

# MIAMI-DADE BACK BAY COASTAL STORM RISK MANAGEMENT DRAFT INTEGRATED FEASIBILITY REPORT AND PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT

DRAFT REPORT RELEASE

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June 2020



US Army Corps  
of Engineers®

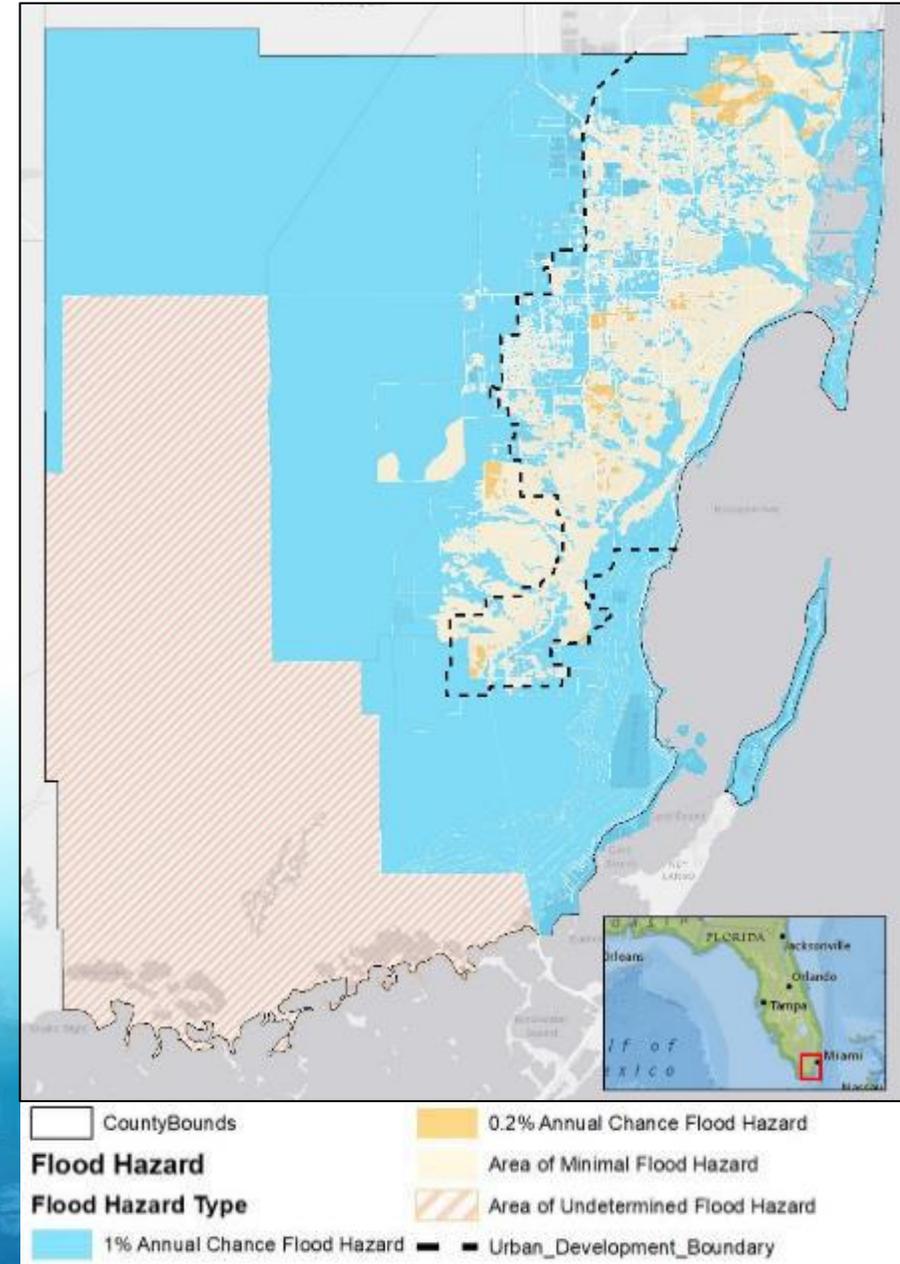


<https://www.saj.usace.army.mil/MiamiDadeBackBayCSRMFfeasibilityStudy/>



# STUDY BACKGROUND

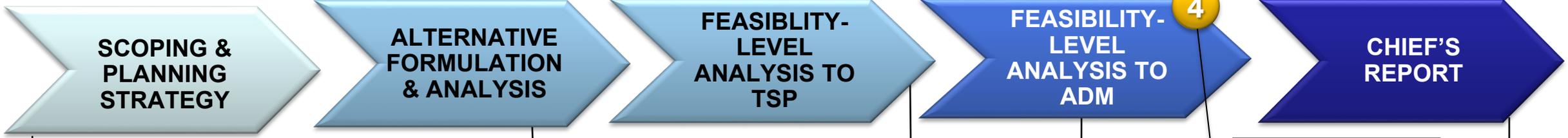
- Bipartisan Budget Act of 2018, Public Law 115-123 authorizes the government to conduct the Study at full Federal expense,
- 3 years and \$3 Million to complete study,
- The Miami-Dade Back Bay CSRM will investigate solutions that will reduce damages and risks from impacts of coastal storms while considering sea level rise. The study will not address federally owned land (e.g. Everglades National Park), but will focus primarily on the urban and coastal areas of the county,
- A draft Integrated Feasibility Report and Programmatic Environmental Impact Statement (EIS) has been prepared. The study will conclude in the Fall of 2021 with Final versions of the documents.





# SMART Feasibility Study Process: Miami-Dade Back Bay Coastal Storm Risk Management Study

Concurrent review



**Execute Feasibility Agreement with non-Federal Sponsor:**  
**9 Oct 2018**

- Initiate Scoping
- Invite Agencies to Participate
- Examine Existing and Future Without Project Conditions
- Identify Problems, Opportunities, Objectives and Constraints

1

**Alternatives Milestone:**  
**9 Jan 2019**

- Receive Stakeholder Input on Potential Measures
- Develop Screening Criteria
- Formulate Initial Array of Alternatives

2

**Tentatively Selected Plan (TSP) Milestone:**  
**Jan 2020**

**Alternative Evaluation and Comparison:**

- Environmental Considerations
- Parametric Costs and Determine Preliminary Benefits (Future With Project Conditions)
- Final Array of Alternatives
- Detailed Benefit-to-Cost Ratio
- Stakeholder Input
- Determine the TSP
- Develop Draft Report

3

**Agency Decision Milestone (ADM):**  
**Oct 2020**

- Release Draft Report (Integrated Environmental Impact Statement) and Respond to Comments
- Initiate Multiple Levels of Quality Review
- Finalize Environmental Mitigation Plans
- Develop Final Report

