



Rebuilding Madeira Beach

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Why are we here?

- City is already susceptible to tidal flooding and conditions are expected to worsen.
- Discuss the results from the District-funded Watershed Management Plan (WMP).
- Discuss pathways forward given 2024 storm season.

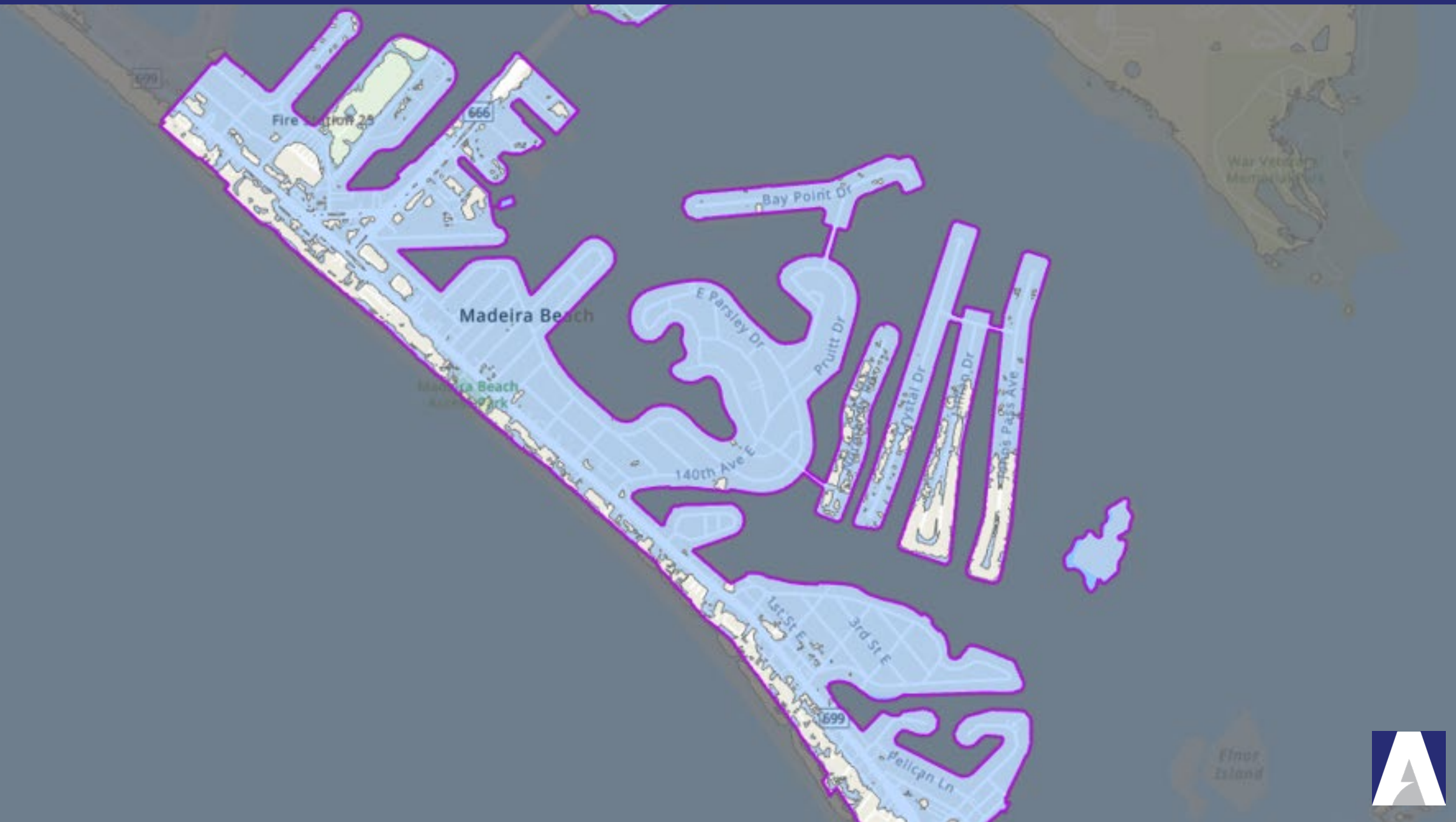


Goals

1. Provide background on WMP development process.
2. Share current Level of Service (LOS).
3. Discuss the impacts of tidal flooding.
4. Discuss paths forward to keep residents in their homes through 2100.
5. Obtain Commission feedback.



What does your community look like in 2100?



A Shared Commitment



*“Residents and industries will need to modify their own properties and their management practices to ensure they are climate change ready, and **not reliant on government** to implement defensive measures as threats become imminent. **Progressive implementation** of adaptation strategies will have **less upheaval of communities and individuals**. Therefore, the responsibility of implementing adaption options in a timely manner at the regional level is **shared between governments, residents and businesses**. Yet, for adaptation to occur strategically and to optimize resource allocation, it should be **orchestrated by local governments**.”* (Sinay and Carter, 2020)

A Local Commitment



*“Sooner or later, those working on coastal resilience issues come to understand an important tenet of our shared efforts: **resilience is not a product which can be created—and then delivered—by the federal government.** It is a condition that individuals and organizations must **advance locally and on their own terms.**”*

