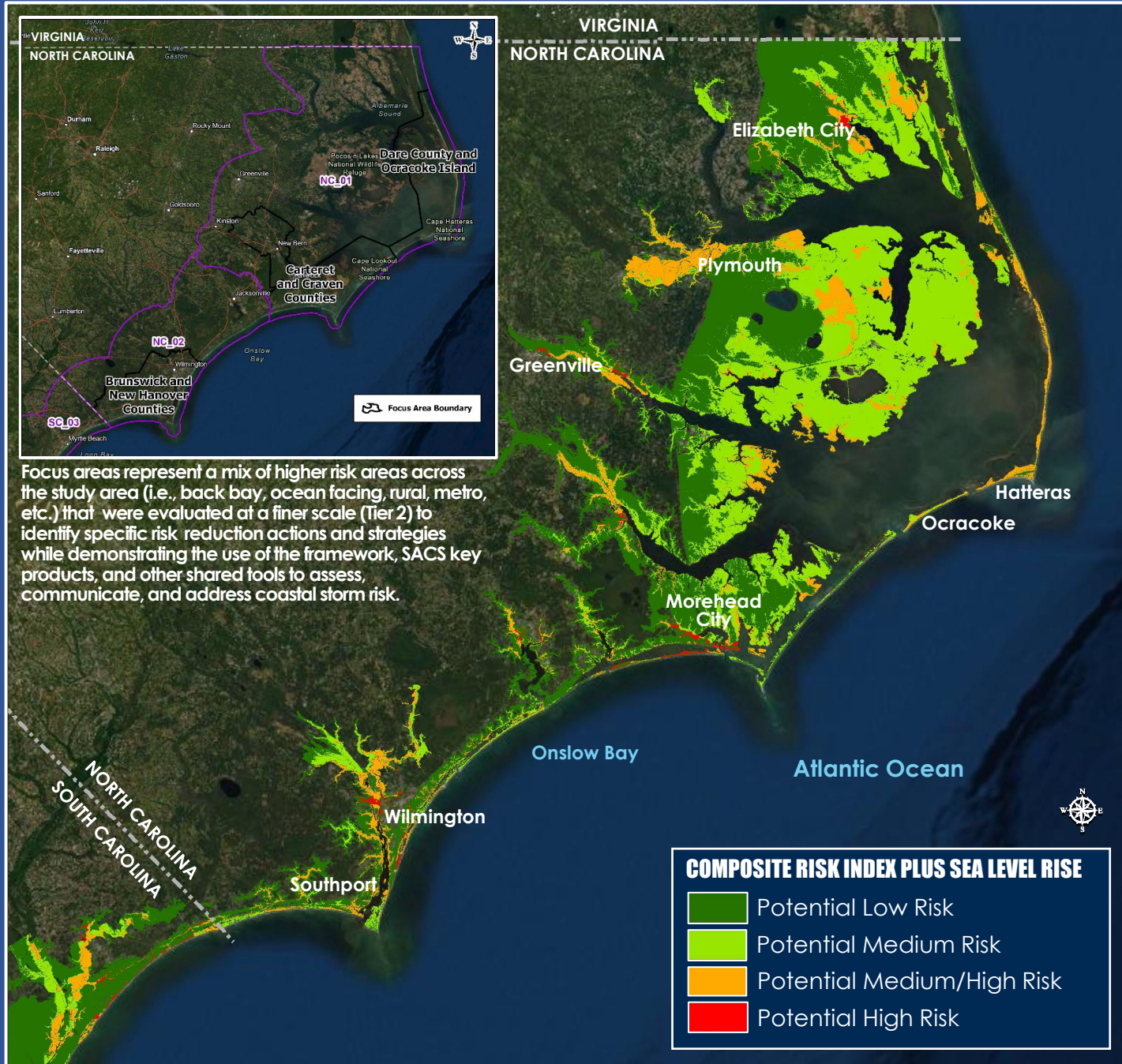


## NORTH CAROLINA SUMMARY

North Carolina has the third highest potential economic risk in the study area. The state has the potential for a significant increase in risk from sea level rise due to many bays and numerous counties along the state's northern coastline. Risk tends to be more dispersed throughout relatively less developed areas. More than 31 percent of the risk is not in a census place and this increases to nearly 35 percent with 3 feet of sea level rise. Nearly two-thirds of the risk in the state is in New Hanover, Carteret, Brunswick, and Dare counties (refer to Focus Area Map below).

