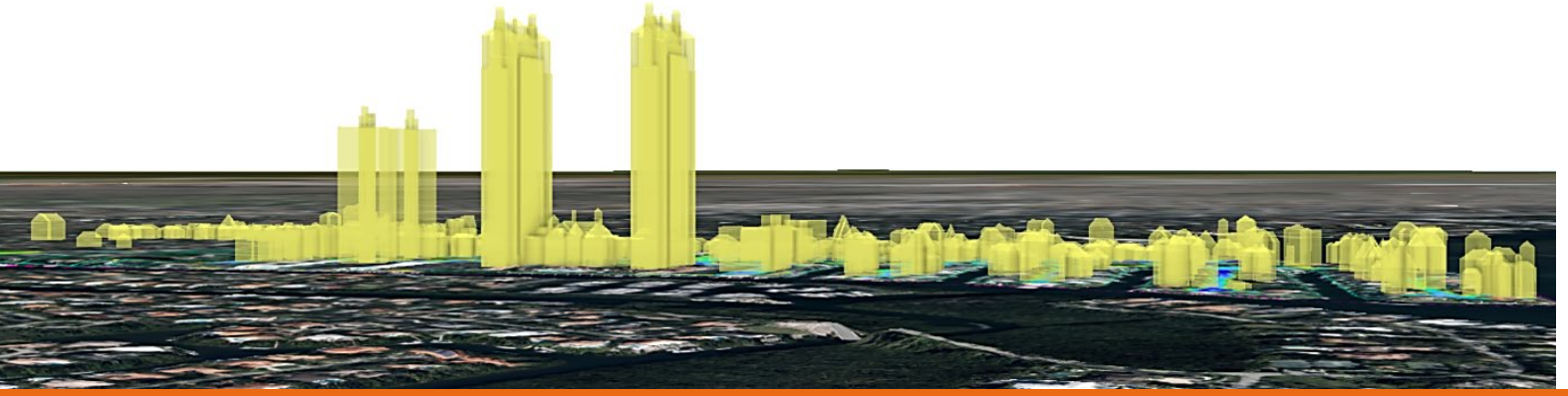

CORAL GABLES
THE CITY BEAUTIFUL

SUNRISE HARBOR DRAINAGE ASSESSMENT

Community Involvement Meeting
April 7, 2021

300 ENGINEERING GROUP, P.A.
Efficient. Responsive. Innovative.

SUNRISE HARBOR DRAINAGE ASSESSMENT

Agenda:

1. Stormwater Management
2. Project Background
3. Project Overview & Status
4. Potential Flood Mitigation Solutions
5. Request for Feedback

300 Engineering Group, P.A.

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Stormwater Management Overview

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What is Stormwater runoff?

- Water from rain and tides that flows over driveways, lawns, sidewalks and streets.
- Picks up debris, chemicals, fertilizers, auto fluids, and other pollutants before entering the stormwater collection system
- Residents may experience flooding due to heavy rainfall and seasonal high tides
- King Tides: higher than normal (September - November)
- Heavy rainfall + high tides can overwhelm stormwater infrastructure and prevent proper drainage

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Stormwater Management System Overview

- Municipal Separate Storm Sewer System (MS4)
  - Carries runoff through system of pipes and structures before depositing into Biscayne Bay & surrounding waterways

- Water Quality
  - Improving health of our waterways by reducing pollutants in stormwater runoff

Graphic Courtesy of City of Miami Beach

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Project Background

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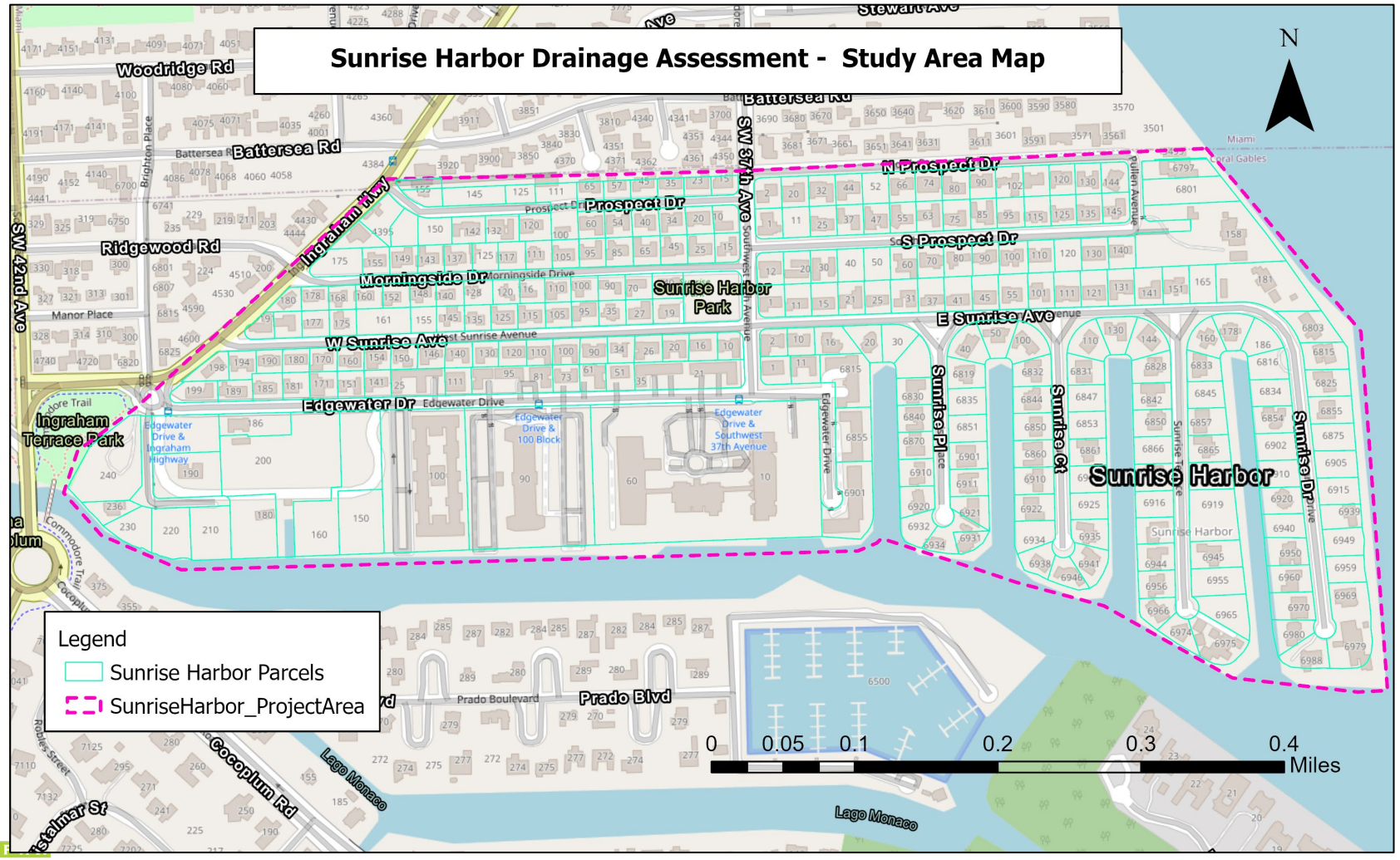
Project Area



