



Stormwater Management in Pinellas County

Public Works Department

Kelli Hammer Levy

Public Works Director





Part I: Where We've Been/How We Got Here

1. Key Characteristics of Stormwater
2. Types of Flooding
3. Regulatory Snapshot
4. Consequences of Development

Part II: Where We're At Today

1. Pinellas Stormwater Challenges
2. Solutions & Tools
3. Program Implementation

Part III: Where We Are Going

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Key Characteristics of Stormwater



Runoff Generation: Occurs when rainfall hits impervious surfaces, which prevent the water from infiltrating the soil.



Pollutant Transport: Carries contaminants such as oil, grease, fertilizers, pesticides, and sediment into lakes, rivers, and oceans.



Impact: High volumes of rapid runoff cause flooding, channel erosion, and damage to environmental systems.



Distinct from Wastewater: Unlike sewage, which is treated in a wastewater plant, stormwater usually drains directly into surface waters.

Runoff Generation and Pollutant Transport

Mechanism: Water that doesn't soak into the ground travels across impervious surfaces, picks up pollutants and directs them into stormwater systems and nearby waterways.

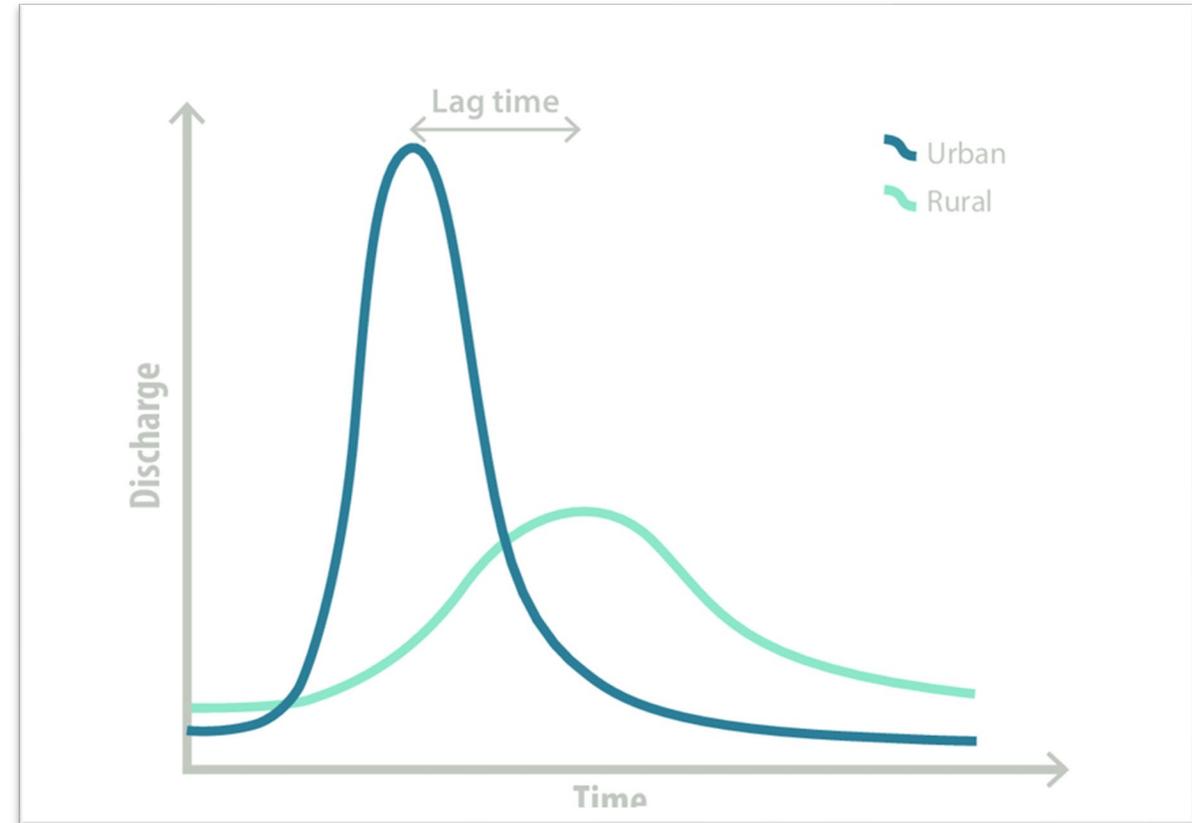
Impact of Development: As natural, pervious landscapes are replaced by urban infrastructure and floodplains are constrained, infiltration is reduced causing more water to run off the land compared to natural ground.



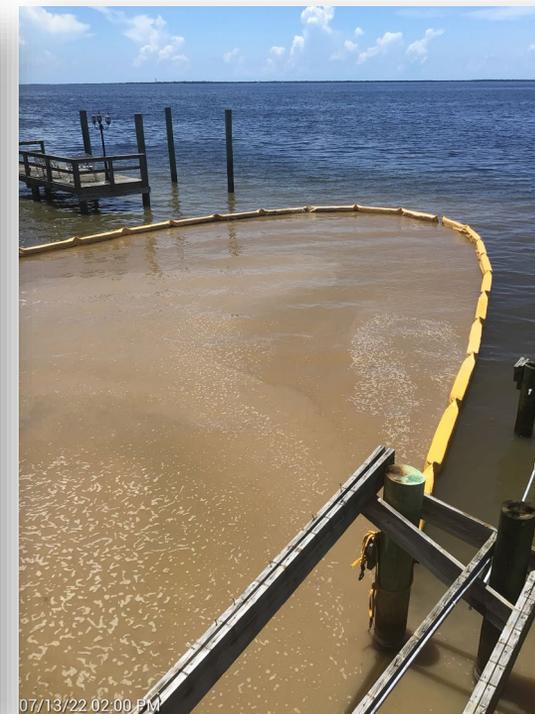
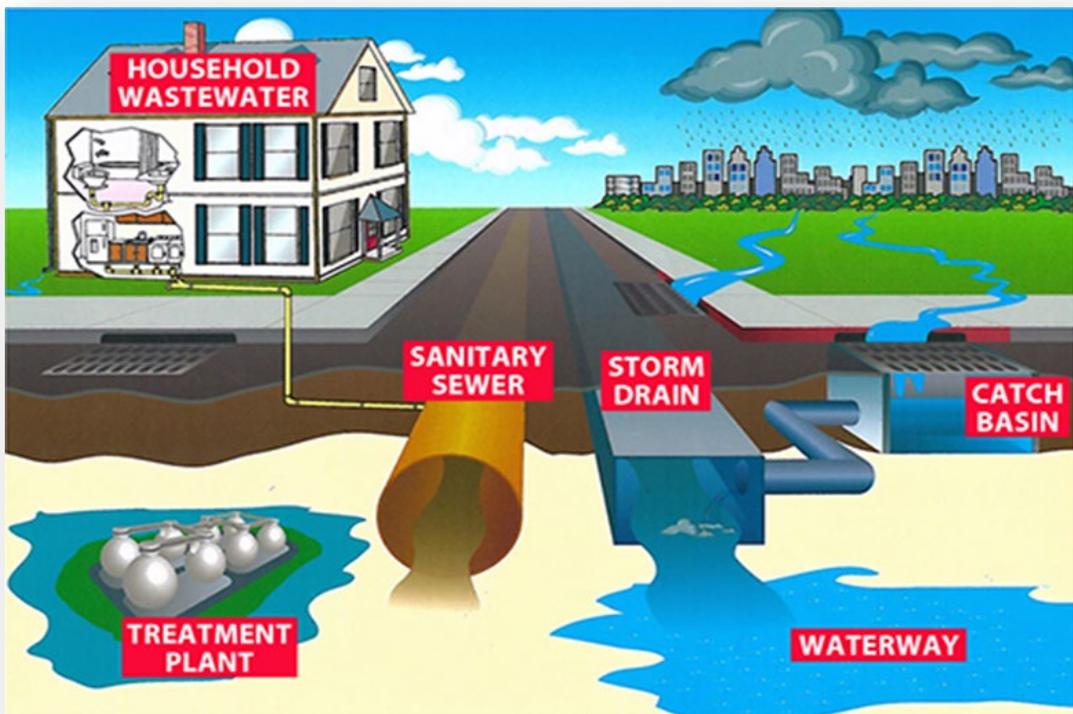
Runoff Generation

Volume and Speed: Runoff from impervious surfaces is not only greater in volume but moves much faster, leading to higher peak flows during storms.

Consequences: This process leads to flash flooding, greater erosion, and higher stream temperatures, which degrades aquatic ecosystems.