## TIER 1 COMPOSITE RISK ASSESSMENT MAP (PLUS SEA LEVEL RISE)



## NORTH CAROLINA SACS SNAPSHOT

|  |  |  |                         |                    |                                 |                     |  |  |  |   |                                 |  |
|--|--|--|-------------------------|--------------------|---------------------------------|---------------------|--|--|--|---|---------------------------------|--|
| <p><b>47</b><br/>Hurricane Strikes<br/>(1851-2021)</p>   | <p><b>3</b><br/>Deep Draft Harbors</p> <p>Annual Dredge Volume:<br/>7,700,000 Cubic Yards</p>                        | <p>More Than<br/><b>13,000</b><br/>Miles Of Tidally Influenced Coastline</p>   |                         |                    |                                 |                     |  |  |  |   |                                 |  |
| <p><b>324,000</b><br/>Estimated Population Within High Socially Vulnerable Communities</p>   | <p><b>531,000</b><br/>Estimated Vulnerable Structures<br/>Footprint: 500 year Floodplain + 3 Feet Sea Level Rise</p> | <p><b>17</b><br/>Priority Environmental Areas (PEAs)</p>   |                         |                    |                                 |                     |  |  |  |   |                                 |  |
| <p><b>26</b><br/>Beach Nourishment Projects<br/>Federal and Non-Federal</p>  | <p><b>158</b><br/>High-Risk Locations<br/>Future Condition with 3 Feet Sea Level Rise</p>                            | <p><b>156%</b><br/>Increase in Economic Damages from the Existing to the Future Condition<br/>(with 3 feet Sea Level Rise)</p> |                         |                    |                                 |                     |  |  |  |   |                                 |  |
| <p><b>OTHER:</b></p> <ul style="list-style-type: none"> <li>134,987 Federal Flood Insurance Policies</li> <li>Jobs and Federal, State, and Local Revenues at Risk</li> </ul>   |  |  |                         |                    |                                 |                     |  |  |  |   |                                 |  |
| <p><b>Sources (rows, left to right):</b></p> <table border="0"> <tr> <td>1) NOAA HURDAT Database</td> <td>6) SACS Appendices</td> </tr> <tr> <td>2) 2020 RSM Optimization Report</td> <td>7) SACS SAND Report</td> </tr> <tr> <td>3) NOAA Environmental Sensitivity Index (ESI) Guidelines</td> <td>8) SACS Tier 1 &amp; Tier 2 Risk Assessments</td> </tr> <tr> <td>4) 2016 CDC Social Vulnerability Index</td> <td>9) SACS Tier 2 Economic Risk Assessment</td> </tr> <tr> <td>5) National Structure Inventory</td> <td></td> </tr> </table> |  |  | 1) NOAA HURDAT Database | 6) SACS Appendices | 2) 2020 RSM Optimization Report | 7) SACS SAND Report | 3) NOAA Environmental Sensitivity Index (ESI) Guidelines | 8) SACS Tier 1 & Tier 2 Risk Assessments | 4) 2016 CDC Social Vulnerability Index | 9) SACS Tier 2 Economic Risk Assessment | 5) National Structure Inventory |  |
| 1) NOAA HURDAT Database  | 6) SACS Appendices   |  |                         |                    |                                 |                     |  |  |  |   |                                 |  |
| 2) 2020 RSM Optimization Report  | 7) SACS SAND Report  |  |                         |                    |                                 |                     |  |  |  |   |                                 |  |
| 3) NOAA Environmental Sensitivity Index (ESI) Guidelines   | 8) SACS Tier 1 & Tier 2 Risk Assessments   |  |                         |                    |                                 |                     |  |  |  |   |                                 |  |
| 4) 2016 CDC Social Vulnerability Index   | 9) SACS Tier 2 Economic Risk Assessment  |  |                         |                    |                                 |                     |  |  |  |   |                                 |  |
| 5) National Structure Inventory  |  |  |                         |                    |                                 |                     |  |  |  |   |                                 |  |



