



# Tampa Riverwalk Extension at Beneficial Drive Bridge Feasibility Study Report

Final – October 2025



Prepared for the City of Tampa, Florida





# Executive Summary





# Executive Summary

## Project Purpose and Background

The City of Tampa (City), in partnership with the Tampa Community Redevelopment Agency (CRA), initiated this feasibility study to evaluate the proposed extension of the Tampa Riverwalk at the Beneficial Drive Bridge to connect the existing Riverwalk near the Tampa History Center and Sparkman Wharf.

This initiative aligns with the City's long-term vision of creating a continuous, scenic, and accessible waterfront corridor that enhances connectivity, public access, recreation, and economic vitality along the downtown waterfront and throughout the downtown area. The study is being conducted in partnership with both the Channel District CRA and the Downtown District CRA to ensure alignment with broader redevelopment goals. This project is part of the City's comprehensive transportation plan – *Tampa MOVES (Mobility, Opportunity, Vision, Equity, Safety)* (City of Tampa 2023) – a long-term initiative driven by the City's Vision Zero efforts.

This study focuses on evaluating multiple conceptual design alternatives for the feasibility of constructing a multiuse shared-use path under the Beneficial Drive Bridge. This corridor presents unique challenges because of its constrained geography, which includes the Beneficial Drive Bridge, active port and industrial operations, sensitive environmental features such as mangroves and wetlands, and existing infrastructure such as a water taxi dock and parking facilities. The goals of the study are to determine engineering and environmental feasibility, estimate project costs, gather key stakeholder feedback, and identify a recommended conceptual alternative to address the project purpose and need.

The purpose and need of the project include the following project goals and objectives:

- **Safety and User Experience** – This extension fills a critical gap in the City's mobility network, helping prevent accidents and encouraging healthier, safer travel options. The project supports Tampa's goal of eliminating traffic fatalities by creating safer infrastructure for non-drivers.
- **Multimodal Access and Mobility** – The proposed extension will close a critical gap in the waterfront pathway, enhancing pedestrian and bicyclist access to major attractions such as the Florida Aquarium and the cruise terminal.
- **Regional Planning Goals** – The proposed extension would progress the City's goal to provide connectivity between West Tampa, Tampa Heights, Hyde Park, Riverside Heights, Ridgewood Park, and Ybor City to downtown by prioritizing multimodal projects based on factors such as mobility for all users, Americans with Disabilities Act (ADA) compliance, and public safety.
- **Seamless Network Integration** – Maintain the signature identity of the Tampa Riverwalk for a consistent user experience. Reinforce the overall cohesion and aesthetic consistency of the corridor even as the alignment shifts away from waterfront segments.
- **Economic Growth** – By linking these destinations, the Riverwalk extension will support green transportation, stimulate local tourism, and reinforce Tampa's image as a vibrant waterfront city that values outdoor recreation and community connectivity. Also, potential extended pedestrian access along Channelside Drive, especially in proximity to the trolley system and proposed future anchor destinations may catalyze further economic activity.
- **Minimize/Avoid Environmental Impacts** – The analysis aims to identify a recommended concept that balances engineering feasibility, environmental stewardship, and public accessibility.
- **Resilience Benefits** – While the project area has not reported recent storm-related damage, minor additions like elevated design standards, permeable surfaces, or shade structures demonstrate proactive risk mitigation and resilience.



## Alternatives Considered

The feasibility study began with the evaluation of initial alternatives based on engineering feasibility, environmental constraints, stakeholder input, and alignment with the City's Riverwalk vision. These initial alternatives included the following:

- **No-Action Alternative (At-Grade Crossing):** Maintaining the existing at-grade crossing on Beneficial Drive and other committed planned improvements. This alternative does not improve connectivity, mobility, or access to the eastern waterfront and it is not consistent with long-term goals for the Riverwalk. This alternative does not satisfy the purpose and need of the project. It will remain a viable alternative throughout this study because it provides a baseline for comparison to the Build Alternatives.
- **Alternative 1 (Under-Bridge Crossing):** Extending the Riverwalk with a new fixed, pile-supported structure underneath the Beneficial Drive Bridge. This alternative maintains visual and physical continuity along the waterfront and also ensures safe, uninterrupted passage beneath a major roadway, minimizing conflicts between pedestrians and vehicular traffic. This alternative satisfies the purpose and need of the project and was further evaluated.
- **Alternative 2 (Over-Bridge Crossing):** Extending the Riverwalk with an overhead pedestrian bridge over Beneficial Drive. Consistent with the findings of the Master Plan, this option was eliminated from further evaluation because of the large footprint required for the switchback ramp system, inconsistency with the Riverwalk experience, and high anticipated cost. This alternative does not satisfy the purpose and need of the project, so it was eliminated from further evaluation.

The study focused on refining Alternative 1 based on stakeholder input, environmental considerations, and user experience. The refined alternatives under Alternative 1 included the following:

- **Alternative 1A:** An alignment that avoids the Southwest Florida Water Management District (SWFWMD) Conservation Easement (CE) but includes multiple abrupt-angle turns that result in limited sight distance, disrupted flow and user experience, safety and maneuverability risks, accessibility limitations, and inconsistency with the Riverwalk aesthetic and design intent.
- **Alternative 1B:** An alignment that shifts the connection to the existing Riverwalk farther west than Alternative 1A, reducing sharp turns, maintaining the existing water taxi dock, and partially encroaching into the CE. Similar to Alternative 1A, this alternative also passes under the Beneficial Drive Bridge between Piers 4 and 5, maintaining minimum vertical clearance and light penetration.
- **Alternative 1C:** An alternative that aligns closer to the shoreline between Piers 5 and 6, minimizing wetland impacts, but reduces vertical clearance compared to Alternative 1B, limiting space for ADA-compliant slopes and user experience enhancements.

## Recommended Alternative

Alternative 1B is recommended for further study and evaluation. It balances environmental sensitivity, operational feasibility, and user experience. It minimizes abrupt turns, improves safety, preserves light under the bridge, and maintains sufficient minimum vertical clearance (7 feet, 6 inches). Although it partially encroaches on the CE, it aligns best with the City's vision. The encroachment into the existing SWFWMD CE would require amending the CE through proper coordination and mitigation strategies.

**Figures ES-1 through ES-4** present preliminary renderings of Alternative 1B. The aesthetic treatments and alignment are subject to change and may be refined as the project progresses through future phases.



**Figure ES-1. Alternative 1B Rendering (looking east under Beneficial Drive Bridge)**



**Figure ES-2. Alternative 1B Rendering (oblique view looking northeast)**

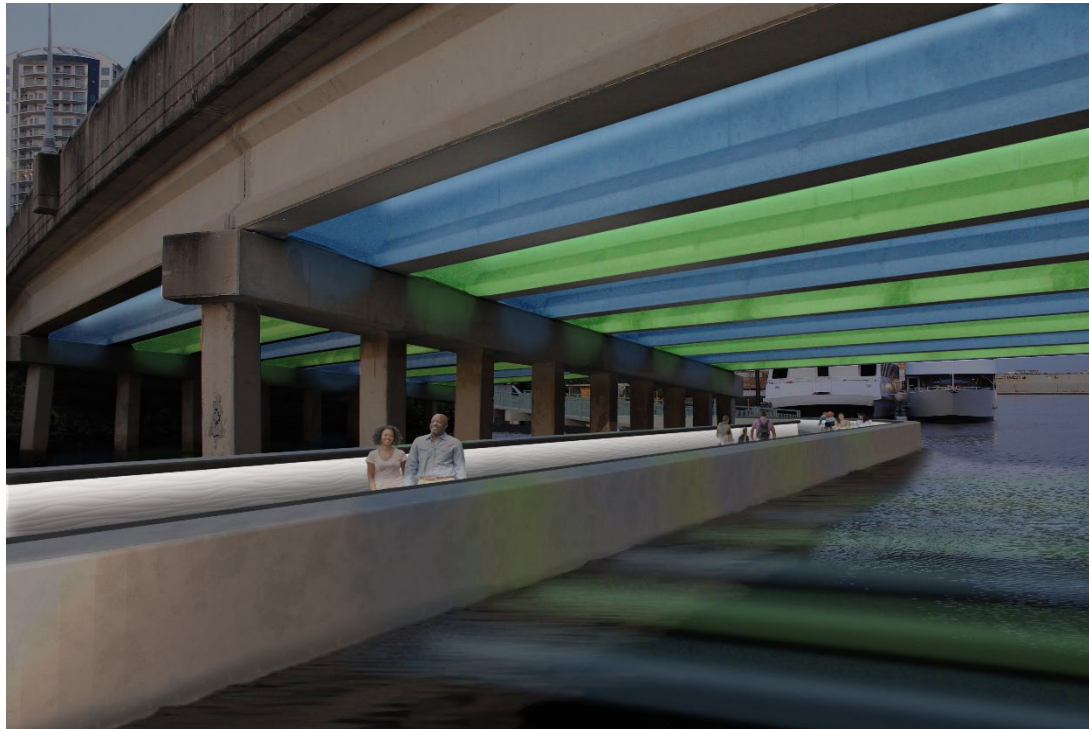




**Figure ES-3. Alternative 1B Rendering (oblique view looking east)**



**Figure ES-4. Alternative 1B Rendering (nighttime view looking east under Beneficial Drive Bridge)**







## Opportunities for Enhancement

There are several opportunities to enhance the Riverwalk Extension during future phases and final design. These enhancements include the following:

- Incorporating integrated public art, interpretive signage, and artistic lighting that emphasize Tampa's cultural heritage and provide memorable experiences.
- Considering the living shoreline for resiliency and ecological value.
- Developing ADA-accessible kayak landings to support recreational access, as well as incorporation of water-level overlooks to enhance waterfront activation.
- Optimizing placement between the existing bridge piers to maximize light penetration, reduce any concerns of a perceived "tunnel effect," and preserve the Riverwalk's open-air character.
- Adding wayfinding, shade, seating, and cultural signage to reinforce user comfort and placemaking.

## Next Steps

Advancing the project may require the following:

- A Project Development and Environment Study to satisfy National Environmental Policy Act requirements if federal funding is pursued. This will include environmental documentation, agency coordination, and the development of 30% design plans.
- Environmental permitting through coordination with SWFWMD, the Florida Department of Environmental Protection, Port Tampa Bay, the Environmental Protection Commission of Hillsborough County, the U.S. Coast Guard, and the U.S. Army Corps of Engineers to address impacts to wetlands, submerged lands, and the CE.
- Stakeholder engagement and public outreach to refine design elements and maintain alignment with community priorities.
- Pursuit of funding opportunities through federal, state, or local sources to support design and construction.

The Riverwalk Extension project represents a vital step in realizing the City's goal of a unified, vibrant, and accessible downtown waterfront. Through thoughtful design and stakeholder collaboration, the extension would continue to serve as a civic landmark and public amenity for generations to come.



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# Acronyms and Abbreviations



# Acronyms and Abbreviations

Abbreviation	Definition
ACS	American Community Survey
ADA	Americans with Disabilities Act
BIL	Bipartisan Infrastructure Law
BRIC	Building Resilient Infrastructure and Communities
BUILD	Better Utilizing Investments to Leverage Development
CAC	Community Advisory Committee
CE	conservation easement
City	City of Tampa
CRA	community redevelopment agency
EFH	essential fish habitat
EPA	U.S. Environmental Protection Agency
EPC	Environmental Protection Commission of Hillsborough County
ERP	Environmental Resource Permit
ESA	Endangered Species Act
EST	Environmental Screening Tool
F.A.C.	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FGDL	Florida Geographic Data Library
FY	fiscal year
FLUCCS	Florida Land Use, Cover, and Forms Classification System
FNAI	Florida Natural Areas Inventory
GIS	geographic information systems
HCC	Hillsborough County Commission



<b>Abbreviation</b>	<b>Definition</b>
IIJA	Infrastructure Investment and Jobs Act
IPaC	Information for Planning and Consultation
JAXBO	Jacksonville Biological Opinion
L RTP	Long-Range Transportation Plan
MHW	mean high water
MOVES	Mobility, Opportunity, Vision, Equity, Safety
NACTO	National Association of City Transportation Officials
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOFO	Notice of Funding Opportunity
NPDES	National Pollutant Discharge Elimination System
OMB	Office of Management and Budget
P3	Public-Private Partnership
PD&E	Project Development and Environment
RAISE	Rebuilding American Infrastructure with Sustainability and Equity
RMD	Resource Management Division
RRFB	rapid rectangular flashing beacon
SHPO	State Historic Preservation Office
SSL	sovereign submerged lands
STBG	Surface Transportation Block Grant
SWIM	Surface Water Management Improvement & Management
SPP	Strategic Property Partners
SWFWMD	Southwest Florida Water Management District
TA	Transportation Alternatives Program
TIP	Transportation Improvement Program
USACE	U.S. Army Corps of Engineers





Abbreviation	Definition
USCG	U.S. Coast Guard
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

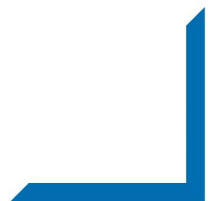
A teal-tinted photograph of a cityscape. In the foreground, there are lush green palm trees and other foliage. In the background, several tall, modern buildings are visible, including one with a distinctive curved facade. A concrete bridge with a metal railing runs across the right side of the image. The sky is overcast with grey clouds.

# SECTION

# 1

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## Introduction





# 1. Introduction

## 1.1 Project Description

The City of Tampa (City), in partnership with the Tampa Community Redevelopment Agency (CRA), is conducting a study to determine the feasibility of extending the existing Riverwalk to the east of Beneficial Drive. The primary goals of the project are to enhance access and mobility by connecting the existing Riverwalk to Sparkman Wharf. The study is being conducted in partnership with both the Channel District CRA and the Downtown District CRA to ensure alignment with broader redevelopment goals.

The proposed project is located within Downtown Tampa, in Hillsborough County, along the northern side of the Garrison Channel near the Beneficial Drive Bridge (as illustrated on **Figure 1-1**, the regional location map). The project study area includes a portion of the existing Riverwalk near the Tampa Bay History Center, Beneficial Drive, the northern shoreline of the Garrison Channel between Cotanchobee Fort Brooke Park and Sparkman Wharf, and the Garrison Parking Lot. The study area is approximately 0.01 square mile in total and is located within both the Tampa Downtown Partnership and Port of Tampa neighborhoods. **Figure 1-2** presents the project location map.

**Figure 1-1. Regional Location Map**

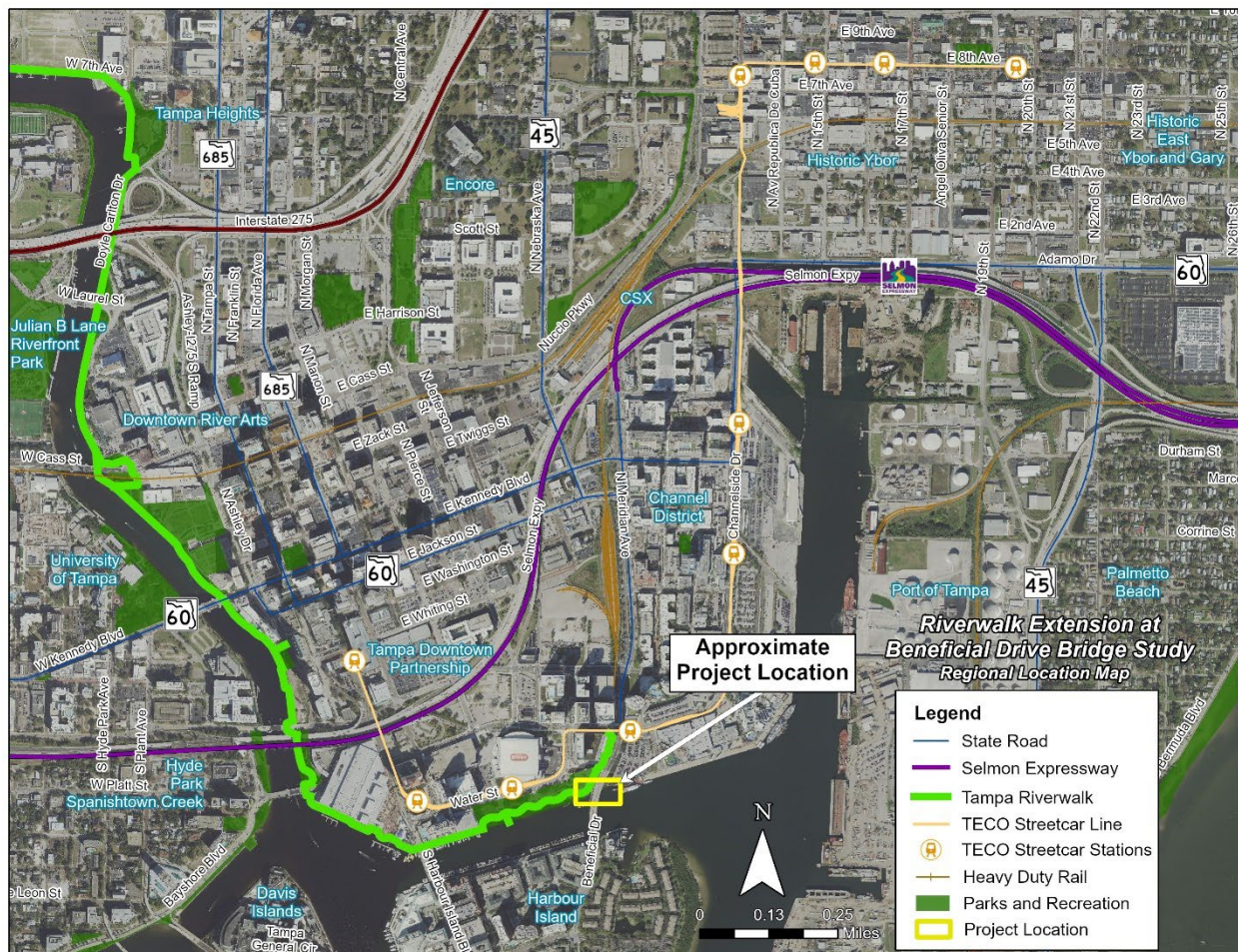




Figure 1-2. Project Location Map



## 1.2 Planning Process

This feasibility study includes an assessment of existing conditions, analysis of engineering alternatives, development of a preliminary cost estimate, and coordination with key stakeholders. The outcome of this feasibility study will identify a recommended alternative for further evaluation for this Riverwalk Extension.

Depending on the project's funding source, this project may require a subsequent Project Development and Environment (PD&E) phase to obtain a more detailed environmental assessment and conceptual design of the recommended alternative. The project may then move forward into design and construction phases, as funding becomes available.

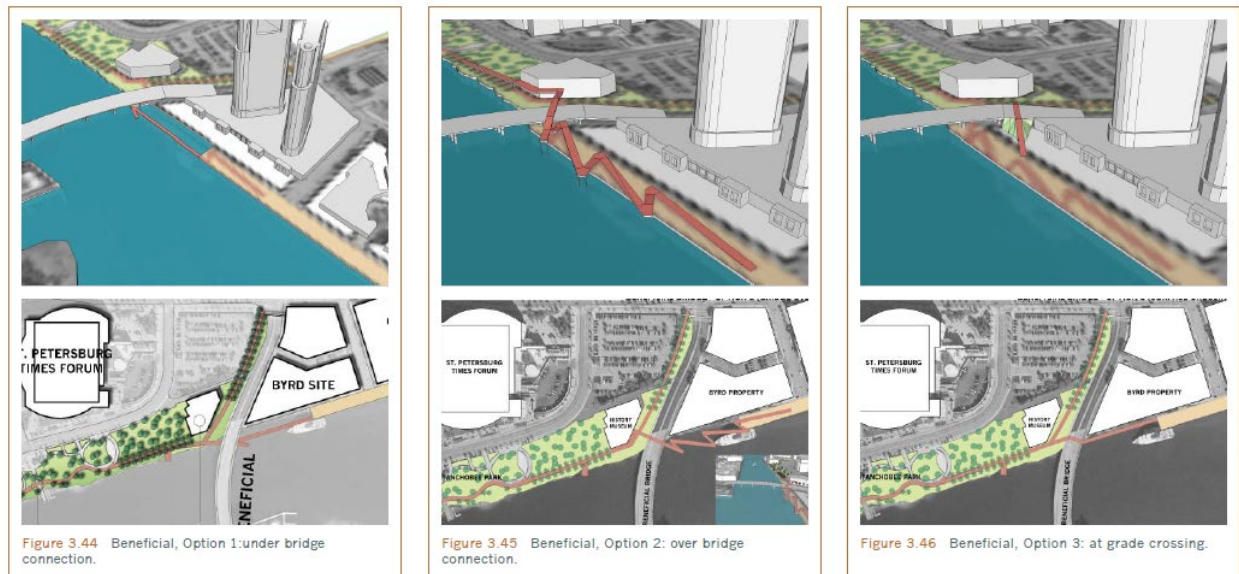
## 1.3 Background and Previous Studies

Several waterfront developments already exist within the project area, including Amalie Arena, the Tampa Bay History Center, and Sparkman Wharf, with more development planned. When completed, this concentrated growth along the shoreline may restrict public access to the City's attractions and waterways. To address this concern, the City of Tampa has envisioned a solution that would preserve and enhance public access to the waterfront's unique amenities through development of a multipurpose walkway between the Channelside area and the North Boulevard Bridge.

The City developed a comprehensive vision for better using and managing its downtown waterfront, which is reflected in the *Tampa Riverwalk Master Plan* (EDAW 2006) (hereinafter, "Master Plan"). The vision of this Master Plan is to "create a vibrant and interactive waterfront experience for residents and visitors that reflects the spirit and uniqueness of Tampa."

The Master Plan documented the City's desire to ultimately connect the Riverwalk to Sparkman Wharf and the Florida Aquarium. At the time the Master Plan was developed, Tampa Port Authority security concerns limited the potential of completing this connection. Extending the Riverwalk east also was constrained by the existing Beneficial Drive Bridge. The Master Plan identified three potential options for extending the Riverwalk past the Beneficial Drive Bridge, which include (1) an under-bridge connection, (2) an over-bridge connection, and (3) an at-grade crossing. At the time, the City decided the under-bridge connection was the most desirable option (refer to **Figure 1-3**). Between November 2019 and February 2020, the City installed an at-grade mid-block crossing along Beneficial Drive consistent with the option documented in the Master Plan.

**Figure 1-3. Master Plan Alternatives at Beneficial Drive**




The *InVision Tampa City Center Plan* (City of Tampa 2012) serves as a comprehensive framework for guiding growth and redevelopment in Downtown Tampa and surrounding urban districts. A central element of the plan is the emphasis on reconnecting the City with its waterfront through public access, multimodal connectivity, and enhanced recreational spaces.

The Tampa Riverwalk is identified as a critical component of the City's public realm and urban mobility network, envisioned as a continuous, scenic, and publicly accessible corridor along the Hillsborough River and Garrison Channel. The plan positions the Riverwalk as the "spine" of the downtown waterfront experience, designed to link key destinations, including parks, museums, event venues, and commercial districts, while encouraging walkability, tourism, and community interaction.

Specifically, the *InVision Tampa City Center Plan* outlines the following priorities related to the Riverwalk:

- Extend and complete the Riverwalk as a continuous corridor from Tampa Heights to the Channel District and beyond.
- Enhance multimodal connections between neighborhoods, the waterfront, and cultural assets by integrating the Riverwalk with pedestrian, bicycle, and transit networks.
- Promote equitable access to the waterfront by prioritizing Americans with Disabilities Act (ADA)-compliant pathways and inclusive public spaces.
- Support economic development by activating the waterfront with mixed-use development, public art, and open space programming adjacent to the Riverwalk.

The plan's emphasis on connectivity, placemaking, and public access helped inform the project purpose and need of this feasibility study. Advancing this segment will help realize the vision articulated in the *InVision Tampa City Center Plan* and continue to strengthen the Riverwalk's role as a unifying and transformative public asset.



In addition, the *Tampa MOVES (Mobility, Opportunity, Vision, Equity, Safety)* (City of Tampa 2023) program strongly supports the Riverwalk Extension as a key piece of its long-term mobility and equity goals. This Citywide mobility plan aims to address strategic recommendations for improving mobility-related issues facing the City of Tampa. These recommendations include the following:

- Implement strategic transit projects.
- Focus on trails and greenways as transportation options.
- Adopt Vision Zero as a Citywide policy.
- Reinvent urban parking and mobility.
- Enhance neighborhood engagement.


The *Tampa Community Redevelopment Agency Annual Report* (Tampa CRA 2024) also includes close coordination with City of Tampa staff to manage projects, programs, and future plans for the City. The Tampa CRA's vision states "Tampa CRA champions a future where vibrant neighborhoods and businesses flourish through proactive preservation and redevelopment efforts that strengthen communities in an equitable, diverse, and sustainable way" (Tampa CRA 2024).

The Riverwalk Extension study area is located within the Channel District CRA, which was established in 2004 as part of a larger effort to foster the redevelopment of Tampa's urban center. The Channel District has since grown into a lively, urban mixed-use neighborhood. The Channel District CRA, which is supporting the Riverwalk Extension project, outlines its vision for this region of Downtown Tampa in its *Channel District Community Redevelopment Plan* (City of Tampa n.d.b.). The plan includes goals and objectives that support the expansion of bicycle and pedestrian connectivity and specifically highlight the importance of improving these connections to the City's waterfront.

## 1.4 Purpose of Study

The primary purpose of this study is to determine the engineering and environmental feasibility of extending the Riverwalk to Sparkman Wharf and other significant destinations east of Beneficial Drive. This study focuses on evaluating multiple conceptual design alternatives for the feasibility of constructing a multiuse shared-use path under the Beneficial Drive Bridge. By creating a continuous, accessible pedestrian and bicycle route, the project aims to improve overall mobility for residents, workers, and visitors, while promoting a healthier, more active lifestyle. Ultimately, this feasibility study supports Tampa's broader goals of expanding equitable access to the waterfront, bolstering connectivity, and fostering a more livable and engaging urban environment. It is essential that the development of this study fully integrates the vision and goals outlined by both the CRA and the City to ensure that the recommended alternative is reflective of them.

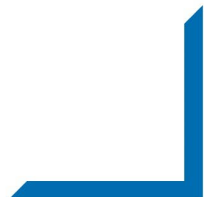




# SECTION 2



## Stakeholder Coordination



## 2. Stakeholder Coordination

### 2.1 Stakeholders

Effective coordination with stakeholders was a critical component throughout the study. This process involved continuous engagement with all interested parties, including individuals, community groups, business owners, and government organizations. Communication with the following stakeholders took place throughout the study:


- Strategic Property Partners (SPP)
- Port Tampa Bay
- City of Tampa Parks and Recreation Division
- Yacht Starship
- City of Tampa Parking Division
- Port Cruise Ship Terminal
- Tampa Water Taxi Company
- U.S. Coast Guard (USCG)
- U.S. Army Corps of Engineers (USACE)
- Channel District Community Advisory Committee (CAC)
- Downtown CRA CAC
- Other community groups
- Southwest Florida Water Management District (SWFWMD)
- Florida Department of Environmental Protection (FDEP)

### 2.2 Record of Meetings

Coordination meetings with stakeholders were conducted throughout the study to obtain input regarding the evaluation of the project alternatives, local knowledge, and issues and concerns. **Table 2-1** lists stakeholder coordination meetings held during the study.

**Table 2-1. List of Stakeholder Meetings**

Meeting Date	Agency/Stakeholder Name	Meeting Topic
7/26/2024	City of Tampa staff, Tampa CRA staff	Kickoff meeting
8/16/2024	City of Tampa staff, Tampa CRA staff	Walking tour/site visit
9/20/2024	Tampa CRA, City of Tampa Parks and Recreation	Project updates regarding Riverwalk long-term vision and goals, environmental impacts, funding and next steps
9/24/2024	SPP Real Estate	Project updates, redevelopment plans, safety measures and access, and next steps
10/2/2024	City of Tampa Parks and Recreation	Project updates and next steps
10/3/2024	Port Tampa Bay, Tampa Port Authority	Project updates, future plans, potential permitting needs, and next steps
11/5/2024	Yacht Starship	Project updates, access, wayfinding, safety, and next steps



Meeting Date	Agency/Stakeholder Name	Meeting Topic
11/5/2024	City of Tampa Sustainability Resilience Officer	Project updates, opportunities for landscape architecture, lighting, and other enhancements, kayak access, potential partners for educational outreach, and next steps
11/6/2024	CRA Channel District CAC Presentation	Presentation
12/02/2024	SWFWMD	Project updates and next steps, determined conservation easement amendment is required
12/05/2024	City of Tampa Parking Division	Project updates and next steps, parking operations discussion
1/7/2025	CRA Downtown District CAC	Presentation
1/17/2025	Tampa Downtown Partnership	Project updates and next steps
1/31/2025	SPP Real Estate	Project updates and next steps
2/25/2025	City of Tampa Parks and Recreation	Project updates and next steps
2/25/2025	SWFWMD	Project updates and next steps
2/21/2025	Executive Director of Friends of the Riverwalk	Project updates and next steps
2/25/2025	Tampa CRA Director	Project updates and next steps
2/25/2025	CRA Staff, City of Tampa Parks and Recreation	Project updates and next steps
3/14/2025	SWFWMD	Project Overview, Permit Requirements
5/01/2025	City of Tampa Parks and Recreation	Project updates and next steps, discussion on Alternatives 1A and 1B
7/31/2025	USACE	Project Overview, Proposed Alternatives, Permit Requirements
10/2/2025	City of Tampa	Concept refinement
11/4/2025	CRA Downtown District CAC	Presentation
11/5/2025	CRA Channel District CAC	Presentation

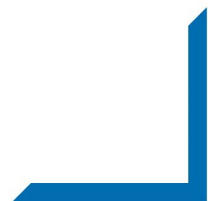




# SECTION 3



## Existing Conditions



## 3. Existing Conditions

The existing conditions assessment included a desktop review and site visit for the proposed 400-foot extension of the pedestrian path under the Beneficial Drive Bridge to connect the existing Riverwalk to Sparkman Wharf. The reviews covered the social aspects, cultural resources, and the natural and physical environments.

