Proposal to the City of St. Petersburg
To Operate the Pier Education Station

Submitted by: Tampa Bay Watch, Inc.
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Partnership for the New Pier Education Station

Tampa Bay Watch, Inc., a Florida non-profit, seeks to enter into an agreement to lease, operate and manage the Pier Education Center. This document provides the vision, company background and details required to enter into a negotiated agreement and partnership with the City of St. Petersburg for a comprehensive educational program for the Pier District based out of the Pier Education Center.

Tampa Bay Watch, Inc. is dedicated exclusively to the protection and restoration of the Tampa Bay estuary through scientific and educational programs. Over the past 24 years, Tampa Bay Watch has been a driving force in the environmental education field by working hand-in-hand with thousands of students that participate in our Estuary EDventures and Bay Grasses in Classes programs. Tampa Bay Watch has been an active partner with a wide range of local organizations by hosting events dedicated to the restoration and preservation of our bay. In addition to the school education programs, TBW has organized over 100,000 community volunteers, facilitating over 60 habitat restoration sites throughout our watershed.

It is important to note that Tampa Bay Watch is a not for profit Florida Corporation. As such our organization is not driven by financial gain, but is charged with the long term restoration and protection of the Tampa Bay estuary through scientific and educational programming. Our organization is managed by a volunteer Board of Directors, primarily made up of local successful businessmen and women. Any proceeds generated by Tampa Bay Watch from a wide variety of income sources is required to be returned back to the organization to help advance our mission.

Over the last ten years the City of St. Petersburg has undertaken the development of a comprehensive waterfront master plan for the City’s core waterfront area. The City recently completed demolition of the old Pier and is proceeding with the construction of the new Pier District. The Pier District encompasses the old overwater structure area and the upland approach from Bayshore Drive eastward.

As part of the new Pier District and vision for the Education Center, the City created an advisory team of education professionals to help shape education programming alternatives at the Pier. The City’s intention is to partner with a third party, preferably non-profit operator for the Education Center focused on marine and environmental education tying into the health of the City and Tampa Bay.

Opportunities at the Education Station for Tampa Bay Watch to support include:

- Morning and early afternoon educational programs for Tampa Bay area schools
• Summer camp programming
• Afternoon and evening educational programs for adults, families and tourist
• Event venue for corporate meetings and special events.

Other opportunities within the Pier District to support educational programs and ecotourism include:

• Classroom / Eco boat to be used in the mornings for student and youth field trip programming (trawling, snorkeling, seagrass mitigation bank, etc.). In the afternoon / evenings the boat would be programmed for providing eco tours for daily visitors.
• Paddleboard and kayak rentals at Spa Beach
• Abundant summer camp opportunities within the Pier District because of the multi-functional spaces provided – water features, play areas, beach, seagrass beds, coastal thicket, etc.

There are a number of other programming opportunities available within the Pier District that will support City and Tampa Bay Watch youth and adult educational programs, including:

• Educational Nature tours through the “Coastal Thicket” area
• Fishing programs at the Education Station and Pier Head
• Educational programming around the stormwater treatment ponds and planted zones
• Splash Pad and Pavilion area for summer camps
• Spa Beach for seagrass seining and open grounds for programming
• Jr. Ranger Program, Scout merit badges and other youth programs that facilitate multiple trips to the Pier District
• Historical tours at the “Maritime Area” and the St. Petersburg Historical Museum
• Solar system under consideration for main parking area, and
• Sustainability educational stations set up along the Pier District.

Tampa Bay Watch wishes to be considered to manage the Education Station and other related environmental activities. Construction starts on the Pier deck this summer, with the upland and over water Pier District expected to be completed by early 2019. Programming potentially can start in 2019 as well.

**St. Petersburg Pier Ad Hoc Exploratory Committee**

In an effort to formalize this proposal the Tampa Bay Watch Board of Directors established an ad hoc Exploratory Committee.

The responsibilities of the St. Petersburg Pier Exploratory Committee are to:
• Explore program opportunities and ensure that they align with our mission.
• Provide analysis of staffing requirements, exhibit and infrastructure needs, and operational costs.
• Support the development of our application for the City’s Request for Proposals.
• Consider development of a naming opportunity program to support Education Station completion, exhibits, eco-vessel, staffing and other long term funding needs.

The Exploratory Committee also evaluated the business model of the new facilities in order to support the fiduciary requirements of the Board. Staffing, startup costs, operational income and expense budgets are all needed in order to provide recommendations to the Board of Directors.

**Tampa Bay Watch Staff Support for the Assessment**

As part of the assessment process, Tampa Bay Watch secured the services of Hands On Studio to lead a series of “brainstorming sessions” with Tampa Bay Watch staff to formulate conceptual operational modes and identify facility, staff and equipment requirements. Tampa Bay Watch staff participating in the roundtable sessions included:

- Peter Clark, President
- Katie Mastenbrook, Director of Education
- Jordan Findley, Education Specialist
- Audrey Boggio, Environmental Educator
- Pamela Arbisi, Director of Development
- Ian Pike, Membership Coordinator

Between sessions Hands On Studio prepared schematic floor plan designs illustrating different operational and programming modes in the exhibit gallery and classroom area. The floor plans will be used as the basis for presentations to the Board’s Pier Exploratory Committee and potentially for the proposal to the City.

**Educational and Ecotourism Proposal to the City of St. Petersburg**

Tampa Bay Watch’s vision for the Pier District Education Station will be to offer a wide array of citizen science programs to expand public involvement in scientific discovery. School group field trips will occur on weekday mornings, inviting students of all ages to come explore and discover Florida’s natural
history, flora and fauna, while learning valuable practices to preserve our environment. There will be a special focus on offering assistance to increase the number of Title I schools and at-risk youth able to participate in our unique citizen-science programs. This type of field experience opportunity for academically at-risk youth is often a critical step in developing a life-long appreciation of the environment, while also encouraging stewardship and the pursuit of science and math careers.

Community based, informative science walks and talks, and water-based ecotourism activity options for the general public will be available in the afternoon, evenings and weekends. Tampa Bay Watch anticipates offering family friendly eco-tours aboard a new US Coast Guard certified vessel that focus on Tampa Bay history and species population studies with activities such as fisheries trawls, bird species identification and behavior, dolphin dorsal identification research, and/or relaxing leisure cruises. Revenue from scheduled eco-tour programs will, in turn, help to fund school field trip opportunities for Title I schools and community based habitat restoration activities.

Adjacent to the Pier District is the new North Shore Park Seagrass Mitigation Bank, the first one being developed and permitted in the State of Florida. This new opportunity provides our citizen science participants (which include students) to cultivate a greater understanding of our valuable Tampa Bay estuary and seagrass habitats by implementing bay health and water quality tests, seagrass transect trends, eco-tours, snorkeling, seineing, and resident animal species identification, all on the North Shore Mitigation Bank Project estuarine shelf. The close proximity of the seagrass site to the Pier, and the relatively protected location offered by North Shore Park make it an ideal location to facilitate STEM education priorities for students, and ecotourism opportunities for families and visitors to the Pier. It is an ideal location to promote in-water environmental education programs where we can compare the largest Gulf Coast seagrass restoration project with healthy mature seagrass communities in close proximity to each other. All of it easily accessible by boat from the St. Petersburg Pier District.

The proposal to the City of St. Petersburg for the Pier District is divided into three programmatic areas as follows:

- Educational and Exhibit Hall Activities in the Education Center
- Educational and Eco – Tourism Vessel, and
- Kayak and Paddle Board Rental Operations

The division is necessary and is sensitive to the different facilities available for program opportunities. Each one can function as stand-alone programs or merged together for greater impact and synergistic opportunities.
Educational and Exhibit Hall Activities in the Education Center

The central education feature of the Pier District is the Education Station located in the middle of the new over water structure. The proposed education station encompasses approximately 2,900 sq. ft. of concrete covered roof area that includes glass on three sides of the “Exhibit Hall” and is principally orientated facing the City. The west side includes an open deck area and amphitheater seating to the water’s edge. About 2/3 of the building will be flexible education and environmental exhibit or event space, the remaining third is bathrooms and what is described as an open air “café”.

Exhibit Hall

The brainstorming sessions conducted with Hands On Studio also focused on flexible and programmatic uses of the 2,900 sq. ft. Education Station. The intended use is to provide a variety of opportunities within the Education Station, including:

1. Public open air exhibit center that showcases the resources and restoration activities within the Tampa Bay estuary
2. Combination of classroom setting and estuary exhibits for school field trips and summer camp activities, and
3. Alignment of the Exhibit Hall for special events, corporate events or other public/private opportunities.

Please see Figure A for the typical day-to-day operational floor plan. In order to accomplish the flexible design the brainstorming sessions recommended the installation of a central permanent estuary tank that the Exhibit Hall will flow around. The estuary tank will be:

- Elevated on a pedestal for eye level viewing
- Hold roughly 2,000 gallons of water (the downstairs tanks at TBW are about 5,000 gallons as a reference)
- Include informational programming stands around the tank, and
- Include an educational or artistic feature that extends from the top of the tank upwards towards the ceiling for dynamic appeal.

The group believes that it will be critical, and expected, to have a native fish and marine wildlife displayed at a facility that is designed to showcase the resources of Tampa Bay.

Surrounding the estuary tank will be a series of portable hands on exhibits that can be rolled around for programming, or stored for special events. The exhibits are yet to be designed, but several of them can also be rolled outside to interact with passing visitors.
The Exhibit Hall will have a welcome desk at the main entrance for visitor orientation and to collect admissions (if appropriate). A rolling retail kiosk is also planned to accommodate the sale of marine related merchandise.

The Exhibit Hall will have an additional back (eastern) wall that runs parallel to the main wall that will provide for minimal exhibit and technical support “back of house” area. Since three of the four sides of the Exhibit Hall is designed having all glass windows it will be difficult to generate space for a support area for exhibits, staff and educational programming. This “back of the house” area will address those needs. The design will also create a “back of house” barrier and not be visible to our students or visitors.

The Exhibit Hall side of the new back wall will feature a 12 ft. multimedia composite monitor. The 12’ monitor will showcase programs and activities that cannot be easily seen or duplicated within the relatively small Exhibit Hall. Programming can run on one hour loops as an example, or changed out regularly to accommodate different needs (seasonal events, Blue Ocean Film Festival, showcase new projects or organizations, etc.). The large screen faces west and will be visible from outside the facility, especially at night. The monitor wall will allow for programming to be viewed by a larger number of visitors, and also serve as an attractant for families walking by the Education Station.

The Exhibit Hall floor plan allows for the movement of the individual exhibits in order to accommodate changing needs within the facility, and programmatically on a daily basis. This includes moving the exhibits aside and setting up tables and chairs to handle a second set of school kids for larger field trips if necessary. The flexibility of the Exhibit Hall and movable exhibits will also provide the opportunity to run both independent programs, but also larger scale dynamic public programming.

Another feature of the moveable exhibits within the Exhibit Hall is the ability to roll the exhibits to the storage room and/or classroom to set up for special events. See Figure B for the special event floor plan for the Exhibit Hall and flexible Classroom areas. In a special event scenario, tables would be set up and orientated towards the multimedia screen and around the estuary tank. The space will be able to accommodate 10 tables holding eight or ten individuals each. The event space set up would be large enough for art shows, corporate mixers or retreats, arm chair chats, movie previews, dinner events, seasonal programming and many other smaller scale opportunities.
Flexible Classroom Space

It should be noted that the Tampa Bay Watch Pier Exploratory Committee took an early position not to pursue the “café” area concept located on the east side of the structure. It was identified that there is a snack bar/cafe planned at the end of the new Pier within 200 yds. of the Education Station. There are plans for a major restaurant at this location as well. A larger snack bar/café is also planned at the Pavilion Area at the head of the Pier, within 200 yds. east of the Education Station.

Review of the café area by educational staff, Hands On Studio and the Tampa Bay Watch Exploratory Committee identified this area as being essential to our overall educational programming. Redesigning this space for educational use is key to the success of our educational programming experience. There are no known environmental educational institutions in our area that provide school field trip and summer camp programming that do not have dedicated classroom space. Without the classroom, schools would still be able to come to the facility, but it would be orientated as a “visit” to the Exhibition Hall. Programmatically this type of field trip would not be able to provide the unique quality experience that we set for our field trip standards, limiting educational outreach and summer camp opportunities.

In this era of funding cuts, extracurricular and school field trip activities are generally the first programs to be reduced. This forces schools and teachers to overstretch the resources provided to them by having to bring multiple classes on field trip opportunities, oftentimes 50 to 60 students at a time. Our objective would be to redesign the café area to accommodate a flexible classroom space, creating the opportunity to:

1. Provide a second teaching platform within the Education Station for the larger groups of students, but also ongoing educational outreach programming to the public.
2. Keep the Exhibit Hall open for the public when there is not an overlap with school trips.
3. Support full day summer camp programs to provide a safe and dedicated program area during summertime and foul weather storm events.
4. Provide additional “back of house” support for the main Exhibit Hall as needed.

Tampa Bay Watch staff and the Exploratory Committee consider the additional classroom space a critical element if we are to provide quality educational programming for school field trips at the new Pier District.

