factors, such as vegetation structure and composition, hydrology, fire regime, topography and soil type. The community types are named for the most characteristic biological or physical feature (FNAI, 2010). FNAI also assigns Global (G) and State (S) ranks to each natural community and species that FNAI tracks. These ranks reflect the status of the natural community or species worldwide (G) and in Florida (S). Lower numbers reflect a higher degree of imperilment (e.g., G1 represents the most imperiled natural communities worldwide, S1 represents the most imperiled natural communities in Florida).

Descriptions were taken from the 2010 FNAI Guide to the Natural Communities of Florida, and site-specific comments have been adapted to TCAP.

Salt Marsh

Salt marsh is a largely herbaceous community that occurs in the portion of the coastal zone affected by tides and seawater and protected from large waves, either by the broad, gently sloping topography of the shore, by a barrier island, or by location along a bay or estuary. The width of the intertidal zone depends on the slope of the shore and the tidal range. Saltmarsh cordgrass (*Spartina alterniflora*) dominates the seaward edge and borders of tidal creeks, areas most frequently inundated by the tides. Other characteristic species include Carolina sea lavender (*Limonium carolinianum*), perennial saltmarsh aster (*Symphyotrichum tenuifolium*), wand loosestrife (*Lythrum lineare*), marsh fimbry (*Fimbristylis spadicea*), and shoreline seapurslane (*Sesuvium portulacastrum*). The landward edge of the marsh is influenced by freshwater influx from the uplands and may be colonized by a mixture of high marsh and inland species, including needle rush, sawgrass (*Cladium jamaicense*), saltmeadow cordgrass (*Spartina*

patens), Gulf cordgrass (*Spartina spartinae*), and sand cordgrass (*Spartina bakeri*), among others. A border of salt-tolerant shrubs, such as groundsel tree (*Baccharis halimifolia*), saltwater falsewillow (*Baccharis angustifolia*), marshelder (*Iva frutescens*), and christmasberry (*Lycium carolinianum*), often marks the transition to upland vegetation or low berms along the seaward marsh edge.

In TCAP, salt marsh is largely ephemeral, and limited in acreage, as it establishes in disturbed areas like those along newly cut tidal channels, but is eventually overgrown by mangroves. In the past, cordgrass has been planted in created wetland areas with the understanding that it is a temporary stabilization strategy until mangroves recruit naturally. Because Tampa Bay is a climatic transition zone, the brief existence of most salt marsh areas in TCAP often does not see the development of an associated faunal community with species, like ribbed mussels (*Geukensia* sp.) and marsh periwinkles (*Littorina* sp.), that might be seen farther north.

Salt marsh soils range from deep mucks with high clay and organic content in the deeper portions to silts and fine sands in higher areas. The organic soils have a high salinity, neutral reaction, and high sulfur content; soil properties of salt flats on higher portions of the marsh are little studied.

Mangrove Swamp

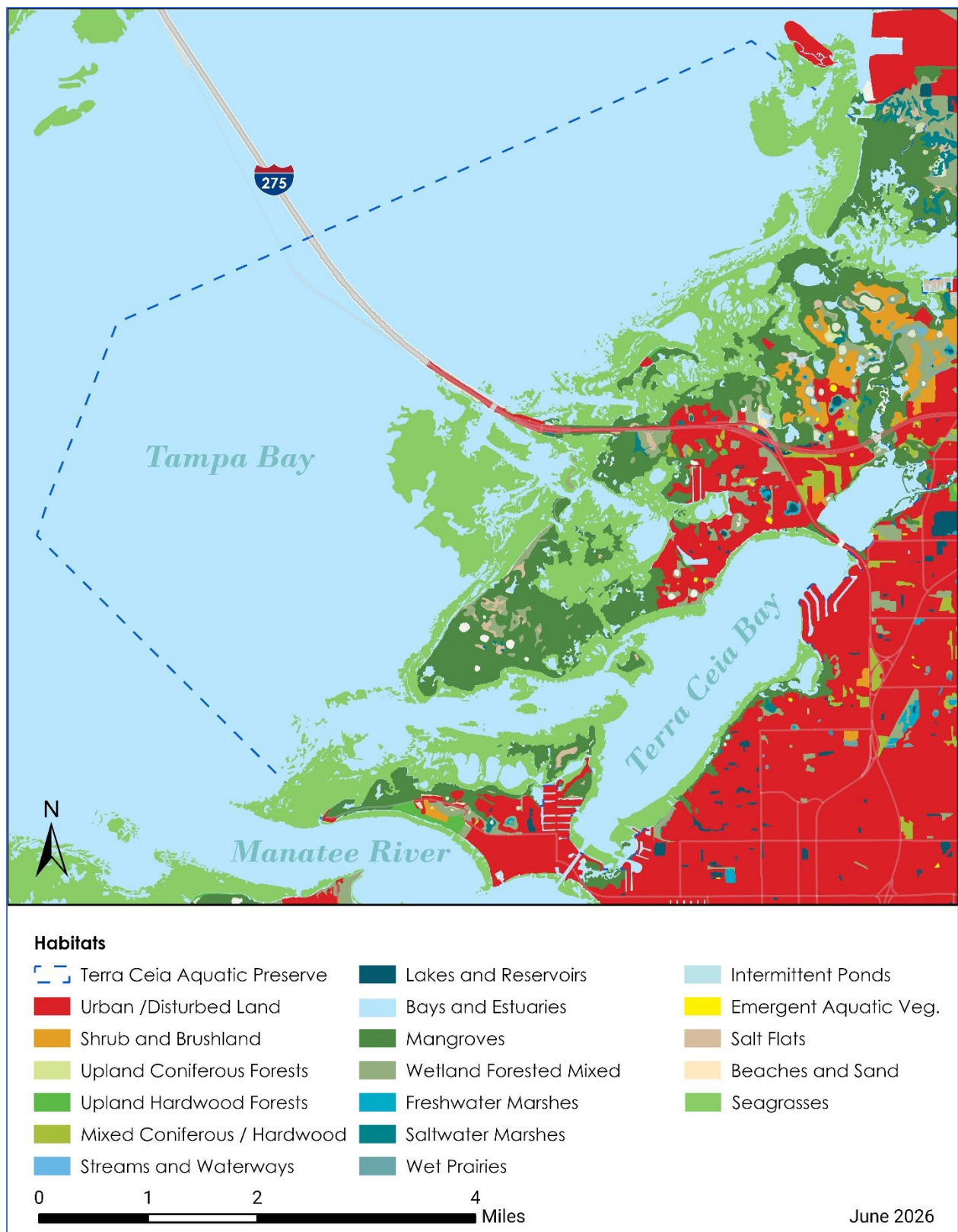
Mangrove swamp is a dense forest occurring along relatively flat, low wave energy, marine and estuarine shorelines. The dominant plants of mangrove swamp are red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), white mangrove (*Laguncularia racemosa*), and buttonwood (*Conocarpus erectus*). These four species can occur either in mixed stands or often in differentiated, monospecific zones that reflect varying degrees of tidal influence, levels of salinity, and types of substrates. Red mangrove often dominates the lowest (or deep-water) zone, followed by black mangrove in the intermediate zone, and white mangrove and buttonwood in the highest, least tidally-influenced zone. Buttonwood often occupies an ecotone, or transition zone, to the adjacent upland community. The density and height of mangroves and the diversity of associated herbaceous species can vary considerably within a mangrove swamp. Mangroves typically occur in dense stands but may be sparse, particularly in upper tidal reaches where salt marsh species predominate.

In recent years, some natural disturbances to mangroves seen in the preserve include apparent lightning strike clearings and individual trees toppled in tropical weather systems.

In TCAP, mangrove communities are the dominant shoreline vegetation of brackish to more saline areas, hosting all three species of mangroves (red, black, white), as well as buttonwood. Worth noting are the historic mangroves on the coastlines surrounding Williams Bayou and Clambar Bay which display extensive prop roots and heights up to 25 feet. In many areas of the preserve, mangrove forests are punctuated by higher-elevation piles of material from old mosquito ditching activities.

Blackwater Stream

Blackwater streams are perennial or intermittent seasonal watercourses originating deep in sandy lowlands where extensive wetlands with organic soils function as reservoirs, collecting rainfall and discharging it slowly to the stream. The tea-colored waters of blackwater streams are laden with tannins, particulates, and dissolved organic matter and iron derived from drainage through swamps and marshes. They generally are acidic. Water temperatures typically fluctuate with the seasons. The dark-colored water reduces light penetration and, thus, inhibits photosynthesis and the growth of submerged



Map 9 / Natural communities of Terra Ceia Aquatic Preserve

Table 1/ Summary of natural communities of Terra Ceia Aquatic Preserve

FNAI Natural Community Type	Acreage	% of Area	Global Rank	State Rank	Comments
Salt Marsh	116	0.6%	G4	S4	
Mangrove Swamp	2468	12.1%	G5	S4	
Blackwater Stream	3	0.0%	G4	S2	Not fully mapped
Mollusk Reef	unknown	unknown	G3	S3	
Unconsolidated Substrate	100	unknown	G2	S2	Not fully mapped
Composite Substrate	unknown	unknown	G3	S3	Not fully mapped
Seagrass Bed	4114	20.2%	G2	S2	Can vary annually

aquatic plants. Emergent and floating aquatic vegetation only occur along shallower and slower moving sections.

In TCAP, the Frog Creek/Terra Ceia River system and McMullen Creek have properties of blackwater streams. Of the many creek systems connected to Tampa Bay, these systems are some of the least impacted by hydrological alterations and shoreline development, but future impacts remain possible. Because of the natural state of these systems in TCAP, relative to most streams along Tampa Bay, protecting them, including acquiring any available shoreline parcels, has, and should continue to be, a top conservation priority.

Marine and Estuarine Unconsolidated Substrates

Marine and estuarine unconsolidated substrates are mineral based natural communities generally characterized as expansive, relatively open areas of subtidal, intertidal, and supratidal zones which lack dense populations of sessile plant and animal species. Unconsolidated substrates are unconsolidified material and include corallgal, marl, mud, mud/sand, sand or shell. This community may support a large population of infaunal organisms as well as a variety of transient planktonic and pelagic organisms [e.g., tube worms, sand dollar (*Clypeasteroida*), mollusks, isopods, amphipods, burrowing shrimp (*Thalassinidea*), and an assortment of crabs].

In general, unconsolidated substrate communities are the most widespread communities in the world. However, unconsolidated substrates vary greatly throughout Florida, based on surrounding parent material. Unconsolidated sediments can originate from organic sources, such as decaying plant tissues (e.g., mud) or from calcium carbonate depositions of plants or animals (e.g., corallgal, marl and shell substrates). In TCAP, the unconsolidated substrates are mostly sand with pockets of clay. While these areas may seem relatively barren, the densities of infaunal organisms in subtidal zones can reach the tens of thousands per meter square, making these areas important feeding grounds for many bottom feeding fish, such as red drum (*Sciaenops ocellatus*), southern flounder (*Paralichthys lethostigma*), spot (*Leiostomus xanthurus*), and sheepshead (*Archosargus probatocephalus*). The intertidal and supratidal zones are extremely important feeding grounds for many shorebirds and invertebrates.

Unconsolidated Substrates are important in that they form the foundation for the development of other marine and estuarine natural communities when conditions become appropriate. Unconsolidated substrate communities are associated with and often grade into numerous other aquatic and coastal natural communities. This community is resilient and may recover from recreational disturbances. However, this community is vulnerable to compaction associated with vehicular traffic on beaches and disturbances from dredging activities and low dissolved oxygen levels, all of which can cause infaunal organisms to be destroyed or to migrate out of the area. Generally, these areas are easily recolonized either by the same organisms or a series of organisms which eventually results in the community returning to its original state once the disturbance has ceased. In extreme examples, such as significant alterations of elevation, there is potential for serious long-term impacts from this type of disturbance.

Another type of disturbance involves the accumulation of toxic levels of heavy metals, oils, and pesticides within Unconsolidated Substrates. Significant amounts of these compounds in the sediments will kill the infaunal organisms, thereby eliminating a food source for certain fishes, birds, and other organisms. Such problems occur in some of the major port cities, in areas where there is heavy industrial development, and along major shipping channels where oil spills are likely to occur.

The infauna and epifaunal communities associated with the unconsolidated sediment areas of TCAP appear to be healthy, diverse and productive. While major impacts to these communities could have resulted from linear infrastructure projects proposed in the past, these projects, when built at all, were routed outside the preserve. While development has not posed extensive impacts to these communities, aquaculture activities, artificial reefs and similar projects that are sited for areas “without significant resources” do impact these areas where the role of these soft sediment communities that form the very basis for the local food chain is often not recognized.

Marine and Estuarine Mollusk Reefs

Marine and estuarine mollusk reefs are faunal-based natural communities typically characterized as expansive concentrations of sessile mollusks occurring in intertidal and subtidal zones to a depth of 40 feet. In Florida, the most developed mollusk reefs are generally restricted to estuarine areas and are dominated by the American oyster. Less common are mollusk reefs dominated by mussels and others dominated by Vermetid worm shells. Numerous other sessile and benthic invertebrates live among, attached to, or within the collage of mollusk shells. Most common are burrowing sponge (*Hadromerida*), anemones, mussels, clams, oyster drill (*Urosalpinx* sp.), lightning whelk (*Busycon contrarium*), polychaetes, oyster leech (*Stylochus* sp.), barnacles, blue crab (*Callinectes sapidus*), mud crab (*Xanthidae*), stone crab (*Menippe mercenaria*), pea crab *pinnotheridae*, amphipods, and starfish (*Asteroidea*). Several fish also frequently occur near or feed among Mollusk Reefs, including cownose ray (*Rhinoptera bonasus*), gulf menhaden (*Brevoortia patronus*), gafftopsail catfish (*Bagre marinus*), pinfish (*Lagodon rhomboides*), spotted seatrout (*Cynoscion nebulosus*), spot (*Leiostomus xanthurus*), black drum (*Pogonias cromis*), and striped mullet (*Mugil cephalus*). Mollusk reefs that are exposed during low tides are frequented by a multitude of shorebirds, wading birds, raccoons (*Procyon lotor*), and other vertebrates.

Reef-building mollusks require a hard (consolidated) substrate on which the planktonic larvae (i.e., spat) settle and complete development. The spat dies if it settles on soft (unconsolidated) substrates, such as mud, sand or grass. Hard substrates include rocks, limestone, wood and other mollusk shells. Hard

substrates are often limited in estuarine natural communities because of the large amounts of silt, sands and muds that are deposited around river mouths. Once established, however, mollusk reefs can generally persist and often expand by building upon themselves.

The most common kind of mollusk reef, oyster mollusk reefs, occur in water salinities from just above fresh water to just below full-strength sea water, but develop most frequently in estuarine water with salinities between 15 and 30 ppt. Their absence in marine water is largely attributed to the many predators, parasites, and diseases of oysters that occur in higher salinities. Prolonged exposure to low salinities (less than 2 ppt.) is also known to be responsible for massive mortality of oyster reefs. Thus, significant increases or decreases in salinity levels through natural or unnatural alterations of freshwater inflow can be detrimental to oyster mollusk reef communities.

Mollusk reefs occupy a unique position among estuarine invertebrates and have been an important human food source since prehistoric times. They present a dynamic community of estuarine ecology, forming refugia, nursery grounds, and feeding areas for a myriad of other estuarine organisms.

The major threats to mollusk reefs continue to be pollution and substrate degradation due, in large part, to upland development. Mollusks are filter feeders, filtering up to 100 gallons of water a day. In addition to filtering food, they also filter and accumulate toxins from polluted waters. Sources of these pollutants can be from considerably distant areas but are often more damaging when nearby. Substrate degradation occurs when silts, sludge and dredge spoils cover and bury the mollusk reefs. Declining oyster and other mollusk reef populations can be expected in coastal waters that are being dredged or are receiving chemicals mixed with rainwater flowing off the land, or from drainage of untreated residential or industrial sewage systems.

Mollusk reefs in TCAP are primarily oyster reefs. While many reefs are easily recognized and mapped in aerial photos, much of the preserves oyster-covered acreage is along tidal channels, where overhanging mangrove limbs obscure them from remote sensing efforts. Oysters thrive in areas where salinities are high enough to keep the oysters open and filter feeding but not so high as to encourage infestation by *Perkinsus marinus* or dermo disease. Hydrological alterations of freshwater inflow in areas of the preserve in which oysters enjoy this hydrological “sweet spot” could diminish the suitability of such areas for oyster growth. Prioritizing adjacent conservation lands acquisition, as well as regulatory oversight of hydrological alterations can help maintain a hydrological regime suitable for oyster growth.

Composite Substrate

Marine and estuarine composite substrates consist of a combination of natural communities such as “beds” of algae and seagrasses or areas with small patches of consolidated and unconsolidated bottom with or without sessile floral and faunal populations.

Composite substrates may be dominated by any combination of marine and estuarine sessile flora or fauna, or mineral substrate type. Typical combinations of plants, animals and substrates representing composite substrates include soft and stony corals (*Scleractinia* spp.) with sponges on a hard bottom such as a limerock outcrop; psammophytic algae and seagrasses scattered over a sand bottom; and patch reefs throughout a corallgal bottom. Any of the remaining marine and estuarine natural communities can grade into composite substrate communities.

Although composite substrates can occur in any marine or estuarine area in Florida, some combinations

are common while others are extremely rare. Combinations of consolidated and unconsolidated substrate components offer the greatest opportunity for diversity and should be high-priority areas for protection. Management requirements are negligible providing the composite community is adequately protected.

Protection efforts will vary slightly based on components of the composite substrate community. Generally, degradation of physical and chemical water quality parameters should be prevented, as well as mechanical disturbance from anchoring, dredging, trawling and similar activities.

The most interesting, and likely the least understood, composite substrate in TCAP is areas of limestone outcrops commonly known as “hardbottom.” Extensive hardbottom acreage of at least hundreds of acres is present within the preserve, but as observed by Ash and Runnels (2005), the existing accounts of acreage, distribution and biota are not accurate. The lack of accurate information on hardbottom, relative to better quantified seagrass, likely reflects the difficulty in mapping low relief hardbottom through interpretation of aerial photographs. The known hardbottom areas are located offshore of Rattlesnake Key, Joe Island, Mariposa Key and Bird Key. Native limestone outcroppings support a diverse assemblage of algae, sponges, compound ascidians, soft corals and hard corals, but the patchiness of these flora and fauna make it difficult to use some of the FNAI categories like “Octocoral Bed” and “Sponge Bed.” These hardbottom areas also support a variety of fishes and motile invertebrates not found on nearby unconsolidated sediments. The least understood component of this community is the endolithic segment. The native limestone of Terra Ceia’s hardbottom is highly bioeroded. It is highly likely that species richness, and sometimes maybe even biomass, may be greater in this infaunal component than in the epilithic component, but studies of the endolithos are nonexistent. These knowledge gaps make it especially difficult to design accurate mitigation measures for impacts to Terra Ceia’s hardbottom community. While a few cursory hardbottom studies have been published for Tampa Bay, the areal extent and faunal assemblages of these areas are still largely unknown.

Another aspect of the hardbottom habitat at TCAP that needs more study is the temporal nature of some hardbottom communities. While the rock does not move, much of it is such low relief that some area may be covered at times by shoaling of adjacent unconsolidated sediments. There is also a seasonal temporal cycle of sargassum (*Sargassum filipendula*), dormant in the summer and fast-growing in the cooler months, that affects the community structure, and the frequency and degree of sediment shoaling may have additional effects on what can persist in a given area.

TBAP has been looking at options for mapping and monitoring hardbottom habitat in the preserve. Such initiatives are important to understanding and protecting this unique feature of TCAP.

Seagrass Bed

Marine and estuarine seagrass beds are floral-based natural communities typically characterized as expansive stands of vascular plants. This community occurs in subtidal (rarely intertidal) zones, in clear, coastal waters where wave energy is moderate. Seagrasses are not true grasses (Poaceae). The three most common species of seagrasses in Florida are turtle grass (*Thalassia testudinum*), manatee grass (*Syringodium filiforme*), and shoal grass (*Halodule wrightii*). Nearly pure stands of any one of these species can occur, but mixed stands are also common. Species of *Halophila*, like star grass, may be intermingled with the other seagrasses, but species of this genus are considerably less common than turtle grass, manatee grass and shoal grass (*Halodule wrightii*). Widgeon grass (*Ruppia maritima*) can

also be found with the previously listed seagrasses (although they occur primarily under high salinities) while widgeon grass typically occurs in areas of lower salinity like upper Williams Bayou.

Attached to the seagrass leaf blades are numerous species of epiphytic algae and invertebrates.

Together, seagrasses and their epiphytes serve as important food sources for manatees, marine turtles, and many fish, including spotted seatrout (*Cynoscion nebulosus*), spot (*Leiostomus xanthurus*), sheepshead (*Archosargus probatocephalus*), and red drum (*Sciaenops ocellatus*). The dense seagrasses also serve as shelter or nursery grounds for many invertebrates and fish, including marine snails, clams, scallops, polychaete worms, blue crab (*Callinectes sapidus*), starfish (*Asteroidea*), sea urchins (*Echinoidea*), tarpon (*Megalops atlanticus*), bonefish (*Albula vulpes*), seahorses (*Hippocampus* spp.), Florida pompano (*Trachinotus carolinus*), permit (*Trachinotus falcatus*), striped mullet (*Mugil cephalus*), great barracuda (*Sphyrna barracuda*), and long-horned cowfish (*Lactoria cornuta*).

Seagrass beds occur most frequently on unconsolidated substrates of marl, muck or sand, although they may also occur on other unconsolidated substrates. The dense blanket of leaf blades reduces the wave-energy on the bottom and promotes settling of suspended particulates. The settled particles become stabilized by the dense roots and rhizomes of the seagrasses. Thus, seagrass beds are generally areas of soil accumulation.

Other factors affecting the establishment and growth of seagrass beds include water temperature, salinity, wave energy, tidal activity, and available light. Generally, seagrasses are found in waters with temperatures ranging from between 20° and 30°C (68°-86°F). Seagrasses occur most frequently in areas with moderate current velocities, as opposed to either low or high velocities. Although seagrass beds are most commonly submerged in shallow subtidal zones, they may be exposed for brief periods of time during extreme low tides. One of the more important factors influencing seagrass communities is the amount of solar radiation reaching the leaf blades. In general, the water must be fairly clear because turbidity blocks essential light necessary for photosynthesis. The rapid growth rate of seagrass under optimum conditions rivals that of most intensive agricultural practices, without anthropogenic energy input.

Seagrass beds are often associated with and grade into unconsolidated substrate, mangrove swamps, and salt marshes, but may also be associated with any other marine and estuarine natural community. Seagrass beds are extremely vulnerable to human impacts. Many have been destroyed through dredging and filling activities or have been damaged by sewage outfalls and industrial wastes. In these instances, the seagrass beds are either physically destroyed or succumb as a result of decreased solar radiation resulting from increased water turbidity.

Seagrass beds are also highly vulnerable to oil spills. Low concentrations of oil are known to greatly reduce the ability of seagrasses to photosynthesize. Extreme high temperatures also have adverse impacts on seagrass beds. The area surrounding power plant outfalls, where water temperatures may exceed 35°C (95°F), has been found to be lethal to seagrasses.

Seagrass beds are susceptible to long term scarring cuts from boat propellers, anchors and trawls. Such gouges may require many years to become revegetated. When protected from disturbances, seagrasses have the ability to regenerate and recolonize areas. Additionally, some successful replantings of seagrass beds have been conducted. However, the best management is to preserve and protect seagrass beds in their natural state.

Historically, most visitors to the preserve have had local knowledge of the shallow waterways, but changing demographics and boats with shallower drafts likely will increase the amount and areal extent of seagrass impacts. It would not be possible to physically mark the numerous depth transitions and other scarring hot spots in the preserve, so boater education is probably the number one approach to seagrass protection at TCAP.

TBAP does not do routine monitoring of seagrass in the preserve, because a long-term program is coordinated by the Tampa Bay Estuary Program with local agencies and organizations. TBAP was involved in the initial establishment of the monitoring transects of that program and continues to make anecdotal observations, like the appearance of turtle grass blooms in late May in the course of other management activities.

3.3.2 / Native Species

While TCAP does not have the species richness of tropical South Florida coastal habitats, its subtropical latitude makes it an area of climatic transition, and it is considerably more species-rich than the coastline of the northern Gulf. With three species of true mangroves (not counting buttonwood) and over three dozen species of macroalgae, the preserve offers a rich foraging area for herbivores and a diverse selection of nursery and protective bottom covers for associated fauna.

Even with documentation of over 600 species of invertebrates, it is likely that numerous species, like endolithic species within the rock of the hardbottom areas and planktonic species, have not yet been detected. Many of these likely form the basis of the area's productive food web, and some would likely be good sentinel species for detecting environmental changes. Further study of the invertebrate population promises to yield valuable information on trophic pathways and community structure.

The nearly 200 species of fishes documented within the preserve boundaries include resident species, as well as seasonal and transitory species. Factors contributing to this species richness include a variety of substrates and relatively intact tidal creeks with salinity gradients and intact shoreline vegetation along the creek banks. Given the year-to-year variation in hydrology and the increased monitoring initiatives of TBAP and FWRI, it is likely that this species list will continue to grow.

Terra Ceia Aquatic Preserve offers a variety of habitats necessary to support the life histories of local bird species. From oyster reefs for the American oystercatcher to lower salinity areas for ibis, the preserve is a productive area for bird foraging. Arboreal nesting colonial waterbirds thrive on mangrove rookery islands like Audubon's Ann and Rich Paul sanctuary and the Miguel Bay rookery island, and species like green herons often nest in mangroves overhanging tidal channels. Less common species like the bald eagle and the mangrove cuckoo make the preserve an exciting place for birdwatchers with a total of over 250 bird species found in or near the preserve.

Because of the salinity gradients in the preserve, a variety of reptiles, from snakes to freshwater turtles to diamondback terrapins, and at least three species of sea turtles, may be found within preserve boundaries. Mammals include expected species of local terrestrial and marine mammals, as well as at least five species of bats, whose presence has been detected acoustically.

While this is a very coarse overview of species observed within the preserve, a detailed list of species can be found at <https://floridaaquaticpreserves.org/tcap-species>.

3.3.3 / Listed Species

With a relatively low level of development and a wide variety of hydrological regimes, it is not surprising that the TCAP is home to several listed species. In the following narrative, “ST” refers to State-designated Threatened, “FT” refers to Federally designated Threatened, and “FE” refers to Federally designated Endangered as conservation status.

Aquatic listed species include the smalltooth sawfish, *Pristis pectinata* (FE), which was found in Bishop Harbor as recently as 2025. The American alligator, *Alligator mississippiensis* (FT s/a), is common in freshwater areas of the preserve. The American crocodile has not been observed within the preserve’s boundaries, but it has regained most of its historic geographic range, and it would not be surprising to see it in the preserve.



Photo 5 / A Kemp's ridley turtle swims up to a camera

At least three sea turtle species are likely in the preserve at some time. Green sea turtles, *Chelonia mydas* (FT) are the most commonly seen by TBAP staff, and most sightings have been near hardbottom habitat. Loggerheads (FT) are sometimes seen in Tampa Bay, but we don't have a documented occurrence within preserve boundaries. One of the most exciting species observations in recent years was a Kemp's ridley sea turtle, *Lepidochelys kempi* (FE) that was documented by one of TBAP's hardbottom nekton monitoring cameras in

2022. Structure and food are features of this habitat that likely attract sea turtles.

While the preserve is not ideal habitat for ground-nesting birds, the nearby island at Port Manatee was modified to support ground nesting, and least terns, *Sternulus antillarum* (ST), black skimmers, *Rynchops niger* (ST). American oystercatchers, *Haematopus palliatus* (ST) are seen in the preserve. Piping plovers, *Charadrius melodus* (FT), snowy plovers, *Charadrius nivosus* (ST) and Rufa red knots, *Calidris canutus rufa* (FT) are also observed in the preserve, where they probably enjoy rich foraging grounds.

Arboreal-nesting colonial waterbirds include little blue herons, *Egretta caerulea* (ST), tricolor egrets, *Egretta tricolor* (ST), reddish egrets, *Egretta rufescens* (ST) and roseate spoonbills, *Platalea ajaja* (ST). Their nesting activity on several rookery islands in the preserve has led the TBAP program to take special measures to mark buffer zones around these islands, as described later in the plan.

Wood storks, *Mycteria americana* (FT) have also been observed foraging in and near the preserve.

The West Indian manatee (*Trichechus manatus*) (FT) is one of the most high-profile listed species in the preserve. Manatees have been observed by TBAP staff many times, and they have approached TBAP staff in the water. While some local boaters have claimed that manatees stay in deeper water, TBAP staff have frequently observed them on seagrass flats in shallow water. Dense, extensive seagrass beds, and diverse macroalgal beds, provide a natural smorgasbord for the manatees within the preserve.

3.3.4 / Invasive and/or Nuisance Species

Invasive species are species that have been brought to a new geographic area intentionally or unintentionally by humans and that cause or have the potential to cause harm to the environment, economy, or humans. Non-native species are species that do not occur naturally in a specified geographic area; they do not cause harm. Not all introduced species become invasive, and the ones that do are generally opportunistic, aggressive, and early colonizing species in their native range. If left unchecked, invasive plants and animals can alter the character, productivity and conservation values of the natural areas they invade (Florida Fish and Wildlife Conservation Commission [FWC], n.d.). In some cases, native plants or wildlife may also pose management problems or nuisances. A nuisance species is an individual or group of individuals of a species whose presence or activities create special management problems (FWC, n.d.). This applies to both native and non-native species. Florida is second only to Hawaii in the number of established invasive species (Simberloff, 1994).

The Tampa Bay area hosts many non-native species in both terrestrial and aquatic habitats. A 2004 report published by the Tampa Bay Estuary Program listed dozens of potential invasive species in addition to known ones.

While TBAP manages very little upland acreage at TCAP, some shorelines adjacent to the preserve are altered by non-native plants that compromise the stability and ecological function of those shorelines by displacing native plant species. Brazilian pepper (*Schinus terebinthifolia*) roots in upland elevations, but its canopy often extends outward to compete with mangrove canopies. Australian pine, (*Casuarina equisetifolia*) seeds wash ashore to germinate into large, salt-tolerant trees whose shallow roots make them susceptible to uprooting by storms. In addition to shading mangroves while they are upright, they destabilize areas of shoreline when they uproot. In recent years, carrotwood (*Cupaniopsis anacardioides*) has become established near local shorelines, and it can grow near enough to the water's edge to also affect shoreline stability by outcompeting mangroves.

Water hyacinth (*Eichhornia crassipes*) has been a management issue in freshwater areas like upper Frog Creek. This fast-growing aquatic plant has, at times, choked off areas of the creek to impede kayak access.

Marine and estuarine invasives include the Asian green mussel, (*Perna viridis*). This species was first found in Tampa Bay in 1999 (Benson, et al., 2001), though its arrival had been anticipated several years earlier, as it was detected farther south. Soon after its arrival, dense masses of green mussels on structures like bridge pilings caused alarm about how the species might cover native hardbottom communities. While green mussels can be found on natural hardbottom, this occurrence remains patchy, and it appears to recruit less successfully on natural hard substrates than on manmade substrates. Nevertheless, it should be monitored as increasing manmade substrates offers more habitat for larval brood stock, and staff and volunteers should continue to remove green mussels from natural habitats when found.

