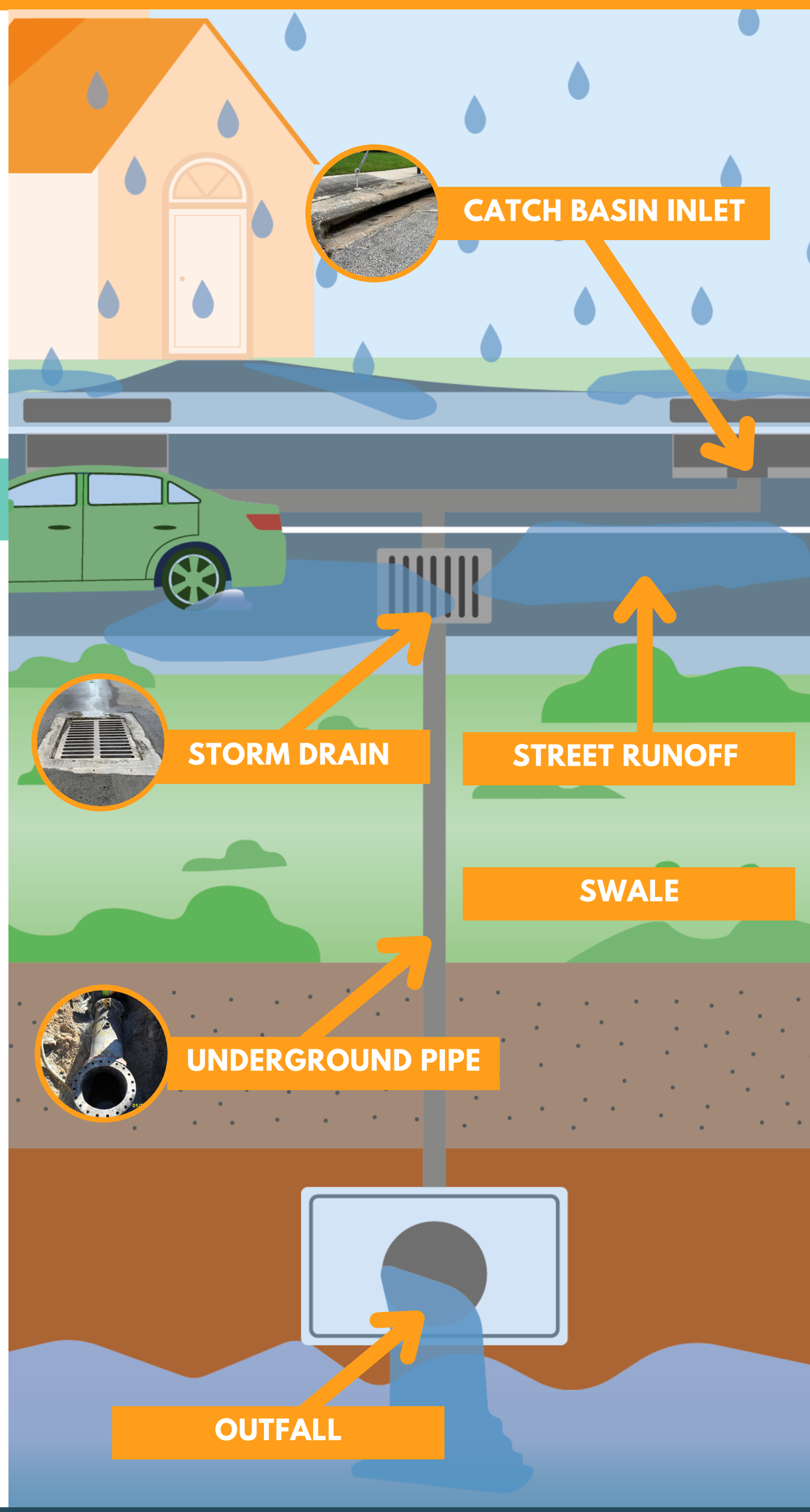
North Bay Village
HEART OF THE BAY

STORMWATER MASTER PLAN

WHAT IS A STORMWATER SYSTEM?

A stormwater system is designed to direct, collect, and drain rainwater away from roads, buildings, and public areas to limit flooding in the event of rain and storms. It is a complex underground system of pipes, storm drain inlets, pump stations, and swales all working together to move and drain stormwater.



