



Tampa Shoreline Restoration Initiative

PARTNERS IN PRESERVATION

[*Shoreline Restoration Masterplan*]



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Publication Design

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Funding Provided By:

National Fish and Wildlife Foundation

Pinellas County Environmental Foundation

Hillsborough County Environmental Protection Commission

Electronic Document Available Online At:

<http://www.mbpt.org>

<http://www.fccdr.usf.edu>

Acknowledgements:

Without the help of numerous people, this project would not have been possible. We would like to thank: Michael Burwell, Debbi Berger, Ilze Berzins, Ged Caddick, Peter Clark, Laura Delise, Holly Greening, Brandt Henningsen, Jack Merriam, Paul Miselis, Stephanie Powers, Rose Poyner, Tom Ries, Bob Stetler, Forest Turbiville and last, but certainly not least, Jim Valentine.

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PROJECT OVERVIEW

EXECUTIVE SUMMARY

The condition of shoreline habitats is critical to the overall health of an estuary. The ribbon of life that occurs where the water meets the land is one of the most biologically productive habitats on earth. In Tampa Bay, alterations to these habitats has resulted in less biological productivity, degraded water quality, and more erosion of property from the storms that threaten the area. To help mitigate this loss, agencies throughout the region have focused on restoration projects that recreate natural habitats along the shoreline. Publicly owned lands provide a great opportunity to restore shoreline habitats and demonstrate the importance of these habitats to the Tampa Bay Estuary.

Specifically, this masterplan addresses existing conditions and shoreline restoration of approximately 100,000 feet of shoreline distributed throughout 30 of the City of Tampa's Parks. Through a GPS-based field inventory, the existing conditions of the shoreline were cataloged and mapped including both habitat quality, habitat type, and the percent cover and species of exotic plant infestations. The parks were ranked based on an exotic plant removal priority rating and overall priority rating. In addition, through interviews with local stakeholder organizations the document catalogs both prior and potential future restoration of the sites within the study area.

The results of the ranking for the exotic plant removal priority indicate that eight of the thirty parks were found to have either a high or moderate priority for exotic vegetation removal. The parks in this category include: Rowlett, Blackwater Hammock, Palm River (McKay Bay Bike Trail), and the Temple Crest Center. The most common exotic found was Brazilian pepper (*Schinus terbinthifolius*). However, other exotics such as Air potato (*Dioscorea bulbifera*), creeping ox-eye (*Wedelia trilobata*), and Torpedo grass (*Panicum repens*) are fairly widespread and may prove more difficult to remove.

The overall ranking results suggest that eight parks in the study have a high priority for restoration. The parks in this category are Rivercrest, Rowlett, Temple Crest Center, Blackwater Hammock, River Tower, Reed, Riverside Garden, and Epps. Of these parks identified, only three of the parks (Reed, River Tower, and Riverside Garden) were in the planning or implementation phase of restoration. Additionally, seventeen parks were ranked as having a moderate priority for restoration of the shoreline.

Fifteen local stakeholder agencies were identified that are directly involved in carrying out restoration activities and many more organizations were identified as funding partners or volunteers. The combined efforts of these organizations have resulted in 20 of the parks in the study area that have had some type of restoration activity. One park was undergoing restoration during the study (DeSoto). Tappan Park was the only park where restoration is considered complete. Nine parks were found to be in the planning process of restoration from one or more stakeholder agencies and those parks include: Ballast Point, Bayshore, Cotanchobee, Curtis Hixon, Cypress, Davis Island, Gandy, Lowry, McKay Bay Nature, Palm River, Reed, Ribbon of Green, Riverside Gardens, and River Tower. Ten parks in the study did not have any associated planning or past restoration project and, as described above, some of these parks are considered a high priority for restoration.

In conclusion, conditions within the parks varied from near pristine to hardened seawall with little habitat value. However, a significant proportion of the shoreline within the parks has undergone restoration, but there exists a great potential for additional restoration projects and new partnerships to form between agencies to carry out restoration in the future. Hopefully, this document will serve as a reference and guide to assist in the restoration process and facilitate additional collaboration in the restoration process.

INTRODUCTION

The City of Tampa is home to more than 300,000 people, and is surrounded by the largest open water estuary in Florida. The Tampa Bay estuary is a natural treasure in the Southwest Florida region and serves as an anchor for much of the metropolitan areas' tourism and commerce. The condition of the shorelines is critical to the health of the estuary. The shoreline is defined as the area where a waterbody meets land; this interface is vitally important to the health of our natural ecosystems. The shoreline can be thought of as a ribbon of life that surrounds our water resources. The natural habitats that occur within this zone are some of the most productive on earth, and the aquatic life that thrives here serves as the basis for many of the world's recreationally and commercially important fisheries species. The City of Tampa is blessed with 183 linear miles of shoreline, of which approximately 7% is located within publicly-owned City parks. As is the case in many urbanized areas, much of the shoreline has been altered from its native state.

Alterations of the shoreline have reduced biological productivity, degraded water quality, and reduced available habitat for commercially important species, and endangered birds and reptiles. Within the region, a number of different types of natural communities thrive on the shores. In the freshwater systems cypress swamps and herbaceous wetlands thrive. While where the tides bring saltwater to the shore, the plant communities change from leatherfern to cordgrass and finally tropical mangrove species within the saltiest portions of the estuary.

Restoration of Shoreline Habitats

Restoration of shoreline habitats has been successful in the past eight years as a total of 2,396 acres have been restored since 1994 by various agencies and stakeholders (table 1). The restoration of 378 acres of oligohaline marsh has exceeded the initial goals set forth in the Tampa Bay Estuary Program's (TBEP) *Charting the Course* plan from 1996.

The Tampa Shoreline Restoration Initiative

In 2003, the Mayor's Beautification Program received funding from the National Fish and Wildlife Foundation, Pinellas County Environmental Foundation, and the Hillsborough County Environmental Protection Commission for the Tampa Shoreline Restoration Initiative (TSRI). The project focus is the shoreline restoration and wildlife habitat protection in 30 of Tampa's parks shown in figure 1. The parks collectively contain 100,000 linear feet of shoreline. To strategically look at the opportunities for restoration, the TSRI proposed the creation of a masterplan document. This document is meant to serve as a guide to prioritizing and targeting resources to restore the shoreline owned by Tampa's citizens through the City park system. The plan provides an overview of the existing conditions in each of the thirty parks, and identifies and prioritizes restoration and exotic plant removal.

In the Tampa Bay area, a number of different organizations play a role in shoreline restoration and maintenance. This plan attempts to not only document existing conditions and make recommendations, but also identify all of the groups that are working on shoreline restoration within the study area of the 30 parks. Furthermore, the plan aims to establish guidelines for monitoring and tracking the health of these vital systems in the future so that they can be maintained to maximize their recreational and ecological benefits.

Table 1: Restoration Acres of Shoreline Habitats in the Tampa Bay Estuary

	1994	1999	2002	Total Restoration
Mangroves/ Salt Marsh	18,000	19,340	20,018	2,018
Oligohaline Marsh	4,117	4,367	4,495	378

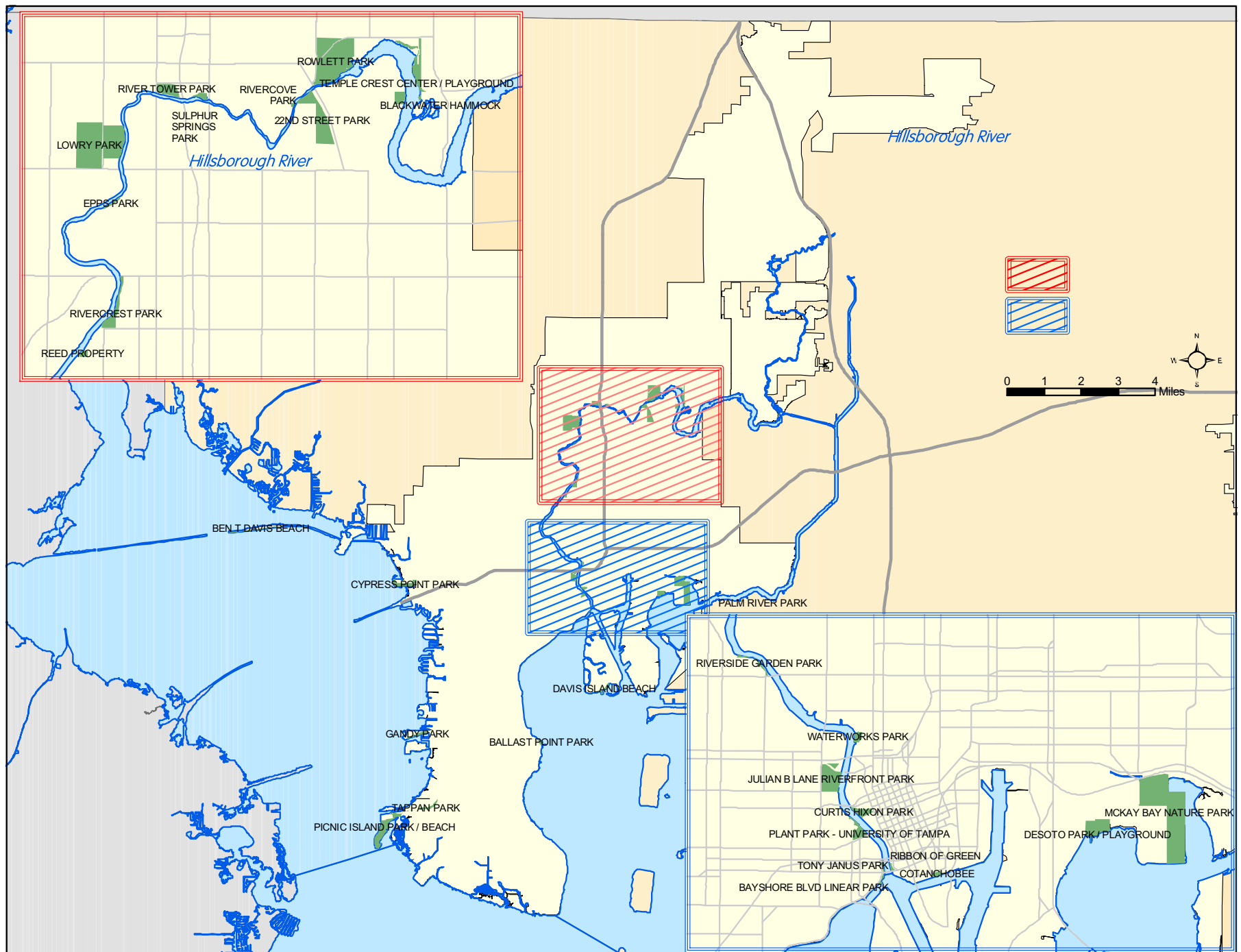


Figure 1: Locator map of the parks being assessed through the Tampa Shoreline Restoration Initiative.

METHODOLOGY

The Tampa Shoreline Restoration Initiative project involved the collection of ecological data for the assessment of the overall shoreline quality within thirty City of Tampa parks. Datasheets were designed primarily for shoreline ecosystem characterization. Shoreline habitat types included:

Coastal dune	Freshwater marsh	Oligohaline marsh	Saltmarsh
Coastal shrub	Mangrove swamp	Rip-rapped shoreline	Sea-walled shoreline
Coastal beach	Mixed hardwood swamp	Riverine forest	Spring
Cypress swamp			

Parks were visited during daylight hours between August 5th, 2004 and October 13th, 2004. GIS shapefiles of park boundaries were installed into a Hewlett Packard IPAQ unit that utilizes ArcPad software. The IPAQ allows for the park aerial, the outline of the park and the current position of the unit to be shown on the screen therefore allowing the user to easily navigate within the park and to capture relevant site information. At a minimum, the shoreline was mapped 30' landward of the mean high tide level and extended inland based on the morphology of the shoreline and the extent of the habitat type.

Once at the park, the aerial was examined to get an overview of the entire park shoreline. Points were then entered into the IPAQ to mark the beginning and end point of each habitat type and the extent of the park boundaries. At each point, data were entered to describe the plant community and provide habitat details. Points were also entered to identify any locations of interest including; culverts, docks, derelict structures, etc. At each habitat type a shoreline assessment datasheet was completed. Data sheets were used to characterize the shoreline quality of the park by calculating the overall percentage of exotic and/or nuisance species within each habitat type (see appendix B). In addition, the soil type, shoreline slope and width and trash/litter scores were recorded on the data sheet. Finally, all dominant plant species were recorded, and the plant stratum were identified (herbaceous, shrub or tree) and categorized as native or nuisance/exotic. The percentage of exotic/nuisance species was recorded and the total percent cover of exotic species for each plant stratum was calculated. The total percent cover of exotic/nuisance species for each plant stratum was then added to calculate the total percent cover of exotic/nuisance species for each habitat type. This number was ultimately used to assign the exotic removal score according to the criteria listed in table 2.

Each habitat type was also assessed using a Uniform Wetland Mitigation Assessment Methodology (UMAM) protocol (see appendix B). This form allows the shoreline to be assessed in accordance with a widely used state evaluation methodology and allows for uniformity when doing comparisons with other similar habitats. The UMAM methodology assesses the habitat based on the location and landscape support, the water environment and the community structure. In each of these habitat subtypes, the ratings range from 0, which is indicative of not present, to 10, which is considered optimal. The total score is converted to a fraction between 0 and 1 for each habitat type with a corresponding quality rating shown in table 3. This information could be used in the future if the park restoration was to receive funding from the FDOT or other City departments to mitigate off-site wetland impacts. In addition to data collection, representative pictures were taken to clearly depict the overall shoreline structure.

Utilizing ArcView and the data points collected in the field, polygons were digitized over the defined habitat types. From these polygons the total acreage of each habitat type along a specific shoreline was calculated. The total acreage from the GIS coverage and the % of exotic/nuisance within each habitat type was calculated. This was calculated for species with greater than 5% cover. Percentages of each habitat type were also calculated for each park from acreages generated in the GIS.

From these data, a prioritization table for park restoration was created which was based on the percentage of exotic plant coverage, the UMAM rating of habitat quality, and a qualitative feasibility rating.

Table 2: Exotic Removal Score

% Coverage by Invasive/Exotic Plants	Score
0 - 1%	0
1 - 25%	2
26 - 50%	5
51 - 75%	7
76 - 100%	10

Table 3: UMAM Habitat Score & Rating

UMAM Habitat Score	Habitat Quality Rating
0	Not Present
< 0.40	Minimal
0.40 - 0.70	Moderate
> 0.70	Optimal

Table 4: Prioritization According to Exotic Removal

Park	Exotic Removal Score	Exotic Removal Priority Rating
DeSoto****	N/A	N/A
Rowlett	7.0	High
Blackwater Hammock	7.0	High
Palm River	7.0	High
Temple Crest Center	7.0	High
Rivercrest	6.9	High
River Tower	5.0	Moderate
Rivercove	5.0	Moderate
22nd Street	5.0	Moderate
Epps	4.0	Low
Riverside Garden	3.9	Low
Reed Property	3.3	Low
McKay Bay Nature	2.2	Low
Ribbon of Green	2.0	Low
Sulphur Springs	2.0	Low
Lowry	2.0	Low
Gandy	1.9	Low
Ballast Point	1.9	Low
Picnic Island	1.8	Low
Davis Island	1.5	Low
Curtis Hixon	0.0	Low
Water Works	0.0	Low
Ft. Brooke Cotanchobee	0.0	Low
Henry B. Plant	0.0	Low
Riverfront	0.0	Low
Ben T. Davis	0.0	Low
Cypress Point	0.0	Low
Tappan	0.0	Low
Tony Jannus	0.0	Low
Bayshore Blvd. Linear	0.0	Low

****not ranked, shoreline undergoing restoration during evaluation

PRIORITIZATION OF PARKS

The parks were prioritized based on the need for exotic removal and an overall priority rating based on the overall ecological integrity of the habitat and the feasibility of restoration activities. In addition, the phase of restoration for each park is examined based upon the input from the stakeholder agencies that were contacted.

Exotic Removal Priority Rating

Two priority ratings were determined for each park. The first is an exotic removal priority rating which was designed to identify the parks that were particularly infested with exotic nuisance species (table 4). The score was determined by calculating a weighted average for the scores from each habitat type within the park. The result was an exotic removal score which was assigned a rating based on the criteria in table 5.

The results indicate that approximately 27% of the parks surveyed have either a high or moderate priority for exotic removal. Parks such as Rowlett, Blackwater Hammock, Palm River (McKay Bay Bike Trail), and the Temple Crest Center had a high priority based on the percentage of exotic plant infestation.

Table 5: Exotic Removal Priority Rating

Exotic Removal Score	Exotic Removal Priority Rating
< or = 4	Low Priority
> 4 - 6	Moderate Priority
> 6	High Priority

Overall Priority Rating

The overall prioritization (low, moderate, high) is based on the overall average score, which is an average of the exotic removal score, the overall UMAM score for the site, and the estimated feasibility of a restoration project. Because the UMAM score is a value less than one, it has been normalized by applying (Adjusted UMAM Score = (1-rowUMAM)*10). The feasibility score was rated on a scale from 1, for the lowest feasibility, to 10, for the highest feasibility based on access and the potential removal of seawall. For example, the removal of the seawall along Bayshore is rated as the lowest feasibility since it may severely compromise the shoreline and the linear park. The limitations of this method are that it tends to estimate the high priority parks very well, but assigns a slightly higher score to lower priority shorelines that have high feasibility. Another disadvantage to the technique is that it does not account for other types of restorations such as oyster domes and reefs that can be placed offshore of the seawall. In addition, the prioritization does not take into account the status of planned restoration projects since the outcome of those projects is subject to change. The overall priority rating was assigned as shown in table 6.

Eight parks (27% of those surveyed) were classified using this methodology as having a high priority, and an additional 17 parks were classified as having a moderate priority. Only four parks were assigned a low priority (table 7).

Table 6: Overall Priority Rating

Overall Average Score	Overall Priority Rating
< or = 4	Low Priority
> 4 - 6	Moderate Priority
> 6	High Priority

Table 7: Prioritization According to Overall Average Score

Park	Exotic Removal Score	Adjusted UMAM Score*	Feasibility Score**	Overall Average Score***	Overall Priority Rating
DeSoto****	N/A	N/A	N/A	N/A	N/A
Rivercrest	6.9	5	10	7.2	High
Rowlett	7.0	4	10	7.1	High
Temple Crest Center	7.0	5	9	7.0	High
Blackwater Hammock	7.0	4	10	6.9	High
River Tower	5.0	5	10	6.6	High
Reed Property	3.3	5	10	6.3	High
Riverside Garden	3.9	5	10	6.2	High
Epps	4.0	4	10	6.1	High
Palm River	7.0	4	7	6.0	Moderate
Rivercove	5.0	6	7	6.0	Moderate
Ribbon of Green	2.0	7	9	6.0	Moderate
Sulphur Springs	2.0	5	10	5.8	Moderate
22nd Street	5.0	4	7	5.4	Moderate
Curtis Hixon	0.0	9	7	5.4	Moderate
Water Works	0.0	9	7	5.4	Moderate
Davis Island	1.5	7	7	5.2	Moderate
Ft. Brooke Cotanchobee	0.0	6	10	5.2	Moderate
Gandy	1.9	4	10	5.1	Moderate
Ballast Point	1.9	4	9	5.0	Moderate
Henry B. Plant	0.0	9	6	4.9	Moderate
Riverfront Park	0.0	9	6	4.9	Moderate
Lowry	2.0	2	10	4.8	Moderate
Picnic Island	1.8	2	10	4.7	Moderate
Ben T. Davis	0.0	7	7	4.6	Moderate
Cypress Point	0.0	3	10	4.2	Moderate
Tappan	0.0	2	10	4.0	Low
Tony Jannus	0.0	9	2	3.8	Low
Bayshore Blvd. Linear	0.0	9	1	3.4	Low
McKay Bay Nature	2.2	2	4	2.8	Low

*UMAM score was normalized by the following formula to be consistent with park priority rating scores (AdjustedUMAM Score = (1-rawUMAM)*10).

**Feasibility scores were based on whether site was easily accessible (10) or, if seawall is present, whether the shoreline would be compromised by seawall removal (0).

***Higher overall average scores indicate the need for shoreline restoration.

****not ranked, shoreline undergoing restoration during evaluation

Table 8: Park Status

Park	Status
22nd Street	None
Ballast Point	Partially Restored, Planning
Bayshore Blvd. Linear	Planning
Ben T. Davis	None
Blackwater Hammock	Partially Restored
Curtis Hixon	Planning
Cypress Point	Planning
Davis Island	Planning
DeSoto	Implementation
Epps	None
Ft. Brooke Cotanchobee	Partially Restored, Planning
Gandy	Partially Restored, Planning
Henry B. Plant	None
Lowry	Partially Restored, Planning
McKay Bay Nature	Partially Restored, Planning
Palm River	Planning
Picnic Island	Partially Restored
Reed Property	Planning
Ribbon of Green	Planning
Rivercove	None
Rivercrest	Partially Restored
Riverfront	None
Riverside Garden	Planning
River Tower	Planning
Rowlett	None
Sulphur Springs	Partially Restored
Tappan	Completed Restoration
Temple Crest Center	None
Tony Jannus	None
Water Works	None

Park Status

The park status table identifies what stage of restoration, if any, the park has undergone (table 8). The categories include the following:

None—no past, present or future restoration activities identified.

Planning—a stakeholder agency has identified the park in its planning process and is actively developing plans, or may be actively seeking funding, to begin a restoration activity.

Implementation—the park was undergoing restoration during the study period (April-October 2004).

Partially Restored—the shoreline has been partially restored in the past but additional work is required.

Completed Restoration—The park shoreline has been completely restored and future restoration activities are currently not required with the exception of potential maintenance and/or oyster reefs or domes placed offshore.

The results indicate that 67% of the parks have some type restoration activity that has either occurred or will occur in the future. Conversely, 33% of the parks have no restoration activities planned or any historical restoration activities that were identified. During the time of this study, one park (DeSoto) was being actively restored and nine parks were in the planning phase of restoration activities from one or more of the stakeholder agencies that were identified. The only shoreline where complete restoration was indicated was at Tappan Park.

