



DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF ENGINEERS
WASHINGTON, D.C. 20314-1000

JAN 04 2006

REPLY TO
ATTENTION OF:

CEMP-NAD (10-l-7a)

SUBJECT: Raritan Bay and Sandy Hook Bay, Union Beach, New Jersey

THE SECRETARY OF THE ARMY

1. I submit for transmission to Congress my report on the study to reduce hurricane and storm damages at the community of Union Beach, New Jersey. It is accompanied by the report of the district and division engineers. These reports are in partial response to a resolution by the Committee on Public Works and Transportation of the U.S. House of Representatives adopted 1 August 1990. The resolution requested a review of existing reports on Raritan Bay and Sandy Hook Bay, New Jersey, to determine whether any modifications to the recommendations contained in the previous reports are advisable at this time. Pre-construction engineering and design activities for this proposed project will be continued under the authority provided by the resolution cited above.

2. The reporting officers recommend a plan for hurricane and storm damage reduction for Union Beach, New Jersey. The plan consists of levees, floodwalls, road raising, relocations, and closure structures, sector gates and pump stations at creeks, and a dune and beachfill with periodic nourishment to form a continuous line of protection on the east, north, and west boundaries of the project area. On the east, the Chingarora Creek element of the recommended plan consists of approximately 6,430 feet of levee and 4,960 feet of floodwall that begins at the high ground near the intersections of Florence Avenue and Bank Street and ends at the northwestern end of the shorefront element (dune). The levees have a 10-foot crest width, 2.5:1 side slopes and top elevation of +15 feet NGVD, and range in average height from five to eleven feet. The floodwalls also have a top elevation of +15 feet NGVD and range in height above ground level from averages from 7 to 11 feet. Three 6'x 6' sluice-type closure gates are provided at the Chingarora Tributary and a road closure gate is provided at Broadway. Drainage structures are provided to facilitate interior drainage runoff. Along the Raritan Bay shoreline (bayfront element) the project consists of a dune and beach incorporating terminal groins and revetments stretching approximately 3,160 feet from the Chingarora Creek levee/floodwall alignment to the levee alignment near Flat Creek. The dune would have a 50-foot crest width, landward slope of 1:5, and seaward slope of 1:10, with a top elevation of +17 feet NGVD. The dune would be stabilized with dune grass and fencing. The beach berm would extend from 50 to 164 feet in width with a slope of 1:15 and elevation of +9 feet NGVD. A total of 688,000 cubic yards of sand would be used for the initial construction including 12 feet

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of advance placement. Periodic renourishment would occur at a 9-year cycle with 21,000 cubic yards by trucking for a period of 50 years following the initiation of construction. To reduce fill losses and the drift of fill materials into adjacent salt marshes and to reduce renourishment fill costs, terminal groins would be constructed at both ends of the dune and beach fill. The Flat and East Creeks element of the flood protection consists of approximately 4,440 feet of levees and 1,930 feet of floodwall that begins at the southeastern limit of the shorefront element and ties into the existing Keansburg levee at the eastern end of that project's limits. The levees have a 10-foot crest width, 2.5:1 side slopes and top elevation of +15 feet NGVD, and range in average height from five to eleven feet. The floodwalls also have a top elevation of +15 feet NGVD and range in height above ground level from averages from 3 to 11 feet. Sector gates and pump stations are provided at Flat Creek and East Creek with three 6'x 6' sluice-type closure gates provided at the East Creek Tributary. A small supplemental interior levee is provided for the low-lying area between East Creek and the East Creek Tributary. The levee is approximately 3,390 feet in length, with a 2-foot crest width, 2:1 side slopes and top elevation of +8 feet NGVD. Drainage structures are provided to facilitate interior drainage runoff. Although the recommended plan was designed and further refined to avoid and minimize adverse ecological affects, construction of the flood control components on Chingarora, East and Flat Creeks would adversely affect 8.4 acres of wetland vegetation. A mitigation plan is included in the project, which will convert 12 acres of wetland *Phragmites* in the Flat Creek area to 10 acres of salt marsh and 2 acres of scrub-shrub habitat. Also in the Flat Creek area, 2.5 acres of upland *Phragmites* would be converted to wetland herbaceous/scrub-shrub habitat. Finally, 3 acres of wetland *Phragmites* in the East Creek area would be converted to wetland scrub-shrub habitat.

