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JUL 16 2013

SUBJECT: Walton County, Florida, Hurricane and Storm Damage Reduction, General Investigations Study

THE SECRETARY OF THE ARMY

1. I submit for transmission to Congress my report on hurricane and storm damage reduction along the Gulf of Mexico shoreline of Walton County, Florida. It is accompanied by the report of the district and division engineers. This report is in response to resolutions authorized both within the United States Senate and the U.S. House of Representatives. In the Senate, the Committee on Environment and Public Works adopted a committee resolution (unnumbered) on July 25, 2002, and in the House, the Committee on Transportation and Infrastructure adopted a resolution, Docket 2690, dated July 24, 2002. The resolutions requested the Secretary of the Army to review the feasibility of providing beach nourishment, shore protection and environmental restoration and protection in the vicinity of Walton County, Florida.
2. The reporting officers recommend authorization of a locally preferred plan (LPP) to reduce hurricane and storm damages by constructing a beach fill along the shoreline of Walton County, Florida. The recommended plan for hurricane and storm damage reduction includes construction of a 50-foot wide berm at elevation 5.5 NAVD that includes 25 feet of berm and an additional 25 feet of advanced nourishment along 18.8 miles of the Walton County shoreline. The project will also include added dune width in the construction area of either 10 or 30 feet. The design dune elevation will be constructed to match the existing 15 foot contour NAVD with a shoreward slope of 3H: 1V. The project will begin at the western boundary of the Walton County shoreline and extend eastward to the eastern boundary. The recommended plan includes the initial fill and four renourishments, for a total of five nourishments, in 50 years at an average of 10-year intervals. Initial construction of the recommended plan will require the placement of 3,868,000 cubic yards (cy) of material and a total of 7,157,000 cy for the four renourishments which average 1,789,000 cy of material each. Other associated features of the project are dune vegetation and replacement of dune walkover structures as required. Material for the berm and dune construction and renourishment will be dredged from a borrow site identified offshore of the shoreline area within state waters. Since the recommended plan would not have any significant adverse effects, no mitigation measures (beyond management practices and avoidance) or compensation measures would be required. The recommended plan is the Locally Preferred Plan for hurricane and storm damage reduction which includes areas requested by the non-Federal sponsor in addition to those included in the National Economic Development Plan (NED). Compared to the NED Plan, the LPP includes additional shoreline length of 3.6 miles to provide consistent shoreline protection in areas that were not economically justified. The LPP, similar to the NED Plan, will include a 50-foot berm with added dune widths of either 10 or 30

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feet throughout the project length. The Assistant Secretary of the Army (Civil Works) approved a policy exception allowing the Corps of Engineers to recommend the LPP by letter dated February 7, 2012. The extension will be funded entirely by the non-Federal sponsor.

3. The Walton County Board of Commissioners is the non-Federal cost sharing sponsor for all features. Based on October 2012 price levels, the estimated total nourishment cost of the NED Plan is \$143,340,000. Based on October 2012 price levels, the estimated total nourishment cost of the LPP is \$164,437,000, which includes the project first cost of initial construction of \$61,397,000 and a total of four periodic renourishments at a total cost of \$103,040,000. Periodic renourishments are planned at 10-year intervals. Cost sharing is applied in accordance with the provisions of Section 103 of the Water Resources Development Act (WRDA) of 1986, as amended by Section 215 of WRDA 1999, as follows:

a. The Federal share of the total first cost would be \$17,191,000 and the non-Federal share would be about \$44,206,000, which equates to 28 percent Federal and 72 percent non-Federal. The non-Federal costs include the value of lands, easements, rights-of-way, relocations, and dredged or excavated material disposal areas (LERRD) estimated to be \$737,000.

b. The Federal share of future periodic renourishment is estimated to be \$23,699,000 and the non-Federal share is estimated to be \$79,341,000 which equates to 23 percent Federal and 77 percent non-Federal.

c. Walton 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 \$168,000 per year.

4. Based on a 3.75 percent discount rate and a 50-year period of analysis, the total equivalent average annual costs of the project are estimated to be \$4,786,000, including monitoring and OMRR&R. All project costs are allocated to the authorized purpose of hurricane and storm damage reduction. The selected plan would reduce average annual coastal storm damages by about 92 percent and would leave average annual damages estimated at \$637,000. The equivalent average annual benefits, which include recreation benefits, are estimated to be \$7,570,000 with net average annual benefits of \$2,784,000. The benefit to cost ratio is approximately 1.6 to 1.

