


COUNCIL COMMUNICATION

 CITY OF DES MOINES OFFICE OF THE CITY MANAGER	Number:	22-373	Meeting:	August 8, 2022
	Agenda Item:	8	Roll Call:	22-1224
	Submitted by:	Steven L. Naber, P.E., City Engineer		

AGENDA HEADING:

Approving a request for a Variance of Floodplain Development Code Section 50-34 (14) for development in a Floodway that results in an increase in base flood elevation for the Des Moines Levee Alterations – Phase C project.

SYNOPSIS:

Approving the request for a Variance of Floodplain Development, Des Moines Municipal Code Section 50-34 (14) for development in a floodway that results in an increase in base flood elevation for the Des Moines Levee Alterations – Phase C Project along the Des Moines River between the Scott Avenue Bridge and SE 14th Street Bridge, based on:

- The rise, up to 0.07-feet, will be contained within the levee system. The levee crest elevations are being raised to accommodate for an increased 100-year water surface elevation of 0.07-feet. Additionally, City design criteria for the earthen levee raise includes an additional 6-inch overbuild to accommodate for future flow frequency increases.
- Riverside slope flattening on the upper portion of the levee system will expand the hydraulic cross section thus reducing water surface elevations during high river levels attributed to 500-year, and greater, storm events.
- The mitigation options evaluated to eliminate the modeled rise have been considered to be either cost prohibitive and/or would result in more flood risk than the modeled rise.