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Existing Challenges

Stormwater Flooding

Excess rain that cannot be absorbed into the soil or drain effectively

Tidal Flooding

Higher than normal tides which can occur without storm conditions

Groundwater Flooding

Elevated groundwater levels

Storm Surge

Temporary rise in ocean water levels from coastal storms such as hurricanes

Saltwater Intrusion

Causes corrosion of metal pipes and structures

Because most of the City is only a few feet above sea level and a few feet above the groundwater table, we face increasing challenges to **drain water** and avoid flooding in our communities

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Flooding







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Project Overview

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Overall Project Goal: Planning Level Study

Study the flooding issues and existing stormwater system in the Sunrise Harbor Area to evaluate potential flood mitigation solutions through data analysis and stormwater modeling simulations

- Evaluate cost-effective stormwater infrastructure control solutions

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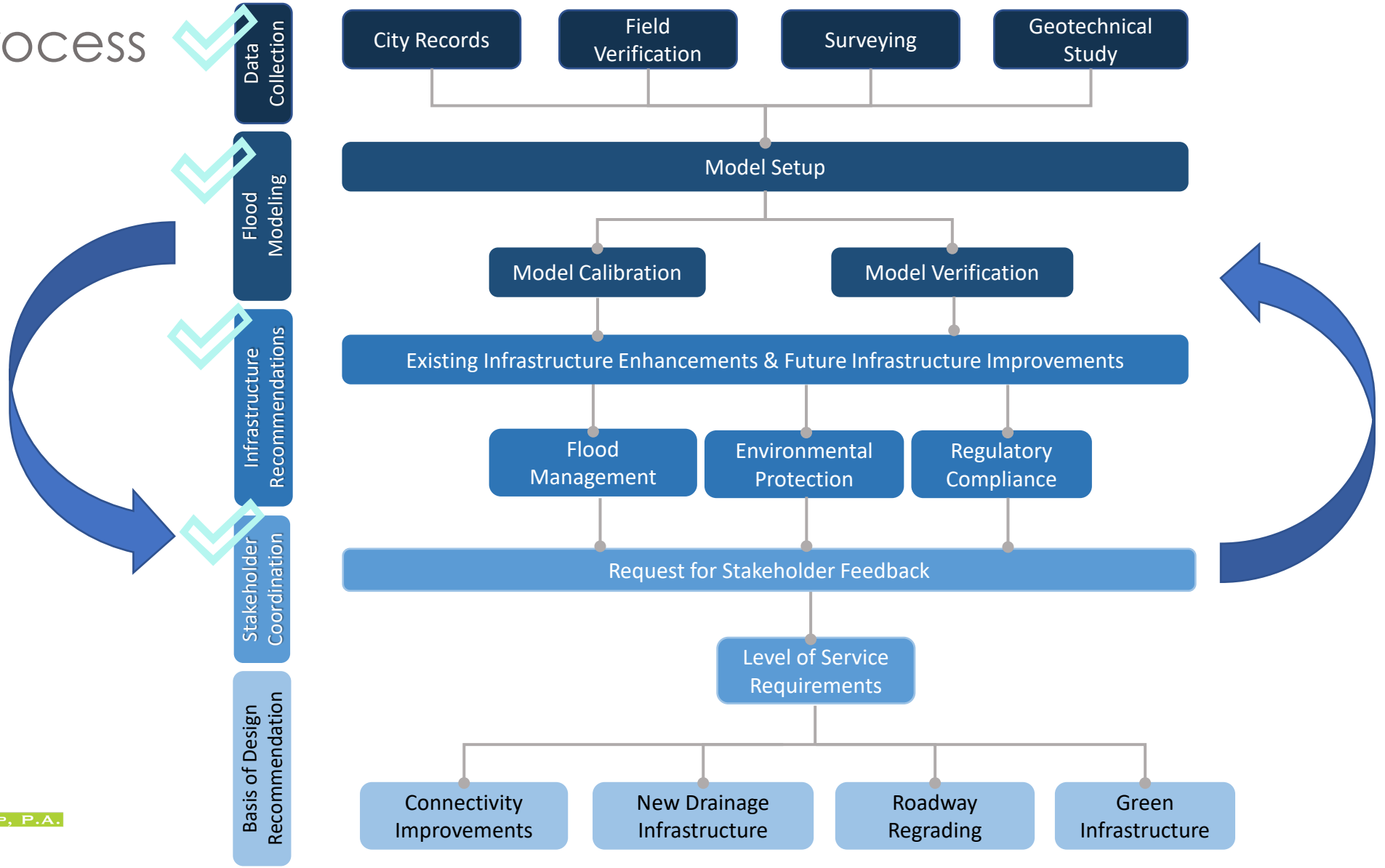
Project Process