Another non-native species that has been in the area for a long time and is often found in high densities on hard surfaces is the solitary ascidian (*Stylea plicata*). As with the green mussel, removal of this pervasive population would be difficult, if not impossible, so its presence is noted, and individuals on natural substrate may be removed when encountered.

A more recent arrival is the warhead blenny (*Protemblemaria punctata*) which is native to Venezuela but has been observed frequently by TBAP staff on the hardbottom off Rattlesnake Key in recent years. Because blennies live in small cavities in the rock, it is likely that this invasive species may displace native blenny species that, otherwise, might inhabit those cavities.

Because of major ports in Tampa Bay, it is likely that new non-native species will appear in the future. While removal may be problematic, TBAP should continue to look for newly arrived species to track their establishment, and, if possible, remove them.



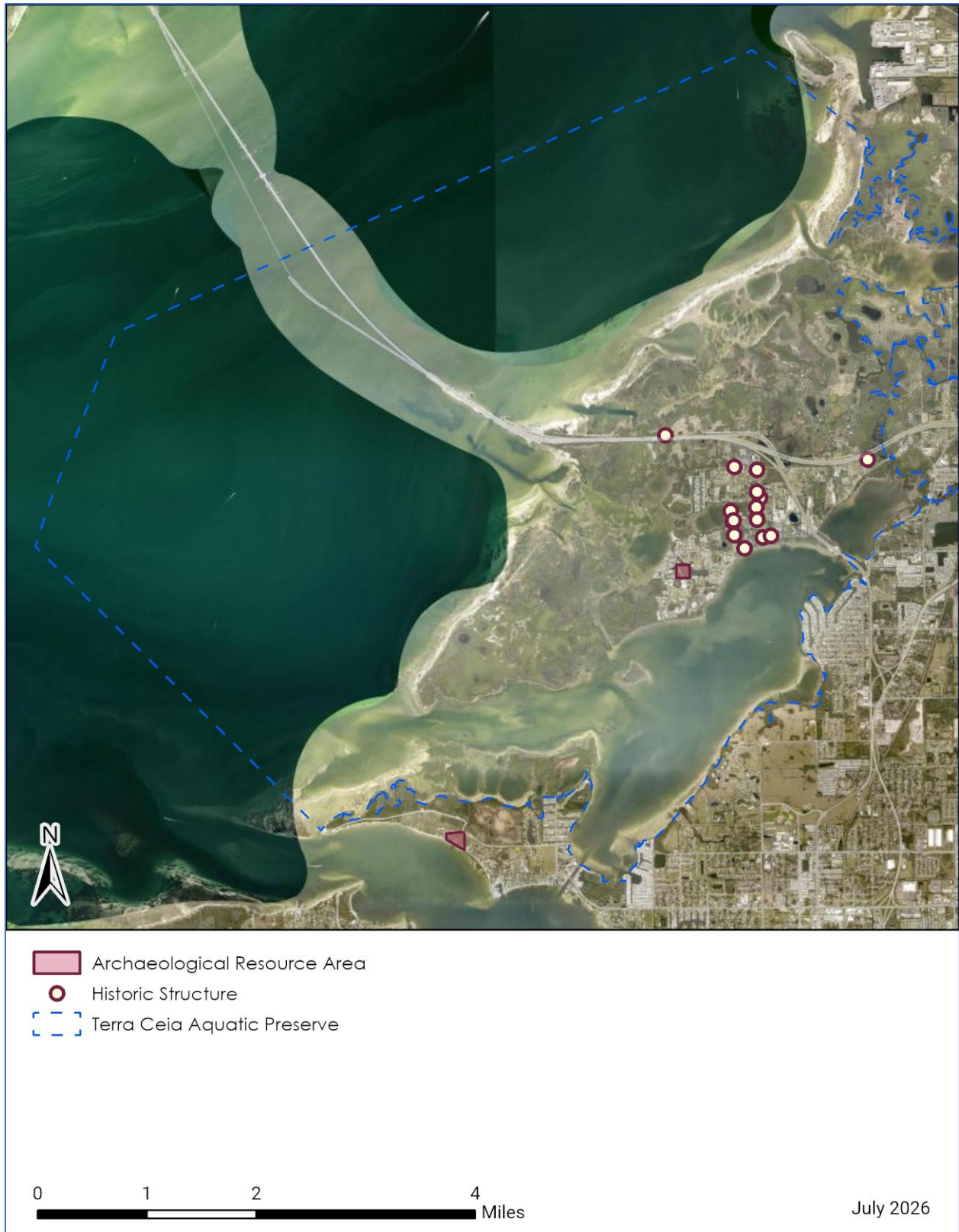
Photo 6 / The colorful warhead blenny.

3.4 / Cultural Resources

3.4.1 / Summary of Cultural Resources

More than one hundred archaeological sites have been identified near Terra Ceia Aquatic Preserve, and approximately 60 of these are presently under state ownership (DEP, 2001). While these sites are not within the aquatic preserve, they may shed light on its importance to prehistoric man. Developed sites adjacent to the aquatic preserve include Madira Bickel Mound State Archaeological Site on Terra Ceia Island and the Portevant Indian Mound at Emerson Point Park. According to local resident and historian Bill Burger, Terra Ceia includes sites dating back to 8,000 BCE, that primarily consist of small hunting and camping sites. Larger shell middens have been found dating to around 1200 BCE. Most of these middens are now underwater, reflecting local sea-level rise trends. More permanent settlements, including temple and burial mounds, were established by indigenous cultures between 800 and 1200 CE, long before Europeans landed on our shores.

By the 17th century, Cuban fishermen were operating in the estuary and shipping catches back to their homeland (B. Burger personal communication with Shelly Allen). In the 1840s, the first European settlement was documented. Julia Atzeroth, or “Madame Joe” as she was known, ran a riverfront boarding house and store in Palmetto where she sold vegetables grown on Terra Ceia Island. The industrious matriarch later purchased a coastal sloop and hired one Samuel Bishop, after whom Bishop Harbor is thought to be named, to captain the vessel. During the Civil War, Madame Joe’s sloop was used for blockade running, ferrying mail from Fort Brooke in Tampa to Bradenton. As legend has it, on one particular trip with Union officers in hot pursuit, Bishop ran the sloop aground but managed to make it ashore and deliver the mail (B. Burger personal communication with Shelly Allen). The tiny farming community grew in the late 1880s, with vegetables and citrus transported by steamship from wharfs on Terra Ceia Bay to Tampa. With the extension of a railroad line to the island in the early 1900s, the community flourished. During Prohibition, whisky runners shuttled liquid contraband through Terra Ceia Bay. Critical Creek, which bisects Rattlesnake Key, got its name from smugglers who used the tiny shortcut to Miguel Bay to escape the U.S. Coast Guard (B. Burger personal communication with Shelly Allen).



Map 10 / Publicly-known archaeological and historic sites near Terra Ceia Aquatic Preserve

3.4.2 / Cultural Resources Site Descriptions

There are 143 known archaeological sites within the boundaries of TCAP. Most of those sites are on upland islands, but there are 32 sites that are partially submerged, including six bridges, and several shell middens.

The archaeological landscape that includes Terra Ceia Aquatic Preserve represents a well-developed pre-Columbian complex that includes middens, ceremonial mounds and at least one rather extensive burial mound. Spending time around these features makes it easy to imagine a thriving pre-Columbian community that enjoyed the area's wealth of natural resources. TBAP also works with archaeological sites across Tampa Bay, and the more than 40 ft long saltwater canoe excavated and preserved near Weedon Island (with assistance from TBAP) in 2011, highlighted the likely connectivity of pre-Columbian communities around the bay. Terra Ceia's archaeology, like the complex around Bishop Harbor, should be studied in the context of a much larger archaeological landscape that includes better-known areas like Weedon Island across the bay.

Of the more than 90 known pre-Columbian sites around Terra Ceia, most are upland sites, and TBAP discovered some of them, but they point to the likely existence of unknown submerged sites. More recent historical features in the area include houses and a historical district and several historically designated bridges.

All archaeological sites and historical resources are protected under Florida Statutes Chapter 267 and are not to be disturbed unless prior permission is granted from the Division of Historical Resources. Not all sites are known, especially in submerged lands.



Photo 7 / Hardbottom nekton monitoring cameras capture images of smaller species.

Chapter 4 / Management of Terra Ceia Aquatic Preserve

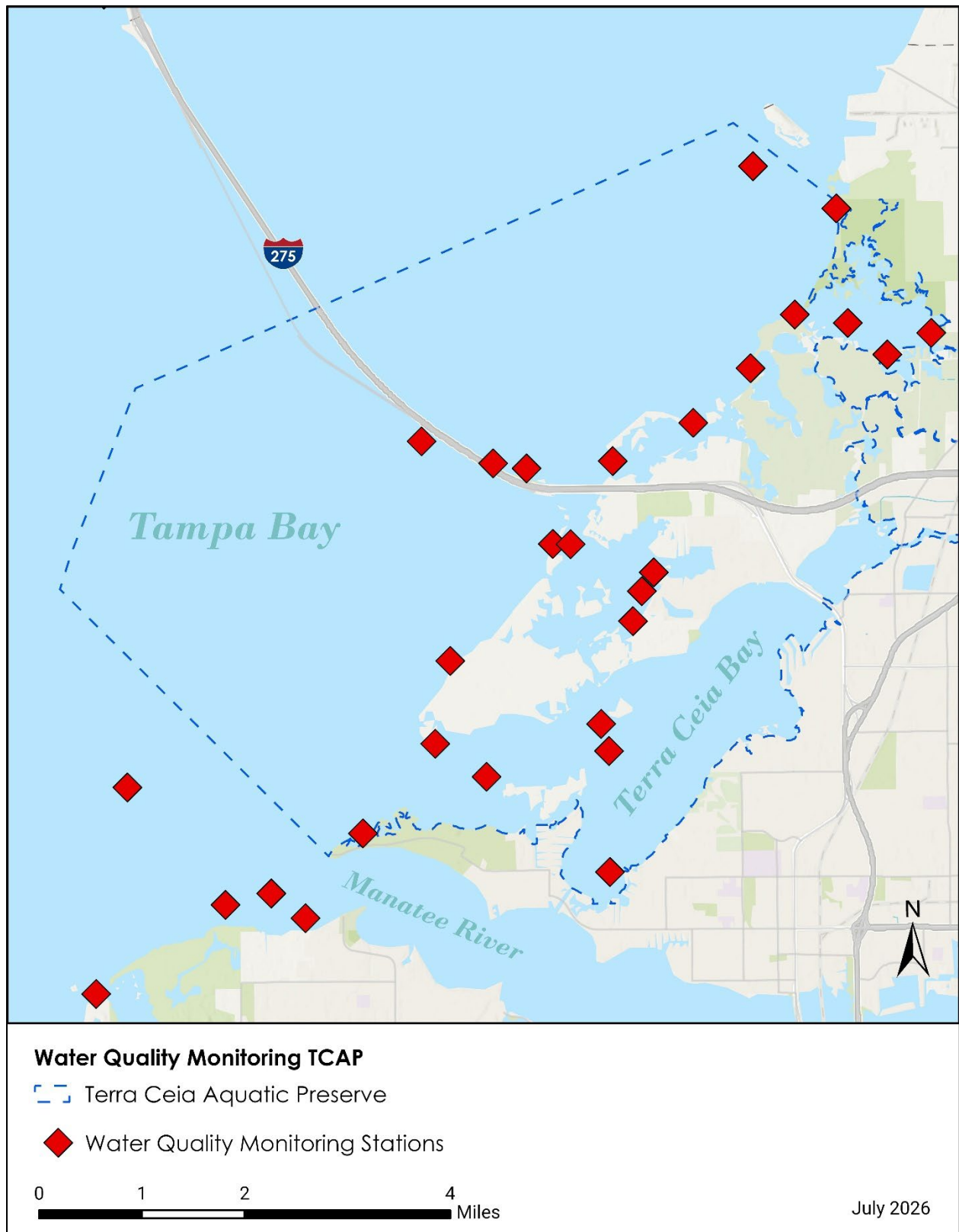
4.1 / Evaluate, maintain, and improve water resources

4.1.1 / History of water resources management

Because Terra Ceia Aquatic Preserve (TCAP) is in a less-developed area of Tampa Bay, and because much of the shoreline along the preserve is managed as conservation and/or recreational lands, TCAP has fewer nonpoint and point sources of pollution than the preserves in more urban landscapes. Nevertheless, there are some single-family homes along the preserve shorelines. Smaller municipalities and housing developments upstream of the preserve are connected to TCAP through waterways like the Frog Creek/Terra Ceia River system and McMullen Creek.

As with some of the other issues addressed in this plan, it will be important to anticipate future development in the watershed of the preserve.

Tampa Bay Aquatic Preserves (TBAP) has relied on routine water quality monitoring programs by Manatee County and Florida Department of Agricultural and Consumer Services (DACS) for data on general water quality parameters. TBAP has provided considerable support for other programs in events



Map 11 / Water quality monitoring stations in Terra Ceia Aquatic Preserve

like extreme red tides and the Piney Point phosphate plant discharges, and this support has been largely in the form of field access logistics like vessels for transporting sampling staff and equipment.

In addition to monitoring water quality as an aspect of TCAP, some efforts have established baseline data that might provide context for data from other areas of Tampa Bay. For several years, TBAP operated two datasonde platforms in TCAP. One, at the mouth of Bishop Harbor, included surface and bottom instrumentation to monitor physical parameters of the water entering and exiting the harbor. The other station, which was located immediately upstream of the Bishop Harbor Road Bridge on Frog Creek, provided surface and bottom data for one of the least developed tidal creeks in the Tampa Bay area.

4.1.2 / Water resources program

At present, relatively low levels of human activity in the preserve do not support the need for additional routine water quality sampling and analysis. TBAP, for the foreseeable future, will rely on existing monitoring programs from DACS and Manatee County to track water quality in the preserve.

That said, TBAP must be ready to respond to episodic events like spills and severe red tides. TBAP maintains vessels that can provide access to field sites for sampling. The program also maintains instrumentation for measuring salinity, conductivity, temperature, dissolved oxygen and pH. TBAP also has an acoustic doppler current profiler, which, when deployed to the bay bottom, can record current directly in up to 10 water column layer bins. While these capabilities are primarily maintained to support biotic sampling with physical data, they could easily be used to support episodic event sampling if needed.

Reestablishment of the continuous water quality stations at Bishop Harbor and Frog Creek, which were removed in 2011, could be a good source of baseline data in areas of Tampa Bay to track changes that might affect water quality either locally or bay wide. While the TBAP program does not currently have the capacity to maintain these stations, it should be a goal to re-establish them, either through increased program resources or through partnerships with other external water quality programs. Projects that are beyond current program capacity, such as continuous water quality stations, are briefly listed in Appendix D.3 in case additional resources become available.

TBAP periodically reassesses whether existing external water quality sampling programs meet the informational needs of the preserve and keeps track of development or other factors that might change those informational needs.

Goal 1: Improve understanding of water quality status and trends in the aquatic preserve.

Objective 1: Maintain a strategic long-term water quality monitoring program that includes biotic and abiotic parameters.

Integrated Strategies:

- Use the SEACAR site report for TCAP for trend analyses and identifying data gaps by area or parameter.
- Collaborate with Florida Fish and Wildlife Conservation Commission (FWC), Fish and Wildlife Research Institute (FWRI) and provide sampling assistance to the Harmful Algal Blooms (HAB) program, as needed for episodic events.

- Evaluate and, if needed, modify water quality sampling in the aquatic preserve by adding, moving, or retiring water quality monitoring sites. Encourage and support partners in re-establishing closed sites, like former datasonde platforms, deemed important as baseline data generators.

Performance Measures:

- As data collection advances, upload data to SEACAR annually.
- Conduct reviews of the status and trends of water quality in the aquatic preserve annually.

Objective 2: Ensure water quality data are available to the public and other agencies.

Integrated Strategies:

- Ensure that water quality data obtained in hardbottom monitoring and other initiatives is QA/QC'd at regular intervals.
- Submit data to a centralized water quality storage database and website.
- Regularly verify that water quality data is available to the public.
- Share water quality storage databases with partners and other potential data users.

Performance Measure:

- As data is generated, QA/QC and submit data to public databases (whether through WIN, SEACAR, WaterAtlas, etc.).

Objective 3: Ensure the sustainability of habitats and wildlife of concern through the development of a tiered approach to water quality monitoring that integrates biological assessments and multiple tools to define a core set of baseline indicators. Such indicators may explain causes and/or sources of any impairment within the aquatic preserve.

Integrated Strategies:

- Continue to review the distribution and abundance of specific indicator species and habitats, such as scallops and seagrass, to determine the ecological health of the aquatic preserve.
- Determine the biodiversity of the aquatic preserve by establishing baseline data and broad scale characterizations of benthic communities which are indicators of habitat quality in an aquatic environment. This likely will take the form of identifying sentinel species as part of the hardbottom monitoring initiative.
- Incorporate Hillsborough County's benthic quality index into evaluation of, and actions on, water quality issues in TCAP.

Performance Measure:

- Submit monitoring data to collaborative databases of all concerned species and habitats.
- Create a report showing biotic monitoring and water quality monitoring side-by-side.

Objective 4: Identify influencing factors contributing to water quality degradation and provide support and collaboration to prevent degradation and improve conditions when possible.

Integrated Strategies:

- Provide support for the implementation of the most effective stormwater treatment measures in both new and retrofit projects (public and private) to meet existing requirements and/or provide innovative treatment approaches for nutrient removal.
- Include information on Best Management Practices for stormwater management in formal presentations.
- Notify agency partners of findings, propose changes to address present or potential future impacts to the aquatic preserve, assist in efforts where applicable and possible through interagency collaboration.
- Participate in regional workshops to encourage collaboration and data sharing to improve contributing water quality (e.g., engage with groups like the Tampa Bay Estuary Program).
- Provide support for the decision-making processes for actions in upriver/inland water bodies influencing aquatic preserve (e.g., Total Maximum Daily Load (TMDL), Basin Management Action Plan (BMAP), Minimum Flows and Levels (MFLs), stormwater efforts) as the need arises.
- Support federal, state, local and non-governmental land acquisition programs to protect headwaters and riparian corridors for rivers and streams that discharge into the aquatic preserve.
- Investigate /pursue additional funding mechanisms at the federal, state and local level for the protection of conservation lands within the aquatic preserve watershed.

Performance Measures:

- Work in tandem with other state and federal agencies to review the list of parameters of concern and threshold criteria.
- Track participation in regional workshops and other decision-making processes for activities within the aquatic preserve.

Objective 5: Identify specific and emerging water quality issues related to nutrients, pollution, and environmental contaminants, and with coordination from other agencies, develop a response strategy to these issues.

Integrated Strategies:

- Support implementation of TMDL and BMAP programs.
- Increase awareness of specific and emerging water quality issues related to nutrient, pollution and environmental contaminations through environmental outreach.

Performance Measure:

- Identify point and non-point sources of pollutants and turbidity.
- Attend local workshops and meetings to support TMDL and BMAP efforts.

- Attend local events to educate audiences on water quality issues and strategies in place to improve water quality.

Goal 2: Maintain and improve water quality of the aquatic preserve.

Objective 1: Facilitate knowledge and understanding of how activities in the watershed impact the aquatic preserve.

Integrated Strategies:

- Encourage homeowners to maintain septic systems and educate them on the benefits of joining municipal or county sewage systems.
- Engage in outreach and education with decisionmakers at all levels of government and serve as a point of contact for information regarding the health of the aquatic preserve's natural resources.
- Engage in local education and outreach events to spread awareness of watershed health, impacts and what the public can do to help.

Performance Measures:

- Meet with decision-makers at the local and municipal levels once a year about the importance of the aquatic preserve's resources with specific focus on how upland uses can affect the quality, both ecological and aesthetic, of the aquatic preserve.
- Coordinate and/or participate in public presentations each year, including outreach events where staff can provide information to the public regarding how to reduce negative impacts on water quality.

Objective 2: Implement research, restoration, and enhancement projects throughout the aquatic preserve that focus on improving water quality.

Integrated Strategies:

- Promote research with institutions of higher education to promote a watershed-wide approach on how regional impacts affect terrestrial, aquatic and estuarine systems.
- Use lessons from successful and unsuccessful habitat restoration and enhancement projects to expand on how projects increase beneficial habitat and the anticipated time for improved water quality.
- Coordinate with Estuarine Restoration Teams (ERT) and other partners on habitat restoration and other water quality improvement projects.
- Support environmentally-sound mitigation strategies, public interest and regulatory efforts to help improve water quality.

Performance Measure:

- Regularly verify that water quality data is available to the public and decision makers.

Objective 3. Support acquisition of lands that would serve to protect or enhance the biological, aesthetic or scientific values of the preserves.

Integrated Strategies:

- Support the Division of State Lands in maintaining a prioritized acquisition inventory of potential areas of significance to the aquatic preserve system based on existing Florida Forever boundaries.
- Investigate/pursue additional funding mechanisms at the federal, state and local level for the protection of conservation lands within the aquatic preserve watershed.

Performance Measure:

- Maintain a dialogue with federal, state, local and nonprofit conservation entities regarding potential conservation lands in the TCAP watershed.

Objective 4: Reduce water quality impacts caused by stormwater and septic system sources within the watershed.

Integrated Strategies:

- Encourage improvements to the integrity of wastewater systems, including innovative alternatives to conventional septic systems when sanitary sewer connection is unavailable.
- Support local government efforts to convert high-priority areas to sewer.
- Support projects to enhance stormwater and sewage treatment in the aquatic preserve watershed.

Performance Measures:

- As requested, provide letters of support for utility managers' efforts for septic-to-sewer conversions.
- Serve as a connection with local municipalities for awareness of DEP and other funding sources to meet needs for sewer connectivity and upgrades.
- Provide letters of support for stormwater and wastewater retrofit projects.
- Engage in and track local education and outreach events to spread awareness of watershed health, impacts, available programs to improve the watershed health, and what the public can do to help.

4.2 / Monitor, protect and restore submerged habitats.

4.2.1 / History of submerged habitats management

Historically, the submerged habitats of TCAP have not faced the degree and types of impacts that characterize more urban landscapes like Pinellas County. This is partly the result of conservation buffers in the Terra Ceia Preserve State Park and Emerson Point Preserve. However, development pressure on shoreline areas in private ownership, as well as upstream in tributaries of Terra Ceia Bay, still highlight vulnerabilities of the coastal ecosystem. Impacts of hardened shorelines, loss or alteration of

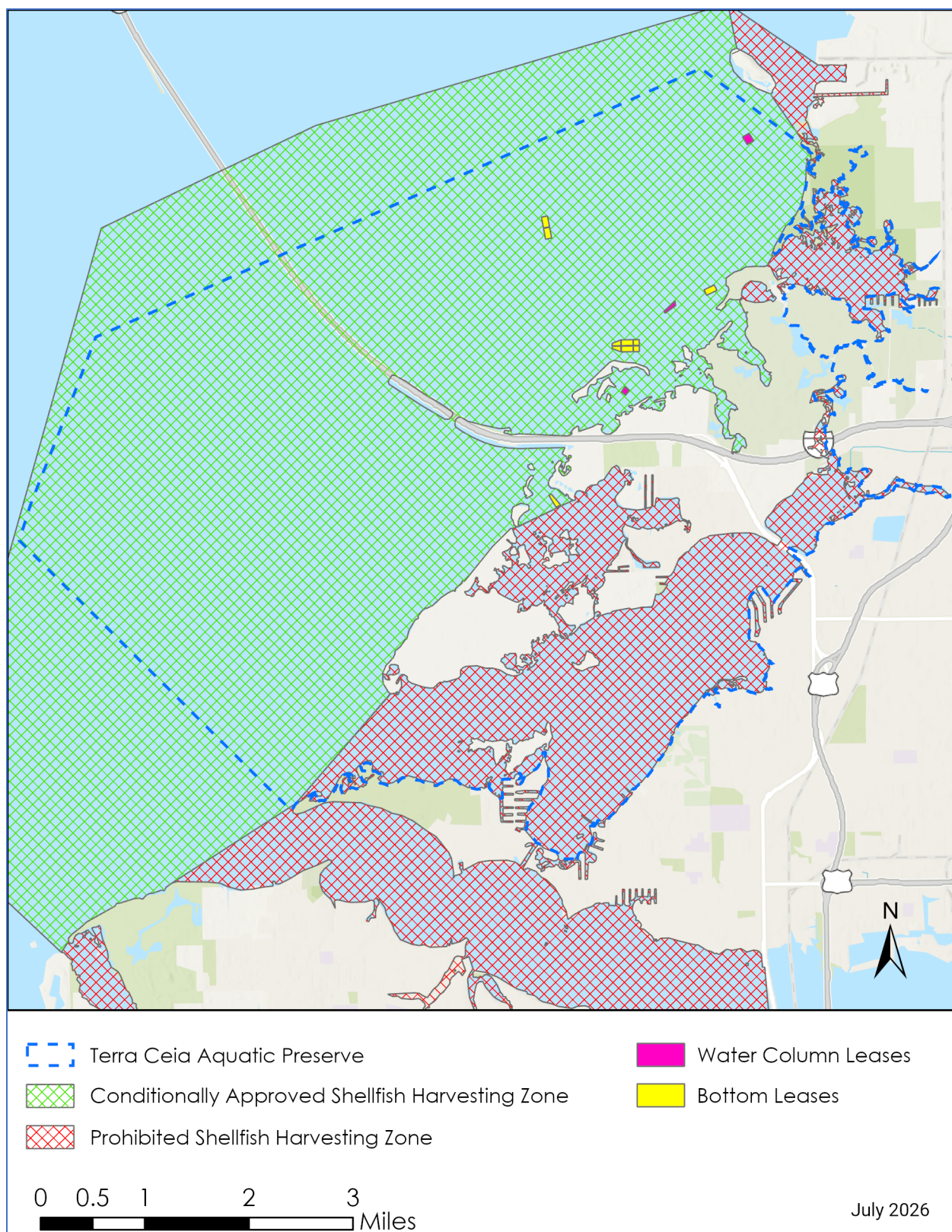
mangroves, and impermeable surfaces are much less than in Tampa Bay's more developed area, but the remote nature of the area has invited unpermitted development activities.

A major responsibility of the TBAP program is to provide public education on the submerged habitats of TCAP, their intrinsic value and the ecosystem services they provide. In addition to more routine environmental resource permit applications, TCAP has reviewed several permit applications for large linear feature projects for natural gas, liquified natural gas and gasoline pipelines designed through TCAP. TBAP has a decades-long history of working with state and federal officials to evaluate these proposals and avoid or reduce impacts to TCAP.

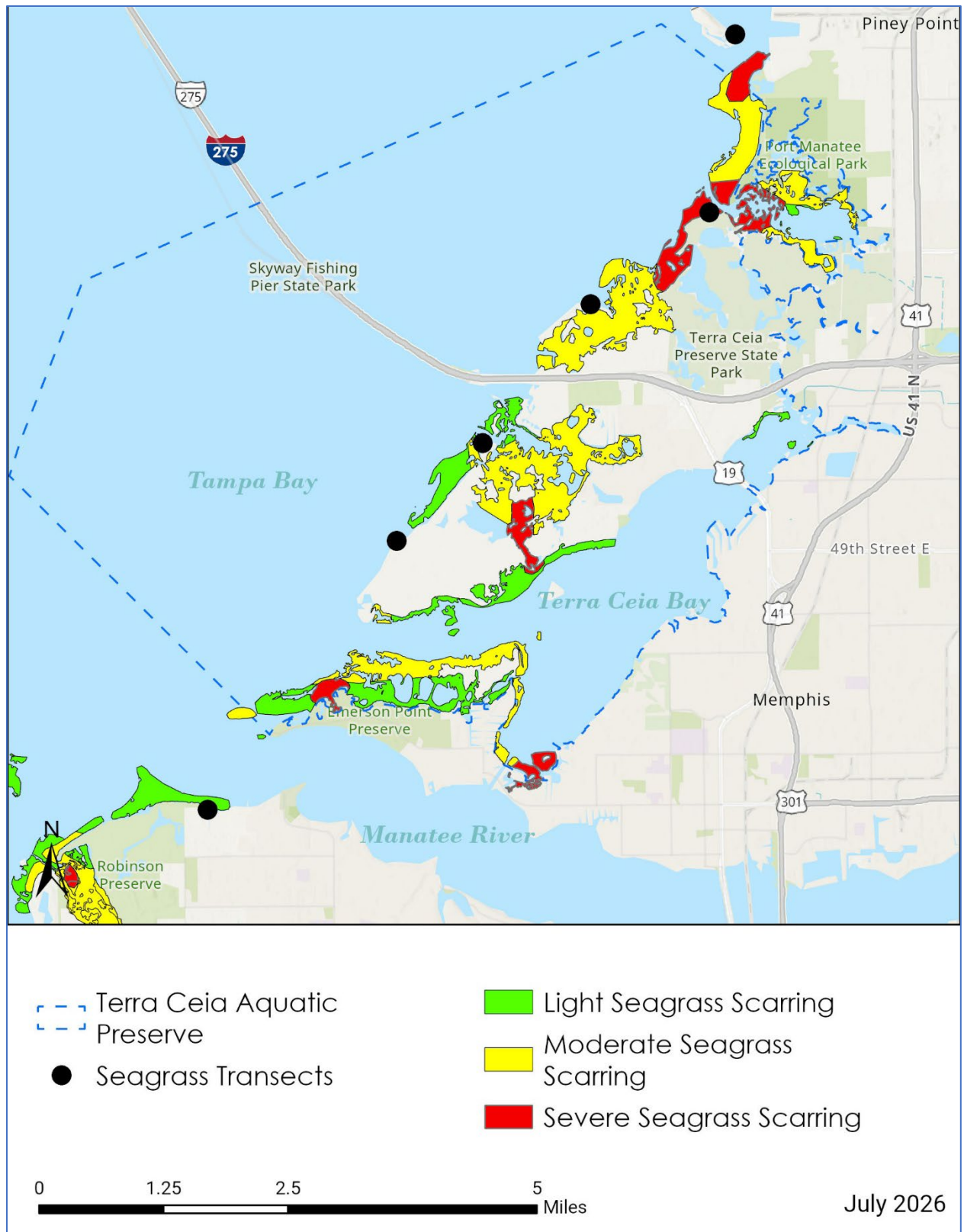
Of particular importance, in the avoidance and minimization of proposed large project impacts, has been TBAP's involvement in pre-application discussions with regulatory staff and applicants. By bringing in-depth knowledge of habitat properties and the area's history to these discussions, TBAP has highlighted potential environmental impacts anticipated by project concepts before much time and money was spent on developing them.

Aquaculture leases cover 39.8 acres of submerged land, and these include bottom leases as well as water column leases for the grow out of bivalve mollusks. These leases are typically for 10 years, and proposed lease areas are reviewed by DACS' Division of Aquaculture and TBAP staff before going to the Board of Trustees of the Internal Improvement Trust Fund for approval.