-Mark Osler, NOAA Senior Advisor for Coastal Inundation and Resilience

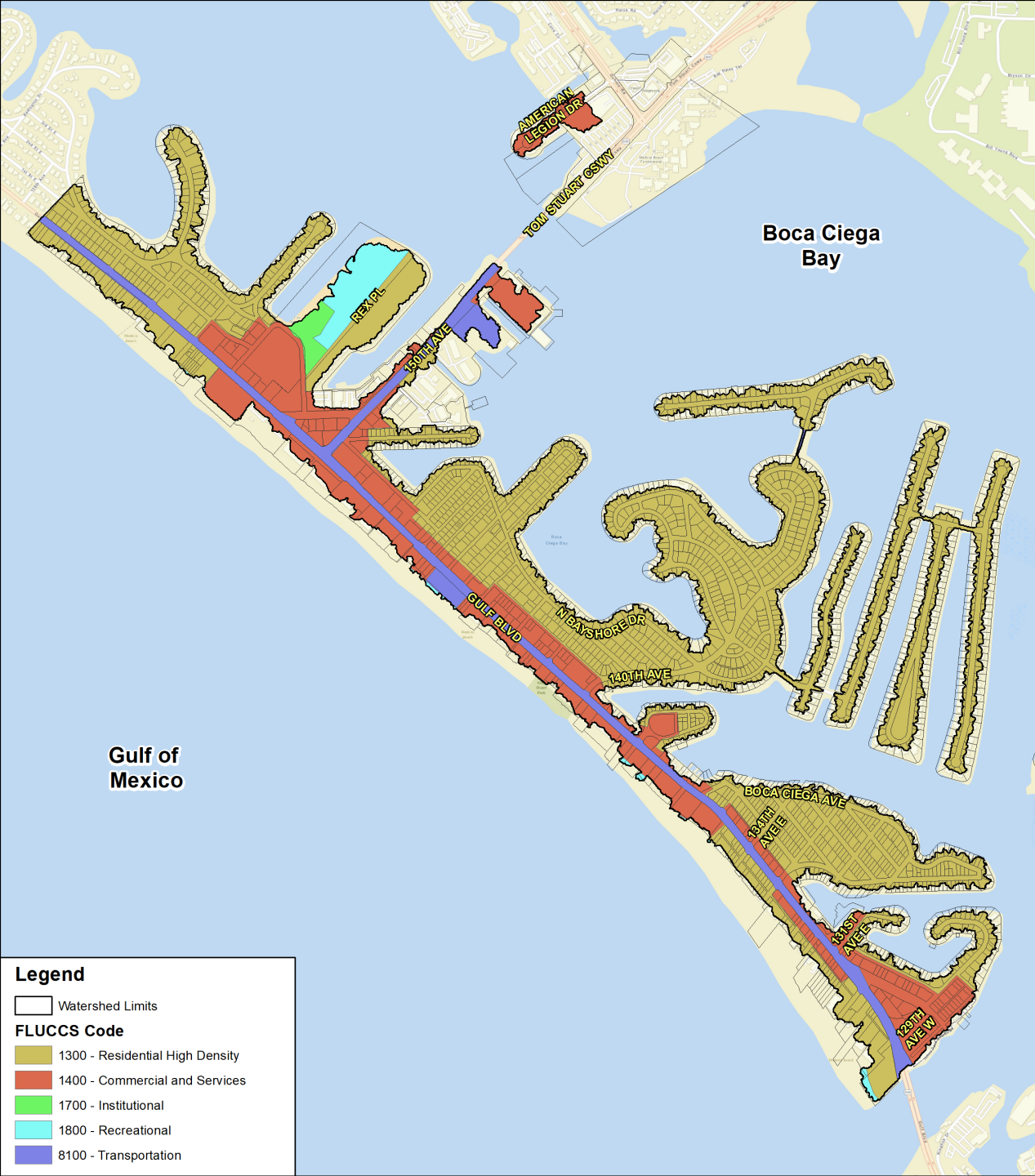
Watershed Management Plan



Boundary Refinement



Land Use Composition



- 2020 Land Use Land Cover provided by SWFWMD.
- Revisions performed to better represent existing conditions.
- Gulf Blvd. added as transportation FLUCCS code to match 150th Ave.



