

Resilience Planning with the U.S. Army Corps of Engineers (USACE): Multi-Jurisdictional Studies in Coastal Virginia

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US Army Corps of Engineers
**PLANNING SMART
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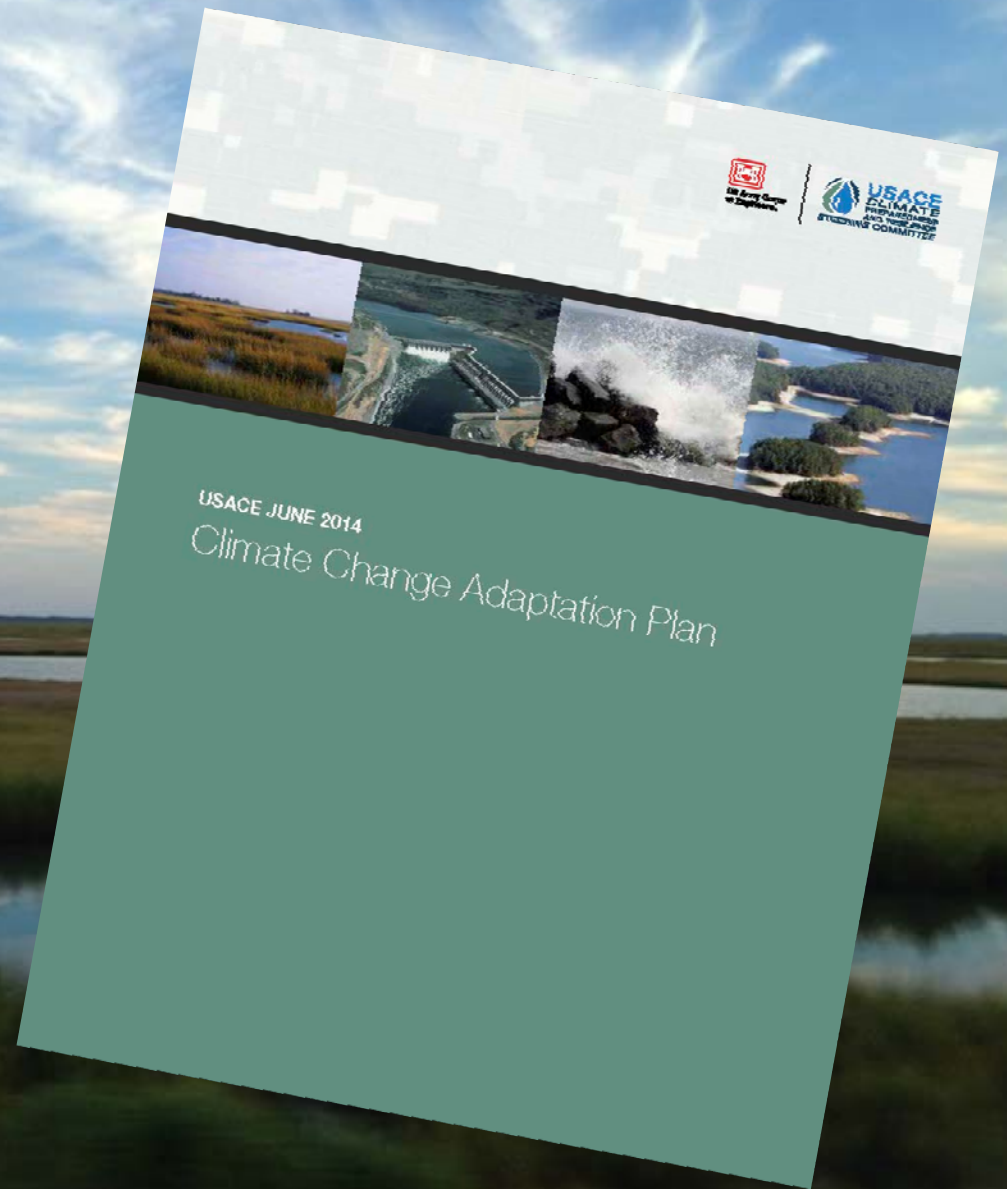
USACE Civil Works Mission Areas

- Navigation (NAV)
- Aquatic Ecosystem Restoration (AER)
- Flood Risk Management (FRM)
 - Coastal Storm Risk Management



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USACE Climate Change Adaptation



USACE Climate Change Adaptation

- Climate variability and change impact all US Army Corps of Engineers (USACE) missions, operations, programs, projects, and systems of projects
- Objective: Improve the resilience and decrease the vulnerability of our missions, operations, programs, projects, and systems of projects to the effects of climate change and variability



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USACE Climate Change Adaptation Priorities



- Modernizing USACE programs and policies to support climate-resilient investment
- Managing USACE lands and waters for climate preparedness and resilience
- Supporting State, local, and tribal preparedness
- Providing actionable climate information, tools, and projections
- International leadership provided by USACE supporting climate preparedness



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How does USACE conduct business?

