

Sarasota Bay Estuary Program Five-Year Habitat Restoration Plan FY 2016 – FY 2020







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Prepared for Sarasota Bay Estuary Program



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Acronyms Used in Report

EFH Essential Fish Habitat

EPA Environmental Protection Agency

ESA Endangered Species Act

FAC Florida Administrative Code

FDEP Florida Department of Environmental Protection

FISH Florida Institute of Saltwater Heritage

FLUCFCS Florida Land Use, Cover and Forms Classification System

FY fiscal year

GIS Geographic Information Systems

ICW Intracoastal Waterway

N/E nuisance/exotic

NEP National Estuary Program

NMFS National Marine Fisheries Service

NOAA National Oceanic and Atmospheric Association

PID parcel identification

PPT parts per thousand

RESTORE Resources and Ecosystems Sustainability, Tourist Opportunities,

and Revived Economies of the Gulf Coast States

SAV submerged aquatic vegetation

SBEP Sarasota Bay Estuary Program

SR State Road

SWFWMD Southwest Florida Water Management District

SWIM Surface Water Improvement and Management

TAC Technical Advisory Committee

TIITF Trustees of the Internal Improvement Trust Fund

TMDL Total Maximum Daily Load

TNC The Nature Conservancy

USFWS United States Fish and Wildlife Service

WTA water treatment area

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1.0 Introduction

Sarasota Bay is located on the central west coast of Florida, adjacent to Sarasota and Manatee Counties. It is a 50-mile long coastal lagoon and consists of a series of smaller bays and tributaries that are separated from the Gulf of Mexico by a string of barrier islands. Multiple inlets, or passes, connect the estuarine waters of Sarasota Bay to the Gulf of Mexico and separate the lands that comprise the narrow barrier islands. The Sarasota Bay watershed is highly developed consists of agricultural, residential. commercial, and light industrial land uses.



In 1987, Congress established the NEP to improve the ecological quality of estuaries of national importance to meet Section 320 of the Clean Water Act. The Sarasota Bay estuarine system is one of 28 estuaries in the NEP and one of four located in the State of Florida: Tampa Bay, Charlotte Harbor, Indian River, and Sarasota Bay. Each has been assigned a management organization to ensure that the objectives of the NEP are being achieved. Each of these programs has established individual CCMPs to meet the goals recognized within Section 320. The CCMPs are used as dynamic management tools that employ a watershed-based approach to improve the overall quality of each program area. The main goals of the SBEP were defined in 1989 and are to:

- improve water transparency;
- reduce the quantity and improve the quality of stormwater runoff to the bay;
- restore lost seagrasses and shoreline habitats, and eliminate further losses;
- establish an appropriate management structure for Sarasota Bay;
- provide increased levels of managed access to Sarasota Bay and its resources;
- restore and sustain fish and other living resources in Sarasota Bay; and,

educate the public on issues and problems facing Sarasota Bay.

Tampa Bay, Sarasota Bay, and Charlotte Harbor are all located on the west coast of Florida and are hydrologically connected to one another. However, each individual estuary program has a unique management approach due to the different anthropogenic influences in the individual watersheds. Although these estuaries are relatively close in proximity, they differ in watershed size, number of tributaries and stormwater systems, population size, frequency and duration of freshwater inputs, and land use types within the watershed at large. Pollutant generators also differ between the estuaries. For example, there are varying degrees of historic impacts associated with industrial and domestic wastewater operations, untreated stormwater, failed septic systems, agriculture, and phosphate production within each estuary. The amount of intact, native shoreline and shoreline habitats also varies between the program areas.

Vegetated tidal wetlands, primarily mangroves in the Sarasota Bay area, are essential nursery areas for many aquatic species. Mangrove forests are one of the world's most threatened tropical ecosystems and are critical to the health of Florida's estuaries, including Sarasota Bay. Development pressure along the coastline has impacted marine fisheries specifically due to the loss of this habitat. A majority of fish and shellfish species inhabit shallow mangrove areas at some point in their life cycle. In fact, mangroves are considered essential nursery habitat for species such as the goliath grouper (*Epinephelus itajara*) that remain in these areas for the first 5-6 years of their lives. Other locally occurring species commonly found in mangrove swamps include grunts (*Haemulon* spp.), gray snapper (*Lutjanus griseus*), snook (*Centropomis undecimalis*), sheepshead (*Archosargus probatocephalus*), spotted seatrout (*Cynoscion nebulosus*), and red drum (*Sciaenops ocellatus*).

Recreational fishing is an industry that creates an enormous economic impact in Florida each year. In 2012, the Florida recreational fishing industry supported 109,341 jobs and generated \$13,150,686,000 in total sales (NMFS, 2014). Snook is one of Sarasota Bay's most popular inshore game fish. Licensed anglers must purchase a snook stamp in order to keep snook caught by hook and line. Since the 1950's, it has been illegal to commercially catch or sell this species due to significant population declines. There are several stock enhancement and monitoring programs on the gulf coast that have proven successful in helping to encourage long-term species survival in the wild. Larval and juvenile snook rely heavily upon low salinity areas such as estuaries, creeks and tributaries. Adult snook also use these areas during winter months. Other species of fish such as spotted seatrout and red fish predominantly reside in seagrass beds and

sand flats, and can be found in deeper channels within mangrove habitat during the colder months. Sarasota Bay contains multiple tidal creeks of varying quality that play important roles in dictating the health of the estuary as well as in providing critical habitat to fish and invertebrates.

Southwest Florida is also within the range of the smalltooth sawfish (*Pristis pectinata*), which inhabit shallow coastal estuarine habitats, preferring areas with muddy and sandy bottoms. The historic range of this once common species includes peninsular Florida; however, available data suggests that the numbers of smalltooth sawfish have dramatically declined. This decline is related to entanglement in gill nets and discarded fishing line, as well as from the loss of mangrove habitat which serves as a nursery area for juveniles. As a result, the smalltooth sawfish is the only domestic marine fish and elasmobranch listed under the ESA. Under the ESA, it is illegal to catch or harm the endangered smalltooth sawfish.

Estuarine health is dependent upon the quantity, quality, and timing of freshwater inputs (Olsen, Padma, & Richter, 2006). Freshwater wetlands, sawgrass marshes, and ponds were once the predominant freshwater features within the Sarasota Bay watershed. The watershed has been historically impacted by widespread dredge and filling operations used to drain large tracts of land for agricultural purposes. A large portion of the inland watershed was previously comprised of isolated sawgrass wetlands that have since been either connected to one another, diverted to drain into the freshwater creeks, or completely filled. As a result, much less water is being retained within the landscape of the watershed, which has reduced natural storage and groundwater recharge. To compensate for increased water quantity flowing toward the bay, most creeks have been modified both naturally and artificially. Some larger order systems, such as Phillippi Creek, have been channelized and dredged, with large control structures installed to manually release water during high flows. The increases in freshwater volume entering the bay and resulting sediment loads have reduced water clarity, which in turn has affected the quality of estuarine habitats and aquatic productivity. Watershed managers are tasked with finding ways to manage erosion, sediment transport, and deposition, and more specifically, to remove total suspended solids and nutrients from non-point source discharges to Sarasota Bay.

Many historic saltwater and freshwater wetlands within the Sarasota Bay watershed have been lost over time. Upland development and associated infrastructure has also impacted many of the remaining wetlands by reducing the landscape support, which limits the opportunity for fish and wildlife to fulfill their life history requirements. Habitat

fragmentation from infrastructure and development continues to threaten ecologically intact landscapes, inevitably impacting habitat corridors and wildlife movement. The need for habitat restoration, both upland and wetland, is an important component for improving the ecological health of the Sarasota Bay. The SBEP has been instrumental in the successful completion of many habitat restoration projects within Sarasota and Manatee Counties. Three projects have won awards of environmental excellence.

This *Five-Year Habitat Restoration Plan* was developed to be used as a guide and planning tool by the SBEP and its partners to identify, prioritize, and implement restoration projects throughout the bay and watershed. Two previous five-year plans were developed for FYs 2004-2009 and 2010-2014. During these 10 years, a total of 55 potential habitat restoration projects were proposed and, to date, 32 have been completed or initiated. This document replaces the previous plans and will be valid from FY 2016-2020.

Revisions to the original ranking criteria were made to encompass changes in environmental management from both a regulatory and ecosystem management standpoint. The primary goal of this plan is to develop and implement projects that will emphasize concepts to 'Restore the Balance' in the Sarasota Bay watershed. This approach recognizes that some habitats have been lost in greater proportion than others, and that those habitats may be critical for specific life cycle requirements of bay-dependent species. The 'Restore the Balance' concept also recognizes that habitats not within or confluent to the bay also benefit estuarine health and that a watershed-level habitat mosaic, in the correct proportions, is necessary to maintain ecological health.

2.0 Site Selection Objectives

Sites were evaluated based on their potential to achieve overall SBEP goals. Objectives encompassing these goals were defined in such as way that sites which meet all objectives provide comprehensive ecological benefits to the Sarasota Bay estuary. The site's location within the watershed was considered to assess potential secondary benefits such as proximity to environmentally significant areas. Primary restoration objectives of this prioritization process can be grouped into three categories:

- 1. Essential habitat restoration and/or creation;
- 2. Water retention and water quality improvements; and,
- 3. Historic habitat restoration and/or preservation.

Together, these objectives help to achieve the overall goal of 'Restoring the Balance' for the Sarasota Bay watershed. For selected sites, the ranking process considers both the primary restoration objectives as well as the logistical constraints. Each of the three primary restoration objectives is discussed below.

For the purpose of the selection process, essential habitat was defined as habitat which consists of accessible areas that contain the physical and biological features that are vital to a species' existence. For example, low-salinity environments, seagrass flats, and mangrove shorelines are essential for certain species of fish. Essential habitat may vary between season, geographic region, and stage of life. Some fish frequent lower salinity creeks and bays during the colder winter months, but spawn off the beaches and passes during the summer months. Mangrove swamps are essential for the goliath grouper during the first 5-6 years of their life cycle whereas offshore hard bottom habitats in the Gulf of Mexico are critical to adults. Each species has its own set of physical and biological parameters which constitute essential habitat. Sites which contained areas with the potential to provide essential habitat for fish and wildlife were preferred.

Stormwater improvements through water retention and retrofitting of dated stormwater infrastructure are critical to improving water quality and clarity within Sarasota Bay. Historically, water quality has been impacted through untreated stormwater discharges, point source discharges from wastewater treatment plants, septic tank leachate, and increased freshwater flows from development and agricultural activities within the watershed (Dillon & Chanton, 2005). Degraded water quality reduces marine productivity, vertebrate and invertebrate species diversity, and seagrass coverage. Watershed managers are continually developing methods to identify, monitor, and improve water quality and quantity within coastal watersheds. Within the past fifteen years, improvements to point source discharges to Sarasota Bay have occurred through upgrades to the City of Sarasota's wastewater treatment plant and due to package plants throughout Sarasota County no longer discharging directly into creeks and/or Sarasota Bay. Improvements to septic systems have occurred within the Phillippi Creek watershed, which has in turn reduced nutrient loading and bacteria counts in Roberts Bay. The SBEP and its partners have been progressive in implementing and designing projects to improve non-point source discharges by installing stormwater retrofit infrastructure, gross sediment removal structures, bioswales, WTAs, and enhancing shoreline among other activities. Sites which contained areas with the potential to include any of theses methods or that could improve in-stream conditions near a point source discharge were preferred.

The final objective identifies projects that will restore habitat to its historic condition. The SBEP recognizes that some habitats have been lost in greater percentages than others, and that restoration projects do not always afford the opportunity to restore these habitats in the historic proportion. As coastal development is widespread and occurs in most cases up to the water's edge, it is often more difficult to restore high marsh and saltern than low marsh and mangrove fringe. Therefore, projects that provided opportunity to restore a more heterogeneous habitat mosaic were preferred. It is also important to recognize the relationship between upstream freshwater habitats and estuarine habitats. Natural water storage within the watershed has been reduced by the filling and draining of isolated freshwater wetlands along with increases in impervious surface. Because this has altered the timing, quantity, and quality of freshwater flows into the Sarasota Bay, the restoration or creation of freshwater wetlands within the drainage basin of a tidal creek were ranked higher. Projects that would restore the historic habitat composition of a site were also ranked higher.

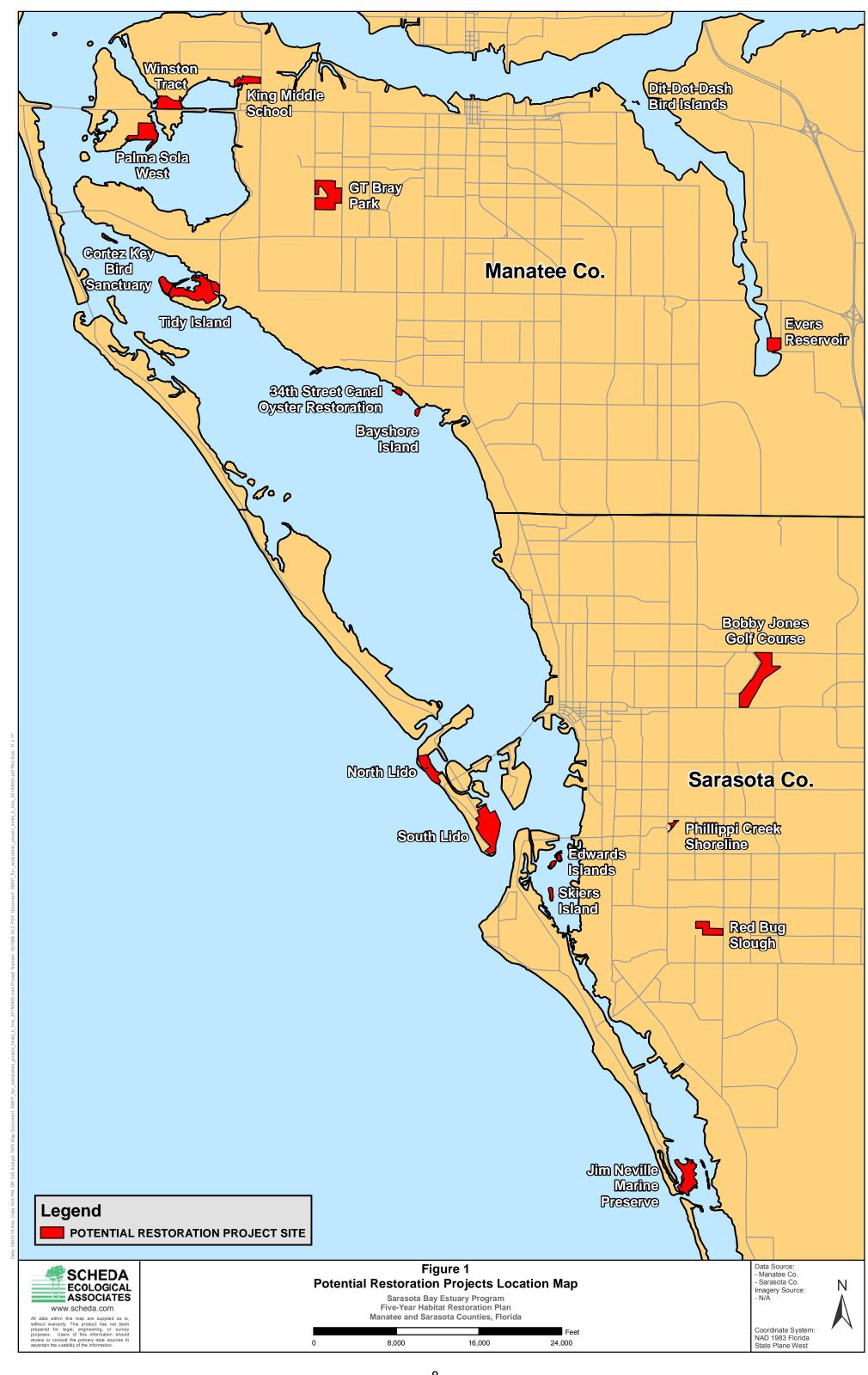
3.0 Methodology

The process was initiated by evaluating the list of restoration sites that was included in the previous five-year plan, to determine which sites were not completed and are still viable. Then, through extensive coordination with regional experts and SBEP partners (Manatee and Sarasota Counties, City of Bradenton, Town of Longboat Key, City of Holmes Beach, FDEP, SWFWMD, and the EPA), additional areas and projects were identified following the site selection guidelines previously described.

