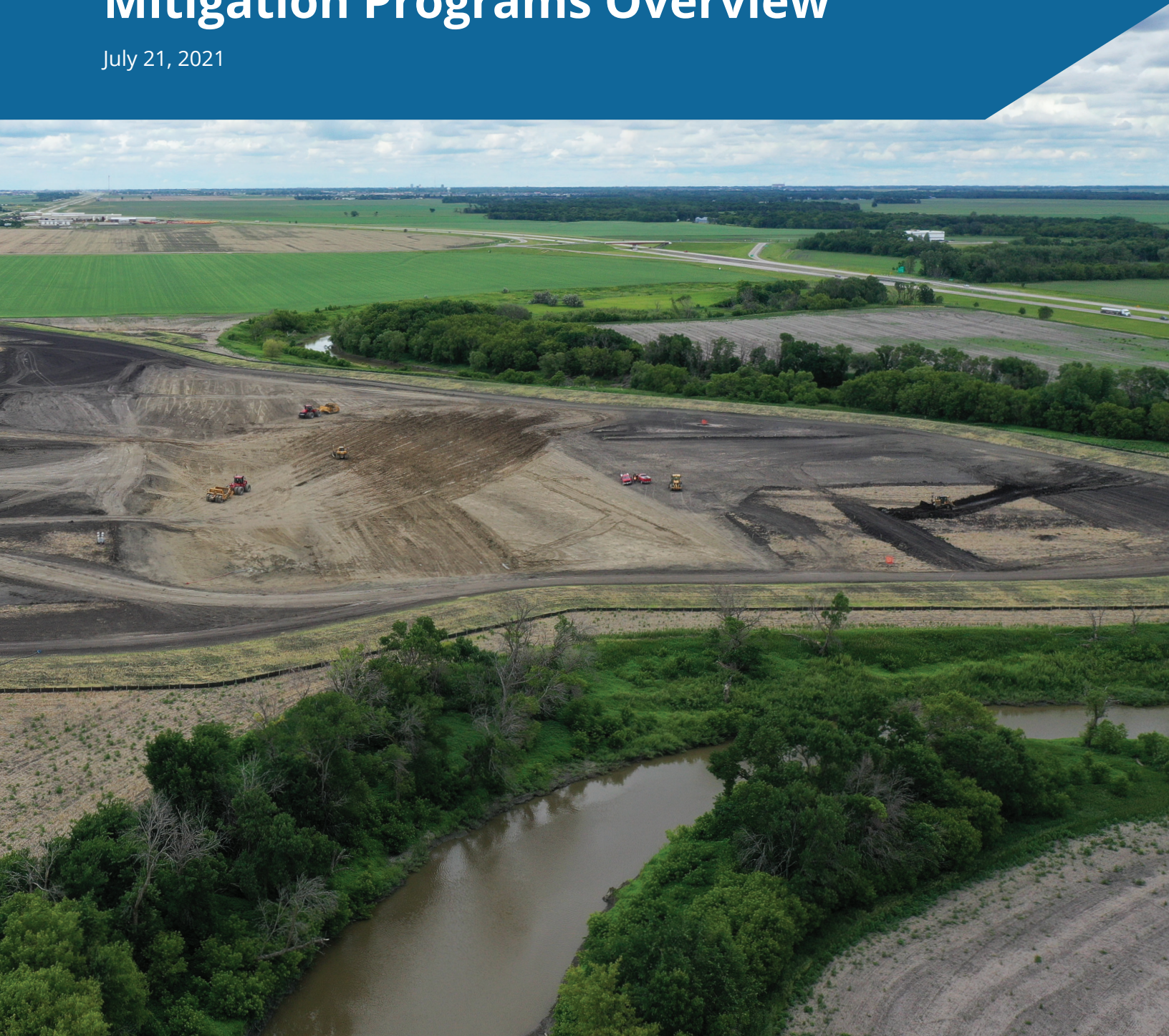




FM AREA
DIVERSION

Mitigation Programs Overview

July 21, 2021



Upstream Mitigation Area

The Upstream Mitigation Area (UMA) is where the Metro Flood Diversion Authority (MFDA) is required to obtain property rights as mitigation for the temporary storage of floodwaters when the project operates.