5. Risk and uncertainty has been explicitly factored into the economic analysis of this project. Chapter 6 of ER 1105-2-100, entitled "Risk-Based Analysis for Evaluation of Hydrology/Hydraulics and Economics in Shore Protection Studies" specifies the analysis requirements for shore protection projects, the fundamental requirement being that all shore protection analyses adopt a life cycle approach. A statistical risk based model, Beach-*fx*, was used in this study to formulate and evaluate the project in a life-cycle approach. Beach-*fx* is a comprehensive analytical framework for evaluating the physical performance and economic benefits and costs of storm damage reduction projects, particularly beach nourishment along

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sandy shores. The model has been implemented as an event-based Monte Carlo life-cycle simulation tool that is run on desktop computers. Beach-*fx* integrates the engineering and economic analyses and incorporates uncertainty in both physical parameters and environmental forcing, which enables quantification of risk with respect to project evolution and economic costs and benefits of project implementation. This approved modeling approach provides for a more realistic treatment of shore protection project evolution through the relaxation of a variety of simplifying assumptions that are made in existing, commonly applied approaches. The application of Beach-*fx* in this study is to estimate future without project damages and quantify the damages prevented by various storm damage reduction alternatives for Walton County over the 50 year project life. The project is intended to address erosion and prevent damages to structures and contents; it is not intended to, nor will it, reduce the risk to 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. These residual risks have been communicated to Walton County.

6. In accordance with the Corps Engineering Circular (EC 1165-2-211) on sea level change, the study performed a sensitivity analysis to look at the effects that different rates of accelerated sea level rise could have on the recommended plan. The plan was formulated using a historical or low rate of sea level rise, and the sensitivity analysis used additional accelerated rates, which includes what the EC defines as intermediate and high rates. The analysis found that the influence of current sea level rise on the project is relatively low as compared to other factors causing erosion (waves, currents, winds and storms). The magnitude of the short-term storm-induced erosion during hurricane events have a much greater affect along the beaches of Walton County than those indicated by the natural long term shoreline trends. The recommended plan was based on Beach-*fx* simulations that incorporated the observed rate of sea level rise. Adaptive management will be used including monitoring and adding additional volume of sand during renourishments to compensate for significant accelerated sea level rise beyond the current observed rate should it become necessary.

7. In accordance with the Corps Engineering Circular (EC 1165-2-209) on review of decision documents, all technical, engineering and scientific work underwent an open, dynamic and rigorous review process to ensure technical quality. This included an Agency Technical Review (ATR), an Independent External Peer Review (IEPR) (Type I), and a Corps Headquarters policy and legal review. All concerns of the ATR have been addressed and incorporated into the final report. The IEPR was completed by Battelle Memorial Institute. A total of 18 comments were documented. The IEPR comments identified significant concerns in areas of the economics and engineering assumptions and methodologies used to support the decision-making process and plan selection and the incorporation of risk and uncertainty into the project analyses. This resulted in expanded narratives throughout the report to support the decision-making process and justify the recommended plan. All comments from the above referenced reviews have been addressed and incorporated into the final documents. Overall the reviews resulted in improvements to the technical quality of the report.

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8. Washington level review indicates that the project recommended by the reporting officers is technically sound, environmentally and socially acceptable, and economically justified. The plan complies with all essential elements of the U.S. Water Resources Council's Economic and Environmental Principles and Guidelines for Water and Land related resources implementation studies and complies with other administrative and legislative policies and guidelines. Also the views of interested parties, including Federal, State and local agencies have been considered. During the State and Agency review, comments were received from the Florida Department of Environmental Protection and Department of Interior. These comments expressed the need to protect endangered species during construction and asked for clarification on the economic modeling. The USACE has acknowledged the need to protect endangered species, in compliance with the USFWS biological opinion and clarified the modeling results. In addition, the Florida State Historic Preservation Office (SHPO) wrote concerning the need for additional information to complete their review. The USACE referred the SHPO to the results of a previous SHPO review, which completed the consultation process.

9. I concur in the findings, conclusions, and recommendations of the reporting officers. Accordingly, I recommend that the plan to reduce hurricane and storm damages for Walton County, Florida be authorized in accordance with the reporting officers' recommended plan at an estimated project first cost of \$61,397,000 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 Federal and State laws and policies, including Section 103 of the Water Resources Development Act (WRDA) of 1986, as amended by Section 215 of WRDA 1999. The non-Federal sponsor would provide the non-Federal cost share and all LERRD. Further, the non-Federal sponsor would be responsible for all OMRR&R. This recommendation is subject to the non-Federal sponsor agreeing to comply with all applicable Federal laws and policies.