Moving forward with the assumption that the “café” will be redesigned as a classroom, the Hands On Studio brainstorming sessions detailed a flexible classroom space that incorporates:
• Seating for a minimum of 28 students
• The room will be centered facing a 72” multimedia monitor for programming
• Large lab counter top with two sinks
• Washer/dryer and full size freezer to support programming
• Wet locker and storage room, and
• A new bathroom that can be accessed from inside the classroom for security reasons.

The flexible Classroom space will also provide the opportunity for adult and family programming outside of student field trips. The Classroom will be used afternoons and evenings for alternate programming, including:

• Science lecture series, historical talks or other social activities by a wide variety of local organizations
• Master Naturalist or Gardener programs
• Jr. Ranger or Scouting programs
• Orientation for guided nature walks and photography hikes
• Fishing seminars, and
• Other programming that will benefit from a classroom setting.

The redesign of the café space will require construction which is compatible to that of the rest of the building and with the surrounding Pier District architecture.

Management of the Exhibit Hall and Education Programming

The Environmental Educators will be responsible for management of the youth education programs at the facility. Educational activities include school programs, summer camps, and teacher training opportunities. Educators will also run Pier District wide programs when schools are not in session (i.e.: holiday camps, Mommy and Me program, coastal hammock tours and other science related programming)

Two full time educators are planned to work Monday through Friday from 8:30 to 5 pm. Two part time educators are planned to work on an “as needed” basis to support full time staff.

Environmental Interpreters will manage the Exhibit Hall, run Pier District wide afternoon and weekend programs. The Environmental Interpreter staff will support the Exhibit Hall facility in five hour time slots during the week (3 to 8 pm), and will be required during the weekends for ten hour days (10 am to 8 pm). In reality, there may be three or four Interpreters on a rotational schedule between weekdays and weekends depending on priority needs and schedules.

Administrative support is included to provide organizational and clerical support. If two or more of the central programs are developed (i.e.: education station and eco-vessel)
the administrative support position will turn into a general manager position for all Pier District related activities.

Exhibit Hall entrance fees were widely discussed at the staff brainstorming sessions and by the Pier Exploratory Committee. All of the marine science centers in the area charge a fee for admission. This will turn a certain number of people away of course, but given the opportunity to host a first class marine exhibit hall and level of Tampa Bay Watch programming, participants felt that a $5 minimal fee was more than justified.

**Classroom and Eco-tourism Vessel Opportunities**

Tampa Bay Watch has enjoyed tremendous success with our 32’ US Coast Guard inspected classroom vessel at the Tampa Bay Watch Marine and Education facility. Because of this success it is natural for our organization to evaluate the opportunity to grow our programs to the downtown St. Petersburg waterfront.

Usage of a new vessel will include:

- Classroom boat trips with an emphasis on fisheries trawling along Northshore seagrass communities
- Summer camp field trips for snorkeling and wading at Northshore seagrass beds, bird island excursions, and touring St. Petersburg waterfront
- Admission based eco-waterfront tours that include Northshore seagrass flats, Coffee Pot Bird Sanctuary, excursions to Bayboro Harbor marine industries and the USCG Station
- Large vessel access to the North Shore Park Seagrass Mitigation Bank
- Evening sunset tours
- Special events and corporate tours

As part of our evaluation process Tampa Bay Watch based the next vessel on all of the priority criteria included with our existing classroom vessel in terms of performance, capacity and usage. Based on this analysis, Tampa Bay Watch is recommending the purchase of a 40’ Corinthian Catamaran vessel with a 49 person capacity. The 40’ has a beam of 12’ similar to our existing vessel.

Reasoning behind our recommendation includes:

- Corinthian makes a USCG certifiable vessel locally in Tarpon Springs
- Corinthian has a great reputation for boats, almost all of the ecotourism and ferry boat catamarans in our area are Corinthians.
- The vessels have a higher freeboard / deeper hull to allow for a better ride in inclement weather, and
The catamarans can be configured in a wide variety to fit our requirements.

Management of the Classroom / Eco-Tourism Vessel

Based on the usage of the boat for school and eco-tour field trips, the boat will require dedicated master captains to operate. Boat Captains will run programs seven days a week. Weekday school trips generally occur during the mornings. Weekday afternoon public trips will be at 1 pm, 3 pm, 5 pm, and will run for 1 hour 45 minutes. Weekends will run four public trips per day starting at 11 am. Environmental Interpreters will be required for each trip to support boat captains and provide environmental programming. Educators will support the student boat trip at 11 am.

Administrative support is included to provide organizational and clerical support. If two or more of the central programs are developed (i.e.: education station and eco-vessel) this position may turn into a general manager position for all Pier District related activities.

Kayak and Paddle Board Rentals

An additional opportunity supporting educational programing is the rental of kayaks and paddle boards. Our current summer camp programs use our kayaks several times throughout each week. Campers spend one afternoon learning kayaking skills and safety procedures, and the next day they embark on an exploratory kayak trip of the surrounding habitats within the Tampa Bay estuary.

The kayak and paddle boards will be rented on an hourly or half day basis when not being utilized by the school or summer camp experiences. Depending on demand one or two staff members need to be present at all times to support the rentals, maintenance and cleaning.

Management of the Kayak / Paddle Board Rentals

A registration kiosk will need to be set up at Spa Beach to coordinate kayak and paddle board activities. Initially, it is estimated that 25 single and double kayaks and individual paddle boards will be purchased and outfitted, with more being acquired as demand increases. It is expected that one to two people will be able to manage the program at a time, seven days a week.
Operational Assessment for the St. Petersburg Pier District

At this point the operational income and expense budgets have been predicted on a yearly basis. Equally important is to evaluate financial information required to outfit the “shell” Education Station and purchase supplies materials and equipment necessary to begin programming activities. Based upon the operational needs described earlier in the assessment the following summary of initial expenses is detailed below:

Naming Opportunities Available at the Education Station

As the new operating entity for the Education Station, Tampa Bay Watch can expect to invest about $1,200,000 initially to fund the startup of all three operational programs at the Pier District. The first year operational expenses are expected to cost an additional $700,000 for all three operational activities. The City of St. Petersburg has identified potential tenant improvement allowances that will also provide financial support towards the build out of the Education Station shell. As the operating entity, Tampa Bay Watch acknowledges the requirement to raise additional capital to complete outfitting the Education Station shell, purchase the environmental and educational exhibits, construct the eco-tourism vessel and to begin programming.

The traditional non-profit method to develop the cash base to fund construction and startup expenses is the development of a naming opportunity program. Board members and staff have started to evaluate candidates for naming opportunities, and additional discussions with the full Board to implement the program are critical.

Signage size and location will be developed with the City to be consistent with other City naming activities within the Pier District.

TIMELINE OF INCOME AND EXPENSES

As part of the operational assessment the finances need to be detailed over time to assess cash flow requirements and income projections to meet those needs. The following summary details outfitting of the education station and purchase of the required equipment, and implementation of first year operational activities.

INVESTMENT BY TAMPA BAY WATCH, INC.

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Build-Out of Pier Education Station Shell</td>
<td>575,000</td>
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<tr>
<td>Design and Purchase Env. and Ed. Exhibits</td>
<td>400,000</td>
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<tr>
<td>Purchase and Construct 40’ - 49 cap. Corinthian Catamaran</td>
<td>260,000</td>
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<tr>
<td>Purchase Kayaks, Paddleboards and Gear</td>
<td>36,250</td>
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<td><strong>TOTAL</strong></td>
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POTENTIAL YEARLY EXPENSES STARTING IN 2019

First Year Education and Visitor Programming  319,000
Kayak and Paddleboard Rental  107,000
First Year Eco Vessel Catamaran Tours  300,000

TOTAL  $726,000

With assistance from the City of St. Petersburg, Tampa Bay Watch will build upon our earlier successes and continue to implement community based educational programming and advance ecological restoration with positive, sustainable outcomes. Tampa Bay Watch seeks to offer knowledge and empowerment to our community, counteracting local environmental issues by nurturing the responsive process of personal ownership in our great Tampa Bay area. Developing a sense of stewardship, while learning how to achieve and maintain a healthy environment is a legacy that will positively influence our “green city” for generations to come.
Qualifications
a. Demonstrated capacity to partner with the City in long-term management of The Pier District Education Station and providing environmental education programming to local communities about Tampa Bay and/or other estuarine ecosystems in the West Central Florida region;

Tampa Bay Watch, Inc. is a 501(c)(3) nonprofit stewardship organization, dedicated exclusively to the protection and restoration of the Tampa Bay estuary through scientific and educational programs. Over the past 24 years, Tampa Bay Watch has been a driving force in the environmental education field by working hand-in-hand with thousands of students that participate in our Estuary EDvences and Bay Grasses in Classes programs. Tampa Bay Watch has been an active partner with a wide range of local organizations by hosting events dedicated to the restoration and preservation of our bay. In addition to the school education programs, TBW has organized over 100,000 community volunteers, facilitating over 60 habitat restoration sites throughout our watershed.

Tampa Bay Watch has been conducting various forms of environmental education in Tampa Bay for the last 24 years. The Bay Grasses in Classes (BGIC) program is a coastal wetland nursery program established in 1995 by Tampa Bay Watch to help the bay recover from environmental degradation while at the same time educating bay area youth. BGIC works with middle and high school students to establish and maintain on-campus wetland nurseries which provide an inexpensive source of native wetland plants to be used in habitat restoration projects in the bay area. BGIC provides hands-on opportunities for students with a goal for them to appreciate and learn about the importance of salt marsh vegetation to the estuarine ecosystem and to become life-long stewards of the environment.

Since 2001, BGIC has restored more than 152 acres. There are currently eighteen middle and high schools in three counties involved with the program. In 2015, 3,707 students raised and planted 19,920 plugs of salt marsh for coastal tidal pond restoration in Tampa Bay. BGIC provides middle and high school
students with an educational resource to learn about ecological and agricultural practices, while enhancing the science-based curriculums at their schools. Students actively participate in restoration activities with scientists to perform wetland restoration in Tampa Bay. The program seeks to build citizen awareness and participation through educational outreach.

It is because of our experience working with bay area schools, through the Bay Grasses in Classes program, that Tampa Bay Watch acquired 18 acres of waterfront property on Shell Key Preserve with the goal of expanding our educational mission. Our first priority was to establish an education field station to start environmental education programming directly on Tampa Bay. The new $5 million Marine and Education Center was completed in 2005. It immediately became a popular environmental facility for area schools wanting to have hands on experience in our Bay, called Estuary EDventures.

The Estuary EDventures program is designed to educate Tampa Bay area students about watershed issues and estuarine ecology. Tampa Bay Watch strives to provide free educational field trip opportunities for low socio-economic school groups in the Tampa Bay area. Tampa Bay Watch recognizes the need for hands on experiential learning through field trip experiences for our local schools. Many school-aged children from financially disadvantaged households who live here in the Tampa Bay area have never had the opportunity to go to the beach or explore the estuary on a boat. Every child should be able to get outdoors and experience their own back yard the Tampa Bay estuary, regardless of their family’s economic status. We believe that it is imperative to continue to provide high-quality, field trip and summer camp opportunities for the Tampa Bay region – even for those schools and families that cannot afford the field trip and camp fees. Tampa Bay Watch wants to be able to assist these schools so that they are afforded the much needed opportunity to take field trips and have an experience that would not be provided otherwise.

The goal of the Estuary EDventures program is to develop the students’ commitment to their local environment by increasing their understanding of the function of the Tampa
Bay estuary. Estuary EDventures empowers students to act as stewards of the Tampa Bay estuary by providing field experiences that combine classroom resources with hands-on environmental field experiences at the Tampa Bay Watch Marine Education Center in Tierra Verde. The field experiences give the students and teachers the opportunity to learn about the critical issues that face the Tampa Bay estuary. By creating lessons that engage the students in critical thinking, we help generate thought processes and practices that encourage minimizing their impact on the watershed. Students and educators also have the opportunity to participate in service learning projects like dune restoration and coastal clean-ups. These projects allow students to actively participate in restoring the habitats that are critical in promoting a healthy estuary; therefore they are able to make a real difference in just one day.

The initiative’s second objective is to offer an environmental education experience that will aid in students’ preparation for the Florida Standards Assessment Test, as well as the Statewide Science Assessment in 5th and 8th grade. Estuary EDventures program’s foundation is based on Florida academic standards in order to complement what the students are learning in the classroom. Estuary EDventures provides students with a solid understanding of the significance of an estuary, how these unique ecosystems function and why they are critical to overall marine ecosystem health.

**Estuary EDventures History**

Since the inception of the Estuary EDventures in 2007, over 30,000 students and teachers from over 150 schools have participated in our field trips. In 2016-2017 school year, Estuary EDventures provided 156 field trips to 3,108 students and 614 educators and chaperones. Of the 156 field trips conducted, 74 of those field trips were with Title I Schools and an additional 35 more were not Title I, but from economically disadvantaged schools with low school grades. Our goal is to provide field trips to 200 classes annually through the Estuary EDventures program.