The UMA is split into four mitigation zones described below and shown on the map on page 3.

Federal Mitigation Zone 1

- Depth difference of 1-foot or greater for the 100-year and 500-year flood events (whichever is greater) within Cass and Clay Counties.
- Depth difference of 1-foot or greater for the 100-year and 500-year flood events (whichever is greater) along the Red River corridor within Richland and Wilkin Counties.
- Defines the operating pool or floodwater storage volume required to ensure the planned operation of the project, which includes minimizing downstream impacts.
- Development will not be allowed within Zone 1.
- Placement of fill will not be allowed within Zone 1.
- Flowage Easements will be required in order to establish a property right.

Federal Mitigation Zone 2

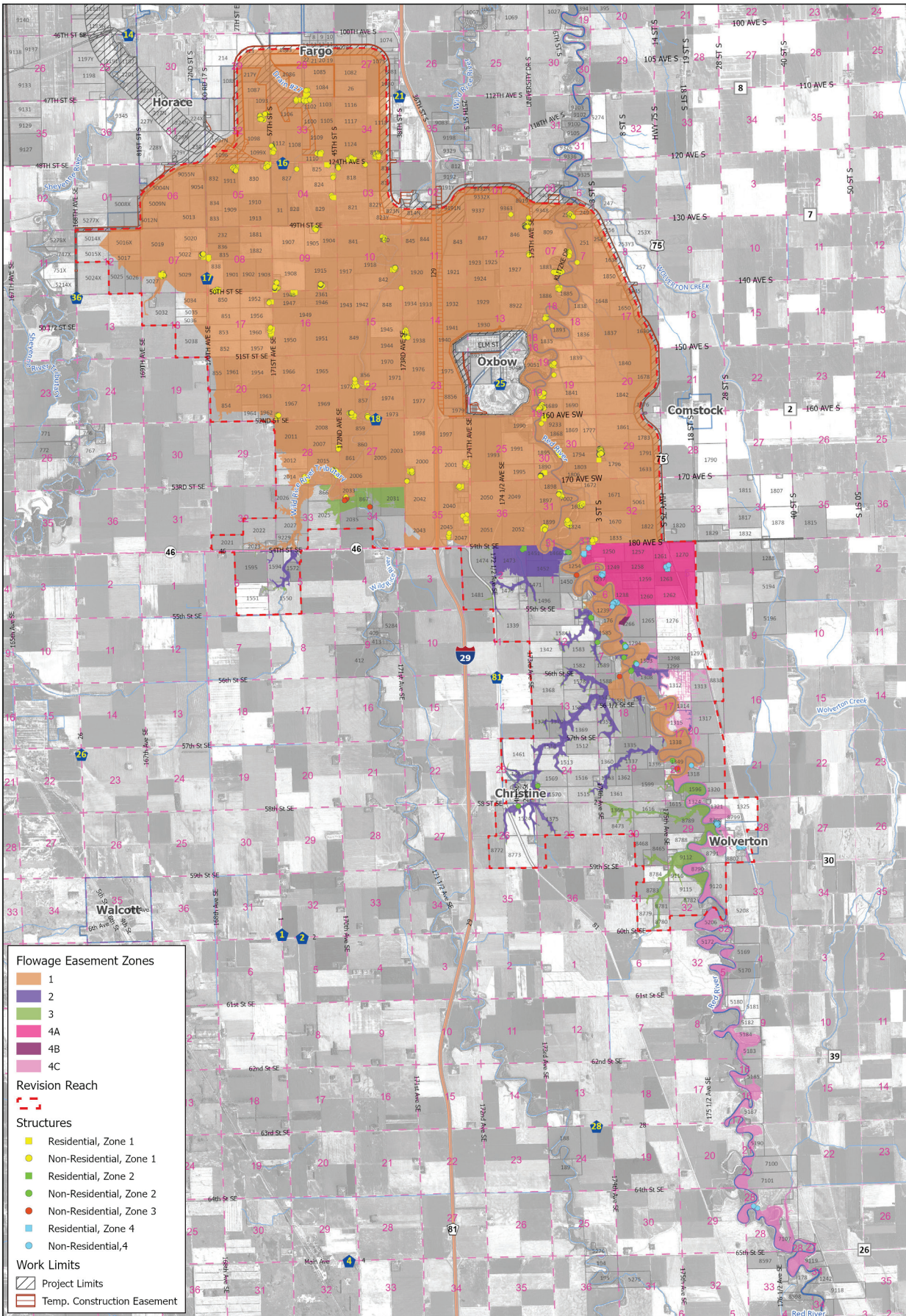
- Depth difference of 1-foot or greater for the 100-year and 500-year flood events (whichever is greater) within Richland and Wilkin Counties.
- Limited placement of fill will be allowed in Zone 2, within the terms and conditions of the flowage easement and in accordance with state and federal floodplain regulations.
- Development will be allowed, but structures must be constructed at least one-foot higher than the elevation of the with-project 500-year flood event water surface elevation.
- Flowage Easements will be required in order to establish a property right.