Environmental Resource Permit review is essential. Submerged land suitable for aquaculture operations is very limited at Terra Ceia. Most bay bottom in the depth range that supports phytoplankton suitable for bivalve feeding is vegetated by seagrass or covered by limestone outcrops with hardbottom communities, including some sites proposed for aquaculture. While aquaculture holds much promise for providing protein to a growing population, aquaculture has the potential for considerable impact on submerged resources of the preserve. By virtue of its relatively remote location and increasingly diverse users, one of the most challenging submerged lands issues in the preserve is impacts by boaters. With boats that operate in increasingly shallow waters) and with more users new to the area, propellor scarring, anchor damage and other impacts are likely to increase. Fortunately, rental boats are not as common in TCAP as they are in more urban areas, as one-time or infrequent boaters in an area like Terra Ceia often have difficulty navigating without local knowledge. At present, TBAP's overall outreach emphasis on local signage at boat ramps and local events is currently the best approach for reducing boating impacts in this preserve. Encouraging the use of nonmotorized watercraft and promoting paddle craft access further reduces the risk of damage to submerged resources.



Map 12 / Shellfish harvesting zones and aquaculture leases in Terra Ceia Aquatic Preserve



Map 13 / Seagrass scarring and transect monitoring in Terra Ceia Aquatic Preserve

4.2.2 / Submerged habitat management program

TBAP's approach to submerged land management at Terra Ceia Aquatic Preserve has been mostly in response to specific needs or events. Regulatory input does include site visits as needed for permit application review, but TBAP does not manage the regulatory process at TCAP. By providing training sessions at the DEP regulatory office, TBAP equips new regulatory staff with much of the knowledge they need to understand whether a given project is within an aquatic preserve and how that affects the regulatory process. These in-person trainings also help create a working connection between TBAP staff and regulatory staff to improve communications between the two programs.

Essential to protecting submerged habitats is an understanding of the community composition of that habitat and trajectories of natural vs anthropogenic change. One of Tampa Bay's most unique, and environmentally sensitive, habitats is hardbottom, and TCAP has extensive areas of this habitat.

While seagrass at TCAP, and Tampa Bay, in general, has been monitored for decades, any observed changes in hardbottom communities are anecdotal. For this reason, TBAP has been developing a hardbottom monitoring program that would include benthic photoquadrats along fixed transects, video fish counts and complementary water physical parameter measurements.

Restoration projects labeled as environmental projects may not always result in a net benefit to the environment. For example, placing sediment tubes in propellor scars may help them to heal in low-energy areas, but placing them in high-energy area prop scars, where sediment and seagrass are already filling in the scars may delay healing instead. Likewise, placing high-relief concrete modules or oyster domes in an area, like TCAP, where natural hardbottom is very low-relief can alter the community composition of hardbottom communities in the preserve. TBAP provides feedback for such projects that focuses on its statutory direction of managing the preserve in "natural or existing conditions."

Goal 1: Monitor, maintain and restore submerged natural resources.

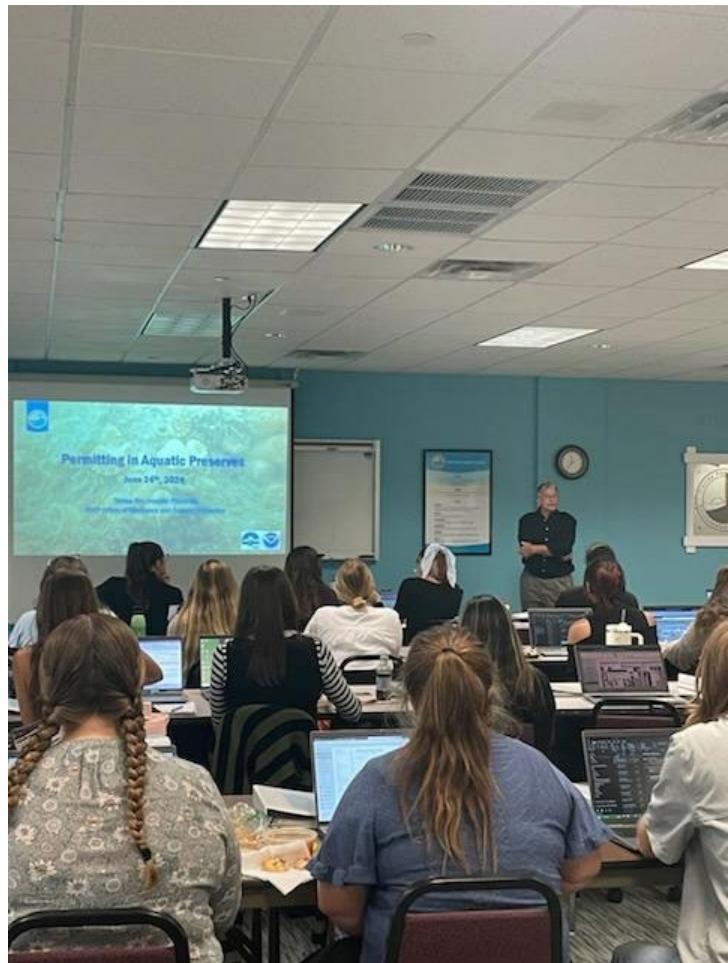


Photo 8 / New staff are trained in aquatic preserves and regulations.

Objective 1: Maintain an inventory of the current location, composition and abundance of the various habitat types and associated fauna and flora.

Integrated Strategies:

- Incorporate research-based indicators of natural community condition into monitoring programs to provide insights and early signs of change.
- Support research to improve understanding of natural community function along environmental gradients (e.g., depth contours).
- Perform a gap analysis for monitoring habitat types and seek partners and/or funding to fill gaps.
- Support the efforts of partner organizations to map submerged habitat in the aquatic preserve.
- Support regulatory entities in mapping regulatory footprint sites with appropriate spatial and temporal detail.
- Ground truth remote sensing generated mapping products from other entities.
- Document species found within the aquatic preserve.

Performance Measures:

- Participate in appropriate habitat monitoring and restoration working groups.
- Maintain a library of additional maps and other data collected through special projects.
- Maintain and update current GIS layers of habitat types found within the aquatic preserve.
- Maintain and update a list of and information about species identified during field activities, and other scientific studies and reports.

Objective 2: Identify current and potential future threats and impacts to the natural communities within aquatic preserve.

Integrated Strategies:

- Incorporate internal and externally sourced information on habitat degradation into the planning and prioritization of protection and restoration actions.
- Utilize co-management partnerships to conduct aerial surveys and ground truthing.
- Coordinate with academic experts and resource managers to promote robust collaboration of efforts and to identify threats and impacts before or as they occur.
- Coordinate with agencies and other groups currently monitoring submerged resources within the aquatic preserve to ensure threat or impact indicators are captured in monitoring datasets.

Performance Measures:

- In coordination with partners, create a comprehensive monitoring plan complete with gap analysis, sampling timeline and execution strategy.
- Maintain a GIS database of degradation hotspots.
- Track participation in appropriate subject matter meetings/workshops to ensure identified threats and impacts remain topics of focus.

Objective 3: Maintain and enhance the extent, quality and abundance of submerged and emergent

habitats while taking into consideration existing habitat and wildlife use.

Integrated Strategies:

- Identify needs and funding sources for restoration and enhancement efforts to address resource degradation.
- Identify restoration projects that might be appropriate candidates for applying public interest funds.
- Determine appropriate locations and implement habitat restoration, conservation and enhancement projects and partnerships within the aquatic preserve.

Performance Measures:

- Develop a list of appropriate habitat restoration, conservation and enhancement projects within the aquatic preserve (i.e. a habitat restoration plan).
- Re-evaluate the list of restoration, conservation and enhancement projects on a regular basis.
- Track location and success rates of implemented restoration, conservation, mitigation and enhancement projects.

Objective 4: Improve community understanding of submerged resources and factors that impact the aquatic preserve by improving data dissemination and accuracy.

Integrated Strategies:

- Upload all eligible data into DEP's Statewide Ecosystem Assessment of Coastal and Aquatic Resources (SEACAR) database, as well as other science-based databases to improve reach.
- Include seagrass and other submerged resource awareness/protection information at access points like boat ramps and marinas.
- Include information on the importance and protection of seagrass or other submerged resources in exhibits, social media and other education/outreach materials.
- Develop and share targeted presentations with stakeholders and user groups.

Performance Measures:

- Compile and upload aquatic preserve submerged resource data into science-based databases, such as SEACAR, annually.
- Share annual status and trends of the aquatic preserve (e.g. SEACAR managed area reports).
- Create a list of reports and presentations shared with the public and outreach events attended.
- Track the number of people directly participating in outreach events, as logistically feasible.

Objective 5: Track and document factors such as sea level rise, increases in sea surface temperature, storm frequency and intensity and alterations in hydrologic cycles as they pertain to the aquatic preserve's submerged and coastal resources.

Integrated Strategies:

- Expand and build new collaborative research and monitoring partnerships with universities, their research stations, and other state agency programs, whereby data collection, research

equipment, volunteers, student training, and other human resources are shared to achieve monitoring objectives.

- Participate in regional environmental change and resiliency workshops and meetings to provide science-based guidance for submerged resource management planning, program development, and future modeling efforts.
- Utilize anticipated future Sea Level Rise (SLR) inundation boundaries within the preserves (utilize GIS, SLR models) to assess impacts on coastal and submerged habitats, in aspects such as the prioritization of conservation land acquisition and in the evaluation of linear infrastructure replacement/construction on uplands parallel to the local shoreline.
- Integrate water quality changes, such as salinity, pH, and temperature, into habitat models.

Performance Measure:

- Compile data to be shared with collaborative science participants as updates are available.

Goal 2: Improve protection and public understanding of submerged natural resources.

Objective 1: Promote the importance of coastal habitats by generating a variety of informational outlets that target recreational, commercial and scientific user groups operating in the aquatic preserve.

Integrated Strategies:

- Distribute and/or contribute to the design of brochures, boater's guides, and other outreach materials that include information on the importance of seagrass habitat, water quality and sound user practices that can be used to prevent destruction of seagrasses.
- Repair, replace or install educational signage pertaining to resource protection at public and private boat ramps and marinas throughout the aquatic preserve.
- Provide educational and informational materials, such as boater's guides and brochures to local businesses, marinas, boat clubs, and tour operators.
- Continue to organize and participate in education and outreach events throughout the region to promote the importance of seagrass and other estuarine habitats.
- Coordinate with local boat and personal watercraft rental companies, fishing charter companies and other tourism-driven businesses to inform visitors of proper boating practices to reduce the amount of propeller scarring in seagrasses or other threats, tailored to each region. This could include, but is not limited to informational brochures, public service announcements or videos to be shown prior to outings in the aquatic preserve.
- Provide educational material on alternative methods of seagrass protection and damage avoidance (examples: pole and troll and less destructive anchoring and mooring methods, expansion of 'Scars Hurt' educational campaign).

Performance Measures:

- Produce and acquire brochures and signage informing users of the importance of seagrass habitat, hardbottom habitat, water quality and good boating practices that can be used to prevent habitat destruction.

- Install, repair, and replace signs as necessary.
- Track location and frequency of outreach events.
- Track education and outreach measures provided to rental companies.

Objective 2: Reduce physical damage (e.g., propeller scarring, anchor drags) to the aquatic preserve submerged resources through management actions and research projects.

Integrated Strategies:

- Identify and fill research gaps on effectiveness and feasibility of exclusion zones, pole and troll/no-motor zones, and/or limited access areas for resource protection.
- Identify scarring hotspots, especially in seagrass and hardbottom areas, and determine the best practice to reduce scarring, may include education, pole and troll zones, for both creating and enforcing poling only zones and prioritizing increased enforcement.
- Proactively engage the public in discussions about degradation hotspots and the possibility of measures like boating zones or additional signage.
- Utilize where appropriate, spatially explicit approaches such as rotating vessel exclusion zones, pole and troll areas, and pole/stick anchoring zones that prevent habitat damage (e.g., propeller scarring in seagrass, anchor damage to hardbottom) and promote habitat recovery from physical damage.
- Support management practices that prevent or reduce vessel impacts by encouraging improved navigation or providing input on establishing mooring areas within aquatic preserve waterways.

Performance Measures:

- Produce and / or utilize partner created publications (e.g., local Audubon boater's guides) to promote awareness and behavior changing stewardship within the aquatic preserve. Track locations and quantities of educational material distribution.
- Identify the effectiveness of management strategies in mitigating resource damage and making recommendations for future action.

Objective 3: Coordinate with DEP/WMD regulatory and compliance staff, and support law enforcement to reduce or prevent impacts to water quality, natural and cultural resources, and wildlife.

Integrated Strategies:

- Identify areas where natural and cultural resources are experiencing increased use and damage, and exchange information with law enforcement and land managers. Take care not to facilitate looting of cultural sites with specific signage identifying those sites, though general signage about protection of resources may be appropriate. Consider whether increased or targeted signage may be appropriate.
- Aid law enforcement by working to improve enforceability of impacts to submerged resources.
- Provide classroom and field training on aquatic preserves to regulatory staff as warranted by staff turnover.
- Continue to participate in cultural and natural resource education of local and state law

enforcement officers and land managers to ensure knowledge of statutes and rules regulating state waters and aquatic preserves.

- Develop and maintain communication and partnerships with law enforcement officers and adjacent land managers to assist in identifying and addressing emerging and ongoing resource threats.
- Report impacts and threats to wildlife to law enforcement.
- Provide input to regulatory staff for permit applications and when otherwise appropriate.
- Report impacts to natural resources and water quality to regulatory and compliance staff.

Performance Measures:

- Attend or facilitate meetings with law enforcement to establish positive working relationships.
- Maintain ongoing communication with local law enforcement and adjacent land managers to understand, prevent, and deter potential threats to the resources.
- Provide at least one training per year for regulatory staff about aquatic preserves and/or submerged resource issues.

Objective 4: Establish processes to track and predict environmental changes to the aquatic preserve's submerged resources to guide adaptive management approaches.

Integrated Strategies:

- Collaborate with partners on the establishment of monitoring (e.g., Surface Elevation Table stations) for tidally influenced communities, like salt marsh and mangroves, to better understand factors such as accretion and erosion rates and habitat transitions/migrations (e.g., mangrove encroachment or uplands to salt marsh/mangroves).
- Explore citizen science data collection to augment research and monitoring programs (examples: temperature, water levels, climate-driven species shifts, photo posts, drone imagery or other parameters like elevation, pre-post storm documentation).
- Identify knowledge gaps in climate-vulnerable resources including seagrasses and western offshore regions of stony corals, hardbottom, and sponge habitats. Pursue collaborative research to address gaps.
- Work with academic and other partners to model the impact of sea level rise on the aquatic preserve's submerged lands and resources including documented cultural sites and tidal wetlands using the most appropriate models and frameworks (e.g., NOAA 2040 and 2070 predictions).
- Based on predictive modeling, identify areas where submerged and intertidal habitats will be likely to shift due to sea level rise and apply a response framework (e.g., Resist-Accept-Direct Framework, stakeholder-driven adaptation plan) to guide resource management decisions.
- Identify known submerged and intertidal cultural resource sites that may be affected by environmental change impacts such as sea level rise and storm damage and consult with cultural resource partners to determine priorities for documenting and, if warranted, protecting at risk sites due to environmental change.

Performance Measures:

- Compile data to be shared with collaborative science participants as updates are available.
- When appropriate, produce technical reports on environmental changes in the aquatic preserve as appropriate.
- Share or present model findings at regional workshops and with other appropriate groups throughout the duration of the plan to ensure risks to resources are communicated and are acted upon appropriately.

4.3 / Monitor, protect, restore, and increase the resiliency of adjacent shorelines and islands

4.3.1 / History of shoreline and island management

While TBAP historically managed the upland shoreline habitat of the Terra Ceia State Buffer Preserve, the property was transferred to the Florida Park Service for management in 2004. TBAP now coordinates with the State Park staff on planning and implementation of shoreline management, habitat restoration and public access points in the renamed Terra Ceia Preserve State Park.

One challenge to maintaining healthy shorelines, and the ecosystem services they provide to the aquatic preserves, is the relatively remote location of Terra Ceia. Over the years, such unauthorized activities on private lands as mangrove defoliation, and even mangrove extraction by the roots, has reduced some erosion protection and canopy habitat for waterbird roosting and nesting. While these alterations have affected a relatively small percentage of the preserve's overall shoreline, they represent disturbances to a remote area of the bay that serves as an especially important wildlife refuge and water quality baseline. These activities may seem inconsequential on an individual basis, but cumulatively, may contribute to significant impacts to the preserve's shoreline habitats.

Rookery islands are an important resource in TCAP. Audubon's Coastal Islands and Sanctuaries program, based in Tampa, manages two Audubon-owned rookery islands in the preserve. In the past, Washburn Sanctuary was a regionally important rookery island, but the nesting colony disappeared from the island several years ago. The smaller Ann and Rich Paul Sanctuary has an active waterbird nesting colony. Additionally, Audubon and other groups help with the management of a state-owned rookery island in Miguel Bay.

Issues with rookery islands include disturbance of nesting colonies by boating and fishing activities and entanglement of birds in abandoned fishing line. On a hot day, the absence of birds from a nest can overheat the eggs in the sunlight within a matter of minutes. While flushing of nesting birds is probably not as frequent in TCAP as it is in more urban areas, it can still be a cause of nesting failure. Because these colonies represent a high density of so many listed species, including little blue herons, *Egretta caerulea*, tricolor egrets, *Egretta tricolor*, reddish egrets, *Egretta rufescens* and roseate spoonbills, *Platalea ajaja*, extra effort to protect them is especially worthwhile. At the time of this writing, two rookery islands in the preserve, the Miguel Bay island with six buoys and the Ann and Rich Paul island, with eight buoys, are posted and maintained with buffer zones each nesting season.



Photo 9 / At the end of nesting season, buoys marking rookery island buffers are removed for reconditioning.

While some monofilament line is left directly on the mangroves of the rookery islands by fishermen, much of it is brought in by pelicans and other waterbirds that have become hooked or entangled at other locations and manage to fly to a rookery island. As a result, monofilament line often is observed draped across the tops of the tallest mangroves, where it is unlikely to have been placed by casting.

Concerned about the effectiveness of signs on islands to notify boaters of the nesting activity, TBAP gained permission to post informational 50m buffer zones around the two most active rookery islands. This buoy placement required both state and federal permits from SWFWMD and Army Corps of Engineers. To protect any new rookery islands with educational buoys TBAP would need to go through the same permitting processes.

In November each year, before blue herons begin the nesting season around Thanksgiving, TBAP staff moor plastic informational buoys to screw anchors that have been installed around the rookery islands. These buoys remain in place until the end of nesting season around August. At that time, the buoys are removed for cleaning and reconditioning until the next nesting season. Observation of boater behavior after installation of similar buoys around a nesting island in Clearwater Harbor gave TBAP staff confidence that the buoy buffer zones substantially decrease disturbance of the nesting colonies by boaters.

4.3.2 / Shoreline and island management program

Since TBAP does not manage shorelines along TCAP, other than the shorelines of a few small mangrove islands, the program has two indirect roles in helping to protect these important features.

For shorelines on public lands, TBAP has helped with the logistics of shoreline cleanups, invasive plant removals and other activities that help maintain those shorelines as part of the Terra Ceia ecosystem. TBAP has equipment and can mobilize volunteers for specific needs to support the management of the environmental integrity of those areas.

To help protect shorelines in private ownership, TBAP can include information on the importance of clean, intact shorelines in its public outreach efforts. TBAP can also work with homeowners and enforcement entities to identify and remedy unauthorized shoreline alterations. As always, positive interaction with the public is essential to leveraging their role as partners in conservation of the areas they enjoy.

TBAP continues to rely on Audubon's Coastal Islands and Sanctuaries program to provide bird census data for rookery islands in the preserve. Groups like Tampa Baywatch help with monofilament line cleanups on rookery islands outside nesting season, and other groups sometimes rescue entangled birds.

TBAP intends to continue to establish seasonal buffer zones around rookery islands with buoys. If a new nesting colony on a different island is detected, TBAP will seek permission to create a buffer around that island.

Goal 1: Protect and restore natural shorelines.

Objective 1: Enhance degraded or altered shorelines to maintain and improve water quality, habitats and address shoreline erosion as appropriate for each site.

Integrated Strategies:

- Distinguish between areas that are naturally, and appropriately, eroding and accreting, and areas where erosion is caused/exacerbated by human activities.
- Use appropriate, site-specific techniques to stabilize shorelines that replicate natural conditions (e.g. oyster shell, mangroves, emergent vegetation) and benefit wildlife.
- Organize volunteer habitat restoration events, as needed/appropriate.
- Contact local landowners whose coastal properties host invasives to determine possible solutions for removing the invasive plants. This includes making information available at local events and to homeowner/civic groups.
- Share technical advice, suggested approaches, and how-to information with partnering agencies and with other interested parties.

Performance Measures:

- Track the number of volunteer hours coordinated.
- Track amount of restored habitat.
- An up-to-date database of technical information and case studies is created and maintained.

Objective 2: Increase awareness of the ecological and protective importance of nature-based shorelines.

Integrated Strategies:

- Provide information, including regulatory information, at outreach events.
- Provide educational literature, workshops and other means of informing the public on the importance of natural shorelines and the impacts of shoreline alteration.
- Provide input to regulatory staff when appropriate.

Performance Measures

- Information on shoreline importance included in event displays where appropriate.
- Conduct presentations to local groups.
- Provide trainings for regulatory staff about shoreline issues.

Goal 2: Retain habitat and ecosystem functions of natural and dredged material islands.

Objective 1: Enhance degraded or altered islands to maintain and improve water quality, habitats, and address shoreline erosion as appropriate for each site.

Integrated Strategies:

- Use emergent vegetation plantings to restore shorelines and enhance island vegetation.
- Use techniques to stabilize shoreline/islands that replicate natural conditions (e.g. oyster shell, cordgrass that will recruit mangroves).
- Organize volunteer planting and/or oyster restoration events.
- Treat invasive plants on islands under aquatic preserve management, in collaboration with management entities.
- Map treated areas with GPS and use GIS to prescribe and track timely retreatment of invasives.
- Share technical advice, suggested approaches, and how-to information with interested parties.

Performance Measure:

- Track management effort for restored, maintained and enhanced habitats, including volunteer hours coordinated, staff hours, and acreage/linear feet of habitat.

Objective 2: Maintain sustainable use on islands.

Integrated Strategies:

- Address incompatible uses on islands within the aquatic preserve.
- Enhance sustainable use on islands within the aquatic preserve.
- Coordinate with law enforcement and regulatory agencies by working to improve enforceability of impacts to islands.

Performance Measure:

- Ongoing communication with local law enforcement and regulatory agencies is maintained to understand, prevent, and deter potential threats to the resources.

4.4 / Assist with listed species and priority species management

4.4.1 / History of listed and priority species management

While TBAP does not directly manage wildlife populations as the Florida Fish and Wildlife Conservation Commission (FWC) does, their habitat management actions often affect those populations directly. To this end, TBAP considers wildlife effects in nearly all their management action planning.

As has been observed in some of the other issues sections of this plan, the preserve's relatively remote location poses some challenges, such as limited access to assist entangled wildlife and illegal fishing.

4.4.2 / Listed and priority species program



Photo 10 / TBAP staff may have to rescue birds entangled in, or hooked by, fishing gear.

TBAP plays an important role in assisting wildlife agencies with enforcing wildlife protections, as well as in educating the public about how their actions can help protect the preserve's wildlife. Support for law enforcement has ranged from helping with access to remote locations to education on enforceable statutes. TBAP has used their vessels and other equipment to get officers to remote locations to assess derelict vessels, locate illegal drug crops and gather evidence for other fisheries-related infractions.

Some of the needed enforcement at the preserve requires familiarity with statutes specific to preserves' resources. TBAP has worked with Audubon's Coastal Islands and Sanctuaries program to offer educational workshops on bird protection for officers from a variety of law enforcement agencies. While the informational buoys TBAP places seasonally around rookery islands do not represent enforceable restrictions, the fact that they highlight the presence of

colonial waterbird nesting makes the state and federal protections of nesting birds more enforceable.

Public education to protect wildlife is a challenge because public access to the preserve is from diverse access points, and many visiting vessels are launched outside the preserve. While some sites, like the Skyway Fishing Pier, have their own programs to inform fishermen about issues like hooking and entangling birds, TBAP doesn't manage a venue in the area that can provide a focus for public outreach. Therefore, TBAP works with other managing entities to place information at shoreline access points and other venues. Modern communications vehicles, like social media can also be effective. The Friends of Tampa Bay Aquatic Preserves have the greatest opportunity for effectiveness through these media on a local level.

Whenever possible, TBAP participates in regulatory processes and other planning processes where they can bring some wildlife experience to bear. Often, TBAP's role is to connect applicants to other organizations for things like marine mammal protection best practices, but the program also pays attention to necessary elements of projects like manatee guards on culverts. As with TBAP's involvement in many things, its role in protecting wildlife is often very project-specific and is based on experience and local site knowledge.

Goal 1: Protect listed and priority species and their key habitats within the aquatic preserve.

Objective 1: Establish, implement and build upon existing routine biological monitoring programs for essential habitats, and rare and listed species.

Integrated Strategies:

- Assist partners with natural resource monitoring efforts.
- Maintain a comprehensive species inventory.
- Support other local and state agencies in the monitoring of distribution and abundance of specific indicator species, such as seagrass, to determine the ecological health of the aquatic preserve.
- Cooperate with FWC and assist, as staff are available, to follow an imperiled fish and wildlife species management strategy, including survey and monitoring protocols for species and their associated habitats that occur, or have the potential to occur, within the aquatic preserve.

Performance Measures:

- Create a regularly updated species list for the aquatic preserve, drawing from partners who inventory specific taxa, as well as work done by TBAP staff.
- Work with other state and federal agencies to develop a database of all species of concern.
- Use water quality data and other indicators to create an approach to protect and ensure sustainability.

Objective 2: Improve understanding of bird populations (migratory and year-round residents) that use the aquatic preserve.

Integrated Strategies:

- Support bird surveys by partners, like Audubon's Coastal Islands and Sanctuaries program.

- Analyze survey data to determine habitat usage.
- Consult with partnering agencies and organizations for appropriate analysis of bird survey data to assess population trends.

Performance Measure:

- Reports by monitoring entities will be reviewed for bird population trends and habitat usage in the aquatic preserve as needed.

Objective 3: Reassess the status of fisheries within the aquatic preserve.

Integrated Strategies:

- Coordinate with FWC's Division of Marine Fisheries Management or other entities who conduct fisheries assessments.
- Encourage and support fisheries surveys within the aquatic preserve.

Performance Measure:

- An updated fisheries assessment is conducted within the aquatic preserve.

Objective 4: Monitor and assess diamondback terrapin populations within the aquatic preserve.

Integrated Strategies:

- Support assessments of crab trap mortality of diamondback terrapins.
- Increase public awareness through various educational outlets (literature, attend public meetings, etc.) about the presence of diamondback terrapin and their habitat, and how to protect them.
- Support the use of terrapin excluder crab traps within the local crabbing community.

Performance Measure:

- Seasonal diamondback terrapin data is reviewed each year.

Objective 5: Annually evaluate status and trends of wading and diving bird populations.

Integrated Strategies:

- Review data to determine status and trends.
- Identify threats to wading and diving bird colonies.
- Collaborate with other groups collecting regional nesting island data to encourage consistency in methodology.
- Work with partners to detect developing new colonial waterbird nesting islands for possible buffer zone establishment.
- Document human disturbance to nesting wading birds and coordinate with law enforcement regarding monitoring of nesting islands for harassment of wildlife.

Performance Measures:

- Potential nesting islands within the aquatic preserve are investigated annually.
- Colonial wading bird surveys data are received from monitoring partners on a regular basis.
- Bird fatality data from fishing line entanglement is submitted to FWC.
- Coordinate annually with partners before active nesting season.

Objective 6: Improve public understanding of colonial wading birds and nesting island habitat.**Integrated Strategies:**

- Educate the public and disseminate information at environmental events.
- Provide volunteer opportunities and train volunteers to assist with rookery buoy installment and maintenance.
- Support partners that provide education and outreach.

Performance Measures:

- Provide current status and trends information for the general public.
- Keep track of volunteer hours.

Objective 7: Preserve and improve bird island habitat and function.**Integrated Strategies:**

- Identify and work to address hotspots, like public fish cleaning benches, where birds frequently become hooked or entangled.
- Conduct fishing-line and trash cleanups, in cooperation with other agencies, organizations and volunteers, avoiding rookery islands during nesting season.
- Coordinate with law enforcement regarding monitoring of bird islands for harassment of wildlife.
- Coordinate with managing agencies on any proposed public use activities (e.g. fireworks and other activities) in range of bird islands.
- Work with FWC and appropriate agencies to post informational signage and regulatory buffer areas around key bird islands during the nesting season.
- Establish informational buoy buffer zones around rookery islands where appropriate.
- Document locations and acreage of invasive vegetation on nesting islands.
- Coordinate with partners to remove invasive vegetation as necessary.

Performance Measures:

- Document cleanup information such as trash removed from nesting islands, number of volunteers participating in cleanups, number of working partnerships, etc.
- Report wildlife harassment activity to appropriate law enforcement personnel.
- Provide comments regarding resources to Environmental Resource Permit (ERP) staff related to current and ongoing DEP permit applications, as needed.
- Coordinate with managing agencies on proposed public use activities within range of bird

islands.

- Informational buoys are installed to buffer key bird islands.
- Document hours worked on maintained or restored nesting islands.

4.5 / Monitor and manage invasive species in the aquatic preserve

4.5.1 / History of invasive species management

In the past, when TBAP also managed some adjacent uplands as a buffer preserve, staff actively engaged in removal and tracking of non-native plants like Brazilian pepper and Australian pine. TBAP has trained staff to anticipate and recognize potential new invasive species prior to introduction.

4.5.2 / Non-native and Invasive species program

The program still offers logistical help to managers of adjacent uplands, like the Florida Park Service. Additionally, TBAP sometimes trains park staff and volunteers in canoe/kayak safety certification that they need to access some remote uplands, like the banks of Frog Creek, to treat invasives in those areas.

In the submerged habitats of the preserve, eradication of any non-native species would be nearly impossible, so staff try to identify and document the establishment of new arrivals, and, when practical, they remove non-natives, like Asian green mussels, when they encounter them on natural substrates.

Goal 1: Reduce the impacts of invasive and nuisance species in the aquatic preserve.

Objective 1: Identify the presence and threat of invasive and/or non-native species.

Integrated Strategies:

- Survey for nuisance, non-native and/or invasive fauna and flora species as a part of other activities like hardbottom monitoring.
- Evaluate vegetation compositions within the aquatic preserve, including the interaction between native and non-native and/or invasive species.
- Encourage the public to report locations within the aquatic preserve of non-native and invasive species.
- Collaborate with groups collecting data on nuisance, non-native species within the aquatic preserve.
- Report invasive species found within the aquatic preserve to the appropriate documenting agency/organization.
- Assist other agencies/organizations in their efforts to control nuisance, non-native and invasive species found within aquatic preserve.
- Increase public awareness through various educational outlets (literature, attend public meetings, etc.) relating to nuisance, non-native and/or invasive species and the importance of their impact within the aquatic preserve.