The proposed project area consists of mostly urban land development, roadways, and brackish tidal-influenced areas connected to Hillsborough Bay. The environmental analysis identifies existing environmental features of potential concern within the project area. Resources used to identify natural, social, cultural, and physical environmental issues included the following:

- Geographic information systems (GIS) review of natural, social, cultural, and physical environmental issues using the Florida Department of Transportation (FDOT) Environmental Screening Tool (EST) (FDOT 2024)
- Review of aeriels using GIS and Google Earth Pro
- U.S. Census Bureau 2018-2022 American Community Survey (ACS) (ACS 2022)
- Florida Geographic Data Library (FGDL) (FGDL 2024)
- City of Tampa GeoHub (City of Tampa 2024)
- Hillsborough County Property Appraiser (Hillsborough County 2024b)

### 3.1 Existing Roadway and Riverwalk Characteristics

#### 3.1.1 Beneficial Drive

Beneficial Drive, between Beneficial Drive Bridge and Channelside Drive, is primarily a four-lane undivided roadway with 11- to 12-foot-wide travel lanes. The roadway is divided by a 5-foot-wide raised concrete traffic separator. Between Beneficial Drive Bridge and the Tampa Bay History Center, 5-foot-wide sidewalks abut both sides of Beneficial Drive. North of the Tampa Bay History Center, a 5-foot-wide sidewalk continues along the east side of Beneficial Drive.

Approximately 130 feet north of the Beneficial Drive Bridge is a raised at-grade pedestrian crossing that allows Riverwalk users to cross Beneficial Drive. The crossing includes advanced pavement markings and signage and a pedestrian-activated rapid rectangular flashing beacon (RRFB).

#### 3.1.2 Beneficial Drive Bridge

Beneficial Drive Bridge (Bridge No. 105628) was constructed in 1984 and is one of two bridges connecting Harbour Island to the greater Downtown Tampa area. Based on FDOT's latest bridge inventory data, the bridge was last inspected on February 13, 2025, and has a condition rating of "good" (FDOT 2025a).

The existing dimensions of the bridge were determined using a combination of desktop review, field observations, and a review of the bridge's as-built plans. The existing bridge length is approximately 526 feet with seven spans. It has four 10-foot-wide travel lanes (two in each direction), a 4-foot-wide raised concrete median, 6-foot-wide buffered bike lanes, and raised concrete sidewalks. The sidewalks along the northbound travel lanes (east side of the bridge) are 4 feet wide, while the sidewalks in the southbound direction (west side of the bridge) are 5 feet wide.

From south to north, the first two span lengths are approximately 95 feet. The third span is slightly longer at 96 feet, and the remaining four spans are each 60 feet in length. The seven spans are supported by six piers (or concrete piles). It should be noted that Pier 4, between Spans 4 and 5, is a bent pier with a dual column.

A preliminary bridge elevation survey conducted in September 2024 found vertical clearance between the water surface and the underside of the bridge spans ranged from 12.89 to 10.77 feet on the west side, and from 9.03 to 6.62 feet on the east side. The lower elevations on the east side are attributed to the bridge's superelevation, which results in a downward slope toward that side.

### 3.1.3 Tampa Riverwalk



The Tampa Riverwalk is a multiuse path in Downtown Tampa that extends 2.6 miles along the eastern edge of the Hillsborough River. It stretches from Armature Works in the Tampa Heights District to Tampa Bay History Center in the Channelside area and connects a variety of museums, shops, restaurants, and parks. The Riverwalk also offers access to water-based attractions such as water bikes and water taxis (City of Tampa n.d.a.).

The trail surface is paved brick, concrete, or asphalt with edge barriers and railings. It is typically 15 feet wide, with some variation along its length. The

Riverwalk includes furnishings and amenities such as benches, lighting, bike racks, water fountains, and trash bins (EDAW 2006). Within the project area, the Riverwalk extends along the south and east sides of the Tampa Bay History Center before terminating on the south side of Channelside Drive.

### 3.1.4 Right-of-Way

Based on the desktop review, the existing right-of-way width along Beneficial Drive, from the north end of the Beneficial Drive Bridge to Channelside Drive, ranges between approximately 125 feet and 150 feet.

### 3.1.5 Traffic Volumes

According to FDOT Traffic Online, the average annual daily traffic along Beneficial Drive has increased 20% between 2020 and 2024, from 5,000 to 6,000 vehicles per day (FDOT 2025b).

## 3.2 Crash Data

The most recent five years of vehicle crash data (2019 to 2023) from Signal 4 Analytics was collected and reviewed for the project area, which includes Beneficial Drive from the Beneficial Drive Bridge to the Channelside Drive and Beneficial Drive intersection (Signal 4 Analytics 2024). A preliminary review of the data indicates there were a total of 40 crashes and 5 injuries. One of the 5 injuries was considered a non-serious injury, while the remaining 4 crashes were considered possible injury crashes. Of the 40 crashes, 26 were documented as being intersection related. There were no reported severe crashes, serious injuries, or fatalities.

Three crashes involving bicyclists were documented during this period. Of those three bicycle-related crashes, one was documented as resulting in a non-serious injury, one was documented as a possible injury, and one was documented as no injury. Two of the three bicycle-related crashes occurred at the intersection of Beneficial Drive and Channelside Drive. The one remaining bicycle-related crash occurred at the crosswalk along the Tampa Riverwalk between the Tampa Bay History Center and the Heron Apartments when a vehicle was turning right into the parking garage. **Table 3-1** summarizes the total crashes by year and severity, **Table 3-2** summarizes the crashes by crash type and severity, and **Figure 3-1** provides a map of the incident locations.



**Table 3-1. Total Crashes by Year and Severity (2019 to 2023)**

Year	Total Crashes	Percent of Total Crashes	Injury-Related Crashes	Percent of Injury-Related Crashes	Severe Crashes	Percent of Severe Crashes
2019	13	32.50%	0	0.00%	0	0.00%
2020	7	17.50%	0	0.00%	0	0.00%
2021	7	17.50%	0	0.00%	0	0.00%
2022	6	15.00%	0	0.00%	0	0.00%
2023	7	17.50%	1	100.00%	0	0.00%
Total	40	100.00%	1	100.00%	0	0.00%

**Table 3-2. Total Crashes by Type and Severity (2019 to 2023)**

Crash Type	Total Crashes	Percent of Total Crashes	Injury-Related Crashes	Percent of Injury-Related Crashes	Severe Crashes	Percent of Severe Crashes
Left Turn	4	10.00%	0	0.00%	0	0.00%
Rear End	12	30.00%	0	0.00%	0	0.00%
Unknown	1	2.50%	0	0.00%	0	0.00%
Pedestrian	0	0.00%	0	0.00%	0	0.00%
Bicycle	3	7.50%	1	100.00%	0	0.00%
Sideswipe	8	20.00%	0	0.00%	0	0.00%
Other	5	12.50%	0	0.00%	0	0.00%
Angle	4	10.00%	0	0.00%	0	0.00%
Head On	1	2.50%	0	0.00%	0	0.00%
Off Road	2	5.00%	0	0.00%	0	0.00%
Total	40	100.00%	1	100.00%	0	0.00%

Figure 3-1. Incident Location Map



### 3.3 Social Environment

The sociocultural environment includes the social (human) and cultural environment. Land use, community facilities, socioeconomic characteristics, parks and recreation areas, and archaeological and historical resources are included.

#### 3.3.1 Land Use

##### 3.3.1.1 Existing Land Use

A review of the existing land use within and adjacent to the project area was completed using the parcel information from the Hillsborough County Property Appraiser (Hillsborough County 2024b). According to the parcel data, the project area primarily consists of Riverwalk pedestrian use while the adjacent areas involve multifamily residential, public, and commercial land uses.

It is important to note there is a conservation easement (CE) in effect since 2003 along certain portions of the shoreline west of the Beneficial Drive Bridge. The CE, between the Florida Communities Trust and the City of Tampa, was created for the conservation, protection, and enhancement of natural and historical resources and for public outdoor recreation compatible with the original goal. The CE limits use of the area to specific activities and ensures the future land use designation remains dedicated to open space, conservation, or outdoor recreation. Impacts to, or change of use within, the CE's defined boundaries are likely prohibited without an amendment.

##### 3.3.1.2 Future Land Use

The City of Tampa's Future Land Use Map (Hillsborough County 2024a) indicates that the project area is anticipated to consist of regional mixed-use, public/semi-public, and central business district land uses. The Garrison Parking Lot is owned by the Tampa Port Authority and leased to SPP, which subleases to a parking operator. This site is expected to be developed into a mixed-use residential/retail site in the coming years.

#### 3.3.2 Community Focal Points

Social resources were identified using the FDOT EST, City of Tampa GeoHub, and aerial imagery. Social resources within and adjacent to the study area are summarized in **Table 3-3** and include recreational areas and parks, transportation resources, cultural resources, and other community resources.



**Table 3-3. Social Resources**

Name	Location
<b>Recreational Areas and Parks</b>	
Cotanchobee Fort Brooke Park	801 Water Street, Tampa, FL 33602
Tampa Riverwalk	West side of Beneficial Drive
Davis Island Paddling Trail	Garrison Channel
<b>Transportation Resources</b>	
Cotanchobee Fort Brooke Park – Museum Boat Slips	801 Water Street, Tampa, FL 33602
Yacht Starship Cruises and Events Marina	603 Channelside Drive, Tampa, FL 33602
TECO Streetcar Line	North of the Garrison Parking Lot and along Channelside Drive
Amalie Arena TECO Streetcar Station	Southeast corner of intersection – Beneficial Drive and Channelside Drive
Micromobility Staging Location	Southeast corner of intersection – Beneficial Drive and Channelside Drive
Port Tampa Bay – Cruise Terminal 2	615 Channelside Drive, Tampa, FL 33602
<b>Cultural Centers</b>	
Tampa Bay History Center	801 Water Street, Tampa, FL 33602
<b>Major Attractors/Mixed-Use</b>	
Amalie Arena	401 Channelside Drive, Tampa, FL 33602
Channelside Bay Plaza	615 South Channelside Drive, Tampa, FL 33602
Sparkman Wharf	615 Channelside Drive, Tampa, FL 33602
The Florida Aquarium	701 Channelside Drive, Tampa, FL 33602

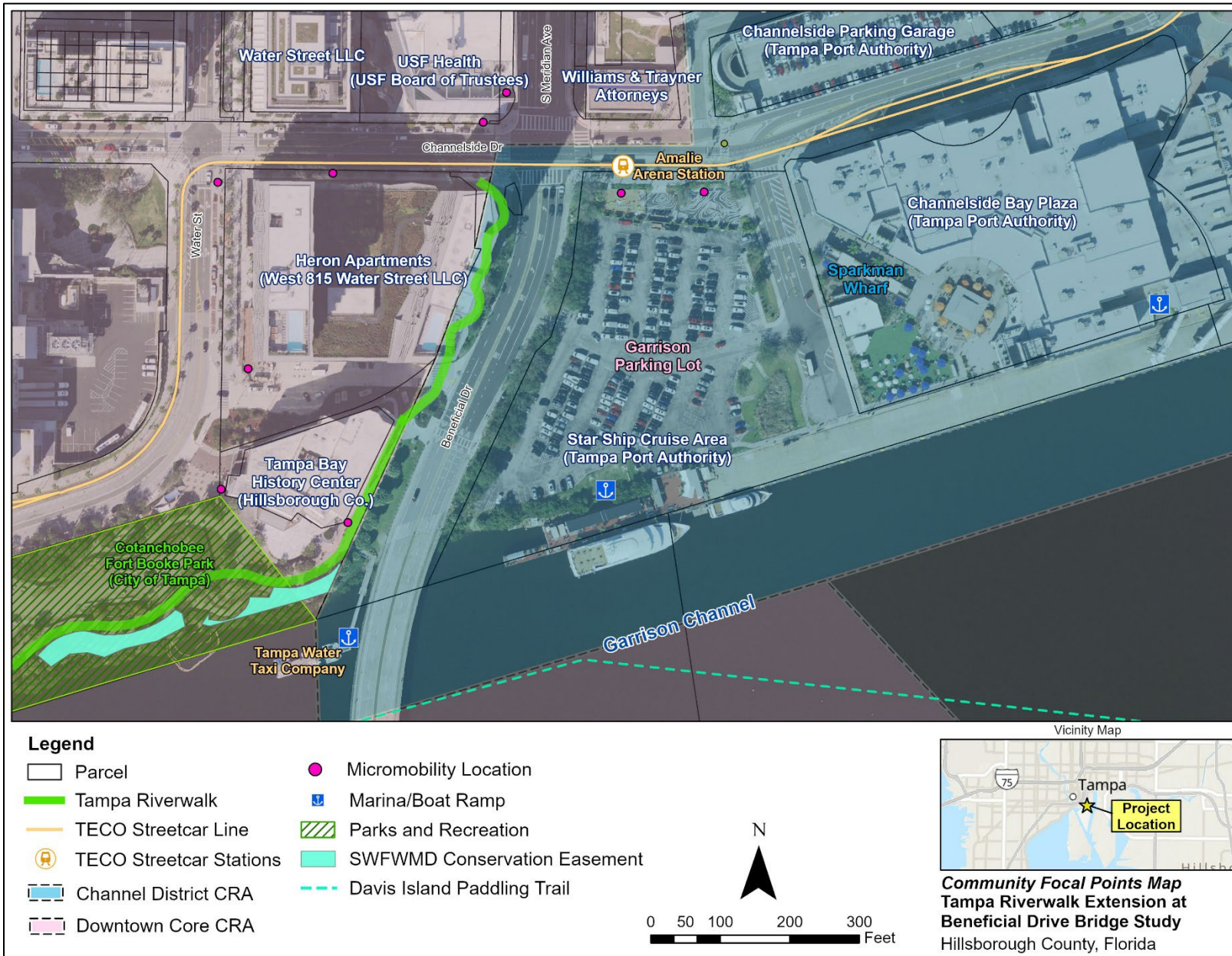
The project area is also located within the Channel District CRA and is adjacent to the Downtown CRA. **Figure 3-2** presents the map of community focal points within and adjacent to the project area.

### 3.3.3 Socioeconomic Characteristics

Demographic information was obtained from the U.S. Census Bureau 2018 to 2022 ACS 5-Year Estimates (ACS 2022). Two census blocks are within or adjacent to the project area. **Table 3-4** summarizes the project area demographics and compares them to the overall demographics of the City of Tampa and Hillsborough County. Demographic information indicates that both census block groups in the project area may contain minority, limited-English-speaking, below poverty level, youth, and disabled populations at percentages lower than the average for the City of Tampa and Hillsborough County. One census block group may contain a higher percentage of population over age 65 when compared to the City of Tampa and Hillsborough County.

When compared to the City of Tampa and Hillsborough County, the project area may contain a higher percentage of households with no vehicle, reinforcing the need for bicycle and pedestrian improvements. The two census block groups also may contain populations with higher median household income when compared to the City of Tampa and Hillsborough County.

Figure 3-2. Community Focal Points Map



**Table 3-4. Demographics**

Census Tract	Block Group	Area (acres)	Total Population	Density (persons/acre)	Median Household Income	% Minority <sup>[a]</sup>	% Households with No Vehicle	% Age 65 and Older	% Below Poverty Level <sup>[b]</sup>	% Limited English <sup>[c]</sup>	% Youth <sup>[d]</sup>	% Disabled
5101	2	351	1,297	3.70	\$127,039	21.97	13.05	4.78	8.76	0	1.00	3.78
5301	1	130	1,159	8.94	\$129,495	24.07	4.94	14.93	8.02	4.31	0.60	1.64
City of Tampa		134,479	468,014	3.48	\$83,582	57.33	3.25	12.76	16.14	6.10	15.28	5.86
Hillsborough County		804,056	1,468,560	1.83	\$80,969	53.73	2.25	14.61	13.44	6.08	16.03	5.75

<sup>[a]</sup> Minority refers to the percentage of population that is non-white.

<sup>[b]</sup> Poverty refers to the percentage of the population of whom poverty status is determined.

<sup>[c]</sup> Limited English refers to the percentage of households with limited English-speaking status.

<sup>[d]</sup> Youth refers to the percentage of the population under 18 years of age in households.

Shading = percentage is at or above the City of Tampa or Hillsborough County average percentage for that demographic.



## 3.4 Cultural Resources

### 3.4.1 Recreational and Protected Lands

The FDOT EST and other desktop-accessible information was used to identify recreational and protected lands within the project area. Results are summarized as follows:

- Cotanchobee Fort Brooke Park – Museum Boat Slips
- Yacht Starship Cruises and Events Marina
- Port Tampa Bay – Cruise Terminal 2
- Cotanchobee Fort Brooke Park
- Tampa Riverwalk
- Tampa Bay History Center
- The Florida Aquarium
- Amalie Arena
- Davis Island Paddling Trail (Office of Greenways and Trails paddling trails opportunity)

Although the data shown in the FDOT EST include the Channelside Cinema and IMAX as an existing cultural resource, the cinema was closed and replaced prior to 2017 (Danielson 2017).

### 3.4.2 Historical and Archaeological Resources

A review of the FDOT EST was used to identify potential archaeological and historic resources. The project area does not contain any historic structures or State Historic Preservation Office (SHPO) resource groups. However, one historic standing structure (Williams & Trayner, Law Offices; site ID HI03091) is adjacent to the project area on the north side of Channelside Drive. This historic structure has not been evaluated by SHPO. Additionally, the EST shows one state historic bridge (Seddon Island Scherzer Rolling Lift; Site ID HI01049) west of the existing Beneficial Drive Bridge within the Garrison Channel. According to the Florida State Archives, the bridge was constructed in 1908 and provided railroad and vehicular access to the island but was removed in 1984 (Florida State Archives 1984). No additional structures built after 1970 were identified within or adjacent to the project area. Note that the City of Tampa is a National Historic Preservation Act Florida Certified Local Government.

## 3.5 Natural Environment

### 3.5.1 Soil and Topography

Elevation in the vicinity of the proposed project area ranges from approximately 0 to 200 feet (North American Vertical Datum of 1983). The proposed project area is a flat, intercoastal area surrounded by water, roadways, and high-rise structures. Before the housing site development, the topography comprised marshes and intercoastal swamps. According to the Natural Resources Conservation Service's soil survey (USDA NRCS 2024), one soil type map unit is in the proposed project area: Urban land (Appendix B). A brief description of the soil type within the proposed project area follows, including the soil name and its map unit identification number in parentheses:

- Urban land, 0 to 2 percent slopes (56): This component is on flatwoods on marine terraces.

## 3.5.2 Habitats

The site survey characterized land uses, including developed and natural upland and aquatic habitats, within the vicinity of the proposed project area. Appendix C contains the photograph log of the areas observed within and adjacent to the project area.

### 3.5.2.1 Upland Habitats

**Table 3-5** summarizes the various habitat and land covers mapped by the SWFWMD in accordance with the Florida Land Use, Cover and Forms Classification System (FLUCCS) within and adjacent to the project area. According to the SWFWMD FLUCCS, the survey areas within the vicinity of the proposed project area contain two upland community types: Commercial & Services and Transportation.

**Table 3-5. Florida Land Use Cover Classification System**

FLUCCS Code	Habitat Description
Commercial & Services	The 1400 class is reserved for commercial and services areas that are predominantly associated with the distribution of products and services. This category usually includes many individual types of commercial land uses.
Transportation	The 8100 class is reserved for transportation areas/facilities used for the movement of people or goods. This category typically is associated with roads, rail, and ports.

Source: SWFWMD 2021

Upland plant species within and immediately adjacent to the proposed project area typically included the ornamental landscaping plants Brazilian peppertree (*Schinus terebinthifolia*), oak tree (*Quercus* sp.), sabal palm (*Sabal palmetto*), and saw palmetto (*Serenoa repens*). These upland habitats are mostly public-use areas owned and maintained by the City.

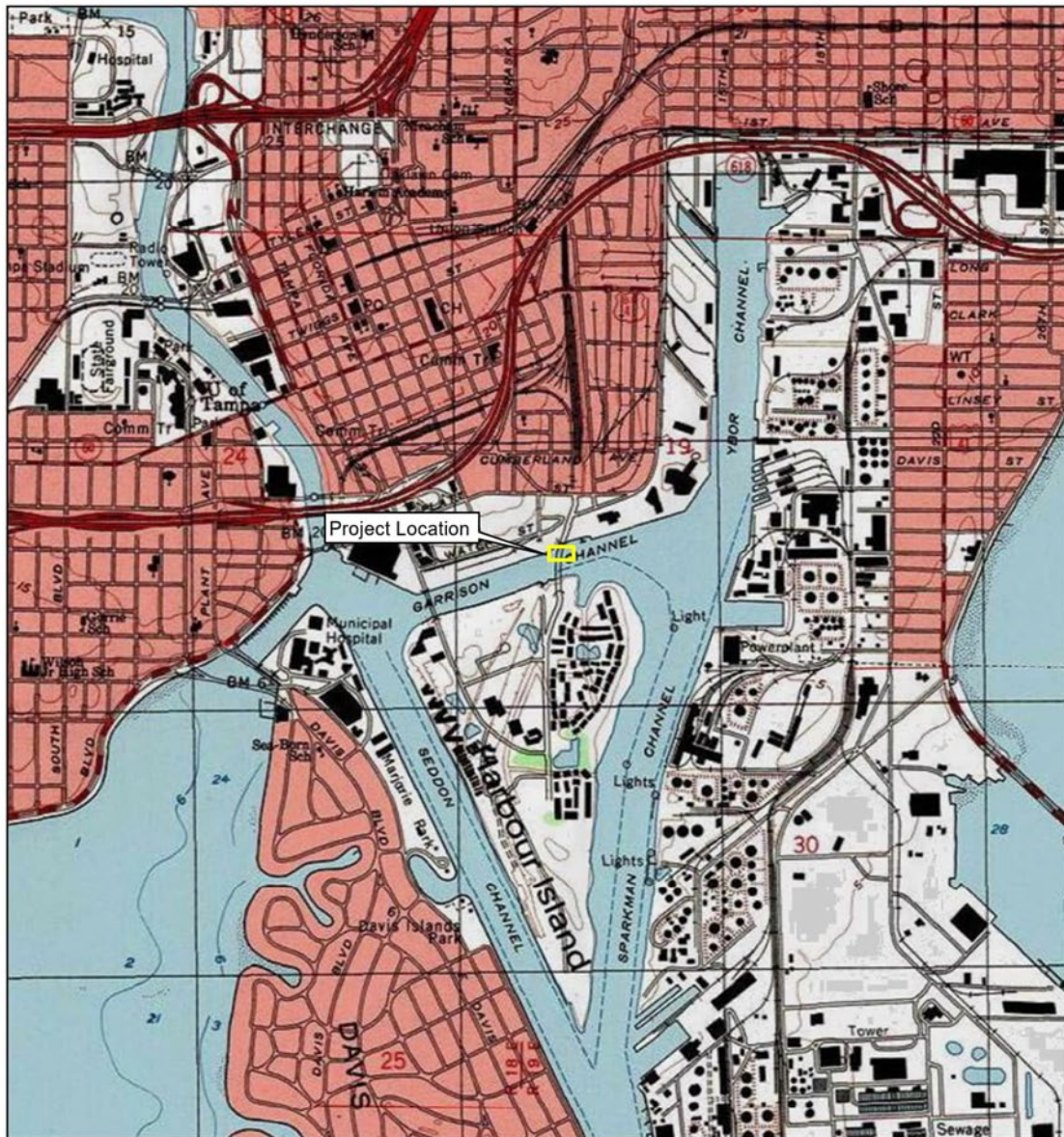
### 3.5.2.2 Wetland and Surface Water Habitats

Tidally influenced wetlands and surface waters are present within the project area. According to the U.S. Geological Survey (USGS) 1942 topographic map, the proposed project area is not significantly different from the 2019 topographic map (**Figure 3-3**) and existing conditions (USGS 2024). The wetland boundaries will need to be determined by the ordinary high-water mark of Garrison Channel. The wetland jurisdictional boundaries would be based on FDEP Rule Chapter 62-331, *Florida Administrative Code* (F.A.C.), as ratified in Section 373.4211, Florida Statutes, for the estimated landward extent of state jurisdictional wetlands or other surface waters.

Wetlands and surface waters within the proposed project area have been previously disturbed to some degree through clearing, construction, vegetative planting, dredging, hydrologic alterations, or invasive exotic plant species encroachment.

The natural resources map (**Figure 3-4**) provides an overview of the habitat types and approximate locations. The project area is hydrologically connected to Hillsborough Bay and has a marine intertidal and subtidal likely unconsolidated bottom. Dominant vegetation includes a mixed mangrove fringe consisting of white mangroves (*Laguncularia racemosa*), black mangroves (*Avicennia germinans*), and red mangroves (*Rhizophora mangle*) ranging from approximately 10 to 25 feet tall (**Figure 3-5** and **Figure 3-6**). Other vegetation present in the intertidal zone consisted of buttonwood (*Conocarpus erectus*), railroad vine (*Ipomoea pes-caprae*), and seagrape (*Coccoloba uvifera*). The remaining area was open water with no apparent visual signs of submerged vegetation.

Figure 3-3. USGS Topographic Map



### Legend

Approximate Project Location

#### Notes:

1. Area of interest subject to change.
- 2.
- 3.

0 0.3 0.6 0.9 1.2 Miles



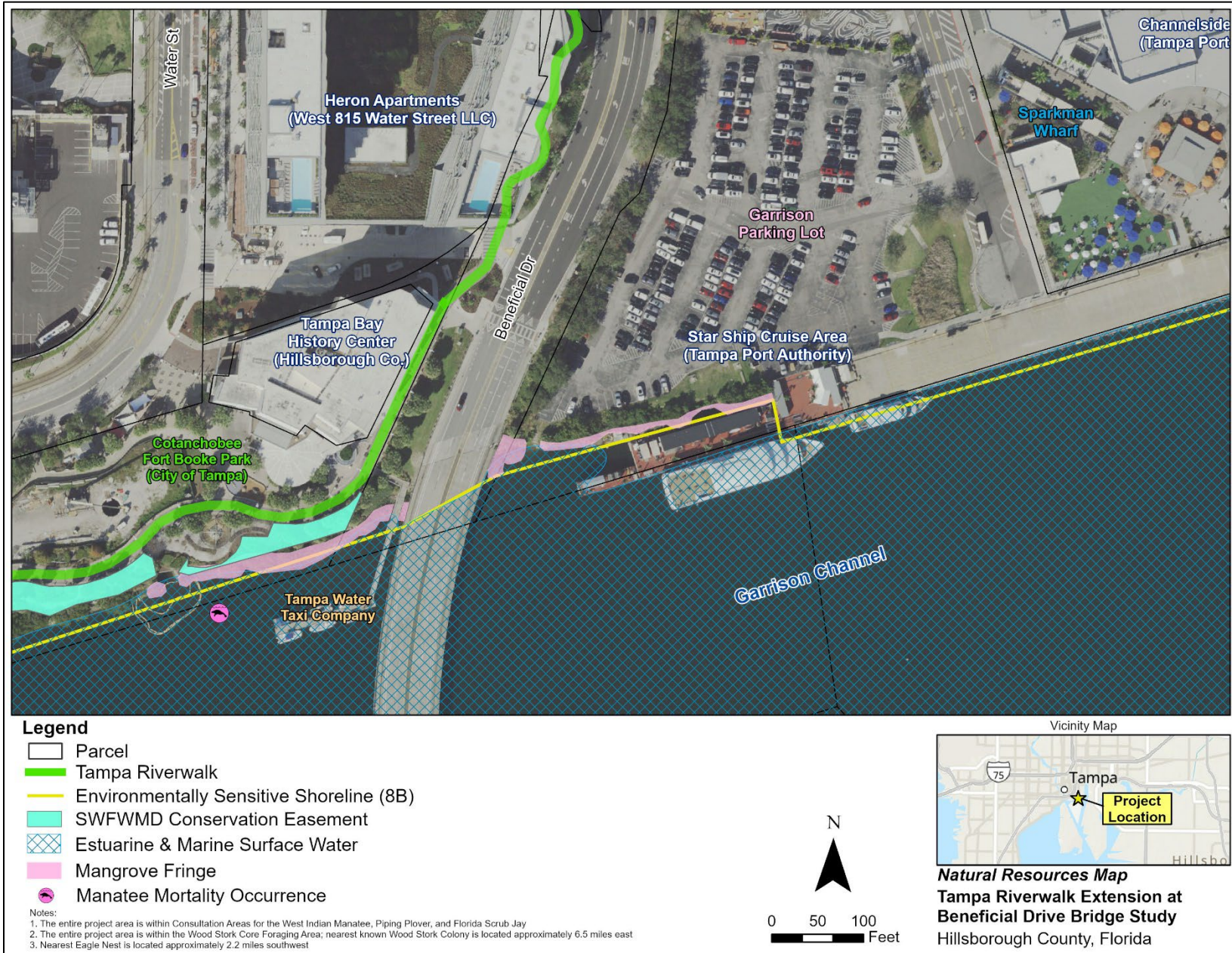
**Project Location 7.5 USGS Topographic Map**  
Tampa Riverwalk Extension Feasibility Report  
Hillsborough County, Florida

**Jacobs**

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Figure 3-4. Natural Resources Map





**Figure 3-5. View from the West Side of Beneficial Drive Bridge**



**Figure 3-6. View from the East Side of Beneficial Drive Bridge**



### 3.5.3 Wetland and Surface Water Regulatory Jurisdiction and Functional Assessment

All wetlands and surface waters within the proposed project area are considered federal and state jurisdictional features. They are regulated under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act and are administered by federal laws. These features are considered federal jurisdictional features because they meet the definition of a wetland and have a continuous surface connection with waters of the United States. The state's Environmental Resource Permit (ERP) Program is responsible for overseeing the permitting of any project proposing dredge or fill activities within state jurisdictional waters. The project area's features identified also are considered state jurisdictional features because they meet the state's definition of wetlands and surface waters under Section 373.019(25), Florida Statutes, and Subsection 62-340.200(19), F.A.C. (FDEP 2021), and would be regulated under the state's ERP Program.

### 3.5.4 Listed Species

A literature review and field site surveys were conducted to determine the potential presence of federally and state-listed species within the vicinity of the proposed project area. The following sections provide the results of these reviews and surveys.

An online search of the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) (Appendix D) database and the Florida Natural Areas Inventory (FNAI) (Appendix E) was conducted to determine the presence of federally listed and state-listed species and critical habitat potentially occurring within and adjacent to the project vicinity before conducting field site surveys. The list included federally endangered, threatened, and candidate species or state-listed species. **Table 3-6** summarizes the list obtained from the IPaC database search.

