



WELCOME



**COLLIER COASTAL STORM RISK MANAGEMENT DRAFT
INTEGRATED FEASIBILITY REPORT AND ENVIRONMENTAL IMPACT
STATEMENT**

Virtual Public Meeting August 2020

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**COLLIER COUNTY COASTAL STORM
RISK MANAGEMENT DRAFT
INTEGRATED FEASIBILITY REPORT AND
ENVIRONMENTAL IMPACT STATEMENT**

**DRAFT REPORT RELEASE PUBLIC
MEETING**

**Norfolk District
U.S. Army Corps of Engineers
Date: August 2020**

"The views, opinions and findings contained in this report are those of the authors(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation."

Collier County

**US Army Corps
of Engineers**

U.S. ARMY

Good afternoon and welcome to the Collier County Coastal Storm Risk Management Study Public Meeting for the release of the Draft Integrated Feasibility Report and 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.

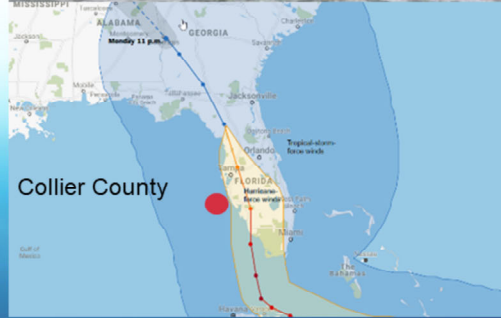
Following the 30 minute presentation, there will be an opportunity to ask questions via the webinar chat function. Please note that questions or comments provided via the chat function during this meeting will not be recognized as formal comments for the study process. If you would like to provide formal 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 the Frequently Asked Questions portion of the study web-page.



STUDY BACKGROUND



- The nonfederal sponsor for this study is Collier County, Florida
- Collier County has developed its own coastal resilience program
 - Beach renourishment occurring since 1996 (renourishments in 2006, 2013-14 and 2016)
- No federal beach nourishment project in the study area
- Given low-lying topography, elevation across study area 0-12 feet (NAVD88), the Collier County is at elevated risk of effects from sea level rise and coastal storms



This study is needed to address the coastal storm risk and the purpose is to develop and evaluate various alternatives aimed at increasing coastal resiliency against erosion and flooding. The beaches of coastal Collier County can be generally described as low and narrow, providing inadequate protection of upland infrastructure from storm surge, storm driven wave action, tidal flooding, and erosion. The shoreline is largely within critically eroded areas as designated by the Florida Department of Environmental Protection (FDEP) and is mostly public beaches with the exception of Pelican Bay. In addition, numerous inlets penetrate the interior community of Naples while Marco Island is completely surrounded by water with only two bridges in and out of the island. There are also concerns regarding a dense population of people who require more time and assistance for evacuation, concerns for critical structures, and protection of evacuation routes.



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 an 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 statues 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.



USACE COASTAL STORM RISK MANAGEMENT (CSRSM) 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.

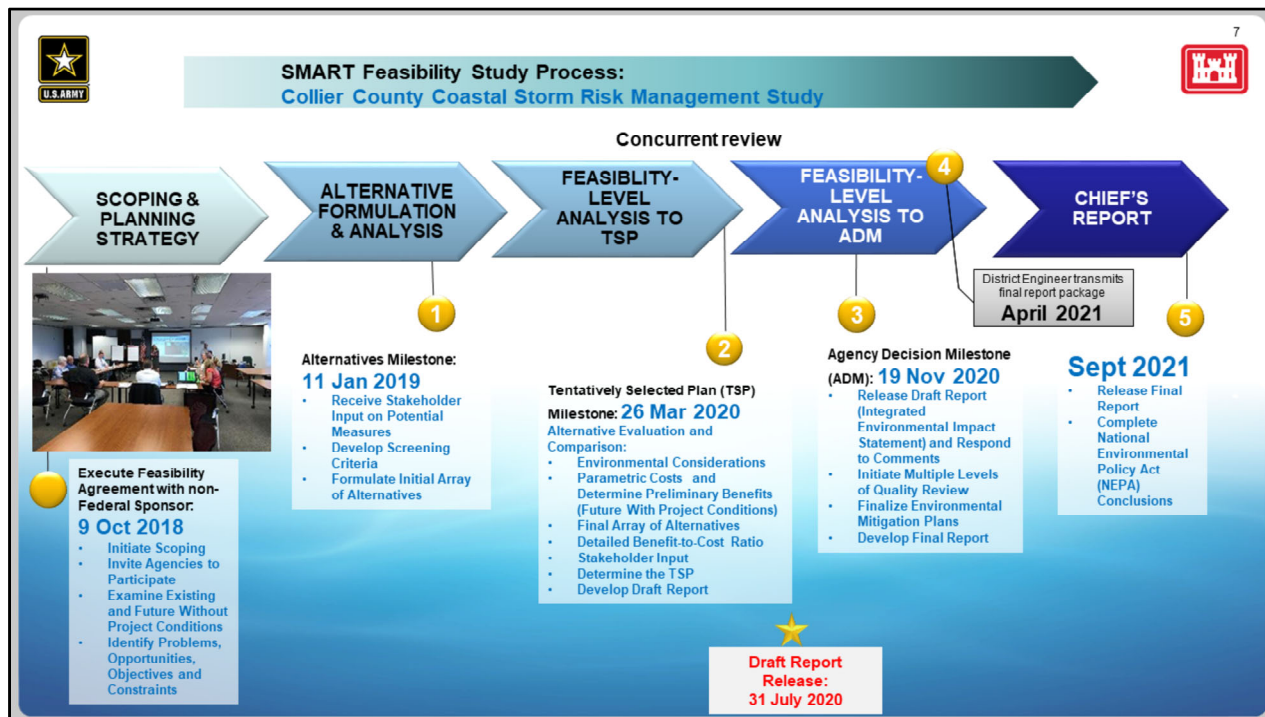
The Corps' Coastal Storm Risk Management Authority under which this study is conducted has a goal of reducing risk from future coastal storm events, and especially storm surge – specifically to reduce the economic damage, as well as threats to life and safety. The authority allows for an examination 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 CSRSM 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 CSRSM project.