Performance Measures:

- Maintain a list and locations of nuisance, non-native and invasive species found within the aquatic preserve.

- Track number of educational efforts (presentations, brochures, signage, etc.) on the threat of non-native and invasive species.

Objective 2: Reduce the abundance and diversity of invasive and non-native species within the aquatic preserve.

Integrated Strategies:

- Conduct invasive fauna species removal workdays as needed.
- Assist other agencies in controlling non-native and invasive species.

Performance Measure:

- Conduct routine invasive species removal and track efforts, including staff time dedicated to working with government agencies, non-profit organizations, and community groups to reduce invasive species.

4.6 / Identify and protect cultural resources within the aquatic preserve

4.6.1 / History of cultural resource management

While any area that has historically been near waterbodies should be considered a high probability area for historic and prehistoric artifacts and sites, the Terra Ceia area is known to be rich in both history and prehistory. Much of the land of the adjacent Terra Ceia Preserve State Park was originally acquired by the state as part of a buffer preserve for the adjacent aquatic preserve, so TBAP has long played an active role in identifying and preserving shoreline and near-shore upland pre-Columbian sites. Staff actively engaged with the Seminole Nation of Florida and the Seminole Nation of Oklahoma in site visits and discussions of their preferred treatment of the area's Native American sites.

The most notable activities of TBAP have included detection of prehistoric human remains in eroding sites and detection and restoration of looting sites. TBAP has also worked with local archaeologists and Division of Historical Resources (DHR) staff to identify new sites and to submit them to the state's Master Site File. TBAP has also served as the "eyes and ears" of DHR for specific projects like a shipwreck survey to ensure that project activities are conducted appropriately and that they do not disclose site locations to the public in media contacts.

Prehistoric and historic site preservation in, and adjacent to, TCAP has benefitted from the local knowledge of archaeologist, and local resident, Bill Burger and from the institutional knowledge within the TBAP program. However, the death of Mr. Burger in 2022 and staff turnover represent a considerable diminution of the sort of multi-decade experience and knowledge that has helped protect these sites. Likewise, while a few of the original participants in the interdisciplinary United States Geological Survey (USGS) Tampa Bay Study, conducted over 20 years ago (Yates, 2004) are still professionally active in academia and government, there is no real knowledge infrastructure directed at Terra Ceia's history and prehistory as exists for other sites like Weedon Island. As a result, there is a need for new approaches that can help fill this knowledge void for continuing protection.

No land clearing or ground disturbance, above or below the ordinary high-water line, will be undertaken

by staff until the Division of Historical Resources has provided a review and recommendations for the proposed activity.

4.6.2 / Cultural resource program

At present, TBAP's efforts in protecting historic and cultural resources at Terra Ceia include staff training and occasional monitoring of known sites. Other activities, like shoreline cleanups and invasive plant removal on shorelines are done with carefully selected groups of volunteers and with an extra level of volunteer orientation to let them know about the likelihood of archaeological resources and methods that help protect those resources from disturbance. TBAP has co-hosted Archaeological Resource Management (ARM) training for staff and partners and intends to do so in the future.

Regarding submerged historic and cultural resources, the few known submerged sites, relative to more than 80 known upland sites, points to the biggest knowledge gap. There have never been adequate probability models and submerged archaeological surveys in TCAP. The known upland and shoreline sites should give a great deal of context for the development of probability models, but that expertise has never been brought to TCAP to the degree needed to understand the underwater archaeological landscape of the preserve.

Goal 1: Promote the protection of cultural and historical resources within the aquatic preserve.

Objective 1: Assess the condition of recorded and emerging cultural and historical resources within the aquatic preserve.

Integrated Strategies:

- Staff will monitor for unidentified cultural resources during other activities in the aquatic preserve. This includes inviting professional archaeologists such as those with the Florida Department of State's Division of Historical Resources (DHR) or Florida Public Archaeology Network (FPAN) staff on field visits or reviewing other field surveys.
- Staff will visit known submerged archaeological and cultural sites on a regular basis. This can also include inviting professional archaeologists.
- Identify cultural sites which may be vulnerable to erosion or other disturbances and methods to protect those sites.
- Staff will obtain Archaeological Resource Monitoring training, and TBAP will partner with DHR to host this training as needed.

Performance Measure:

- Maintain a log of the sites visited, the condition of those sites, and any new sites discovered during other management activities. The number of sites visited, their condition, any restoration or protection efforts, and number of invitations to professional archaeologists will be included.

Objective 2: Improve public understanding of archaeological and cultural resources associated with the aquatic preserve.

Integrated Strategies:

- Develop and present educational programs to the public and interested parties related to

specific cultural or historical resources within the aquatic preserve.

- Coordinate with tribal entities on the appropriate treatment and depiction of pre-Columbian sites.

Performance Measure:

- The number of educational presentations, signs, press releases, and social media posts about cultural or historical resources will be reported. All these activities will be done without the disclosure of sensitive sites to help prevent degradation and looting.

4.7 / Reduce marine debris in the aquatic preserve

4.7.1 / History of marine debris management

Historically, debris in Terra Ceia Aquatic Preserve is of three general types – urban debris, fishing and boat-related debris, and episodic event debris. Anthropogenic urban debris, like cans, bottles, plastic films and similar items is probably carried to the preserve from more urban parts of Tampa Bay by winds, currents and by transport down creek systems. Other debris probably enters the preserve from boating and fishing activities (e.g., monofilament line), uncovered trash bins and unsecured items that come from vehicles on the Skyway Bridge and other roadways. Debris at TCAP from episodic events like hurricanes has included derelict vessels, dredge pipe floats and stray buoys. Students from the University of North Carolina – Chapel Hill’s Maymester program have gathered and characterized debris washed ashore on Mariposa Key, and they found that small debris in TCAP is similar in composition to debris in more urbanized areas. Winds and currents likely bring “floatables” into the preserve from other parts of Tampa Bay.

As part of its routine assessments of parks and other public spaces on the shores of the preserve, TBAP looks for trash cans without covers and other potential sources of debris. Receptacles for used fishing line are also part of this assessment. Whenever possible at events and on the water, TBAP staff provide boaters with marine debris bags, often provided by the Clean Marina Program, that are designed to keep debris aboard the vessel. Keeping debris from entering the preserve is a high priority.

TBAP has played a major role in the timely and environmentally responsible removal of derelict vessels from the preserve. Whether that is through direct involvement, as in the aftermath of Hurricane Irma, or providing Best Management Practices (BMPs) trainings for contractors, as in the aftermath of Hurricanes Helene and Milton, TBAP is committed to ensuring that the removal of vessels brought in on a storm tide does not result in unnecessary additional damage to natural resources. Timely removal of these and other large debris items is necessary to prevent mechanical damage by their moving around with waves and tides.

TBAP has also played an active role in the oversight of several bridge replacement projects to ensure that debris from demolishing the old bridge is removed from the submerged lands of the preserve.

4.7.2 / Marine debris program

Because many of the shorelines and other habitats of TCAP are relatively remote, TBAP has the best

access to identify and communicate locations of many of the areas where debris might accumulate. Many of these areas are managed by adjacent land managers, such as Florida State Parks and Manatee County.

While events like coastal cleanups mobilize many volunteers to clean up accessible areas around the bay, some of the least-frequently cleaned areas are less accessible but are very important wildlife habitat. For that reason, TBAP focuses more of its cleanup efforts on areas that require vessel access and local knowledge.

With nearly 100 known pre-Columbian archaeological sites along its shores, the Terra Ceia area requires extra oversight on cleanup activities to prevent disturbance of historic and cultural resources. Without extra pre-cleanup orientation about the local archaeological resources, a volunteer might collect a shell tool, thinking that it is just another seashell to save. Such removals, unintentionally, would add up to a tragic loss of the area's archaeological record over time.

Unfortunately, intentional looting of archaeological resources is also a possibility. With that in mind, TBAP is careful about who to recruit as volunteers for the removal of debris from Terra Ceia's most sensitive sites. Often this work goes to visiting student groups from out of state, because it is unlikely that individuals from those groups would return to collect artifacts seen during the event. Indeed, during a cleanup of a temple mound by a visiting out-of-state student group, human remains, including a pre-Columbian skull, were spotted eroding from the mound. It was an interesting experience for the students in their one-time visit to that site, and proper orientation of the group ensured that the utmost care was taken around such resources to remove only modern trash.

Goal 1: Reduce debris at the source.

Objective 1: Identify implications to the natural resources of the various types of marine debris occurring within the aquatic preserve.

Integrated Strategies:

- Support partners (e.g., UNC service-learning groups) in conducting surveys assessing types of marine debris, documenting areas of high concentration, and noting habitat impacts of each type.
- Analyze data collected from marine debris removal efforts (both Aquatic Preserve and partner hosted events with groups like UNC Maymester teams).
- Apply results of analysis to prioritize marine debris removal and educational efforts for contributing user groups.

Performance Measure:

- Collect and analyze survey data for marine debris removal efforts within the aquatic preserve managed areas for the duration of the management plan.

Objective 2: Reduce marine debris through increased awareness, including the impacts of marine debris.

Integrated Strategies:

- In collaboration with UF/IFAS Sea Grant, FWC, and other partners educate public on marine debris, and its effects on wildlife and the environment.
- Include marine debris-related information and activities at TBAP exhibits at regional events such as boat shows and Shark Con, as well as at local events.
- Provide awareness messages at access point kiosks and other informational locations to raise awareness about marine debris and its effects on the aquatic preserve.
- Categorize debris from shoreline cleanup activities in the preserve with regard to material, amount, nature, location, etc. which may provide information on potential sources.

Performance Measures:

- Identify access points needing signage.
- Information on marine debris is available at appropriate identified points of access/use of the aquatic preserve.
- Track number of outreach events per year which provide information on marine debris.

Objective 3: Seek methods to reduce debris that enters the aquatic preserve.

Integrated Strategies:

- Work with the Clean Marina Program and other partners to ensure that access points have monofilament line depositories and trash receptacles with secure lids.
- Periodically survey public access points adjacent to the preserve for covers on trash cans and other marine debris reduction measures. Work with the management entities of these sites to implement marine debris BMPs.
- Work with partners to develop projects such to reduce debris and identify sites for additional trash receptacles.

Performance Measure:

- Communicate updated information on trash receptacles, etc. is maintained in TBAP's public access geodatabase.

Goal 2: Remove debris from the aquatic preserve.

Objective 1: Coordinate and collaborate in debris removal activities, including derelict vessel removal and derelict trap removal.

Integrated Strategies:

- Facilitate shoreline, island, and in-the-water cleanups of marine debris.
- Host or participate in crab trap removal events in coordination with FWC.
- Occasionally spot-check aquaculture sites for appropriate management of debris from activities.
- Encourage and support derelict vessel removal operations using appropriate BMPs.

Performance Measures:

- Track removed debris data, including types of debris, accumulation rate, and location and report, such as on FWC's marine debris tracker.

- The manager or staff will obtain Resource Advisor Training to reduce resource impacts during cleanups or other management activities.

4.8 / Enhance low impact public use and access

4.8.1 / History of public use and access management

The TBAP primary access issues are limited water access points, resource distributions and historic uses in the area. The presence of shared boundaries between uplands and submerged lands presents a common challenge needing an integrated approach to meeting management needs. Aquatic preserve staff will partner with State Park staff as resources are available to meet these common needs.

4.8.2 / Public use and access program

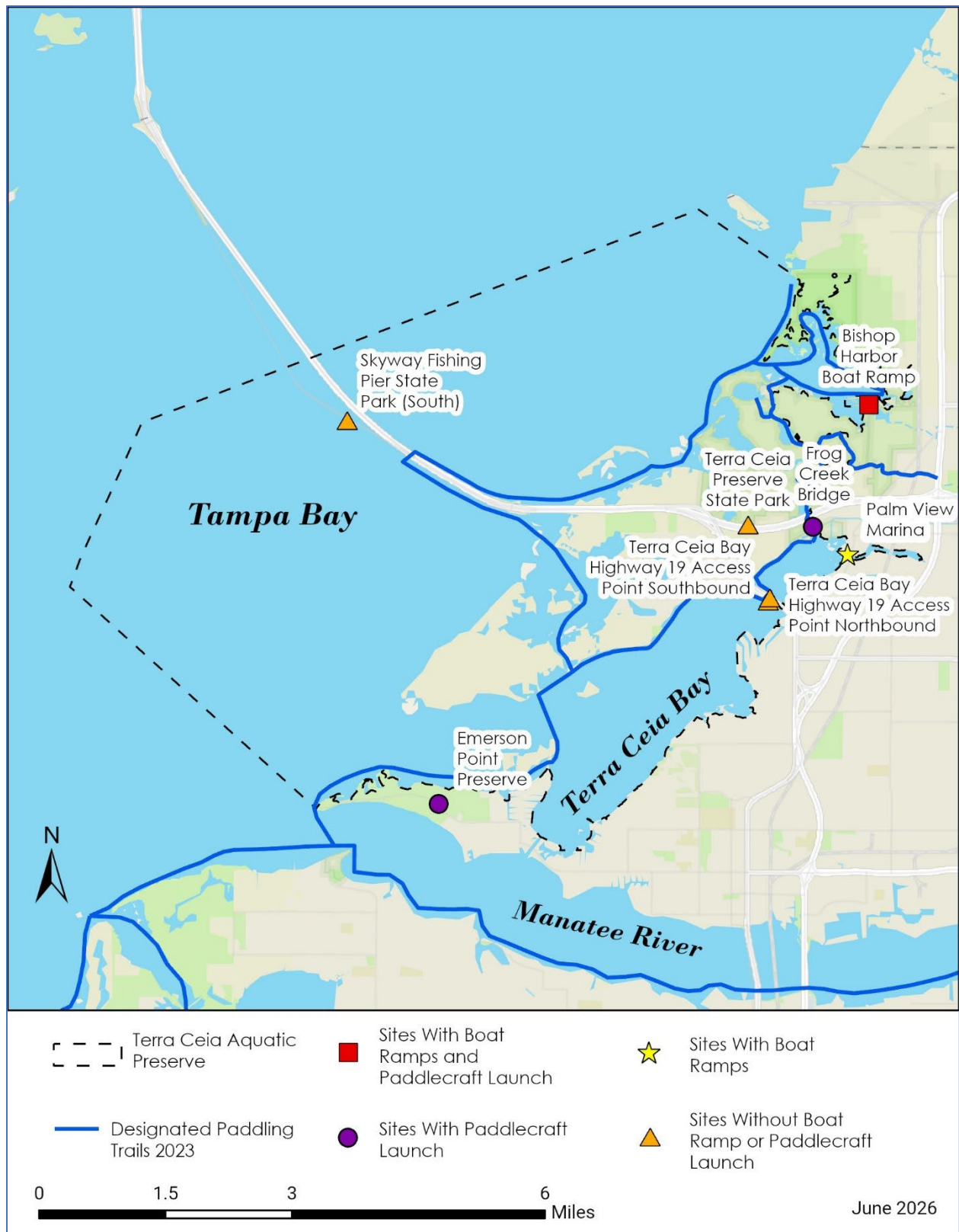
Because there is little road access to water in TCAP, and because much of that adjacent water is very shallow, TBAP's site knowledge and emphasis on protecting resources is essential to any public access initiatives. For these reasons, as well, it is important to encourage non-motorized watercraft whenever possible.

Boat access at Bishop Harbor is a good example of the challenges of providing public access. The eastern half of the harbor, where an improvised, non-paved ramp has been in use for decades, is so shallow that it can be difficult to get a flat-bottomed boat out on a low winter tide. The western half of the harbor has a swash channel that is several feet deeper, but it is a winding channel that can only be followed with local knowledge. Upgrades to the ramp risk promoting access to deeper-draft boats that would damage submerged resources, and marking the channel would require careful consideration, as it might increase overall vessel traffic into the harbor from Tampa Bay. A comprehensive approach, involving both land and water perspectives is needed to better accommodate existing use without increasing vessel impacts.

A paddling launch farther down Bishop Harbor Road was established in the past, but it was closed for habitat creation projects and not reopened. TBAP should work with the Florida Park Service to determine whether re-establishing this launch would be a good way to encourage paddling access to the preserve while keeping paddlecraft away from boat traffic closer to the boat ramp.

The Frog Creek/Terra Ceia River system offers paddlers a great chance to see one of Tampa Bay's last undeveloped tidal creek systems with an excellent salinity/vegetation gradient along its course. At present, most paddling trips in that waterway are done by locals or guided by people with experience in getting through that labyrinth of channels and mangrove islands. TBAP and the Florida Park Service should revisit the idea of a marked paddling trail through that system with a launch at the Haley Site near the Terra Ceia Road bridge.

An integral part of any access initiative should be resource appreciation and protection information at any access points. TBAP has provided kiosks and information at access points in the past, and the program needs to renew its dedication to education at the points of resource access/use.



Map 14 / Public access sites for Terra Ceia Aquatic Preserve

Goal 1: Enhance public access and public use experiences in the aquatic preserve.

Objective 1: Maintain and enhance sustainable public access where appropriate.

Integrated Strategies:

- Identify appropriate locations for public access points, launch sites and destinations within the aquatic preserve (i.e. a paddling trail).
- Increase coordination with the Manatee County Blueways, DEP's Division of Recreation and Parks, Office of Greenways and Trails, and other managing entities to develop and maintain paddling trails.

Performance Measure:

- Produce a map with potential launch sites, proposed improvements and paddling trails that can be shared with managing agencies.

Objective 2: Support low impact recreational opportunities in the aquatic preserve.

Integrated Strategies:

- Increase awareness of non-consumptive use opportunities such as paddle boarding, sailing, kayaking, canoeing, swimming and snorkeling.
- Support and educate others that offer ecotourism programs concerning aquatic preserves and resource protection. Provide information to local guides and ecotour operators to help educate and encourage responsible use of the resources.
- Coordinate with adjacent land managers, government agencies and entities to promote sustainable recreational activities.

Performance Measure:

- Develop educational methods (presentations, brochures, website, signage, etc.) that can be shared with ecotour operators, adjacent land managers and others. Observe local resident and visitor demographic trends to determine the need for non-English versions of these media products.
- Post and distribute educational materials directly to the public.

4.9 / Improve awareness and protection of the aquatic preserve and its resources.

4.9.1 / History of education and outreach

TBAP's recent move of its office to Clearwater has been beneficial to the TBAP program, overall. However, the geographic distancing of the program from Terra Ceia, as well as the passing of several key citizen contacts, has made the program a little more isolated from the Terra Ceia community. TBAP must redouble its efforts to interact with local citizens, elected officials and scientists at Terra Ceia to compensate for the resulting administrative and geographic distance. Local meetings have been held in venues such as the Village Improvement Hall and Manatee County Convention Center, but smaller events and volunteer staging continues to be held at the historic Haley House site.

4.9.2 / Education and outreach program

In general, TBAP's approach to public outreach and education reflects the widely-dispersed nature of the resources it manages and the diversity of the stakeholders who use and affect those resources. TBAP is accustomed to operating over a broad geographic area. Partnerships with valued local governments have made excellent facilities, like the Weedon Island Preserve visitor center and the Emerson Point Preserve classrooms available for such TBAP-sponsored trainings as Wilderness First Aid, Vessel Removal Best Management Practices and Archaeological Resource Management.

TBAP continues to see value in its participation in larger regional events like the St. Petersburg Boat Show and Shark Con, as these events draw people from a large geographic area that includes Terra Ceia. At these events, TBAP staff and volunteers interact directly with residents, and many of these conversations have focused on the Terra Ceia area.

There are a few local events with good target audiences for TBAP's participation. The Ruskin Seafood Festival draws many people from southern Hillsborough County and northern Manatee County. TBAP has renewed its participation in local events, such as the Seafood Festival and Terra Ceia Mullet Smoke-Off. The Friends of Tampa Bay Aquatic Preserves citizen support organization could expand its reach, and Terra Ceia would be a good target for membership and outreach expansion.

Likewise, the Friends organization has been instrumental in providing TBAP with informational kiosks on a budget. Kiosks made by the Friends have been installed at various locations, recently including the park service's Bishop Harbor boat launch. Additional kiosks are needed to reach people accessing the preserve.

As with other issues in this plan, it is imperative that TBAP pay attention to local population growth and any change in visitation demographics to ensure that outreach and education efforts are targeted for maximum relevance and reach.

Goal 1: Increase public involvement, awareness and knowledge of the aquatic preserve.

Objective 1: Promote awareness of the aquatic preserve and its significance.

Integrated Strategies:

- Develop signage for boat ramps or other access points, both for TBAP-wide issues and site-specific issues.
- Develop and/or update brochures and presentations.
- Deliver presentations to targeted user groups.
- Host or participate in outreach events.
- Partner with other agencies and/or non-governmental organizations to promote greater understanding and interpretation of resources including threats.

Performance Measures:

- Track dates and locations of events and attendance at events.

Objective 2: A sense of stewardship is developed among the public by providing volunteer opportunities.

Integrated Strategies:

- Develop or utilize an existing volunteer program to assist with management activities.
- Coordinate with Citizen Support Organizations.
- Provide internship opportunities.

Performance Measure:

- Track number of volunteers and their hours
- Track number of opportunities, including internships.

4.10 / Provide support to other agencies in episodic events such as tropical weather events, oil spills, red tide events, fish kill events, etc.

4.10.1 / History of episodic event responses.

While the Tampa Bay area has had relatively few direct tropical weather impacts in over a century, the earlier hurricanes of 1848 and 1921 had demonstrated that direct hits, with devastating storm surges are possible. Hurricane Irma, in 2017, and Hurricanes Helene and Milton, in 2024, demonstrated that even glancing blows from these storms can affect both manmade and natural communities in profound ways.

In the absence of coastal development, storms may actually benefit natural systems. Proffitt & Travis (2010) demonstrated that mangrove propagules seldom travel to basins far from those of their parent trees. Kendall, et al., 2004 demonstrated that manatee grass relies on episodic storms to disperse seeds. As gene flow across the geographic range of a species may be necessary for that species' genetic diversity and long-term survival, occasional transport of propagules by tropical weather systems may boost the fitness of species that depend on such dispersal mechanisms.

It is when storms interact with coastal development that damage can be quite extensive. Wind is often thought of as the overriding threat from hurricanes. Wind driven waves, especially on top of storm surge, along with debris driven by wind and water, can be especially destructive.

TBAP has responded to regional hurricanes in various ways. Following Hurricane Charley in 2004, damage in the Tampa Bay area was minimal, so TBAP delivered supplies to the Charlotte Harbor Aquatic Preserves office and then assisted the Council on Aging in central Florida in locating and assisting the elderly in their homes. After Hurricane Ian, in 2022, TBAP partnered with its local citizen support organization to procure supplies and deliver them to staff at the Charlotte Harbor and Estero Bay offices. Following Hurricanes Irma, in 2017, and Hurricanes Helene and Milton, in 2024, TBAP helped coordinate derelict vessel removal from preserves' habitats and coordinated volunteer efforts to remove other debris from islands in the preserves.

For TBAP to be effective in its post-event response, the program must be proactive in its own resilience measures. TBAP's approach to resilience with regard to facilities and other preparation is outlined in the

Facilities section of Chapter 5 in this plan.

4.10.2 / Episodic event response program

As has been the case in the past, TBAP's role in post-event response will depend on (1) the nature/severity of the event and (2) any multi-agency command structure put in place. TBAP's primary responsibility as a resource management program is to protect habitats, but the program has equipment like boats, chainsaws and water tanks that can help address public safety issues in extreme situations.

When a tropical weather system affects Tampa Bay or other areas, the response may be assistance to communities if needed, but the program also would do rapid assessments of hazards in the areas it manages. Following Hurricane Irma, the TBAP manager provided support as a certified Natural Resource Advisor, to visit derelict vessel sites to give guidance to the Coast Guard and their contractors on each unique vessel removal. Following Hurricanes Helene and Milton, TBAP set up and operated best management trainings for the state's vessel removal contractors. In future storm event responses, the command structure will drive much of the nature of TBAP's responses.

A high post-storm priority for TBAP is assessing islands and other parts of the preserves for hazards. Spills, partially downed trees and other public safety issues will be assessed as soon as preserve staff can access managed areas. TBAP tries to maintain communications channels with current officials in a variety of agencies and organizations that would mobilize to address these issues, once identified.

The probability of oil spills in the Tampa Bay area continues to decrease, as power plants have been retrofitted to burn natural gas instead of heavy fuel oil, but some risk persists. However, TBAP will remain available to assist law enforcement and other appropriate officials on-site following any oil spill at Port Manatee or other area. The true value of their site knowledge has been included in the Area Contingency Planning process, which is coordinated with multiple agencies through the US Coast Guard.

Goal 1: Minimize negative impacts to the aquatic preserve from episodic events.

Objective 1: Maintain hurricane and other disaster response plans to limit damage, facilitate impact assessments and conduct debris and vessel removals.

Integrated Strategies:

- Revise TBAP's hurricane plan annually, and other event response plans as needed, and share as necessary.
- Participate with the US Coast Guard and other entities in Area Contingency Planning exercises.
- Ensure that equipment needed for hurricane preparation is properly available, maintained and stored.
- Proactively plan with staff and partners before storm seasons to understand responsibilities and update contacts.
- Coordinate with the Clean Boating Program to provide information to local facilities whose hurricane preparations may prevent spills, derelict vessels, and other hurricane-related impacts.
- Partner with local governments and nonprofits to share information with homeowners and homeowner associations about steps they should take to protect their property (such as docks, boats and kayaks) on the shorelines of the aquatic preserve prior to storm events.

Performance Measures:

- The hurricane plan for the aquatic preserve is revised annually, and other event response plans are revised as needed.
- Event response training sessions are conducted with other programs such as the Clean Boating Program, Area Contingency Planning, FWC Marine Debris and Derelict Vessel programs, etc. for other resource managers and facility operators.

Objective 2: Support other agencies during and after events such as providing monitoring data, manpower, etc., as resources and staffing allows.

Integrated Strategies:

- Provide input to FWC law enforcement and DEP compliance staff on derelict vessels and their removal.
- Create fine-scale bathymetric maps and other products “on-the-fly” to help guide removal equipment to avoid impacts to submerged resources in shallow areas.
- Assist with surveys after events (and before if possible) such as windshield beach surveys, fish kill surveys, etc.
- Use local knowledge and equipment to assist other agencies with disaster response as needed, such as helping with a variety of immediate post-emergency event issues like locating missing channel markers, downed power lines, clearing roofs, etc.

Performance Measures:

- Resource maps and other detailed aquatic preserve specific information are provided as needed to other agencies to assist with vessel removals.
- Maps of marine debris and other impacts are provided as needed to other agencies.
- Communicate lessons learned with other aquatic preserves and other agencies.



Photo 11 / Kids decorate reusable grocery bags as a public outreach activity tied directly to an issue of the preserve.

Chapter 5 - Administrative Plan

5.1 / Current Staffing

Successful implementation of the ecosystem science, public use, education, and resource management programs outlined in this management plan is dependent on an effective administration strategy and framework that provides for adequate staffing, facilities, funding, and cooperation with other agencies and citizen support. The objectives of the aquatic preserve's administrative program include the following: 1) to supervise and administer programs and maintain facilities; 2) to comply with all legal rules, contracts, agreements, and regulations; 3) to maintain all records needed for operating, budgeting, planning, and purchasing; and 4) to communicate and coordinate with all entities involved in research, education, commercial, and recreation utilization or management within the aquatic preserve.

Present staff positions include a full-time Environmental Specialist III- Select Exempt Service (ESIII-SES), a full-time Environmental Specialist II- Other Personnel Services (ESII-OPS), and a full-time ES I-OPS. In addition to science-based resource management, these positions also perform administrative, maintenance and outreach duties. To implement planned activities, staff resources are supplemented by active intern and volunteer programs. Colleges, grade schools, Friends of TBAP, nonprofit organizations, corporate groups and other agencies have been valuable sources of volunteers.

5.2 / Staffing Needs

The strategies identified in this plan will be implemented using existing staff and funding. However, several objectives and the strategies necessary to accomplish them cannot be completed during the life

of this plan without additional resources. The plan's recommended actions, time frames, and cost estimates will guide the Office of Resilience and Coastal Protection's (ORCP) planning and budgeting activities over the period of this plan. These recommendations are based on the information that exists at the time the plan was prepared. A high degree of adaptability and flexibility must be built into this process to ensure that ORCP can adjust to changes in the availability of funds, unexpected events such as hurricanes, and changes in statewide issues, priorities and policies.

Statewide priorities for management and restoration of submerged and coastal resources are evaluated each year as part of the process for planning ORCP's annual budget. When preparing ORCP's budget, it considers the needs and priorities of the entire aquatic preserve program, other programs within ORCP, and the projected availability of funding from all sources during the upcoming fiscal year. ORCP pursues supplemental sources of funds and staff resources whenever possible, including grants, volunteers, and partnerships with other entities. ORCP's ability to accomplish the specific actions identified in the plan will be determined largely by the availability of resources, which may vary from year to year. Consequently, the target schedules and estimated costs identified in Appendix D may need to be adjusted during the ten-year management planning cycle.

5.3 / Facilities

Facilities

Terra Ceia Aquatic Preserve (TCAP) is part of the Tampa Bay Aquatic Preserves (TBAP) program, which manages four aquatic preserves in three counties. In addition to Terra Ceia Aquatic Preserve, TBAP manages Pinellas County Aquatic Preserve, Boca Ciega Bay Aquatic Preserve and Cockroach Bay Aquatic Preserve. While a primary base of operation is important, it is equally important that the TBAP program maintain partnerships around the bay so local resources can be leveraged for site-specific projects and activities. These resources include compounds that can be used for temporary equipment storage near projects, local community group partners that can provide manpower and volunteers, agencies and organizations that can provide meeting and event spaces and both public and private academic institutions that can provide equipment, student interns/volunteers and local expertise. This dispersed facilities partner approach is essential for a program with resource management goals spread across a large geographic area.

Buildings

Until recently, most of TBAP's facilities were based nearer to TCAP. Initially, this location made sense, because TBAP historically managed surrounding uplands and occupied a historic structure at Terra Ceia Preserve State Park. Since the previous plan, TBAP has secured a lease and moved most facilities to Clearwater, in Pinellas County.

TBAP's office is located in a property managed by Clearwater Historical Society at 610 S. Ft. Harrison Avenue on the 2nd floor of the building in downtown Clearwater. Data lines link the offices directly to the state's data network, while also supporting Cisco phone connectivity. Aside from the lease, an event center, that could seat approximately 50 people on-site, is available for use, at no charge, from the Clearwater Historical Society. For larger meetings and events, other facilities are available, also at no charge on some Manatee County managed lands.

