



Resiliency Case Study – Tampa, FL

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City of Tampa

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Agenda

- ▶ Tampa Basic Facts
- ▶ Funding for City of Tampa Projects
- ▶ Project Case Studies
- ▶ Resiliency Guide Manual
- ▶ ArcGIS 'My Story' Tour

Tampa, FL Quick Facts

- ▶ Incorporated in 1887
- ▶ Current population is about 392,800
 - ▶ Almost a 20% increase since 2010
- ▶ 3rd largest city in the state of Florida
- ▶ 53rd largest city in the United States
- ▶ Occupies 113 square miles





City of Tampa At-a-Glance

- ▶ Approximately 4,800 employees citywide
- ▶ 41 different departments
- ▶ Mobility Department
 - ▶ Operations Division
 - ▶ Parking Division
 - ▶ Smart Mobility Division
 - ▶ Transportation Engineering Division
 - ▶ Stormwater Engineering Division
 - ▶ Design
 - ▶ Drafting
 - ▶ Planning

Stormwater Engineering Division - Funding

Stormwater Assessment Program

▶ Service Assessment (~\$14M/year)

- ▶ Since 2003
- ▶ Annual non-ad valorem assessment
- ▶ Funds operations and maintenance of the existing stormwater system.
Services include:
 - ▶ street sweeping
 - ▶ pond maintenance
 - ▶ pipeline system cleaning
 - ▶ outfall cleaning
 - ▶ ditch maintenance
 - ▶ miscellaneous micro-projects ancillary to maintenance activities

▶ Improvement Assessment (~\$14M/year increasing over time)

- ▶ Since 2016
- ▶ Annual non-ad valorem assessment
- ▶ Funds capital improvements associated with the stormwater system in the Central and Lower Improvement Area.
Improvements include:
 - ▶ system capacity increases
 - ▶ treatment facilities such as ponds, ditches and baffle boxes
 - ▶ new pipelines and box culverts
 - ▶ pump stations
 - ▶ backflow valves, inlets, curb and gutter systems, as well as roadway regrading to improve flow patterns

Stormwater Engineering Division - Funding

Green Bond

- ▶ City of Tampa issued \$84.6 million green bond in 2018 to finance improvements to stormwater management system and reduce surface and groundwater pollution.
- ▶ Funding through a two-phase bond program. The Series 2018 Bonds will be the first phase of bonds, to be followed by a second phase which are anticipated to be issued in the fiscal year ending September 30, 2021.
- ▶ City of Tampa developed voluntary guidelines with respect to Green Bonds.
- ▶ City of Tampa expects to report on the use and spending progress of the net proceeds of the Green Bonds in the City of Tampa Annual Sustainability Report.

Stormwater Engineering Division - Funding

SWFWMD Co-Funding

- ▶ For well over a decade, the City of Tampa has partnered with the Southwest Florida Water Management District (SWFWMD) for yearly co-funding of large CIPs
- ▶ SWFWMD's program is called the Cooperative Funding Initiative (CFI)
- ▶ The CFI program allows local governments and private entities to share costs for projects that assist in creating sustainable water resources, provide flood protection and enhance conservation efforts.
- ▶ The CFI program covers up to 50 percent of the cost of projects
- ▶ Projects are evaluated based on several criteria including cost effectiveness (benefit/cost analysis), alignment with SWFWMD Strategic Goals, past performance, etc.