ND Mitigation Zone 3

- This is an area in North Dakota beyond Federal Mitigation Zone 1 and Zone 2 where the project causes a hydraulic effect of 0.5-feet or more at the 100-year flood event.
- Flowage Easements will be required in order to establish a property right.

MN Mitigation Zone 4

- This is an area in Minnesota beyond Federal Mitigation Zone 1 and Zone 2 where the project causes a hydraulic effect of 0.1-feet or more from flood events up to and including the PMF flood event.
 - Mitigation Zone 4 is divided into three sub-zones reflecting the flood event that defines the boundary of impacts.
 - Zone 4A: This is an area in Minnesota beyond Federal Mitigation Zone 1 and Zone 2 where the project causes a hydraulic effect of 0.1-feet or more at the PMF flood event.
 - Zone 4B: This is an area in Minnesota beyond Federal Mitigation Zone 1 and Zone 2 where the Project causes a hydraulic effect of 0.1-feet or more at the 500-year flood event.
 - Zone 4C: This is an area in Minnesota beyond Federal Mitigation Zone 1 and Zone 2 where the Project causes a hydraulic effect of 0.1-feet or more at the 100-year flood event.
 - Flowage Easements will be required in order to establish a property right.
-



Restrictions for New and Existing Structures

Zone	Restrictions for Existing Residential Structures
Zone 1	Must remove all structures. No fill allowed.
Zone 2	Existing residential structures must be at least 1-foot above the 100 yr flood level AND protected to the 500 yr flood level.
Zone 3	Existing residential structures must be at least 1-foot above the 100 yr flood level.
Zone 4A	Existing residential structures must be at least 1-foot above the 100 yr flood level AND protected to the PMF flood level.
Zone 4B	Existing residential structures must be at least 1-foot above the 100 yr flood level AND protected to the 500 yr flood level.
Zone 4C	Existing residential structures must be at least 1-foot above the 100 yr flood level.

Zone	Restrictions for Existing Non-Residential Structures
Zone 1	Must remove all structures. No fill allowed.
Zone 2	Existing non-residential structures must be protected to the 500 yr flood level.
Zone 3	Existing non-residential structures must be protected to at least 1-foot above the 100 yr flood level.
Zone 4A	Existing non-residential structures must be protected to the PMF flood level.
Zone 4B	Existing non-residential structures must be protected to the 500 yr flood level.
Zone 4C	Existing non-residential structures must be protected to at least 1-foot above the 100 yr flood level.

Zone	Restrictions for New Structures
Zone 1	No Development Allowed. No fill allowed.
Zone 2	New structures must be at least 2-feet above the 100 yr flood level AND at least 1-foot above the 100 yr flood level within 15 feet from structure AND protected to at least 1-foot above the 500 yr flood level.
Zone 3	New structures must be at least 2-feet above the 100 yr flood level AND at least 1-foot above the 100 yr flood within 15 feet from structure.
Zone 4A	New structures must be at least 2-feet above the 100 yr flood level AND at least 1-foot above the 100 yr flood level within 15 feet from structure AND protected to at least the PMF flood level.
Zone 4B	New structures must be at least 2-feet above the 100 yr flood level AND at least 1-foot above the 100 yr flood level within 15 feet from structure AND protected to at least 1-foot above the 500 yr flood level.
Zone 4C	New structures must be at least 2-feet above the 100 yr flood level AND at least 1-foot above the 100 yr flood within 15 feet from structure.

