North Atlantic Coast Comprehensive Study

Hurricane Sandy: Reducing Risk and Building Resiliency

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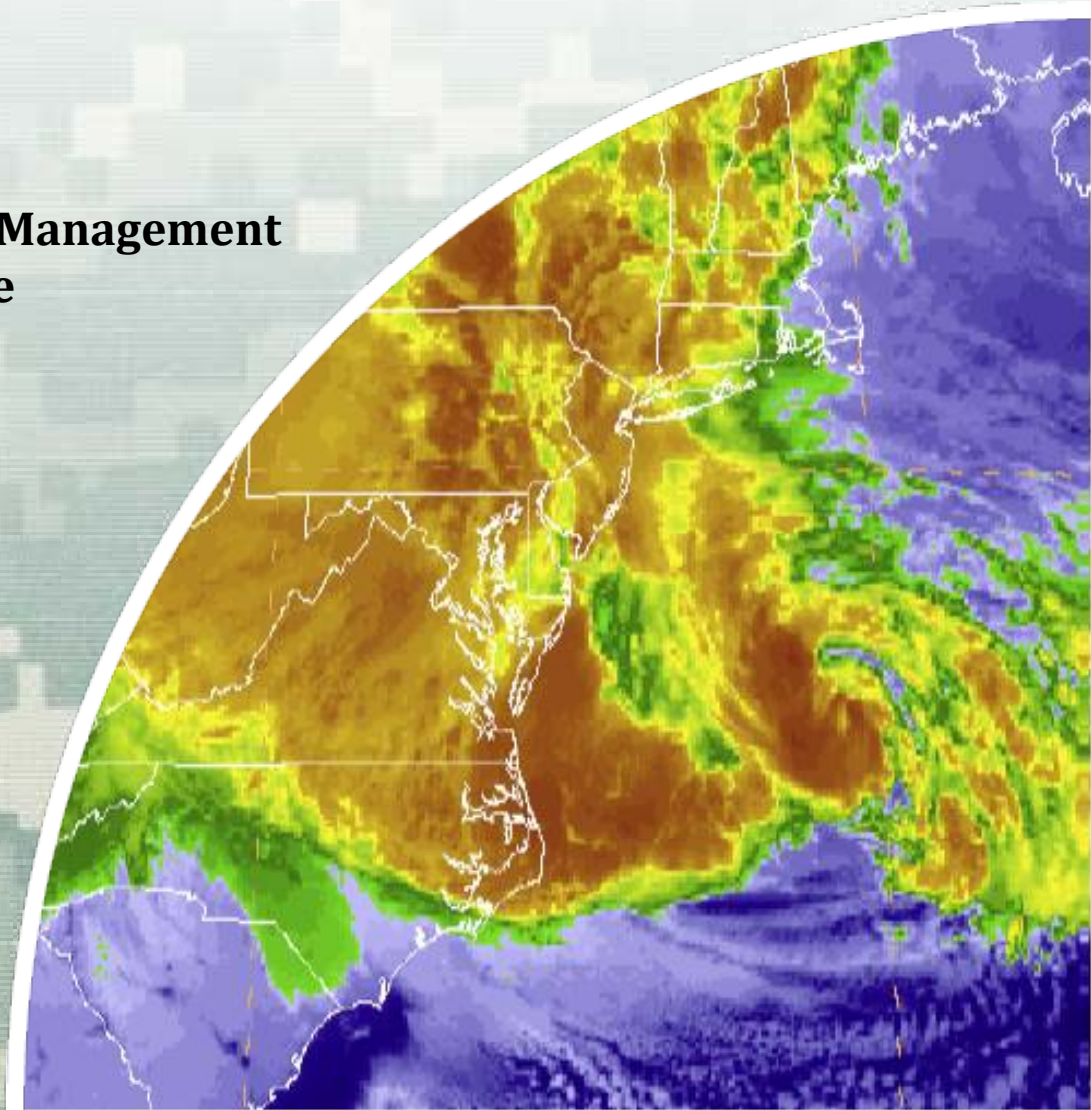
12 September 2013



North Atlantic Coast Comprehensive Study

- ❑ Overview
- ❑ Authority, Goals, and Study Area
- ❑ Scoping Process
- ❑ Collaboration
- ❑ Risk Reduction Framework
- ❑ Coastal Risk Reduction and Resiliency Measures
- ❑ Way Ahead
- ❑ Discussion