## RECOMMENDATIONS

The Coastal Storm Risk Management Framework, SACS key products, and other shared tools were used to assess and communicate risk across the SACS Study Area, and ultimately to address the assessed risk with a series of recommendations. The entire process was implemented with input from stakeholders across federal, state, and local public and private sectors. Recommendations to manage coastal storm risk are grouped into six categories, as illustrated in the icon graphics below, and are further grouped by timeframe : near term (< 5 years), mid term ( 5 10 years), and long term (> 10 years), as well as by responsible party (multi agency, USACE, and Congress).

|   |   |  |   |   |                      |
|---|---|--|---|---|----------------------|
| <p>Activities and Areas Warranting Further Analysis</p> | <p>Address Barrier Preventing Comprehensive Risk Management</p> | <p>Design and Construction Efforts</p> | <p>Recommendations on Previously Authorized USACE Construction Projects</p> | <p>Regional Sediment Management Practices</p> | <p>Study Efforts</p> |
|---|---|--|---|---|----------------------|

## RECOMMENDATION CATEGORIES DEFINED

- Activities and Areas Warranting Further Analysis:** This category includes development of tools, data collection, and multi-agency efforts such as those undertaken by Silver Jackets teams, which bring together multiple state, federal, and sometimes tribal and local agencies to manage risk from flooding and other natural disasters.
- Address Barriers Preventing Comprehensive Risk Management:** This category advances opportunities to address the multiple barriers preventing comprehensive risk management identified in the SACS report.
- Design and Construction Efforts:** Examples include recommendations that support design and construction of tentatively selected or recommended plans from USACE CSRSM studies conducted separately from SACS.
- Recommendations on Previously Authorized USACE Construction Projects:** This category includes recommendations that maintain and/or adapt existing USACE CSRSM projects to continue providing storm risk management as sea level rises.
- Regional Sediment Management Practices:** This category supports a systems approach for more efficient and effective use of sediments in coastal environments, ranging from agency collaboration on sand source identification to leveraging the beneficial use of dredged material with emerging natural, nature-based features (NNBF).
- Study Efforts**  
Examples include USACE feasibility study recommendations, studies that may be led by other stakeholders, and studies that fall under existing USACE authorities, such as the Continuing Authorities Program (CAP) and Planning Assistance to States (PAS).

## NORTH CAROLINA RECOMMENDATIONS

The recommendations to the right include:

### 1 REGIONAL RECOMMENDATIONS APPLICABLE TO NORTH CAROLINA

Regional Priority Recommendations may be applicable to the entire region, such as improving understanding and application of compound flooding effects, or they may be location-specific recommendations to address areas with the most significant risk relative to the entire study area.

### 2 NORTH CAROLINA-SPECIFIC RECOMMENDATIONS

There are seventeen (17) Recommendations specific to North Carolina. Of these, twelve (12) are USACE-led recommendations and five (5) are non-USACE-led recommendations. North Carolina Recommendations are consistent with Key Finding in the SACS Main Report. Additionally, multiple Recommendations support the North Carolina State Resiliency Strategy.