4

District Engineer transmits final report package  
**April 2021**

5

**Sept 2021**

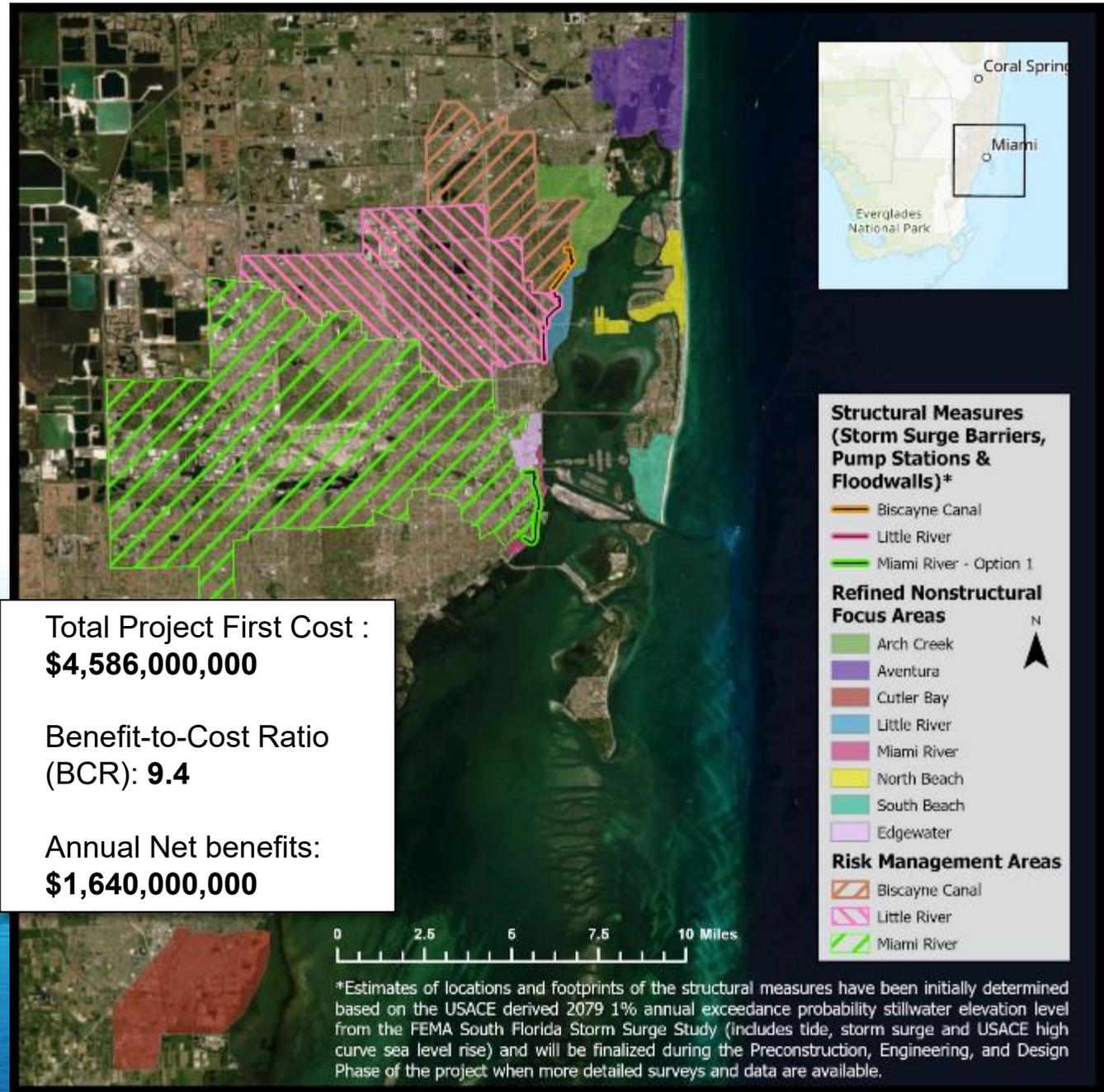
- Release Final Report
- Complete National Environmental Policy Act (NEPA) Conclusions

**Draft Report Release:**  
**5 June 2020**



# TENTATIVELY SELECTED PLAN (ALTERNATIVE 8)

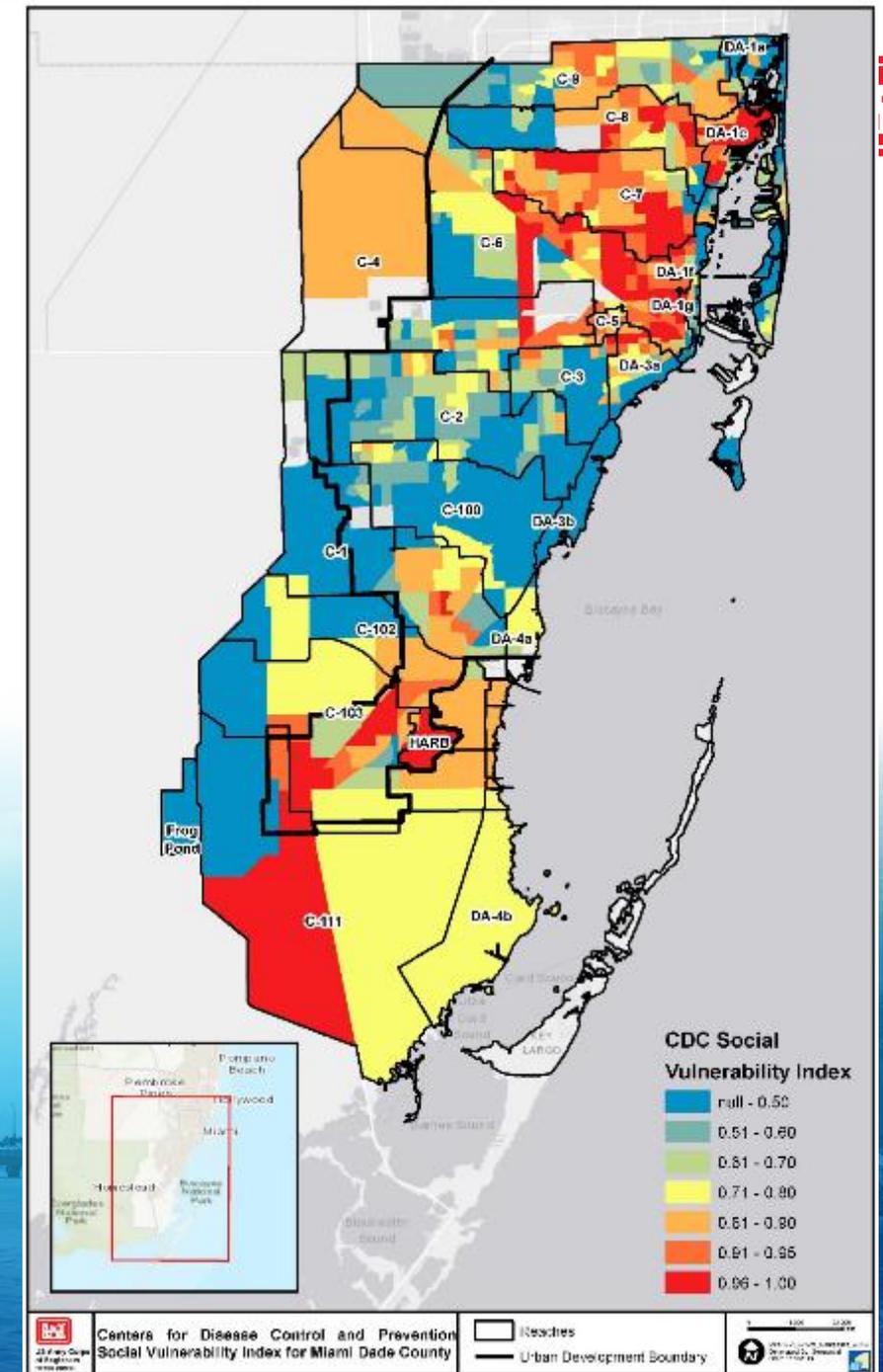
- Surge barriers at Biscayne Canal, Little River, and Miami River all of which include associated pump stations and floodwalls
- Nonstructural mitigation at seven socially vulnerable economic damage centers
  - Outside structural measures at Arch Creek, Little River, and Miami River/Edgewater.
  - Aventura, Cutler Bay (not shown on map), North Beach, and South Beach
- Natural and Nature-Based Features are being considered at the Cutler Bay site
- Critical infrastructure mitigation on priority asset categories throughout all of Miami-Dade County (not shown on map)