STAKEHOLDER ORGANIZATIONS

Fourteen stakeholder organizations were identified by the Mayor's Beautification Program and were contacted and interviewed using a standard phone protocol (see appendix C). The purpose of the interview was to determine any existing or future plans for the identified parks, as well as, assess the potential for partnerships, funding, and overall collaboration. Table 9 provides the contact information for each organization that participated. The results of that interview process are summarized below.

City of Tampa Parks Department—The Parks Department is a lead organization in the planning, development, and funding for shoreline restoration within Tampa's parks. Thanks in part to their efforts, fourteen of the thirty parks included in the study have been completely or partially restored. The Parks Department is interested in working more closely with volunteers to assist with park maintenance and the planting of restoration areas. The Department is also willing to collaborate directly on grants and can provide grant writing assistance for priority projects.

City of Tampa Stormwater Department—The City of Tampa Stormwater Department does not typically work specifically on park projects. Traditionally, the department has not funded restoration projects but that does not preclude the possibility in the future of partnership on a project that would benefit stormwater management or water quality improvement. The organization does not have any specific plans for any projects within the study area.

Florida Aquarium—The Florida Aquarium has an extensive education and outreach program which includes shoreline restoration of a spoil island in Tampa Bay known as Fantasy Island. They are currently working with a number of partners, including, the Tampa Electric Company (TECO), GE Foundation, and the Gardiner Settlement Trust Fund to restore the natural habitats on the island. Aquarium staff are using the island to educate students in Hillsborough County Schools on marine science.

Florida Department of Environmental Protection (Southwest District)—The Florida Department of Environmental Protection has been instrumental in providing resources for shoreline restoration projects within the area. Although they are not currently involved in any ongoing restoration projects, the FDEP is willing to collaborate and assist in funding shoreline restoration.

Hillsborough County Environmental Lands Acquisition and Protection Program (ELAPP)—The ELAPP is not currently planning any projects within or near any of the parks in the study area. However, the program is a resource for funding of land acquisition throughout Hillsborough County.

Hillsborough County Environmental Protection Commission (EPC)—EPC is not currently planning any projects within or near any of the parks in the study area. The EPC can be a source of funding through projects related to the pollution recovery funding. They are also involved in the permitting process and can provide expertise related to wetland plant selection and acquisition.

Hillsborough River Greenways Task Force (HGRTF)—The HGRTF is a non-profit organization that is primarily involved in education and outreach. They are currently working in conjunction with the City of Tampa on mapping potential mitigation sites.

Mayor's Beautification Program—A non-profit organization that focuses on improving and beautifying public areas, parks, and streetscapes. The organization has a large volunteer base and is interested in partnering with other stakeholder agencies in exotic plant removal activities and shoreline restoration in public parks.

National Audubon Society–The National Audubon’s Florida Coastal Sanctuaries is interested in shoreline restoration projects within the Tampa Bay estuary and would be interested in collaborating more closely with organizations involved in shoreline restoration; particularly as it relates to habitat restoration in specific areas.

Southwest Florida Water Management District, Surface Water Improvement & Management (SWIM Program)–The SWIM Program has been active in shoreline restoration throughout the Tampa Bay area for the past several years. SWIM has provided design and construction funding and planning/project management support for several projects including: Reed Property, Tappan, and Picnic Island. SWIM will likely be an active partner for future projects developed within the City of Tampa’s parks.

Tampa Bay Estuary Program–The program is a significant resource for restoration projects within the Tampa Estuary. As a funder, the program provides grants to local organizations through the Tampa Bay Minigrants Program. The Minigrant Program typically funds 20 projects per year and provides \$5000-\$7000 per year. In addition, the organization can serve as a partner to assist in the grant writing process and is interested in any project that helps to meet the goals set forth in the CCMP. The estuary program will also be addressing habitat restoration in a new assessment in 2005 that will look at the life cycle of key organisms within the estuary and what types of habitats are necessary to support these organisms.

Tampa Audubon Society–The Tampa Audubon Society, a chapter of the National Audubon Society, is a non-profit organization that is actively involved in shoreline restorations projects. Recently, the organization has been involved in projects at the McKay Bay Nature Park and Rivercrest Park. The organization is interested in partnering with other stakeholders in the writing of grants and can provide volunteer resources and equipment.

Tampa Bay Watch–Tampa Bay Watch is a non-profit organization that is extremely active in shoreline restoration projects. The organization has a program entitled Bay Grasses in Classes that involves local students in the growing and transplanting of smooth cord grass *Spartina alterniflora*. In addition, the organization is active in the development of oyster reefs near area seawalls using reef ball technology, and overall oyster reef development near natural or restored shorelines. Tampa Bay Watch has numerous existing partners that assist in the restoration process including the School District of Hillsborough County, School District of Pinellas County, NOAA, Restore Americas Estuaries, Southwest Florida Water Management District, General Electric ELFUN, Fish America, Coastal Conservation Association, and the Florida Fish and Wildlife Conservation Commission. The organization has volunteer capacity, is willing to partner with organizations in funding restoration projects, and will collaborate on grant writing.

PEER–Preserving the Environment through Ecological Research is a local non-profit organization that works closely with the Tampa Audubon Society on restoration projects. The organization is willing to collaborate on grant proposals and can provide expertise and volunteer resources for restoration projects.

Table 9: Contact Information for Stakeholder Organizations

Organization	Address	Phone Number	Web Site	Contact
City of Tampa Parks Department	1420 N. Tampa St. Tampa, FL 33602	[813] 274.8615	http://www.tampagov.net/dept_Parks/	Jim Valentine
City of Tampa Stormwater Department	306 E. Jackson St. Tampa, FL 33602	[813] 274.8771	http://www.tampagov.net/dept_stormwater/	Mike Burwell
Florida Aquarium	701 Channelside Dr. Tampa, FL 33602	[813] 273.4000	http://www.flaquarium.org/	Debbi Berger
Florida Department of Environmental Protection	Southwest District Office 3804 Coconut Palm Dr. Tampa, FL 33619	[813] 744.6100	http://www.dep.state.fl.us/southwest/	Rose Poyner
Hillsborough County Environmental Lands Acquisition & Protection Program (ELAPP)	1101 East River Cove St. Tampa, FL 33604	[813] 672.7876	http://www.hillsboroughcounty.org/parks/resourcegmt/	Forest Turbiville
Hillsborough County Environmental Protection Commission	Roger P. Stewart Center 3629 Queen Palm Dr. Tampa, FL 33619	[813] 272.5960	http://epchc.org/	Bob Stetler
Hillsborough County Public Works	County Center, 22nd Floor 601 E. Kennedy Blvd. Tampa, FL 33602	[813] 272.5912	http://www.hillsboroughcounty.org/publicworks/	Jack Merriam
Hillsborough River Greenways Task Force	P.O. Box 21405 Tampa, FL 33622	[813] 495.5285	N/A	Laura Delise
Mayor's Beautification Program	P.O. Box 2104 Tampa, FL 33601-2104	[813] 221.8733	http://www.mbp-tree.org/	Jennifer Sterling, Devesh Nirmul
National Audubon	410 Ware Blvd., Suite 702, Tampa, FL 33619	[813] 623.6826	N/A	Ann Paul
Preserving the Environment through Ecological Research (PEER)	5892 East Fowler Avenue Tampa, Florida 33617	[813] 975.4400	http://www.peerinc.org	Tom Ries
Southwest Florida Water Management District, SWIM Program	7601 Highway 301 North Tampa, FL 33637	[813] 985.7481	http://www.swfwmd.state.fl.us/	Stephanie Powers, Brandt Henningsen, Paul Miselis
Tampa Audubon	P. O. Box 320025 Tampa, FL 33679	[813] 983.0258	http://www.tampa-audubon.org	Ged Caddick
Tampa Bay Estuary Program	100 8th Avenue S.E. MS I-1 / NEP St. Petersburg, FL 33701	[727] 893.2765	http://www.tbep.org/	Holly Greening
Tampa Bay Watch	3000 Pinellas Bayway South Tierra Verde, FL 33715	[727] 896.5320	http://www.tampabaywatch.org/	Peter Clark

PARK SHORELINE ASSESSMENTS

22ND STREET PARK



Existing Conditions

The 22nd Street Park shoreline consists primarily of a freshwater marsh buffer. Several large laurel oaks (*Quercus laurifolia*) and cabbage palms (*Sabal palmetto*) provide canopy along the shoreline, but the cover is not dense enough to classify the entire shoreline as a riparian forest. This system contains approximately 35% cover of nuisance species including: air potato (*Dioscorea bulbifera*), Brazilian pepper (*Schinus terebinthifolius*) and creeping ox-eye (*Vedelia trilobata*). Leather fern (*Acrostichum sp.*) was observed along the waterward edge of this system and, due to the steep slope, is isolated from the surrounding nuisance species. The water level is appropriate, but the shoreline has severely eroded. Due to the steep slope, the extent of the wetland species is limited to the base of the slope, and upland species have colonized the top of the bank. The shoreline provides some habitat for wading birds, amphibians and fish.

The surrounding upland park is large with several isolated pockets of native vegetation. The park provides supporting habitat for species that may utilize the shoreline, but may be limited by the surrounding single-family residences. The adjacent river allows for movement of fish and wading birds into and out of the site. The park is currently closed to public usage. Overall, the exotic removal priority rating for this park is moderate based on the nuisance species cover. The freshwater marsh had a habitat quality rating of moderate.

Existing Plans and Historical Plans

Currently no existing plans are available for this park.

Future Plans

Currently, stakeholder organizations do not have any future plans for this park. The City of Tampa has identified the park as a potential mitigation site.

Recommendations

Short Term: Volunteers to remove the nuisance species, in particular, the air potato vine and Brazilian pepper shown in figure 2.

Long Term: Pursue funding and/or mitigation in conjunction with the City of Tampa and/or SWFMWD to re-grade the shoreline, and install native vegetation (and rip-rap, if necessary) to further stabilize the shoreline.

Percentage of Plant Community Types Within 22nd Street Park

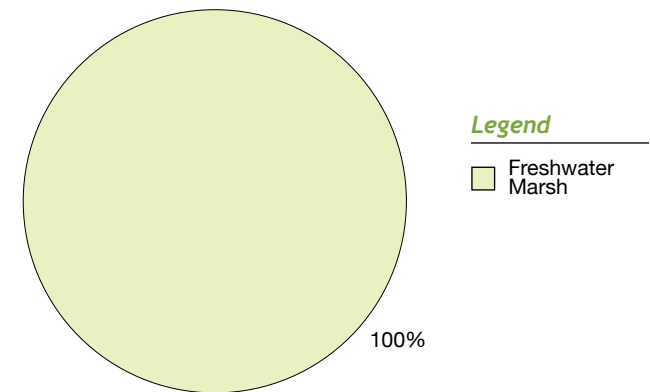


Table 10: Dominant Exotics & Habitat Quality Within 22nd Street Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Freshwater Marsh	<i>Brazilian pepper</i>	15	0.57	Moderate
	<i>Air potato</i>	15		
	<i>Creeping ox-eye</i>	5		



Figure 2: Air potato vine and Brazilian pepper along the 22nd Street Park shoreline.

22nd Street Park



Sources:
GPS shoreline data provided by PB&J and USF.

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Cherise Williams

Map Projection:
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Legend

Assessment

Freshwater Marsh



0 200 Feet

A horizontal scale bar with a vertical tick at the 0 mark and another at the 200 mark, with the word "Feet" at the end.

Figure 3: Existing shoreline condition of 22nd Street Park.

BALLAST POINT PARK



Existing Conditions

It is evident that a majority of the Ballast Point shoreline has successfully been restored. The entire shoreline has been faced with rip-rap, and vegetation has been planted or colonized in all areas; with the exception of the wall adjacent to the boat ramp and dock (figure 4). A lagoon area has been created through the installation of rip-rap approximately 20 feet waterward of the seawall. This area includes several native species including: smooth cordgrass (*Spartina alterniflora*) and red mangroves (*Rhizophora mangle*). The remaining shoreline has been colonized by red, black and white mangroves (*Avicennia germinans* and *Languncularia racemosa*), and saltbush (*Baccharis halimifolia*). The southern point was not part of the original restoration and contains approximately 10% cover by Brazilian pepper (*Schinus terebinthifolius*). It is anticipated that the overall shoreline provides habitat for wading birds, fish, amphibians and invertebrates.

The adjacent upland park is narrow and maintained with scattered oak trees. Therefore, it provides little supporting habitat for species that may utilize the shoreline. The adjacent bay allows for easy movement of species and does provide supporting habitat. The hydrology on this site allows for partial submergence of the rip-rap, and supports appropriate vegetation within the lagoon area and along the entire shoreline.

Overall, the vegetated shoreline with rip-rap has a moderate rating for habitat quality and the rip-rap non-vegetated shoreline has a minimal habitat quality rating. Ballast Point Park has a low overall exotic removal priority rating due to the percentage of nuisance species.

Existing Plans and Historical Plans

Three phases of restoration work were completed by the City of Tampa, the Southwest Florida Water Management District (SWFWMD) SWIM program. A prior mangrove restoration was completed on the east side of the property—Phase 1 in 1993, Phase 2 in 2000, and Phase 3, completed in 2004, was for revetment, for which the City of Tampa invested \$15,000.

Future Plans

The City of Tampa has conceptual plans which were completed in December 2003 to complete seagrass transplantation in cooperation with Tampa Bay Watch (figure 6). In addition, the City has planned the development of a tidally influenced retention area that will be planted with mangroves which are currently in the bid process (\$25,000). The City of Tampa has existing funding to complete the project. Tampa Bay Watch is seeking funding for restoration at Ballast Point.

Recommendations

Short Term: Exotic removal of Brazilian pepper for southern portion of park.

Long Term: Pursue funding in conjunction with the City of Tampa and/or SWFWMD to restore the southern point of the park including Brazilian pepper removal, rip-rap installation and restoration using native plantings.

Percentage of Plant Community Types Within Ballast Point Park

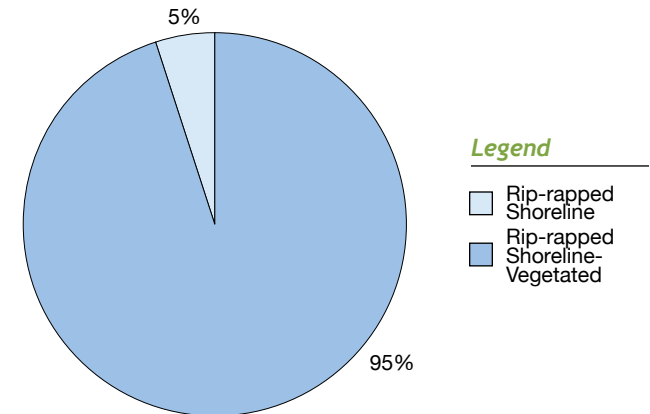


Table 11: Dominant Exotics & Habitat Quality Within Ballast Point Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Rip-rapped Shoreline	None	0	0.26	Minimal
Rip-rapped Shoreline-Vegetated	Brazilian pepper	10	0.6	Moderate



Figure 4: Rip-rap and vegetation along the Ballast Point Park shoreline.

Ballast Point Park



Sources:
GPS shoreline data provided by PBS&J and USF.

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Legend

Assessment

- Rip-rapped Shoreline
- Rip-rapped Shoreline-Vegetated



0 300 Feet

Figure 5: Existing shoreline condition of Ballast Point Park.

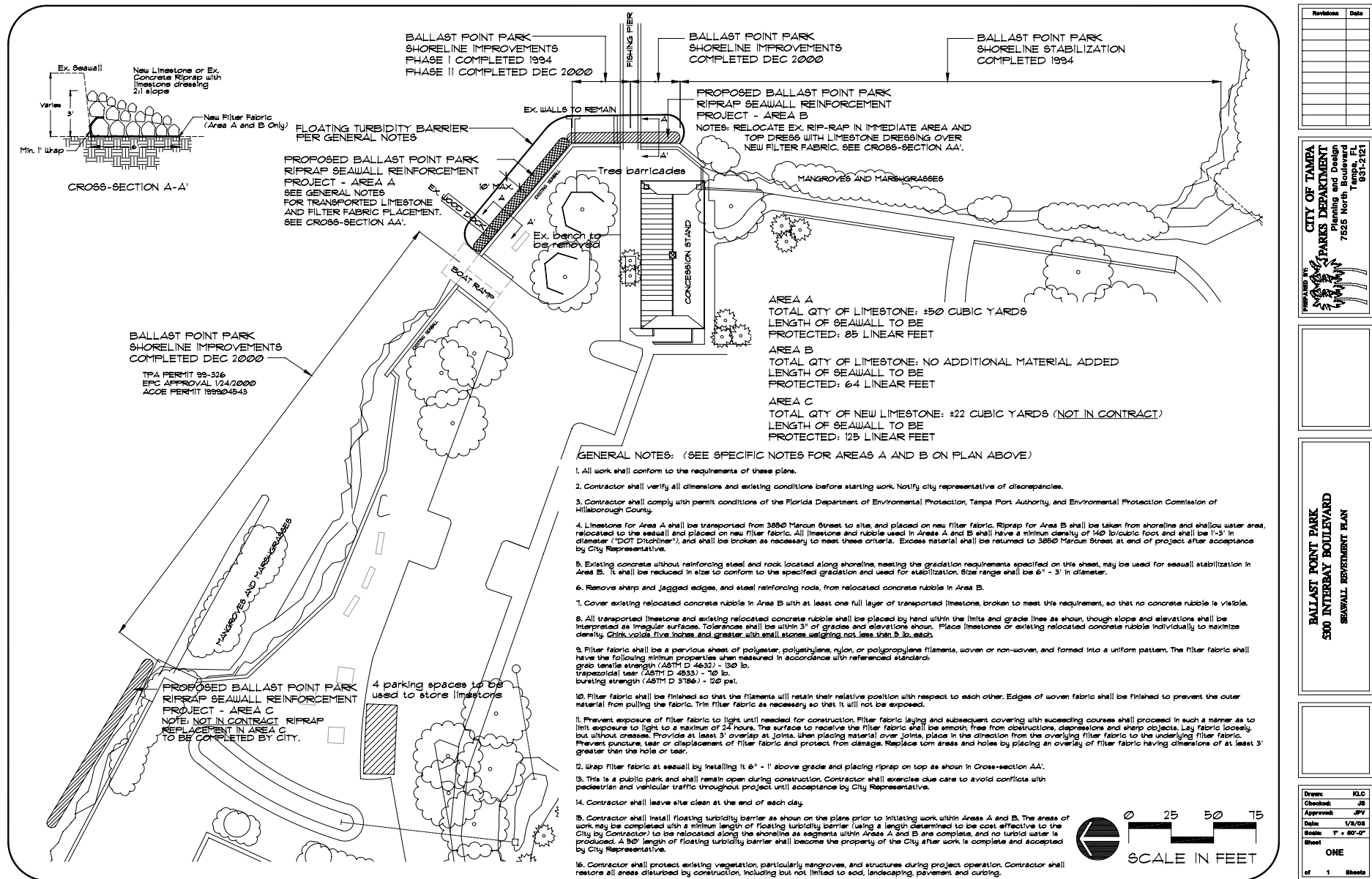


Figure 6: Conceptual plans for Ballast Point Park completed in December 2003 to complete seagrass transplantation in cooperation with Tampa Bay Watch.

BAYSHORE BLVD. LINEAR PARK



Existing Conditions

Seawall makes up the entire Bayshore Blvd. Linear Park shoreline (figure 7). The adjoining upland area consists of a concrete footpath and a narrow vegetated buffer that separates the footpath from a busy roadway. This park does not contain any natural area and provides no obvious wildlife support. Finger piers are adjacent to a majority of the shoreline and may preclude the placement of rip-rap along the wall. Litter observed within this park was found floating in the water and therefore would be difficult to retrieve. This park has a low exotic removal rating due to the absence of vegetation, but could benefit from enhancing the shoreline through the placement of rip-rap or reef material waterward of the existing seawall to create habitat for wading birds and fish. Further enhancement would be difficult due to the limited park area. Overall, the habitat quality for the seawall is minimal.

Existing Plans and Historical Plans

Tampa Bay Watch has installed 120 oyster domes along Bayshore Blvd. and completed 2,000 salt marsh plantings at the southern end outside of the park boundary.

Future Plans

Tampa Bay Watch is evaluating sites for additional oyster domes and is currently seeking funding.

Recommendations

Short Term: Use volunteers to occasionally pick up litter along the path.

Long Term: 1) Pursue funding in conjunction with the City of Tampa and/or SWFMWD to install rip-rap waterward of the seawall in applicable areas. 2) Pursue funding in conjunction with Tampa Bay Watch for seawall enhancement such as oyster reefs.

Percentage of Plant Community Types Within Bayshore Blvd. Linear Park

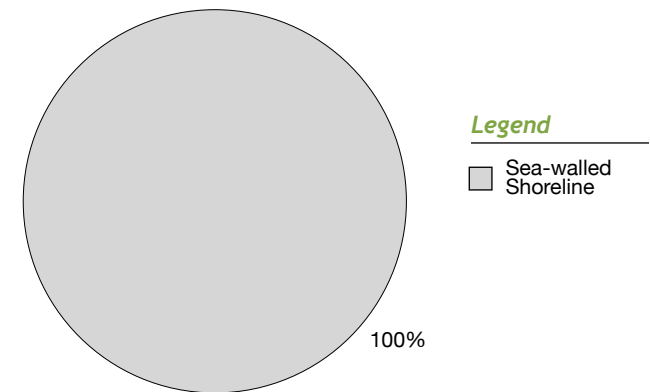


Table 12: Dominant Exotics & Habitat Quality Within Bayshore Blvd. Linear Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Sea-walled Shoreline	None	0	0.07	Minimal



Figure 7: Concrete footpath and vegetated buffer along Bayshore Blvd. Linear Park.

Bayshore Blvd. Linear Park



Sources:
GPS shoreline data provided by PBS&J and USF.

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Legend

Assessment

Sea-walled Shoreline



0 400 Feet

Figure 8: Existing shoreline condition of Bayshore Blvd. Linear Park.