As classroom sizes increase, funding for science related field trips is being cut, and schools are being rated as failing factories. Tampa Bay Watch feels it is critical for students and teachers to have an opportunity provided for them to continue out of the classroom education. Immersing students in their environment during a hands-on field trip has proven to be an effective way to teach science and math concepts that students will remember for years to come. While at Tampa Bay Watch, students have the opportunity to venture out on the classroom vessel and learn about critical habitats important to the health of Tampa Bay. They learn about the interconnectedness of water quality, habitats, and food web in the estuary and oceans. Students use microscopes and collection gear to study the smallest organism’s plankton, to the bigger species that
call Tampa Bay home. The Estuary EDventures program is a field trip that students do not soon forget.

Each field experience lasts about four hours and accommodates a class of up to 25 students and two chaperones with a maximum of 2 classes, or 50 total students in a field experience day. Field trips contain many activities that examine critical watershed issues and the importance of estuarine habitat in Tampa Bay. Examples of field trip activities include:

• Classroom trips on our US Coast Guard certified 38-person capacity catamaran boat. This trip is designed to engage students in observation of critical habitats within the bay. While on the boat most groups will participate in Otter Trawl. This lab allows students to examine collection techniques, marine plant and animal observation and identification procedures, and introduces them to species adaptations.

• Seining in coastal waters is a chance for students to explore the lush seagrass beds in our backyard, Shell Key Preserve. While in the water, they discover the marsh and mangrove forest that buffer our coastlines, but also collect specimens to take back to our outdoor Wet Lab for further exploration.

• Service learning projects include salt marsh wetland nursery construction and maintenance, coastal salt marsh and sea oat plantings, oyster shell reefs and marine friendly oyster dome construction programs and coastal clean-ups to remove marine debris from the environment.

In 2016, Estuary EDventures Summer Camp reached 220 total campers in nine different sessions. The cost of summer camp is $300 per child for one week. Our camp is an opportunity for youth who are interested in marine science topics to have a week long immersion with like-minded individuals in a marine science focused camp. The campers have an opportunity to not only be on the water through boating and snorkeling activities, but also get to participate in educational activities in the Marine Education Center.

Because of our location and relatively small acreage available for expansion, Tampa Bay Watch is near its maximum capacity for school field trips and summer camp programs. It is because of our rapid growth, and a need for additional school capacity, that Tampa Bay Watch is exploring opportunities to work with the City in order to develop the Education Station at the new St. Petersburg Pier. Having a second educational center site will provide additional opportunities for Title I and other schools that are closer to the urban core of St. Petersburg produce a complimentary curriculum.
to the Tierra Verde Marine Center while providing different programming opportunities (North Shore Mitigation Bank Project, Coastal Hammock, bird and dolphin tours, etc.).

Clearly the development of the North Shore Mitigation Bank Project provides rich synergy with the development of the Education Station on the St. Petersburg Pier. The Scope of Work for the North Shore Mitigation Bank is attached under Appendix A. to identify the existing comprehensive program partnership Tampa Bay Watch maintains with the City of St. Petersburg. In addition, a kiosk along the Coastal Hammock Trail will provide passive educational information on the North Shore Mitigation Bank Project. Having the major restoration project just a short boat ride form the Pier will create a state-of-the-science educational platform for visiting schools and ecotours alike. Classroom/ecotour boat operations will be able to pull up to the edge of the estuarine shelf and offload students and visitors from the front of the boat so that they can for example:

- study local small fisheries with a beach seine;
- observe mollusks and crabs; and
- walk or snorkel short transect lines to compare the new and mature stands of seagrass communities;
- perform citizen science by taking basic water quality measurements; and
- learn how human activities far from the Project Area can affect the health of seagrass communities and what individuals can do to help.

The quality of Tampa Bay depends on the health of its seagrass - what better location to observe the importance of seagrass communities and its relationship with our community!
Other

It is important to note that Tampa Bay Watch is a not for profit Florida Corporation. As such our organization is not driven by financial gain, but is charged with the long term restoration and protection of the Tampa Bay estuary through scientific and educational programming. Our organization is managed by a volunteer Board of Directors, primarily made up of local successful businessmen and women. Any proceeds generated by Tampa Bay Watch from a wide variety of income sources is required to be returned back to the organization to help advance our mission.

Since its inception, Tampa Bay Watch has an 18 year track record of successful annual independent audits. Our non-profit organization is managed by a 12 member volunteer Board of Directors who are responsible for the fiduciary health of the organization and long-term strategic planning. We currently maintain cash accounts, investment reserves and grants under contract equal to two years’ operating expenses in order to ensure financial stability and security of the organization. From a business perspective, Board can also provide expert professional advice for the project, including legal and financial recommendations. Additionally, our organization has a succession plan in place to ensure that all key staff positions are always maintained.

Central to the mission of Tampa Bay Watch is our involvement of the Tampa Bay community. Our program works with 10,000 community volunteers each year to implement habitat construction and planting projects all around Tampa Bay. This saves local governments significant amounts of money, and provides opportunities for youth and adult volunteers to take a hands on role in the Bay’s recovery.

Tampa Bay Watch has been able to fill a critical void between local governments and restoration efforts within Tampa Bay. Several recent examples include:

- In 2015, at the request of the City Parks Department, Tampa Bay Watch completed the installation of oyster reef communities at Abercrombie, Maximo and Bay Vista Parks to prevent shoreline erosion and restore coastal habitat.

- At the request of the City of Tampa Stormwater Department, Tampa Bay Watch designed and permitted the mitigation of seagrass communities in the Westshore area to allow maintenance dredging of neighborhood canals.

- In 2014, at the request of the Florida Department of Transportation, Tampa Bay Watch designed and permitted the mitigation of seagrass communities for the barge grounding at the Pinellas Bayway.
Information Designated a Trade Secret and/or Confidential and/or Proprietary

Tampa Bay Watch recognizes that this proposal, including documentation and materials attached are subject to Florida’s public records laws.

Tampa Bay Watch acknowledges this and states that nothing in this proposal is considered a Trade Secret and/or Confidential and/or Proprietary.
ATTACHMENT A  
Experience and Qualifications

a. Company ownership

Tampa Bay Watch, Inc. was incorporated in Florida as a not for profit corporation on February 16, 1993. As a not for profit organization Tampa Bay Watch is not driven by financial gain, but is charged with the long term restoration and protection of the Tampa Bay estuary through scientific and educational programming. Our organization is managed by a volunteer Board of Directors, primarily made up of local successful businessmen and women. Any proceeds generated by Tampa Bay Watch from a wide variety of income sources is required to be returned back to the organization to advance our mission.

b. Location of the company offices.

The address of Tampa Bay Watch is 3000 Pinellas Bayway South, Tierra Verde, FL 33715.

c. Location of the office servicing the City’s account.

The location of the office servicing the City's account is Tampa Bay Watch, 3000 Pinellas Bayway South, Tierra Verde, FL 33715.

d. Number of employees both locally and nationally.

Tampa Bay Watch has 20 full and part time employees, all local to St. Petersburg.

e. Location(s) from which employees will be assigned to the City’s account.

Tampa Bay Watch, 3000 Pinellas Bayway South, Tierra Verde, FL 33715, is the location from which employees will be assigned to the City’s account.

f. Name, address, and telephone number of the Offeror’s point of contact (account manager) for a contract resulting from this Proposal.

Peter A. Clark, President of Tampa Bay Watch is the point of contact. Mr. Clark’s address is 3000 Pinellas Bayway South, Tierra Verde, FL 33715, email address is pclark@tampabaywatch.org and phone number is (727) 867-8166 x226.
g. Length of time Offeror or Offeror's employees have been providing services described in this submittal. Please provide a brief description.

Peter A. Clark is the Founder and President of Tampa Bay Watch, Inc. Established in 1993, Mr. Clark has managed the organization from a start up to a nationally recognized not for profit organization with an annual budget of $1.4 million, facilitated by 20 professional staff members and more than 10,000 community volunteers each year. He also worked with the State and County to acquire Cunningham Key in Tierra Verde and completed construction of the $5 million Tampa Bay Watch Marine and Education Center in 2005.

Under his watch, the organization has coordinated more than 100,000 volunteers, installed 18,000 oyster reef units and 2,000 tons of oyster shell to create more than three miles of oyster shell reef communities, planted more than 1,000,000 salt marsh grasses to restore 200 acres of coastal tidal ponds to Tampa Bay.

Until 1993, Mr. Clark served as Director of the Tampa Bay Regional Planning Council's Agency on Bay Management, an alliance of agencies charged with protecting Tampa Bay. Mr. Clark has a BS in Marine Biology and over fifty professional publications on natural resource restoration, water quality and environmental planning. Mr. Clark also initiated the nomination, which ultimately led to the designation, of Tampa Bay into the EPA’s National Estuary Program. Mr. Clark holds a US Coast Guard Master Captains License, received the Outstanding Environmentalist of the Year award from the Florida Marine Research Institute Environmental Excellence Awards program in 1994, and the NOAA Fisheries / American Fisheries Society Nancy Foster Habitat Conservation Award in 2005.

Katie Mastenbrook is the Director of Education for Tampa Bay Watch. She is responsible for directing and coordinating all educational programs (on site, traveling education, outreach, teacher trainings, and summer camps) and supervising staff. She is also responsible for maintaining, updating, and monitoring the Marine Education Center and Estuary EDventures programing. Katie has more than ten years of experience in the environmental education field, her passion lies within programming focused on experiential education, “hands-on, place-based education”. Katie strives to increase environmental literacy in both past and future generations. She believes it is never too late to get someone engaged in their environment.

Katie holds a B.S. in Marine Science and minor in Environmental Science from Coastal Carolina University. After graduating Katie began her career in the environmental field as a ranger at Huntington Beach State Park in Murrells Inlet, SC. She was responsible for the daily operation of the park when on duty. Katie quickly realized her passion for interacting and teaching park patrons about marine science and environmental topics.
She quickly jumped at the opportunity to further her education career when offered a job at Newfound Harbor Marine Institute “SeaCamp” as a marine science instructor. There she acquired the foundation and skills to facilitate hands-on curriculum focusing on tropical ecology of the National Marine Sanctuary of the Florida Keys.

During her time at Newfound Harbor she was able to work her way from a seasonal instructor to becoming the assistant director of the education program. Katie created new programming for students grade five to college level, trained and managed the seasonal staff and interns, and captained the vessels out to snorkel sites to study mangroves, sea grass, and coral reef habitats. Through her boating experience, Katie obtained her USCG Master Captain License.

Since then, Katie has held many roles from education coordinator to assistant director for non-profit organizations like the YMCA, Florida Youth Conservation Centers Network, and Marine Lab. Most recently she worked for the Florida Youth Conservation Centers Network and assisted in re-accrediting the Everglades Youth Conservation Camp from the American Campers Association, as well as coordinated the multi-program summer camp and school field trip programming.

**Jordan Findley** is the Environmental Education Specialist for Tampa Bay Watch assisting in the development and facilitation of the Estuary EDventures field trip and summer camp programs. She has spent the past four years dedicated to furthering her expertise and demonstrating environmental advocacy. Jordan’s passion for the environment extends far beyond her career path. She believes wholeheartedly in creating a future of sustainability and fostering a generation of environmental stewards.

Jordan holds a B.A. in Zoology and a M.A. in Biological Sciences from Miami University. She earned a professional certification in environmental education through the Environmental Education Council of Ohio, refining her skill set. She was awarded the Audubon Miami Valley (AMV) Rosie Bloom Scholarship for excelling in her academics. Her graduate coursework, focusing on anthropogenic cause of wildlife decline, led her to study human impact on the environment in Mexico, Australia, and Kenya.

Complimenting her education, Jordan spent two years during graduate school perfecting her skills in environmental education, interning at SeaWorld Parks and Entertainment. Jordan then pursued her passion for marine life coordinating eco-cruises at the Conservancy of Southwest Florida. There, she later transitioned into her position as a naturalist, gaining expertise in Florida ecosystems and experiential education before joining Tampa Bay Watch.

**h. Offeror’s Federal ID number.**

Tampa Bay Watch’s Federal ID number is 59-3191962.
ATTACHMENT B.

North Shore Seagrass Mitigation Bank Proposal to the City of St. Petersburg, Submitted on April 12, 2016.