# SELECTION OF FOCUS AREAS

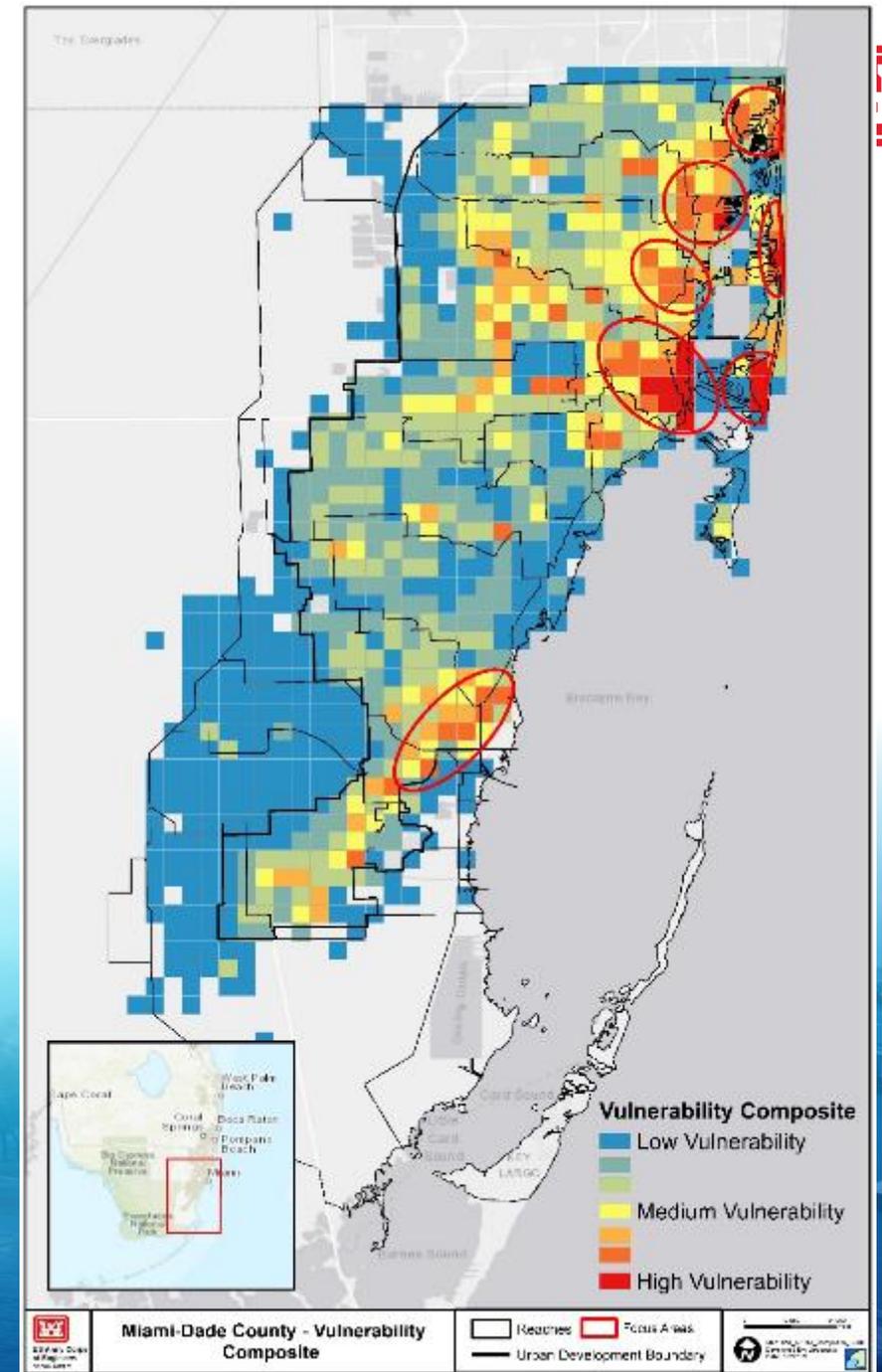
- ❑ Focus areas were selected based on
  - (1) the Social Vulnerability Index and
  - (2) expected flooding damage
- ❑ **Social Vulnerability Index (SVI)** from the Centers for Disease Control and Prevention (CDC) uses U.S. census data to determine social vulnerability by census tract. Each tract was ranked on 15 factors grouped into four themes which include:
  - ❑ Socioeconomic status
  - ❑ Household composition / disability
  - ❑ Race / ethnicity / language / minority status
  - ❑ Housing/transportation
- ❑ **Flooding damage** was estimated using the HAZUS model using FEMA's 1% (100-year) annual chance flood with 4' of SLR.
- ❑ 4000' x 4000' grids made to narrow down damage areas
- ❑ Flooding damage was multiplied by SVI to obtain a composite risk map which showed seven socially vulnerable economic damage centers





# FEATURES OF THE PLAN

- Structural Measures – screened based on seven focus areas identified, preliminary real estate and engineering concerns, and non-Federal sponsor input.
- Nonstructural Areas – areas narrowed down to seven focus areas based on preliminary flood damage analysis and the Social Vulnerability Index (SVI).
- Critical Infrastructure – Asset Categories were determined through scoping meetings and in-line with Miami-Dade County's Rapid Action Plan which consists of vulnerable critical infrastructure.
- Natural and Nature Based Features (NNBF) – Identified through coordination with local stakeholders. Designed to work in conjunction with non-structural and structural measures.