A GIS analysis was conducted for each site to generate some of the information needed for scoring and to determine whether viable restoration options were available based upon existing conditions. In some cases, the percent N/E vegetation and disturbed conditions were digitized based on aerial photo-interpretation. Field-verification of site conditions was conducted for sites that had not yet been visited and/or for areas where existing conditions were difficult to discern from aerial imagery. Approximate property acreage and an estimate of the area within the property boundaries that could be restored were calculated from GIS-based maps. Restoration scientists developed conceptual design plans for each viable site. These conceptual designs are relatively general; the actual restoration design can only be determined through closer site inspection including topographic survey, soils investigation, other pertinent data collection efforts, and coordination with the land owner. In an effort to plan for future sea level rise, these conceptual plans intentionally incorporate climate-resilient designs. For instance, designs include more high marsh and upland areas which will allow the

plant communities to naturally migrate as gradual inundation occurs. A total of 18 projects were developed; Figure 1 shows all proposed projects and their locations within the watershed.

To promote the living shorelines initiative, the SBEP will continually investigate potential locations for demonstration living shoreline projects, especially in highly visible areas. Additionally, it should be recognized that some concepts and ideas that were initially proposed by SBEP stakeholders were not considered viable for this five-year period. Reasons for non-viability included but were not limited to: inability to locate publicly owned parcels, idea not sufficiently developed to plan its initiation, field visit determined impacts to native habitat would outweigh benefit of restoration activity, and lack of political will. Information regarding those concepts may be considered in the future if and when the timing becomes more appropriate.



The site scoring criteria for this plan were based largely off of the previous plan's criteria (with minor changes) as they were vetted by the SBEP TAC as well as other partners, for input and concurrency. These scoring criteria are linked to specific goals identified in the CCMP which are described in Appendix A. Each site was ranked relative to the others through assessment of the criteria listed below.

Logistical considerations:

- Cost per acre
- Proximity to preserved lands
- Potential restoration magnitude
- Planned government/partnering opportunity
- Construction feasibility

Habitat balance considerations:

- Potential fisheries habitat
- Salinity classification
- Water quality improvement
- Water retention improvement
- Water quality impairment
- Tributary
- Shoreline enhancement
- Protected species benefits
- Historic habitat improvement

Numeric values were established for each criterion to generate an overall score for each site. Value ranges, and highest and lowest numbers achievable, were customized for each criterion. For example, some categories could result in high, medium, and low values, while others only high and low, or simply yes or no, with differing point assignments. Each criterion is described and scored in the following sections.

3.1 Cost per Acre

Restoration cost per acre was based on the approximate design and construction cost per acre, which depends on size and potential design constraints for each site. The cost per acre for design and construction was based on the SWIM program's current cost estimate of a maximum of \$50,000 per acre, which was then adjusted according to

site-specific information such as existing overburden and construction access. The resulting values assigned for the cost per acre are:

3.2 Proximity to Preserved Lands

Proximity to preserved lands was defined as the location of a given project parcel relative to the nearest significant tract of preserved lands. To receive credit, if public, the preserved lands must be managed as a park or nature preserve. If private, the preserved lands must be undeveloped, in relatively natural condition, and possess a conservation easement or other instrument that precludes future development. The purpose of this criterion was to recognize the benefit provided to a site by maintaining habitat connectivity and wildlife corridors in a landscape that has been fragmented by development and infrastructure. The resulting values are:

Within or adjacent = 2

Not connected = 1

3.3 Potential Restoration Magnitude

Potential restoration magnitude was defined as the acreage of the total habitat improvement area. This is the size of the restoration project within a parcel, not the size of the parcel as a whole. The acreages of all restoration activities, including but not limited to N/E removal, tidal creek creation, and breakwater structure installation, regardless of the proposed prescription, were summed to measure the potential restoration magnitude. The resulting values are:

> 10 acres = 3

5-10 acres = 2

< 5 acres = 1

3.4 Planned Government Project/Partnership Opportunity

Data from the Southwest Florida Regional Ecosystem Restoration Plan (adopted March 8, 2013), local watershed management plans, and projects submitted to the SBEP as potentially eligible for RESTORE Act funding (Clean Water Act penalty funds available as a result of the Deepwater Horizon oil spill in the Gulf of Mexico), were incorporated in this criterion. Projects were ranked higher if grant or other cooperative funding opportunities currently exist through partnerships with other public agencies. Higher values were also assigned to sites that have been previously designed and/or permitted, or have been identified as a priority government project. These conditions increase the likelihood of completion. The resulting values are:

High = 2

Low = 1

3.5 Construction Feasibility

Construction feasibility reflects a determination of the ease or difficulty of accessing a site, the ease of obtaining necessary permits, the amount of existing overburden, and the complexity of a project. An example of a feasible project would be one that could be easily accessed by roads, that wouldn't require a significant amount of earthmoving due to overburden, and that would be relative easy to permit. An example of a difficult project would be one on a spoil island, as it would be difficult and expensive to access with heavy equipment. The feasibility of construction directly relates to overall project cost. The resulting values are:

Easy = 3

Moderate = 2

Difficult = 1

3.6 Potential Fisheries Habitat

The potential fisheries habitat value reflects the potential for fishery enhancement as a result of project construction. Projects that occur within or adjacent to the water (tidal creeks, mangrove swamps, oyster reefs etc.) and improve habitat structure, specifically for fish, were assigned the highest value. Projects that occur along a coastline with minimal existing native vegetation were assigned a medium value, and sites that occur

adjacent to hardened shoreline with no proposed shoreline enhancement had the lowest. The resulting values are:

High = 3

Medium = 2

Low = 1

3.7 Salinity Classification

The salinity classification is the current salinity regime of the proposed project area. Overall, sites that occur within or near a freshwater or brackish water (oligohaline) salinity regime were ranked higher than those that occur in areas of higher (polyhaline) or more consistent salinity regimes. The resulting values are:

Polyhaline = 1

Mesohaline (6-19 ppt) = 2

Oligohaline (0-5 ppt) = 3

Freshwater (0 ppt) = 4

3.8 Water Quality Improvement

The water quality improvement criterion is assessed by determining the project's ability to improve existing stormwater outputs. Examples of the highest scoring activities include the installation of retrofits such as gross sediment removal structures, creation of WTAs, bioswales, ditch bank stabilization, wet detention areas, and shoreline stabilization. Less direct water quality improvements provided by activities such as creation of marsh, or increased number or filter-feeding organisms were valued as 'limited' in the scoring. The resulting values are:

Significant water quality improvement = 3

Limited water quality improvement = 2

No water quality improvement = 1

3.9 Water Retention Improvement

The water retention improvement criterion is assessed by determining the project's ability to retain stormwater flows from entering either directly or indirectly to the bay. Projects that would provide the most improvement would include natural retention in the watershed by restoring hydrology in existing wetlands, installation of weirs in ditches and swales to reduce velocities, construction of wetlands or restoration of streambeds, and creation of detention areas. The resulting values are:

Significant water retention = 3

Limited water retention = 2

No water retention = 1

3.10 Water Quality Impairment

Water quality impairment was defined as whether or not the site is located adjacent to or within a waterbody that has been assigned a TMDL by the FDEP, or has been listed on the 303D Verified List of Impaired Waterbodies by the FDEP (Chapter 62-303 FAC). The purpose of this criterion is to assign a higher score to projects that would ultimately improve conditions within the impaired waterbody. The resulting values are:

Adjacent to/within waterbody with a TMDL = 3

Adjacent to/within waterbody listed as impaired = 2

The waterbody has no TMDL/is not listed = 1

3.11 Tributary

If the project is located within or adjacent to a bay tributary or a creek, it would be given a higher score. The ranking was designed to recognize the importance of tidal creeks and freshwater inputs to estuarine health. The resulting values are:

Adjacent to/within Sarasota Bay tributary = 3

Not adjacent to/within Sarasota Bay tributary = 1

3.12 Shoreline Enhancement

Shoreline enhancement projects may involve seawall/rip rap removal, installation of a 'living shoreline', native plantings, stabilization using manufactured materials that can be planted or hydroseeded, and re-grading. Projects that incorporate shoreline improvements were ranked higher than those that did not. The resulting values are:

Shoreline enhancement = 2

No shoreline enhancement = 1

3.13 Protected Species Benefits

If a project provides direct benefits to protected wildlife through improvement of essential habitat, it was ranked higher. Examples of projects that would directly benefit protected species include those that enhance, create, or protect bird rookery islands. Projects that would create native habitat were also given a higher rank than those that provided indirect benefits, such as a stormwater improvement. The resulting values are:

Improve rookery islands = 3

Improve/create other native habitat = 2

Indirect benefits to wildlife = 1

3.14 Historic Habitat Improvement

This criterion was developed to recognize the importance of restoring historic habitat in appropriate locations. This criterion assigned a higher ranking to projects that provide the restoration of a historic habitat signature on a particular site. A medium ranking was given to projects that create a habitat essential to the Sarasota Bay. The lowest ranking was given to projects that did not involve direct habitat restoration. The resulting values are:

Protect or restore historic habitat signature = 3

Restore habitat essential to Sarasota Bay =2

No direct restoration of habitat = 1

4.0 Resulting Site Ranking

The results of the previously described ranking process, including scores, are shown in Table 1. A fiscal year was assigned to each project; higher ranking projects are proposed to be undertaken earlier in the five-year planning period.

The sites with the highest ranking were generally located near or adjacent to freshwater streams and the sites with the lowest ranking were primarily spoil islands. These results are consistent with the design of the ranking criteria, which prioritized sites that are located within freshwater regimes, involved on-site historic habitat restoration, and/or provided water quality improvements. Spoil islands, by definition, cannot truly be restored only enhanced, as they were artificially created during the initial dredging of the ICW. Additionally, construction is more difficult on islands, public support is often low, and habitat improvements are limited to saltwater regimes. Table 2 lists the sites in accordance with their relative ranking, from highest to lowest.

Table 1. Project Scoring

		Cost per Acre	Proximity to Preserved Lands	Potential Restoration Magnitude	Planned Government/Partnering	Construction Feasibility	Potential Fisheries Habitat	Salinity Classification	Water Quality Improvement	Water Retention Improvement	Water Quality Impairment	Tributary	Shoreline Enhancement	Protected Species Benefits	Historic Habitat Improvement	Total Score	Rank	Fiscal Year
	34th Street Canal Oyster Restoration	2	1	1	2	2	3	2	2	1	2	1	1	2	2	24	12	2019
	Bayshore Island	3	1	2	2	2	1	1	1	1	2	1	2	2	1	22	18	
nt	Cortez Key Bird Sanctuary*	1	2	1	2	2	3	1	2	1	2	1	2	3	3	26	7	2018
no	Dit-Dot-Dash Bird Islands*	1	1	1	2	2	3	2	2	1		1	2	3	3	26	7	2018
S	Evers Reservoir	2	2	2	2	2	2	4	2	2	1	1	2	2	2	28	4	2017
tee	GT Bray Park	1	2	1	2	2	2	4	3	3	2	3	2	1	3	31	1	2016
na	King Middle School	3	1	1	0	2	1	2	2	2	2	3	1	2	2	24	12	2019
Ma	Palma Sola West	1	1	3	2	1	2	1	2	1	2	1	2	2	3	24	12	
	Tidy Island	1	2	2	2	1	3	1	2	2	2	1	2	2	3	26	7	2018
	Winston Tract	3	2	2	2	3	2	1	1	1	2	1	2	2	3	27	6	
>	Bobby Jones Golf Course	3	1	1	2	2	1	4	3	3	2	3	2	1	2	30	3	2016
Int	Edwards Islands	3	1	2	2	1	3	1	1	1	2	1	2	2	1	23	16	2020
a Cou	Jim Neville Marine Preserve	2	2	3	2	1	2	1	1	1	2	1	2	3	2	25	11	2019
	North Lido	2	2	1	2	3	2	1	1	1	2	1	2	2	2	24	12	2020
ota	Phillippi Creek Shoreline	3	1	1	0	2	2	3	2	1	2	3	2	2	2	26	7	2018
ras	Red Bug Slough	2	2	2	2	2	2	4	2	2	2	3	2	2	2	31	1	2016
Sal	Skiers Island	3	1	2	2	1	3	1	1	1	2	1	2	2	1	23	16	
	South Lido	2	2	3	2	2	2	1	2	1	2	1	2	3	3	28	4	2017

^{*}Scored under the assumption that artificial reef balls will be used, however, oyster bags are also a viable option.

Table 2. Project Ranking and Fiscal Year Summary

Site	Rank	Fiscal Year
GT Bray	1	2016
Red Bug Slough	1	2016
Bobby Jones Golf Course	3	2016
Evers Reservoir	4	2017
South Lido	4	2017
Winston Tract	6	2017
Cortez Key Bird Sanctuary*	7	2018
Dit-Dot-Dash Bird Islands*	7	2018
Phillippi Creek Shoreline	7	2018
Tidy Island	7	2018
Jim Neville Marine Preserve	11	2019
34th Street Canal Oyster Restoration	12	2019
King Middle School	12	2019
Palma Sola West	12	2019
North Lido	12	2020
Edwards Islands	16	2020
Skiers Island	16	2020
Bayshore Island	18	2020

^{*}Scored under the assumption that artificial reef balls will be used, however, oyster bags are also a viable option.

5.0 Project Descriptions

Individual project descriptions, conceptual designs, and historic imagery follow in order of rank and fiscal year.

5.1 Fiscal Year 2016

GT Bray Park Red Bug Slough Bobby Jones Golf Course

GT Bray Park PID# 5110200002

Fiscal Year: 2016	Rank: 1
Parcel Size: 127.00 acres	County: Manatee
Project Size: 5.61 acres	Landowner: Manatee County / City of
	Bradenton

Location: 2905 West 59th Street, Bradenton, Manatee County

Owner/Contact Information: Manatee County Department of Parks and Natural Resources,

(941) 742-5923

Existing Land Use Description

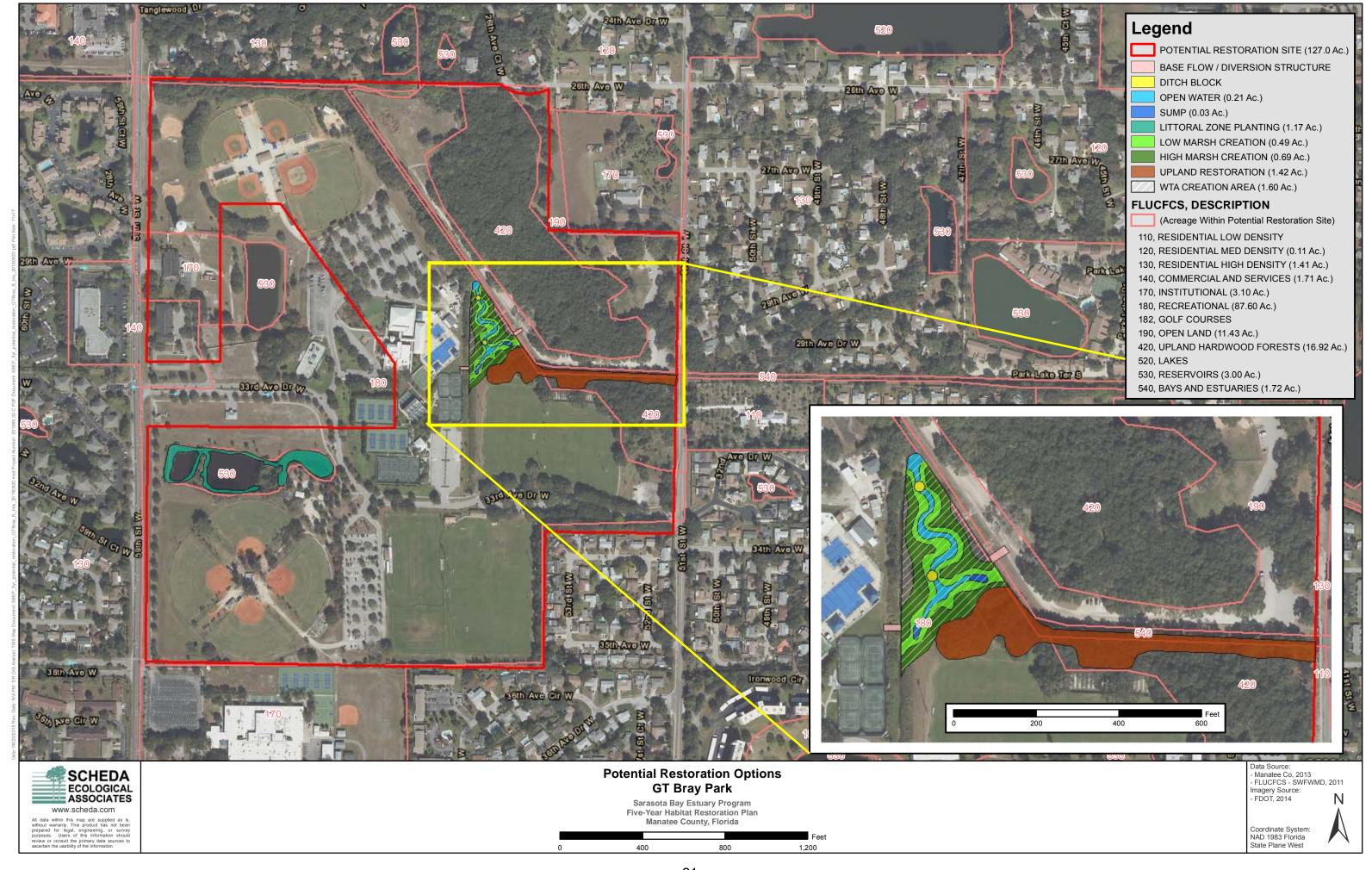
	FLUCFCS Type	Code	Acreage	Condition
				_
Upland	Residential Med Density	120	0.11	Developed
-	Residential High Density	130	1.41	Developed
	Commercial and Services	140	1.71	Developed
	Institutional	170	3.10	Developed
	Recreational	180	87.60	Developed
	Open Land	190	11.43	Disturbed
	Upland Hardwood Forests	420	16.92	Natural
Wetland	Reservoirs	530	3.00	Disturbed
	Bays and Estuaries	540	1.72	Disturbed