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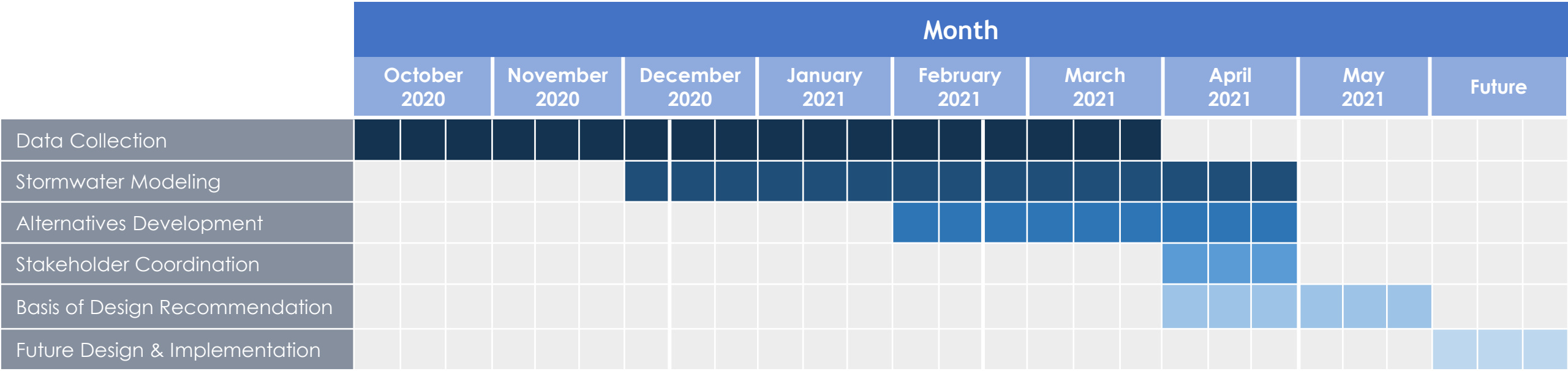
Timeline



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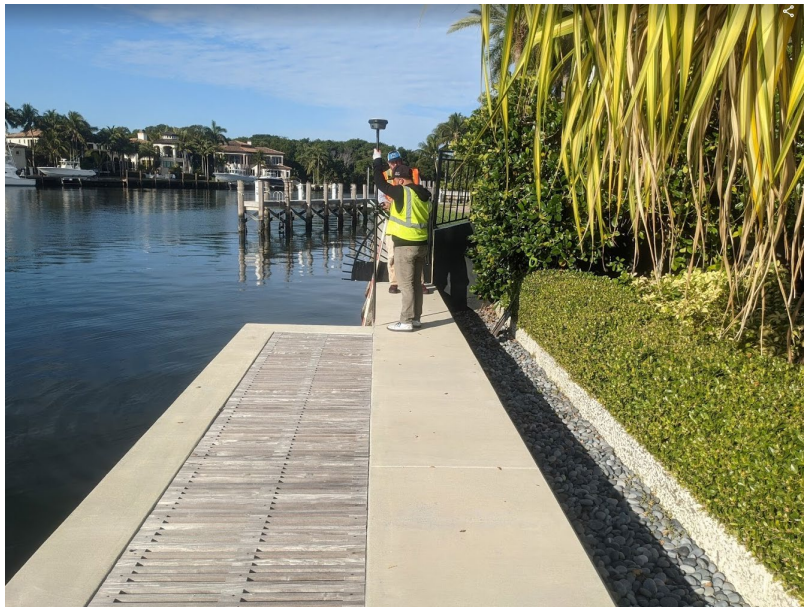
Field Verification & Assessments

- Multiple Site Visits to confirm:
  - Pipe sizes, materials and elevations
  - Connectivity of System
  - Presence of buried/hidden assets
  - Condition of pipes (debris)



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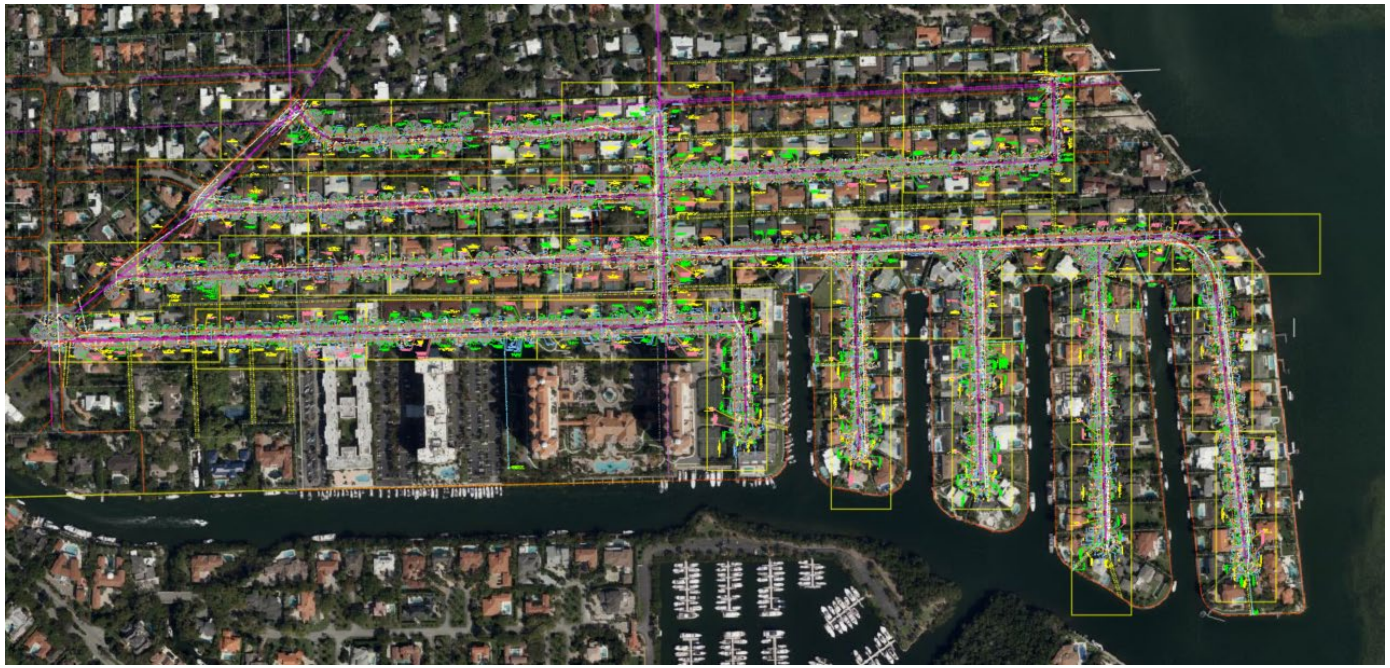
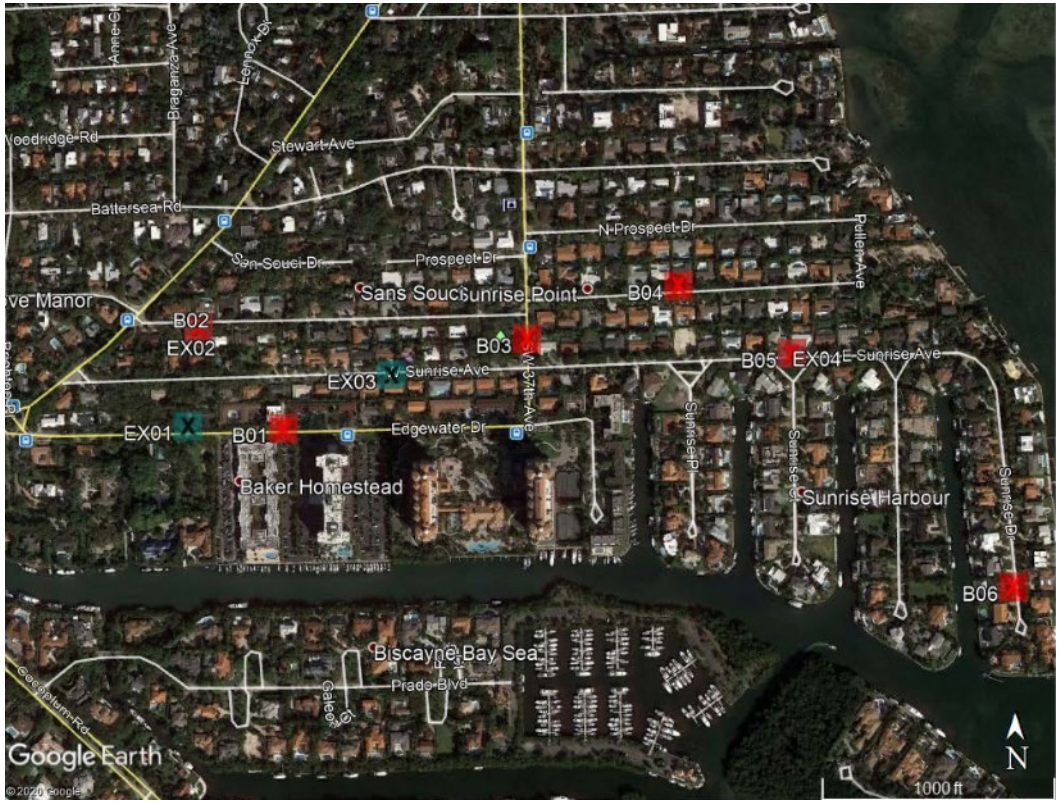
Surveying & Geotechnical Studies





