



DEPARTMENT OF THE ARMY

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

DAEN

23 Apr 2020

SUBJECT: Tulsa and West-Tulsa Levee Feasibility Study, Tulsa County, Oklahoma

THE SECRETARY OF THE ARMY

1. I submit for transmission to Congress my report on the feasibility of reconstruction of a portion of the existing federally constructed flood risk management project, the Tulsa and West-Tulsa (TWT) Levee System near Tulsa, Oklahoma. It is accompanied by the report of the District Commander. This report is a full response to Section 1202(a) of the Water Resources Development Act of 2016 (Title I of Public Law 114-322). Section 1202(a) directs the Secretary of the Army to "conduct a study to determine the feasibility of modifying the projects for flood risk management, Tulsa and West-Tulsa, Oklahoma." Section 1202(a) further provides that in carrying out the study, the Secretary "shall address deficiencies, uncertainties, and significant data gaps, including material, construction, and subsurface, which render the project at risk of overtopping, breaching, or system failure." The existing TWT Levee System was authorized for construction by Section 3 of the Flood Control Act of August 18, 1941 (55 Stat. 645, chapter 377). Main components of the existing TWT Levee System include Levees A, B and C, as well as pump stations.
2. As the study was completed using Investigations funds provided in the Bipartisan Budget Act of 2018 (P.L. 115-123) (BBA 2018), the project would be eligible to be considered for construction using Construction funds provided in the BBA 2018, if there are sufficient BBA 2018 funds remaining to complete such construction, with financing of the non-federal cash contribution over thirty years following completion of construction of the project. In addition, if the project is implemented using other than BBA 2018 Construction funds, it is still possible that the non-federal cash contribution could be financed in accordance with Section 103(k) of the Water Resources Development Act of 1986, however, additional appropriations would need to be provided to allow for financing of the non-federal cash contribution.
3. The TWT Levee System Feasibility Study and integrated Environmental Assessment received approval from the Assistant Secretary of the Army (Civil Works) (ASA(CW)) for an exception to the requirement for the U.S. Army Corps of Engineers (Corps) to recommend the National Economic Development (NED) plan, and instead allow the Corps to recommend a plan based on overriding life-safety risks and contribution to the Other Social Effects Account. Plan formulation focused on system Levees A and B, and selection of the recommended plan was based on reduced life safety risks versus NED benefits.

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4. The reporting officers recommend authorizing a plan to reduce flood risks in terms of flood damages, reduce flood risk to public health, safety and life, and minimize residual flood risks to the extent justified along the TWT Levee System in Tulsa County. The recommendation is supported by the non-federal sponsor, Tulsa County Levee Drainage District No. 12, and local stakeholders. Recommendations for addressing residual risk by the non-federal sponsor include nonstructural features, such as comprehensive flood warning emergency evacuation planning and floodplain management. The principal structural features of the recommended plan are listed below.

a. A filtered berm with toe drain on Levee A and B for approximately 11.3 miles, which is the entire length of Levees A and B;

b. Approximately 2,000 feet of cutoff wall and impervious blanket at the Superfund site in the vicinity of Levee A;

c. A filtered floodway structure (Charles Page Floodway Structure);

d. Approximately 3,000 feet of landside armoring along Levee B to address overtopping;

e. A landside inverted filtered berm on the Levee B tieback for approximately 1.7 miles, which is the entire length of the Levee B tieback; and two detention ponds upstream of the Levee B tieback (sized for 1/100 Annual Exceedance Probability);

f. Removal, replacement or abandonment of conduits through Levees A and B. The estimated number of conduits to be removed or replaced for Levee A is approximately 65 and 32, respectively, and for Levee B are approximately 114 and 32, respectively; and

g. Reconstruction of pump stations (minimal facilities) 1 through 5 along Levees A and B for system wide completeness.