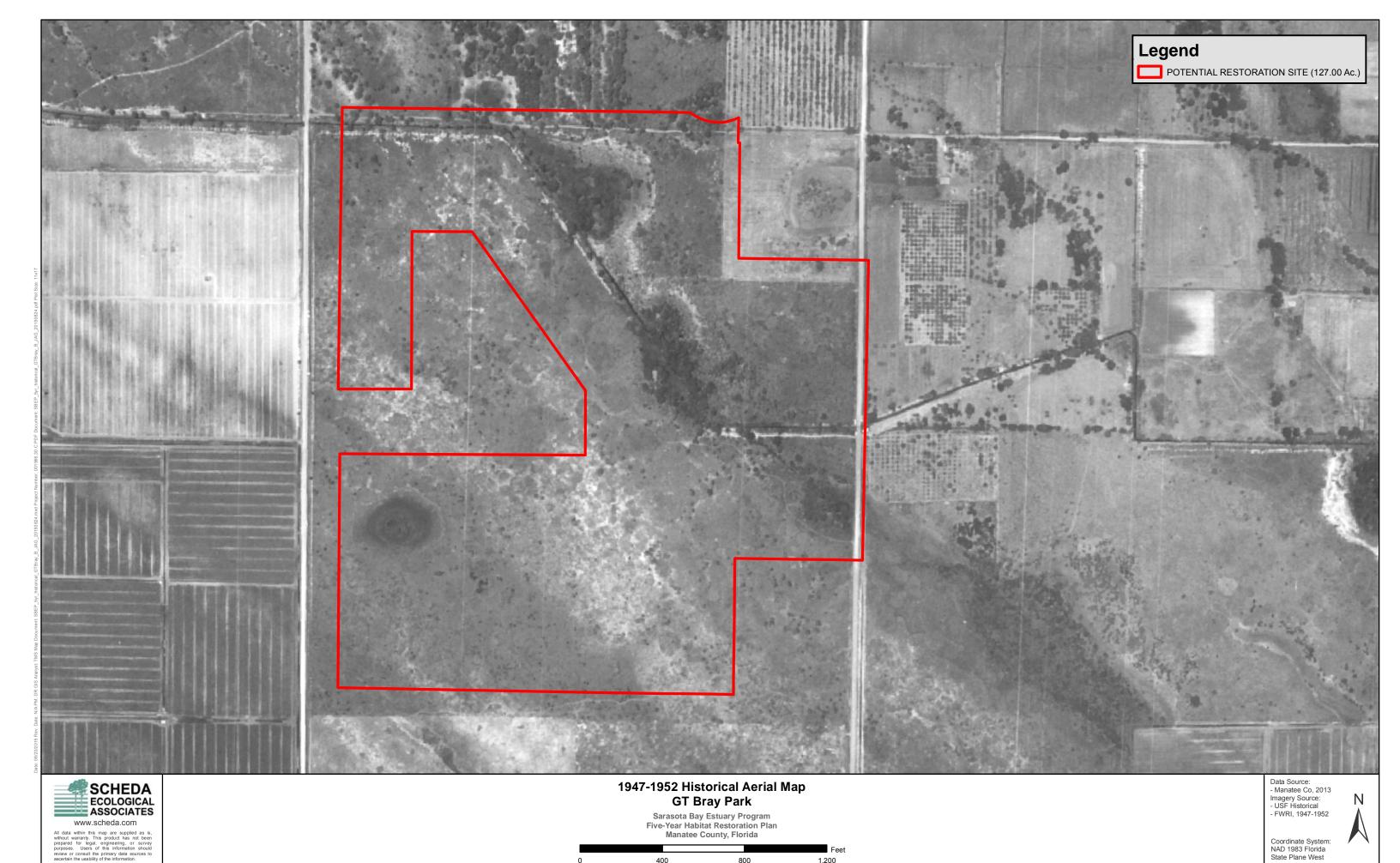
Summary

Two distinct projects are proposed at the 127-acre GT Bray Park site which is owned by the City of Bradenton and operated by Manatee County. GT Bray Park is in central Bradenton surrounded by long-standing residential developments. The first proposed project is at Habitat Oasis, a natural wetland which had been invaded by melaleuca (*Melaleuca quinquenervia*) and other N/E species. Manatee County is implementing a phased restoration for Habitat Oasis; Phase I removed the dense N/E vegetation and was completed in 2015. This project proposes to complete Phase II of the restoration by replanting with native vegetation as outlined in the Manatee County plan (Potential Restoration Options).

The second project proposes the creation of a WTA at the meeting point of two canals which drain to Palma Sola Bay. The plan is to excavate the land in between the two canals to a level lower than the existing canal bottom. Proposed baseflow diversion structures would divert water into the WTA where there would be a series of low and high marshes, open water, and pools (Potential Restoration Options). Hydrologic modeling would be required for this project, however; the resulting design would improve downstream water quality. The nearby uplands

which abut the canal are proposed to have N/E species (primarily Brazilian pepper (*Schinus terebinthifolia*) removed and to be re-contoured before being selectively replanted with native vegetation. Combined, the projects would improve the quality of water which reaches Palma Sola Bay, provide habitat for fish and wildlife within the park, reduce the N/E seed source and enhance a popular recreational amenity for the community.





1,200

Red Bug Slough PID# 0087-10-0001

Fiscal Year: 2016	Rank: 1
Parcel Size: 49.85 acres	County: Sarasota
Project Size: 7.09 acres	Landowner: Sarasota County

Location: 5200 South Beneva Road, Sarasota County

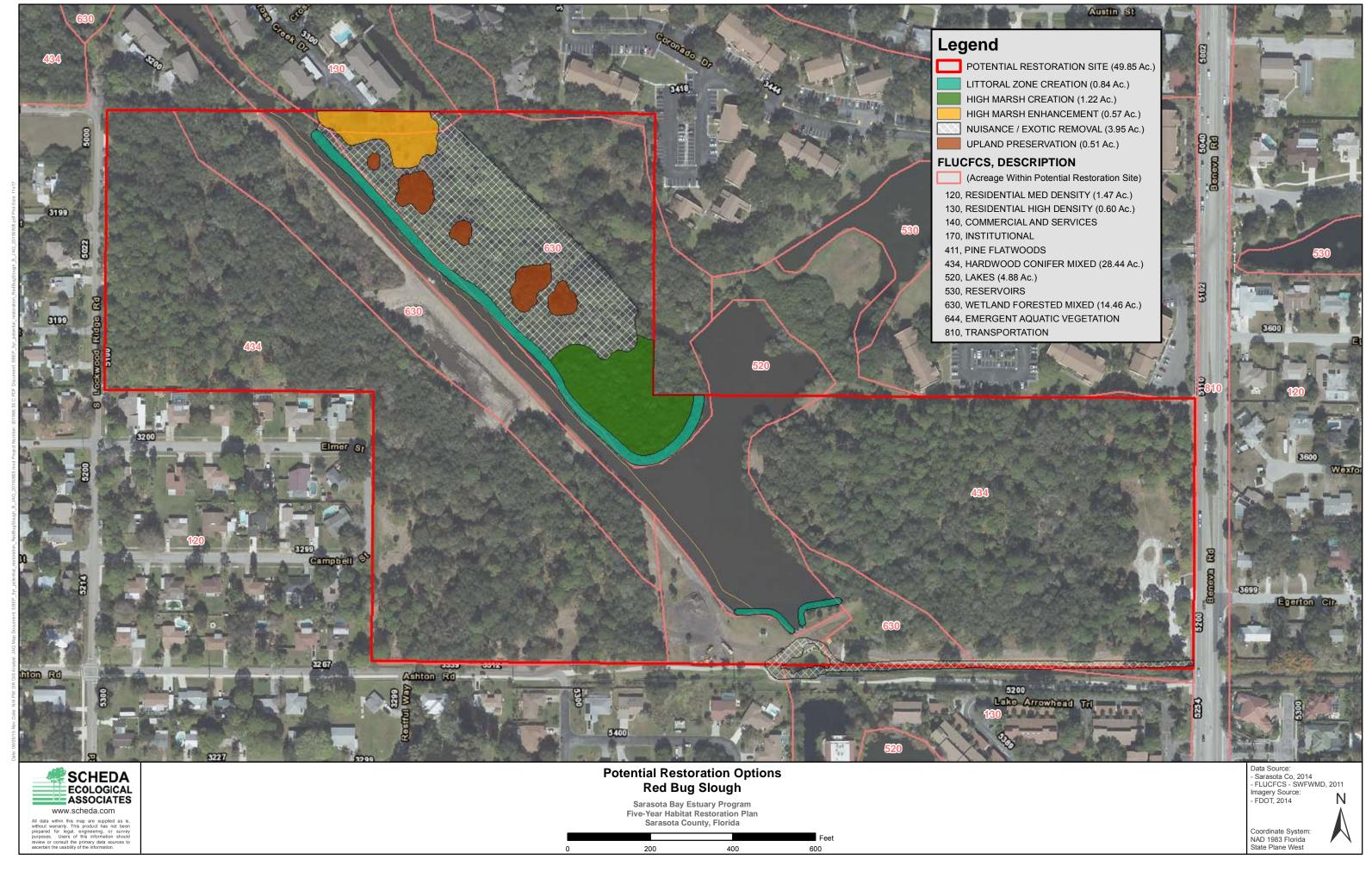
Owner/Contact Information: Sarasota County Parks & Natural Lands, (941) 861-5000

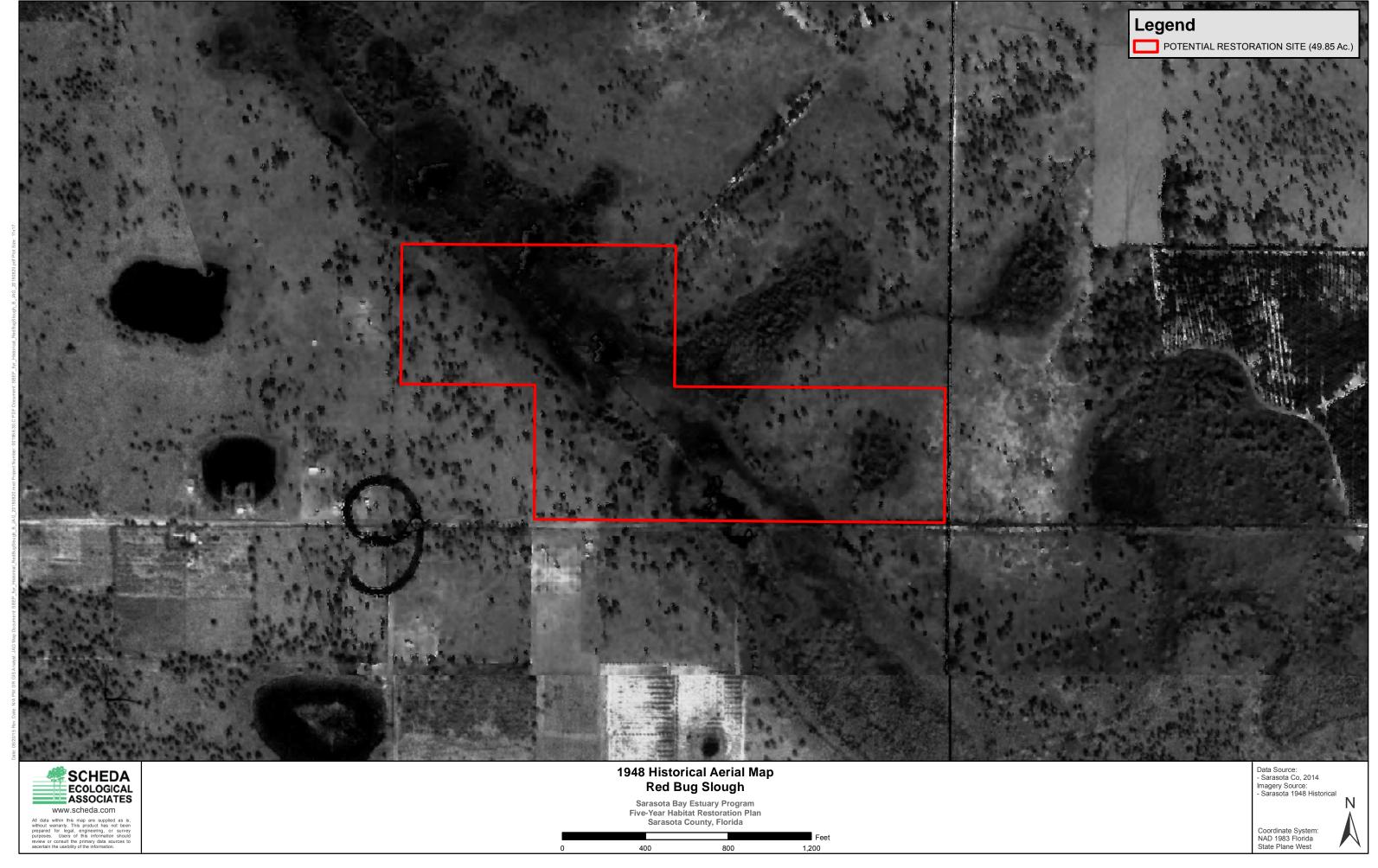
Existing Land Use Description

	FLUCFCS Type	Code	Acreage	Condition
Upland	Residential Med Density	120	1.47	Developed
	Residential High Density	130	0.60	Developed
	Hardwood Conifer Mixed	434	28.44	Natural
Wetland	Lakes	520	4.88	Natural
	Wetland Forested Mixed	630	14.46	Disturbed

Summary

The Red Bug Slough project site is approximately 50 acres which are owned by Sarasota County. This park is a slough system surrounded by mesic hardwood forests with public recreational amenities. Long-standing residential developments surround the park boundaries. Red Bug Slough connects with Phillippi Creek to the northwest and ultimately drains into Roberts Bay. An extensive and successful restoration effort was undertaken in 2013. This project targets the areas not restored in the previous effort and would result in a more comprehensively improved system. The upland peninsula area is invaded by N/E species such as Brazilian pepper. The project proposes removal of N/E species throughout the peninsula with high marsh creation proposed at the southern end and enhancement of the existing shrubby wetland at the northern end. Mature oak (Quercus spp.), pine (Pinus spp.), and cabbage palm (Sabal palmetto) would be preserved. The project would grade banks and plant littoral shelves with native vegetation as shown in the following Potential Restoration Options figure, to match the work completed in 2013. Additionally, at the southern boundary of the park, N/E maintenance would be conducted at the littoral shelf of the open water feature and along the ditch. This project would reduce the N/E seed source, improve habitat for wildlife, provide additional stormwater attenuation and filtration, and enhance a popular recreational amenity for the community.