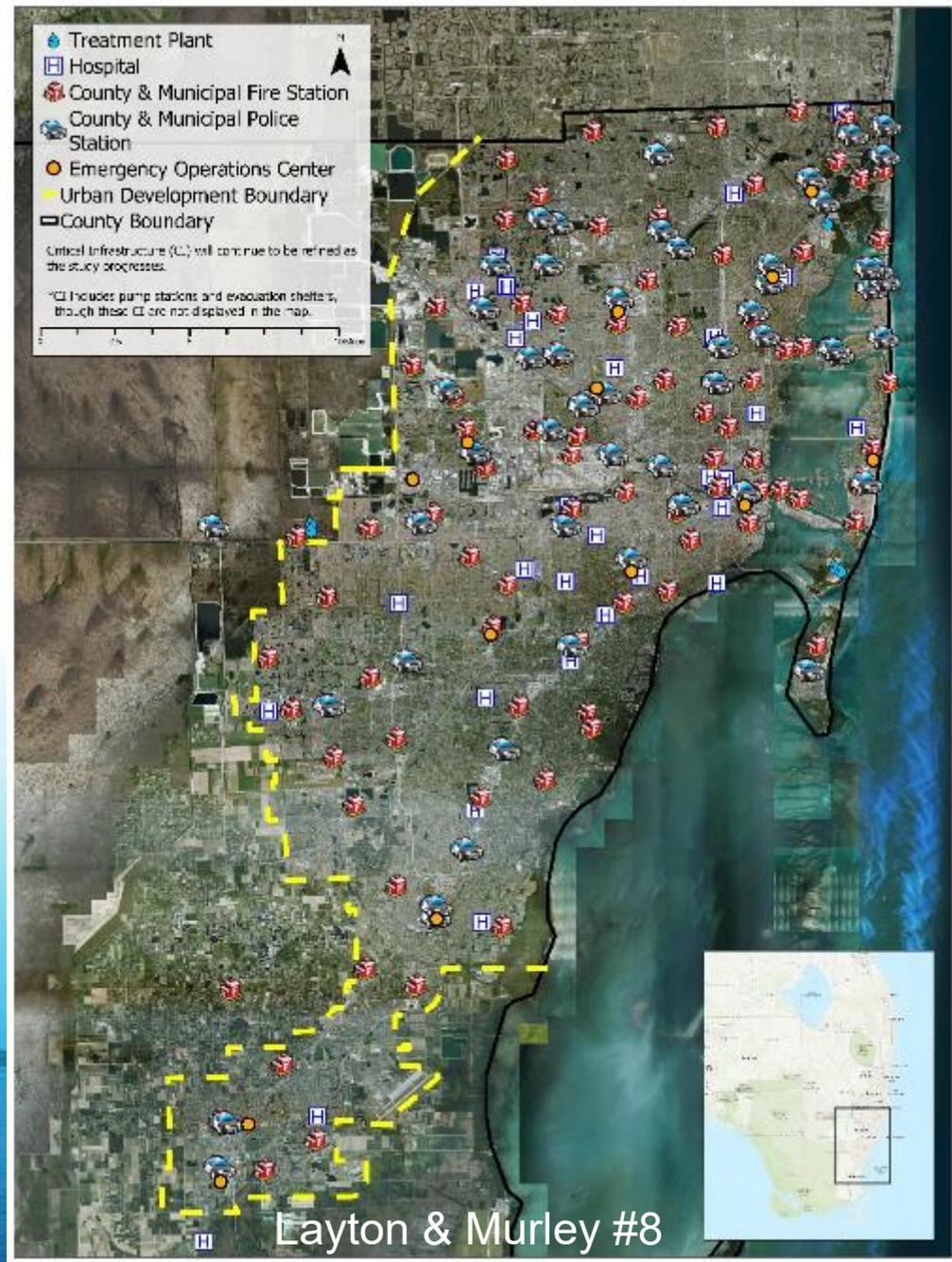
# CRITICAL INFRASTRUCTURE

**Critical infrastructure analyzed throughout the entire county.**

**Critical asset categories to include in study:**

- Fire Stations
- Medical Facilities
  - Significant hospital / emergency facilities
- Police Stations / 311 centers
- Shelters / evacuation centers
- Wastewater and potable water facilities
  - Treatment plants, pump stations
- EOC Facilities
- Vulnerable airport facilities from the Rapid Action Plan (RAP)
- Railway electrical substations
- Erosion at Rickenbacker Causeway and Venetian Way

| Critical Infrastructure                     | Count |
|---|-------|
| Emergency Operations Center Command Centers | 13    |
| Evacuation Centers                          | 81    |
| Fire Stations (County)                      | 71    |
| Fire Stations (Municipal)                   | 30    |
| Hospitals                                   | 40    |
| Police Stations (County)                    | 8     |
| Police Stations (Municipal)                 | 58    |
| Pump Stations                               | 458   |
| Treatment Plants                            | 9     |