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 CSRSM 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 November 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

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Planning Charette

- Held on 14 November 2018
- Attendees included: Collier County, FDOT, FDEP, NOAA, and the public

NEPA Coordination

- Notice of Intent published on 18 July 2019
- A public scoping meeting was held on 6 December 2018 in Naples, Florida
- A public informational meeting was conducted on 9 September 2019
- Four Interagency/cooperating agency meetings via webinar/teleconference with jurisdictional, cooperating, and participating agencies on 4 January 2019, 22 February 2019, 20 August 2019 and 21 January 2020



Interagency coordination began with a kick-off stakeholder meeting on January 4, 2019. Federal, state, and local government officials representing USACE, Collier County, and various resource agencies were invited. The stated purpose of this meeting was to present the management measures being used in the formulation and solicit feedback. Since the kick-off meeting was held during a period of Federal government shutdown, some agencies were unable to participate. A follow-up meeting for agencies who were unable to attend was held on February 22, 2019. Additional interagency meetings were held on August 19, 2019 and October 15, 2019.

On December 6, 2018 USACE held a National Environmental Policy Act (NEPA) open-house Public Scoping Meeting at the Collier County Administration Building in Naples, FL. USACE staff were in attendance with storyboards to show the areas within the County the team would study, describe potential management measures, answer questions from the public, and receive public comments. Additionally, a second public meeting was held in Collier County on September 9, 2019, and two more written comments were submitted. This open-house meeting was located in the Board of County Commissioners chambers, and the purpose was to solicit public feedback regarding the management measures contained in the final array of alternatives.



PROBLEMS, OPPORTUNITES, OBJECTIVES AND CONSTRAINTS



PROBLEMS	OPPORTUNITIES	OBJECTIVES	CONSTRAINTS
<ul style="list-style-type: none">• Risk of coastal storms and their damage mechanisms like beach erosion, wave action, and storm surge threaten damage to and loss of residential and commercial structures, critical infrastructure, environmental resources, and economic livelihood.• 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 economic loss due to coastal flood damage.• Restore natural coastline with environmental features that support coastal resiliency.• Increase public facilities and access to recreation.• Increase community understanding through communication about coastal resilience and protective measures.• Incorporating natural and nature-based features into potential alternatives.	<ul style="list-style-type: none">• Reduce risk and damage, economic loss, and environmental impacts due to wave attack and inundation due to storm surge in Collier County over a 50-year period of analysis.• Reduce risk to life, health, and safety during coastal storms.• 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, minimize, or mitigate impacts to environmental and cultural resources.• Avoid or minimize impacts to habitat for listed species.

Now you may be asking how we targeted the study for Collier County. At the initiation of the study, stakeholder and nonfederal sponsor input led 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.

Problems include:

- Risk of coastal storms and their damage mechanisms like beach erosion, wave action, and storm surge threaten damage to and loss of residential and commercial structures, critical infrastructure, environmental resources, and economic livelihood.
- 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.

Opportunities include:

- Reduce economic loss due to coastal flood damage.
- Restore natural coastline with environmental features that support coastal resiliency.
- Increase public facilities and access to recreation.
- Increase community understanding through communication about coastal resilience and protective measures.
- Incorporating natural and nature-based features into potential alternatives.

Objectives include:

- Reduce risk and damage, economic loss, and environmental impacts due to wave attack and inundation

due to storm surge in Collier County over a 50-year period of analysis.

- Reduce risk to life, health, and safety during coastal storms.
- Incorporate natural and nature based features to reduce flood damages and complement the recommended nonstructural and structural measures.

Constraints include:

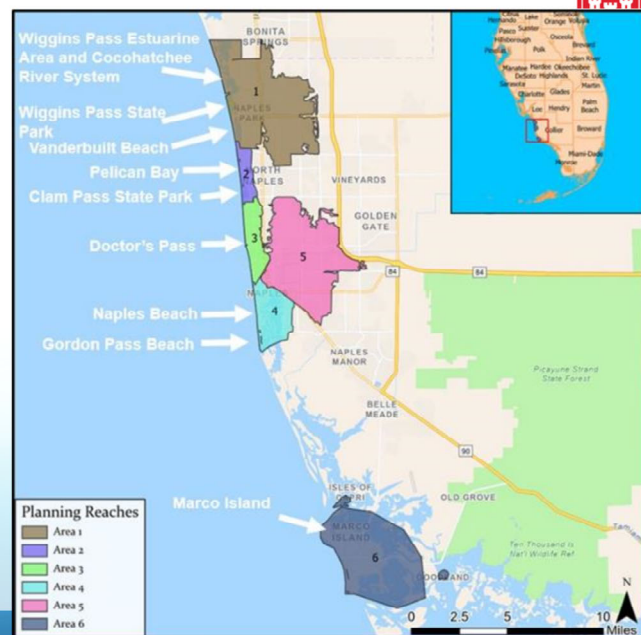
- Avoid creating or exacerbating flooding within the project area, to other local municipalities, and to local military installations.
- Avoid flooding solutions for the study area that would induce increased flooding issues in locations outside of the study area.
- Avoid, minimize, or mitigate impacts to environmental and cultural resources.
- Avoid or minimize impacts to habitat for listed species.