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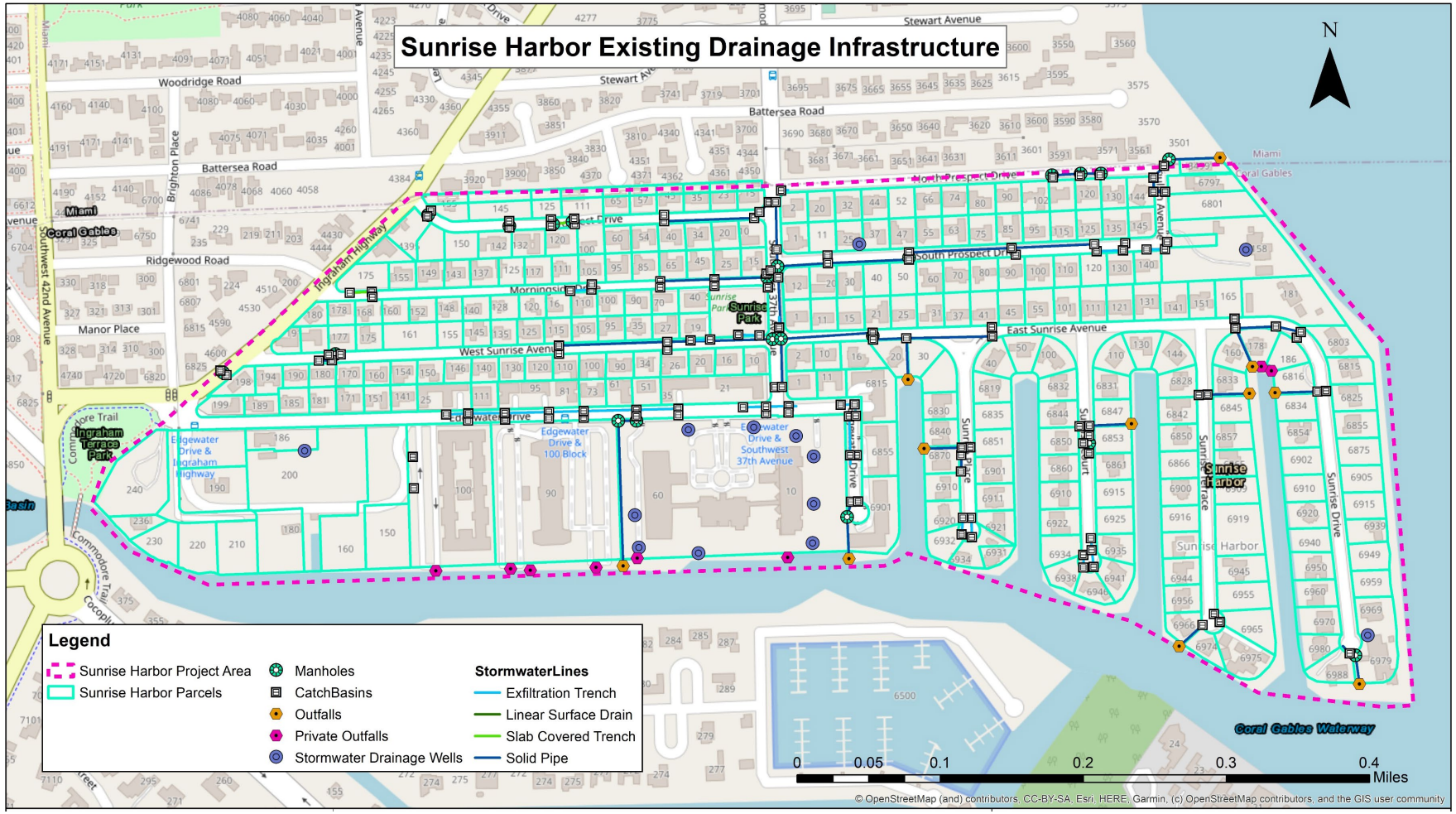
Stormwater Management System Overview



