METRO FLOOD DIVERSION AUTHORITY

FM Area Diversion Project Update

Kris Bakkegard, *MFDA Director of Engineering*

METRO FLOOD DIVERSION AUTHORITY

Agenda

01 Background

02 Overview

03 P3

04 Project Components

Flood History

The Need for Flood Mitigation

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- Red River in Fargo **exceeded flood stage every year** from 1993-2023 except 2012, 2016 and 2021
  - It's **flooded 61 times** in the past 120 years
- **260,000 people** – along with $18 billion worth of their homes, businesses and property – are **at risk of catastrophic flooding**
- **Economic impacts**
  - 1997 flood: $3.5 billion in damages (more than $6.4 billion when adjusting for inflation)
  - Millions spent fighting floods, including $8.2M in 2009
  - Flood insurance will not be required for those protected after the diversion's construction, but it will be available for a reduced rate

Fargo's Top 10 Floods

1. 40.82' – 2009
2. 39.72' – 1997
3. 39.10' – 1897
4. 38.81' – 2011
5. 37.34' – 1969
6. 37.13' – 2006
7. 36.99' – 2010
8. 36.69' – 2001
9. 35.39' – 1989
10. 35.04' – 2019

Changing 100-Year Floodplain

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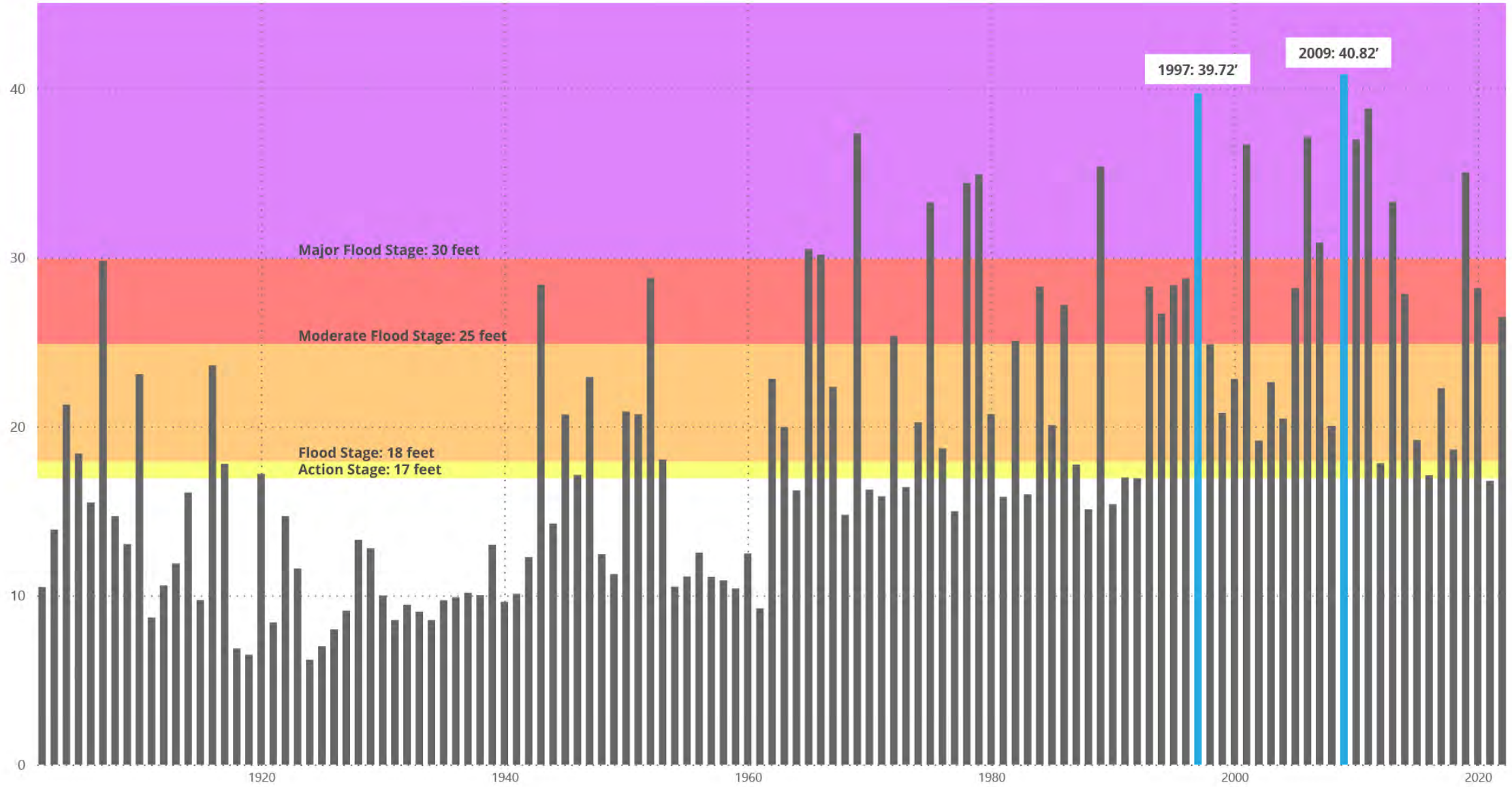

North Dakota Impact

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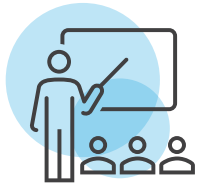
Reducing catastrophic flood risk protects:



55+ schools
including >20% of the state's school-age children, from K-12

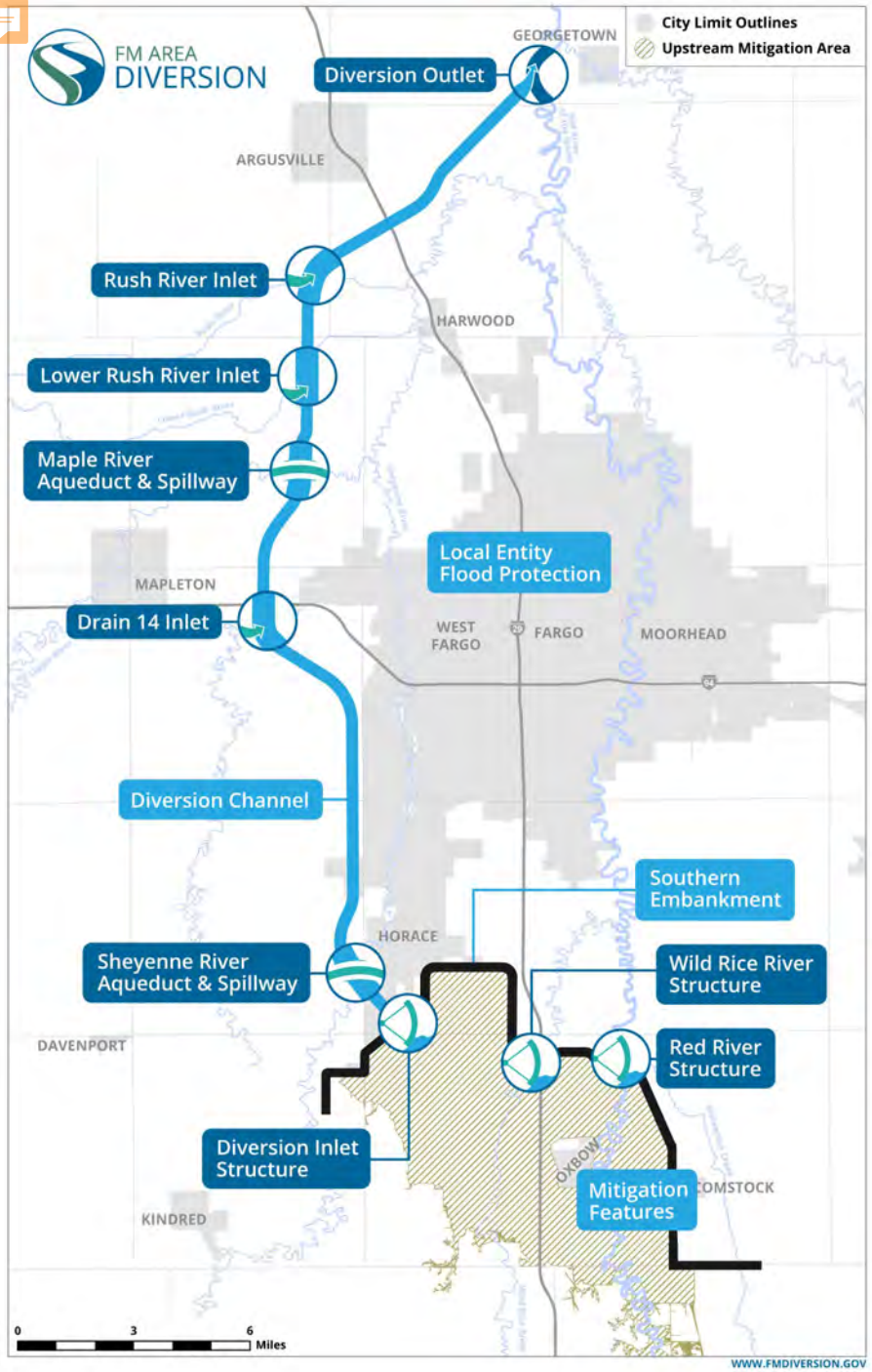
>25% hospital capacity
for the state

Only Level 1 trauma center
between Minneapolis, Seattle, Denver and Omaha

>$25 billion property value

Largest university
in the state

Project Overview



Project Goals

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100-year flood protection minimum