While moving most TBAP facilities away from TCAP places the center of operations farther from the resources in this plan, there are benefits to the overall TBAP program. This benefits TCAP by improving connectivity and resilience of the office facilities. Perhaps most importantly, the office and storage facility, at an elevation of over 30 feet, and in solid old school buildings, puts the TBAP program on better footing in the event of hurricanes and other weather events. Therefore, TBAP has improved capacity to aid the community and/or engage in resource-related activities, like derelict vessel removal, following episodic events.

Unlike the office space, the storage space on site is not climate-controlled, though portable air conditioner can be used for climate-control in a smaller room in that space. The storage space is organized into grab-and-go aisles for outreach materials, display components and volunteer field gear. A small workbench area facilitates repairs of instruments and other field equipment.

TBAP has secured a portable building for items that are not appropriately stored in the main storage building, such as flammable or wet field gear. The 10' x 12' building was selected because it has a welded steel frame with a wind rating of 180 mph, and blends well with the old school buildings of the site. This building needs to be very resilient, as it protects equipment, like chainsaws, that could be needed in the immediate aftermath of a storm.

Partnerships are key to TBAP's facilities use and management. Whether it is the use of a Manatee County venue, like Emerson Point's classroom facility, or a vehicle compound, like the one at Terra Ceia Preserve State Park, such partnerships have enabled TBAP to operate with much greater efficiency and effectiveness than otherwise would be possible. With the new Clearwater headquarters, TBAP has also gained a valuable partner in the Clearwater Historical Society. The Friends of Tampa Bay Aquatic Preserves has already worked with the Historical Society on outreach events and other initiatives, and, as the Clearwater Historical Society continues to renovate building space, TBAP may have room to grow.

5.4 / Vehicles and Vessels

Vehicles

TBAP currently has two vehicles, and they are suitable for the program's present vehicle needs. TBAP uses vehicles to tow vessels on trailers, to transport staff, interns and volunteers and to transport equipment.

TBAP's 2021 F-250, heavy duty, supercab truck has good towing capacity, a full 8ft bed and a topper on the bed. This vehicle is the main vehicle for towing boats and carrying equipment to marinas and other field sites. The topper can be locked, so equipment can be stored in the bed with some security at marinas until it is needed.

TBAP's 2007 F-150 extended cab truck is also suitable for towing vessels and carrying equipment. It does not have a topper on the bed, so it is suitable for transporting large objects like native plants.

Vessels

TBAP has two fully-operational motorized vessels. One is a 24 ft commercial SeaArk aluminum boat. This vessel is very well-suited for shallow water and island work. It can be configured with coolers for storage and seating, and it also can be fitted with a 500 lb capacity boom and hand winch for retrieving large

debris, buoys, etc.

TBAP acquired a 25 ft vee hull Mako in 2026 that complements the SeaArk by allowing work to be conducted in open, often choppy, conditions. TBAP uses open water vessels to access offshore and open bay sections of the preserves and to transport volunteers to remote island shorelines.

TBAP also has several kayaks and a canoe, along with a kayak trailer, that allows them to be transported easily. These allow staff, volunteers and equipment to access areas where motorized vessels cannot go. Additionally, TBAP has a 10 ft Zodiac inflatable boat that can be used for shallow water and as a tender for the Mako.

TBAP maintains, and annually updates, a hurricane plan with detailed plans for securing and/or removing equipment and facilities in the event of a severe weather threat.

5.5 / Citizen Support Organizations

Citizen Support Organizations (CSOs) are recognized by statute as citizen-led organizations with a special connection to the managed area they support. CSOs may support parks, research reserves and aquatic preserves. Some CSOs support specific managed areas, while others are formed to support groups or systems of managed areas. CSOs for specific sites typically start off with enthusiasm which must be sustained through specific goals for each specific geographic area.

In 2014, a group of Florida citizens formed a CSO called the Aquatic Preserve Society, Inc. Since then, the Aquatic Preserve Society has gained 501(c)3 status, and it also has been given statutory authority to accept funds on behalf of aquatic preserves to be applied to their management needs. The present CSO strategy of TBAP is to rely on the Aquatic Preserve Society to receive funds donated or otherwise designated for TBAP projects. To date, funds for several public interest projects have been deposited with the Aquatic Preserve Society for disbursement, as needed, for those specific projects.

In 2020, a steering committee of local citizens incorporated the Friends of Tampa Bay Aquatic Preserves, and the organization obtained 501(c)3 status. The organization has established a formal agreement with the state to serve as the official CSO for Tampa Bay's Aquatic Preserves. Since then, the organization has been supporting TBAP through volunteers and public outreach. The Friends of Tampa Bay Aquatic Preserves has become an important component of TBAP's public engagement strategy. In addition to providing people familiar with the TBAP program to help staff event exhibits, the CSO has provided additional public engagement through newsletters, social media posts and their meetings.

When the TBAP program moved and began to lease office space from the Clearwater Historical Society, the Friends of Tampa Bay Aquatic Preserves began a productive collaboration with the board of the historical society. The two organizations have partnered on several public events that included a showing of *Living Waters*, an aquatic preserves photo exhibition, at the historical society's museum. This opportunity for collaboration between the two nonprofits has been very beneficial.

Appendix A / Legal Documents

A.1 / Aquatic Preserve Resolution

WHEREAS, the State of Florida, by virtue of its sovereignty, is the owner of the beds of all navigable waters, salt and fresh, lying within its territory, with certain minor exceptions, and is also the owner of certain other lands derived from various sources; and

WHEREAS, title to these sovereignty and certain other lands has been vested by the Florida Legislature in the State of Florida Board of Trustees of the Internal Improvement Trust Fund, to be held, protected and managed for the long range benefit of the people of Florida; and

WHEREAS, the State of Florida Board of Trustees of the Internal Improvement Trust Fund, as a part of its overall management program for Florida's state-owned lands, does desire to insure the perpetual protection, preservation and public enjoyment of certain specific areas of exceptional quality and value by setting aside forever these certain areas as aquatic preserves or sanctuaries; and

WHEREAS, the ad hoc Florida Inter-Agency Advisory Committee on Submerged Land Management has selected through careful study and deliberation a number of specific areas of state-owned land having exceptional biological, aesthetic and scientific value, and has recommended to the State of Florida Board of Trustees of the Internal Improvement Trust Fund that these selected areas be officially recognized and established as the initial elements of a statewide system of aquatic preserves for Florida;

NOW, THEREFORE, BE IT RESOLVED by the State of Florida Board of Trustees of the Internal Improvement Trust Fund:

THAT it does hereby establish a statewide system of aquatic preserves as a means of protecting and preserving in perpetuity certain specially selected areas of state-owned land: and

THAT specifically described, individual areas of state-owned land may from time to time be established as aquatic preserves and included in the statewide system of aquatic preserves by separate resolution of the State of Florida Board of Trustees of the Internal Improvement Trust Fund; and

THAT the statewide system of aquatic preserves and all individual aquatic preserves established thereunder shall be administered and managed, either by the said State of Florida Board of Trustees of the Internal Improvement Trust Fund or its designee as may be specifically provided for in the establishing resolution for each individual aquatic preserve, in accordance with the following management policies and criteria:

(1) An aquatic preserve is intended to set aside an exceptional area of state-owned land and its associated waters for preservation essentially in their natural or existing condition by reasonable regulation of all human activity which might have an effect on the area.

(2) An aquatic preserve shall include only lands or water bottoms owned by the State of Florida, and such private lands or water bottoms as may be specifically authorized for inclusion by appropriate instrument from the owner. Any included lands or water bottoms to which a private ownership claim might subsequently be proved shall upon adjudication of private ownership be automatically excluded from the preserve, although such exclusion shall not preclude the State from attempting to negotiate an arrangement with the owner by which such lands or water bottoms might be again included within the

preserve.

(3) No alteration of physical conditions within an aquatic preserve shall be permitted except: (a) minimum dredging and spoiling for authorized public navigation projects, or (b) other approved activity designed to enhance the quality or utility of the preserve itself. It is inherent in the concept of the aquatic preserve that, other than as contemplated above, there be: no dredging and filling to create land, no drilling of oil wells or excavation for shell or minerals, and no erection of structures on stilts or otherwise unless associated with authorized activity, within the confines of a preserve - to the extent these activities can be lawfully prevented.

(4) Specifically, there shall be no bulkhead lines set within an aquatic preserve. When the boundary of a preserve is intended to be the line of mean high water along a particular shoreline, any bulkhead line subsequently set for that shoreline will also be at the line of mean high water.

(5) All human activity within an aquatic preserve shall be subject to reasonable rules and regulations promulgated and enforced by the State of Florida Board of Trustees of the Internal Improvement Trust Fund and/or any other specifically designated managing agency. Such rules and regulations shall not interfere unduly with lawful and traditional public uses of the area, such as fishing (both sport and commercial), hunting, boating, swimming and the like.

(6) Neither the establishment nor the management of an aquatic preserve shall infringe upon the lawful and traditional riparian rights of private property owners adjacent to a preserve. In furtherance of these rights, reasonable improvement for ingress and egress, mosquito control, shore protection and similar purposes may be permitted by the State of Florida Board of Trustees of the Internal Improvement Trust Fund and other jurisdictional agencies, after review and formal concurrence by any specifically designated managing agency for the preserve in question.

(7) Other uses of an aquatic preserve, or human activity within a preserve, although not originally contemplated, may be permitted by the State of Florida Board of Trustees of the Internal Improvement Trust Fund and other jurisdictional agencies, but only after a formal finding of compatibility made by the said Trustees on the advice of any specifically designated managing agency for the preserve in question.

IN TESTIMONY WHEREOF, the Trustees for and on behalf of the State of Florida Board of Trustees of the Internal Improvement Trust Fund have hereunto subscribed their names and have caused the official seal of said State of Florida Board of Trustees of the Internal Improvement Trust Fund to be hereunto affixed, in the City of Tallahassee, Florida, on this the 24th day of November A. D. 1969.

CLAUDE R. KIRK, JR, Governor

TOM ADAMS, Secretary of State

EARL FAIRCLOTH, Attorney General

FRED O. DICKINSON, JR., Comptroller

BROWARD WILLIAMS, Treasurer

FLOYD T. CHRISTIAN, Commissioner of Education

DOYLE CONNER, Commissioner of Agriculture

As and Constituting the State of Florida Board of Trustees of the Internal Improvement Trust Fund

A.2/ Florida Statutes

2.1 /2026 Florida Statutes, Chapter 258.393: Terra Ceia Aquatic Preserve

258.393 Terra Ceia Aquatic Preserve. —

(1) The following described area in Manatee County is hereby designated by the Legislature for inclusion in the aquatic preserve system under the Florida Aquatic Preserve Act of 1975. Such area, to be known as the Terra Ceia Aquatic Preserve, shall be included in the aquatic preserve system and shall include the following described real property: Begin at a point 165 feet north of the southwest corner of the northwest quarter of Section 12, Township 33 South, Range 17 East, Manatee County, thence run west to the mean high-water line of Tampa Bay, said point being the point of beginning. From said point of beginning, run northwesterly into the waters of Tampa Bay and parallel to the Port Manatee ship channel to the Manatee-Hillsborough county line; thence run southwest along the Manatee-Hillsborough county line to its intersection with the Intracoastal Waterway; thence run south-southwesterly along the Intracoastal Waterway to a point on a line connecting the westernmost tip of Sned Island (Manatee County) to the southernmost tip of Mullet Key (Pinellas County); thence run southeasterly along said line to the westernmost tip of Sned Island (also known as Emerson Point); thence run in a northeasterly direction along the mean high-water line of Tampa Bay, Terra Ceia Bay, where the mean high water line intersects the north line of U.S. Government Lot 4, Section 16, Township 34 South, Range 17 East; thence east along the said north line of U.S. Government Lot 4 and the easterly extension thereof a distance of 1,111 feet more or less to the mean high water line at a seawall; thence meander in a northwesterly, westerly, northerly direction along the seawall of a canal; thence in a northeasterly direction along the mean high water line of Miguel Bay, Joe Bay, and Bishop Harbor to the point of beginning, including tidal waters of all tributaries; less all privately titled submerged lands and uplands.

(2) Wastewater or effluent discharge activities from an existing stationary facility or existing stationary installation which has been approved pursuant to state law or federal law or for which facility or installation an application has been filed before June 24, 1984, are exempt from the requirements of this chapter.

(3) No further dredging or filling of the submerged lands of the Terra Ceia Aquatic Preserve shall be approved or tolerated by the board except:

(a) Such minimum dredging and spoiling as may be authorized for public navigation projects or for such minimum dredging and spoiling as may be constituted as a public necessity.

(b) Such other alteration of physical conditions, including the placement of riprap, as may be necessary to enhance the quality and utility of the preserve.

(c) Such dredging as is necessary for the purpose of eliminating conditions hazardous to the public health or for the purpose of eliminating stagnant waters, islands, and spoil banks, the dredging of which would enhance the aesthetic and environmental quality and utility of the preserve and be clearly in the public interest as determined by the board.

(d) Such minimum dredging and filling as may be authorized for the creation and maintenance of marinas, public boat ramps, piers, and docks and their attendant navigation channels and access roads.

Such projects may be authorized only upon a specific finding by the board that there is assurance that the project will be constructed and operated in a manner that will not adversely affect the water quality and utility of the preserve. This paragraph may not be construed to authorize the connection of upland canals to the waters of the preserve.

Any dredging and filling pursuant to paragraph (a), paragraph (b), or paragraph (c) shall be approved by the board only after public notice as provided in s. 253.115.

History.—s. 1, ch. 84-312; s. 4, ch. 85-345.

A. 2.2 / Additional Florida Statutes

All the statutes can be found according to number at:

<http://www.leg.state.fl.us/Statutes>

- Florida Statutes, Chapter 253: State Lands
- Florida Statutes, Chapter 258, Part II: Florida Aquatic Preserves Act
- Florida Statutes, Chapter 267: Historical Resources
- Florida Statutes, Chapter 370: Saltwater Fisheries
- Florida Statutes, Chapter 372: Wildlife
- Florida Statutes, Chapter 403: Environmental Control
- (Statute authorizing the Florida Department of Environmental Protection (DEP) to create Outstanding Florida Waters is at 403.061(27))
- Florida Statutes, Chapter 597: Aquaculture

A.3 / Florida Administrative Code

A.3.1 / Chapter 18-20: Florida Aquatic Preserves

CHAPTER 18-20

FLORIDA AQUATIC PRESERVES

18-20.001	Intent
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18-20.005	Uses, Sales, Leases, or Transfer of Interests in Lands, or Materials, Held by the Board (Repealed)
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18-20.014	Enforcement (Repealed)
18-20.015	Application Form (Repealed)
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18-20.017	Lake Jackson Aquatic Preserve
18-20.018	Lake Weir Aquatic Preserve (Repealed)
18-20.019	Boca Ciega Bay and Pinellas County Aquatic Preserves
18-20.001	Intent.

(1) All sovereignty lands within a preserve shall be managed primarily for the maintenance of essentially natural conditions, the propagation of fish and wildlife, and public recreation, including hunting and fishing where deemed appropriate by the Board, and the managing agency.

(2) Aquatic preserves which are described in Part II of Chapter 258, F.S., were established for the purpose of being preserved in an essentially natural or existing condition so that their aesthetic, biological and scientific values may endure for the enjoyment of future generations.

(3) The preserves shall be administered and managed in accordance with the following goals:

(a) To preserve, protect, and enhance these exceptional areas of sovereignty submerged lands by reasonable regulation of human activity within the preserves through the development and implementation of a comprehensive management program;

(b) To protect and enhance the waters of the preserves so that the public may continue to enjoy the traditional recreational uses of those waters such as swimming, boating, and fishing;

(c) To coordinate with federal, state, and local agencies to aid in carrying out the intent of the Legislature in creating the preserves;

(d) To use applicable federal, state, and local management programs, which are compatible with the intent and provisions of the act and these rules, and to assist in managing the preserves;

(e) To encourage the protection, enhancement or restoration of the biological, aesthetic, or scientific values of the preserves, including but not limited to the modification of existing manmade conditions toward their natural condition, and discourage activities which would degrade the aesthetic, biological, or scientific values, or the quality, or utility of a preserve, when reviewing applications, or when developing and implementing management plans for the preserves;

(f) To preserve, promote, and utilize indigenous life forms and habitats, including but not limited to: sponges, soft coral, hard corals, submerged grasses, mangroves, salt water marshes, fresh water marshes, mud flats, estuarine, aquatic, and marine reptiles, game and non-game fish species, estuarine, aquatic and marine invertebrates, estuarine, aquatic and marine mammals, birds, shellfish and mollusks;

(g) To acquire additional title interests in lands wherever such acquisitions would serve to protect or enhance the biological, aesthetic, or scientific values of the preserves;

(h) To maintain those beneficial hydrologic and biologic functions, the benefits of which accrue to the public at large.

(4) Nothing in these rules shall serve to eliminate or alter the requirements or authority of other governmental agencies, including counties and municipalities, to protect or enhance the preserves provided that such requirements or authority are not inconsistent with the act and this chapter.

Rulemaking Authority 120.53, 258.396(4), 258.43(1) FS. Law Implemented 258.35, 258.36, 258.37, 258.39, 258.393 FS., Chapter 80-280, Laws of Florida. History—New 2-23-81, Amended 8-7-85, Formerly 16Q-20.01, 16Q-20.001, Amended 9-29-97.

18-20.002 Boundaries and Scope of the Preserves.

(1) These rules shall only apply to those sovereignty lands within a preserve described in Part II of Chapter 258, F.S., title to which is vested in the Board, and those other lands for which the Board has an appropriate instrument in writing, executed by the owner, authorizing the inclusion of specific lands in an aquatic preserve pursuant to section 2(2) of Chapter 73-534, Laws of Florida, Sections 258.40(1) and 258.41(5), F.S., future aquatic preserves established through general or special acts of the legislature, and pursuant to Rule 18-20.008, F.A.C. Any publicly owned and maintained navigation channel authorized by the United States Congress, or other public works project authorized by the United States Congress, designed to improve or maintain commerce and navigation shall be deemed to be excluded from the provisions of this chapter, pursuant to Section 258.40(2), F.S. Furthermore, all lands lost by avulsion or by artificially induced erosion shall be deemed excluded from the provisions of this chapter pursuant to Section 258.40(3), F.S.

(2) These rules do not apply to Biscayne Bay Aquatic Preserve.

(3) These rules are promulgated to clarify the responsibilities of the Board in carrying out its land management functions as those functions apply within the preserves. Implementation and responsibility for environmental permitting of activities and water quality protection within the preserves are vested in the Department of Environmental Protection and the water management districts. Since these rules are considered cumulative with other rules, a person planning an activity within the preserves should also consult the other applicable rules of the Board (Chapter 18-21, F.A.C., for example) as well as the rules of the Department of Environmental Protection and the water management districts.

(4) These rules shall not affect previous actions of the Board concerning the issuance of any easement or lease; or any disclaimer concerning sovereignty lands.

(5) The intent and specific provisions expressed in paragraphs 18-20.001(3)(e) and (f), F.A.C., apply generally to all existing or future aquatic preserves within the scope of this chapter. Upon completion of a resource inventory and approval of a management plan for a preserve, pursuant to Rule 18-20.013, F.A.C., the type designation and the resource sought to be preserved shall be subject to Board approval in accordance with Rule 18-20.013, F.A.C.

(6) For the purpose of clarification and interpretation, the legal descriptions set forth in Part II of Chapter 258, F.S., do not include any land which is expressly recognized as privately owned upland in a pre-existing recorded mean high water line settlement agreement between the Board and a private owner or owners. Provided, however, in those instances wherein a settlement agreement was executed subsequent to the passage of the Florida Coastal Mapping Act, the determination of the mean high water line shall be in accordance with the provisions of such act.

(7) Persons interested in obtaining details of particular preserves should contact the Office of Coastal and Aquatic Managed Areas, Department of Environmental Protection, 2600 Blair Stone Road, Mail Station 235, Tallahassee, FL 32399 (telephone (850)245-2094; website: <https://floridadep.gov/rcp/aquatic-preserve/>).

Rulemaking Authority 120.53, 258.43(1) FS. Law Implemented 258.39, 258.391, 258.392, 258.393, 258.40, 258.41, 258.42, 258.43, 258.44, 258.45 FS. History—New 2-23-81, Amended 8-7-85, Formerly 16Q-20.02, 16Q-20.002, Amended 9-29-97, 3-25-19.

18-20.003 Definitions.

When used in these rules, the following words shall have the indicated meaning unless the context clearly indicates otherwise:

- (1) “Act” means the provisions of Sections 258.35 through 258.46, F.S., the Florida Aquatic Preserve Act.
- (2) “Activity” means any project and such other human action within the preserve requiring Board approval for the use, sale, lease or transfer of interest in sovereignty lands or materials, or which may require a permit from the Department of Environmental Protection.
- (3) “Aesthetic values” means scenic characteristics or amenities of the preserve in its essentially natural state or condition, and the maintenance thereof.
- (4) “Applicant” means any person making application for a permit, license, conveyance of an interest in state owned lands or any other necessary form of governmental approval in order to perform an activity within the preserve.
- (5) “Application” means a joint application for an environmental resource permit/authorization to use state-owned submerged lands/federal dredge and fill permit or a joint application for wetland resource alterations (dredging or filling) in the waters of Florida.
- (6) “Aquaculture” means the cultivation of aquatic organisms and associated activities, including, but not limited to grading, sorting, transporting, harvesting, holding, storing, growing and planting.
- (7) “Artificial reef” means any artificial or man-made material acceptable to the Department that is placed on sovereign submerged land for the purpose of fish attraction, habitat creation, enhancement, or restoration.
- (8) “Authorization” means the permission granted by the Board for a person to construct a facility or to carry out an activity on sovereign submerged lands.
- (9) “Avulsion” means the sudden or perceptible loss of or addition to land by the action of water or the sudden or perceptible change in the bed of a lake or the course of a stream.
- (10) “Beneficial biological functions” means interactions between flora, fauna and physical or chemical attributes of the environment, which provide benefits that accrue to the public at large, including, but not limited to: nutrient, pesticide and heavy metal uptake; sediment retention; nutrient conversion to biomass; nutrient recycling and oxygenation.
- (11) “Beneficial hydrological functions” means interactions between flora, fauna and physical geological or geographical attributes of the environment, which provide benefits that accrue to the public at large, including, but not limited to: retardation of storm water flow; storm water retention; and water storage, and periodical release.
- (12) “Biological values” means the preservation and promotion of indigenous life forms and habitats including, but not limited to: sponges, soft corals, hard corals, submerged grasses, mangroves, saltwater marshes, fresh water marshes, mud flats, marine, estuarine, and aquatic reptiles, game and non-game fish species, marine, estuarine, and aquatic mammals, marine, estuarine, and aquatic invertebrates, birds and shellfish.
- (13) “Board” means the Board of Trustees of the Internal Improvement Trust Fund or its delegate. The Department and water management districts serve as staff to the Board and are delegated authority to carry out functions of the Board as specified in Rule 18-21.0051, F.A.C.
- (14) “Bulkhead” means a vertical structure separating land and water areas primarily designed to resist earth

pressure.

(15) "Channel" means a trench, the bottom of which is normally covered entirely by water, with the upper edges of its sides normally below water.

(16) "Commercial, industrial and other revenue generating/income related docks" means docking facilities for an activity which produces income, through rental or any other means, or which serves as an accessory facility to other rental, commercial or industrial operations. It shall include, but not be limited to docking for: marinas, restaurants, hotels, motels, commercial fishing, shipping, boat or ship construction, repair, and sales.

(17) "Department" means the State of Florida Department of Environmental Protection or any of its predecessor agencies.

(18) "Division" means the Division of Marine Resources and its Bureau of Coastal and Aquatic Managed Areas.

(19) "Dock" means a fixed or floating structure, including moorings, used for the purpose of berthing buoyant vessels either temporarily or indefinitely.

(20) "Dredging" means mechanical or other methods used to remove sovereign submerged land.

(21) "Easement" means a nonpossessory interest in state lands created by a grant from or agreement with the Board that confers upon the recipient the limited nonexclusive right and privilege to use such lands for a specific purpose and for a specific time.

(22) "Energy production" means the exploration for, and extraction of, hydrocarbons, including necessary transmission through pipelines, or the water oriented activities related to the generation of electricity.

(23) "Erosion" means the gradual and imperceptible wearing away of riparian or littoral land due to natural causes. Artificial erosion refers to erosion caused by man-made projects and operations.

(24) "Essentially natural condition" means those functions which support the continued existence or encourage the restoration of the diverse population of indigenous life forms and habitats to the extent they existed prior to the significant development adjacent to and within the preserve.

(25) "Extreme hardship" means a significant burden, unique to the applicant and not shared by property owners in the area. Self-imposed circumstances caused to any degree by actions of any person subsequent to the enactment of the Act shall not be construed as an extreme hardship. Extreme hardship under this act shall not be construed to include any hardship which arises in whole or in part from the effect of other federal, state or local laws, ordinances, rules or regulations. The term may be inherent in public projects which are shown to be a public necessity.

(26) "Facility" means any boat ramp, covered slip, pier, dock, piling, marina or other structure which preempts sovereign submerged land.

(27) "Fill" means materials from any source, deposited by any means onto sovereignty lands, either for the purpose of creating new uplands or for any other purpose, including spoiling of dredged materials. For the purpose of this rule, the placement of pilings or riprap shall not be considered to be filling.

(28) "Lease" means a conveyance of interest in lands, title to which is vested in the Board, granted in accordance with specific terms set forth in writing.

(29) "Main access dock" means that walkway which connects a riparian owner's property to a terminal platform.

(30) "Maintenance dredging" means mechanical or other methods used to remove sovereign submerged land in existing channels where navigation by vessels presently occurs. For the purpose of this rule, requests to dredge previously dredged areas that have regained their former natural characteristics due to lack of use, lack of upkeep, or other factors or requests to change the design specification of previously dredged areas shall not be considered as maintenance dredging but shall be considered new dredging.

(31) "Mangrove" means any specimen of the species *Avicennia germinans* (black mangrove), *Laguncularia racemosa* (white mangrove), or *Rhizophora mangle* (red mangrove).

(32) "Marina" means a small craft harbor complex used primarily for recreation.

(33) "Mean high water line" means the intersection of the tidal plane of mean high water with the shore as determined in accordance with Chapter 177, Part II, F.S., and Chapter 18-11, F.A.C.

(34) "Mean sea level" means a tidal datum constituting the arithmetic mean of the hourly water elevations observed over a 19-year cycle (the National Tidal Datum Epoch).

(35) "Mitigation" means an action, series of actions, or activity that will offset adverse impacts to sovereign submerged lands. Cash payments shall not be considered mitigation unless payments are specified for use in a previously identified, Department endorsed, environmental or restoration project and the payments initiate a restoration project or supplement an ongoing restoration project.

(36) "Natural characteristics" means topographic features conforming to the usual or ordinary course of nature.

(37) "Negative environmental impact" means an unfavorable effect or damage to the natural resources, aesthetics, or scientific value of an aquatic preserve.

(38) "Oil and gas transportation facilities" means those structures necessary for the movement of oil and gas from the production site to the consumer.

(39) "Ordinary high water line (OHWL)" means the boundary between sovereign submerged lands and the adjacent uplands along nontidal waterbodies.

(40) "Person" means any individual, corporation, partnership, firm, association, joint venture, estate, trust, business trust, syndicate, fiduciary, commission, county, municipality or political subdivision of a state, any interstate body, the federal government, or any subdivision thereof and all other groups or combinations, whether public or private.

(41) "Pier" means a structure in, on, or over sovereignty lands, which is used by the public primarily for fishing or swimming. A pier shall not include a dock.

(42) "Preempted area" means the area of sovereign submerged lands from which traditional public uses have been or would be excluded to any extent by an activity, such as the area occupied by the docks and other structures; swimming areas set apart by buoys, ropes or similar structures; temporary or permanent mooring areas; the area between the docks and shoreline; and the docking facility's turning basin used predominantly by vessels mooring at a dock. If the activity or facility is required to be moved waterward to avoid dredging or disturbing nearshore habitat, a portion of the nearshore area may be excluded from the preempted area if otherwise reasonably accessible to the public.

(43) "Preserve or Aquatic Preserve" means any and all of those areas which are exceptional areas of sovereignty lands and the associated water body so designated in Part II of Chapter 258, F.S., including all sovereignty lands, title to which is vested in the Board, and such other lands as the Board may acquire or approve for inclusion by the Legislature. These areas also include the water column over such lands, which have been set aside to be maintained in an essentially natural or existing condition of indigenous flora and fauna and their supporting habitat and the natural scenic qualities and amenities thereof.

(44) "Private residential single-family dock" means a dock which is used for private, recreational or leisure purposes for a single-family residence, cottage or other such single dwelling unit and which is designed to moor no more than two boats. This also includes docks, with mooring of no more than a total of four boats, located on property lines between two upland single-family residences, where the dock is shared for use by both upland, single-family residences.

(45) "Private residential multi-slip dock" means a docking facility which is used for private recreational or leisure purposes for multi-unit residential dwellings which shall include but is not limited to condominiums, townhouses, subdivisions and other such dwellings or residential areas and which is designed to moor three or more boats. Yacht clubs associated with residential developments, whose memberships or utilization of the docking facility requires some real property interest in the residential area, shall also be included.

(46) "Public interest" means demonstrable environmental, social, and economic benefits which would accrue to the public at large as a result of a proposed action, and which would clearly exceed all demonstrable environmental, social, and economic costs of the proposed action. In determining the public interest in a request for use, sale, lease, or transfer of interest in sovereignty lands or severance of materials from sovereignty lands, the Board shall consider the ultimate project and purpose to be served by said use, sale, lease, or transfer of lands or materials.

(47) "Public land" means any land in which a public entity has a title interest.

(48) "Public navigation project" means a project primarily for the purpose of navigation which is authorized and funded by the United States Congress or by port authorities as defined by Section 315.02(2), F.S.

(49) "Public necessity" means the works or improvements required for the protection of the health and safety of the public, consistent with the Act and these rules, for which no other reasonable alternative exists.

(50) "Public utilities" means those services, provided by persons regulated by the Public Service Commission, or which are provided by rural cooperatives, municipalities, or other governmental agencies, including electricity, telephone, public water and wastewater services, and structures necessary for the provision of these services.

(51) "Quality of the preserve" means the degree of the biological, aesthetic and scientific values of the preserve necessary for present and future enjoyment of it in an essentially natural condition.

(52) "Repair" means activities undertaken to maintain existing structures in a safely useable and functional condition without modifying the dimensions or footprint of the original structure.

(53) "Resource management agreement" means a contractual agreement between the Board and one or more parties which does not create an interest in real property but merely authorizes the party to conduct certain management activities on lands held by the Board.

(54) "Resource Protection Area (RPA) 1" – Areas within the aquatic preserves which have resources of the highest quality and condition for that area. These resources may include, but are not limited to corals; marine grassbeds; mangrove swamps; salt-water marsh; oyster bars; archaeological and historical sites; endangered or threatened species habitat; and, colonial water bird nesting sites.

(55) "Resource Protection Area 2" – Areas within the aquatic preserves which are in transition with either declining resource protection area 1 resources or new pioneering resources within resource protection area 3.