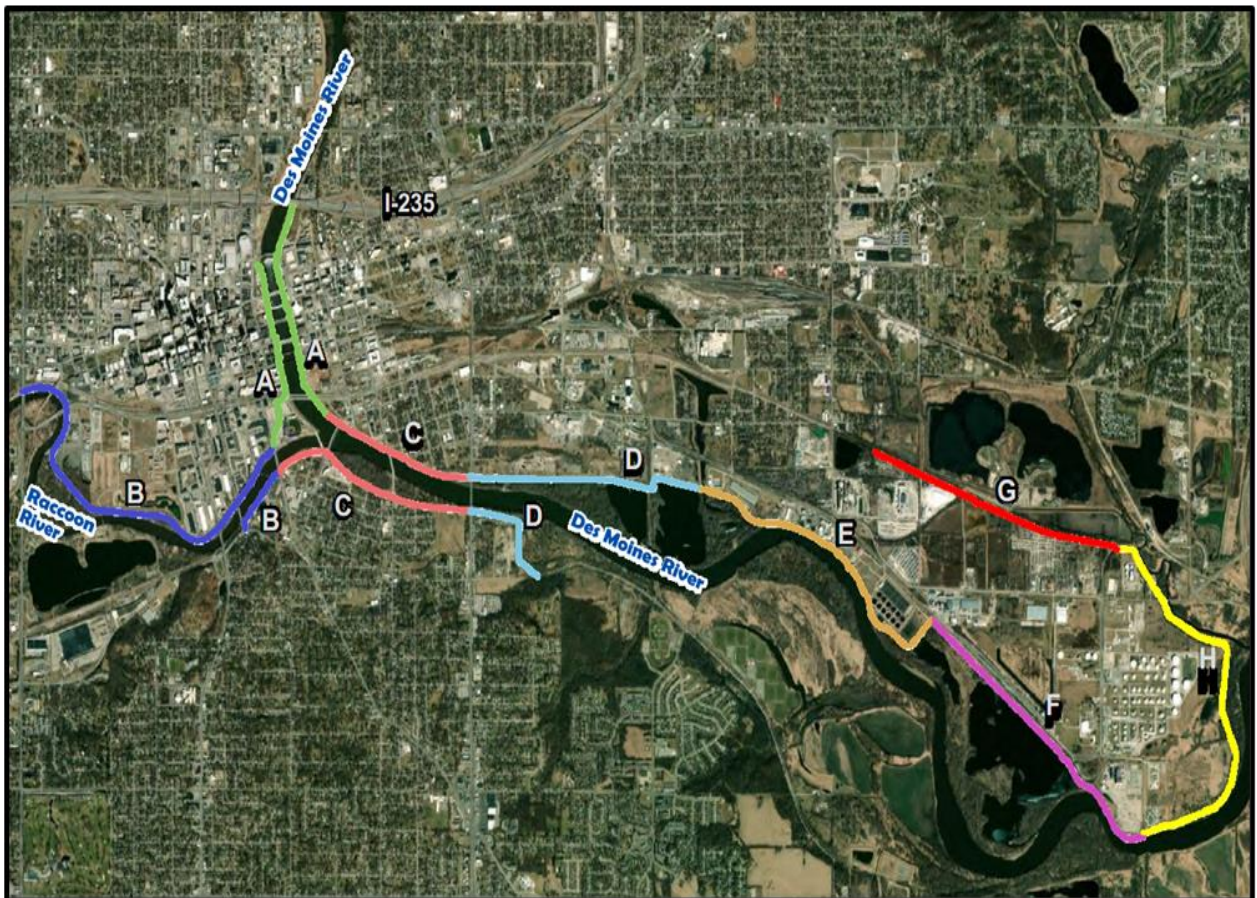
FISCAL IMPACT: NONE

ADDITIONAL INFORMATION:

- The United States Army Corps of Engineers (USACE) released the Des Moines River Regulated Flow Frequency Study in January 2011, which showed a higher risk of flooding along the Des Moines and Raccoon Rivers and 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 