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Stormwater Modeling: Key Assumptions and Scenarios Evaluated

- The purpose of the stormwater modeling is to:
  - Create an existing conditions stormwater management model
  - Use the stormwater model to determine peak flood elevations
  - Use the stormwater model for identification of areas of concern and prioritization of flood mitigation in those areas
  - Modify the stormwater model to conduct flood mitigation scenario evaluations
- We evaluated the following scenarios
  - King Tides
  - 5-year, 24-hour Design Storm
  - 100-year, 72 hour Design Storm
  - Sea Level Rise

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Stormwater Modeling – Digital Elevation Model

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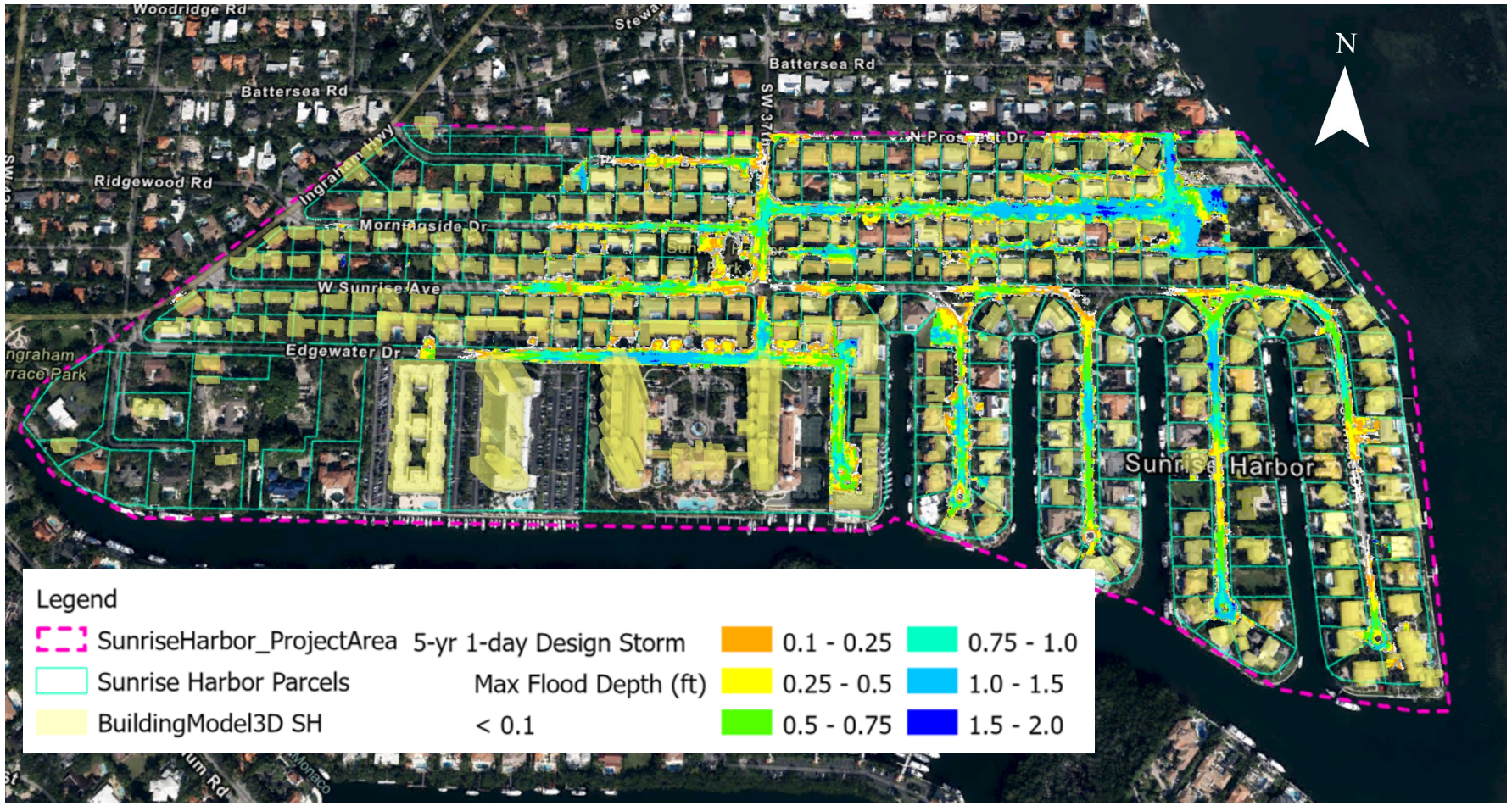
Stormwater Modeling – Existing Conditions: **5 Year** Design Storm