37-foot river stage through town

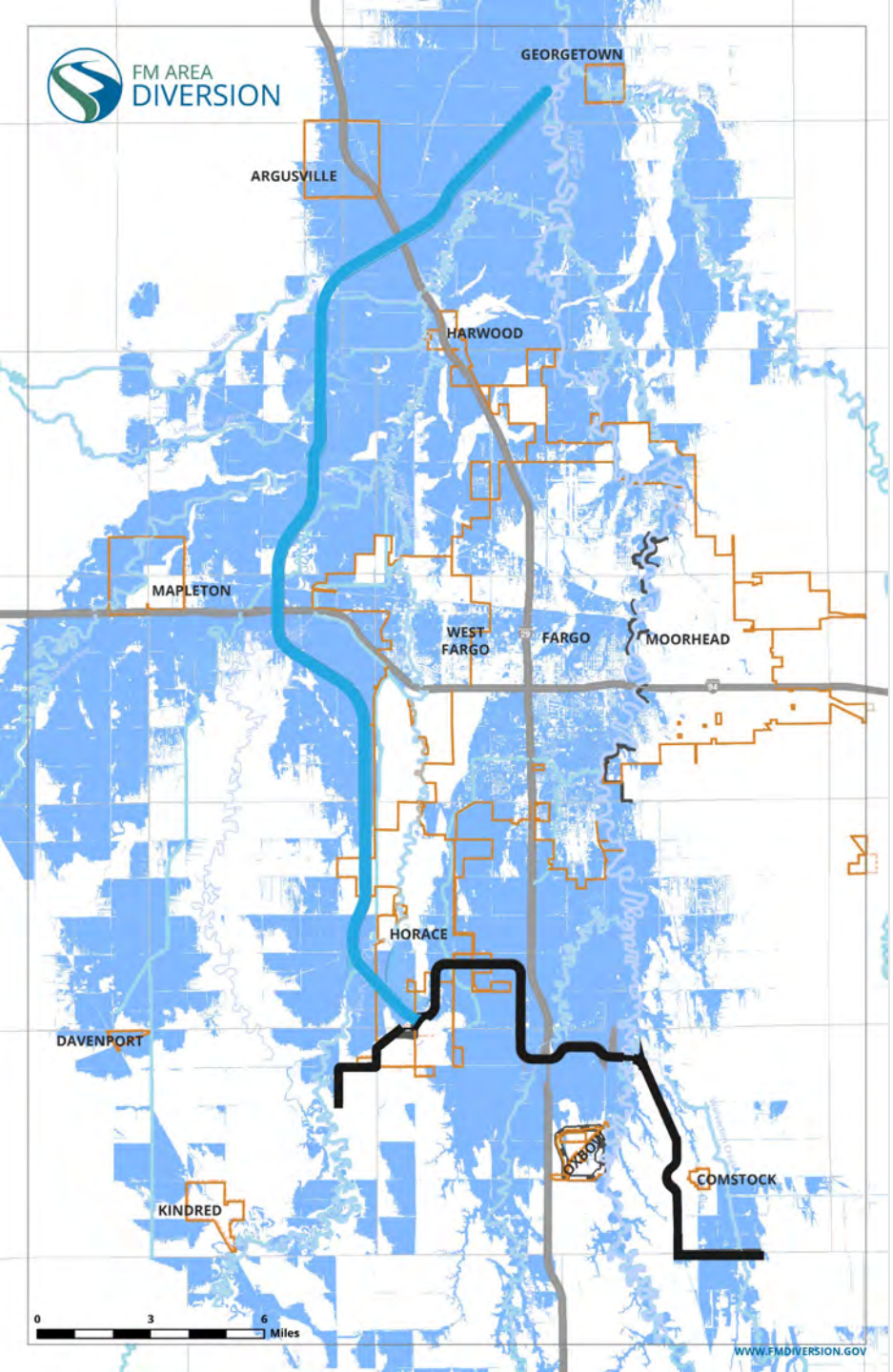
500-year fightable protection

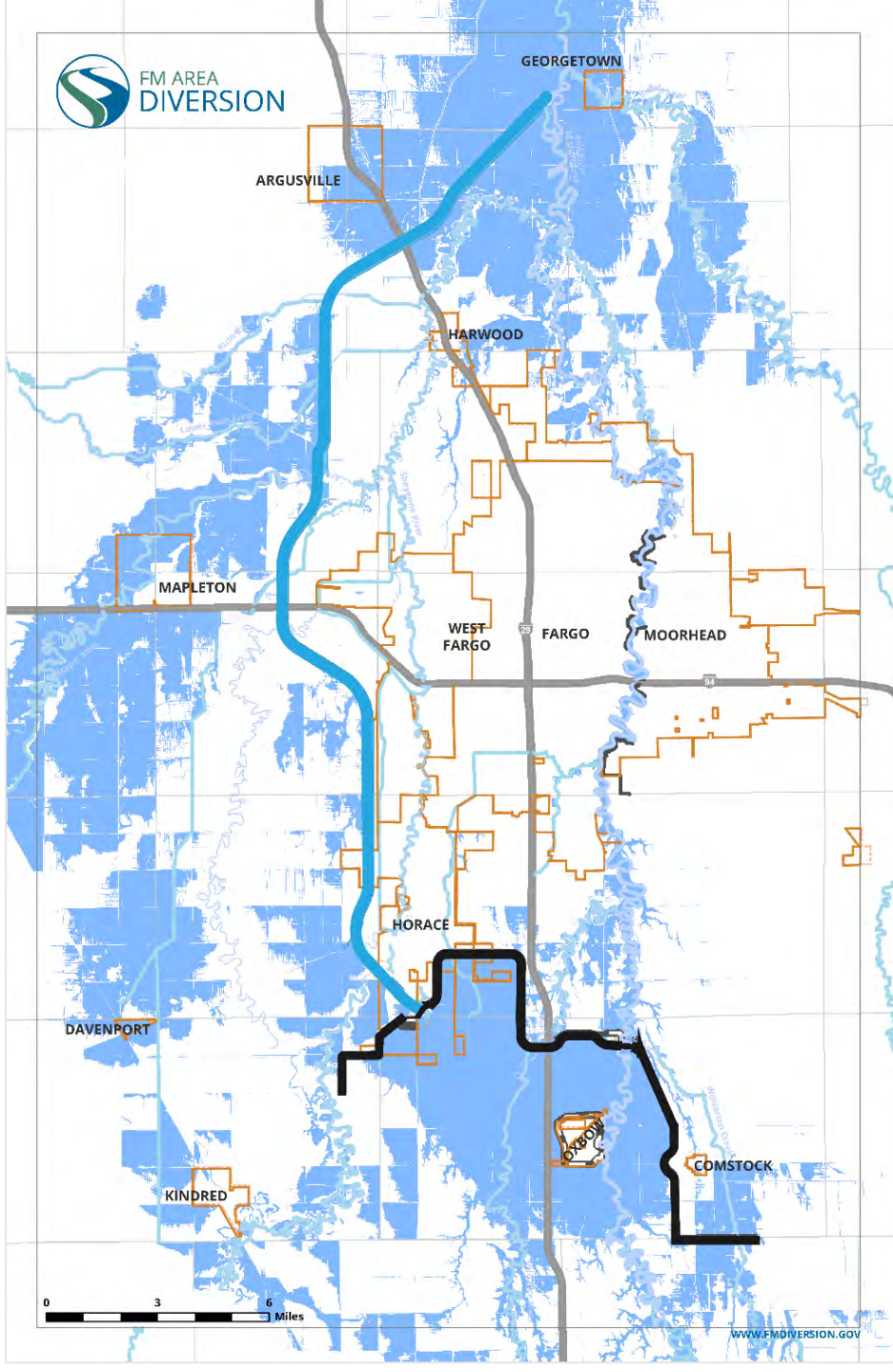
40-foot river stage through town

100-Year Floodplain

Existing Conditions

With Project





How It Will Work

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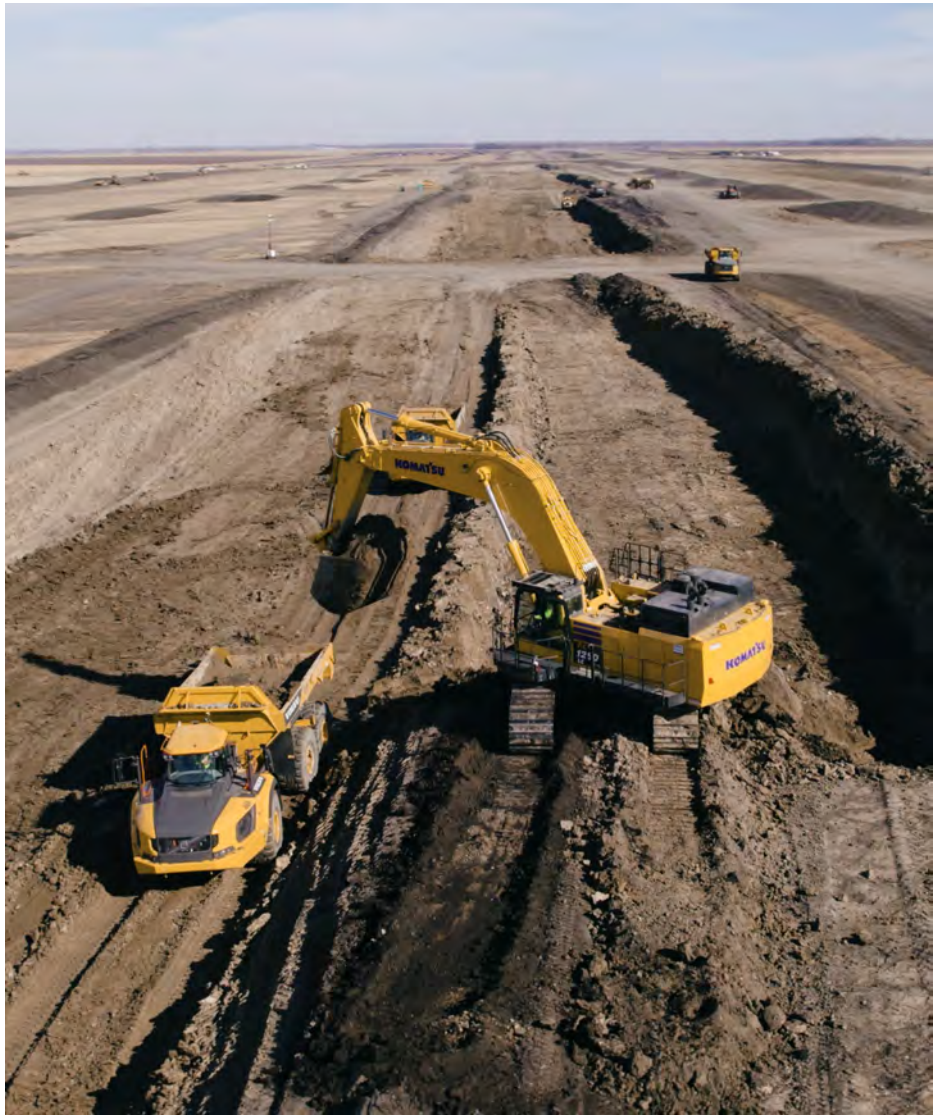
Project Firsts



- First-ever public-private partnership (P3) done in conjunction with the U.S. Army Corps of Engineers
- First-ever water management P3 implemented in North America
- First green finance initiative in the U.S. specifically designed for climate change adaptation
- Pilot project for using renewable biofuels to power heavy machinery

Project Flyover

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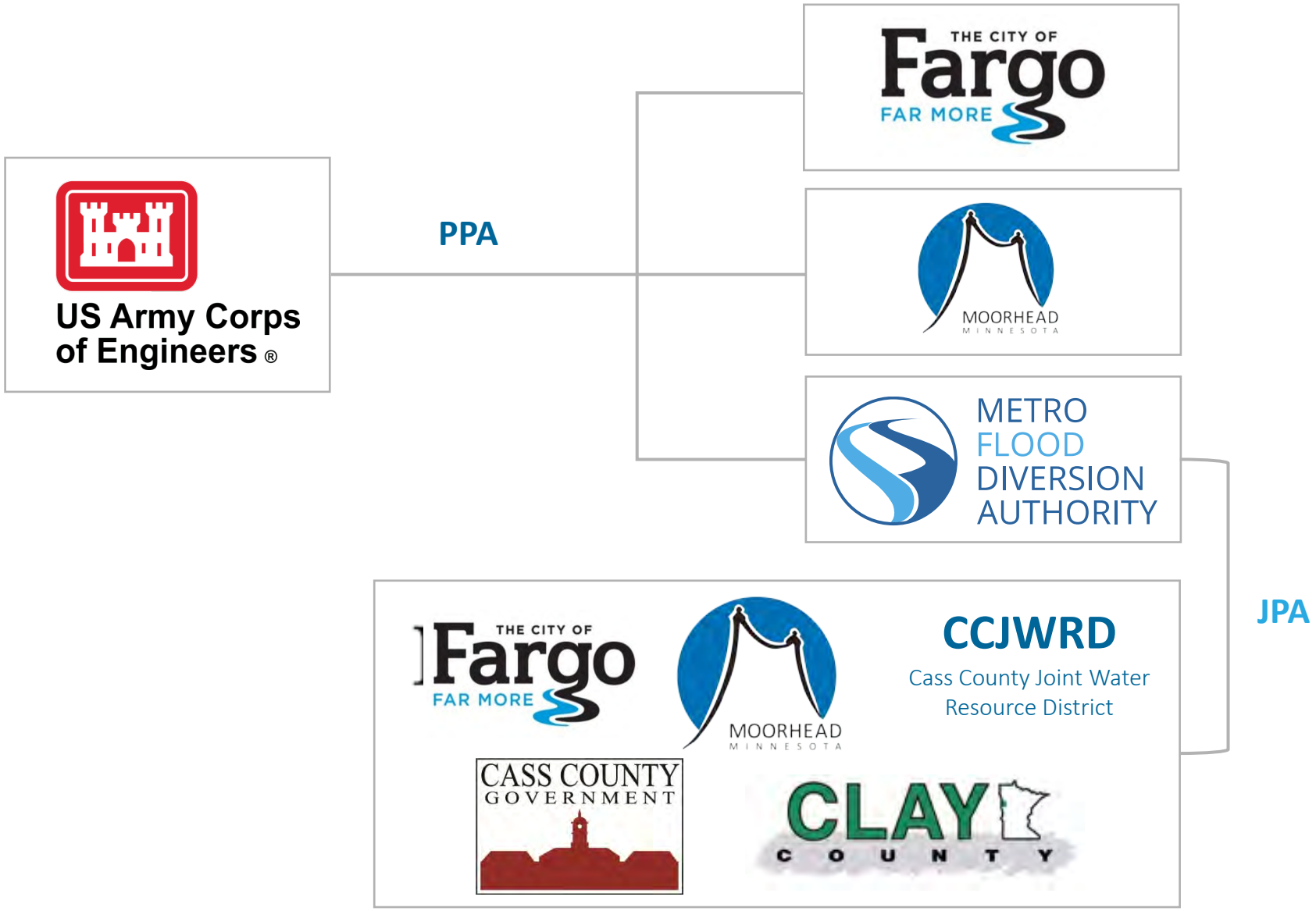
Split Delivery Structure



The Project Partnership Agreement (PPA) is between the government (USACE) and non-federal partners (MFDA, City of Fargo and City of Moorhead) and serves as the official agreement marking the beginning of the FM Area Diversion.

The Joint Powers Agreement (JPA) is an agreement between member entities that establishes duties, responsibilities, and obligations regarding the FM Area Diversion project.

P3 Structure

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METRO FLOOD DIVERSION AUTHORITY

Governing Authority