BEN T. DAVIS PARK



Existing Conditions

The Ben T. Davis Park shoreline consists primarily of a hardened shoreline with both rip-rap and seawall. The park area includes a public beach, concession stand, parking area and a long access roadway, which is used for recreational fishing along the waterward side of the road. The beach area is isolated but contains a small, vegetated area including both sea oats (*Uniola paniculata*) and railroad vine (*Ipomoea brasiliensis*) (figure 9). The beach area is immediately adjacent to a large commercial building and the park's parking area.

The remaining shoreline is a combination of seawall and seawall faced with rip-rap, which are devoid of vegetation. The rip-rap is partially submerged depending on tide stage, and provides habitat for wading birds, fish, and invertebrates. The adjacent upland area provides little to no wildlife support and adjoins a high volume highway. The bay allows for wildlife movement into the park site, and provides habitat support for species that may utilize the shoreline.

Overall, the coastal beach provides optimal habitat quality while both the rip-rapped shoreline and the seawall provide minimal habitat. The exotic removal priority rating for this park is low based on the overall absence of vegetation.

Existing Plans and Historical Plans

Currently no stakeholder agencies have existing plans.

Future Plans

The City of Tampa has identified the park as a high priority for stabilization due to the severe erosion which was worsened during the 2004 hurricane season. Tampa Bay Watch is evaluating Ben T. Davis for a future project.

Recommendations

Short Term: No immediate need for short term activity.

Long Term: 1) Large scale restoration is needed for stabilization and beach erosion. 2) Pursue funding in conjunction with the City of Tampa and/or SWFMWD to place rip-rap along the section of seawall waterward of the concession stand.

Percentage of Plant Community Types Within Ben T. Davis Park

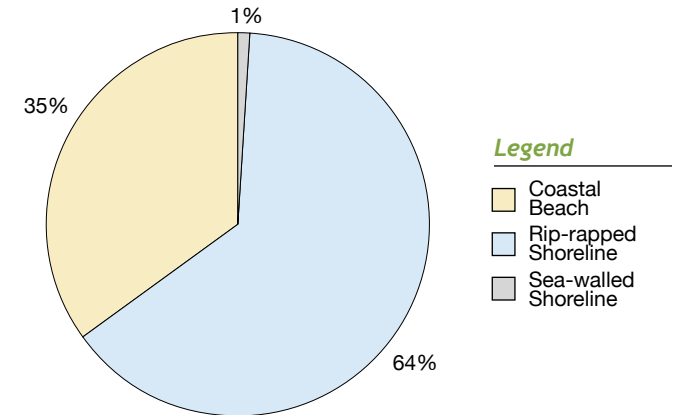


Table 13: Dominant Exotics & Habitat Quality Within Ben T. Davis Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Coastal Beach	None	0	0.50	Optimal
Rip-rapped Shoreline	None	0	0.23	Minimal
Sea-walled Shoreline	None	0	0.07	Minimal



Figure 9: Sea oats and railroad vine along the Ben T. Davis Park shoreline.

Ben T. Davis Park



Sources:
GPS shoreline data provided by PBS&J and USF.

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Legend

Assessment

- Coastal Beach
- Rip-rapped Shoreline
- Sea-walled Shoreline



0 3,000 Feet

Figure 10: Existing shoreline condition of Ben T. Davis Park.

BLACKWATER HAMMOCK PARK



Existing Conditions

Blackwater Hammock Park was purchased through the Florida Communities Trust in 1997 in conjunction with Hillsborough County's Environmental Land Acquisition and Protection Program (ELAPP). The Blackwater Hammock shoreline consists primarily of a freshwater marsh bordered by a riparian forest. The freshwater marsh consists of a large percentage of exotics including: wild taro (*Colocasia esculenta*), water hyacinth (*Eichhornia crassipes*), and cattails (*Typha sp.*). The marsh also contained less dominant exotics such as: paragrass (*Brachiaria mutica*) and water lettuce (*Pistia stratiotes*) (figure 11). This system transitions into a more forested system that includes: cypress (*Taxodium distichum*), Carolina willow (*Salix caroliniana*), cinnamon fern (*Osmunda cinnamomea*) and laurel oak (*Quercus laurifolia*). Overall approximately 50% of the shoreline consisted of nuisance species. The slope of the shoreline is gradual and it appears that the vegetation is providing habitat for fish, wading birds and amphibians.

A restoration completed by the City of Tampa restored native species adjacent to the shoreline. It is evident that a portion of the adjacent shoreline has been replanted with native tree species. Approximately half of the park is maintained and has been replanted, and the other half remains a natural upland. Both areas provide supporting habitat for species that may utilize the shoreline.

Although a portion of the uplands has been restored, approximately 50% of the shoreline consists of nuisance species giving this park a high exotic removal priority rating. Since the slope of the shoreline is gradual, and a portion of the park has previously undergone restoration, removal of the remaining exotics from the shoreline and replanting with natives would provide additional ecological benefits for the site.

Overall, the freshwater marsh has a habitat quality rating of moderate.

Existing Plans and Historical Plans

The City of Tampa has plans that were completed in 1997 (figure 13), and initial restoration was completed in 1999. The City of Tampa invested \$10,000 plus capital expenses. The project restored approximately 50% of the shoreline with the planting of 150 trees.

Future Plans

The City of Tampa is attempting to identify funding for \$10,000 to complete Phase 2 of the restoration.

Recommendations

Short Term: 1) Volunteers to remove the nuisance species; in particular, the air potato vine and Brazilian pepper. 2) Volunteers to remove litter on a regularly scheduled basis.

Long Term: 1) Pursue funding for Phase 2 of restoration with City of Tampa. 2) Pursue funding, in conjunction with the City of Tampa and/or SWFWMD, for the creation of a freshwater marsh focusing on the south section of the property where upland restoration has previously occurred, along with the incorporation of a boardwalk feature similar in design to that at Lowry Park.

Percentage of Plant Community Types Within Blackwater Hammock Park

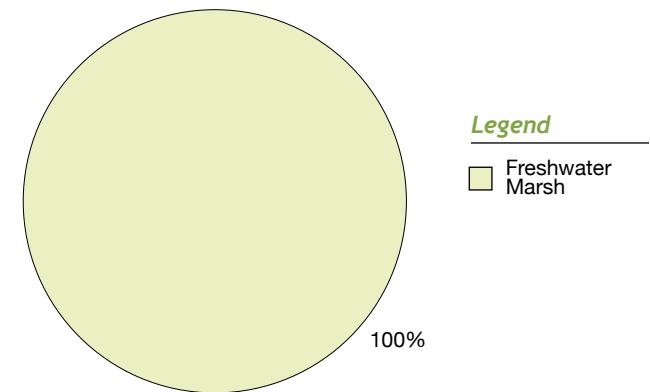


Table 14: Dominant Exotics & Habitat Quality Within Blackwater Hammock Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Freshwater Marsh	Wild taro Water hyacinth Cattails	10 10 10	0.63	Moderate



Figure 11: Exotics along the Blackwater Hammock Park shoreline.

Blackwater Hammock Park



Sources:
GPS shoreline data provided by PBS&J and USF.

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Legend

Assessment

 Freshwater Marsh



0 200 Feet

Figure 12: Existing shoreline condition of Blackwater Hammock Park.

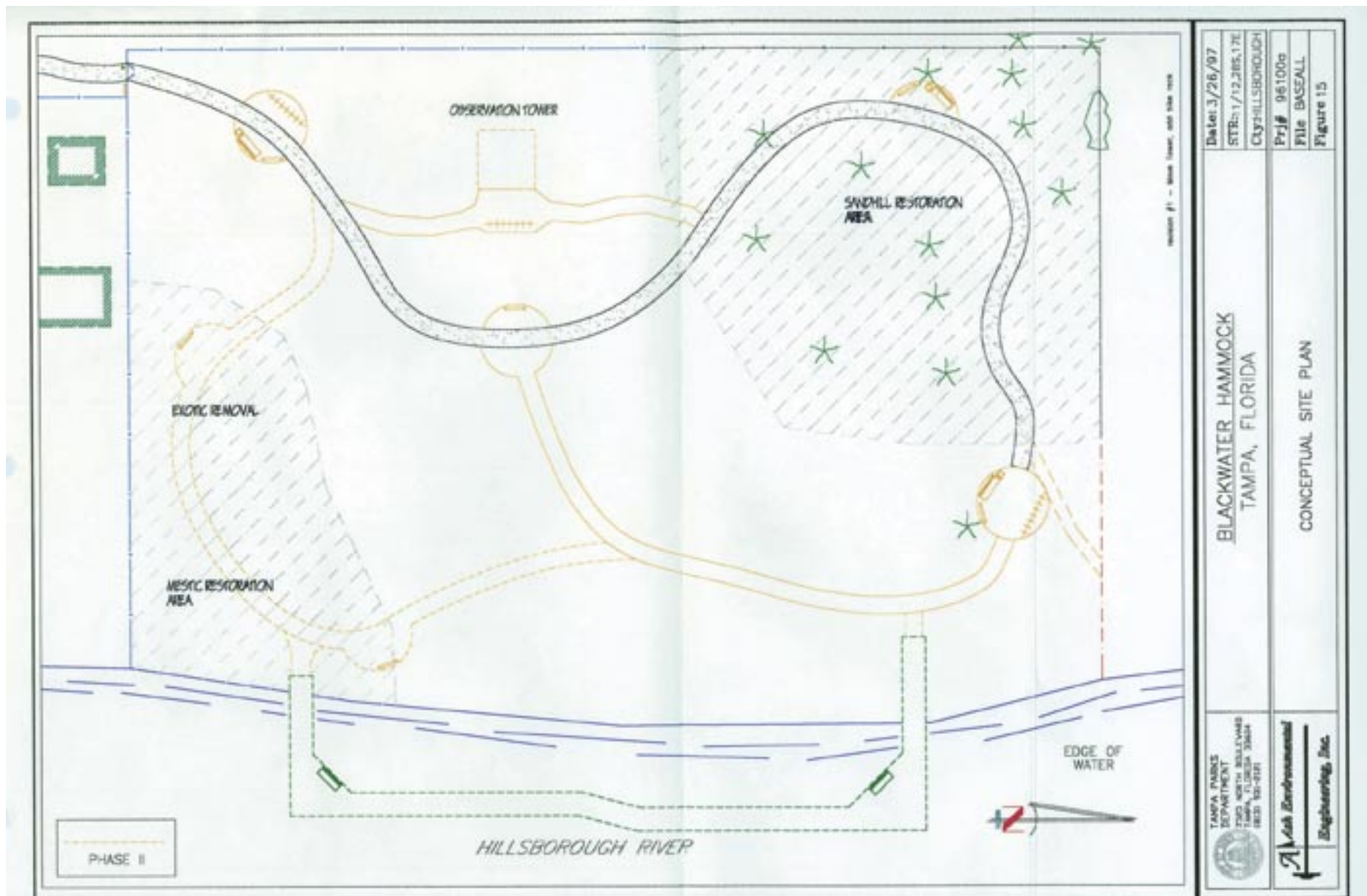
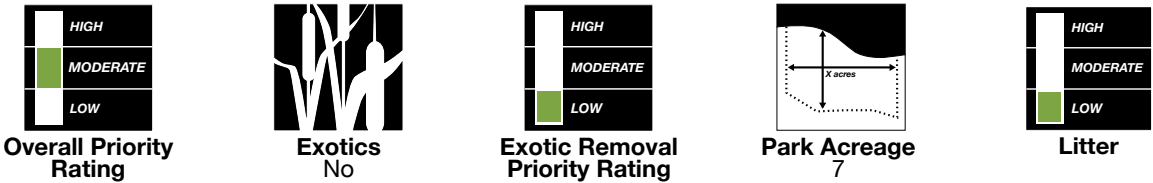


Figure 13: City of Tampa's 1997 restoration plans for Blackwater Hammock Park.

CURTIS HIXON PARK



Existing Conditions

The entire Curtis Hixon Park shoreline is sea-walled (figure 14). In addition, the area will be undergoing major reconstruction which, at this time, plans indicate that the shoreline will remain the same. The park is located adjacent to the Hillsborough River as an upland urban park. This shoreline provides no significant habitat value for wildlife that would be found utilizing the adjacent river. The assessment area immediately upland of the seawall is a wide concrete pedestrian path. In addition, the park and river are located in a highly urbanized area. The adjacent upland park is maintained as a grassed area with scattered oaks. The park is highly visible and in an urban area with high usage. Therefore, it would be highly beneficial to restore the shoreline by installing rip-rap or reef material along the seawall. Similar plans have been considered by the City of Seattle in the Terminal 46 Area (Landscape Northwest 2004).

Overall, the seawall at Curtis Hixon has a minimal habitat quality rating. It also has a low exotic removal priority rating due to the absence of nuisance vegetation.

Existing Plans and Historical Plans

No stakeholder agencies have existing plans for the park.

Future Plans

The City of Tampa has major construction plans for the area but the shoreline is not addressed in the plans.

Recommendations

- Short Term:** Determine if existing plans for reconstruction could incorporate unique shoreline features such as habitat shelves.
- Long Term:** Pursue funding in conjunction with the City of Tampa, SWFMWD, and or Tampa Bay Watch to install rip-rap, habitat shelves, or reef balls adjacent to the wall to serve as a demonstration project.

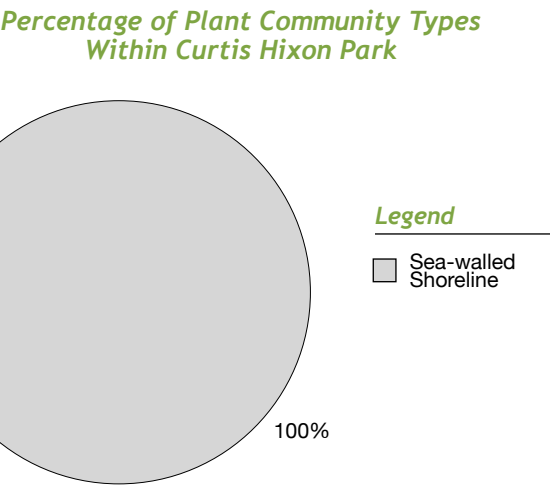


Table 15: Dominant Exotics & Habitat Quality Within Curtis Hixon Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Sea-walled Shoreline	None	0	0.07	Minimal



Figure 14: The seawall along Curtis Hixon Park's shoreline.

Curtis Hixon Park



Sources:
GPS shoreline data provided by PBSSJ and USF.

Disclaimer:
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Legend

Assessment

Sea-walled Shoreline



0 200 Feet

Figure 15: Existing shoreline condition of Curtis Hixon Park.

CYPRESS POINT PARK



Existing Conditions

The Cypress Point Park shoreline is a diverse mixture of habitats including: mangrove fringe, coastal dunes and coastal shrub. Although this park is narrow, the shoreline provides a significant amount of natural habitat and wildlife support. The coastal dune system contains several native species including: sea-oats (*Uniola paniculata*), cucumber leaved sunflower (*Helianthus angustifolius*), sand cord grass (*Spartina bakeri*), love grass (*Eragrostis sp.*), railroad vine (*Ipomea brasiliensis*) and fingergrass (*Eustachys petraea*) (figure 16). The dune system experienced some erosion during the 2004 hurricane season, creating several steep ledges. The coastal shrub system also contains a variety of native species including: finger grass, buttonwood (*Conocarpus erectus*), seashore elder (*Iva imbricata*), and black and white mangroves (*Languncularia racemosa* and *Avicennia germinans*). The coastal shrub blends into and becomes a pure mangrove fringe on the western edge of the park. This mangrove fringe contains a healthy stand of red (*Rhizophora mangle*), black and white mangrove fringe, which are diverse in both species and size distribution. Saltgrass (*Distichlis spicata*) forms a dense cover waterward of the fringe within the shallow areas. This combination of habitats provides wildlife support for fish, wading and shore birds, amphibians and invertebrates. The hydrology is normal for this type of system and is supporting appropriate vegetation.

The shoreline is adjacent to the bay, which allows for wildlife movement into and out of the park, and provides supporting habitat for species that would utilize the shoreline. The adjacent upland park is narrow and primarily maintained as grassed areas with scattered pines. It currently provides minimal wildlife support. The park is located immediately adjacent to an industrial park. The park has undergone various levels of habitat restoration and restoration design over the past several years. Overall, the habitat quality rating for all habitat types at Cypress Point are optimal. It also has a low exotic removal priority rating due to the absence of nuisance and exotic species.

Existing Plans and Historical Plans

The City of Tampa, in partnership with Florida Department of Environmental Protection and the Southwest Florida Water Management District, completed restoration in August 1998. A total of \$250,000 were invested from the project partners. Tampa Bay Watch participated in the restoration by planting approximately 5000-6000 smooth cord grass (*Spartina alterniflora*) plants.

Future Plans

The City of Tampa is currently leading a project to stabilize the beach shoreline and will provide matching funds. A design has been completed (figure 18). The EPC is providing pollution recovery funding worth \$100,000 and \$15,000 is being provided by the Tampa Port Authority (Sovereign Lands Management). Construction is scheduled to be completed Fall 2005.

Recommendations

Short Term/Long Term: Utilize volunteers to monitor the site for litter, and nuisance and exotic species to ensure the site is maintained in its current state.

Percentage of Plant Community Types Within Cypress Point Park

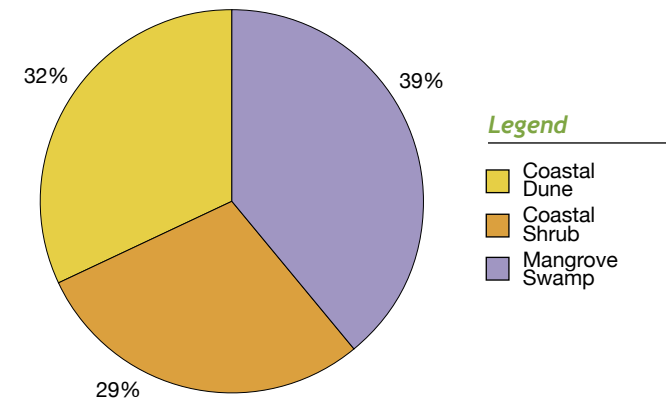


Table 16: Dominant Exotics & Habitat Quality Within Cypress Point Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Coastal Dune	None	0	0.73	Optimal
Coastal Shrub	None	0	0.73	Optimal
Mangrove Swamp	None	0	0.73	Optimal



Figure 16: Native species along the Cypress Point Park shoreline.

Cypress Point Park



Sources:
GPS shoreline data provided by PBS&J and USF.

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Legend

Assessment

- Coastal Dune
- Coastal Shrub
- Mangrove Swamp

0 800 Feet



Figure 17: Existing shoreline condition of Cypress Point Park.

DAVIS ISLAND PARK



Existing Conditions

The Davis Island Park shoreline is a combination of seawall and rip-rap. Vegetation has begun to naturally recruit within the rip-rap shoreline. Native species observed include: black, white and red mangroves (*Avicennia germinans*, *Laguncularia racemosa*, *Rhizophora mangle*), saltbush (*Baccharis halimifolia*). Nuisance species, including creeping ox-eye (*Wedelia trilobata*), Brazilian pepper (*Schinus terebinthifolius*), and the less dominant mimosa (*Acacia julibrissin*) have also colonized the shoreline (figure 19). The rip-rap has been placed along the peninsular portion of the shoreline, and the adjacent upland consists of maintained grass; therefore, providing little supporting habitat. The rest of the shoreline is hardened by seawall, and the adjacent upland is also maintained grass. Both shorelines are influenced by the bay, which allows for movement and provides supporting habitat for species that may utilize the rip-rap areas. The seawall provides no obvious wildlife support.

Overall, this park is narrow and located within a residential area. The hydrology is sufficient to support the rip-rap habitat but the seawall is excluding it from influencing the adjoining upland. The exotic removal score for the park is low due to the nuisance and exotic species within the rip-rap area. Litter is a problem in the park.

The Davis Island Park rip-rapped and seawall shorelines have minimal habitat quality ratings. It also has a low exotic removal priority rating due to the percentage of nuisance and exotic species.

Existing Plans and Historical Plans

Tampa Bay Watch completed the planting of smooth cord grass (*Spartina alterniflora*), with a total of 1,200 plants on the north side and 2,000 plants on the south side.

Future Plans

PEER and Tampa Audubon have listed Davis Island Beach in their strategic planning process. Tampa Bay Watch is evaluating and seeking funding for the seawall across from the airport for potential oyster dome installation (~.5 miles).

Recommendations

Short Term: 1) The Mayor's Beautification Program to partner with PEER and Tampa Audubon to obtain funding for restoration and coordinate exotic removal. 2) Use volunteers to occasionally pick up litter along the shoreline. A garbage can on the end of the peninsula was requested by local residents utilizing the park.

Long Term: Install rip-rap or reef ball structures waterward of the seawall, and plant native coastal vegetation along the shoreline.

Percentage of Plant Community Types Within Davis Island Park

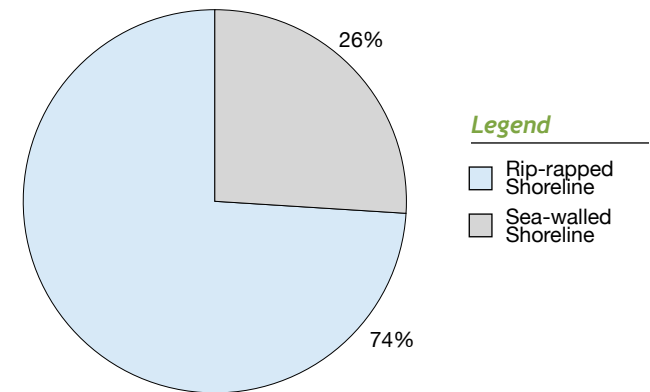


Table 17: Dominant Exotics & Habitat Quality Within Davis Island Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Rip-rapped Shoreline	Creeping ox-eye Brazilian pepper	15 5	0.33	Minimal
Sea-walled Shoreline	None	0	0.13	Minimal



Figure 19: Nuisance species along the Davis Island Park shoreline.

Davis Island Park



Sources:
GPS shoreline data provided by PB&J and USF.

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Legend

Assessment

- Rip-rapped Shoreline
- Sea-walled Shoreline



0 600 Feet

Figure 20: Existing shoreline condition of Davis Island Park.