(56) "Resource Protection Area 3" – Areas within the aquatic preserve that are characterized by the absence of any significant natural resource attributes.

(57) "Riparian rights" means those rights incident to lands bordering upon navigable waters, as recognized by the courts of this state and common law.

(58) "Riprap" means a man-made aggregation of unconsolidated boulders, rocks, or clean rubble designed to break the force of waves and to protect the shore from erosion. The materials used shall not contain any dangerous protrusions.

(59) "Sale" means a conveyance of interest in lands, by the Board, for consideration.

(60) "Scientific values" means the preservation and promotion of certain qualities or features which have

scientific significance.

(61) "Seawall" means a vertical structure built along a portion of a coast, retaining earth against its landward face and designed to prevent erosion and other damage by wave action.

(62) "Shoreline" means the mean or ordinary high water line.

(63) "Shore protection structure" means a type of coastal construction designed to minimize the rate of erosion. Coastal construction includes any work or activity which is likely to have a material physical effect on existing coastal conditions or natural shore processes.

(64) "Slip" or "wet slip" means an area of the water column above sovereign submerged lands specifically set aside for a boatlift or the mooring of a single vessel associated with a docking facility.

(65) "Sovereignty lands" means those lands including, but not limited to: tidal lands, islands, sandbars, shallow banks, and lands waterward of the ordinary or mean high water line, to which the State of Florida acquired title on March 3, 1845, by virtue of statehood, and of which it has not since divested its title interest. For the purposes of this rule sovereignty lands shall include all submerged lands within the boundaries of the preserve, title to which is held by the Board.

(66) "Spoil" means materials dredged from sovereignty lands which are redeposited or discarded by any means, onto either sovereignty lands or uplands.

(67) "Terminal platform" means that part of a dock or pier, including finger piers, that is connected to the access walkway, is located at the terminus of the facility, and is designed to secure and load or unload a vessel or conduct other water dependent activities.

(68) "Transfer" means the act of the Board by which any interest in lands, including easements, other than sale or lease, is conveyed.

(69) "Turning basin" means the area of sovereign submerged land which is required to maneuver a vessel into or out of a facility.

(70) "Uplands" means those lands above the mean high water line or ordinary high water line.

(71) "Utility of the preserve" means fitness of the preserve for the present and future enjoyment of its biological, aesthetic and scientific values, in an essentially natural condition.

(72) "Water dependent activity" means an activity which can only be conducted on, in, over, or adjacent to, water areas because the activity requires direct access to the water body or sovereignty lands for transportation, recreation, energy production or transmission, or source of water and where the use of the water or sovereignty lands is an integral part of the activity.

(73) "Water Management Districts" means the water management districts described in Chapter 373, F.S.

Rulemaking Authority 258.43(1) FS. Law Implemented 258.37, 258.43(1) FS. History--New 2-25-81, Amended 8-7-85, Formerly 16Q-20.03, 16Q-20.003, Amended 4-27-94, 9-29-97, 3-25-19.

18-20.004 Management Policies, Standards and Criteria.

The following management policies, standards and criteria are supplemental to Chapter 18-21, F.A.C. (Sovereignty Submerged Lands Management), and shall be used in determining whether to approve, approve with conditions or modifications, or deny all requests for activities on sovereignty lands in aquatic preserves.

(1) GENERAL PROPRIETARY.

(a) In determining whether to approve or deny any request the Board will evaluate each on a case-by-case basis

and weigh any factors relevant under Chapter 253 and/or 258, F.S. The Board, acting as Trustees for all state-owned lands, reserves the right to approve, modify or reject any proposal.

(b) There shall be no further sale, lease or transfer of sovereignty lands except when such sale, lease or transfer is in the public interest (see subsection 18-20.004(2), F.A.C., Public Interest Assessment Criteria).

(c) There shall be no construction of seawalls waterward of the mean or ordinary high water line, or filling waterward of the mean or ordinary high water line, except in the case of public road and bridge projects where no reasonable alternative exists and except as provided in Section 258.42(3)(e)4., F.S.

(d) There shall, in no case, be any dredging waterward of the mean or ordinary high water line for the sole or primary purpose of providing fill for any area landward of the mean or ordinary high water line.

(e) A lease, easement or consent of use may be authorized only for the following activities:

1. A public navigation project;
2. Maintenance of an existing navigational channel;
3. Installation or maintenance of approved navigational aids;
4. Creation or maintenance of a commercial/industrial dock, pier or a marina;
5. Creation or maintenance of private docking facilities for reasonable ingress and egress of riparian owners;
6. Minimum dredging for navigation channels attendant to docking facilities;
7. Creation or maintenance of a shore protection structure, except that restoration of a seawall or riprap at its previous location, upland of its previous location, or within one foot waterward of its previous location is hereby exempted from any requirement to make application for consent of use;
8. Installation or maintenance of oil and gas transportation facilities;
9. Creation, maintenance, replacement or expansion of facilities required for the provision of public utilities;
10. Aquaculture; and
11. Other activities which are a public necessity or which are necessary to enhance the quality or utility of the preserve and which are consistent with the act and this chapter.

(f) For activities listed in subparagraphs 18-20.004(1)(e)1.-10., F.A.C. above, the activity shall be designed so that the structure or structures to be built in, on or over sovereignty lands are limited to structures necessary to conduct water dependent activities.

(g) For activities listed in subparagraphs 18-20.004(1)(e)7., 8., 9. and 10., F.A.C. above, it must be demonstrated that no other reasonable alternative exists which would allow the proposed activity to be constructed or undertaken outside the preserve.

(h) The use of state-owned lands for the purpose of providing private or public road access to islands where such access did not previously exist shall be prohibited. The use of state-owned lands for the purpose of providing private or public water supply to islands where such water supply did not previously exist shall be prohibited.

(i) Except for public navigation projects and maintenance dredging for existing channels and basins, any areas dredged to improve or create navigational access shall be incorporated into the preempted area of any required lease or be subject to the payment of a negotiated private easement fee.

(j) All private residential multi-slip docking facilities and commercial, industrial and other revenue generating/income related docking facilities require a lease from the Board in accordance with the application procedures and fees of Chapter 18-21, F.A.C.

(k) Aquaculture and beach renourishment activities which comply with the standards of this chapter and Chapter 18-21, F.A.C., may be approved by the Board, but only subsequent to a formal finding of compatibility with the purposes of Chapter 258, F.S., and this rule chapter.

(l) Other uses of the preserve, or human activity within the preserve, although not originally contemplated, may be approved by the Board, but only subsequent to a formal finding of compatibility with the purposes of Chapter 258, F.S., and this rule chapter.

(2) PUBLIC INTEREST ASSESSMENT CRITERIA.

In evaluating requests for the sale, lease or transfer of interest, a balancing test will be utilized to determine whether the social, economic and/or environmental benefits clearly exceed the costs.

(a) GENERAL BENEFIT/COST CRITERIA:

1. Any benefits that are balanced against the costs of a particular project shall be related to the affected aquatic preserve;

2. In evaluating the benefits and costs of each request, specific consideration and weight shall be given to the quality and nature of the specific aquatic preserve. Projects in the less developed, more pristine aquatic preserves such as Apalachicola Bay shall be subject to a higher standard than the more developed preserves; and,

3. For projects in aquatic preserves with adopted management plans, consistency with the management plan will be weighed heavily when determining whether the project is in the public interest.

(b) BENEFIT CATEGORIES:

1. Public access (public boat ramps, boatslips, etc.);
2. Provide boating and marina services (repair, pumpout, etc.);
3. Improve and enhance public health, safety, welfare, and law enforcement;
4. Improved public land management;
5. Improve and enhance public navigation;
6. Improve and enhance water quality;
7. Enhancement/restoration of natural habitat and functions; and,
8. Improve/protect endangered/threatened/unique species.

(c) COSTS:

1. Reduced/degraded water quality;
2. Reduced/degraded natural habitat and function;
3. Destruction, harm or harassment of endangered or threatened species and habitat;
4. Preemption of public use;
5. Increasing navigational hazards and congestion;
6. Reduced/degraded aesthetics; and,
7. Adverse cumulative impacts.

(d) EXAMPLES OF SPECIFIC BENEFITS:

1. Donation of land, conservation easements, restrictive covenants or other title interests in or contiguous to

the aquatic preserve which will protect or enhance the aquatic preserve;

2. Providing access or facilities for public land management activities;

3. Providing public access easements and/or facilities, such as beach access, boat ramps, etc.;

4. Restoration/enhancement of altered habitat or natural functions, such as conversion of vertical bulkheads to riprap and/or vegetation for shoreline stabilization or re-establishment of shoreline or submerged vegetation;

5. Improving fishery habitat through the establishment of artificial reefs or other such projects, where appropriate;

6. Providing sewage pumpout facilities where normally not required, in particular, facilities open to the general public;

7. Improvements to water quality such as removal of toxic sediments, increased flushing and circulation, etc.;

8. Providing upland dry storage as an alternative to wet slip; and,

9. Marking navigation channels to avoid disruption of shallow water habitats.

(3) RESOURCE MANAGEMENT.

(a) All proposed activities in aquatic preserves having management plans adopted by the Board must demonstrate that such activities are consistent with the management plan.

(b) No drilling of oil, gas or other such wells shall be allowed.

(c) Utility cables, pipes and other such structures shall be constructed and located in a manner that will cause minimal disturbance to submerged land resources such as oyster bars and submerged grass beds and do not interfere with traditional public uses.

(d) Spoil disposal within the preserves shall be strongly discouraged and may be approved only where the applicant has demonstrated that there is no other reasonable alternative and that activity may be beneficial to, or at a minimum, not harmful to the quality and utility of the preserve.

(4) RIPARIAN RIGHTS.

(a) None of the provisions of this rule shall be implemented in a manner that would unreasonably infringe upon the traditional, common law and statutory riparian rights of upland riparian property owners adjacent to sovereignty lands.

(b) The evaluation and determination of the reasonable riparian rights of ingress and egress for private, residential multi-slip docks shall be based upon the number of linear feet of riparian shoreline.

(c) For the purpose of this rule, a private residential, single-family docking facility which meets all the requirements of subsection 18-20.004(5), F.A.C., shall be deemed to meet the public interest requirements of paragraph 18-20.004(1)(b), F.A.C. However, the applicants for such docking facilities must apply for such consent and must meet all of the requirements and standards of this rule chapter.

(5) STANDARDS AND CRITERIA FOR DOCKING FACILITIES.

(a) All docking facilities, whether for private residential single-family docks, private residential multi-slip docks, or commercial, industrial, or other revenue generating/income related docks or public docks or piers, shall be subject to all of the following standards and criteria.

1. No dock shall extend waterward of the mean or ordinary high water line more than 500 feet or 20 percent of the width of the waterbody at that particular location, whichever is less.

2. Certain docks fall within areas of significant biological, scientific, historic or aesthetic value and require special management considerations. The Board shall require design modifications based on site specific conditions to minimize adverse impacts to these resources, such as relocating docks to avoid vegetation or altering configurations to minimize shading.

3. Docking facilities shall be designed to ensure that vessel use will not cause harm to site specific resources. The design shall consider the number, lengths, drafts and types of vessels allowed to use the facility.

4. In a Resource Protection Area 1 or 2, any wood planking used to construct the walkway surface of a facility shall be no more than eight inches wide and spaced no less than one-half inch apart after shrinkage. Walkway surfaces constructed of material other than wood shall be designed to provide light penetration which meets or exceeds the light penetration provided by wood construction.

5. In a Resource Protection Area 1 or 2, the main access dock shall be elevated a minimum of five (5) feet above mean or ordinary high water.

6. Existing docking facilities constructed in conformance with previously applicable rules of the Board and in conformance with applicable rules of the Department are authorized to be maintained for continued use subject to the current requirements of Chapter 18-21, F.A.C. Should more than 50 percent of a nonconforming structure fall into a state of disrepair or be destroyed as a result of any natural or manmade force, the entire structure shall be brought into full compliance with the current rules of the Board. This shall not be construed to prevent routine repair.

(b) Private residential single-family docks shall conform to all of the following specific design standards and criteria.

1. Any main access dock shall be limited to a maximum width of four (4) feet.

2. The dock decking design and construction will ensure maximum light penetration, with full consideration of safety and practicality.

3. The dock will extend out from the shoreline no further than to a maximum depth of minus four (-4) feet (mean low water).

4. When the water depth is minus four (-4) feet (mean low water) at an existing bulkhead the maximum dock length from the bulkhead shall be 25 feet, subject to modifications accommodating shoreline vegetation overhang.

5. Wave break devices, when requested by the applicant, shall be designed to allow for maximum water circulation and shall be built in such a manner as to be part of the dock structure.

6. Terminal platform size shall be no more than 160 square feet.

7. If a terminal platform terminates in a Resource Protection Area 1 or 2, the platform shall be elevated to a minimum height of five (5) feet above mean or ordinary high water. Up to 25 percent of the surface area of the terminal platform shall be authorized at a lower elevation to facilitate access between the terminal platform and the waters of the preserve or a vessel.

8. Docking facilities in a Resource Protection Area 1 or 2 shall only be authorized in locations having adequate existing water depths in the boat mooring, turning basin, access channels, and other such areas which will accommodate the proposed boat use in order to ensure that a minimum of one foot clearance is provided between the deepest draft of a vessel and the top of any submerged resources at mean or ordinary low water; and,

9. Dredging to obtain navigable water depths in conjunction with private residential, single-family dock applications is strongly discouraged.

(c) Private residential multi-slip docks shall conform to all of the following specific design standards and criteria.

1. The area of sovereignty, submerged land preempted by the docking facility shall not exceed the square footage amounting to ten times the riparian waterfront footage of the affected waterbody of the applicant, or the square footage attendant to providing a single dock in accordance with the criteria for private residential single-family docks, whichever is greater. A conservation easement or other similar legally recorded use restriction must be placed on the riparian shoreline, used for the calculation of the 10:1 threshold, to conserve and protect shoreline resources and subordinate or waive any further riparian rights of ingress and egress for additional docking facilities.

2. Docking facilities and access channels shall be prohibited in a Resource Protection Area 1 or 2, except as allowed pursuant to Section 258.42(3), F.S., while dredging in Resource Protection Area 3 shall be strongly discouraged.

3. Docking facilities shall not terminate in a Resource Protection Area 1 or 2; however, main access docks will be allowed to pass through a Resource Protection Area 1 or 2, to reach a Resource Protection Area 3, when reasonable assurances are provided that such crossing will generate no significant negative environmental impact.

4. Main access docks and connecting or cross walks shall not exceed six (6) feet in width.

5. Terminal platforms shall not exceed eight (8) feet in width.

6. Finger piers shall not exceed three (3) feet in width, and 25 feet in length.

7. If requested by the applicant, pilings may be used to provide adequate mooring capabilities.

8. The provisions of paragraph 18-20.004(5)(d), F.A.C., shall also apply to private residential multi-slip docks.

(d) Commercial, industrial and other revenue generating/income related docking facilities shall conform to all of the following specific design standards and criteria.

1. Docking facilities shall be authorized only in locations having adequate circulation and existing water depths in the boat mooring, turning basin, access channels, and other such areas which will accommodate the proposed boat use to ensure that a minimum of one foot clearance is provided between the deepest draft of a vessel and the bottom of the waterbody at mean or ordinary low water.

2. Docking facilities and access channels shall be prohibited in a Resource Protection Area 1 or 2, except as allowed pursuant to Section 258.42(3), F.S.; while dredging in Resource Protection Area 3 shall be strongly discouraged.

3. Docking facilities shall not terminate in Resource Protection Area 1 or 2; however, main access docks will be allowed to pass through Resource Protection Area 1 or 2, to reach a Resource Protection Area 3, when reasonable assurances are provided that such crossing will generate no significant negative environmental impact.

4. Docking facilities shall be sited to ensure that boat access routes avoid injury to marine grassbeds or other aquatic resources in the surrounding areas.

5. Expansion of existing facilities shall take precedence over approval of new facilities.

6. Use of upland dry storage shall take precedence over the creation of new wet slips.

7. Marinas shall not be sited within state designated manatee sanctuaries.

8. In any areas with known manatee concentrations, manatee awareness signs or informational displays shall be specified as part of a wetland resource or environmental resource permit for the facility.

(e) Alterations to the criteria in subsection 18-20.004(5), F.A.C., shall be authorized to accommodate persons with disabilities or to comply with Americans with Disabilities Act.

(6) MANAGEMENT AGREEMENTS.

The Board may enter into management agreements with local agencies for the administration and enforcement of standards and criteria for private residential single-family docks.

(7) The aquatic preserve management plans shall be used by the Department to preserve and restore the distinctive characteristics identified by the inventories for each aquatic preserve. The management plans for each aquatic preserve are available for guidance purposes only at the following Internet website address: <https://floridadep.gov/rcp/rcp/content/site-management-plans>.

Rulemaking Authority 258.43(1) FS. Law Implemented 258.41, 258.42, 258.43(1), 258.44 FS. History—New 2-25-81, Amended 8-7-85, Formerly 16Q-20.04, 16Q-20.004, Amended 9-4-88, 3-6-94, 4-27-94, 6-12-97, 9-29-97, 5-27-99, 3-25-19.

18-20.005 Uses, Sales, Leases, or Transfer of Interests in Lands, or Materials, Held by the Board.

Rulemaking Authority 258.43(1) FS. Law Implemented 258.02, 253.12, 258.42 FS. History—New 2-25-81, Formerly 16Q-20.05, 16Q-20.005, Repealed 8-7-85.

18-20.006 Cumulative Impacts.

In evaluating applications for activities within the preserves or which may impact the preserves, the Board recognizes that, while a particular alteration of the preserve may constitute a minor change, the cumulative effect of numerous such changes often results in major impairments to the resources of the preserve. Therefore, the particular site for which the activity is proposed shall be evaluated with the recognition that the activity may, in conjunction with other activities, adversely affect the preserve which is part of a complete and interrelated system. The impact of a proposed activity shall be considered in light of its cumulative impact on the preserve's natural system. The evaluation of an activity shall include:

(1) The number and extent of similar human actions within the preserve which have previously affected or are likely to affect the preserve;

(2) The similar activities within the preserve which are currently under consideration by the department and the water management districts;

(3) Direct and indirect effects upon the preserve and adjacent preserves, if applicable, which may reasonably be expected to result from the activity;

(4) The extent to which the activity is consistent with management plans for the preserve, when developed;

(5) The extent to which the activity is permissible within the preserve in accordance with comprehensive plans adopted by affected local governments, pursuant to Section 163.3161, F.S., and other applicable plans adopted by local, state, and federal governmental agencies;

(6) The extent to which the loss of beneficial hydrologic and biologic functions would adversely impact the quality or utility of the preserve; and,

(7) The extent to which mitigation measures may compensate for adverse impacts.

Rulemaking Authority 258.396(4), 258.43(1) FS. Law Implemented 258.36, 258.43, 258.44 FS. History—New 2-25-81, Formerly 16Q-20.06, 16Q-20.006, Amended 9-29-97.

18-20.007 Protection of Riparian Rights.

Rulemaking Authority 258.43(1) FS. Law Implemented 258.123, 253.124(8), 258.44 FS. History—New 2-25-81, Formerly 16Q-20.07, 16Q-20.007, Repealed 8-7-85.

18-20.008 Inclusion of Lands, Title to Which Is Not Vested in the Board, in a Preserve.

Rulemaking Authority 258.43(1) FS. Law Implemented 258.40, 258.41 FS. History—New 2-25-81, Formerly 16Q-20.08, 16Q-20.008, Repealed 3-8-12.

18-20.009 Establishment or Expansion of Aquatic Preserves.

Rulemaking Authority 258.43(1) FS. Law Implemented 258.41 FS. History—New 2-25-81, Formerly 16Q-20.09, 16Q-20.009, Repealed 3-8-12.

18-20.010 Exchange of Lands.

The Board in its discretion may exchange lands for the benefit of the preserve, provided that:

- (1) In no case shall an exchange result in any land or water area being withdrawn from the preserve; and,
- (2) Exchanges shall be in the public interest and shall maintain or enhance the quality or utility of the preserve.

Rulemaking Authority 258.396(4), 258.43(1) FS. Law Implemented 258.41(5), 258.42(1) FS. History—New 2-25-81, Formerly 16A-20.10, 16Q-20.010.

18-20.011 Gifts of Lands.

Rulemaking Authority 258.43(1) FS. Law Implemented 258.42(5) FS. History—New 2-25-81, Formerly 16Q-20.11, 16Q-20.011, Repealed 5-23-96.

18-20.012 Protection of Indigenous Life Forms.

The taking of indigenous life forms for sale or commercial use is prohibited, except that this prohibition shall not extend to the commercial taking of fin fish, crustacea or mollusks, except as prohibited under applicable laws, rules or regulations. Members of the public may exercise their rights to fish, so long as not contrary to other statutory and regulatory provisions controlling such activities.

Rulemaking Authority 258.396(4), 258.43(1) FS. Law Implemented 258.43(1) FS. History—New 2-25-81, Formerly 16Q-20.12, 16Q-20.012.

18-20.013 Development of Resource Inventories and Management Plans for Preserves.

(1) The Board authorizes and directs the Division to develop a resource inventory and management plan for each preserve.

(2) The Board authorizes the Division to perform the work to develop the inventories and plans, or may enter into agreements with other persons to perform the work. In either case, the inventories, management plans and all work performed shall be subject to approval by the Board, which shall weigh and balance the criteria set forth in subsection 18-20.001(3), F.A.C.

Rulemaking Authority 258.43(1) FS. Law Implemented 253.03(7), 253.03(8) FS. History—New 2-25-81, Amended 8-7-85, Formerly 16Q-20.13, 16Q-20.013, Amended 3-25-19.

18-20.014 Enforcement.

Rulemaking Authority 258.43(1) FS. Law Implemented 258.46 FS. History—New 2-25-81, Formerly 16Q-20.14, 16Q-20.014, Repealed 5-23-96.

18-20.015 Application Form.

Rulemaking Authority 258.43(1) FS. Law Implemented 258.43 FS. History—New 2-25-81, Formerly 16Q-20.15, 16Q-20.015,

Repealed 8-7-85.

18-20.016 Coordination with Other Governmental Agencies.

Rulemaking Authority 258.43(1) FS. Law Implemented 258.43 FS. History—New 2-25-81, Formerly 16Q-20.16, 16Q-20.016, Repealed 5-23-96.

18-20.017 Lake Jackson Aquatic Preserve.

In addition to the provisions of Rules 18-20.001 through 18-20.016, F.A.C., except for those in subsection 18-20.004(5), F.A.C., the following requirements shall also apply to all proposed activities within the Lake Jackson Aquatic Preserve.

(1) No further sale, transfer or lease of sovereignty lands in the preserve shall be approved or consummated by the Board, except upon a showing of extreme hardship on the part of the applicant or when the Board shall determine such sale, transfer or lease to be in the public interest.

(2) No further dredging or filling of sovereignty lands of the preserve shall be approved or tolerated by the Board except:

(a) Minimum dredging and spoiling authorized under a valid wetland resource or environmental resource permit, as applicable, or an exemption under Section 403.813(1), F.S., for public navigation projects or for preservation of the lake; and,

(b) Such other alteration of physical conditions as may be necessary to enhance the quality or utility of the preserve.

(3) There shall be no drilling of wells, excavation for shell or minerals, and no erection of structures (other than docks), within the preserve, unless such activity is associated with activity authorized by Part II of Chapter 258, F.S.

(4) The Board shall not approve the relocations of bulkhead lines within the preserve.

(5) Notwithstanding other provisions of this act, the Board may, respecting lands lying within the Lake Jackson basin:

(a) Enter into agreements for and establish lines delineating sovereignty and privately owned lands;

(b) Enter into agreements for the exchange and exchange sovereignty lands for privately owned lands;

(c) Accept gifts of land within or contiguous to the preserve.

(6) All docking facilities shall be subject to all of the following standards and criteria:

(a) No docking facility shall extend waterward of the 81-foot N.G.V.D. contour elevation or otherwise create a navigational hazard by extending farther waterward than the existing line of neighboring docks.

(b) The size of terminal platforms shall not exceed 160 square feet. Terminal platforms are authorized to be fixed or floating. Fixed portions of terminal platforms shall be elevated at or above 89.2 feet N.G.V.D., except that not more than 25 percent of the surface area of the terminal platform may be at a lower elevation to facilitate access between the terminal platform and the waters of the preserve or a vessel. Terminal platforms shall not include covers and shall not be enclosed.

(c) Boat lifts are authorized to be a part of the docking facility.

(d) Mooring locations shall not include covers and shall not be enclosed.

(e) Main access docks shall be fixed (not floating) with a decking elevation at or above 89.2 feet N.G.V.D.

(f) Certain docks fall within areas of significant biological, scientific, historic or aesthetic value and require special management considerations. The Board shall require design modifications based on site specific conditions to minimize adverse impacts to these resources, such as relocating docks to avoid vegetation or altering configurations to minimize shading. Any wood planking used to construct the walkway surface of a facility shall be no more than eight inches wide and spaced no less than one-half inch apart after shrinkage. Walkway surfaces constructed of material other than wood shall be designed to provide light penetration which meets or exceeds the light penetration provided by wood construction.

(g) Wave break devices, when requested by the applicant, shall be designed to allow for maximum water circulation and shall be built in such a manner as to be part of the dock structure.

(h) Docking facilities shall be authorized only in locations having adequate circulation and existing water depths in the boat mooring, turning basin, access channels, and other such areas so as to accommodate boat use without causing bottom scouring or dredging.

(i) No dock shall extend waterward of the ordinary high water line more than 500 feet or 20 percent of the width of the waterbody at that particular location, whichever is less.

(j) When the local government has more stringent standards and criteria for docking facilities, the more stringent standards for the protection and enhancement of the aquatic preserve shall prevail.

(k) Docking facilities shall be designed to ensure that vessel use will not cause harm to site specific resources. The design shall consider the number, lengths, drafts and types of vessels allowed to use the facility.

(7) Private residential single-family docks shall conform to all of the following specific design standards and criteria.

(a) Main access docks shall be limited to a maximum width of four (4) feet.

(b) New dredging to obtain navigable water depths in conjunction with private residential, single-family docks is prohibited.

(8) Private residential multi-slip docks shall conform to all of the following specific design standards and criteria.

(a) The area of sovereignty, submerged land preempted by the docking facility shall not exceed the square footage amounting to ten times the riparian waterfront footage of the affected waterbody of the applicant, or the square footage attendant to providing a single dock in accordance with the criteria for private residential single-family docks, whichever is greater. A conservation easement or other similar legally recorded use restriction must be placed on the riparian shoreline, used for the calculation of the 10:1 threshold, to conserve and protect shoreline resources and subordinate or waive any further riparian rights of ingress and egress for additional docking facilities.

(b) Main access docks and connecting or cross walks shall not exceed six (6) feet in width.

(c) Terminal platforms shall not exceed eight (8) feet in width.

(d) Finger piers shall not exceed three (3) feet in width, and 25 feet in length.

(e) If requested by the applicant, pilings may be used to provide adequate mooring capabilities.

(f) The provisions of subsection 18-20.017(9), F.A.C., shall also apply to private residential multi-slip docks.

(9) Commercial, industrial and other revenue generating/income related docking facilities shall conform to the following specific design standards and criteria.

(a) Access channels shall be prohibited.

(b) Docking facilities shall be sited to ensure that boat access routes avoid injury to grassbeds or other aquatic resources in the surrounding areas.

(c) Expansion of existing facilities shall take precedence over approval of new facilities.

(d) Use of upland dry storage shall take precedence over the creation of new wet slips.

(e) The siting of new facilities within the preserve shall be secondary to the expansions of existing facilities within the preserve when such expansion is consistent with the other standards.

(f) The location of new facilities and expansion of existing facilities shall consider the use of upland dry storage as an alternative to multiple wet-slip docking.

(10) Alterations to the criteria in this section shall be authorized to accommodate persons with disabilities or to comply with the Americans with Disabilities Act.

(11) Existing docking facilities constructed in conformance with previously applicable rules of the Board and in conformance with applicable rules of the Department are authorized to be maintained for continued use subject to the current requirements of Chapter 18-21, F.A.C. Should more than 50 percent of a nonconforming structure fall into a state of disrepair or be destroyed as a result of any natural or manmade force, the entire structure shall be brought into full compliance with the current rules of the Board. This shall not be construed to prevent routine repair.

Rulemaking Authority 258.42, 258.43(1) FS. Law Implemented 258.39(26), 258.42, 258.43(1), 258.44 FS. History—New 8-7-85, Formerly 16Q-20.17, 16Q-20.017, Amended 9-29-97, 3-25-19.

18-20.018 Lake Weir Aquatic Preserve.

Rulemaking Authority 258.42, 258.43(1) FS. Law Implemented 258.398, 258.42, 258.43(1), 258.44 FS. History—New 5-22-97, Repealed 8-1-01.

18-20.019 Boca Ciega Bay and Pinellas County Aquatic Preserves.

The following rules, in addition to the provisions of Rules 18-20.001 through 18-20.016, F.A.C., except for subsection 18-20.004(5), F.A.C., apply in the Boca Ciega Bay and Pinellas County Aquatic Preserves in recognition of their highly developed, urban nature.

(1) No dock shall extend waterward of the mean or ordinary high water line more than 500 feet or 25 percent of the width of the waterbody at that particular location, whichever is less.

(2) When the local government has more stringent standards and criteria for docking facilities, the more stringent standards for the protection and enhancement of the aquatic preserve shall prevail.

(3) Certain docks fall within areas of significant biological, scientific, historic or aesthetic value and require special management considerations. The Board shall require design modifications based on site specific conditions to minimize adverse impacts to these resources, such as relocating docks to avoid vegetation or altering configurations to minimize shading. Any wood planking used to construct the walkway surface of a facility shall be no more than eight inches wide and spaced no less than one-half inch apart after shrinkage. Walkway surfaces constructed of material other than wood shall be designed to provide light penetration which meets or exceeds the light penetration provided by wood construction.

(4) In a Resource Protection Area 1 or 2, the main access dock shall be elevated a minimum of five (5) feet above mean sea level.

(5) If a terminal platform terminates in a Resource Protection Area 1 or 2, the platform shall be elevated to a minimum height of five (5) feet above mean sea level.

(6) Private residential single-family docks shall conform to all of the following specific design standards and criteria.

(a) Main access docks shall be limited to a maximum width of four (4) feet in a Resource Protection Area 1 or 2, and six (6) feet in a Resource Protection Area 3.

(b) Wave break devices, when requested by the applicant, shall be designed to allow for maximum water circulation and shall be built in such a manner as to be part of the dock structure.

(c) Dredging to obtain navigable water depths in conjunction with private residential, single-family docks is strongly discouraged.

(d) For those docking facilities terminating in a Resource Protection Area 1 or 2, a terminal platform shall not exceed a total of 100 square feet which may include a lower level platform of not more than 20 square feet to facilitate access between the terminal platform and the waters of the preserve or a vessel. Covered slips shall be in accordance with Section 258.42(3)(e)1., F.S.