5. The recommended plan would reduce risk to life safety and flood risk damages behind the TWT Levee System. Public input was considered as part of the National Environmental Policy Act (NEPA) process. The recommended plan was developed with consideration of public input as required by NEPA, as well as in coordination and consultation with federal, state, and local agencies. The recommended plan would have long-term effects on environmental resources; however in all cases, the potential adverse environmental effects would be reduced to a less than significant level or mitigated through project design, construction practices, preconstruction surveys and analysis, regulatory requirements, and best management practices. The U.S. Fish & Wildlife Service has provided a Biological Opinion and a Fish and Wildlife Coordination Act Report (CAR) in which the agency provided recommendations for impact avoidance and minimization measures, and mitigation requirements for the American Burying Beetle. Mitigation for impacts to the federally listed threatened beetle are included in the recommended

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plan, which includes purchase of 5.38 impacted acres worth of credits from a regional conservation bank. The CAR recommendations have been integrated into the recommended plan. The Corps' Tulsa District, Tulsa County Drainage District No. 12, the Oklahoma State Historic Preservation Officer, the Osage Nation, and the Muskogee (Creek) Nation have executed a Programmatic Agreement to account for impacts to historic properties. The recommended plan would implement the Programmatic Agreement, environmental compensatory mitigation plan, and associated impact avoidance and minimization measures.

6. Based on Fiscal Year (FY) 2020 price-levels, the estimated total project first cost of the recommended plan is \$133,508,000. Based on cost sharing provisions of the Water Resources Development Act of 1986, the federal and non-federal shares of construction costs would be \$86,780,000 (65% federal) and \$46,728,000 (35% non-federal), respectively. The non-federal sponsor, Tulsa County Drainage District No. 12, is responsible for operation, maintenance, repair, replacement, and rehabilitation of the project after completion (OMRR&R). The OMRR&R costs are currently estimated at \$260,000 per year at FY 2020 price levels. The costs for lands, easements, rights-of-way, relocations and disposal areas are estimated at \$3,986,000. The non-federal sponsor would also have a minimum 5% cash contribution of \$6,675,000.

7. 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 to be \$6,120,000, including OMRR&R, and average annual economic benefits are estimated to be \$103,000. Alternative plans were evaluated under the Other Social Effects Account for reduction in life safety risk using a cost-effectiveness and incremental cost analysis. The recommended plan addresses life safety risk up to 96 lives (90 lives at risk behind Levee B and six lives behind Levee A) for potential failure modes associated with breach prior to overtopping.

Alternative plans were measured against Tolerable Risk Guideline (TRG) 1 and 4 as required by Planning Bulletin 2019-04. The recommended plan partially addresses TRG 1 (plan moves risk below the societal life risk threshold) and fully meets TRG 4 (cost-effective actions have been identified and recommended to further reduce life-safety risk). TRG 1 is partially met because overtopping risks remain above the threshold. Overtopping measures were evaluated, but it was determined that it transferred flood risks downstream. Overtopping breach risks are partially addressed in the recommended plan by landside armoring along Levee B, which allows for additional evacuation time of any remaining population in the leveed area, in an overtopping event. The sponsor will continue to develop and exercise their emergency action plan to achieve maximum evacuation during an overtopping event.

8. The goals and objectives included in the Corps' Campaign Plan have been fully integrated into the TWT Levee System Feasibility Study process. The recommended plan has been designed to reduce flood risks and damages, reduce flood risk to public health, safety, and life, and minimize residual flood risks. The study team organized and participated in stakeholder meetings and public workshops throughout the process and worked with the sponsor to achieve a

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balance of project goals and public concerns. The study report fully describes the flood risks associated with the Arkansas River and the TWT Levee System, and describes the residual risks. The residual risks have been communicated to Tulsa County Drainage District No. 12 and Tulsa County, and they understand and agree with the analysis.

9. In accordance with Engineer Circular 1165-2-217 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 Quality Control, Agency Technical Review, and Policy and Legal Compliance Review. All comments from the above referenced reviews have been addressed and incorporated into the final documents. A Type I Independent External Peer Review (IEPR) was not performed as it did not meet any mandatory triggers; however, a safety assurance review (Type II IEPR) will be conducted during the design phase of the project.

10. Washington level review indicates that the project recommended by the reporting officers is environmentally acceptable, technically sound, cost effective, and socially acceptable. The plan complies with all essential elements of the 1983 U.S. Water Resources Council's *Economic and Environmental Principal and Guidelines for Water and Land Related Resources Implementation Studies*, with the exception to recommend the NED plan approved by the ASA(CW). The recommended plan complies with other Administration and legislative policies and guidelines. The views of interested parties including federal, state, and local agencies have been considered.