13-member Board of Authority and staff

RED RIVER VALLEY ALLIANCE

P3 Partner
Responsible for designing, constructing, financing, operating, and maintaining the Stormwater Diversion Channel & Associated Infrastructure

Joint venture of: acciona SHIKUN&BINUI NORTH AMERICAN CONSTRUCTION GROUP

ASN Constructors

Design & Construction Arm of RRVA
Responsible for design and construction of Stormwater Diversion Channel & Associated Infrastructure

Project Delivery Structure

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FM AREA DIVERSION

Stormwater Diversion Channel & Associated Infrastructure (SWDCAI)	**Southern Embankment** & Associated Infrastructure (SEAI)	**Mitigation Features** and Associated Infrastructure (MFAI)	**Local Entity Flood Protection** & Associated Infrastructure (LFPAI)
METRO FLOOD DIVERSION AUTHORITY	US Army Corps of Engineers®	US Army Corps of Engineers® and METRO FLOOD DIVERSION AUTHORITY	METRO FLOOD DIVERSION AUTHORITY
Delivered by the P3	Delivered by the U.S. Army Corps of Engineers	Delivered by the U.S. Army Corps of Engineers and city and county governments	Delivered by city and county governments in coordination with the Corps
RED RIVER VALLEY ALLIANCE			THE CITY OF Fargo FAR MORE; MOORHEAD MINNESOTA; CCJWRD; CASS COUNTY GOVERNMENT; CLAY COUNTY

Public-Private Partnership (P3)

Why a Public-Private Partnership?

