



WELCOME



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

Virtual Public Meeting June 2020

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

DRAFT REPORT RELEASE PUBLIC MEETING

Norfolk District
U.S. Army Corps of Engineers
June 2020



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

Good afternoon and welcome to the Miami Dade Back Bay Coastal Storm Risk Management Study Public Meeting for the release of the Draft Integrated Feasibility Report and Programmatic Environmental Impact Statement study documents.

My name is Susan Layton and I am the Chief of Planning for Norfolk District, US Army Corps of Engineers.

It is great to hear so many people called in, interested to discuss the path forward for this very important project.



OUTLINE



- Opening Remarks
- Overview: Authority, Scope, Problem/Opportunities, Objectives/Constraints
- Tentatively Selected Plan
- Compliance and Considerations
- Schedule
- How to Provide Comments
- Related USACE Studies
- Question and Answer

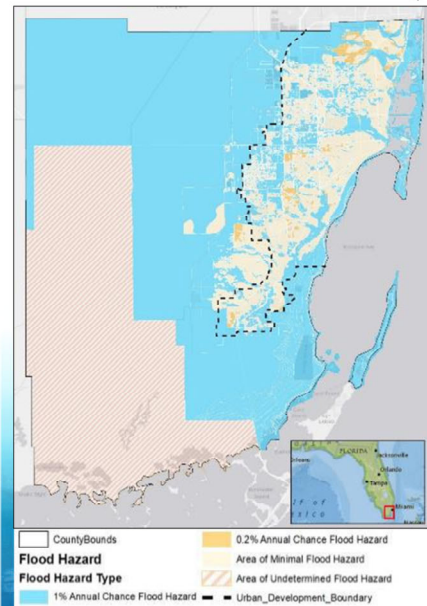
Today we will review the study background and the Tentatively Selected Plan presented in the draft study documents. This will be followed by a discussion of the compliance and considerations for the implementation of the draft study plan. An overview of the 3 year study schedule and how to provide comments will be reviewed. Finally, a brief introduction of other U.S. Army Corps of Engineer studies in the south-east Florida Region will be provided.

Following the 30 minute presentation, there will be an opportunity to ask questions via the webinar chat function. Please note that questions or comments provided via the chat function during this meeting will not be recognized as formal comments for the study process. If you would like to provide formal comments, you can do so via email, webmap or by letter. For more details on how to provide comments please see the final slide, the study Public Notice on the Corps website or in the Miami-Herald, or the Frequently Asked Questions portion of the study web-page.



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.



The Miami-Dade Coastal Storm Risk Management or CSRM Study investigates solutions that will reduce damage and risks from impacts of sea level rise and coastal storms. The study does not address federally owned land such as Everglades National Park, but focuses primarily on the urban and coastal areas of the county. The beach front is addressed by a separate USACE study.

The study is scoped to be completed within 3 years and for no more than \$3 million dollars in accordance with U.S. Army Corps of Engineer or USACE modernized planning policies. Due to the geographic size, population, and complexity of coastal flooding risks of the study area a countywide comprehensive study is not possible. The study focuses on critical infrastructure on a county-wide basis and the most vulnerable areas to storm surge flooding. It should be noted, however, that this study does NOT result in a holistic recommendation for dealing with Coastal Storm Risk in Miami Dade County.

The study is roughly 50% complete and the draft report identifies the Tentatively Selected Plan which is the draft alternative that the Corps proposes to move forward for further analysis before developing a final recommendation at the conclusion of the study.

The national economic development plan is the solution that most reasonably maximizes the benefits compared to project costs. Benefits include things such as avoided losses and

reduced property damage. Costs include elements such as construction costs, operation and maintenance, environmental mitigation and real estate costs.

The Tentatively Selected Plan will be optimized as we move forward to include additional analysis, technical reviews and public input prior to the production of final report documents concluding the study in the fall of 2021.



NATIONAL ENVIRONMENTAL POLICY ACT OVERVIEW



- The National Environment Policy Act (NEPA) requires federal agencies to evaluate how their actions affect the human and natural environment.
- In accordance with NEPA, compliance with other federal laws and statutes is also documented and addressed (i.e., Endangered Species Act, Clean Water Act, National Historic Preservation Act, Coastal Zone Management Act).
- This document has been prepared as a Programmatic Environmental Impact Statement (EIS) based on a 10% (conceptual) design level; future NEPA documentation will be prepared for site specific project as designs advance.

Before we jump into specific aspects of this study, I thought it would be helpful to review the requirements of the National Environmental Policy Act and the general elements of the Corps' Coastal Storm Risk Management Authority.

The National Environmental Policy Act or NEPA, which applies to Federal Agencies and their actions, requires that agencies take a hard look at how their actions affect the human and natural environment. In accordance with NEPA, compliance with other federal laws and statutes is also documented and addressed. This may include the Endangered Species Act, Clean Water Act, National Historic Preservation Act, and Coastal Zone Management Act, for example. For a complete list of federal laws and statutes relevant to this project, please refer to Chapter 9, the Environmental Compliance chapter, of the main draft document.

In accordance with NEPA, this document has been prepared as a Programmatic EIS. The term "programmatic" indicates this is a high-level NEPA document. Therefore, during successive phases of the project, additional site-specific NEPA documents, would be prepared and coordinated with local, state, and federal regulatory agencies, tribal governments, and the public. The level of detail in this programmatic Environmental Impact Statement or EIS is based on a 10% level of engineering design for proposed structural measures and is sufficient to allow an informed decision among planning-level alternatives. Future site-specific NEPA documentation will be prepared.



USACE COASTAL STORM RISK MANAGEMENT (CSRM) STUDY AUTHORITY



Authorized

- Measures that reduce risks from coastal storms considering property and life safety/ critical infrastructure.
- Inclusion of increases in storm surge over time due to sea level rise.
- Pump stations associated with structural barriers such as floodwalls or surge barriers.
- Natural features where there is a benefit to reducing storm surge impacts.
- 10% (conceptual) design development.

Not Authorized

- Direct inclusion of Federal property
- Sea level rise impacts not occurring during a coastal storm event.
- Improvements to reduce rainfall/ stormwater flooding.
- Natural features with no direct reduction in coastal storm risks.
- Recreational or aesthetic features.
- Construction or Operation and Maintenance.