Stormwater Engineering Division - Funding

FDEP Funding

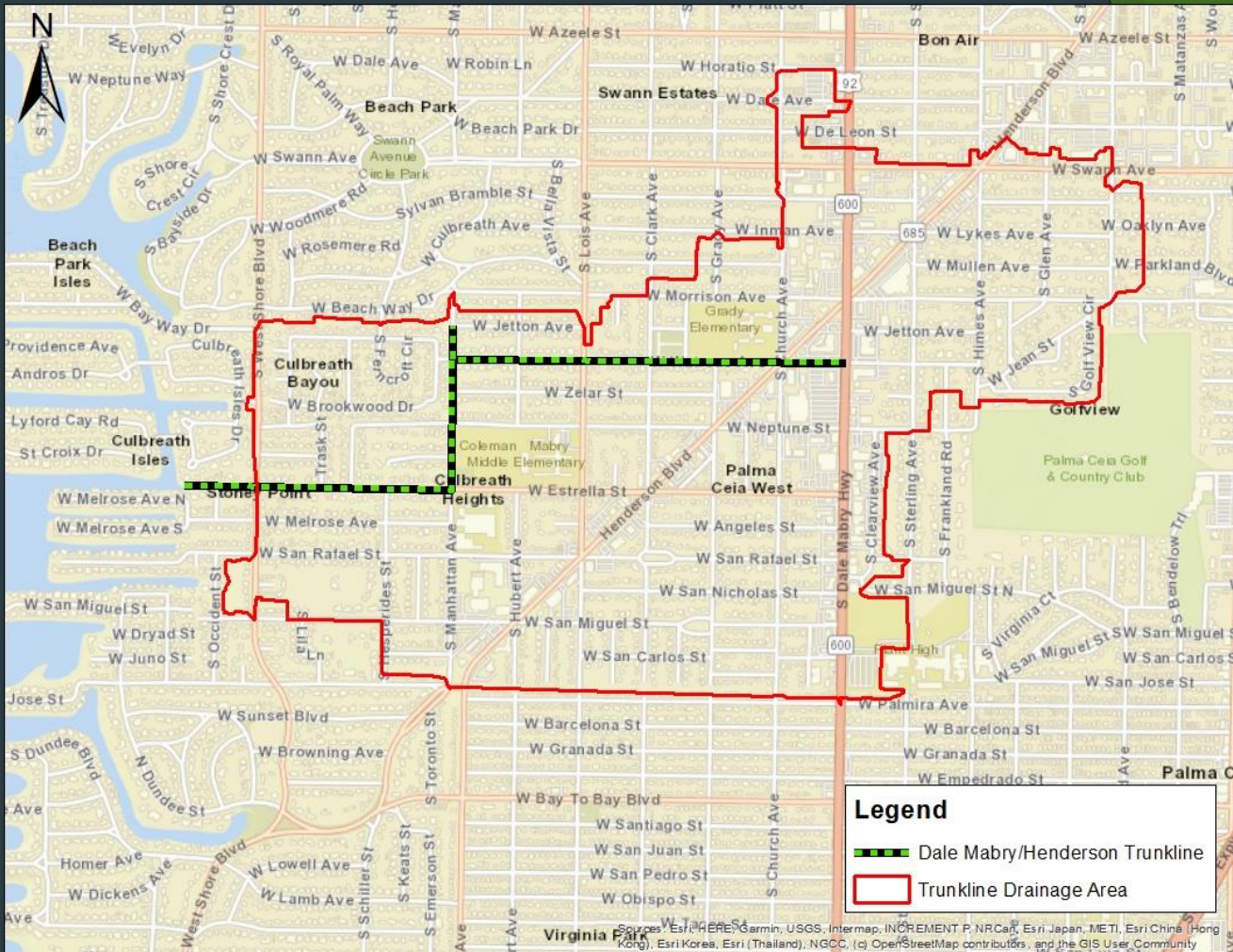
- ▶ For several years now the City of Tampa has received grant funding from the Florida Department of Environmental Protection (FDEP)
- ▶ Received grant funding for:
 - ▶ flood protection construction projects
 - ▶ resiliency, sustainability and sea level rise (SLR) studies
 - ▶ water quality projects and TMDL studies
- ▶ Most recently, the City of Tampa has partnered with FDEP's Florida Resilient Coastlines Program
 - ▶ Completed a SLR Vulnerability Analysis and Resiliency Strategy Report in June 2020
 - ▶ Complies with 2017 State of Florida Peril of Flood Act to address flooding from SLR
 - ▶ Studied all 563 City of Tampa outfalls and analyzed 6 'Study Basins' with vulnerable coastal/tidal outfalls
 - ▶ Getting started on another grant for a pilot study on Davis Islands