response, the City worked with USACE develop a Section 408 Concept Submittal to improve the levee system to reduce flood risk and satisfy FEMA accreditation requirements

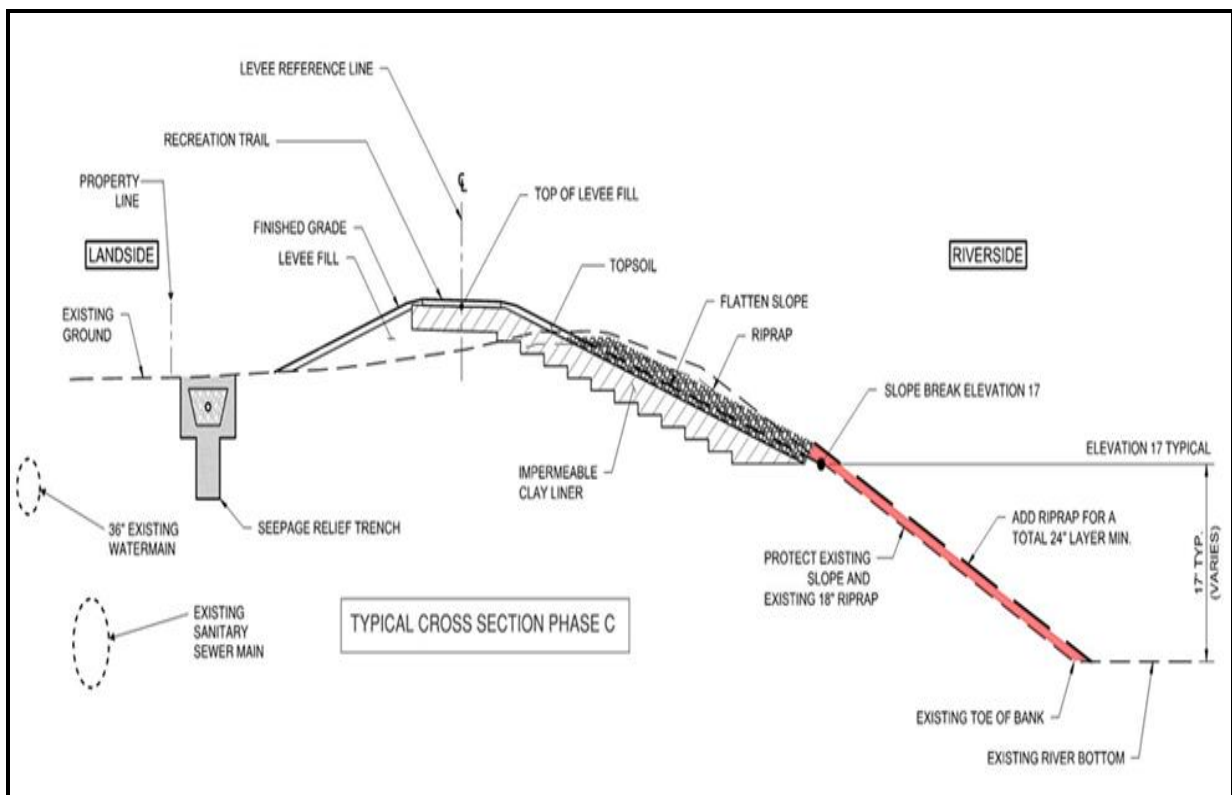
and work through 33 USC 408 (Section 408) requirements. The Section 408 Concept Submittal was approved by USACE in July 2018.