Distinct from Wastewater



Understanding Flood Types

Rainfall Driven

Riverine

Groundwater

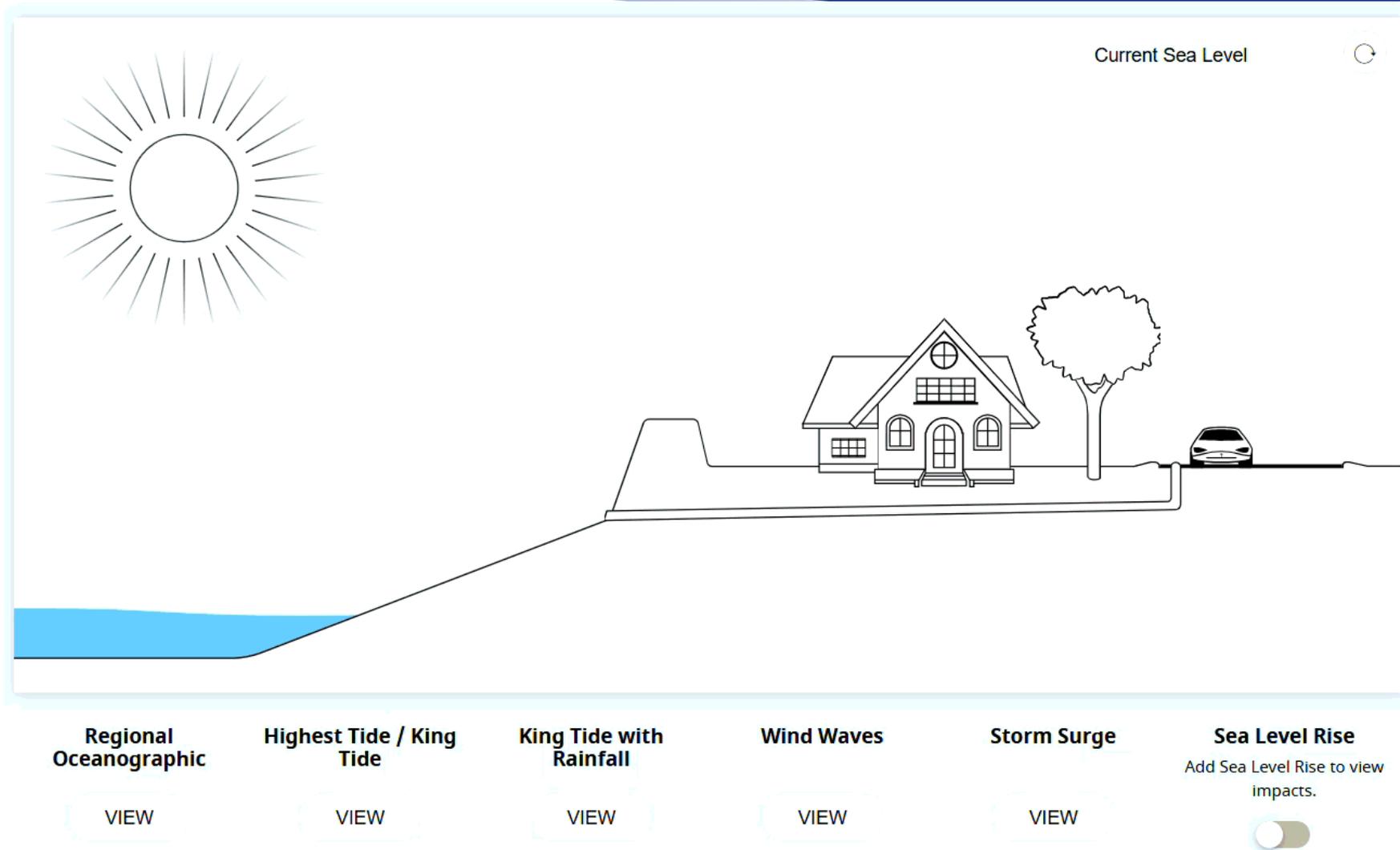
Coastal

- **High-tide flooding**
- **Storm Surge**
- **Localized wave action**

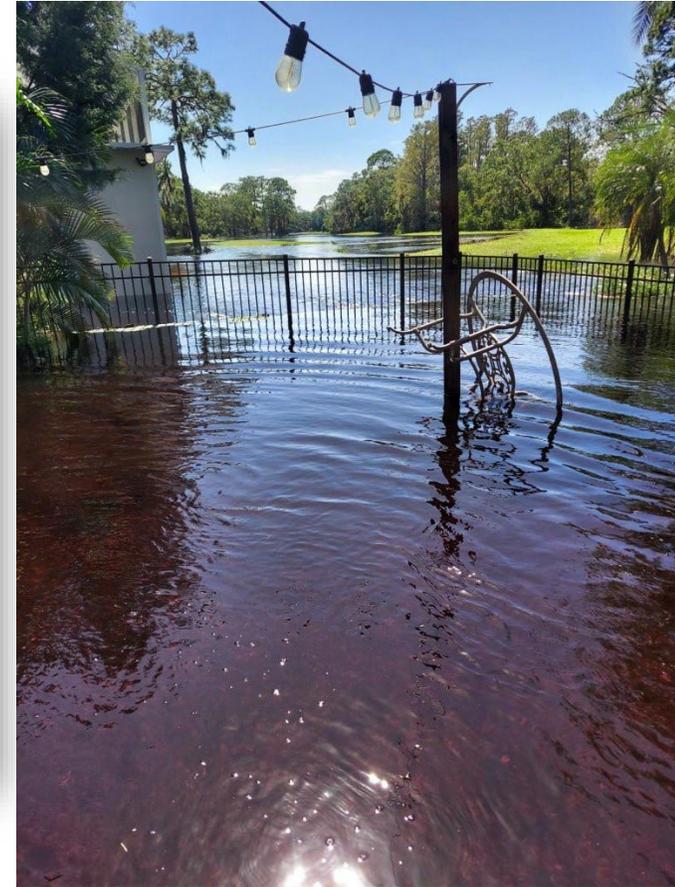
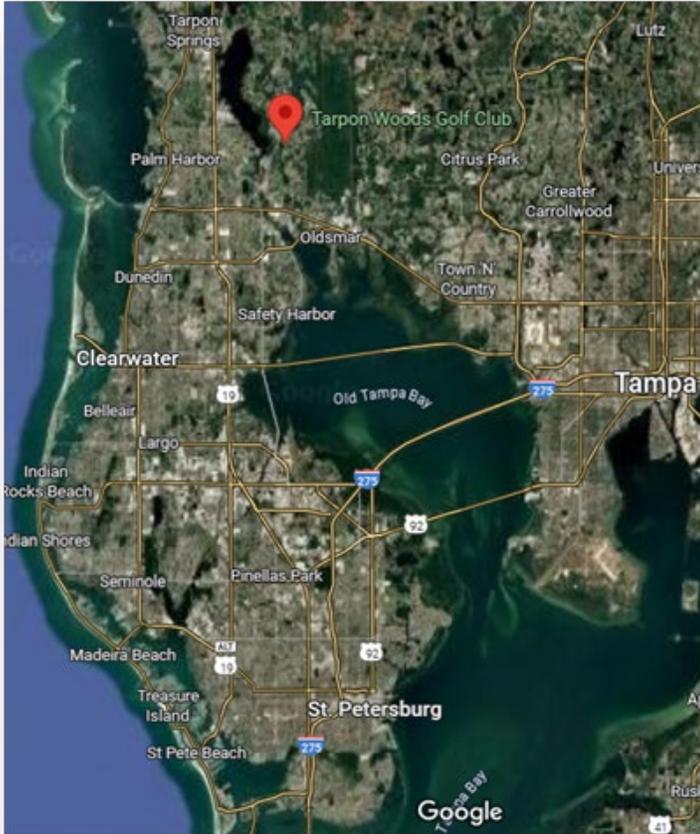
Compound



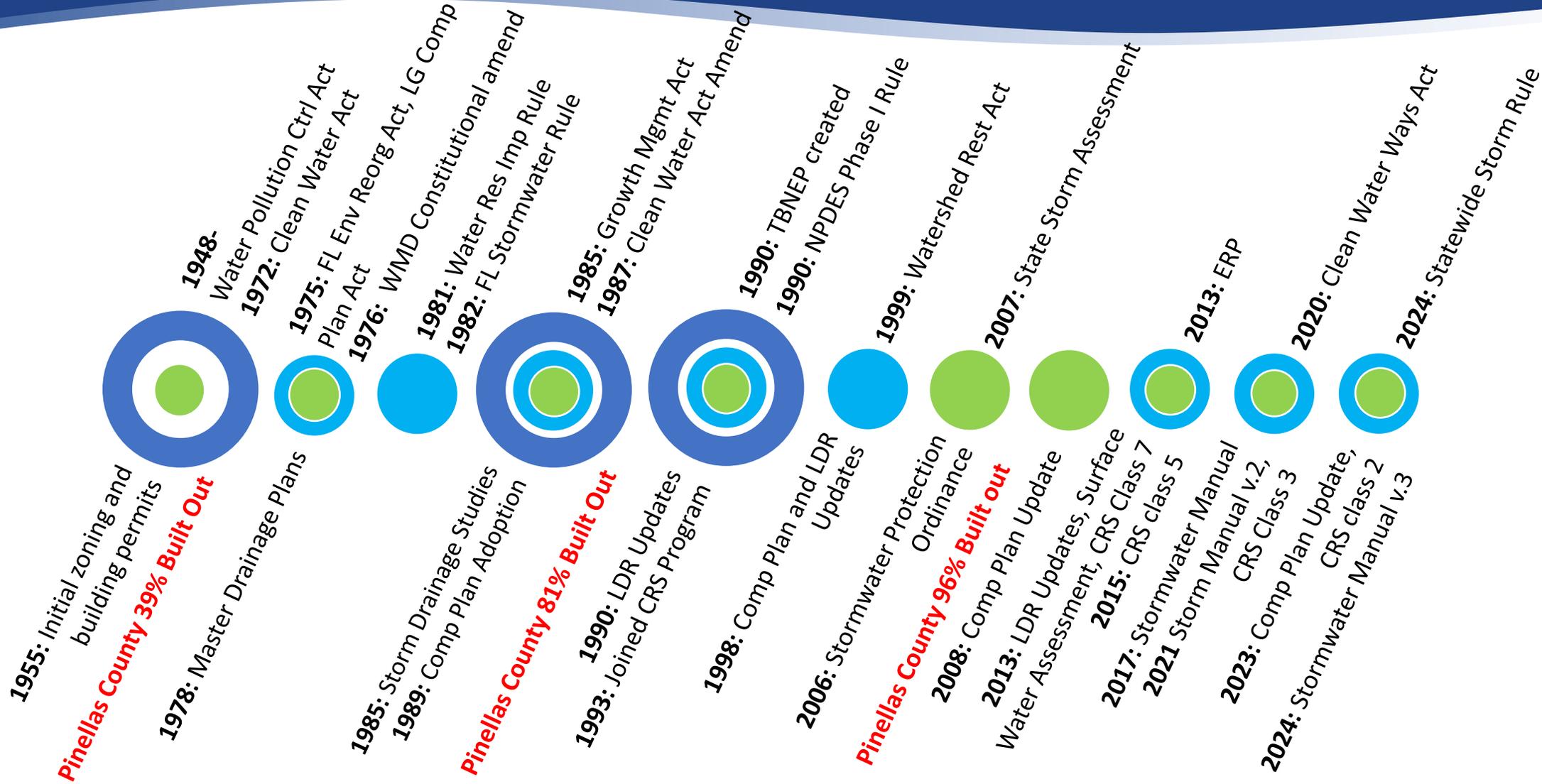
Understanding Flood Types



Rainfall-Based Flooding Impacts Brooker Creek Watershed Post-Milton



Federal, State, and Pinellas Snapshot



Regulatory Frameworks



Federal – Clean Water Act: NPDES, Water Quality and Cleanup Plans.

Florida Department of Environmental Protection (FDEP) – Delegated Federal Authority (for above), Regulates some development activities.

Southwest Florida Water Management District (SWFWMD) – Environmental Resource Permitting, Watershed Management and Surface Water Improvement and Management Program,

Local – County and Cities Stormwater/Watershed Management Plans and Regulations

Inherited Impacts of Development



Consequences



Consequences



Consequences



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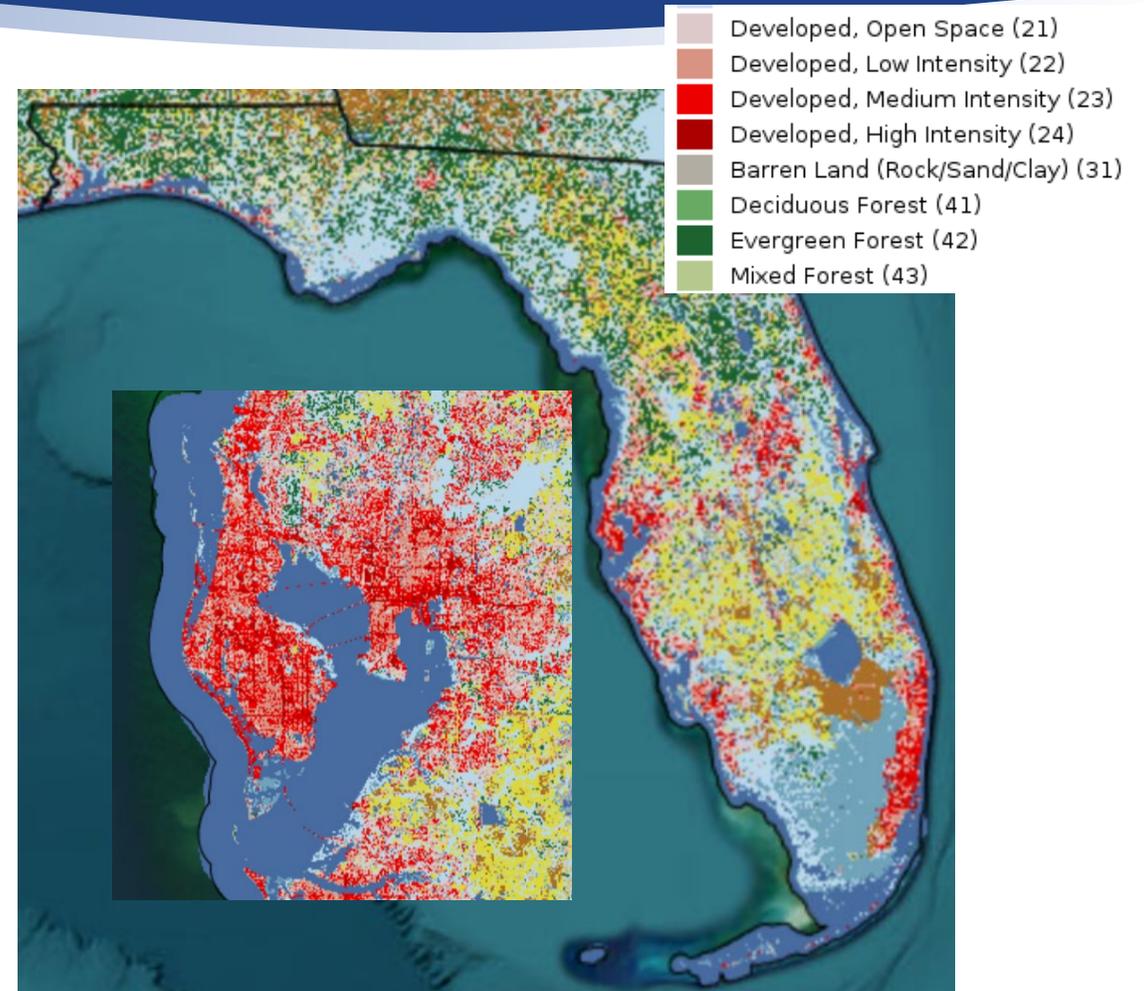
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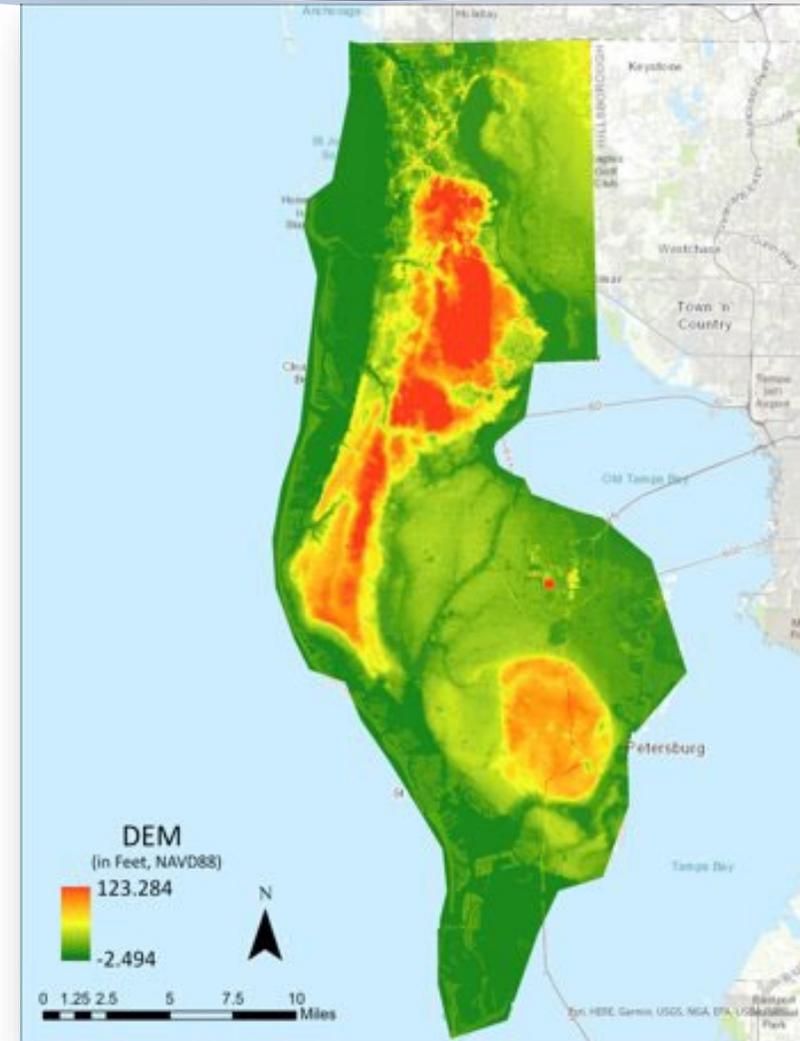
Pinellas Stormwater Challenges

