



DEPARTMENT OF THE ARMY
CHIEF OF ENGINEERS
2600 ARMY PENTAGON
WASHINGTON, DC 20310-2600

DAEN

AUG 17 2020

SUBJECT: Turpentine Run, St. Thomas, United States Virgin Islands, Flood Risk Management

THE SECRETARY OF THE ARMY

1. I submit for transmission to Congress my report on the study of flood risk management along Turpentine Run, Nadir, St. Thomas, United States Virgin Islands (USVI). It is accompanied by the report of the Jacksonville District Commander. The report was prepared under the authority of Section 209 of the Flood Control Act of 1966 (Public Law (P.L.) 89-789), which authorizes studies for flood control for designated localities in the United States and its territories, including watersheds and streams of the Virgin Islands. Preconstruction engineering and design activities will continue under the study authority cited above.
2. The reporting officers recommend authorizing the National Economic Development Plan to reduce flood damages along Turpentine Run in St. Thomas, USVI. The plan involves replacement of the existing concrete channel with a new channel having greater capacity. Improvements would begin at the north end of the Nadir development and be completed downstream of the new Bovoni bridge at the Nadir racetrack. The principal features of the plan include:
 - a. A 260-foot levee along the northern edge of the Nadir development.
 - b. A 170-foot sheet pile wall along the development side of the channel.
 - c. A 60-foot drop structure near the entrance to the existing concrete channel.
 - d. A 460-foot "U" shaped concrete channel that transitions to a 1,385-foot trapezoidal, earthen channel lined with rip rap.
 - e. A 1,300-foot levee on the west side of the channel, south of the new Bovoni Road Bridge ending at the Nadir racetrack at the south end of the channel.
 - f. An interior drainage system to convey water from the small existing concrete channel to the Mangrove Lagoon, including 1,745 feet of pipe.
 - g. Recreation features including a nature trail on top of the levee, picnic tables, and parking.

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3. The USVI Department of Public Works is the non-federal cost-sharing sponsor for all features. Based on October 2019 price levels, the estimated total first cost of the recommended plan is \$43,662,000. In accordance with the cost sharing provisions of Section 103 of the Water Resources Development Act (WRDA) of 1986, as amended, the non-federal sponsor must contribute a minimum of 35 percent of construction costs, up to a maximum of 50 percent of construction costs, with a minimum 5 percent cash contribution. The remaining portion of the non-federal share can be provided in lands, easements, rights-of-way, relocations and dredged or excavated material disposal areas; in-kind contributions; cash; or a combination. The estimated share of costs is adjusted based on Section 1156 of WRDA 1986, as amended (33 USC 2310), which provides a waiver for a portion of the non-federal cost sharing for Puerto Rico, Territories, and Indian Tribes. As a result, the non-federal share would be reduced \$484,000 and the federal and non-federal shares of construction costs would be \$28,864,000 and \$14,798,000, respectively. The non-federal costs include the value of lands, easements, rights-of-way, relocations and dredged or excavated material disposal areas estimated at \$2,944,000. The USVI Department of Public Works would be responsible for operation, maintenance, repair, replacement and rehabilitation (OMRR&R) of the project at approximately \$35,000 per year.

4. Based on a 2.75 percent discount rate and a 50-year period of analysis, the total equivalent average annual costs of the project are estimated at \$765,000, including OMRR&R. Project costs are allocated to the authorized purpose of flood risk management and include incidental recreation costs. The recommended plan is expected to reduce flood risk from a flood which has a four percent chance of occurrence in any year (four percent Annual Chance Exceedance (ACE) event). The recommended plan would reduce average annual flood damages by approximately \$711,000 and would leave average annual residual damages estimated at \$90,000. The project would provide approximately \$169,000 in incidental annual recreation benefits for a total of \$880,000 in average annual benefits. Total net average annual benefits are estimated at \$114,000, with a benefit to cost ratio of approximately 1.2 to 1.

5. Approximately 118 structures in the study area, primarily single-family homes, are subject to flooding impacts. The project is expected to reduce flood levels over existing conditions for the four percent ACE and is economically justified. After project construction, the risk of flooding remains during the four percent ACE event and larger, less frequent flood events. The residual risks have been communicated to the non-federal sponsor, who understands and agrees with the analysis. The recommended plan has been designed to avoid or minimize environmental impacts while maximizing safety and economic benefits to the community. The study team organized and participated in stakeholder meetings and public workshops throughout the process and worked with local groups to achieve a balance of project goals and public concerns.