DESOTO PARK



Existing Conditions

At the time of the inspection, the shoreline was being actively restored; therefore, the standard assessment could not be utilized. It appears that the shoreline is being restored in accordance with the included SWIM plans. Prior to the construction activities, the shoreline was a combination of natural vegetation and poured concrete. The vegetated portion of the shoreline was minimal and contained Brazilian pepper (*Schinus terebinthifolius*) and red, black and white mangroves (*Rhizophora mangle*, *Avicennia germinans*, and *Languncularia racemosa*). The remaining shoreline was covered with concrete; therefore, was devoid of vegetation.

The upland portion of the park is maintained lawn with a pedestrian path. The shoreline is adjacent to the bay, which allows for wildlife movement and provides supporting habitat. This park was not given an exotic removal score because the shoreline is in the process of being restored (figures 21 and 22).

Existing Plans and Historical Plans

Plans are not currently available.

Future Plans

The City of Tampa, in cooperation with the SWFWMD and the Hillsborough County Environmental Protection Commission, funded \$400,000 for design and permitting of restoration. The project will be completed in 2004/2005. Once implemented, 100% of the shoreline will be restored.

Recommendations:

Short Term: Restoration activities are currently underway.

Long Term: Volunteers will be needed for ongoing maintenance.



Figure 21: Restoration work being done in DeSoto Park.



Figure 22: Upland portion of DeSoto Park.

EPPS PARK



Existing Conditions

The Epps Park shoreline consists primarily of an oligohaline riparian buffer with scattered lengths of rip-rap (figure 23). This system consists of a variety of native species including: cypress (*Taxodium distichum*), laurel oak (*Quercus laurifolia*), leather fern (*Acrostichum sp.*), sand cord grass (*Spartina bakeri*), maidencane (*Panicum hemitomon*), wax myrtle (*Myrica cerifera*), needle rush (*Juncus roemerianus*) and arrowhead (*Sagittaria sp.*). Nuisance species along the shoreline include: torpedo grass (*Panicum repens*), creeping ox-eye (*Wedelia trilobata*) and cattails (*Typha sp.*). The entire shoreline is rip-rapped but the vegetation is covering all but the most waterward rocks.

The upland portion of the park is a narrow maintained lawn area adjacent to single-family homes. This area provides little functional support to the species that may utilize the shoreline. It is anticipated that the shoreline provides habitat for fish, amphibians and wading birds. The river level was normal for this time of the year and is supporting the plant species within this habitat. Litter is not a problem within this assessment area.

Overall, the habitat quality at Epps was rated as moderate for both the oligohaline marsh and the rip-rapped shoreline. The exotic removal priority rating for this park is low due to the percentage of nuisance species. Torpedo grass is the main nuisance species which is difficult to eradicate. With the exception of the torpedo grass, the shoreline consists primarily of a healthy diverse plant community. The removal of nuisance species will only slightly improve the overall quality of this area. However, additional plantings of riparian vegetation such as ferns, shrubs and trees may enhance wildlife usage along the shoreline.

Existing Plans and Historical Plans

No existing plans from any stakeholder agencies.

Future Plans

Currently, no future plans from any stakeholder agencies.

Recommendations

Short Term: No immediate need for short term activity.

Long Term: Use volunteers to occasionally monitor the park for percent cover by nuisance and exotic species.

Percentage of Plant Community Types Within Epps Park

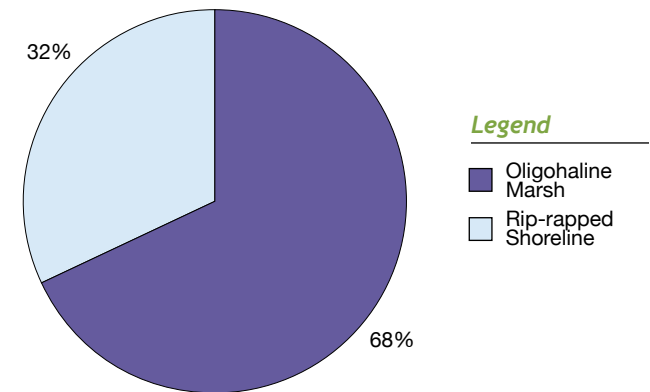


Table 18: Dominant Exotics & Habitat Quality Within Epps Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Oligohaline Marsh	Torpedo grass Creeping ox-eye Cattails	20 5 5	0.6	Moderate
Rip-rapped Shoreline	Creeping ox-eye	10	0.5	Moderate



Figure 23: Epps Park's shoreline showing riparian buffer with scattered rip-rap.

Epps Park



Sources:
GPS shoreline data provided by PBSSJ and USF.

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Legend

Assessment

- Oligohaline Marsh
- Rip-rapped Shoreline



0 200 Feet

Figure 24: Existing shoreline condition of Epps Park.

FT. BROOKE COTANCHOBEE PARK



Existing Conditions

The Ft. Brooke Cotanchobee Park shoreline has been hardened by a seawall and rip-rap. The rip-rap portion of the park shows evidence of restoration planting and natural recruitment that has resulted in a vegetated shoreline. A diversity of native species occurs along this portion (figure 25) of the shoreline including: smooth cordgrass (*Spartina alterniflora*), false-willow (*Baccharis angustifolia*), and black and white mangroves (*Avicennia germinans* and *Languncularia racemosa*). No exotic species were observed along the shoreline. In addition, a row of sand cord grass (*Spartina bakeri*) appears to have been planted along the entire shoreline at the top of slope. The seawall is a small part of the shoreline and is associated with a large concrete pier. Overall, the shoreline provides habitat for fish, wading birds, and invertebrates. The bay allows water movement in and out of the site and provides supporting habitat for fish and wading birds. The adjacent park is primarily comprised of paved sidewalks and planters and is located in the middle of an urban area. The park is narrow and located next to a heavily used roadway. The park has benefited from restoration activities. The installation of rip-rap and native plants has greatly increased the habitat value of this shoreline.

Overall, the habitat quality rating was moderate for the rip-rapped shoreline and minimal for the seawall. Cotanchobee has a low exotic removal priority rating due to the absence of exotic species.

Existing Plans and Historical Plans

The City of Tampa has completed Phase 1 and Phase 2 (November 2001) of restoration which converted hardened shoreline to vegetated shoreline and altered the slope. \$100,000 was provided by the City of Tampa in kind, and SWFWMD provided \$50,000 (figure 27). As part of the restoration, Tampa Bay Watch installed 5,000 smooth cord grass (*Spartina alterniflora*) plugs.

Future Plans

The City of Tampa has conceptual plans for a Phase 3 restoration that would complete the remaining 33% of the shoreline. The design is expected to mimic Phase 1 and Phase 2.

Recommendations

Short Term: 1) Partner with the City of Tampa in obtaining funding for Phase 3 restoration. 2) Use volunteers to monitor nuisance species within the park and schedule maintenance events as necessary.

Long Term: Monitor condition of restoration.

Percentage of Plant Community Types Within Ft. Brooke Cotanchobee Park

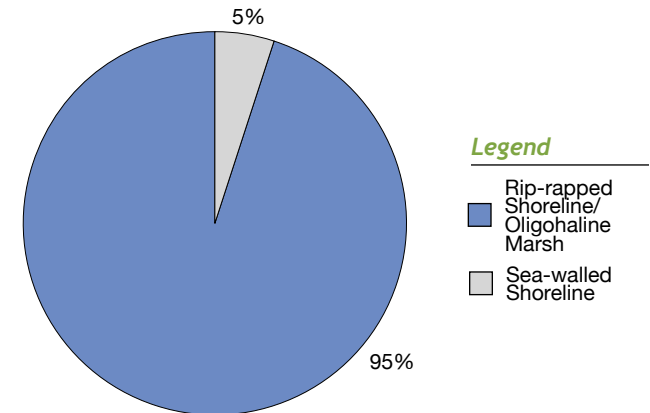


Table 19: Dominant Exotics & Habitat Quality Within Ft. Brooke Cotanchobee Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Rip-rapped Shoreline/Oligohaline Marsh	None	0	0.46	Moderate
Sea-walled Shoreline	None	0	0.13	Minimal



Figure 25: Native species along the Ft. Brooke Cotanchobee Park shoreline.

Ft. Brooke Cotanchobee Park



Sources:
GPS shoreline data provided by PBS&J and USF.

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Legend

Assessment

- Rip-rapped Shoreline/Oligohaline Marsh
- Sea-walled Shoreline



0 200 Feet

Figure 26: Existing shoreline condition of Ft. Brooke Cotanchobee Park.

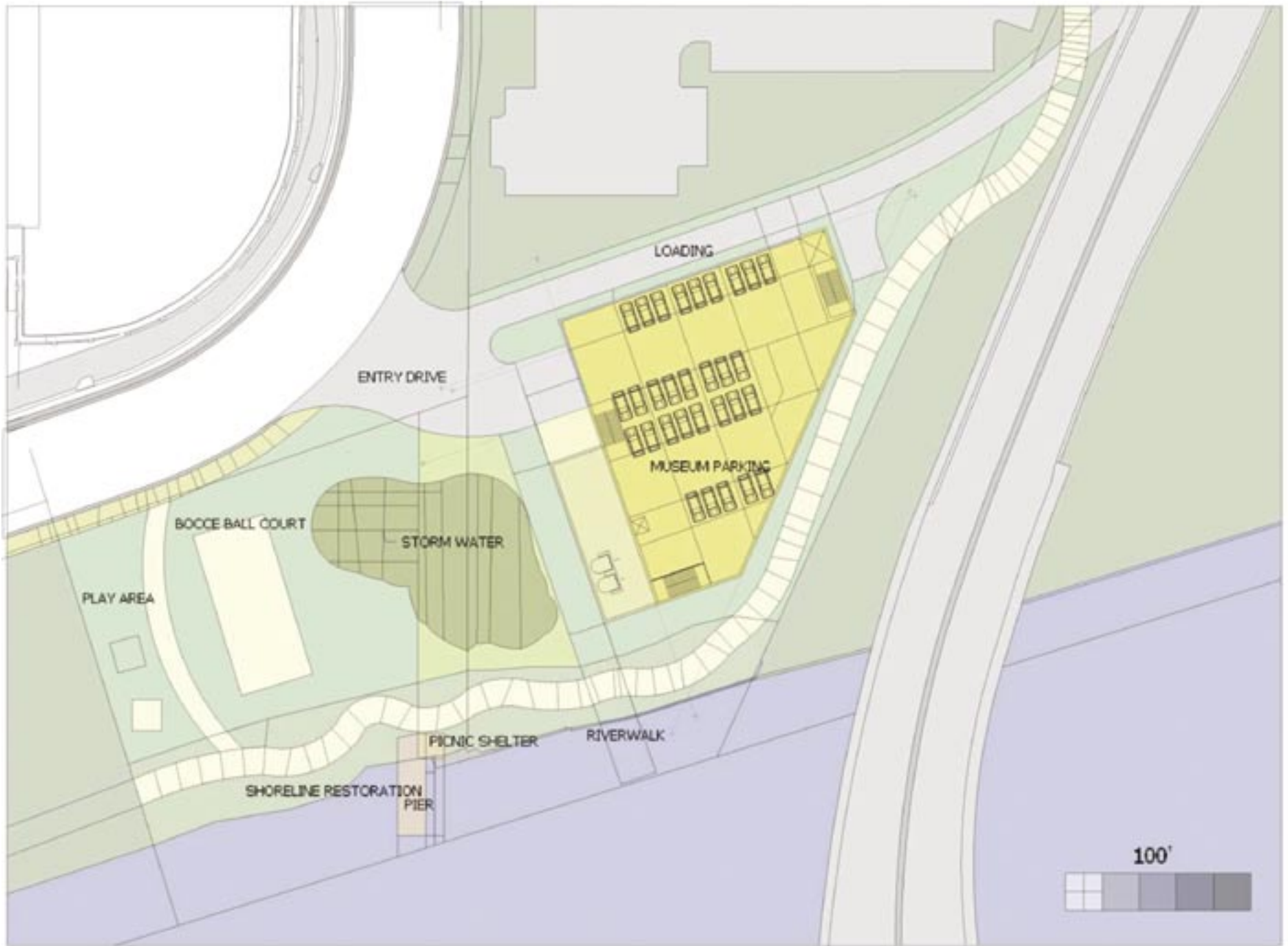
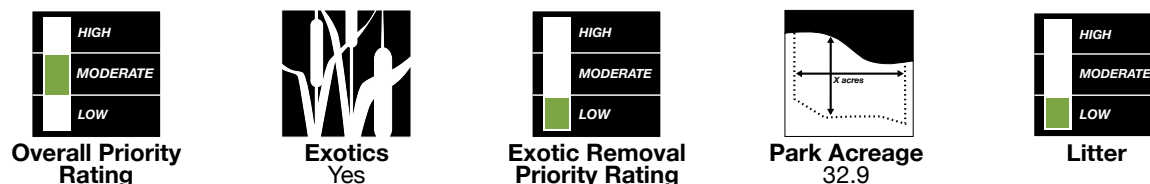


Figure 27: Phase 2 of shoreline restoration for Ft. Brooke Cotanchobee Park.

GANDY PARK



Existing Conditions

Portions of the Gandy Park shoreline were previously restored through a cooperative project with the SWIM program and the City of Tampa. The majority of the shoreline was historically sea-walled, but now consists primarily of a mangrove fringe. The western end of the park consists of a steep rip-rap and "mac block" shoreline for shoreline protection of the Gandy Bridge approach (figure 28). This area has very little vegetative cover due to the hardened shoreline and higher wave energy due to boat wakes and wave exposure from the open bay. Vegetation along the shoreline includes: black mangroves (*Avicennia germinans*), saltbush (*Baccharis halimifolia*) and morning-glory (*Ipomea brasiliensis*). The majority of the shoreline is a dense, healthy mangrove fringe. Remnant portions of the seawall, which were cut or breached, still exist in several areas—the breaches allow for tidal exchange with the bay. The mangrove fringe contains a variety of native species including: red, white, and black mangroves, saltbush and flat-topped goldenrod (*Euthamia minor*). On the landward edge of the fringe, scattered cabbage palms (*Sabal palmetto*) and laurel oaks (*Quercus laurifolia*) occur. Approximately 20% of the fringe has been recolonized by exotic/nuisance vegetation including mimosa (*Acacia sp.*) and Brazilian pepper (*Schinus terebinthifolius*). Within the mangrove fringe is a small, tidally influenced, open water area. The mangrove fringe is healthy and diverse in size and species. The exotics appear to be limited primarily to the landward edge of the fringe.

The mangrove fringe provides habitat for fish, wading birds, amphibians and invertebrates. The park is adjacent to the bay and a very narrow maintained strip of lawn. The park is also adjacent to a busy highway. The bay allows for movement of fish and birds that may utilize the shoreline but the adjacent park provides no significant habitat for wildlife species.

Overall, the habitat quality rating was moderate for the mangrove swamp and rip-rapped shoreline, and minimal for the seawall. It also has a low exotic removal priority rating due to the percentage of nuisance species.

Existing Plans and Historical Plans

Tampa Bay Watch was involved in exotic removal and restoration of approximately 2 acres in early 1990s. Tampa Bay Watch also put in 75 tons of oyster bars at Palonis Park. The, City of Tampa in conjunction with SWIM completed plans shown in (figure 30).

Future Plans

Tampa Bay Watch is considering a salt marsh planting adjacent to the previously installed oyster bar.

Recommendations

Short Term: 1) Use volunteers to remove Brazilian pepper along mangrove fringe. 2) Volunteers needed for annual bay cleanup.

Percentage of Plant Community Types Within Gandy Park

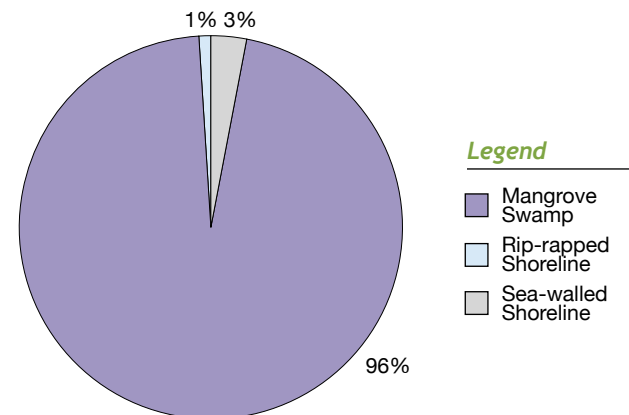


Table 20: Dominant Exotics & Habitat Quality Within Gandy Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Mangrove Swamp	Brazilian pepper Mimosa	15 5	0.66	Moderate
Rip-rapped Shoreline	None	0	0.53	Moderate
Sea-walled Shoreline	None	0	0.07	Minimal



Figure 28: Mac block shoreline along the Gandy Bridge approach.

Gandy Park



Sources:
GPS shoreline data provided by PBS&J and USF.

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Legend

Assessment

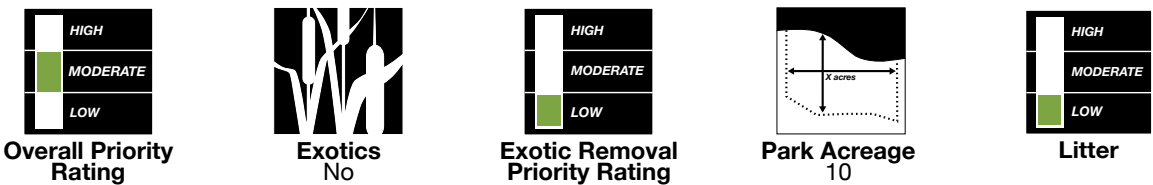
- Mangrove Swamp
- Rip-rapped Shoreline
- Sea-walled Shoreline



0 600 Feet

Figure 29: Existing shoreline condition of Gandy Park.

HENRY B. PLANT PARK



Existing Conditions

Seawall makes up the entire Henry B. Plant Park shoreline (figure 31). The adjoining upland area is a maintained lawn adjacent to housing for the University of Tampa. The seawall does not provide any obvious wildlife support, and precludes the river from influencing the adjacent upland system. The upland assessment area contains some scattered oaks, and may provide some supporting habitat for wading birds. This park has a low exotic removal priority rating due to the absence of exotic vegetation, but could benefit from enhancing the shoreline through the placement of rip-rap waterward of the existing seawall to create habitat for wading birds and fish. The habitat quality rating for the seawall is minimal.

Existing Plans and Historical Plans

Currently, no stakeholder agencies have existing plans.

Future Plans

Currently, no stakeholder agencies have plans for shoreline restoration.

Recommendations

Long Term: Pursue funding in conjunction with the City of Tampa and/or SWFMWD to install rip-rap or reef material waterward of the seawall. If possible, the wall should be removed, the slope regraded to a more gradual incline, rip-rap installed, and native plants installed.

Percentage of Plant Community Types Within Henry B. Plant Park

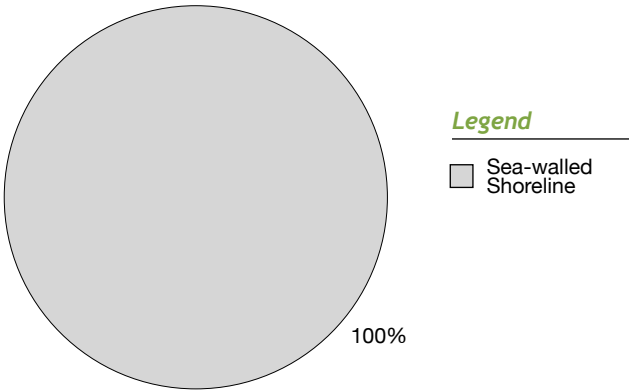


Table 21: Dominant Exotics & Habitat Quality Within Henry B. Plant Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Sea-walled Shoreline	None	0	0.13	Minimal



Figure 31: Sea-walled shoreline in Henry B. Plant Park.

Henry B. Plant Park



Sources:
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Legend

Assessment

Sea-walled Shoreline



0 300 Feet

Figure 32: Existing shoreline condition of Henry B. Plant Park.

LOWRY PARK



Existing Conditions

The Lowry Park shoreline consists primarily of a restored oligohaline riparian buffer (figure 33). This system consists of a variety of native species including: leather fern (*Acrostichum sp.*), wax myrtle (*Myrica cerifera*), bulrush (*Scirpus sp.*), saltbush (*Baccharis halimifolia*), sand cord grass (*Spartina bakeri*), cypress (*Taxodium distichum*), red maple (*Acer rubrum*) and several other beneficial species. Within the marsh habitat, approximately 20% of the cover consisted of exotic or invasive species including torpedo grass (*Panicum repens*) and cattails (*Typha sp.*). Adjacent to the seawall and rip-rap, the percent cover of cattails (*Typha sp.*) was approximately 15%. Overall, the native species are large and dominant and it does not appear that the exotic species are becoming a nuisance. The slope of the shoreline is shallow and there is no evidence of litter.

In addition to the oligohaline riparian buffer, the southernmost boundary of the park consists of a concrete seawall, associated dock and boat ramp. Throughout the shoreline, there are several small isolated wooden seawalls that enclose a large riparian tree. The intention of these planters appears to be to eliminate the risk of losing the tree to erosion.

The shoreline is located adjacent to the Hillsborough River and a large park. The park contains both maintained grass areas and hammocks of native vegetation. The surrounding area provides habitat support for species that may utilize the shoreline. The river level was normal for this time of the year and is supporting the plant species within this habitat. It is anticipated that fish, wading birds, and amphibians utilize this shoreline.

The habitat quality of the oligohaline marsh was rated as optimal, and the seawall and rip-rapped areas as moderate. Lowry Park has a low exotic removal priority rating due to the percentage of nuisance species.

Existing Plans and Historical Plans

The City of Tampa completed Phase 1 of the restoration. Currently existing plans for Phase 1 are not available. In addition, The Tampa Bay Estuary Program funded a minigrant for bay cleanup.

Future Plans

The City of Tampa has identified Phase 2 of restoration as a high priority (figure 35).

Recommendations

Short Term: 1) At this time exotic species are not a problem, and the park should be monitored to ensure that there is no further spread of nuisance species. 2) Stakeholder agencies partner with the City of Tampa in funding Phase 2 of shoreline restoration.