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RED RIVER VALLEY ALLIANCE

acciona S&B USA CONSTRUCTION NORTH AMERICAN CONSTRUCTION GROUP

- MFDA retains ownership and control over operating standards and other requirements
- RRVA, as the private sector partner, delivers innovative technical solutions within MFDA requirements
- The engineer and contractor work collaboratively to lower construction cost and deploy new technology
- MFDA receives a fixed-price bid and RRVA assumes the risks of delay, cost escalation, etc.
- Private entity holds debt and is incentivized to deliver the project in order to receive payment

P3 Benefits

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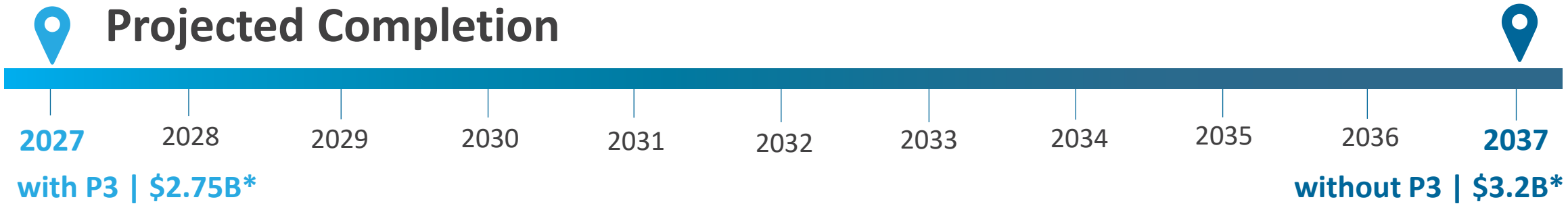
- Allows multi-generational payback for large projects
- Uses multiple, long-term alternative financing
- Promotes design and delivery innovation
- Provides cost certainty
- Assigns risk to the party most able to manage the risk
- Provides performance guarantees and long-term warranties
- Best option to secure Federal appropriations
- Shortens schedule



Reflected in 2018 dollars

Stormwater Diversion Channel & Associated Infrastructure (SWDCAI)

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Components

30-Mile Diversion Channel

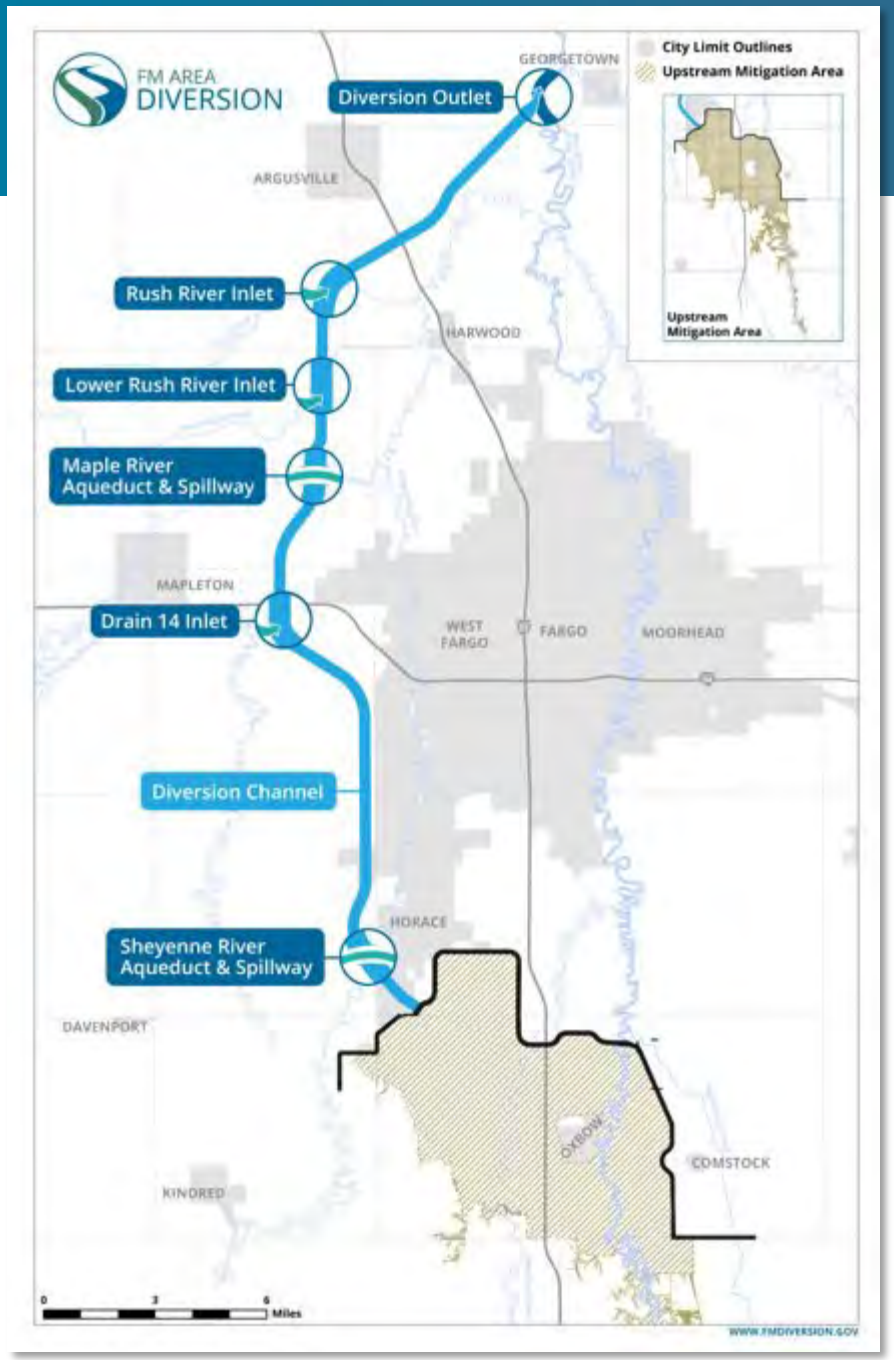
3 Structures

- Diversion Outlet
- Maple River Aqueduct
- Sheyenne River Aqueduct

14 Drainage Inlets

Transportation Features

- 3 Railroad Crossings
- 4 Interstate Crossings
- 12 County Road Crossings



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Stormwater Diversion Channel

METRO FLOOD DIVERSION AUTHORITY

Construction Overview

Builder: ASN Constructors (P3)

Start Date: August 2022

Scheduled Completion: Early 2027

Component Details

Length: 30 miles

Excavation Totals: 45 million cubic yards

Utility Relocations: coordinating with 18 companies

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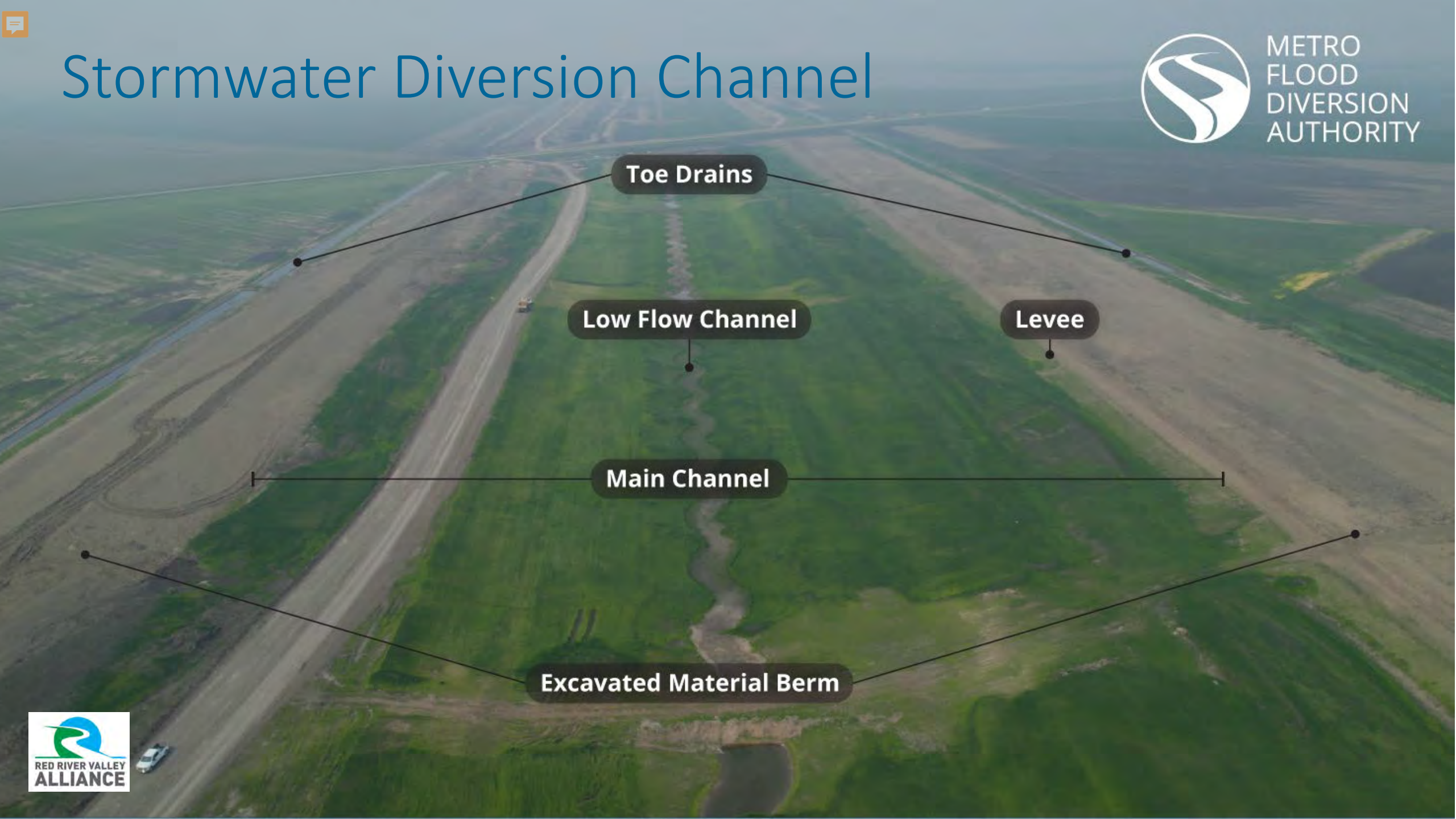
Stormwater Diversion Channel