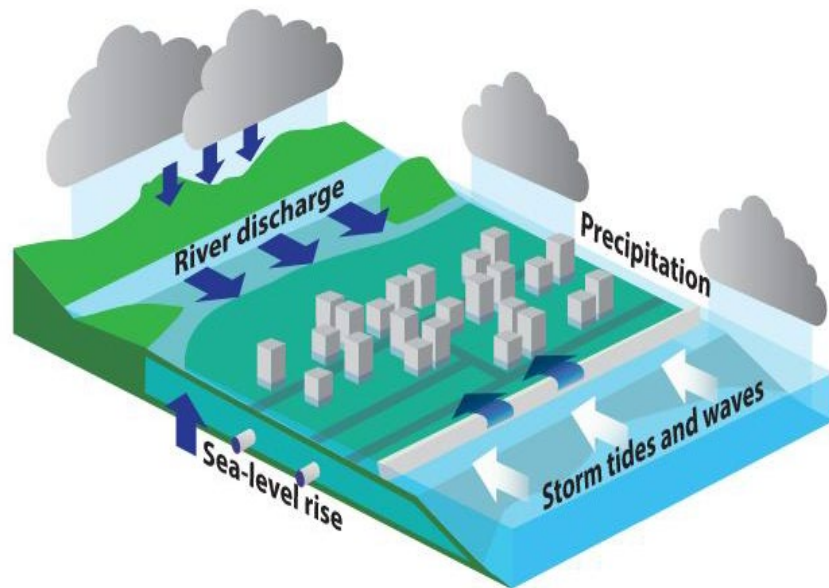


Figure 1. Conceptual illustration of compound flooding

## NORTH CAROLINA RECOMMENDATIONS

| CATEGORY                                     | TIMING*   | TYPE** | RECOMMENDATION  | ASSIGNED TO  | NEXT STEP                                 |
|--|-----------|--------|---|--------------|---|
| Activities/Areas Warranting Further Analysis | Near-Term | SP     | FPMS Special Study – CHS Training Workshop.   | USACE        | Funding                                   |
|  | Mid-Term  | SP     | Compound Flooding Modeling Effort (National Oceanic and Atmospheric Administration's National Hurricane Center and National Water Center).    | Multi-agency | Stakeholder Collaboration                 |
|  | Mid-Term  |        | Enhanced Building-level Risk Assessments (North Carolina Emergency Management, University of North Carolina - UNCW, USACE).                   | Multi-agency | Stakeholder Collaboration                 |
|  | Mid-Term  |        | Community Interest Night - Down East Community (Floodplain Management Services (FPMS) Special Study).   | USACE        | Stakeholder Collaboration                 |
|  | Mid-Term  |        | Leverage CHS directly to NCORR Strategic Buyout Program.  | USACE        | Stakeholder Collaboration                 |
| Address Barriers                             | Near-Term | SP     | Masonboro Inlet Jetty project.  | USACE        | Funding                                   |
| Design and Construction                      | Near-Term |        | Neuse River Basin and Tar-Pamlico Flood Risk Management Feasibility Study Recommendations.  | Congress     | Funding                                   |
|  | Near-Term |        | City of New Bern Flood Resiliency Study Recommendations.  | Multi-agency | Funding                                   |
| Regional Sediment Management                 | Mid-Term  |        | SAD-RSM-RCX coordination with SAW on applicable District projects identified in the 2020 RSM Optimization Update.                             | USACE        | Stakeholder Collaboration                 |
|  | Long-Term |        | Offshore Sand Management Strategy Discussions (Bureau of Ocean Energy Management - BOEM, USACE, N.C. Division of Coastal Management - NCDCM). | Multi-agency | Stakeholder Collaboration                 |
| Study Efforts                                | Near-Term | RP, SP | Back Bay Erosion/Marsh Restoration Study (Albemarle-Pamlico Estuary System – APES, USACE).  | Multi-agency | Identify Nonfederal Sponsor (USACE Study) |
|  | Near-Term | SP     | Oak Island CSRSM feasibility study.   | Congress     | Funding                                   |
|  | Near-Term | SP     | Lola Road - Emergency Streambank and Shoreline Erosion Protection.  | USACE        | Identify Nonfederal Sponsor (USACE Study) |
|  | Mid-Term  | SP     | Wanchese (south of Harbor) - Continuing Authority Program (CAP) 204.  | USACE        | Funding                                   |
|  | Near-Term | SP     | Masonboro Island - Beach, Dune and Back-barrier Ecosystem Restoration (USACE).  | Congress     | New Study Authority                       |
|  | Mid-Term  | SP     | NC Battleship Memorial - Continuing Authority Program (CAP) 205.  | USACE        | Stakeholder Collaboration                 |
|  | Near-Term | SP     | Cape Fear River Basin – Flood Risk Management (FRM)study (USACE).   | Congress     | New Study Authority                       |