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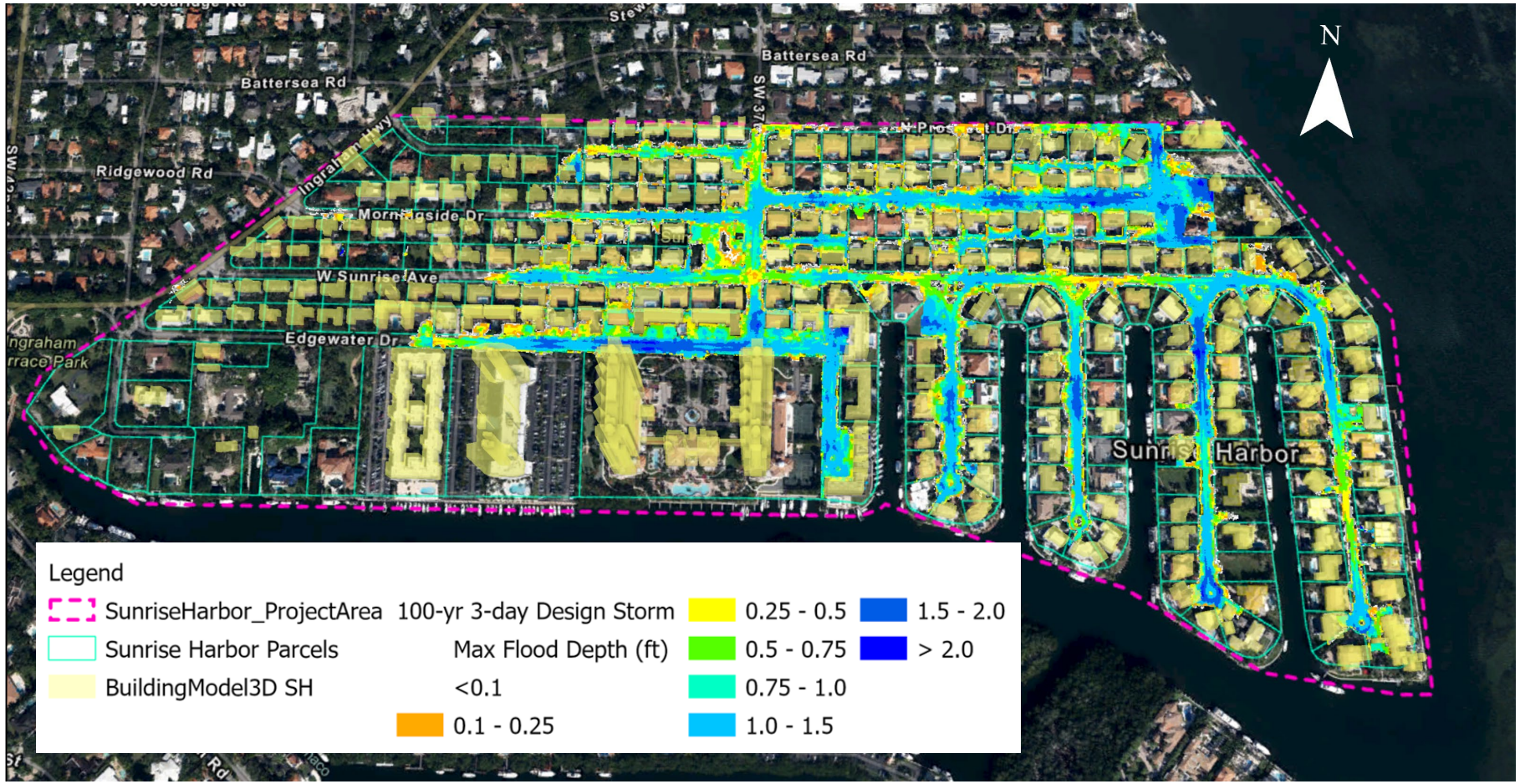
Stormwater Modeling – Existing Conditions: **100 Year** Design Storm



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Potential Flood Mitigation Solutions

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Potential Solutions: Flood Mitigation, Water Quality Treatment, Aquifer Recharge

- Capturing Runoff at Higher Elevations (reduce downstream impacts)
- Outfall Improvements
- Drainage Wells
- Regrading Roadways (Improve Conveyance)
- Improving System Connectivity
- Green Stormwater Infrastructure

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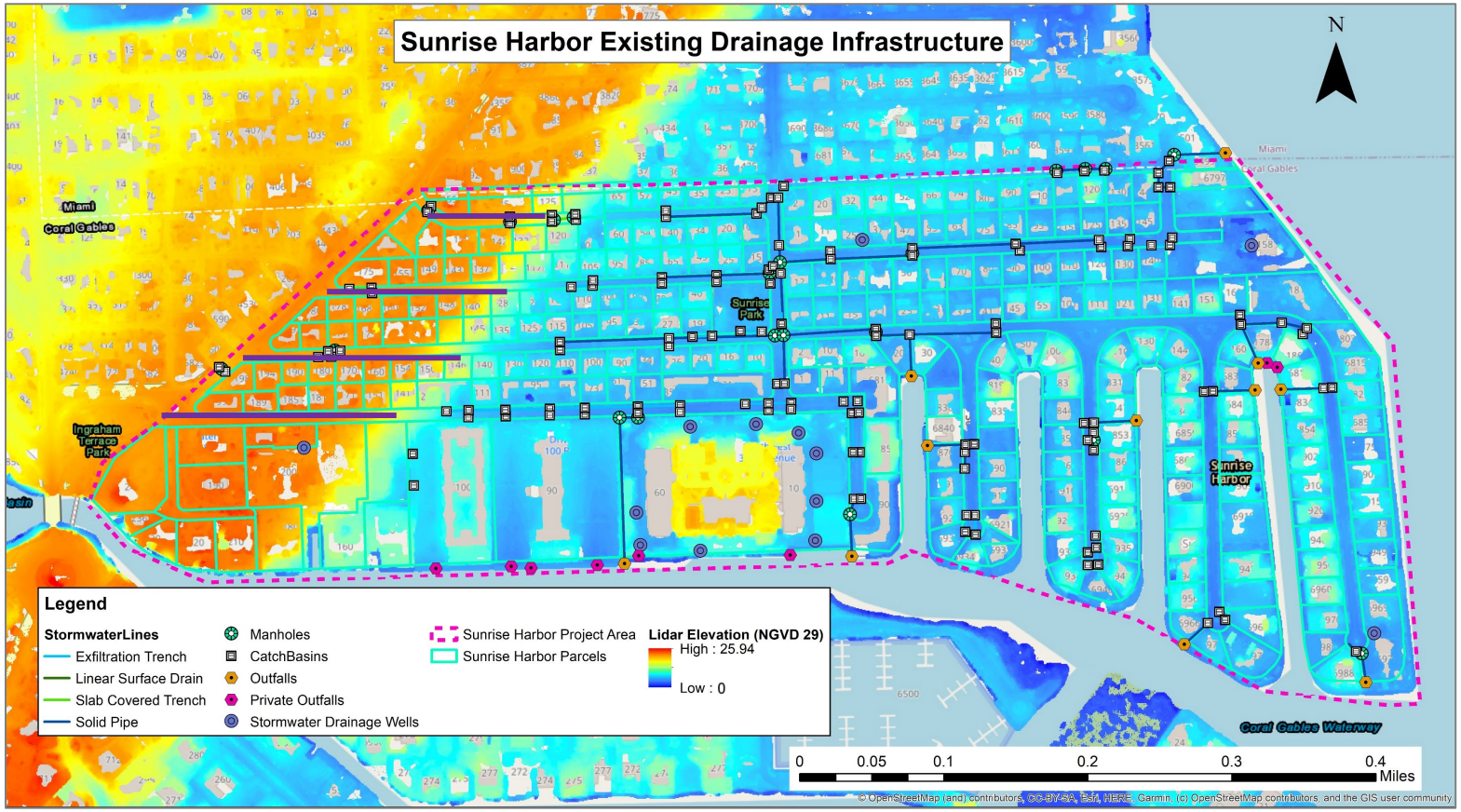
Capturing Runoff at Higher Elevations (reduce downstream impacts)