Term	Definition of Flood Protection measures
Residential Structures	Elevate the structure, combination of elevating the structure and dry floodproofing in accordance with FEMA requirements, or use of levees constructed in accordance with applicable federal or state criteria.
Non-Residential Structures	Elevating the structure, dry or wet floodproofing in accordance with FEMA requirements, or use of levees constructed in accordance with applicable federal or state criteria.

Notes: The lowest opening of the structure shall be used to meet the elevation criteria. Levees alone cannot be used to remove the structure from the 1-percent annual chance event.

Mitigation for Existing Structures

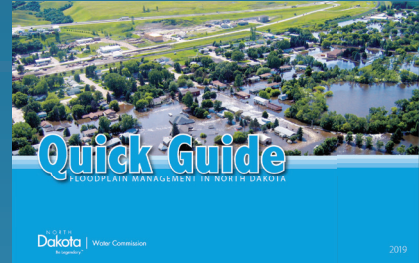
Structure Mitigation withing Zones 2, 3, and 4

- If the structure is impacted by the project, an offer to acquire and remove the structure will be made.
- Alternative mitigation options for structures impacted by the project may be available if the property owner does not want a buyout, and if the alternative mitigation is less expensive than a buyout.
- Impacted structures are those within or touched by a Mitigation Zone.
- Alternative Mitigation of structures impacted by the project must follow these mitigation requirements:
 - Structures must be removed from the with-project 100-year (on percent annual chance exceedance) floodplain in accordance with local, state, and FEMA guidance and standards.
 - Constructing a non-accredited ring levee to provide “real protection.”
 - Raising or elevating the structure.
 - Relocation of structure to non-affected area.
- Individual ring levees will not be accredited.
- Individual, non-accredited ring levees cannot be used to remove the structure from the 100-year (one percent) annual chance exceedance floodplain.
- The MFDA will fund the mitigation of impacted structures.
- The MFDA will not compensate for any changes in flood insurance costs as a result of future policy changes by FEMA.
- Owner accepts the flooding risks to the structure site.
- Owner accepts risks of access to the structure site.
- Structure site will require dry access to a level of 100-year flood minus 1-foot.
- If the structure is not impacted by the project, no mitigation will be provided.

Dry Access Considerations

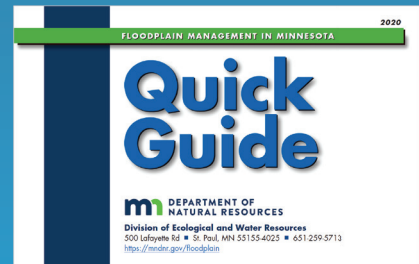
- Dry access is defined as roads having no more than one-foot of water during the 100-year flood event.
- Dry access must be available to the structure site.
- Roads in Zone 1 will not be raised.
- Roads outside Zone 1 may not be able to be raised - technical review needed.

Flood Plain Management Quick Guides



North Dakota

www.swc.nd.gov/pdfs/floodplain_quick_guide.pdf



Minnesota

www.files.dnr.state.mn.us/waters/watermgmt_section/floodplain/2020-mn-floodplain-mgt-quick-guide.pdf

Post-Operation Debris Clean-Up Program

Private Lands

Project may cause debris to accumulate within the UMA after project operation, impacting farmers. The MFDA is committed to conduct flood debris clean-up operations in the UMA by removing debris and repairing non-structural property damage within 10 days of project operation completion.

- Landowner or tenant may use pre-qualified contractors to remove debris and submit the cost for reimbursement.
- Adaptive approach is anticipated.



Public Lands

There is a concern from townships, cemeteries, watershed districts, and others about damage caused by project operation.

- Public Property Repair Plan is mirrored after FEMA disaster assistance.
- Allows government entities to contract for repair and clean-up work, then submit for reimbursement to the MFDA.