METRO FLOOD DIVERSION AUTHORITY



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Maple River Aqueduct

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March 2024

RED RIVER VALLEY ALLIANCE

Construction Overview

Builder: ASN Constructors (P3)

Start Date: June 2023

Scheduled Completion: Q4 2025

Component Details

Length: 250 feet

Width: 50 feet

Concrete: 10,000 cubic yards

Piling: 48,194 linear feet of H pile

Aqueduct

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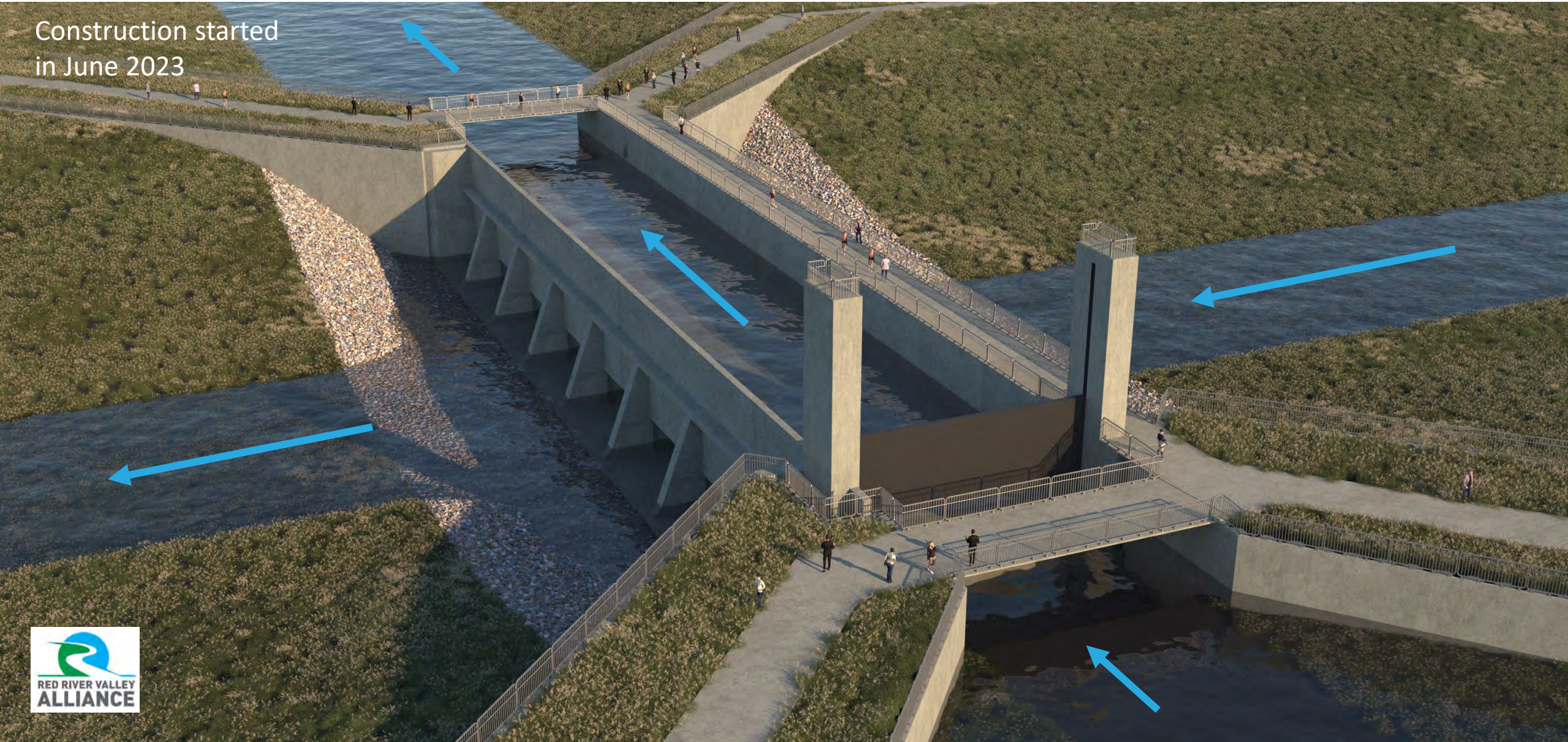
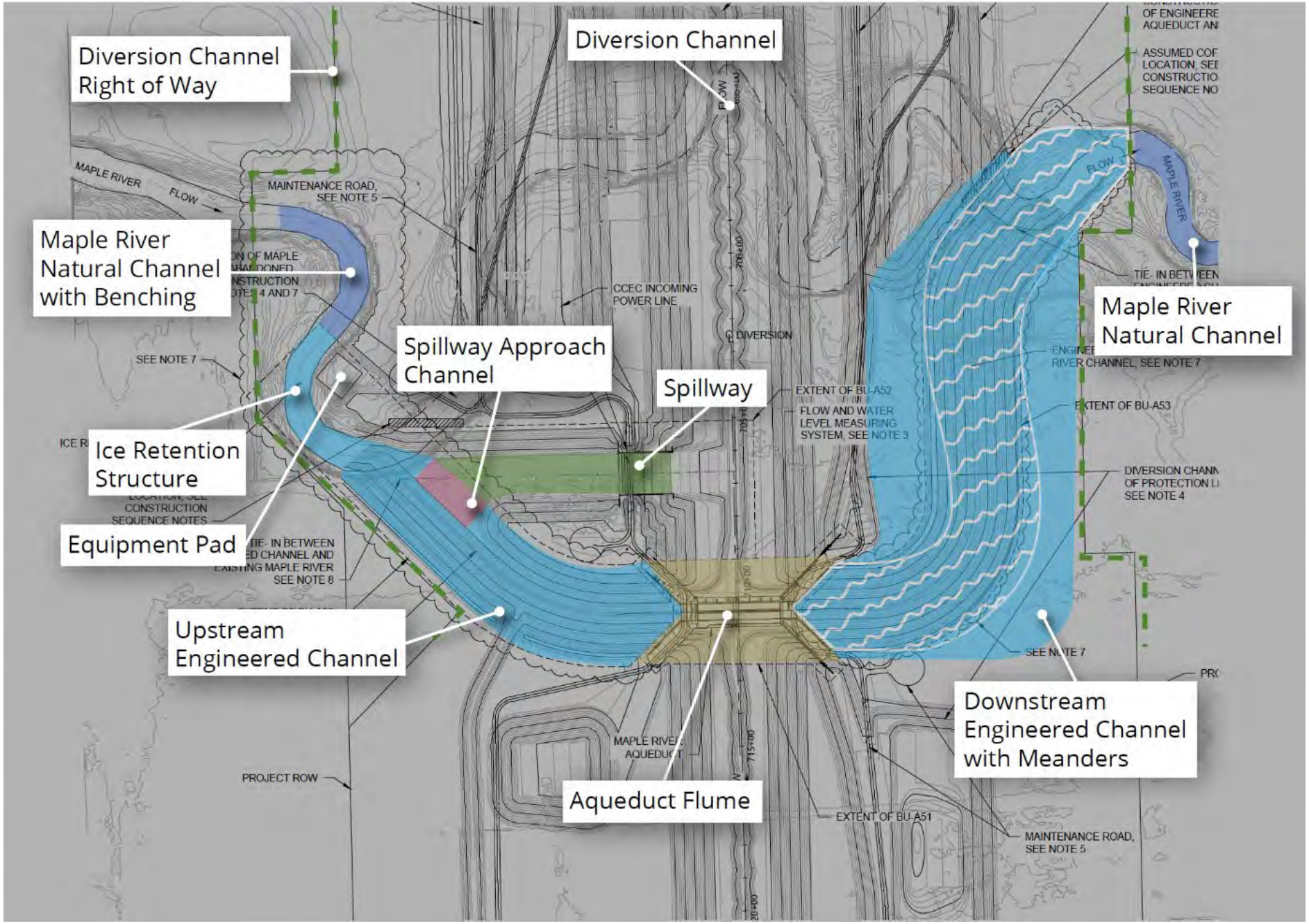