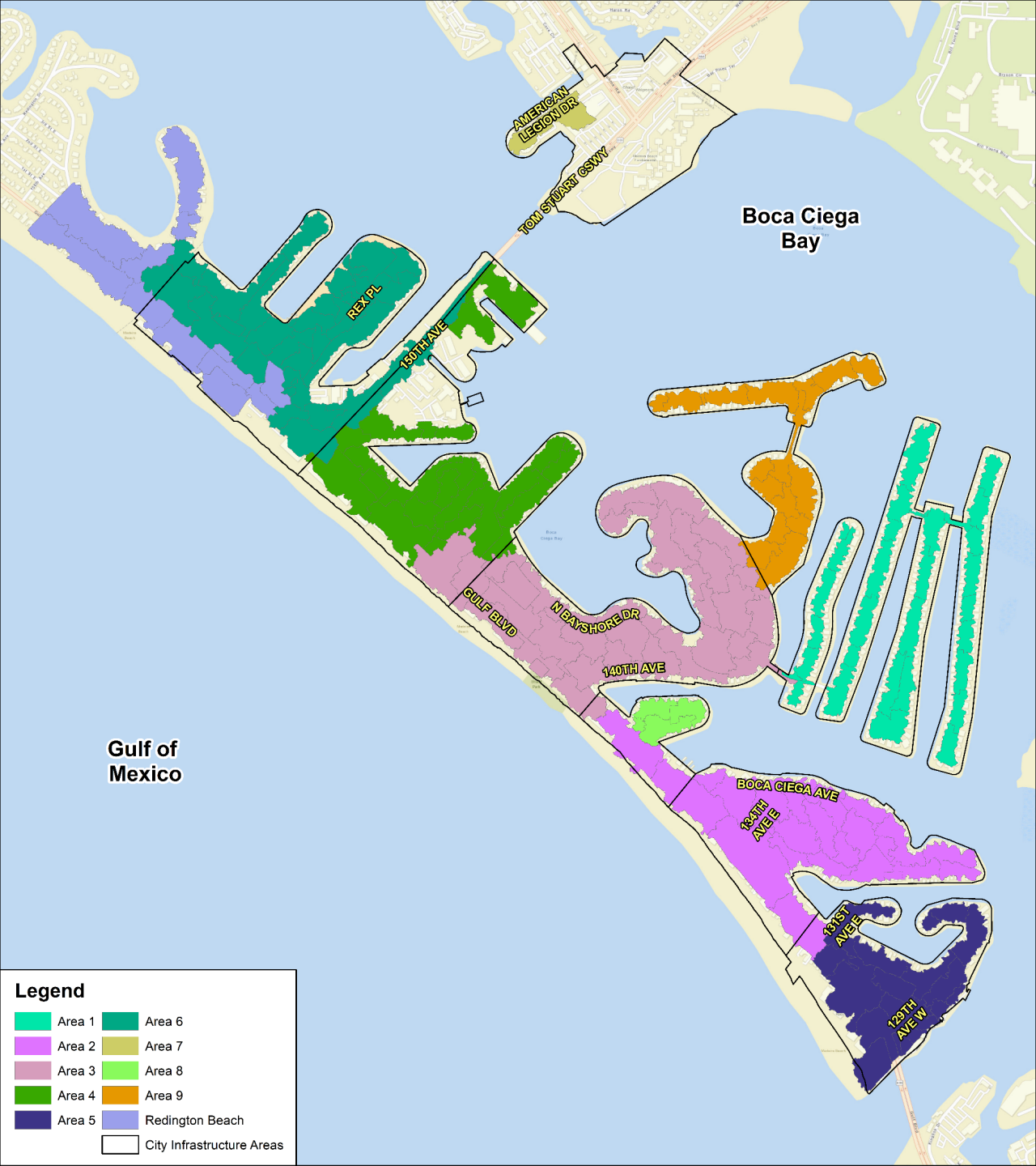
Soil Composition

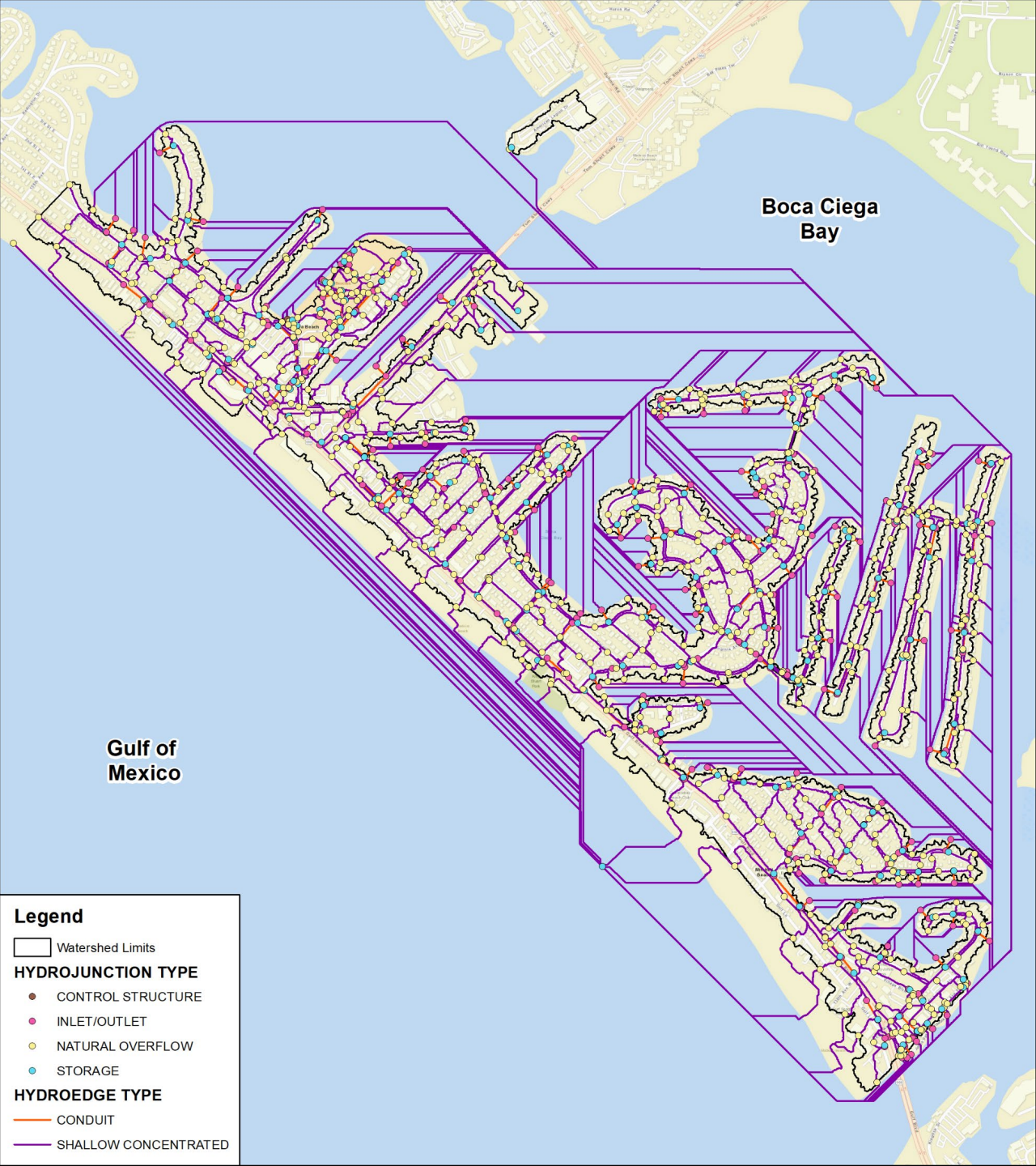
- Soil Survey Geographic Database (SSURGO) provided by SWFWMD.
- Revisions were performed to better represent existing conditions.