- **Development history**
- **Level of urbanization**
- **Development practices**
- **Impervious cover**
- **Floodplain encroachment**



Pinellas Stormwater Challenges

- **Topography**
- **Coastal influence**
- **Location**
- **Soils**
- **Depth to groundwater**
- **Rainfall patterns**
- **Numerous Jurisdictions/private property**



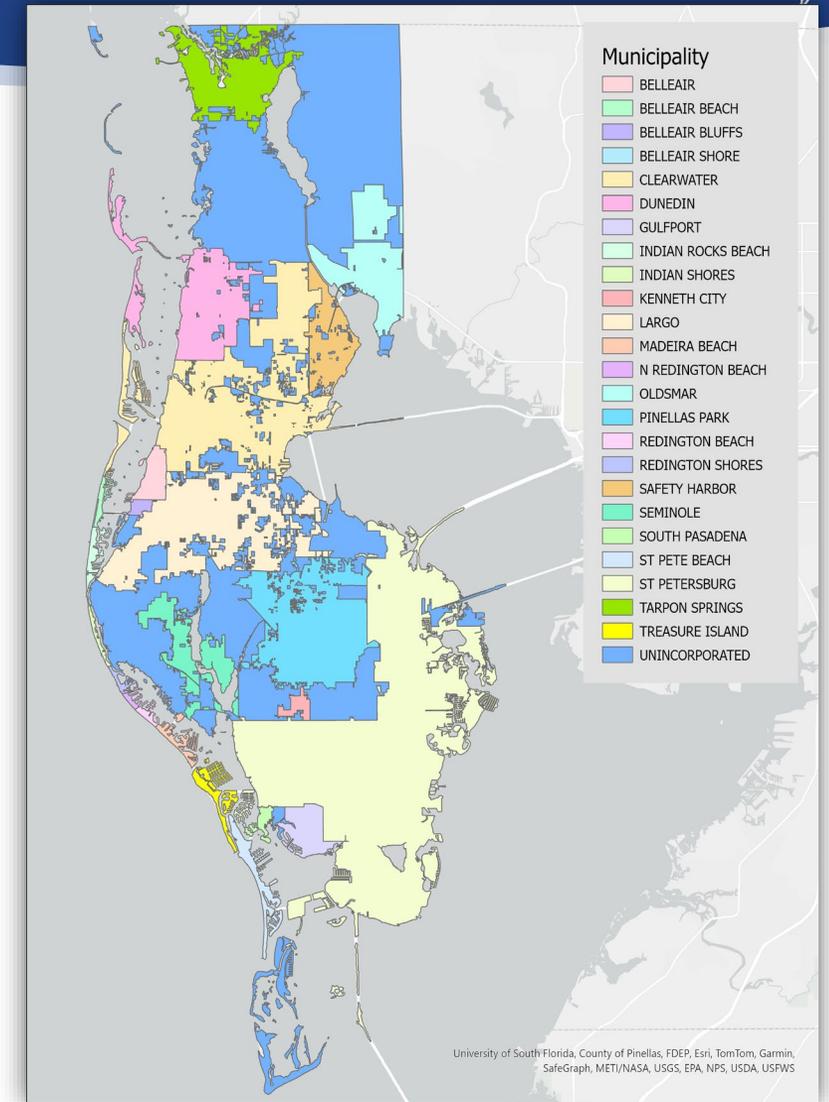
Pinellas Stormwater Challenges



Jurisdiction – Pinellas County's Surface Water Utility is for the Unincorporated area only

Cities may or may not have Surface Water Utilities and may or may not fully fund operations, maintenance or capital

Many major drainage channels are on private property



Jurisdiction Challenges & Collaborations



Challenges:

Partnerships and disconnects

Varying maintenance standards and funding levels from city to city

Shared watersheds and waterways

Collaborations:

NPDES Permit – 22 Cities + FDOT

Vulnerability Assessment – 11 Cities

Watershed Planning – 9 Cities

Solutions - Watershed Planning

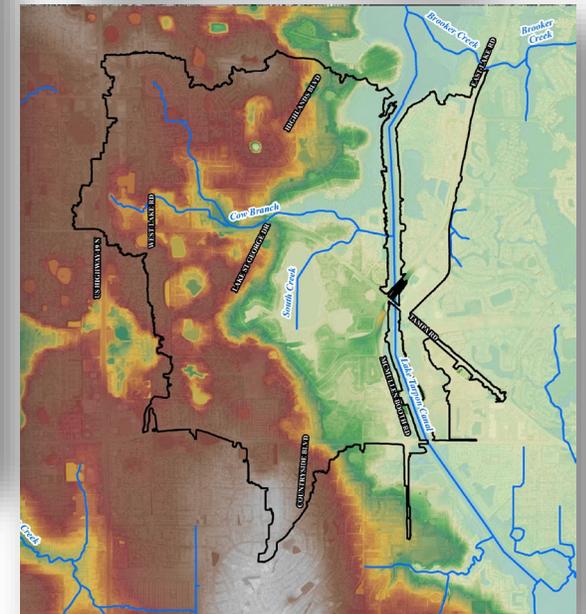
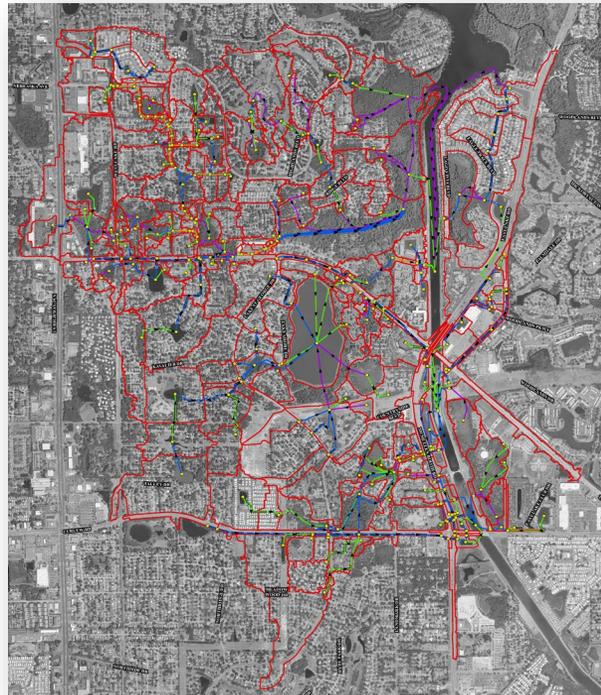
Partnership with SWFWMD/Cities Watershed Plan Components

1. Topographic Information

- Digital mapping, aerial photos, ground surveys to understand boundaries

2. Watershed Evaluation

- Analysis of surface water storage, conveyance features, and water quality



Watershed Planning Process

3. Flood Protection Level of Service and Stormwater Assessment

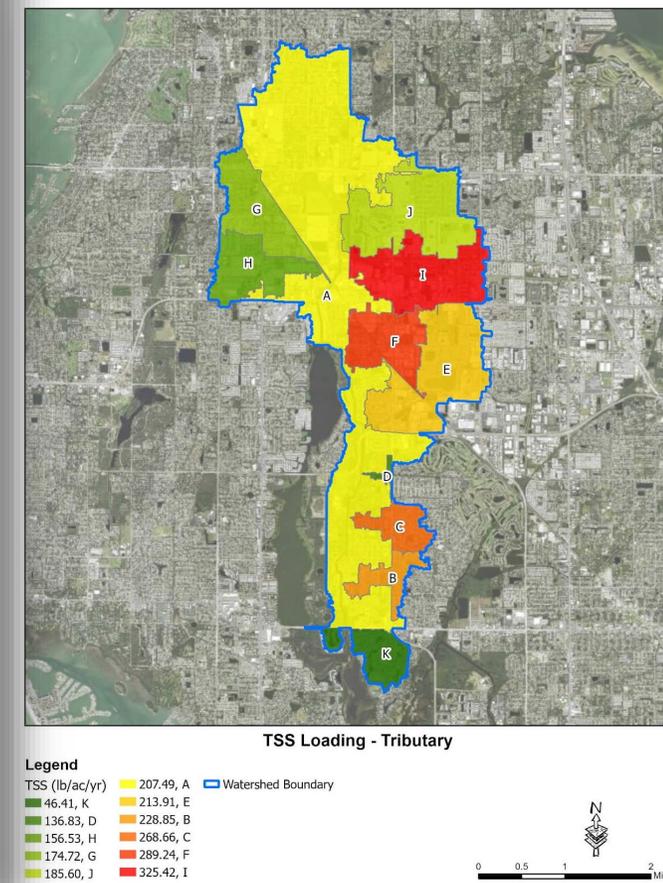
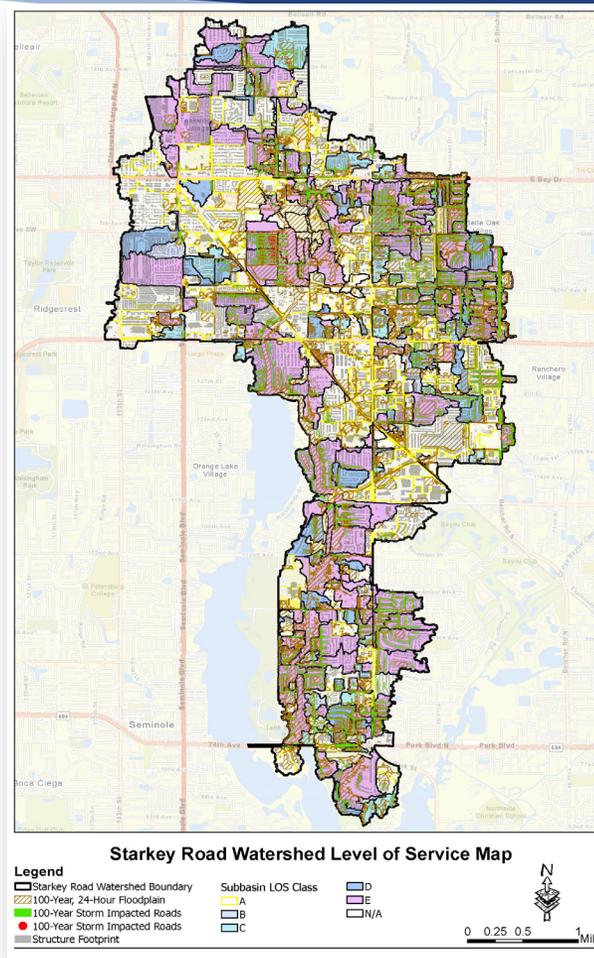
- Determines the capacity of the watershed to provide flood protection and water quality