Overview

- Hurricane Sandy impacted the Atlantic coastline in October 2012
- Affected entire east coast:

  24 States from Florida to Maine; New Jersey to Michigan and Wisconsin
- Greatest areas of impact: New Jersey, New York, Connecticut
- Public Law 113-2 enacted

  January 29, 2013

Overview: Sandy and Recovery

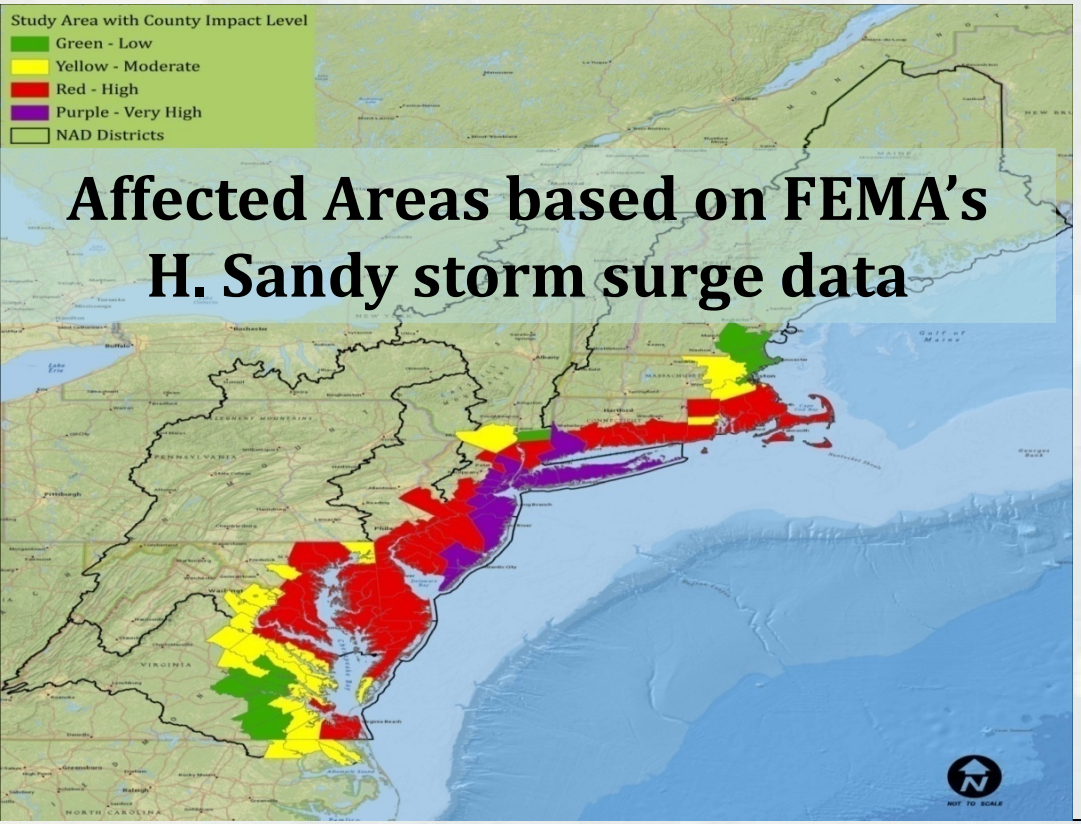
Authority:

- Disaster Relief Appropriations Act of 2013 (PL 113-2) allocated 5.35B ($5.08B after sequestration) to the USACE to address areas impacted by Hurricane Sandy
- North Atlantic Division (NAD) received $4.56B ($4.33B after sequestration) of this funding
- NAD execution of the Sandy Work Program:
  - Near-Term Coastal Restoration
  - Operations and Maintenance
  - Authorized But Not Yet Constructed
  - Coastal Storm Damage Risk Reduction Studies
  - Continuing Authorities Program
- Website for further information:

http://www.nad.usace.army.mil/Sandy

Authority, Study Area, and Goals

- "… 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 - sequestration)
- Complete by **Jan 2015**



- Provide a **Risk Reduction Framework (Infrastructure Systems Rebuilding Principles NOAA-USACE)**
- Support **resilient coastal communities and sustainable coastal landscape systems,** considering future sea level rise and climate change scenarios, to reduce risk to vulnerable population, property, ecosystems, and infrastructure.

