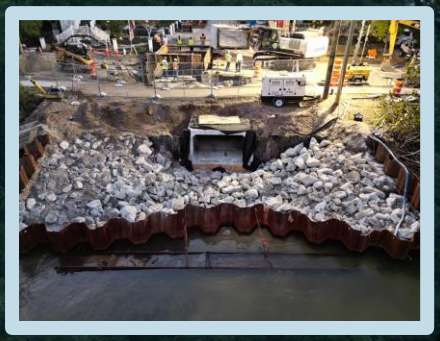
Lower Peninsula Stormwater Improvements

June 12, 2025



The City of Tampa's nature-based solution to urban flooding that improves water quality for Hillsborough Bay

City of Tampa Florida

AtkinsRéalis

Presenters

Daniel Parsons, PE, CFM, ENV SP
Florida Water Division Manager
11 years with AtkinsRéalis

Christian Chandler, PE
Senior Engineer
9 years with AtkinsRéalis

Amanda Serra, PE
Florida Water Resources Group Manager
18 years with AtkinsRéalis

Agenda

01 Project History and Initial Concepts

02 Preliminary Engineering and Route Study

03 Public Involvement and Outreach

04 Flood Reduction Benefits

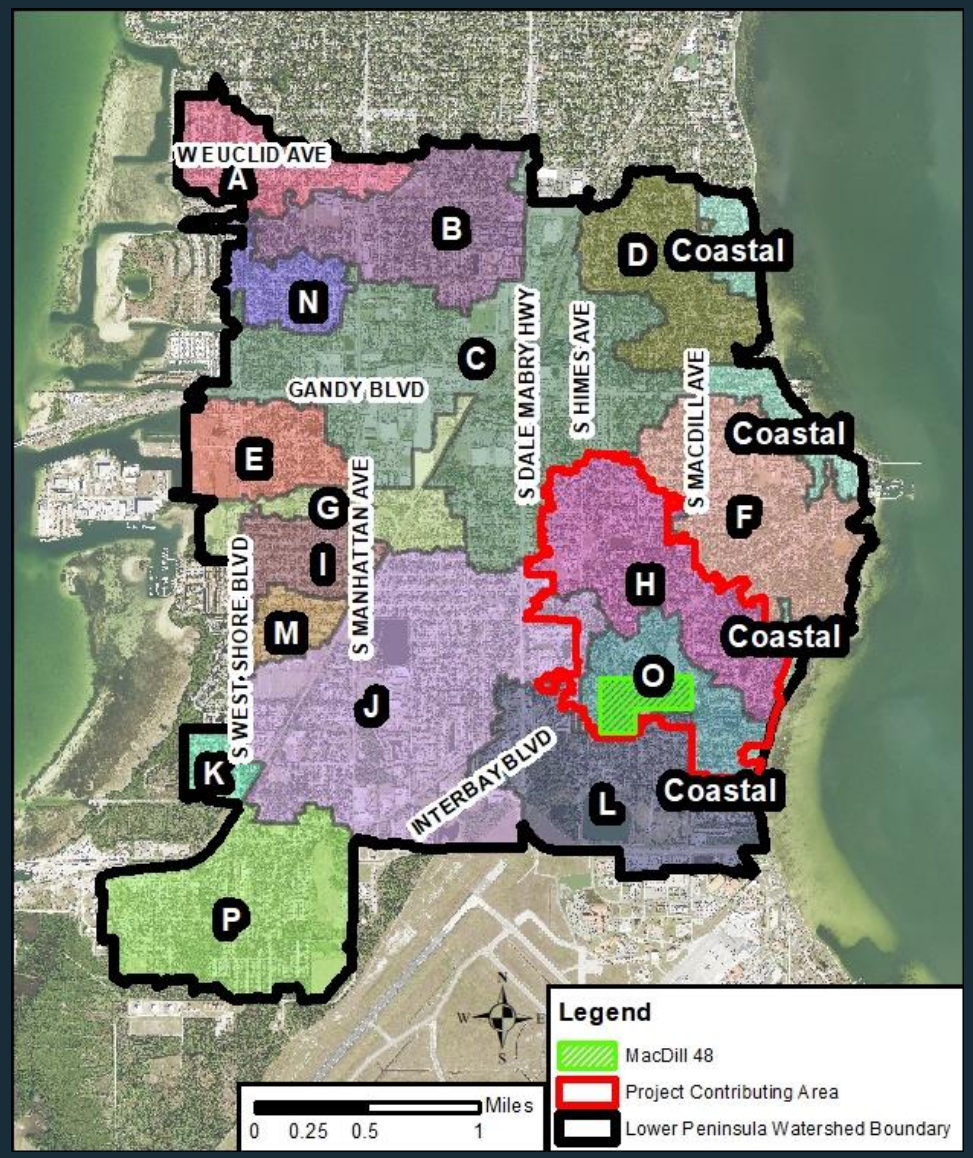
05 Water Quality / Sustainable Infrastructure