Bobby Jones Golf Course PID# 2021-07-0001

Fiscal Year: 2016	Rank: 3
Parcel Size: 162.51 acres	County: Sarasota
Project Size: 1.70 acres	Landowner: City of Sarasota

Location: 1000 Circus Boulevard, Sarasota, Sarasota County

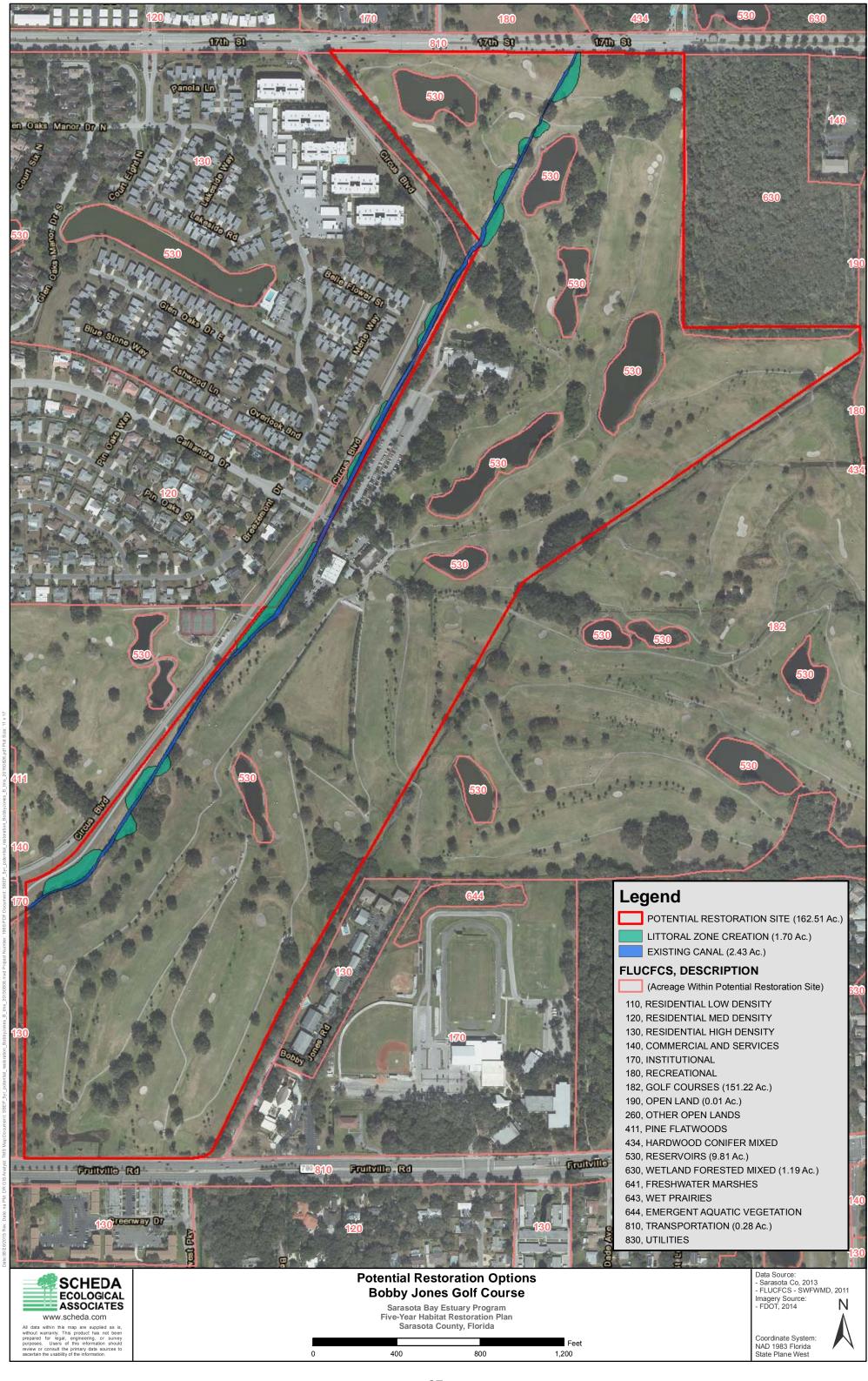
Owner/Contact Information: City of Sarasota Public Works, (941) 954-4198

Existing Land Use Description

	FLUCFCS Type	Code	Acreage	Condition
Upland	Golf Courses	182	151.22	Disturbed
•	Open Land	190	0.01	Disturbed
	Transportation	810	0.28	Developed
Wetland	Reservoirs	530	9.81	Disturbed
	Wetland Forested Mixed	630	1.19	Natural

Summary

The Bobby Jones Golf Course project site is 162 acres and is owned by the City of Sarasota. The project area is surrounded by long-standing residential developments and other recreational facilities. The site is an active golf course with multiple large canals that drain to Phillippi Creek and, ultimately, to Roberts Bay. This project focuses on Phillippi Creek Main B Canal which is highly channelized and has steep banks with ruderal, N/E vegetation. The project proposes to excavate select uplands adjacent to the canal to create a more meandering stream system. New banks would have a gradual slope and be planted with native littoral zone vegetation (Potential Restoration Options). This project would improve water quality by increasing retention time and filtering capacity, improve habitat value, and enhance a popular recreational amenity for the community.





5.2 Fiscal Year 2017

Evers Reservoir South Lido Winston Tract

Evers Reservoir PID# 1739300059

Fiscal Year: 2017	Rank: 4
Parcel Size: 37.65 acres	County: Manatee
Project Size: 6.73 acres	Landowner: City of Bradenton

Location: Braden River south of dam, Manatee County

Owner/Contact Information: City of Bradenton Public Works and Utilities, (941) 708-6300

Existing Land Use Description

	FLUCFCS Type	Code	Acreage	Condition
				_
Upland	Residential Med Density	120	0.56	Developed
	Hardwood Conifer Mixed	434	4.91	Disturbed
Wetland	Reservoirs	530	30.04	Disturbed
	Saltwater Marshes	642	2.14	Disturbed

Summary

The Evers Reservoir project site is approximately 38 acres of degraded freshwater wetlands and uplands owned by the City of Bradenton. The project is south of SR 70 and the dam, and abuts a reservoir in the Braden River. Historically, the area consisted of periodically inundated marsh and upland areas that were part of the tidally-influenced Braden River's meandering bank system. Since the construction of the dam in 1936, the reservoir is exclusively freshwater and, in portions, is classified as a Class I surface water (Chapter 62-302 FAC) due to its use as a potable water source for the City of Bradenton. Spoil from the excavation of the reservoir was deposited on the project site, resulting in a loss of wetlands and an infestation with N/E species (melaleuca and Brazilian pepper). Nuisance and exotic species would be removed from the entire project area. The project proposes creating a mosaic of meandering freshwater marshes with an open water feature; marshes on the western side are existing and will be enhanced, while previously filled marshes on the eastern side will be restored. The existing uplands are planned to be enhanced with N/E removal and selective replanting (Potential Restoration Options). This project will reduce the N/E seed source, improve habitat for wildlife, and provide additional water attenuation and filtration within the reservoir.

^{*}Project has not been designed or proposed by owner.





South Lido PID# 2016-10-0021

Fiscal Year: 2017	Rank: 4
Parcel Size: 153.49 acres	County: Sarasota
Project Size: 31.53 acres	Landowner: City of Sarasota

Location: 2201 Benjamin Franklin Drive, Sarasota County

Owner/Contact Information: Sarasota County Parks & Natural Lands, (941) 861-5000

Existing Land Use Description

	FLUCFCS Type	Code	Acreage	Condition
Upland	Recreational	180	9.15	Natural
	Open Land	190	5.88	Disturbed
	Upland Hardwood Forests	420	26.00	Natural
Wetland	Bays and Estuaries	540	40.74	Natural
	Mangrove Swamps	612	71.72	Disturbed

Summary

The South Lido site consists of approximately 153 acres that are owned by the City of Sarasota and operated by the Sarasota County Parks and Natural Lands Department. It is on Lido Key and is bordered by Big Pass, Sarasota Bay, and beachfront development. The park provides a mosaic of habitat and foraging opportunities for wildlife. Since 2001, several successful habitat restoration, enhancement, and creation projects have been completed at this location. The remaining project phases included high and low marsh creation, tidal creek creation, exotic removal, and dune restoration. This final phase of the project includes the removal of N/E vegetation (primarily Australian pine (*Casuarina equisetifolia*), excavation of spoil within the mangrove swamps, and the creation of coastal hammock near the park entrance (Potential Restoration Options). The spoil material was originally generated by historic dredging and filling associated with the mosquito ditch. This material will be removed either by hand or by hydroblasting techniques. This project would reduce the seed source of N/E species, improve hydrology within the mangrove swamps, increase the habitat value for wildlife, and enhance a popular recreational amenity for the community.





<u>Winston Tract</u> PID# 7334900003, 7356600002, 7356000005, 7333800006

Fiscal Year: 2017	Rank: 6
Parcel Size: 59.14 acres	County: Manatee
Project Size: 5.12 acres	Landowner: TIITF/State of Florida

Location: North of Manatee Avenue Palma Sola Bay Causeway, Manatee County

Owner/Contact Information: FDEP, (850) 245-2118

Existing Land Use Description

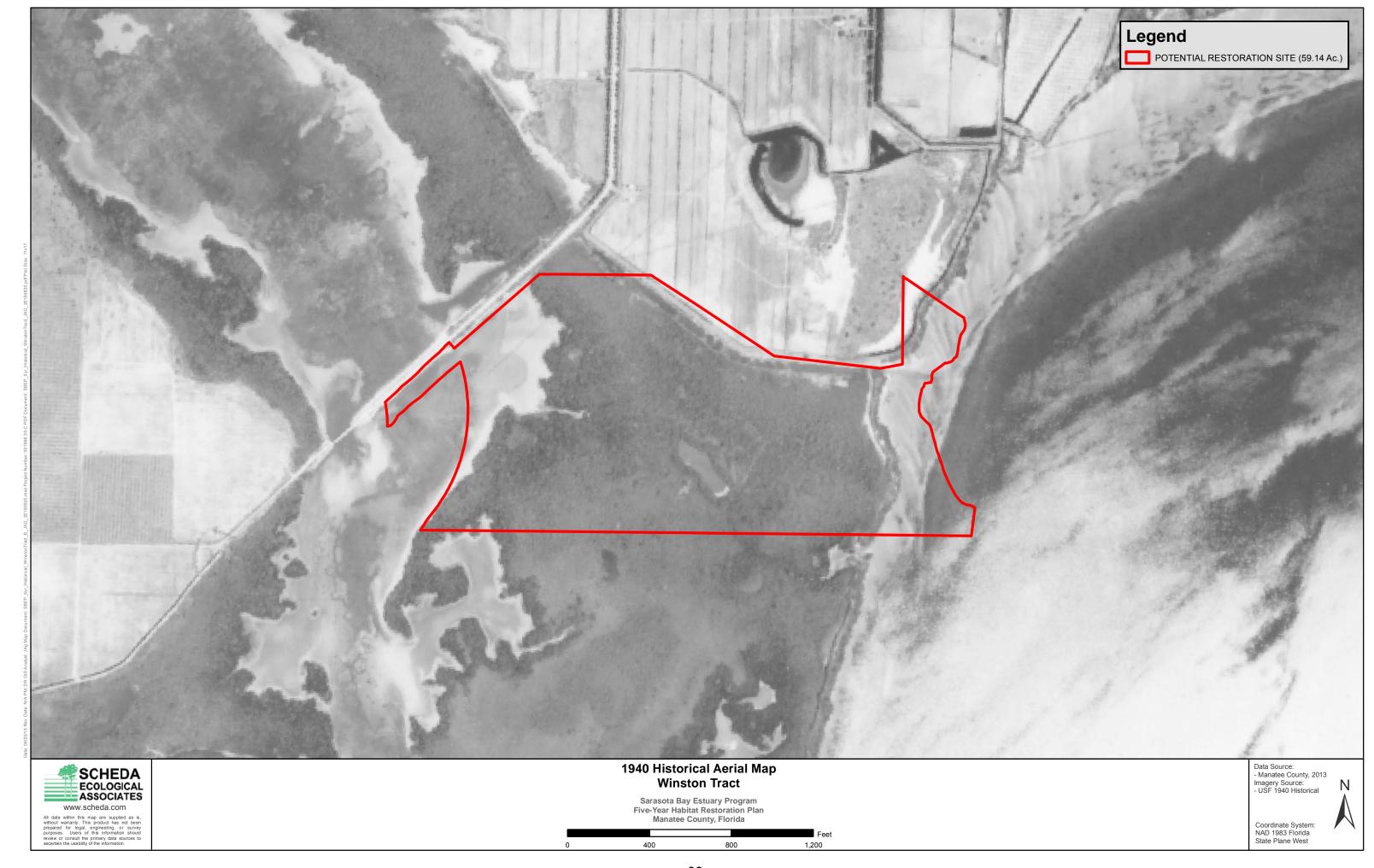
	FLUCFCS Type	Code	Acreage	Condition
Upland	Open Land	190	0.08	Disturbed
Opianu	Other Open Land	260	0.08	Disturbed
	Transportation	810	0.90	Developed
	Transportation	010	0.17	Developed
Wetland	Bays and Estuaries	540	6.69	Natural
	Mangrove Swamps	612	51.00	Disturbed
	Beaches Other Than Swimming Beaches	710	0.22	Disturbed

Summary

The Winston Tract consists of approximately 60 acres, is owned by the State of Florida/TIITF, and is managed by TNC. The project abuts the Manatee Avenue roadway and is centrally located amongst four other natural areas: Perico Bayou, Robinson Preserve, Palma Sola Bay, and Neal Preserve. The site is primarily an estuarine wetland that was historically ditched for mosquito control. Ditch spoil was deposited in sporadically-located mounds, on upland ridges, and along the roadway. The site is dominated by mangroves; however, disturbed upland areas contain Australian pine, Brazilian pepper, and carrotwood (*Cupaniopsis anacardioides*). This project proposes the removal of these N/E species from disturbed uplands (Potential Restoration Options). This project would increase habitat value, decrease the seed source of the N/E species, improve wildlife habitat value, and increase visibility and personal safety of visitors to the area.

^{*}Project has not been designed or proposed by owner.





5.4 Fiscal Year 2018

Cortez Key Bird Sanctuary Dit-Dot-Dash Bird Islands Phillippi Creek Shoreline Tidy Island

Cortez Key Bird Sanctuary No PID#

Fiscal Year: 2018	Rank: 7
Parcel Size: N/A	County: Manatee
Project Size: 0.49 acres	Landowner: State of Florida

Location: Sarasota Bay south of Cortez Fishing Village and the FISH Preserve, Manatee

County

Owner/Contact Information: State of Florida Sovereign Submerged Lands; FDEP, (813) 632-

7600 / Audubon Florida, (813) 623-6826

Existing Land Use Description

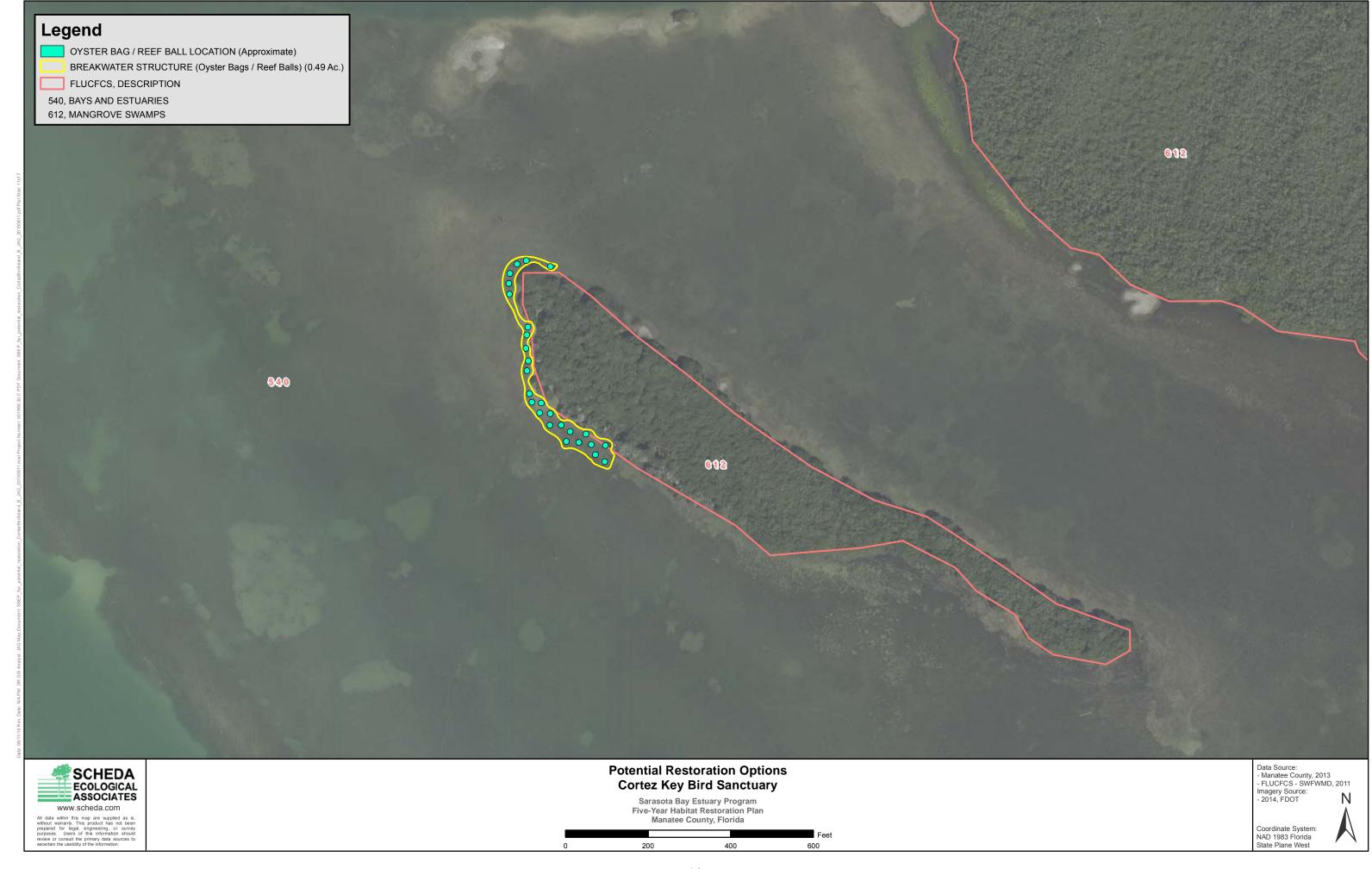
	FLUCFCS Type	Code	Acreage	Condition
Wetland	Bays and Estuaries	540	0.46	Natural
	Mangrove Swamps	612	0.03	Natural

Summary

The Cortez Key Bird Sanctuary island is approximately eight acres of sovereign submerged land owned by the State of Florida and managed by the Audubon Society. The project is in northern Sarasota Bay, east of the ICW, and south of the Cortez Fishing Village and the F.I.S.H. Preserve within an embayment locally referred to as "The Kitchen". This is a natural mangrove island which is surrounded by seagrasses and oyster reefs. The island is an important roosting and nesting location for many protected bird species. The island's northwestern edge currently shows signs of erosion from wave action generated in the ICW and is at further risk of land mass loss due to sea level rise. The proposed plan is to install a series of breakwater structures to dissipate wave action and to protect the shoreline (Potential Restoration Options).