- Authorization (Study, then Construction)
- Appropriations (Study, then Construction)



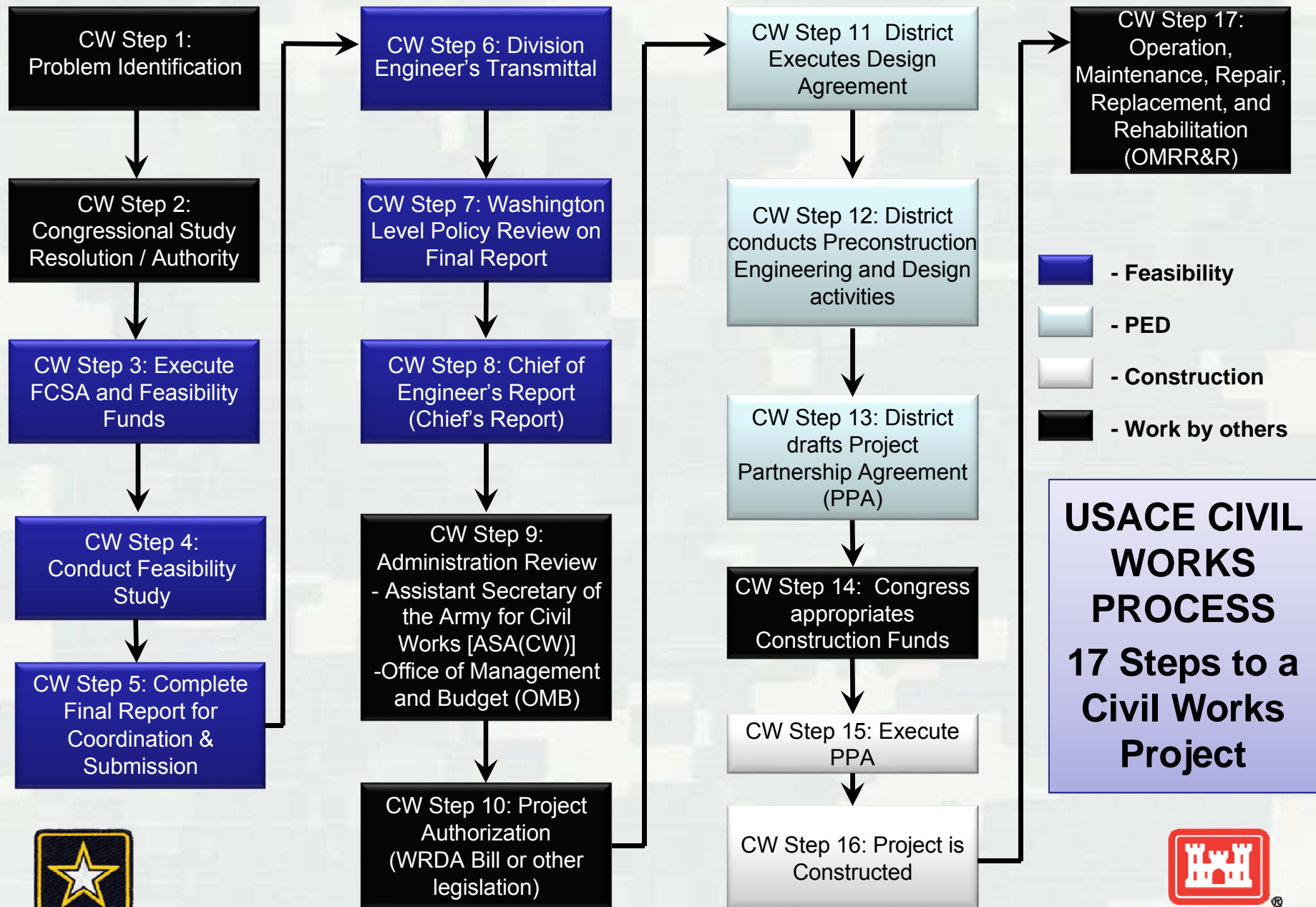
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How to access USACE Construction funding?