Resiliency Project Case Studies

Upper Peninsula Watershed Drainage Improvements - Dale Mabry/Henderson Trunkline

- ▶ Project was completed in December 2020
- ▶ Permitting, design and construction of approx. 8,100 LF of box culvert
- ▶ Alleviate longstanding and chronic flooding in a 755-acre fully-developed residential and commercial area of South Tampa with narrow ROW
- ▶ Total project cost was about \$36.5M funded 50/50 with SWFWMD
- ▶ Significant water quality benefits and green infrastructure implemented beyond the original scope of the project
- ▶ Added green infrastructure elements as a pilot study

- ▶ Implemented 4 Nutrient-Separating Baffle Boxes with Bio-sorption Activated Media (BAM) up-flow filters
 - ▶ Nutrient removal rates:
 - ▶ 160 lbs/year TN
 - ▶ 26 lbs/year TP
 - ▶ 9,539 lbs/year TSS
- ▶ Constructed a bioswale at the project outfall to Old Tampa Bay
 - ▶ Street overflow runoff will be treated through percolation
 - ▶ Grate inlet allows excess flows to discharge directly to Old Tampa Bay
- ▶ Added about ½-acre of permeable pavers and pervious concrete in on street parking stalls
 - ▶ Overall net decrease in impervious area for the project
- ▶ Added 43 curb inlet filter baskets to further capture trash, debris and sediment before it reaches Old Tampa Bay