**Table 3-6. Federally Listed Threatened and Endangered Species Potentially Found Near the Proposed Project Area**

Species Type	Common Name	Scientific Name	Habitat	Status
Mammal	West Indian manatee	<i>Trichechus manatus latirostris</i>	The West Indian manatee inhabits shallow, slow-moving waters of rivers, estuaries, saltwater bays, canals, and coastal areas, as well as freshwater, brackish water, and saltwater.	Threatened
Bird	Crested caracara	<i>Caracara plancus audubonii</i>	The southern crested caracara inhabits wet prairies with cabbage palms and may be found in wooded areas with saw palmetto, cypress, scrub oaks, and pastures.	Threatened
Bird	Eastern black rail	<i>Laterallus jamaicensis</i>	The eastern black rail inhabits tidally or nontidally influenced saltwater, brackish water, or freshwater marshes with dense cover and upland areas surrounding these marshes.	Threatened
Bird	Everglades snail kite	<i>Rostrhamus sociabilis plumbeus</i>	The Everglades snail kite inhabits freshwater marshes and the shallow vegetated edges of lakes where apple snails can be found.	Endangered
Bird	Rufa red knot	<i>Calidris canutus rufa</i>	The rufa red knot inhabits coastal marine and estuarine habitats with large areas of exposed intertidal sediments, as well as tidal flats in more sheltered bays and lagoons.	Threatened



Species Type	Common Name	Scientific Name	Habitat	Status
Bird	Whooping crane	<i>Grus americana</i>	The whooping crane habitat during migration and winter includes marshes, shallow lakes, lagoons, salt flats, grain and stubble fields, and barrier islands. Nesting occurs in dense emergent vegetation in shallow (often slightly alkaline) ponds, freshwater marshes, wet prairies, or along lake margins.	Experimental population
Bird	Wood stork	<i>Mycteria americana</i>	The wood stork's habitat consists of freshwater and brackish forested wetlands for breeding and wetlands, swamps, ponds, roadside ditches, and marshes, especially with an open canopy, for foraging.	Threatened
Reptile	American crocodile	<i>Crocodylus acutus</i>	The American crocodile inhabits coastal areas that are brackish and saltwater habitats, and can be found in ponds, coves, and creeks in mangrove swamps.	Threatened
Reptile	Eastern indigo snake	<i>Drymarchon corais couperi</i>	The Eastern indigo snake's habitat consists of xeric pine-oak sandhills, typically sharing burrows with the gopher tortoise.	Threatened
Reptile	Hawksbill sea turtle	<i>Eretmochelys imbricata</i>	The hawksbill sea turtle inhabits subtropical and temperate oceans. In Florida, it is primarily found in coral reefs, rocky areas, lagoons, and shallow coastal areas.	Endangered
Reptile	Leatherback sea turtle	<i>Dermochelys coriacea</i>	The leatherback sea turtle is found in Florida's coastal waters, nesting on sandy beaches.	Endangered
Insect	Monarch butterfly	<i>Danaus plexippus</i>	In general, breeding areas are virtually all patches of milkweed in North America and some other regions. The critical conservation feature for North American populations is the overwintering habitats, which are certain high-altitude Mexican conifer forests or coastal California conifer or eucalyptus groves. Coastal regions are important flyways, so nectar (wild or in gardens) is an important resource in such places.	Candidate

Source: USFWS 2024

Site surveys were conducted on September 4, 2024, in the vicinity of the proposed project area, including the Beneficial Drive Bridge, to assess the presence and absence of listed species and to assess the habitats known to be used by these species, as obtained from the online IPaC database. The proposed project area and its vicinity are heavily disturbed from development, dredging activities, and regular maintenance. No listed species were observed during the site surveys. These results are based on a cursory visual inspection and observation. Therefore, it will be vital to perform comprehensive surveys to confirm the presence or absence of certain species, including a bat survey and submerged aquatic vegetation survey. Based on the IPaC results, there is also potential for the West Indian manatee (*Trichechus manatus*), crested caracara (*Caracara planc audubonii*), Eastern black rail (*Laterallus*

*jamaicensis*), Everglade snail kite (*Rostrhamus sociabilis plumbeus*), rufa red knot (*Calidris canutus rufa*), whooping crane (*Grus americana*), and wood stork (*Mycteria americana*) to occur within the project area. A review of FDEP's Florida wood stork colony and foraging area online GIS sources shows the proposed project area is within a wood stork core foraging area. The nearest known wood stork colony is located approximately 6.5 miles to the east. The project area is within the piping plover (*Charadrius melodus*), Florida scrub jay (*Aphelocoma coerulescens*), and West Indian manatee (*Trichechus manatus*) USFWS consultation areas.

Birds protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act are also listed in the IPaC report for the proposed project area. No bald eagle nests were observed, nor are any nests known to be within the proposed project area. The nearest recorded bald eagle's nest is approximately 2.2 miles to the southwest of the proposed project area.

Because of the potential for the occurrence of federally listed species and essential habitats (mangroves) within the proposed project area, an informal consultation under Section 7 of the Endangered Species Act (ESA) and essential fish habitat (EFH) consultation will be conducted. This consultation should be coordinated with USFWS, National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS), and other regulatory agencies responsible for the issuance of Section 404 permits and ERPs. The permitting and commenting agencies will likely require the implementation of the following conditions during upland and in-water construction to protect listed species:

- Sea Turtle and Smalltooth Sawfish Construction Conditions (NMFS)
- Standard Manatee Conditions for In-Water Work (USFWS)
- Standard Protection Measures for the Eastern Indigo Snake (USFWS)

**Table 3-7** provides additional state, federal, or otherwise listed species that also will require consideration during design and construction.

**Table 3-7. Additional Species of Concern**

Species Type	Common Name	Scientific Name	Status
Mammal	Bottlenose dolphin	<i>Tursiops truncatus</i>	Marine Mammal Protection Act of 1972 (NOAA)
Bird	Bald eagle	<i>Haliaeetus leucocephalus</i>	Bald and Golden Eagle Protection Act (USFWS & FWCC)
Bird	Florida sandhill crane	<i>Antigone canadensis pretensis</i>	State Threatened
Bird	Migratory birds	Various species	Migratory Bird Treaty Act of 1918 (USFWS & FWCC)
Plant	White mangrove	<i>Laguncularia racemosa</i>	Mangrove Trimming and Preservation Act (FDEP)
Plant	Red mangrove	<i>Rhizophora mangle</i>	Mangrove Trimming and Preservation Act (FDEP)
Plant	Black mangrove	<i>Avicennia germinans</i>	Mangrove Trimming and Preservation Act (FDEP)

FWCC = Florida Fish and Wildlife Conservation Commission

### 3.5.5 Floodplain and Mean High Water

The Federal Emergency Management Agency Flood Insurance Rate Map for Hillsborough County (Map No. 12057C03554J), revised October 7, 2021, indicates the project area is within Zone AE of the 100-year floodplain and Zone X of the 500-year floodplain. The Hillsborough County flood zone definitions are as follows:

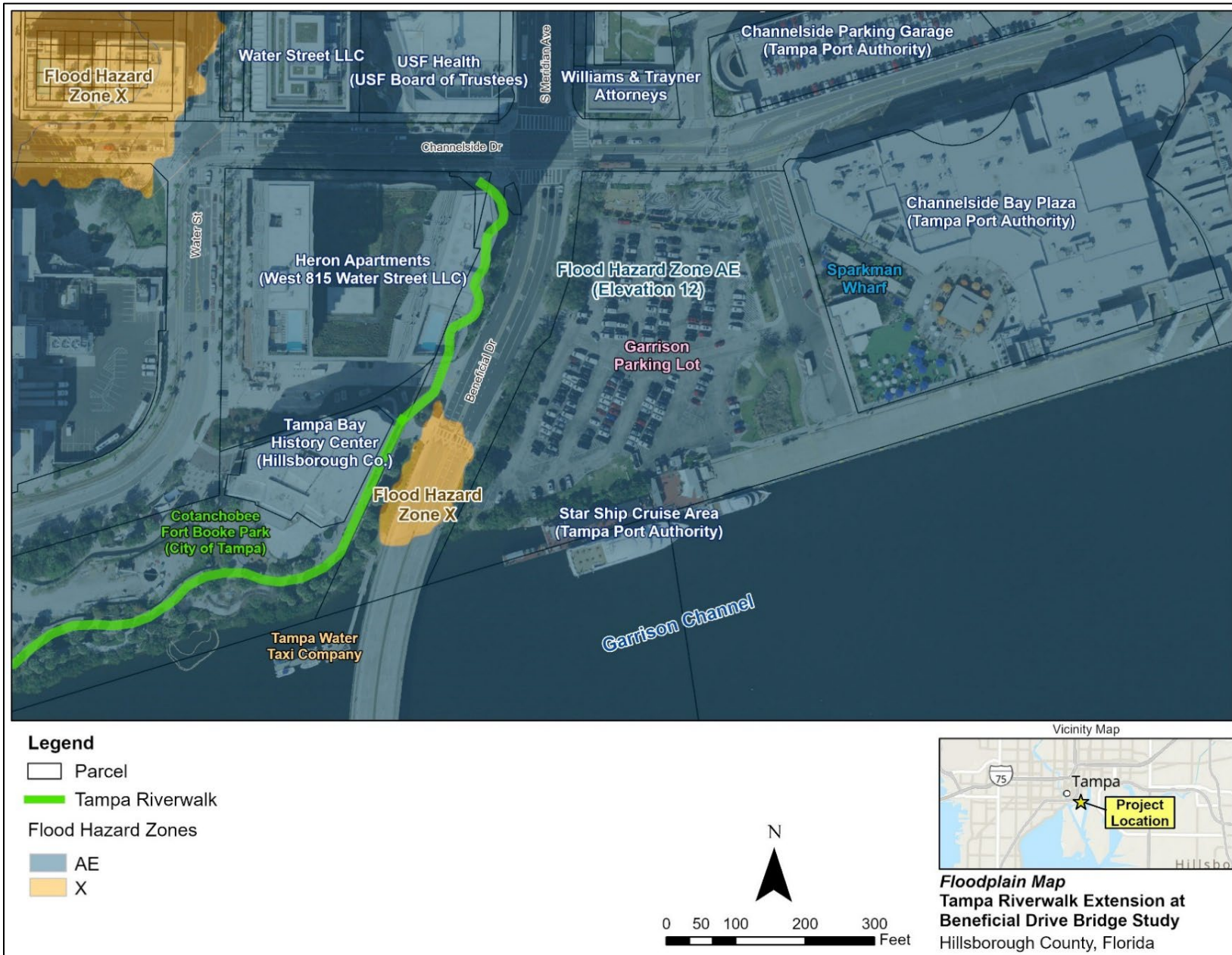
- ZONE AE: Areas subject to inundation by the 1-percent-annual-chance (100-year) flood event determined by detailed methods. Mandatory flood insurance purchase requirements and floodplain management standards apply.
- Zone X: A moderate flood hazard area and an area between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) flood. Mandatory flood insurance is not required.

**Figure 3-7** presents flood hazard areas within and surrounding the project area.

Based on the latest data from NOAA, the mean high-water level of the Garrison Channel is 0.84 foot and is based on the North American Vertical Datum of 1988 (NOAA 2025).



Figure 3-7. Flood Hazard Areas Map



## 3.6 Physical Environment

Physical resources evaluated for this study include contamination sites and utilities. Existing physical resources identified within the study area are documented in this section.

### 3.6.1 Contamination

A desktop review of the FDEP Contamination Locator Map (FDEP 2024) and the FDOT EST indicates that there are seven potential contamination sites within the project area. According to the data, all but one storage tank contamination monitoring site in the project area is closed. Additionally, the one National Pollutant Discharge Elimination System (NPDES) permit is listed as effective and is associated with Sparkman Wharf. The petroleum contamination monitoring site is listed as closed, but monitoring activities are still ongoing and associated monitoring wells are located within the Garrison Parking Lot. Note that some of the identified sources may overlap in categories. **Table 3-8** summarizes the results of the desktop review. **Figure 3-8** presents the approximate locations of the potential contamination sites in the project area.

**Table 3-8. Contamination Sites**

Contamination Site Type	Quantity	Facility Name	Status	Site Address
Petroleum Contamination Monitoring Site	1	Pate Stevedoring Site	Closed	651 Channelside Drive Tampa, FL 33602
Storage Tank Contamination Monitoring Site	4	Sun Oil	Closed	1021 E Ellamae Street Tampa, FL 33602
		Raybro Electric Supplies, Inc.	Closed	907 Ellamae Street Tampa, FL 33602
		Pate Stevedoring Site	Closed	651 Channelside Drive Tampa, FL 33602
		Tampa Bay History Center	Open	801 Old Water Street Tampa, FL 33602
Resource Conservation and Recovery Act Regulated Facility	1	Sunmark Petroleum Marketing Term	Nonactive	1021 Ellamae Avenue Tampa, FL 33602
NPDES Permit	1	Sparkman Wharf	Effective	615 Channelside Drive Tampa, FL 33602

### 3.6.2 Utilities

A desktop review of existing stormwater and sewer utilities within the project area was conducted using the City of Tampa's GeoHub (Tampa 2024). Major stormwater utilities within the project area include stormwater gravity mains, sewer gravity mains, stormwater inlets and stormwater/sewer manholes, and sewer pressurized mains.

Two stormwater gravity mains (54-inch diameter and 36-inch diameter) run parallel to Beneficial Drive, between Beneficial Drive and the Garrison Parking Lot. A 36-inch stormwater gravity main also exists along the west side of Beneficial Drive, beginning at Heron Apartments and extending south to the Garrison Channel. Two 24-inch-diameter sewer gravity mains cross Beneficial Drive approximately 225 feet south of Channelside Drive and extend approximately 215 feet east into the Garrison Parking Lot. Additionally, a 54-inch pressurized sewer main extends from the Cotanchobee Fort Brooke Park to the east, under the Beneficial Drive Bridge. However, data from the City shows this pressurized sewer main as being inactive. **Figure 3-9** presents the stormwater and sewer utilities within the project area.

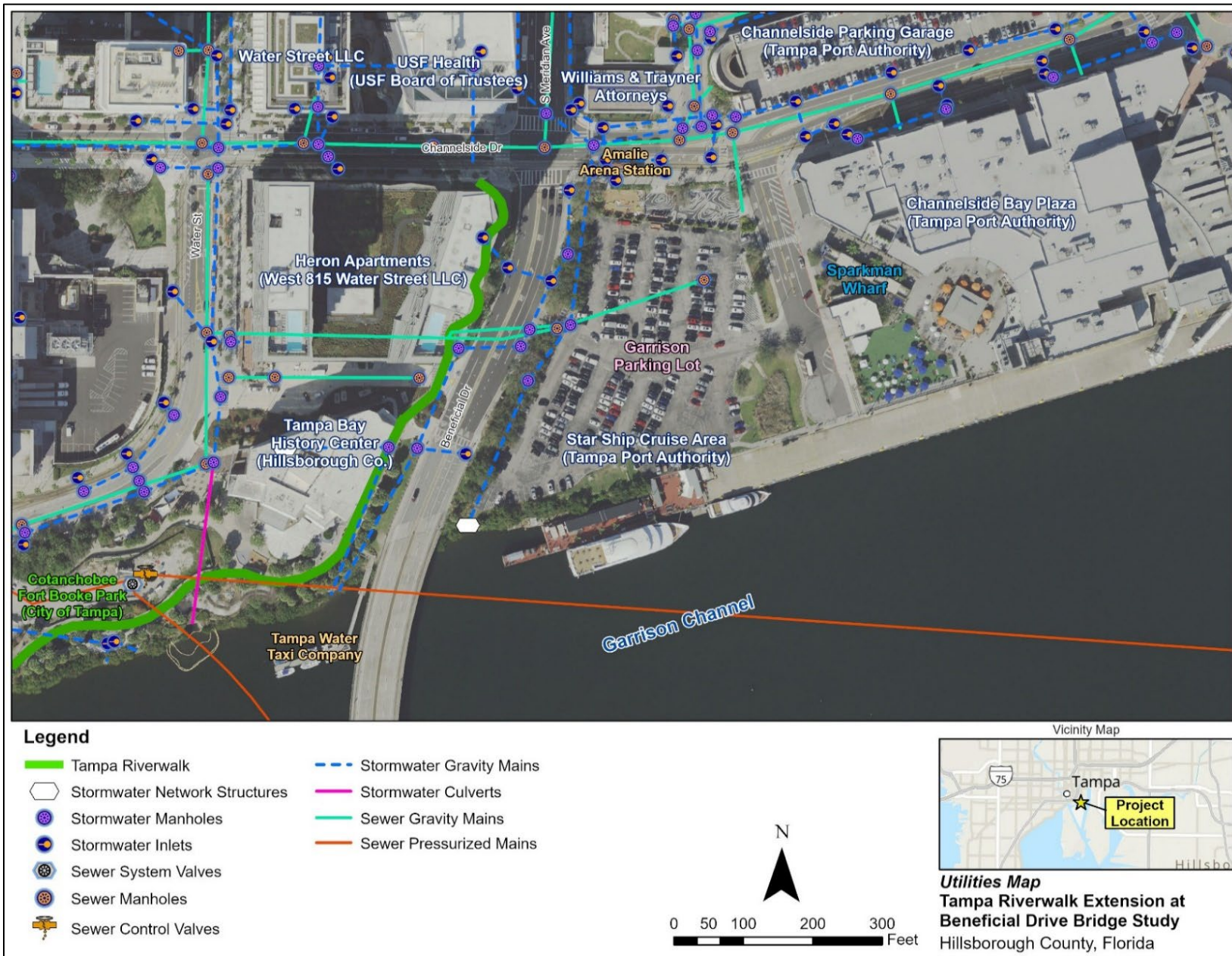


Figure 3-8. Contamination Sites Map






Figure 3-9. Stormwater and Sewer Utilities Map





A teal-tinted photograph of a cityscape. In the foreground, there are dense palm trees and other foliage. In the background, there are several tall, modern buildings, including a prominent one with a curved facade. A concrete bridge with a metal railing is visible on the right side of the image. The sky is overcast with grey clouds.

# SECTION 4

A decorative graphic consisting of a 4x4 grid of small white dots on a teal background.

## Project Development



## 4. Project Development

### 4.1 Design Considerations

Applicable criteria documents were reviewed to determine the controlling design criteria that would guide the development of preliminarily feasible alternatives. The *Manual of Uniform Minimal Standards for Design, Construction, and Maintenance for Streets and Highways* (Florida Greenbook, 2023 edition); the National Association of City Transportation Officials (NACTO) *Urban Bikeway Design Guide*, third edition (NACTO 2025); and the United States Department of Justice ADA Standards (2010) were reviewed. In addition, the City of Tampa Parks and Recreation Department's preferences were considered. The controlling design elements and minimum design values used to set a feasible alternative are summarized in **Table 4-1**. These considerations do not represent a comprehensive list of all criteria required if this project moves forward to design; however, they identify the primary design elements to set horizontal and vertical geometry for a feasible concept.

**Table 4-1. Design Considerations**

Design Element	Minimum Value
Vertical Clearance	7 feet, 6 inches (8 feet desirable)
Width	15 feet
Longitudinal Slope	5%

### 4.2 Initial Alternatives

Three initial alternatives were considered for this feasibility study and were consistent with alternatives considered as part of the Master Plan (EDAW 2006). The three initial alternatives considered include the following:

- (1) **No-Action Alternative (At-Grade Crossing)**: Maintain the at-grade crossing at Beneficial Drive and other related programmed improvements.
- (2) **Alternative 1 (Under-Bridge Crossing)**: A marine structure under Beneficial Drive Bridge.
- (3) **Alternative 2 (Over-Bridge Crossing)**: A grade-separated pedestrian bridge over Beneficial Drive (to be further evaluated if the Alternative 1 under-bridge crossing was determined not feasible).

The following sections describe these initial alternatives in more detail.

#### 4.2.1 No-Action Alternative (At-Grade Crossing)

The No-Action Alternative assumes the proposed project is not constructed and retains only the existing infrastructure along with any improvements already committed to in approved plans. Under this scenario, the existing at-grade crossing on Beneficial Drive would be maintained in place. As described in Section 3.1.1, the existing at-grade crossing, located approximately 130 feet north of the Beneficial Drive Bridge, features a raised crosswalk equipped with a pedestrian-activated RRFB, as shown on **Figure 4-1**.

An at-grade crossing option was documented in the Master Plan as one of the least desirable long-term options for the Riverwalk because of increased conflict points for pedestrians and bicyclists and from the vehicular traffic congestion that may result. The No-Action Alternative provides connectivity and avoids environmental impacts, but it does not improve connectivity, mobility, or access to the eastern waterfront and it does not maintain the identity of the Riverwalk. **Therefore, the No-Action Alternative does not meet all the objectives of the purpose and need of the project, but it remains a viable alternative throughout this study because it provides a baseline for comparison to the Build Alternatives and allows decision-makers to evaluate what would happen if the project were not implemented.**



Figure 4-1. Existing At-Grade Crossing along Beneficial Drive



#### 4.2.2 Alternative 1 (Under-Bridge Crossing) – Structural Considerations

Alternative 1 consists of extending the existing Riverwalk from west of Beneficial Drive, under the Beneficial Drive (Bridge No. 105628), then connecting back to the shoreline east of Beneficial Drive. The supporting structural components required to extend the Riverwalk under the Beneficial Drive Bridge was a key consideration. To achieve a desired connection under the bridge, three main structure types were evaluated, including a floating structure, a filled slope with riprap along the shoreline, and a fixed, pile-supported structure.

##### 4.2.2.1 Structural Options

A floating structure used to support the under-bridge connection would result in the quickest installation. However, this option is often more expensive than the other options considered because the materials and design are often proprietary in nature. Additionally, these floating structures require the use of underwater divers during installation, which is an additional expense when compared to other structure options.

The use of a filled slope with riprap along the shoreline to support the under-bridge connection is another feasible option but could result in the greatest impact to natural resources when compared to the other options. Given the presence of the existing SWFWMD CE, species habitat, and sensitive shoreline, this structural option could require extensive environmental mitigation. Additionally, the use of filled slope would require following an alignment that places the Riverwalk Extension closer to the shoreline.

A fixed, pile-supported structure may provide the most feasible structural option of those considered. Similar structure types have already been used in other sections of the Riverwalk, allowing for aesthetic and design continuity. This option may also provide the most cost-effective and proven construction method of the three options considered. It could result in minimal environmental impact to the river bottom and shoreline. Additionally, local contractors may have more construction experience with this type of structure, allowing for more competitive bidding and construction costs. ***Therefore, a fixed, pile-supported structure was used in developing Alternative 1.***

#### 4.2.2.2 Recommended Structural Option – Fixed Pile Supported Structure

The portion of this extension that goes under the existing bridge would consist of a durable precast concrete tub structure, providing a safe path for pedestrian traffic beneath the bridge. With a maximum span of 100 feet, the concrete tub would meet the required deflection criteria and ensure a watertight design with no cracking. This engineering approach would deliver both reliability and low maintenance over time. The tub structure could extend between 2 feet-10 inches and 3- feet-8 inches below the mean high water (MHW) line (depending on the alignment), with exterior walls rising approximately 3 feet above the MHW line to accommodate tidal fluctuations. The total exterior wall height would range from 6 feet to 6 feet-10 inches. The concrete tub would include built-in stormwater drains and pumps to remove any accumulated water after foul weather conditions.

To meet the required overhead clearance of 7 feet-6 inches, the structure could be located between either Piers 4 and Pier 5, or Pier 5 and Pier 6 of the existing Beneficial Drive Bridge (refer to Appendix A). Depending on the location of the alignment under the bridge, the new Riverwalk Extension would be located approximately 50 feet to 115 feet from the shoreline. Outside of the Beneficial Drive Bridge footprint, the Riverwalk structure would continue with approximately 25-foot spans to the landside connection points using precast concrete planks atop bents constructed of concrete pile caps secured to a steel pipe pile foundation. The structure then will be locked together with a cast-in-place concrete topping that can include thin-set pavers, stained or colored concrete, or other architectural features as desired. This alternative not only maintains visual and physical continuity along the waterfront, but it also ensures safe, uninterrupted passage beneath a major roadway, minimizing conflicts between pedestrians and vehicular traffic.

#### 4.2.3 Alternative 2 (Over-Bridge Crossing)

Alternative 2 consists of an overhead pedestrian bridge over Beneficial Drive. Alternative 2 would begin at the existing Riverwalk on the east side of Beneficial Drive, extend over Beneficial Drive, and connect back on the west side of Beneficial Drive.

To accommodate all users and meet ADA criteria, the maximum slope for ramps between the existing ground and the bridge is 1:12 (8.33%). A level landing is required for every 30-inch rise. This would result in a switchback system of ramps with a maximum length of 30 feet separated by level landings. Similar systems resulted in a ramp footprint of approximately 110 feet long and 34 feet wide on each side of the bridge. The pedestrian bridge would be required to meet minimum vertical clearance of 17 feet for vehicular traffic along Beneficial Drive. This elevation difference is exacerbated the farther south the pedestrian bridge is placed because of the height of the roadway bridge versus adjacent ground level at the existing Riverwalk.

Further evaluation of the crossing confirmed several challenges associated with a pedestrian bridge crossing over Beneficial Drive that eliminated it from further consideration. These challenges include the following:

- The large footprint required for the switchback ramp system will not fit within the right-of-way on the east side of the bridge and may require reconfiguration of the stairs to the Columbia Café outdoor seating area on the west side of Beneficial Drive.
- The elevation difference and switchback system would not be consistent with the Riverwalk experience.
- The ramp switchback system would consist of extensive structures to design and build, as well as high anticipated cost relative to other options.

***Therefore, Alternative 2 was eliminated from further evaluation because it does not meet all the objectives of the purpose and need of the project and is considered not feasible because of extensive impacts and cost.***

## 4.3 Alternatives Evaluation

As documented in Section 4.2, Alternative 1 with a fixed, pile-supported structure was identified for further evaluation. The alternatives evaluation process focused on developing, refining, and evaluating alignment options for Alternative 1. This process was guided by the goals of the study, stakeholder input, the broader vision articulated in the *Tampa Riverwalk Master Plan*, and the design considerations outlined in Section 4.1.

The Riverwalk is designed to be a seamless, inclusive, and dynamic multimodal corridor that strengthens connectivity, encourages recreation, drives economic growth, and highlights the beauty of Tampa's waterfront. In evaluating extension alternatives, the goal was to ensure engineering and environmental feasibility while preserving the Riverwalk's identity and long-term vision as a landmark civic destination.

Key criteria used in the evaluation of alternatives included the following:

1. **Engineering Feasibility:** Evaluating alignment constructability, structural requirements, and physical constraints.
2. **Safety and User Experience:** Ensuring safe, comfortable, and intuitive circulation for pedestrians, bicyclists, and individuals with mobility challenges.
3. **Economic Growth:** Expanding access to key destinations to boost tourism, commerce, and local businesses and foster vibrant waterfront activity.
4. **Consistency with Local and Regional Plans:** Aligning with the *Tampa Riverwalk Master Plan*, the *InVision Tampa City Center Plan*, *Tampa MOVES*, the Channelside CRA goals, and broader municipal planning objectives.
5. **Multimodal Access and Mobility:** Creating an inclusive, engaging corridor that appeals to a diverse range of users.
6. **Environmental Considerations:** Minimizing/avoiding adverse effects to natural, social, cultural, and physical resources while incorporating feasible viable mitigation measures where necessary.

This comprehensive evaluation framework allowed for a balanced assessment of each alternative's potential to deliver a safe, functional, and inviting extension of the Tampa Riverwalk while considering engineering constraints and community values.

### 4.3.1 Stakeholder Engagement

Stakeholder input played a vital role in shaping the development and refinement of alignment alternatives. Throughout the process, public and private stakeholders provided valuable feedback on the design, location, and overall connectivity of the proposed Riverwalk Extension. Their insights helped ensure the proposed alternatives balance safety, usability, and long-term vision. Key themes and perspectives raised by stakeholders are summarized as follows:

- **Yacht Starship** – Emphasized safety concerns for pedestrians traversing the existing parking lot. Expressed strong support for an under-bridge Riverwalk Extension to enhance pedestrian safety and stimulate economic activity east of the Beneficial Drive Bridge.
- **SPP** – Indicated that redevelopment of the Garrison Parking Lot is a long-term initiative, envisioned as a mixed-use development. Emphasized the importance of incorporating traffic controls and pedestrian safety measures that will support future site activation and connectivity.
- **Tampa Port Authority** – Requested that the Riverwalk Extension remain clear of designated security and operational zones. Also noted the need to account for sufficient overhead clearance to accommodate bicyclists and other users along the alignment.
- **Channelside CRA CAC** – Voiced concerns related to the overall cost of construction for the Riverwalk Extension. Recommended careful evaluation of funding feasibility and cost-benefit considerations.



- **City of Tampa Parks and Recreation** – Highlighted the importance of avoiding abrupt or angle turns that could create blind spots or conflict points along the path. Recommended that any conceptual alignment emphasize natural flow, incorporate safety enhancements, and maintain a minimum 15-foot-wide shared-use path to ensure flexibility for a variety of users. Additional input included consideration of overhead clearance for bicyclists and the potential integration of a kayak landing zone during design.
- **City of Tampa** – Underscored the importance of meeting the vertical and horizontal clearances and ensuring that all proposed alternatives align with the overarching vision of the Tampa Riverwalk, which prioritizes seamless connectivity, safety, accessibility, and cohesive aesthetics.

### 4.3.2 Alternatives Refinement

Alternative 1 underwent further refinement resulting from ongoing stakeholder engagement and design considerations. Feedback from key stakeholders (which included City departments, private property owners, and agencies) provided important insights related to safety, connectivity, operational constraints, and future land use. These perspectives, combined with technical evaluations of site geometry, constructability, and user experience, informed a more nuanced approach to the alignment.

As a result of this collaborative and iterative process, three distinct alignment variations of Alternative 1 were developed. Each of these options reflects a different balance of priorities, such as minimizing environmental impacts, enhancing user safety, and maintaining consistency with the City of Tampa's vision for the Riverwalk.

The three Alternative 1 alignment options are described in greater detail in the following subsections.