FOCUSED PLANNING AREAS

The County was broken into 6 primary planning reaches based on hydrologic boundaries and existing county project limits. The major hydrologic features in each planning area are named below:

- **Area 1** – Wiggins Pass Estuarine Area, Cocohatchee River System, and Vanderbilt Lagoon
- **Area 2** – Clam Pass State Park and Outer Clam Bay
- **Area 3** – Doctor's Pass and Venetian Bay
- **Area 4** – Naples Beach and Naples Bay
- **Area 5** – Upper Gordon River and Rock Creek
- **Area 6** – Marco Island



In order to better analyze the coastline in an organized manner, the study area was divided into 6 focused planning areas which are shown here. These focus areas are based on hydrologic boundaries and existing county project limits. The major hydrologic features in each area are shown here and are as follows:

- **Area 1** – Wiggins Pass Estuarine Area, Cocohatchee River System, and Vanderbilt Lagoon
- **Area 2** – Clam Pass State Park and Outer Clam Bay
- **Area 3** – Doctor's Pass and Venetian Bay
- **Area 4** – Naples Beach and Naples Bay
- **Area 5** – Upper Gordon River and Rock Creek
- **Area 6** – Marco Island



MANAGEMENT MEASURES



- **Structural Measures** – Screened based on seven focus areas identified, preliminary real estate and engineering concerns, and non-Federal sponsor input.
- **Nonstructural Areas** – All nonstructural measures carried forward for consideration in alternatives, elevation, floodproofing, and acquisition would reduce damage and life risk.
- **Critical Infrastructure** – Asset Categories were determined through scoping meetings and coordination with Collier County which consists of vulnerable critical infrastructure.
- **Natural and Nature Based Features (NNBF)** – Identified and designed to work in conjunction with non-structural and structural measures.

Coastal storm risk management measures consist of three basic types: structural, nonstructural, and NNBFs.

Structural coastal storm risk management measures are man-made, constructed measures that counteract a flood event in order to reduce the hazard, or to influence the course or probability of occurrence of the event. This includes gates, levees, and flood walls that are implemented to protect people and property.

Nonstructural coastal storm risk management measures are permanent or contingent measures applied to a structure and/or its contents to prevent or provide resistance to damage from flooding. Nonstructural measures differ from structural measures in that they focus on reducing the consequences of flooding instead of focusing on reducing the probability of flooding. Relocation, floodproofing, home elevation, and flood warning systems are examples of nonstructural measures.

Natural and Nature-based coastal storm risk management measures work with or restore natural processes with the aim of wave attenuation and storm surge reduction. Natural features are those created through physical, geological, and chemical processes over time. Nature-based features are created by human design, engineering, and construction to work in concert with natural processes to mimic, as closely as possible, conditions that would occur in the absence of human influence to the environment in order to achieve the study objectives. For this study, mangrove restoration and oyster reef restoration were considered, AND OYSTER REEF RESTORATION WAS CARRIED FORWARD. Vegetative dune plantings are already widespread and abundant in the beach habitats in the study area and are included as mitigation features but not as a NNBF.



FINAL ARRAY OF ALTERNATIVES

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Alternative	Components
No Action/Future Without Project	No Action
1 (beach only)	Berm and Dune Measures from Gulf-facing Shoreline Analysis
2 (beach + structural)	Beach + Structural
3 (beach + nonstructural)	Beach + Nonstructural + Critical Infrastructure
4 (combo)	Combination of structural and nonstructural measures from alternatives A1-A3
4A (combo excluding PA4)	Combination of structural and nonstructural measures from alternatives A1-A3 excluding Planning Area 4 and parts of Planning Area 6

Natural and Nature Based Features: reef habitats surrounding Marco Island; included in each action alternative.

The final array of alternatives considered in the study are shown here and include:

No Action/Future Without Project

No Action

1 - Berm and Dune Measures from Gulf-facing Shoreline Analysis

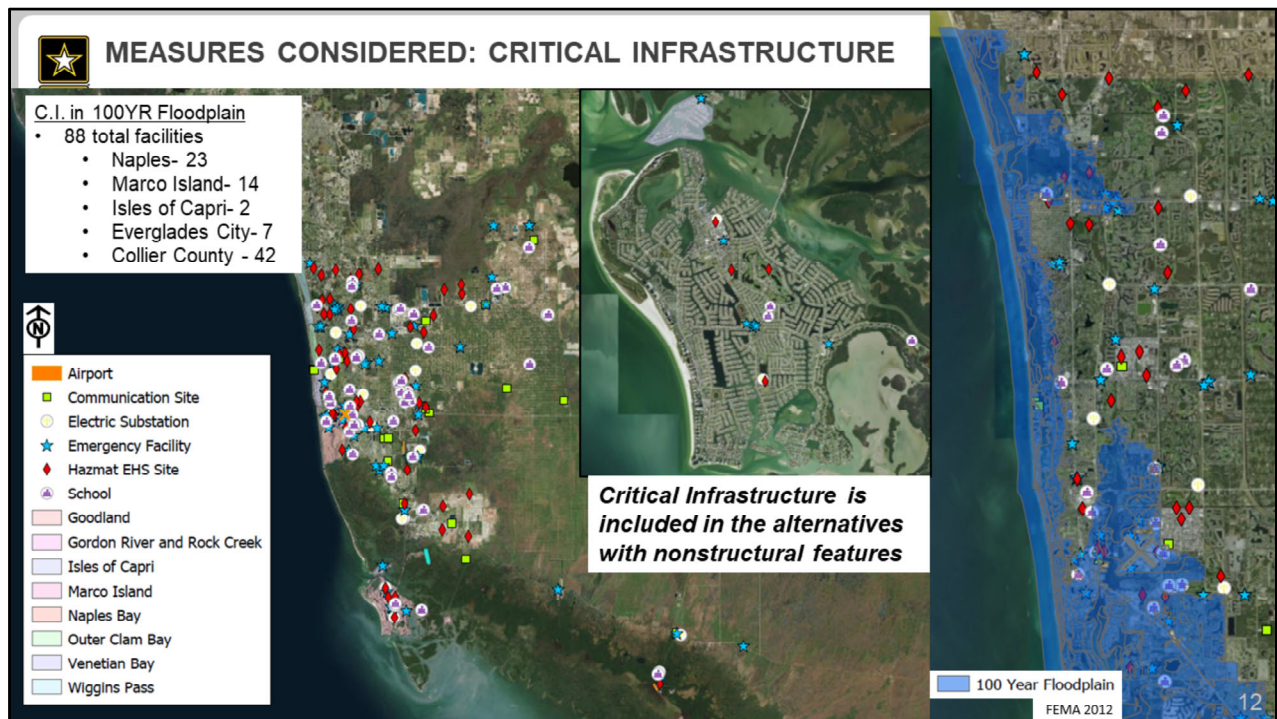
2 - Beach + Structural

3 - Beach + Nonstructural + Critical Infrastructure

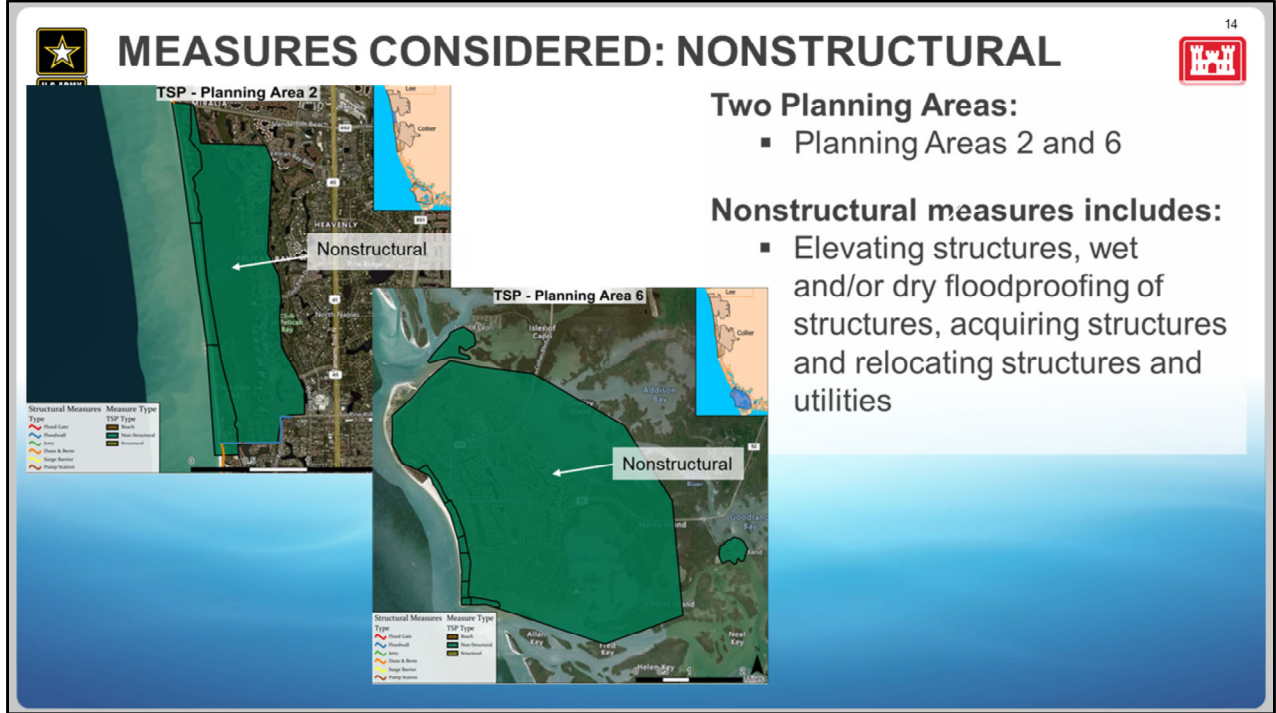
4 - Combination of structural and nonstructural measures from alternatives A1-A3

4A (combo excluding PA4) -Combination of structural and nonstructural measures from alternatives A1-A3 excluding Planning Area 4 and parts of Planning Area 6

Natural and Nature Based Features include reef habitats surrounding Marco Island and are included in each action alternative.



The Critical Infrastructure inventory was determined by considering what facilities were most important to helping the community recover after a storm event. The list of facilities provided are integral to the County’s emergency response framework and critical to the Recovery aspect of Resilience. Our analysis has identified what infrastructure resides in the 100YR floodplain. In cooperation with the County’s Emergency Management Division, we compiled a robust list of C.I., which is plotted on the base map of this slide. In the middle, you can see a zoomed-in view of Marco Island, and on the right, the North County area overlaid with the 100YR floodplain. By doing this analysis we identified 88 pieces of C.I. within the 100YR floodplain- a summary is provided in the top LH corner. There are 57 properties in Naples, 17 on Marco Island, 2 on Isles of Capri, 9 in Everglades City, and 3 with addresses in Ochopee. Types of C.I. included are waste water treatment plants (hazmat), public and charter schools, Fire and EMS stations, Police Stations, Urgent Care clinics, and hospitals.