Subwatersheds

Subwatersheds initially delineated based on existing City stormwater infrastructure assessment areas and further refined based on hydraulic connectivity.





System Connectivity

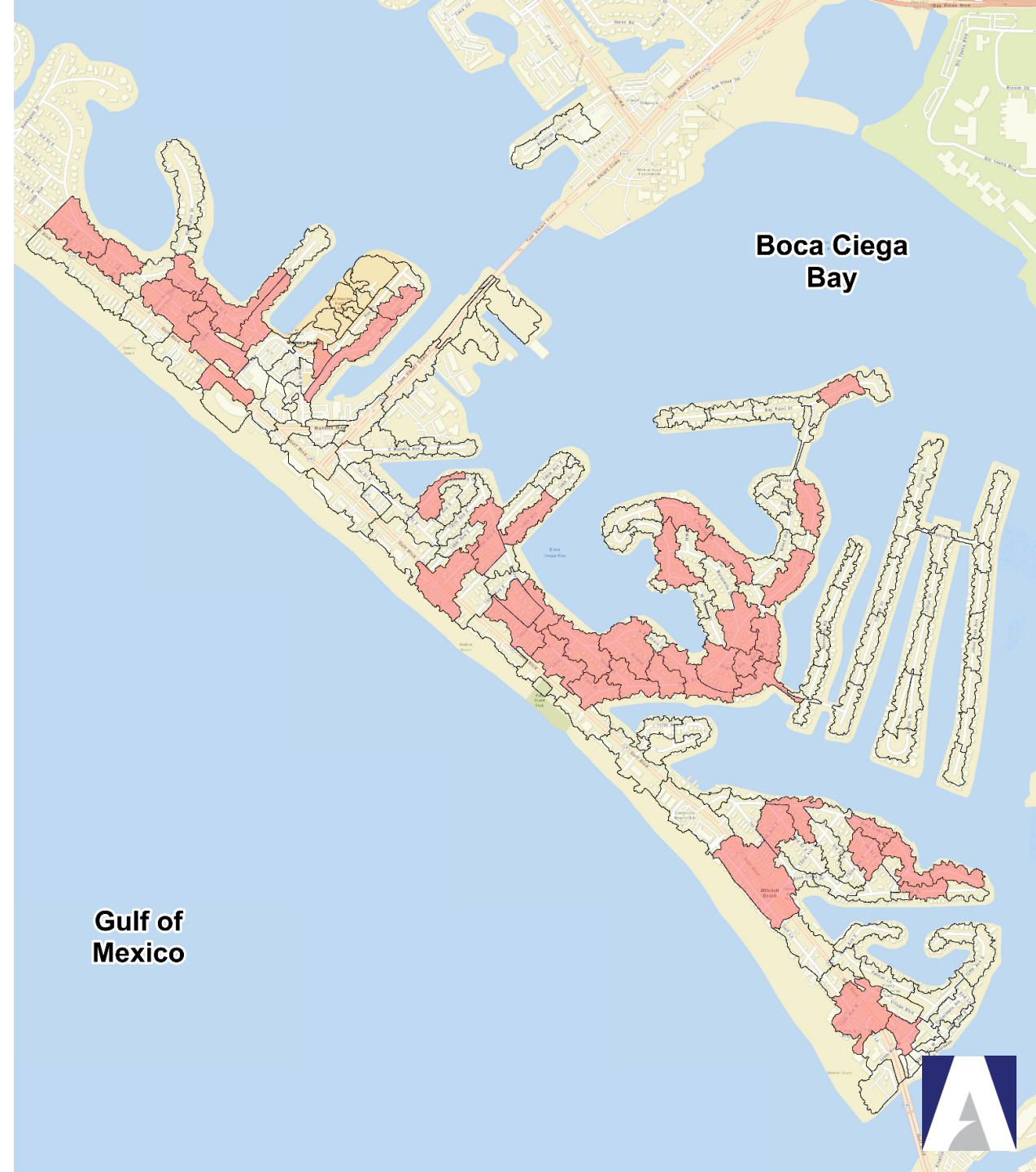


How do we evaluate stormwater performance?