The Corps' Coastal Storm Risk Management Authority under which this study is conducted has a goal of reducing risk from future coastal storm events, and especially storm surge – specifically to reduce the economic damage, as well as threats to life and safety. The authority allows for an examination of impacts from coastal storms while considering sea level rise over a 50-year period of analysis. The authority does not include an examination of sunny-day flooding or sea level rise impacts alone. The authority also does not include stormwater system improvements beyond those required for the implementation of CSRM alternatives – such as building a pump station to provide for interior drainage with the construction of a floodwall that could cutoff existing outfalls or overland flow.

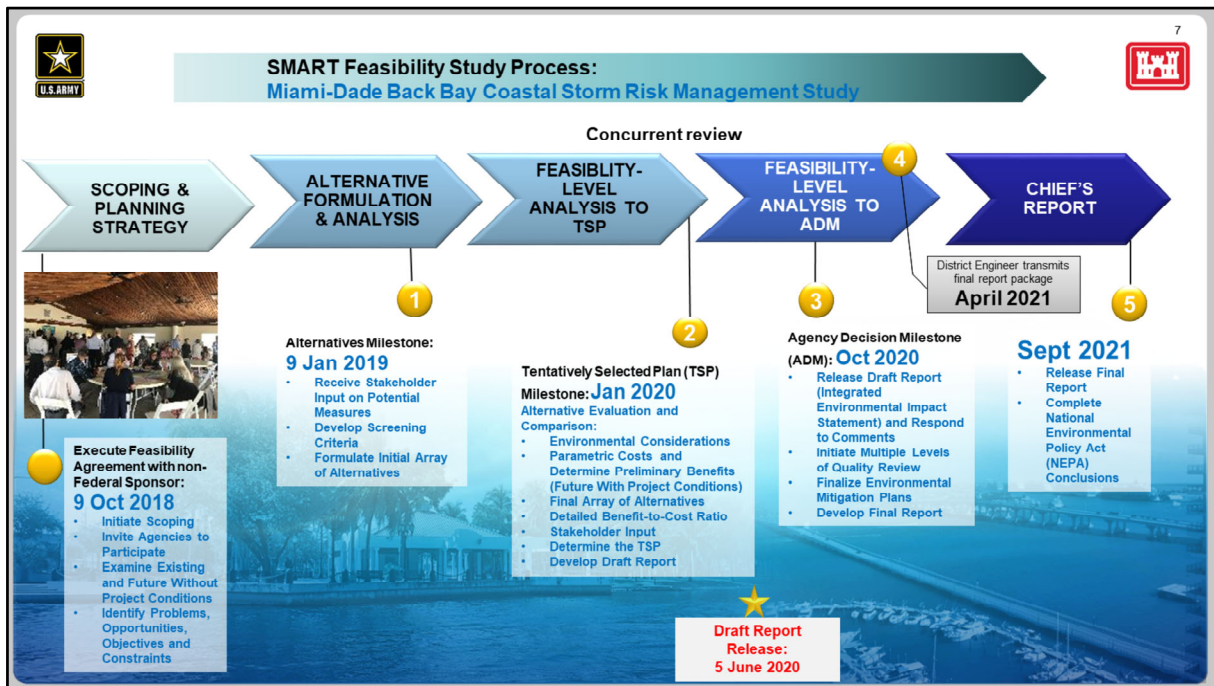
Additionally, while USACE strives to implement natural and nature based features (such as mangrove restoration) whenever possible, those features must have a coastal storm risk management benefit to be implemented under this CSRM project.

USACE also recognizes the local collaboration to provide improvements, such as a continued Baywalk in downtown Miami. While a feature such as a Baywalk can be implemented if this project moves into the Construction Phase, those features would be considered a betterment and must be paid at 100% non-Federal expense.

A final item of importance is to note that at this time only the study and design phase are

authorized. The study will result in 10% (or conceptual level) design and the project can move into the Pre-construction Engineering and Design (or PED) phase for full design upon approval of the study.

In order for a Federal coastal storm risk management Project to be implemented, the construction must be separately authorized (meaning Congressional approval for construction), Federal appropriations (or funding) must be made available and an eligible, cost-sharing non-Federal sponsor must participate.



Now to refer back specifically to this study. The study schedule is shown here, with the upcoming milestones including an Agency Decision Milestone in October 2020 and submittal of the final report in April 2021, and Chiefs Report in September of 2021.

The Feasibility Agreement was executed on 9 October 2018. This CSR study authority is Public Law 84-71, June 15, 1955 which authorizes an examination and survey of the coastal and tidal areas of the eastern and southern United States, with particular reference to areas where severe damage have occurred from hurricane winds and tides. The study is appropriated under Bipartisan Budget Act of 2018 (Public Law 115-123), enacted February 9, 2018, at 100% Federal expense.

The study kicked off in October 2018 and has a duration of 3 years to final approval of a Recommended Plan by the Corps of Engineers. The study team held several stakeholder coordination events to receive and incorporate feedback into the plan development since the initiation of the study. Currently we are about 50% through the study duration. The current phase of work involves gathering public input on the Tentatively Selected Plan or TSP and conducting optimization on that plan by the next agency milestone in October 2020.

Optimization includes a feasibility level analysis at a greater level of detail to refine the TSP

into a recommended plan and results in the completed integrated Feasibility Report and Programmatic Environmental Impact Statement that will be provided for consideration for USACE approval through the signing of a summary report, the Chief of Engineer's Report.

If the study results in a plan for construction, and is approved, designs can be completed under the existing authority after the execution of a Design Agreement and allocation of Federal and non-Federal funding. Again, in order for a project to be constructed the project must be authorized by Congress, appropriated or funded by Congress and a Project Partnership Agreement executed with the non-Federal Sponsor. The cost share for construction of a CSRM project is 65% Federal to 35% non-Federal.



COORDINATION



STAKEHOLDER WORKSHOP AND PLANNING CHARETTE

- Held on 8-9 November 2018 with over 70 attendees
- Representation from federal and state agencies, universities, Attendees included: USEPA, City of Miami, SFWMD, South Florida Regional Planning Council, U of M, FIU, Miami-Dade County (MDC) DER, MDC Office of EM, Florida DEP



PUBLIC MEETINGS

- NEPA Scoping meeting held on December 2018
- Public meeting held September 2019

WORKSHOP

- Held on March 21-22, 2019 in Miami, Florida with the non-Federal sponsor to refine focus areas
- Interagency meetings held roughly bimonthly
- Weekly update calls with the non-Federal Sponsor
- Bi-Weekly update calls with the Jacksonville District to discuss Miami-Dade Back Bay CSR, Miami-Dade CSR, and Miami Harbor study

Since the initiation of the study in October 2018, there has been a number of efforts to ensure the opportunity for Miami-Dade County and other stakeholders to provide input into the formulation of alternatives. Starting with scoping site visits in October 2018, then stakeholder workshop and planning charette in November 2018 with over 70 participants including many stakeholders listed here, and NEPA scoping meeting in December 2018. Through 2019 the team was focused on formulating alternatives and potential alternatives were reviewed with the public in September 2019. A public comment period was provided in September of 2019 prior to the selection of the Tentatively Selected Plan in the current draft report. Finally, the team has been working with the non-Federal sponsor, resource agencies and our counterparts in the Corps Jacksonville District on a reoccurring basis since the study began.