a. Provide a minimum of at least 35 percent of initial project costs assigned to coastal storm damage reduction, plus 50 percent of initial project costs assigned to protecting undeveloped public lands, plus 50 percent of initial project costs assigned to recreation, plus 100 percent of initial project costs assigned to protecting undeveloped private lands and other private shores which do not provide public benefits and 50 percent of periodic nourishment costs assigned to coastal 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 and as further specified below:

(1) Enter into an agreement which provides, prior to execution of the project partnership agreement, the non-Federal share of design costs;

(2) Provide all lands, easements, and rights-of-way, and perform or ensure the performance of all relocations determined by the Federal Government to be necessary for the initial construction, periodic nourishment, operation, and maintenance of the project;

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(3) 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 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 and 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;

(4) Provide 100 percent of the total project costs that reflect the difference between the National Economic Development (NED) Plan and the Locally Preferred Plan (LPP);

b. For so long as the project remains authorized, operate, maintain, repair, rehabilitate, and replace the project, or functional portions of the project, including any mitigation features, 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, for a minimum of three years after completion of the accounting for which such books, records, documents, and other evidence is required, to the extent and in such detail as will properly reflect total costs of construction of the project, and 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 (CERCLA), Public Law 96-510, as amended, 42 U.S.C. 9601-9675, 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;

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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;

g. Assume, as between the Federal Government and the non-Federal sponsor, 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, as between the Federal Government and the non-Federal sponsor, 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, PL 91-646, as amended by (42 U.S.C. 4601 – 4655), and the Uniform Regulations contained in 49 CFR 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, PL 88-352 (42 U.S.C. 2000d), 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 all applicable Federal labor standards and requirements, including but not limited to, 40 U.S.C. 3141 – 3148 and 40 U.S.C. 3701 – 3708 (revising, codifying, and enacting without substantial change the provisions of the Davis- Bacon Act (formerly 40 U.S.C. 276a et seq.), the Contract Work Hours and Safety Standards Act (formerly 40 U.S.C. 327 et seq.) and the Copeland Anti-Kickback Act (formerly 40 U.S. C. 276c et seq.);

k. Comply with Section 402 of the Water Resources Development Act of 1986, as amended (33 U.S.C. 701b-12), which requires the non-Federal interest to participate in and comply with applicable Federal floodplain management and flood insurance programs, prepare a floodplain management plan within one year after the date of signing a Project Cooperation Agreement, and implement the plan not later than one year after completion of construction of the project;

l. Provide the non-Federal share of that portion of the costs of mitigation and data recovery activities associated with historic preservation, that are in excess of one percent of the total

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amount authorized to be appropriated for the project, in accordance with the cost sharing provisions of the agreement;

m. Agree to participate in and comply with applicable Federal floodplain management and flood insurance programs;

n. 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 authorized.

o. Prevent obstructions of or encroachment on the project (including prescribing and enforcing regulations to prevent such obstructions or encroachments) which might reduce the level of protection it affords, hinder operation and maintenance or future periodic nourishment, or interfere with its proper function, such as any new developments on project lands or the addition of facilities which would degrade the benefits of the project;

p. Not less than once each year, inform affected interests of the extent of protection afforded by the project;

q. 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;

r. For so long as the project remains authorized, the non-Federal sponsor shall ensure continued conditions of public ownership, access, and use of the shore upon which the amount of Federal participation is based;

s. Provide, keep and maintain the recreation features, and access roads, parking areas, and other associated public use facilities, open and available to all on equal terms;

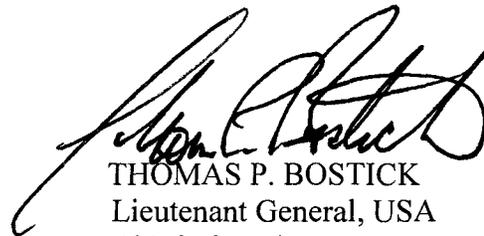
t. At least twice annually and after storm events, perform surveillance of the beach to determine losses of nourishment material from the project design section and provide the results of such surveillance to the Federal Government; and,

u. Comply with Section 221 of Public Law 91-611, Flood Control Act of 1970, as amended (42 U.S.C. 1962d-5b), and Section 103 of the Water Resources Development Act of 1986, PL 99-662, as amended (33 U.S.C. 22130, 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.;

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10. The recommendations contained herein reflect the information available at this time and current Departmental policies governing formulation of individual projects. These recommendations do 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 recommendations may be modified before they are transmitted to the Congress as proposals for authorization and implementation funding." However, prior to transmittal to the Congress, the non-Federal sponsor, the State, interested Federal agencies, and other parties will be advised of any modifications and will be afforded an opportunity to comment further.



THOMAS P. BOSTICK  
Lieutenant General, USA  
Chief of Engineers