Stormwater management. All new development and redevelopment activity within the city will adhere to the drainage requirements of a ten-year frequency/60 minute stormwater event until the Sand Key Master Drainage Plan is completed, at which time the drainage requirements will adhere to the 25-year/24-hour duration storm event. This criteria is based upon a tidal elevation of plus 2.0 feet mean sea level and the water elevation anywhere in the city shall not be greater than 1.0 feet above the crown of the road. All stormwater requirements will be monitored on a permit by permit basis and require a SWFWMD permit including water quality and quantity design standards.



How do we evaluate stormwater performance?





Boca Ciega Bay

Gulf of Mexico

25-Year Floodplain

Legend

- Discharge
- NetworkStructure
- Manhole
- Inlet
- GravityMain

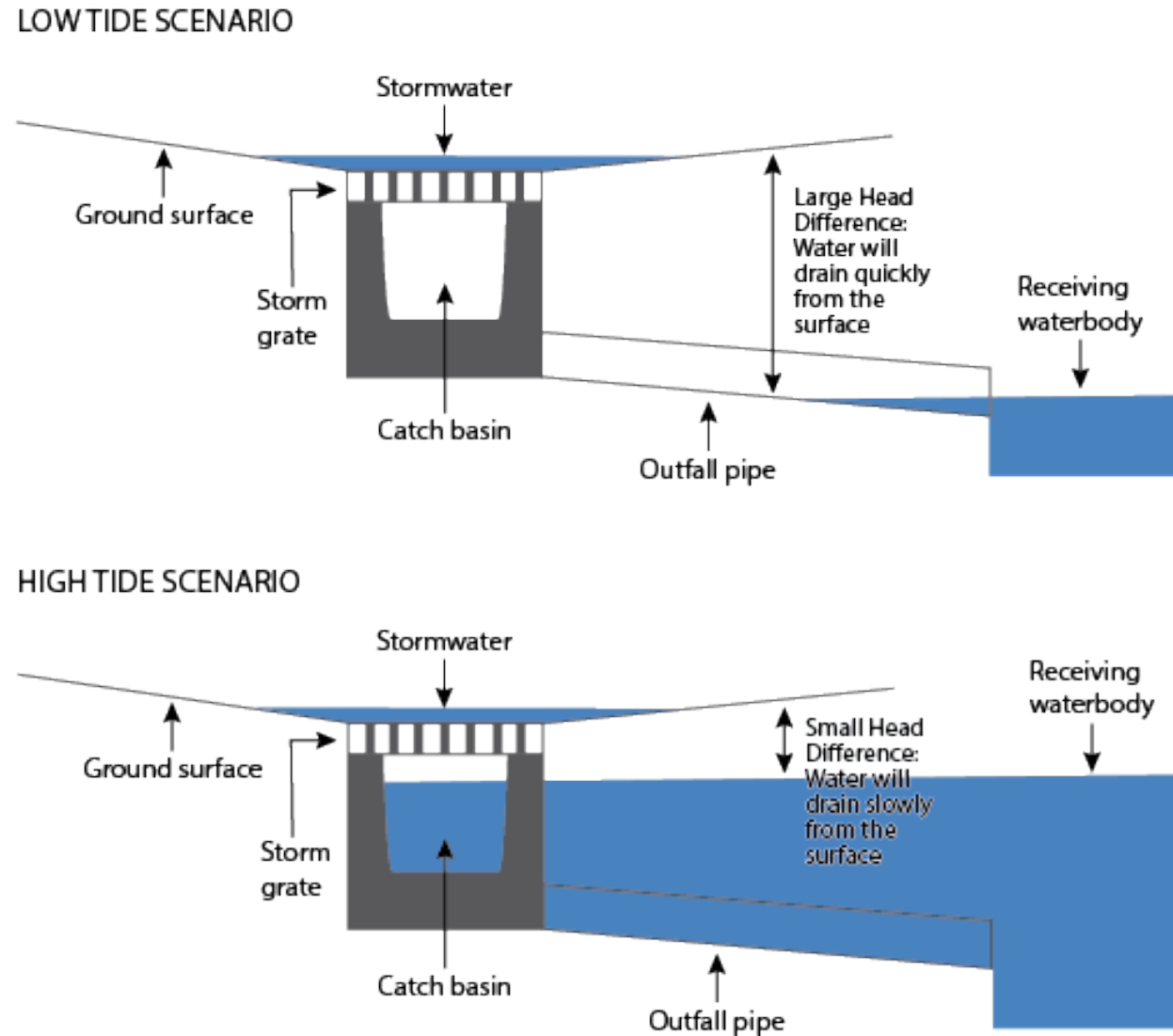
BMPs

1. 2nd Street East Improvements
2. Parsley Drive Improvements
3. Mitchell's Beach Improvements
4. Bay Point Estates Improvements
5. 141st Avenue Pump Station



