


COUNCIL COMMUNICATION

 CITY OF DES MOINES OFFICE OF THE CITY MANAGER	Number:	23-307	Meeting:	June 26, 2023
	Agenda Item:	7	Roll Call:	23-0881
	Submitted by:	Jonathan A. Gano, P.E., Public Works Director and Steven L. Naber, P.E., City Engineer		

AGENDA HEADING:

Approving Agreement with the US Army Corps of Engineers (USACE) for levee system Semi Quantitative Risk Analysis (SQRA) evaluation of the Des Moines Levee Alterations Program, estimated at \$572,469.

SYNOPSIS:

Recommend approval of agreement in an amount estimated at \$572,469 with the USACE for levee system Semi Quantitative Risk Analysis (SQRA) evaluation of the Des Moines Levee Alterations Program.

FISCAL IMPACT:

Amount: \$572,469

Funding Source: 2023-2024 CIP, Page 105, Flood Mitigation Improvements, SM087, Being: Sales Tax Increment Fund, Storm Water Revenue Bonds, and Storm Water Utility Funds

The baseline existing levee condition assessment involves a USACE 50/50 cost share for a total cost to the City of \$377,605. The proposed levee design assessment has a total cost to the City of \$194,864 with no USACE cost share.

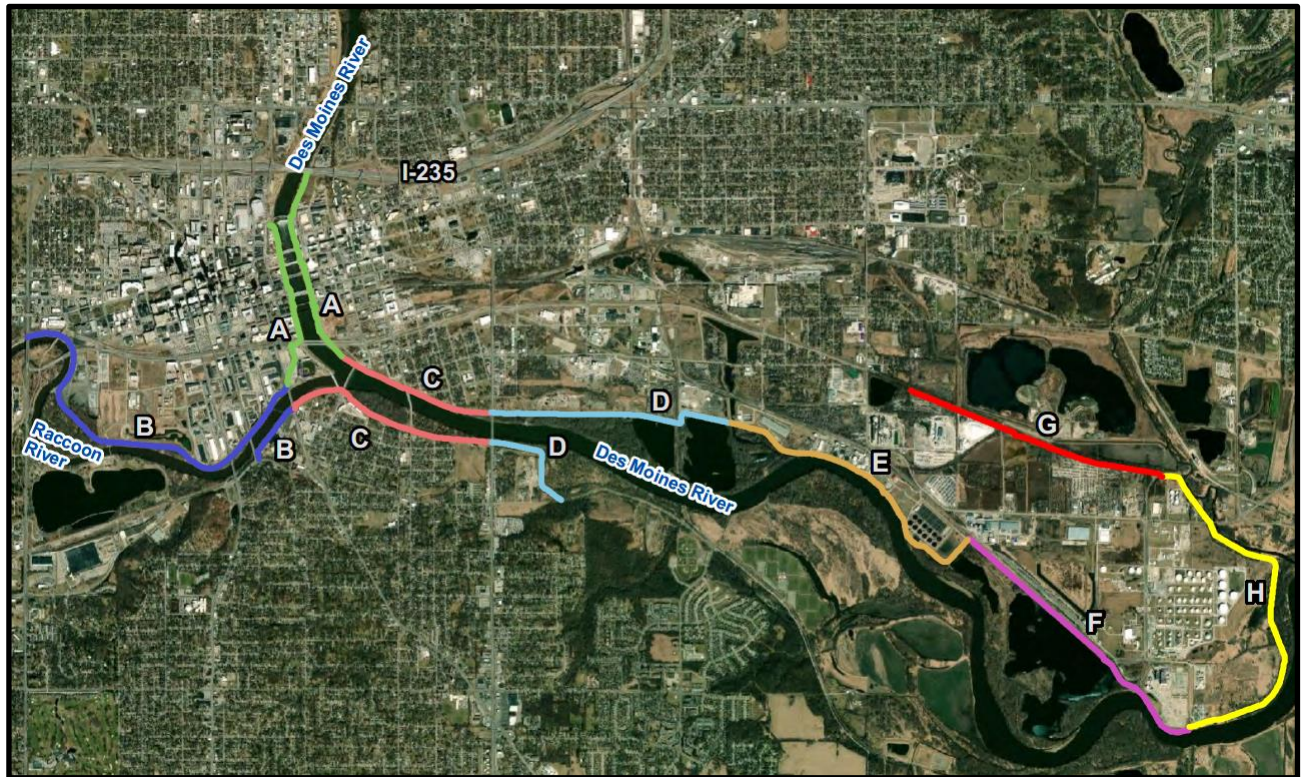
ADDITIONAL INFORMATION:

- Following the 2008 Midwest flood, the USACE conducted the Des Moines River Regulated Flow Frequency Study (DMRRFFS) to estimate the frequency and magnitude of future reservoir outflows and downstream river flows. Completed in November 2010 and released in January 2011, the results of the DMRRFFS showed flood flow frequencies have increased over previous USACE estimates and floods similar in magnitude to the 1993 and 2008 events are more likely to occur than previously estimated. In addition to identifying the higher risk of flooding, the DMRRFFS showed that the existing levees in downtown Des Moines do not meet the standards for Federal Emergency Management Agency (FEMA) accreditation of levees provided in Title 44 of the Code of Federal Regulations (44 CFR) Section 65.10 of the National Flood Insurance Program regulations impacting FEMA flood hazard mapping.
- In March 2011, the City initiated professional services to begin responding to the USACE DMRRFFS by working through the USACE Section 408 requirements to improve the levee system

to satisfy FEMA accreditation requirements. The City worked closely with the USACE Rock Island District staff to prepare a Section 408 Concept Submittal to improve the levee system to meet accreditation requirements with City and Iowa Flood Mitigation Program funding. The Section 408 Concept Submittal was approved by USACE in 2018. Individual (detailed) Section 408 submittals have been and will continue to be required for individual projects.

- Phase 1 Analyses have been conducted and documented to identify deficiencies relative to 44 CFR 65.10 accreditation requirements. The City plans to address these deficiencies by implementing various projects along the levee systems. These projects include levee raises, modification of gatewell and closure structures, pump station modifications, installation of embankment protection, and embankment and foundation stability mitigating features such as cutoff trenches or seepage berms. In accordance with the Flood Mitigation Program Agreement (Roll Call No. 15-1094, dated June 22, 2015), the project completion date is December 31, 2024. As projects move forward, the terms of the agreement will be reconciled to match project schedules. The projects will be constructed in multiple phases, generally from upstream to downstream along the system and the phases are identified as Phases A thru H.
- Phase A, which incorporates the upstream reaches of the DM-I and DM-II levee systems along the Des Moines River upstream of the confluence with the Raccoon River, was designed by Stantec Consulting Services Inc. The project was awarded to Corell Contractor, Inc. in August 2020 for \$2,606,976.90 and construction was completed in June 2022.
- Phase B, which incorporates the reaches of the DM-II and DM-III levee systems along the Raccoon River upstream of SW 3rd Street, was designed by Stantec Consulting Services Inc. The project was awarded to Peterson Contractors, Inc. in April 2022 for \$12,686,390.85 and is currently being constructed.
- Phase C, which incorporates the downstream reaches of the DM-I and DM-III levee systems along the Des Moines River from approximately the confluence with Raccoon River to just downstream of SE 14th Street, was designed by Barr Engineering Company. The project was awarded to Peterson Contractors, Inc. for \$17,391,129.50 in December 2022 and is currently being constructed.
- Phase D incorporates the downstream reaches of the DM-I and DM-III levee systems along the Des Moines River from approximately SE 14th Street to just upstream of the Des Moines Metropolitan Wastewater Reclamation Facility. Phases E, F, G, and H incorporate the Southeast Des Moines levee system (SEDM), which is part of the Lake Red Rock Remedial Works and is hydraulically connected to the DM-I levee system. SEDM is an eight (8) mile levee system located along the Des Moines River starting just upstream of the Des Moines Metropolitan Wastewater Reclamation Facility to the confluence of Fourmile Creek, then runs along Fourmile Creek to about a quarter mile east of SE 30th Street. Phases F, G, and H are maintained and operated by USACE. USACE is currently responsible for the maintenance and operation of Phase E along the Des Moines Metropolitan Wastewater Reclamation Facility; however, there is an agreement in place for the City to perform general maintenance along Phase E. Recent Federal legislation has provided for Phase E to become part of the DM-I levee, pending real estate transactions between the City, Wastewater Reclamation Authority and USACE.