- Through Studies, which:
 - Identify a Federal Interest in investment
 - Inform the Report of the Chief of Engineers to Congress
- Favorable Reports result in Construction Authorization from Congress



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USACE Studies

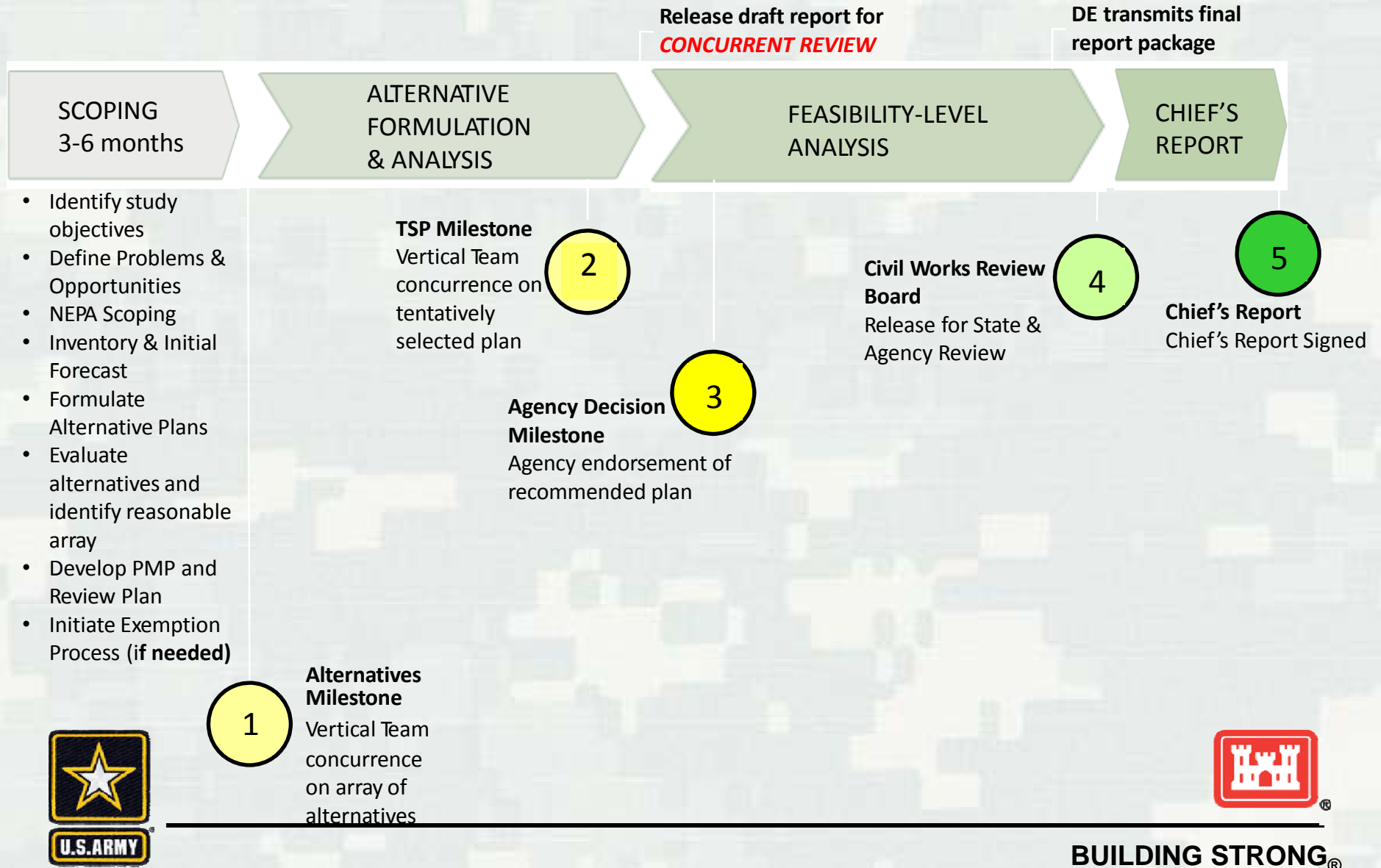
- Focused Portfolio of Priority Feasibility Studies
- All Feasibility Studies expected to follow 3-3-3 Rule
 - ▶ 3 Year study duration
 - ▶ \$3 Million maximum per study cost
 - ▶ Vertical team integration at 3 command levels (District, MSC, HQUSACE)
 - ▶ Exemption process for very large, complex studies that cannot meet the 3- year and/or \$3 million policy
- Feasibility Cost Sharing Agreement (FCSA) is first step
- Project Management Plan (PMP) and Scope of Work to be initially developed and updated throughout conduct of the study