The study team plans to continue to collaborate with the public, local stakeholders and resource agencies throughout the study process. Today serves as one of those opportunities.



PROBLEMS, OPPORTUNITIES, OBJECTIVES AND CONSTRAINTS



PROBLEMS	OPPORTUNITIES	OBJECTIVES	CONSTRAINTS
<ul style="list-style-type: none">• The geographic location, low elevation, and high population of Miami-Dade County make it vulnerable to storm surge from hurricanes and tropical storms.• Increasing high tides and king tides resulting from sea level rise result in recurrent flooding to roads and properties.• Increasing groundwater elevations from sea level rise result in flood risks to inland areas.• Increasing flooding from rain events due to the higher groundwater elevations and higher tailwater elevations from sea level rise threaten properties and infrastructure.	<ul style="list-style-type: none">• Reduce risk of loss of life due to high flooding events or infrastructure failure.• Reduce coastal storm-related economic damages and improve economic resiliency of the local economy and communities, particularly low-income communities.• Increase resiliency and structural integrity of critical infrastructure• Reduce transportation and evacuation route impacts during high flooding events.• Utilize available natural areas and open spaces for improving wave attenuation, water retention, and/or water storage.	<ul style="list-style-type: none">• Increase the resiliency of Miami-Dade County to function effectively before, during, and after coastal storm events by decreasing the vulnerability of critical infrastructure to flooding damages from SLR and storm surge.• Reduce economic damages to structures in communities vulnerable to severe flooding damages from SLR and storm surge.• Incorporate natural and nature based features to reduce flood damages and complement the recommended nonstructural and structural measures.	<ul style="list-style-type: none">• Avoid creating or exacerbating flooding within the project area, to other local municipalities, and to local military installations.• Avoid flooding solutions for the study area that would induce increased flooding issues in locations outside of the study area.• Avoid impacts to environmental and cultural/historic resources in the study area and nearby (e.g. Everglades National Park, Biscayne Bay National Park).• Cannot exacerbate saltwater intrusion which will negatively impact fresh water for drinking and agriculture.

Now you may be asking how we targeted the study for Miami-Dade County. At the initiation of the study, stakeholder input lead to the problems, opportunities, objectives and constraints. These statements characterize the high vulnerability of the study area and define the objectives to increase the resiliency of the County and reduce economic damage. Miami-Dade County has a population of approximately 2.8 M people, making it the most populous county in Florida and seventh most populated county in the Country. Approximately 220,000 structures are located within the FEMA 1% (or 100-year) annual chance event floodplain. In general -

Problems include:

- High vulnerability to coastal storm risks due to low elevation, geographic location on the coast and high population.
- Increasing high tides and king tides causing recurrent flooding.
- Increasing groundwater elevations from sea level rise.
- Increasing flooding from rain events due to higher groundwater elevations and tailwater elevations threatening property and infrastructure.

Opportunities include:

- Reduce risk of loss of life.
- Reduce economic damage and improve economic resiliency.
- Improve resilience of critical infrastructure.
- Reduce transportation and evacuation impacts.
- Utilize natural areas.

Objectives include:

- Increase resilience of Miami-Dade County before, during and after storm events.
- Reduce economic damage to structures.

- Utilize natural and nature based features to reduce flood damage and complement the recommended plan.

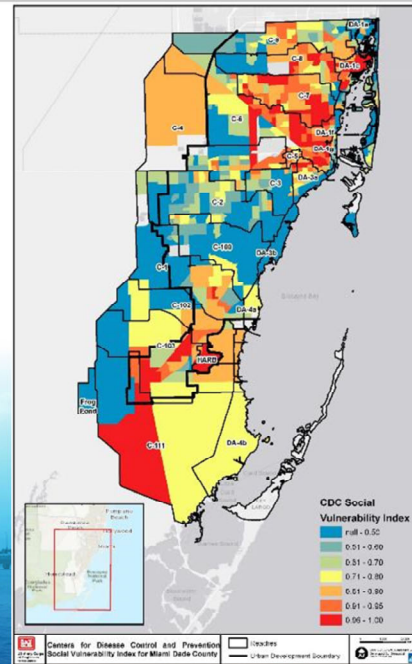
Constraints include:

- Avoid flooding in nearby areas.
- Avoid environmental and cultural impacts
- Avoid exacerbating saltwater intrusion.



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

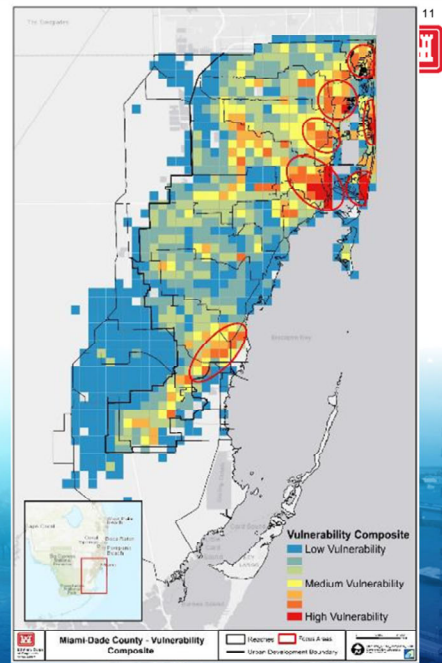


Because the study area was too large to holistically analyze, and in order to narrow down those areas that are most vulnerable to coastal storms, the team decided to complete a geospatial analysis of Miami-Dade County using the CDC's social vulnerability index overlaid with damage data in Federal Emergency Management Agency's (FEMA's) HAZUS model. HAZUS is a software program utilized to estimate damages from different types of natural hazards. The HAZUS damage data in this case reflects where flooding is most likely to occur. This graphic depicts the Social Vulnerability Index (or SVI) on each census track. The social factors that define the SVI include the four themes shown above: socioeconomic status, household composition/disability; race/ethnicity/language/minority; and housing/transportation. This analysis resulted in seven focus areas to be included in the scope of the study. However, note critical infrastructure is still included in the study throughout the County.