PROJECT OVERVIEW

On June 20, 2022, North Bay Village Commission adopted the Stormwater Master Plan (SWMP) with a $60.8 million infrastructure roadmap, with the goal of:

- **Increasing the community's ability to prepare for and withstand current and future flooding events**
- **Protecting the Village's critical infrastructure**
- **Improving water quality, preventing pollution, and protecting Biscayne Bay**
- **Enhancing the overall community resilience**

The SWMP does not compel the Village to build out all recommended projects but serves as a guide or roadmap as the Village considers future infrastructure needs.

WHAT IS NEXT?

In addition to the Stormwater Master Plan, the Village was awarded a grant from the Department of Environmental Protection to perform an island-wide vulnerability assessment, granting access to over $100 million in infrastructure grants available from the State of Florida every year. The Village has already adopted its long-term NBV100 Strategy- and has established a culture of local engagement with the understanding that the main stakeholders of this island community are the 9,000 residents that call it home.

www.northbayvillage-fl.gov/stormwater

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WHAT DOES THE SWMP INCLUDE?

The consultant team developed a Village-wide comprehensive model and took into account sea level rise, heavier rainfall, and future groundwater elevation. This included:

- Assessing the stormwater system across the entire Village
- Examining future conditions, using the NOAA High Projection Curve in 2060
- Collecting various sources of scientifically-backed data
- Evaluating stormwater Best Management Practices, such as systems that recreate natural processes to filter pollutants and reduce ecological impacts, including Green Infrastructure technologies for implementation
- Testing and calibrating the designed model by comparing it to recent flood events to ensure current and future projections are aligned with the proposed improvements
- Gathering community input
- Creating conceptual designs of the proposed drainage infrastructure
- Phasing out the proposed infrastructure improvements with the Village's available funding and Capital Improvement Plans

READ THE FULL REPORT AVAILABLE ONLINE

WHAT WERE THE RESULTS?

- The existing aging systems are beyond their service life span of 30 years and need to be replaced
- The projected rise in groundwater and sea-level rise is driving severe inundation, with average groundwater of 3.34-ft, NAVD88, by 2060
- Gravity-driven drainage systems would not be enough, and new pumps are needed to drain stormwater into the Biscayne Bay
- A significant portion of seawalls throughout the Village are situated low compared to future high tide conditions
- Backflow preventers need to either be maintained or replaced, otherwise proposed pump systems will continuously operate resulting in expedite wear and increased maintenance

ADDITIONAL RECOMMENDATIONS:

- Elevate seawall to a minimum cap elevation of 5.94-ft, NAVD88 or higher
- Capture, store, and reuse stormwater in existing and future re-developments through various green infrastructure solutions including green and blue roofs
- Increase permeable pavers and porous asphalt for low-traffic roadways, parking spaces, and sidewalks
- Increase and elevate infiltration gardens to filter water and stormwater storage
- Increase and protect tree canopy
- Install tidal and storm surge gauges within the Village to better evaluate tidal conditions and water level change

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WHAT ARE THE PROPOSED INFRASTRUCTURE IMPROVEMENTS AND COSTS ASSOCIATED?

The proposed improvements were broken down into 3 elements: design, construction of new drainage systems, and construction of raised roadways. **The SWMP is not only a roadmap but a model to predict future flooding conditions throughout the Village.**

TREASURE ISLAND

- Three designed stormwater pump stations
- The construction of 5.94 ft-NAVD88 seawall along the island perimeter

ESTIMATED TO BE:
$43.4 MILLION

NORTH BAY ISLAND

- Two new stormwater pump stations
- The construction of 5.94 ft-NAVD88 seawall along the island perimeter

ESTIMATED TO BE:
$13.2 MILLION

HARBOR ISLAND

- One new stormwater pump stations
- The construction of 5.94 ft-NAVD88 seawall along the island perimeter
- **No road raising necessary**

ESTIMATED TO BE:
$4.1 MILLION

WHAT ARE THE FLOODING CONDITIONS BEFORE AND AFTER THE PROPOSED IMPROVEMENTS?