3. Based on October 2005 price levels, the total first cost for construction of the recommended plan is \$112,600,000. Cost sharing for initial construction will be 65 percent Federal and 35 percent non-Federal in accordance with the requirements of the Water Resources Development Act of 1986 (WRDA 86), as amended. The estimated total Federal first cost of construction is \$73,200,000, and the estimated total non-Federal first cost of construction is \$39,400,000. Five periodic nourishment actions are anticipated during the 50-year period following initiation of project construction. Total renourishment costs are estimated to be \$6,400,000. The cumulative construction cost, including initial construction and periodic nourishment, is estimated to be \$119,000,000. The average annual cost of future periodic nourishment is estimated to be \$130,000, based on a Federal discount rate of 5.125 percent and a 50-year period of analysis. Cost sharing of periodic nourishment would be 50 percent Federal and 50 percent non-Federal in accordance with WRDA 1986, as amended, subject to the availability of appropriations. All costs for operation, maintenance, repair, rehabilitation, and replacement of the recommended project are the responsibility of the non-Federal sponsor. Based on October 2005 prices and a Federal discount rate of 5.125 percent, the estimated average annual cost of the recommended plan is \$7,300,000, average annual benefits are \$12,800,000, and average annual net benefits are \$5,500,000. The project's benefit-to-cost ratio is 1.8 to 1.0. The recommended plan is the national economic development plan.

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4. I generally concur with the findings, conclusions, and recommendations of the reporting officers. The plan developed is technically sound, economically justified, and environmentally and socially acceptable. The plan conforms with essential elements of the U.S. Water Resources Council's Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies and complies with other administrative and legislative policies and guidelines.

5. The views of interested parties, including Federal, State, and local agencies, have been considered. Specific requests have been made for additional coordination with New Jersey and Federal resources agencies as detailed designs proceed on the project. In addition, the U.S. Environmental Protection Agency (EPA) raised a specific concern that wetland habitat mitigation was insufficient because it was not based on a EPA's preferred wetlands enhancement and creation ratios. The U.S. Army Corps of Engineers (USACE) has agreed to continue close coordination with the participating resources agencies as the design and construction process continues. However, the New York District, North Atlantic Division, and Headquarters have all reviewed the impact assessments, mitigation needs determination, and mitigation plan, and found them to be compliant with USACE regulations. USACE has fully considered the State and Federal Agency comments, but based on our evaluations, the existing impacts assessment is valid, and the additional mitigation, as requested by EPA, is not warranted.

6. Accordingly, I recommend implementation of the authorized project in accordance with the reporting officers' plan with such modifications as in the discretion of the Chief of Engineers may be advisable. My recommendation is subject to cost sharing, financing, and other applicable requirements of WRDA 86, as amended. Also, this recommendation is subject to the non-Federal sponsor agreeing to comply with all applicable Federal laws and policies, including the following requirements:

a. Provide non-Federal costs assigned to hurricane and storm damage reduction as further specified below:

- (1) Enter into an agreement which provides, prior to construction, 25 percent of pre-construction engineering and design (PED) costs;
- (2) Provide, during construction, any additional funds needed to cover the non-federal share of PED costs;
- (3) Provide all lands, easements, and rights-of-way, including suitable borrow areas, and perform or ensure the performance of any relocations determined by the Federal Government to be necessary for the initial construction, periodic nourishment, operation, and maintenance of the project;
- (4) Provide, during construction, any additional amounts as are necessary to make its total contribution equal to 35 percent of initial project costs assigned to hurricane and storm

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damage reduction plus 100 percent of initial project costs assigned to protecting undeveloped private lands and other private shores which do not provide public benefits.

- (5) Provide, during construction of each periodic nourishment, 50 percent of periodic nourishment costs assigned to hurricane and storm damage reduction, plus 100 percent of periodic nourishment costs assigned to protecting undeveloped private lands and other private shores which do not provide public benefits.
- b. For so long as the project remains authorized, operate, maintain and repair the completed project, or functional portion of the project, at no cost to the Federal Government, in a manner compatible with the project's authorized purposes and in accordance with applicable Federal and State laws and regulations and any specific directions prescribed by the Federal Government;
- c. Give the Federal Government a right to enter, at reasonable times and in a reasonable manner, upon property that the Non-Federal Sponsor, now or hereafter, owns or controls for access to the project for the purpose of inspecting, operating, maintaining, repairing, replacing, rehabilitating, or completing the project. No completion, operation, maintenance, repair, replacement, or rehabilitation by the Federal Government shall relieve the Non-Federal Sponsor of responsibility to meet the Non-Federal Sponsor's obligations, or to preclude the Federal Government from pursuing any other remedy at law or equity to ensure faithful performance;
- d. Hold and save the United States free from all damages arising from the initial construction, periodic nourishment, operation, maintenance, repair, replacement, and rehabilitation of the project and any project-related betterments, except for damages due to the fault or negligence of the United States or its contractors;
- e. Keep and maintain books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to the project in accordance with the standards for financial management systems set forth in the Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments at 32 Code of Federal Regulations (CFR) Section 33.20;
- f. Perform, or cause to be performed, any investigations for hazardous substances that are determined necessary to identify the existence and extent of any hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), Public Law 96-510, as amended, that may exist in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be required for the initial construction, periodic nourishment, operation, and maintenance of the project. However, for lands that the Federal Government determines to be subject to the navigation servitude, only the Federal Government shall perform such investigations unless the Federal Government provides the Non-Federal Sponsor with prior specific written direction, in which case the Non-Federal Sponsor shall perform such investigations in accordance with such written direction;