Maple River Aqueduct

- **Conceptual Design**



Diversion Outlet

METRO FLOOD DIVERSION AUTHORITY

Construction Overview

Builder: ASN Constructors (P3)

Start Date: 2023

Completion Date: 2024

Component Details

Length: 1,500 feet

Width: 300 feet

Riprap: 24,000 cubic yards

Boulders: 450+ boulders placed as rock weir to promote fish passage

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Diversion Outlet

METRO FLOOD DIVERSION AUTHORITY

November 2023

RED RIVER VALLEY ALLIANCE

Drain Inlet

METRO FLOOD DIVERSION AUTHORITY

August 2023

RED RIVER VALLEY ALLIANCE

Drain Inlet

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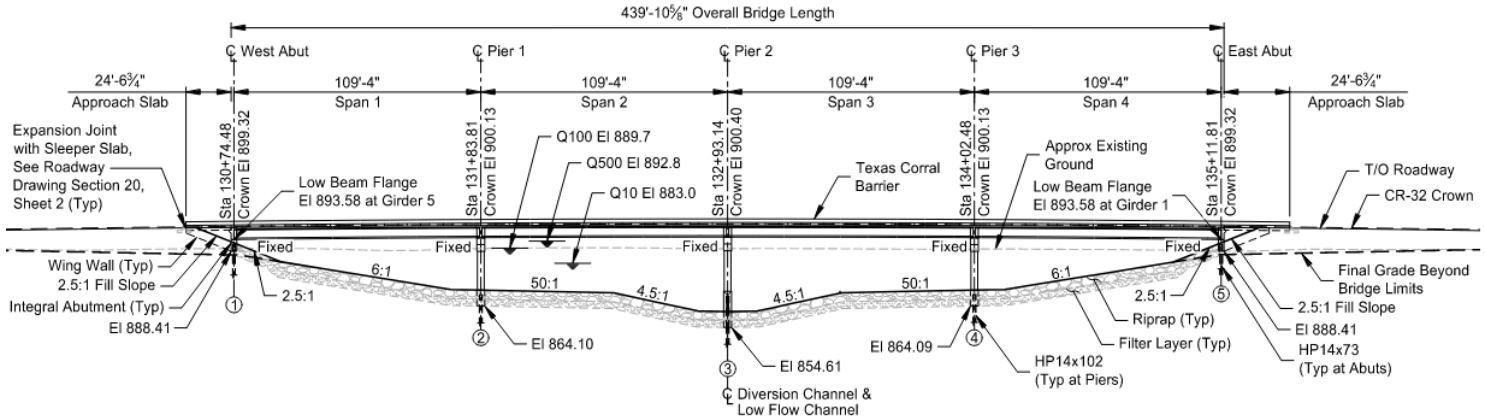
RED RIVER VALLEY ALLIANCE