Percentage of Plant Community Types Within Lowry Park

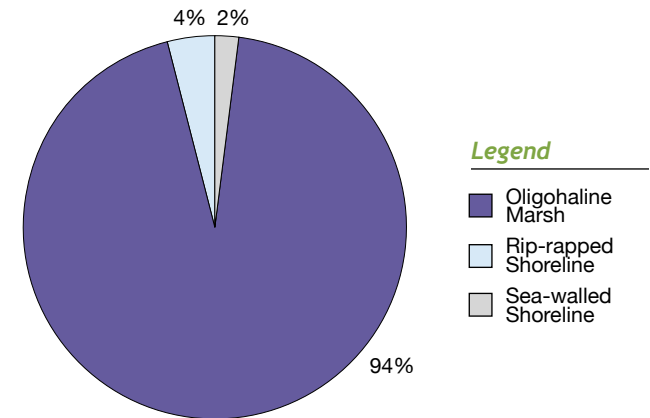


Table 22: Dominant Exotics & Habitat Quality Within Lowry Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Oligohaline Marsh	Cattails Torpedo grass	10 10	0.76	Optimal
Rip-rapped Shoreline	None	0	0.56	Moderate
Sea-walled Shoreline	Cattails	15	0.56	Moderate



Figure 33: Oligohaline riparian buffer at Lowry Park.

Lowry Park



Sources:
GPS shoreline data provided by PBS&J and USF.

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Legend

Assessment

- Oligohaline Marsh
- Rip-rapped Shoreline
- Sea-walled Shoreline



0 600 Feet

Figure 34: Existing shoreline condition of Lowry Park.



Lowry Park Shoreline Restoration

Scale: 1" = 120'

Figure 35: Phase 2 of the City of Tampa's restoration plan for Lowry Park.

MCKAY BAY NATURE PARK



Existing Conditions

The McKay Bay Nature Park shoreline can be broken into two polygons. A large portion of the shoreline is a healthy, wide mangrove fringe (figure 36). The remaining shoreline is riverine forest that contains 40% nuisance species. The shoreline is narrow and adjacent to a narrow access road that runs between the park and a recycling plant. The shoreline is very steep and the vegetation is stratified. *Mimosa* (*Albizia julibrissin*) occurs on the landward edge of the fringe. Within the fringe is a mixture of mimosa and Brazilian pepper (*Schinus terebinthifolius*), and red and white mangroves (*Rhizophora mangle* and *Languncularia racemosa*) occur on the waterward edge. This habitat is adjacent to the bay, which allows for movement in and out of the system. It is anticipated that this shoreline supports wading birds, fish, and invertebrate species. Due to the close proximity of the recycling plant, there is little supporting habitat landward of the fringe. Overall, due to the low level of nuisance species cover (2%) within this system, it has a low exotic removal priority rating.

The rest of the shoreline is a healthy mangrove forest with boardwalks throughout the fringe to facilitate public access. The fringe contains red, black (*Avicennia germinans*) and white mangroves. False willow (*Baccharis angustifolia*) and sea grape (*Coccoloba uvifera*) occur on the land edge of the system. The mangrove fringe is adjacent to an upland park that maintains grass paths for the public but has been replanted with native upland species. This habitat provides wildlife support for the birds, reptiles and amphibians that may utilize the fringe. It can be anticipated that the fringe also provides habitat for a variety of fish species and invertebrates. The hydrology within the system is normal and there is no sign of upland encroachment or vegetative stress. Due to the level of nuisance species cover (40%) within this system, it has a low exotic removal priority rating. The overall habitat quality rating was optimal for the mangrove forest and moderate for the riverine forest.

Existing Plans and Historical Plans

A complete management plan was developed for McKay Bay Nature Park in 1995 with cooperation from many stakeholders (figure 38). In addition, the Tampa Bay Estuary Program awarded Tampa Audubon with a minigrant for exotic removal.

Future Plans

The Army Corps of Engineers is planning a project for filling subtidal dredge holes at the mouth of the Alafia River. In addition, Tampa Audubon and PEER plan to work on exotic removal.

Recommendations

Short Term: Efforts should be focused within the area of the park with the high level of exotics. Due to the steep slope, it may be difficult to remove the nuisance species without immediately stabilizing the shoreline or replanting with native species.

Long Term: Pursue funding in conjunction with the City of Tampa and/or SWFMWD to stabilize the shoreline and replant with native vegetation.

Percentage of Plant Community Types Within McKay Bay Nature Park

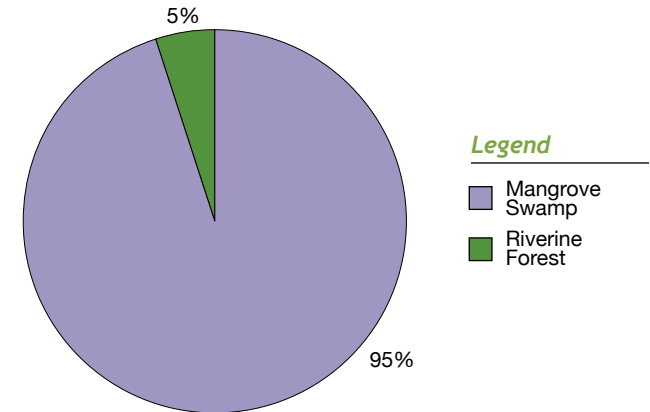


Table 23: Dominant Exotics & Habitat Quality Within McKay Bay Nature Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Mangrove Swamp	None	0	0.80	Optimal
Riverine Forest	<i>Mimosa</i> <i>Brazilian pepper</i>	30 10	0.43	Moderate



Figure 36: Shoreline of McKay Bay Nature Park.

McKay Bay Nature Park



Sources:
GPS shoreline data provided by PBS&J and USF.

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Legend

Assessment

- Mangrove Swamp
- Riverine Forest



0 1,500 Feet

Figure 37: Existing shoreline condition of McKay Bay Nature Park.



CONCEPTUAL PLAN
FIGURE 1

Scale: 1" = 900'



Figure 38: Restoration Plan for McKay Bay Nature Park.

PALM RIVER PARK (MCKAY BAY BIKE TRAIL PARK)



Existing Conditions

The McKay Bay Bike Trail Park was assessed as a substitution for Palm River Park, which is not located on the river. McKay Bay Bike Trail is located on McKay Bay directly outside the mouth of the Palm River (figure 39). The entire shoreline is a mangrove fringe containing both red and white mangroves (*Rhizophora mangle* and *Languncularia racemosa*) along the waterward edge of the fringe. The fringe contains approximately 50% exotic species, 40% of which is mimosa (*Albizia julibrissin*). The mimosa is limited to the landward edge of the fringe. The shoreline is steep and there are signs of erosion.

It is anticipated that this system supports wading birds, amphibians and fish. This habitat is adjacent to the bay, which allows for movement in and out of the system. The adjacent upland is primarily maintained grass, but contains three large ponds which are heavily utilized by wading and migrating birds. The park is currently closed to vehicular traffic, but it appears that pedestrians can use the bike path.

The mangrove swamp has a moderate habitat quality rating. The exotic removal priority rating is high due to the percentage of nuisance and exotic species.

Existing Plans and Historical Plans

Tampa Bay Watch and other stakeholder agencies have formed a management committee for the management of Palm River. The planting scheme is shown in figure 41.

Future Plans

Tampa Bay Watch is currently seeking funding for restoration at Palm River. The City of Tampa is currently seeking funding for restoration of the adjacent parcel to the Palm River Park.

Recommendations

Short Term: Efforts should be focused within the area of the park with the high level of exotics. Due to the steep slope, it may be difficult to remove the nuisance species without immediately stabilizing the shoreline, or replanting with native species.

Long Term: Pursue funding in conjunction with the City of Tampa and/or SWFMWD to stabilize the shoreline with rip-rap, and replant with native vegetation.

Percentage of Plant Community Types Within Palm River Park

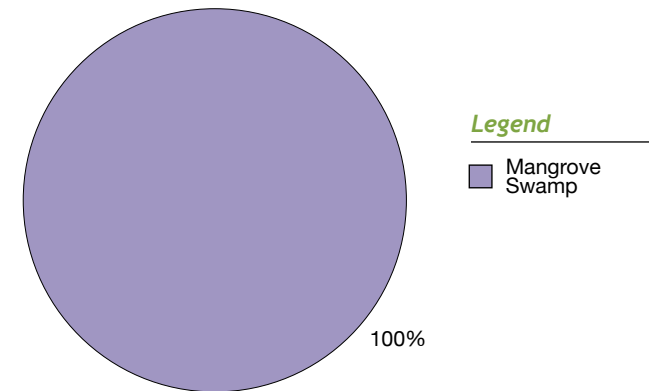


Table 24: Dominant Exotics & Habitat Quality Within Palm River Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Mangrove Swamp	Mimosa Brazilian Pepper	40 10	0.60	Moderate



Figure 39: The shoreline of Palm River Park.

Palm River Park (McKay Bay Bike Trail)



Sources:
GPS shoreline data provided by PBS&J and USF.

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Map Projection:
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Legend

Assessment

 Mangrove Swamp



0 1,500 Feet

Figure 40: Existing shoreline condition of Palm River Park (McKay Bay Bike Trail).

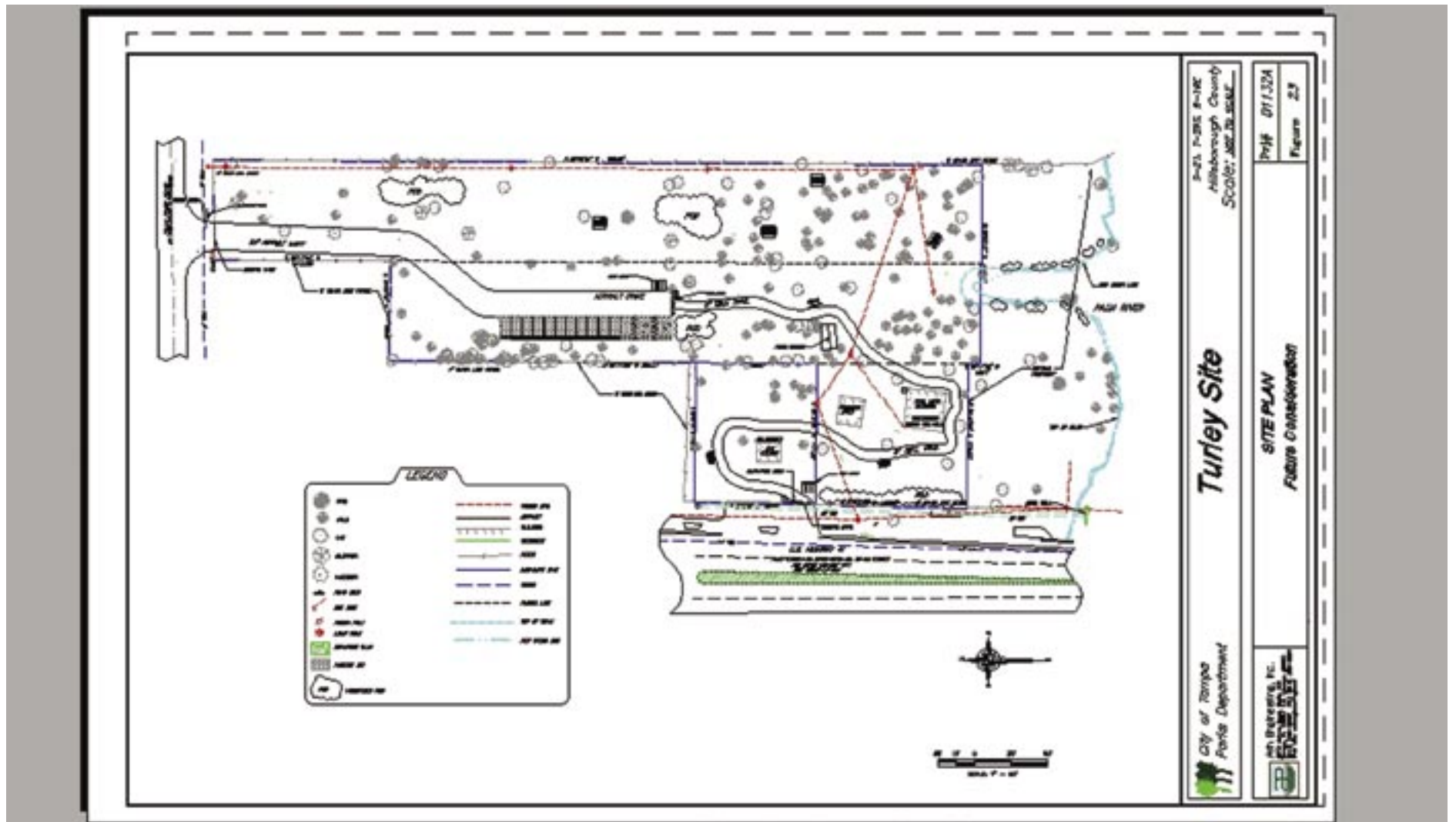


Figure 41: Existing planting scheme for Palm River Park.

PICNIC ISLAND PARK



Existing Conditions

The Picnic Island Park shoreline is a diverse mixture of habitats including: mangrove fringe, rip-rap, coastal dunes, coastal shrub and beach. The majority of the eastern shoreline was restored in the mid 1990s as part of a cooperative project with the SWFWMD SWIM Program. With the exception of a boat ramp, several small parking lots and an access road, the majority of this park has been left in a natural state. The shoreline provides habitat for wading birds, fish, amphibians and invertebrates. The south side of Picnic Island is a coastal system and supports a natural beach system. The coastal shrub and coastal dune systems are comprised of a variety of native species including: false-willow (*Baccharis angustifolia*), railroad-vine (*Ipomea brasiliensis*), fen-flower milkweed (*Asclepias lanceolata*), white and red mangroves (*Languncularia racemosa* and *Rhizophora mangle*), buttonwood (*Conocarpus erectus*), cucumber leaved sunflower (*Helianthus angustifolius*), and sea-oats (*Uniola paniculata*). There were no exotic species observed within these habitats. Within the area previously restored, rip-rap has been placed waterward of the existing shoreline, creating a tidally influenced lagoonal area. Within this area are *Paspalum* sp., red and white mangroves, and salt marsh cord grass (*Spartina alterniflora*). The northern edge of Picnic Island is a large mangrove swamp. The shoreline also contains a diversity of native species including: false-willow, wax myrtle (*Myrica cerifera*), cabbage palm (*Sabal palmetto*) and bushy broom grass (*Andropogon glomeratus*). Brazilian pepper is scattered throughout the fringe but only makes up about 10% cover.

Overall, this shoreline is healthy and the previous restoration project has been highly successful (figure 42). The upland park is maintained to facilitate use by the public but still provides some supporting habitat. The water level is appropriate in the various community types. All of the habitat types at Picnic Island are rated as optimal except the costal shrub portion which has a moderate rating. The exotic removal priority rating for this park is low due to the level of exotic species.

Existing Plans and Historical Plans

The restoration completed by SWIM involved over 7-8 acres of salt marsh planting from Tampa Bay Watch. Tampa Bay Watch also installed 2,000 smooth cord grass plants in March 2004, and 250 oyster domes.

Future Plans

The City of Tampa is considering a mitigation project to correct severe erosion. An adjacent restoration of upland edges and mosquito ditches is currently in conceptual planning east of Picnic Island (205 acres). The plan will be to knock down exotics and restore more natural flow. The City of Tampa is considering it as a possible transportation mitigation. No funding has been identified. Volunteer exotic removal and planting is possible. Tampa Bay Watch has planned salt marsh planting for Spring of 2005.

Recommendations

Short Term: Volunteers to monitor and remove re-growth of exotic species on a regularly scheduled basis.

Long Term: The City of Tampa desires a partner for funding the adjacent upland and mosquito ditch project.

Percentage of Plant Community Types Within Picnic Island Park

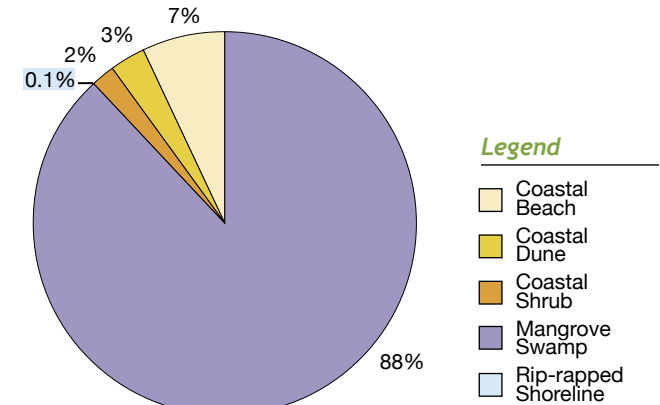


Table 25: Dominant Exotics & Habitat Quality Within Picnic Island Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Coastal Beach	None	0	0.80	Optimal
Coastal Dune	None	0	0.80	Optimal
Coastal Shrub	None	0	0.67	Moderate
Mangrove Swamp	Brazilian pepper	10	0.77	Optimal
Rip-rapped Shoreline	None	0	0.80	Optimal



Figure 42: A healthy shoreline at Picnic Island Park due to a successful restoration project.

Picnic Island Park



Sources:
GPS shoreline data provided by PBS&J and USF.

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Legend Assessment

- Coastal Beach
- Coastal Dune
- Coastal Shrub
- Mangrove Swamp
- Rip-rapped Shoreline



0 1,000 Feet

Figure 43: Existing shoreline condition of Picnic Island Park.

REED PROPERTY



Existing Conditions

The Reed Property shoreline consists of a mixture of freshwater marsh, seawall and rip-rapped shoreline (figure 44). The seawall has been compromised in several areas and has caused erosion to occur landward of the wall. Due to recent heavy rain events, water has pooled landward of the wall. Vegetation within this area is limited to the uplands landward of the wall and includes: laurel oaks (*Quercus laurifolia*), bahia and St. Augustine grass (*Paspalum notatum* and *Stenotaphrum secundatum*). A portion of the seawall is rip-rapped, and some cattails (*Typha sp.*) are growing waterward of the rocks. The freshwater marsh is primarily covered by nuisance and/or exotic species including: cattails (*Typha sp.*), Brazilian pepper (*Schinus terebinthifolius*) and the less dominant creeping ox-eye (*Wedelia trilobata*). It is anticipated that the shoreline provides some habitat for fish, amphibians and wading birds. The river level was normal for this time of the year, and is supporting the plant species within this habitat. However, the seawall is precluding the water from influencing the entire shoreline. The shoreline is eroding behind the seawall and along a portion of the freshwater marsh.

The adjacent upland is primarily maintained lawn with scattered oaks. Therefore, it provides minimal supporting habitat for wildlife that may utilize the shoreline. The park is located within a single-family residential neighborhood and is closed to the public. The exotic removal priority rating for this park is low due to the level of nuisance and/or exotic species. This park would benefit greatly from the installation of rip-rap, removal of exotic species, and installation of native plants. The rip-rap would help to stabilize the shoreline before the erosion becomes a significant problem, and the installation of natives would increase the value of the wildlife habitat.

Overall, the habitat quality ratings for all of the habitats at Reed Park are moderate.

Existing Plans and Historical Plans

The City of Tampa has design and construction plans for the site which are completed (figure 46). SWFWMD invested \$500,000 in the restoration, and the City of Tampa funded \$30,000. When the project is complete, 100% of the shoreline will be restored.

Future Plans

The existing project will complete restoration of the site.

Recommendations

Short Term: Shoreline restoration will be completed by the City of Tampa and SWFWMD.

Long Term: 1) Use volunteers to remove exotic species and ongoing maintenance once construction is complete. 2) Monitoring of shoreline condition once restoration is complete.

Percentage of Plant Community Types Within Reed Property

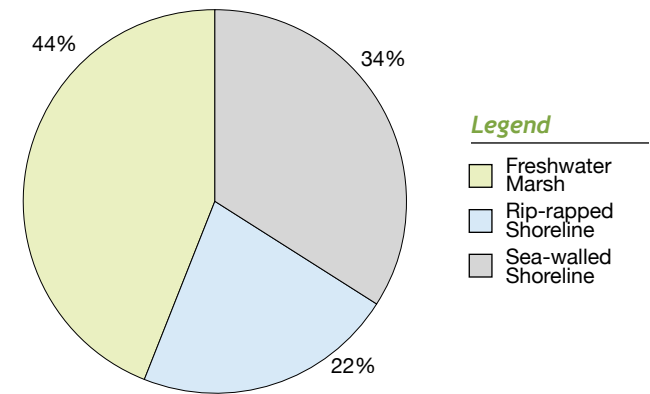


Table 26: Dominant Exotics & Habitat Quality Within Reed Property

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Freshwater Marsh	Cattails Brazilian pepper	25 5	0.46	Moderate
Rip-rapped Shoreline	Creeping ox-eye Torpedo grass	5 5	0.50	Moderate
Sea-walled Shoreline	None	0	0.40	Moderate



Figure 44: Reed Property's mixed shoreline.

Reed Property



Sources:
GPS shoreline data provided by PBS&J and USF.

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Legend

Assessment

- Freshwater Marsh
- Rip-rapped Shoreline
- Sea-walled Shoreline



0 100 200 300 Feet

Figure 45: Existing shoreline condition of Reed Property.