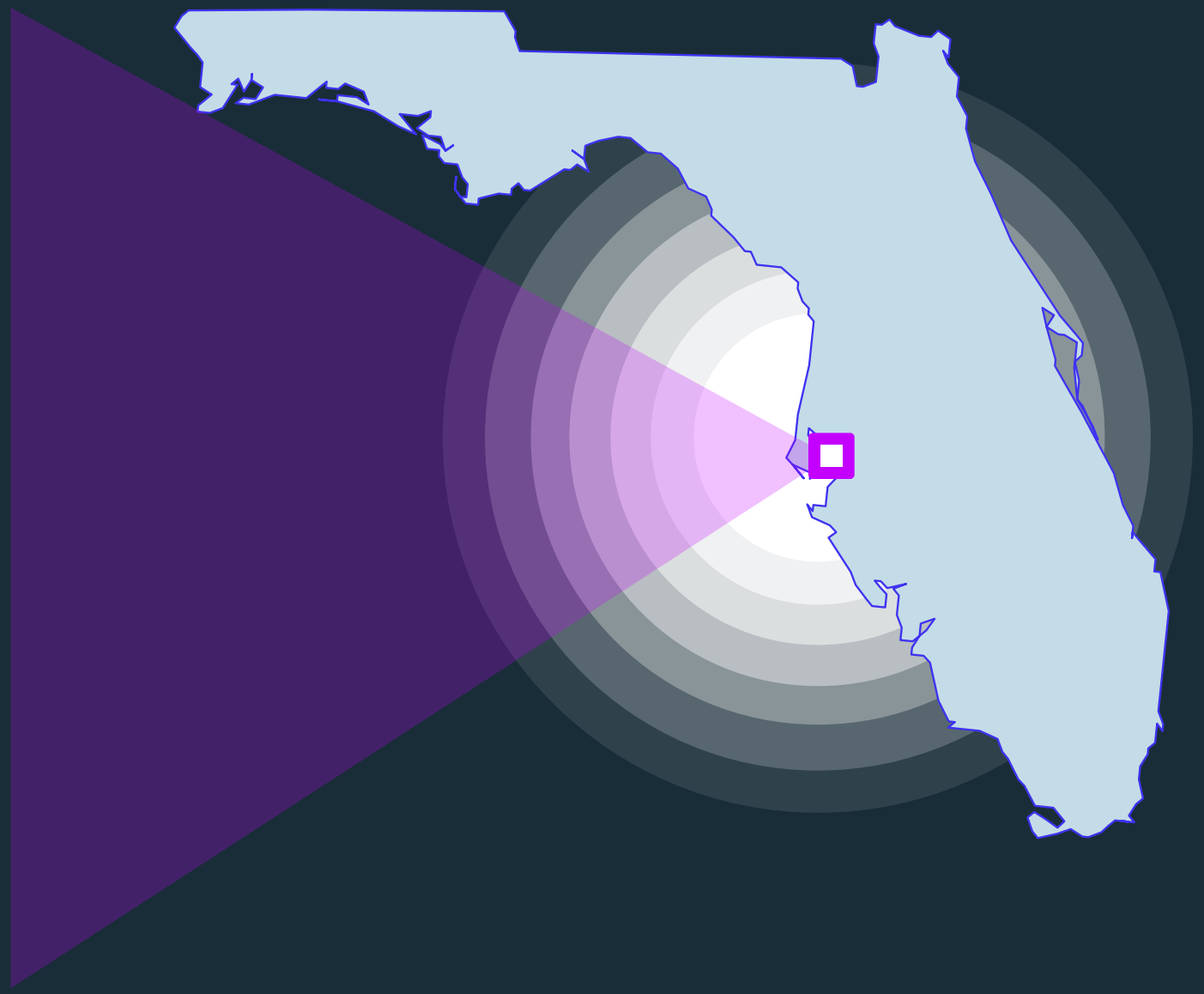
06 Passive Park and Community Amenities

07 Construction Activities

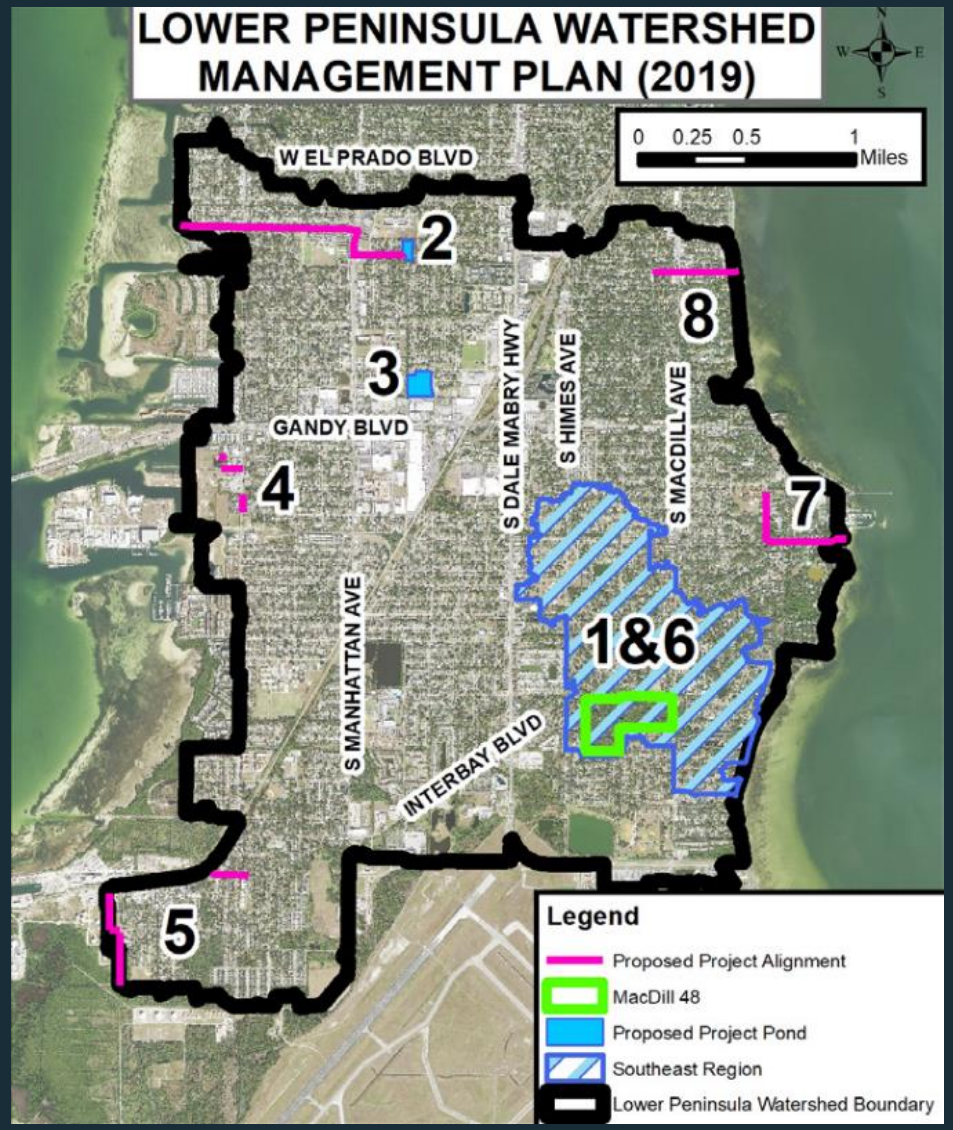
Project History and Initial Concepts

Project Location



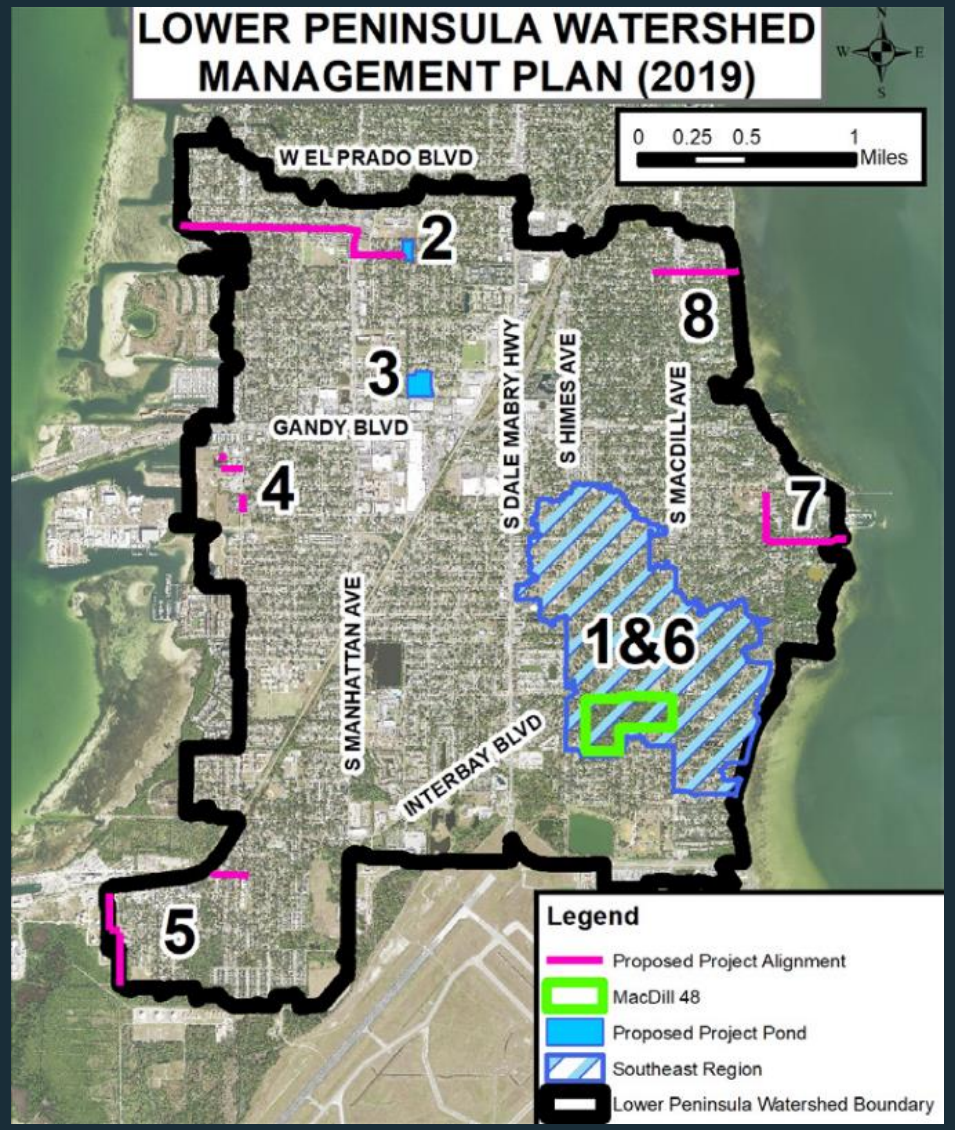


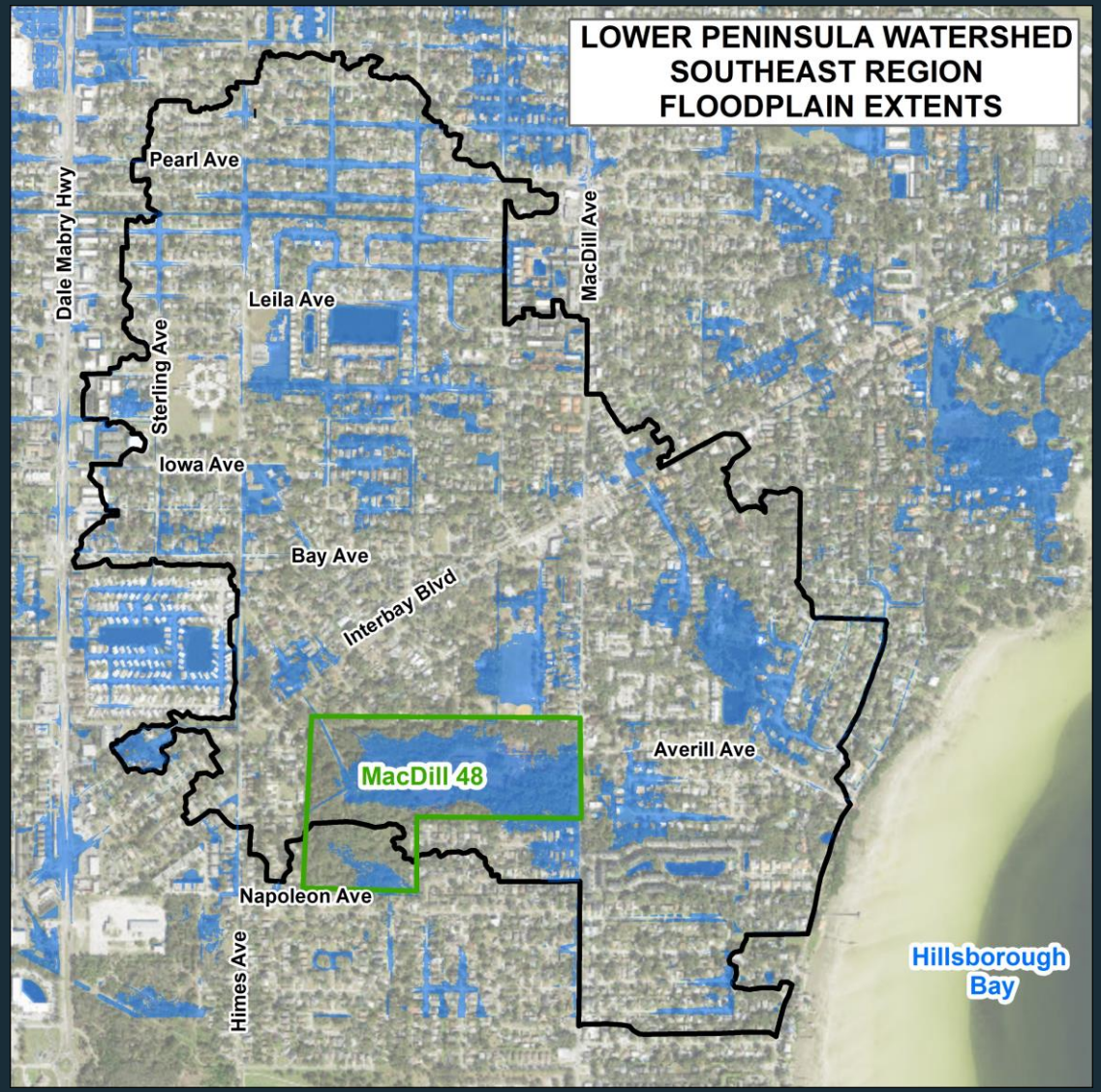
Need for Project



- Ensure roads are passable during the 5-year/8-hour design storm event and establish stormwater conveyance trunkline that future smaller drainage improvements projects can use
- Improve water quality, particularly for Hillsborough Bay, to benefit the Tampa Bay estuary whose ecosystem has suffered from high levels of nutrients and pollutants in stormwater runoff