(e) For those docking facilities terminating in a Resource Protection Area 3, a terminal platform shall not exceed a total of 250 square feet which may include a lower level platform of not more than 40 square feet to facilitate access between the terminal platform and the waters of the preserve or a vessel. Covered slips shall be in accordance with Section 258.42(3)(e)1., F.S. Total coverage of sovereignty, submerged lands of the terminal platform, any lower level platform, and any covered slip which exceeds the criteria in Section 258.42(3)(e)1., F.S., shall not exceed 500 square feet.

(7) Private residential multi-slip docks shall conform to all of the following specific design standards and criteria.

(a) The area of sovereignty, submerged land preempted by the docking facility shall not exceed the square footage amounting to thirty times the riparian waterfront footage of the affected waterbody of the applicant, or the square footage attendant to providing a single dock in accordance with the criteria for private residential single-family docks, whichever is greater. A conservation easement or other similar legally recorded use restriction must be placed on the riparian shoreline, used for the calculation of the 30:1 threshold, to conserve and protect shoreline resources and subordinate or waive any further riparian rights of ingress and egress for additional docking facilities.

(b) Docking facilities shall not terminate in a Resource Protection Area 1 or 2; however, main access docks will be allowed to pass through a Resource Protection Area 1 or 2, to reach a Resource Protection Area 3, when reasonable assurances are provided that such crossing will generate no significant negative environmental impact.

(c) Docking facilities shall be authorized only in locations having adequate circulation and existing water depths in the boat mooring, turning basin, access channels, and other such areas which will accommodate the proposed boat use. This depth shall be a minimum of minus two (2) feet at mean or ordinary low water.

(d) In a Resource Protection Area 1 or 2, the main access docks and connecting or cross walks shall not exceed six (6) feet in width.

(e) If requested by the applicant, pilings may be used to provide adequate mooring capabilities.

(f) The provisions of paragraphs 18-20.019(8)(b) through (g), F.A.C., shall also apply to private residential multi-slip docks.

(8) Commercial, industrial and other revenue generating/income related docking facilities shall conform to all of the following specific design standards and criteria.

(a) Docking facilities shall be authorized only in locations having adequate circulation and existing water depths in the boat mooring, turning basin, access channels, and other such areas which will accommodate the proposed boat use. This depth shall be a minimum of minus three (3) feet at mean or ordinary low water.

(b) Access channels shall be prohibited.

(c) Docking facilities shall not terminate in a Resource Protection Area 1 or 2; however, main access docks will

be allowed to pass through a Resource Protection Area 1 or 2, to reach a Resource Protection Area 3, when reasonable assurances are provided that such crossing will generate no significant negative environmental impact.

(d) The location of new facilities and expansion of existing facilities shall consider the use of upland dry storage as an alternative to multiple wet-slip docking.

(e) Docking facilities shall be designed to ensure that vessel use will not cause harm to site specific resources. The design shall consider the number, lengths, drafts and types of vessels allowed to use the facility.

(f) Marinas shall not be sited within state designated manatee sanctuaries.

(g) In any areas with known manatee concentrations, manatee awareness signs or informational displays shall be specified as part of a wetland resource or environmental resource permit for the facility.

(9) Alterations to the criteria in this section shall be authorized to accommodate persons with disabilities or to comply with the Americans with Disabilities Act.

(10) Private residential single-family docking facilities constructed prior to 9-29-97 in conformance with the permitting requirements of Pinellas County are hereby authorized to be maintained or rebuilt for continued use. Such structures are grandfathered for the purposes of reconstruction in the event of destruction or damage resulting from any natural or man-made force. Design alterations to such structures, however, must comply with the provisions of these rules.

(11) Private residential multi-slip and commercial, industrial, or other revenue generating/income-related docking facilities constructed prior to 9-29-97 in conformance with the permitting requirements of Pinellas County and any applicable requirements of the Department and the water management districts, and the rules of the Board are hereby authorized to be maintained or rebuilt for continued use. Those private residential multi-slip and commercial, industrial, or other revenue generating/income-related docking facilities constructed prior to 9-29-97 in conformance with the permitting requirements of Pinellas County but without the requisite approval of the Board and the Department shall be considered unauthorized structures unless the owner:

(a) Registers with the Department on or before May 1, 1998, by providing a copy of the permit issued by Pinellas County and a statement of intent to apply for a lease of lands preempted from public use by May 1, 1999;

(b) Submits a completed application for lease under Chapter 18-21, F.A.C., by May 1, 1999; and,

(c) Pays standard lease fees, including lease fees in arrears from April 9, 1991 or the documented date of the commencement of construction, whichever is later. Lease fees shall be computed pursuant to subsection 18-21.011(1), F.A.C.

(12) Existing structures previously authorized by the Board or pursuant to subsection 18-20.019(10) or (11), F.A.C., are grandfathered for the purposes of reconstruction in the event of destruction or damage resulting from any natural or man-made force. Design alterations to such structures, however, must comply with the provisions of these rules. This shall not be construed to prevent routine repair.

Rulemaking Authority 258.42, 258.43(1) FS. Law Implemented 258.39(27), 258.396, 258.42, 258.43(1), 258.44 FS. History—New 9-29-97, Amended 3-25-19.

A.3.1 / Florida Administrative Code, Other Key Chapters

All rules can be found according to number at:

<https://www.flrules.org/Default.asp>

- Florida Administrative Code, Chapter 18-18: Biscayne Bay Aquatic Preserve
<https://www.flrules.org/gateway/ChapterHome.asp?Chapter=18-18>
- Florida Administrative Code, Chapter 18-21: Sovereignty Submerged Lands Management
<https://www.flrules.org/gateway/ChapterHome.asp?Chapter=18-21>
- Florida Administrative Code, Chapter 62-302: Surface Water Quality Standards (Rule designating Outstanding Florida Waters is at 62-302.700)
<https://www.flrules.org/gateway/ChapterHome.asp?Chapter=62-302>

Appendix B / Resource Data

B.1 / Glossary of Terms

References to these definitions can be found at the end of this list and in Appendix B.2 (References).

aerial - referring to the air (Collin, 2004).

algae - tiny single-celled or multicellular organisms living in water or in moist conditions, which contains chlorophyll but have no stems, roots or leaves (Collin, 2004).

algal bloom - a mass of algae which develops rapidly in a lake as a result of eutrophication (Collin, 2004).

aggregate - a mass of soil and rock particles stuck together (Collin, 2004).

anaerobic - growing or occurring in the absence of molecular oxygen (Lincoln et al., 2003).

angiosperm - a plant in which the sex organs are carried within flowers and seeds are enclosed in a fruit (Collin, 2004).

anthropogenic - caused by or resulting from human activities (Collin, 2004).

aquaculture - the cultivation of aquatic organisms (Lincoln et al., 2003).

aquifer – a body of porous rock or soil through which water passes and in which water gathers (Collin, 2004).

archipelago – a group of islands (Collin, 2004).

benthic - on or living on the bottom of the sea or of a lake (Collin, 2004).

biodiversity – the range of species, subspecies or communities in a specific habitat such as a rainforest or a meadow (Collin, 2004).

biotic community – a community of organisms in a specific area (Collin, 2004).

channel – a deep part of a harbor or sea passage where ships can pass or, a stretch of water between two seas (Collin, 2004).

conservation - the process of protecting something from undesirable change (Collin, 2004).

coral - a sedentary invertebrate animal that is composed of individual polyps, often colonial, that secretes a calcium carbonate skeleton that provides much of the structure in coral reefs (stony corals) or have a largely proteinaceous skeleton (soft corals) (Rupper, et al., 2004).

crustacean - an invertebrate animal with a chitinous and/or calcareous exoskeleton, several pairs of jointed legs, and stalked eyes (Collin, 2004).

debris - rubbish or waste matter (Collin, 2004).

deforestation - the cutting down of forest trees for commercial purposes or to make arable or pasture land (Collin, 2004).

diversity - a measure of the number of species and their relative abundance in a community (Lincoln et

al., 2003).

drainage basin (catchment) - the area from which a surface watercourse or a groundwater system derives its water; watershed (Allaby, 2005).

easement - a right that one may have in another's land (Neufeldt & Sparks, 1990).

ecosystem - a community of organisms and their physical environment interacting as an ecological unit (Lincoln et al., 2003).

emergent - an aquatic plant having most of the vegetative parts above water (Lincoln et al., 2003).

endangered species - an animal or plant species in danger of extinction throughout all or a significant portion of its range (United States Fish and Wildlife Service, 2015).

endemic - native to, and restricted to, a particular geographical region (Lincoln et al., 2003).

epifauna – the total animal life inhabiting a sediment surface or water surface; epibenthos (Lincoln et al., 2003).

estuary – the highly productive part of a river where it meets the sea and becomes brackish, often serving as nursery grounds and providing food, breeding grounds, and migration stopovers for many animals (National Oceanic and Atmospheric Administration, 2019)

fauna - the animal life of a given region, habitat or geological stratum (Lincoln et al., 2003).

filter feeder - an animal that lives in water and feeds on small particles that it filters out of the water it takes in, e.g. a clam, sponge, or baleen whale (Collin, 2004).

flora - the plant life of a given region, habitat or geological stratum. (Lincoln et al., 2003).

geomorphology - the study of landforms and relief features, including their origins and development (Merriam-Webster, 2020).

geographic information system (GIS) - computer system supporting the collection, storage, manipulation and query of spatially referred data, typically including an interface for displaying geographical maps (Lincoln et al., 2003).

ground water - water that stays in the top layers of soil or in porous rocks and can collect pollution (Collin, 2004).

Gulf Stream - a current of warm water in the Atlantic Ocean, which flows north along the east coast of the USA, then crosses the Atlantic to northern Europe, passing close to the west coast of Scotland and giving the British Isles and European coast a mild winter climate compared with countries at the same latitude such as eastern Canada (Collin, 2004).

habitat – the type of environment in which a specific organism lives (Collin, 2004).

herbivore - an animal that feeds only on plants (Collin, 2004).

hurricane - a tropical storm with winds in excess of 74 miles per hour (National Oceanic and Atmospheric Administration, 2018).

hydric - pertaining to water; wet (Lincoln et al., 2003).

infauna - the animal life within a sediment (Lincoln et al., 2003).

intertidal zone - the shore zone between the highest and lowest tides; littoral (Lincoln et al., 2003).

invertebrate - an animal that has no backbone (Collin, 2004).

limestone - a common sedimentary rock, formed of calcium minerals and often containing fossilized shells of sea animals (Collin, 2004)

listed species - a species, subspecies, or distinct population segment that has been added to a federal or state list of endangered and threatened wildlife and plants (United States Fish and Wildlife Service, 2015).

mandate - an order or command; the will of constituents expressed to their representative, legislature, etc. (Neufeldt & Sparks, 1990).

marsh - an area of permanently wet land and the plants that grow on it; can be salt or fresh water (Collin, 2004).

midden - a refuse heap; used especially in archaeology (Lincoln et al., 2003).

monitoring – a process of regular checking on the progress of something (Collin, 2004).

oolite – a sedimentary rock consisting of cemented oolites (Chiappone, 1996).

oolith – a speleothem body, commonly 0.5-1mm across, consisting of concentric layers of aragonite formed in warm, shallow, turbulent seawater (Chiappone, 1996).

patch reef – a small, mound-like reef usually occurring in lagoons. In the Florida Keys, patch reefs are small, rounded clusters of coral heads and other reef biota generally occurring in Hawk Channel (Chiappone, 1996).

pollution – the presence of unusually high concentrations of harmful substances in the environment, as a result of human activity or a natural process (Collin, 2004).

pollution, non-point source - a source of pollution not associated with a specific discharge point (Collin, 2004).

pollution, point source – any single identifiable source of pollution from which pollutants are discharged, such as a pipe, ditch, ship, or factory smokestack (United States Environmental Protection Agency, n.d.).

population - all individuals of one or more species within a prescribed area, or a group of organisms of one species, occupying a defined area and usually isolated to some degree from other similar groups (Lincoln et al., 2003).

porous - referring to rock which has many small pores in it and can absorb water (Collin, 2004).

reef - a submarine mound or ridge constructed of rock debris or formed by calcium carbonate-depositing marine organisms (Chiappone, 1996).

resilience - the ability of an organism to resist or recover from adverse conditions or, the ability of an ecosystem to return to its usual state after being disturbed (Collin, 2004).

runoff - part of precipitation that is not held in the soil but drains freely away (Lincoln et al., 2003).

salinity - a measure of the total concentration of dissolved salts in seawater (Lincoln et al., 2003).

sampling - to take a small quantity of something to test (Collin, 2004).

sea level - the average level of the surface of the sea (Collin, 2004).

sessile - non-motile; permanently attached at the base (Lincoln et al., 2003).

species - a group of organisms, minerals or other entities formally recognized as distinct from other groups; the basic unit of biological classification (Lincoln et al., 2003).

species of concern - an informal term referring to a species that might be in need of conservation action. This may range from a need for periodic monitoring of populations and threats to the species and its habitat, to the necessity for listing as threatened or endangered. Such species receive no legal protection and use of the term does not necessarily imply that a species will eventually be proposed for listing. A similar term is "species at risk," which is a general term for listed species as well as unlisted ones that are declining in population. Canada uses the term in its new "Species at Risk Act." "Imperiled species" is another general term for listed as well as unlisted species that are declining (United States Fish and Wildlife Service, 2015).

stakeholder - any person or organization who has an interest in the actions discussed or is affected by the resulting outcomes of a project or action (United States Fish and Wildlife Service, 2015).

stewardship - the protection of the environment for the future benefit of generations of human beings by developing appropriate institutions and strategies (Collin, 2004).

storm surge - a rise in sea level as a hurricane or other severe storm moves over water, causing flooding when the storm comes ashore storm swell storm swell (Collin, 2004).

stratification - the formation of several layers in substances such as sedimentary rocks, or water in a lake or air in the atmosphere (Collin, 2004).

submarine - situated or existing beneath the sea (Collin, 2004).

substrate - the matter or surface on which an organism lives (Collin, 2004).

subtidal - environment which lies below the mean low water level (Allaby, 2005).

supratidal zone - the zone on the shore above mean high tide level (Lincoln et al., 2003).

threatened species - an animal or plant species likely to become endangered within the foreseeable future throughout all or a significant portion of its range (United States Fish and Wildlife Service, 2015).

turbid - cloudy; opaque with suspended matter (Lincoln et al., 2003).

upland - land elevated above other land (Neufeldt & Sparks, 1990).

vascular plant - a plant that has specialized tubes within it for transporting sap (Collin, 2004).

vegetation - plant life or cover in an area; also used as a general term for plant life (Lincoln et al., 2003).

water column - the vertical column of water in a sea or lake extending from the surface to the bottom (Lincoln et al., 2003).

watershed - an elevated boundary area separating tributaries draining in to different river systems; drainage basin (Lincoln et al., 2003).

wetland - an area of low lying land, submerged or inundated periodically by fresh or saline water (Lincoln et al., 2003).

wildlife - any undomesticated organisms; wild animals (Allaby, 2005).

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B.3 / Species Lists

A complete list of species found in Terra Ceia Aquatic Preserve is posted online at <https://floridaaquaticpreserves.org/tcap-species>.

B.3.1 / Listed Species

Legend: FT = Federally- and State-Designated Threatened • FE = Federally-and State-Designated Endangered • ST = State-Designated Threatened • SE = State-Designated Endangered • BGEPA = Bald and Golden Eagle Protection Act

Common Name	Species Name	Status
Fish		
smalltooth sawfish	<i>Pristis pectinata</i>	FE
Reptiles		
American alligator	<i>Alligator mississippiensis</i>	FT (S/A)
green sea turtle	<i>Chelonia mydas</i>	FT
leatherback sea turtle	<i>Dermochelys coriacea</i>	FE
Kemp's ridley sea turtle	<i>Lepidochelys kempii</i>	FE
Birds		
Scott's seaside sparrow	<i>Ammodramus maritimus peninsulae</i>	ST
snowy plover	<i>Anarhynchus nivosus</i>	ST
Florida sandhill crane	<i>Antigone canadensis pratensis</i>	ST
rufa red knot	<i>Calidris canutus rula</i>	FT
piping plover	<i>Charadrius melodus</i>	FT
little blue heron	<i>Egretta caerulea</i>	ST
reddish egret	<i>Egretta rufescens</i>	ST
tricolored heron	<i>Egretta tricolor</i>	ST
Southeastern American kestrel	<i>Falco sparverius paulus</i>	ST
American oystercatcher	<i>Haematopus palliatus</i>	ST
bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA
Eastern black rail	<i>Laterallus jamaicensis jamaicensis</i>	FT
wood stork	<i>Mycteria americana</i>	FT
roseate spoonbill	<i>Platalea ajaja</i>	ST
black skimmer	<i>Rynchops niger</i>	ST
roseate tern	<i>Sterna dougallii dougallii</i>	FT
least tern	<i>Sternula antillarum</i>	ST
Mammals		
West Indian manatee	<i>Trichechus manatus</i>	FT

B.3.2 / Invasive and/or Nuisance Species

Florida Exotic Pest Plant Council (FLEPPC) categorizes invasive plants as Category I (plants that are altering native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives) or Category II (plants that have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species). Animals are described as either Invasive or Nuisance.

Common Name	Species Name	Class
Kingdom Animalia		
Phylum Chordata		
Class Amphibia (amphibians)		
Order Anura		
Family Hylidae		
Cuban tree frog	<i>Osteopilus septentrionalis</i>	invasive
Class Mammalia (mammals)		
Order Carnivora		
Family Procyonidae		
raccoon	<i>Procyon lotor</i>	problem
Phylum Mollusca		
Class Bivalvia (bivalves)		
Order Mytilida		
Family Mytilidae		
Asian green mussel	<i>Perna viridis</i>	invasive
Kingdom Plantae		
Phylum Tracheophyta		
Class Magnoliopsida (flowering plants)		
Order Alismatales		
Family Araceae		
taro	<i>Colocasia esculenta</i>	I
Order Caryophyllanae		
Family Amaranthaceae		
alligator weed	<i>Alternanthera philoxeroides</i>	II
Order Fagales		
Family Casuarinaceae		
Australian pine	<i>Casuarina equisetifolia</i>	I
Order Liliales		
Family Pontederiaceae		
water hyacinth	<i>Eichhornia crassipes</i>	I
Order Myrtales		
Family Myrtaceae		
melaleuca	<i>Melaleuca quinquenervia</i>	I
Order Poales		

Common Name	Species Name	Class
Family Poaceae		
torpedo grass	<i>Panicum repens</i>	I
Order Sapindales		
Family Anacardiaceae		
Brazilian pepper	<i>Schinus terebinthifolius</i>	I
Family Sapindaceae		
carrotwood	<i>Cupaniopsis anacardioides</i>	I
Order Poales		
Family Typhaceae		
southern cattail	<i>Typha domingensis</i>	problem

B.4 /- Arthropod Control Plan

Spatial data (e.g. shapefiles) for the boundaries of the aquatic preserve have been made accessible to the appropriate mosquito control district. The aquatic preserve is deemed highly productive and environmentally sensitive. As per DEP policy since 1987, aerial adulticiding is not allowed, but larviciding and ground adulticiding (truck spraying in public use areas) is typically allowed. Mosquito control plans temporarily may be set aside under declared threats to public or animal health, or during a Governor's Emergency Proclamation. Mosquito control plans are typically proposed by local mosquito control agencies when they desire to treat on public lands.

B.5 / Archaeological and Historical Sites Associated with the Terra Ceia Aquatic Preserve

The list below was derived from shapefiles obtained from the Florida Department of State, Division of Historical Resources on January, 12, 2026, and are within the boundaries of Terra Ceia Aquatic Preserve, including the upland islands within its legal description, except Portovant Mound. These sites total 136 acres.

Site ID	Site Name	Description	Location
HI11604	Bob Graham Sunshine Skyway Bridge	Built in 1987.	In TCAP.
MA00013	HARBOR KEY 1	Human remains noted at site	Uplands.
MA00014	HARBOR KEY 2	Prehistoric burial mound(s)	In TCAP.
MA00015	HARBOR KEY 3	Prehistoric midden(s)	In TCAP.
MA00019	SNEAD ISLAND 2	Campsite (prehistoric)	Uplands.
MA00020	SNEAD ISLAND 3	Land-terrestrial	Uplands.
MA00041	NN	Prehistoric shell midden	In TCAP.
MA00042	NN	Prehistoric shell midden	Uplands.
MA00043	NN	Subsurface features are present	Uplands.
MA00076	NN	Prehistoric shell midden	In TCAP.
MA00077	NN	Prehistoric shell midden	In TCAP.
MA00078	NN	Prehistoric shell midden	In TCAP.
MA00079	KENNEDY MOUND	Prehistoric midden(s)	In TCAP.
MA00080	NN	Prehistoric midden(s)	Uplands.
MA00081	NN	Subsurface features are present	Uplands.
MA00083	MADIRA BICKEL MOUND	Archaeological District	Uplands.
MA00083A	TERRA CEIA, ABLE SHELL MIDDEN	Habitation (prehistoric)	Uplands.
MA00083B	MADIRA BICKEL MOUNDS	Platform mound (prehistoric)	Uplands.
MA00083C	TERRA CEIA, PRINE MOUND	Prehistoric burial mound(s)	Uplands.
MA00084	SNEAD ISLAND IV	Campsite (prehistoric)	Uplands.
MA00086	NN	Prehistoric shell midden	Uplands.
MA00133	TERRY 1	Habitation (prehistoric)	Uplands.
MA00134	TERRY 2	Campsite (prehistoric)	Uplands.

Site ID	Site Name	Description	Location
MA00135	TERRY 3	Artifact scatter-low density (< 2 per sq meter)	Uplands.
MA00147	HELLS HALFACRE 1	Prehistoric shell midden	In TCAP.
MA00148	HELLS HALFACRE 2	Prehistoric shell midden	Uplands.
MA00149	HELLS HALFACRE 3	Prehistoric shell midden	In TCAP.
MA00150	NORTHEAST HEAD	Campsite (prehistoric)	Uplands.
MA00151	KERSEY MIDDEN	Prehistoric shell midden	Uplands.
MA00152	MOSES HOLE ROADSIDE MIDDEN 1	Prehistoric shell midden	Uplands.
MA00155	OAKTREE HAMMOCK	Prehistoric shell midden	In TCAP.
MA00156	MOSES HOLE EXIT CANAL MIDDEN	Prehistoric shell midden	In TCAP.
MA00157	CAMPSIDE MIDDEN	Prehistoric shell midden	Uplands.
MA00158	HANDAXE	Prehistoric midden(s)	In TCAP.
MA00159	CLAMBAR HAMMOCK	Prehistoric shell midden	In TCAP.
MA00160	WILLIAMS BAYOU 1	Prehistoric shell midden	In TCAP.
MA00161	WILLIAMS BAYOU 2	Prehistoric shell midden	In TCAP.
MA00162	WILLIAMS BAYOU 3	Prehistoric shell midden	Uplands.
MA00163	TERRA CEIA RIVER 1	Prehistoric shell midden	Uplands.
MA00164	TERRA CEIA RIVER 2	Prehistoric shell midden	Uplands.
MA00165	TERRA CEIA RIVER 3	Prehistoric shell midden	Uplands.
MA00166	TERRA CEIA RIVER 4	Prehistoric shell midden	Uplands.
MA00167	TERRA CEIA RIVER 5	Prehistoric shell midden	Uplands.
MA00168	DEVILS ELBOW	Prehistoric shell midden	Uplands.
MA00170	BURGER FILL	Prehistoric shell midden	Uplands.
MA00172	HELLS HALFACRE 4	Prehistoric shell midden	In TCAP.
MA00173	KNOTT 1	Historic refuse / dump	Uplands.
MA00174	KNOTT 2	Prehistoric shell midden	Uplands.
MA00175	KNOTT 3	Prehistoric shell midden	Uplands.
MA00176	KNOTT 4	Prehistoric shell midden	Uplands.
MA00177	KNOTT 5	Prehistoric shell midden	Uplands.
MA00178	KNOTT 7	Prehistoric shell midden	In TCAP.
MA00179	KNOTT 8	Prehistoric shell midden	In TCAP.
MA00276	WILLIAMS BAYOU 4	Prehistoric shell midden	Uplands.
MA00277	WILLIAMS BAYOU 5	Campsite (prehistoric)	Uplands.
MA00278	WILLIAMS BAYOU 6	Prehistoric shell midden	Uplands.
MA00279	WILLIAMS BAYOU 7	Campsite (prehistoric)	Uplands.
MA00280	WILLIAMS BAYOU 8	Prehistoric shell midden	Uplands.
MA00281	WILLIAMS BAYOU 9	Prehistoric shell midden	In TCAP.
MA00282	ABEL ROAD 1	Prehistoric shell midden	Uplands.
MA00283	ABEL ROAD 2	Prehistoric shell midden	Uplands.
MA00284	DOUBLE POND	Prehistoric shell midden	Uplands.

Site ID	Site Name	Description	Location
MA00285	TERRA CEIA BAYOU	Prehistoric shell midden	Uplands.
MA00286	SPRING ROAD	Prehistoric shell midden	Uplands.
MA00287	SYLVAN	Campsite (prehistoric)	Uplands.
MA00288	CHICKEN SNAKE	Prehistoric shell midden	Uplands.
MA00289	PALM	Prehistoric shell midden	Uplands.
MA00290	ALDERMAN BAYOU 1	Prehistoric shell midden	Uplands.
MA00291	ALDERMAN BAYOU 2	Prehistoric shell midden	Uplands.
MA00292	JOHNSON FLAT 1	Campsite (prehistoric)	Uplands.
MA00294	BIGFORD 1	Prehistoric shell midden	Uplands.
MA00295	BIGFORD 2	Prehistoric shell midden	Uplands.
MA00298	FROG BANK 2	Prehistoric shell midden	Uplands.
MA00299	FROG BANK 3	Prehistoric shell midden	Uplands.
MA00302	MARIPOSA KEY	House	In TCAP.
MA00311	HARBOR KEY ARCHAEOLOGICAL COMPLEX	Archaeological District	In TCAP.
MA00460	TERRA CEIA METHODIST EPISCOPAL CHUR	House of worship	Uplands.
MA00461	POLLARD, R D HOUSE	Private residence	Uplands.
MA00462	ROBINSON, T R HOUSE	Private residence	Uplands.
MA00490	VILLAGE IMPROVEMENT ASSOCIATION	Lodge (club) building	Uplands.
MA00495	DOLE, E R HOUSE	Private residence	Uplands.
MA00516	HALLOCK, WILLIAM R HOUSE	Private residence	Uplands.
MA00517	FOGARTY, WILLIAM HENRY	Private residence	Uplands.
MA00524	N R ANDERSON HOUSE	Private residence	Uplands.
MA00525	TILLET, JOSEPH HOUSE	Private residence	Uplands.
MA00568	CHARLES BOYETTE HOUSE	Private residence	Uplands.
MA00582	1520 BAYSHORE DR	Private residence	Uplands.
MA00716	PRESTON	Prehistoric shell midden	Uplands.
MA00719	JOE BAY 1	Prehistoric shell scatter	Uplands.
MA00720	JOE BAY 2	Campsite (prehistoric)	Uplands.
MA00722	WAGGONER	Prehistoric shell scatter	Uplands.
MA00723	TRACIE	Prehistoric shell scatter	Uplands.
MA00724	CLARENDON	Campsite (prehistoric)	Uplands.
MA00725	BRADLEY	Prehistoric shell midden	Uplands.
MA00734	BANK OF TERRA CEIA	Bank	Uplands.
MA00912	WAGGONER	Campsite (prehistoric)	Uplands.
MA00914	LOST POINT	Single artifact or isolated find	Uplands.
MA00915	BRADLEY	Campsite (prehistoric)	Uplands.
MA00916	TRACIE	Campsite (prehistoric)	Uplands.

Site ID	Site Name	Description	Location
MA00917	JOE BAY NO. 1	Campsite (prehistoric)	Uplands.
MA00919	Portovant Mound Site		Near TCAP.
MA00997	FIELDEDGE	Campsite (prehistoric)	Uplands.
MA00998	SAFE	Campsite (prehistoric)	Uplands.
MA00999	SALTERN	Campsite (prehistoric)	Uplands.
MA01000	HUBER HAMMOCK	Campsite (prehistoric)	Uplands.
MA01106	BURNT PINE	Campsite (prehistoric)	Uplands.
MA01107	PINE SIGH	Campsite (prehistoric)	Uplands.
MA01108	EASLEY	Campsite (prehistoric)	Uplands.
MA01109	CLAMBAR BAYOU	Campsite (prehistoric)	Uplands.
MA01111	JAY ISLAND	Homestead	Uplands.
MA01136	ANHINGA ISLAND	Campsite (prehistoric)	Uplands.
MA01137	EMERSON POINT	Historic burial(s)	Uplands.
MA01237	BOOTS POINT MIDDEN	Prehistoric shell midden	Uplands.
MA01241	HALEY HOUSE	Private residence	Uplands.
MA01262	Gillette Picnic Grounds	Land-terrestrial	Uplands.
MA01264	Alfonso	Land-terrestrial	Uplands.
MA01265	Durrance	Homestead	Uplands.
MA01266	Hornsby	Homestead	Uplands.
MA01267	Barn	Agriculture/Farm structure	Uplands.
MA01268	Swamp Spot	Campsite (prehistoric)	In TCAP.
MA01269	Taylor	Campsite (prehistoric)	Uplands.
MA01275	Jones/Petty Dump	Homestead	Uplands.
MA01278	McLean/McLaughlin Packinghouses	Building remains	Uplands.
MA01279	Haley Rental #1	Homestead	Uplands.
MA01280	Terra Ceia Island Farms Packing House	Land-terrestrial	Uplands.
MA01281	Haley Rental #2	Homestead	Uplands.
MA01282	Abel Road West	Campsite (prehistoric)	Uplands.
MA01283	Abel Road East	Homestead	Uplands.
MA01284	Abel Dump	Homestead	Uplands.
MA01285	McLaughlin's Quarters	Homestead	Uplands.
MA01286	Williams Dump	Homestead	Uplands.
MA01287	Williams/Robertson Homestead	Homestead	Uplands.
MA01453	Clorox	Other	Uplands.
MA01462	Lyons Scatter	Campsite (prehistoric)	Uplands.
MA01503	1631 Center Road	Private residence	Uplands.
MA01569	780 Terra Ceia Road	Private residence	Uplands.
MA01793	Old Sunshine Skyway Bridge	Built in 1954.	In TCAP.

Site ID	Site Name	Description	Location
MA01798	Bob Graham Sunshine Skyway Bridge	Built in 1987.	In TCAP.
MA01802	Boots Point Unmarked Human Burials	Prehistoric burial(s)	Uplands.
MA01824	US-19 NB (SR-55) / Terra Ceia Bay	Built in 1969.	In TCAP.
MA02163	Sunshine Skyway Bridge Monument	Monument, Marker, Statue	Uplands.
PI00135	OLD SUNSHINE SKYWAY BRIDGE	Built in 1954.	In TCAP.
PI11962	Bob Graham Sunshine Skyway Bridge	Built in 1987.	In TCAP.