These flood maps (displayed on the next page) show the current and future maximum depth of flooding that is anticipated throughout the Village in the event of a 5-year storm with a duration of 24 hours. Future conditions are based on the 2019 Southeast Florida Regional Climate Change Compact Sea-Level Rise Projections for the Year 2060 using NOAA's 2017 High Projection Curve.

The intent of these maps is to provide a better understanding of the severity of flooding and to pinpoint areas that are most susceptible to recurring flooding. The colors shown on the map correspond to varying depth of water ponding above the ground denoting the incremental flood depth changes in feet.

WHAT IS A 5-YEAR 24 HOUR STORM?

It is similar to a weak tropical storm with a 20% chance of occurring each year. **You have a better chance of seeing this storm event in any given year than rolling a "6" on a dice on your first roll.**

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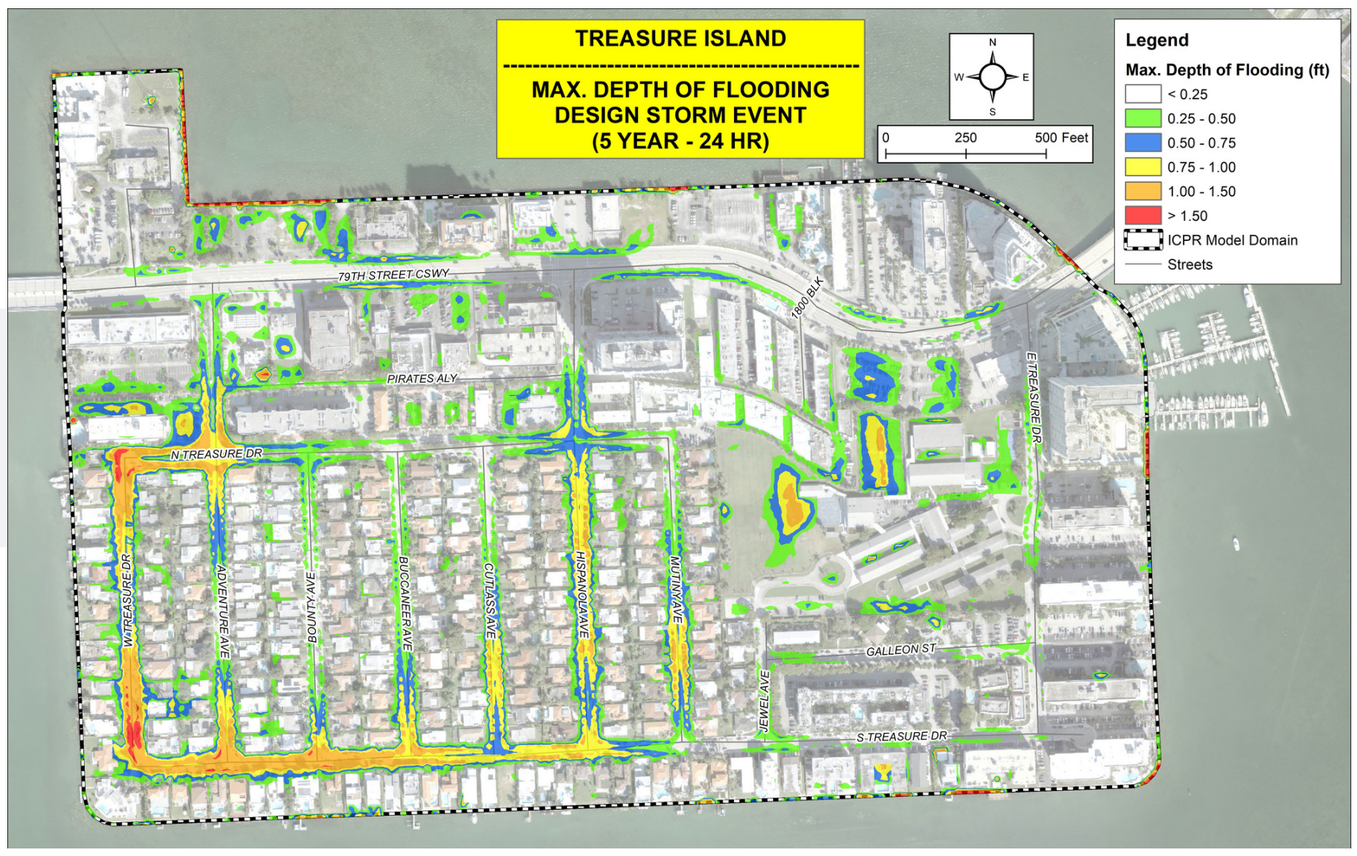
WHAT ARE THE FLOODING CONDITIONS BEFORE AND AFTER THE PROPOSED IMPROVEMENTS?