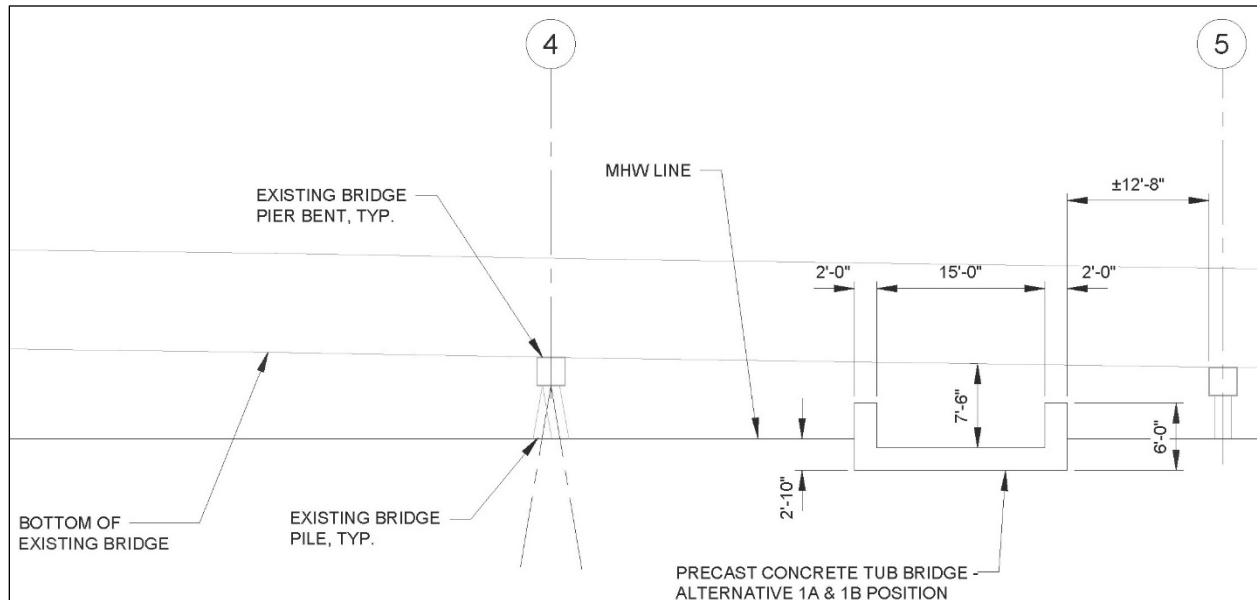
#### 4.3.2.1 Alternative 1A (Avoidance Alternative)

Alternative 1A includes a conceptual design that avoids direct impacts to the existing CE. This alignment would connect to the existing Riverwalk approximately 20 feet northeast of the CE boundary. West of the Beneficial Drive Bridge, the proposed path generally follows the alignment of the existing water taxi dock. Approximately 100 feet from the edge of the existing Riverwalk (60 feet south of the shoreline), the path turns east to extend under the bridge, then shifts north on the east side of the existing bridge. The precast concrete tub under the bridge would be 19 feet wide and consists of a 15-foot-wide path and 2-foot-wide exterior walls. The tub structure would extend 2 feet, 10 inches below the MHW line and the exterior walls would extend 3 feet, 2 inches above the MHW line for a total height of 6 feet.

Careful consideration was given to the placement of the Riverwalk Extension in relation to the existing bridge structure. This alignment locates the path between Piers 4 and 5 of the existing Beneficial Drive Bridge. This location was selected to ensure the minimum vertical clearance requirement of 7 feet, 6 inches is met while allowing for adequate natural light penetration. This location under the bridge also avoids creating a confined "tunnel effect," which can reduce visibility, compromise user comfort, and diminish the inviting, open-air character that defines the Tampa Riverwalk.

By placing the extension between these specific piers, the design preserves clear sightlines and supports a more seamless, pleasant experience for pedestrians and bicyclists. This approach also ensures consistency with the City of Tampa's broader vision for the Riverwalk as a safe, accessible, and aesthetically engaging waterfront corridor. The typical section of the tub structure and location under the bridge is presented on **Figure 4-2**.

**Figure 4-2. Alternative 1A Typical Section Under Beneficial Drive Bridge**



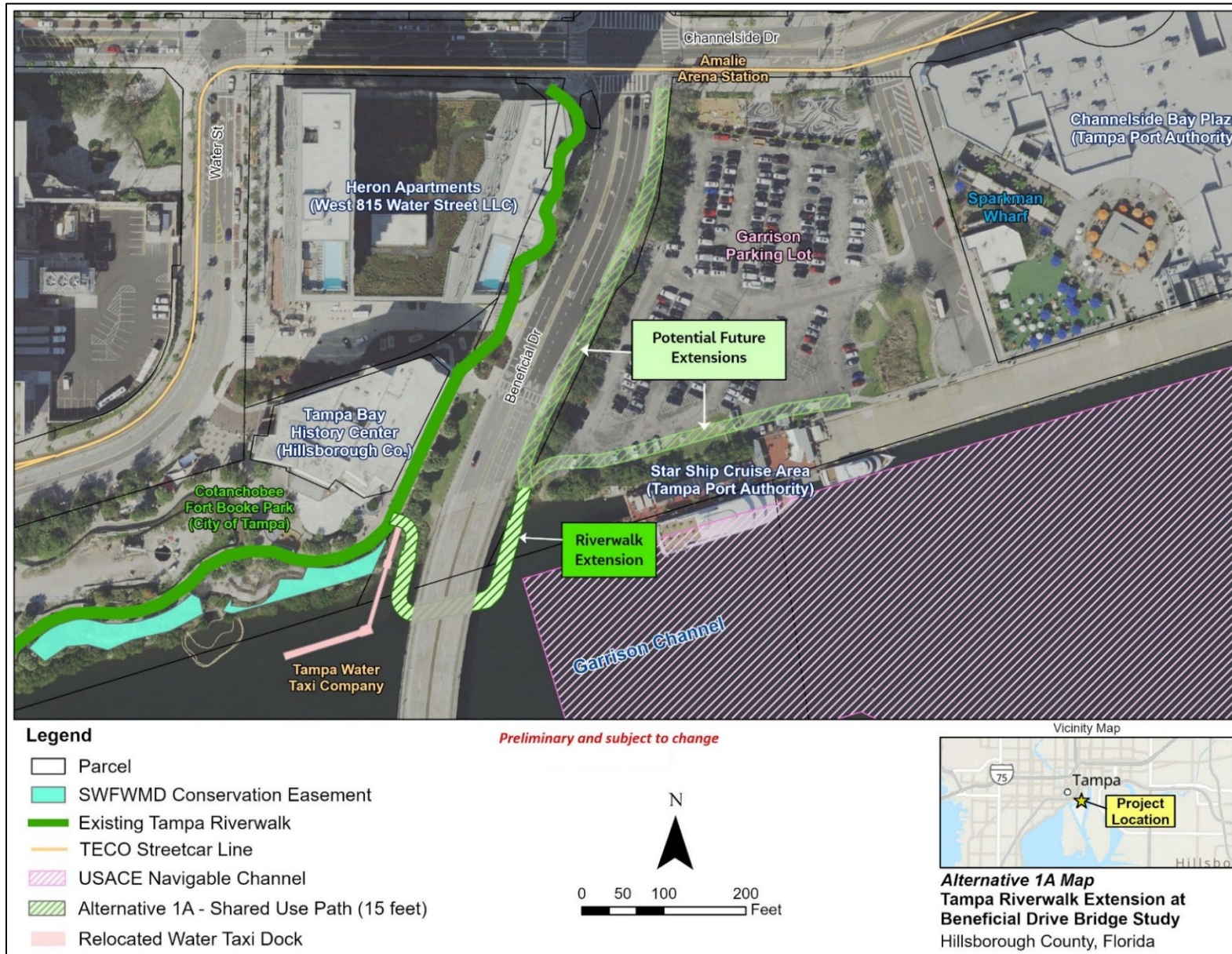
While Alternative 1A avoids the CE, it would require relocation of the existing water taxi dock to the west of the Riverwalk Extension. Additionally, to maintain the path's footprint between the relocated dock and the Beneficial Drive Bridge, this alignment incorporates a series of abrupt-angle turns.

These sharp directional changes (particularly just west of the bridge) introduce several challenges that may not align with the City of Tampa's vision for the Riverwalk as a safe, accessible, and inviting multimodal corridor. The Riverwalk is intended to promote seamless connectivity, scenic continuity, and a high-quality experience for users of all ages and abilities. In contrast, this alternative introduces multiple geometric constraints that raise the following concerns:

- **Limited Sight Distance:** The abrupt turns restrict user visibility, increasing the potential for collisions between pedestrians and bicyclists (especially in high-traffic zones).
- **Disrupted Flow and User Experience:** Sudden changes in direction can reduce flow efficiency and diminish the overall comfort of the path, particularly for runners, bicyclists, and visitors unfamiliar with the area.
- **Safety and Maneuverability Risks:** The tight turning radii may present challenges for individuals using bicycles, scooters, strollers, or mobility devices, increasing the risk of accidents or near misses.
- **Accessibility Limitations:** The sharp geometry could limit ADA-compliant access, especially for users requiring wider turning movements.
- **Inconsistency with Riverwalk Aesthetic and Design Intent:** The constrained, angular layout contrasts with the Riverwalk's established character.

In summary, while this alignment option avoids impacts to the CE, it introduces several functional and design tradeoffs that warrant careful consideration to ensure consistency with the City's long-term vision for the Riverwalk. **Figure 4-3** presents the conceptual alignment of Alternative 1A.

Figure 4-3. Alternative 1A Alignment





#### 4.3.2.2 Alternative 1B

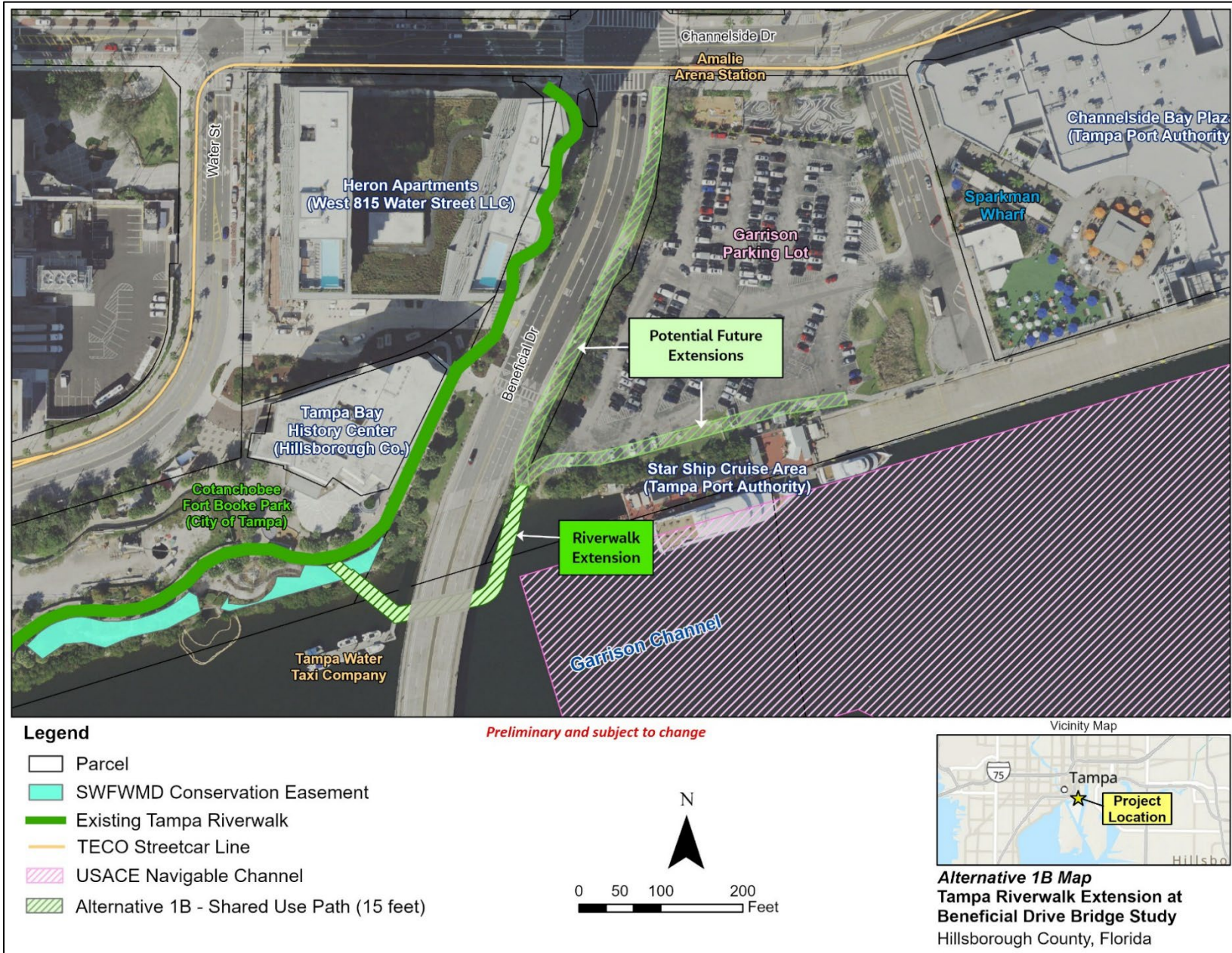
Alternative 1B connects to the existing Riverwalk farther west than the connection point identified in Alternative 1A. By shifting the connection point southwestward, this alignment eliminates the need for the abrupt angle turns required in Alternative 1A. This results in a smoother and more intuitive transition for users, enhancing safety, visibility, and flow for pedestrians and bicyclists. The revised connection under Alternative 1B would result in direct impacts to the existing CE. Any advancement of this alignment would require coordination with regulatory agencies and the identification of appropriate mitigation strategies.

Another advantage of Alternative 1B is that it preserves the existing water taxi dock in its current general location. The floating portion of the water taxi dock could be reoriented and attached perpendicularly to the new Riverwalk Extension, thereby eliminating the need for full relocation and reducing costs and disruptions to current operations.

Similar to Alternative 1A, this alignment follows the path underneath the Beneficial Drive Bridge between Piers 4 and 5, maintaining the required minimum vertical clearance of 7 feet, 6 inches while allowing for adequate natural light penetration. The path then shifts north on the east side of the structure.

Overall, Alternative 1B may result in improved user experience, flow, and safety, and is more consistent with the City of Tampa's vision for the Riverwalk. While the potential impacts to the CE must be carefully considered, this alignment offers a strong balance between design feasibility, user functionality, and long-term integration with the City's Riverwalk network. **Figure 4-4** presents the conceptual alignment of Alternative 1B.

Figure 4-4. Alternative 1B Alignment

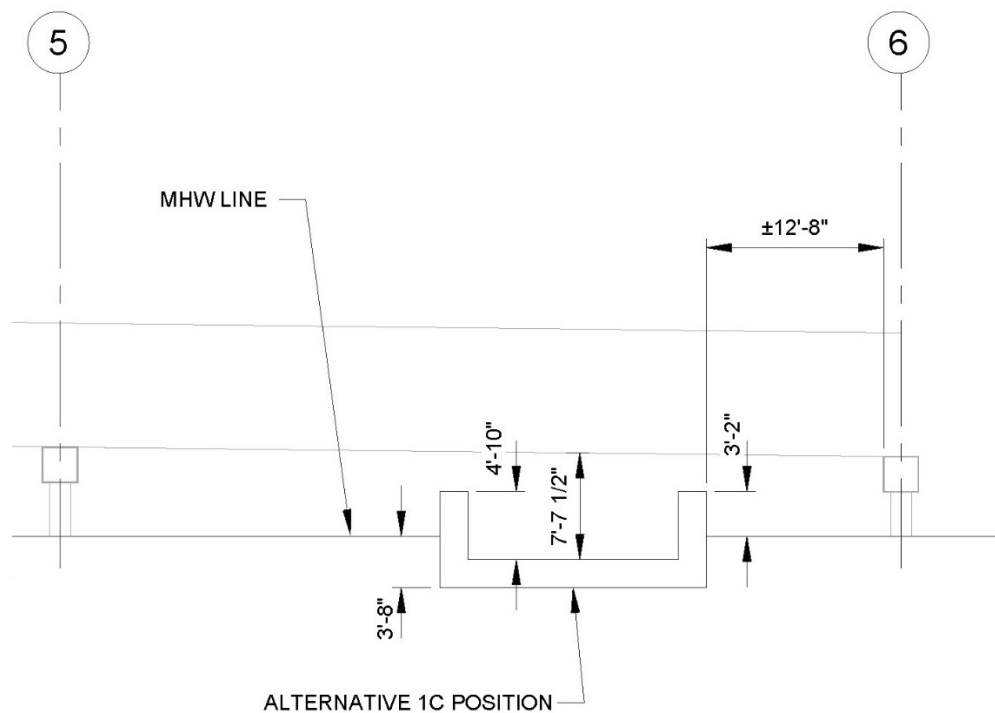


### 4.3.2.3 Alternative 1C

Alternative 1C was developed as an alternative alignment which locates the Riverwalk Extension closer to the shoreline, between Piers 5 and 6 of the Beneficial Drive Bridge. While this alignment may offer opportunities to minimize impacts to the CE or existing infrastructure, it also presents several challenges.

Most notably, the elevation of the bridge between Piers 5 and 6 is lower than in other portions of the bridge, which requires placing the tub structure lower in the water and increasing the exterior wall heights. This increased wall height, combined with the lower vertical elevation of the bridge, may create uncomfortable or unsafe conditions for pedestrians and bicyclists (particularly taller users or those on bicycles) while also limiting visibility and contributing to a constrained, tunnel-like environment. The typical section of the tub structure and location under the bridge for Alternative 1C is presented in **Figure 4-5**.

**Figure 4-5. Alternative 1C Typical Section under Beneficial Drive Bridge**

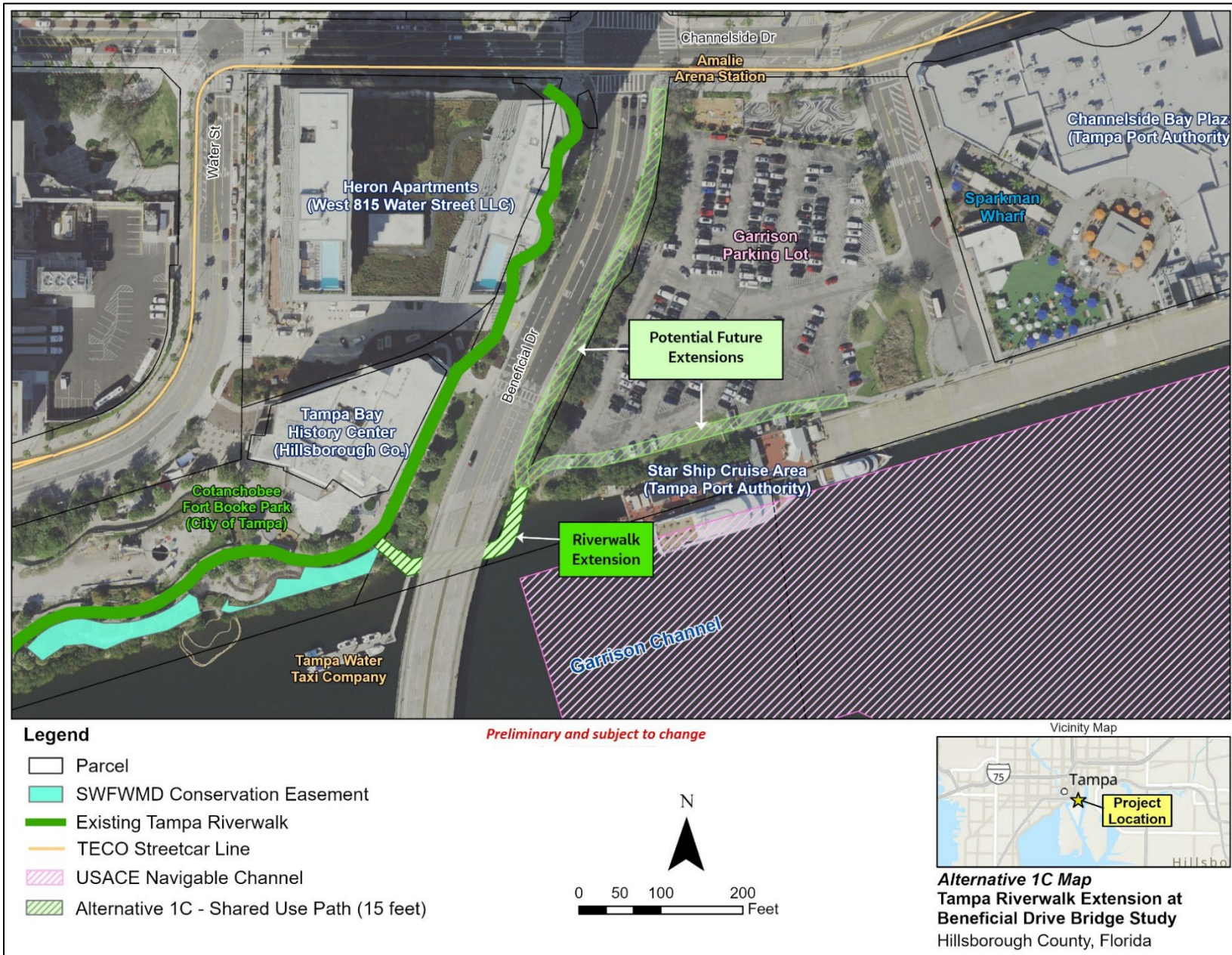


Additionally, the limited horizontal distance between the shoreline and under-bridge portion of the extension could limit the available space needed for vertical transitions. This may make it difficult to achieve the longitudinal slope or grade transitions required to comply with ADA requirements. Without adequate distance, the design may require steeper slopes or abrupt elevation changes, both of which can create barriers for users with mobility impairments and reduce the overall comfort and usability of the facility. A detailed survey of the area during the design phase would be needed to determine the elevation differences between the landside connection and the under-bridge structure. This proximity to the shoreline and tighter geometry also may limit future maintenance access.

Given these concerns, aligning the Riverwalk Extension between Piers 5 and 6 may conflict with the City of Tampa's vision for a safe, accessible, and open waterfront corridor and may result in usability and design issues. **Figure 4-6** presents the conceptual alignment of Alternative 1C.



Figure 4-6. Alternative 1C Alignment



### 4.3.3 Anticipated Environmental Impacts

Each of the preliminary alignment options evaluated under Alternative 1 would result in direct and secondary impacts to regulated environmental resources, including estuarine and marine wetlands, surface waters, and mangroves. However, only Alternatives 1B and 1C are anticipated to impact conservation lands.

#### 4.3.3.1 Wetlands and Surface Waters

All three alignment options (Alternatives 1A, 1B, and 1C) may impact jurisdictional wetlands and surface waters. The estimated impacts for each option are as follows:

- Alternative 1A: approximately 0.127 acre
- Alternative 1B: approximately 0.124 acre
- Alternative 1C: approximately 0.068 acre

Alternative 1C is anticipated to reduce wetland and surface water impacts by nearly half compared to Alternatives 1A and 1B based on its modified alignment closer to the shoreline.

#### 4.3.3.2 Floodplains

All three alignment options would result in impacts to the existing 100-year floodplain. However, preliminary reviews suggest that these impacts are anticipated to be categorized as *de minimis*, given that the proposed improvements are considered small, insignificant, and would not substantially alter the floodplain's natural functions.

#### 4.3.3.3 Shoreline Mangroves

Each alignment option would result in varying degrees of impact to existing mangrove vegetation along the shoreline. The estimated impacts are as follows:

- Alternative 1A: approximately 737 square feet
- Alternative 1B: approximately 727 square feet
- Alternative 1C: approximately 800 square feet

While Alternative 1C minimizes wetland impacts, it results in the highest mangrove disturbance of the three options, primarily because it is closer to the vegetated shoreline.

#### 4.3.3.4 Southwest Florida Water Management District Conservation Easement

Impacts to the existing SWFWMD CE vary across the alignment options, as follows:

- Alternative 1A: Avoids any direct impact to the CE boundary.
- Alternative 1B: Proposes a linear encroachment within the CE, resulting in an estimated impact of approximately 398 square feet.
- Alternative 1C: Shifts the alignment connection to the northeastern edge of the CE, reducing the disturbance footprint to approximately 63 square feet.

Any encroachment within the CE would require coordination with SWFWMD, including a potential easement amendment.

#### 4.3.3.5 Submerged Lands and Affected Parcels

All alignment options are expected to result in impacts to submerged lands and adjacent parcels. Sovereignty lands located east of the Beneficial Drive Bridge are owned and managed by the Tampa Port Authority (Appendix F) and will require coordination for impacts. West of the bridge, potentially impacted parcels and submerged lands are under the ownership and jurisdiction of the City of Tampa.

#### 4.3.3.6 Stormwater Infrastructure and Water Taxi Dock

Minor relocation of existing stormwater gravity mains and network structures located on either side of the Beneficial Drive Bridge may be required under all alternatives, in addition to the following:

- Alternative 1A would necessitate the full relocation of the water taxi dock to the west of its current location.
- Alternatives 1B and 1C would allow the existing supporting structure of the water taxi dock to remain but would require relocation of the dock's floating structure to accommodate the new Riverwalk connection.

#### 4.3.3.7 Navigational Boundaries

None of the proposed alignment options are anticipated to encroach within the boundary of the USACE federal navigation channel (pending future coordination). However, all alternatives are likely located within the setback buffer and will necessitate coordination with the Civil Works Division and Section 408 abbreviated review.

### 4.3.4 Alternatives Evaluation Matrix

Table 4-2 summarizes the comparative evaluation of the No-Action Alternative, Alternative 1A (CE Avoidance Alternative), Alternative 1B, and Alternative 1C. As mentioned previously, the alternatives were assessed using a range of criteria aligned with the project's goals, the City of Tampa's Riverwalk vision, regulatory requirements, and environmental considerations.



Table 4-2. Alternatives Evaluation Matrix

Evaluation Criteria	Unit of Measure	No-Action Alternative	Alternative 1A (Avoidance Alternative)	Alternative 1B	Alternative 1C
<b>Project Goals/Community Vision</b>					
Enhanced Safety and Mobility	High/Medium/Low	Low	Low	High	Medium
Supports Enhanced Socioeconomic Activity	High/Medium/Low	Low	High	High	High
ADA Compliance	Yes/Unlikely/No	Yes	Unlikely	Yes	Unlikely
Consistency with City of Tampa and Regional Plans	High/Medium/Low	Low	Medium	High	Medium
User Experience and Accessibility	High/Medium/Low	Low	Low	High	Medium
<b>Sociocultural Environment</b>					
Potential Regulatory Conservation Easement Impacts (SWFWMD)	square foot (feet)	0	0	~398	~63
Potential Impacts to Nonresidential Parcels	no. of parcel(s)	0	1	1	1
Community Facilities	no. of conflict(s)	0	1 <sup>a</sup>	1 <sup>a</sup>	1 <sup>a</sup>
<b>Natural Environment</b>					
Potential Flood Hazard Area Impacts (100-Year Floodplain)	acres	0	~0.16	~0.15	~0.10
Potential Surface Water/Estuarine and Marine Deepwater Wetland Impacts	acres	0	~0.127	~0.124	~0.068
Potential Habitat Impacts – Federally/State-Listed Species <sup>b</sup>	square foot (feet)	0	~737	~727	~800

<sup>a</sup> Related to the existing water taxi dock.

<sup>b</sup> Quantitative impacts to habitat only includes existing mangroves.

~ = approximately



SECTION

5

Recommended Alternative



## 5. Recommended Alternative

### 5.1 Selection of Recommended Alternative

Based on a preliminary conceptual evaluation of design feasibility, stakeholder input, environmental impacts, and consistency with the Riverwalk vision, Alternative 1B is the recommended alignment for extending the Tampa Riverwalk east of Beneficial Drive. Among the three alternatives analyzed Alternative 1B offers the most balanced and achievable solution, performing strongly across multiple evaluation criteria outlined in **Table 4-2**. Key evaluation criteria supporting the selection of Alternative 1B are summarized as follows:

1. **Enhanced Safety and User Experience:** Alternative 1B eliminates the sharp, abrupt-angle turns required for Alternative 1A, offering a smoother and more intuitive travel path. This design reduces potential user conflict points and improves overall safety.
2. **Inclusive Multimodal Access and Mobility** Alternative 1B provides sufficient space to accommodate ADA-compliant slopes and grade transitions, ensuring accessibility for individuals of all mobility levels.
3. **Alignment with Regional Planning Goals:** Alternative 1B closely reflects the City of Tampa's vision for the Riverwalk – a continuous, scenic, and accessible waterfront corridor. It supports broader planning objectives on connectivity and public realm improvements.
4. **Seamless Network Integration:** Positioned between Piers 4 and 5, Alternative 1B ensures adequate vertical clearance and allows natural light to filter through. This creates a comfortable, open-air path experience and avoids the enclosed, tunnel-like feel of other options.
5. **Supports Economic Growth:** By improving access to nearby, Alternative 1B encourages economic activity and redevelopment opportunities, particularly east of the bridge.
6. **Environmental Considerations:**
  - a. Wetland/Surface Water Impacts: Estimated at 0.124 acre, similar to Alternative 1A and greater than Alternative 1C, but still manageable within regulatory permitting frameworks.
  - b. Mangrove Impacts: Approximately 727 square feet, the lowest among all alternatives, reducing the potential amount of necessary mitigation credits.
  - c. SWFWMD CE Impacts: Estimated at 398 square feet, greater than Alternative 1C (63 square feet) but less than a full encroachment. The linear footprint allows for potential easement modifications or mitigation in coordination with SWFWMD.
7. **Parcel and Submerged Lands Impacts:** All alternatives result in impacts to submerged lands owned by Tampa Port Authority and adjacent parcels located west of the Beneficial Drive Bridge.

In summary, Alternative 1B best meets the project goals and community vision by balancing design feasibility, safety, ADA accessibility, and environmental stewardship. Its strong performance across key evaluation criteria makes it the most suitable option to advance into future design and permitting phases.