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SMART Feasibility Study Process

Up to 36 Months

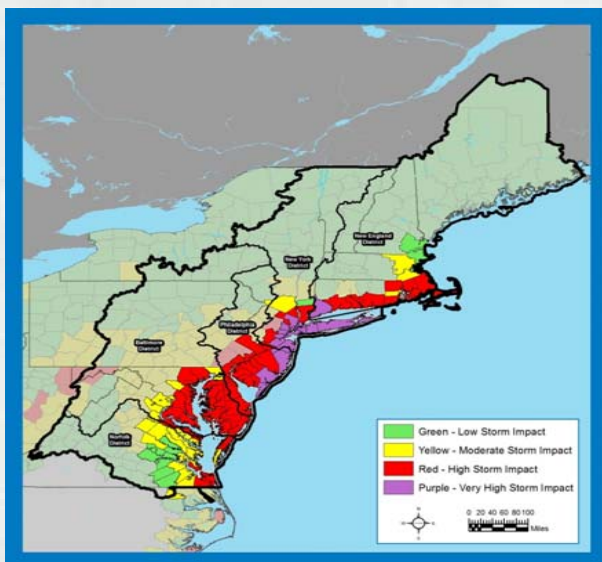


North Atlantic Coast Comprehensive Study (NACCS)

“That using up to \$20,000,000* of the funds provided herein, the Secretary shall conduct a comprehensive study to address the flood risks of vulnerable coastal populations in areas that were affected by Hurricane Sandy within the boundaries of the North Atlantic Division of the Corps” (*19M after sequestration)

Goals

- Provides a **Risk Management Framework – not a plan**
- Supports **Resilient Coastal Communities** and robust, sustainable coastal landscape systems
- **Considers future sea level rise scenarios**, to reduce risk to vulnerable population, property, ecosystems, and infrastructure
- Whole of Government Approach



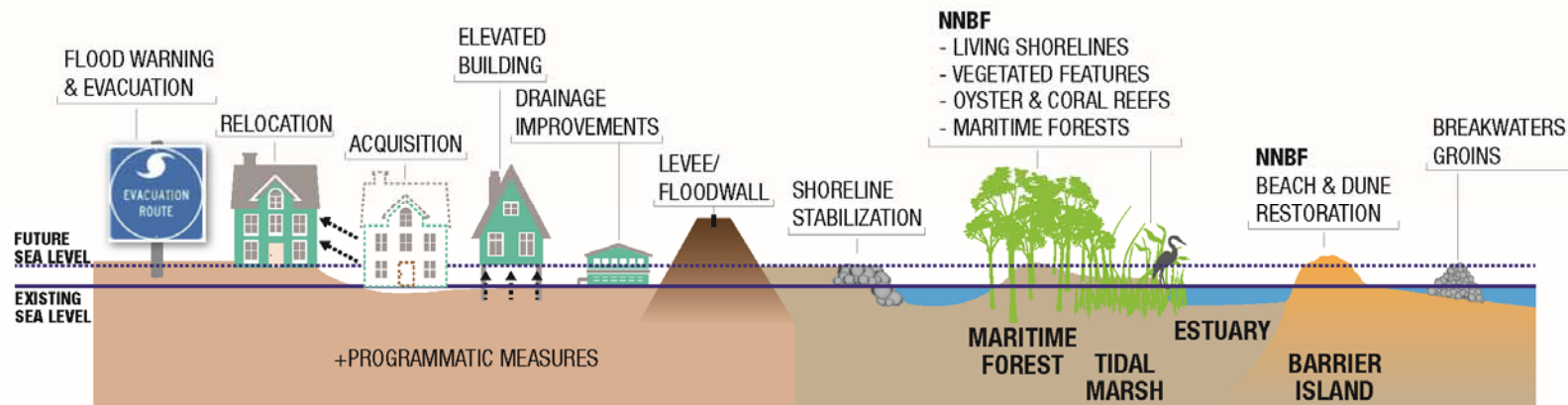
www.nad.usace.army.mil/CompStudy



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Findings

- **Shared** responsibility of all levels of Government and partnerships
- Rethink approaches to **adapting to risk**
- Resilience and sustainability must consider a **combination and blend** of measures