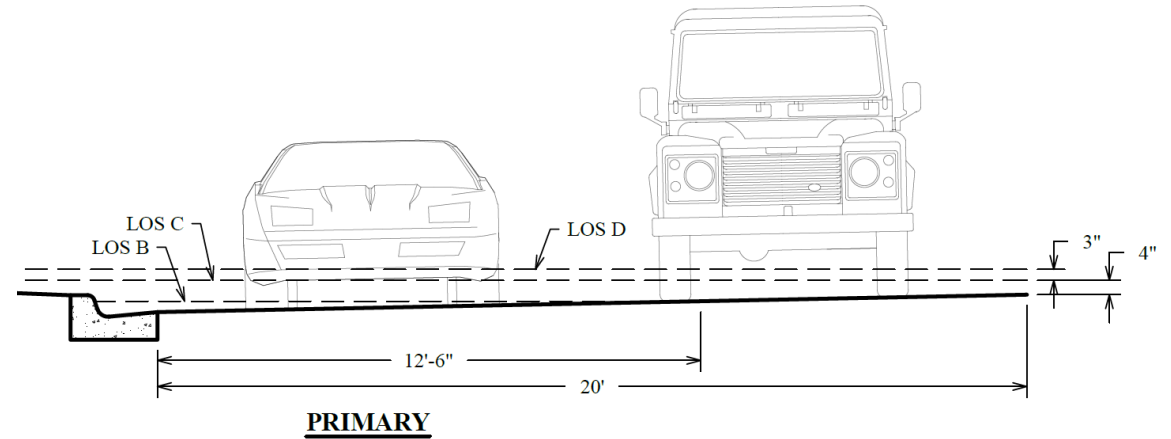
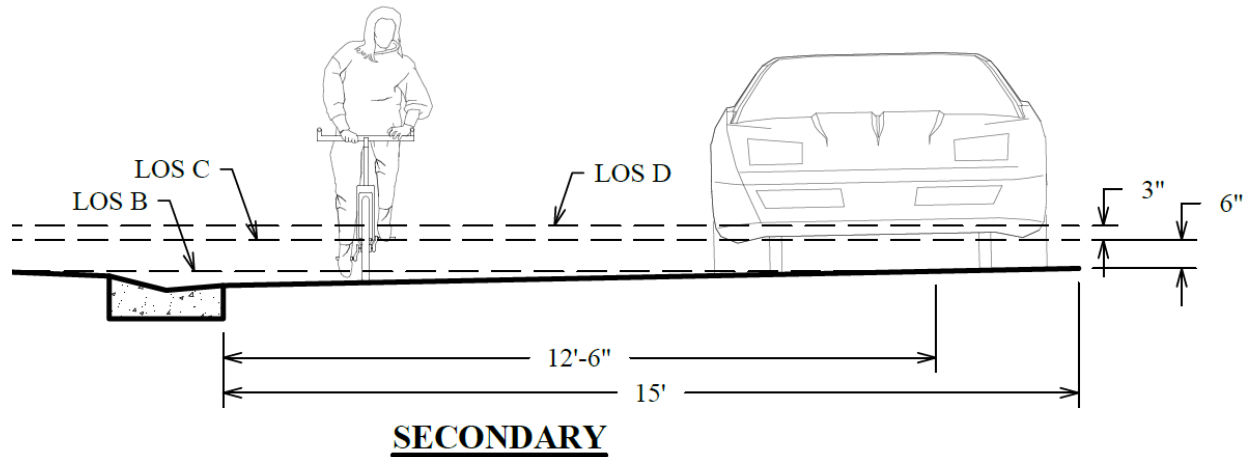
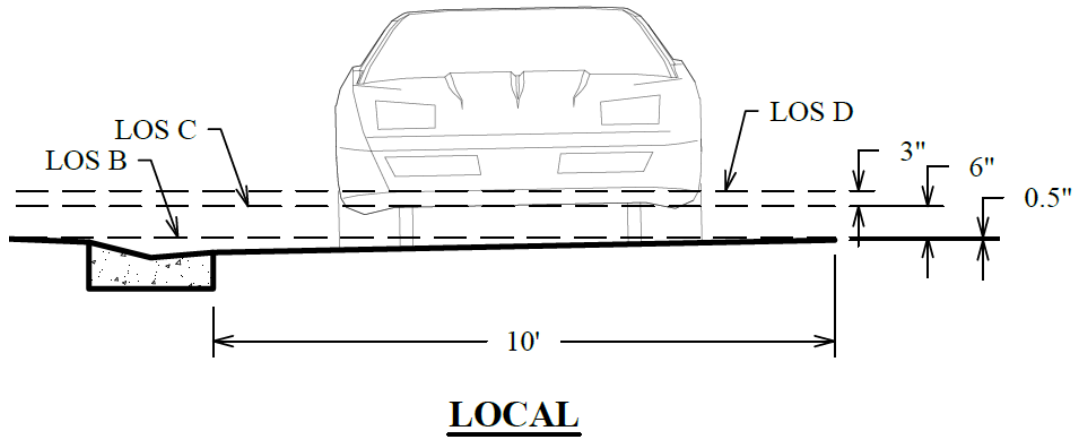
Tidal Impacts on Stormwater Infrastructure

- Backflow
- Saltwater Intrusion
- Slower Drainage
- Increased Groundwater Levels
- Infrastructure Damage
- Clogged Drains