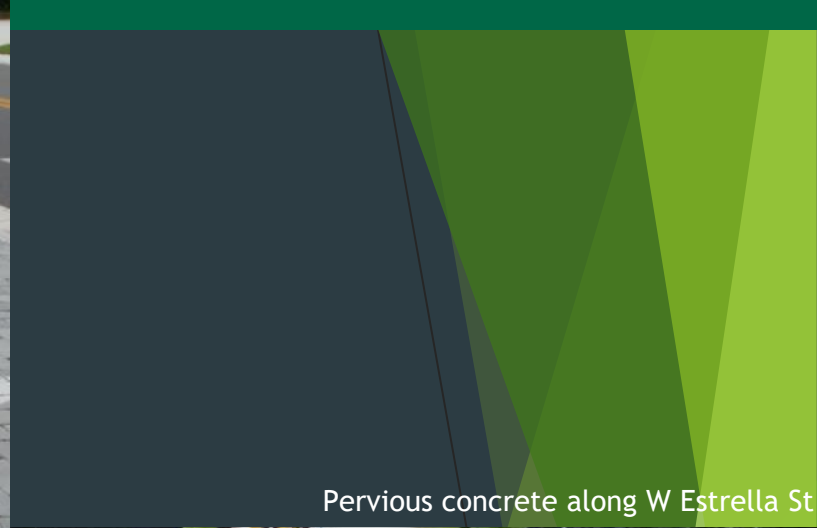
Legend

- Dale Mabry/Henderson Trunkline
- Trunkline Drainage Area

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

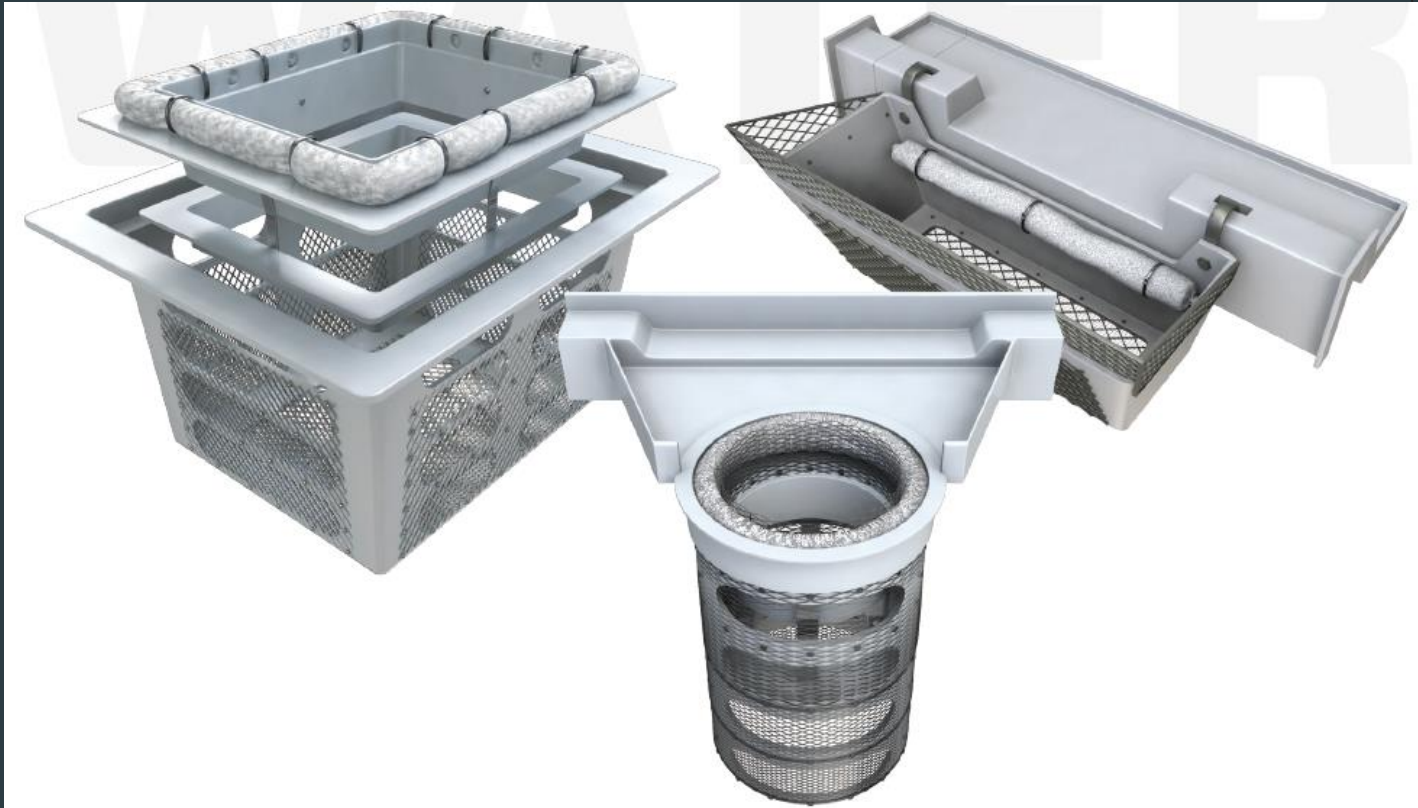


Permeable pavers along S Manhattan Ave



Pervious concrete along W Estrella St





Curb inlet filter baskets

Cypress St Outfall Regional Stormwater Improvements

- ▶ Project is nearly complete
- ▶ Permitting, design and construction of approx. 6,000 LF of box culvert
- ▶ Alleviate longstanding and chronic flooding in approx. 220-acre fully-developed residential and commercial area of Tampa
- ▶ Total project cost was about \$30M funded 50/50 with SWFWMD
- ▶ Significant water quality benefits and green infrastructure implemented

Implemented 3 Nutrient-Separating Baffle Boxes with Bold and Gold® media for increased nutrient removal efficiency

- Nutrient removal rates:
 - 755 lbs/year TN with B&G media
 - 173 lbs/year TP with B&G media