Appendix C / Public Involvement

C.1 / Advisory Committee

C.1.1 / List of members and their affiliations

C.1.2 / Florida Administrative Register Posting

C.1.3 / Meeting Summary

C.2 / Formal Public Meeting

The following Appendices contain information about the Formal Public Meeting which was held in order to obtain input from the public about the Terra Ceia Aquatic Preserve Draft Management Plan.

C.2.1 / Florida Administrative Register Posting

C.3.2 / Advertisement Flyer

C.2.3 / Summary of the Formal Public Meeting

Appendix D / Program Budgets

D.1 / Budget Table

Statewide priorities for all aspects of land management are evaluated each year as part of the process for developing the ORCP's annual legislative budget requests. When preparing these annual requests, ORCP considers the needs and priorities of the entire Aquatic Preserve Program, other ORCP programs, and the projected availability of funding from all sources during the upcoming fiscal year. In addition to annual legislative appropriations, the ORCP pursues supplemental sources of funds and staff resources wherever possible, including grants, volunteers and partnerships with other entities. ORCP's ability to accomplish the specific objectives identified in the plan will be determined largely by the availability of funds and staff for these purposes, which may vary from year to year. Consequently, the target planning period and estimated costs may need to be adjusted during the ten-year management planning cycle. Dollar figures in red font and *italics* indicate funding not currently available.

Issue \ Goal \ Objective	Measures	Planning Period	Total Expenses
Issue 1: Water Resources			
Goal 1: Improve understanding of water quality status and trends in the aquatic preserve.			
Objective 1: Maintain a strategic long-term water quality monitoring program that includes biotic and abiotic parameters, compile analyzed data to evaluate water quality status and trends and develop a list of priority actions. Compile data, determine long-term water quality status and trends and identify gaps or redundancies.	As data collection advances, upload data to SEACAR annually. Conduct reviews of the status and trends of water quality in the aquatic preserve annually.	continual	\$500
Objective 2: Ensure water quality data are available to the public and other agencies.	As data is generated, QA/QC and submit data to public databases (whether through WIN, SEACAR, WaterAtlas, etc.).	continual	\$400
Objective 3: Ensure the sustainability of habitats and wildlife of concern through the development of a tiered approach to water quality monitoring that integrates biological assessments and multiple tools to define a core set of baseline indicators. Such indicators may explain causes and/or sources of any impairment within the aquatic preserve.	Submit monitoring data to collaborative databases of all concerned species and habitats. Create a report showing biotic monitoring and water quality monitoring side-by-side.	continual	\$2,000

Issue \ Goal \ Objective	Measures	Planning Period	Total Expenses
Objective 4: Identify influencing factors contributing to water quality degradation and provide support and collaboration to prevent degradation and improve conditions when possible.	Work in tandem with other state and federal agencies to review the list of parameters of concern and threshold criteria. Track participation in regional workshops and other decision-making processes for activities within the aquatic preserve.	continual	\$800
Objective 5: Identify specific and emerging water quality issues related to nutrients, pollution, and environmental contaminants, and with coordination from other agencies, develop a response strategy to these issues.	Identify point and non-point sources of pollutants and turbidity. Attend local workshops and meetings to support TMDL and BMAP efforts. Attend local events to educate audiences on water quality issues and strategies in place to improve water quality.	continual	\$1,200
Goal 2: Maintain and improve water quality of the aquatic preserve.			

Issue \ Goal \ Objective	Measures	Planning Period	Total Expenses
Objective 1: Facilitate knowledge and understanding of how activities in the watershed impact the aquatic preserve.	Meet with decision-makers at the local and municipal levels once a year about the importance of the aquatic preserve's resources with specific focus on how upland uses can affect the quality, both ecological and aesthetic, of the aquatic preserve. Coordinate and/or participate in public presentations each year, including outreach events where staff can provide information to the public regarding how to reduce negative impacts on water quality.	continual	\$1,000
Objective 2: Implement research, restoration, and enhancement projects throughout the aquatic preserve that focus on improving water quality.	Regularly verify that water quality data is available to the public and decision makers.	continual	\$1,500
Objective 3. Support acquisition of lands that would serve to protect or enhance the biological, aesthetic or scientific values of the preserves.	Maintain a dialogue with federal, state, local and nonprofit conservation entities regarding potential conservation lands in the TCAP watershed.	continual	\$800

Issue \ Goal \ Objective	Measures	Planning Period	Total Expenses
Objective 4: Reduce water quality impacts caused by stormwater and septic system sources within the watershed.	As requested, provide letters of support for utility managers' efforts for septic-to-sewer conversions. Serve as a connection with local municipalities for awareness of resilience grants and other funding opportunities for sewer connectivity and upgrades. Provide letters of support for stormwater and wastewater retrofit projects. Engage in and track local education and outreach events to spread awareness of watershed health, impacts, available programs to improve the watershed health, and what the public can do to help.	continual	\$1,000
Issue 2: Submerged Resources			
Goal 1: Monitor, maintain and restore submerged natural resources.			

Issue \ Goal \ Objective	Measures	Planning Period	Total Expenses
Objective 1: Maintain an inventory of the current location, composition and abundance of the various habitat types and associated fauna and flora.	Participate in appropriate habitat monitoring and restoration working groups Maintain a library of additional maps and other data collected through special projects. Maintain and update current GIS layers of habitat types found within the aquatic preserve. Maintain and update a list of and information about species identified during field activities, and other scientific studies and reports.	continual	\$10,000
Objective 2: Identify current and potential future threats and impacts to the natural communities within aquatic preserve.	In coordination with partners, create a comprehensive monitoring plan complete with gap analysis, sampling timeline and execution strategy. Maintain a GIS database of degradation hotspots. Track participation in appropriate subject matter meetings/workshops to ensure identified threats and impacts remain topics of focus.	continual	\$1,200

Issue \ Goal \ Objective	Measures	Planning Period	Total Expenses
Objective 3: Maintain and enhance the extent, quality and abundance of submerged and emergent habitats while taking into consideration existing habitat and wildlife use.	Develop a list of appropriate habitat restoration, conservation and enhancement projects within the aquatic preserve (i.e. a habitat restoration plan). Re-evaluate the list of restoration, conservation and enhancement projects on a regular basis. Track location and success rates of implemented restoration, conservation, mitigation and enhancement projects.	continual	\$1,200
Objective 4: Improve community understanding of submerged resources and factors that impact the aquatic preserve by improving data dissemination and accuracy.	Compile and upload aquatic preserve submerged resource data into science-based databases, such as SEACAR, annually. Share annual status and trends of the aquatic preserve (e.g. SEACAR managed area reports). Track number of access points with signage and exhibits about conservation of seagrass, and other habitats when and where appropriate.	continual	\$1,500
Objective 5: Track and document factors such as sea level rise, increases in sea surface temperature, storm frequency and intensity and alterations in hydrologic cycles as they pertain to the aquatic preserve's submerged and coastal resources.	Compile data to be shared with collaborative science participants as updates are available.	continual	\$1,200
Goal 2: Improve protection and public understanding of submerged natural resources.			

Issue \ Goal \ Objective	Measures	Planning Period	Total Expenses
Objective 1: Promote the importance of coastal habitats by generating a variety of informational outlets that target recreational, commercial and scientific user groups operating in the aquatic preserve.	Produce and acquire brochures and signage informing users of the importance of seagrass habitat, hardbottom habitat, water quality and good boating practices that can be used to prevent habitat destruction. Install, repair, and replace signs as necessary. Track location and frequency of outreach events. Track education and outreach measures provided to rental companies.	continual	\$3,000
Objective 2: Reduce physical damage (e.g., propeller scarring, anchor drags) to the aquatic preserve submerged resources through management actions and research projects.	Produce and / or utilize partner created publications (e.g., local Audubon boater's guides) to promote awareness and behavior changing stewardship within the aquatic preserve. Track locations and quantities of educational material distribution. Identify the effectiveness of management strategies in mitigating resource damage and making recommendations for future action.	continual	\$2,000

Issue \ Goal \ Objective	Measures	Planning Period	Total Expenses
Objective 3: Coordinate with DEP/WMD regulatory and compliance staff, and support law enforcement to reduce or prevent impacts to water quality, natural and cultural resources, and wildlife.	Attend or facilitate meetings with law enforcement to establish positive working relationships. Maintain ongoing communication with local law enforcement and adjacent land managers to understand, prevent, and deter potential threats to the resources. Provide at least one training per year for regulatory staff about aquatic preserves and/or submerged resource issues.	continual	\$2,500
Objective 4: Establish processes to track and predict environmental changes to the aquatic preserve's submerged resources to guide adaptive management approaches.	Compile data to be shared with collaborative science participants as updates are available. Produce When appropriate, produce technical reports on environmental changes in the state of the aquatic preserve as appropriate. Share or present model findings at regional workshops and with other appropriate groups throughout the duration of the plan to ensure risks to resources are communicated and are acted upon appropriately.	continual	\$1,000
Issue 3: Shoreline and Island Management			
Goal 1: Protect and restore natural shorelines.			

Issue \ Goal \ Objective	Measures	Planning Period	Total Expenses
Objective 1: Enhance degraded or altered shorelines to maintain and improve water quality, habitats and address shoreline erosion as appropriate for each site.	Track the number of volunteer hours coordinated. Track amount of restored habitat. An up-to-date database of technical information and case studies is created and maintained.	continual	\$1,500
Objective 2: Increase awareness of the ecological and protective importance of nature-based shorelines.	Information on shoreline importance included in event displays where appropriate. Conduct presentations to local groups. Provide trainings for regulatory staff about shoreline issues.	continual	\$1,000
Goal 2: Retain habitat and ecosystem functions of natural and dredged material islands.			
Objective 1: Enhance degraded or altered islands to maintain and improve water quality, habitats, and address shoreline erosion as appropriate for each site.	Track management effort for restored, maintained and enhanced habitats, including volunteer hours coordinated, staff hours, and acreage/linear feet of habitat.	continual	\$2,000
Objective 2: Maintain sustainable use on islands.	Ongoing communication with local law enforcement and regulatory agencies is maintained to understand, prevent, and deter potential threats to the resources.	continual	\$1,000
Issue 4: Listed and Priority Species Management			
Goal 1: Protect listed and priority species and their key habitats within the aquatic preserve.			

Issue \ Goal \ Objective	Measures	Planning Period	Total Expenses
Objective 1: Establish, implement and build upon existing routine biological monitoring programs for essential habitats, and rare and listed species.	Create a regularly updated species list for the aquatic preserve, drawing from partners who inventory specific taxa, as well as work done by TBAP staff. Work with other state and federal agencies to develop a database of all species of concern. Use water quality data and other indicators to create an approach to protect and ensure sustainability.	continual	\$800
Objective 2: Improve understanding of bird populations (migratory and year-round residents) that use the aquatic preserve.	Reports by monitoring entities will be reviewed for bird population trends and habitat usage in the aquatic preserve as needed.	continual	\$800
Objective 3: Reassess the status of fisheries within the aquatic preserve.	An updated fisheries assessment is conducted within the aquatic preserve.	continual	\$500
Objective 4: Monitor and assess diamondback terrapin populations within the aquatic preserve.	Seasonal diamondback terrapin data is reviewed each year.	continual	\$500

Issue \ Goal \ Objective	Measures	Planning Period	Total Expenses
Objective 5: Annually evaluate status and trends of wading and diving bird populations.	Potential nesting islands within the aquatic preserve are investigated annually. Colonial wading bird surveys data are received from monitoring partners on a regular basis. Bird fatality data from fishing line entanglement is submitted to FWC. Coordinate annually with partners before active nesting season.	continual	\$2,000
Objective 6: Improve public understanding of colonial wading birds and nesting island habitat.	Provide current status and trends information for the general public. Keep track of volunteer hours.	continual	\$1,500

Issue \ Goal \ Objective	Measures	Planning Period	Total Expenses
Objective 7: Preserve and improve bird island habitat and function.	Document cleanup information such as trash removed from nesting islands, number of volunteers participating in cleanups, number of working partnerships, etc. Report wildlife harassment activity to appropriate law enforcement personnel. Provide comments regarding resources to Environmental Resource Permit (ERP) staff related to current and ongoing DEP permit applications, as needed. Coordinate with managing agencies on proposed public use activities within range of bird islands. Informational buoys are installed to buffer key bird islands. Document hours worked on maintained or restored nesting islands.	continual	\$15,000
Issue 5: Non-native and Invasive Species			
Goal 1: Reduce the impacts of invasive and nuisance species in the aquatic preserve.			

Issue \ Goal \ Objective	Measures	Planning Period	Total Expenses
Objective 1: Identify the presence and threat of invasive and/or non-native species.	Maintain a list and locations of nuisance, non-native and invasive species found within the aquatic preserve. Track number of educational efforts (presentations, brochures, signage, etc.) on the threat of non-native and invasive species.	continual	\$1,200
Objective 2: Reduce the abundance and diversity of invasive and non-native species within the aquatic preserve.	Conduct routine invasive species removal and track efforts, including staff time dedicated to working with government agencies, non-profit organizations, and community groups to reduce invasive species.	continual	\$2,000
Issue 6: Protection of Cultural Resources			
Goal 1: Promote the protection of cultural and historical resources within the aquatic preserve.			
Objective 1: Assess the condition of recorded cultural and historical resources within the aquatic preserve.	Maintain a log of the sites visited, the condition of those sites, and any new sites discovered during other management activities. The number of sites visited, their condition, any restoration or protection efforts, and number of invitations to professional archaeologists will be included.	continual	\$2,400
Objective 2: Improve public understanding of archaeological and cultural resources associated with the aquatic preserve.	The number of educational presentations, signs, press releases, and social media posts about cultural or historical resources will be reported. All these activities will be done without the disclosure of sensitive sites to help prevent degradation and looting.	continual	\$1,500

Issue \ Goal \ Objective	Measures	Planning Period	Total Expenses
Issue 7: Marine Debris			
Goal 1: Reduce debris at the source.			
Objective 1: Identify implications to the natural resources of the various types of marine debris occurring within the aquatic preserve.	Collect and analyze survey data for marine debris removal efforts within the aquatic preserve managed areas for the duration of the management plan.	continual	\$2,000
Objective 2: Reduce marine debris through increased awareness, including the impacts of marine debris.	Identify access points needing signage. Information on marine debris is available at appropriate identified points of access/use of the aquatic preserve. Track number of outreach events per year which provide information on marine debris.	continual	\$2,500
Objective 3: Seek methods to reduce debris that enters the aquatic preserve.	Communicate updated information on trash receptacles, etc. is maintained in TBAP's public access geodatabase.	continual	\$1,500
Goal 2: Remove debris from the aquatic preserve.			
Objective 1: Coordinate and collaborate in debris removal activities, including derelict vessel removal and derelict trap removal.	Track removed debris data, including types of debris, accumulation rate, and location and report, such as on FWC's marine debris tracker. The manager or staff will obtain Resource Advisor Training to reduce resource impacts during cleanups or other management activities.	continual	\$1,500
Issue 8: Low-Impact Public Use and Access			
Goal 1: Enhance public access and public use experiences in the aquatic preserve.			

Issue \ Goal \ Objective	Measures	Planning Period	Total Expenses
Objective 1: Maintain and enhance sustainable public access.	Produce a map with potential launch sites, proposed improvements and paddling trails that can be shared with managing agencies.	2026-2027	\$400
Objective 2: Support low impact recreational opportunities in the aquatic preserve.	Develop educational methods (presentations, brochures, website, signage, etc.) that can be shared with ecotour operators, adjacent land managers and others. Observe local resident and visitor demographic trends to determine the need for non-English versions of these media products. Post and distribute educational materials directly to the public.	continual	\$1,000
Issue 9: Education and Outreach			
Goal 1: Increase public involvement, awareness and knowledge of the aquatic preserve.			
Objective 1: Promote awareness of the aquatic preserve and its significance.	Track dates and locations of events and attendance at events.	continual	\$5,000
Objective 2: A sense of stewardship is developed among the public by providing volunteer opportunities.	Track number of volunteers and their hours opportunities, including internships.	continual	\$5,000
Issue 10: Episodic Events such as Tropical Weather Events, Oil Spills, Red Tide events, etc.			
Goal 1: Minimize negative impacts to the aquatic preserve from episodic events.			

Issue \ Goal \ Objective	Measures	Planning Period	Total Expenses
Objective 1: Maintain hurricane and other disaster response plans to limit damage, facilitate impact assessments and conduct debris and vessel removals.	The hurricane plan for the aquatic preserve is revised annually, and other event response plans are revised as needed. Event response training sessions are conducted with other programs such as the Clean Boating Program, Area Contingency Planning, FWC Marine Debris and Derelict Vessel programs, etc. for other resource managers and facility operators.	continual	\$3,000
Objective 2: Support other agencies during and after events such as providing monitoring data, manpower, etc., as resources and staffing allows.	Resource maps and other detailed aquatic preserve specific information are provided as needed to other agencies to assist with vessel removals. Maps of marine debris and other impacts are provided as needed to other agencies. Communicate lessons learned with other aquatic preserves and other agencies.	continual	\$15,000

Large, beneficial projects, outside the current capacity of Tampa Bay Aquatic Preserves office's funding and staffing, are identified in Appendix D.3, in case opportunities become available to support those projects in the ten-year span of this management plan.

D.2 / Budget Summary Table

Program Area	Total Expense
Water resource	\$9,200
Submerged habitat	\$23,600
Shoreline and island habitat	\$5,500
Listed species	\$21,100
Invasive species	\$3,200
Cultural resource	\$3,900
Marine debris	\$7,500
Public use and access	\$1,400
Education and outreach	\$10,000
Episodic event response	\$18,000

D.3 / Additional Management Objectives

While the primary focus of this plan is on objectives that can be achieved with present program resources, TBAP, by nature, is opportunistic in seeking to leverage additional resources to expand its positive impact on the preserve. To this end, the following are some additional objectives to be considered if additional resources allow.

Comprehensive Submerged Habitat Inventory

While resource inventories are a goal of all marine protected areas, the expense and logistics required for comprehensive mapping of submerged resources make these goals rarely achievable. Because the shallow submerged resources of TCAP are so diverse, and because of existing and increasing impacts to submerged lands around the state, it would be useful to know more about the distribution and temporal dynamics of submerged habitats in TCAP.

A challenge that has plagued previous attempts to characterize the preserve's submerged habitats on a large scale is the difficulty in mapping these habitats without direct observation. Aerial photography, even that attempted by TBAP staff from low-flying helicopters, has proven difficult to distinguish between seagrass and large patches of drift algae. Also, low-altitude observation and photography of areas with known hardbottom habitat has often failed to resolve the full extent of that habitat because

of sand veneers over rock, lower contrast than seagrass next to sand, etc. Likewise, high-definition sidescan sonar, can identify some areas with some relief, but it often draws little distinction between limestone substrate and adjacent unconsolidated sediments.

Unknown temporal elements also may alter hardbottom distribution, not because of movement of rock, but because of shoaling of unconsolidated sediments over low-profile rock. A good example is the hardbottom monitoring transect set up off Mariposa Key. Following the 2024 hurricane season, much of the previously-exposed rock appears to have been covered by sand. The likelihood that different areas of rocky substrate, by virtue of its relief or orientation to sediment transport dynamics, may be covered and uncovered at different intervals may also influence the epifauna and infauna inhabiting that rock, but those dynamics have not been studied beyond anecdotal observations.

A comprehensive strategy to map the submerged habitats of the preserve may involve the aforementioned components of aerial interpretation and acoustic mapping, but direct or georeferenced video appears to be the only definitive mapping method for local conditions. Because of the program resources needed for this approach, prioritizing the mapping of shallow resources (e.g., less than 2 meters depth) may be a more realistic goal.

Submerged Cultural Resource Inventory

As mentioned in the plan, the rich archaeological landscape above the water adjacent to the preserve points to the likelihood that considerable unknown archaeological resources exist within the preserve boundary. A comprehensive survey for these submerged sites requires expertise and manpower beyond the scope of the TBAP program. TBAP could seek funding and/or academic partnerships to produce probability models for submerged sites from known upland sites. These models could help direct in-the-water efforts to locate submerged cultural resources. Perhaps a survey for cultural resources could be piggybacked upon efforts to map submerged natural resources.

Hardbottom Monitoring Add-ons

The goal of developing the present hardbottom monitoring program for benthos and nekton is to produce a ‘bare-bones’ program that can be sustained over the long term with program resources. That does not preclude TBAP from seeking to pursue additional components that could provide more specialized, and complementary, information without placing a burden on the core monitoring protocols being developed. An example of this could be a recruitment study, possibly done as a graduate student project, that would use recruitment tiles to look at seasonal settlement of corals and other benthic species. Another might be to complement the basic video monitoring for fish counts with the much more tech-intensive setup to do stereogrammetric video that would allow quantification of fish size classes.

An additional project that would provide information for true avoidance and mitigation of hardbottom impacts would be a study of the endolithic community that nestles, and sometimes, bores into the rock substrate. This would require careful decalcification of rock samples to yield taxa like dodecacerid and flabellagerid polychaetes, lithophagid bivalves, etc., that likely make up an unappreciated addition to

the species richness and biomass of the known fauna of the preserve's extensive hardbottom acreage.

While motile taxa like demersal plankton are increasingly recognized as an important energy flow factor on coral reefs, these are poorly understood on hardbottom like that of TCAP. It would be interesting to study the plankton swarms of the area, and emergence trapping of demersal taxa could shed some light on the patchiness and fluxes of a considerable, but highly-motile, biomass component.

Continuous Water Monitoring Stations

When TBAP set up continuous monitoring datasonde platforms at the mouth of Bishop Harbor and in Frog Creek near the Bishop Harbor Road Bridge, the idea was to gather baseline data from one of the least developed embayments and one of the least developed tidal creek systems in the Tampa Bay area. At that time, TBAP had more staff resources and had technical assistance from local hydrological scientists to set up and maintain the stations on a shoestring budget. When the office reopened in 2012, after a temporary closure due to budget constraints, that capacity was reduced, so the stations were not re-established. While some instrumentation has been added to Bishop Harbor through collaboration with USF, the goal of re-establishing the two original stations is still worthwhile. Additionally, a third station, originally proposed with the others, at the mouth of the Frog Creek/Terra Ceia River system, could give useful information, complementary to the upper Frog Creek station, on salinity wedges and their response to rainfall, tides, etc. If there were an effort to reestablish these stations, TBAP should consult with hydrological modelers to determine the appropriate configurations for maximizing useful data.

Enhanced Passive Public Access

While conservation is the primary goal of TBAP's resource management program, providing some passive public access creates goodwill and promotes stewardship with users of the preserve through the appreciation gained through their experiences. It also helps the program meet its conservation goals by directing passive access to areas that are less likely to disturb nesting birds, archaeological sites and other sensitive resources. TBAP has considered a paddling trail along the Frog Creek/Terra Ceia River system that would provide guidance for paddlers, along an interesting salinity gradient, through a course that presently requires detailed local knowledge. Other opportunities exist, as well. Such water-based trails would require close coordination with the Florida Park Service and/or other local managers of adjacent public lands to ensure safe, convenient launching of the watercraft and adequate interpretation of the features along the route. In addition to physical paddling trail markers, virtual trails, accessed online, may also be used.

Appendix E / Other Requirements

E.1 / Acquisition and Restoration Council Management Plan Compliance Checklist

Land management Plan Compliance Checklist: Required for State-owned conservation lands over 160 acres

Section A: Acquisition Information Items

Section B: Use Items

*The following taken from 253.034(10) is not a land management plan requirement; however, it should be considered when developing a land management plan: The following additional uses of conservation lands acquired pursuant to the Florida Forever program and other state-funded conservation land purchase programs shall be authorized, upon a finding by the Board of Trustees, if they meet the criteria specified in paragraphs (a)-(e): water resource development projects, water supply development projects, storm-water management projects, linear facilities and sustainable agriculture and forestry. Such additional uses are authorized where: (a) Not inconsistent with the management plan for such lands; (b) Compatible with the natural ecosystem and resource values of such lands; (c) The proposed use is appropriately located on such lands and where due consideration is given to the use of other available lands; (d) The using entity reasonably compensates the titleholder for such use based upon an appropriate measure of value; and (e) The use is consistent with the public interest.

Section C: Public Involvement Items

Section D: Natural Resources

Section E: Water Resources

Section F: Historical Archaeological and Cultural Resources

****While maps of Native American sites should not be included in the body of the management plan, the DSL urges each managing agency to provide such information to the Division of Historical Resources for inclusion in their proprietary database. This information should be available for access to new managers to assist them in developing, implementing and coordinating their management activities.**

Section G: Facilities (Infrastructure, Access, Recreation)

Section H: Other/ Managing Agency Tools

***** = The referenced inventories shall be of such detail that objective measures and benchmarks can be established for each tract of land and monitored during the lifetime of the plan. All quantitative data collected shall be aggregated, standardized, collected, and presented in an electronic format to allow for uniform management reporting and analysis. The information collected by the DEP pursuant to s. 253.0325(2) shall be available to the land manager and his or her assignee.**

E.2 / Management Procedures for Archaeological and Historical Sites on State-Owned or Controlled Lands

(revised June 2021)

These procedures apply to state agencies, local governments, and non-profits that manage state-owned properties.

A. Historic Property Definition

Historic properties include archaeological sites and historic structures as well as other types of resources. Chapter 267, Florida Statutes states: “ ‘*Historic property*’ or ‘*historic resource*’ means any prehistoric district, site, building, object, or other real or personal property of historical, architectural, or archaeological value, and folklife resources. These properties or resources may include, but are not limited to, monuments, memorials, Indian habitations, ceremonial sites, abandoned settlements, sunken or abandoned ships, engineering works, treasure trove, artifacts, or other objects with intrinsic historical or archaeological value, or any part thereof, relating to the history, government, and culture of the state.”

B. Agency Responsibilities

Per Chapter 267, F.S. and state policy related to historic properties, state agencies of the executive branch must provide the Division of Historical Resources (Division) the opportunity to comment on any undertakings with the potential to affect historic properties that are listed, or eligible for listing, in the National Register of Historic Places, whether these undertakings directly involve the state agency, i.e., land management responsibilities, or the state agency has indirect jurisdiction, i.e. permitting authority, grants, etc. No state funds should be expended on the undertaking until the Division has the opportunity to review and comment on the undertaking. (267.061(2)(a))

State agencies must consult with the Division when, as a result of state action or assistance, a historic property will be demolished or substantially altered in a way that will adversely affect the property. State agencies must take timely steps to consider feasible and prudent alternatives to the adverse effect. If no feasible or prudent alternatives exist, the state agency must take timely steps to avoid or mitigate the adverse effect. (267.061(2)(b))

State agencies must consult with Division to establish a program to locate, inventory and evaluate all historic properties under ownership or controlled by the agency. (267.061(2)(c))

State agencies are responsible for preserving historic properties under their control. State agencies are directed to use historic properties available to the agency when that use is consistent with the historic property and the agency’s mission. State agencies are also directed to pursue preservation of historic properties to support their continued use. (267.061(2)(d))

C. Statutory Authority

The full text of Chapter 267, F.S. and additional information related to the treatment of historic properties is available at:

<https://dos.myflorida.com/historical/preservation/compliance-and-review/regulations-guidelines/>

D. Management Implementation

Although the Division sits on the Acquisition and Restoration Council and approves land management plans, these plans are conceptual and do not include detailed project information. Specific information for individual projects must be submitted to the Division for review and comment.

Managers of state lands must coordinate any land clearing or ground disturbing activities with the Division to allow for review and comment on the proposed project. The Division's recommendations may include, but are not limited to: approval of the project as submitted, recommendation for a cultural resource assessment survey by a qualified professional archaeologist, and modifications to the proposed project to avoid or mitigate potential adverse effects.

Projects such as additions or alterations to historic structures as well as new construction must also be submitted to the Division for review. Projects involving structures fifty years of age or older must be submitted to the Division for a significance determination. In rare cases, structures under fifty years of age may be deemed historically significant.

Adverse effects to historic properties must be avoided when possible, and if avoidance is not possible, additional consultation with the Division is necessary to develop a mitigation plan. Furthermore, managers of state property should make preparations for locating and evaluating historic properties, both archaeological sites and historic structures.

E. Archaeological Resource Management (ARM) Training

The ARM Training Course introduces state land managers to the nature of archaeological resources, Florida archaeology, and the role of the Division in managing state-owned archaeological resources. Participants gain a better understanding of the requirements of state and federal laws with regard to protecting and managing archaeological sites on state managed lands. Participants also receive a certificate recognizing their ability to conduct limited monitoring activities in accordance with the Division's Review Procedure, thereby reducing the time and money spent to comply with state regulations. Additional information regarding the ARM Training Course is available at:

<https://dos.myflorida.com/historical/archaeology/education/arm-training-courses/>

F. Matrix for Ground Disturbance on State Lands

The matrix is a tool designed to help streamline the Division's Review Procedure. The matrix allows state land managers to make decisions about balancing ground disturbance and stewardship of historic resources. The matrix establishes types of undertakings that are either minor or major disturbances and then guides the land manager to consult the Division, conduct ARM-trained project monitoring, or proceed with the project.

Additional information regarding the matrix is available at:

<https://dos.myflorida.com/historical/archaeology/education/dhr-matrix-for-ground-disturbance-on-state-lands/>

G. Human Remains Treatment

Chapter 872, *Florida Statutes* makes it illegal to willfully and knowingly disturb human remains. In the event human remains are discovered, cease all activity in the area that may disturb the remains. Leave the bones and nearby items in place. Immediately notify law enforcement or the local district medical examiner of the discovery and follow the provisions of Chapter 872, FS. Additional information regarding the treatment of human remains and cemeteries is available at:

<https://dos.myflorida.com/historical/archaeology/human-remains/>
<https://dos.myflorida.com/historical/archaeology/human-remains/abandoned-cemeteries/what-are-the-applicable-laws-and-regulations/>

H. Division of Historical Resources Review Procedure

Projects on state owned or controlled properties may submit projects to the Division for review using the streamlined State Lands Consultation Form. The form provides instructions to submit projects for review and outlines the necessary information for the Division to complete the review process. The State Lands Consultation Form and additional information about the Division's review process is available at:

<https://dos.myflorida.com/historical/preservation/compliance-and-review/state-lands-review/>

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Questions relating to the treatment of archaeological and historic resources on state lands should be directed to:

Compliance and Review Section
Bureau of Historic Preservation Division of Historical Resources
R. A. Gray Building
500 South Bronough Street
Tallahassee, FL 32399-0250

StateLandsCompliance@dos.myflorida.com

Phone: (850) 245-6333
Toll Free: (800) 847-7278
Fax: (850) 245-6435

E.3 / Letter of Compliance with County Comprehensive Plan

The final draft of the management plan will be submitted to the county for their review concurrently with the management plan's submission to ARC. The letter of compliance will be added after ARC approval.

E.4 / Division of State Lands Management Plan Approval Letter

This item will be added after ARC approval.



Terra Ceia Aquatic Preserve Management Plan – DRAFT
Florida Department of Environmental Protection
Office of Resilience and Coastal Protection
2600 Blair Stone Road, MS #235
Tallahassee, FL 32399
www.floridacoasts.org