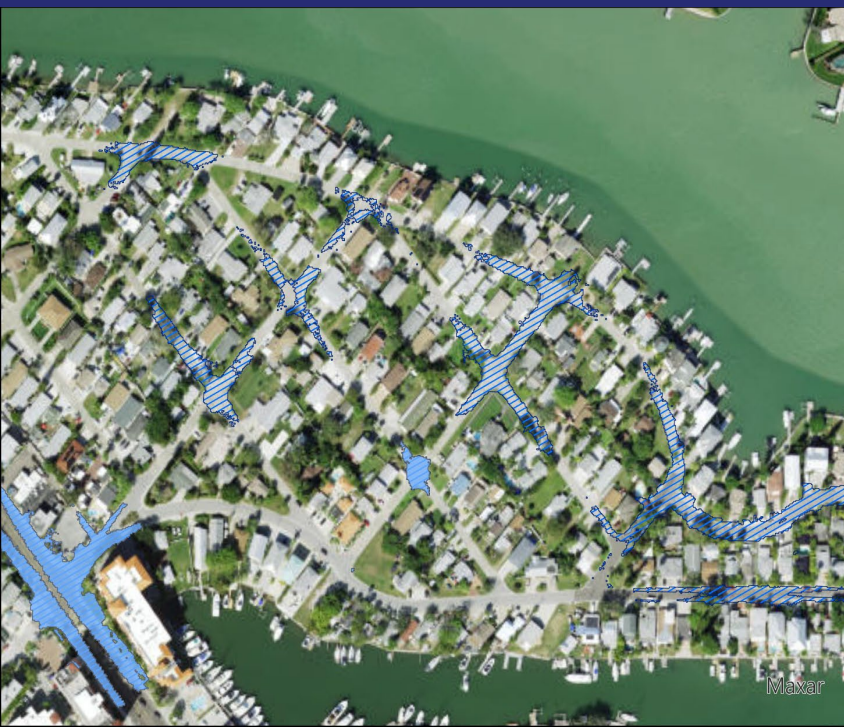
Credit: Charleston, SC Mayor's Office of Resilience and Sustainability

Proposed Level of Service



Level of Service (LOS) Classification	Proposed Level of Service (LOS) Criteria
A	No Roadway Flooding.
B	Roadway Flooding Depth < 3"
C	3" < Roadway Flooding Depth < 9"
D	9" < Roadway Flooding Depth < 12"
E	Roadway Flooding Depth > 12"

Revised Floodplains





How do we provide a reasonable stormwater level of service as tidal flooding increases?



Foundational Planning Assumptions

1. We will keep City residents in their homes through 2100 at their current quality of life.
2. The City will continue to operate in 2100 and beyond.
3. A reasonable stormwater level of service will be maintained to support connectivity across the city.

Potential Options

- Do Nothing / Cede Land
- Minor Improvements
- Install Stormwater Pump Stations
- Utilize Fill / Increase Elevations
- Combination of Options





King Tide (2070)