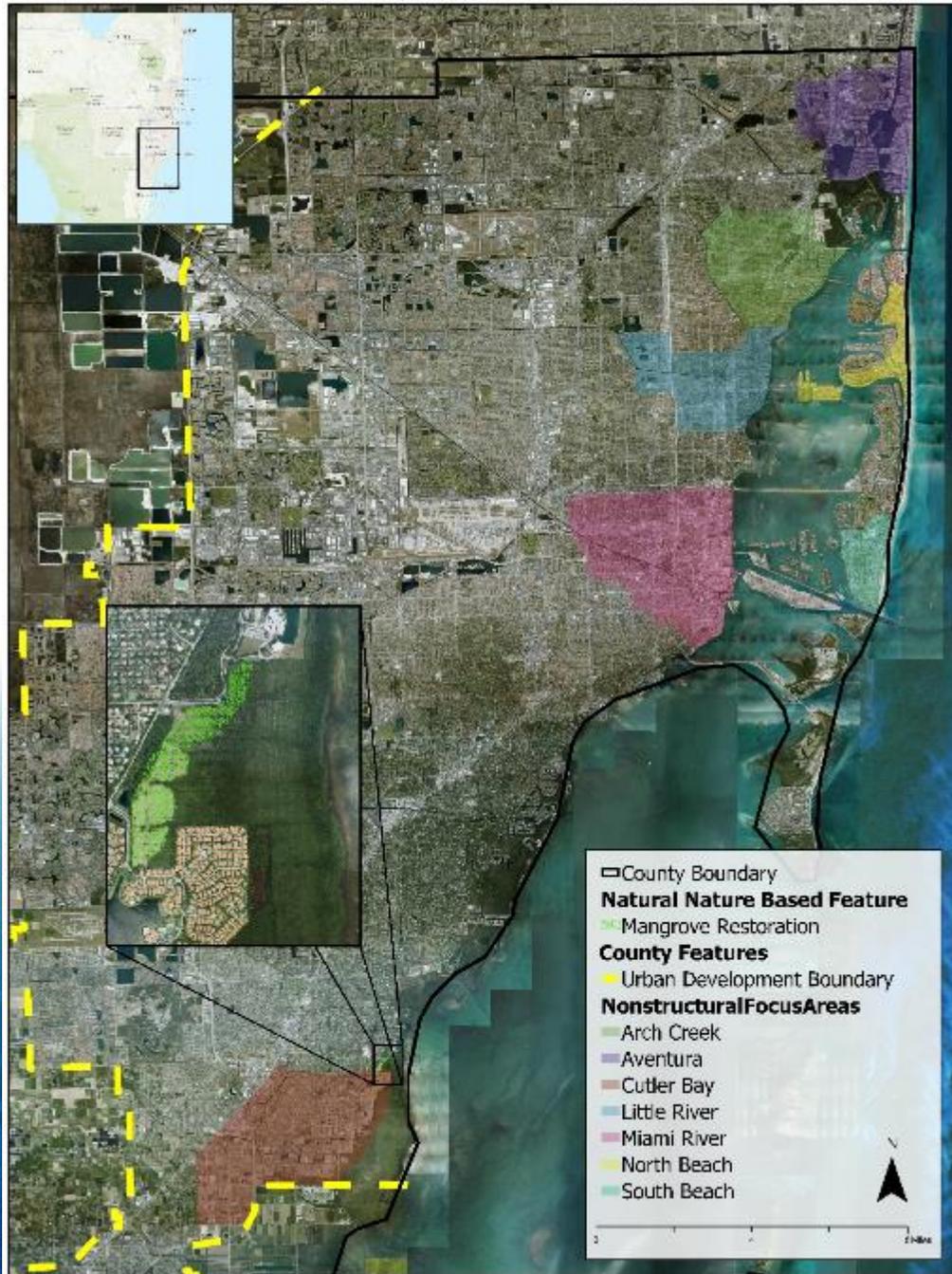
# NONSTRUCTURAL

## Seven socially vulnerable economic damage centers

- Arch Creek, Aventura, Cutler Bay, Little River, Miami River, North Beach, and South Beach

## Nonstructural measures includes:

- Elevating structures, wet and/or dry floodproofing of structures, acquiring structures and relocating structures and utilities





# STRUCTURAL

- Surge barriers at Biscayne Canal, Little River, and Miami River including associated pump stations and floodwalls
- Floodwall at Edgewater, examined, but not included in the Tentatively Selected Plan.
- The proposed top of wall elevation varies from 1 to 13 feet above ground depending on location and is greater in height where the wall is in the water. Optimization will occur for different storm frequencies prior to the final report.





# NATURAL AND NATURE-BASED FEATURES

*Natural and Nature-Based features (NNBFs) considered for this study included mangrove and other native vegetation plantings, coral reefs, living shorelines, submerged aquatic vegetation, and marsh island creation/enhancements.*

Old  
Cutler  
Road



- The NNBF selected for this study is the planting of native vegetation including mangroves at the Cutler Bay Site
- Vegetation such as mangroves serve to dissipate storm surge and provide a natural form of coastal protection.



# Resilient305



## PLACES

### OBJECTIVES

- ◆ Enhance Natural Systems
- ◆ Safeguard Urban Systems
- ◆ Create Mobility Options
- ◆ Increase Energy Efficiencies
- ◆ Enhance Housing Options

19 actions | 5 spotlights  
11 case studies

Layton & Murley #8



## PEOPLE

### OBJECTIVES

- ◆ Cultivate Financial Stability
- ◆ Advance Public Health Priorities
- ◆ Strengthen Community Response
- ◆ Communicate the Concept of Resilience

22 actions | 13 spotlights  
8 case studies

Layton & Murley #8



## PATHWAYS

### OBJECTIVES

- ◆ Pre-plan for Post Recovery
- ◆ Cultivate Resilience Expertise
- ◆ Leverage our Experience
- ◆ Develop Shared Resources
- ◆ Leverage our Dollars