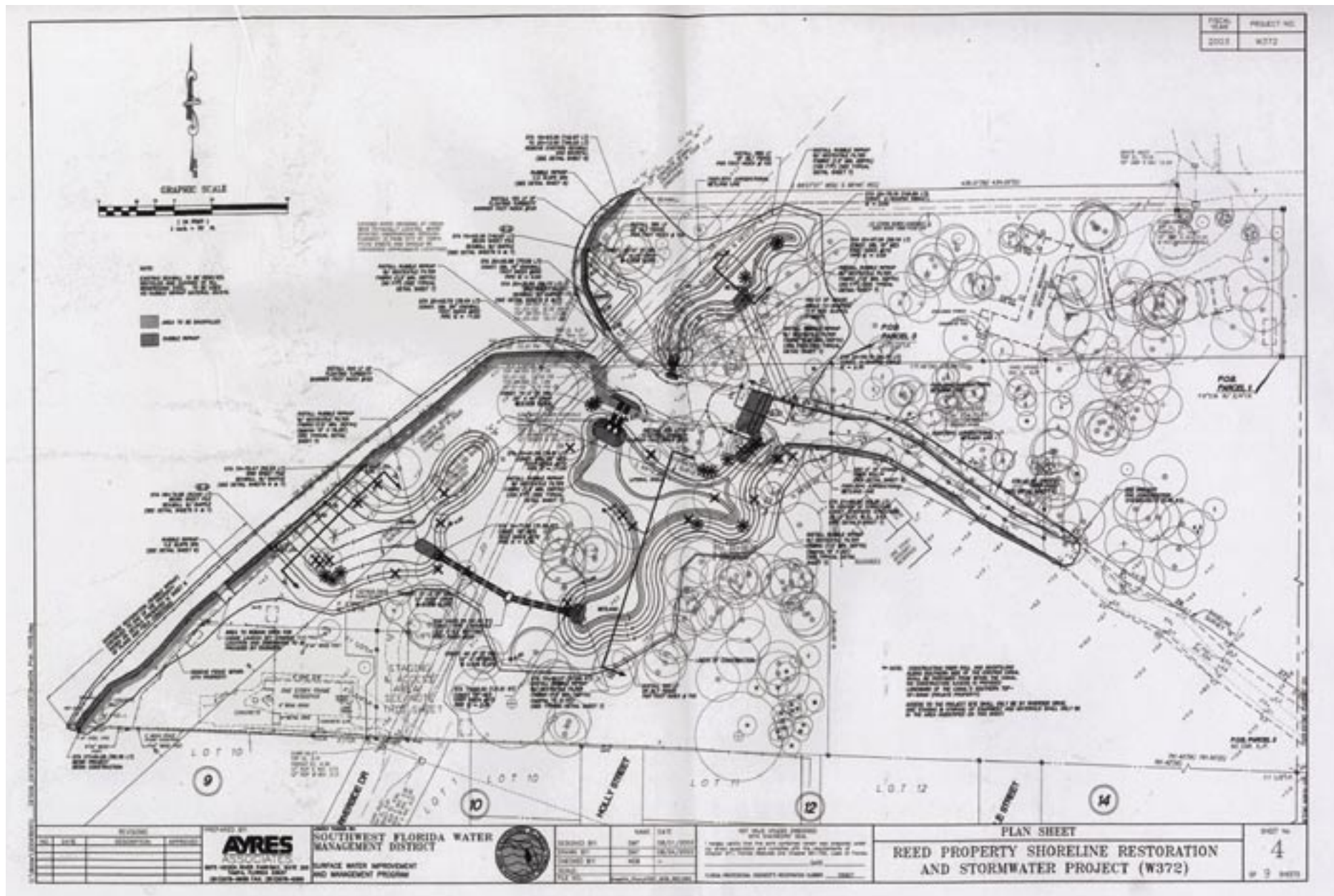


Figure 46: Design and construction plans for Reed Property.

RIBBON OF GREEN PARK



Existing Conditions

The entire Ribbon of Green Park shoreline is rip-rapped with concrete rubble (figure 47). The park is located adjacent to the Hillsborough River and is an upland urban park. Brazilian pepper (*Schinus terebinthifolius*) has begun to colonize the shoreline and covers approximately 2% of the entire shoreline. The shoreline provides some habitat for fish, wading birds and amphibians. The adjacent upland is narrow and contains maintained lawn. The adjacent river provides supporting habitat and allows for wildlife movement. However, the park is located in a highly urban area and is adjacent to a high volume roadway, and therefore, provides little to no wildlife support to species that may utilize the shoreline. The hydrology is influenced both by the tide and river flow. A master plan has been developed for the site which includes a wetland restoration component. Alternative forms of shoreline stabilization (such as reticulated concrete block mats) could be used to allow more vegetation to grow along the shoreline.

Overall, the rip-rapped shoreline has a minimal habitat quality rating. The exotic removal score is low due to the percent cover by Brazilian pepper.

Existing Plans and Historical Plans

The entire site is funded by Capital Improvement Tax (CIT) of more than \$44,848. SWFMWD is providing cooperative funding (figure 49). The existing plans include a component of wetland restoration, but a large portion of the shoreline will become a cantilevered boardwalk.

Future Plans

Construction will be completed by December 2005.

Recommendations

Short Term: 1) Completion of existing plans. 2) Utilize volunteers to remove litter from the shoreline.

Long Term: 1) Monitoring of wetland restoration. 2) Volunteers for litter and exotic removal.

Percentage of Plant Community Types Within Ribbon of Green Park

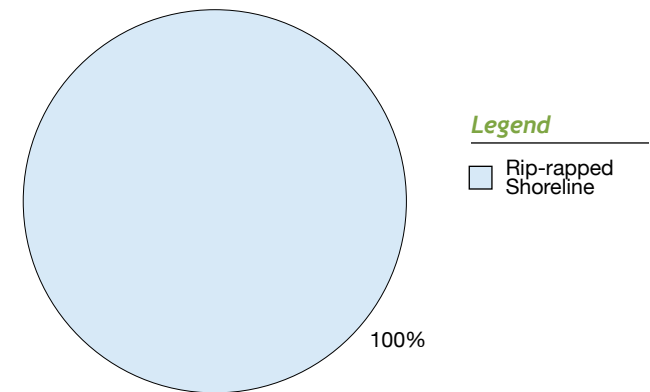


Table 27: Dominant Exotics & Habitat Quality Within Ribbon of Green Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Rip-rapped Shoreline	Brazilian pepper	2	0.30	Minimal



Figure 47: Rip-rapped shoreline with concrete rubble at Ribbon of Green Park.

Ribbon of Green Park



Sources:
GPS shoreline data provided by PBS&J and USF.

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


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Legend

Assessment

 Rip-rapped Shoreline



0 100 200 300 Feet

Figure 48: Existing shoreline condition of Ribbon of Green Park.



70 | Tampa Shoreline Restoration Initiative

RIVERCOVE PARK



Existing Conditions

The Rivercove Park shoreline consists primarily of a forested riparian buffer. The canopy consists primarily of laurel oaks (*Quercus laurifolia*) and cabbage palms (*Sabal palmetto*) (figure 50). Native vegetation within the system includes: leather fern (*Acrostichum sp.*) and corkwood (*Stillingia aquatica*). Nuisance species within this site include: air potato (*Dioscorea bulbifera*) and wild taro (*Colocasia esculenta*). Due to the severe slope of the landward fringe of the system, the river is not able to influence the top of the bank. Therefore, there is encroachment by weedy upland species including: Caesar weed (*Urena lobata*), bahia grass (*Paspalum notatum*), and common beggarticks (*Bidens alba*). Overall, the shoreline is severely eroded and limited in the amount of habitat it provides for fish, wading birds and amphibians.

The adjacent park is a small upland lot surrounded on both sides by single-family residences. The park is unmarked and is not being utilized by the public. The park provides very little habitat support for species that may utilize the shoreline.

Overall, the riverine forest has a moderate habitat quality rating. Rivercove Park has a moderate exotic removal priority rating due to the percent cover by nuisance and/or exotic vegetation.

Existing Plans and Historical Plans

No stakeholder agencies have existing plans.

Future Plans

No stakeholder agencies have identified future plans.

Recommendations

Short Term: Utilize volunteers to remove exotic species.

Long Term: Stakeholder agencies pursue funding to stabilize and enhance the shoreline with riparian and oligohaline species.

Percentage of Plant Community Types Within Rivercove Park

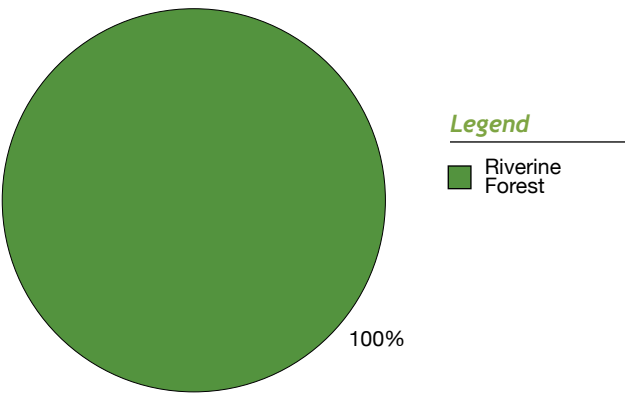


Table 28: Dominant Exotics & Habitat Quality Within Rivercove Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Riverine Forest	Air potato Wild taro	15 10	0.40	Moderate



Figure 50: The canopy of Rivercove Park.

Rivercove Park



Sources:
GPS shoreline data provided by PB&J and USF.

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Legend

Assessment

 Riverine Forest



0 100 200 Feet

Figure 51: Existing shoreline condition of Rivercove Park.

RIVERCREST PARK



Existing Conditions

The Rivercrest Park shoreline consists of a freshwater marsh shoreline. A majority of the shoreline has been restored and rip-rap has been placed waterward of the shoreline to create a protected lagoon area. This system consists of a variety of native species including: bulrush (*Scirpus sp.*), saltbush (*Baccharis halimifolia*), needle rush (*Juncus roemerianus*) and maidencane (*Panicum hemitomon*). Although these areas have been restored, there is a large amount of nuisance species encroachment from the adjacent upland including: Brazilian pepper (*Schinus terebinthifolius*), creeping ox-eye (*Wedelia trilobata*), torpedo grass (*Panicum repens*) and St. Augustine grass (*Stenotaphrum secundatum*). Areas that have not been restored have a natural shallow shoreline but contain a large percentage of nuisance species including: paragrass (*Brachiaria mutica*), creeping ox-eye, Brazilian pepper, cowpea (*Vigna luteola*) and mimosa (*Acacia sp.*) (figure 52).

At the time of the review, there was a large amount of litter within the shoreline and park, but this can be attributed to a recent flooding event. The adjacent upland is very narrow and consists primarily of maintained grass and scattered laurel oaks. It also provides very little supporting wildlife habitat for species that may utilize the shoreline. The river level was normal for this time of the year and is supporting the plant species within this habitat. It is anticipated that fish, amphibians and wading birds utilize this shoreline.

Although a portion of this park has been restored, it has a high exotic removal priority rating due to the large percentage of nuisance species encroaching from the landward edge. It is recommended that the exotics species be cleared from this area and the landward edge be replanted to avoid further encroachment.

Overall, the freshwater marsh and rip-rapped shoreline have moderate habitat quality ratings, whereas the sea-walled portion has a minimal rating.

Existing Plans and Historical Plans

The City of Tampa completed the restoration with \$142,000 of cooperative funding provided by SWFWMD. The restoration was completed in 2003 (figure 54). Tampa Audubon and PEER worked on a restoration project with funds from the Tampa Bay Estuary Program.

Future Plans

Currently, stakeholder agencies do not have any plans for Rivercrest Park.

Recommendations

Short Term: Volunteers should be recruited to remove litter and exotic vegetation. Exotic removal at the park is a high priority.

Long Term: Pursue funding in conjunction with the City of Tampa and/or SWFWMD to replant the landward edge with native vegetation and complete restoration of the shoreline.

Percentage of Plant Community Types Within Rivercrest Park

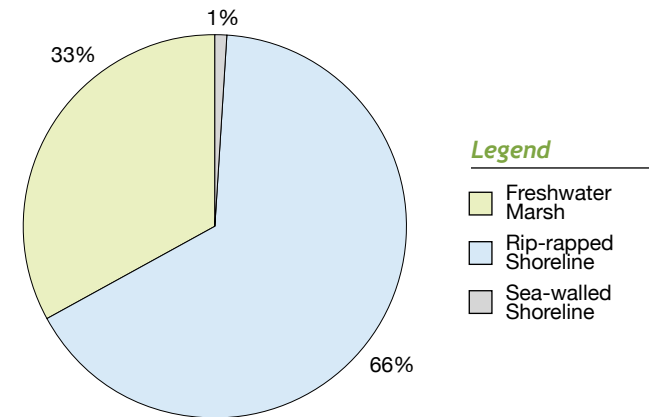


Table 29: Dominant Exotics & Habitat Quality Within Rivercrest Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Freshwater Marsh	Paragrass Creeping ox-eye Cowpea Torpedo grass	20 10 10 10	0.43	Moderate
Rip-rapped Shoreline	Creeping ox-eye Brazilian pepper Cattails Torpedo grass	35 5 5 5	0.60	Moderate
Sea-walled Shoreline	None	0	0.07	Minimal



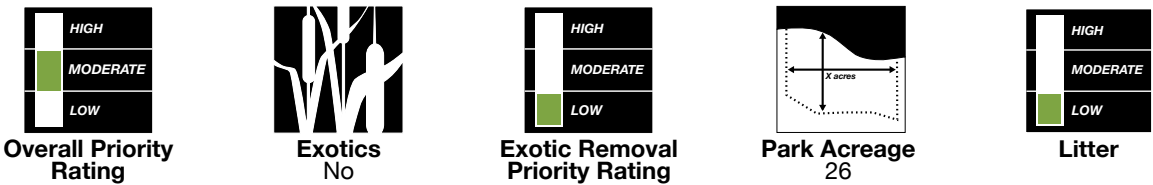
Figure 52: Nuisance species along unrestored shoreline at Rivercrest Park.

Rivercrest Park



Figure 53: Existing shoreline condition of Rivercrest Park.

RIVERFRONT PARK



Existing Conditions

The entire Riverfront Park shoreline is sea-walled. The park is located adjacent to the Hillsborough River and is an upland urban park. This shoreline provides no habitat value for wildlife that would be found utilizing the adjacent river. The assessment area immediately upland of the seawall is a narrow maintained grass area. In addition, the park and river are located in a highly urban area. The park is highly visible and in an urban area with high usage. Therefore, it would be highly beneficial to restore the shoreline through the installation of rip-rap waterward of the seawall.

Overall, the habitat quality rating for Riverfront Park is minimal.

Existing Plans and Historical Plans

No existing plans from any stakeholder agency.

Future Plans

No future plans from any stakeholder agency.

Recommendations

Long Term: Pursue funding in conjunction with the City of Tampa and/or SWFMWD to install rip-rap waterward of the seawall.

Percentage of Plant Community Types Within Riverfront Park

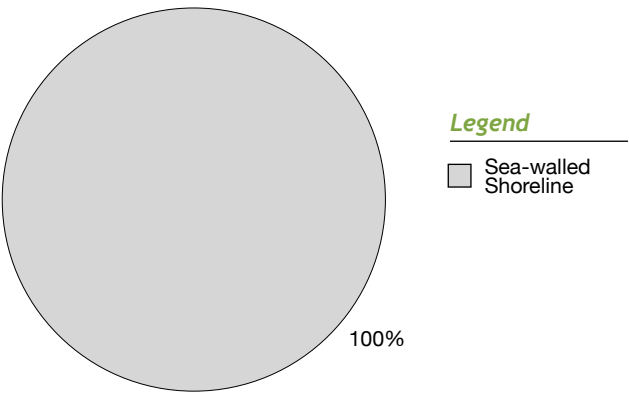
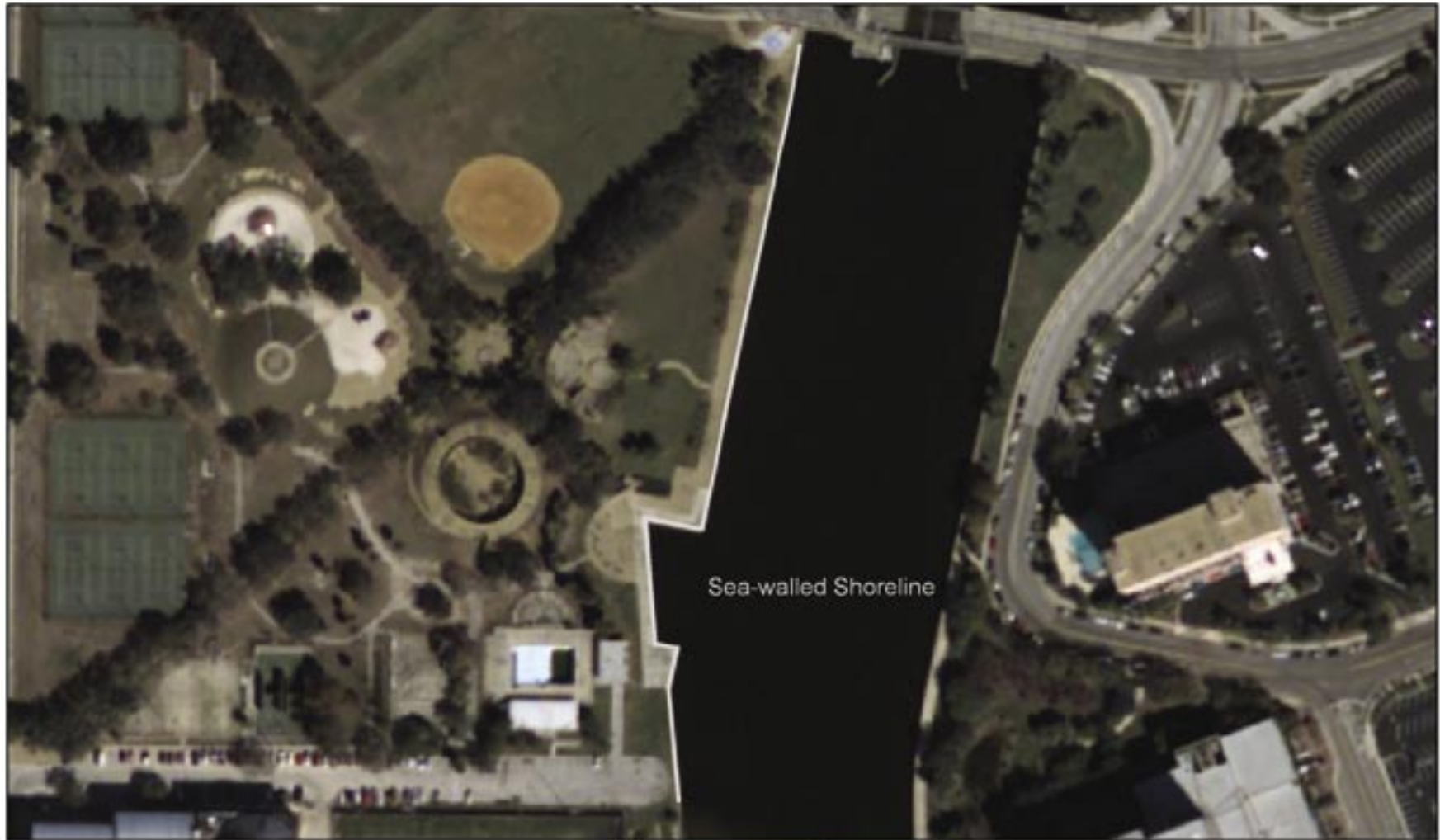


Table 30: Dominant Exotics & Habitat Quality Within Riverfront Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Sea-walled Shoreline	None	0	0.13	Minimal

Riverfront Park



Sources:
GPS shoreline data provided by PB&J and USF.

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Legend

Assessment

Sea-walled Shoreline



0 300 Feet

Figure 55: Existing shoreline condition of Riverfront Park.

RIVERSIDE GARDEN PARK



Existing Conditions

The Riverside Garden Park shoreline consists of a mixture of freshwater marsh, riverine forest and hardened shoreline (seawall and rip-rap). Several large laurel oaks (*Quercus laurifolia*) and cabbage palms (*Sabal palmetto*) provide canopy along the shoreline, but the cover is not high enough to classify the entire shoreline as a riverine forest (figure 56). The shoreline consists primarily of a freshwater marsh with intermittent laurel oak and cabbage palm hammock. This freshwater marsh system contains a moderate percentage (25%) of nuisance species including: paragrass (*Brachiaria mutica*), cattails (*Typha sp.*), and torpedo grass (*Panicum repens*). Similar species were observed within the riverine forest but also included Brazilian pepper (*Schinus terebinthifolius*). Native species found within this system include: laurel oak (*Quercus laurifolia*), cabbage palm (*Sabal palmetto*) and American elm (*Fraxinus Americana*). The seawall is composed of eroded aluminum that has detached from the shoreline allowing water to get landward of the wall; although no native wetland species have encroached the area. In several areas, the upland grass is being mowed down to the water's edge precluding native vegetative growth.

The shoreline slope is variable based on the vegetative community. The slope within the riparian forest is steep and there are signs of erosion. The shoreline adjacent to the freshwater marsh is much more gradual and erosion is not a problem. It is anticipated that this shoreline provides habitat for wading birds, fish and amphibians. The adjacent upland is a narrow, maintained grass area located within a residential area; therefore, it provides little supporting habitat. The low exotic removal priority rating is based on the percentage of exotic and/or nuisance species. This site has been selected for restoration by the City of Tampa and SWFWMD/SWIM and is currently under design.

Overall, the habitat quality for the freshwater marsh and riverine forest are rated as moderate, and the rip-rapped and sea-walled shoreline are rated as minimal.

Existing Plans and Historical Plans

Conceptual plans to restore 2,500 linear feet with funding from the SWIM program (figure 58).

Future Plans

The City of Tampa has requested SWFWMD cooperative funding for construction in early summer 2005.

Recommendations

Short Term: 1) Volunteers to remove the nuisance species and clean up litter. 2) Implement proposed restoration plan currently under development by the City and SWFWMD SWIM Program. 3) Volunteers to participate in the restoration process.

Long Term: 1) Monitoring of restoration. Volunteers to provide ongoing exotic removal.

Percentage of Plant Community Types Within Riverside Garden Park

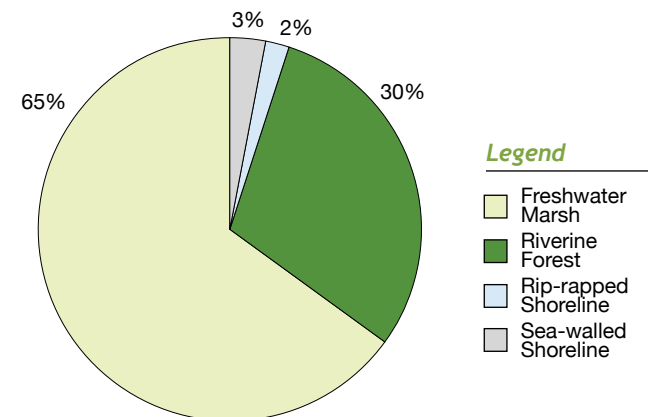


Table 31: Dominant Exotics & Habitat Quality Within Riverside Garden Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Freshwater Marsh	Cattails Torpedo grass Paragrass	10 10 5	0.53	Moderate
Riverine Forest	Brazilian pepper Paragrass	5 5	0.56	Moderate
Rip-rapped Shoreline	None	0	0.30	Minimal
Sea-walled Shoreline	Torpedo grass	10	0.30	Minimal



Figure 56: The canopy along Riverside Garden Park's shoreline.