Exfiltration Trench: Collect, Store, Treat and Infiltrate within the City ROW (lowest cost, modular)



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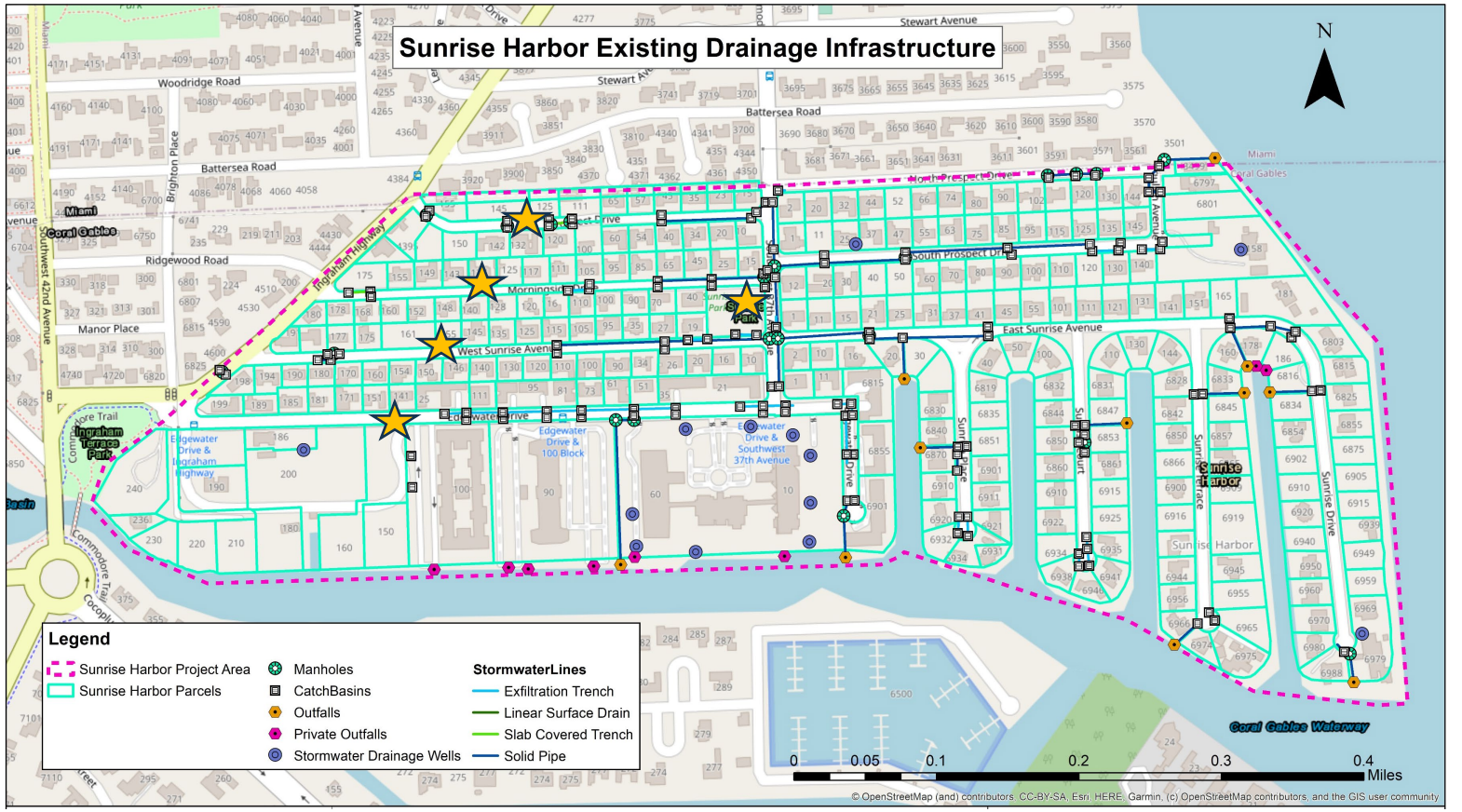
Drainage Wells

Drainage Wells: recharge groundwater and help to maintain or restore the site's natural hydrology



★ Potential Locations for new Drainage Wells

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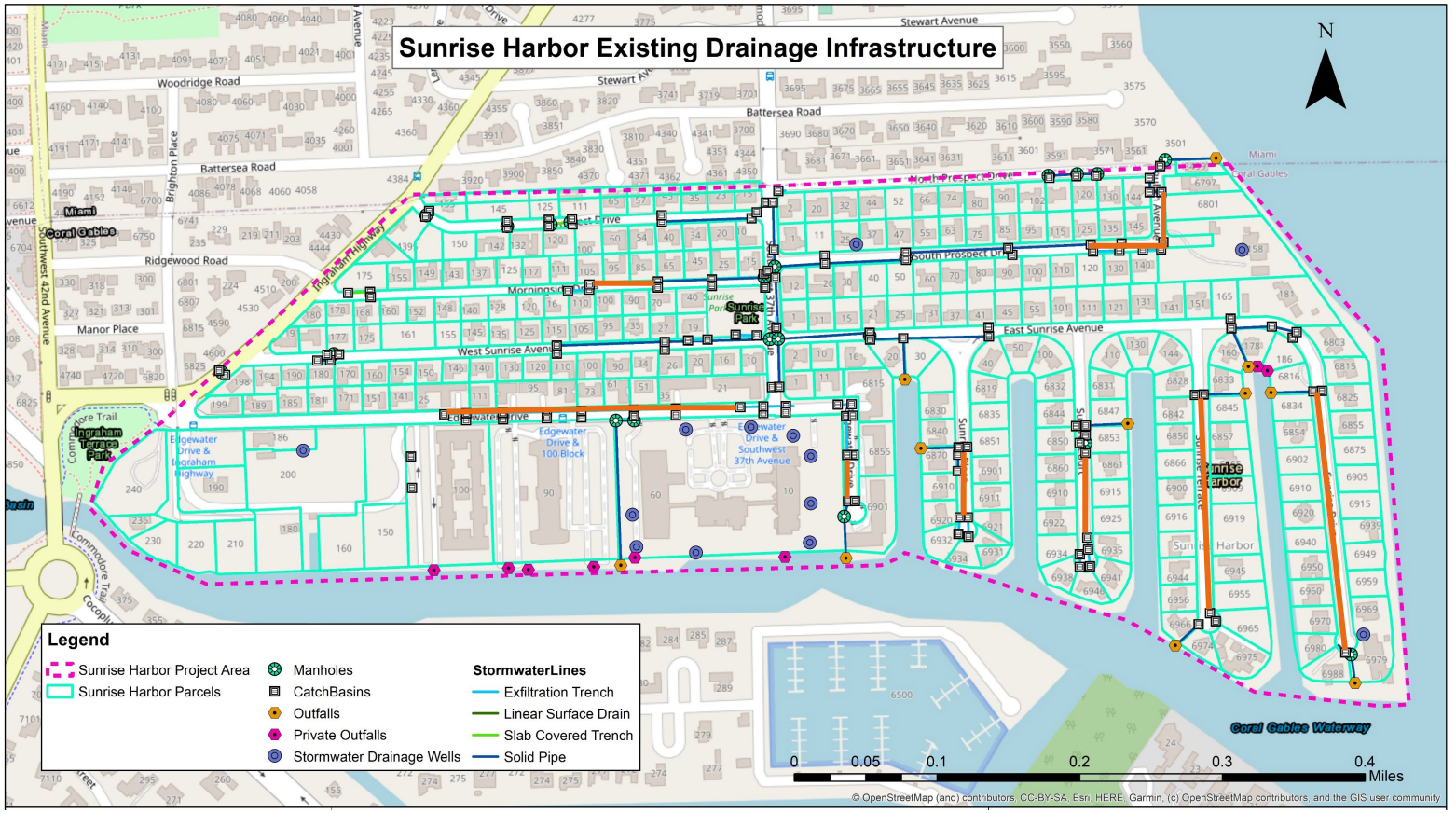
Improving System Connectivity