- Section 408 Concept proposes improving approximately 8.8-miles of City levees along the Des Moines and Raccoon Rivers (known as the DM I, DM II, and DM III levee systems) and approximately seven (7) miles of USACE levee along the Des Moines River and Fourmile Creek, which is hydraulically connected to the City levee system, in multiple project phases shown below.

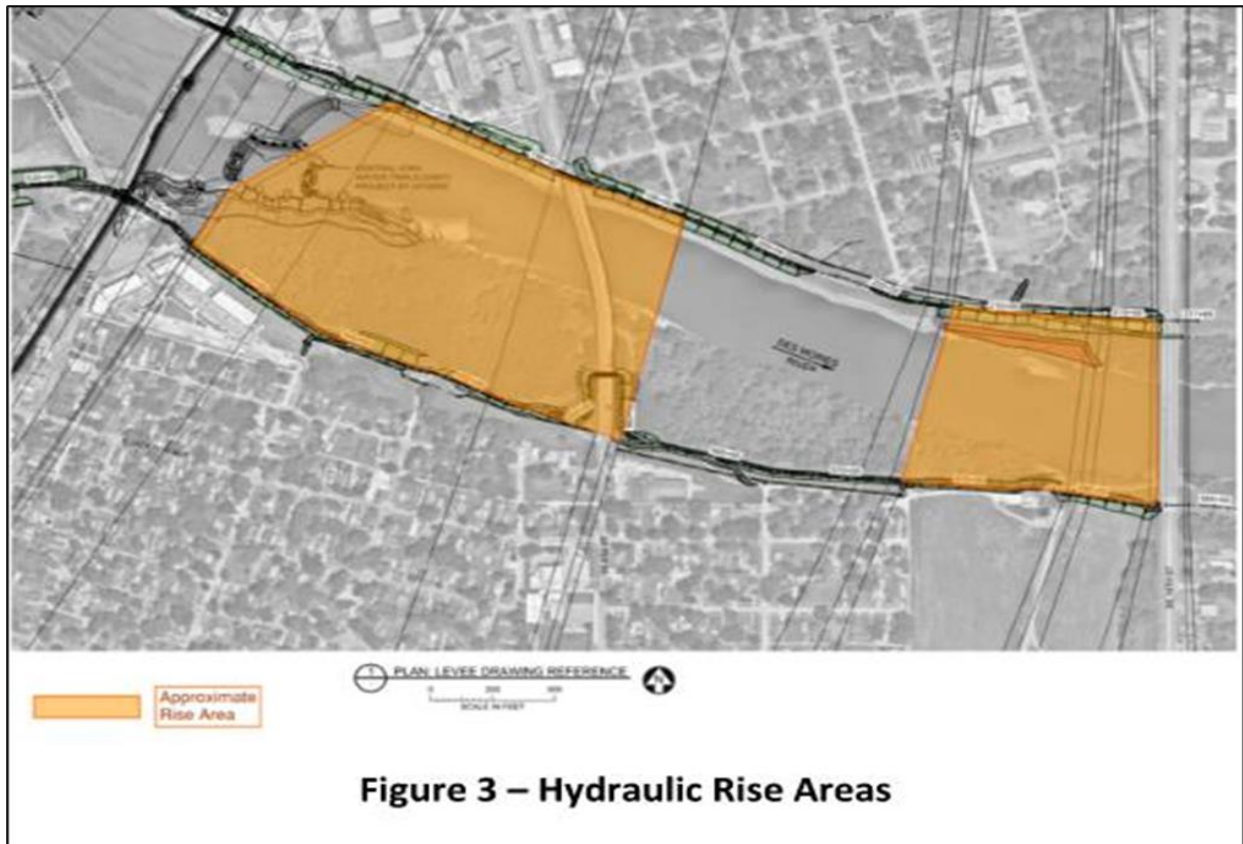


- The City has completed several flood mitigation improvement projects, including elevating the Red Pedestrian Bridge, stormwater closure improvements, replacement and/or improving multiple storm water pump stations along the levee system, and interior drainage improvements including storm sewer capacity improvements and constructing a storm water detention facility.
- Des Moines Levee Alterations - Phase A project 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. Construction has been substantially completed for the Phase A project.
- Des Moines Levee Alterations - Phase B project incorporates the upstream reaches of the DM II and DM III levee systems along the Raccoon River upstream of the confluence with the Des Moines River. This project was awarded by City Council to Peterson Contractors, Inc. on April 18, 2022, in the amount of \$12,686,390.85, and this project is currently under construction and targeting completion by the end of 2023.

- Des Moines Levee Alterations - Phase C project 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 S.E. 14th Street. The Des Moines Levee Alterations - Phase C project, as coordinated with the ICON Water Trails Scott Avenue project, is targeted for bidding in the fall 2022, providing for construction starting in 2023 through summer 2025.
- The Des Moines Levee Alterations – Phases D, E, F, G, and H, are currently under design and anticipated to be constructed between 2024 and 2028.
- Phase C levee system improvements include earthen levee raises, gatewell structure modifications, pipe penetration improvements (sewer replacement and abandonments), bank armoring with riprap, geotechnical modifications, and construction of seepage relief trenches to increase levee stability.
- Phase C includes riverside slope flattening of the existing levee section, required for geotechnical slope stability from Scott Avenue to the SE 9th Street pump station. Flattening the upper part of levee expands the hydraulic cross section. Increased riprap thickness on the lower part of the levee is required for bank protection and geotechnical stability from Scott Avenue to the SE 9th Street pump station. Placement of riprap for embankment protection contracts the hydraulic cross section and adds roughness (see below graphic).



- This Phase C work, which results in a contraction of the hydraulic cross section and added roughness results in an increase ranging from 0.01-feet to 0.07-feet in a modeled 1% annual exceedance probability flood event (or 100-year flood event) from downstream of the Scott Avenue Bridge to SE 6th Street Bridge and just upstream of the SE 14th Street Bridge (shown in graphic below).