The breakwater structure could be constructed of either oyster bags or pH-balanced artificial reef balls. Oyster bags are less expensive, easier to install, and easier to permit while reef balls more effectively dissipate wave energy and attract larger fish species. Both options occupy the same footprint which may include seagrass beds and will require appropriate permitting. Installation of the breakwater structure would not occur during the breeding season. These are both viable breakwater components which will protect the vulnerable mangrove island shoreline while increasing EFH in the bay.

^{*}Project has not been designed or proposed by owner.







Sarasota Bay Estuary Program Five-Year Habitat Restoration Plan Manatee County, Florida

600

Coordinate System: NAD 1983 Florida State Plane West

Dit-Dot-Dash Bird Islands PID# 1131700005

Fiscal Year: 2018	Rank: 7
Parcel Size: 1.18 acres	County: Manatee
Project Size: 0.37 acres	Landowner: State of Florida / Carlton Arms
	of Bradenton

Location: Confluence of the Braden and Manatee Rivers, Manatee County

Owner/Contact Information: State of Florida Sovereign Submerged Lands; FDEP, (813) 632-

7600 / Audubon Florida, (813) 623-6826

Existing Land Use Description

	FLUCFCS Type	Code	Acreage	Condition
Wetland	Bays and Estuaries	540	0.04	Natural
	Mangrove Swamp	612	1.14	Natural

Summary

The Dit-Dot-Dash Bird Islands occupy approximately one acre in the Braden River. The group of mangrove islands is, in part, sovereign submerged land owned by the State of Florida and managed by the Audubon Society and, in part, owned by Carlton Arms of Bradenton. The project is at the confluence of the Braden and Manatee Rivers immediately north of the SR 64 (Manatee Avenue) Bridge. The mangrove islands are surrounded by unconsolidated sandy bottom, and are an important roosting and nesting location for many protected bird species. The islands' northwestern edges currently show signs of erosion from wave action generated in the boat channel and are at further risk of land mass loss due to sea level rise. This project proposes the installation of a breakwater structure at each island to dissipate wave action and encourage the deposition of sediments on the shoreline (Potential Restoration Options). All proposed work occurs in sovereign submerged land owned by the State of Florida.

The breakwater structure could be constructed of either oyster bags or pH-balanced artificial reef balls. Oyster bags are less expensive, easier to install, and easier to permit while reef balls more effectively dissipate wave energy and attract larger fish species. Both options occupy the same footprint. These are both viable breakwater components which will bolster the vulnerable mangrove island shore while increasing EFH in the rivers. Initial inspection revealed no seagrass in the areas designated for breakwater structure however; this would need to be more thoroughly investigated prior to initiating this project. If present, seagrass impacts would require appropriate permitting. Installation of the structure would not occur during the breeding season.

^{*}Project has not been designed or proposed by owner.





Phillippi Creek Shoreline PID# 0059-04-0045, 0059-04-0046, 0059-04-0034

Fiscal Year: 2018	Rank: 7
Parcel Size: 6.06 acres	County: Sarasota
Project Size: 1.30 acres	Landowner: West Coast Church of the
	Cross, South Gate Community Association,
	Sarasota County

Location: Phillippi Creek south of Webber Street, Sarasota County

Owner/Contact Information: West Coast Church of the Cross, (941) 360-8888; South Gate

Community Association, (941) 955-4597; Sarasota County Utilities, (941) 861-5000

Existing Land Use Description

	FLUCFCS Type	Code	Acreage	Condition
Upland	Residential Med Density Commercial and Services	120 140	0.22 5.73	Developed Developed
	Commercial and Services	140	3.73	Developed
Wetland	Bays and Estuaries	540	0.11	Disturbed

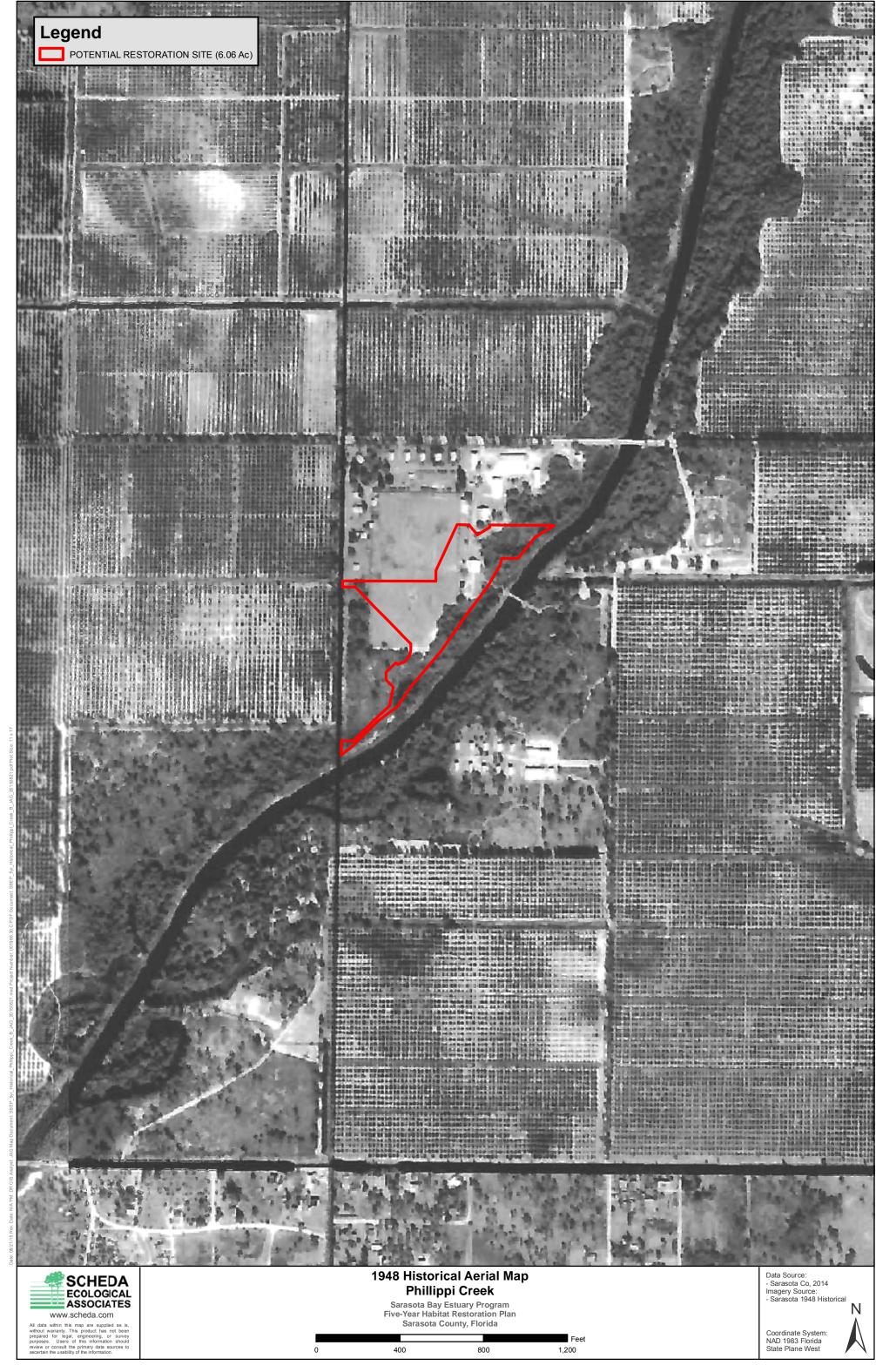
Summary

The Phillippi Creek shoreline project site covers approximately six acres of mixed publicly and privately owned land. Phillippi Creek is listed as an impaired waterbody according to the State of Florida's Impaired Waters Rule Chapter 62-303 FAC.. The project is downstream from the recently-restored Pinecraft Park and upstream of Roberts Bay. The site is along Phillippi Creek's channelized northwest bank and consists of a freshwater marsh which has a dense cattail (*Typha* sp.) interior. Both the marsh and surrounding uplands contain high densities of N/E species, primarily Brazilian pepper, carrotwood, guinea grass (*Panicum maximum*), and airpotato (*Dioscorea bulbifera*). This project proposes the removal of dense cattail and other N/E species to restore areas of low and high marsh, the removal of N/E species from onsite uplands, and the preservation of existing native vegetation such as giant leather fern (*Acrostichum danaeifolium*) and oaks (Potential Restoration Options).

This project would increase habitat value and decrease the seed source of N/E species downstream of the marsh. Sarasota County has expressed support for this project; however, because portions of this site are owned by private entities, it would be essential to receive the approval of all property owners prior to initiating this project. Additionally, N/E species would be very likely to recolonize the marsh without an aggressive maintenance regimen. Therefore, the proposed project is contingent upon two factors: the approval of all property owners, and a commitment from Sarasota County to maintain the proposed restoration efforts.

^{*}Project has not been designed or proposed by all owners.





<u>Tidy Island</u> PID# 7760050000

Fiscal Year: 2018	Rank: 7
Parcel Size: 182.79 acres	County: Manatee
Project Size: 11.47 acres	Landowner: New College Foundation, Inc.

Location: Eastern Sarasota Bay opposite of Longboat Pass, Manatee County

Owner/Contact Information: New College Foundation, (941) 487-4800

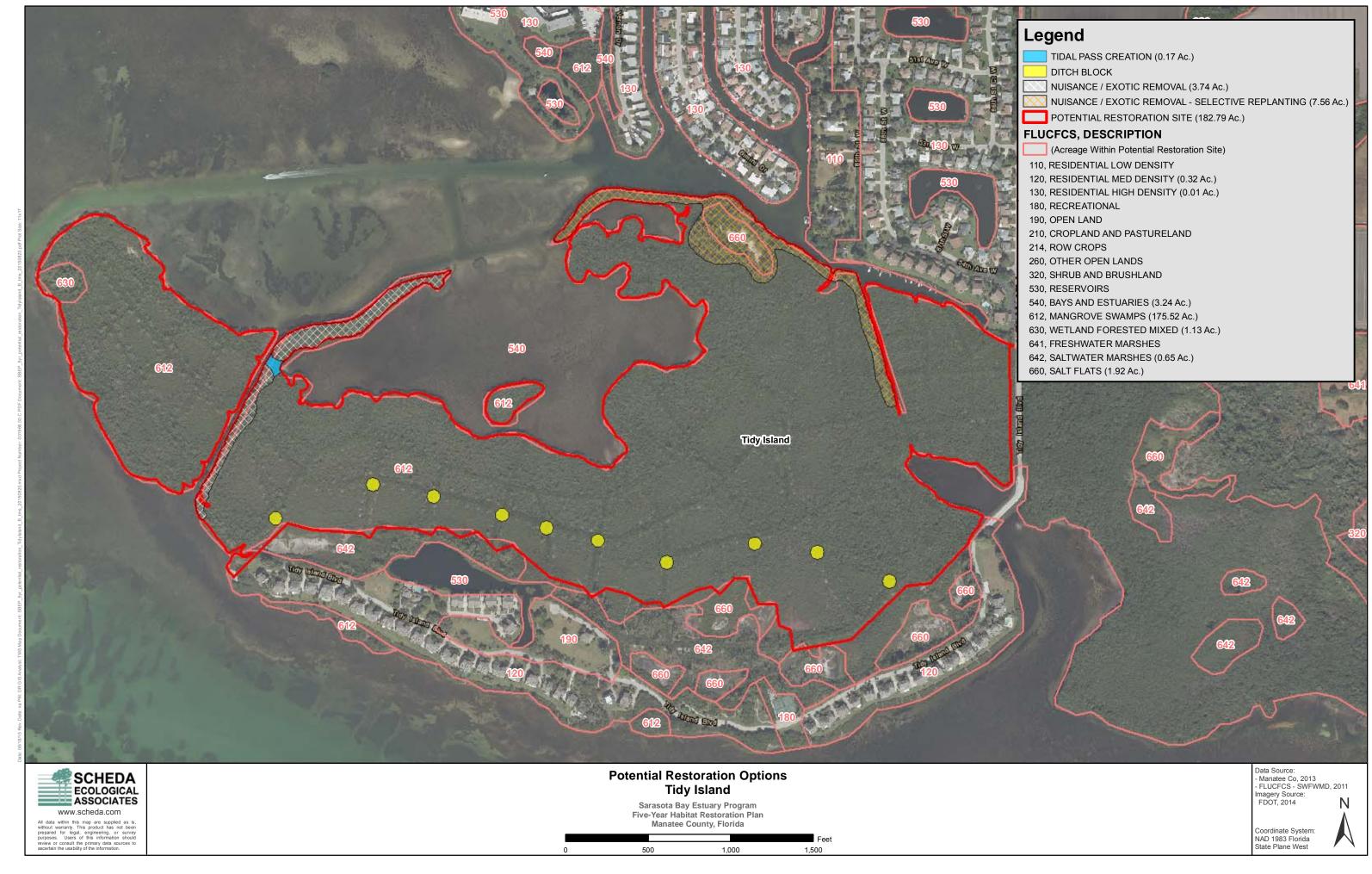
Existing Land Use Description

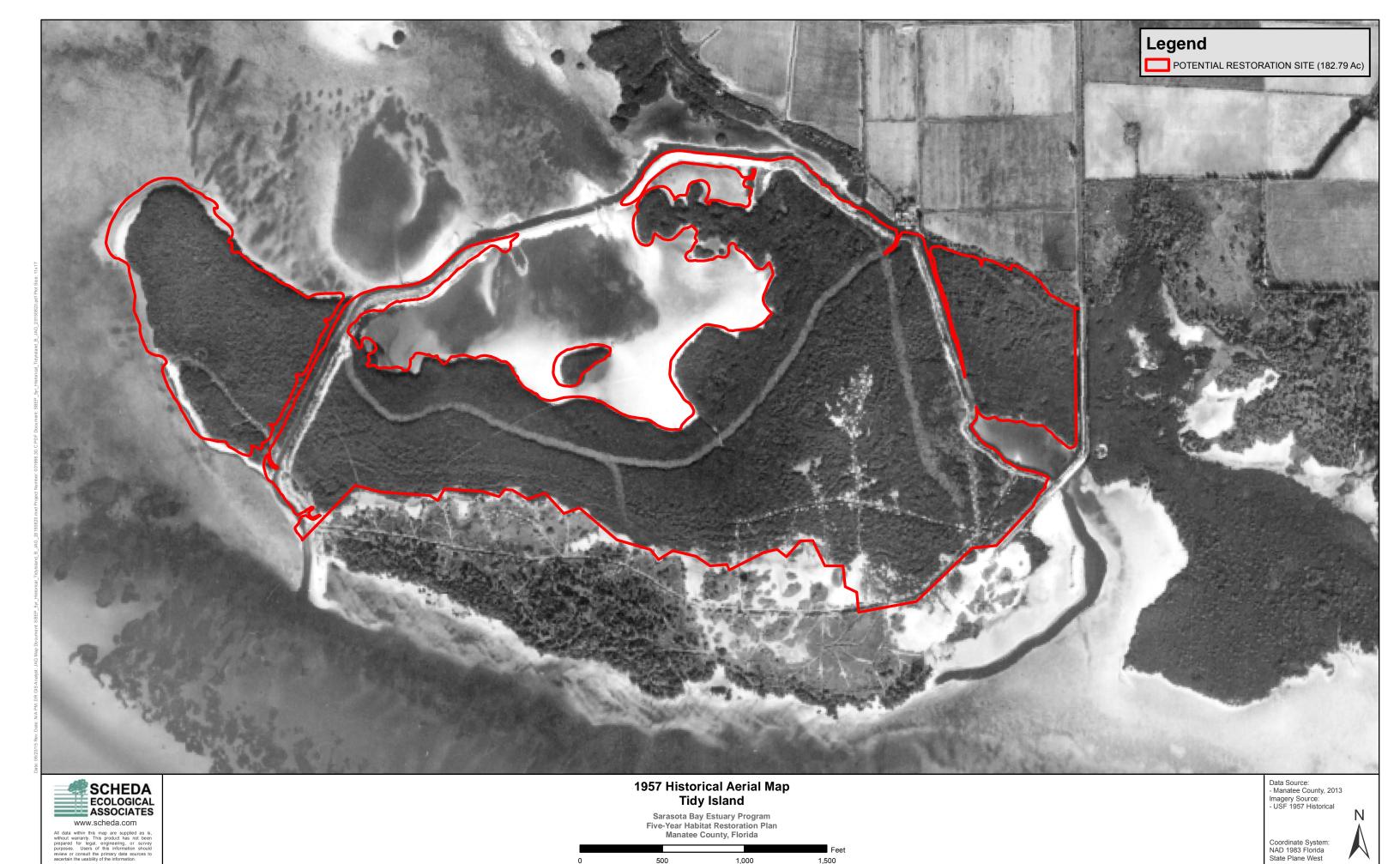
	FLUCFCS Type	Code	Acreage	Condition
				_
Upland	Residential Med Density	120	0.32	Developed
	Residential High Density	130	0.01	Developed
				•
Wetland	Bays and Estuaries	540	3.24	Natural
	Mangrove Swamps	612	175.52	Disturbed
	Wetland Forested Mix	630	1.13	Disturbed
	Saltwater Marshes	642	0.65	Disturbed
	Salt Flats	660	1.92	Disturbed

Summary

The Tidy Island project site consists of approximately 183 acres of estuarine wetlands owned by the New College Foundation. The project is in eastern Sarasota Bay opposite of Longboat Pass and nearby multiple private residential communities. This natural island primarily consists of mangrove swamp which has been ditched for mosquito control. Ditch spoil was deposited in sporadically-located mounds and on upland ridges which are now infested with N/E species. South of the mangrove swamp are historic salterns which have been severely degraded by drainage alterations introduced by the mosquito ditching. The island also contains a semiclosed bayou.