4. Best Management Practices

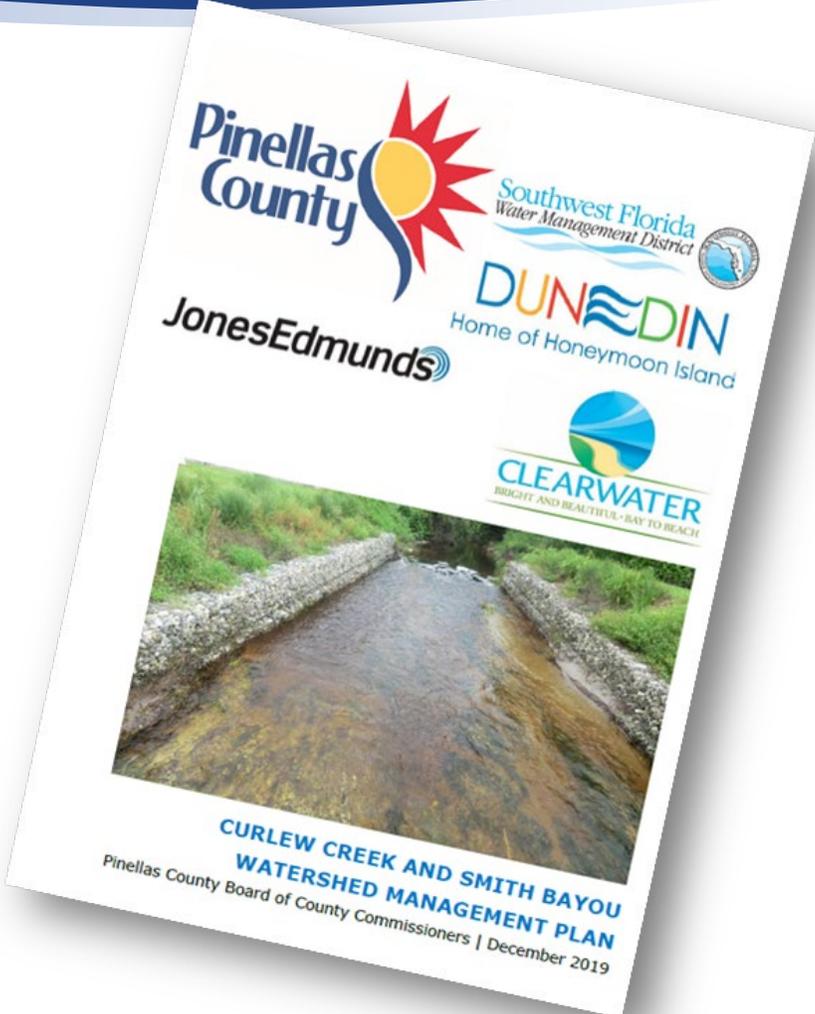
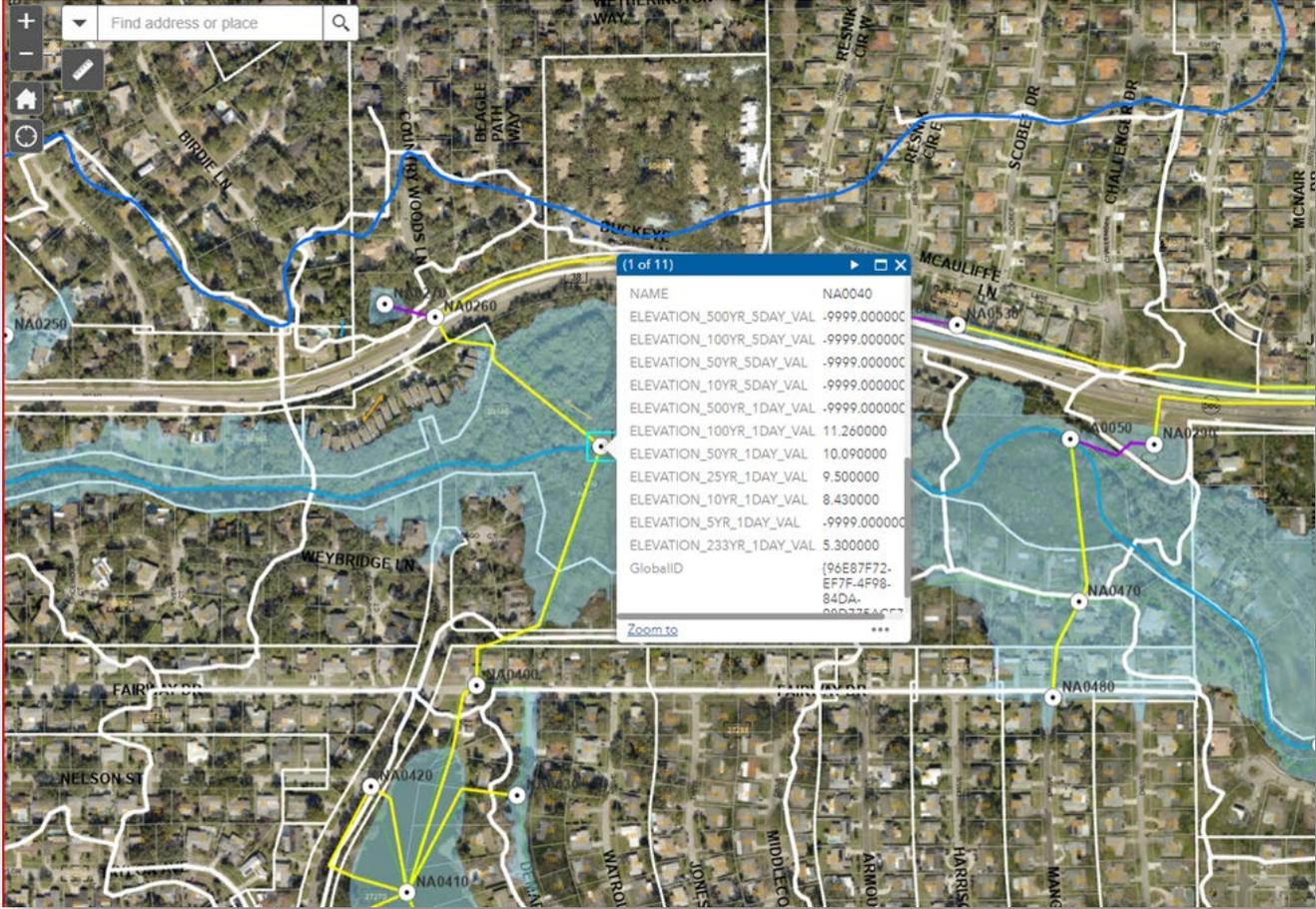
- Structural and non-structural approaches to improve conditions

5. Plan Maintenance

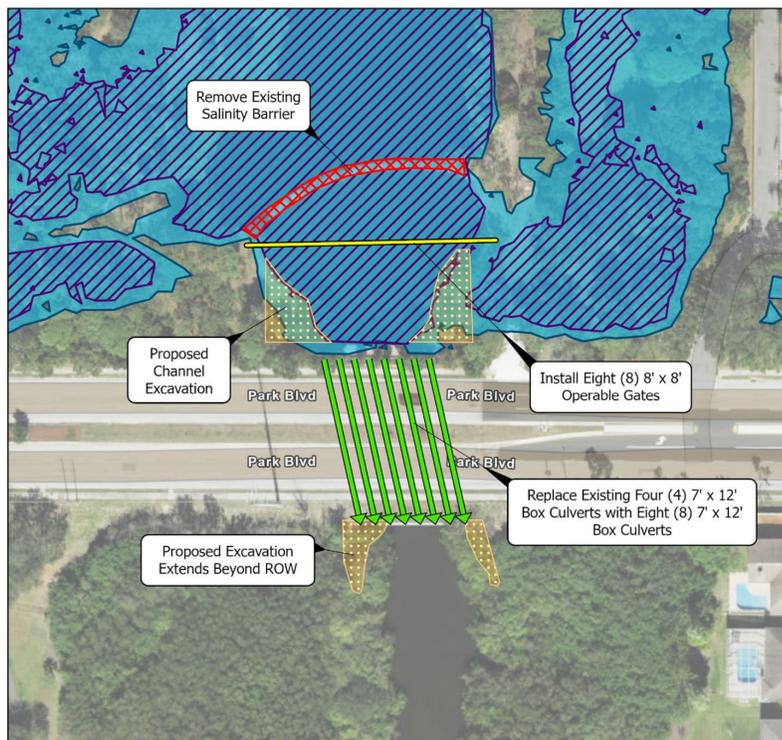
- Regular plan updates



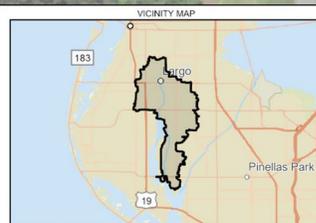
Watershed Management Plans



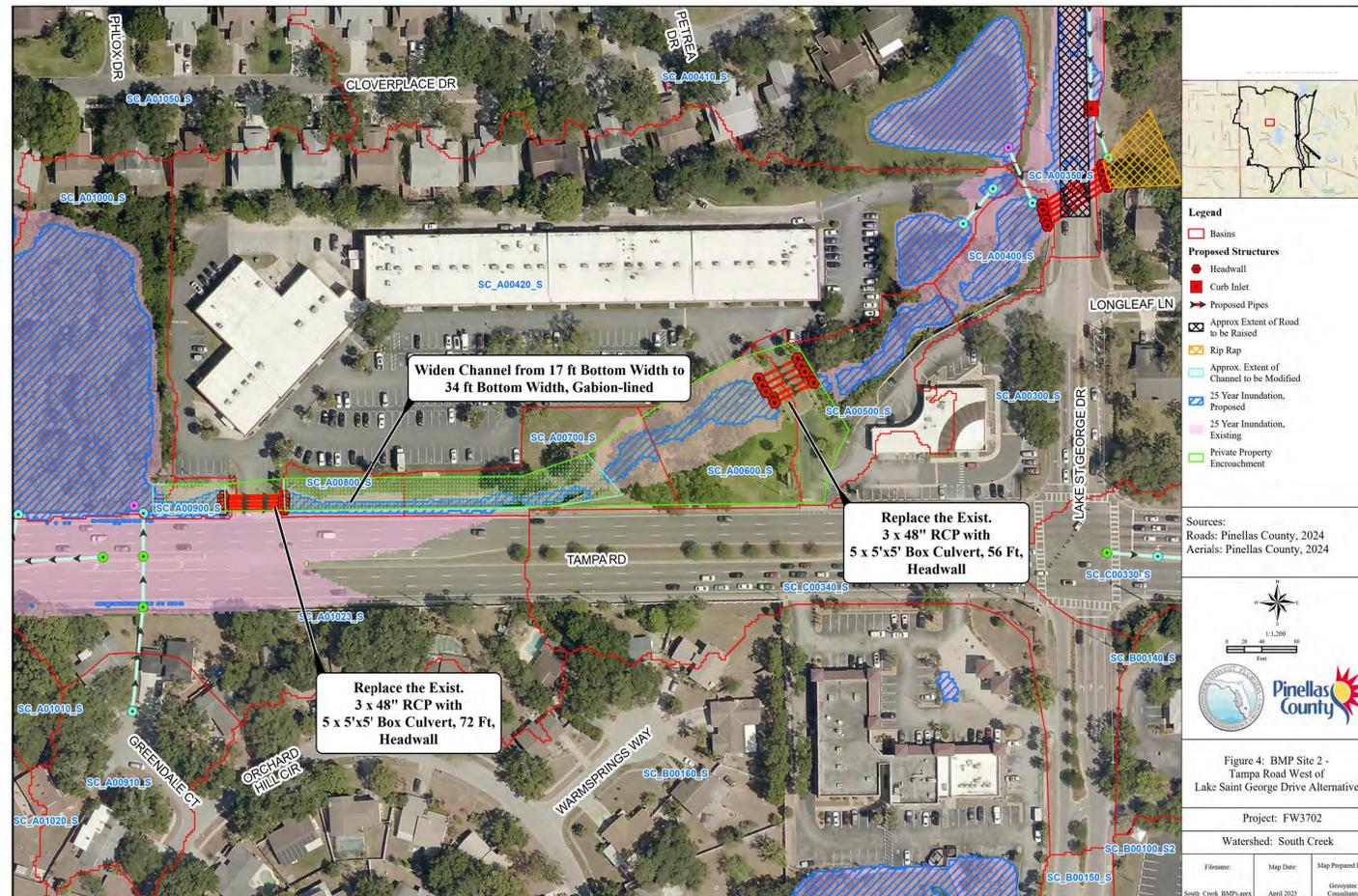
Watershed Management Plans



- Legend**
-  Proposed Operable Gate
 -  Proposed Pipe
 -  Channel Excavation
 -  Existing Salinity Barrier
 -  Existing 10-Year, 24-Hour Floodplain
 -  BMP 5 & 6 Proposed 10-Year, 24-Hour Floodplain



BMPs 5 and 6 Conceptual Layout and Floodplain
 Starkey Road BMP Alternatives Analysis Report
 Pinellas County, Florida

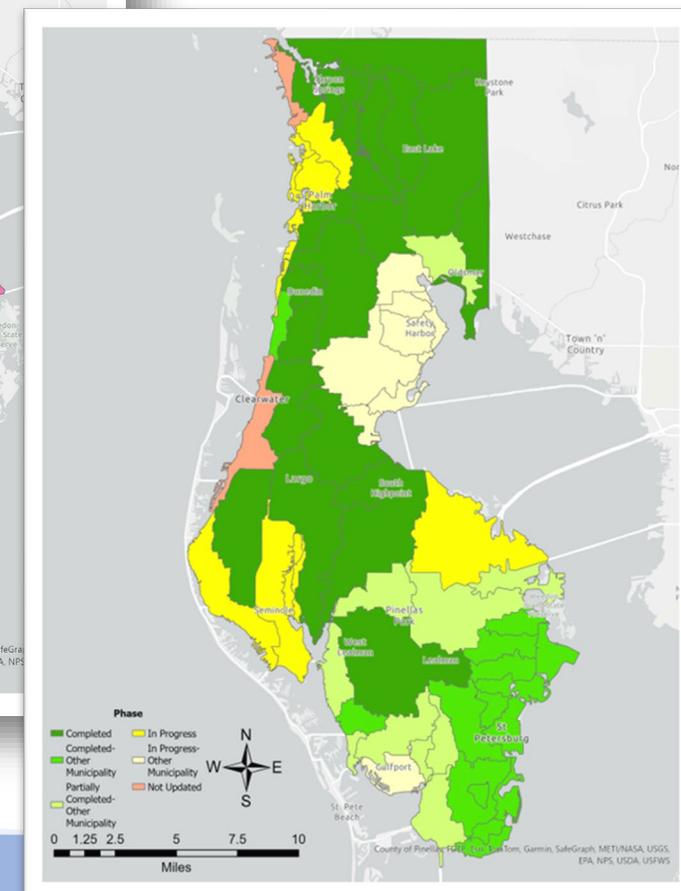
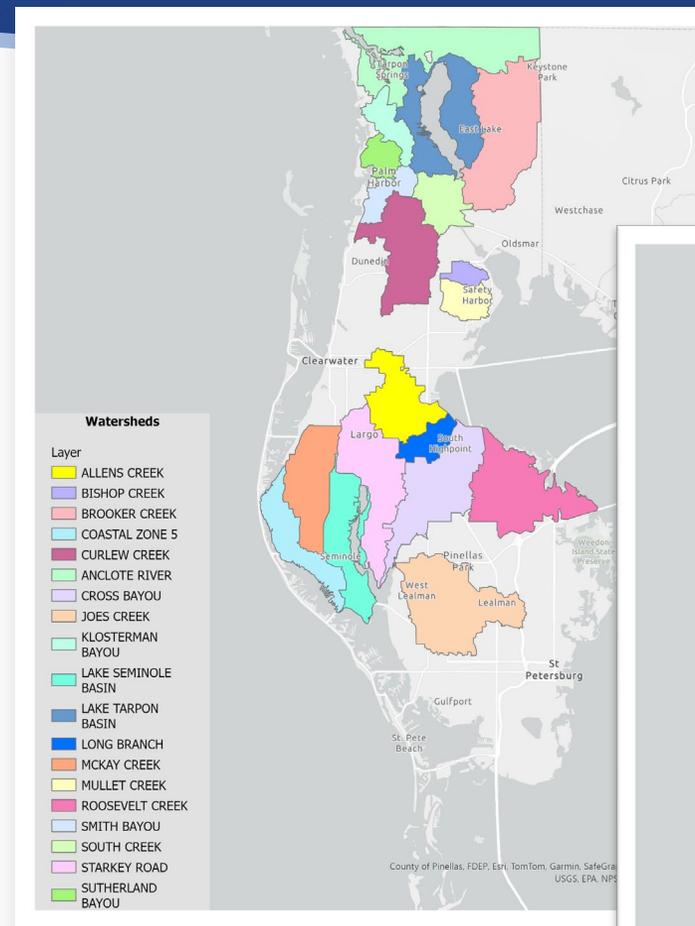