Riverside Garden Park



Sources:
GPS shoreline data provided by PBS&J and USF.

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Legend

Assessment

- Freshwater Marsh
- Riverine Forest
- Rip-rapped Shoreline
- Sea-walled Shoreline

0 400 Feet



Figure 57: Existing shoreline condition of Riverside Garden Park.



Rivergarden Park Shoreline Stabilization and Restoration

Figure 58: Conceptual plans to restore 2,500 linear feet of Riverside Garden Park shoreline with funding from the SWIM program.

RIVER TOWER PARK



Existing Conditions

The River Tower Park shoreline consists primarily of an oligohaline marsh with scattered canopy (figure 59). Several large laurel oaks (*Quercus laurifolia*) and cabbage palms (*Sabal palmetto*) provide canopy along the shoreline, but the cover is not high enough to classify the entire shoreline as a riverine forest. This system contained approximately 20% cover of nuisance species including: air potato (*Dioscorea bulbifera*), Brazilian pepper (*Schinus terebinthifolius*) and the less dominant cattails (*Typha sp.*). Beneficial native species appear to be located at the water's edge and include leather fern (*Acrostichum sp.*) and bulrush (*Scirpus sp.*). Other species include: common beggartick (*Bidens alba*), Caesar weed (*Urena lobata*) and St. Augustine grass (*Stenotaphrum secundatum*). Overall, the shoreline is steep and severely eroding. The water level is normal for this time of year but is not reaching the entire shoreline due to the steep slope created by the erosion.

Overall, the shoreline may provide habitat to wading birds, fish and amphibians, but it is limited by the slope of the bank and the width of the system. The adjacent park is maintained with scattered oaks and provides only minimal supporting habitat. This park has a moderate exotic removal priority rating due to the percentage of nuisance and exotic species. The City of Tampa has identified the park as priority for restoration and has requested funding from SWFWMD.

The overall habitat quality rating for the oligohaline marsh is rated as moderate.

Existing Plans and Historical Plans

A shoreline restoration project was submitted to SWFWMD for cooperative funding. \$250,000 was requested from SWFWMD to start the project in fall 2004. The City of Tampa's share is \$40,000 and would include an in-kind supply of plants.

Future Plans

Tampa Audubon and PEER are both interested in volunteer opportunities and participating in the restoration project.

Recommendations

Short Term: Volunteers to remove the nuisance species; in particular, the air potato vine and Brazilian pepper.

Long Term: 1) Monitor restoration. 2) Volunteer ongoing exotic removal and maintenance.

Percentage of Plant Community Types Within River Tower Park

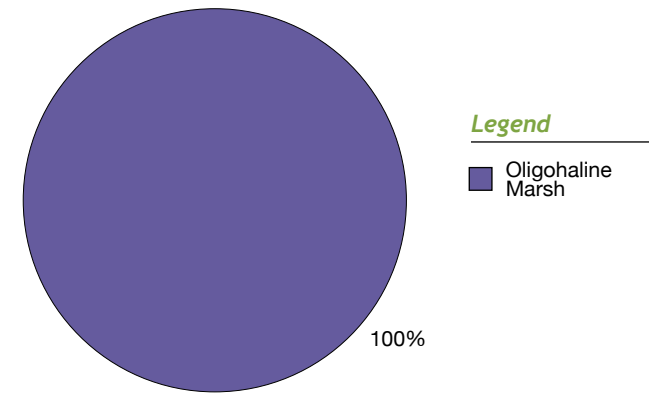


Table 32: Dominant Exotics & Habitat Quality Within River Tower Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Oligohaline Marsh	Brazilian pepper Air potato	10 10	0.53	Moderate



Figure 59: River Tower Park shoreline and canopy.

River Tower Park



Sources:
GPS shoreline data provided by PBS&J and USF.

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Legend

Assessment

Oligohaline Marsh



0 300 Feet

Figure 60: Existing shoreline condition of River Tower Park.

ROWLETT PARK



Existing Conditions

The Rowlett Park shoreline consists primarily of an oligohaline marsh and riparian buffer with some scattered tree cover (figure 61). This shoreline consists of a variety of native species including: Carolina willow (*Salix caroliniana*), laurel oak (*Quercus laurifolia*), cabbage palm (*Sabal palmetto*), leather fern (*Acrostichum* sp) and elderberry (*Sambucus canadensis*). Approximately 45% of this site consists of nuisance species including air potato (*Dioscorea bulbifera*), cattails (*Typha* sp.) and creeping ox-eye (*Wedelia trilobata*). In addition, there is some encroachment of less dominant nuisance species including Caesar weed (*Urena lobata*) and white beggar-ticks (*Bidens pilosa*). The shoreline width varies between 20 to 100 feet wide and has a shallow slope.

This park is located immediately downstream of the Hillsborough River dam. The upland portion of Rowlett Park is a large, open, maintained lawn. This area provides little functional support to the species that may utilize the shoreline. The shoreline likely provides some habitat for fish, amphibians and wading birds. The river level appeared normal for this time of the year but, is highly influenced by the water control structure. Litter was not a problem within the assessment area.

The oligohaline marsh at Rowlett Park has a moderate habitat quality rating. The exotic removal priority rating for this project is high due to the extensive cover of exotic species. This park would benefit greatly from removing the nuisance species and replanting with native species.

Existing Plans and Historical Plans

No stakeholder agencies have existing plans.

Future Plans

No stakeholder agencies have future plans.

Recommendations

Short Term: 1) Use volunteers to remove exotic species. 2) Monitor site for invasive exotics.

Long Term: Pursue funding in cooperation with stakeholder agencies to enhance oligohaline marsh which is a priority of the Tampa Bay Estuary.

Percentage of Plant Community Types Within Rowlett Park

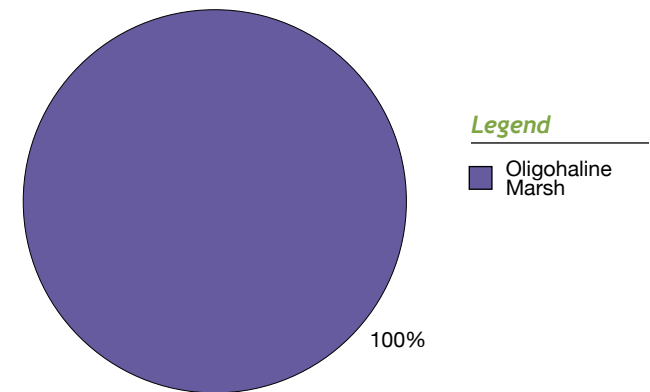


Table 33: Dominant Exotics & Habitat Quality Within Rowlett Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Oligohaline Marsh	Air potato Creeping ox-eye Cattails	20 20 5	0.57	Moderate



Figure 61: Oligohaline marsh and riparian buffer of Rowlett Park.

Rowlett Park



Sources:
GPS shoreline data provided by PBS&J and USF.

Disclaimer:
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Cheran Williams

Map Projection:
State Plane NAD 83

Production Date:
October 2004



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Legend

Assessment

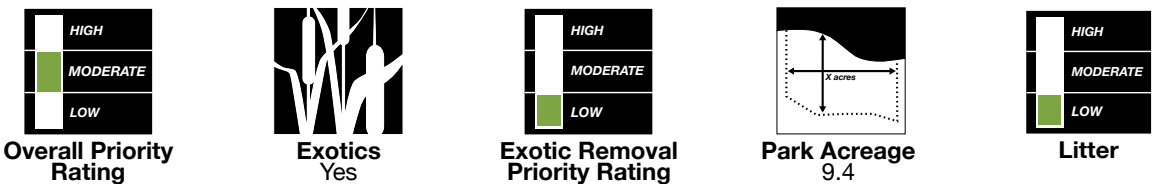
Oligohaline Marsh



0 400 Feet

Figure 62: Existing shoreline condition of Rowlett Park.

SULPHUR SPRINGS PARK



Existing Conditions

The Sulphur Springs Park shoreline consists primarily of an oligohaline fringe and riparian forest buffer adjacent to the rip-rap shoreline (figure 63). Several large laurel oaks and cabbage palms provide canopy along the shoreline. The slope of the shoreline is medium to steep. This system consists of a variety of native species including: leather fern (*Acrostichum sp.*), laurel oaks (*Quercus laurifolia*) and cabbage palms (*Sabal palmetto*). Approximately 15 percent of the shoreline is covered with nuisance species, including air potato (*Dioscorea bulbifera*) and barnyard grass (*Echinochloa sp.*). The air potato cover is high in some areas and completely covers the native vegetation. Overall, the shoreline is rip-rapped but herbaceous vegetation has covered all but the most waterward rocks.

This shoreline is adjacent to the Hillsborough River but is also influenced by the neighboring freshwater spring. The upland portion of Sulphur Springs Park is frequently maintained and provides very little habitat. It is anticipated that the shoreline provides habitat for fish, amphibians and wading birds. The river level was normal for this time of the year and is supporting the plant species within this habitat.

The rip-rapped shoreline at Sulphur Springs has a moderate habitat quality rating. It also has a low exotic removal priority rating due to the percentage of cover by nuisance and exotic species.

Existing Plans and Historical Plans

The City of Tampa completed restoration by the pool in 2002.

Future Plans

None of the organizations have identified Sulphur Springs Park as a priority and there are no future plans by any stakeholder agencies.

Recommendations

- Short Term:** Volunteers to remove the nuisance species in particular the air potato vine.
- Long Term:** Pursue funding in conjunction with stakeholder agencies for creation of oligohaline marsh on the south section of the property with incorporation of a boardwalk feature similar in design to that at Lowry Park.

Percentage of Plant Community Types Within Sulphur Springs Park

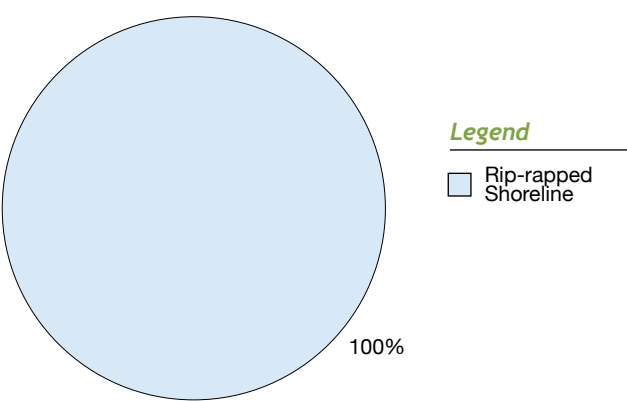


Table 34: Dominant Exotics & Habitat Quality Within Sulphur Springs Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Rip-rapped Shoreline	Air potato Barnyard grass	10 5	0.47	Moderate



Figure 63: Sulphur Springs Park shoreline.

Sulphur Springs Park



Sources:
GPS shoreline data provided by PBS&J and USF.

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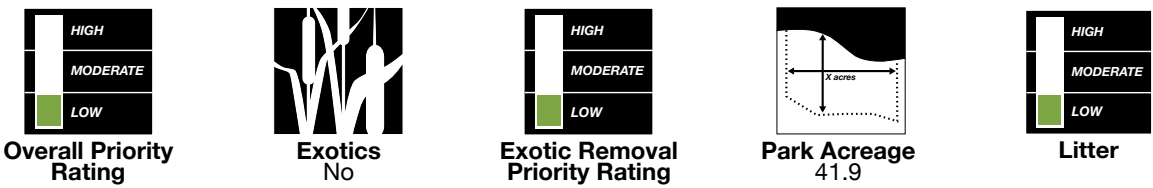
Rip-rapped Shoreline



0 300 Feet

Figure 64: Existing shoreline condition of Sulphur Springs Park.

TAPPAN PARK



Existing Conditions

The Tappan Park shoreline is a diverse and healthy mangrove fringe (figure 65). No nuisance or exotic species were observed within the fringe. The fringe included red, white and black mangroves (*Rhizophora mangle*, *Languncularia racemosa* and *Avicennia germinans*) and is diverse both in species composition and size distribution. Immediately upland of the mangrove fringe is a large, tidally influenced saltern area. This site was recently restored through a cooperative project between the City of Tampa and SWFWMD/SWIM and no nuisance or exotic vegetation was observed. The fringing estuarine area provides habitat for wading birds, amphibians, fish and invertebrates. The adjacent saltern area and the bay provide suitable wildlife support for species that may utilize the fringe. The park is located within a residential area, and is located next to a road.

Overall, the mangrove swamp has an optimal habitat quality rating. Tappan Park has a low exotic removal priority rating due to the absence of nuisance and/or exotic vegetation.

Existing Plans and Historical Plans

A restoration project funded by SWFWMD was completed in 2002. Total funding for the project was \$260,000 plus \$10,000 from the City of Tampa (figure 67).

Future Plans

No future plans from any stakeholder agencies.

Recommendations

Short Term: This park has been restored and no additional work is needed. Volunteers could conduct inspections of the park, at least annually, to ensure that no exotic or nuisance vegetation recolonizes the site and that litter is removed.

Percentage of Plant Community Types Within Tappan Park

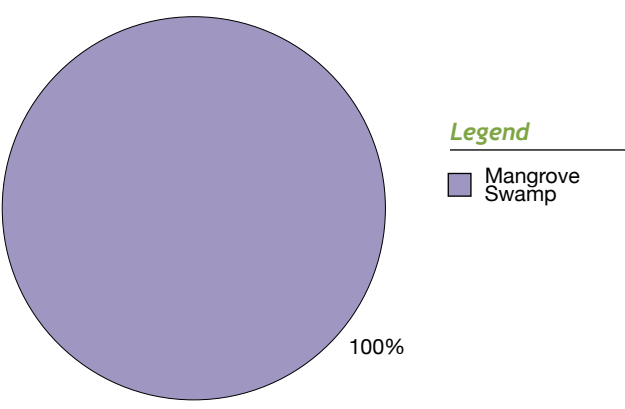


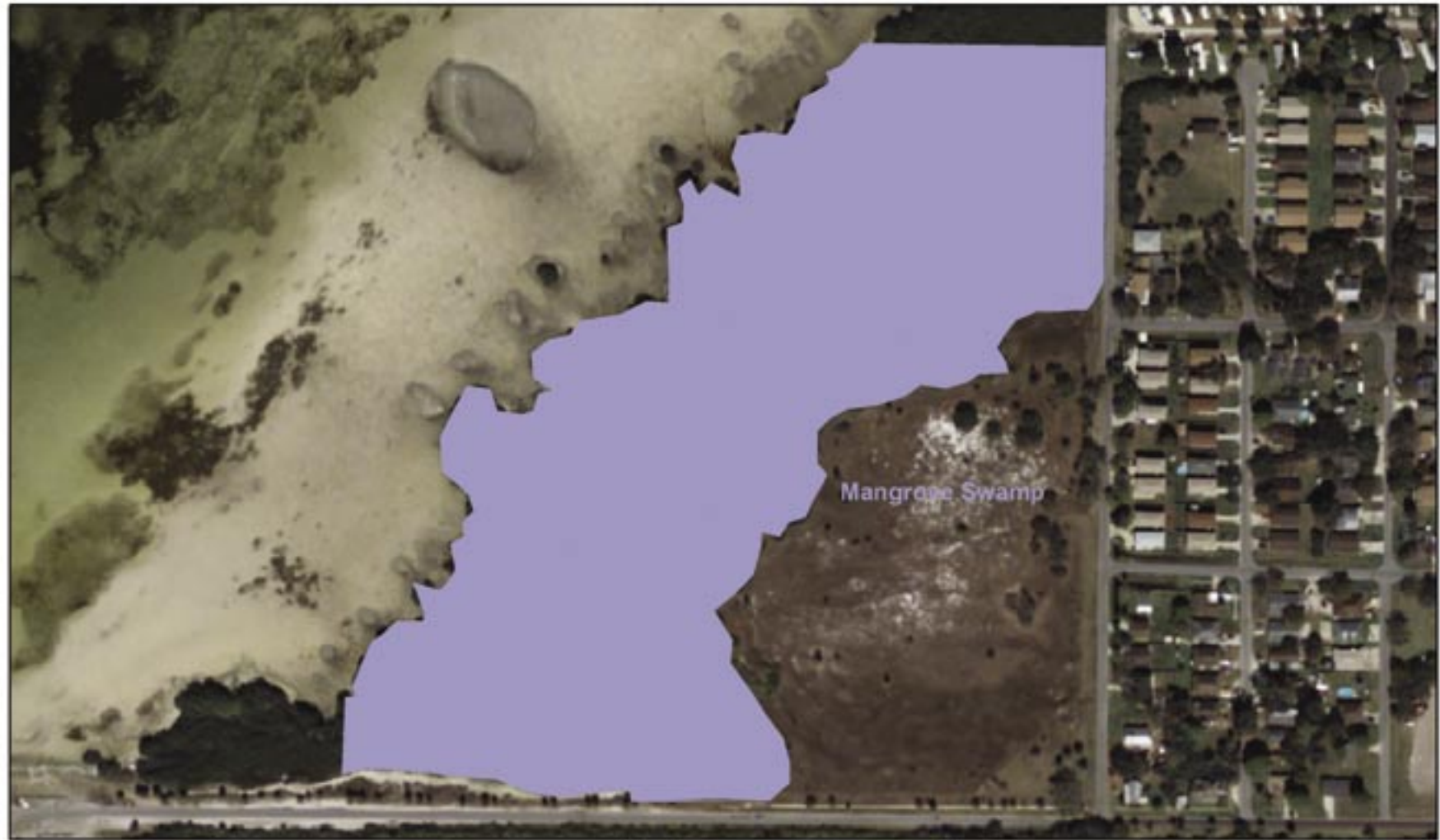
Table 35: Dominant Exotics & Habitat Quality Within Tappan Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Mangrove Swamp	None	0	0.80	Optimal



Figure 65: Mangrove fringe along Tappan Park's shoreline.

Tappan Park



Sources:
GPS shoreline data provided by PB&J and USF.

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Mangrove Swamp



0 600 Feet

Figure 66: Existing shoreline condition of Tappan Park.

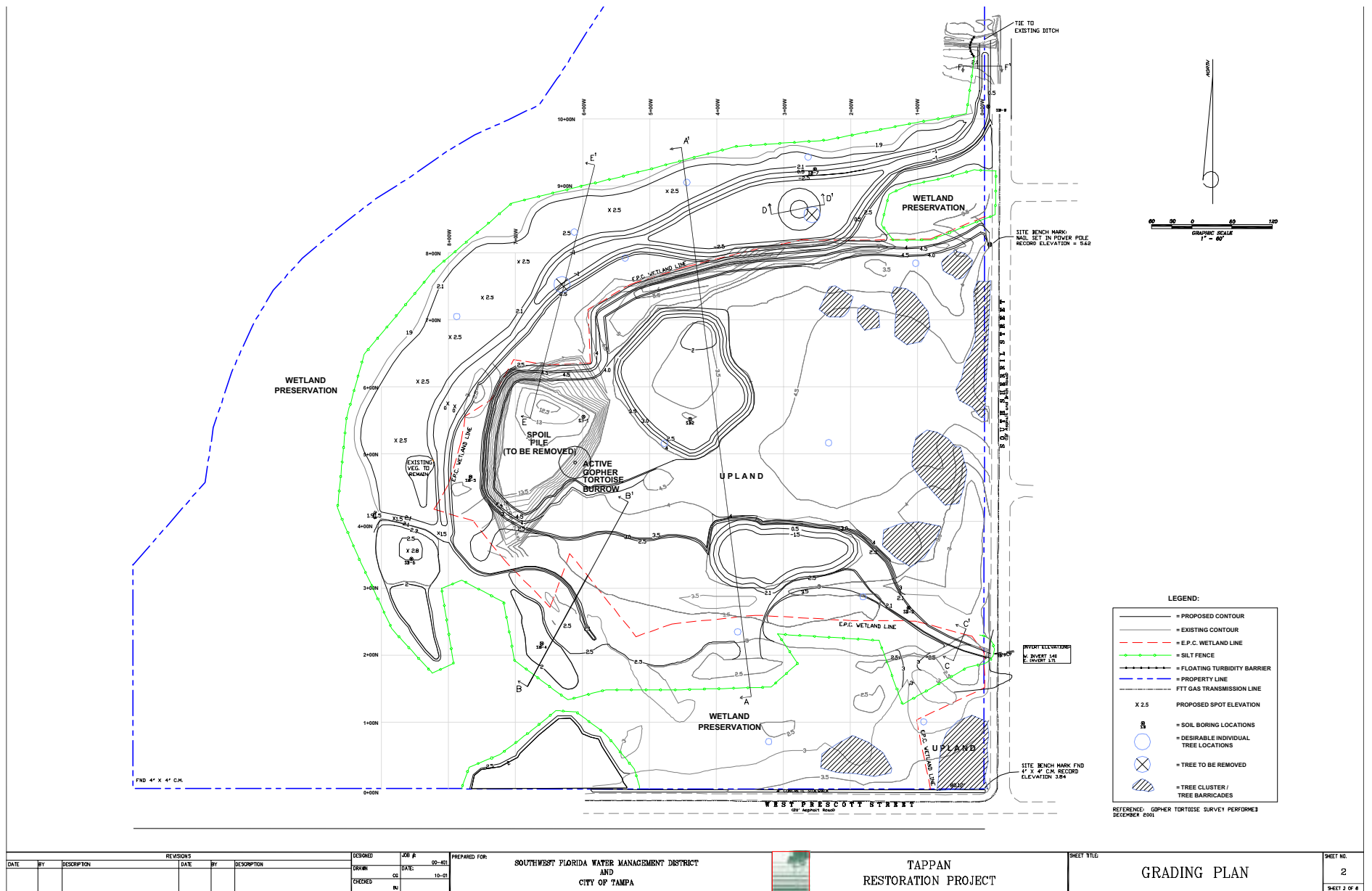


Figure 67: Restoration plan for Tappan Park.