Scoping Process

Infrastructure Systems Rebuilding Principles NOAA-USACE

28 February 2013

Resilience: Ability to adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies

Coastal Risk Reduction Framework

- Collaborative across multiple scales of governance (Local, State, Tribal, and Federal)
- Improve coastal resilience by pursuing a systems approach that incorporates natural, social, and built systems as a whole
- Promote increased recognition and awareness of risks and consequences among decision makers, stakeholders, and the public

Scoping Process

- ❑ USACE National Planning Center of Expertise – Coastal Storm Risk Management
- ❑ USACE Vertical Team
  - HQUSACE Governing Body
  - USACE Enterprise Technical Team
- ❑ Project Management Plan and Scope of Work
- ❑ National and Regional Collaboration: Federal Agencies, States, NYC, DC, Tribes
  - Agency Single Point of Contact and Subject Matter Experts
  - Federal Register Notice (19 June 2013)
  - Response to 267 comments issued (28 June 2013)
- ❑ Review Plan (30 June 2013)
- ❑ Continuous Smart Planning Decision Log

Scoping Process

- **Coastal Framework**
  - Storm suite modeling and sea level rise analyses
  - Economic depth-damage curves with secondary and tertiary effects
  - Regional Sediment Management
  - Vulnerability Assessment
  - Nature-Based Features
  - USFWS and NMFS Planning Aid Reports

- **No NEPA Documentation**
- **No Design/Construction Recommendations**
- **Identify activities warranting additional analysis**
- **Identify policy and institutional barriers**

Scoping Process

Scoping Process

PHASE 1
Collaboration to assemble existing and future conditions.
Risk Assessment and formulation of measures
[Months 1-14]

PHASE 2
Validation

PHASE 3
Finalize Comprehensive Study to submit to Congress

Jan 2013 — **Mar 2014** — **Sep 2014** — **Jan 28, 2015**

PHASE 1

National Disaster Recovery Framework

Synchronization w/ missions and scoping assessments

Interim Reports 1 and 2

Project Performance Evaluation and Policy and Institutional Barriers

Regional Plans

Joint Field Offices- Recovery Support Strategies

Task Force Strategy

Collaboration

Federal, States, and Regional Partners, Tribes, Academia, NGO's

Collaboration

- **Technical Working Meetings & Webinars (Jul-Sep 2013)**
  - Numerical Modeling
  - Resiliency Measures
  - Nature-Based Features
- **Interagency Collaboration Webinar Series (Jul-Dec 2013)**
  - July – Nature-Based Measures
  - Aug – Ecosystem Goods and Services
  - Sep – Identification of Vulnerable Communities
  - Oct – Adaptive Management
  - Nov – Sea Level Rise & Climate Change
  - Dec – Nature-Based Measures (risk reduction applications) and/or Policy Barriers
- **Partner and Stakeholder Outreach (Fall 2013- Jun 2014)**
  - NY/NJ Harbor Coordination Meeting (Fall 2013)
  - Federal, State (NYC and DC), NGO, Tribal (Jan-Mar 2014)

Collaboration

- **Notice in Federal Register**
- **Press Releases and Media Communication**
- **Task Force and Joint Field Offices**
- **Public Engagement Opportunities**
  - Participate in State and Regional Forum
  - Local, academia, agency, public meetings/events
  - Exchange of ideas and input
- **Visioning Sessions**
  - Oct 2013-March 2014
  - Locations throughout the North Atlantic Coast Study Area
- **Public Website**
  http://www.nad.usace.army.mil/Missions/CivilWorks/HurricaneSandyCoastalRecovery/NorthAtlanticComprehensiveStudy.aspx
  - Subscribe for Update Alerts
  - Solicit Coastal Resiliency Input

NORTH ATLANTIC DIVISION

US Army Co gineers

Sandy restoration page

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Evaluating North Atlantic Coastal Risks

North Atlantic Coast Comprehensive Study

Background

The Congressional response to the devastation in the wake of Hurricane Sandy represents a need to address as a regional system the vulnerability of populations at risk in coastal regions in the U.S. Army Corps of Engineers (USACE) North Atlantic Division. Along with a recent increase in high magnitude storm events such as Hurricanes Katrina and Rita in 2005, and recent storms with larger areal extents creating larger damage areas as evident by the size of Hurricane Irene in 2011 and Hurricane Sandy in 2012, as well as the reality of sea level rise as a probable future condition, there is a need to comprehensively evaluate the existing and planned measures to reduce the flooding risk from tidally-influenced storm surges as well as other alternatives for areas at risk to future storm damages.