This project proposes removing N/E species from portions of the upland ridges followed by replanting of native species in select areas. Project plans also include the removal of a portion of the upland ridge to open a pass between the semi-enclosed bayou and the bay. This will result in increased water exchange which will improve water quality within the bayou, thereby improving habitat quality for estuarine species. The project includes the placement of strategically-located ditch blocks to restore a hydrologic regime that will support the natural regeneration of the salterns (Potential Restoration Options). The proposed project would improve water quality within the bayou, restore historic saltern habitat, reduce the seed source of N/E species, and improve wildlife habitat.





51

1,000

1,500

5.5 Fiscal Year 2019

Jim Neville Marine Preserve 34th Street Canal Oyster Restoration King Middle School Palma Sola West

Jim Neville Marine Preserve PID# 0131-01-0001

Fiscal Year: 2019	Rank: 11
Parcel Size: 94.30 acres	County: Sarasota
Project Size: 31.42 acres	Landowner: Sarasota County

Location: Little Sarasota Bay east of historic Midnight Pass, Sarasota County

Owner/Contact Information: Sarasota County Parks and Natural Lands, (941) 861-

5000

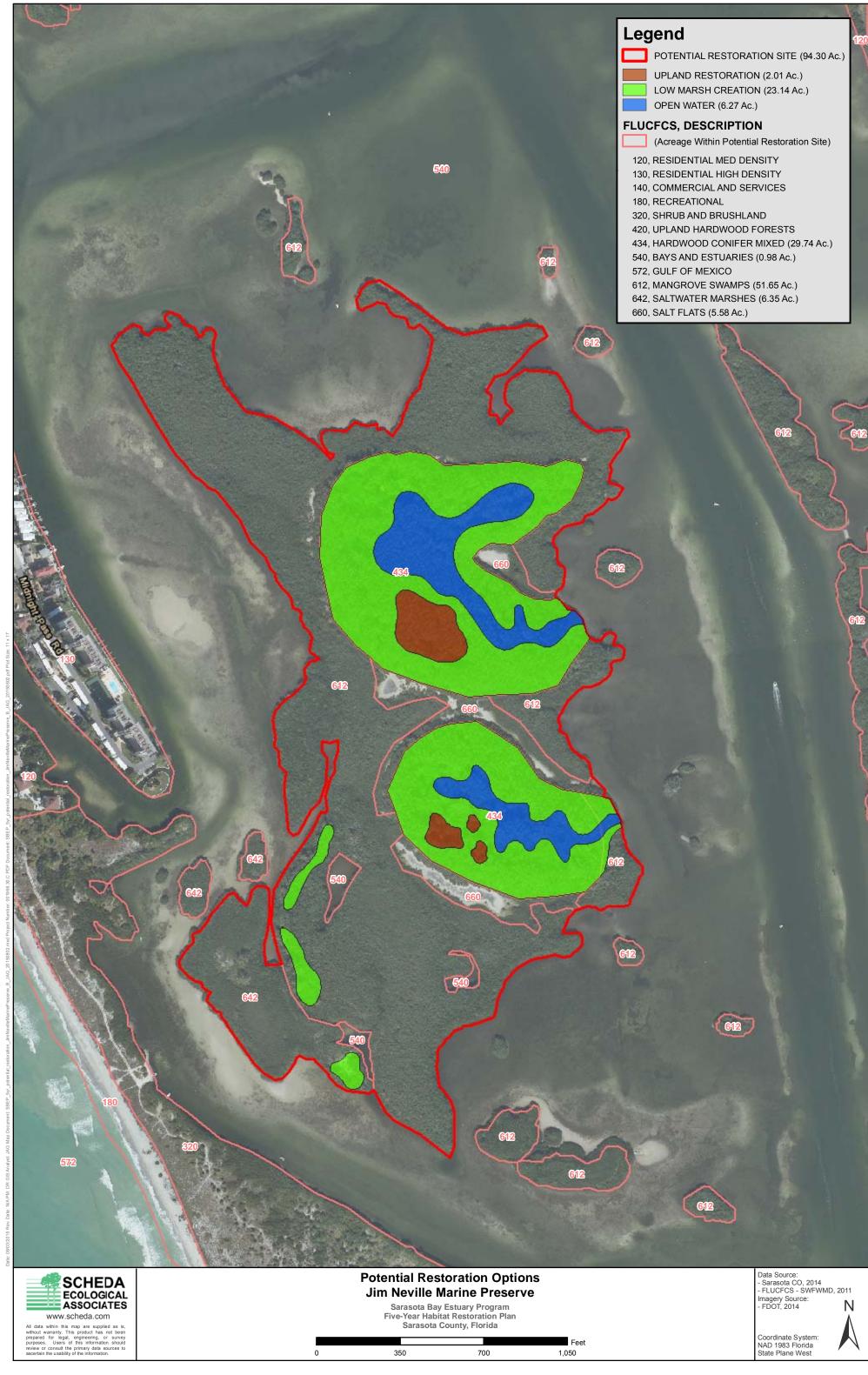
Existing Land Use Description

	FLUCFCS Type	Code	Acreage	Condition
Upland	Hardwood Conifer Mixed	434	29.74	Disturbed
Wetland	Bays and Estuaries	540	0.98	Natural
	Mangrove Swamp	612	51.65	Natural
	Saltwater Marshes	642	6.35	Natural
	Salt Flats	660	5.58	Natural

Summary

The Jim Neville Marine Preserve is a mangrove island located within Little Sarasota Bay, just east of historic Midnight Pass. It was present in the historical imagery when Midnight Pass was open to the Gulf of Mexico (1948 aerial). The Jim Neville Preserve is surrounded by intact seagrass beds and sand flats that are important habitat and foraging areas for fish and wildlife. The island is dominated by mature mangrove swamp that is embedded with saltmarsh and salt flats. However, as the total area of uplands has increased over time, the percent coverage of N/E vegetation has also increased. The proposed project would remove N/E vegetation from areas which would subsequently be augmented with native coastal hammock species (Potential Restoration Options). There is potential to expand or create saltmarsh and/or saltern in these areas as well, although the overall plan should not preclude the public from using the site for recreation.

^{*}Project has not been designed or proposed by owner.





34th Street Canal Oyster Restoration No PID#

Fiscal Year: 2019	Rank: 12
Parcel Size: 8.06 acres	County: Manatee
Project Size: 0.71 acres	Landowner: State of Florida

Location: Northern Sarasota Bay at 34th Street Canal, Manatee County

Owner/Contact Information: State of Florida Sovereign Submerged Lands; FDEP

(813) 632-7600

Existing Land Use Description

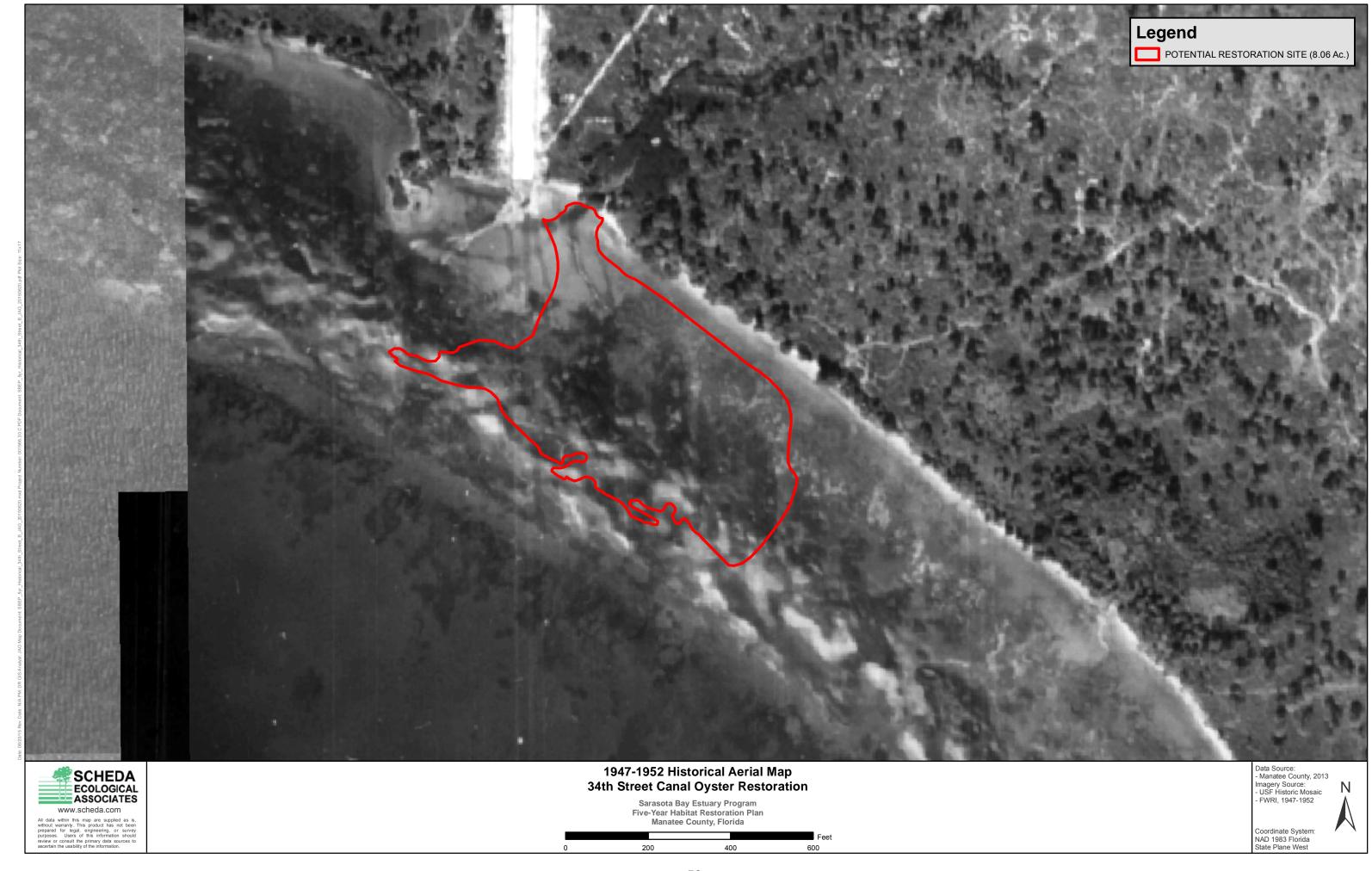
	FLUCFCS Type	Code	Acreage	Condition
Upland	Residential High Density	130	0.01	Developed
Wetland	Bays and Estuaries	540	8.05	Disturbed

Summary

The 34th Street Canal Oyster Restoration project site consists of approximately eight acres of sovereign submerged land owned by the State of Florida. The project is in northern Sarasota Bay near the outfall of multiple freshwater canals. The outfall area is a matrix of unconsolidated sandy bottom with patches of seagrass and oyster reefs. This project proposes the strategic installation of oyster bags to promote the growth of oyster reefs throughout the available sandy areas (Potential Restoration Options). Because oyster bags would not be placed in areas containing seagrass, no permitting for impacts would be required. The availability of freshwater from the canals and presence of existing oyster reefs indicate that live oyster spat (*Crassostrea virginica*) would colonize the bags once installed. This project would provide EFH and improve water quality with the increased number of filter-feeding organisms.

^{*}Project has not been designed or proposed by owner.





<u>King Middle School</u> PID# 3837801809, 3837000458, 3837010051

Fiscal Year: 2019	Rank: 12
Parcel Size: 38.36 acres	County: Manatee
Project Size: 2.83 acres	Landowner: School Board of Manatee
	County, William Eller, Wilmington Land
	Company