- Des Moines Municipal Code Chapter 50 requires that development within the City’s floodplain and floodway districts, as designated by flood insurance studies published by the FEMA and shown on related flood insurance rate maps utilized by the City, comply with the City’s floodplain performance standards.
- Des Moines Municipal Code Section 50-34 (14) prohibits proposed development within a designated floodway from increasing flood levels within the flood plain during the occurrence of a 100-year flood.
- Des Moines Municipal Code Section 50-35 requires that a certificate of compliance, or floodplain development permit, must be issued by the City prior to commencement of any proposed development within a floodplain area, and that any application for such certificate/ permit shall be denied if the City Engineer determines that the proposed development does not meet applicable performance standards of Section 50-34.
- With the modeled 100-year event increase ranging from 0.01-feet to 0.07-feet, the Des Moines Levee Alterations – Phase C project does not meet the performance standard identified in Section 50-34 (14) of the Municipal Code, which states the following: “All encroachments, including fill, new construction, substantial improvements, and other development, within a designated floodway are hereby prohibited unless it has been demonstrated to the reasonable satisfaction of the City Engineer through hydrologic and hydraulic analysis performed in accordance with standard engineering practices that the proposed encroachment will not result in any increase in flood levels within the flood plain during the occurrence of a 100-year flood.”

- City staff do not recommend any of the considered measures to mitigate the rise:
 - Reconstructing the levee outward to move the levee landside would be cost prohibitive, especially with the available real estate and existing utilities located landside of the levee and would potentially have more flood risk during construction.
 - Omitting the recommended slope flattening of the existing levee section required for geotechnical slope stability and increased riprap thickness on the lower part of the levee is required for bank protection and geotechnical stability would provide more flood risk than the modeled rise.
- City staff recommend granting a variance for the Des Moines Levee Alterations – Phase C project to allow the 0.07-foot rise in 100-year event based on:
 - The rise is contained within the levee system and the levee crest elevations are being raised to accommodate for an increased 100-year water surface elevation of 0.07-foot and City design criteria for the earthen raise includes an additional 6-inch overbuild to accommodate for future flow frequency increases.
 - Riverside slope flattening on the upper portion of the levee expanding the hydraulic cross section will reduce water surface elevation during high river levels attributed to 500-year plus storm events.
 - The mitigation options considered to eliminate the modeled rise are either cost prohibitive and/or provide more flood risk than the modeled rise.
- The granting of this variance is specific to the Des Moines Levee Alterations – Phase C project and offers no relief for any other project. In addition, the granting of this variance is specific to the performance standard identified in Section 50-34 (14) and offers no relief from any other performance standard identified in Section 50-34 (including but not limited to compensatory storage, freeboard, utility requirements, and geotechnical requirements).
- The City participates in the Community Rating System (CRS), which is a voluntary program for recognizing community floodplain management activities that exceed the minimum standards and rewards property owners of those communities with discounts to flood insurance premium rates. Des Moines has recently adopted new floodplain development standards and is in the process of improving its CRS score to provide a greater discount to its residents. The granting of this variance will not have an impact to the City's CRS score or class rating.
- Section 50-35(c) of the Des Moines Municipal Code provides that the City Engineer shall review each floodplain development application and shall, within a reasonable time, make a determination as to whether the proposed development meets the applicable performance standards of section 50-34 and, on the basis of such determination, shall issue or deny the certificate of compliance. Section 50-35(c) further provides in the case of a denial the applicant shall have the right to appeal to the city council for a variance from the requirements of this article on the grounds that (i) the City Engineer made an erroneous determination or (ii) an exception or modification should be made to the full application of the performance standards of section 50-34 of this article in order to avoid unnecessary hardship to the applicant or to further the public interest.

- With the modeled 100-year event increase ranging from 0.01-feet to 0.07-feet, the Des Moines Levee Alterations – Phase C project does not meet the performance standard identified in Section 50-34 (14) of the Municipal Code; however, the City Engineer has not issued a denial of certificate of compliance as the project at issue is a City Project. This matter is coming before the City Council as a variance that may only be granted by the City Council.
- Pursuant to Section 50-35 (c), City Council shall only authorize such a variance with affirmation of the six (6) provisions stated below along with the responses in italics addressing each provision:

- Variances shall only be issued upon (i) a showing of good and sufficient cause, (ii) a determination that failure to grant the variance would result in exceptional hardship to the applicant, and (iii) a determination that the granting of the variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public or conflict with existing local codes or ordinances.