The goals of the Comprehensive Study are to (1) provide risk reduction strategies to reduce risk to which vulnerable coastal populations are subject, and (2) promote coastal resilient communities to ensure a sustainable and robust coastal landscape system, considering future sea level rise and climate change scenarios, to reduce risk to vulnerable population, property, ecosystems, and infrastructure. The Comprehensive Study will include a coastal framework (submitted to Congress within 24 months) as well as storm suite modeling, coastal GIS analysis, and related evaluations, for the affected coastlines. The study will identify existing green infrastructure, include an evaluation of the performance of green infrastructure during Hurricane Sandy and other recent storms, and consider the performance of green infrastructure in reducing the impacts of coastal storm flooding, as well as other impacts at a larger scale and as a system.

The Comprehensive Study will generally be developed by a USACE enterprise team. This team will be led by the USACE Coastal Storm Damage Reduction Planning Center of Expertise and will comprise planners and engineers from North Atlantic Division districts, the USACE Engineer Research and Development Center, and the USACE Institute for Water Resources, incorporating other USACE resources and expertise as appropriate.

Collaboration

Federal Agencies
BOEM
EPA
FEMA
HUD
NOAA
Presidential Task Force
USFWS
USGS

States
Connecticut
Delaware
District of Columbia
Maine
Maryland | MDE | DNR
Massachusetts
New Hampshire
New Jersey | NJDEP
New York | NYDEC | NYC
Pennsylvania
Rhode Island
Virginia

NGOs
Ducks Unlimited | MOU
Fish & Wildlife Foundation | MO
National Audubon Society | MOU
The Conservation Fund | MOU
The Nature Conservancy | MOU
Union of Concerned Scientists
Waterfront Alliance

Agency Partners

NB features webinar

Webinar series
July 30, 2013
Green/Nature-Based Features Webinar Slides
Green/Nature Based Webinar Audio

Study Maps

Study maps

County Impact Level

Important Links

Infrastructure Systems Rebuilding

the USACE Coastal Storm Damage Reduction Planning Center of Expertise and will comprise planners and
orth Atlantic Division districts, the USACE Engineer Research and Development Center,
nstitute for Water Resources, incorporating other USACE resources and expertise as

Exec level PPT

Scope Synopsis

Click here for a na v the study goals, scope, products and schedule.

Click here for a scope synopsis of the project management plan.

Budget

Interim Reports 1&2

Item	Estimated Cost	Available after Sequestration
Interim Reports 1 & 2	$50,000	$50,000
Comprehensive Study*	$19,450,000	$18,450,000
Performance Evaluation	$500,000	$500,000
Total Estimated Cost	$20,000,000	$19,000,000

includes storm suite modeling & GIS analysis

Study Schedule

In FY13, USACE initiated activities including data compilation, problem identification, existing conditions characterization, and future-without project forecasting. In addition, federal, state, tribal, and non-governmental organization coordination was initiated.

With full federal funding, the comprehensive study to reduce risk to populations affected by Hurricane Sandy and vulnerable to tidally-influenced storm surge in areas within the boundaries of the North Atlantic Division will be submitted to Congress in January 2015.

In the News

The Weather Channel report includes commentary by Joe Vietri

U.S. Army Corps of Engineers collaborates on study of North Atlantic coast after Hurricane Sandy

North Atlantic Division conducts working meeting with coastal stakeholders

Congressman fights to help towns with flooding

U.S. Army Corps of Engineers Begins Post-Sandy Study of North Atlantic Coast - Insurance Journal

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Important Lin

Rebuilding Principles

- Infrastructure Systems Rebuilding Principles ...
- First Interim Report ...
- Second Interim Report
- Sea Level Rise Planning Tool
- Coastal Resilience Tool For Sandy Recovery
- FAQ: North Atlantic Coastal Comprehensive Study
- FAQ: Advisory Base Flood Elevations
- NAD Hurricane Sandy Coastal Restoration
- Disaster Relief Appropriations Act, 2013 ...