Nonstructural measures are permanent or temporary measures used to reduce flood damage to an individual structure. Nonstructural measures were found to be justified in planning areas 2 and 6, although we will continue to evaluate nonstructural measures in other select vulnerable areas during optimization. Nonstructural mitigation measures include elevating residential structures, acquiring residential structures, wet and/or dry floodproofing of non-residential structures. This map includes shading of the two planning areas where nonstructural measures were justified.



EXAMPLE NONSTRUCTURAL MEASURES

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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

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Planning Area 1:

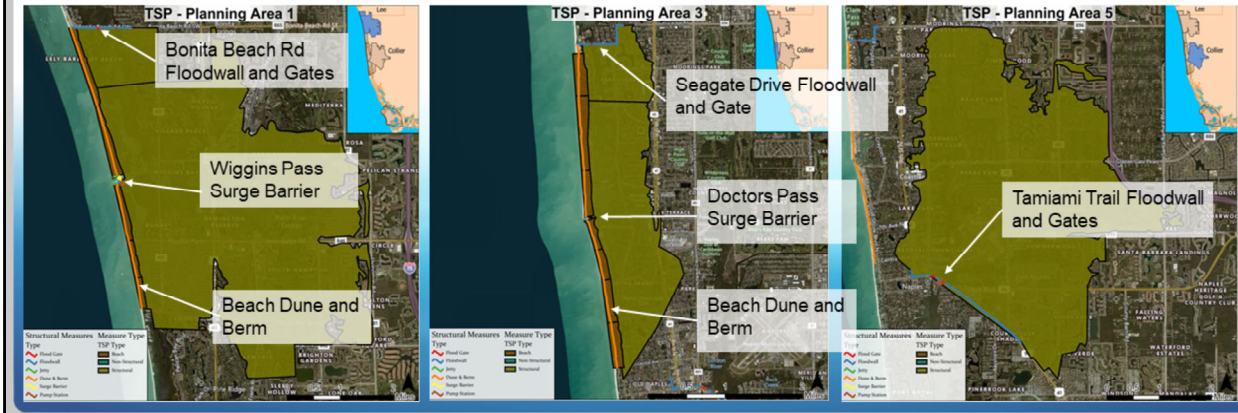
- Bonita Beach Rd Floodwall and Gates
- Wiggins Pass Surge Barrier
- Beach Dune and Berm

Planning Area 3:

- Seagate Drive Floodwall and Gate
- Doctors Pass Surge Barrier
- Beach Dune and Berm

Planning Area 5:

- Tamiami Trail Floodwall and Gates



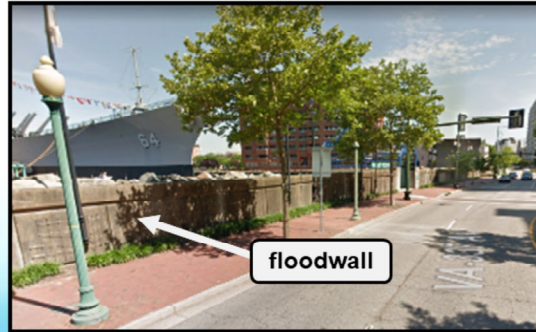
Structural measures are physical modifications designed to reduce the frequency of damaging levels of flood inundation. Structural measures that are recommended include floodwall and gates at bonita beach road, Seagate drive, and tamiami trail, surge barriers at wiggins pass and doctors pass, and beach dune and berm in planning areas 1 and 3.

The surge barriers may also include floodwalls to tie into high ground and pump stations are required for interior drainage. The proposed height of the floodwalls on land varies depending on the location. 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.