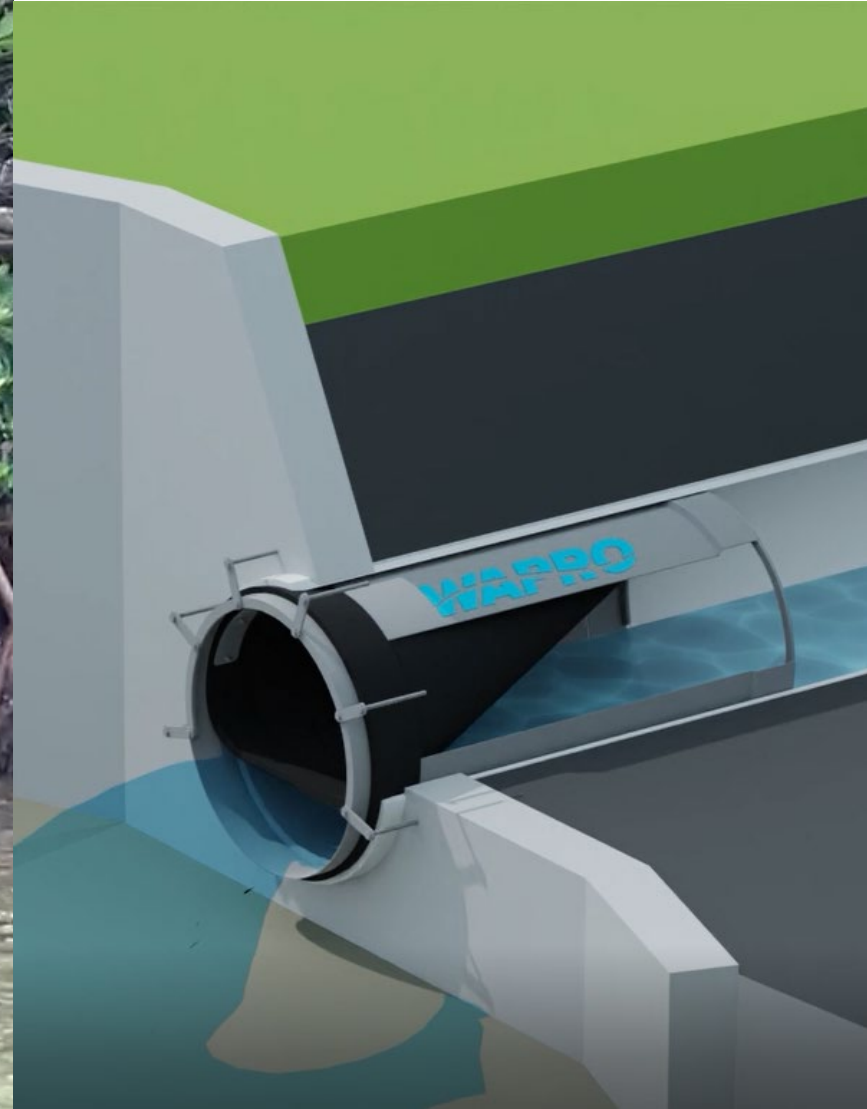


King Tide (2100)

Do Nothing / Cede Land



- Maintain Current Level of Service
- Backflow Valves
- Maintain Vegetated Shoreline



Minor Improvements

- Isolation of tidal waters from the stormwater system
- Can function when the tide is below or above roadway elevation
- Requires piping network & operating footprint

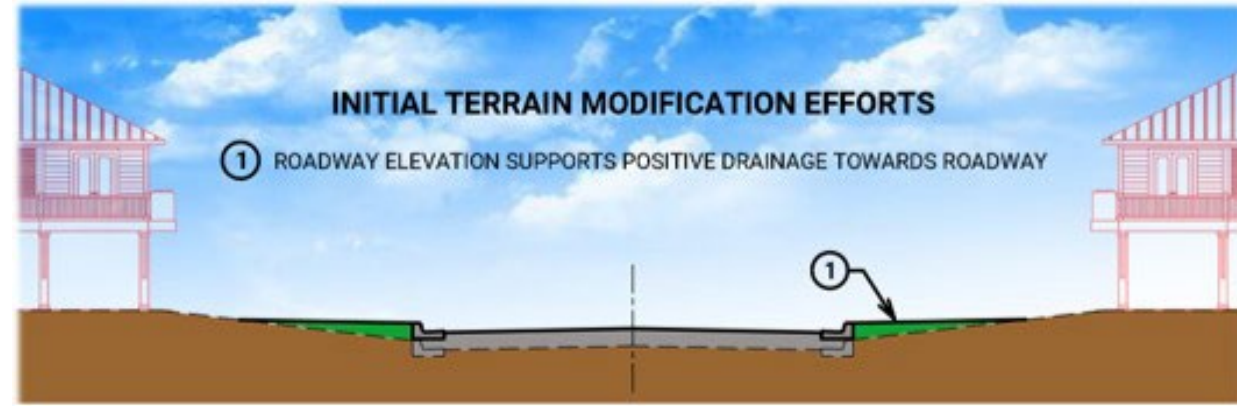


City of Miami Beach

Stormwater Pump Stations

Utilize Fill / Increase Elevations

Utilize fill to elevate the ground beneath single-family, commercial, and public infrastructure projects. By altering the physical terrain over time, we can protect against tidal flooding and maintain stormwater LOS.





How Would You Use Fill?

FEMA flood elevations continue to establish lowest (or living) floor elevation. Garage elevations established by City.

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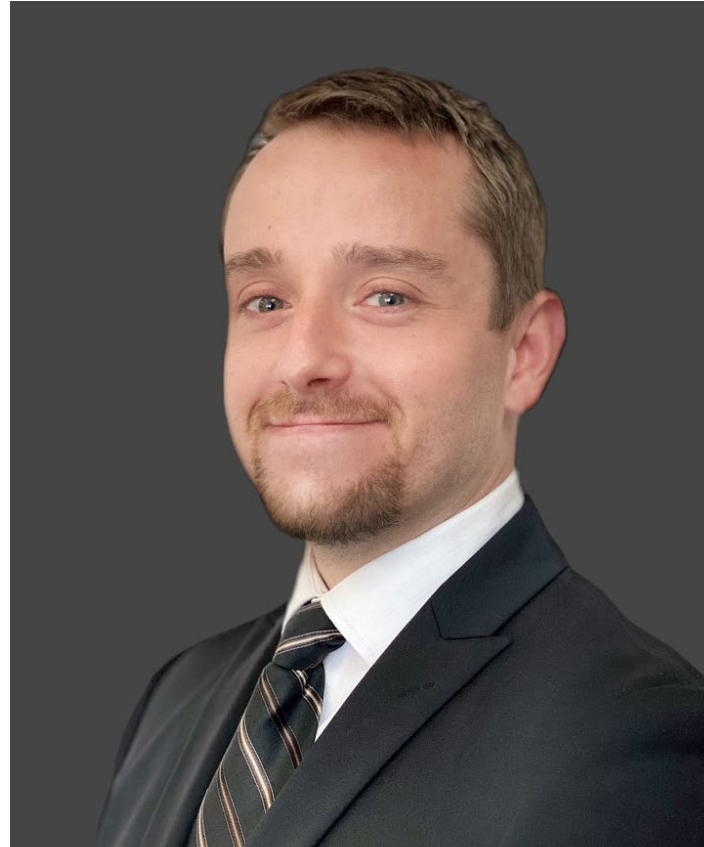




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