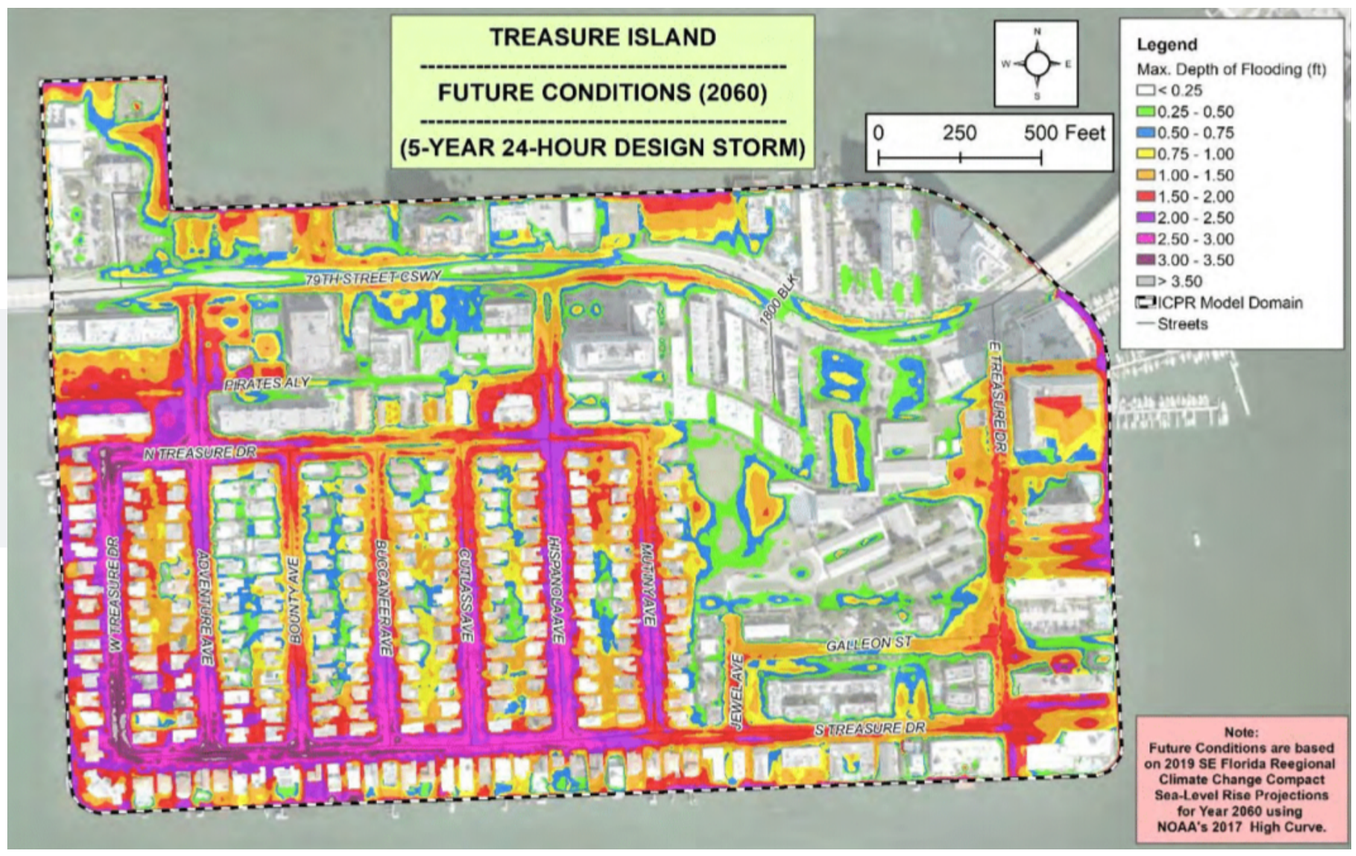
TREASURE ISLAND

CURRENT CONDITIONS



WITHOUT IMPROVEMENTS IN 2060

Future conditions in the event of a 5-yr storm during a 24-hr period in 2060



WITH IMPROVEMENTS IN 2060