Coastal Storm Risk Management Framework: Risk Management Measures

Natural and Nature-Based Infrastructure at a Glance

GENERAL COASTAL RISK REDUCTION PERFORMANCE FACTORS:

STORM INTENSITY, TRACK, AND FORWARD SPEED, AND SURROUNDING LOCAL BATHYMETRY AND TOPOGRAPHY



Dunes and Beaches

Benefits/Processes

Break offshore waves
Attenuate wave energy
Slow inland water transfer

Performance Factors

Berm height and width
Beach Slope
Sediment grain size and supply
Dune height, crest, width
Presence of vegetation



Vegetated Features: Salt Marshes, Wetlands, Submerged Aquatic Vegetation (SAV)

Benefits/Processes

Break offshore waves
Attenuate wave energy
Slow inland water transfer
Increase infiltration

Performance Factors

Marsh, wetland, or SAV elevation and continuity
Vegetation type and density



Oyster and Coral Reefs

Benefits/Processes

Break offshore waves
Attenuate wave energy
Slow inland water transfer

Performance Factors

Reef width, elevation and roughness



Barrier Islands

Benefits/Processes

Wave attenuation and/or dissipation
Sediment stabilization

Performance Factors

Island elevation, length, and width
Land cover
Breach susceptibility
Proximity to mainland shore



Maritime Forests/Shrub Communities

Benefits/Processes

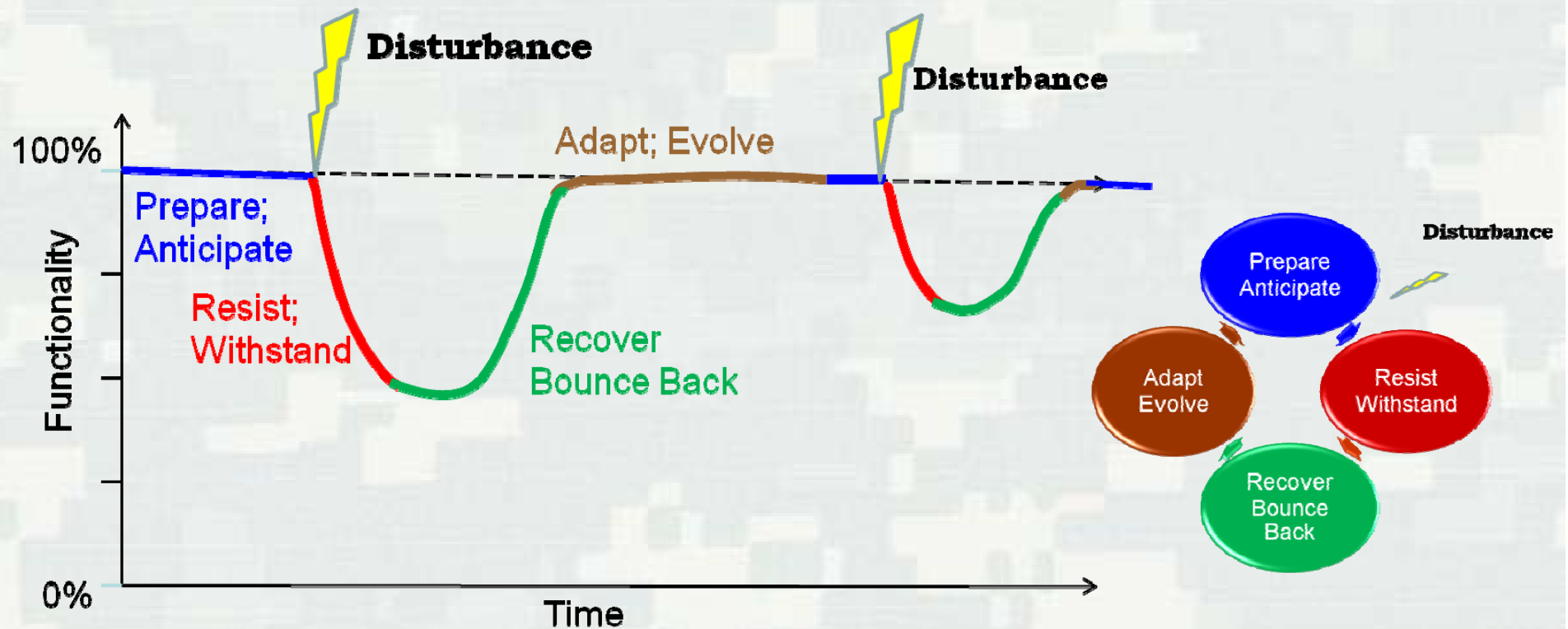
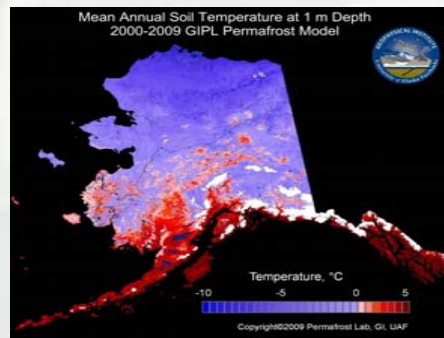
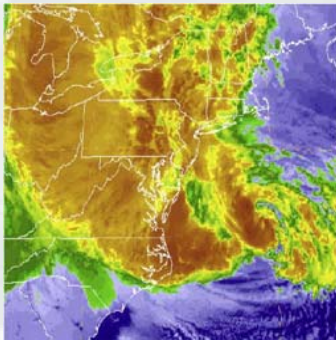
Wave attenuation and/or dissipation
Shoreline erosion stabilization
Soil retention