Watershed Planning Summary

19 County Watershed Plans

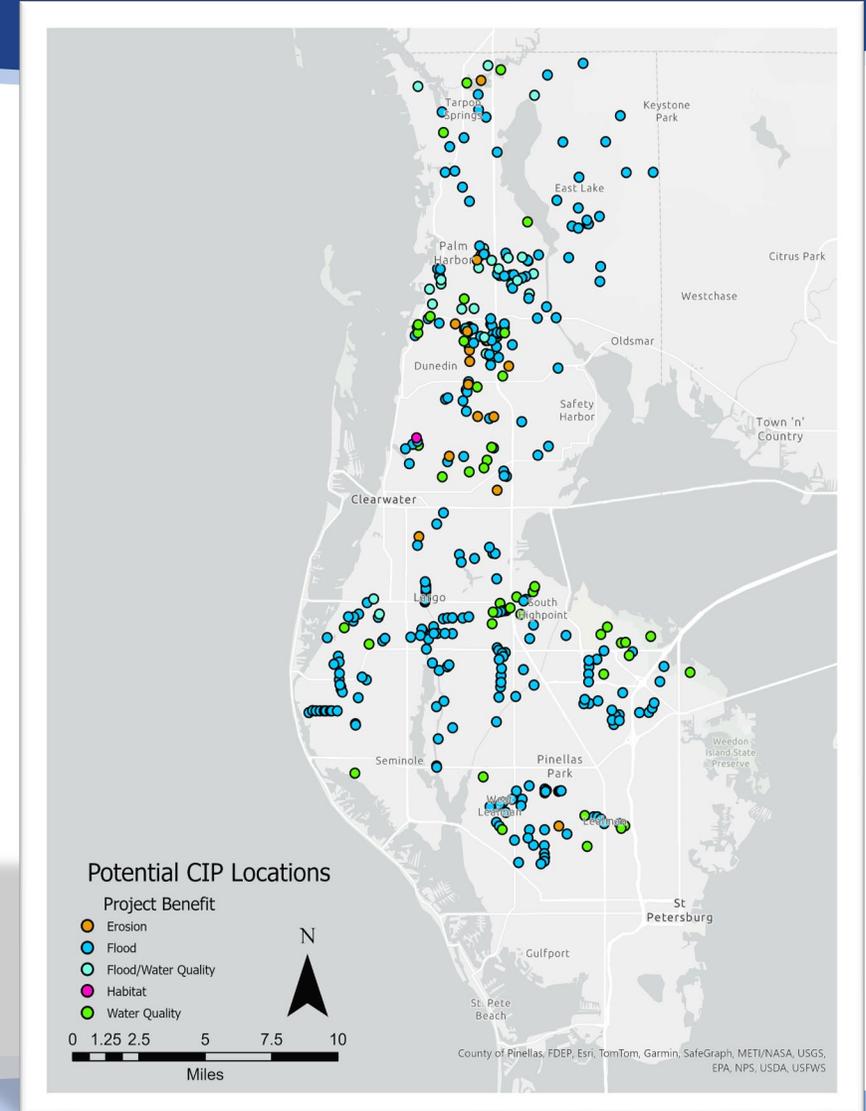
- **Modeling**
 - Hot spot focus areas
 - Capital improvements
 - Flood forecasting
 - Pollutant loading
 - Development

- **Areas for improvement**
 - Flood control projects
 - Water quality investment

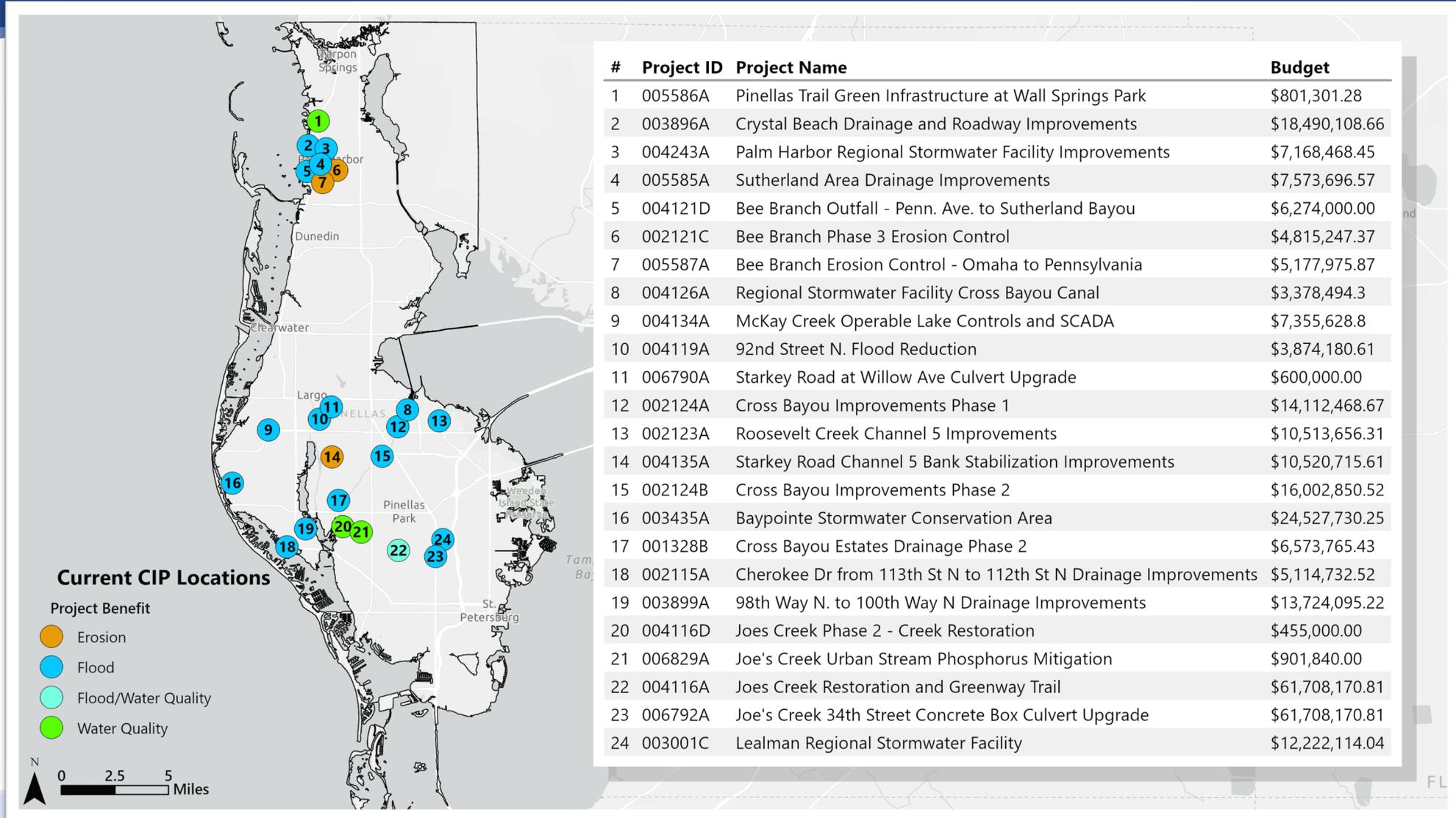


19 Watershed Plans

- **383 Potential Capital Projects**
- **\$1.13B Planning Level Cost Estimate for Design & Construction**



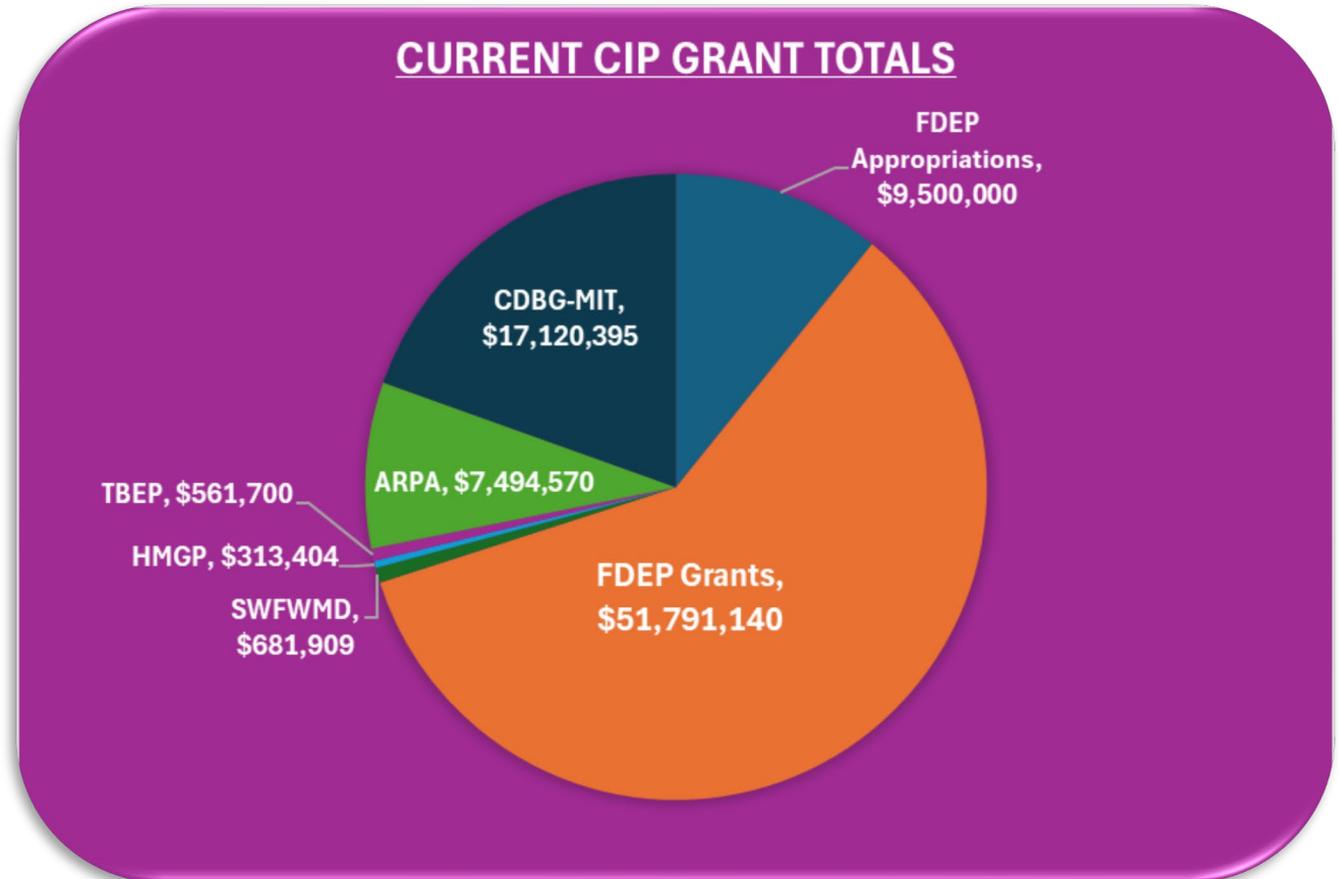
Implementation: Current Capital Projects



Implementation: Capital Project Funding

Funding Overview

- ~\$277M
Estimated cost for
24 projects underway
- > \$87M (32%)
Grant funding secured
- > \$7M
Pending grant applications



Implementation: Watershed Highlights

Joe's Creek – 9,257 acres

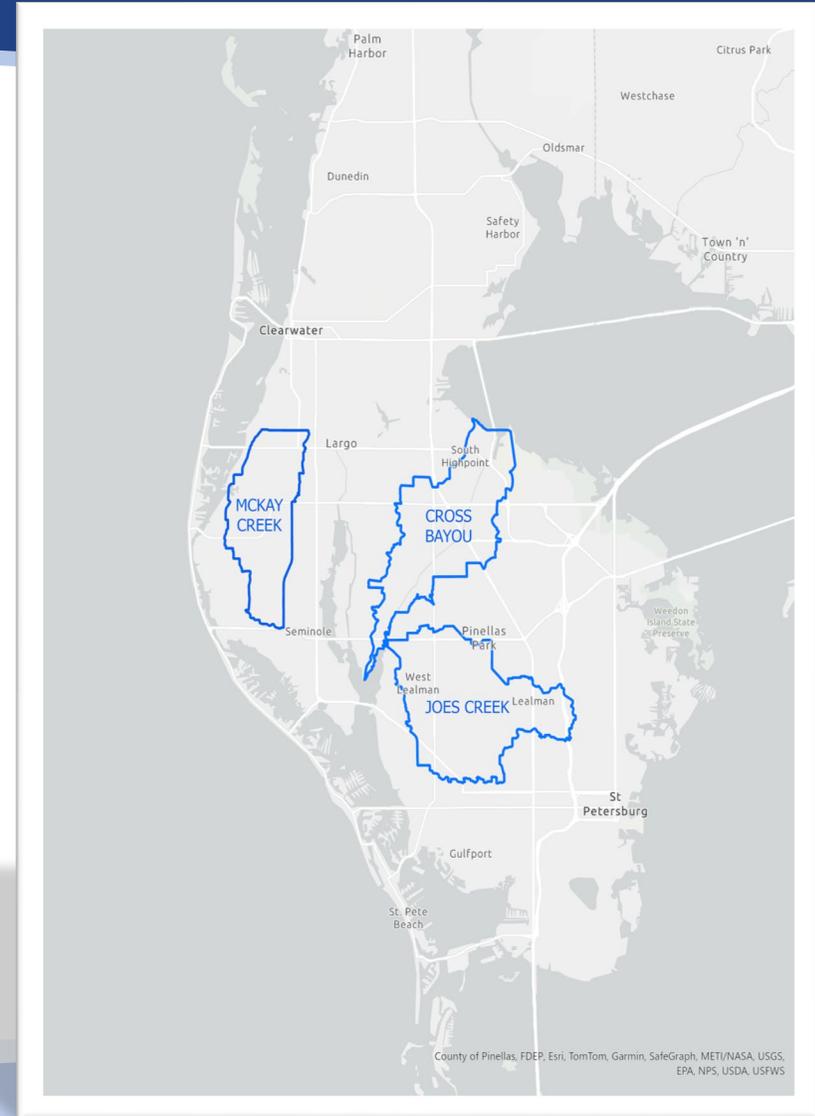
- **37% Unincorporated, 43% St. Petersburg, 15% Pinellas Park, 5% Kenneth City**