18 actions | 6 spotlights  
9 case studies

# Miami-Dade County Sea Level Rise Strategy Approaches



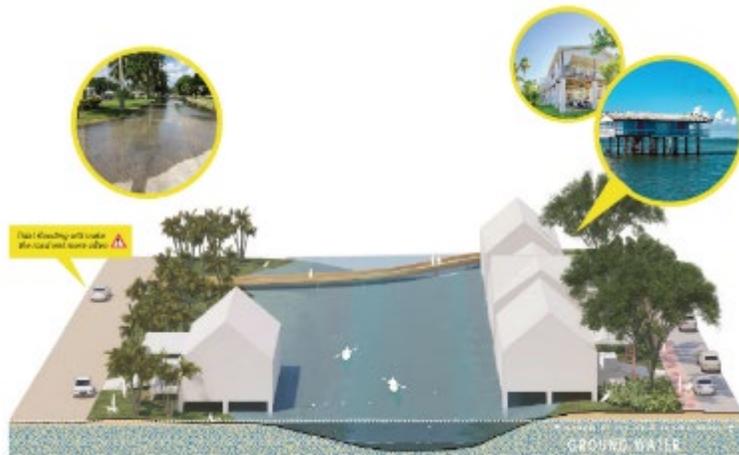
Build on fill



Blue & greenways



Build on high ground around transit



Layton & Murley #8

Build like the keys

Layton & Murley #8



Blue & green neighborhoods

# Miami-Dade typology transect



Parks & Conservation Lands



Agriculture



Wooded  
Suburban



Critical  
Facilities



Slough



Ridge



Mainland -  
Typicam



Island -  
Typicam



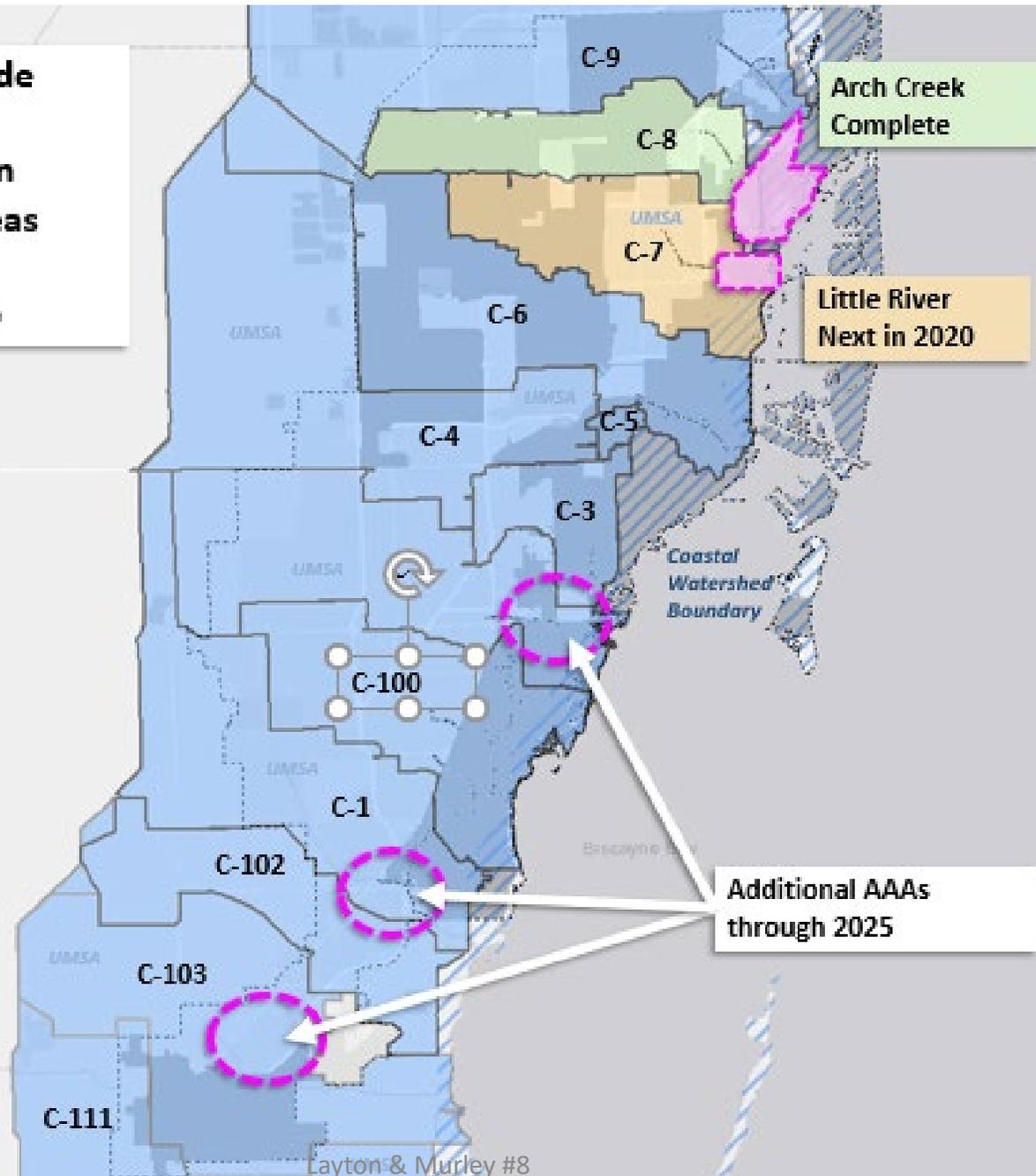
Island -  
Concentric



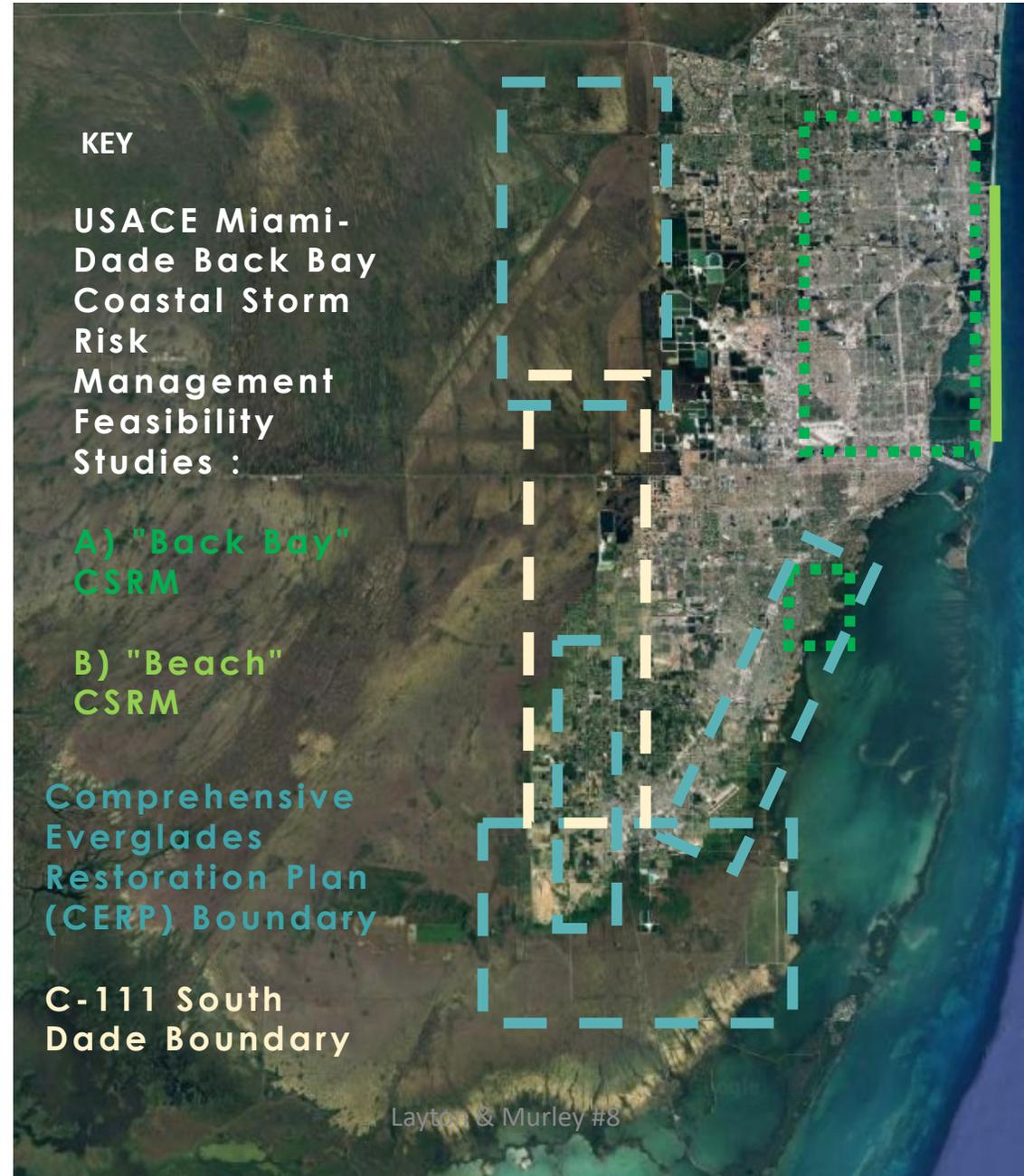
TYPOLOGY TRANSECT

**Miami-Dade  
County  
Adaptation  
Action Areas**

**2020-2025**



# Regional projects



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# QUESTIONS?