Performance Factors

Vegetation height and density
Forest dimension
Sediment composition
Platform elevation

Natural
and
Nature-
Based
Features





Resilience: the ability of a *system* to **Prepare for**, **Resist**, **Recover**, and **Adapt** to achieve functional performance under the stress of disturbances through time

Norfolk Flood Risk Management Study



Hyunsoo
Leo Kim
/ The Virginian-Pilot



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Study Details

- Benefits quantified by economic damages reduced/avoided
- Life/safety benefits important
- Strong support for nonstructural & green infrastructure along with structural options
- Cost Shared 50/50 with City of Norfolk



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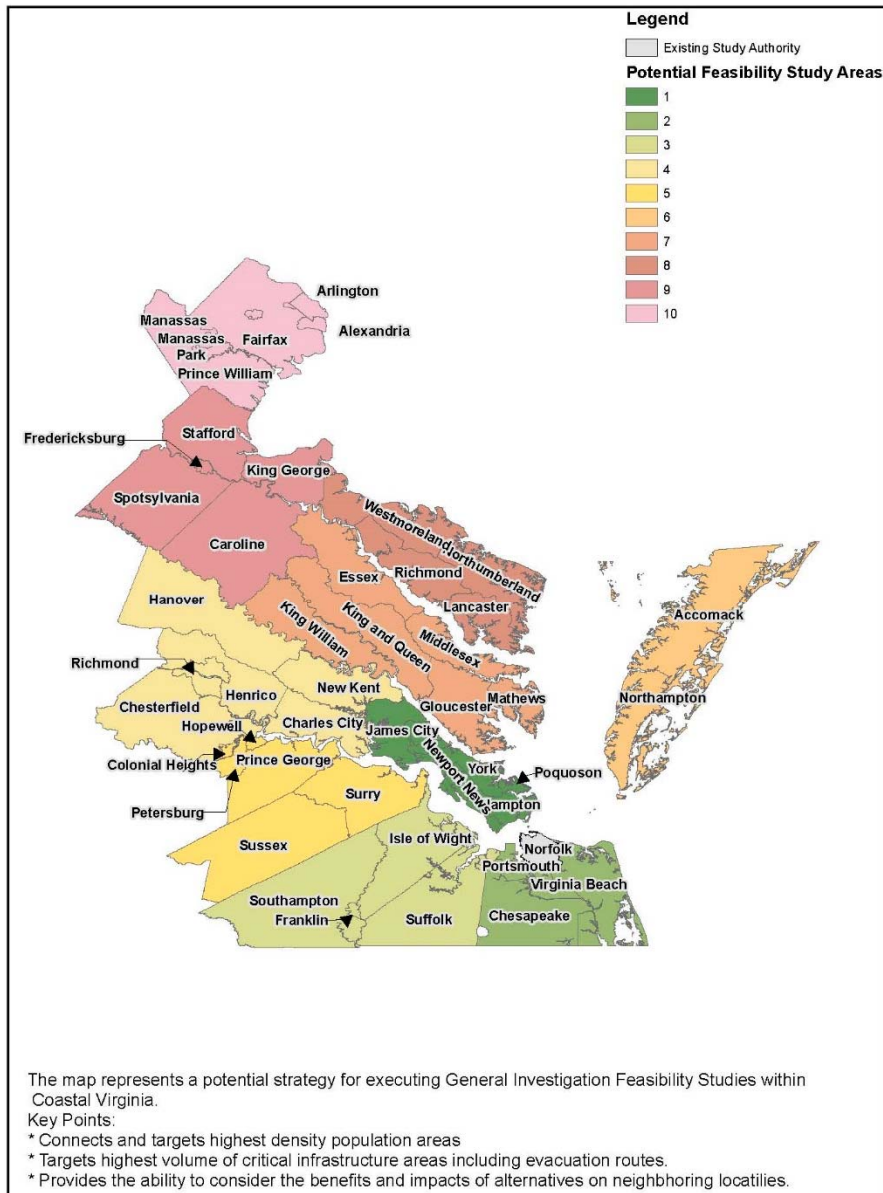
What's Next for Norfolk FRM?