There is good cause to grant the variance because the project will reduce flood risk to the community by raising and improving the existing levee and the modeled increase in 100-year flood will be contained within the project reach (between the levees) and not result in an additional threat to public safety when compared to the levee alterations proposed.

- Variances shall not be issued within any designated floodway if any increase in flood levels during the 100-year flood would result. Consideration of the effects of any development on flood levels shall be based upon the assumption that an equal degree of development would be allowed for similarly situated lands.

The modeled increase in 100-year flood will be contained within the project reach (between the levees) and not result in any impacts to development behind the levee system. The rise is contained within the levee system and the levee crest elevations are being raised to accommodate for an increased 100-year water surface elevation of 0.07-feet and City design criteria for the earthen raise includes an additional 6-inch overbuild to accommodate for future flow frequency increases.

- Variances shall only be granted upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.

The requested variance allowing an increased 100-year water surface elevation of 0.07-feet is the minimum necessary to provide the required embankment protection using riprap. The increase in the remainder of the reach is between 0.01-feet and 0.06-feet and confined to the Des Moines Levee Alterations – Phase C project.

- In cases where the variance involves a lower level of flood protection for buildings than what is ordinarily required by this article, the applicant shall be notified in writing over the signature of the city engineer that: (i) the issuance of a variance will result in increased premium rates for flood insurance up to amounts as high as \$25 for \$100 of insurance coverage and (ii) such construction increases risks to life and property.

This provision is not applicable to this project or area.

- All variances granted shall have the concurrence or approval of the Iowa Department of Natural Resources (IDNR).

IDNR Flood Plain Development Permit was approved on April 6, 2022. Prior to approval, program regulations require the IDNR send adjoining property owners a letter via certified mail stating the intent of the project and provide a IDNR contact if owners have questions or concerns about the project. Upon a 30-day review period, no comments were received by IDNR.

- In addition to the above conditions in this subsection, variances may be issued for the repair or rehabilitation of historic structures upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.

On June 8, 2022, the USACE submitted a “No Adverse Effect” finding for the project pursuant to Section 106 of the National Historic Preservation Act. The State Historic Preservation Office concurred with the USACE finding of “No Adverse Effect” on June 28, 2022, concluding Section 106 consultation for the project.

- On May 24, 2021, under Roll Call Number 21-0800, City Council granted a Variance of Floodplain Development Code Section 50-34 (14) for development in a Floodway that results in an increase in base flood elevation to the Des Moines Area Metropolitan Planning Organization (MPO) on behalf of Central Iowa Water Trails, LLC (CIWT) for the CIWT Scott Avenue Project. The CIWT Scott Avenue Project will result in a rise in the flood elevation ranging from 0.01-feet to 0.07-feet along portions of the Des Moines Levee Alterations – Phase C project. The Des Moines Levee Alterations – Phase C project has been designed to provide a new levee elevation that will contain both the rises from the CIWT Scott Avenue Project and the Des Moines Levee Alterations – Phase C, while still meeting FEMA Accreditation requirements and providing a 6-inch overbuild.

PREVIOUS COUNCIL ACTION(S):

Date: May 24, 2021

Roll Call Number: [21-0800](#)

Action: Items related to the Central Iowa Water Trails: Phase I Dam Mitigation and User Access Project:

- (A) [Granting](#) a variance of Floodplain Development Code Section 50-34 (14) for development in a Floodway that results in an increase in base flood elevation to the Des Moines Area Metropolitan Planning Organization (DMAMPO) on behalf of Central Iowa Water Trails, LLC (CIWT) for the CIWT Scott Avenue Project. ([Council Communication No. 21-228](#)) Moved by Mandelbaum to adopt. Motion Carried 7-0.

BOARD/COMMISSION ACTION(S): NONE

ANTICIPATED ACTIONS AND FUTURE COMMITMENTS: NONE

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