Location: 600 75th Street Northwest, Bradenton, Manatee County

Owner/Contact Information: Joe Harrison, (941) 366-4800

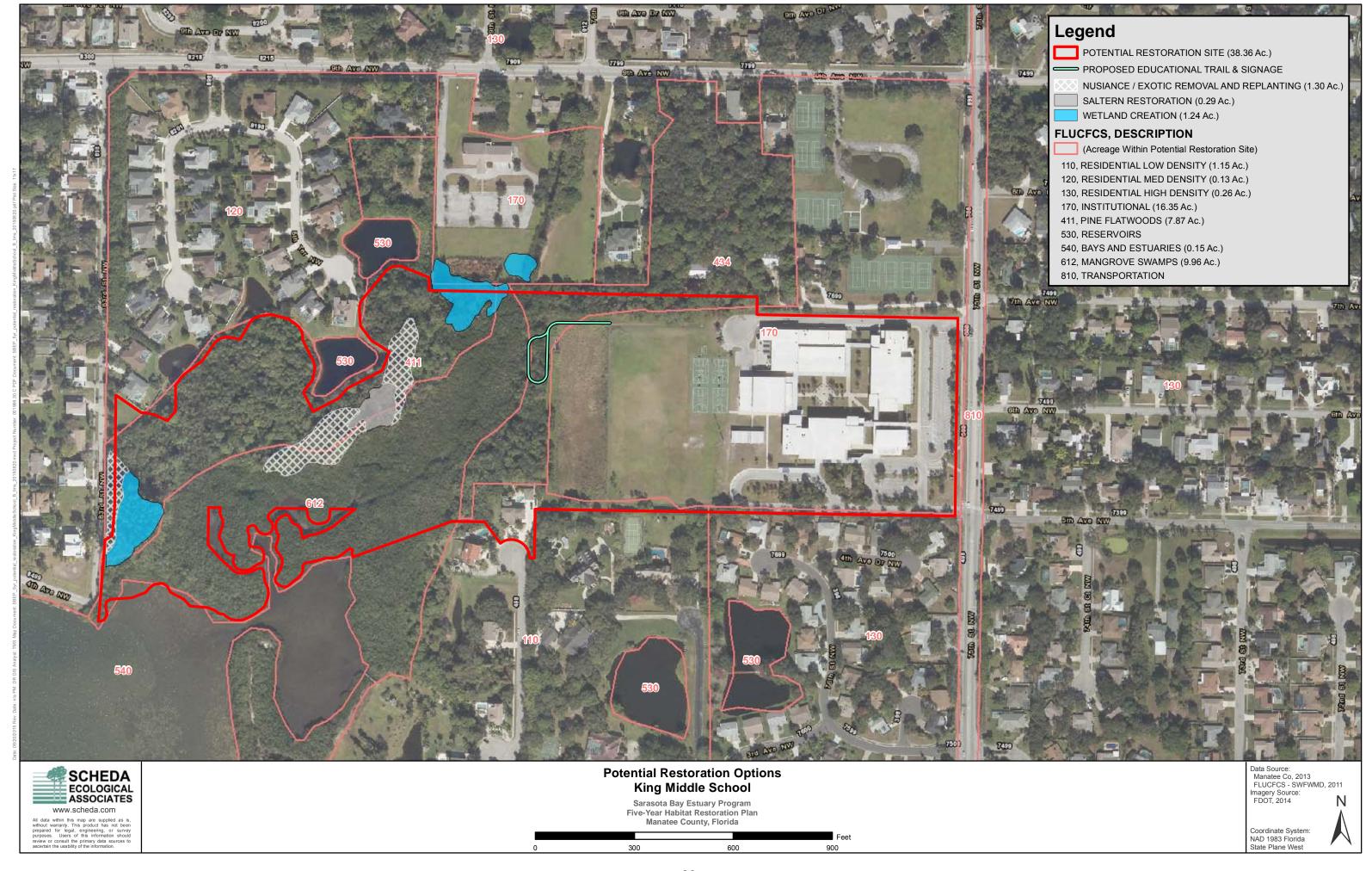
Existing Land Use Description

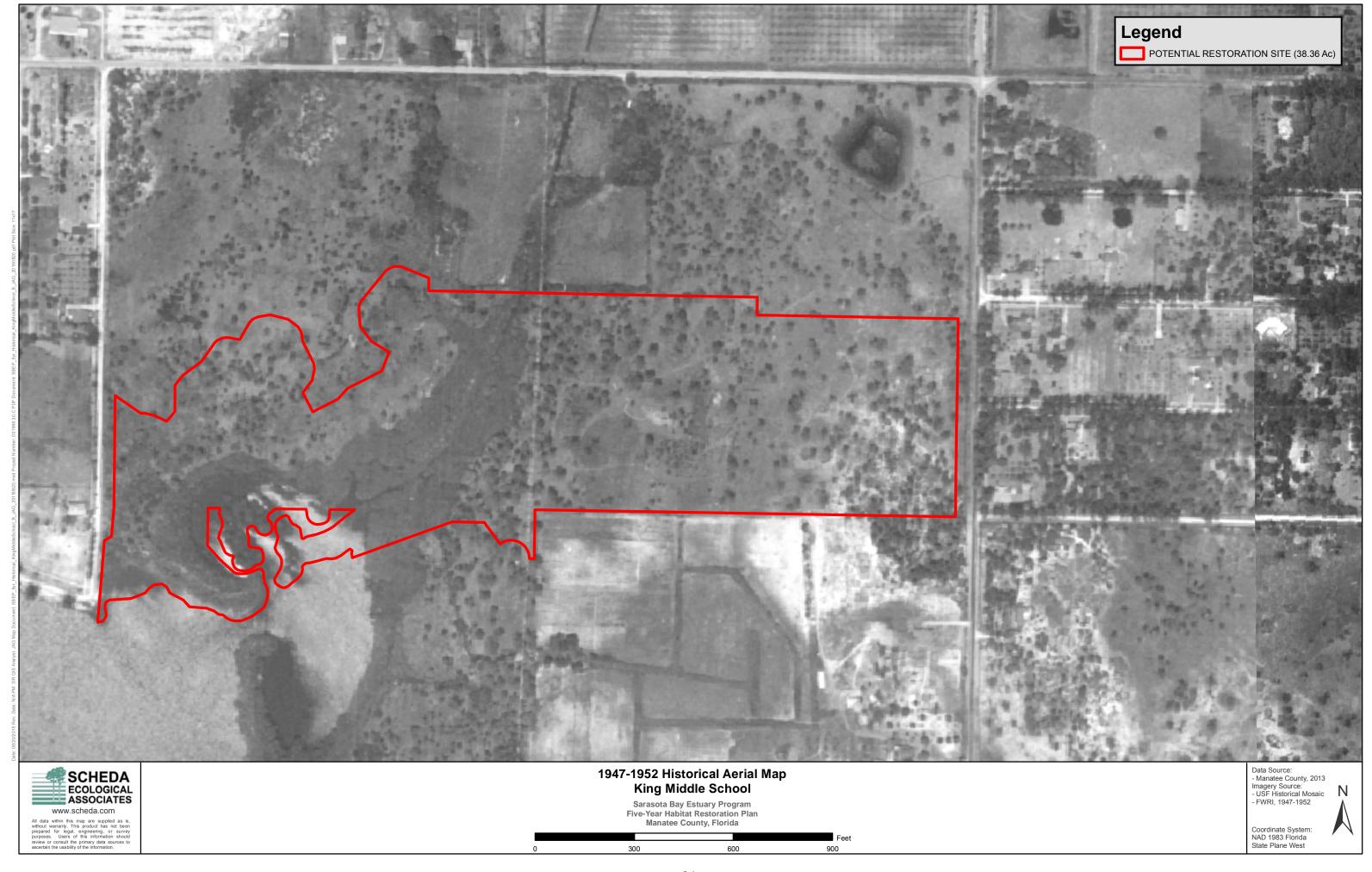
FLUCFCS Type	Code	Acreage	Condition
Residential Low Density	110	1.15	Developed
Residential Med Density	120	0.13	Developed
Residential High Density	130	0.26	Developed
Institutional	170	16.35	Developed
Pine Flatwoods	411	7.87	Natural
Hardwood Conifer Mixed	434	2.49	Natural
Bays and Estuaries	540	0.15	Natural
Mangrove Swamps	612	9.96	Natural
	Residential Low Density Residential Med Density Residential High Density Institutional Pine Flatwoods Hardwood Conifer Mixed Bays and Estuaries	Residential Low Density 110 Residential Med Density 120 Residential High Density 130 Institutional 170 Pine Flatwoods 411 Hardwood Conifer Mixed 434 Bays and Estuaries 540	Residential Low Density 110 1.15 Residential Med Density 120 0.13 Residential High Density 130 0.26 Institutional 170 16.35 Pine Flatwoods 411 7.87 Hardwood Conifer Mixed 434 2.49 Bays and Estuaries 540 0.15

Summary

The King Middle School project site is approximately 38 acres of mixed publicly and privately owned land. It is at the northeastern corner of Palma Sola Bay. The site is primarily mangrove swamp with some relict saltern habitat, both of which have been invaded by melaleuca, Australian pine, and other N/E species. This project includes the removal of N/E vegetation, the creation of estuarine wetlands, and the restoration of coastal hammock (Potential Restoration Options). The installation of an educational trail with signs is proposed from the middle school into the mangrove swamp. This project would reduce the seed source of N/E species, increase the habitat value for wildlife, and provide an educational and recreational resource for students of the school and the local community. King Middle School has expressed support for this project; however, because portions of this site are owned by private entities, it would be essential to receive the approval of all property owners prior to initiating this project.

^{*}Project has not been designed or proposed by all owners.





Palma Sola West PID# 7499500002

Fiscal Year: 2019	Rank: 12
Parcel Size: 78.44 acres	County: Manatee
Project Size: 11.12 acres	Landowner: Manatee County

Location: Western Palma Sola Bay southeast of Perico Bay Club, Manatee County

Owner/Contact Information: Manatee County Parks and Natural Resources, (941)

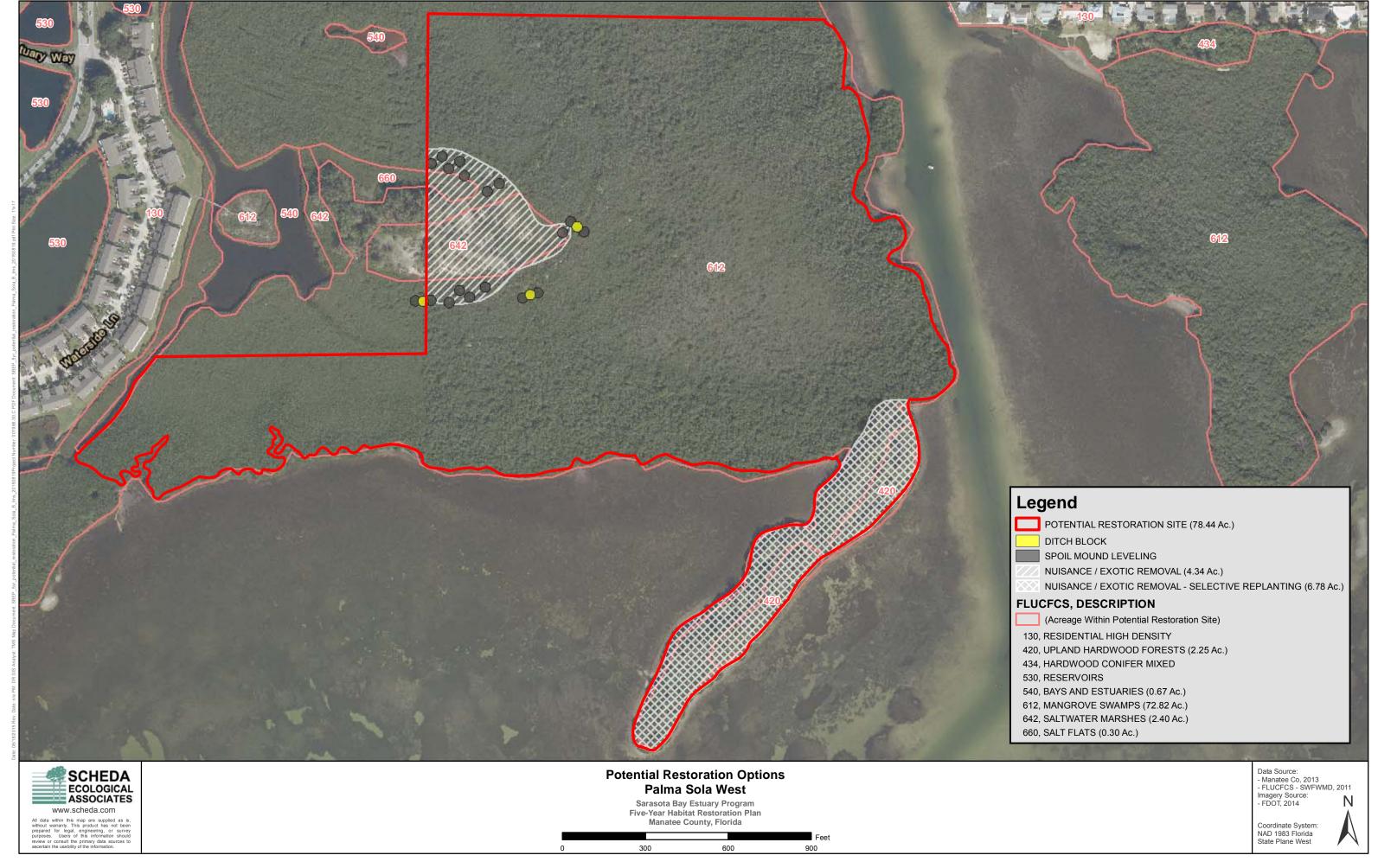
742-5923

Existing Land Use Description

	FLUCFCS Type	Code	Acreage	Condition
Upland	Upland Hardwood Forests	420	2.25	Disturbed
Wetland	Bays and Estuaries	540	0.67	Natural
	Mangrove Swamps	612	72.82	Disturbed
	Saltwater Marshes	642	2.40	Disturbed
	Salt Flats	660	0.30	Disturbed

Summary

The Palma Sola West project site is approximately 78 acres of estuarine wetlands owned by Manatee County. The project is located in western Palma Sola Bay and abuts the Perico Bay Club residential community along its western edge. This area is surrounded by seagrass and EFH and could provide roosting and nesting habitat for protected bird species. This site was historically mangrove swamp with a central area of saltern. Mosquito ditching in the 1960s altered the hydrology and severely degraded and reduced the size of the saltern. Of all estuarine habitats in this region, salterns have been most disproportionately impacted by development. Spoil from mosquito ditching and nearby dredging of the ICW was deposited on the project site and these spoil areas are now infested with N/E vegetation such as Australian pine. The project proposes strategically-located ditch blocks to restore a hydrology which will support the natural regeneration of the saltern. Additionally, the project proposes the removal of N/E species from a peninsula of spoil that extends into Palma Sola Bay, and from within the former saltern. Following removal of N/E vegetation, the peninsula would be replanted to create coastal maritime hammock habitat (Potential Restoration Options). This project would reduce the N/E seed source, improve habitat for wildlife, and regenerate critical saltern habitat.







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Sarasota Bay Estuary Program Five-Year Habitat Restoration Plan Manatee County, Florida

1,200 1,800 Coordinate System: NAD 1983 Florida State Plane West

5.6 Fiscal Year 2020

North Lido Edwards Islands Skiers Island Bayshore Island

North Lido PID# 0012-05-0001

Fiscal Year: 2020	Rank: 12
Parcel Size: 60.77 acres	County: Sarasota
Project Size: 2.0 acres	Landowner: City of Sarasota

Location: Benjamin Franklin Drive , Sarasota County

Owner/Contact Information: Sarasota County Parks & Natural Lands, (941) 861-5000

Existing Land Use Description

	FLUCFCS Type	Code	Acreage	Condition
Upland	Recreational	180	4.79	Natural
	Shrub and Brushland	320	26.27	Natural
	Upland Hardwood Forests	420	20.45	Disturbed
Wetland	Mangrove Swamps	612	9.26	Natural

Summary

The North Lido site is owned by the City of Sarasota and operated by the Sarasota County Parks Department. It is on Lido Key, bordered on one side by the Gulf of Mexico and on the other by Pansy Bayou within Sarasota Bay. The site contains a myriad of different habitat types such as sand beach, dune, mangrove swamp, and upland coastal hammock. North Lido is a popular birding spot with reports of nesting snowy plovers (*Charadrius nivosus*), mangrove cuckoos (*Coccyzus minor*), great horned owls (*Bubo virginianus*), and a variety of migratory songbirds.

Phase I of the habitat improvement and enhancement project was completed in 2010 and included the removal of N/E species, the creation of a tidal creek with associated high and low marsh wetlands, and the restoration of upland coastal hammock. This project proposes the completion of the habitat restoration efforts (Phase II) which consist of removing a dense stand of Australian pines and excavating and connecting that area to the tidal lagoon; this will create an open water area with low and high marsh estuarine habitat. The project plans to selectively remove Australian pine from the western edge of the park to create a beach dune system (Potential Restoration Options). The maintenance of the Brazilian pepper removal area from Phase I is also planned. Completion of Phase II will improve habitat value for wildlife, provide recreational opportunities for the public, and complete the restoration effort that began in 2009.