Crop Insurance Programs

MFDA committed to providing additional mitigation for producers in the UMA, and retained crop insurance development firm Watts & Associates.

1. Growing Season Crop Loss
2. Prevent Plant Crop Insurance
 - MFDA will offer a rider that provides producers with supplemental crop loss coverage for the risk associated with Project operations
 - Anticipated that federal crop insurance programs will not cover damages caused by Project operations





Crop Damage Protection for Farmers In the Upstream Mitigation Area

July 21, 2021

Background

- The Metro Flood Diversion Authority (MFDA) Contracted Watts & Associates (W&A) to study the expected risks to farmers associated with the potential operation of the FM Area Diversion.
- W&A conducted a study, based on the hydrology data provided by the MFDA, to determine the expected worse-case and annual expected losses to farmers.
- Farmers in the Upstream Mitigation Area (UMA) are concerned the potential operation of the FM Area Diversion will prevent planting or damage crops in wet years.
- Growers are familiar with the current Federal Crop Insurance program administered by the United States Department of Agriculture Risk Management Agency (USDA-RMA); nearly every arable acres is insured in the UMA.
- Federal Crop Insurance coverage specifically excludes losses as a result of 'man-made' government action.
- The MFDA has agreed to provide supplemental crop insurance coverage to compensate producers for the value of any losses stemming from operation of the project; effectively adding this peril back into their crop insurance policies.

Process

- W&A has provided a ratemaking study to the MFDA for consideration.
 - W&A studied the expected frequency and severity of future project operation events. These were then compared to the value of expected losses under each potential event.
 - This process forms the basis for determining premiums for the additional coverage.
- W&A is currently in the process of developing the policy, which is intended to go into effect prior to the completion of the FM Area Diversion, to supplement this insurance.
- W&A and MFDA will provide affected producers with regular updates regarding this development and detailed information regarding the specific implementation of the product as it advances.



Flowage Easement Q&A

July 21, 2021

What Is a Flowage Easement?

- The flowage easement provides the legal right to temporarily inundate property as part of the operation of the Project.
- USACE policy defines the compensation for a flowage easement as a one-time payment made at the time that the flowage easement is acquired for all impacts caused by the Project, such as potential loss of development rights, agricultural production impacts, and periodic and temporary flooding impacts.
- Flowage easements will allow for farming to continue on properties subject to the terms of the flowage easement; however, development will be limited

Why Is a Flowage Easement Needed?

- The FM Area Diversion Project (Project) includes temporary retention of floodwaters upstream of the Project. The upstream retention is a necessary component of the Project, and it will periodically and temporarily store flood waters.
- The member entities of the Metro Flood Diversion Authority (MFDA), must obtain flowage easements to provide the legal right to periodically and temporarily store water on properties in the Upstream Mitigation Area (UMA).
- There are various federal and state agencies that dictate where flowage easements will be necessary. For example, the North Dakota Office of State Engineer has indicated that the MFDA will need to mitigate (presumably through the acquisition of a flowage easement) for the modeled floodwater depth increase of 0.5-feet or more up to the one percent annual chance exceedance event (100-year flood).
- The US Army Corps of Engineers (USACE) has designated portions of the UMA as Federal Mitigation Zone 1, where no development will be allowed. Development within Mitigation Zones 2, 3, and 4 may be allowed in accordance with local floodplain development ordinances, rules, regulations, and the terms and conditions of the flowage easement.

Where Will Flowage Easements Be Needed?

- The member entities of the MFDA are required to obtain flowage easements in the UMA as mitigation for the temporary storage of floodwaters during Project operations.
- The UMA is defined using four mitigation zones, summarized in the table below.