Transportation Features

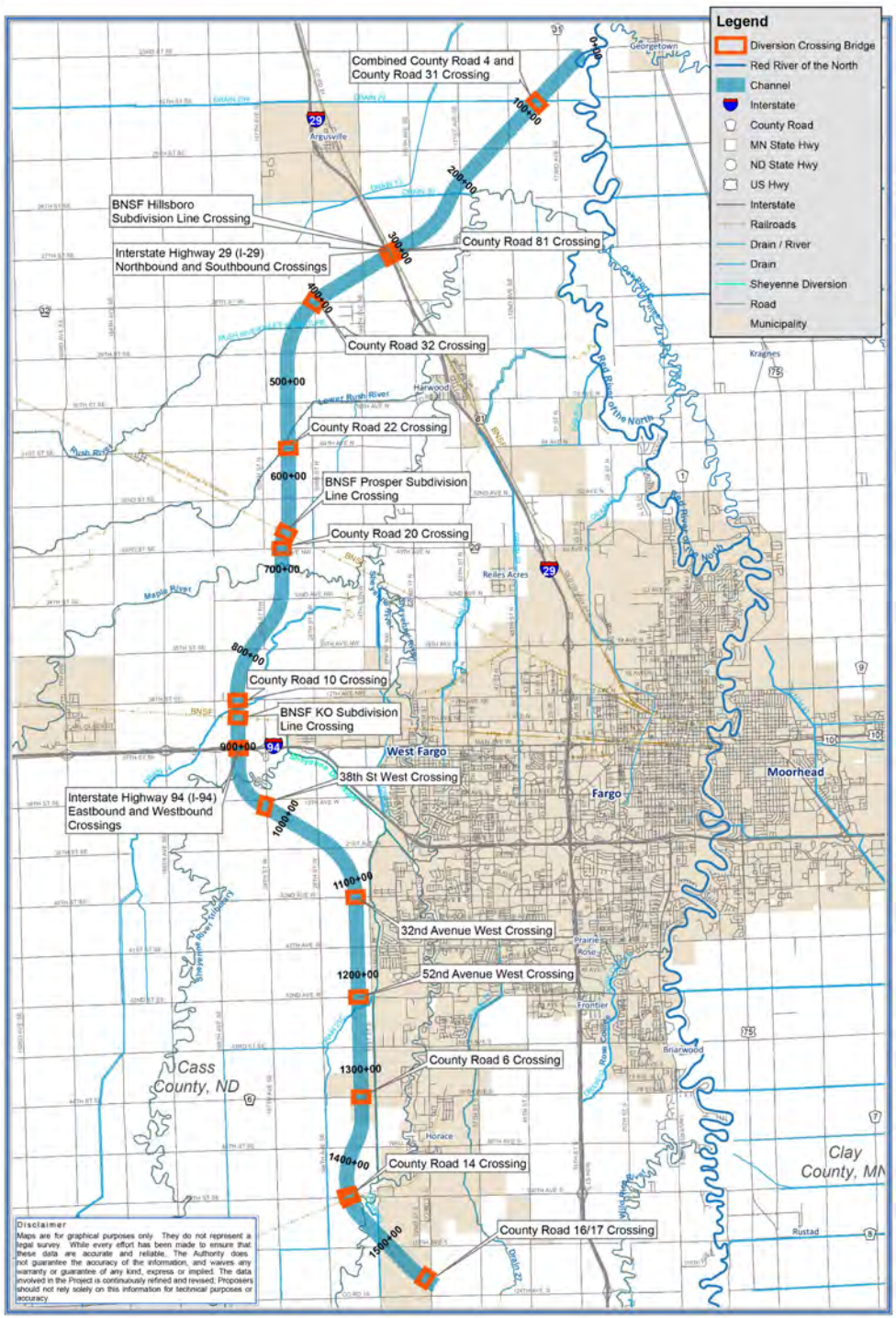


Flood Control and Road Design

- RRVA

Supporting Partners

- NDDOT
- MNDOT
- Cass County



Interstate Crossings

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I-29/BNSF/CR 81 Crossings

METRO FLOOD DIVERSION AUTHORITY

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County Roads 16/17 Crossing

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December 2023

RED RIVER VALLEY ALLIANCE

38th Street Crossing

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January 2024

RED RIVER VALLEY ALLIANCE

County Roads 4/31 Crossing

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January 2024

RED RIVER VALLEY ALLIANCE

County Road 32 Crossing

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Railroad Crossings

METRO FLOOD DIVERSION AUTHORITY

RED RIVER VALLEY ALLIANCE

BNSF Shoofly / CR 81 Bypass

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January 2024

RED RIVER VALLEY ALLIANCE

BNSF Prosper Crossing

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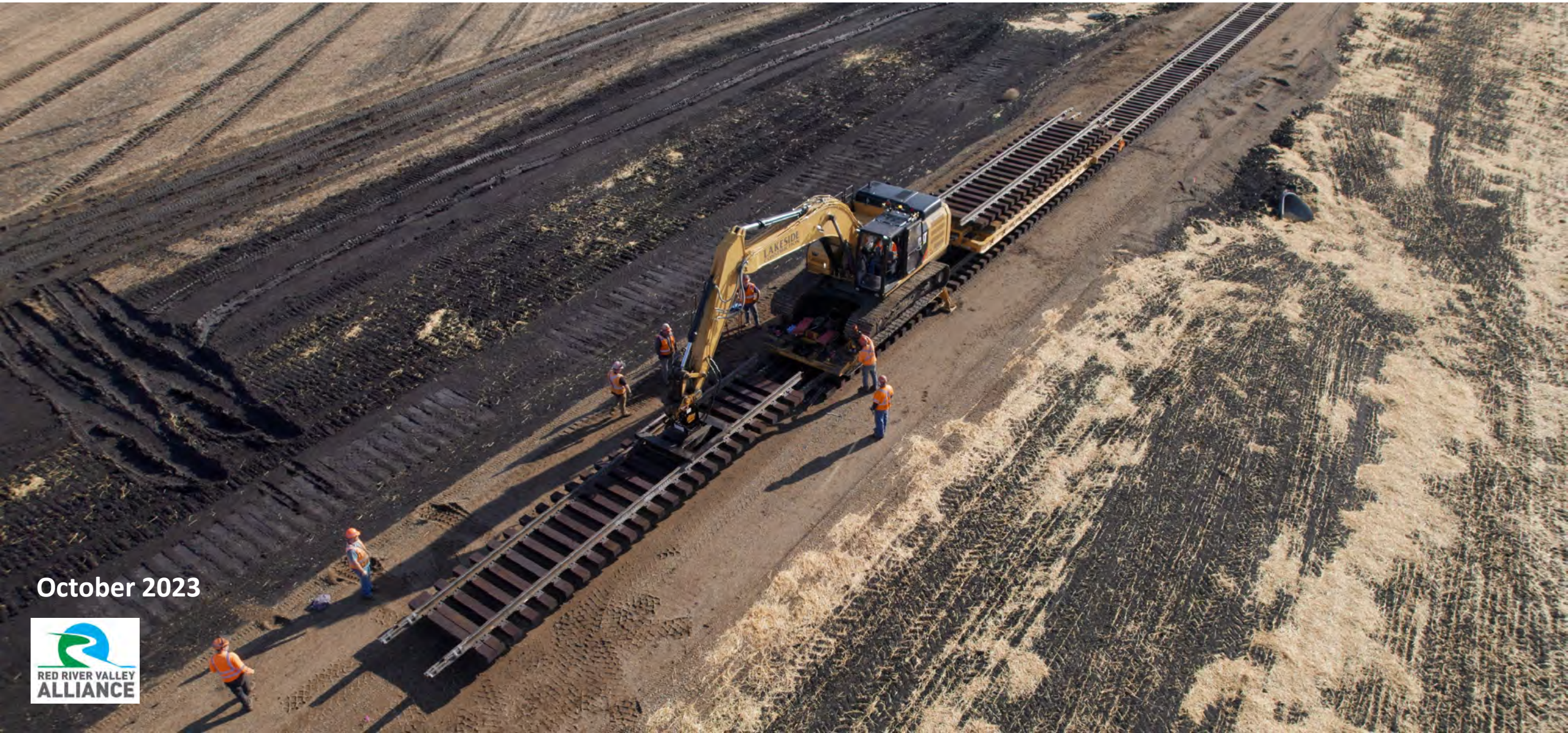

October 2023

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Southern Embankment & Associated Infrastructure (SEAI)

US Army Corps of Engineers ®

Components

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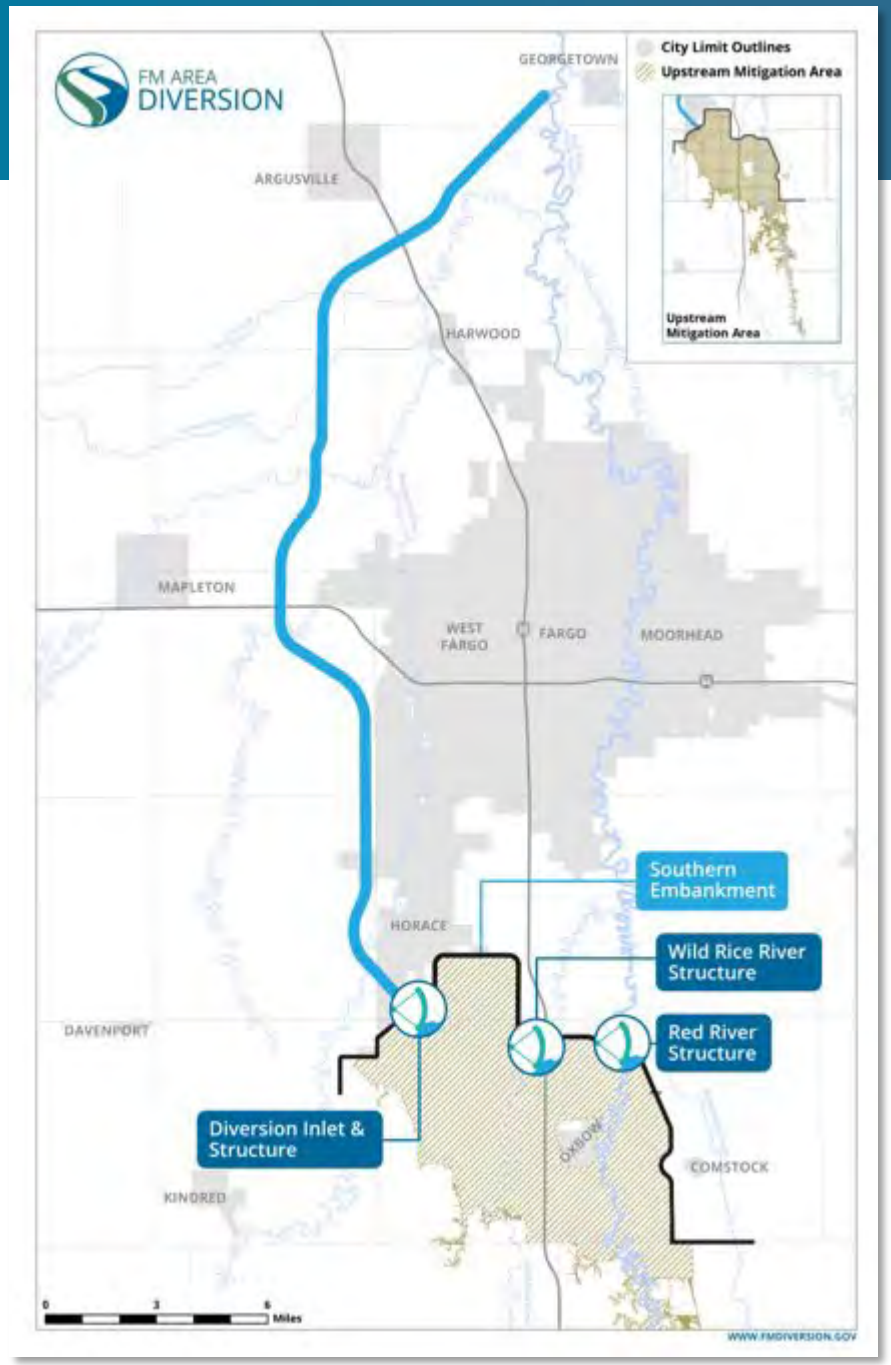
22 Miles of Earthen Embankment

3 Control Structures

- Diversion Inlet Structure
- Wild Rice River Structure
- Red River Structure

Transportation Features

- I-29 crossing bridge
- County and township crossings
- 4-mile grade raise on I-29



Diversion Inlet Structure

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Construction Overview

Builder: Ames Construction (USACE contractor)

Start Date: 2017

Scheduled Completion: November 2023

Component Details

Excavation: 264,000 cubic yards

Steel Piling: 55,400 linear feet

Concrete: 11,700 cubic yards

Riprap: 20,000 cubic yards

Gates: 50 feet wide by 26 feet tall

Diversion Inlet Structure

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July 2023

Wild Rice River Structure

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Construction Overview

Builder: Ames Construction (USACE contractor)

Start Date: 2020

Completed: October 2023

Component Details

Excavation: 420,000 cubic yards

Steel Piling: 70,200 linear feet

Concrete: 13,000 cubic yards

Riprap: 14,500 cubic yards

Gates: 40-by-40 feet

Wild Rice River Structure Area Mockup

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Red River Structure

METRO FLOOD DIVERSION AUTHORITY

Construction Overview

Builder: Ames Construction (USACE contractor)

Start Date: 2022

Scheduled Completion: March 2026

Component Details

Excavation: 1.8 million cubic yards

Steel Piling: 87,000 linear feet

Concrete: 72,000 cubic yards

Riprap: 26,200 cubic yards

Gates: 50 feet wide by 52.5 feet tall

Southern Embankment Reach SE-1A

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Construction Overview

Builder: Tunheim Construction (USACE contractor)

Start Date: 2021

Completed: November 2022

Component Details

Length: 3 miles

Excavation: 142,000 cubic yards

Southern Embankment Reach SE-2A

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Construction Overview

Builders: H. B. Construction Inc. (USACE contractor)

Start Date: 2021

Scheduled Completion: September 2024

Component Details

Length: 1.8 miles

Excavation: 693,000 cubic yards

Turf Reinforcing Mat: 79,000 cubic yards

Southern Embankment Design

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Upcoming Reaches

5 more reaches of the 22-mile southern embankment have designs being finalized and construction will begin within the next couple of years.