Interim Reports 1&2

FAQs

The USACE Team

North Atlantic Division
302 General Lee Avenue
Brooklyn, NY 11252
347-370-4550 | Email

Institute for Water Resources
7701 Telegraph Rd (Casey Bdg)
Alexandria, Va 22315
703-428-8015 | Contact

Engineer Research & Development Center
3909 Halls Ferry Road
Vicksburg, MS 39180-6199
601-634-3188 | Email

Reso

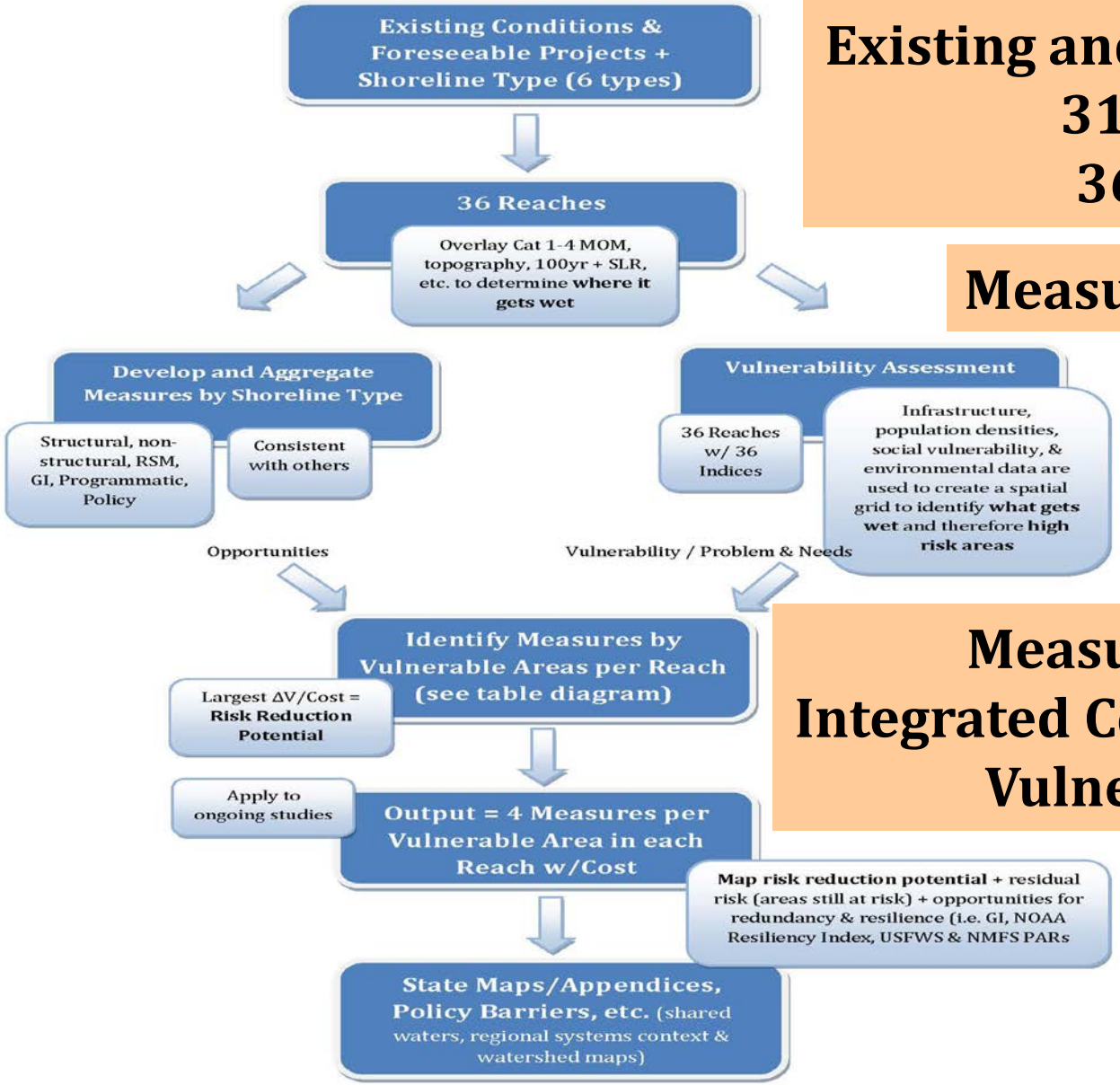
Rebuilding Principles

- Infrastructure Systems Rebuilding Principles
- National Nonstructural Flood Proofing Committee
- Silver Jackets