Future conditions in the event of a 5-yr storm during a 24-hr period in 2060

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CURRENT CONDITIONS

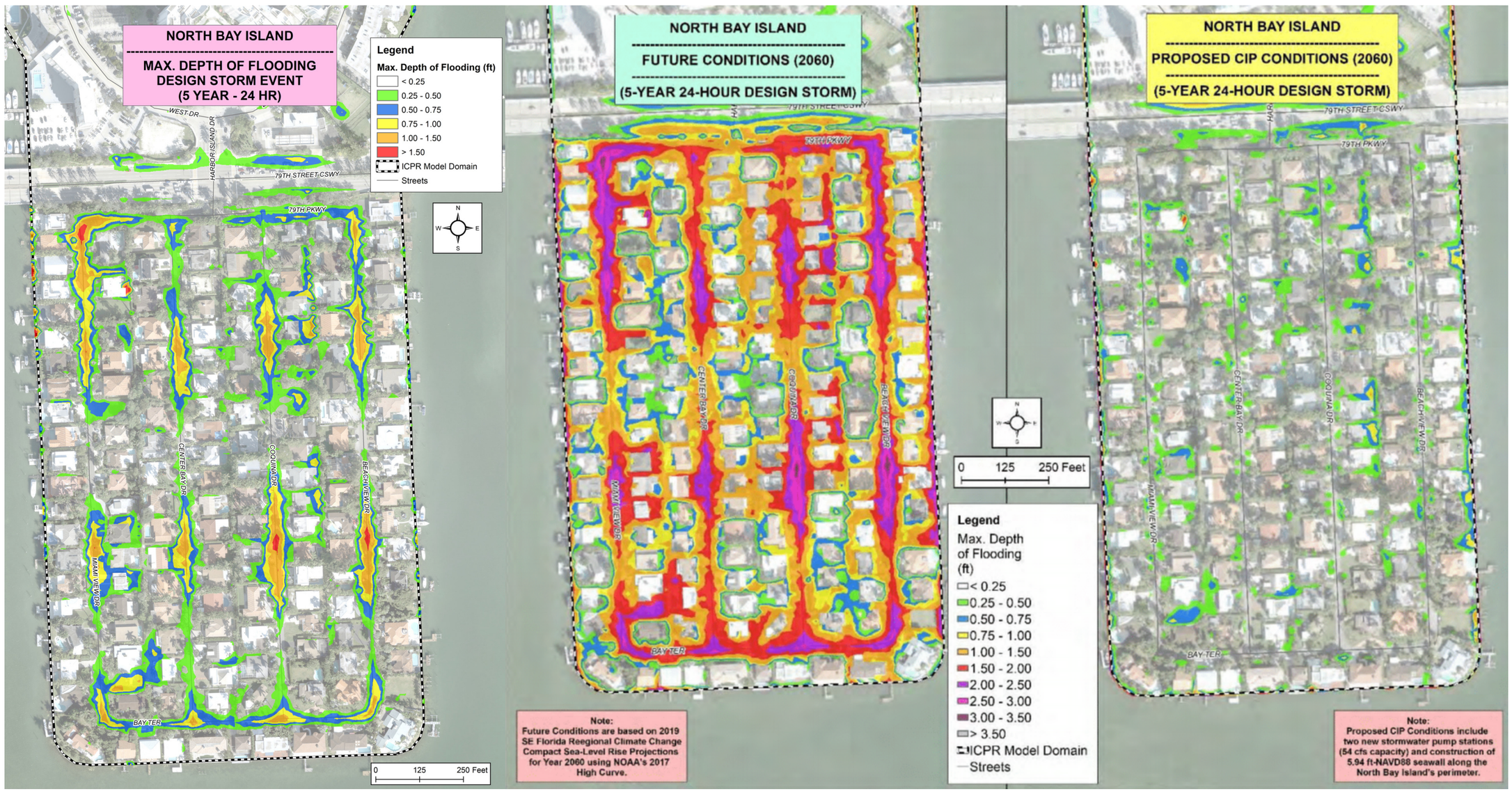
WITHOUT IMPROVEMENTS IN 2060

Future conditions in the event of a 5-yr storrm during a 24-hr period in 2060