6. In accordance with the U.S. Army Corps of Engineers guidance 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 District

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Quality Control review, Agency Technical Review, and a headquarters policy and legal review. All comments from these reviews have been addressed and incorporated into the final documents. Type I Independent External Peer Review (IEPR) was not required. A safety assurance review (Type II IEPR) will be conducted during the Preconstruction Engineering and Design Phase.

7. 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 1983 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. The views of interested parties, including federal, state, and local agencies, have been considered.

8. I concur with the findings, conclusions, and recommendations of the reporting officers. My recommendation is subject to cost sharing and other applicable requirements of federal laws and policies. Federal implementation of the recommended plan would be subject to the non-federal sponsor agreeing to comply with applicable federal laws and policies, including but not limited to agreeing to:

a. Provide a minimum of 35 percent and up to a maximum of 50 percent of total structural flood risk reduction project costs, and 50 percent of total recreation costs, subject to a reduction per Section 1156 of WRDA 1986, as amended, as further specified below:

(1) Provide 35 percent of design costs allocated to structural flood risk reduction and 50 percent of design costs allocated to recreation in accordance with the terms of a design agreement entered into prior to commencement of design work;

(2) Provide, during construction, a cash contribution of funds equal to 5 percent of total flood risk reduction project costs;

(3) Provide all lands, easements and rights-of-way, including those required for relocations, the borrowing of material and the disposal of dredged or excavated material; perform or ensure the performance of all relocations; and construct all modifications required on lands, easements and rights-of-way to enable the disposal of dredged or excavated material all as determined by the Federal Government to be required or to be necessary for the construction and OMRR&R of the project, all in compliance with applicable provisions of the Uniform Relocation and Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 U.S.C. 4601-4655) and the regulations contained in 49 C.F.R. Part 24;

(4) Provide, during construction, any additional funds necessary to make its total contribution equal to at least 35 percent of total flood risk reduction project costs and 50 percent of the total recreation project costs, subject to a reduction per Section 1156 of WRDA 1986, as amended; and

(5) Provide, during construction, 100 percent of the total recreation costs that exceed 10 percent of the federal share of total structural flood risk reduction costs;

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b. Operate, maintain, repair, rehabilitate, and replace the project, or functional portions 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 laws and regulations and any specific directions prescribed by the Federal Government;

c. Inform affected interests, at least annually, of the extent of protection afforded by the project; participate in and comply with applicable federal floodplain management and flood insurance programs; comply with Section 402 of the Water Resources Development Act of 1986, as amended (33 U.S.C. 701b-12); and publicize floodplain information in the area concerned and provide this information to zoning and other regulatory agencies for their use in adopting regulations, or taking other actions, to prevent unwise future development and to ensure compatibility with protection levels provided by the project;

d. Keep the recreation features, and access roads, parking areas, and other associated public use facilities, open and available to all on equal terms;

e. Prevent obstructions or encroachments on the project (including prescribing and enforcing regulations to prevent such obstructions or encroachments) such as any new developments on project lands, easements, and rights-of-way or the addition of facilities that may reduce the level of protection the project affords, hinder operation and maintenance of the project, or interfere with the project's proper function;

f. Give the Federal Government a right to enter, at reasonable times and in a reasonable manner, upon property that the non-federal sponsor owns or controls for access to the project to inspect the project, and if necessary, to undertake any work necessary to the functioning of the project for its authorized purpose.

g. Hold and save the United States free from all damages arising from the construction, operation, maintenance, repair, rehabilitation, and replacement of the project, except for damages due to the fault or negligence of the United States or its contractors;

h. Perform, or ensure performance of, 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 construction, operation, or 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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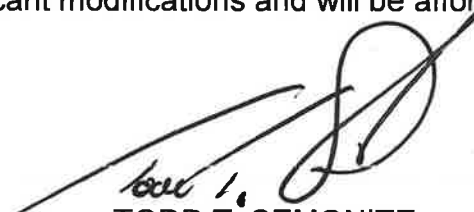
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i. Assume, as between the Federal Government and the non-federal sponsor, complete financial responsibility for all necessary cleanup and response costs of any hazardous substances regulated under CERCLA that are located in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be required for construction, operation, or maintenance of the project; and

j. Agree, as between the Federal Government and the non-federal sponsor, 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, repair, rehabilitate, and replace the project in a manner that will not cause liability to arise under CERCLA.

9. 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 a proposal for authorization and implementation funding. However, prior to transmittal to the Congress, the non-federal sponsor, the United States Virgin Islands, interested federal agencies, and other parties will be advised of any significant modifications and will be afforded an opportunity to comment further.

*Very pleased
to approve this
critical Chief's Report!
We are absolutely
committed to reducing
flood risks for the
Virgin Islands!*


TODD T. SEMONITE
Lieutenant General, USA
Chief of Engineers