



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
441 G STREET NW
WASHINGTON, DC 20314-1000

CECW-SAD

2 July 2020

MEMORANDUM FOR the Assistant Secretary of the Army (Civil Works)

SUBJECT: Wrightsville Beach, North Carolina Integrated Validation Report and Environmental Assessment

1. Purpose: To request your review and approval of the subject Validation Report, which documents the need to modify the project authorization to increase the authorized cost to \$76,117,000.
2. Post-Authorization Change: The Wrightsville Beach Coastal Storm Risk Management (CSRМ) project was initially authorized under Section 203 of the Flood Control Act of 1962 (PL 87-874) at a total cost of \$345,000. Construction was initiated in 1964. This authorization provided for federal aid for periodic nourishment for a 10-year trial period after completion of construction to determine the technical viability of periodic nourishment. After the 10-year trial period ended in 1981, the project was re-evaluated for continued federal participation in periodic nourishment culminating in a recommendation to continue nourishment for 50 years, which was authorized in Section 501(a) of the Water Resources Development Act (WRDA) of 1986 (PL 99-662) at a total cost of \$9,120,000. The government and the non-federal sponsor entered into a Local Cooperation Agreement for the continued periodic nourishment on 27 June 1990.
3. The maximum cost for the authorized project, adjusted for allowable inflation in accordance with Section 902 of WRDA 1986 (33 U.S.C. 2280), is \$24,500,000. The current estimate of total project costs through Fiscal Year (FY) 2036, without inflation, is \$76,117,000 (October 2019 prices). Cumulative total project costs through FY 2019 are approximately \$22.2 million. The next scheduled periodic nourishment is in FY 2022.
4. Background:
 - a. The recommended plan is the National Economic Development plan and is a continuation of the existing Wrightsville Beach CSRМ project through the end of the current authorization for federal participation in periodic nourishment in FY 2036. This plan consists of approximately 15,650 feet (including transitions) of ocean shoreline fronting the majority of the Town of Wrightsville Beach, a dune having a crown width of 25 feet at 12.5 feet North American Vertical Datum of 1988 (NAVD88), a storm berm having a crown width of 50 feet at 9.5 feet NAVD88, and a varying-width construction berm at 5.5 feet NAVD88. The dune and berm extend north from the Masonboro Inlet north jetty. The average volume per nourishment interval is approximately 780,000 cubic yards for each of the four scheduled nourishment events through FY 2036. Dredged material for the beach fill would be obtained from Masonboro Inlet/Banks Channel as the primary borrow source in combination with an offshore source, to the extent required, through FY 2036. It is anticipated that an offshore

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borrow source would likely be needed for at least one of the four scheduled nourishment cycles.

b. The entire historic borrow area within Masonboro Inlet and about half of the borrow area in Banks Channel are located within a Coastal Barrier Resources System (CBRS) unit. The Coastal Barrier Resources Act (CBRA) was enacted in 1982 and contains restrictions on federal spending within undeveloped coastal barrier shorelines. Section 6 of CBRA (16 U.S.C. 3505) permits certain federal expenditures and financial assistance within the CBRS after consultation with the U.S Fish and Wildlife Service (USFWS). The Department of Interior recently amended their interpretation of the applicability of the exception at 16 U.S.C. 3505(a)(6)(G), determining that qualifying stabilization actions under this statutory exception are not limited to actions within a CBRS unit. Utilization of the Masonboro Inlet/Banks Channel borrow source thus would qualify under the exception to CBRA found at 16 U.S.C. 3505(a)(6)(G) for “non-structural projects for shoreline stabilization that are designed to mimic, enhance, or restore a natural stabilization system.” However, in order to be allowable, this exception also must be consistent with the three purposes of the CBRA, which are to minimize the loss of human life by not encouraging development in high risk areas; minimize the wasteful expenditure of federal revenues; and minimize the damage to fish, wildlife, and other natural resources associated with coastal barriers.

(1) Utilizing existing information about the Masonboro Inlet/Banks Channel borrow source and information gathered about the offshore borrow source, it has been determined that the use of Masonboro Inlet/Banks Channel as the primary borrow source is consistent with the three purposes of the CBRA. Because the area is part of the North Carolina National Estuarine Research Reserve system and a State Dedicated Nature Preserve under the North Carolina Nature Preserves Act, use of the Masonboro Inlet/Banks Channel does not encourage development on the barrier islands. Utilization of the Masonboro Inlet/Banks Channel borrow source is the lowest cost alternative and its use is environmentally preferable to only using the offshore borrow source.

(2) The Department of Interior’s reinterpretation of the exception to CBRA in 16 U.S.C. 3505(a)(6)(G), which resulted in allowing the use of the Masonboro Inlet/Banks Channel as a borrow source for the project, was issued subsequent to the completion of the report by the U.S. Army Corps of Engineers (Corps) Wilmington District Commander. Thus, that report does not reflect use of the Masonboro Inlet/Banks Channel as part of the recommended plan. The Wilmington District reinitiated consultation with the USFWS in an electronic mail message dated 20 December 2019. In an addendum to the initial consultation request dated 26 February 2020, the Wilmington District provided proposed impact minimization measures. In a letter dated 10 March 2020, the USFWS concurred that the project meets the exception at 16 U.S.C. 3505(a)(6)(G), if the Corps adopts the measures listed in the 10 March 2020 USFWS letter and the 26 February 2020 addendum to the Corps’ 20 December 2019 CBRA consultation request to USFWS. The Wilmington District will adopt these measures in its implementation of the project.

c. Based on FY 2020 price levels, the estimated total project cost is \$76,117,000, which includes the cost of four periodic nourishment events during the authorized period of

federal participation through FY 2036. The Corps Walla Walla District Cost Engineering Mandatory Center of Expertise completed a Cost and Schedule Risk Analysis for the project and certified the revised total project cost estimate on 9 October 2019. No additional lands, easements, rights-of-way, relocations, or dredged or excavated material placement areas are required for the recommended plan.