- On May 10, 2021, by Roll Call No. 21-0675, the City and Barr Engineering Company entered into a Professional Services Agreement (PSA) for design services for Des Moines Levee Alterations – Phases D & E, not to exceed \$3,285,500.
- On May 10, 2021, by Roll Call No. 21-0676, the City and Stantec Consulting Service Inc. entered into a PSA for design services for Des Moines Levee Alterations – Phases F, G, & H, not to exceed \$3,665,100.
- Des Moines Levee Alterations Phases D through H have reached 30% preliminary design. Current levee designs have followed a prescriptive approach that USACE guidance has utilized for years. USACE is starting to integrate risk-based design approach process into future designs and design manuals for levee design optimization, but currently not mandated.
- As part of the Des Moines Levee Alterations Project, and in concurrence with the City Manager’s Office, the Engineering Department is requesting the USACE to perform a SQRA of the Des Moines River (DM-I) segment and the SE Des Moines and SW Pleasant Hill – Red Rock Remedial Works (SEDM) levee reaches in an attempt to identify ways to significantly reduce the cost of improving those portions of the levee, and yet remain in conformance with the National Flood Insurance Program (NFIP) requirements. The SQRA process provides the following benefits:
 - Provides a better understanding for flood risk.
 - Risk assessment covers design criteria that is prescriptive.
 - Prioritizing funding could shift a bit more towards operations and maintenance versus construction.
 - The goal is to optimize work versus creating work. Baseline existing levee condition established first.
 - Can still get FEMA accreditation.
- Potential construction saving related to SQRA include possible reductions in levee height, the amount of riprap to install, and geotechnical mitigations. Given budgetary constraints, City staff is recommending pursuing USACE risk-based design approach that recently started to be more widely adopted by USACE. Total agreement cost of \$572,469 and includes the following:
 - There are two (2) different analyses the USACE will be conducting. The first analysis is an assessment of the existing levee condition (NFIP SQRA Work Plan) and the second is a review taking into consideration proposed improvements to the levees (Risk-Informed Designs (RID) SQRA Work Plan).
 - The baseline existing levee condition assessment involves a USACE 50/50 cost share for a total cost to the City of \$377,605 as authorized by Section 3014(b) of the Water Resources Reform and Development Act of 2014.
 - The proposed improvements risk-informed design assessment total cost to the City of \$194,864 with no USACE cost share.
 - The timeline to complete risk analysis would be 12 to 18 months.



PREVIOUS COUNCIL ACTION(S):

Date: May 10, 2021

Roll Call Number: [21-0675](#) and [21-0676](#)

Action: Approving exception to Request for Proposal process for good cause and approving the following Professional Services Agreements for Des Moines Levee Alterations – Phases D-H: ([Council Communication No. 21-210](#))

- (A) [Barr](#) Engineering Company for professional services for Des Moines Levee Alterations – Phases D & E, not to exceed \$3,285,500. Moved by Gatto to adopt. Motion Carried 7-0.
- (B) [Stantec](#) Consulting Services, Inc. for professional services for Des Moines Levee Alterations – Phases F, G, & H, not to exceed \$3,665,100. Moved by Gatto to adopt. Motion Carried 7-0.

BOARD/COMMISSION ACTION(S): NONE

ANTICIPATED ACTIONS AND FUTURE COMMITMENTS:

Additional Supplemental Agreements for construction phase services and any changes to the U.S. Army Corps of Engineers requirements and pending final resolution of real estate requirements for the Federal SEDM levee.

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