Cross Bayou – 7,808 acres

- **42% Unincorporated, 35% Pinellas Park, 21% Largo, 2% Seminole**

McKay Creek – 5,643 acres

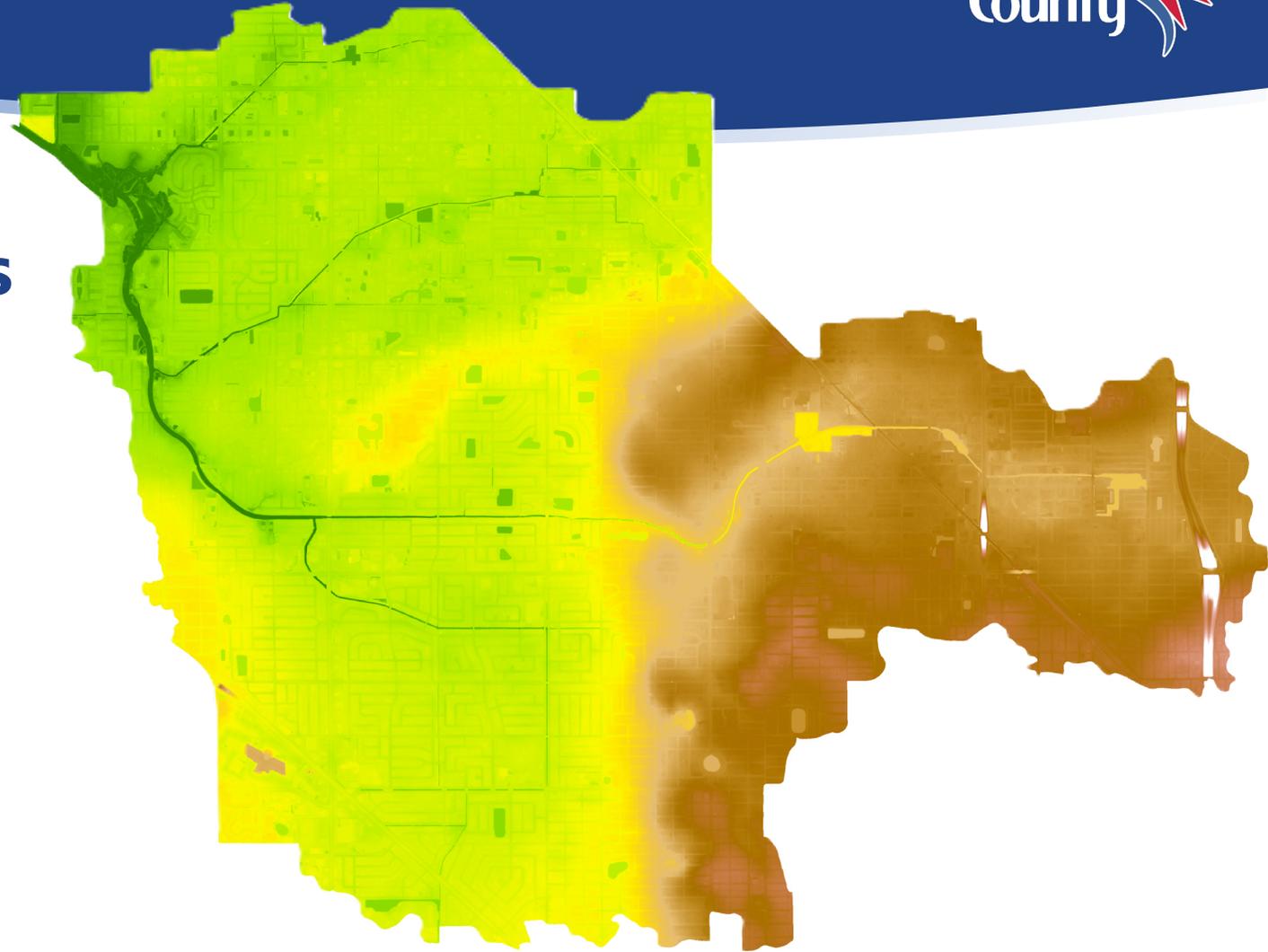
- **43% Unincorporated, 46% Largo, 8% Seminole, 3% Belleair Bluffs**



Joe's Creek Watershed

Watershed by the Numbers

- **9,257 Acres**
 - 3,425 Acres Unincorporated
- **97 miles of pipes**
- **36 miles of ditches**
- **7,154 stormwater structures**
- **126 permitted facilities**



Joe's Creek Restoration & Greenway Trail



Strategic channel widening to improve flow, mitigate erosion, and improve flood control.

Native vegetation will reduce erosion and stormwater runoff and improve water quality.

The project will provide safer and enhanced access.

Joe's Creek Restoration and Greenway Trail Project Benefits

Provides resilient and sustainable water quality improvements.

Restores the greenway from a highly urbanized waterway to a more natural condition.

Creates 5 miles of ADA accessible, paved multi-modal pathway.

Helps to alleviate current flooding, as well as mitigate for future flood conditions.

Opportunities to highlight culture and history of Lealman and Kenneth City communities.

Pinellas Park
West Lealman
Kenneth City
Lealman Community Redevelopment Area

694
693
19
275
19 ALT

0 0.5 1 Mile

Joe's Creek Watershed Joe's Creek Channel Joe's Creek Tributary Joe's Creek Greenway Trail

Escanee Aquí
Español

Quét Tới
Tiếng Việt

Project Funded with: Southwest Florida Water Management District; Florida Department of Economic Opportunity (FDEO); Community Development Block Grant-Mitigation (CDBG-MIT). Project Cost: Awarded \$17,120,395.00 (34%). Total amount of other funds Pinellas County will contribute to the project: \$33,225,753.80 (66%). Total Funds (both FDEO Grant and Pinellas County contributions): \$50,346,148.80; and Penny for Pinellas

Joe's Creek 34th Street Culvert Project



Improvement Includes Larger Culverts to Improve Conveyance

100-year Flood Improvements

- ~2,963 feet of roads removed
- ~14 structures removed
- ~Flood depth reduced by 0.54 feet



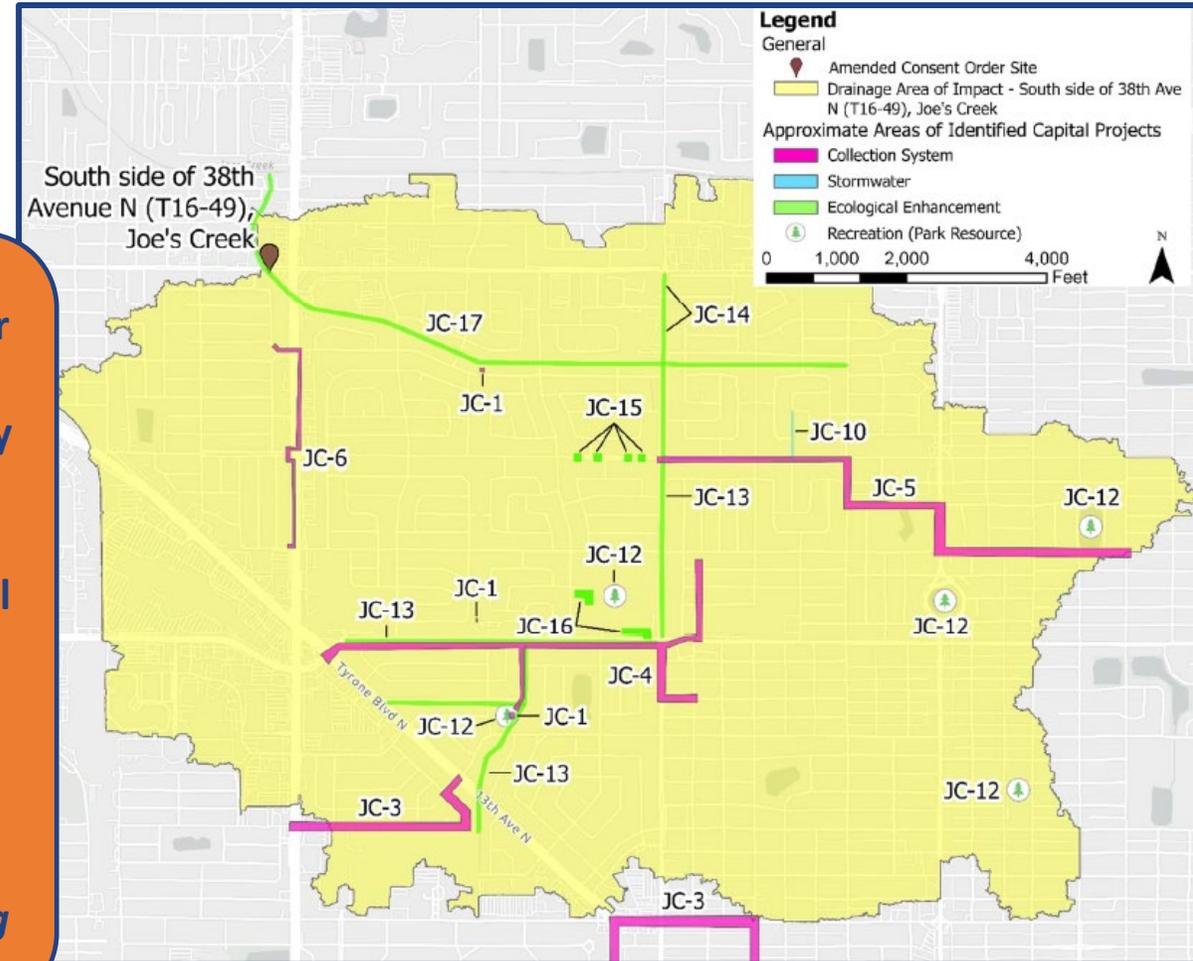
Joe's Creek Proposed Improvements

City of St. Petersburg



- 4 Stormwater Projects
- 5 Ecological Projects
- 6 Collection System Projects
- 1 Reclaimed Water Project

St. Pete ranked Joe's Creek as their "fourth highest priority water body primarily because of its regulatory status, recreational exposure, connectivity to receiving waterbodies, and city priorities."
Jacobs Engineering Group



Joe's Creek Watershed Improvements

City of Pinellas Park



62nd Street Stormwater Improvements from 70th Ave to 68th Ave

- Removed corrugated pipes
- Eliminated dirt road that was contributing to waterway sedimentation.
- Cost \$100,000