## ADDITIONAL REGIONAL PRIORITY RECOMMENDATIONS APPLICABLE TO ALL STATES

| CATEGORY  | TIMING*   | TYPE** | RECOMMENDATION  | ASSIGNED TO  | NEXT STEP                 |
|---|-----------|--------|---|--------------|---------------------------|
| Activities/Areas Warranting Further Analysis      | Mid-Term  | RP     | Advance ongoing interagency work to improve understanding and application of compound flooding effects on existing and future coastal storm risk.   | Multi-Agency | Stakeholder collaboration |
|   | Near-Term | RP     | SACS key products should be maintained and updated by USACE and utilized, as applicable, by USACE and stakeholders to support consistent, efficient, and effective analyses. Additionally, other agency-led data and tools should be supported to facilitate use of consistent, up-to-date information for decision making. Examples of such agency-led efforts include the Bureau of Ocean Energy Management (BOEM) Minerals Management Information System (MMIS) and the National Oceanic and Atmospheric Administration (NOAA) Coastal Change Analysis Program.  | Multi-Agency | Funding                   |
|   | Near-Term | RP     | A multi-agency and collaborative approach should be used to develop methods that account for environmental benefits in traditional habitat units and economic quantities (monetized) in order to acknowledge and consider environmental benefits as a factor in deciding on a recommended plan in all future CSRSM studies.   | Multi-Agency | Guidance/ Policy          |
|   | Near-Term | RP     | Develop streamlined and vetted methods to quantify and incorporate risk management benefits to Regional Economic Development, Environmental Quality, and Other Social Effects to ensure Federal interest determinations consider benefits other than National Economic Development.   | USACE        | Guidance/ Policy          |
| Address Barriers                                  | Near-Term | RP     | Develop streamlined and vetted methods to quantify and incorporate risk management benefits to Regional Economic Development, Environmental Quality, and Other Social Effects to ensure Federal interest determinations consider benefits other than National Economic Development.   | USACE        | Guidance/ Policy          |
| Previously Authorized USACE Construction Projects | Near-Term | RP     | Prioritize funding for renourishment of existing federal CSRSM beach nourishment projects (except Puerto Rico and USVI).  | Congress     | Funding                   |
|   | Near-Term | RP     | Prioritize extension of federal periods of participation in existing CSRSM beach nourishment projects, as appropriate, to continue providing coastal storm risk management and important incidental benefits to coastal systems, communities, and environmental and cultural resources. Options could include prioritizing funding and review of studies on existing CSRSM projects, streamlining the study process for existing projects, or providing extensions to the existing periods of federal participation through legislation such as was done by WRDA 2018 (P.L. 115-270) (except Puerto Rico and USVI). | Congress     | Funding                   |
|   | Near-Term | RP     | Ongoing and future federal and nonfederal studies recommending beach nourishment should explicitly incorporate adaptive capacity to improve project resilience.   | Multi-Agency | Guidance/ Policy          |
| Regional Sediment Management                      | Near-Term | RP     | Promote partnerships and collaboration on beneficial use of dredged material opportunities.   | Multi-Agency | Stakeholder collaboration |
|   | Near-Term | RP     | Develop regional prioritization of strategies to address sand needs.  | USACE        | Funding                   |

\* Near-Term: < 5 Years / Mid-term: 5 – 10 Years / Long-term: >10 Years / \*\* RP: Regional Priority / SP: State Priority