- Completed Feasibility Report with an identified recommended plan for implementation (2019)
- Chief's Report to Congress (2019)
- Construction Authorization
- Construction New Start Appropriations
- Preconstruction Engineering and Design
- Construction



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Multi-Jurisdictional Resiliency Strategy



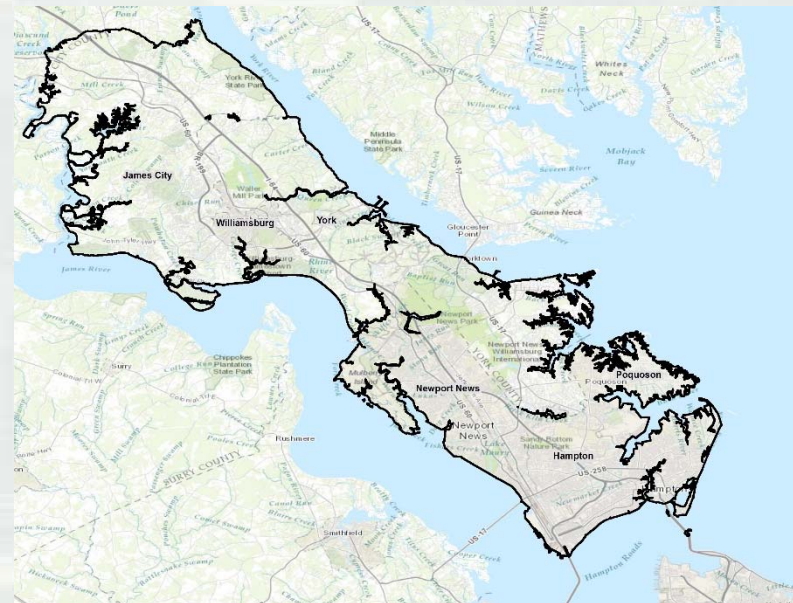
- Norfolk Flood Risk Management Study
- Virginia Peninsula Flood Risk Management Study
- Subsequent studies in Coastal Virginia: possibly prioritized based on damages avoided to critical infrastructure
- Close alignment with Commonwealth to study resiliency alternatives



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Virginia Peninsula Flood Risk Management Study

- Next steps:
 - ▶ Letter of Intent
 - ▶ 7001 Submittal (HRPDC)
 - ▶ Budget
 - \$3 Million Total
 - \$1.5 Million Non-Federal Share



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Other Areas of Consideration

- Eastern Shore of Virginia
 - Chincoteague
- Virginia Beach/Chesapeake
- Tangier Island
- Other?



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How Can Commonwealth Help?

- Assist with Cost Sharing Challenges
 - Scope beyond political jurisdictions of individual localities, Commonwealth could serve as Sponsor
 - Some localities may not have financial capability, but have a need
- Provide Guidance/Vision on State-Level Priorities to Address Recurrent Flooding



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Questions?