#### 5.1.1 Recommended Alternative Renderings

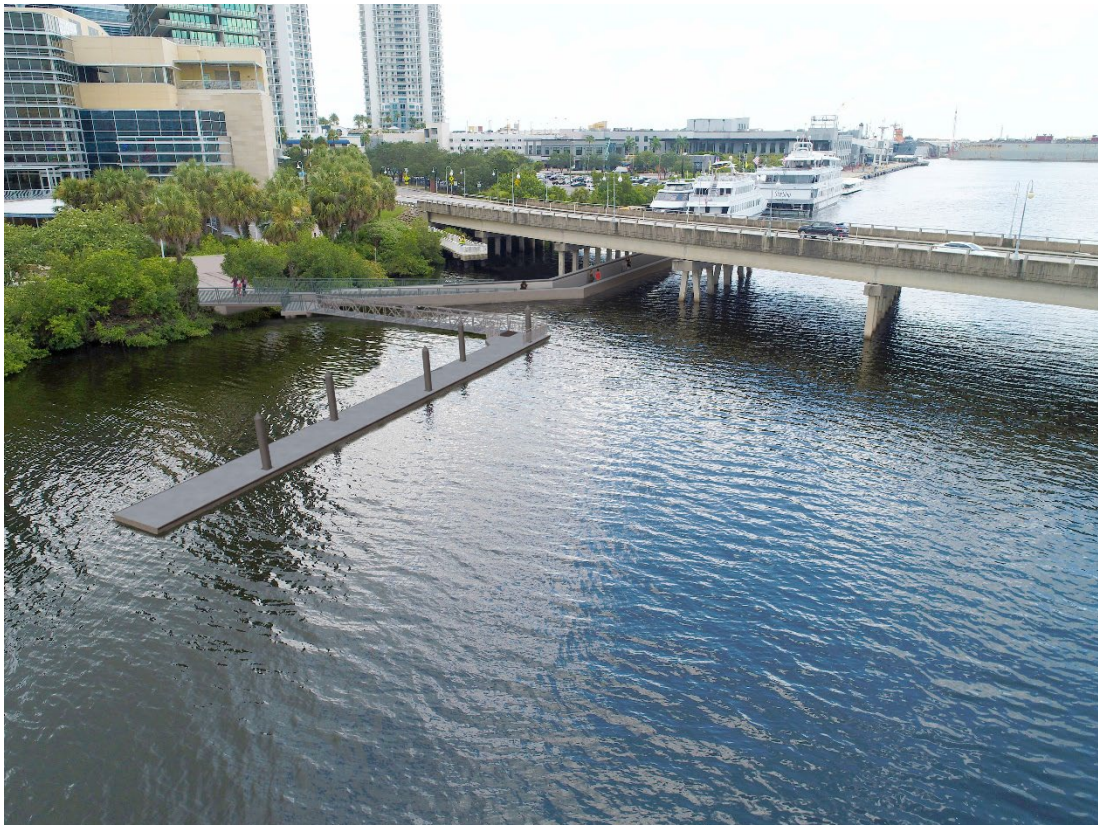
**Figures 5-1 through 5-4** present the preliminary renderings of Alternative 1B. The aesthetic treatments and alignment are subject to change and may be refined as the project progresses through future phases.



**Figure 5-1. Alternative 1B Rendering (looking east under Beneficial Drive Bridge)**



**Figure 5-2. Alternative 1B Rendering (oblique view looking northeast)**

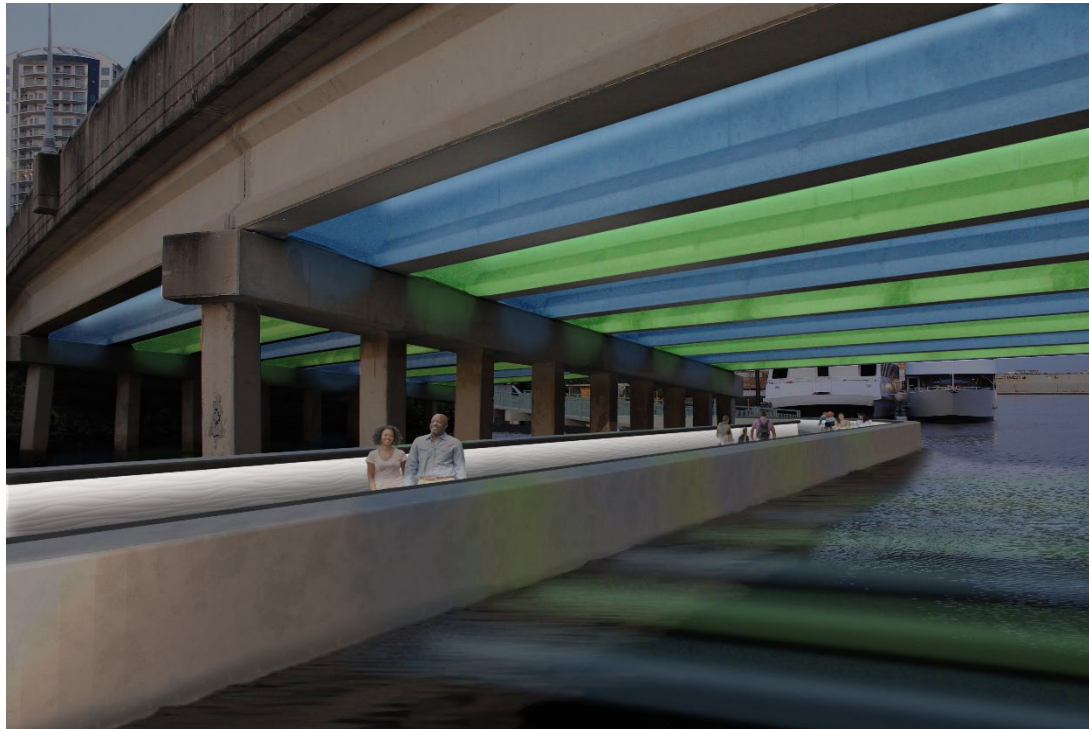




**Figure 5-3. Alternative 1B Rendering (oblique view looking east)**



**Figure 5-4. Alternative 1B Rendering (nighttime view looking east under Beneficial Drive Bridge)**



### 5.1.2 Preliminary Cost Estimate

The total preliminary construction cost for Alternative 1B is estimated to be approximately \$3,771,000 (in 2025 dollars). The construction costs include categories for general conditions (i.e., survey, environmental best management practices, and mobilization), trestle construction (i.e., pile bents, abutments, and pre-cast concrete), under bridge construction (i.e., under bridge concrete slab, special transport, and placement of structure), and architectural and general finishes (i.e., concrete texturing, lighting, and navigation signs). A project contingency cost based on 15 percent of the construction total was also included to account for project unknowns. Estimated preliminary construction costs do not include costs for design, permits, environmental mitigation, cost escalation, or removal and disposal of contaminated soils or materials, right-of-way acquisition, or water taxi dock relocation. **Table 5-1** summarizes the construction cost for Alternative 1B by category.

**Table 5-1. Alternative 1B Construction Cost Estimate**

Cost Category	Anticipated Cost (2025 dollars)
General Conditions	\$232,000
Trestle Construction	\$1,896,000
Under Bridge Crossing (Concrete Tub)	\$865,000
Architectural and General Finishes	\$286,000
<b>Total Construction Cost</b>	<b>\$3,279,000</b>
Project Contingency (15% of Construction Total)	\$492,000
<b>Total Preliminary Construction Cost</b>	<b>\$3,771,000</b>

### 5.1.3 Anticipated Permits and Mitigation

The state's ERP Program and federal Clean Water Act and Rivers and Harbors Act is responsible for overseeing the permitting of any project proposing dredge or fill activities within state jurisdictional waters and federal waters of the U.S. (WOTUS). The project area's features identified are considered state jurisdictional features because they meet the state's definition of wetlands and surface waters under Section 373.019(25), Florida Statutes, and Subsection 62-340.200(19), F.A.C. (FDEP 2021), and would be regulated under the state's ERP Program. Garrison Channel is also considered a WOTUS, requiring a federal Section 404 permit depending on the impacts, and a navigable waterway, prompting the need for Section 10 authorization. As the channel is a navigable water, the USCG was consulted to determine if a Bridge Permit would be required. The USCG Bridge Management Specialist in the Southeast District confirmed a Bridge Permit will not be required since the structure does not cross Garrison Channel. However, the project will need to submit the Bridge Pre-Construction Checklist - St Pete (Appendix G) 60 days prior to the start of construction. The coordination will allow the USCG to monitor construction and any in-water activity that could temporarily affect marine traffic and issue a Local Notice to Mariners. Because the project area is located within Hillsborough County, additional agencies such as Tampa Port Authority and the Environmental Protection Commission will likely require permits or review as well. The level of NEPA review and effort will depend on the funding source selected. Based on the current impacts and assumptions, an initial list of potential regulatory agencies and permitting requirements is provided in **Table 5-2**.




**Table 5-2. Anticipated Permits**

Agency	Permit Type	Jurisdiction	Permit Fees	Application Processing Time (months)	Potential Commenting Agencies
USACE Jacksonville District	Regional General Permit SAJ-20 (Expires 3/28/28), or Letter of Permission	Clean Water Act Section 404/Rivers and Harbors Act Section 10	N/A	6 to 12	For ESA: NMFS, USFWS For Cultural and Archaeological: SHPO
USACE Jacksonville District	Navigation Cursory Section 408 Review	Section 408 of the Rivers and Harbors Act	N/A	2 to 3 – depending on funding	
USCG District 7	Bridge Pre-Construction Checklist	Section 9 of the Rivers and Harbors Act and General Bridge Act of 1946	N/A	2 months	N/A
FDEP Southwest District	Environmental Resource Permit	Dredging and Filling –Part IV, Chapter 373, F.S. per Chapter 62-330, F.A.C.	Dependent on area of impact	8 to 12	FWCC, SHPO
FDEP	Stormwater NPDES Construction General Permit	40 CFR Part 122.26; 62-621, F.A.C. If impacts 1+ acre	\$250	1 to 2	N/A
FDOT	General Use Permit	F.A.C. Chapter 14-20.010	TBD	TBD	N/A
Port Tampa Bay	Minor Work Permit, or Standard Work Permit, and Consent by Rule, Submerged Lands Lease, Easement, or Use Agreement	Chapter 95-488, Laws of Florida	Minor – \$100 Standard – \$1,000  Submerged Lands - \$150 to \$500	Minor – 6 to 8 Standard – 8 to 12	EPC, HCC
EPC	Mangrove Trimming Permit	Section 1-14.06, Section 1-14.07	TBD	1 to 2	
City of Tampa	Construction Permit		TBD	TBD	
City of Tampa	Floodplain Review / Permit		TBD	TBD	



Agency	Permit Type	Jurisdiction	Permit Fees	Application Processing Time (months)	Potential Commenting Agencies
City of Tampa	Right-of-Way Permit		TBD	TBD	
City of Tampa	Tree Permit		TBD	TBD	

EPC = Environmental Protection Commission  
HCC = Hillsborough County Commission  
TBD = to be determined



When the proposed impacts are better defined, there are multiple recommended surveys to better establish existing conditions and presence of listed or protected species. For example, a bathymetric survey may be essential for construction purposes. Also, a submerged aquatic vegetation survey, performed during the agency-prescribed timeframe, will be necessary to determine if seagrass is present within the footprint. Other surveys will involve observations for listed and protected species such as a bald eagle or migratory bird nest within the agency-specified buffer distance or project footprint. A survey of the bridge for presence of bats is also recommended.

Impacts to wetlands and surface waters resulting from Alternative 1B may require compensatory mitigation. Compensatory mitigation activities may include onsite mitigation, offsite mitigation, or the purchase of mitigation credits from permitted mitigation banks. If mitigation is required, regional mitigation banks within the same watershed may be contacted to assess the availability of mitigation credits. However, initial research shows the mitigation bank within the basin has sold or reserved available in-kind credits. If federal mitigation credits are deemed necessary, early coordination with the USACE to use the Proximity Factor Tool to purchase in-kind credits from an out-of-basin mitigation bank will be important. This option will likely have a higher cost (not included) when compared to the same amount of credits purchased from a bank located within the watershed. Permitting and final wetland impacts will be determined during the design and permitting stage of the project.

Because of the potential for the occurrence of federally listed species and essential habitats (mangroves) within the proposed project area, coordination with the agencies under Section 7 of the ESA and EFH will be conducted. It is anticipated to be performed as an informal consultation because the project is not proposing to increase vessel traffic. However, it will depend on the proposed construction methods for installing the pilings and whether Jacksonville Biological Opinion (JAXBO) is applicable for noise impacts. This consultation should be coordinated with USFWS, NMFS, and other regulatory agencies responsible for the issuance of Section 404 and Section 10 permits. The permitting and commenting agencies will likely require the implementation of the following conditions during upland and in-water construction to protect listed species:

- Sea Turtle and Smalltooth Sawfish Construction Conditions (NMFS)
- Standard Manatee Conditions for In-Water Work (USFWS)
- Standard Protection Measures for the Eastern Indigo Snake (USFWS)
- JAXBO Project Design Criteria

Given the scale and nature of the proposed improvements, impacts to the 100-year floodplain are anticipated to be categorized as *de minimis*. *De minimis* floodplain impacts are typically applied to projects that demonstrate they will not:

- Significantly increase flood risk.
- Adversely affect the floodplain's natural functions (water storage, filtration habitat).
- Cause substantial harm to human health or safety.
- Interfere with the intended use of the property.

Additionally, the stormwater runoff generated by the project will likely not exceed the threshold that would trigger a need for floodplain or stormwater-related permitting. The actual impacts and required permitting would need be determined through continued coordination with SWFWMD.



A teal-tinted photograph of a cityscape. In the foreground, there are several palm trees and dense foliage. In the background, there are two tall, modern buildings with many windows. A concrete bridge with a metal railing is visible on the right side of the image. The sky is overcast with grey clouds.

# 6

A decorative graphic consisting of a grid of small white dots arranged in a 4x4 pattern, located to the left of the section header.

## Potential Funding Alternatives



## 6. Potential Funding Alternatives

### 6.1 Federal and State Grants

Over the past 5 years, with the passage of the Infrastructure Investment and Jobs Act (IIJA) in 2021, the availability and amount of grant funding has expanded significantly – especially for infrastructure. Local and state governments have won billions of dollars in federal funding for bridges, trails, transit, streets, parks, and more. In the early days of the new administration, though, signs emerged that this boom could be slowing. In January 2025, the Office of Management and Budget (OMB) ordered a pause on all federal grants and loans. Although OMB swiftly reversed this directive, it raised questions about whether future funding opportunities could be cancelled.

The outlook today is still somewhat unsure. While some programs have been cancelled – including the Federal Emergency Management Agency’s (FEMA) Building Resilient Infrastructure and Communities (BRIC) and several grants from the U.S. Environmental Protection Agency (EPA) – others have been released. In March 2025, the U.S. Department of Transportation (USDOT) released a Notice of Funding Opportunity (NOFO) for the Safe Streets and Roads for All grant, a program that primarily funds bicycle and pedestrian safety improvements.

This suggests that the initial worst-case scenario that some feared (that federal grant funding would all but dry up) is unlikely to happen. It is more likely that some programs will be cut while others will be released, though it is difficult to predict which will survive. That said, USDOT has offered more clarity regarding its new funding priorities.

#### 6.1.1 USDOT Updated Funding Priorities

On January 28, 2025, the Transportation Secretary released multiple memorandums laying out new USDOT priorities and a plan for implementing executive orders related to climate and equity signed by President Trump.

The memorandums provide insight into new administration priorities, which are summarized as follows:

- **Emphasis on Benefit-Cost Analyses:** The administration will prioritize projects with a positive benefit-cost ratio (BCR) and include a benefit-cost analysis (BCA) requirement in all grant programs when permitted. This may be a departure from the Biden Administration, which allowed funding for projects with lower BCRs or even BCRs below 1 in disadvantaged communities for some grant programs.
- **Marriage and Birth Rates:** The memo states that USDOT will give preference to communities with marriage and birth rates higher than the national average. While it is not yet clear how this will be implemented<sup>1</sup>, Jacobs has begun analyzing census data related to fertility and marriage rates and can provide details on areas across Tampa and the region with higher marriage and fertility rates if needed.
- **Mask and Vaccine Mandates:** USDOT will prohibit funding recipients from implementing vaccine or mask mandates.
- **Immigration Enforcement:** USDOT will prioritize projects in jurisdictions that require local compliance or cooperation with federal immigration enforcement.
- **Longstanding USDOT Goals:** In addition, the memo continued to emphasize some longstanding USDOT goals, such as safety and economic opportunity. The memo also states that goals include alleviating poverty and raising the standard of living for communities and families.

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<sup>1</sup> USDOT has neither developed a standardized tool for applicants to determine marriage and birthrates nor cited datasets for applicants to reference.

- **Environmental Considerations:** USDOT will no longer emphasize greenhouse gas emissions reduction. However, the memos do cite reducing noise and water pollution in communities as priorities.
- **User-Pay Models:** The memo also states that USDOT will prioritize user-pay models for funding.
- **Opportunity Zones:** Finally, the memo brings back the emphasis on Opportunity Zones seen during the previous Trump Administration.

## 6.1.2 Federal Grant Programs

### 6.1.2.1 Better Utilizing Investments to Leverage Development (BUILD)

- Funding Agency: USDOT
- Total Funding Available (Approximate): \$1.5 billion
- Maximum Award (Expected): \$25 million
- NOFO Expected: Fall 2025

The BUILD program (formerly known as RAISE) can support any type of road, rail, transit, active transportation, and other surface transportation investment. Projects are evaluated based on how they address selection criteria that include safety, sustainability, economic competitiveness, and mobility.

Funding is available through IIJA for the BUILD program through fiscal year (FY) 2026. However, the future of the BUILD program is uncertain after IIJA funding expires in FY 2026.

#### Why It Could Be a Good Fit

BUILD grants are among the most flexible offered by USDOT. They support a wide range of infrastructure projects, including urban trails. In fact, the City of Tampa won a \$24 million grant through this program in 2020 to extend the west side of the Riverwalk.

The Riverwalk Extension under the Beneficial Drive Bridge would likely perform well under several of the BUILD program's merit criteria. It would afford pedestrians access to the west side of Beneficial Drive without having to cross the road itself, eliminating the possibility of a pedestrian-vehicle collision. This would allow a grant writer to make a compelling case that the project could significantly improve safety.

The Tampa Riverwalk also has a track record of attracting private-sector development to Downtown Tampa. Although much of the area west of Beneficial Drive is already built out, the Garrison Parking Lot site is expected to be developed into a mixed-use residential/retail site in the coming years. While economic development has long been a goal of the BUILD program, the current administration has placed a particular emphasis on projects that are likely to catalyze private sector investment.

The project also meets some administration priorities. For example, it is partially located in an Area of Persistent Poverty (the east side of Beneficial Drive is considered an Area of Persistent Poverty, but the west side is not).

#### Why It Might Not Be a Good Fit

In recent years, active transportation projects have performed well under the RAISE program; however, the new administration may focus on more traditional surface transportation projects. A wide range of projects are eligible for BUILD funding, giving USDOT reviewers substantial control over the types of projects to prioritize. Eligible projects may include activities to plan and construct new major surface transportation improvements, including roadway, passenger and freight rail, port infrastructure, and airport-specific transportation. In the most recent round of BUILD awards (the first round of awards that was selected under the new administration), not a single active transportation project was selected.

What's more, the BUILD program has historically been oversubscribed. With the recent cancellation or delay of several grant programs, it is possible that the next round will be even more competitive. Since



BUILD is the most flexible USDOT program, applicants who would have applied to programs that have been cancelled – or have lost funding from cancelled programs – might turn to BUILD instead.

### Next Steps to Determine Competitiveness

Before deciding whether to apply for a BUILD grant, the City should consider the following questions, which will help determine the project's competitiveness:

1. *What is the pedestrian injury/fatality rate at the existing at-grade crossing on Beneficial Drive?* The current administration is placing more weight on formal BCA than the previous one. Based on crash data presented in Section 3.2, only one injury-related bicycle crash occurred on Beneficial Drive in the last 5 years. Therefore, it may be difficult to convince USDOT that the cost of extending the Riverwalk under the bridge is worth it.
2. *How does the project benefit families with young children?* The current administration is prioritizing infrastructure projects that will have appreciable benefits for families. If the City can show that the Riverwalk Extension will help families walk to school, parks, or other amenities, for example, then it would enhance the application's competitiveness.

### 6.1.3 State Grant Programs

The State of Florida offers several grant programs that could be a good fit for this project. Some of these programs receive formula funding from federal agencies, while others are funded partially or entirely by the state.

#### 6.1.3.1 Transportation Alternatives Set-Aside Program (TA)

- Funding Agency: Florida Department of Transportation (FDOT)
- Total Funding Available (Approximate): TBD
- NOFO Expected: December 2025

Each year, FDOT receives formula funding from the Federal Highway Administration through the Surface Transportation Block Grant (STBG) program. Of those funds, the Bipartisan Infrastructure Law (BIL) requires that 10% be set aside for “transportation alternatives,” which include on- and off-road bicycle and pedestrian facilities, trails, safe routes for non-drivers, safe routes to schools, and accessibility enhancements.

Several projects in Tampa have received funding through the TA program, including the Tampa Bypass Canal Trail, which won \$672,000 for a PD&E Study in the most recent round of awards.

The BIL authorized funding for the TA program through FY 2026. It is still unclear whether Congress will reauthorize the program beyond that date and, if so, at what funding level.


#### Why It Could Be a Good Fit

The Riverwalk Extension fits within the TA program's scope, since it promotes walking and bicycling by expanding pedestrian and bicycle access along the downtown waterfront. The project aligns with TA goals to reduce car dependency and improve transportation safety for bicyclists and pedestrians.

Additionally, the Riverwalk serves as an important connector between commercial, cultural, and recreational destinations in Tampa. Extending it would improve access to nearby neighborhoods and help meet regional mobility objectives set by FDOT. The project is consistent with past TA-funded improvements and could be competitive given its focus on multimodal connectivity.

#### Why It Might Not Be a Good Fit

The TA Program tends to prioritize projects that address critical safety needs or fill major gaps in nonmotorized infrastructure. The Riverwalk Extension, as an enhancement to an existing amenity in a well-developed urban core, may be viewed as less urgent than proposals focused on underserved or



disconnected areas. If the extension is primarily recreational, it could be seen as less aligned with TA's core goals of improving everyday transportation access and connectivity.

Additionally, TA funds are often limited and highly competitive, with emphasis placed on cost-effectiveness and statewide equity. Large-scale projects like the Riverwalk Extension may face scrutiny over budget relative to impact. Without a strong demonstration of utility for commuters or integration into broader transportation plans, the project may be perceived as having limited reach.

### **Next Steps to Determine Competitiveness**

The City should ask itself similar questions as listed previously in the BUILD section. Most importantly, it should determine whether a critical safety need exists for pedestrians attempting to cross Beneficial Drive. If so, then the TA program could be a good fit for this project. If not, the City may want to look to alternative funding sources.

#### **6.1.3.2 Land and Water Conservation Fund**

- Funding Agency: FDEP
- Total Funding Available (Approximate): \$15 million
- Maximum Award: \$1.5 million
- Local Match Requirement: 50%
- NOFO Expected: September 2025

The FDEP receives annual formula funds from the U.S. Department of the Interior through the Land and Water Conservation Fund (LWCF). This money is then allocated to local governments through a competitive grant program. The LWCF program supports a wide variety of projects that provide Floridians with recreational opportunities. Past projects that have received funding include parks, trails, campgrounds, and sports/playing fields.

The LWCF program could be a good fit for the Riverwalk Extension project, since the program's focus is on recreation, not transportation. This alleviates some of the concerns discussed previously that the project might not sufficiently enhance pedestrian safety or connectivity to be competitive for a transportation-focused grant. However, the amount of funding offered by LWCF is comparatively low. The maximum award is only \$1.5 million. It also requires a steep 50% local match. This means that, although the program could be a good option to secure partial funding for the project, it is unlikely to cover the whole cost.

#### **6.1.3.3 Other Funding Programs**

The following programs are administered by FDEP and fund recreational amenities, including trails:

- Florida Recreation Development Assistance Program
- Recreational Trails Program

However, the maximum grant award for these programs is very low (ranging from \$200,000 to around \$500,000). This study presents them as potential funding options but does not discuss them in detail.

## **6.2 Public-Private Partnership Opportunities**

The City has demonstrated openness to creative financing mechanisms, including Public-Private Partnership (P3) models, as a practical response to funding shortfalls. Early screening of P3 viability is recommended to identify opportunities for shared investment, risk transfer, and accelerated delivery. The following subsections describe potential P3 opportunities.



### **6.2.1 Development Agreements**

A development agreement between the City and adjacent landowners (for example, Strategic Property Partners or other private developers) could:

- Require construction of Riverwalk segments as a condition of development approvals
- Allow the City to negotiate right-of-way or easements in exchange for incentives
- Tie Riverwalk enhancements to community benefit packages or zoning bonuses

### **6.2.2 Cost Sharing/Joint Construction**

- Riverwalk components (for example, sidewalk enhancements, lighting, kayak landings) could be incorporated into adjacent private redevelopment efforts, reducing City costs.
- Coordinated construction staging can reduce disruption and accelerate timelines.

### **6.2.3 Naming Rights and Sponsorship**

- Riverwalk features (for example, pavilions, benches, water access points) can be sponsored by corporate or philanthropic partners.
- These funds can be dedicated toward maintenance or capital improvement needs.

### **6.2.4 Grant Matching or Leveraging**

- Private entities can provide match funding for grants (for example, Infrastructure for Rebuilding America [INFRA] or RAISE) to make the City's application more competitive.
- Matching funds could include land value donations, design contributions, or in-kind construction services.

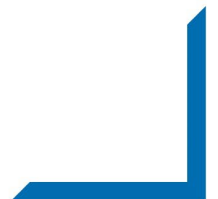




# SECTION 7



## Schedule and Next Steps



## 7. Schedule and Next Steps

### 7.1 PD&E/NEPA Study Considerations

Incorporating a PD&E Study as the next phase of project development will satisfy National Environmental Policy Act (NEPA) requirements, provide a coordinated framework for stakeholder and agency engagement, and support the development of 30% design plans. This step is essential for ensuring that the Riverwalk Extension is eligible for federal funding and ready for implementation in compliance with environmental and engineering standards. Key timing considerations for initiating a PD&E Study include the following:

- A PD&E Study is typically required before federal funds can be obligated for construction or final design.
- In many cases, federal or state grants can fund the PD&E Study itself.
- Completing the PD&E process early strengthens funding applications by demonstrating project readiness, environmental feasibility, and stakeholder coordination.

During the PD&E phase, the recommended alternative (Alternative 1B) could be further refined through preliminary engineering to develop a 30% design. These 30% design plans would provide opportunities to refine the concept further through geometry enhancements, ADA-compliant transitions, under-bridge lighting, shoreline treatments, kayak landing areas, living shoreline enhancements, and safety features. These design enhancements can further support grant competitiveness. Continued coordination with City of Tampa departments, agencies, and private stakeholders will ensure design compatibility.

### 7.2 Conservation Easement Amendment Process

Alternative 1B encroaches on the SWFWMD CE located along the shoreline and would require an amendment to the CE. The process for revising the CE potentially includes the following steps in accordance with Surface Water Management Improvement & Management Program (SWIM):

- The City will need to make a proposal to the SWFWMD via the SWIM Manager for review. The SWIM Manager will consider items such as:
  - Recreate same quality with a larger quantity, show “overwhelming” benefit to the SWFWMD.
  - Demonstrate why avoidance is not a desirable option.
- SWIM Manager will coordinate with Resource Management Division (RMD) Director for consideration.
- RMD Director may coordinate a recommendation to the SWFWMD Governing Board for consideration.
- If Governing Board supports, the legal process for CE right-of-way agreements can proceed.
- Assume approximately three months from initial proposal to RMD Director review.
- If Governing Board approves, assume approximately six months duration to have legal agreements finalized from time when RMD Director makes recommendation to Governing Board.

### 7.3 Design and Construction

As the Riverwalk Extension advances from conceptual planning into detailed design, there are multiple opportunities to refine the project in ways that support the City of Tampa’s vision for a safe, inclusive, resilient, and visually engaging waterfront corridor. Strategic design enhancements can improve usability, aesthetics, environmental function, and long-term adaptability while reinforcing the Riverwalk’s identity as a premier public space.



### **7.3.1 Aesthetic and Placemaking Features**

Incorporating integrated public art, interpretive signage, and artistic lighting can emphasize Tampa's cultural heritage and provide memorable experiences along the corridor.

### **7.3.2 Multimodal Accessibility**

Expanding the shared-use path beyond the 15-foot minimum where feasible allows for safer and more comfortable use by pedestrians, bicyclists, and individuals with mobility aids, and accommodates emergency or maintenance access. Viewpoints, benches, and shade canopies strategically placed along the corridor could offer spaces for users to pause, gather, and enjoy the waterfront environment.

### **7.3.3 Safety, Comfort, and Under-Bridge Experience**

The alignment beneath the Beneficial Drive Bridge presents a unique opportunity for design refinement. Careful positioning between Piers 4 and 5 can maximize light penetration, reduce any concerns of a perceived "tunnel effect," and preserve the Riverwalk's open-air character. For instance, aligning the extension closer to Pier 4, may increase the vertical clearance between Beneficial Drive Bridge and the extension. The increased vertical clearance could reduce the required water depth placement of the tub structure, allowing for a potential reduction in exterior wall height (refer to Optional Location 1D on Sheet 1 of Appendix A). Design strategies should include optimizing the placement between the piers, integrating reflective or light-enhancing materials, and adding low-profile lighting fixtures to increase brightness and visibility during evening hours.

### **7.3.4 Waterfront Activation and Access**

Incorporating ADA-accessible kayak landings in appropriate locations along the extension can promote non-motorized water access and recreational diversity. These features should be designed to integrate safely with pedestrian movement and other water-based uses, such as water taxis. Additional features like floating docks or water-level overlooks may provide users with direct connections to the water while activating underutilized shoreline edges. Flexibly designed areas that can accommodate pop-up cultural events can add vibrancy and economic activation along the corridor.

### **7.3.5 Partnership and Educational Enhancements**

This extension offers opportunities to align with nearby development projects enabling shared investment, connectivity improvements, and design synergy. Educational signage explaining ecological systems, shoreline restoration efforts, or cultural history can foster public awareness and stewardship of the waterfront.

Incorporating these enhancements during the design phase will help transform the Riverwalk Extension from a functional pathway into a signature, resilient, and community-centered waterfront experience.

## **7.4 Interim Enhancements**

While the Riverwalk Extension project advances through planning, environmental review, design development, and funding acquisition, there is an opportunity to implement interim improvements at the existing at-grade crossing on Beneficial Drive. These enhancements would improve safety, visibility, and user experience in the near term, while supporting the City of Tampa's broader goals for waterfront connectivity and multimodal access.

The current at-grade crossing connects the eastern terminus of the existing Riverwalk to the sidewalk system across Beneficial Drive. This crossing experiences a mix of pedestrian, bicycle, and vehicle traffic, with limited infrastructure. Potential interim enhancements to the crossing could include those described in the following subsections.