TEMPLE CREST CENTER PARK



Existing Conditions

The Temple Crest Center Park shoreline consists predominantly of a mixture of freshwater marsh and riverine forest. Several large laurel oaks (*Quercus laurifolia*) and cabbage palms (*Sabal palmetto*) provide canopy along the shoreline, but the cover is not high enough to classify the entire shoreline as a riverine forest. The shoreline consists primarily of a freshwater marsh with intermittent laurel oak and cabbage palm hammock. This system contained a large percentage of nuisance species including: air potato (*Dioscorea bulbifera*), Brazilian pepper (*Schinus terebinthifolius*), paragrass (*Brachiaria mutica*) and creeping ox-eye (*Wedelia trilobata*) (figure 68). Native species found within this system included: dayflower (*Commelina sp.*), beauty berry (*Callicarpa americana*) and wax myrtle (*Myrica cerifera*). There is evidence of encroachment by upland species including: common beggarticks (*Bidens alba*), dog fennel (*Eupatorium capillifolium*) and scarlet milkweed (*Asclepias curassavica*). The shoreline is gradual in most places with the exception of a small seawall surrounding a drainage pipe.

This shoreline is adjacent to the Hillsborough River and a large, upland park. The upland portion of Temple Crest Center Park is narrow in some places, but overall is a large park with scattered oaks. The upland would provide some suitable supporting habitat for species that may utilize the shoreline. It is anticipated that the shoreline provides habitat for fish, amphibians and wading birds. The Hillsborough River also allows for access to the shoreline by fish and wading birds.

The habitat quality rating is moderate for the freshwater marsh, freshwater marsh/riverine forest, and rip-rapped shorelines; and minimal for the sea-walled shoreline. Temple Crest has a high exotic removal priority rating due to the percentage of nuisance and exotic species.

Existing Plans and Historical Plans

No existing plans from stakeholder agencies.

Future Plans

The City of Tampa has identified this park as a potential priority for restoration.

Recommendations

Short Term: 1) Volunteers to remove the nuisance species; in particular, the air potato vine and Brazilian pepper. 2) Volunteers to monitor, and if necessary, remove re-growth of exotic species on a regularly scheduled basis. 3) Volunteers to remove litter.

Long Term: Pursue funding in conjunction with stakeholder agencies to restore freshwater marsh species and riparian canopy species.

Percentage of Plant Community Types Within Temple Crest Center Park

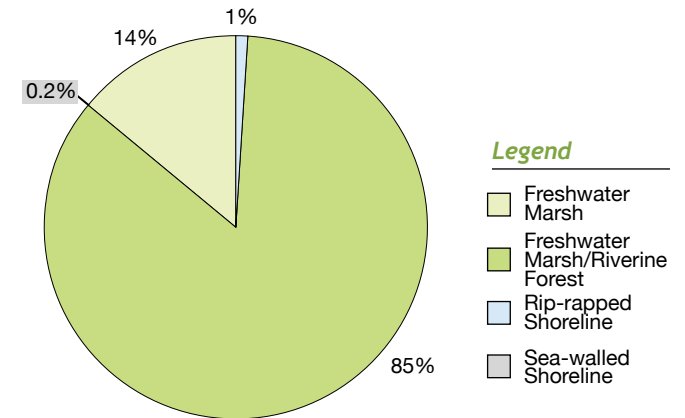


Table 36: Dominant Exotics & Habitat Quality Within Temple Crest Center Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Freshwater Marsh	Brazilian pepper Air potato Paragrass Cattails	20 15 15 0	0.50	Moderate
Freshwater Marsh/Riverine Forest	Brazilian pepper Air potato Paragrass Cattails	20 15 15 0	0.50	Moderate
Rip-rapped Shoreline	Brazilian pepper Creeping ox-eye	10 20	0.47	Moderate
Sea-walled Shoreline	None	0	0.13	Minimal



Figure 68: Nuisance species along the shoreline of Temple Crest Center Park.

Temple Crest Center Park



Sources:
GPS shoreline data provided by PBS&J and USF.

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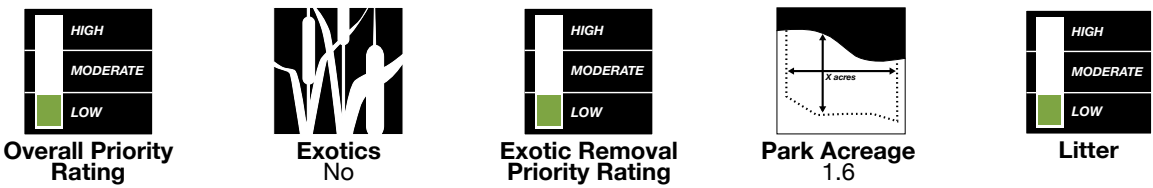
- Freshwater Marsh
- Freshwater Marsh/Riverine Forest
- Rip-rapped Shoreline
- Sea-walled Shoreline



0 1,000 Feet

Figure 69: Existing shoreline condition of Temple Crest Center Park.

TONY JANNUS PARK



Existing Conditions

Seawall makes up the entire Tony Jannus Park shoreline (figure 70). The adjoining upland area consists of a concrete footpath and a narrow, vegetated buffer that separates the footpath from a high volume roadway. This park does not contain any natural area and provides no obvious wildlife support. Litter observed within this park was found floating in the water, and therefore, would be difficult to retrieve. This park has a low exotic removal priority rating due to the absence of vegetation, but could benefit from enhancing the shoreline through the placement of rip-rap or reef material waterward of the existing seawall to create habitat for wading birds and fish. Further enhancement would be difficult due to the limited park area.

Overall, the habitat quality rating for the seawall is minimal.

Existing Plans and Historical Plans

No existing plans for stakeholder agencies.

Future Plans

No future plans identified by stakeholder agencies.

Recommendations

- Short Term:** Use volunteers to occasionally pick up litter along the path.
- Long Term:** Pursue funding in conjunction with the City of Tampa and/or SWFMWD to install rip-rap or reef material waterward of the seawall.

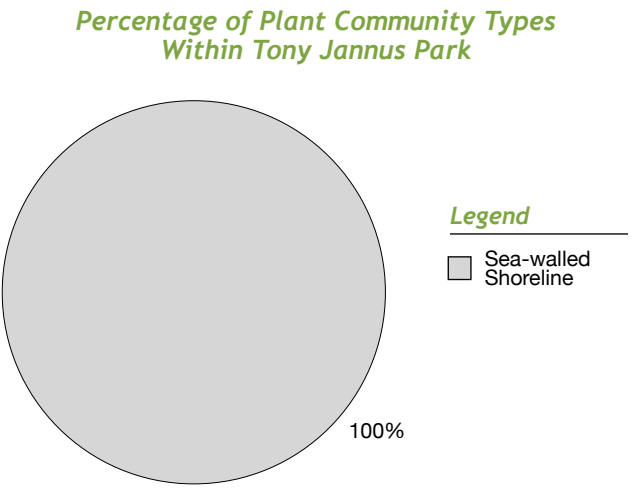


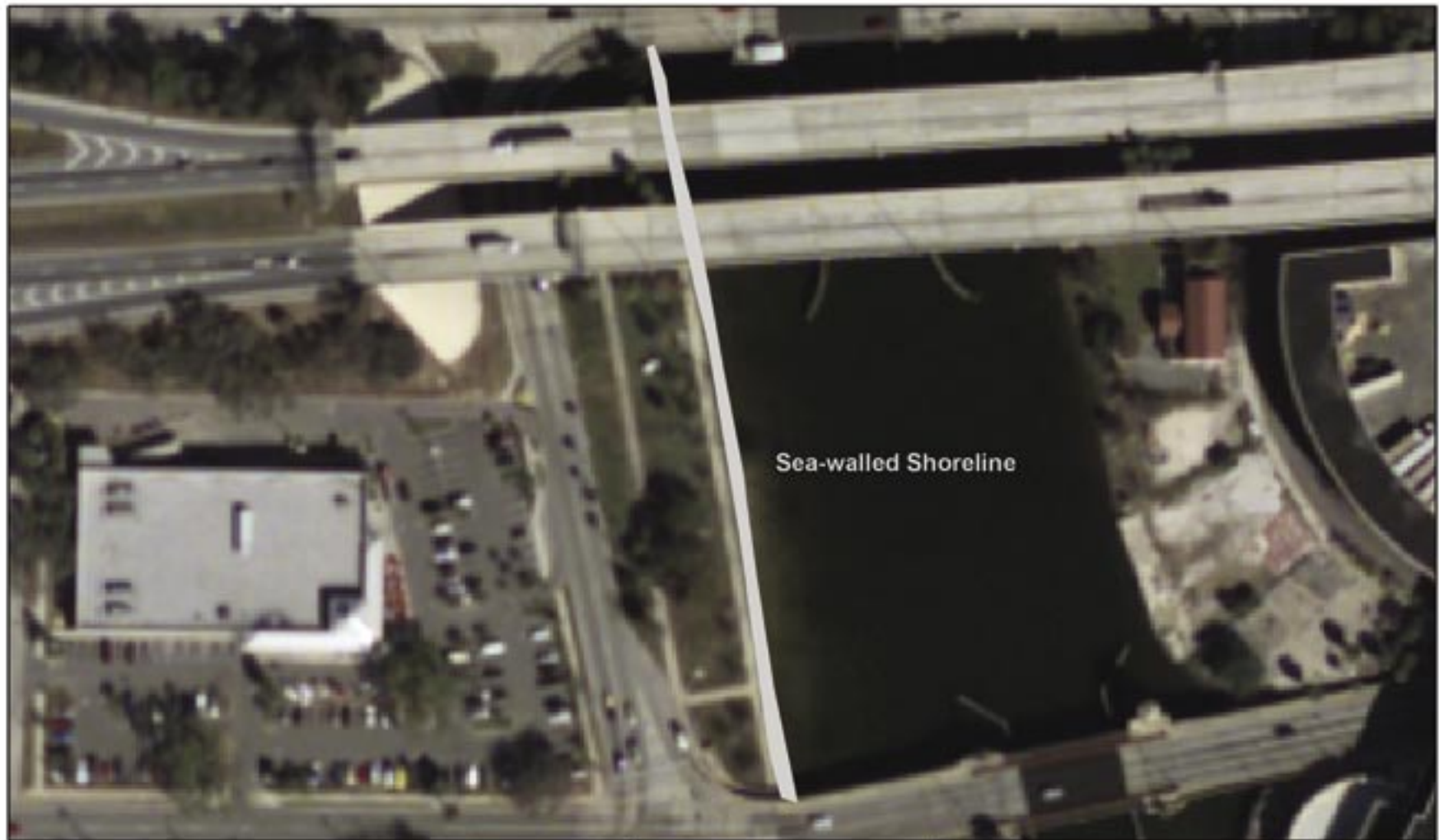
Table 37: Dominant Exotics & Habitat Quality Within Tony Jannus Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Sea-walled Shoreline	None	0	0.07	Minimal



Figure 70: The seawall along the Tony Jannus Park shoreline.

Tony Jannus Park



Sources:
GPS shoreline data provided by PBS&J and USF.

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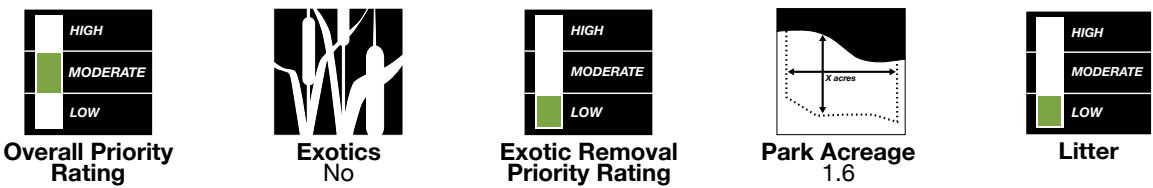
Sea-walled Shoreline



0 200 Feet

Figure 71: Existing shoreline condition of Tony Jannus Park.

WATER WORKS PARK



Existing Conditions

The entire Water Works Park shoreline is seawall; therefore, there is no vegetation within the assessment area. The area immediately upland of the shoreline is a maintained grassed area with scattered laurel oaks (*Quercus laurifolia*) and cabbage palms (*Sabal palmetto*) (figure 72). The seawall provides no wildlife support, and precludes the adjacent upland from being influenced by the river. In addition, the upland provides very little wildlife support. There is a small isolated spring within the park but it is not within the assessment area and contains a large percentage of exotic species.

Overall, the park is located in a residential area and is not heavily utilized by the public. The exotic removal priority rating is low due to the absence of vegetation. The installation of rip-rap or other reef material waterward of the seawall would provide additional habitat within a highly developed section of the Hillsborough River.

Overall, the habitat quality rating for the seawall is minimal.

Existing Plans and Historical Plans

No stakeholder agencies have existing plans for the park.

Future Plans

No stakeholder agencies have future plans for the park.

Recommendations

- Short Term:** Exotic and litter monitoring and removal by volunteers.
- Long Term:** Pursue funding in conjunction with stakeholder agencies to install rip-rap or reef material waterward of the seawall.

Percentage of Plant Community Types Within Water Works Park

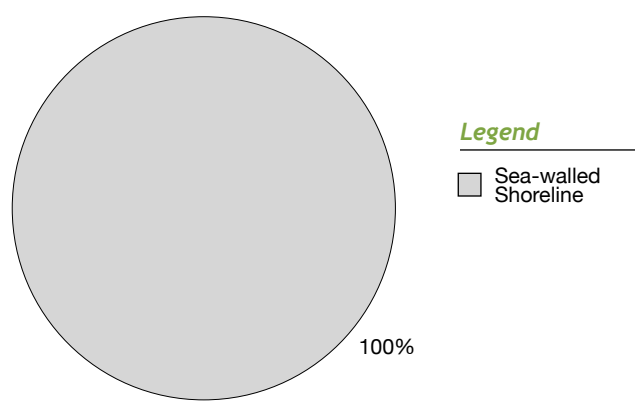


Table 38: Dominant Exotics & Habitat Quality Within Water Works Park

Shoreline	Exotics	% Cover	UMAM Score	Habitat Quality Rating
Sea-walled Shoreline	None	0	0.07	Minimal



Figure 72: The Water Works Park shoreline.

Water Works Park



Sources:
GPS shoreline data provided by PBS&J and USF.

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Legend

Assessment

Sea-walled Shoreline



0 100 200 300 Feet

Figure 73: Existing shoreline condition of Water Works Park.

APPENDICES

APPENDIX A: ADDITIONAL RESOURCES

Permitting Requirements

The Tampa Shoreline Restoration Initiative focused on prioritizing the various parks according to restoration need. Once the parks were prioritized, existing restoration plans were examined and recommendations for future restoration activities were proposed. These restoration activities involved a range of activities from exotic vegetation removal to removal of hardened shorelines, installation of rip-rap, and additional wetland and shoreline vegetation plantings. As with any activity that could potentially impact wetland habitat, there are a range of potential permits that would be required from various regulatory agencies.

Removal of exotic vegetation requires minimal permitting effort, especially if the shoreline area is not within a jurisdictional wetland. If the removal of vegetation does not disturb the soil or water, it is not necessary to acquire a permit from the Southwest Florida Water Management District (SWFWMD) or the U.S. Army Corps of Engineers (COE). Most of the previous restoration projects completed within the City's parks have been cooperative projects with either the Surface Water Improvement and Management (SWIM) Program at the SWFWMD or the Florida Department of Environmental Protection (FDEP). In these cases, a Noticed General Permit (NGP) was acceptable along with a Nationwide 27 permit from the COE. If SWIM or the FDEP were not involved with the project, a Joint Environmental Resource Permit Application from the SWFWMD may be required. This type of activity would qualify for a *de minimus* exemption from the SWFWMD. If work were to occur waterward of the existing shoreline, additional permitting or coordination may be required from the Port of Tampa and the State of Florida through the Sovereign and Submerged Lands section.

Funding Shoreline Restoration

Several potential sources exist which are actively involved in funding shoreline habitat restoration projects in the Tampa Bay area. The Southwest Florida Water Management District's, Surface Water Improvement and Management (SWIM) program has cooperatively funded several existing shoreline restoration projects in the City of Tampa and is currently assisting with future project design and construction at Riverside Garden Park and Reed Property. The Florida Department of Environmental Protection has also actively participated in shoreline restoration projects throughout the Bay area and has provided funding assistance through various regulatory and grant programs which they administer.

A list of other potential funding sources and the agencies which administer the grants is presented in table 29.

Table 39: Potential Funding Sources & Grant Administrators

Grant Name	Agency	Funding Available
319(h) Grant	Florida Department of Environmental Protection	Varies, requires match, demonstrate non-point source pollution reduction. Includes both Tampa Bay and Hillsborough River.
Aquatic Plant Management Funding	Florida Department of Environmental Protection	Varies, select water resources available for plant management activities.
Bay Minigrants	Tampa Bay Estuary Program	Maximum of \$7500 annual award
Coastal Program	USFWS	Varies
Community-based Habitat Restoration National and Regional Partnerships	NOAA	\$200,000 - \$600,00
Cooperative Funding Program/SWIM Program	Southwest Florida Water Management District	Varies, requires 50% match.
Curtis and Edith Munson Foundation Grants	Curtis and Edith Munson Foundation	\$10,000-\$25,000 annual award
Elizabeth Ordway Dunn Grant Making	Elizabeth Ordway Dunn Foundation	\$10,000-\$25,000 annual award
FishAmerica/NOAA Community-Based Marine and Anadromous Fish Habitat Restoration Projects	FishAmerica Foundation	\$5000-\$50,000
Five-Star Restoration Matching Grants Program	National Fish and Wildlife Foundation, EPA, NOAA	\$5,000 to \$20,000
Florida Communities Trust	Florida Department of Community Affairs	Varies, funding available for land acquisition.
Kodak American Greenways Awards Program	Kodak, The Conservation Fund, and the National Geographic Society	Maximum award is \$2,500. However, most grants range from \$500 to \$1,500. Requires community match.
National Coastal Wetlands Conservation Grant Program	United States Fish and Wildlife Service	Maximum Request \$1,000,000
NOAA/American Rivers Habitat Restoration	NOAA/American Rivers	Average award is \$25,000.
Pinellas County Environmental Fund (PCEF)	Pinellas County, Florida and the National Fish and Wildlife Foundation	Varies, matching funds required.
Pollution Recovery Trust Fund (PRTF)	Florida Department of Environmental Protection	Varies
Pollution Recovery Fund	Hillsborough County Environmental Protection Commission	Varies, annual award.
Targeted Watershed Grant Program	U. S. Environmental Protection Agency	Funding varies but funds per project \$1,000,000+, must be nominated.
Wetlands Program Development Grants	U. S. Environmental Protection Agency	Range from \$11,000-\$496,00

Site Name: _____ Date: _____
Site Number: _____ Event number: _____
FLUCCS Code: _____ Scientist: _____

Plant Community	Abbreviation
Soil Type (sand,muck,mud,shell,rock,other)	
Slope (shallow, medium, steep)	
Litter Score (1-10 scale: 1= No Litter, 10= Widespread Litter)	
Width of system	

[illegible]

Total % cover invasives (Herbaceous layer)	
Total % cover invasives (Shrub layer)	
Total % cover invasives (Tree layer)	
Total % cover invasives	
Priority Rating	

Photo No.	Direction

Describe overall condition of plant community with respect to invasive species coverage and potential for restoration through their removal and replanting of desirable species

Plant Community	Abbreviation
Coastal dune	CD
Coastal shrub	CS
Cypress swamp	CyS
Freshwater marsh	FM
Mangrove swamp	MS
Mixed hardwood swamp	MHS
Rip-rapped shoreline	RRS
Riverine forest	RF
Saltmarsh	SM
Sea-walled shoreline	SW
Spring	SP
Oligohaline marsh	OM

Priority Rating	Priority	Rating
Percentage		
0-1% cover by invasive or exotic plants	Not a priority	0
1-25% cover by invasive or exotic plant	Low priority	2
26-50% cover by invasive or exotic plants	Moderate Priority	5
51-75% cover by invasive or exotic plants	High priority	7
76-100% cover by invasive or exotic plants	Highest Priority	10

Form 62-345.900(1), F.A.C. (See Section 62-345.400, F.A.C.)

Site/Project Name		Application Number		Assessment Area Name or Number	
FLUCCs code	Further classification (optional)		Impact or Mitigation Site?	Assessment Area Size	
Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e. OFW, AP, other local/state/federal designation of importance)			
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
Assessment area description					
Significant nearby features		Uniqueness (considering the relative rarity in relation to the regional landscape.)			
Functions		Mitigation for previous permit/other historic use			
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)		Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)			
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):					
Additional relevant factors:					
Assessment conducted by:					
Assessment date(s):					

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and 600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Impact or Mitigation	Assessment conducted by:	Assessment date:

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(7)(a) Location and Landscape Support <div> <div>w/o pres or current</div> <div></div> <div>with</div> </div>	
.500(7)(b) Water Environment (n/a for uplands) <div> <div>w/o pres or current</div> <div></div> <div>with</div> </div>	
.500(7)(c) Community structure 1. Vegetation and/or 2. Benthic Community <div> <div>w/o pres or current</div> <div></div> <div>with</div> </div>	

Score = sum of above scores/30 (if uplands, divide by 20)
current
or w/o pres
with

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres =

Delta = [with-current]

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

APPENDIX C: PHONE PROTOCOL FOR AGENCY RESEARCH

Initial Call: My name is _____ from _____ (agency/company) and I am working with the University of South Florida and the Mayor's Beautification Program on a Shoreline Restoration Master Plan for 30 parks within the City of Tampa. The reason we are contacting you is to determine if your agency has any specific plans for these parks related to restoration or shoreline activities.

We can provide a locator map, and list of sites to agency for review.

Specific Questions

Does your agency have any current or future plans for shoreline restoration work in any of the identified parks?

If yes, would you be able to provide any conceptual design or planning related documents in electronic format?

If not electronic, would it be possible to obtain copies of any plans that your agency may have?

If you are currently, or planning to undertake restoration activities do you have a schedule for implementation?

Do you have any partners working with your organization on restoration activities? If so, which partners?

Are the projects fully funded? And if so, by whom? If funded, what is the total project funding and how is it divided?

Or, if the projects are not fully funded, is your agency actively seeking funds for specific restoration activities?

Does your project plan to use volunteers in the restoration process?

Would your agency potentially be interested in partnering with the Mayor's Beautification Program in restoration of shorelines within the specified parks?

Does your agency provide matching funds for shoreline restoration?