Before



After

Sams Club, 7001 Park Blvd

- Public-Private Partnership
- Stormwater pond restoration
- Cost \$100,000

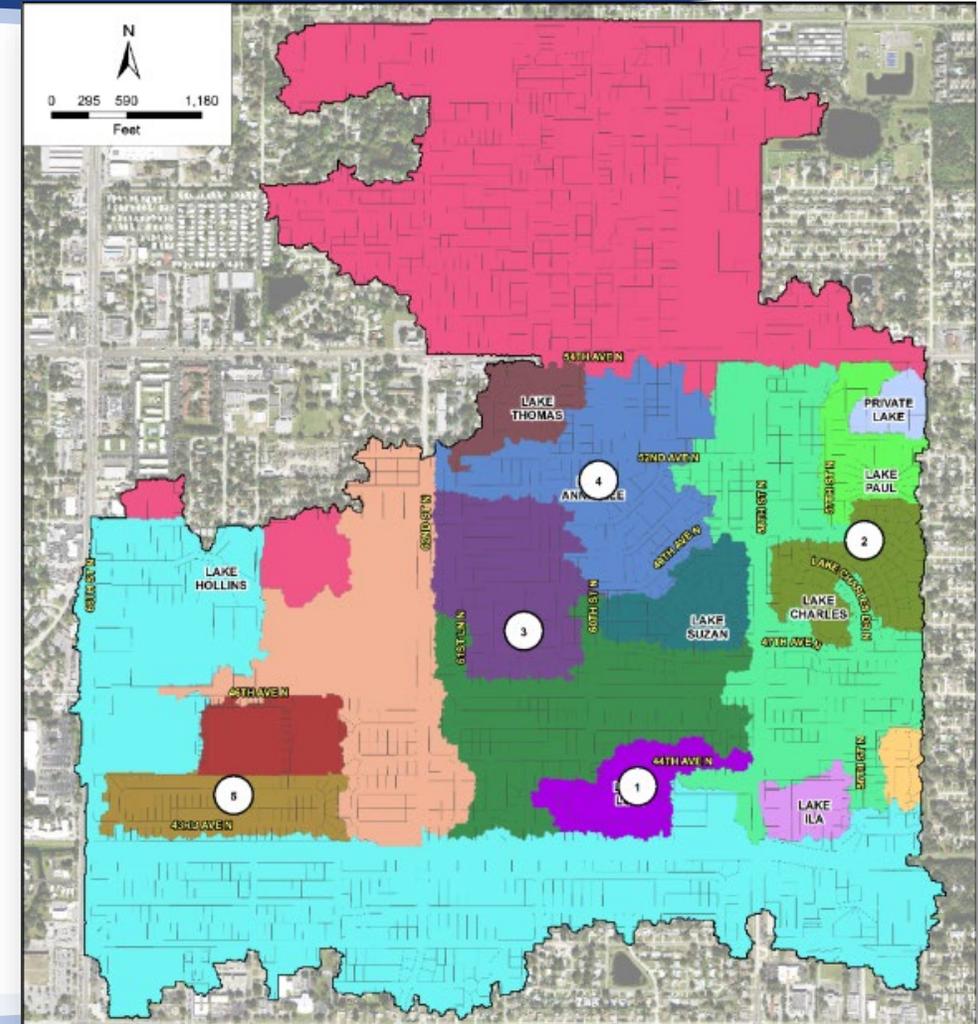
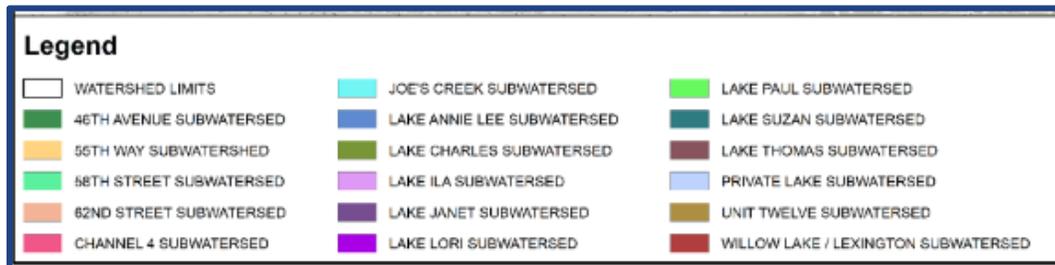


Joe's Creek Improvement Projects Kenneth City

Projects Identified

Project Name	Watershed Model Node	Flood Control	Water Quality
Lake Lori Stormwater Improvements	ND0240	X	X
Lake Paul & Lake Charles Stormwater Improvements	ND0140 / ND0360	X	X
Lake Janet Stormwater Improvements	ND0130	X	X
Lake Annie Lee & Lake Thomas Stormwater Improvements	ND0120 / ND0110	X	X
Unit Twelve Stormwater Improvements	ND0500_1 / ND0500_2	X	

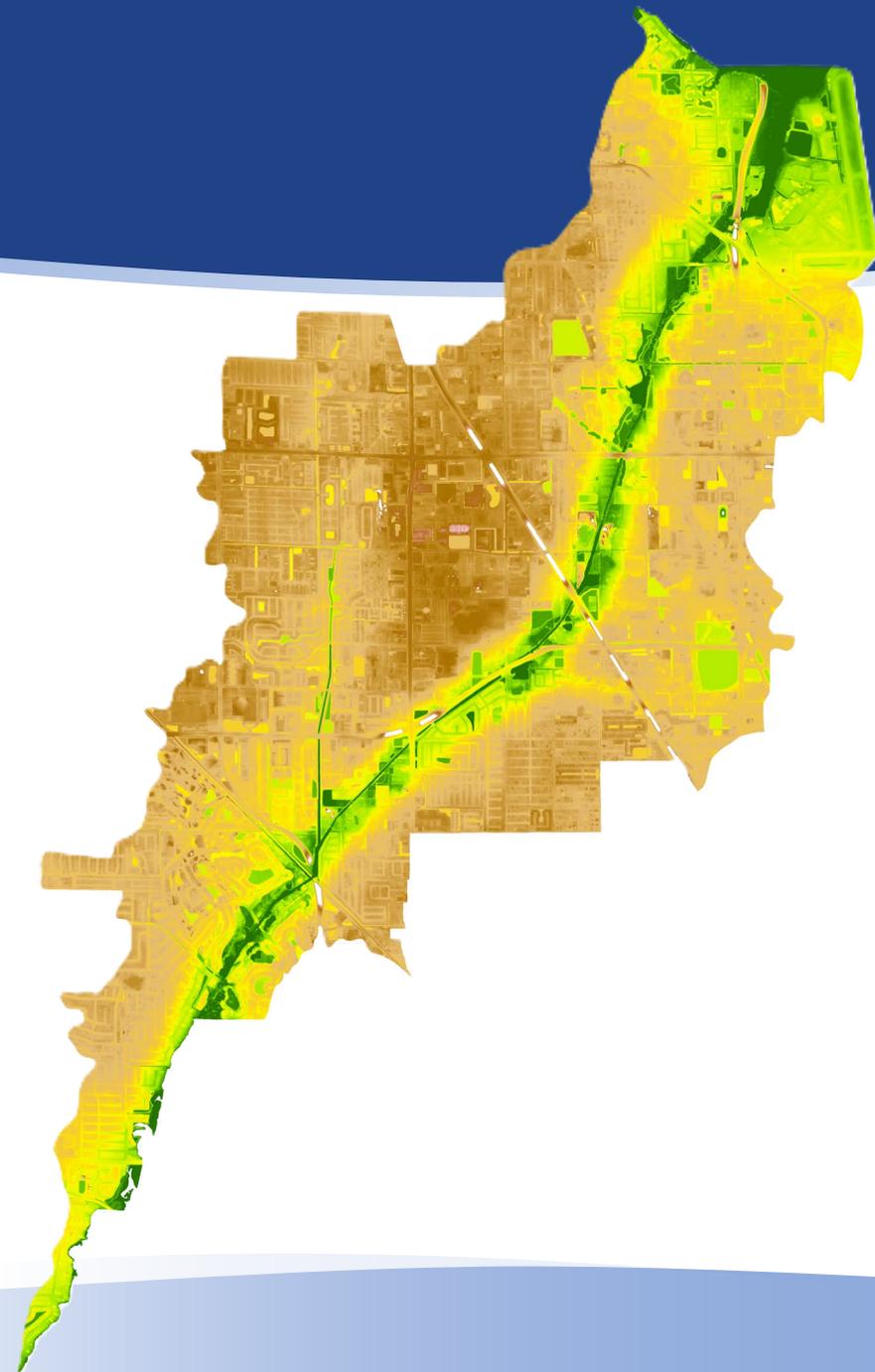
Table 7-2 Summary of Project Recommendations



Cross Bayou Watershed

Watershed by the Numbers

- **7,808 Acres**
 - 3,279 Acres Unincorporated
- **49 miles of pipes**
- **32 miles of ditches**
- **4,533 stormwater structures**
- **71 permitted facilities**



Cross Bayou Regional Stormwater Facility

Goals: to improve water quality in Cross Bayou and to provide potential stormwater credits for re-development within the area

- **Preliminary engineering phase**
- **Water quality improvements**



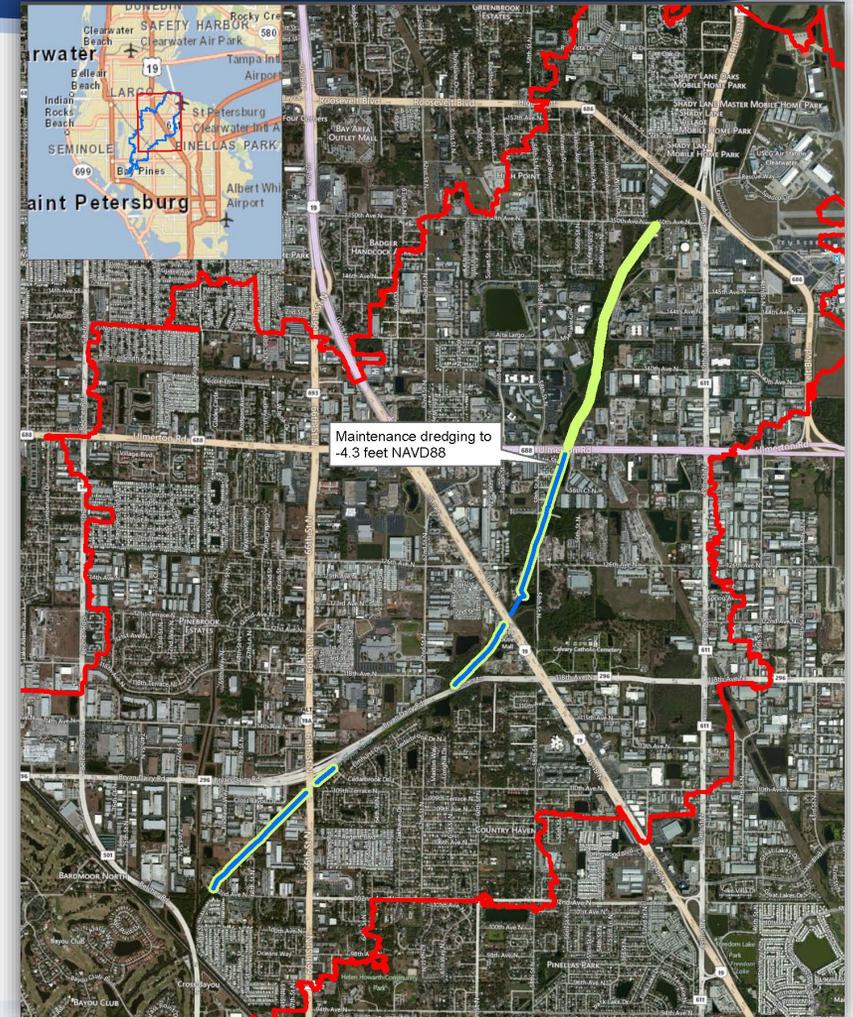
Cross Bayou Canal Improvements Ph I/II

Goals: to improve stormwater conveyance, water quality, and habitat in Cross Bayou.

Project includes:

- **Sediment removal**
- **Channel restoration and bank stabilization**
- **Exotic/nuisance vegetation removal**

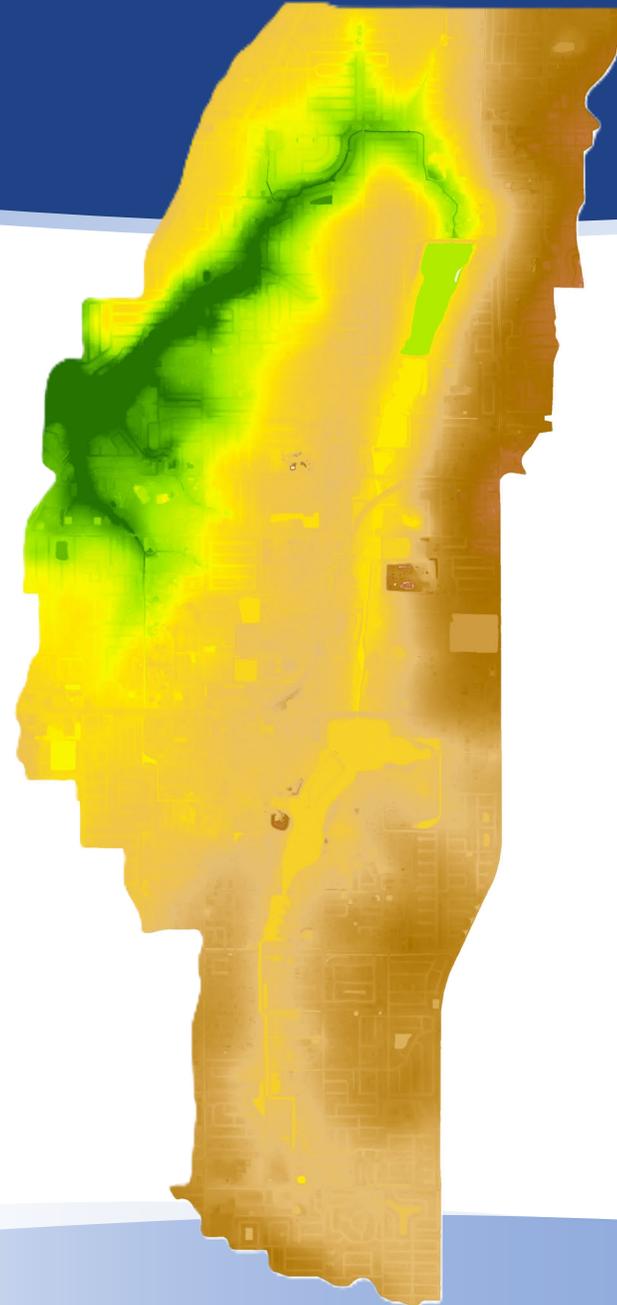
Partnership with Largo and Pinellas Park



McKay Creek Watershed

Watershed by the Numbers

- **5,643 Acres**
 - 2,426 Acres Unincorporated
- **49 miles of pipes**
- **22 miles of ditches**
- **2,790 stormwater structures**
- **76 permitted facilities**