### 7.4.1 Streetscape Enhancements

- Use of modular curb extensions (for example, delineators, planters, or temporary bumpouts) to reduce crossing distance and calm vehicular traffic.
- Consideration of a pedestrian refuge island for phased crossings, especially during high-traffic periods.
- Artistic and custom-designed crosswalks that reflect branding and local cultural themes.
- Expanded sidewalks and landing areas along the east side of Beneficial Drive.
- Installation of branded benches, trash receptacles, and bicycle racks that reflect aesthetics, similar to those used along Water Street.

### 7.4.2 Signage and Wayfinding

- Installation of interim wayfinding signs to clearly direct pedestrians and bicyclists between Riverwalk segments and nearby destinations.
- Branded signage that reinforces the Riverwalk identity, even in a temporary configuration.

Implementing these interim measures allows the City to do the following:

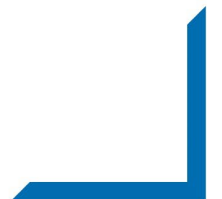
- Improve user safety and comfort in the short term.
- Support continued Riverwalk activation and public engagement.
- Reinforce the City's commitment to pedestrian- and bicycle-friendly infrastructure.
- Lay the groundwork for a seamless future connection when the full Riverwalk Extension is constructed.



# SECTION 8




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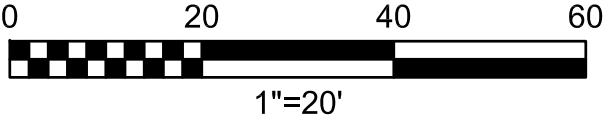
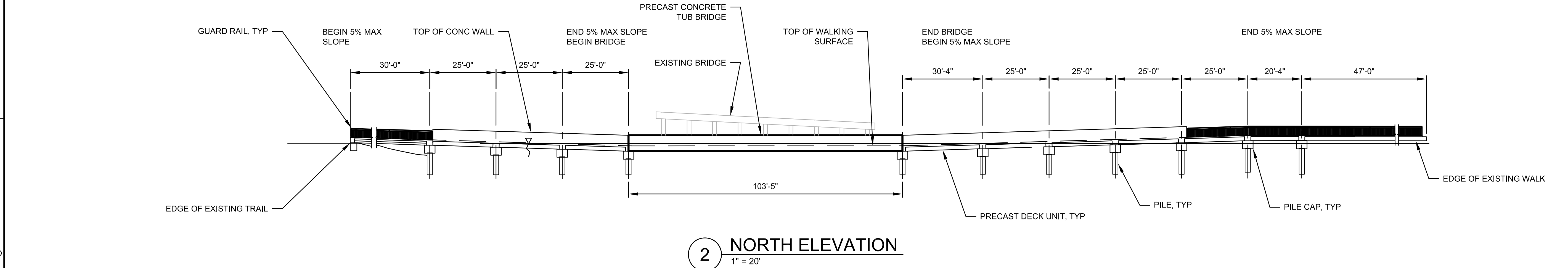
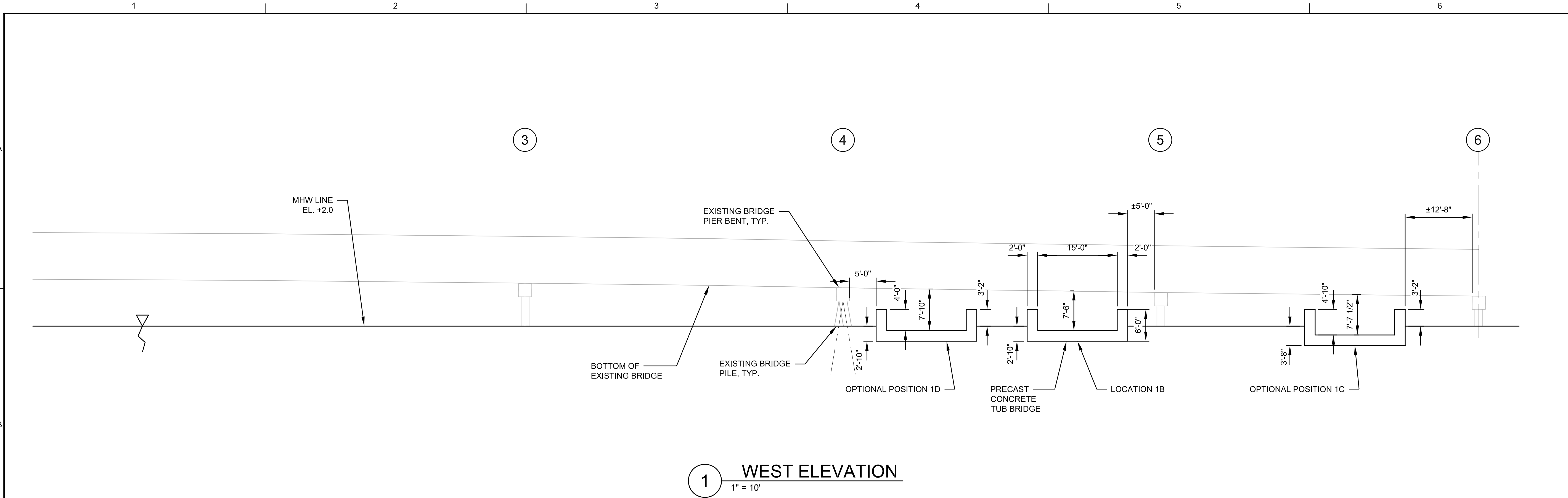
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U.S. Fish and Wildlife Service (USFWS). 2023. Information for Planning and Consultation. Version 1.4. Brevard County. <https://ecos.fws.gov/ipac/>.

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## Appendix A. Preliminary Concepts



DRAFT 10/17/2025

PRELIMINARY SUBJECT TO CHANGE.  
NOT FOR CONSTRUCTION

Jacobs

STRUCTURAL

TAMPA RIVERWALK SKETCH

DATE

PROJ

DWG

SHEET

6/11/2025

5/27/25

5/19/2025

1

WIDTH REVISED TO 15'-0"

ADDED OPTIONAL POSITION

WEST ELEV. REVISIONS & NORT ELEV. ADDED

REVISION

NO.

DATE

DSGN

DR

CHK

APVD

L HELLSTROM

APVD

AS NOTED

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.

0 1"

DATE

PROJ

DWG

SHEET

JULY 1, 2025

EGXM7402

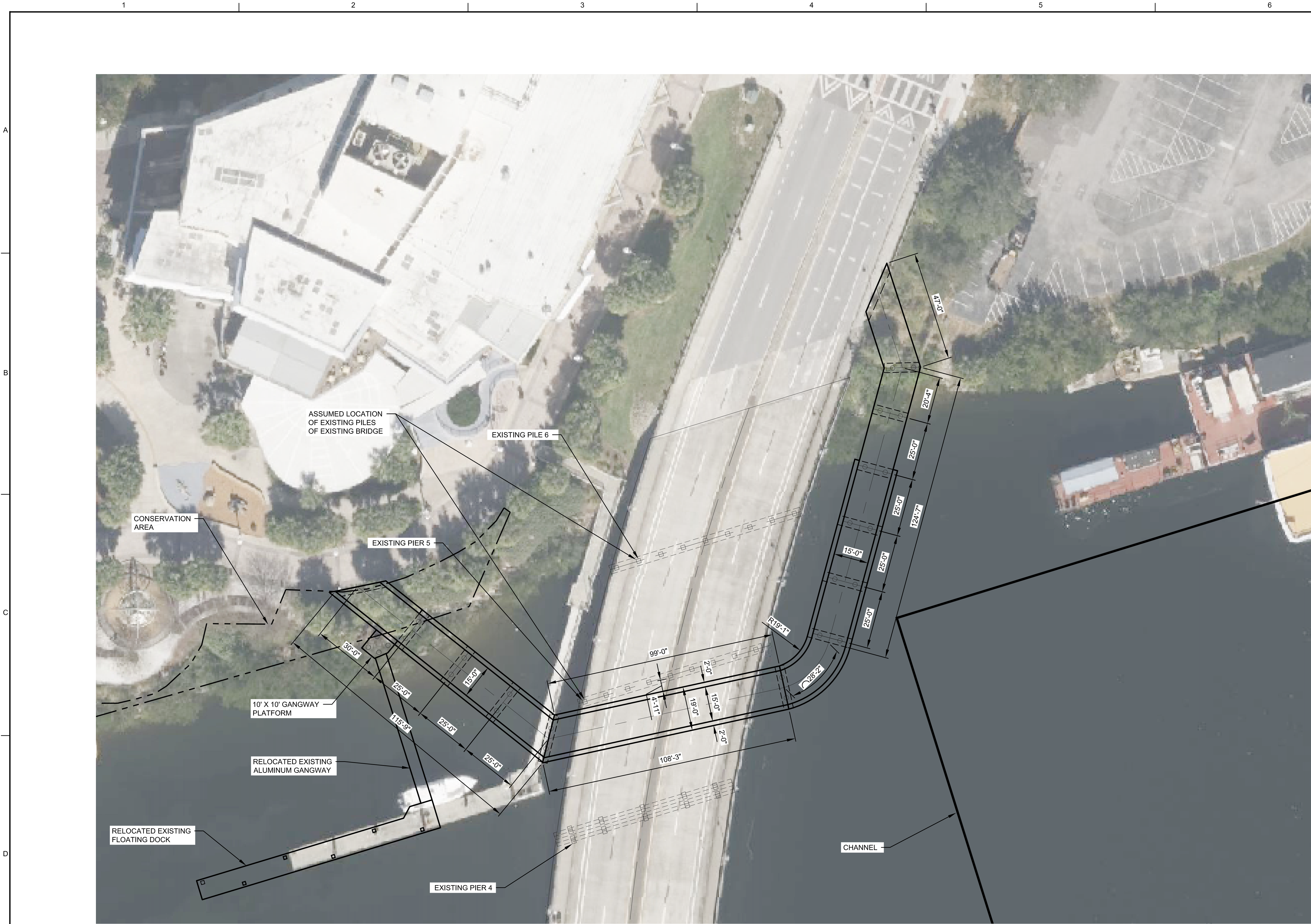
S1.0

1 X

CONCEPTUAL PLAN

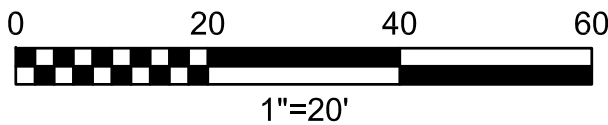
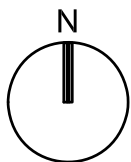
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Note: The Relocated Existing Floating Water Taxi Dock is preliminary and subject to change. A recommended alternative is pending further evaluation and coordination with City of Tampa and stakeholders.

1 CONCEPTUAL PLAN 1B  
1" = 20'



DRAFT 10/17/2025  
PRELIMINARY SUBJECT TO CHANGE.  
NOT FOR CONSTRUCTION

<div>Jacobs</div>		STRUCTURAL		TAMPA RIVERWALK EXTENSION STUDY 5401 W KENNEDY BLVD #900 TAMPA, FLORIDA 33609		TAMPA RIVERWALK SKETCH		NO.		DATE		DSGN		DR		T LUEHRS		APVD		BY		APVD	
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CONCEPTUAL PLAN

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL ENGINEERS, INC., A WHOLLY OWNED SUBSIDIARY TO JACOBS ENGINEERING GROUP, AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.

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## Appendix B. NRCS Soil Report



United States  
Department of  
Agriculture

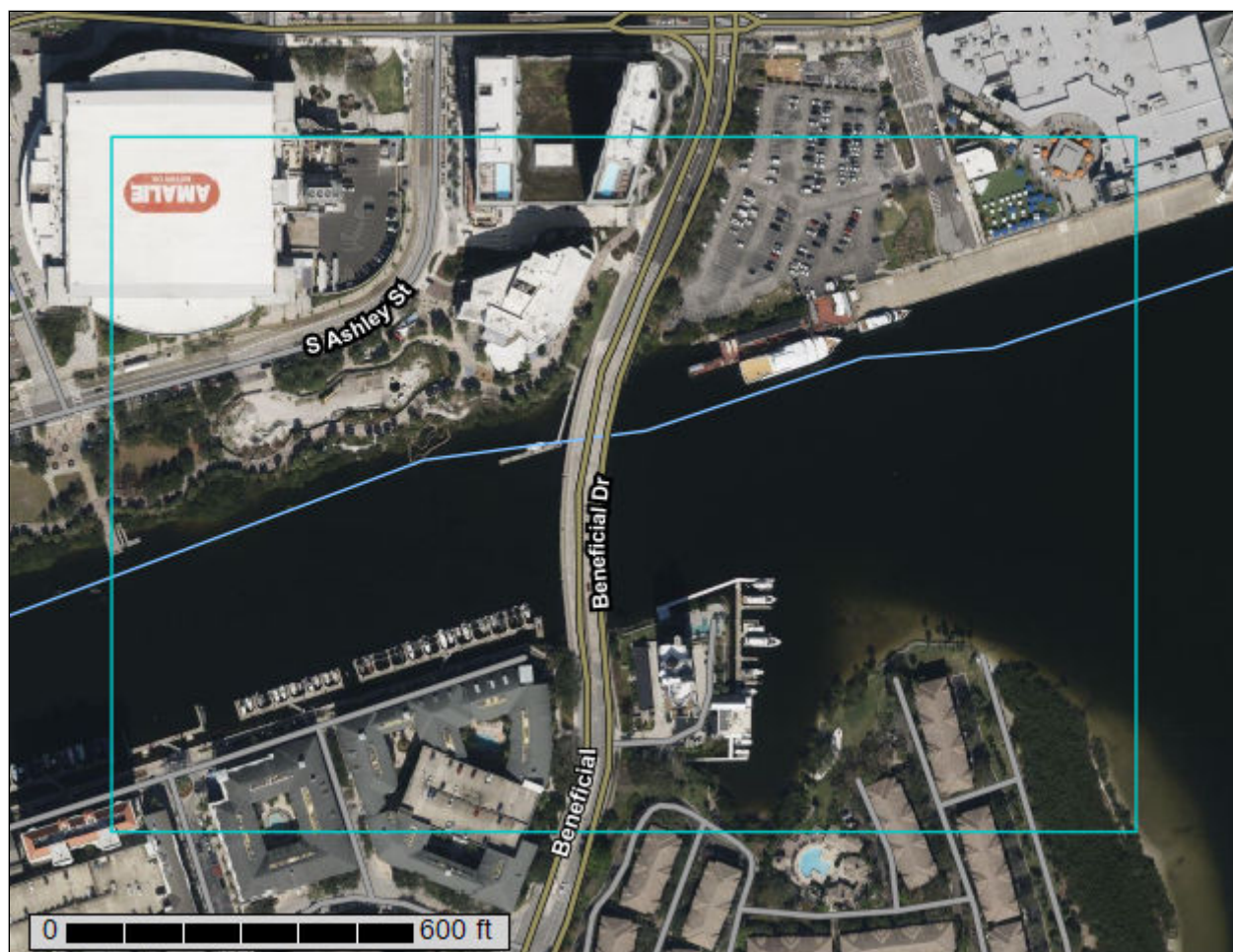
**NRCS**

Natural  
Resources  
Conservation  
Service

A product of the National  
Cooperative Soil Survey,  
a joint effort of the United  
States Department of  
Agriculture and other  
Federal agencies, State  
agencies including the  
Agricultural Experiment  
Stations, and local  
participants

# Custom Soil Resource Report for Hillsborough County, Florida

TampaRiverwalkExtension





# Preface

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Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# How Soil Surveys Are Made

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Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

## Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.



# Soil Map

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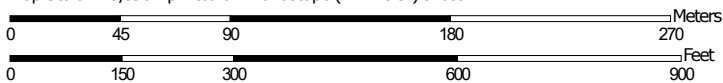
The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report Soil Map (TampaRiverwalkExtension)



Soil Map may not be valid at this scale.

Map Scale: 1:3,090 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

# Custom Soil Resource Report

## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

### Special Point Features

 Blowout

 Borrow Pit

 Clay Spot


 Closed Depression

 Gravel Pit

 Gravelly Spot


 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water


 Perennial Water

 Rock Outcrop


 Saline Spot

 Sandy Spot

 Severely Eroded Spot


 Sinkhole


 Slide or Slip


 Sodic Spot

 Spoil Area

 Stony Spot


 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

### Water Features

 Streams and Canals

### Transportation

 Rails


 Interstate Highways

 US Routes

 Major Roads

 Local Roads

### Background

 Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL:  
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hillsborough County, Florida  
Survey Area Data: Version 24, Aug 26, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 1, 2023—Sep 1, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



## Map Unit Legend (TampaRiverwalkExtension)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
45	St. Augustine-Urban land complex	10.1	20.9%
56	Urban land, 0 to 2 percent slopes	18.0	37.1%
99	Water	20.4	42.0%
<b>Totals for Area of Interest</b>		<b>48.6</b>	<b>100.0%</b>

## Map Unit Descriptions (TampaRiverwalkExtension)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

## Custom Soil Resource Report

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Hillsborough County, Florida

### 45—St. Augustine-Urban land complex

#### Map Unit Setting

*National map unit symbol:* 1j72y  
*Elevation:* 0 to 100 feet  
*Mean annual precipitation:* 48 to 56 inches  
*Mean annual air temperature:* 70 to 77 degrees F  
*Frost-free period:* 324 to 354 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*St. augustine and similar soils:* 50 percent  
*Urban land:* 40 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of St. Augustine

##### Setting

*Landform:* Rises on marine terraces, flats on marine terraces  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Parent material:* Sandy mine spoil or earthy fill

##### Typical profile

*A - 0 to 3 inches:* fine sand  
*C - 3 to 80 inches:* fine sand

##### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Somewhat poorly drained  
*Runoff class:* Very low  
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (1.98 to 19.98 in/hr)  
*Depth to water table:* About 18 to 36 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 15 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 4.0  
*Available water supply, 0 to 60 inches:* Low (about 4.7 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7s  
*Hydrologic Soil Group:* A/D  
*Forage suitability group:* Forage suitability group not assigned (G155XB999FL)  
*Other vegetative classification:* Forage suitability group not assigned (G155XB999FL)  
*Hydric soil rating:* No



## Description of Urban Land

### Setting

*Landform:* Marine terraces  
*Landform position (three-dimensional):* Interfluve, talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* No parent material

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Forage suitability group:* Forage suitability group not assigned (G155XB999FL)  
*Other vegetative classification:* Forage suitability group not assigned (G155XB999FL)  
*Hydric soil rating:* Unranked

## Minor Components

### Kesson, frequently flooded

*Percent of map unit:* 5 percent  
*Landform:* Tidal marshes on marine terraces  
*Landform position (three-dimensional):* Interfluve, talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* Forage suitability group not assigned (G155XB999FL), Salt Marsh (R155XY009FL)  
*Hydric soil rating:* Yes

### Myakka, frequently flooded

*Percent of map unit:* 5 percent  
*Landform:* Tidal marshes on marine terraces  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* Forage suitability group not assigned (G155XB999FL), Salt Marsh (R155XY009FL)  
*Hydric soil rating:* Yes

## 56—Urban land, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* 2x9fc  
*Elevation:* 0 to 200 feet  
*Mean annual precipitation:* 40 to 68 inches  
*Mean annual air temperature:* 68 to 79 degrees F  
*Frost-free period:* 345 to 365 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Urban land:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Urban Land

#### Setting

*Landform:* Flatwoods on marine terraces, rises on marine terraces, knolls on marine terraces, ridges on marine terraces, hills on marine terraces

*Landform position (two-dimensional):* Summit, backslope

*Landform position (three-dimensional):* Interfluve, side slope, riser, talf, rise

*Down-slope shape:* Linear, convex

*Across-slope shape:* Linear

*Parent material:* No parent material

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Forage suitability group:* Forage suitability group not assigned (G155XB999FL)

*Other vegetative classification:* Forage suitability group not assigned (G155XB999FL)

*Hydric soil rating:* Unranked

### Minor Components

#### Matlacha

*Percent of map unit:* 3 percent

*Landform:* Flats on marine terraces

*Landform position (three-dimensional):* Tread, talf

*Down-slope shape:* Convex, linear

*Across-slope shape:* Linear

*Other vegetative classification:* Forage suitability group not assigned (G155XB999FL)

*Hydric soil rating:* No

#### St. augustine

*Percent of map unit:* 3 percent

*Landform:* Marine terraces

*Landform position (three-dimensional):* Tread, rise

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Other vegetative classification:* Forage suitability group not assigned (G155XB999FL)

*Hydric soil rating:* No

#### Paola

*Percent of map unit:* 1 percent

*Landform:* Knolls on marine terraces, ridges on marine terraces

*Landform position (two-dimensional):* Backslope, summit

*Landform position (three-dimensional):* Side slope, interfluve, riser

*Down-slope shape:* Convex, linear

*Across-slope shape:* Linear

*Other vegetative classification:* Sandy soils on ridges and dunes of xeric uplands (G155XB111FL), Sand Pine Scrub (R155XY001FL)

*Hydric soil rating:* No

## Custom Soil Resource Report

### **Adamsville**

*Percent of map unit:* 1 percent  
*Landform:* Knolls on marine terraces, rises on marine terraces  
*Landform position (three-dimensional):* Tread, rise  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Other vegetative classification:* Sandy soils on rises and knolls of mesic uplands (G155XB131FL), Upland Hardwood Hammock (R155XY008FL)  
*Hydric soil rating:* No

### **Eaugallie**

*Percent of map unit:* 1 percent  
*Landform:* Flatwoods on marine terraces  
*Landform position (three-dimensional):* Tread, talf  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Other vegetative classification:* South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)  
*Hydric soil rating:* No

### **Immokalee**

*Percent of map unit:* 1 percent  
*Landform:* Flatwoods on marine terraces  
*Landform position (three-dimensional):* Riser, talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)  
*Hydric soil rating:* No

### **Myakka**

*Percent of map unit:* 1 percent  
*Landform:* Drainageways on flatwoods on marine terraces  
*Landform position (three-dimensional):* Tread, talf, dip  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear, concave  
*Other vegetative classification:* Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)  
*Hydric soil rating:* No

### **Pomello**

*Percent of map unit:* 1 percent  
*Landform:* Knolls on marine terraces, ridges on marine terraces  
*Landform position (two-dimensional):* Backslope, summit  
*Landform position (three-dimensional):* Interfluve, side slope, riser  
*Down-slope shape:* Convex, linear  
*Across-slope shape:* Linear  
*Other vegetative classification:* Sandy soils on rises and knolls of mesic uplands (G155XB131FL), Sand Pine Scrub (R155XY001FL)  
*Hydric soil rating:* No

### **Apopka**

*Percent of map unit:* 1 percent  
*Landform:* Ridges on marine terraces, hills on marine terraces  
*Landform position (two-dimensional):* Summit, backslope  
*Landform position (three-dimensional):* Interfluve, side slope, riser



## Custom Soil Resource Report

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Other vegetative classification:* Sandy soils on ridges and dunes of xeric uplands (G155XB111FL), Longleaf Pine-Turkey Oak Hills (R155XY002FL)

*Hydric soil rating:* No

### **Brynwood**

*Percent of map unit:* 1 percent

*Landform:* Flatwoods on marine terraces

*Landform position (three-dimensional):* Tread, talf

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)

*Hydric soil rating:* Yes

### **Cypress lake**

*Percent of map unit:* 1 percent

*Landform:* Drainageways on marine terraces, flats on marine terraces

*Landform position (three-dimensional):* Tread, dip, talf

*Down-slope shape:* Linear, convex

*Across-slope shape:* Concave, linear

*Other vegetative classification:* Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), South Florida Flatwoods (R155XY003FL)

*Hydric soil rating:* Yes

## **99—Water**

### **Map Unit Composition**

*Water:* 100 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Water**

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Forage suitability group:* Forage suitability group not assigned (G155XB999FL)

*Other vegetative classification:* Forage suitability group not assigned (G155XB999FL)

*Hydric soil rating:* Unranked

# References

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- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2\\_053374](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374)
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

## Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2\\_054242](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242)

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053624](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624)

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. [http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs142p2\\_052290.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf)





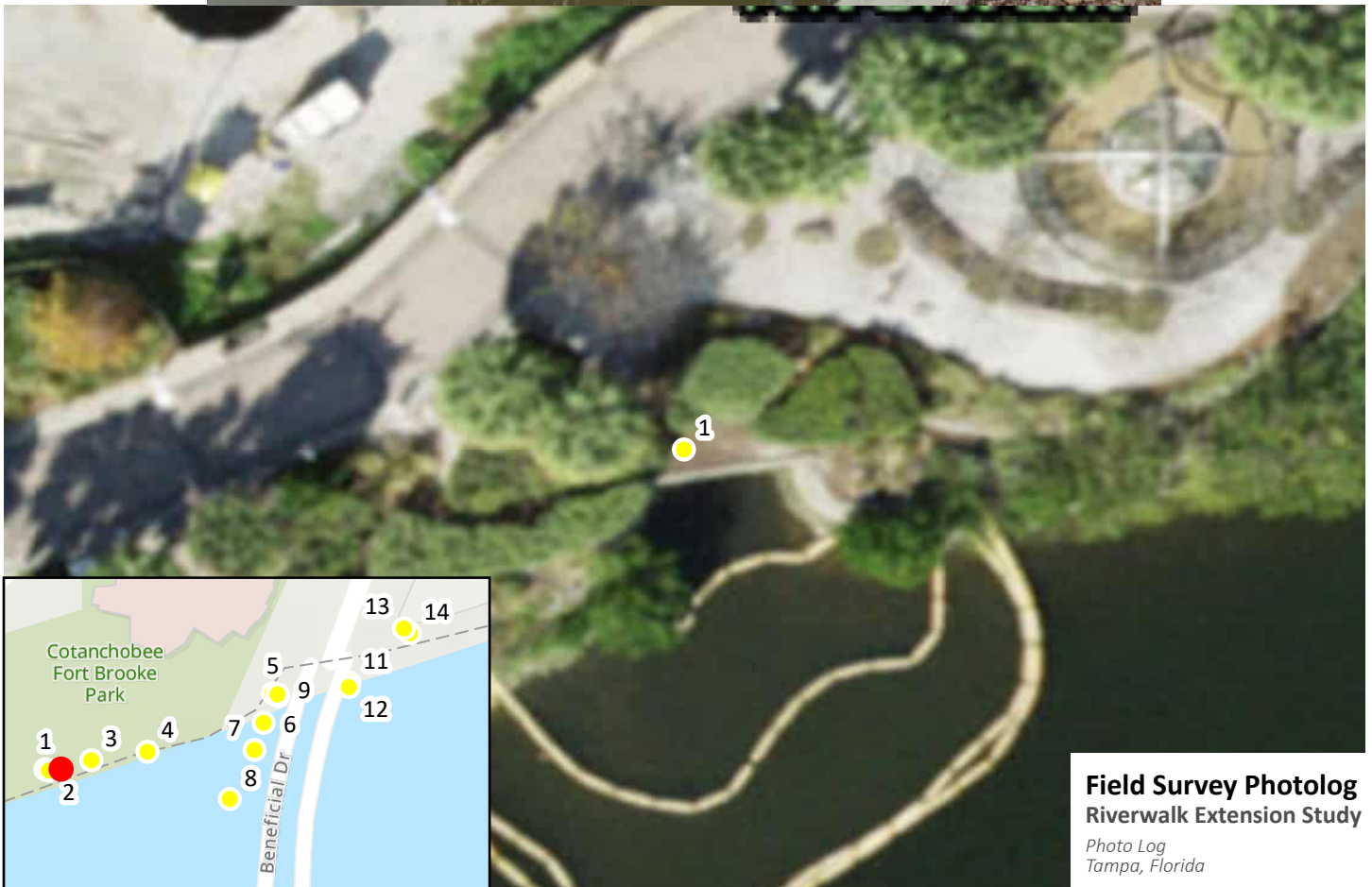
## Appendix C. Field Review Photo Log

**OID:** 1

**DATE:** 09/04/2024, 10:16 AM

**LOCATION:** 27.94164077 / -82.45043138

**NOTES:** Photo Direction- facing southwest. West of Beneficial Bridge - upland at outfall. West end at outfall with red mangroves and observed oysters, crabs, and oysters.



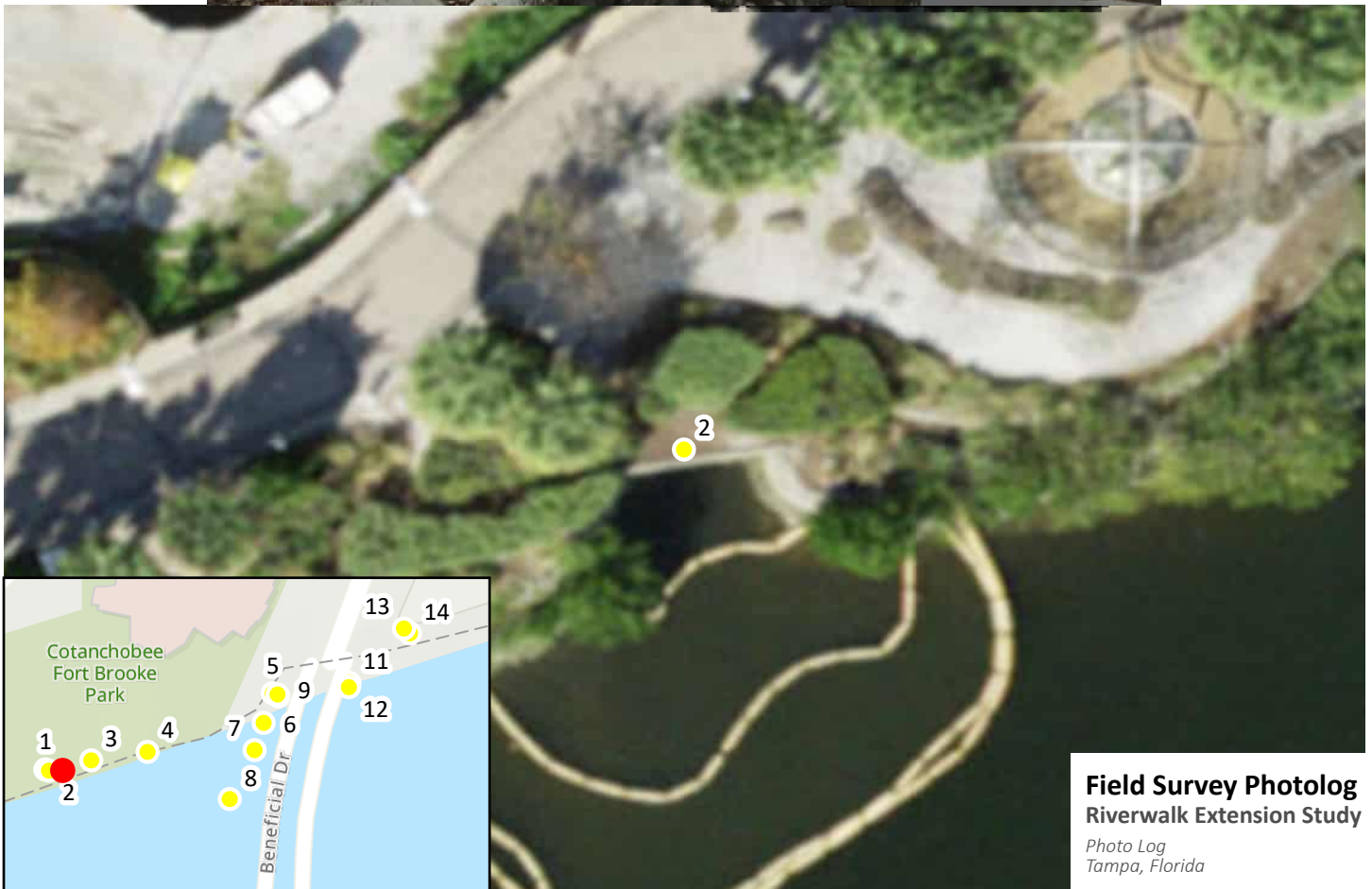


**OID:** 2

**DATE:** 09/04/2024, 10:16 AM

**LOCATION:** 27.94163693 / -82.45042042

**NOTES:** Photo Direction - facing southeast. West of Beneficial Bridge - upland at outfall. West end at outfall with red mangroves.