Subscribe

If you would like to receive updates for this study, click here.

Risk Reduction Framework



Existing and Future Conditions
31,000 miles
36 Reaches

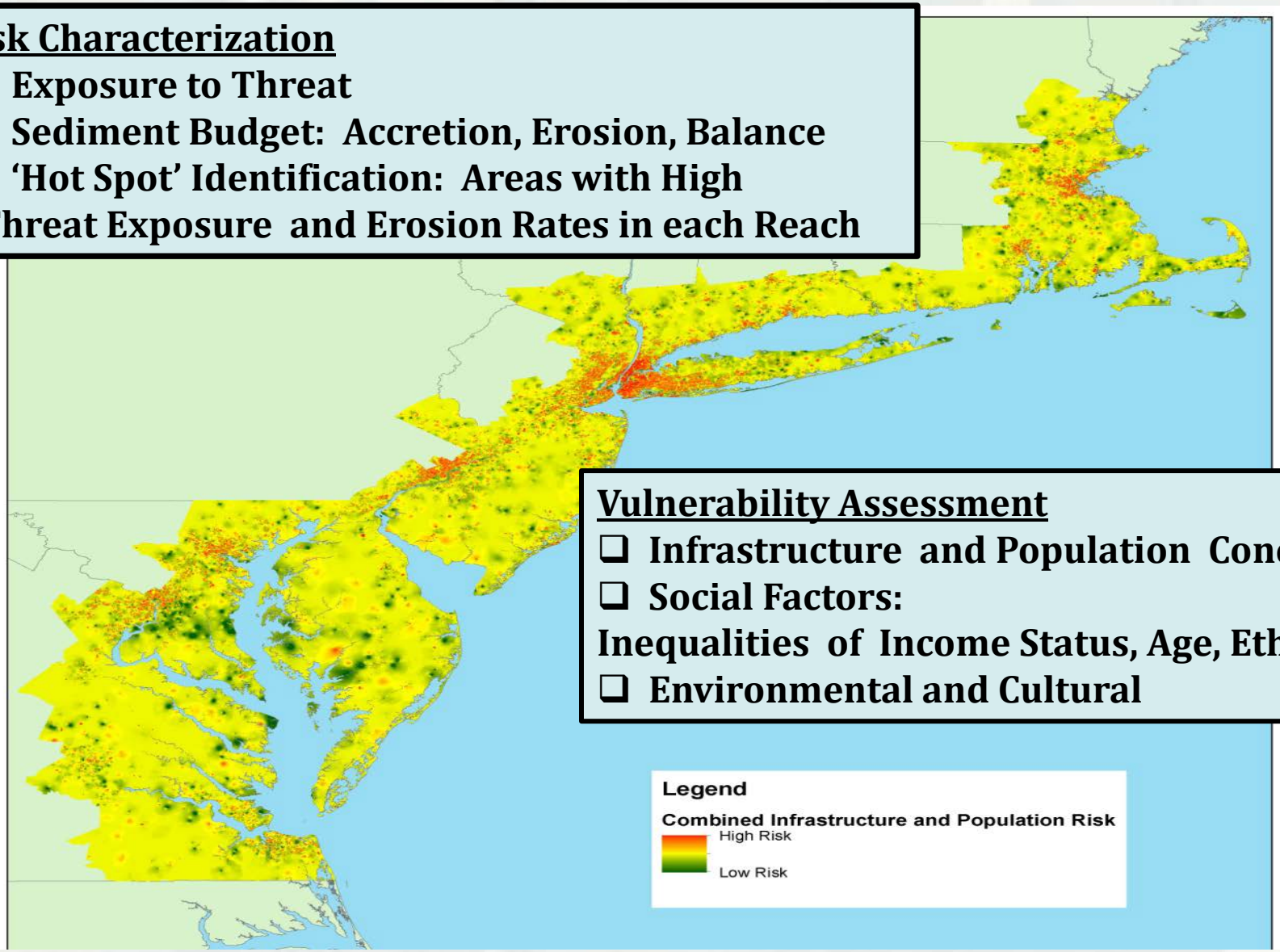
Measures - Vulnerability

Measures by Reach
Integrated Conceptual Plans for Vulnerable Areas

Risk Reduction Framework

Risk Characterization

- ❑ Exposure to Threat
- ❑ Sediment Budget: Accretion, Erosion, Balance
- ❑ 'Hot Spot' Identification: Areas with High Threat Exposure and Erosion Rates in each Reach



Vulnerability Assessment

- ❑ Infrastructure and Population Concentration
- ❑ Social Factors:

Inequalities of Income Status, Age, Ethnicity

- ❑ Environmental and Cultural

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Coastal Risk Reduction and Resilience Measures

Measure	Definition	Effect	Examples
Natural	Created through the action of physical, biological, geologic, and chemical processes operating in nature	Shoreline erosion control, wave and surge attenuation, especially in low-energy environments; additional resilience benefits; dynamic behavior and response affect performance with respect to objectives	Barrier islands, dunes, reefs, wetlands, marsh islands and riparian corridors
Nature-Based	Products of planning, engineering design, and construction incorporating natural processes that contribute to coastal risk reduction and resilience	Shoreline erosion control, wave and surge attenuation, especially in low-energy environments; dynamic behavior and response affect performance with respect to objectives	
Non-Structural	Products of public policy, management and regulatory practices; may include pricing schemes, planning, engineering design, and construction	Modify or avoid the impacts of the hazard (vs. modifying the hazard); relatively predictable level of performance with respect to objectives	Structure acquisitions or relocations, flood proofing, implementing flood warning systems, flood preparedness planning, use regulations, development restrictions within the greatest flood hazard areas, elevated development, managed retreat, evacuation, buyout and leaseback