MANAGEMENT MEASURES

- 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.



Based on the overlay of the flood damage data with the Social Vulnerability data, seven focus areas of high risk were identified. The seven focus areas are shown in the red circles on this map and are generally the neighborhoods of Arch Creek, Aventura, Cutler Bay, Little River, Miami River, North Beach, and South Beach. After the identification of Focus Areas, management measures to include structural, nonstructural, critical infrastructure and natural and nature based features were examined. Critical infrastructure is included on a county-wide basis, however the remaining management measures were applied only within the seven focus areas. This examination lead to the formulation of alternative plans. Further details on management measures/alternatives will be described over the next few slides starting with the final array of alternatives.



ARRAY OF ALTERNATIVES



12

ALTERNATIVE NUMBER	ALTERNATIVE NAME	DESCRIPTION
1	No Action	No Action
2	Critical Infrastructure Only	Analyzing critical infrastructure throughout all of Miami-Dade County on priority asset categories. This includes wet and dry floodproofing structures.
3	Miami River Basin + Alternative 2	Surge barrier at Miami River (with associated floodwalls and pump stations) + Floodwall at Edgewater + Nonstructural outside of surge barrier.
4	Nonstructural + Alternative 2	Acquiring, elevating, and wet and dry floodproofing of structures in seven socially vulnerable, economic damage centers defined by Hazus and the Centers for Disease Control and Prevention (CDC) Social Vulnerability Index which include Miami River, Little River, Arch Creek River, Aventura, North Beach, South Beach, and Cutler Bay areas.
5	Inland Storm Surge Reduction (Structural) + Alternative 2	Surge barriers (with associated floodwalls and pump stations) at the most socially vulnerable, economic damage centers which include Miami River, Little River, and Biscayne Canal.
6	Alternative 2 + 3 + 4	Miami River Basin + Nonstructural + Critical Infrastructure
7	Alternative 2 + 4 + 5	Nonstructural + Structural + Critical Infrastructure
8	Alternative 2 + 4 + 5 + EWNS - EW FW	Nonstructural + Structural + Critical Infrastructure + Nonstructural at Edgewater - (without) Floodwall at Edgewater

Alternatives include a combination of management measures. The final array of alternatives includes:

1. A no action plan
2. A plan to address critical infrastructure only on a county-wide basis. This alternative is included in all other combination of action alternatives.
3. A plan to implement a surge barrier at the Miami River Basin (including a floodwall at Edgewater) and protect critical infrastructure.
4. A plan to address nonstructural measures within each focus area and protect critical infrastructure
5. A plan to address the Miami River (including Edgewater), Little River and Biscayne canal with structural measures and protect critical infrastructure.
6. A plan to implement a surge barrier at the Miami River Basin (including a floodwall at Edgewater), address nonstructural measures within each focus area and protect critical infrastructure.
7. A plan to implement a surge barrier at the Miami River Basin (including a floodwall at Edgewater), Little River and Biscayne canal, address nonstructural measures within each focus area and protect critical infrastructure.
8. A plan to implement a surge barrier at the Miami River Basin, Little River and Biscayne canal, address nonstructural measures within each focus area and protect critical infrastructure. This plan also includes additional nonstructural measures at Edgewater

instead of a floodwall.

After utilizing an economic model to compare the benefits, reduction in damage to property, over the 50-year period of analysis, one alternative was chosen for the having the greatest net benefits (the highest amount of benefits after removing the costs). This plan is alternative 8 and is identified as the Tentatively Selected Plan. The definition of the alternative component management measures will be reviewed on the following slides.



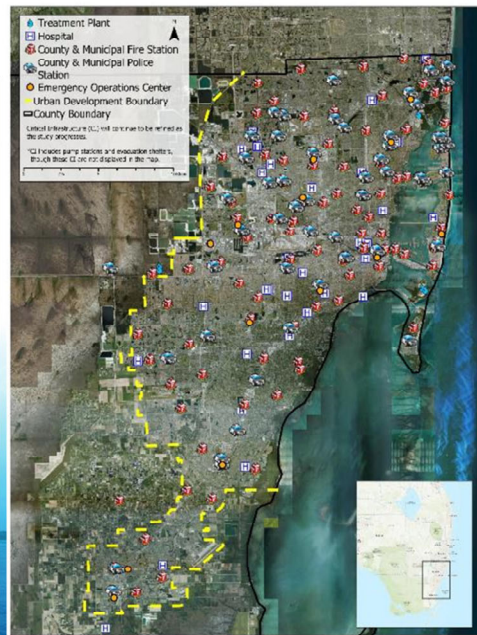
MEASURES CONSIDERED: CRITICAL INFRASTRUCTURE

Critical infrastructure analyzed throughout the entire county.

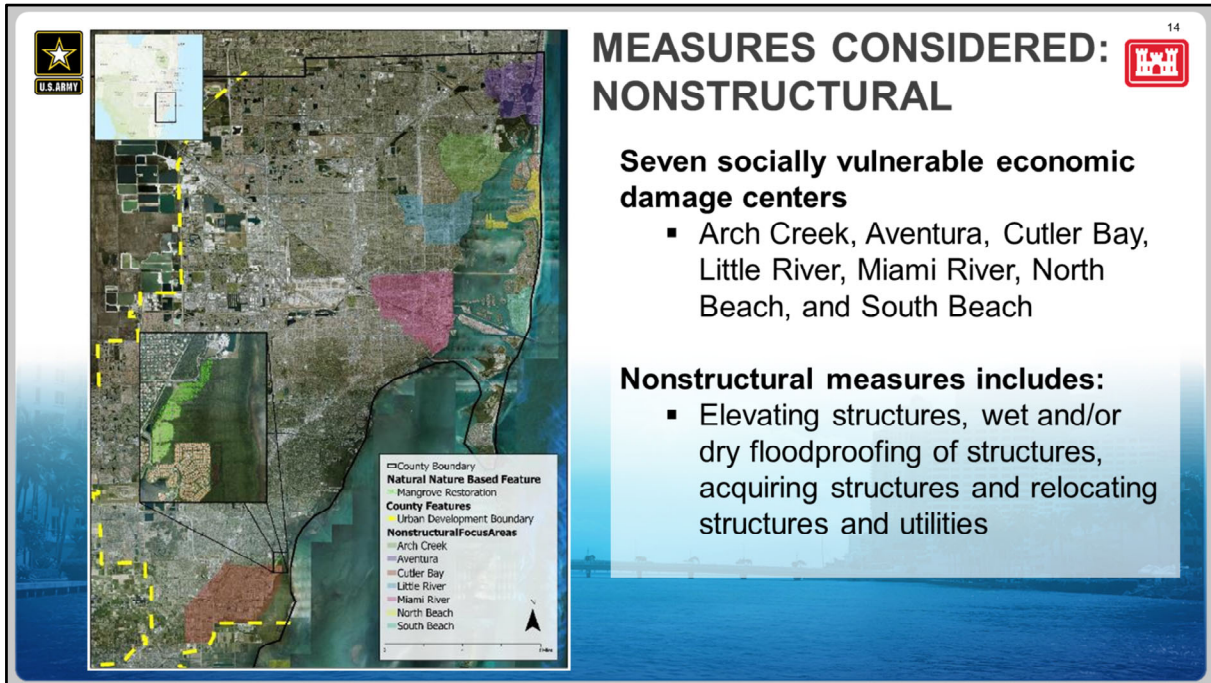
Critical asset categories to include in study:

- 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



Critical infrastructure is included in every alternative due to its criticality to resiliency in the county. The asset categories presented on this slides are proposed for inclusion in the analysis. The actual number of each type of facility included in the plan, based on the risks to flooding and benefit from nonstructural flood protection, are summarized in this table. Generally, floodproofing is recommended to reduce risk to critical infrastructure. This map displays locations of critical infrastructure throughout the County.



Nonstructural measures are permanent or temporary measures used to reduce flood damage to an individual structure. Nonstructural measures were found to be justified in all seven focus areas. Nonstructural mitigation measures include elevating residential structures, acquiring residential structures, wet and/or dry floodproofing of non-residential structures. The current plan only includes elevation and floodproofing, but further refinement prior to the final report may add acquisition of certain structures. This map includes shading of the seven areas where nonstructural measures were considered.



EXAMPLE NONSTRUCTURAL MEASURES

15



elevation



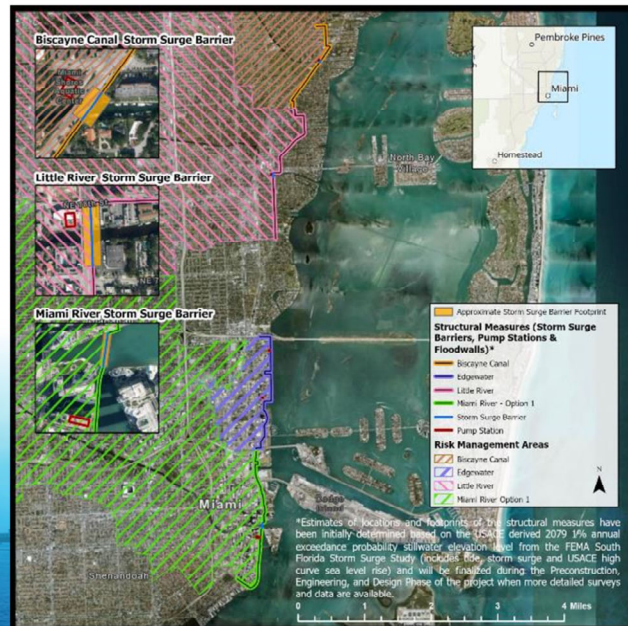
floodproofing

An examples of an elevated home and a floodproofed building is shown on this slide. These are the primary nonstructural mitigation measures included in the current Tentatively Selected Plan.



MEASURES CONSIDERED: 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.

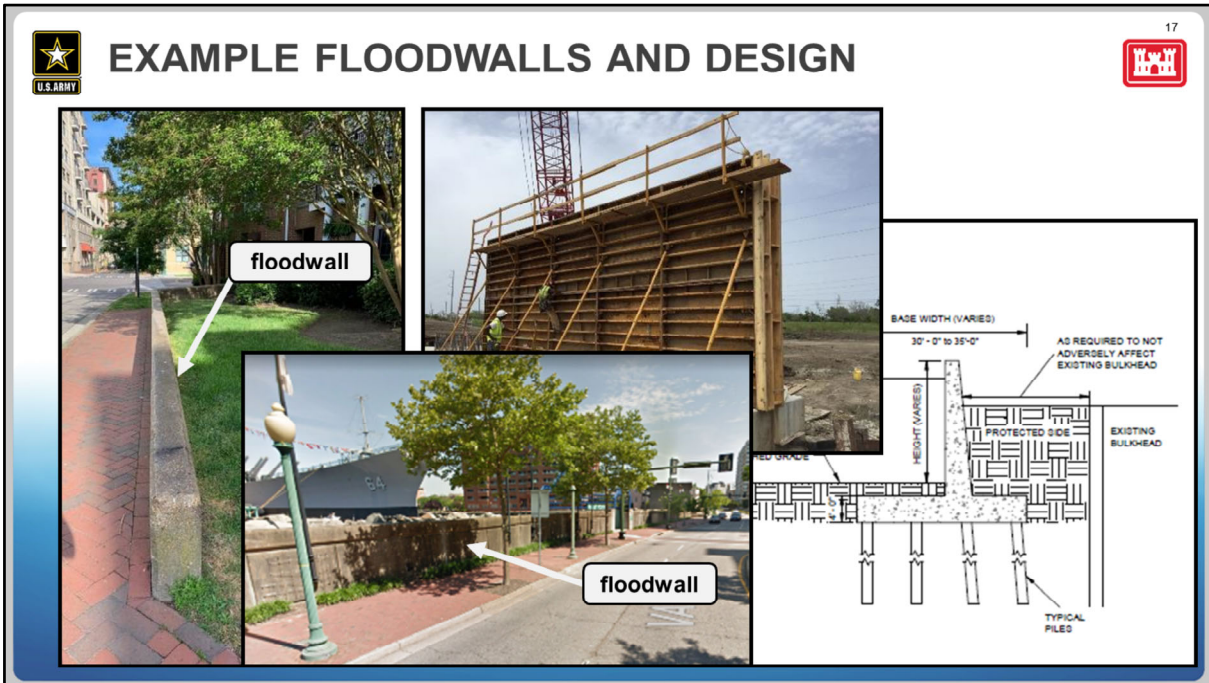


Structural measures are physical modifications designed to reduce the frequency of damaging levels of flood inundation. Structural measures that are recommended include barriers at Biscayne Canal, Little River and Miami River which are shown on this map. The surge barriers also include floodwalls to tie into high ground and pump stations are required for interior drainage. A floodwall at Edgewater was also examined, but ultimately not included as nonstructural measures were most cost effective for that area in the Tentatively Selected Plan. The proposed height of the floodwalls on land varies depending on the location; however, the approximate general range of heights that is currently being considered is from 1 foot to 13 feet. The proposed height of the floodwalls in the water, near the Brickell area, varies depending on the location; however, the approximate general range of heights that is currently being considered is from 10.5 feet to 36 feet. Note the final alignments of these structural measures will be determined during the detailed design phase as the feasibility study final report will result in 10% level of design.