McKay Creek Operable Lake Controls & SCADA

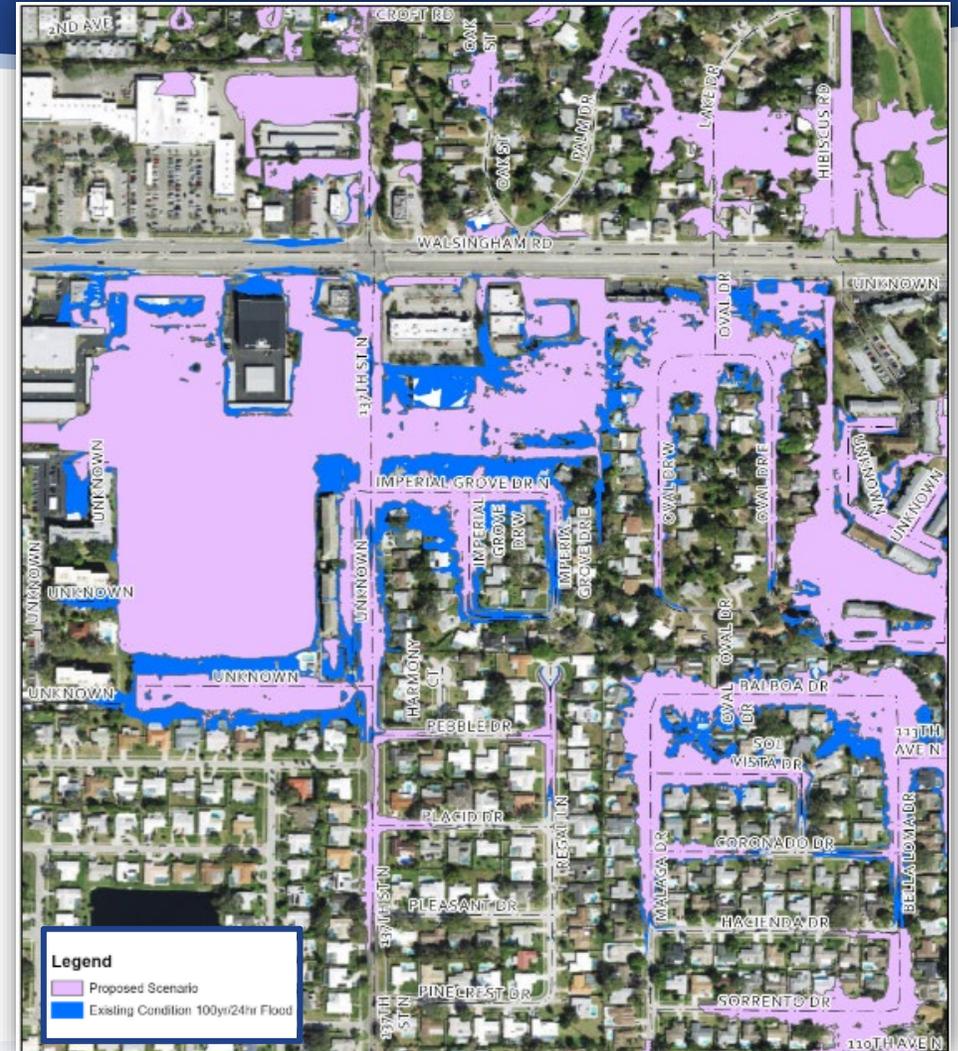
Allows remote draw down of Walsingham Reservoir and Taylor Lake before storms

Avoids ~\$24M in damages to impacted structures under 100-year, 24-hour event

Awarded HGMP Grant for Design

Construction HMGP application pending

Storm Event	Flood Damage Estimate	
	Existing Conditions	Proposed Conditions
100Y-1D	\$27,798,677.00	\$3,971,058.00
500Y-1D	\$55,396,398.00	\$38,178,987.00



McKay Creek Pinecrest Golf Course

City of Largo



26.6 acres to be converted to regional stormwater facility and passive park

Taylor Lake to the south, McKay Creek flows through the property and exits to the north.

- Creates a master stormwater facility for the Medical Arts District
- Improves flood control & water quality
- Provides passive recreation with connectivity to the Pinellas Trail and
- Provides native habitat and invasive plant abatement.



McKay Creek Flood Mitigation Projects

City of Largo



Valencia Drive Neighborhood Improvements

- **Extended stormwater infrastructure to the neighborhood; installing additional pipe and inlets**
- **Construction is currently substantially complete**
- **Cost: \$2,629,000**

Church Creek Phase II Flood Mitigation

- **Expands the channel's capacity**
- **Construction in FY27**
- **Estimated Cost: \$5,225,000**



McKay Creek Flood Mitigation City of Seminole



**Improvements at the
Waterfront Park
Blossom Lake
Improvement Project
Baywood Park Drive
and Park Place Drive
Swale Restoration**



County Watershed Operations and Maintenance



<u>Calendar Year</u>	<u>Joe's Creek</u>	<u>McKay Creek</u>	<u>Cross Bayou</u>
2020	\$1,999,952	\$838,079	\$741,814
2021	\$912,629	\$419,001	\$530,920
2022	\$466,291	\$421,352	\$372,735
2023	\$708,131	\$403,588	\$557,257
2024	\$820,232	\$726,972	\$994,058
2025	\$1,199,895	\$1,075,873	\$1,045,704
5-YR TOTALS	\$6,107,129	\$3,884,864	\$4,242,488

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3. Regulatory Snapshot
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2023 Stormwater Infrastructure Report Card - Update

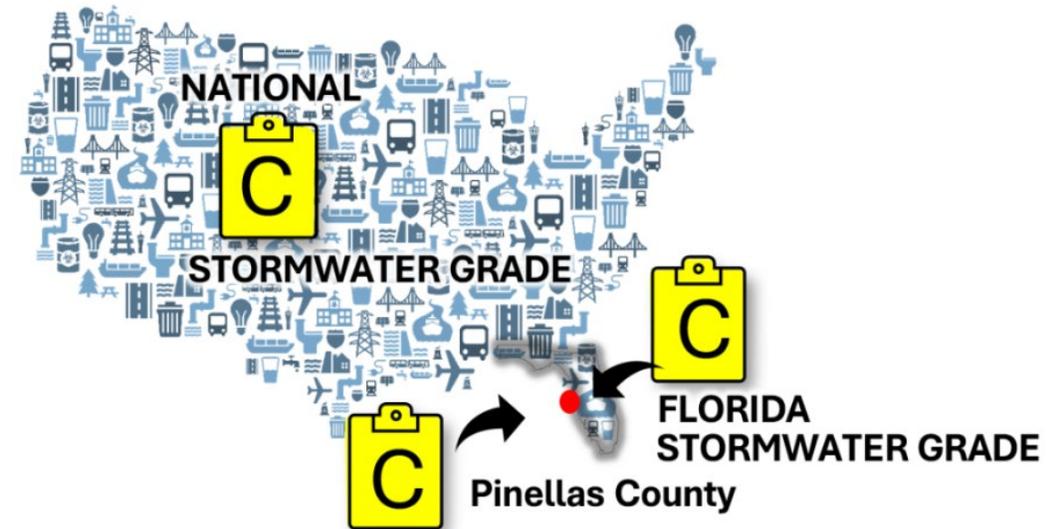
STORMWATER

Capacity	C
Condition	C
Funding	D
Future Need	D
Operations & Maintenance	C
Public Safety	C
Resilience	C
Innovation	A



OVERALL
GRADE

Comparative Stormwater Grades



Major Drainage Needs Assessment



Geosyntec is currently working to identify opportunities for collaboration with the municipalities on major drainage maintenance. The project will wrap up in April.

Leveraging County Dollars



Federal

- Federal Grants
- FEMA
- HMGP



FEMA



State

- Resilient Florida
- SWFWMD
- FDOT



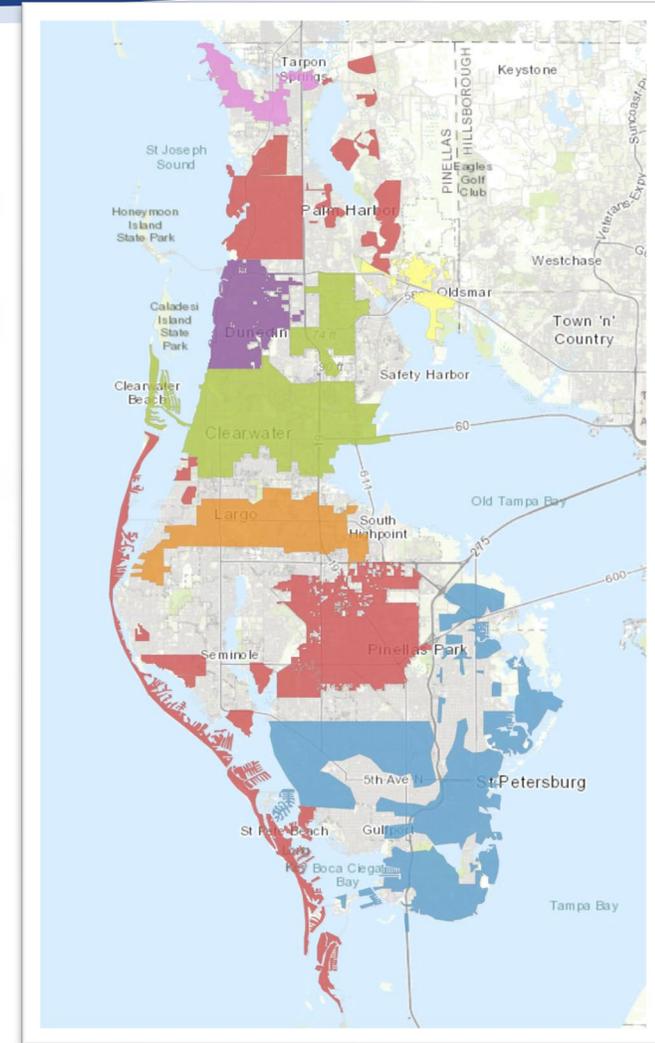
Southwest Florida
Water Management District

Local Partnerships

- Cost share

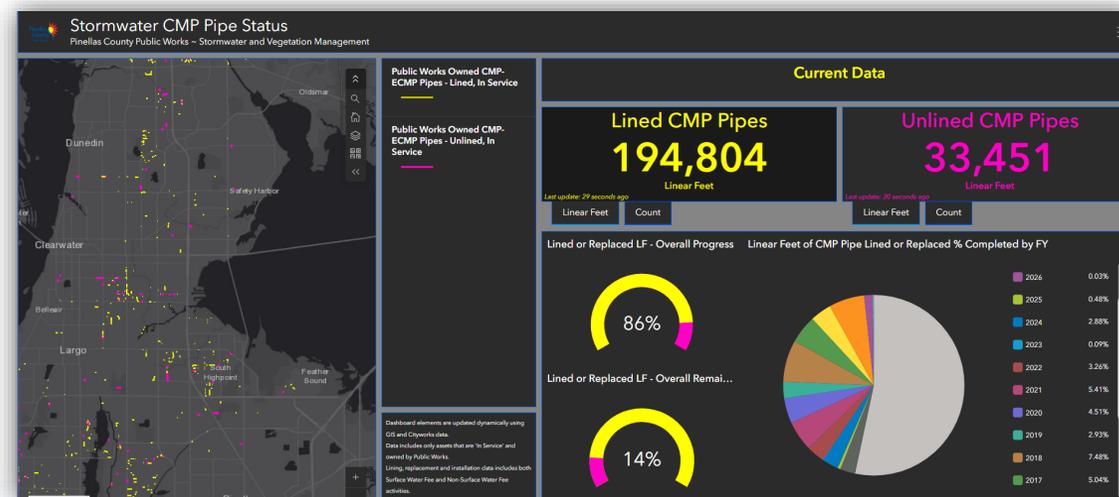
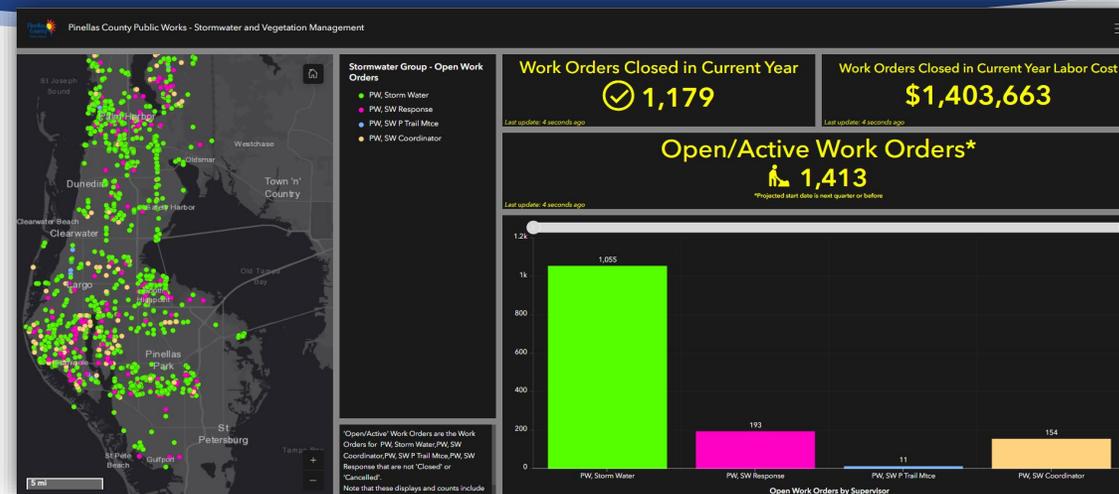


TBRPC
TAMPA BAY REGIONAL
PLANNING COUNCIL



Looking Ahead 2026

- Consultant Evaluation of Major Drainage with Municipalities
- Updates to Hot Spots
- Updated Asset Management Plan
- Continued Focus on the Hurricane Related Backlog
- Hurricane Milton NRCS Project
- Project ranking for future Penny discussions
- Monitoring Outcomes





Discussion