Project Approach

The Offeror should identify the process envisioned for the Phase I services and Phase II services identified in this RFP. The project approach shall include a narrative identifying the key services and deliverables and the time/sequencing of the same for both Phase I and Phase II. If Offeror intends to use subconsultants or subcontractors, Offeror should include such persons or entities and description (including approximate percentage) of such services and/or deliverables to be done by such persons or entities. The goal of this section is intended to provide interested Offerors with the opportunity to demonstrate their ability to perform the services and provide the deliverables. c.2 Rev (8/13), (9/13) Request for Proposal Requirements

Phase I

a. Baseline Establishment Phase
   (1) Biological Characterization of the seagrass and identification of other native and non-native communities located throughout the Project Area, including percent cover of desirable species and percent bare ground.
The current status of seagrasses in the general project area is a critical element in the eventual success of the proposed mitigation bank. If either water quality or the physical setting (sediments, hydrodynamics, etc.) are inadequate to support the growth and reproduction of seagrass then the likelihood of successful restoration will be reduced. To assess the ability of water quality and physical setting to support seagrasses in the project area, an analysis of the available seagrass data both regionally, i.e., Middle Tampa Bay, and locally was completed. The following Figure provides the results of this analysis.
There has been a significant increase in the seagrass areal coverage since the early 1980’s in Middle Tampa Bay, which includes North Shore Park seagrass flats. This increase was concomitant with improved water quality over that same time period. On a more local basis, a seagrass transect located within the proposed mitigation bank area has been monitored annually by Tampa Bay Watch since 2001. The % cover estimates that have been recorded also show an increase in the seagrasses in the immediate area adjacent to the project area. Therefore, both of the data sources indicate that the water quality and physical setting of the project should be adequate to support the restoration of seagrasses in the program area.
Permitting of the mitigation bank will require a complete characterization of the existing seagrass communities within the project area and the development of a comprehensive restoration, enhancement and protection plan. Tampa Bay Watch has been performing seagrass characterization along a 961 meter transect in the project area for 15 years. The transect runs roughly parallel to the Coffeepot entrance channel from the North Shore Park seawall to waterward of the eastern edge of the estuarine shelf. The monitoring protocol used to evaluate this transect, and the 62 other transects established throughout Tampa Bay, was developed by an inter-agency seagrass monitoring program managed by the Tampa Bay Estuary Program (TBEP). We will use the data from the transects to compare the results of the mitigation project site with the long-term results collected by TBEP and other partner agencies.
Tampa Bay Watch will utilize the existing 961 meter seagrass characterization transect and establish two additional transects (1,122 and 740 meter) to monitor restoration and enhancement efforts across the site. Each transect will be monitored this summer, during the seagrass growing season for permitting requirements, and then yearly in the fall & spring (September and April) for species diversity, percent coverage and general health of the seagrass present. Every 25m, a meter square will be placed and Braun Blanquet abundance determinations of all seagrass and algae will be made. Current water depth measurements, sediment type, epiphyte type and cover, and seagrass appearance will also be documented every 25m. Every 100m, in addition to collecting the meter square data (abundance, depth, epiphytes, and sediment), Tampa Bay Watch will also measure three short shoot densities and five blade lengths.

Another part of the characterization will be to evaluate and identify any bare areas in the project area and quantify the size of these areas. An aerial survey will provide photo documentation of seagrass percent cover and patchiness (no notable presence of seagrass) that can be digitized and quantified. Open areas greater than 200 square feet will be delineated. We will conduct aerial surveys, using planes or drones, to
photo-document any patchy areas of significant size. Photos will be geo-rectified onto a working base map for permitting documentation. A sample of the open areas identified will be ground-truthed to assure that seagrass is not present in these areas.

During the Biological Characterization, the proximity of the project area to adjacent habitats such as oyster reefs, sand flats, and mangroves will be identified and documented. This will be referenced on the aerial photo base map and submitted with the final Background Evaluation report. Additional narrative will include recommendations to provide additional oyster, salt marsh or mangrove habitats within the project area to increase opportunities for mitigation credits. Additionally, the presence of any invasive species that are observed within the project boundary will be documented. This will be referenced on the aerial photo base map and submitted with the final Background Evaluation report.

The Biological Characterization will also include an assessment of the benthic and fish communities in the area. There is a wealth of information that is provided by the Florida Wildlife Commission Fisheries Independent Monitoring Program and the Tampa Bay Estuary Program Benthic Monitoring Program. These long-term databases allow an examination of the project area over time as well an assessment of the ecological integrity of these communities in and near the project area.
Deliverables: (1) A summary Biological Characterization Report will be generated after the summertime background monitoring of the seagrass characterization transects (and yearly thereafter). Results will be used to describe health and status of existing seagrass communities, provide recommendations for enhancement areas, identify donor locations for future transplanting efforts and provide background documentation for future trend analyses. (2) A data base of the seagrass open patches and project site map with the open areas identified will be generated. Recommendations on restoration of the existing seagrass open patches will be included in the analysis.

(2) Project Area survey and bathymetry, including the Dredge Site

We will conduct field and bathymetric surveys of the project area and use the data to:

- calculate the type and volume of fill needed to bring the elevation of the dredge hole up to the levels of adjacent seagrass communities;
- explore opportunities to enhance open areas within existing seagrass beds; and
- quantify slopes and water depths at the entrance channel and offshore estuarine bar.

The field and bathymetric surveys will be conducted by ATM, around and including the approximately 35-acre dredge hole. All survey work will be performed by a Florida Licensed Surveyor and Mapper. Hypack Hydrographic software running on an on-board laptop computer will be used to produce this survey. Horizontal positioning and vertical corrections to NAVD 88 will be provided by RTK GPS (Real-Time Kinematic Global Positioning System). The Florida DOT FPRN (Florida Permanent Reference Network) base stations will be used to provide RTK corrections. The RTK GPS will be checked at established survey control monuments prior to data collection. Adjustments will be made for any differences in established survey control and RTK GPS results. A high frequency (200kHz) single beam survey fathometer will be used to measure water depths. This fathometer will be calibrated at the beginning of each survey day and adjusted for speed of sound in water and vessel draft. Standard bar check methods will be used for this calibration, resulting in raw soundings with a vertical accuracy of +/- 0.1 foot. Survey line spacing will be adequate to accurately map existing conditions and provide a base line for calculating the quantity of fill required.

Survey control will be based on the Florida State Plane Coordinate System, West Zone, NAD’83/90 in U.S. Survey Feet. Vertical datum for the topography will be the North American Vertical Datum of 1988 (NAVD 88) also in feet.

**Deliverable:** Survey data will be processed and an AutoCAD drawing produced showing plan view and typical cross sections. The quantity of fill required to meet provided design templates will be calculated. Survey information will also be used to evaluate the enhancement areas and other open seagrass patches for additional restoration opportunities.

(3) Water quality characterization, including stormwater and other input source documentation.

Janicki Environmental will characterize current water quality conditions within the project area and identify and evaluate discharge sources that may impact the project area, e.g., stormwater sewer outfalls. Current water quality data in combination with available data on long-term water quality trends will be used to develop and tailor mitigation plans.

The assessment of the water quality status and trends will be completed in two elements. First, the available water quality data for the project area and adjacent waters in Middle Tampa Bay will be examined. Of particular importance will be light attenuation, nutrients, and salinity as these factors are known to play a significant role in the success
and long-term viability of seagrass restoration projects. Second, Tampa Bay Watch will establish six water quality monitoring stations that will be monitored two times per year, once each in the spring and once in the fall during a higher tide event. Water quality monitoring stations will be geo-referenced and located as follows (Figure 6):

- two within the dredge hole,
- one in the middle of the existing mature seagrass flats,
- one in the middle of the seagrass enhancement area,
- one in the Coffeepot Bayou channel, and
- one on the waterward side of the eastern estuarine offshore bar.

At each station water samples will be collected and monitored for pH, salinity, temperature. Light attenuation as measured by Secchi disc will also be documented at each monitoring station if water depth allows.
The Project Team, in unison with the City of St. Petersburg Engineering Department, will identify and document stormwater outfall sizes and locations. This will be referenced on the aerial photo base map and submitted with the final Background Evaluation report. Loading estimates for Total Nitrogen (“TN”), Total Phosphate (“TP”) and Total Suspended Solids (“TSS”) draining to the project area will be derived from the long-term loading records that have been developed by Janicki Environmental for the Tampa Bay Estuary Program. This information will be used to identify potential upland stormwater improvements.

**Deliverable:** Results of the analysis will be included in the Northshore Seagrass Characterization Report after the summertime background monitoring of the water quality stations. Documentation of the stormwater discharge sources and quantities in the project area will also be included.

**(4) Sediment and benthic characterization.**

Evaluation of the sediments at specific locations is required to determine opportunities for restoration, enhancement and protection activities, particularly in the dredge hole and enhancement areas. The dredge hole sediments will provide the jurisdictional agencies with a better understanding why the hole needs to be filled. The enhancement area sediments will provide a comparison with adjacent areas to see if transplanting efforts potentially could be limited due to sediment type (as opposed to bathymetric elevations). The other background stations will provide a comparison from which to evaluate the mitigation bank components and provide technical information for restoration activities.

The Project Team will work with Dr. Gregg Brooks at Eckerd College to collect eight sediment samples, five cores and three surface sediment samples (see Figure 7). Samples will be collected using a core sampler within the seagrass beds and a Ponar grab sampler of the sediments in the dredge hole. Two additional cores will be extended in the field to survey the enhancement area. These cores are specifically designed to determine the depth of the side cast spoil material on top of the historical seagrass beds in order to provide valuable information for the restoration plan of this area.
Lab analysis includes initially wet sieving to separate muds from sands/gravels. The mud fraction will then be analyzed for %silt/%clay by the pipette method. The sand/gravel fraction will be analyzed to determine whole phi intervals (subdivisions of sand sizes) by the settling tube method. Results will be expressed as mean grain size in phi units, %gravel/%sand/%silt/%clay, as well as %mud.

**Deliverable:** Results for the sediment sampling will be provided in the North Shore Seagrass Characterization Report.

**b. Restoration Plan Phase**

As part of the development of the restoration plan, Tampa Bay Watch and Janicki Environmental will create a North Shore Seagrass Project Technical Advisory Committee (North Shore TAC). The mission of the committee will be to provide technical review of the Characterization Report and recommendations on site conditions, restoration opportunities and techniques. Confirmed members (other than the City designees) of the North Shore TAC include:
The North Shore TAC will be supported by:

Peter A. Clark, Founder and President, Tampa Bay Watch
Serra Herndon, Director of Habitat Restoration, Tampa Bay Watch
Tony Janicki, President of Janicki Environmental
Roger Johansson, Senior Scientist, Janicki Environmental

Additional members that will be asked to participate after the bidding process include:

Tampa Bay Estuary Program
Southwest Florida Water Management District
City of St. Petersburg Engineering representative
City of St. Petersburg Parks Department representative
City of St. Petersburg staff responsible for the mitigation bank

(1) Characterization of the Dredge Site, including dimensional and volume estimates.

Applied Technology & Management (ATM) will characterize the dredge hole within the project area. ATM has direct experience in all aspects of dredge hole habitat restoration including field investigations, design, permitting and construction administration. In addition, ATM has extensive experience with projects in the vicinity of seagrass resources and the utilization of dredge hole infilling as mitigation for seagrass resources. ATM will provide technical expertise in the evaluation of substrate material and the development of cost effective beneficial use approaches.

ATM will be responsible for all survey work within the project area, including the dredge hole and enhancement area. Results of the benthic surveys will be used to generate dimensional and volume estimates for the dredge hole. Additionally ATM will provide construction level detailed engineering drawings for the filling of the dredge hole and performance standards to ensure that adjacent resources are protected. Additional construction drawings will be generated for the enhancement area if the City and project team decide to undertake restoration of these additional areas.
Deliverable: Bathymetric survey of the project area, with emphasis on the dredge hole and enhancement areas. Survey results will be used to generate site specific performance standards and construction level engineering drawings required for permitting activities of the mitigation bank.

(2) Identification of potential fill sources in the region, including “beneficial use” of dredged material as defined by the U.S. Army Corps of Engineers (USACE)

The Project Team will work to evaluate and prioritize qualified sources of fill material from potential City of St. Petersburg sources, US Army Corps of Engineers, and other dredging operations such as the potential opening of Shell Key Pass.

Ideally, the project could provide a valuable disposal location for major new or maintenance dredging operations currently being evaluated by the US Army Corps of Engineers. Termed “Beneficial Use Projects”, the USACE has the opportunity to utilize channel dredging operations materials for local projects, instead of disposal of the dredged material into permitted locations within the Bay or at the offshore disposal location. Generally a local government would be required to absorb the added expense, however, given the location of North Shore Park project to USACE projects currently under development disposal of dredged material at this location could be significantly less expensive than offshore disposal.

Tampa Bay Watch has been asked to participate in the USACE Regional Sediment Management Program which is looking for beneficial uses throughout the region for dredge disposal sediments. Discussions with USACE indicate that the ship channels through Middle Tampa Bay are maintenance dredged on a two to three year cycle (not the entire channel, just locations where infilling has occurred). Recent analysis of the Middle Tampa Bay maintenance material indicates high quality sand material which could be used to fill North Shore Park hole. Timing of the maintenance activities with permitting of the dredge hole will be critical in our efforts to advance restoration activities in a timely manner. Additionally, Cut G Channel is located immediately north of the project site. Cut G runs east-west, which is perpendicular to the north-south flow of currents at this location. Cut G requires routine maintenance (about every 3 years) which would also provide a source of fill in close proximity to North Shore Park. The location of the ship channels that could provide “beneficial use project” dredge material and proximity to the North Shore Seagrass Bank project area are identified on Figure 9.
Members of the Project Team are also members of the newly established USACE Regional Sediment Management Committee, the Tampa Bay Regional Planning
Council’s Agency on Bay Management, Tampa Bay Estuary Programs Technical Advisory Committee, and Restore America’s Estuaries program. These affiliations give our Project Team a collaborative advantage in terms of identifying less expensive sources of suitable fill material and an accelerated restoration schedule for the North Shore dredge hole.

**Deliverable:** A prioritized list of qualified sources of fill material and their scheduled availability and quantity.

(3) **Identification and characterization of other potential secondary seagrass enhancement areas within the Project Area**

The Project Team, as part of our proposed Restoration Plan, will identify and characterize areas that are devoid of seagrass or where seagrass growth is intermittent. We will determine the reasons why these areas are bare or thinning and whether the areas can be enhanced to support sustained seagrass growth.