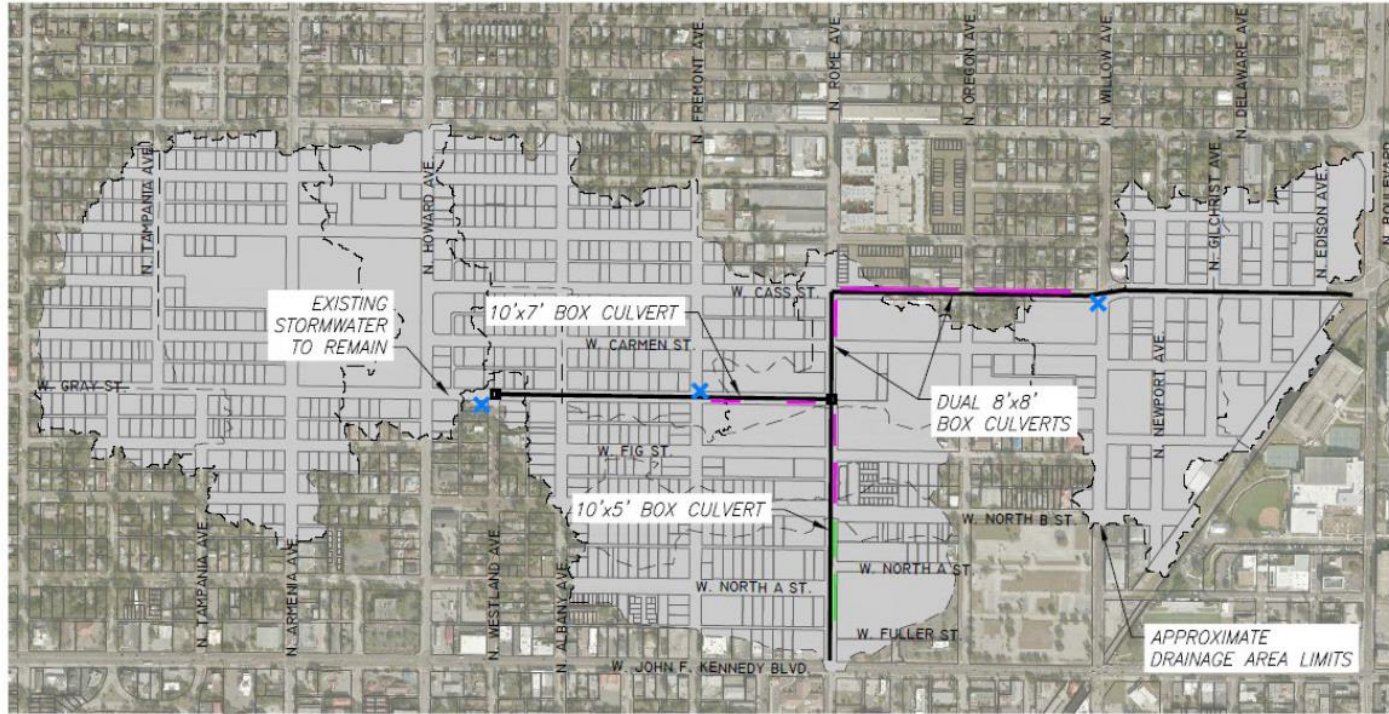
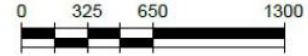
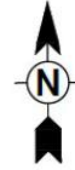
Replaced all (about ½-acre) existing impervious on-street parking areas within the project limits with new pervious concrete pavement

Also added grass-lined swales along portions of the project route for additional treatment and nutrient removal

- Provides runoff attenuation and water quality benefit through percolation

LEGEND

-  BOX CULVERT SYSTEM
-  PERVIOUS PAVEMENT AREA
-  BAFFLE BOX LOCATION
-  GRASS SWALES





On-street parking with
pervious pavement



- ▶ Project was completed in 2019
- ▶ The City of Tampa purchased 2 residential properties that repetitively flooded (co-funded with SWFWMD)
- ▶ Demolished structures and created a resilient ¼-acre garden area for water quality benefits and flood protection
- ▶ Lowered properties to accept runoff from roadway
- ▶ Implemented hardy native plant species to treat urban runoff prior to discharging to Old Tampa Bay
- ▶ Overflow control structure with weir and skimmer
- ▶ Worked with neighborhood and adjacent residents