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- g. Assume complete financial responsibility for all necessary cleanup and response costs of any CERCLA regulated materials located in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be necessary for the initial construction, periodic nourishment, operation, or maintenance of the project;
- h. Agree that the Non-Federal Sponsor shall be considered the operator of the project for the purpose of CERCLA liability, and to the maximum extent practicable, operate, maintain, and repair the project in a manner that will not cause liability to arise under CERCLA;
- i. Comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended, and the Uniform Regulations contained in 49 C.F.R. Part 24, in acquiring lands, easements, and rights-of-way, required for the initial construction, periodic nourishment, operation, and maintenance of the project, including those necessary for relocations, borrow materials, and dredged or excavated material disposal, and inform all affected persons of applicable benefits, policies, and procedures in connection with said Act;
- j. Comply with all applicable Federal and State laws and regulations, including, but not limited to, section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. § 2000d), and Department of Defense Directive 5500.11 issued pursuant thereto, as well as Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army, and section 402 of the Water Resources Development Act of 1986, as amended (33 U.S.C. § 701b-12), requiring non-Federal preparation and implementation of flood plain management plans;
- k. Provide 35 percent of that portion of total historic preservation mitigation and data recovery costs assigned to initial construction of hurricane and storm damage reduction, 50 percent of those costs assigned to periodic nourishment and 100 percent of those costs assigned to protecting undeveloped private lands and other private shores which do not provide public benefits that are in excess of 1 percent of the total amount authorized to be appropriated for the project;
- l. Participate in and comply with applicable Federal floodplain management and flood insurance programs;
- m. Within one year after the date of signing a project cooperation agreement, prepare a floodplain management plan designed to reduce the impact of future flood events in the project area. The plan shall be prepared in accordance with guidelines developed by the Federal Government and must be implemented not later than one year after completion of construction of the project;

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- n. Prescribe and enforce regulations to prevent obstruction of, or encroachment on, the project that would reduce the level of protection it affords or that would hinder future periodic nourishment and/or the operation and maintenance of the project;
 - o. Not less than once each year, inform affected interests of the extent of protection afforded by the project;
 - p. Publicize floodplain information in the area concerned and provide this information to zoning and other regulatory agencies for their use in preventing unwise future development in the floodplain, and in adopting such regulations as may be necessary to prevent unwise future development and to ensure compatibility with protection levels provided by the project;
 - q. For so long as the project remains authorized, the Non-Federal Sponsor shall ensure continued conditions of public ownership and use of the shore upon which the amount of Federal participation is based;
 - r. Provide and maintain necessary access roads, parking areas, and other public use facilities, open and available to all on equal terms;
 - s. Recognize and support the requirements of Section 221 of Public Law 91-611, Flood Control Act of 1970, as amended, and Section 103 of the Water Resources Development Act of 1986, Public Law 99-662, as amended, which provides that the Secretary of the Army shall not commence the construction of any water resources project or separable element thereof, until the non-Federal sponsor has entered into a written agreement to furnish its required cooperation for the project or separable element; and
 - t. At least twice annually and after storm events, perform surveillance of the beach to determine losses of nourishment material from the project design section and advance nourishment section and provide the results of such surveillance to the Federal Government.
 - u. Do not use Federal funds to meet the non-Federal sponsor's share of total project costs unless the Federal granting agency verifies in writing that the expenditure of such funds is expressly authorized by statute.
7. The recommendation contained herein reflects the information available at this time and current departmental policies governing formulation of individual projects. It does not reflect program and budgeting priorities inherent in the formulation of a national civil works construction program nor the perspective of higher review levels within the executive branch. Consequently, the recommendation may be modified before it is transmitted to Congress as a

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proposal for authorization and implementation funding. However, prior to transmittal to Congress, the State of New Jersey, the non-Federal sponsor, interested Federal agencies, and other parties will be advised of any modifications and will be afforded an opportunity to comment further.

A handwritten signature in black ink, appearing to read 'Carl A. Strock', with a long horizontal line extending to the right.

CARL A. STROCK
Lieutenant General, USA
Chief of Engineers