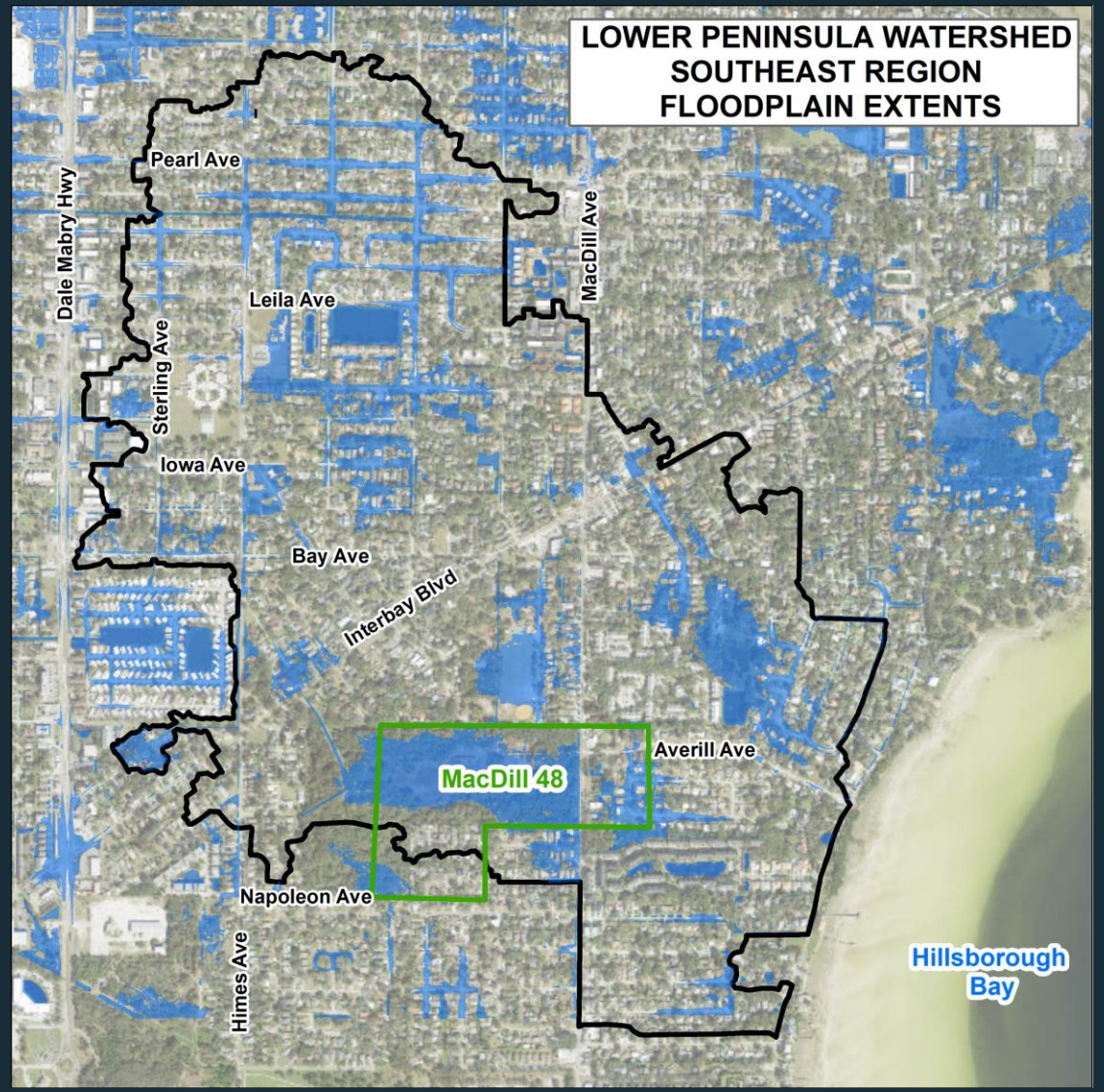
Need for Project





Existing Conditions

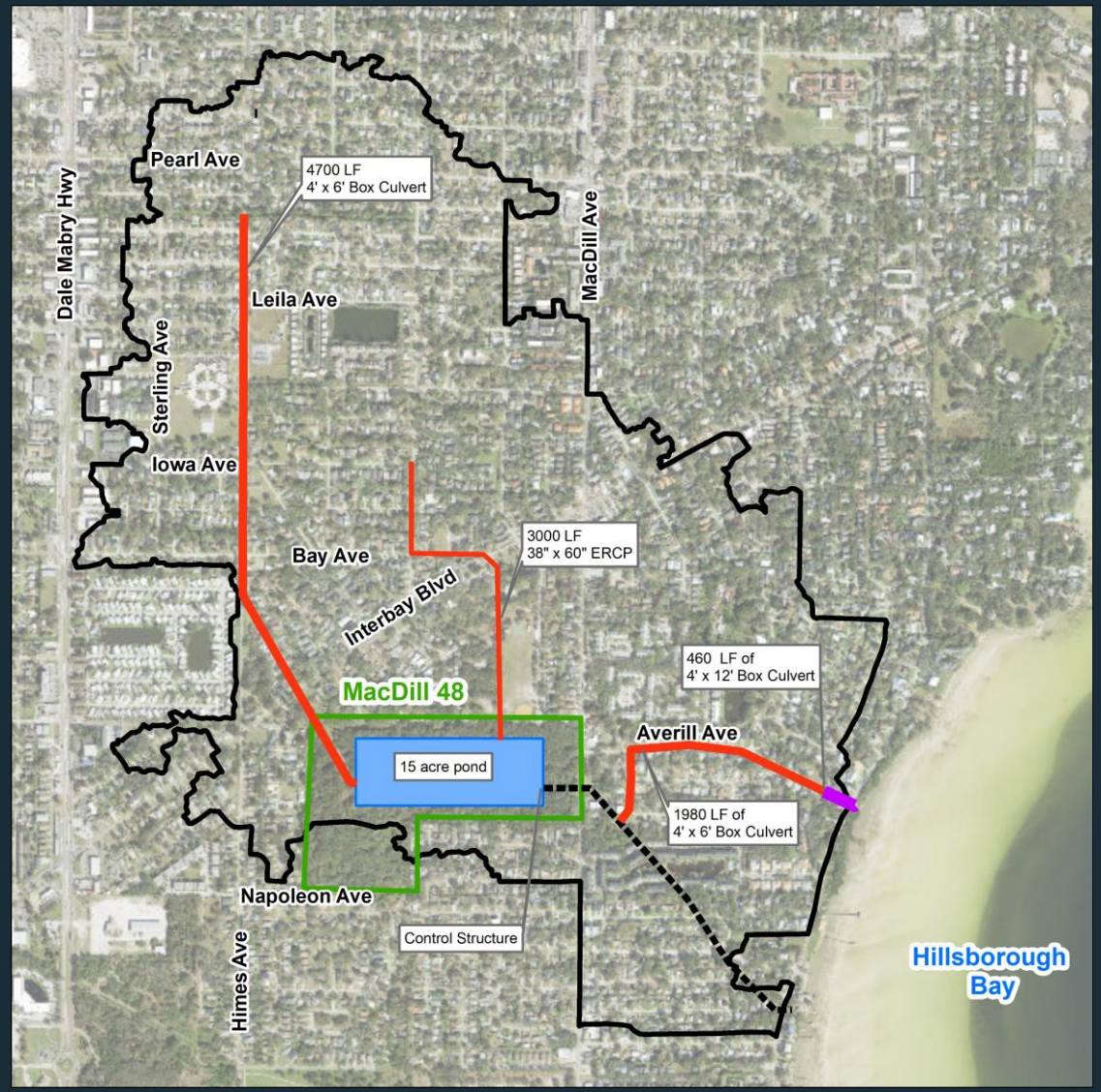
Need for Project



Existing Conditions

Existing Conditions – Observed
Sept. 2020, less than 1” of rainfall

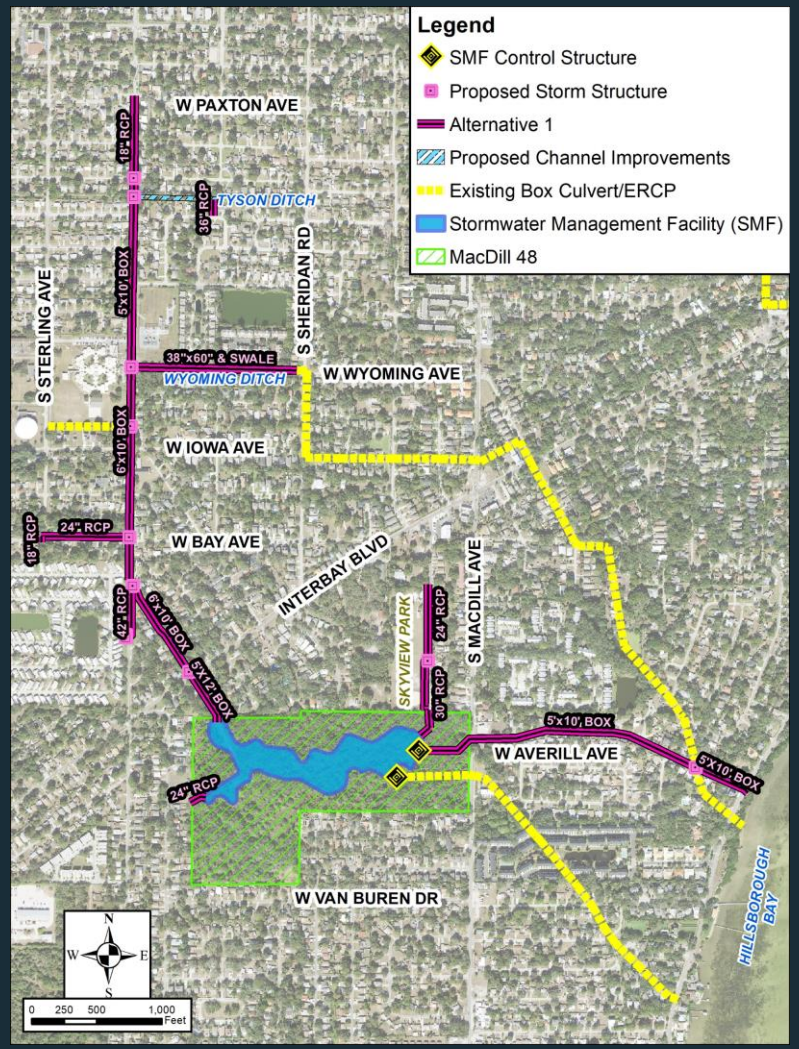
Initial Concept

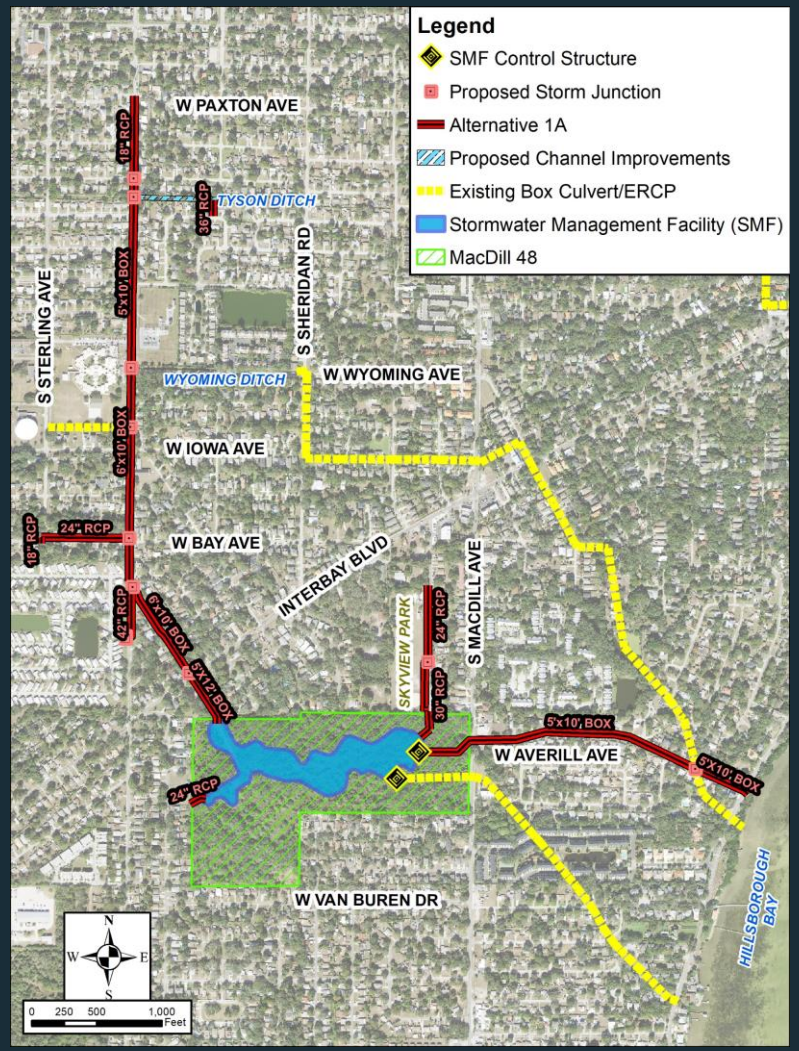


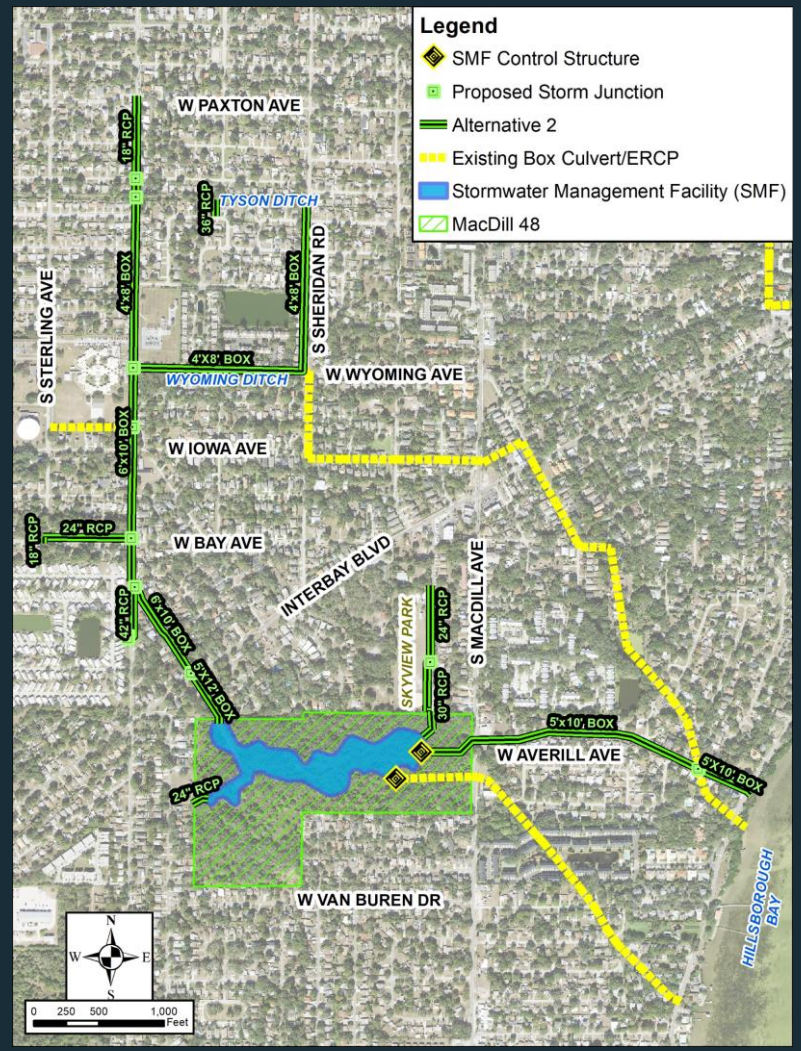
- Developed as part of 2019 Watershed Management Plan
- Add box culverts and large pipes to alleviate street flooding in neighborhoods, send water to pond within MacDill 48 site
- Convert unmanaged, former ELAPP land to large pond (BURP - Big Ugly Rectangular Pond)
- Use existing 3’x4’ box culvert outfall (Project 1), new 4’x12’ box culvert outfall (Project 6)
- After updating the existing conditions model and analyzing this concept further, unfortunately it did not meet the City’s flood reduction goals