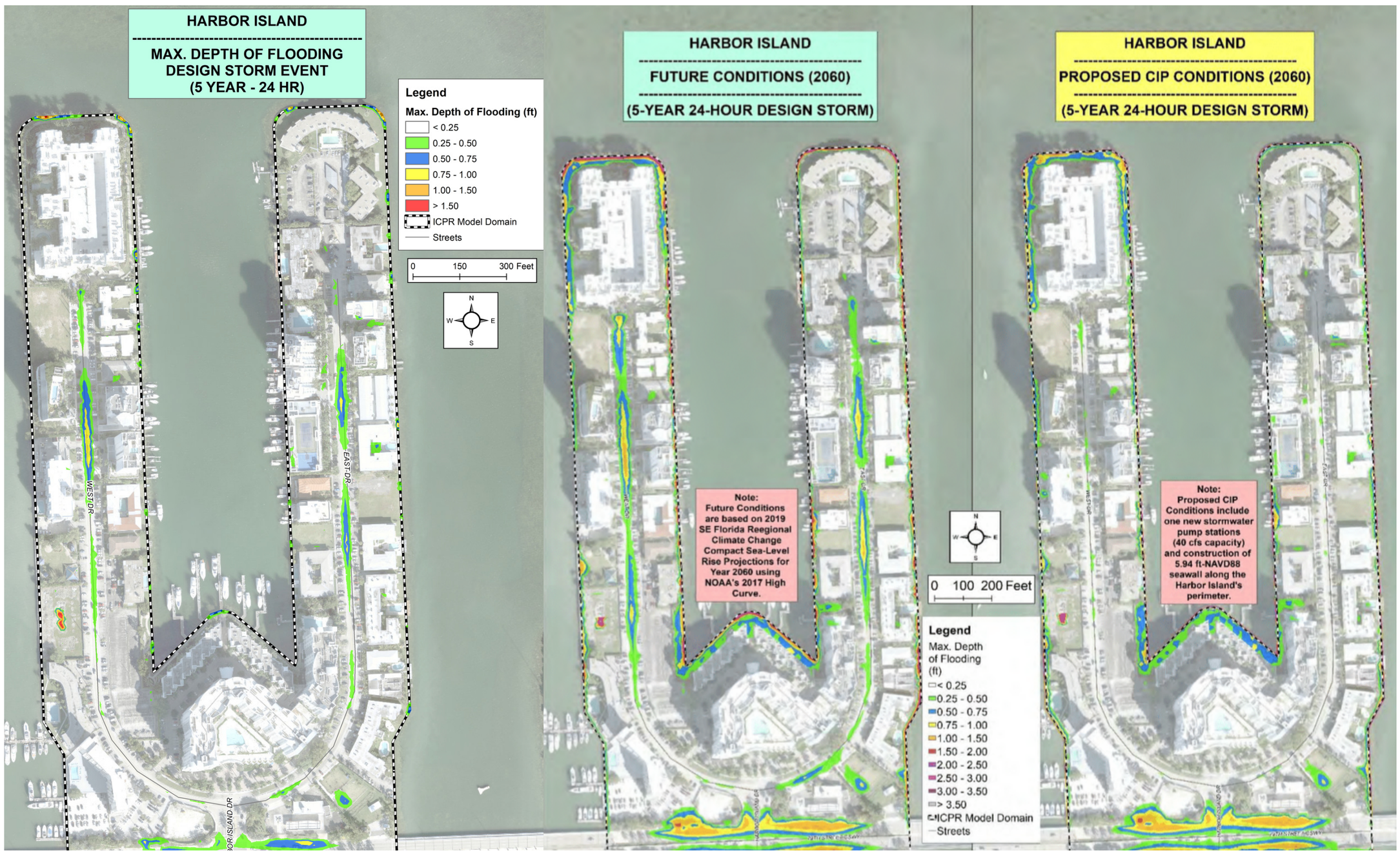
WITH IMPROVEMENTS IN 2060

Future conditions in the event of a 5-yr storrm during a 24-hr period in 2060

NORTH BAY ISLAND



HARBOR ISLAND



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