EXAMPLE FLOODWALLS AND DESIGN

17

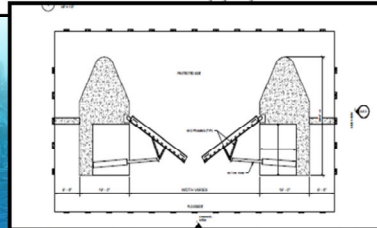
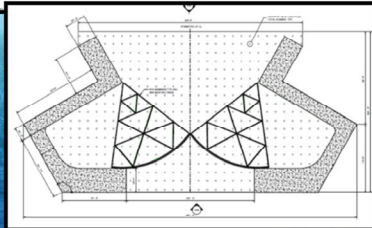
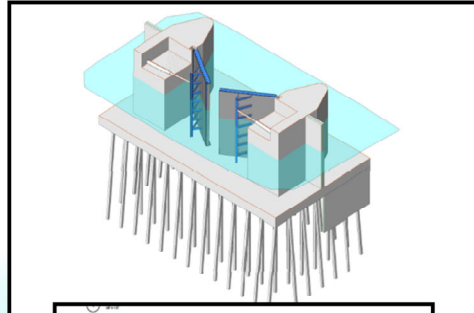
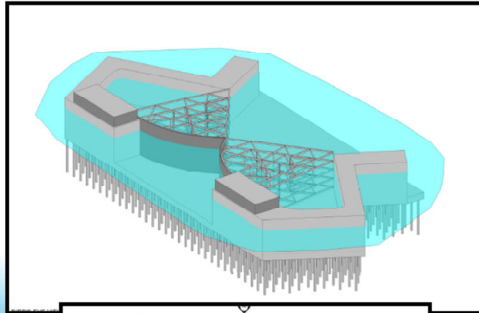


This slide shows an example Federal floodwall constructed in downtown Norfolk, Virginia, and a larger floodwall during construction in New Orleans. As you can see the floodwall height in downtown Norfolk varies based on the existing ground elevation and terminates at 1 to 2' in height where it is not recognized as a floodwall by many local residents. There are also areas where the floodwall is taller than most pedestrians and pedestrian gates allow access to the waterfront areas. Additionally, a cross-section from the Engineering Appendix of a typical floodwall design anticipated for this project, a T-wall, is displayed.



EXAMPLE SURGE BARRIER DESIGN

18



sector gate

miter gate

This slides demonstrates the typical type of surge barriers recommended in the Engineering Appendix of the draft report. The sector gate on the left is recommended for Miami River while miter type gate on the right is recommended for the smaller openings of Biscayne Canal and Little River. Again, these designs will be examined in greater detail prior to the final report resulting in 10% level of design for each measure in the final recommended plan. It is also important to note surge barriers are designed to be open most of the time and only closed during major coastal storm events.



EXAMPLE SURGE BARRIERS

19



sector gate



miter gate

Here we display an application of sector gate type surge barrier in the New Orleans area in the open position and a Miter gate in Richmond, Virginia, in a closed position. The sector gate is the same type of gate proposed for the Miami River, but larger in the example shown. The Miter gate is the same type of gate proposed for Biscayne Canal and Little River, but the example is smaller than the proposed gates for those waterways.

Old Cutler Road

Miami-Dade County: Potential Locations for Natural Nature Based Features (NNBF)
Cutler Bay Community

MEASURES CONSIDERED: 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.

20

- 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.

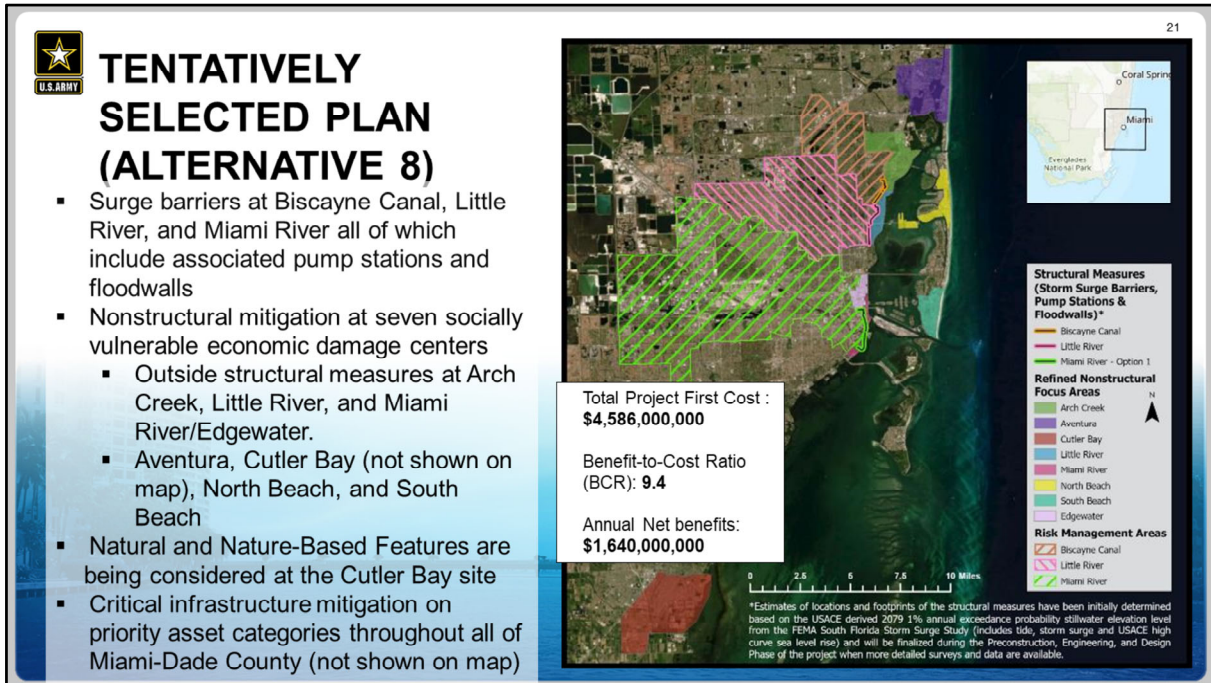
Natural and Natural-Based Features (NNBFs) are either natural or constructed features that mimic natural features that provide coastal storm risk protection. In addition to more traditional structural and non-structural features, a wide array of NNBFs were evaluated to determine if they could potentially be applied in this study.