One major area under consideration is the large barren sand flat along the southeast side of Coffeepot Entrance Channel. Review of a historical photographic trend analysis (see Figure 8) indicates that the large 8+ acres of open bare sand of the North Shore project area is the result of side cast spoil material placed on top of the seagrass beds during early dredging of the Coffeepot Bayou navigation channel. The material was placed there by 1951, the sand spread out onto adjacent seagrasses by 1970, and seems to be relatively stable in size since 2002. A second area just south of the entrance to Coffeepot Bayou (approximately 3 acres) also appears to have intermittent seagrass growth.
FIGURE 10. NORTH SHORE PARK HISTORICAL TREND IMAGERY
NORTH SHORE PARK - SEAGRASS MITIGATION BANK PROJECT SITE
LOCATION: SAINT PETERSBURG, FL

Figure 10 also shows that the dredge hole was first constructed prior to the 1951 photograph and was used to fill portions of the upland at Northshore Park. A second substantial dredging operation occurred between 1951 and 1970 that expanded the dredge hole and southern entrance area. This material created the Northshore Beach area and extended the waterfront uplands east of the Vinoy on Tampa Bay.

Both of the northern seagrass enhancement areas are immediately adjacent to, or directly within the seagrass transect monitored by Tampa Bay Watch as part of the interagency seagrass monitoring program established by the Tampa Bay Estuary Program. This provides 15 years of seagrass composition and density information to support our evaluation process. High resolution bathymetry and sediment analysis will provide critical information needed to identify restoration techniques required to enhance this area for seagrass recovery efforts. More information is clearly needed, but early observations indicate the likelihood that if a very thin layer of sediments are removed from targeted locations (with the material placed in the larger dredge hole) we would be able to create the optimum elevation necessary for seagrass growth at these locations.

The aerial survey recommended in the Characterization Section of this proposal will provide photo documentation of seagrass patchiness that can be digitized and quantified. Open areas greater than 200 square feet will be delineated. Survey will be conducted by plane or drone (with FAA and City permission), flying over the area and photo-documenting any patchy areas of significant size. A sample of the open areas identified will be ground-truthed to assure that seagrass is not present, or transient in nature (i.e., *Ruppia maritima*) in these areas. Generally speaking, healthy seagrass communities have natural open patches within mature beds. We will determine if restoration and enhancement of any of the naturally occurring open areas in the Project Area are biologically and economically feasible.

Once the characterization effort is completed, the results will be run through the new North Shore TAC to formulate optimum seagrass restoration opportunities for the large side cast spoil areas alongside Coffeepot Channel, and other open patches within the seagrass community if appropriate.

**Deliverable:** The completed North Shore Seagrass Characterization Report will be used to provide recommendations for secondary enhancement areas including the two areas alongside Coffeepot Channel as well as other open patches. A data base of the seagrass open patches and project site map with the open areas identified will be generated. Recommendations on restoration of the existing seagrass open patches will be included in the analysis.
(4) Evaluation of seagrass impacts throughout the Project Area and recommendations for minimization or reversal of impacts

The Project Team’s first recommendation is the establishment of a boater regulatory zone to minimize manmade impacts to seagrasses within the Project Area. Establishing the regulatory zone will be an integral part of obtaining a permit for the North Shore Mitigation Bank and, based on our experience, should generate additional mitigation credits. The regulatory zones, which likely will include both “No Motor” and “Idle Speed” restrictions, will provide an immediate benefit to the health and quality of the Project Area’s seagrass communities. This is one of the quickest ways to enhance the value of the North Shore Mitigation Bank and accelerate the City’s ability to monetize credits and generate funds for the next stage of restoration work.

Seagrasses in the Project Area are vulnerable to boaters running aground and “propeller dredging” their way to deeper water. When the propeller scars dig into the root systems of seagrass beds the scars may take five years or longer to recover. The Project Team will assist the City, as owner of the submerged lands, in obtaining the necessary public approvals and regulatory permits to establish a boater regulatory zone. The fact that the Project Area is already protected by a conservation easement should facilitate the approval and permitting process.

Tampa Bay Watch will also document and digitize seagrass propeller scars that are identified within the project boundary. Aerial surveys will be accomplished to photo-document the presence of existing propeller scars. The most significant scars that are observed will be ground-truthed for location and scale accuracy. As part of the restoration plan Tampa Bay Watch and Janicki Environmental will evaluate the level of prop scarring and prioritize areas for restoration. Once we have a comprehensive understanding of the level of impacts within the project site our team, with the assistance of the North Shore TAC, will perform a cost/benefit analysis on the efficacy of using the sand tube method to restore the propeller scars. Tampa Bay Watch has experience using the sand tube restoration method. The process is expensive and the results have been mixed. The cost/benefit analysis, which will take into account the value of mitigation credits created, will determine if restoration is ecologically and economically feasible.

**Deliverable:** Site specific recommendations to the City of St. Petersburg to establish a boater regulatory zone that will minimize manmade impacts to sea grasses within the Project Area. Documentation of seagrass propeller scars within the Project Area. Cost/benefit analysis of restoring the prop scars.
(5) Identification of and recommendations for potential upland stormwater improvements (in conjunction with the City’s Engineering Department)

The Project Team will work with the City’s Engineering Department to develop a list of potential stormwater improvements that will provide treatment for the stormwater runoff that drains to the project area. As part of the characterization, the Project Team will have identified and documented the location and size of stormwater outfalls. Loading estimates for TN, TP, and TSS from the upland areas draining to the project area will be derived from the long-term loading records that have already been developed by Janicki Environmental for the Tampa Bay Estuary Program.

Two potential steps follow. The first step is to rank the various outfalls according to their relative contributions of stormwater inputs to the project area. Other criteria to be used in the ranking will include logistical considerations as well as property ownership, especially if the recommended management actions might include and impact properties other than those owned by the City. The probability of permitting success and the likely benefits, i.e., reduced pollutant loading, will also be used in the ranking process. The second step is to review existing Capital Improvement Projects (CIP) that the City has previously defined. The opportunities that arise from this step will also be ranked as above.

**Deliverable:** A list of potential stormwater improvements will be compiled with the support of the City. This will be based on the information that is identified as a part of the initial characterization.

(6) Identification and recommendation of other ecological restoration opportunities

The Project Team will identify adjacent habitats such as oyster reefs, sand flats, and mangroves. This will be referenced on the aerial photo base map and submitted with the final Characterization Report. Additional narrative will include recommendations to provide oyster bars or reefs, salt marsh or mangrove habitats within the project area to increase opportunities for mitigation credits.

Tampa Bay Watch has worked with the St. Petersburg Parks Department to design, permit and install intertidal oyster shell reefs at three parks within the City (Bay Vista, Maximo and Abercrombie) over the last two years. These reefs are designed to reduce shoreline erosion at the Parks and enhance habitat conditions to the Greater Tampa Bay ecosystem. Oyster shell reefs and oyster dome fields (or Reef Balls) will be evaluated along the seawall shoreline area (away from traditional public access points).
Other potential opportunities exist for salt marsh communities to be installed behind the shell reefs, or in the vicinity of the existing mangrove stand. Any and all restoration techniques along the shoreline area will be reviewed by the Project Team’s North Shore TAC, City Park and Engineering staff as part of the sorting process for project development.

**Deliverable:** Identify and document habitats within the project area and make recommendations for ideal areas for oyster reef, salt marsh, or mangrove restoration or enhancement.

(7) **Quantification of range of potential Bank credits generated by the Restoration Plan**

The following section is a desktop analysis of the potential range of credits generated by the project. We recommend a preliminary assessment of both credit potential and market demand before proceeding with permitting.

Mitigation credits will be assessed using the state’s Uniform Mitigation Assessment Method (UMAM) to assess the Relative Functional Gain (RFG) of the restoration activities. The team’s goal will be to provide the scientific justification and understanding of the UMAM rule to optimize the greatest number of credits possible considering practical limitations, cost, and market drivers. UMAM is a functional analysis that takes into consideration the site’s landscape setting (location), water environment, and vegetative community. Assuming that all of these parameters can be met at the highest level after restoration is complete, there is significant credit in restoring the dredge hole from its current degraded state to a healthy seagrass meadow. Restoring the sandy spoil disposal area near the Coffeepot Entrance Channel will result in slightly less credit per acre, and preservation of the primarily intact seagrass areas may yield a small amount of credit.

**Seagrass Preservation – 116 acres**

Preservation and protection of the existing seagrass meadow would provide minor ecological uplift. By protecting the area with a conservation easement and by establishing a boater regulatory zone, anthropogenic impact potential is decreased. These actions would physically prevent vegetative disturbances and turbidity from boat activity. Further, educational signage installed on-site and at local landside parks and boat ramps as well as community outreach events would be a project benefit. Assuming preservation activities yield a Relative Functional Gain (RFG) of 0.07, up to 8 credits could be generated. More importantly, these credits could be sold up front to provide funding for the more intensive restoration activities.
Small open areas in the seagrass meadow such as depressional "potholes" provide natural diversity and habitat. However, some bare areas that have resulted from siltation, boat groundings, propeller scarring, or unnatural erosion may be candidates for restoration, and it is likely that significant credit could be obtained for restoring the proper soils, topography, and vegetative components of the impacted areas. Restoring these small or narrow areas in the otherwise healthy seagrass meadow may not provide the same location uplift as broad restoration areas since they do not provide the same linkage to spatially separated meadows. However, the restoration of proper sediment topography followed by vegetative planting could yield an RFG of 0.70-1.0. Assuming that 10% of the meadow is impacted, restoring the additional 5.8 acres could yield 4-6 credits.

**Dredge Hole Restoration – 34 acres**
Re-establishing seagrass in the dredge hole area could yield a raw RFG of 0.70 to 1.0 credit per acre, depending on how the location parameter is interpreted. Conservatively, if the location parameter is assumed to be optimal in the existing state, there would be no improvement in that portion of the score. However, part of the scoring of this parameter considers the synergy between adjacent assessment areas and the export of functions from the assessment area to the surrounding environment. For example, restoration of a broad impacted area will provide an ecological linkage to healthy habitats on either side of the impacted area. Further, establishing educational signage and a boater regulatory zone has the benefit of decreasing anthropomorphic impacts, thereby enhancing the location scoring of the mitigation site. The complete lack of seagrass habitat implies that the location parameter should not be considered at all, much like wetland creation areas are treated under the UMAM rule. The water environment and vegetation parameters should be considered inappropriate for seagrass development (hence their total absence), which allows significant room for restoration uplift to the optimal state. Multiplying 34 acres by the range of RFGs yield a credit estimate of 24-34 credits.

**Secondary Restoration Areas – 11 acres**
This expanse of mostly open bare sand along the southeast side of Coffeepot Entrance Channel is another good candidate for restoration. Approximately 2/3 of the area is devoid of seagrasses. By removing the upper thin layer of sediment and replanting seagrasses, this area could be restored to the optimal condition. Much like the dredge hole area, a broad non-vegetated area could be restored that provides meaningful support to adjacent habitats. Assuming an RFG range of 0.70 to 1.0, the 11 acres area would yield approximately 5-7 credits.
Other improvements or restoration activities – acreage TBD
There are a number of additional opportunities to restore coastal habitats and improve stormwater drainage into the project area. The Characterization Analyses and development of the Restoration Plan will identify which activities have the potential to generate additional mitigation credits for the Bank, such as: potential oyster shell reef and oyster dome installation locations, improvements to stormwater discharging to the project area, seagrass propeller scar restoration, and exotic plant control. A cost/benefit analysis will be needed to the ecological and economic feasibility of each potential improvement activity. The analysis will take into account the value of mitigation credits created by each activity.

Time Lag and Risk
Restoration activities could produce a range of 40-55 credits. When credits are released before the restoration activities are complete, time lag and risk factors are applied to the RFG calculations. Generally, when credits are released early (e.g., before construction or final success is met) the time lag and risk factors that are applied reduce the overall number of credits generated. In lay terms, there is a penalty for early withdrawal. To avoid the penalty, the credit release schedule must be optimized to produce sufficient credits to fund restoration while serving realistic credit demand. Project Team will assist the City in managing time lag and risk while synchronizing credit sales and reservations.

Deliverable: Based on the restoration plan and feedback from permitting agencies, a full quantification of the range of potential mitigation credits to be generated by the Bank.

c. Permit Application

The permit required to establish the North Shore Mitigation Bank is an Environmental Resource Permit (ERP) for the state agencies and a Mitigation Banking Instrument (MBI) for the federal agencies. In addition, the Mitigation Bank entity will be required to perform an assessment using the Uniform Mitigation Assessment method (Chapter 62-345, F.A.C.) of the areas to be restored. At a minimum, the UMAM will be performed on the dredge hole restoration work, the northeastern enhancement area, stormwater improvement projects, oyster restoration activities and any other enhancements that would provide environmental lift for the North Shore Mitigation Bank.

Permit Application requirements under Chapter 62-342.450, F.A.C. specifies the information that must be included in a mitigation bank permit application, including:
A description of the location of the proposed mitigation bank including: regional watershed map (Tampa Bay Drainage), vicinity map, aerial photograph showing boundaries of the Bank; highway map showing access points for site inspections; and a legal description of the Bank.