**Field Survey Photolog**  
**Riverwalk Extension Study**

*Photo Log*  
*Tampa, Florida*

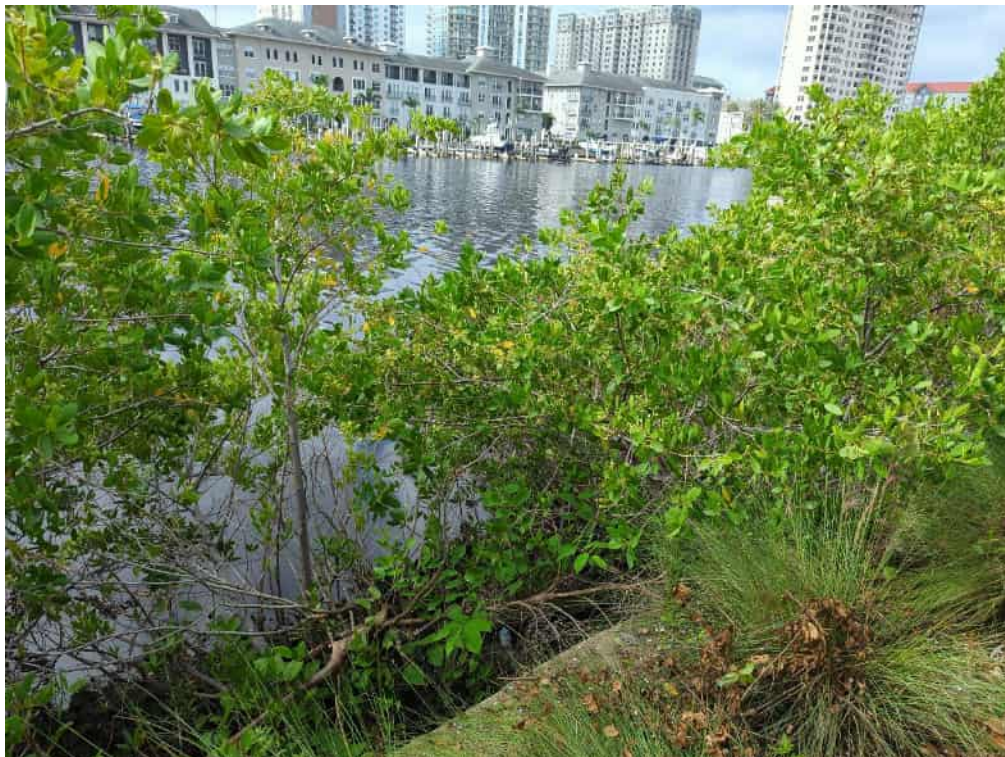


**OID:** 3

**DATE:** 09/04/2024, 10:30 AM

**LOCATION:** 27.94166772 / -82.4502707

**NOTES:** Photo Direction - facing southwest. West of Beneficial Bridge - upland between outfall and walkway to pier. East of outfall with mixed mangrove fringe along water's edge.



**Field Survey Photolog**  
**Riverwalk Extension Study**

*Photo Log*  
*Tampa, Florida*

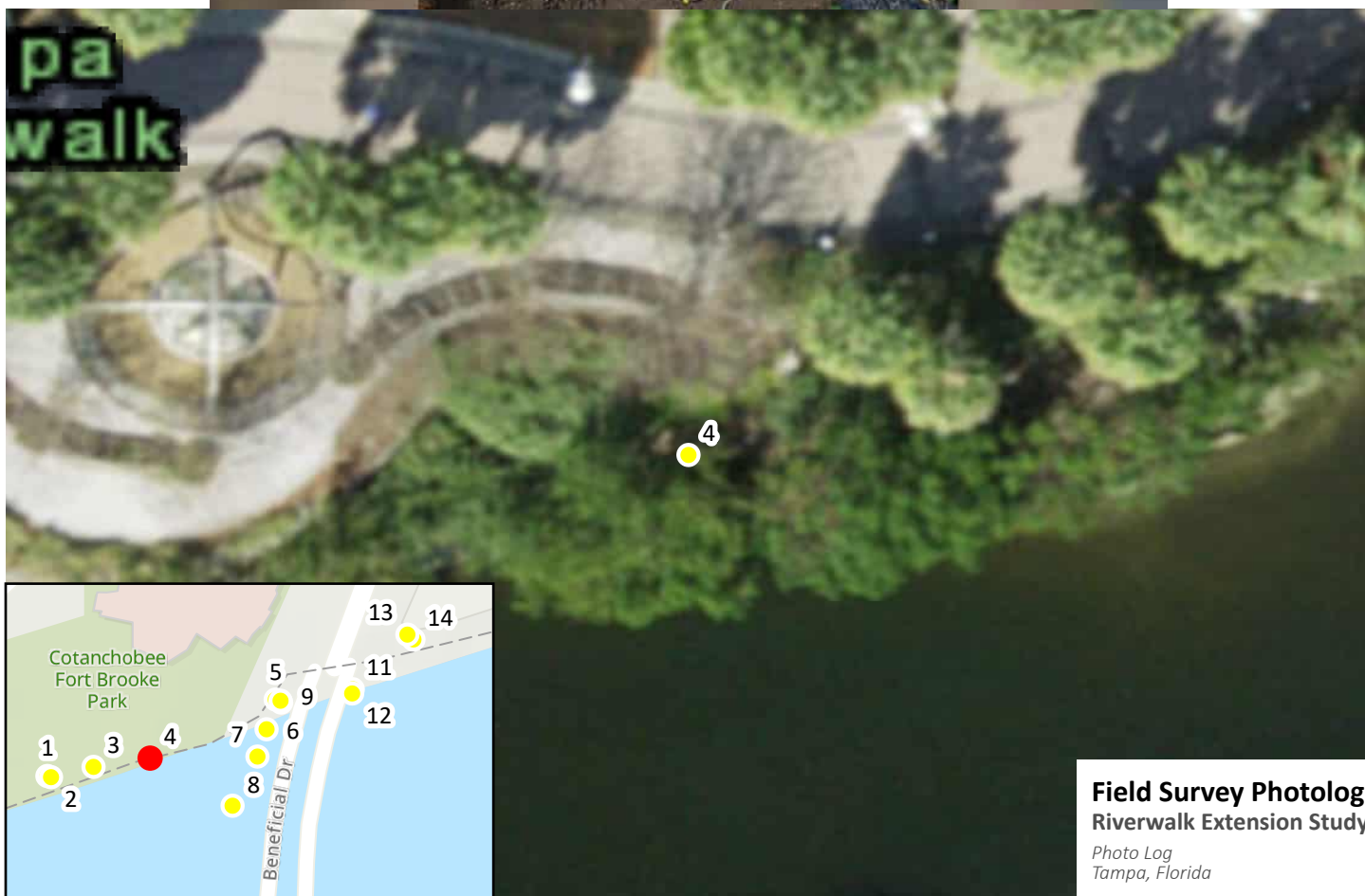


**OID:** 4

**DATE:** 09/04/2024, 10:42 AM

**LOCATION:** 27.94169545 / -82.45007202

**NOTES:** Photo Direction - facing south. West of Beneficial Bridge - upland between outfall and walkway to pier. East of outfall with mixed mangrove fringe on water's edge.



**Field Survey Photolog**  
**Riverwalk Extension Study**

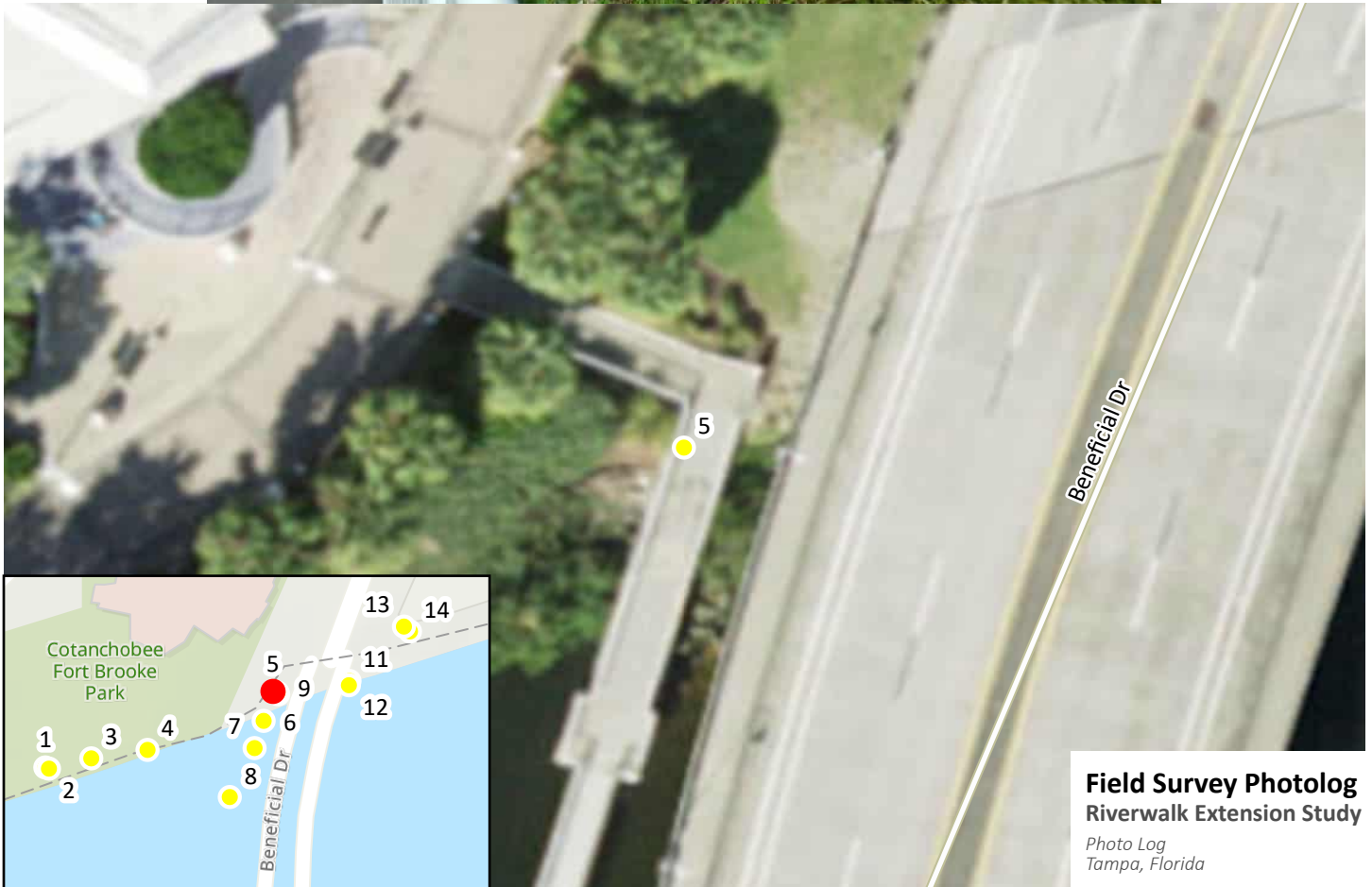
*Photo Log*  
*Tampa, Florida*

**OID:** 5

**DATE:** 09/04/2024, 10:52 AM

**LOCATION:** 27.94187665 / -82.44963052

**NOTES:** Photo Direction - facing southwest. West of Beneficial Bridge - on west side of walkway to dock/pier. North end of walkway to dock with ornamental plants and mangrove fringe on water's edge.



**Field Survey Photolog**  
**Riverwalk Extension Study**

Photo Log  
Tampa, Florida



**OID:** 6

**DATE:** 09/04/2024, 10:59 AM

**LOCATION:** 27.94178552 / -82.44966287

**NOTES:** Photo Direction - facing west. West of Beneficial Bridge - on west side of walkway to dock/pier. Middle of walkway to dock with mangrove fringe at water's edge and upland trees and ornamental plants.



**Field Survey Photolog**  
**Riverwalk Extension Study**

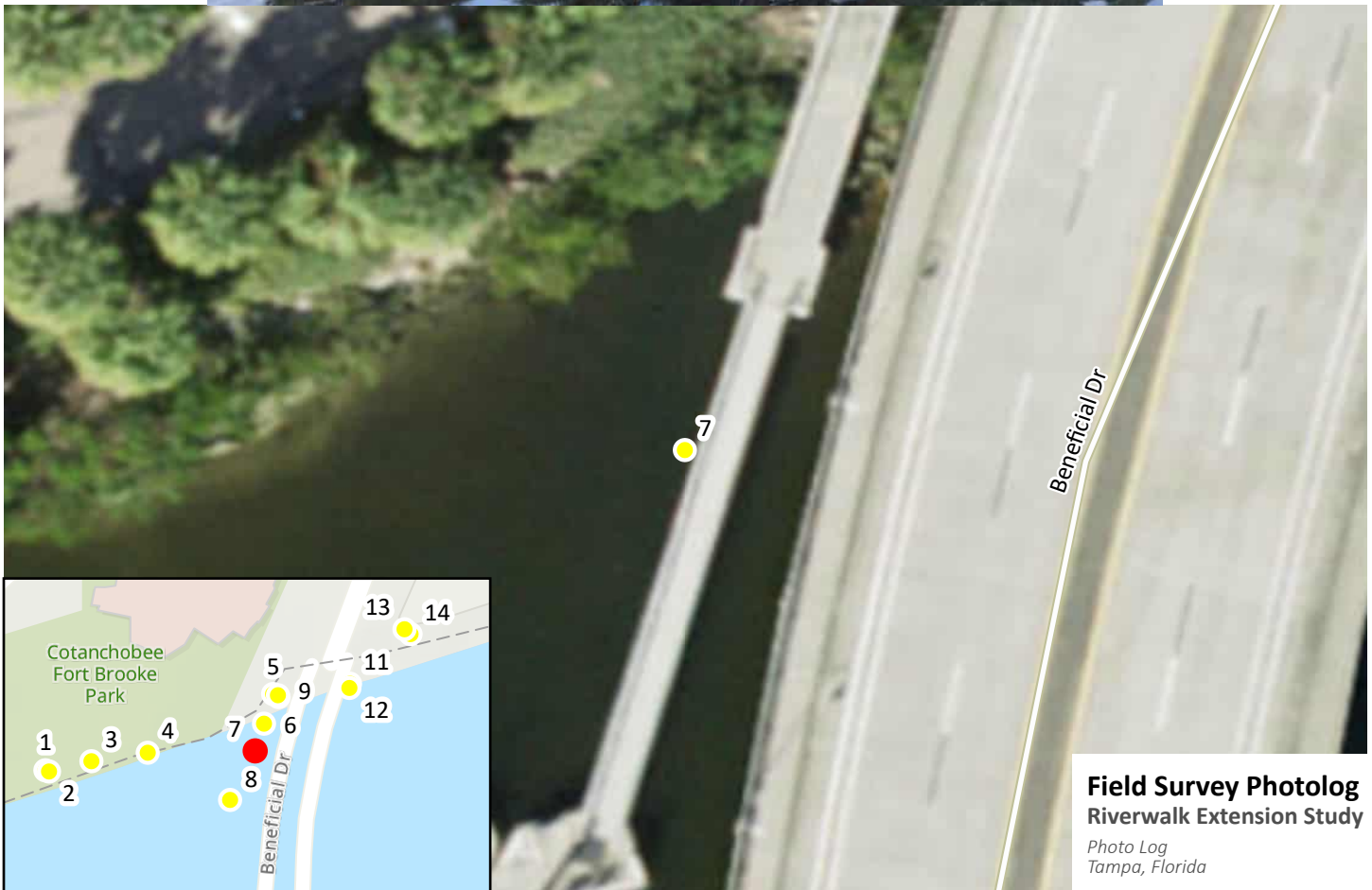
Photo Log  
Tampa, Florida

**OID:** 7

**DATE:** 09/04/2024, 11:03 AM

**LOCATION:** 27.94170037 / -82.44969453

**NOTES:** Photo Direction - facing northwest. West of Beneficial Bridge - on west side of walkway to dock/pier. Middle of walkway to dock with two outfalls, mangrove fringe at water's edge and upland trees and ornamental plants.



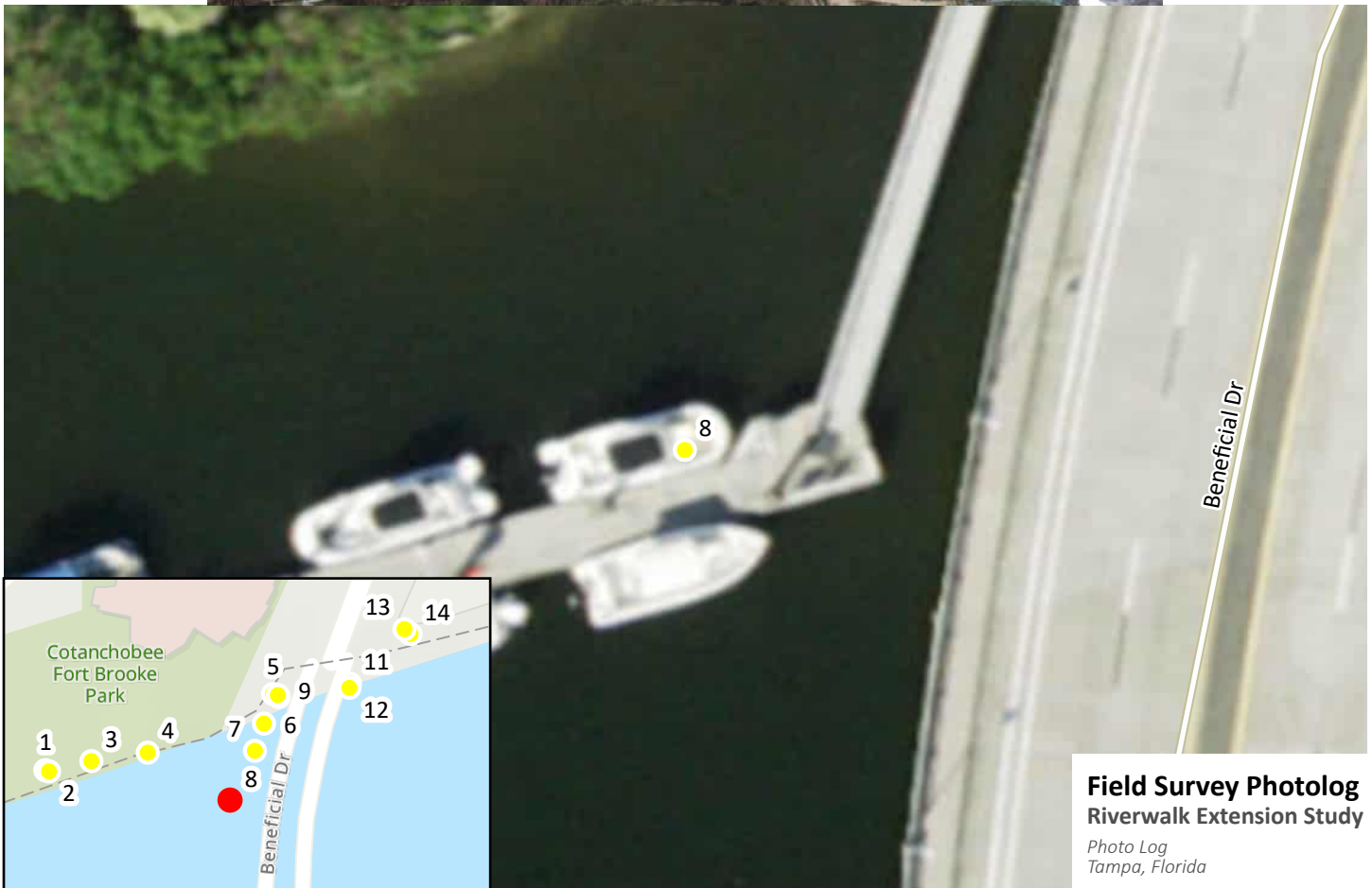


**OID:** 8

**DATE:** 09/04/2024, 11:06 AM

**LOCATION:** 27.94154708 / -82.44978297

**NOTES:** Photo Direction - facing north. West of Beneficial Bridge - on pier over water. East end on the floating dock with two outfalls, mangrove fringe at water's edge, and upland trees and ornamental plants.



**Field Survey Photolog**  
**Riverwalk Extension Study**

Photo Log  
Tampa, Florida

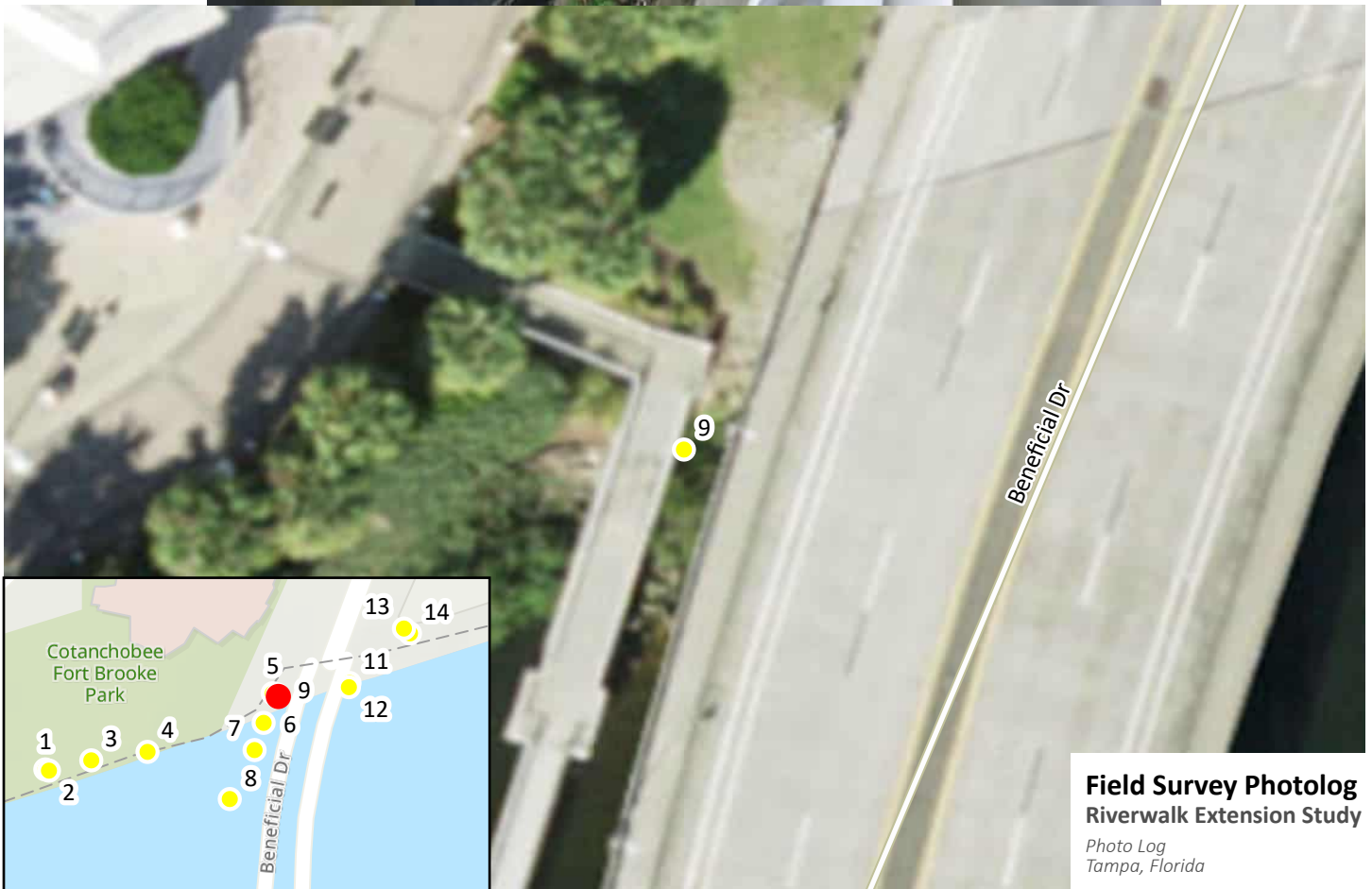


**OID:** 9

**DATE:** 09/04/2024, 11:21 AM

**LOCATION:** 27.94186713 / -82.44961177

**NOTES:** Photo Direction - facing south. West of Beneficial Bridge - on east side of walkway to dock/pier North end of walkway to dock with mixed mangroves on water's edge.



**Field Survey Photolog**  
**Riverwalk Extension Study**

Photo Log  
Tampa, Florida

**OID:** 10

**DATE:** 09/04/2024, 11:22 AM

**LOCATION:** 27.94187338 / -82.44961548

**NOTES:** Photo Direction - facing east. West of Beneficial Bridge - on east side of walkway to dock/pier. North end of walkway to dock with upland plant species.



**Field Survey Photolog**  
**Riverwalk Extension Study**

Photo Log  
Tampa, Florida

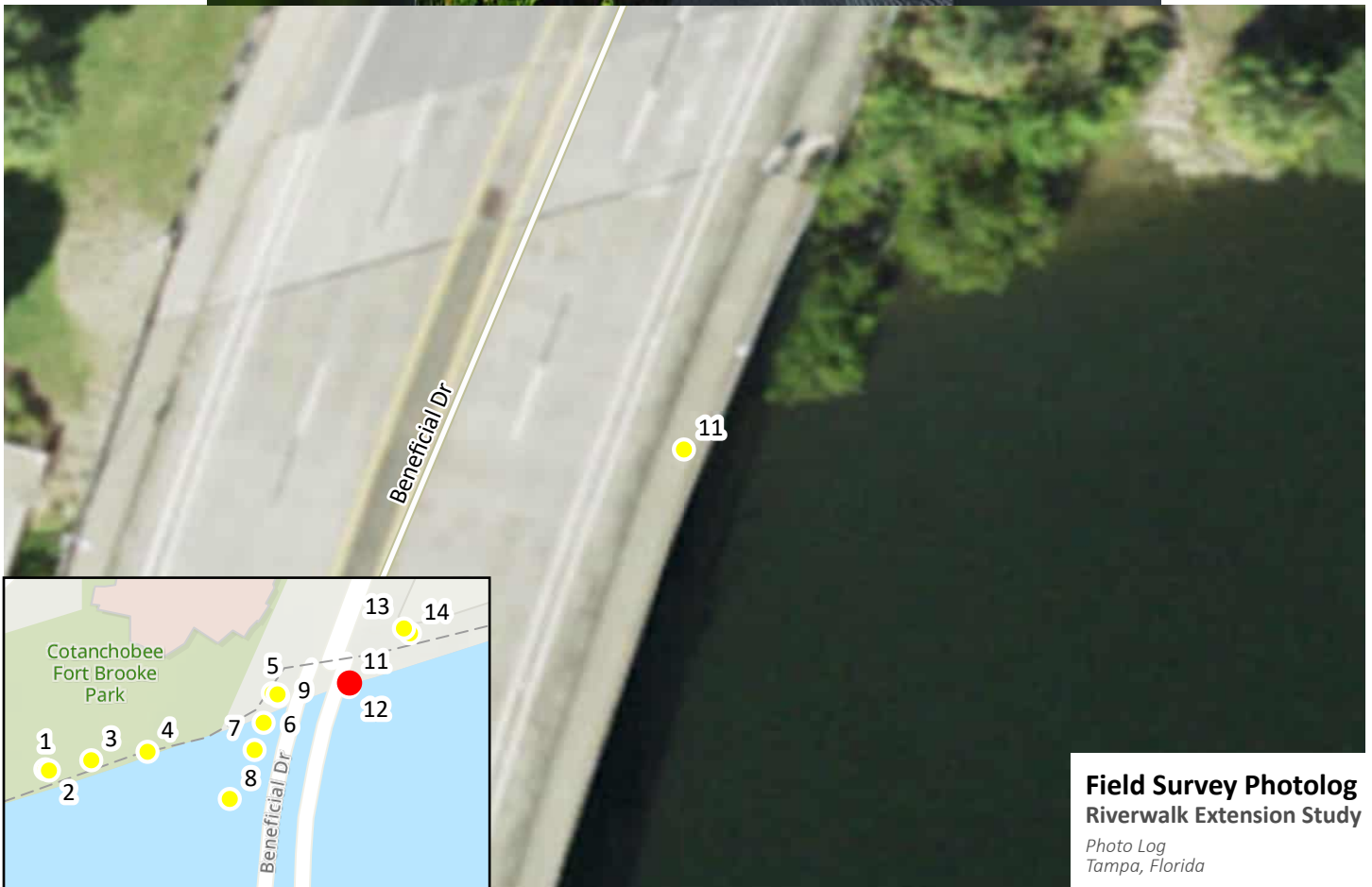
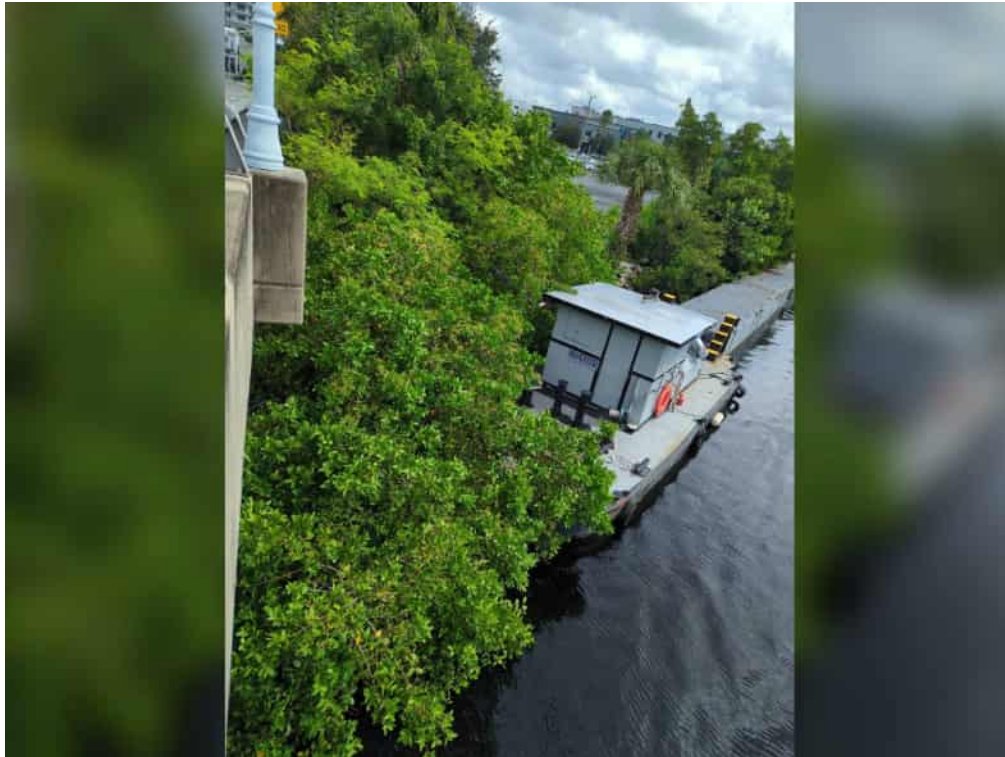


OID: 11

DATE: 09/04/2024, 11:41 AM

LOCATION: 27.94190875 / -82.44936103

**NOTES:** Photo Direction - facing northeast. Top of Beneficial Bridge. Mixed mangrove fringe on water's edge and upland trees and plants. Star Ship Cruise boats.