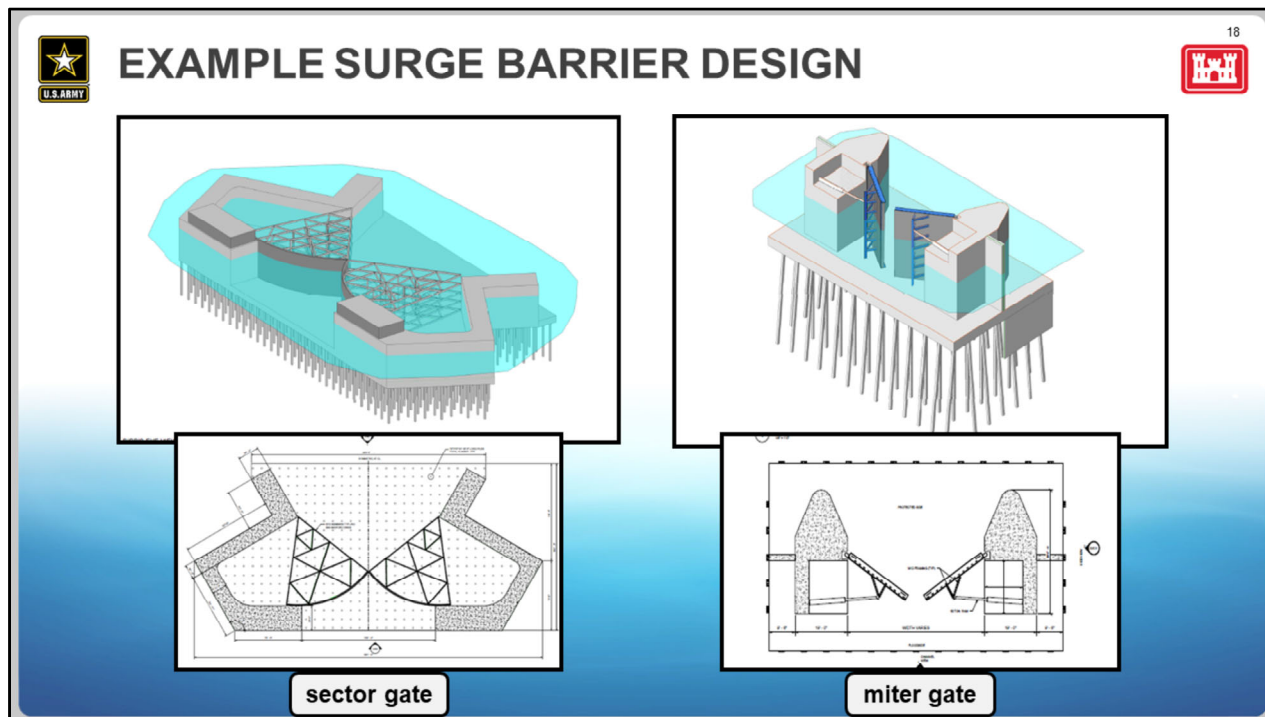


EXAMPLE FLOODWALLS AND DESIGN

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This slide shows an example Federal floodwall constructed in downtown Norfolk, Virginia. 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 many pedestrians.



This slide demonstrates the typical type of surge barriers recommended in the Engineering Appendix of the draft report. The two main types of gates being proposed in this study are sector gates and sluice gates. Sector gates are shaped like a slice of pie with a triangular framework making up the majority of the gate and a solid skin plate that wraps around the outer curved edge. Sluice gates are barriers that cross small tidal creeks are proposed to be sluice gates. The sluice gates considered for this study are vertical rising sluice gates with metal plates, controlled by machinery. In this study, sector gates were considered for crossing Wiggins Pass and Doctors Pass. Sluice gates were considered in conjunction with miter gates for areas with wider openings and for areas with existing drainage culverts. Miter gates consist of a pair of gates that swing out and meet at an angle pointing toward the upstream direction. A combination miter and sluice gate was considered for Wiggins Pass.

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

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sector gate



sluice gate

Here we display an application of sector gate type surge barrier in the New Orleans area in the open position and a sluice gate through a levee.



MEASURES CONSIDERED: NATURAL AND NATURE-BASED FEATURES



- The NNBF being considered for this study are installation of oyster reefs near Marco Island
- Oyster reefs 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 initially considered included planting mangroves and other native vegetation plantings, oyster reefs, living shorelines, and Submerged Aquatic Vegetation.

Oyster reefs were determined to be feasible NNBFs for Collier County because they reduce incoming storm wave energy and function to dissipate storm surge. The oyster reefs proposed consist of shaped concrete structures rising from the bottom into the intertidal zone; these will function similarly to coral reefs in their ability to reduce incoming storm wave energy. They also serve a secondary purpose of improving water quality by removing excess nutrients in the water column and provide habitat to fish species. The primary site identified in the feasibility study for these reef features is the shores off Marco Island. The team will continue to evaluate the feasibility of these features for implementation as the study proceeds and as the tentatively selected plan is optimized. 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.

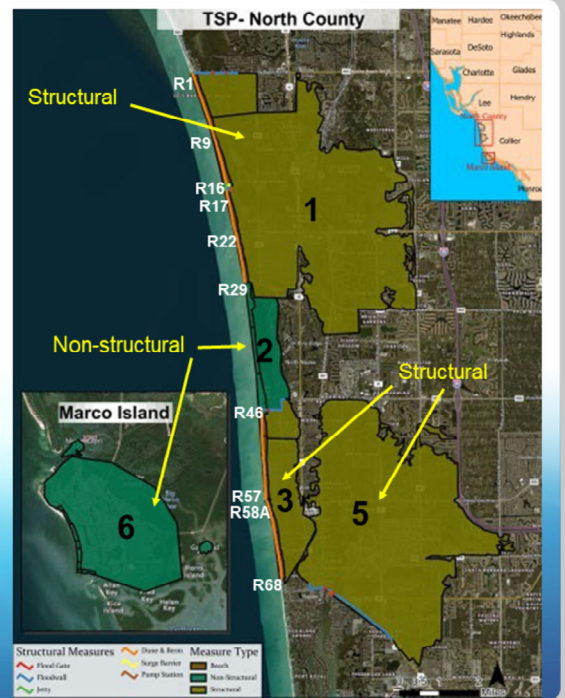


TENTATIVELY SELECTED PLAN

The TSP is **Alternative 4A**: Beach + Structural/Nonstructural/Critical Infrastructure

- Alternative 4A – Combination excluding PA4 and portions of PA6
- Structural measures in Planning Areas 1,3, 5
- Nonstructural measures in planning areas 2 and 6
- Beach Nourishment in areas supporting effectiveness of back bay structural measures; Reaches include R1-R29 (planning area 1) and R46—R68 (planning area 3)
- Reduces risk for approximately 38,000 structures

Reach Name	Extents
Barefoot Beach	R1-R9
Barefoot Beach Preserve	R9-R16
Wiggins Pass State Park	R17-R22
Vanderbilt Beach	R22-R29
Park Shore	R46-R57
Naples Beach	R58A-R68



To summarize, the TSP is Alternative 4A, and includes:

- Alternative 4A – Combination excluding PA4 and portions of PA6
- Structural measures in Planning Areas 1,3, 5
- Nonstructural measures in planning areas 2 and 6
- Beach Nourishment in areas supporting effectiveness of back bay structural measures; Reaches include R1-R29 (planning area 1) and R46—R68 (planning area 3)
- Reduces risk for approximately 38,000 structures



REAL ESTATE CONSIDERATIONS

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- 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 1,350 properties
 - Floodproofing commercial and critical infrastructure: approximately 620 properties
 - Acquisitions: approximately 130 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 1,350 structures, acquisition of approximately 130 structures, and floodproofing approximately 620 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	Wetlands and Submerged Aquatic Vegetation
Noise and Vibration	Utilities
Benthic Fauna	Floodplains
Special Status Species	Transportation and Navigation
Recreational Resources	Safety
Aesthetic and Visual Resources	Climate Change

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 21 resource areas were evaluated for the final array of alternatives. The following sixteen 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; benthic fauna; special status species; recreational resources; aesthetic and visual resources; geology, physiography, and topography; wildlife and terrestrial habitat; wetlands and submerged aquatic vegetation (SAV); utilities; floodplains; transportation and navigation; safety; and climate change. 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.