A description of the ecological significance of the proposed mitigation bank to the regional watershed.

A description and assessment of current site conditions, including a soils map, topographic map, hydrological features map with current conditions; vegetation map including existing land uses and projected land uses according to comprehensive plans by local governments having jurisdiction, and any special designations or classifications associated with adjacent lands or waters, such as Outstanding Florida Waters.

Ecological benefits currently provided to the Tampa Bay Drainage watershed by the project area.

In addition to the above, a mitigation plan describing the actions proposed to establish the bank must be developed. This plan must include the following:

- Construction-level drawings detailing topographic alterations. The permit requires detailed engineering plans for the dredge hole fill and the enhancement area and all structural components that will be associated with the project
- Proposed construction activities including schedule for implementation
- Proposed vegetation planting scheme and schedule for implementation
- Measures to avoid during and after construction to avoid adverse impacts related to proposed activities.
- A detailed perpetual management and monitoring plan to demonstrate mitigation success.
- An assessment of improvement in ecological value as a result of the mitigation effort that includes a description of anticipated site conditions in the Mitigation Bank after the mitigation plan is successfully implemented; a comparison of current fish and wildlife habitat to expected habitat after the mitigation plan is successfully implemented; and a description of the expected ecological benefits to the regional watershed.

Federal permitting requirements are very similar, and must follow the requirements of 33 CFR Part 332.8. The first step is to prepare a prospectus which summarizes, at a moderately high level, all of the critical components of the project including the objectives of the bank, proposed service area, technical feasibility, long-term management, and general ecological suitability of the project site. After the prospectus is deemed complete and the IRT’s comments have been reviewed, it is put on public
notice for comment. After the comment period, the USACE will provide an initial evaluation determining whether or not the project has potential as a mitigation bank.

Janicki Environmental will take the lead in coordinating the permitting effort with the Project Team. The specific requirements regarding engineering and survey will be completed by ATM. The environmental/ecological elements of the permit application will be completed by Tampa Bay Watch and Janicki Environmental staff. All legal and regulatory aspects associated with the permitting of the proposed seagrass mitigation bank will be addressed by the key team players from EarthBalance, Inc. and Manson Bolves Donaldson, P.A..

The Project Team will to hold a series of pre-application meetings with the Southwest Florida Water Management District (SWFWMD), the US Army Corps of Engineers (USACE), Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), and other state and federal agencies, referred to as the Interagency Review Team (IRT). The first one will occur immediately after acceptance of our proposal by the City of St. Petersburg and signing of the program contract. The first set of meetings will be to introduce the team to the jurisdictional agencies and run through the recommended baseline characterization analysis and also to discuss preliminary restoration techniques. This will allow the permitting agencies to provide early feedback on completeness of the characterization strategy and identify any preliminary issues they may have. Members of our Project Team took the initiative last year to meet with members of the SWFWMD permitting review team to discuss the same kinds of mitigation bank concepts and monitoring methodology that we are proposing for this project. The SWFWMD team was supportive of our approach.

The second pre-application meeting will be held after completion of the baseline characterization analysis and the draft restoration plan. This meeting will provide the opportunity to review the specific details of the North Shore Mitigation Bank permit application with the jurisdictional agencies to ensure that we are in mutual agreement on the process to date and the proposed restoration goals and North Shore Mitigation Bank objectives.

Part of the early discussions will also focus on the “service area” for the North Shore Seagrass Mitigation Bank. The service area is the defined location where projects that have impacts to seagrass beds can apply for mitigation credits from the St. Petersburg Bank. Typically for freshwater or upland banks the service area is defined as the watershed where the bank is located. In coastal locations the service area can be much larger since saltwater fish and wildlife utilize much larger areas as part of their life cycle. The service area will be negotiated with the jurisdictional agencies, but considering that
FIGURE 11.
RECOMMENDED SERVICE AREA FOR CITY OF ST. PETERSBURG
NORTH SHORE PARK - SEAGRASS MITIGATION BANK
LOCATION: SAINT PETERSBURG, FL
the seagrass bank will benefit a much larger area of West Central Florida the project team recommends that the service area should comprehensively cover all coastal areas and tidally influenced tributaries in:

Pasco County
Pinellas County
Hillsborough County
Manatee County, and
Little Sarasota Bay within Sarasota County

Figure 11 identifies the recommended service area to begin negotiations with the jurisdictional agencies for the North Shore Seagrass Mitigation Bank.

Assuming a positive review, the team will draft the MBI. The MBI serves as the project’s federal permit and provides significant detail on the restoration plan, long-term management, financial assurances, and credit release provisions. Following review and comment by the IRT, the MBI is finalized and the project can proceed.

The following timeline provides a summary of the project tasks and the organizations responsible for implementing each task. The task descriptions also include the timeframe to complete the objectives of each task.
# Northshore Seagrass Mitigation Bank Project Timeline

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<tr>
<th>Task</th>
<th>Responsible Team Member</th>
<th>Task Schedule</th>
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<td><strong>a) Baseline Establishment Phase</strong></td>
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<td>a1) Biological characterization</td>
<td>Tampa Bay Watch</td>
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<td>a2) Bathymetry survey</td>
<td>Applied Technology &amp; Management</td>
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<td>a3) Water quality characterization</td>
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<td>a4) Benthic characterization</td>
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<td>b1) Dredge site characterization</td>
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<tr>
<td>b2) Identify potential fill sources</td>
<td>Tampa Bay Watch/Janicki/Northshore TAC</td>
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<td>b3) Identify &amp; characterize secondary areas</td>
<td>Tampa Bay Watch/Janicki/Northshore TAC</td>
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<td>b4) Evaluate &amp; minimize seagrass impacts</td>
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<td>b5) Identify potential stormwater improvements</td>
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<td>b6) Identify other ecological restoration opps.</td>
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<td>b7) Quantification of range of credits</td>
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<td><strong>c) Permit Application</strong></td>
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<td>c1) Completion of baseline establishment</td>
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<td>c2) Completion of restoration plan</td>
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<tr>
<td>c3) Development of Bank instruments</td>
<td>Earth Balance/City of St. Petersburg</td>
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<td>c4) Establishment of const. &amp; rest. timeline</td>
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<tr>
<td>c5) Attend meetings &amp; site visits</td>
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<tr>
<td><strong>d) Conceptual Plan</strong></td>
<td></td>
<td>Sept. 2017-Sept. 2027</td>
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(1) Completion of Baseline Establishment

The characterization analysis will set the baseline for permitting activities. The characterization analysis and process are defined in Phase 1, section a. It is our intent to complete the baseline characterization assessment during the summer of 2016 to coincide with the seagrass growing season. A report of the assessment will be generated no later than September 2016.

(2) Completion of Restoration Plan

Based upon the results of the characterization analysis, with input from the North Shore TAC and the first pre-application meeting with the jurisdictional agencies, the restoration plan will be formalized for inclusion into the permit application.

(3) Development of Bank instruments, including but not limited to:

(a) Construction bonds

Typically, financial assurances for construction are required up front to allow the release of mitigation credits prior to project completion. Standard templates are available if providing a bond or letter of credit. Special consideration may be available to the City as it is a government agency.

(b) Long-term maintenance endowment and other financial assurances required by the USACE

Normally, financial assurances for long-term management are required up front with the first credit release. Depending on the credit release schedule, the maintenance fund (endowment) may be funded over time from credit sales. As part of the application process, the City of St. Petersburg will be required to complete the “Mitigation Bank Financial Assurance” forms. Since the City is a local government municipality many of the upfront financial requirements may not be required.

After the Northshore Park Seagrass Mitigation Bank has been deemed complete by the permitting agencies, the City of St. Petersburg will be able to complete selling of all remaining mitigation credits. Generally there is a five year credit release schedule. Credits are released over time as milestones are met. There are provisions for early release of credits generated from preservation activities. Depending on the phasing of construction and length of time required for restoration, the credit release schedule can be negotiated to fit the project and expected credit demand.
The Long-term Maintenance Fund will be used to generate yearly income to ensure monitoring and maintenance of the North Shore Park Seagrass Bank. Long-term maintenance and monitoring will include:

- Establish and monitor the long term seagrass transects and water quality monitoring stations on a yearly basis
- Maintain the aids to navigation for the no motor or slow speed zones around site
- Repair propeller scars that occur within the project area.
- Provide maintenance for the signage along the waterfront identifying the restoration goals of the project and value to the Tampa Bay estuary.
- Prepare yearly reports on the status of the restoration efforts to jurisdictional agencies and the City of St. Petersburg

The long-term maintenance fund should be structured to provide $50,000 yearly for long term maintenance and monitoring needs.

(c) Conservation easement over the Project Area (in conjunction with the City’s Real Estate and Property Management Department and the City Attorney’s Office)

The City of St. Petersburg completed a public referendum in November of 2015 that allows the City to limit development activities at the North Shore seagrass project site. Since the City owns the lands they are now in the position to establish a Conservation Easement on the project area, a requirement of the permitting process. The City, with legal and technical recommendation from the Project Team, should be able to define and establish a conservation easement over the project area. The USACE provides Form 62-330.301(13) “Deed of Conservation Easement Third Party Beneficiary Rights to USACE” that will also provide guidance on the standards that are typically required for third party conservation easements.

(4) Establishment of timelines for the long-term construction and restoration tasks for the life of the Bank

Depending on the expected credit demand and logistical considerations, the restoration plan should be optimized. For example, if beneficial-use fill becomes available, it should be used rather that barging in clean fill. However, planting of the entire dredge hole need not occur all at once. The cash flow from credit sales should be balanced with restoration opportunities.
Completion of the Restoration Plan and initiation of the permitting process will facilitate the development of the long-term construction and restoration timeline for the Bank. The timeline will be generated by the North Shore Team with input from the City staff at all points. Clearly there will be opportunities for expedited activities to generate credits and sales quickly (conservation easement), intermediate projects that are relatively easy to implement but require more time and expense (enhancement area, oyster reefs, salt marsh communities) and long term major efforts that require strategic restoration efforts (dredge hole, stormwater improvements).

5) Attending meetings and Project Area site visits with all agencies with jurisdiction over the Bank

Key members of our Project Team will participate in all City, jurisdictional agency, and community meetings as well as other programmatic meetings to ensure rapid completion of the North Shore Mitigation Bank permitting process and widespread community awareness of the goals and objectives of the program.

d. Conceptual Plan

After the North Shore Mitigation Bank has been deemed complete by the permitting agencies, the City of St. Petersburg will be able to sell all remaining mitigation credits. It is anticipated that 20% of the credits will be held until documentation that the North Shore Mitigation Bank has met all success criteria. The North Shore Mitigation Bank will then enter into a long-term maintenance and monitoring mode. It is anticipated that the jurisdictional agencies will require the City to establish a fund to support the long-term monitoring and maintenance of the North Shore Mitigation Bank.

Consistent with the permitting and other applicable USACE, federal, state and local agency requirements, the conceptual plan for the long-term maintenance and monitoring of the North Shore Mitigation Bank will include:

- Establish and monitor the long term seagrass transects and water quality monitoring stations on a yearly basis
- Maintain the aids to navigation for the no motor or slow speed zones around site
- Repair propeller scars that occur within the project area.
- Document any ongoing or new problem issues that potentially could affect the viability of the North Shore seagrass communities.
- Provide maintenance for the educational kiosk signage along the waterfront identifying the restoration goals of the project and value to the Tampa Bay estuary.
• Prepare yearly reports on the status of the restoration efforts to jurisdictional agencies and the City of St. Petersburg as required.

The Project Team recommends that the long-term maintenance fund be structured to provide $50,000 per annum with an annual inflation adjustment. The income from the fund will be used for long term maintenance and monitoring needs. Initial recommendation includes, subject to jurisdictional agency agreement, creating a $1,250,000 trust fund through the sale of the seagrass credits, with an expected 4% return, net of inflation, to generate the $50,000 per year in perpetuity required to fund the long-term needs of the project.
Potential Future Phase II

a. Environmental Education Plan

(1) Conceptual plan narrative of future environmental education programming related to the restoration of the Project Area and the establishment of the Bank

Tampa Bay Watch, Inc. is a 501(c)(3) nonprofit stewardship organization, dedicated exclusively to the protection and restoration of the Tampa Bay estuary through scientific and educational programs. Over the past 23 years, Tampa Bay Watch has been a driving force in the environmental education field by working hand-in-hand with thousands of students that participate in our Estuary EDventures and Bay Grasses in Classes programs. Tampa Bay Watch has been an active partner with a wide range of local organizations by hosting events dedicated to the restoration and preservation of our bay. In addition to the school education programs, TBW has organized over 100,000 community volunteers, facilitating over 60 habitat restoration sites throughout our watershed. We are well positioned to quickly and efficiently expand and tailor our existing environmental education infrastructure and programs to include a program that specifically addresses the unique needs of Project Area and also integrates it with our larger education initiatives.

The City of St. Petersburg has outlined their vision of success as a “green city,” and the strategic pathways to obtain these goals include stewardship and community engagement. According to the business overview, marine and environmental sciences provide a total impact of $251 million in gross county product. Tampa Bay Watch will help advance this effort by creating a successful community based educational initiative centered on the North Shore Mitigation Bank Project with opportunities extending along the waterfront neighborhoods, waterfront parks, and the new Pier District and Education Station. The success of the seagrass bank and environmental educational programming will not only be measured in monetary gain for the City of St. Petersburg, but in critical environmental services to the Bay and community awareness.