Preliminary Engineering and Route Study

Route Selection / Alternative Analysis

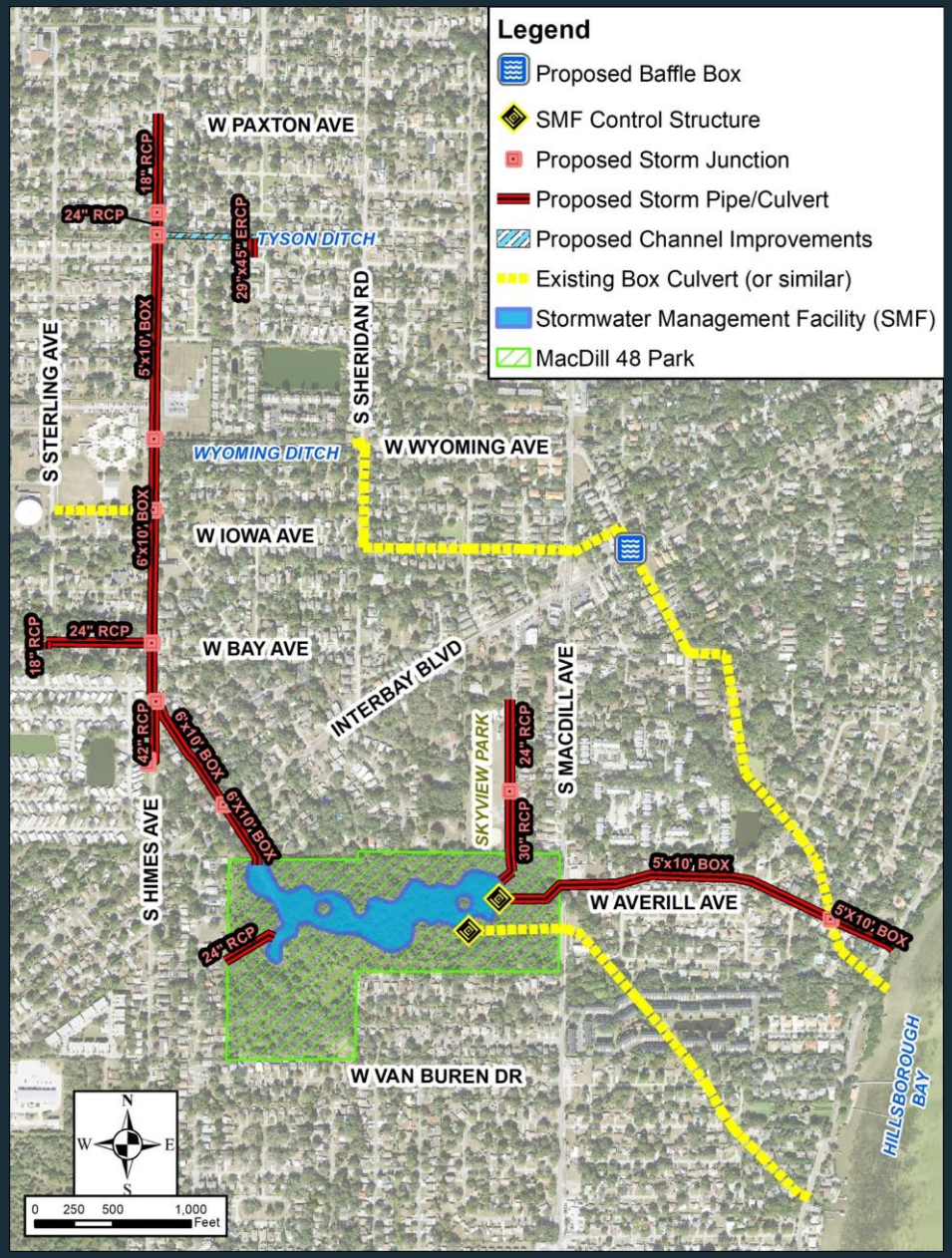






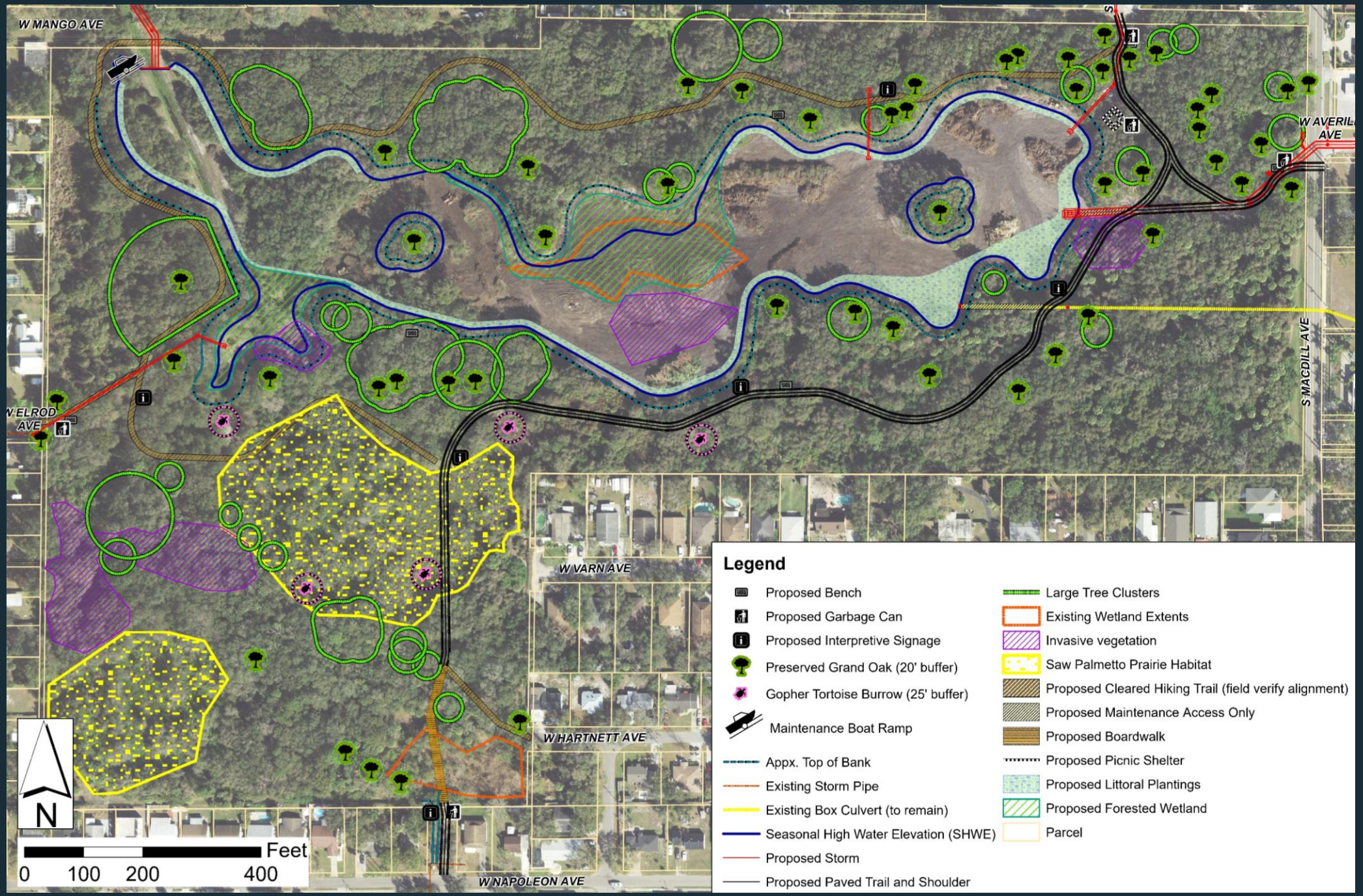
Finalized Project Plan

- The project will consist of design and construction of a major stormwater conveyance system that includes more than 10,000 linear feet of box culvert, pipes, and inlets.
- An aesthetically pleasing pond will be developed to provide storage and water quality treatment for stormwater runoff prior to discharging to Hillsborough Bay through a new box culvert outfall.
- Several green infrastructure solutions are designed to further reduce the discharge of nutrients, sediments, oils and greases, and floating debris into Hillsborough Bay.



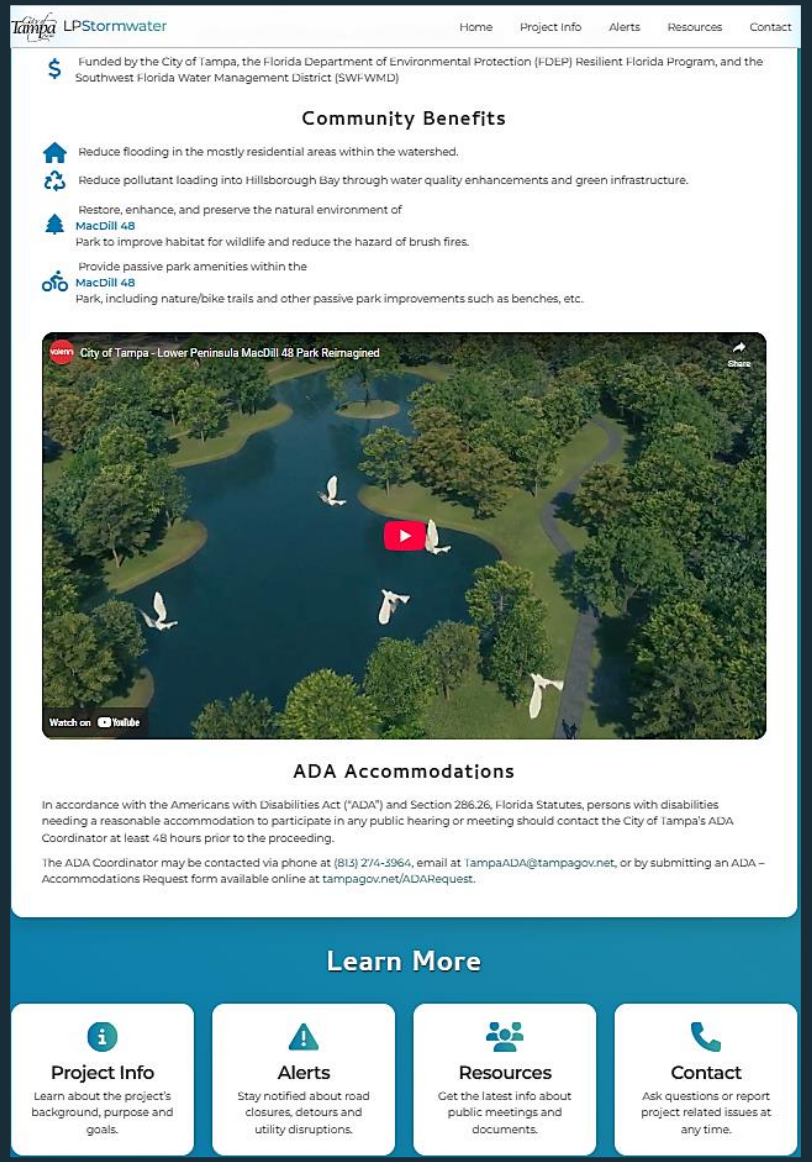
Finalized Project Plan

- The project will also include improvements to the City's 48-acre environmental property, which was originally purchased by the City in 2003 from the Environmental Lands Acquisition Protection Program (ELAPP) administered by Hillsborough County to protect and preserve the property.
- Improvements and amenities to the passive park will include hiking trails, shared use path and boardwalk, a picnic pavilion, bicycle storage, benches, and educational signage highlighting the preservation and restoration of the diverse and native habitats within the site.


W MANGO AVE
W AVERILL AVE
S MACDILL AVE
W ELROD AVE
W VARN AVE
W HARTNETT AVE
W NAPOLEON AVE
N
0 100 200 400 Feet
Legend
Proposed Bench
Proposed Garbage Can
Proposed Interpretive Signage
Preserved Grand Oak (20' buffer)
Gopher Tortoise Burrow (25' buffer)
Maintenance Boat Ramp
Appx. Top of Bank
Existing Storm Pipe
Existing Box Culvert (to remain)
Seasonal High Water Elevation (SHWE)
Proposed Storm
Proposed Paved Trail and Shoulder
Large Tree Clusters
Existing Wetland Extents
Invasive vegetation
Saw Palmetto Prairie Habitat
Proposed Cleared Hiking Trail (field verify alignment)
Proposed Maintenance Access Only
Proposed Boardwalk
Proposed Picnic Shelter
Proposed Littoral Plantings
Proposed Forested Wetland
Parcel