Improve Connectivity:
Install new pipes at specific locations



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Potential Outfall Improvements

- Outfall Protection
- Larger Outfalls
- Water Quality Pre-treatment

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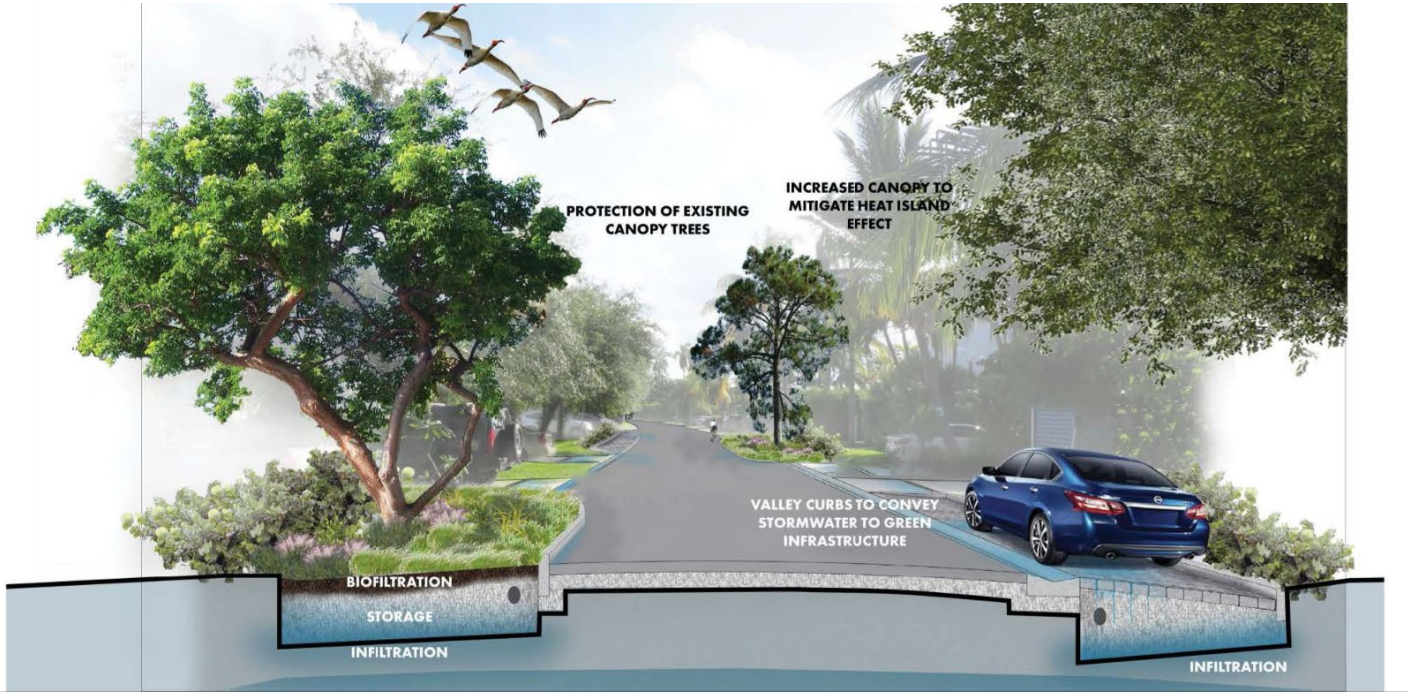
Green Stormwater Infrastructure (GSI) - Benefits

- GSI can reduce pollutants that threaten the Bay, such as metals, nutrients, sediment, and pathogens
- By retaining rainfall, GSI reduces stormwater discharges and pollutant loads
- GSI can also reduce runoff volume and peak discharge



Graphic Courtesy of City of Miami Beach

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Green Stormwater Infrastructure

Where can the City implement Green Infrastructure?

- Sunrise Harbor Park
- Triangular Open Spaces
- Parking areas
- Roads/Intersections
- Integrated with other stormwater infrastructure improvements

Potential Areas to implement GSI

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What does this mean for the Sunrise Harbor Community?

- Fewer flood disturbances
- More desirable area
- Improved water quality of the Bay
- Improved motorist and pedestrian safety

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Request for Feedback

SUNRISE HARBOR DRAINAGE ASSESSMENT

Request for Feedback

Participatory Approach to decision-making: Key to successful flood-resilient Sunrise Harbor Community

Community collaboration is essential to assist the City in identifying benefits and limitations of planned improvements

Please submit your feedback by April 23rd, 2021

E-mail: sunriseharbordrainage@coralgables.com

Web: https://www.coralgables.com/sunriseharbor

Thank you

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Questions/Discussion