Project Documents are Located:

<https://www.saj.usace.army.mil/MiamiDadeBackBayCSRMFfeasibilityStudy/>



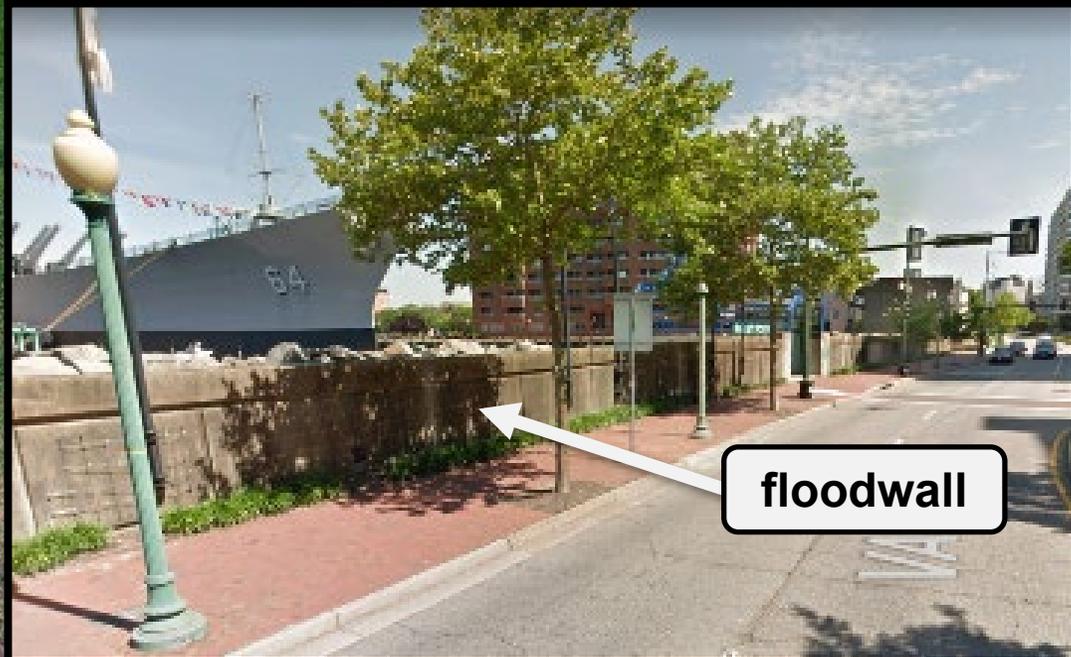
# BACK-UP SLIDES



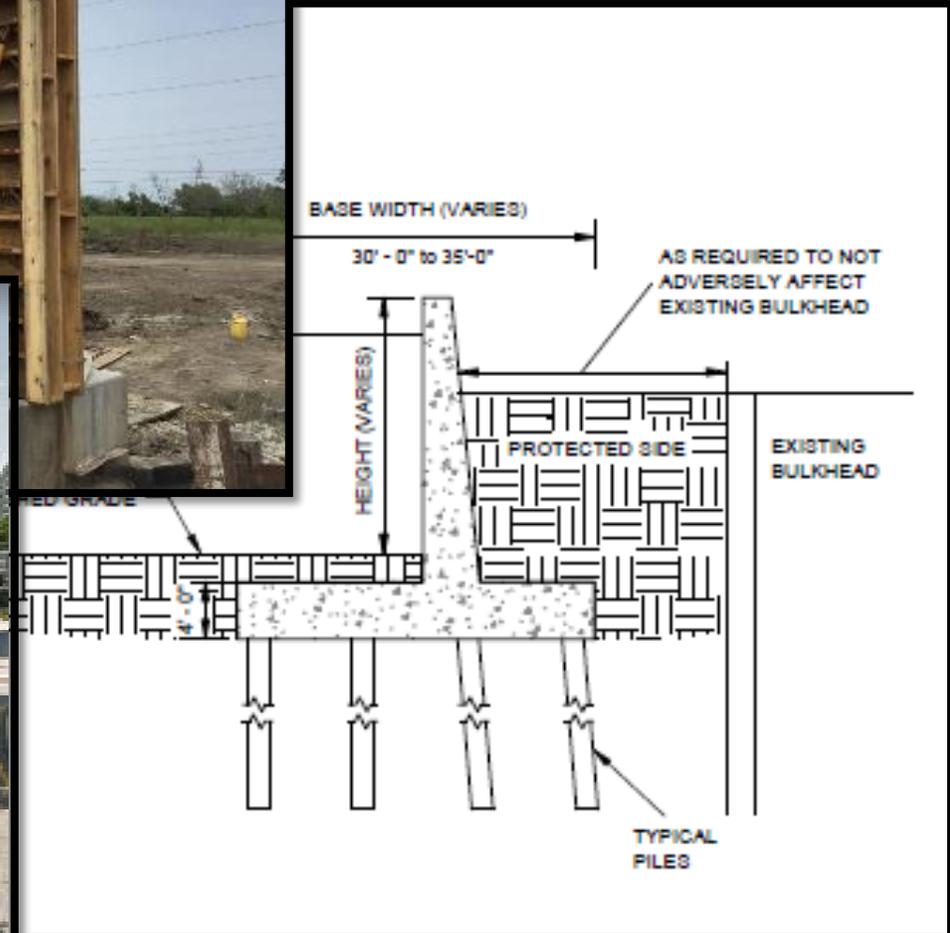
# EXAMPLE FLOODWALLS AND DESIGN



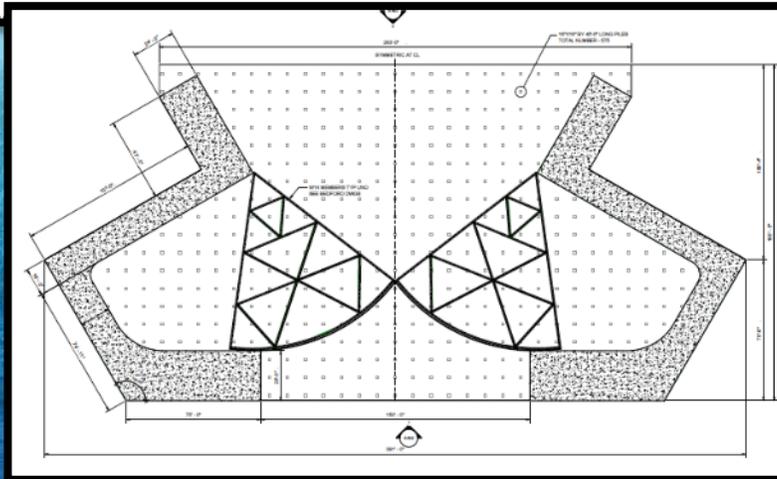