Tampa Bay Watch has an award-winning environmental education program and is prepared to take the lead in conservation education by helping the public recognize and appreciate the ways in which our bay positively impacts our everyday lives. Whether it's family beach time, swimming, fishing, kayaking, or getting a glimpse of our local flora and fauna at North Shore Park, there are an infinite number of reasons to care for our local seagrass habitats and the species that reside in these diverse ecosystems.
It is evident that the educational components outlined below are crucial in progressing the City’s goal of building a “green city,” that encourages stewardship actions. Furthermore, our Tampa Bay Watch education effort will advance the long-term environmental targets as outlined in the Tampa Bay Estuary Program’s management plan for Tampa Bay.

Tampa Bay boasts great beauty, with seagrass communities providing critical services by improving water quality, creating shelter and habitat, providing a food source and stabilizing sediments. Our team will continue to work towards enhancing and preserving our local estuary through a wide array of environmental educational programs related to the North Shore Mitigation Bank Project. This will be achieved by:

- Conducting presentations to the neighborhood associations or other public meeting opportunities surrounding the North Shore Park area;
- Installation of informational kiosks along the North Shore Park waterfront and new St. Petersburg Pier District;
- Including the North Shore Seagrass Mitigation Bank Project in classroom field trips and ecotourism opportunities at the new Pier District and Education Station;
- Organizing community and student volunteer opportunities to support Phase II activities such as seagrass transplanting efforts; and
- Promoting of the North Shore Park Seagrass Project at local and national estuary management meetings including the Tampa Bay Regional Planning Council Agency on Bay Management, Tampa Bay Estuary Program Technical Advisory Committee, St. Petersburg Oceans Team and the Restore America’s Estuaries national conference on coastal habitat restoration, and others.

Tampa Bay Watch and key members of the Project Team will provide a joint neighborhood presentation to the three neighborhood associations that surround North Shore Park and the Downtown Neighborhood Association. The moderated public meetings will be used to provide detailed descriptions of the project, benefits to the Tampa Bay estuary and our community. Results of the moderated public meeting will be tabulated and used to help support future restoration and community awareness of program activities. A project description with photos and graphics will also be distributed to each of the neighborhood associations for inclusion in their local papers. Regional press releases to mainstream media will be prepared and distributed, after City review, at selected times to coincide with project milestones.

A direct environmental education opportunity exists with the installation of static professionally designed kiosks located at various sites along the public walkways at North Shore Park. The new kiosks will provide citizens with detailed knowledge of the
importance of seagrasses to the health of the Bay as well as the City’s seagrass restoration and North Shore Mitigation Bank efforts and the profound ecological and economic impact this will have on the Tampa Bay estuary. Other educational facts regarding recovery of seagrass communities in Tampa Bay, water quality targets, value of seagrass to carbon sequestration, native seagrass species, colorful illustrations, and other Tampa Bay restoration projects could potentially be displayed on the kiosks. The kiosks would also enhance nature walks, providing fun and educational information on our native seagrasses, fish, and bird species. These visual education displays are often a simple, but vital method of cultivating a deeper connection between the community and our Tampa Bay.

Tampa Bay Watch is working with City staff to partner with the new Education Station in the Pier District. During the St. Petersburg Pier Working Group process the community overwhelmingly supported the concept of marine based educational programming activities on the new Pier. The current design includes a variety of environmental education opportunities including:

- A Pier Education Station located on the new Pier structure, includes 3,000 sq. ft. of internal air conditioned classroom and rotating exhibit space
- An open amphitheater on the west side of the Education Station for in-water programming
- A coastal hammock trail that travels along the northern side of the new Pier District
- Potential kayak and paddleboard rentals
- Opportunities to include a US Coast Guard inspected classroom / ecotour vessel for local field trips, specifically to the North Shore Mitigation Bank Project site and Coffeepot Bayou Bird Sanctuary.

Tampa Bay Watch’s vision for the Pier District Education Station will be to offer a wide array of citizen science programs to expand public involvement in scientific discovery. Our citizen science participants (which include students) will cultivate a greater understanding of our valuable Tampa Bay estuary and seagrass habitats by implementing bay health and
water quality tests, seagrass transect trends, eco-tours, snorkeling, seining, and resident animal species identification, all on the North Shore Mitigation Bank Project estuarine shelf. The close proximity of the seagrass site to the Pier, and the relatively protected location offered by North Shore Park make it an ideal location to facilitate STEM education priorities for students, and ecotourism opportunities for families and visitors to the Pier. It is an ideal location to promote in-water environmental education programs where we can compare the largest Gulf Coast seagrass restoration project with healthy mature seagrass communities in close proximity to each other. All of it easily accessible by boat from the St. Petersburg Pier District.

School group field trips will occur on weekday mornings, inviting students of all ages to come explore and discover Florida's natural history, flora and fauna, while learning valuable practices to preserve our environment. There will be a special focus on offering funding assistance to increase the number of Title I schools and at-risk youth able to participate in our unique citizen-science programs. This type of field experience opportunity for academically at-risk youth is often a critical step in developing a life-long appreciation of the environment, while also encouraging stewardship and the pursuit of science and math careers.

Community based, informative science walks and talks, and water-based ecotourism activity options for the general public will be available in the afternoon, evenings and weekends. Tampa Bay Watch anticipates being able to offer family friendly eco-tours aboard a new US Coast Guard certified vessel that focus on Tampa Bay history and species population studies with activities such as fisheries trawls, bird species identification and behavior, dolphin dorsal identification research, and/or relaxing leisure cruises. Revenue from scheduled eco-tour programs will, in turn, help to fund school field trip opportunities for Title 1 schools and community based habitat restoration activities.

The Phase II seagrass transplanting process will create opportunities for participation by community volunteers and student interns. Tampa Bay Watch will provide professional supervision and ensure the correct procedural steps are implemented. Tampa Bay Watch regularly trains and organizes citizen volunteers, students, at-risk youth and civic organizations that participate in restoration projects to increase community awareness of the fragile nature and importance of our local estuary. All trained volunteers will have the chance to participate in planting, providing exceptional "hands-on" field experiences in the scientific process. Hands-on, feet-wet, community-based restoration translates directly into environmental awareness and education. This opportunity denotes a key facet of the educational pathway to encourage stewardship of the Bay's shared resources.
Tampa Bay Watch and Project Team members will promote the North Shore Mitigation Bank Project at local and national estuary management meetings including the Tampa Bay Regional Planning Council’s Agency on Bay Management, Tampa Bay Estuary Program Technical Advisory Committee, St. Petersburg Oceans Team and the Restore America’s Estuaries national conference on coastal habitat restoration. Early presentations will focus on the need for seagrass restoration at this location the development of the new City of St. Petersburg North Shore Seagrass Mitigation Bank, and permitting requirements. As the project develops additional public meetings and conference presentations will focus on the results of the project and potential marketing of the program.

With assistance from the City of St. Petersburg, Tampa Bay Watch will build upon our earlier successes and continue to advocate ecological restoration with positive, sustainable outcomes. Tampa Bay Watch seeks to offer knowledge and empowerment to our community, counteracting local environmental issues by nurturing the responsive process of personal ownership in our great Tampa Bay area. Developing a sense of stewardship, while learning how to achieve and maintain a healthy environment is a legacy that will positively influence our “green city” for generations to come.

b. Long-term O&M

(1) O&M activities may include, but are not limited to:

(a) Planting new seagrass

Tampa Bay Watch proposes transplanting a mix of shoal grass, *Halodule wrightii*, and manatee grass, *Syringodium filiforme*, into the filled dredge hole area. *Halodule wrightii* is commonly considered to be a pioneering species of seagrass and is one of the easiest types of seagrass to transplant due to its high growth rate. The planting of *Syringodium filiforme* would support the theory of compressed succession which accelerates the natural process by planting a more successionaly mature species. Depending on the criteria negotiated in the permitting process, the goal is to harvest the seagrass units from the healthy and vibrant seagrass bed in the area to the east of the dredge hole and another potential donor site on the other side of Coffee Pot Channel. This site was selected due to its close proximity to the project and large area of monospecific beds of *Halodule* and *Syringodium* to work with, preventing unintentional harvesting of other species.

There are two potential methods of harvest and planting that will be discussed and finalized during the permitting process.
Seagrass sod units are 20 cm x 20 cm by 10 cm deep square plugs of seagrass and bottom sediments that are harvested together. The sod units are then transported to the restoration / enhancement area, a small hole is hand dug and the plug is installed into the new hole at the desired depth and location. Seagrass sods offer the best likelihood of success, however, since they include the bottom sediments with the planting units they are often considered more intrusive to the existing donor seagrass bed. If you want the best and quickest success rate go with the seagrass sod units.

Bare root seagrass plugs are collected by shoveling a large deep plug of seagrass and then immediately returning the sediments back into the hole that was just made. The seagrass blade and root system is then transported and reinstalled into the restoration area by hand digging a small hole and anchoring the planting unit with a metal staple (or biodegradable wooden cloths pin). Generally bare root units do not require as much seagrass for transplanting and the donor sites recover at a greater rate of time. Generally bare root provides a compromise between speed of donor site recovery and rate of restoration area coalescence.

The seagrass transplanting techniques to be used will be negotiated with the jurisdictional agencies to find the right balance. Given the excellent water quality in the North Shore area and healthy mature seagrass communities present either technique is viable.

The following methodology outlines procedures for harvesting and planting of *Halodule wrightii* and *Syringodium filiforme* sod unit material. It is expected that sod units with sediment attached will provide the highest probability for survival of the planted material and for the restoration of seagrass meadows at the selected planting area. Collection of the sod units (20x20cm) will take place over a large designated area and individual sod unit collections will be spatially separated by at least 1m. Harvesting will be conducted in a manner designed to minimize impacts to both sediments and seagrass of the donor area. Each plug will be acquired using a 20cm x 20cm x 10cm stainless steel plugger at a minimum spacing of one meter. The seagrass plugs are removed by a team of three people: one person placing the plugger onto the grass and ensuring that only the
The harvested seagrass will transported by shallow draft boats, kept shaded and wet, and will be planted within a few hours of harvesting at the filled dredge hole site or other permitted enhancement areas. Based upon our experience at other transplant sites we expect the donor site will fully recover within one year. Facilitating recovery is the fact that the donor sites we are proposing to use are located in a relatively quiescent area with no indications of ongoing erosion or sedimentation. Also, the *Halodule wrightii* and *Syringodium filiforme* meadows in this area are stable and mature, and are expected to quickly recolonize the collection sites. Tampa Bay Watch has used harvested seagrass from donor sites during a wide variety seagrass restoration projects over the last twenty years. We have a documented monitoring record that these donor areas recover within a 1-2 year time frame. This information will be provided to the permitting agencies as part of the permitting process for the North Shore Mitigation Bank.

Once the dredge hole has been permitted, filled and stabilized, we will determine the exact planting design that will be utilized. At this point we are recommending that the planting will occur in 20m x 20m plots staggered in a checkerboard pattern throughout the 34 acre dredge hole and the enhancement areas. Once the plants have been harvested and are brought to the planting site, volunteers and staff will install the seagrass by hand in established rows within the restoration area along a planting transect line laid across the bottom. Corner posts will be placed to help delineate the planted area and all corner posts will be surveyed and plotted with a sub-meter resolution GPS prior to each transplanting event. Planting density will be designed to install 20 cm plug planting units on 1 meter centers in staggered rows to enhance coalescence of planted seagrass (Figure 9).
The planted rows will be located 1 meter apart, within the restoration or enhancement area. The framework will provide an excellent compromise between plot densities and the quantity of donor material needed to restore the seagrass community. The transplant sites will be monitored for survival and growth on the following schedule post planting: one month, six months, one year, and two years (see detailed description of harvesting, planting and monitoring procedures in project timeline below).

It has been our experience that the transplant area will show successful recovery in a period of two years. The timing of the seagrass transplanting will have an impact on how quickly the area will recover. If the transplanting is done early in typical seagrass growing period (April through July) it will get a jump start on seasonal growth. As one example, Tampa Bay Watch conducted a very similar seagrass transplanting project off the shoreline of MacDill AFB in June 2006. In September 2008, two years after plantings, the total Syringodium grass ground cover was 1340m² (0.33 acres). This was a 28 times increase in area cover over the originally planted 48m². All plots showed a substantial increase in area coverage and several of the restored meadows were actively expanding in area coverage at a rate similar to natural growing manatee grass meadows.

To document the results of the program, and to help guide future efforts, a monitoring methodology has been refined to determine plant survival and percent coverage until coalescence. Monitoring efforts will utilize the Braun-Blanquet (1932) cover-abundance scale which will monitor percent cover based on 10 random tosses of a one-quarter meter square along the planted site. The percent cover will document the growth and expansion of the planting units. Bioturbation by stingrays, manatees, crabs and other biota will also be monitored to investigate and implement protective strategies, if necessary.