Public Involvement and Outreach

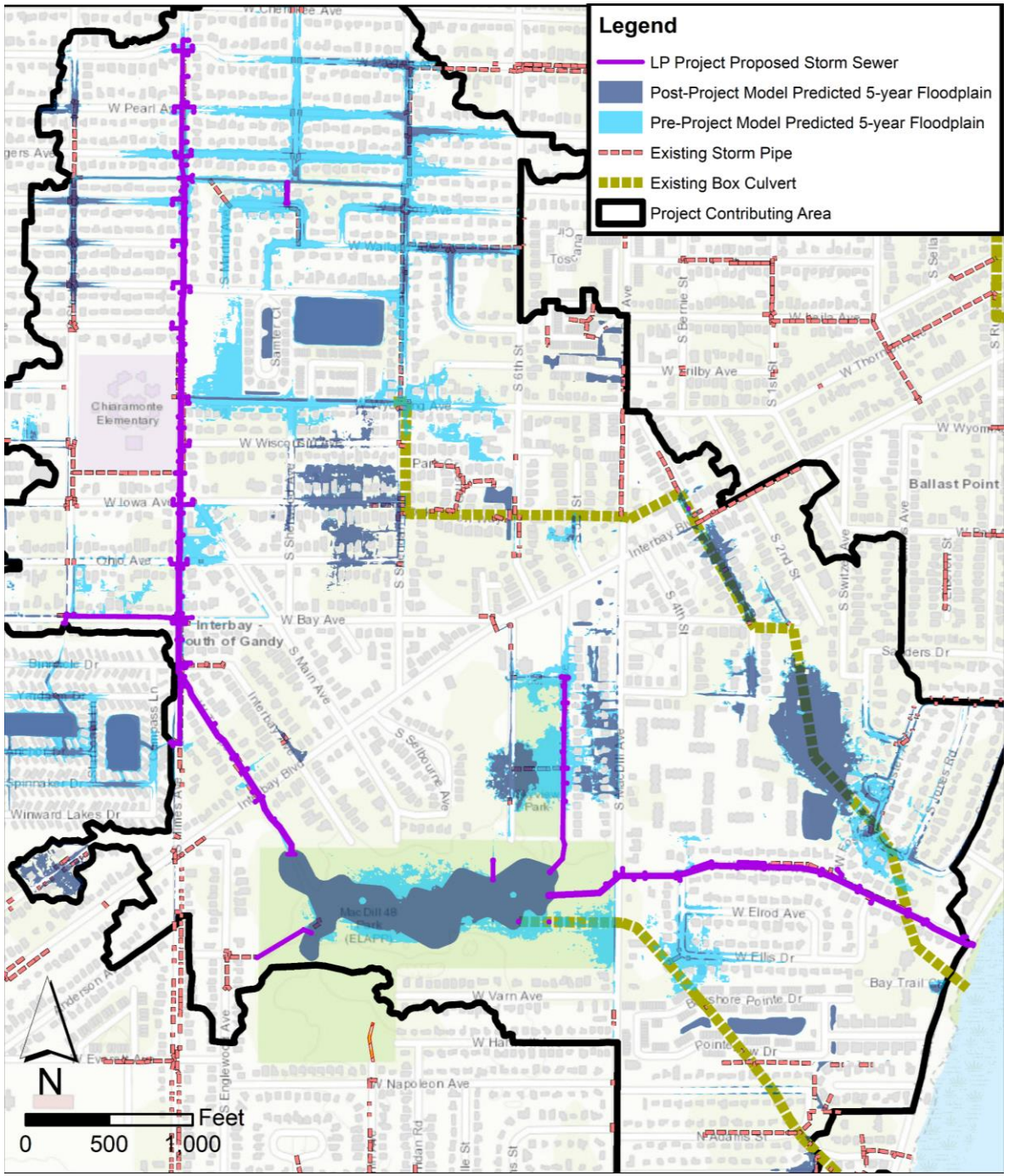
Public Outreach



Flood Reduction Benefits

Flood Reduction

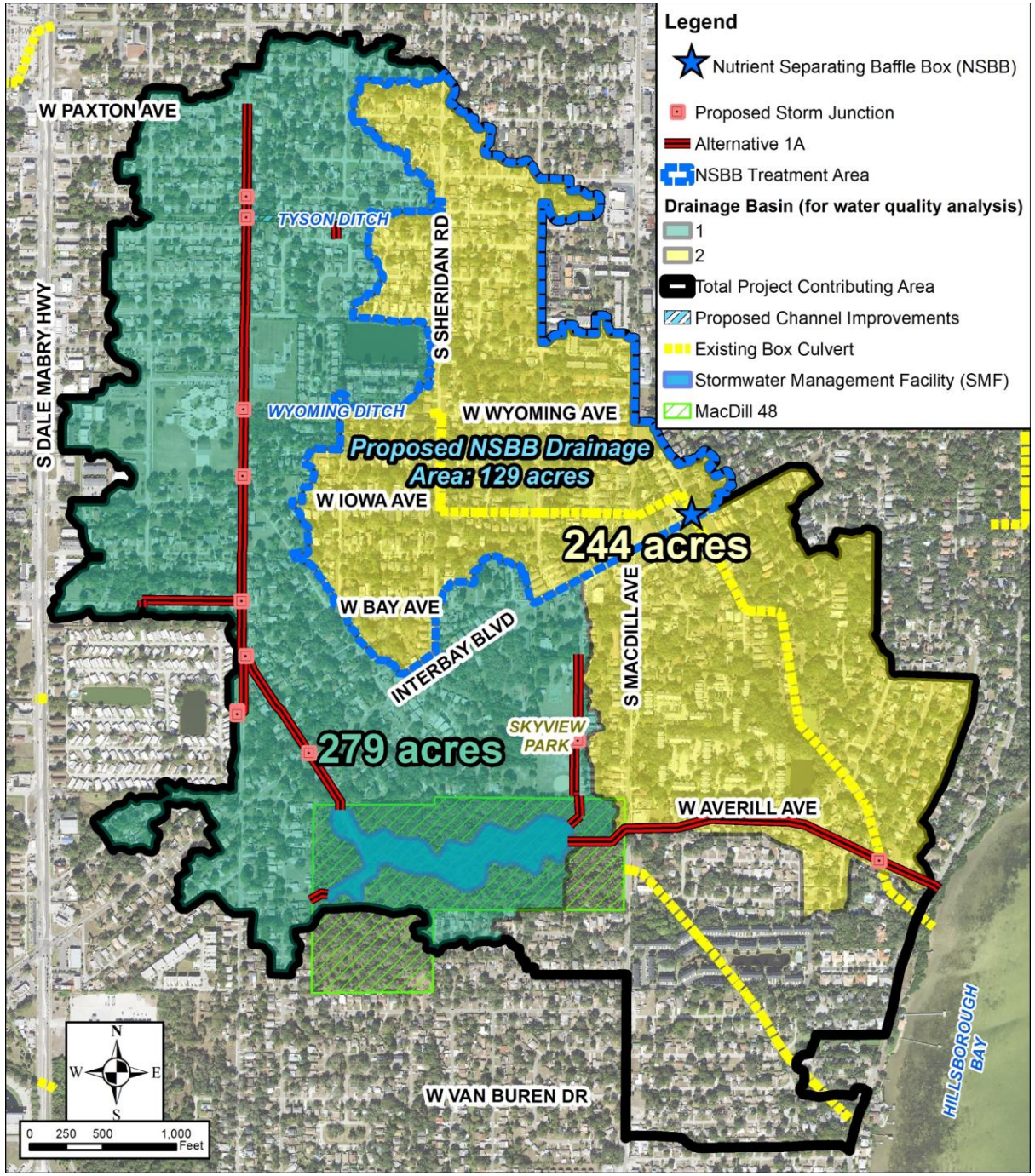
- Project design calculations assume tailwater stage of 2.0 (ft, NAVD88) in Hillsborough Bay, which is equal to 1-year Stillwater elevation, rather than commonly used mean higher-high water elevation
- Pond and control structures were designed to maximize storage and flood reduction while controlling a freshwater ecosystem nearly 4 feet above current mean sea level
- Anticipated reduction of total length of inundated roadway is nearly 19,000 LF (3.6 miles) for 5-year design storm
- Significant reduction in duration of roadway flooding during large design storm events (8+ hours in many locations for 100-year/24-hour event)