The resources whose impacts are anticipated not to be significant due to mitigation include: benthic fauna; wetlands and SAV; and cultural resources. Mitigation will be discussed in a later slide.

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.



RESOURCES AREAS EVALUATED WITH POTENTIAL SIGNIFICANT IMPACTS

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RESOURCE AREA	
Land Use	Water Quality
Essential Fish Habitat and Fishery Resources	Socioeconomics*
Bathymetry, Hydrology, and Tidal Processes	

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 five 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: Land use; Essential Fish Habitat and fishery resources; bathymetry, hydrology, and tidal processes; water quality; and socioeconomics. 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. These effects are described more in the next slide.



POTENTIALLY SIGNIFICANT EFFECTS



Land Use and Socioeconomics

- Potential acquisition/demolition of residential structures (approximately 130)
- Elevation of existing buildings and structures (approximately 1,350)
- Flood protection provides significant, socioeconomic beneficial effects

Water Quality

- Temporary effects to embayment waters due to gate closures
- Water Quality modeling for nutrients (nitrogen and phosphorus) and total suspended solids (TSS) is being conducted

Bathymetry, Hydrology, and Tidal Processes

- Natural barrier island hydrology, bathymetry, and sediment transport, bathymetry, hydrology, tidal processes
- Modelling underway to better understand the potential magnitude and extent of impacts

Essential Fish Habitat and Fisheries (EFH)

- Direct and indirect impacts to Submerged Aquatic Vegetation, as well as corals/hardbottom habitat, and Essential Fish Habitat (EFH).
- Temporary trapping of aquatic species during closure events including fish, marine mammals, and reptiles.
- Coordination is ongoing with the National Marine Fisheries Service is ongoing for EFH

The potential for significant, both adverse and beneficial permanent effects is anticipated on land use and socioeconomics, due to acquisition/relocation, elevation, and floodproofing. These effects would be both beneficial and adverse, depending on perspective.

- Potential acquisition/demolition of residential structures (approximately 130)*
- Elevation of existing buildings and structures (approximately 1,350)*
- Flood protection or relocation also provides significant, socioeconomic beneficial effects

It should be noted that these numbers are only preliminary and subject to change based on ongoing economic modeling.

Water Quality. There are potentially significant effects on water quality, due to temporary gate closures. Modeling for nutrients (nitrogen and phosphorus) and total suspended solids (TSS) is being

conducted

Bathymetry, Hydrology, and Tidal Processes

The construction of the jetties and Wiggins Pass Surge Barrier would result in an anticipated significant impact to the natural barrier island hydrology, bathymetry, and sediment transport., bathymetry, hydrology, tidal processes. Modeling is underway to better understand the potential magnitude and extent of impacts of the structural features to hydrology, sediment transport, and water quality.

Essential Fish Habitat (EFH)

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, 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.

Coordination is ongoing with the National Marine Fisheries Service to determine the effects and minimization measures on Essential Fish Habitat and fisheries.

For a more detailed description of the significant impacts, please refer to Chapter 8 of the draft report.



INTERAGENCY COMPLIANCE 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 Section 7 consultation with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service is required and has been initiated.
 - *Federally listed species, may affect:* piping plover, red knot, woodstork, sea turtles (green, hawksbill, Kemp's ridley, leatherback, and loggerhead); giant manta ray, gulf sturgeon, and smalltooth sawfish
 - *Federally listed species, may affect, not likely to adversely affect:* American alligator, American crocodile, west Indian manatee; oceanic whitetip shark, and whales (Bryde's whale, north Atlantic right whale, and sperm whale)
- Fish and Wildlife Coordination Act is being addressed through the NEPA process per a Memorandum of Agreement with FWS, ongoing
- Magnuson-Stevens Fishery Conservation Act – EFH Assessment submitted, Consultation initiated

The proposed structural measures have the potential to result in adverse effects to federally protected threatened and endangered species. They could result in a potential temporary, trapping effect to aquatic listed species and could potentially affect foraging and migrations of listed species. There would be anticipated sea turtle take from the hopper dredging and sea turtle trawling actions.

Formal consultation with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service is required and has been initiated (concurrent with the report release) as a result of the potential adverse effects to federally protected threatened and endangered species.

The following protected species were evaluated and were given a “may affect” determination: piping plover, red knot, woodstork, sea turtles (green, hawksbill, Kemp’s ridley, leatherback, and loggerhead); giant manta ray, gulf sturgeon, and smalltooth sawfish

The following species were evaluated and were given a “may affect, not likely to adversely affect” determination: American alligator, American crocodile, west Indian manatee; oceanic whitetip shark, and whales (Bryde’s whale, north Atlantic right whale, and sperm whale)

The Biological Assessments were prepared for the U.S. Fish and Wildlife Service and the National Marine Fisheries Service (NMFS) are provided in the Environmental Appendix of the document.