For this study, NNBFs considered included planting mangroves and other native vegetation plantings, corals reefs, living shorelines, Submerged Aquatic Vegetation, and marsh island creation/enhancements.

Planting of native vegetation including mangroves was determined to be a feasible NNBF. The site identified in the feasibility study for this NNBF is the Cutler Bay Site located east of Old Cutler Road and south of 184th street extending to southwest 188th street and extending to Biscayne Bay. The team will continue to evaluate the feasibility of mangroves as a natural and nature based feature for implementation as the study proceeds. The team will also continue to evaluate if other areas could be included for potential NNBFs before the final report. In particular, the team will evaluate if there are areas where NNBFs could be applied to compliment the structural measures and potentially reduce operation and maintenance costs of those measures.

The benefits of mangroves as a feature to reduce coastal storm risk has been well

documented throughout the scientific literature. Mangroves serve to buffer the impacts of waves and storm surge via dissipation of wave energy. Mangroves have been documented to reduce surge heights, reduce water flow velocities, and reduce inundation levels caused by coastal storms.



To summarize, the Tentatively Selected Plan, which is currently the draft National Economic Development plan, included in the draft report includes:

- 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,
 - And in Aventura, Cutler Bay (not shown on map), North Beach, and South Beach.
- Natural and Nature-Based Features are being considered at one site in Cutler Bay.
- Critical infrastructure mitigation on priority asset categories throughout all of Miami-Dade County (not shown on map) in areas without structural measures.

This plan is estimated to cost \$4.5 billion dollars, but could produce annual net benefits (meaning benefits in excess of the annual costs) of over \$1.6 billion dollars per year. This leads to an approximate benefit-to-cost ratio (BCR) of 9 to 1.

The Tentatively Selected Plan will be further optimized in the next phase of the study to develop a final recommended plan in the final report.



REAL ESTATE CONSIDERATIONS



- Real Estate actions for structural measures
 - Permanent and temporary easements, fee acquisition and relocations will be needed to support construction of structural measures.

- Real Estate actions for non-structural measure
 - Elevations: approximately 2,300 properties
 - Floodproofing commercial and critical infrastructure: approximately 3,800 properties

- Expectation is that the real estate impacts will continue to be refined as the project is optimized.

Currently, the real estate plan includes estimated costs for the implementation of structural measures to include temporary and permanent easements required for construction. Those costs are inclusive of administrative costs and relocations costs required.

The real estate plan also includes nonstructural component of elevating approximately 2,300 structures and floodproofing approximately 3,800 structures.

During the next phase of the study, the designs are expected to be optimized with additional analysis and will result in the need to update the real estate plan.



RESOURCES AREAS EVALUATED WITH NO SIGNIFICANT IMPACTS



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RESOURCE AREA	
Air quality	Geology, Physiography, and Topography
Hazardous, Toxic, and Radioactive Materials and Wastes	Wildlife and Terrestrial Habitat
Cultural Resources	Plankton Community
Noise and Vibration	Utilities
Water Quality	Floodplain
Wetlands and Mangroves	Bathymetry, Hydrology, and Tidal Processes

Potential impacts to resource areas listed above range from adverse to beneficial, temporary to permanent, and negligible or minor to moderate. For impacts to specific resources, please refer to Chapter 8 of the draft report.

Potential impacts to 22 resource areas were evaluated for the final array of alternatives. The following twelve resource areas were determined to have impacts that were not considered to be significant. These resource areas include: air quality, hazardous, toxic, and radioactive materials and wastes, cultural resources, noise and vibration, water quality, wetlands and mangroves, geology, physiography, and topography, wildlife and terrestrial habitat, plankton community, utilities, floodplains, and bathymetry, hydrology, and tidal processes. Impacts to these resource areas ranged from adverse to beneficial, temporary to permanent, and negligible or minor to moderate. The slides in this presentation include a general summary of impacts, for resource-specific impacts please refer to Chapter 8 of the draft report.

With respect to cultural resources, while there has been considerable archeological and architectural cultural resources previously surveyed in the proposed project area, the level of survey may not be sufficient to assess the effects of this project or surveys may be outdated. Because of these limitations the completion of the identification of historic properties, determination of effects, and mitigation measures are being deferred to the Preconstruction, Engineering, and Design Phase of the project with a Programmatic Agreement anticipated in the future to ensure compliance with the National Historic Preservation Act.



RESOURCES AREAS EVALUATED WITH POTENTIAL SIGNIFICANT IMPACTS



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RESOURCE AREA	
Fish and Fishery Resources	Recreational Resources
Benthic Resources	Aesthetic and Visual Resources
Special Status Species	Navigation
Socioeconomics	Safety
Transportation	Land Use

Potential significant impacts to resource areas listed above range from adverse to beneficial and are considered major. For impacts to specific resources, please refer to Chapter 8 of the draft report.

The following ten resources areas were also evaluated for the final array of alternatives and were determined to have effects that were considered to be significant. This list includes: fish and fishery resources, benthic resources, special status species, socioeconomics, transportation, recreational resources, aesthetic and visual resources, navigation, safety, and land use. Impacts to these resources ranged from adverse to beneficial and were considered major impacts. The proposed structural measures considered in the study were primarily responsible for the significant impacts to these resources areas. For a more detailed description of the significant impacts, please refer to Chapter 8 of the draft report.



INTERAGENCY COORDINATION AND CONSULTATIONS

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- ❑ Proposed structural measures have the potential to result in adverse effects to federally protected threatened and endangered species. Formal consultation with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service is anticipated. Interagency coordination is ongoing.