Structural	Products of planning, engineering design, and construction	Shoreline erosion control, wave and surge attenuation, reduced flooding; relatively predictable level of performance with respect to objectives	Levees, storm surge barrier seawalls, groins, revetments, and near-shore breakwaters

Coastal Risk Reduction and Resilience Measures

Nature-Based Features as Risk Resiliency Measures

- Natural landscapes or engineered, and blended solutions
- Provides multiple, diverse benefits
- Intrinsically dynamic, adaptive, and potentially more resilient

- Interagency Webinars
- Interagency Meetings
- Planning Aid Reports
- Performance Evaluation
  - Identifying features that were especially resilient to storms
  - Advancing tools for evaluation of benefits including coastal storm risk reduction

Way Ahead

- ❑ Interagency and Tribal coordination ongoing
- ❑ Plan Formulation
  - Intensive assessment, GIS analyses and future scenarios for 36 reaches
  - Existing/future conditions
  - Vulnerable populations & infrastructure
  - Identification of risk and application of appropriate measures
  - Shared-waters analysis
  - Institutional and policy barriers
- ❑ Integrate Regional Plans
  - NYC Mayor's Report
  - Joint Field Offices State Recovery Support Strategies
  - Task Force Strategy
- ❑ Agency Technical Review of Analytic Products - SAD

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Way Ahead

- **Deliverables (Jan 2015)**
  - Compilation of Impacts & Effects from Hurricane Sandy
  - Storm Suite Modeling
  - Coastal GIS Analysis
  - Coastal Risk Reduction Framework and Institutional Barriers
    - Identify activities / areas for further analyses
    - Range of measures and parametric costs
- **Outcomes:**

Develop framework and identify institutional barriers, and in doing so,

  - Enable crosscut budgeting to "buy down" risk
  - Align agency priorities
  - Strengthen Regional Partnerships
  - Leverage resources
  - Provide "roadmap" and catalyst for Regional Risk Reduction

Discussion

http://www.nad.usace.army.mil/Missions/CivilWorks/HurricaneSandyCoastalRecovery/NorthAtlanticComprehensiveStudy.aspx

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