**Field Survey Photolog**  
**Riverwalk Extension Study**

Photo Log  
Tampa, Florida

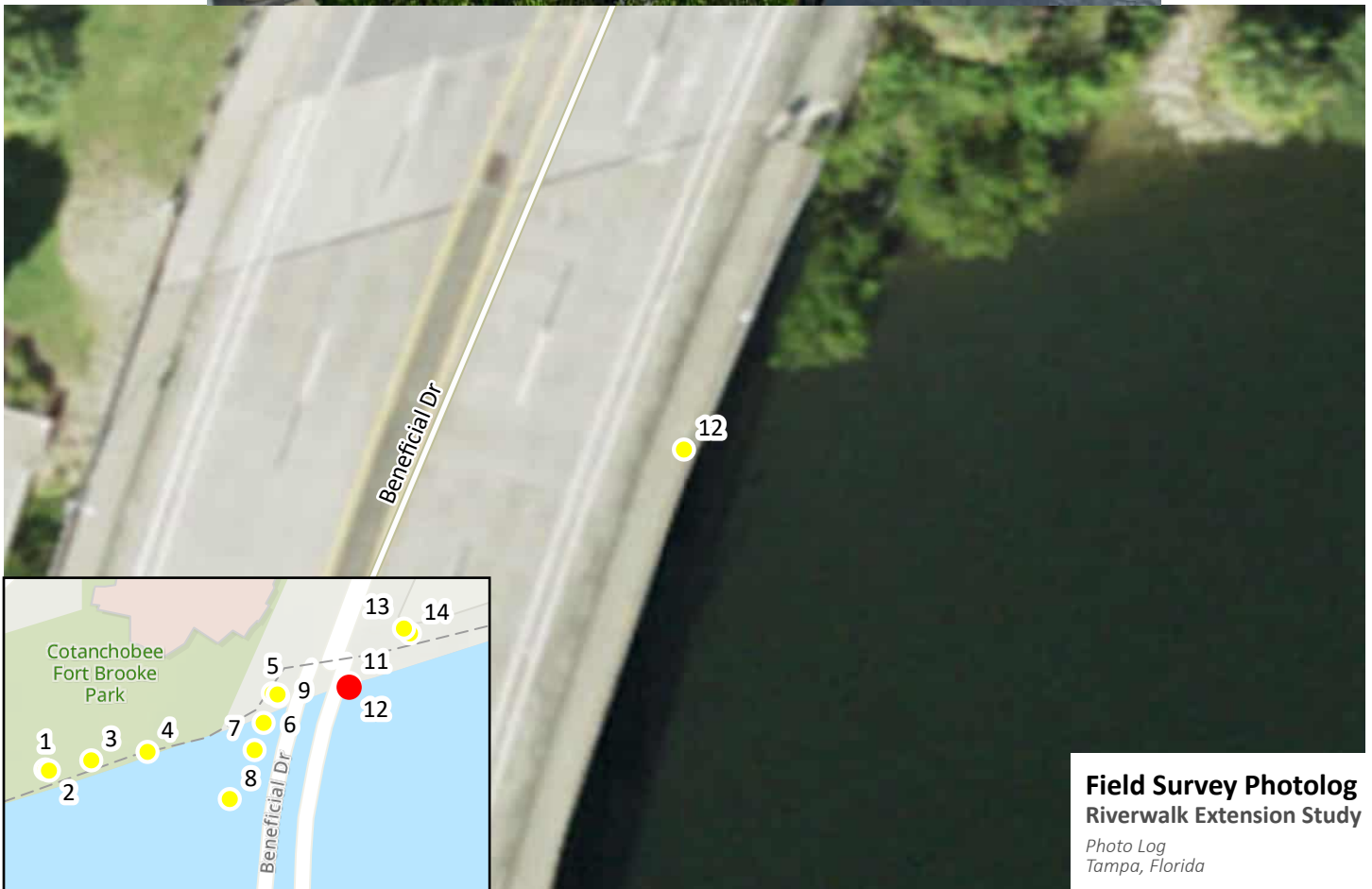


**OID:** 12

**DATE:** 09/04/2024, 11:42 AM

**LOCATION:** 27.94189585 / -82.44936243

**NOTES:** Photo Direction - facing east. Top of Beneficial Bridge. East side of bridge with mixed mangrove fringe on water's edge and upland trees and plants. Star Ship Cruise boats.



**Field Survey Photolog**  
**Riverwalk Extension Study**

Photo Log  
Tampa, Florida

**OID:** 13

**DATE:** 09/04/2024, 11:54 AM

**LOCATION:** 27.94207933 / -82.44916863

**NOTES:** Photo Direction - facing south. East of Beneficial Bridge. East side of bridge with upland tree and plant species. Star Ship Cruise boats.



**Field Survey Photolog**  
**Riverwalk Extension Study**

Photo Log  
Tampa, Florida

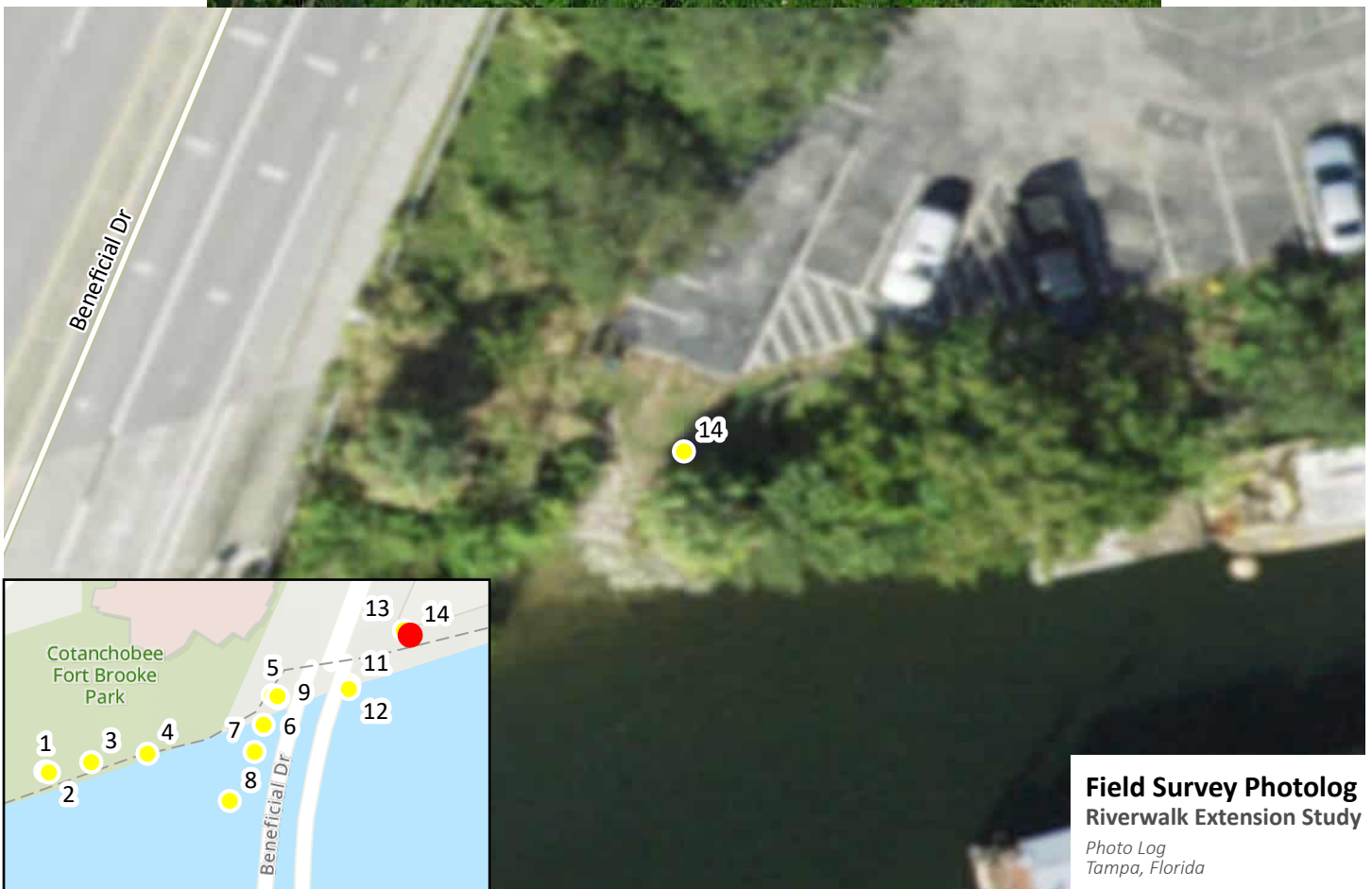


**OID:** 14

**DATE:** 09/04/2024, 11:54 AM

**LOCATION:** 27.94206373 / -82.44914742

**NOTES:** Photo Direction - facing southwest. East of Beneficial Bridge. East side of bridge with white mangrove cluster along water's edge and upland trees and plants.



**Field Survey Photolog**  
**Riverwalk Extension Study**

Photo Log  
Tampa, Florida



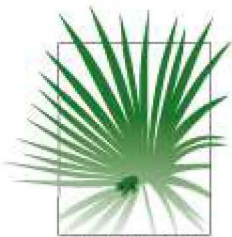


## Appendix D. IPaC Report



## Appendix E. FNAI Report





FLORIDA  
Natural Areas  
INVENTORY

1018 Thomasville Road  
Suite 200-C  
Tallahassee, FL 32303  
850-224-8207  
850-681-9364 fax  
www.fnai.org

## Florida Natural Areas Inventory

### Biodiversity Matrix Query Results

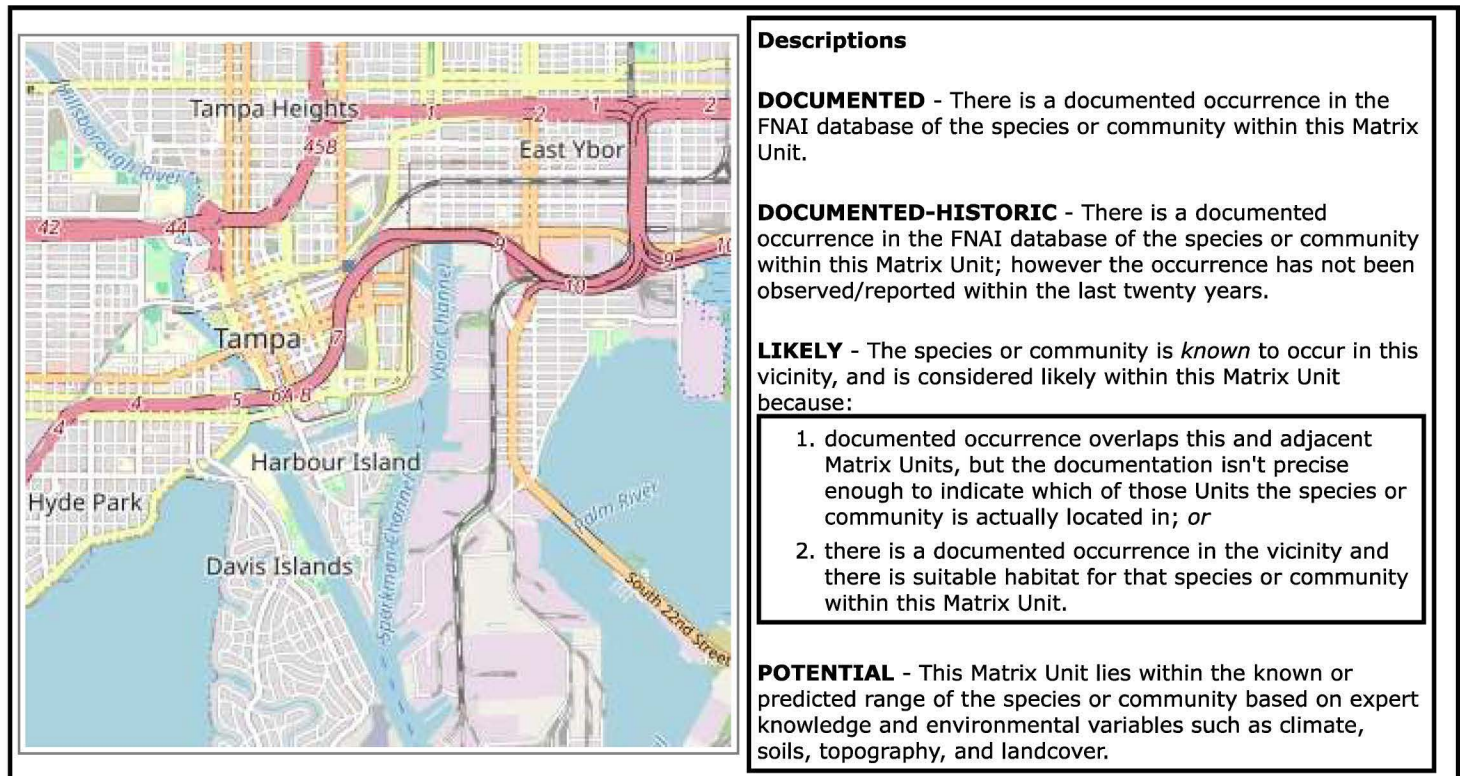
#### UNOFFICIAL REPORT

Created 12/16/2024

(Contact the FNAI Data Services Coordinator at 850.224.8207 or  
kbrinegar@fnai.fsu.edu for information on an official Standard Data Report)

NOTE: The Biodiversity Matrix includes only rare species and natural communities tracked by FNAI.

#### Report for 1 Matrix Unit: 25776



#### Descriptions

**DOCUMENTED** - There is a documented occurrence in the FNAI database of the species or community within this Matrix Unit.

**DOCUMENTED-HISTORIC** - There is a documented occurrence in the FNAI database of the species or community within this Matrix Unit; however the occurrence has not been observed/reported within the last twenty years.

**LIKELY** - The species or community is *known* to occur in this vicinity, and is considered likely within this Matrix Unit because:

1. documented occurrence overlaps this and adjacent Matrix Units, but the documentation isn't precise enough to indicate which of those Units the species or community is actually located in; *or*
2. there is a documented occurrence in the vicinity and there is suitable habitat for that species or community within this Matrix Unit.

**POTENTIAL** - This Matrix Unit lies within the known or predicted range of the species or community based on expert knowledge and environmental variables such as climate, soils, topography, and landcover.

#### Matrix Unit ID: 25776

0 Documented Elements Found

0 Documented-Historic Elements Found

1 Likely Element Found

Scientific and Common Names	Global Rank	State Rank	Federal Status	State Listing
<a href="#">Mycteria americana</a> Wood Stork	G4	S2	T	FT

#### Matrix Unit ID: 25776

21 Potential Elements for Matrix Unit 25776

Scientific and Common Names	Global Rank	State Rank	Federal Status	State Listing
-----------------------------	-------------	------------	----------------	---------------



<a href="#"><u>Acipenser oxyrinchus desotoi</u></a> Gulf Sturgeon	G3T2T3	S2?	T	FT
<a href="#"><u>Agrimonia incisa</u></a> incised groove-bur	G3	S2	N	T
<i>Antigone canadensis pratensis</i> Florida Sandhill Crane	G5T2	S2	N	ST
<a href="#"><u>Athene cunicularia floridana</u></a> Florida Burrowing Owl	G4T3	S3	N	ST
<i>Bolbocerosoma hamatum</i> Bicolored Burrowing Scarab Beetle	G3G4	S3	N	N
<a href="#"><u>Centrosema arenicola</u></a> sand butterfly pea	G2Q	S2	N	E
<a href="#"><u>Dermochelys coriacea</u></a> Leatherback Sea Turtle	G2	S2	E	FE
<a href="#"><u>Drymarchon couperi</u></a> Eastern Indigo Snake	G3	S2?	T	FT
<a href="#"><u>Eretmochelys imbricata</u></a> Hawksbill Sea Turtle	G3	S1	E	FE
<a href="#"><u>Eumops floridanus</u></a> Florida bonneted bat	G1	S1	E	FE
<a href="#"><u>Gopherus polyphemus</u></a> Gopher Tortoise	G3	S3	C	ST
<a href="#"><u>Gymnopogon chapmanianus</u></a> Chapman's skeletongrass	G3	S3	N	N
<i>Lampropeltis extenuata</i> Short-tailed Snake	G3	S3	N	ST
<a href="#"><u>Nemastylis floridana</u></a> celestial lily	G2	S2	N	E
<i>Phyllophaga elongata</i> Elongate June Beetle	G3	S3	N	N
<a href="#"><u>Pteroglossaspis ecristata</u></a> giant orchid	G2G3	S2	N	T
<i>Rallus longirostris scottii</i> Florida Clapper Rail	G5T3?	S3?	N	N
<i>Sciurus niger niger</i> Southeastern Fox Squirrel	G5T5	S3	N	N
<i>Selonodon mandibularis</i> Large-Jawed Cebionid Beetle	G2G4	S2S4	N	N
<i>Setophaga discolor paludicola</i> Florida Prairie Warbler	G5T3	S3	N	N
<i>Trichechus manatus latirostris</i> Florida Manatee	G2G3T2	S2S3	T	N

#### Disclaimer

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

#### Unofficial Report

These results are considered unofficial. FNAI offers a [Standard Data Request](#) option for those needing certifiable data.



## Appendix F. Tampa Port Authority Submerged Lands Ownership

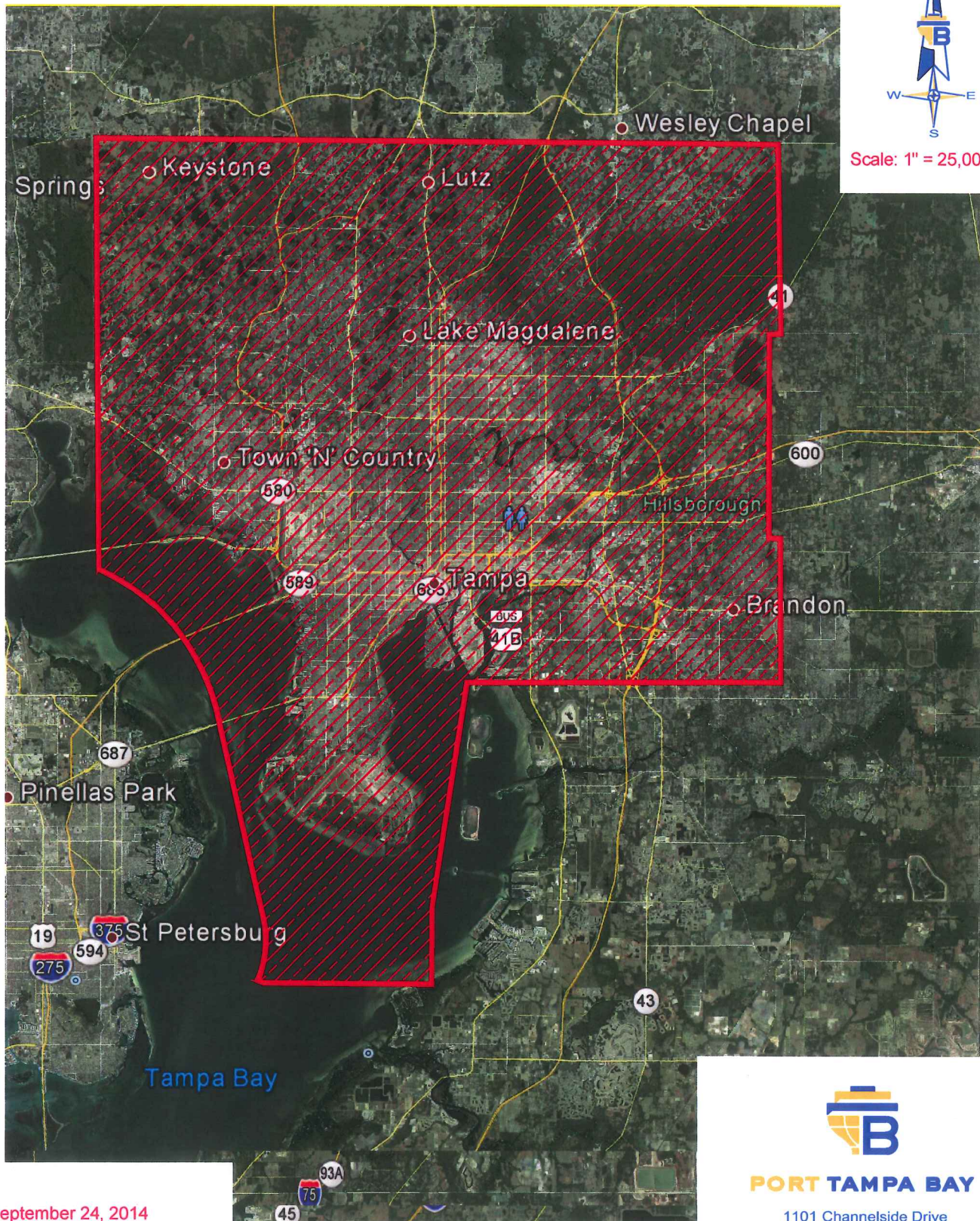


# 1948 TERRITORIAL DESIGNATION

NORTH



Scale: 1" = 25,000'



September 24, 2014

Drawn by: Craig Kurial

THIS IS NOT A SURVEY

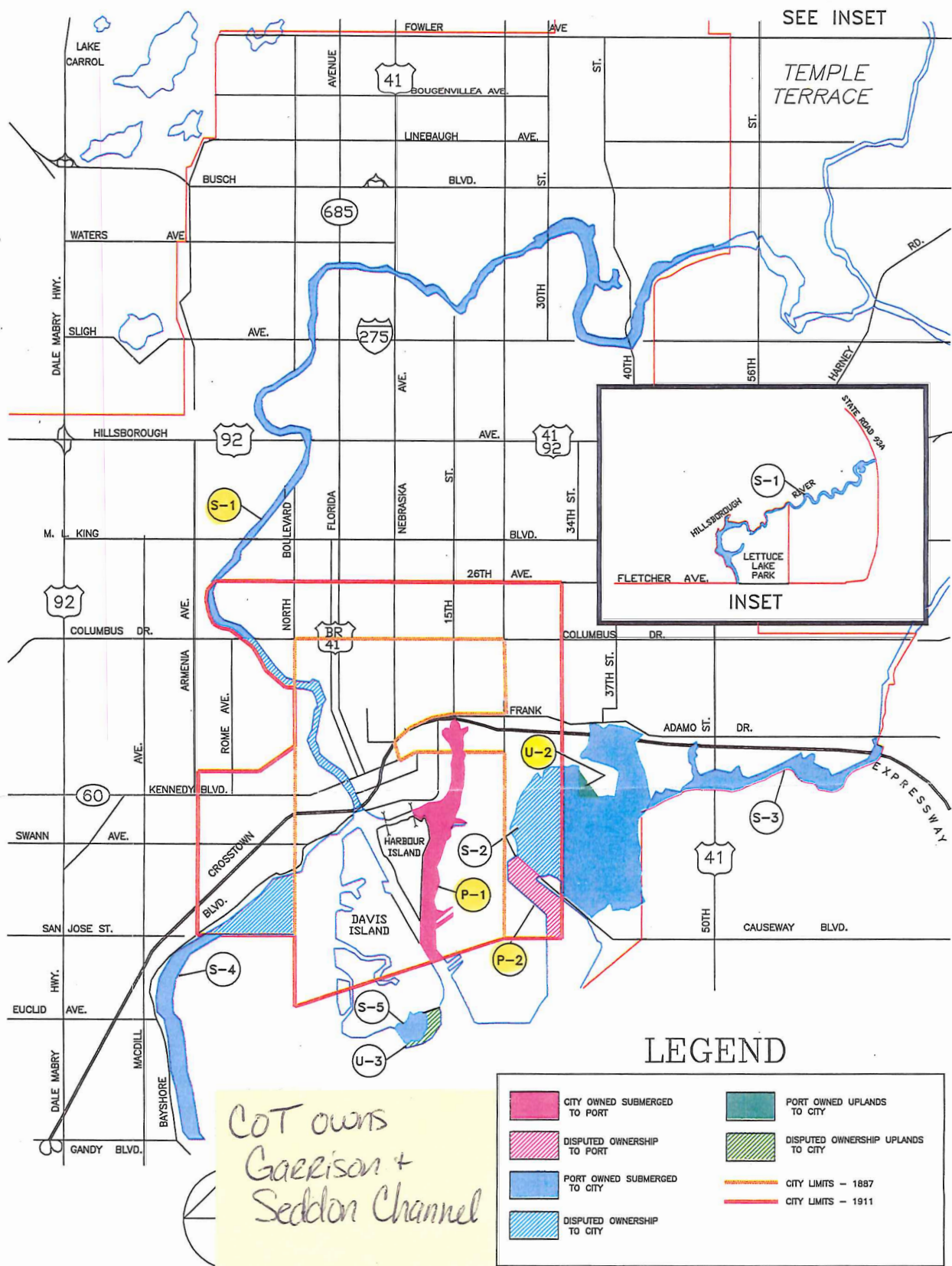


**PORT TAMPA BAY**

1101 Channelside Drive  
Tampa, Florida 33602  
(813) 905-7678 Fax (813) 905-5029  
[WWW.PORTTB.COM](http://WWW.PORTTB.COM)



# CITY / PORT AUTHORITY PROPERTY EXCHANGE



PREPARED BY: BCS 02/08/1996  
L:\MAPS\RED\COTTPAEX\_rev 02/02/2010 PLOTTED BY: JHC PRODUCED BY: GMS

EXHIBIT J-a

- ① P1 Submerged Lands transferred to TPA 3/2/2011
  - ② P2 Submerged Lands transferred to TPA 3/2/2011
  - ③ S1 Submerged Lands transferred to City w/in COT + TPA outside COT limits 2/28/2011
  - ④ S4 Submerged Lands transferred to City w/in COT + TPA outside COT limits (2/28/2011)
  - ⑤ U2 Uplands transferred to City w/ TPA Access Easement (7/8/2015)
- (Ybar Channel)  
(East Bay Basin Channel)  
(Hills. River)  
(Bayshore Blvd.)  
(34th St / McKay Bay)*



## Appendix G. USCG Bridge Pre-Construction Checklist – St Pete



## BRIDGE PRE-CONSTRUCTION CHECKLIST



Roadway/Bridge: \_\_\_\_\_

Waterway: \_\_\_\_\_

Bridge Owner: \_\_\_\_\_

Contractor Primary/24-Hour POC: \_\_\_\_\_

Project: Start Date/Time: \_\_\_\_\_ Finish Date/Time: \_\_\_\_\_

Brief Project Description:

The Coast Guard requires all in-water equipment to be properly lighted. List any in-water equipment to be used: \_\_\_\_\_

Describe type/quantity of petroleum products or hazardous materials stored/transferred on site (if any): \_\_\_\_\_

Describe any proposed channel restrictions or closures and/or vertical clearance restrictions. Include dates/times of restriction(s): \_\_\_\_\_

On a movable span, are you requesting: Complete Closure, Single Leaf Opening, Limited Openings, Advance Notice. Please Explain: \_\_\_\_\_

### **If Applicable:**

- Hurricane plan submitted for projects between June & November: Y/N
- How many hours advance notice needed for a full opening: \_\_\_\_\_
- How many hours advance notice needed to move equipment to provide access to full channel: \_\_\_\_\_
- Will in-water equipment remain in place or moved at end of workday: \_\_\_\_\_
- POC for full opening/moving equipment: \_\_\_\_\_

60 days advance notice required prior to starting a project. 30 days advance notice required prior to any channel obstructions, closures, or opening restrictions. Make all notifications to Sector St. Petersburg Waterways ([D07-SMB-Tampa-WWM@uscg.mil](mailto:D07-SMB-Tampa-WWM@uscg.mil)) and Coast Guard Southeast District Bridge Administration [Jennifer.N.Zercher@uscg.mil](mailto:Jennifer.N.Zercher@uscg.mil).