The Fish and Wildlife Coordination Act is being addressed through the NEPA process per a Memorandum of Agreement with FWS, ongoing

As mentioned earlier, coordination is ongoing with the National Marine Fisheries Service to determine the

effects and minimization measures on Essential Fish Habitat and fisheries.



ENVIRONMENTAL IMPACTS AND MITIGATION

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- Preliminary, estimated environmental impacts are as follows:
 - Direct and indirect wetland impacts: approximately 11.6 acres
 - SAV indirect only impacts: approximately 1.1 acres
 - Hardbottom direct and indirect impacts: approximately 12 acres
 - Sediment Transport Impacts: approximately 866,000 cubic yards (per nourishment event)
- A wetlands jurisdictional determination would be conducted during later project phases to ascertain impacts and wetland mitigation requirements.
- Hardbottom and SAV impact would be refined in later project phases with benthic surveys.
- Wetland, SAV, and hardbottom mitigation would be determined by Unified Mitigation Assessment Methodology (UMAM), a habitat functional assessment methodology
- Constructed beach dunes would be replanted with dune vegetation.
- A Draft Environmental Mitigation Plan for wetland, SAV, hardbottom, and vegetated dune mitigation is provided in the appendix of the document.

It is important to note that the environmental impacts are very preliminary and estimated at this time, based on GIS mapping and feasibility-level conceptual designs.

The preliminary direct and indirect impacts anticipated for wetlands is approximately 11.6 acres. There would be indirect SAV effects of to approximately 1.1 acres for SAV. For hardbottom, there would be direct and indirect impacts of approximately 12 acres, and sediment transport impacts would result from the placement of approximately 866,000 cubic yards (per beach nourishment event). There would be an estimated 90 acres of beach dune vegetation impacts.

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 determined required mitigation.

Wetland and SAV, mitigation would be in-kind, and hardbottom mitigation would be artificial reef construction. All would be determined using the Unified Mitigation Assessment Methodology (UMAM), a functional assessment methodology.

Constructed beach dunes would be replanted with dune vegetation. Dune vegetation mitigation would consist of planting native dune vegetation in approximate coverage and species diversity of the existing dune system that would be impacted by the beach nourishment.

An Environmental Mitigation Plan **for wetland, SAV, hardbottom, and vegetated dune mitigation** is provided in the appendix of the document.



CULTURAL RESOURCES IMPACTS AND MITIGATION

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- Archeological resource impacts are not anticipated
- Potential for adverse effects on Cultural Resource are anticipated for buildings eligible for the National Register of Historic Places.
- Any required Cultural Resource surveys and/or mitigation will be determined during later phases of the project.
- A Programmatic Agreement (PA) has been prepared to address Cultural Resources adverse effects and mitigation, in accordance with the National Historic Preservation Act.
- Coordination with the Advisory Council on Historic Properties (ACHP), State Historic Preservation Officer (SHPO) and interested tribes is ongoing.

With respect to cultural resources, impacts on archeological resources are not anticipated. However, any modification of a structure or building that is eligible for or listed in the National Register of Historic Places could be considered an adverse effect, and may require mitigation. Potential for adverse effects on Cultural Resource are anticipated for buildings eligible for the National Register of Historic Places.

Any required Cultural Resource surveys and/or mitigation will be determined during later phases of the project.

A Programmatic Agreement is anticipated in the future to ensure compliance with the National Historic Preservation Act.

Coordination with the Advisory Council on Historic Properties (ACHP), State Historic Preservation Officer (SHPO) and interested tribes is ongoing.



FEASIBILITY STUDY MILESTONE SCHEDULE

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Description	Date
Signing of Feasibility Cost Share Agreement	09 Oct 2018 (A)
Alternatives Milestone	11 Jan 2019 (A)
In Progress Review	07 May 2019 (A)
Tentatively Selected Plan Milestone	26 Mar 2020 (A)
Release of Draft Study for Concurrent Reviews	31 July 2020 (A)
Agency Decision Milestone	19 Nov 2020 (S)
Submit Final Report Package/Policy and Legal Review	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 sensitivity analysis using different storm events and sea level rise (SLR) scenarios.
- Optimization of tentatively selected plan to further refine proposed measure locations
- Determine benefits from natural and nature based features (NNBFs) in the current TSP.
- Update water quality modeling

The final report is planned for release in the Spring 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: 14 September 2020
- Email: Collier-CSRМ@usace.army.mil
- Written Comments:
 - Environmental Analysis Section, Norfolk District
 - 803 Front Street
 - Norfolk, Virginia 23510
- For any accessibility issues that prevent written comments, please call (757) 201-7320.
- Project Documents are Located:
<https://www.saj.usace.army.mil/CollierCountyCSRМFeasibilityStudy/>

The release of the draft report on 31 July 2020 kicked-off a 45 day public comment period. Public comments must be received by 14 September 2020 to be included in the analysis. Comments can be provided via email or in writing.

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/>

Miami-Dade Back Bay CSRM Study

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

South Atlantic Coastal Study

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

Florida Keys, Monroe County CSRM Study

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

Pinellas County CSRM Study

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

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 adjacent to Collier County. Additional information about this projects are located on their public websites listed on this slide.



THIS CONCLUDES THE PRESENTATION

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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 email or written mail. The Public Virtual Meeting Hours are included below:

Public Virtual Meeting Hours

August 18, 2020 from 1 – 3:30 pm

August 24, 2020 from 5:30 - 8 pm

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

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

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. AS NOTED EARLIER, PLEASE NOTE THAT THE CHAT FUNCTION DOES NOT WORK FOR GOOGLE CHROME, SO YOU WOULD NEED TO USE A DIFFERENT BROWSER.