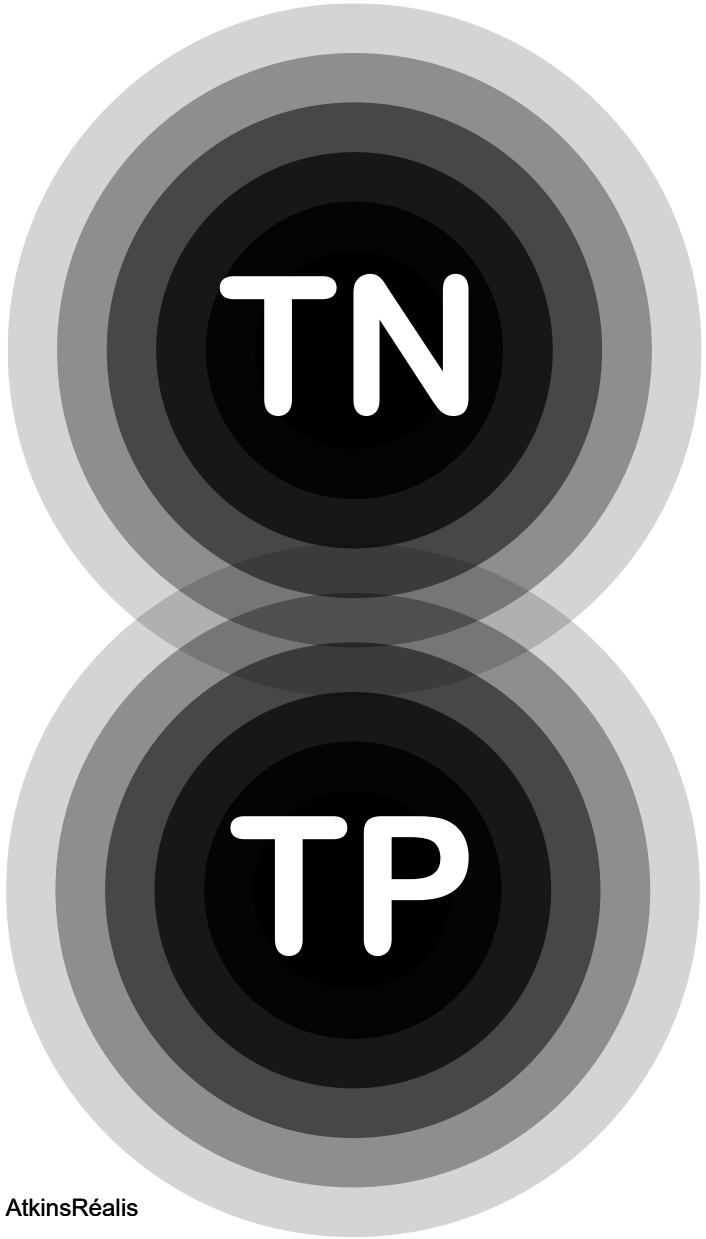
Water Quality / Sustainable Infrastructure

Water Quality

- Runoff from approximately 523 acres previously drained to project limits before discharging to Hillsborough Bay with minimal treatment. Runoff from 78% of this area (408 acres) now receives some form of treatment.
- Primary water quality improvement features include MacDill 48 pond and 12’x24’ nutrient separating baffle box (NSBB) with Biosorption Activated Media (BAM) up flow filter
- Pond includes 38 acre-ft of permanent pool volume and 3 acres of new wetland plants (constructed herbaceous and forested wetland areas)
- Additional water quality improvement features include pond control structure skimmers, floating skimmer inside 6’x10’ box culvert conflict structure upstream of pond



Water Quality Improvements



Project expected to remove

30%

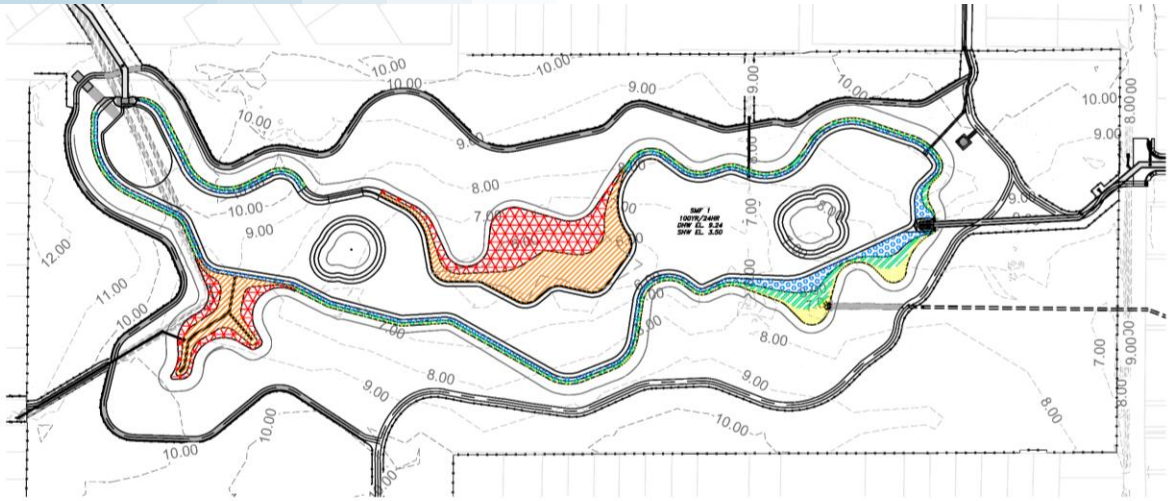
of incoming nitrogen (**appx. 850 pounds removed annually**)

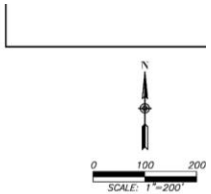
Project expected to remove

40%

of incoming phosphorus (**appx. 230 pounds removed annually**)

Water Quality and Sustainable Infrastructure





COMMON NAME	SCIENTIFIC NAME	Area (sq ft)	Spacing	Total plants
0" - 3" BELOW CONTROL WATER LEVEL (El 3.25 to 3.5)		**8,891**		
Maidencane	*Panicum hemitomon*	2,223	12"	2,567
Softrush	*Juncus effesus*	2,223	12"	2,567
Swamp Lily	*Crinum americanum*	2,223	12"	2,567
Golden Canna	*Canna flaccida*	2,222	12"	2,566
3" - 12" BELOW CONTROL WATER LEVEL (El 2.5 to 3.25)		**18,676**		
Arrowhead	*Sagittaria lancifolia*	4,669	12"	5,391
Bulrush	*Schoenoplectus tabernaemontani*	4,669	12"	5,391
Spikerush	*Eleocharis spp.*	4,669	12"	5,391
Blueflag Iris	*Iris virginica*	4,669	12"	5,391
12" - 24" BELOW CONTROL WATER LEVEL (El 1.5 to 2.5)		**25,333**		
Spikerush	*Eleocharis spp.*	6,333	12"	7,313
Pickerelweed	*Pontederia cordata*	6,333	12"	7,313
Bulrush	*Schoenoplectus tabernaemontani*	6,333	12"	7,313
Alligator Flag	*Thalia geniculata*	6,334	12"	7,314

COMMON NAME	SCIENTIFIC NAME	Area (sq ft)	Spacing	Total plants
6" ABOVE - 3" BELOW CONTROL WATER LEVEL (El 3.25 to 4.0)		**31,886**		
Dahoon Holly	*Ilex cassine*	10,629	15'	55
Red maple	*Acer rubrum*	10,629	15'	55
Swamp bay	*Persea palustris*	10,628	15'	55
3" - 12" BELOW CONTROL WATER LEVEL (El 2.5 to 3.25)		**35,147**		
Pond cypress	*Taxodium ascendens*	17,574	15'	90
Pop ash	*Fraxinus caroliniana*	17,573	15'	90
Buttonbush (between trees)	*Cephalanthus occidentalis*	35,147	30'	90

MAIDENCANE, SOFTRUSH, SWAMP LILY, GOLDEN CANNA

DAHOON HOLLY, RED MAPLE, SWAMP BAY

ARROWHEAD, BULRUSH, SPIKERUSH, BLUEFLAG IRIS

POND CYPRESS, POP ASH, BUTTONBUSH (BETWEEN TREES)

SPIKERUSH, PICKERELWEED, BULRUSH, ALLIGATOR FLAG

Water Quality / Permitting

SWFWMD

HCEPC

USACE

Passive Park and Community Amenities

Passive Park and Community Amenities

Passive Park and Community Amenities

Construction Activities

Construction Activities

Construction Activities

Project Recap

- 7000 LF of 5’x10’ (or larger) box culvert
- 1.5 miles of full corridor reconstruction in a coastal residential area
- Steel sheet pile seawall and outfall to Hillsborough Bay
- Widespread flood relief to nearly 600 acres of urban watershed
- Removal of pollutants and nutrients from discharges to bay
- Rigorous permitting and public involvement effort
- Grant funding through SWFWMD and Resilient Florida Program with FDEP

Q&A

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Engineering and Public Works Excellence

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INFRASTRUCTURE WORKS