

Bogue Banks Coastal Storm Damage Reduction Project Carteret County, North Carolina

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ABSTRACT: Bogue Banks is a barrier island located in Carteret County, North Carolina, along North Carolina's central coast. The study area encompasses approximately 24 miles of the barrier island itself, as well as the immediate area offshore, and a number of offshore borrow areas. The Recommended Plan is a berm and dune plan that addresses coastal storm damage reduction along about 22.7 miles of shoreline facing the Atlantic Ocean.

The non-Federal sponsor for the project is Carteret County, NC. Historically, coastal storms have eroded the coastline of Bogue

Banks, resulting in retreat of the natural protective beach berm and dune system, with subsequent damage to homes, infrastructure and the natural environment. The feasibility study assessed the need for hurricane and coastal storm damage reduction, as well as presenting the opportunity to protect existing habitat that would be lost otherwise.

The Recommended Plan (which is also the National Economic Development (NED) Plan), is a combination berm-and-dune plan. This plan proposes to reduce coastal storm damages by creating a fifty-foot wide beach berm 5.5 to 7 feet in height and approximately 22.7 miles in length in conjunction with approximately 5.9 miles of dune construction approximately 10 to 95-foot wide at the base, and varying between 15 to 20 feet in maximum elevation. The ends of the project would be tapered down with a 1,000-foot long transition at either end. The NED Plan renourishment interval is three years. The project includes initial dune and berm construction and sixteen renourishment cycles over the 50 year project life. Initial construction of the Recommended Plan will require the placement of 2.45 million cubic yards of material, and a projected 1.07 million cubic yards of material for each renourishment cycle. The total project volume requirement over the life of the project is approximately 19.6 million cubic yards of material. Estimated compatible sediment volumes available in three tested offshore borrow areas total 41.8 MCY, more than adequate to fulfill the requirements of the project. Stabilization of dunes would be accomplished through use of native grasses. As the Recommended Plan would not have any significant adverse effects, no mitigation measures (beyond management practices and avoidance) or compensation measures would be required.



Based on October 2014 price levels, the estimated First Cost of the Recommended Plan is about \$37,327,000, which would be cost-shared, based on full compliance with parking and access requirements, at 65% Federal, and 35% non-Federal. The sixteen periodic renourishments are estimated at a cost of \$14,341,000 each, at 50% Federal and 50% non-Federal cost shares. All project costs are allocated to the authorized purpose of hurricane and storm damage reduction.

Applying these cost-sharing percentages in accordance with Section 103 of the Water Resources Development Act of 1986, as amended, the Federal share of the first cost of initial construction would be about \$24,263,000 (65 percent) and the non-Federal share would be about \$13,064,000 (35 percent). Of that amount, the cost of lands, easements, rights-of-way, relocations, and dredged or excavated material disposal areas (LERRD) is estimated at \$3,655,000, all of which is eligible for LERRD credit as part of the non-Federal sponsor's 35% cost share.

The Federal share of the total cost for the sixteen periodic renourishments would be about \$7,170,500 (50 percent) and the non-Federal share would be about \$7,170,500 (50 percent). Carteret County would be responsible for the operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) of the project after construction, a cost currently estimated at about \$75,000 per year.

Based on the current 3.5% discount rate and a 50-year period of analysis, the average annual costs of the project are estimated to be \$6,065,000, including monitoring and OMRR&R. The Recommended Plan would reduce potential coastal storm damages of \$337,681,000, by about 62% of the damageable inventory, or a damage reduction estimated at \$209,686,000. Residual damages would be approximately \$127,995,000. The equivalent average annual benefits, which include recreation benefits, are estimated to be approximately \$14,837,000 with net average annual benefits of approximately \$8,772,000. The benefit to cost ratio is approximately 2.45 to 1.

Report Documentation: Pertinent documentation on the project, the results of the CWRB and subsequent Washington-Level Review Actions are linked below:

- CWRB Agenda
- Project Map/Placemat
- Project Summary
- CWRB Briefing Slides
- CWRB Lessons Learned
- CWRB Meeting Record
- State & Agency Review Comments Letters
- Documentation of Review Findings
- Signed Chief of Engineers Report
- Advanced Copy to Congressional Committees
- ASA (CW) Memo to OMB
- OMB Response
- ASA (CW) Transmittal to Congress
- Signed Record of Decision
- Authorization

Additional Information: [South Atlantic Division](#)

[Wilmington District](#)