Edwards Islands PID# 0078-08-0001, 0076-04-0001

Fiscal Year: 2020	Rank: 16
Parcel Size: 12.53 acres	County: Sarasota
Project Size: 9.49 acres	Landowner: Sarasota County

Location: Roberts Bay west of ICW, Sarasota County

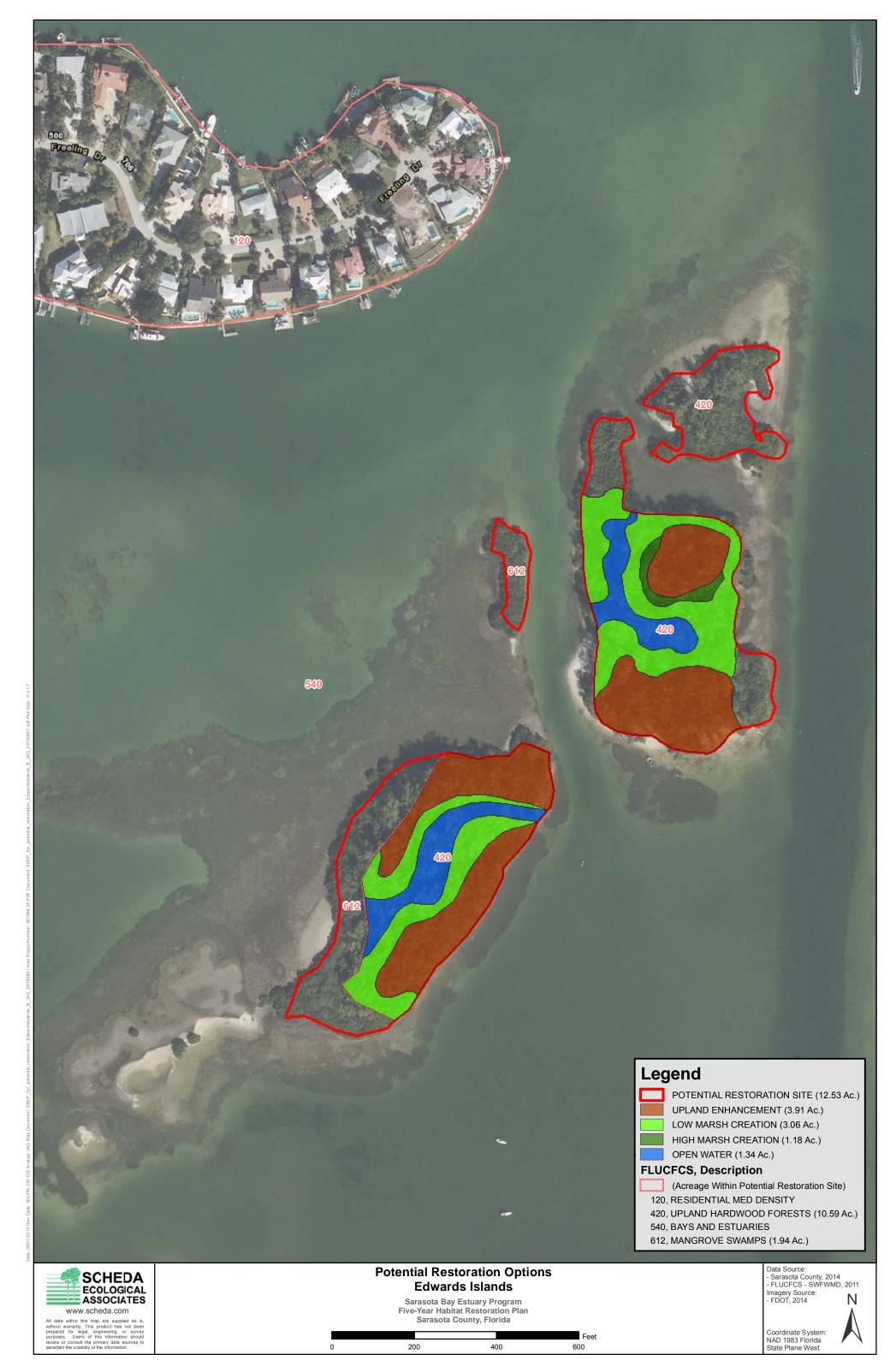
Owner/Contact Information: Sarasota County Parks & Natural Lands, (941) 861-5000

Existing Land Use Description

	FLUCFCS Type	Code	Acreage	Condition
Upland	Upland Hardwood Forests	420	10.59	Disturbed
Wetland	Mangrove Swamps	612	1.94	Natural

Summary

Edwards Islands are a series of small spoil islands within Roberts Bay located just south of the Siesta Drive Bridge. The islands are surrounded by intact seagrass beds and sand flats that are important habitat and foraging areas for fish and wildlife. Habitat improvements are proposed for the two larger islands locally referred to as Big Edwards (north) and Little Edwards (south) Islands. Both islands are commonly used by the public for recreation. The majority of the combined land area is occupied by mature stands of Australian pine and other N/E vegetation. Several habitat improvement projects have been previously planned for these islands that primarily included the removal of N/E vegetation. However, there has been local opposition to these activities from the community for a number of reasons. This proposal is to enhance upland areas on both islands by removing N/E species and replanting with native coastal maritime species. On both islands, the plan creates a tidal lagoon which would be exposed at low tide and connect to the bay and existing mangrove swamp. The proposed open water features would be surrounded by created estuarine marsh (Potential Restoration Options). As the Edwards Islands are in a normal operating speed zone, future improvement projects may include shoreline stabilization and enhancement projects to reduce erosion caused by wave energy. The overall plan will not preclude the public from using the site for passive recreation.







Sarasota Bay Estuary Program Five-Year Habitat Restoration Plan Sarasota County, Florida

Feet 800 1,600 2,400

Coordinate System: NAD 1983 Florida State Plane West



Skiers Island No PID#

Fiscal Year: 2020	Rank: 16
Parcel Size: 9.05 acres	County: Sarasota
Project Size: 5.99 acres	Landowner: Sarasota County

Location: Roberts Bay west of ICW, Sarasota County

Owner/Contact Information: Sarasota County Parks and Natural Lands, (941) 861-

5000

Existing Land Use Description

	FLUCFCS Type	Code	Acreage	Condition
Upland	Upland Hardwood Forests	420	5.80	Disturbed
Wetland	Mangrove Swamps	612	3.25	Natural

Summary

Skiers Island is a dredge spoil island which covers approximately nine acres and is owned by Sarasota County. It is located near the entrance of Siesta Key's Grand Canal, just south of Edwards Islands. Like Edwards Islands, a large majority of the Skiers Island is covered by dense, mature stands of Australian pine and other N/E vegetation. This project proposes the complete removal of existing N/E vegetation and enhancement of the two upland areas to create coastal maritime hammock using oaks, myrsine (*Myrsine cubana*), seagrape (*Coccoloba uvifera*), and buttonwood (*Conocarpus erectus*). Excavation of an open water area surrounded by low marsh is proposed in order to provide tidal flow between three outlets to the bay (Potential Restoration Options). This project will reduce the seed source of N/E species, improve tidal flushing, create EFH within the island, and increase the value of wildlife habitat on the island. As Skiers Island is located in a normal operating speed zone and is also a designated water sport area, additional improvements include shoreline stabilization and enhancement features to reduce erosion caused by wave energy. The overall plan will not preclude the public from using the site for passive recreation.





Sarasota Bay Estuary Program Five-Year Habitat Restoration Plan Sarasota County, Florida

Feet 1,600 800 2,400

Coordinate System: NAD 1983 Florida State Plane West

Bayshore Island No PID#

Fiscal Year: 2020	Rank: 18
Parcel Size: 6.14 acres	County: Manatee
Project Size: 6.14 acres	Landowner: State of Florida

Location: Northeastern Sarasota Bay at Cedar Hammock Creek outfall, Manatee

County

Owner/Contact Information: State of Florida Sovereign Submerged Lands; FDEP,

(813) 632-7600

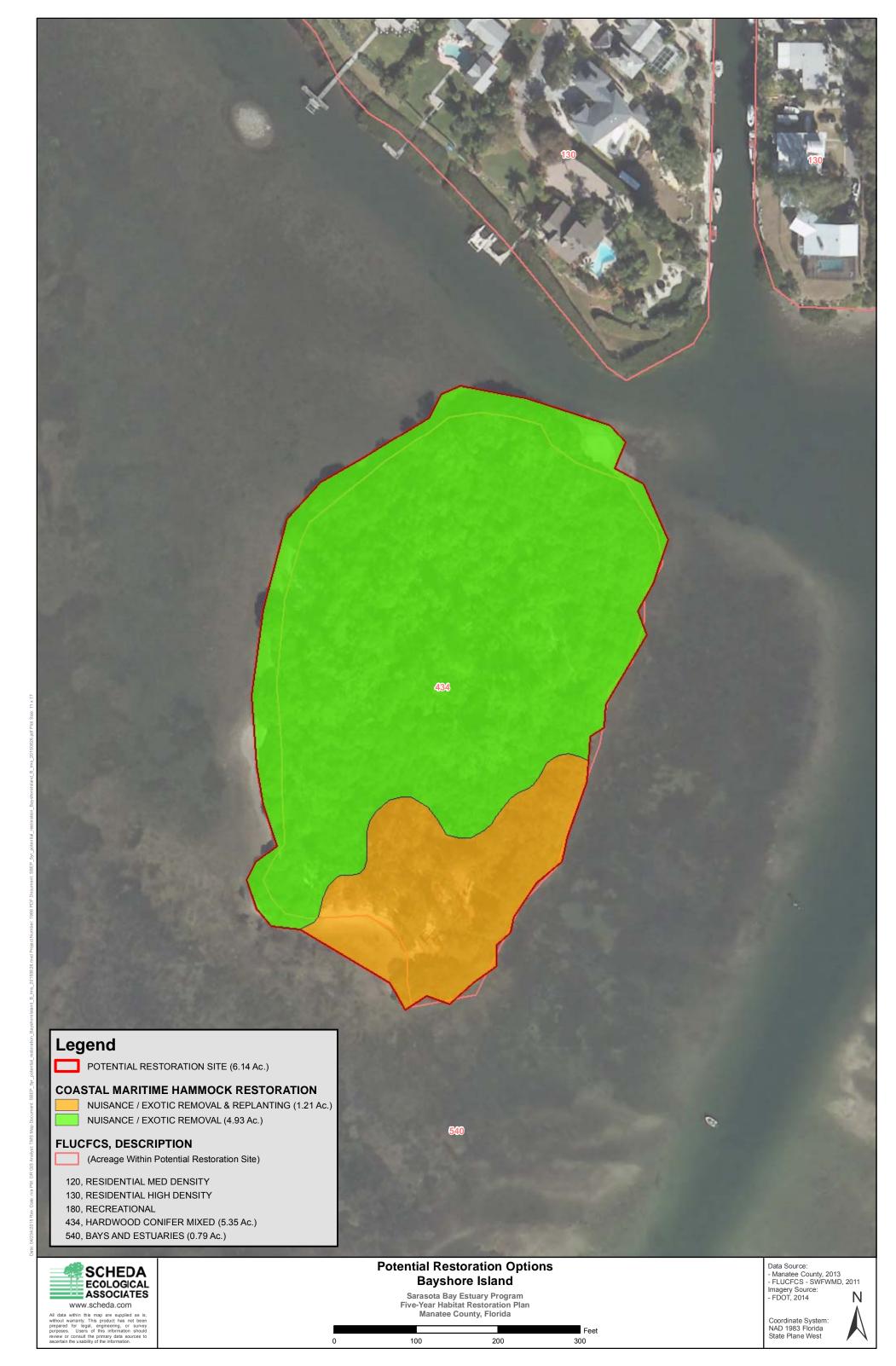
Existing Land Use Description

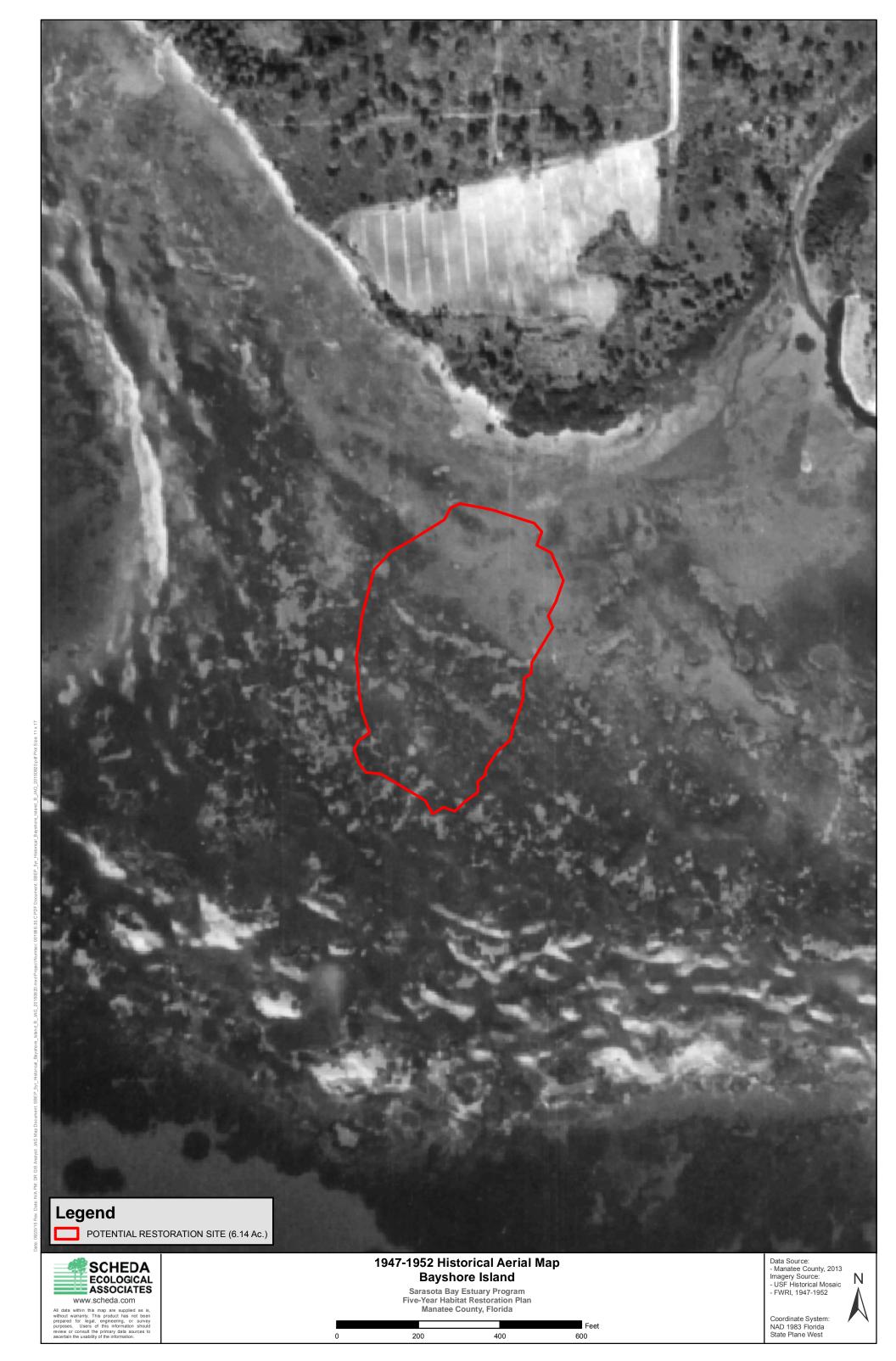
	FLUCFCS Type	Code	Acreage	Condition
Upland	Hardwood Conifer Mixed	434	5.35	Disturbed
Wetland	Bays and Estuaries	540	0.79	Disturbed

Summary

The Bayshore Island project site consists of approximately six acres of sovereign submerged land owned by the State of Florida. The project is located in northeastern Sarasota Bay, at the outfall of Cedar Hammock Creek. Bayshore Island is surrounded by seagrass and EFH and could provide roosting and nesting habitat for protected bird species. This spoil island has a small area of higher elevation and a larger area of lower elevation with estuarine wetland; both contain dense Australian pine, carrotwood, and Brazilian pepper. This project proposes the 100 percent removal of N/E species from the higher elevation area and replanting with native vegetation to restore the area to coastal maritime hammock. Within the estuarine wetland, the project proposes selective N/E removal (Potential Restoration Options). It is possible to bring heavy equipment on the island so chipping, kill-in-place, and manual removal/burn are all viable options for N/E removal; specific techniques would be chosen to ensure minimal impacts to native vegetation. This project would reduce the N/E seed source and improve habitat for wildlife.

^{*}Project has not been designed or proposed by owner.





6.0 References

- Dillon K.S., & J.P. Chanton. 2005. Nutrient transformations between rainfall and stormwater runoff in an urbanized coastal environment: Sarasota Bay, Florida, Limnology and Oceanography, 1, doi: 10.4319/lo.2005.50.1.0062.
- National Marine Fisheries Service. 2014. Fisheries Economics of the United States, 2012. U.S. Dept. Commerce, NOAA Tech. Memo. NMFS-F/SPO-137, 175p. Available at: https://www.st.nmfs.noaa.gov/st5/publication/index.html.
- Olsen, S.B., Padma, T.V., & B.D. Richter. 2006. Managing Freshwater Inflows to Estuaries A Methods Guide. USAID, The Nature Conservancy, The Coastal Resource Center University of Rhode Island. Washington DC.

Appendix A **Comprehensive Conservation and Management Plan Excerpt: Goals**

PARTNERSHIPS

Sarasota Bay was named an "estuary of national significance" in the Water Quality Act of 1987. The Sarasota Bay Estuary Program (SBEP) was established as a Special District in Florida on July 23, 2004, with the signing of an Interlocal Agreement. Partners to the agreement are Sarasota County, Manatee County, the City of Sarasota, the City of Bradenton, the Town of Longboat Key, the Florida Department of Environmental Protection, the Southwest Florida Water Management District, the U.S. Fish & Wildlife Service, the National Oceanic and Atmospheric Administration, and the U.S. Army Corps of Engineers. The U.S. Environmental Protection Agency (EPA) is participating as a partner under a Memorandum of Understanding.



The SBEP is one of 28 EPA National Estuary Programs in the United States. Florida has four National Estuary Programs: the Indian River Lagoon National Estuary Program, the Tampa Bay and Sarasota Bay Estuary Programs, and the Charlotte Harbor National Estuary Program.



Sarasota Bay Estuary Program would like to thank the citizens and technical advisors for their thousands of volunteer hours, and for the contributions of federal, state, and local government staff in making Bay restoration a reality.

GOALS:

In 1989, the SBEP was formed with the following goals, established through the EPA nomination and acceptance process:

- Improve water transparency
- Reduce the quantity and improve the quality of stormwater runoff to the Bay
- Restore lost seagrasses and shoreline habitats, and eliminate further losses
- Establish an appropriate management structure for Sarasota Bay
- Provide increased levels of managed access to Sarasota Bay and its resources
- Restore and sustain fish and other living resources in Sarasota Bay
- Educate the public on issues and problems facing Sarasota Bay.

After approximately three years of technical assessment and studies, a preliminary management plan was presented to the community in the "Framework for Action Report 1993." Following two years of review, the Comprehensive Conservation and Management Plan (CCMP) was formally adopted in June 1995.



