Depending upon timing of the permits, restoration of the enhancement areas and filling of the dredge hole, the reestablishment of seagrass communities is expected to take a number of years and phases to complete. Each year of the planting programs, at the beginning of the growing season (at time zero for that year), six donor plug monitoring sites will be established. On each of the compass headings (north, east, south, and
a donor plug will be removed two (2) meters from the central float. The units will also be flagged with small florescent yard flags to ease monitoring efforts. Each of the six donor monitoring sites will have four donor plugs harvested, resulting in a total of 24 donor units to be monitored for each year of transplanting effort.

Evaluation of the donor plug monitoring sites will be accomplished in the following manner. Each of the four monitoring sites will be visited immediately after construction for baseline monitoring and will be visited again approximately six months post construction, one year, and two years post construction. At each of the monitoring sites, a quarter meter square will be laid over the top of each harvested unit. Percent cover and species diversity will be quantified for Braun-Blanquet (1932) cover-abundance scale and approximate depth of plug hole in centimeters. A monitoring report will be generated every year, documenting the progress of the priority seagrass restoration effort and donor site and identifying opportunities to improve the program. A quality assurance plan will be implemented to ensure that the planting and monitoring meets quality assurance metrics determined prior to the initiation of the project.

(b) Maintaining seagrass beds

Once the North Shore Mitigation Bank has been deemed complete, the Bank will enter into a long-term maintenance and monitoring mode. It is anticipated that the jurisdictional agencies will require a maintenance fund that will be used to generate sufficient income to ensure long-term monitoring and maintenance of the North Shore Mitigation Bank.

Maintenance of the seagrass beds will include several different tasks. As previously mentioned, the City of St. Petersburg owns the bottom lands and the first recommendation to be implemented should be the establishment of a boater regulatory zone around the existing conservation easement. The establishment of a “No Motor” or “Idle Speed” regulatory zones will provide an immediate benefit to the health and quality of seagrass communities across the North Shore Mitigation Bank Project area. The regulatory zones will protect seagrasses that have historically existed as well as the seagrasses that have been restored and enhanced as part of the project. Part of the maintenance of the seagrass beds will be the maintenance of the aids to navigation for the “No Motor” or “Idle Speed” zones. These signs will be checked annually and replaced or repaired as needed.
Establishing a program to annually monitor the seagrass transects and water quality will give an excellent annual snapshot on the health of the project area. In particular, the seagrass transects can and will be compared with the Tampa Bay transect data base managed by the Tampa Bay Estuary Program for long-term trend analysis.

Other activities to ensure long-term maintenance of the seagrass communities include:

- Repair propeller scars that occur within the project area.
- Document any ongoing or new problem issues that potentially could affect the viability of the North Shore seagrass communities.
- Provide maintenance for the educational kiosk signage along the waterfront identifying the restoration goals of the project and value to the Tampa Bay estuary.
- Prepare yearly reports on the status of the restoration efforts to jurisdictional agencies and the City of St. Petersburg as required.

We estimate that the long-term maintenance fund will need to generate $50,000 per annum, with annual inflation adjustments, in order to fund long-term maintenance and monitoring requirements for the Project Area. Initial recommendation includes, subject to jurisdictional agency agreement, creating a $1,250,000 trust fund through the sale of the seagrass credits, with an expected 4% return, net of inflation, to generate $50,000 per year in perpetuity required to fund the long-term needs of the project.

(c) Monitoring seagrass beds

A monitoring methodology to document the results of the project, and guide future efforts will be developed. The monitoring will assess plant survival and percent coverage until coalescence. The Project Team will monitor the newly created seagrass bed at completion of the project (time zero) at which point a “Time Zero” Construction Report will be completed and submitted. This report will include the date that the transplanting was completed and a table depicting spacing and species density of the transplant areas. It will then be monitored semi-annually in April and September of each year into perpetuity.

Monitoring efforts will utilize the Braun-Blanquet (1932) cover-abundance scale which will monitor percent cover based on 10 haphazard tosses of a one meter survey square into 25% of the total number of 20m by 20m planted sites. The percent cover will document the growth and expansion of the planting units and the short shoot density and canopy height can give an idea of the overall health of the bed. Bioturbation by stingrays, manatees, crabs and other biota will also be monitored to investigate and
implement protective strategies, if necessary. We also document the presence of any attached or drift algae that may be impeding the successful growth of the grasses. Additionally, a reference (e.g. control) area will be established concurrent with baseline monitoring. This reference area will be in a nearby healthy seagrass bed to give a perspective and comparison on how the transplanted area is recovering in comparison to an established area. The reference monitoring area will mapped using the Trimble prior to baseline monitoring. The reference area(s) will be monitored on the same schedule and for the same criteria as the transplant areas. Monitoring reports will be submitted yearly after each set of monitoring events to document the ongoing results of the program.

Below and above water photographs will be taken of each transplanting site during each monitoring event. The photographic data base will help to provide a visual picture of the relocation site as the new seagrass beds grow, coalesce and mature.

Seagrass transplants will be monitored for the duration of the construction activities (3 to 10 years) and replanted where needed. A required percent cover of new seagrass will be negotiated with jurisdictional agencies, consistent with the natural background seagrass communities. After monitoring has shown recovery to the approved percent cover, the project will be deemed a success, jurisdictional agencies will sign off on the North Shore Mitigation Bank, and the project will move from a construction to a monitoring and maintenance phase.

Six donor plug monitoring sites will be established at the beginning of the growing season (at time zero for that year). This will be done for each year of the planting of the project. On each of the compass headings (north, east, south, and west) a donor plug will be removed two (2) meters from the central float. The units will also be plotted with the Trimble to ease monitoring efforts and identifying locations of donor monitoring areas. Each of the six donor monitoring sites per year will have four donor plugs harvested, resulting in a total of 24 donor units to be monitored for each year of transplanting effort.

Evaluation of the donor plug monitoring sites will be accomplished in the following manner. Each of the four monitoring sites will be visited immediately after construction for baseline monitoring and will be visited again approximately six months post construction, one year, and two years post construction. At each of the monitoring sites, a quarter meter square will be laid over the top of each harvested unit. Percent cover and species diversity will be quantified for Braun-Blanquet (1932) cover-abundance scale and approximate depth of plug hole in centimeters. A monitoring report will be generated every year, documenting the progress of the priority seagrass
restoration effort and donor site and identifying opportunities to improve the program. A quality assurance plan will be implemented to ensure that the planting and monitoring meets quality assurance metrics determined prior to the initiation of the project.

In addition to the monitoring described above, it can be reasonably expected that the Southwest Florida Water Management District will continue their biannual aerial mapping of seagrasses in Tampa Bay. Their period of record extends back to 1988 and provides the best time series of seagrass area and distribution for southwest Florida. In conjunction with the site-specific monitoring, a technically defensible analysis of changes in the project area will be achieved. Specifically, any changes in the project area can be put into a regional perspective allowing those more regional effects such as excessive rainfall to be accounted for.

Other key monitoring will include the water quality monitoring being conducted by the Pinellas County Environmental Management Division and the Environmental Protection Commission of Hillsborough County. These programs provide critical information regarding light attenuation and salinity that can significantly influence the seagrass restoration in the project area. If any significant changes in water quality occur, these changes too can be put into a regional context.

(d) Minimizing threats to the Bank, including propeller scarring and invasive species

The Project Team’s first recommendation to minimize threats to the North Shore Mitigation Bank area is the establishment of a boater regulatory zone to minimize manmade impacts to sea grasses within the Project Area. Establishing the regulatory zone will be an integral part of obtaining a permit for the North Shore Mitigation Bank and, based on our experience, should generate additional mitigation credits. The regulatory zones, which likely will include both “No Motor” and “Idle Speed” restrictions, will provide an immediate benefit to the health and quality of the Project Area’s seagrass communities. This is one of the quickest ways to enhance the value of the North Shore Mitigation Bank and accelerate the City’s ability to monetize credits and generate funds for the next stage of restoration work.

Seagrasses in the Project Area are vulnerable to boaters running aground and “propeller dredging” their way to deeper water. When the propeller scars dig into the root systems of seagrass beds the scars may take five years or longer to recover. The Project Team will assist the City, as owner of the submerged lands, in obtaining the necessary public approvals and regulatory permits to establish a boater regulatory
zone. The fact that the Project Area is already protected by a conservation easement should facilitate the approval and permitting process.

(e) Establishment of the primary enhancement site at the Dredge Site

Dredge hole should be filled within the first three-years of the project. Dredge material can be placed in stages, but will need to allow for settling to make sure that appropriate elevations are met for the final grade. During the dredge hole construction project turbidity barriers will need to be maintained around the project site. Early discussions with the City also indicated a need to maintain a small channel on the east side of North Shore Beach for recreational swimmers. This is possible to do, but will require the City to determine if the tradeoff of reducing mitigation credits is worth maintaining the swim channel.

After the dredge hole fill material has settled (recommend six months to one year) the area will be planted with seagrass, either *Syringodium filiforme* or *Halodule wrightii*. An anticipated 34 acres of new seagrasses are targeted for installation. The North Shore Mitigation Bank Project will be the largest seagrass restoration project on the West Coast of Florida.

Ideally donor seagrass should be sourced from adjacent permitted donor beds. Alternatively, seagrass can be purchased from local growers. Typically, seagrasses are installed during the summer growing season, May through September, and it is expected to take at least two growing seasons, possibly more, to accomplish the installation, to ensure comprehensive coverage of the newly restored area. The harvesting of the donor material and the planting of the seagrasses into the dredge hole will be accomplished by professional staff as well as directly supervised paid part-time personnel and community volunteers.
(f) Establishment of secondary or any additional enhancement sites.

As mentioned previously in our application, one major additional enhancement area under consideration is the large barren sand flat along the southeast side of Coffeepot Entrance Channel. Review of historical photography indicates that the large 8+ acres of open bare sand of the North Shore project area is the result of side cast spoil material placed on top of the seagrass beds during early dredging of the Coffeepot channel. A second area just south of the entrance to Coffeepot (about 3+ acres) also appears to have intermittent seagrass growth.

Both of these areas are immediately adjacent to, or directly within the seagrass transect monitored by Tampa Bay Watch as part of the interagency seagrass monitoring program established by the Tampa Bay Estuary Program. This provides fifteen years of seagrass composition and density information to support our evaluation process. High resolution bathymetry and sediment analysis will provide critical information needed to identify restoration techniques required to enhance this area for seagrass recovery efforts.
More information is clearly needed, but early observations indicate the likelihood that if a very thin layer of sediments are removed from targeted locations (with the material placed in the larger dredge hole) we would be able to create the optimum elevation necessary for seagrass growth in these locations. It is important to note that if the characterization analysis determines that this project is feasible, and the jurisdictional agencies through the mitigation bank permitting process approve this area for restoration, there is a strong likelihood that this will be the first major area to undergo restoration. This relatively large seagrass project:

- requires a minimal amount of earthwork;
- does not require settling time that the dredge hole will for the fill material;
- sediments would be available almost immediately for seagrass transplanting; and
- could be used to verify seagrass transplant techniques, if required by the permitting agency, prior to undertaking the 34 acre dredge hole project.

Tampa Bay Watch also plans to document and digitize seagrass propeller scars that are identified within the project boundary. As part of the restoration plan, Tampa Bay Watch and Janicki Environmental will evaluate the level of prop scarring and prioritize areas for restoration. Once we have a comprehensive understanding of the level of impacts within the project site our team, with the assistance of the North Shore TAC, will perform a cost/benefit analysis on the efficacy of using the sand tube method to restore the propeller scars. Tampa Bay Watch has experience using the sand tube restoration method. The process is expensive and the results have been mixed. The cost/benefit analysis, which will take into account the value of mitigation credits created, will determine if restoration is ecologically and economically feasible. If the jurisdictional agencies agree that propeller scar restoration will benefit the North Shore Mitigation Bank, and the City decides that the economic value is worth the additional credits generated, Tampa Bay Watch is in a position to complete this additional form of restoration work. We completed a project in the Lower Boca Ciega Bay and Cockroach Bay Aquatic Preserve in 2006 to evaluate the performance of sand tubes at several unique Bay locations, and also installed 333 square feet of sand tubes within propeller scars as part of the Bayside Bridge mitigation effort in 2014.

Several other opportunities exist to restore or enhance environmental systems on site. The seawall area along the northern shoreline of North Shore Park may have elevations conducive to oyster shell reefs. Areas along the toe of the seawall may be suitable for oyster domes. Working with the City Parks Department, Tampa Bay Watch will evaluate the water depths at these locations, and potential conflicts with recreational access, to see if a small scale project is feasible. Depending on water depth there may be opportunities to plant salt marsh behind the oyster communities in order to create a
model “living shoreline” system. This technique has been used extensively at Mac Dill Air Force Base by Tampa Bay Watch to restore shoreline communities and buffer ship traffic waves from eroding the shoreline.

**c. Marketing and Sale of Bank Credits**

The Tampa Bay Watch program partners all agree that there will be plenty of “buzz” around the establishment of the very first seagrass mitigation bank in the State of Florida. As such we are not recommending that a formal program to market the credits will be necessary.

However, it will be critical to ensure that we are known and respected by all the regulatory agency reviewers in the service area so that they are aware of the North Shore Mitigation Bank and will recommend it. The regulatory agencies are the single gatekeeper through which all sales must pass. These agencies are key to selling the credits.