Federally protected species evaluated: Nassau grouper, smalltooth sawfish, boulder star coral, Elkhorn coral, lobed star coral, mountainous star coral, pillar coral, rough cactus coral, staghorn coral, West Indian manatee including critical habitat, Florida bonneted bat, American crocodile, green sea turtle, hawksbill sea turtle, Kemp's ridley sea turtle, leatherback sea turtle, loggerhead sea turtle, and Johnson's seagrass including critical habitat, piping plover, and red knot

- ❑ The final design and siting of project features would not occur until later project phases. Resource surveys, including benthic surveys and a wetlands jurisdictional determination, would be conducted during later project phases.
- ❑ Future NEPA documentation would be prepared for site-specific projects as designs advance and more detailed resource data becomes available.

Formal consultation with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service is anticipated as a result of the potential adverse effects to federally protected threatened and endangered species. Interagency coordination is ongoing. The following protected species were evaluated: Nassau grouper, smalltooth sawfish, boulder star coral, Elkhorn coral, lobed star coral, mountainous star coral, pillar coral, rough cactus coral, staghorn coral, West Indian manatee including critical habitat, Florida bonneted bat, American crocodile, green sea turtle, hawksbill sea turtle, Kemp's ridley sea turtle, leatherback sea turtle, loggerhead sea turtle, and Johnson's seagrass including critical habitat, piping plover, and red knot.

The construction, operation, and maintenance of the surge barriers and associated floodwalls and pump stations have the potential to cause direct and indirect impacts to Submerged Aquatic Vegetation including Johnson's seagrass and associated critical habitat, as well as corals/hardbottom habitat, and Essential Fish Habitat (EFH). The surge barriers would result in the temporary trapping of aquatic species during closure events including fish, marine mammals, and reptiles. The Brickell Floodwall in the Biscayne Bay would extend up to approximately one mile in length at a distance of approximately 50 feet from existing bulkheads resulting in significant, adverse impacts to benthic resources and habitat. There would be an anticipated permanent loss of SAV, corals/hardbottom habitat, mangrove, and open water benthic habitats.

The final designs and siting of project features would not occur until the Preconstruction, Engineering, and Design Phase when more detailed surveys and data are available. A wetland jurisdictional determination and detailed environmental surveys of benthic habitat (to include corals, hardbottom habitat, and SAV) would be conducted during the Preconstruction, Engineering and Design Phase to define site-specific impact acreages, and provide additional input needed to determine required mitigation. Topographic surveys, subsurface geotechnical surveys, and a detailed operational plan for the project structural features would be further developed during the Preconstruction, Engineering, and Design Phase.

Future NEPA documentation would be prepared for site-specific projects as designs advance and more detailed resource data becomes available.



FEASIBILITY STUDY MILESTONE SCHEDULE



Signing of Feasibility Cost Share Agreement	09 Oct 2018 (A)
Alternatives Milestone	09 Jan 2019 (A)
In Progress Review	07 May 2019 (A)
Tentatively Selected Plan Milestone	17 Jan 2020 (A)
Release of Draft Study for Concurrent Reviews	5 June 2020 (A)
Agency Decision Milestone	15 Oct 2020 (S)
Submit Final Report Package/Policy and Legal	
Compliance Review Team	23 April 2021 (S)
Signed Chief's Report	24 Sep 2021 (S)

The path forward is shown here. The team will be incorporating public input from this 45-day public comment period and working on additional analysis to refine the Tentatively Selected Plan (TSP) for the final recommended plan.

Some tasks planned by the team include:

- Additional analysis using different storm events and sea level rise (SLR) scenarios.
- Additional analysis of the plan to consider neighborhood cohesiveness.
- Review assumptions for high rise buildings in the economic modeling.
- Determine benefits from natural and nature based features (NNBFs) in the current TSP.
- Water quality modeling of the surge barriers.

The final report is planned for release in the Summer of 2021 and Corps' approval may be granted through a Chief's report planned for September of 2021 to conclude the study.



PUBLIC COMMENT OPTIONS



- Deadline: 20 July 2020
- Email: MDBB-CSRStudy@usace.army.mil
- Public Web-Page Web Mapper Tool: <http://arcg.is/fm0Xe>
- Written Comments:
 - Environmental Analysis Section, Norfolk District
 - 803 Front Street
 - Norfolk, Virginia 23510
- For any accessibility issues that prevent written comments, please call (757) 201-7728.
- Project Documents are Located:
<https://www.saj.usace.army.mil/MiamiDadeBackBayCSRMFfeasibilityStudy/>

The release of the draft report on 05 June 2020 kicked-off a 45 day public comment period. Public comments must be received by 20 July 2020 to be included in the analysis. Comments can be provided via email or in writing. There is also a public comment tool, a web-map based tool where participants can provide formal comments, linked on the public-web-page.

Comments received by members of the public as well as private and public agencies will be considered by the study team to determine if any alterations are needed to the Tentatively Selected plan.



RELATED USACE STUDIES



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Miami-Dade County CSRM Study

<https://www.saj.usace.army.mil/Missions/Civil-Works/Shore-Protection/Dade-County/>

Monroe County CSRM Study

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

South Atlantic Coastal Study

<https://www.sad.usace.army.mil/SACS>

To close-out this presentation, there are many USACE efforts through the south-east Florida region. However the Miami-Dade County CSRM Study, Monroe County CSRM Study, and South Atlantic Coastal Study are most relevant to coastal storm risk concerns in or adjacent to Miami-Dade County. Additional information about this projects are located on their public websites listed on this slide.



THIS CONCLUDES THE PRESENTATION



To ask a question, please scroll towards the lower middle section of your screen.

Click on the chat feature.



A box on the right side of the screen should appear. Please identify yourself, and organization (if applicable) when typing your question.

Responses will be provided verbally. There may be a several minute delay in receiving a response.

If your question is not answered today due to a high volume of questions received, please contact us by telephone during the Public Virtual Office Hours (Question and Answer session only) provided below:

Public Virtual Office Hours

June 10, 2020 from 1–2 pm

June 18, 2020 from 5–6 pm

Dial-in information for the teleconference line is the same as the virtual meeting information and can also be found at the project website link provided below:

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

Please refer to the public web-page for additional study resources. We are now open to receiving questions via the chat function on the webinar and will provide responses verbally. Directions are seen on the screen. Please remember that discussion during this webinar will not be documented as formal comments on the study, but formal comments can be provided via the methods discussed earlier that are also outlined on the public web-page.