El Prado Stormwater Garden



Before



After

Crushed shell drive for maintenance

Resilient landscaping



Retention area

Overflow
control
structure
with
skimmer

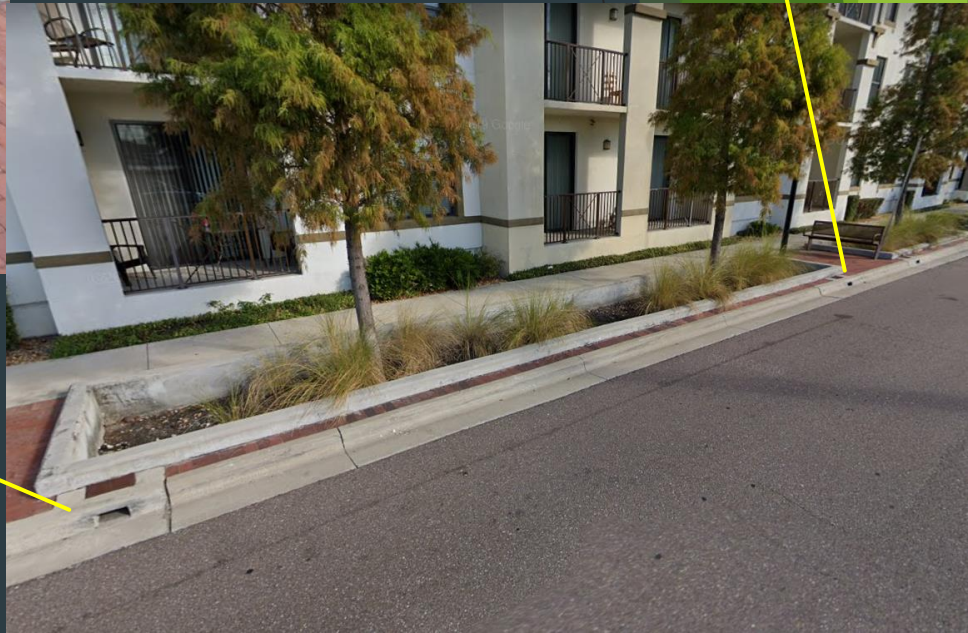


Public-Private Partnership: Legacy Westshore Apartments

- ▶ Project was completed in 2014
- ▶ Private apartment complex constructed on 3-acre impervious site
- ▶ City of Tampa allowed developer to construct green infrastructure within the ROW
- ▶ Privately maintained
- ▶ Roadside treatment garden areas



Inflow from
street



Outflow to
street

Other examples of resilient Green Infrastructure around the City of Tampa...

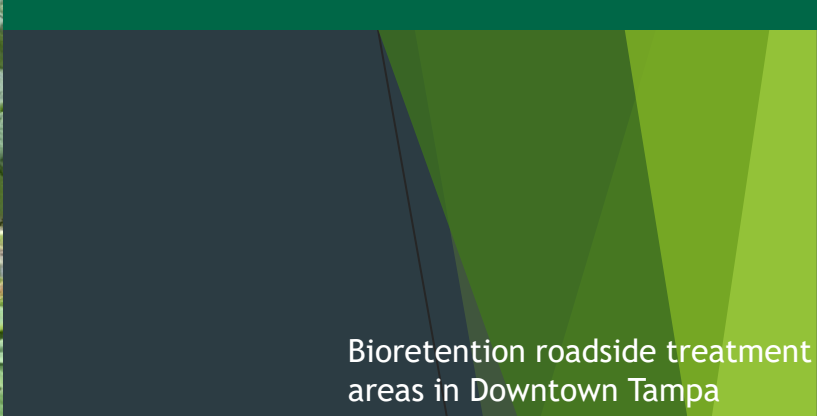
Living Shoreline in Downtown Tampa



Bioretention Curb Extensions and Sidewalk Planters



Butterfly garden with Florida-friendly landscaping treats runoff and provides learning environment for surrounding neighborhood