5. Updated Project Costs and Benefits: Based on FY 2020 price levels, a 2.75-percent discount rate, and a 50-year period of analysis, the total equivalent average annual costs of the recommended plan are estimated to be \$1,424,000. The average annual equivalent benefits are estimated to be \$10,771,000, which include incidental recreation benefits of \$3,500,000. The average annual net benefits are approximately \$9,347,000 and the benefit-to-cost ratio is 7.6. The change in cost is not due to any changes in the overall scope of the project, project purpose, project location, local cooperation agreements, or as a result of any modifications required by law. Primary cost drivers to date for the periodic nourishment of this project include significant increases in mobilization and demobilization costs, changes in conditions at the Masonboro Inlet/Banks Channel borrow site, and variations in sand volume placed on the shoreline for each periodic nourishment cycle.

a. Risk and uncertainty have been explicitly factored into the economic analysis of this project. A statistical risk-based model, Beach-fx, was used in this study to formulate and evaluate the project in a life-cycle approach. The application of Beach-fx in this study is to estimate future without project damages and to quantify the damages prevented by various CSRMs alternatives for the Wrightsville Beach CSRMs project over the 50-year period of analysis. The project is intended to address erosion and prevent damages to structures and infrastructure; however, it is not intended to, nor will it, reduce the risk of loss of life during major storm events. Loss of life can only be prevented by residents and visitors following the local evacuation plans that are already in place.

b. The direct and indirect physical effects of projected future sea level change on design, construction, operation, and maintenance of the project were incorporated in accordance with Engineering Regulation 1100-2-8162. Three estimates of sea level change were evaluated: a baseline estimate representing the minimum expected sea level change, an intermediate estimate, and a high estimate representing the maximum expected sea level change. It was determined that sea level could rise by 0.0068 feet (baseline), 0.013 feet (intermediate), or 0.0327 feet (high) from FY 2022 to FY 2036. Adaptive management, such as adjusting the timing of periodic nourishment and project volume requirements based on monitoring reports, will be used to compensate for any significant accelerated sea level rise beyond the historical or low rate should it become necessary.

6. Project Cost Sharing: The Town of Wrightsville Beach is the non-federal cost-sharing sponsor for the project. The federal and non-federal shares of the total project cost are \$53,788,000 and \$22,329,000, respectively, in accordance with multiple authorities. In accordance with Section 103(c)(5) of WRDA 1986, as amended (33 U.S.C. 2213(c)(5)), the \$22,216,000 of sunk costs for the CSRMs project to date are shared 65 percent federal (\$14,440,000) and 35 percent non-federal (\$7,776,000). In accordance with the cost sharing provisions of Section 103(d)(2) of WRDA 1986, as amended (33 U.S.C. 2213(d)(2)),

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the \$29,106,000 required for the remaining periodic nourishment of the CSRSM project is shared 50 percent federal (\$14,553,000) and 50 percent non-federal (\$14,553,000). In accordance with Section 111 of the River and Harbor Act of 1968 (PL 90-483) the estimated cost of \$24,795,000 to mitigate for impacts to the Wrightsville Beach shoreline caused by the Masonboro Inlet North Jetty navigation project is a federal cost. The estimated cost for operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) of the project is \$75,000 per year. OMRR&R is a 100% non-federal cost and responsibility.

7. Environmental Considerations: Existing environmental authorizations for this project include seasonal environmental windows. The Validation Report and its integrated Environmental Assessment do not propose changes to existing environmental windows; however, consultation with resource agencies locally and regionally will likely result in changes to those seasonal environmental windows. The Wilmington District expects to programmatically address changes to environmental windows, including changes to the time of year when this project is constructed, if applicable, in a supplemental National Environmental Policy Act (NEPA) document covering multiple projects.

8. Technical, Policy, and Legal Review: In accordance with Corps policy regarding the review of decision documents, all technical, engineering and scientific work underwent an open, dynamic, and rigorous review process to ensure technical quality. This included District Quality Control, Agency Technical Review, review and certification by the Cost Engineering Mandatory Center of Expertise, and policy and legal compliance review. All comments and concerns from these reviews have been addressed and incorporated into the final report. This validation report is excluded from the requirement to perform Independent External Peer Review (IEPR) because this project does not meet any of the mandatory triggers for IEPR under Section 2034 of WRDA 2007 (PL 110-114), as amended.

9. Conclusion and Recommendation: I have reviewed the Validation Report and concur with the increase of the authorized cost to \$76,117,000 (October 2019 price level). I recommend that the enclosed Validation Report be transmitted to Congress as a basis for increasing the authorized project cost of the Wrightsville Beach CSRSM project.



ALVIN B. LEE
Director of Civil Works

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