11. I concur in the findings, conclusions, and recommendations of the reporting officers. Accordingly, I recommend that the TWT Levee System Flood Risk Management Project be modified as generally described in this report and that the recommended plan be authorized at an estimated first cost of \$133,508,000. My recommendation is subject to cost sharing, financing, and other applicable requirements of federal laws and policies, including Section 103 of WRDA 1986, as amended (33 U.S.C. 2213). In addition, it is subject to the non-federal sponsor agreeing to comply with all applicable federal laws and policies, including, but not limited to, that it will:

a. Provide a minimum of 35 percent, up to a maximum of 50 percent, of construction costs allocated to structural flood risk management, as further specified below:

1. Provide, during design, 35 percent of design costs in accordance with the terms of a design agreement entered into prior to commencement of design work for the project;

2. Pay, during construction, funds equal to 5 percent of construction costs allocated to structural flood risk management;

3. Provide all lands, easements, and rights-of-way, and perform or ensure the performance of any relocations determined by the federal government to be necessary for the construction or the operation and maintenance of the project, all in compliance with applicable

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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 and inform all affected persons of applicable benefits, policies, and procedures in connection with said act;

4. Pay, during construction, any additional funds necessary to make its total contribution equal to at least 35 percent of costs allocated to structural flood risk management;

b. 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, which might reduce the level of flood risk management the project affords, hinder operation and maintenance of the project, or interfere with the project's proper function;

c. Inform affected interests, at least yearly, of the extent of flood risk management 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 the flood risk management levels provided by the project;

d. Operate, maintain, repair, rehabilitate, and replace 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;

e. 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;

f. 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), 42 USC 9601-9675, that may exist in, on, or under lands, easements, or rights-of-way that the federal government determines to be necessary for the construction or operation and maintenance of the project;

g. 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

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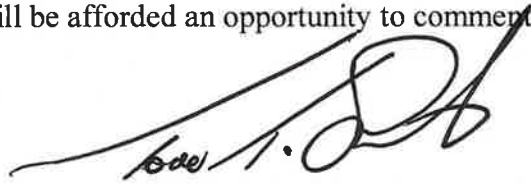
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regulated under CERCLA that are located in, on, or under lands, easements, or rights-of-way required for construction, operation, maintenance, repair, rehabilitation, or replacement of the project; and

h. 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.

12. 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 or the perspective of higher review levels within the executive branch. Consequently, the recommendation may be modified before it is transmitted to the Congress as a proposal for authorization and implementation funding. However, prior to transmittal to Congress, the sponsor, the state, interested federal agencies, and other parties will be advised of any significant modifications and will be afforded an opportunity to comment further.

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INITIATIVE THAT WILL
REDUCE FLOOD RISKS
AND SAVE LIVES FOR
TULSA - CITIZENS!*



TODD T. SEMONITE
Lieutenant General, USA
Chief of Engineers



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The Honorable John Barrasso
Chairman, Committee on Environment
and Public Works
United States Senate
410 Dirksen Senate Office Building
Washington, D.C. 20515

23 Apr 2020

Dear Mr. Chairman:

As required by Section 2033 of Public Law 110-114, I am enclosing a copy of the final Report of the Chief of Engineers for the Tulsa and West-Tulsa Levees Feasibility Study, Tulsa County, Oklahoma. Under separate letter, and in accordance with Executive Order 12322 dated September 17, 1981, the Assistant Secretary of the Army (Civil Works) will be providing his report and the advice from the Office of Management and Budget on how the proposed project relates to the policy and programs of the President, the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies, and other applicable laws, regulations, and requirements relevant to the planning process.

I am sending an identical letter to the Honorable Peter DeFazio, Chairman of the House Committee on Transportation and Infrastructure. Thank you for your interest in the U.S. Army Corps of Engineers Civil Works Program.

Sincerely,

Todd T. Semonite
Lieutenant, U.S. Army
Commanding General

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AND SAVE LIVES
Enclosure FOR CITIZENS
TULSA