Bioretention roadside treatment areas in Downtown Tampa





RESILIENT TAMPA

TRANSFORMING OUR CITY'S TOMORROW

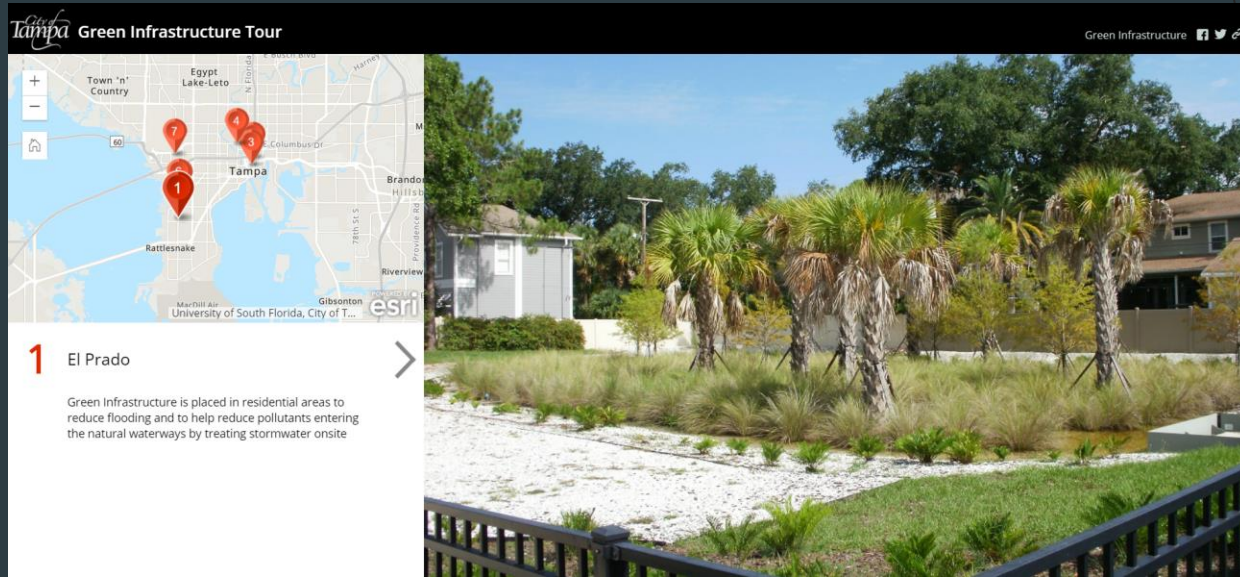


City of Tampa Resiliency Guide Manual

- ▶ Completed in May 2021
- ▶ Serves as a roadmap for a resilient Tampa that builds on Mayor Castor's "Transforming Tampa's Tomorrow" (T3) strategic initiative
- ▶ Strategic document sets forth concrete actions that address the City of Tampa's most pressing challenges at all scales
- ▶ Identifies and analyzes "shocks" and "stresses" to our environment
- ▶ Chapters include:
 - ▶ Opportunity for all Tampanians
 - ▶ Thriving Neighborhoods
 - ▶ Climate-Ready Infrastructure
 - ▶ Growing and Connected City
- ▶ Visit www.tampa.gov/green-tampa/resilience for more!

Visit our ArcGIS “My Story” Online

- ▶ Take a virtual tour of some of the City of Tampa’s Green Infrastructure
- ▶ Created using ArcGIS software
- ▶ Great way to showoff City of Tampa’s efforts to be more resilient and implement sustainable solutions to stormwater management
- ▶ Visit www.tampa.gov/tss-stormwater/programs/green-infrastructure for more!



Questions?