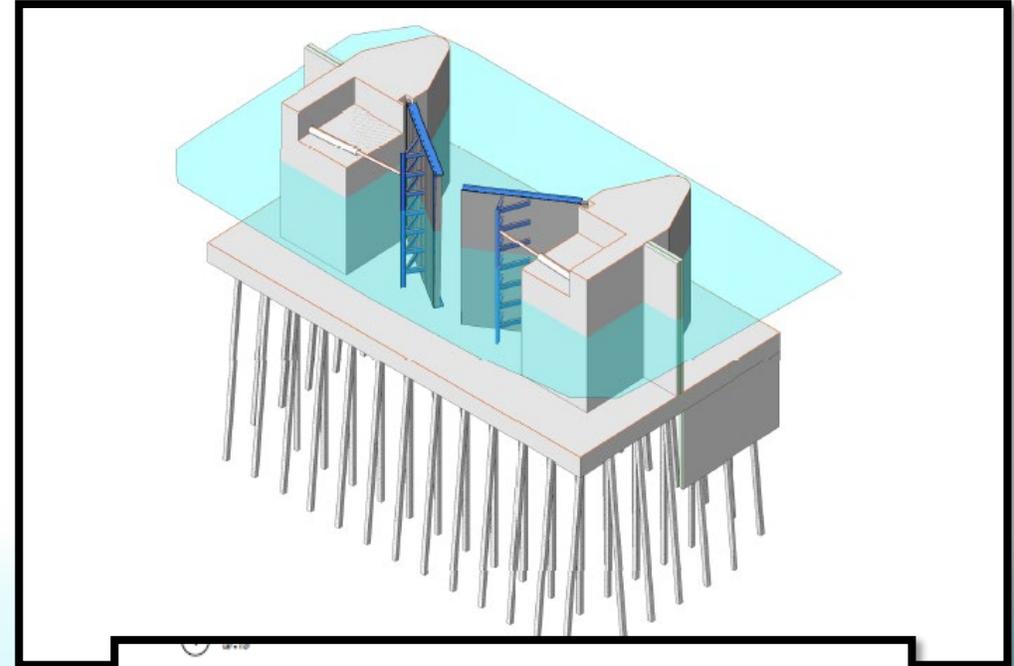
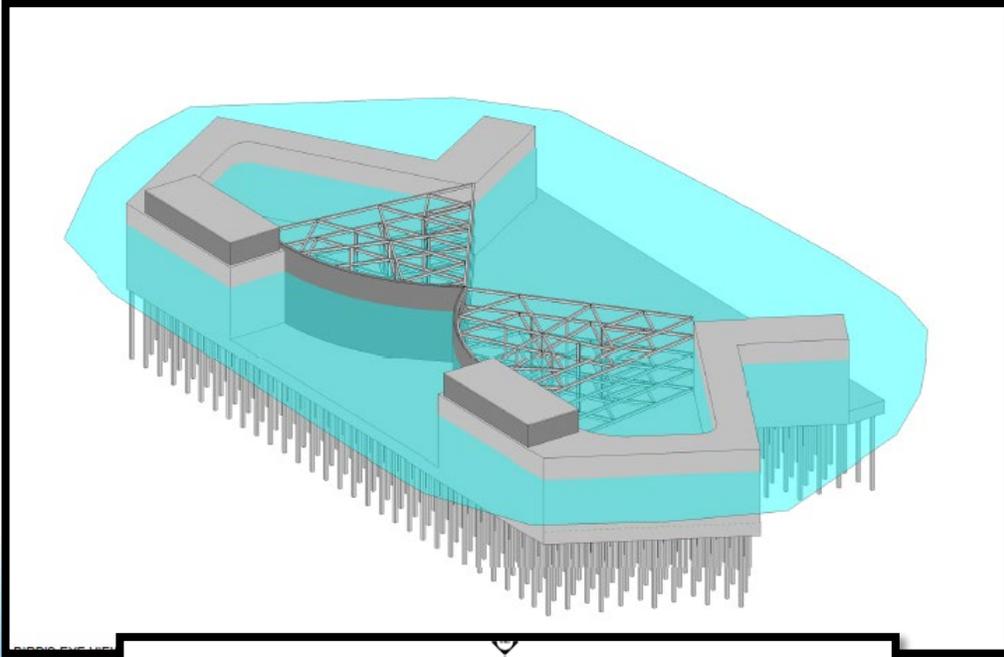
floodwall



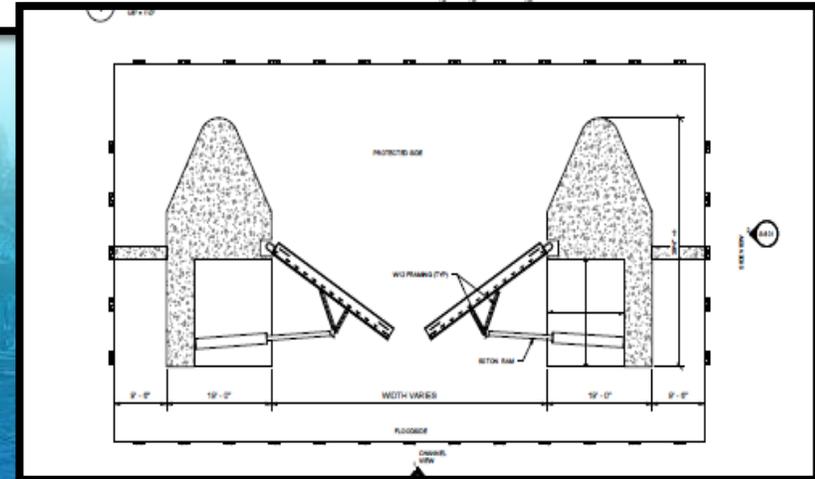
floodwall



# EXAMPLE SURGE BARRIER DESIGN



sector gate



miter gate



# EXAMPLE SURGE BARRIERS



sector gate



miter gate