Term	Definition
Zone 1	This is an area where the Project causes a floodwater depth increase of 1-foot or greater for the 100-year and 500-year flood events (whichever is greater) within Cass and Clay Counties and along the Red River corridor within Richland and Wilkin Counties.
Zone 2	This is an area where the Project causes a floodwater depth increase of 1-foot or greater for the 100-year and 500-year flood events (whichever is greater) within Richland and Wilkin Counties.
Zone 3	This is an area in North Dakota beyond Federal Mitigation Zone 1 and Zone 2 where the Project causes a floodwater depth increase of 0.5-feet or more at the 100-year flood event.
Zone 4	This is an area in Minnesota beyond Federal Mitigation Zone 1 and Zone 2 where the Project causes a floodwater depth increase of 0.1-feet or more from flood events up to and including the Probable Maximum Flood (PMF) flood event. Mitigation Zone 4 is comprised of three subzones reflecting the flood event that defines the boundary of impacts.
Subzone 4A	This is an area in Minnesota beyond Federal Mitigation Zone 1 and Zone 2 where the Project causes a floodwater depth increase of 0.1-feet or more at the Probable Maximum Flood PMF event.
Subzone 4B	This is an area in Minnesota beyond Federal Mitigation Zone 1 and Zone 2 where the Project causes a floodwater depth increase of 0.1-feet or more at the 500-year flood event.
Subzone 4C	This is an area in Minnesota beyond Federal Mitigation Zone 1 and Zone 2 where the Project causes a floodwater depth increase of 0.1-feet or more at the 100-year flood event.

How Will the Payment for the Flowage Easement Be Determined?

- Factors that will be considered include the depth, duration, and frequency of additional flooding, and the highest and best use of the property.
- An appraiser will conduct a “before and after” valuation in which the market value of the property before the flowage easement is determined, and the market value of the property with the flowage easement applied is determined. The just compensation to be paid to the landowners for the flowage easement will be determined using the difference between the before and after valuations.
- When determining the devaluation caused by the flowage easement, the appraiser may consider future impacts caused by the temporary storage of water on the property as allowed by the flowage easement, including delayed planting, yield loss, debris, and limitations to future land use.
- Values of flowage easements will vary depending on the location and type of the property, magnitude of impacts, and future risks to the property.
- The flowage easement payment will be a one-time payment to the property owner. The payment will be made when the easement is acquired.
- The valuations will be compliant with Uniform Standards of Professional Appraisal Practice (USPAP) and applicable state and federal guidelines.

What Are the Terms and Conditions of the Flowage Easement?

- The flowage easement will describe the “Easement Property” upon which the easement applies. If less than all of a particular property will be covered by the flowage easement, the “Easement Property” will be shown by survey.
- The flowage easement will provide the right to occasionally overflow, flood, and submerge the Easement Property in connection with the operation of the Project as well as actions necessary to enforce compliance with the easement.
- The flowage easement will restrict or prohibit development potential within the Easement Property in compliance with the Federal Emergency Management Agency (FEMA) and local floodplain development rules.
- The flowage easement will require removal of all structures in Mitigation Zone 1, and insurable structures not meeting floodplain management rules in the other mitigation zones.
- The flowage easement will provide access rights related to the Project for removing flood-related debris deposited on the Easement Property due to operation of the Project upon Grantor’s request; removing structures, obstructions, and any other obstacles from the Easement Property; conducting compliance inspections; and necessary and reasonable rights of ingress and egress to and from the Easement Property subject to the provisions regarding crop damages.
- The flowage easement will define acceptable use of the property by Grantor (property owner) and Grantee.
- The flowage easement will allow property owners to mortgage the property as long as the mortgage is subordinate to the flowage easement.
- The flowage easement will outline and reference a Dispute Resolution Board as an optional mechanism for property owners to bring claims if they believe they suffer future damages not compensated for in the flowage easement acquisition.
- The flowage easement will also contain other legal terms including governing law, severability, etc.

When Will the Flowage Easements Be Obtained?

- Flowage easements need to be acquired prior to construction of the last segment of southern embankment for the Project. The current schedule indicates that all flowage easements will need to be acquired by late 2024.
- It is anticipated that several years will be required to acquire all of the flowage easements necessary for the Project.
- The member entities of the MFDA may start early in approaching property owners in the UMA to acquire flowage easements.

Who Will Obtain the Flowage Easements?

- In North Dakota, the Cass County Joint Water Resource District (CCJWRD) will acquire the flowage easements.
- In Minnesota, the City of Moorhead, Clay County, or the Moorhead Clay County Joint Powers Authority (MCCJPA) will acquire the flowage easements.