SE-1B: 2024 – 2026

SE-2B: 2024 – 2025

SE-3: 2025 – 2026

SE-4: 2024 – 2026

SE-5: 2025 – 2026

Summer 2022

I-29 Grade Raise

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Construction Overview

Builder: Industrial Builders Inc. (USACE contractor)

Start Date: 2021

Scheduled Completion: January 2024

Component Details

Length: 4.2 miles

Excavation: 1.2 million cubic yards

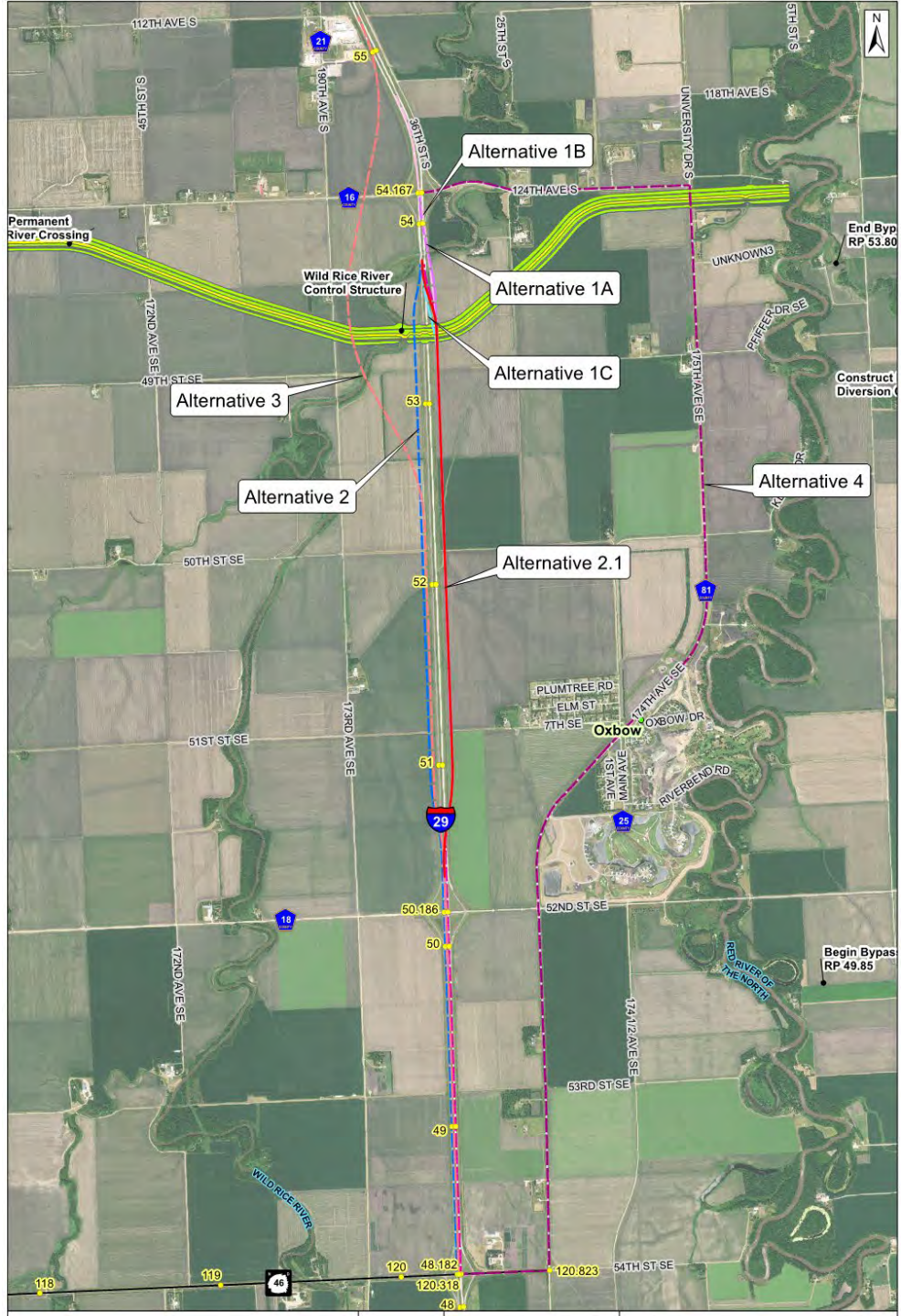
Steel Piling: 13,000 feet

Concrete: 387,000 cubic yards

Riprap: 11,700 cubic yards

I-29 Grade Raise

- Alternatives Considered
  - Permanent interstate realignment
  - Bypass alternatives
- Selected Alternative
  - Permanent improvements along existing corridor
  - Temporary bypass east of existing alignment



I-29 Grade Raise

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I-29 Grade Raise

METRO FLOOD DIVERSION AUTHORITY

Transportation Features

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Flood Control Design

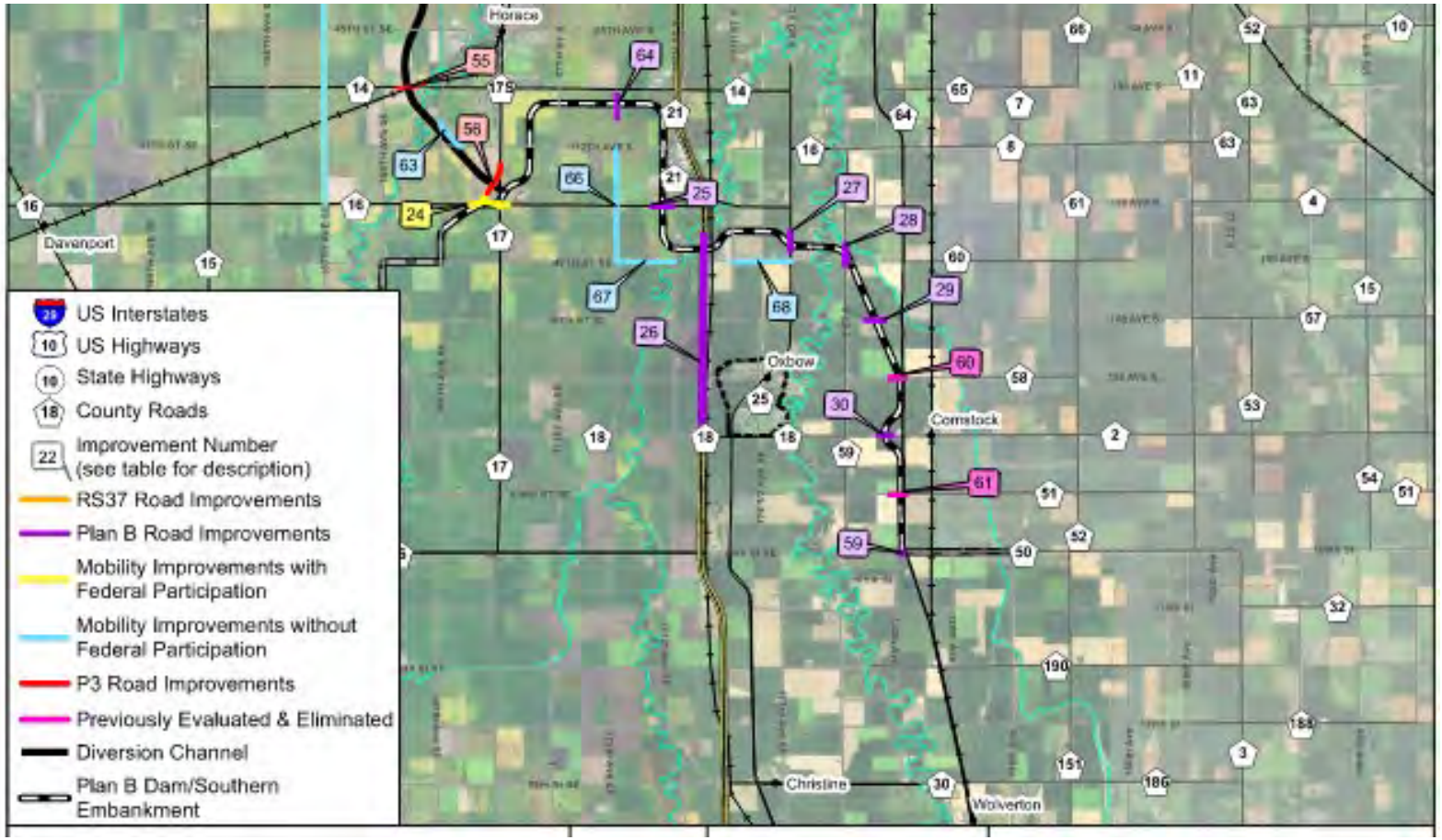
- USACE

Road Design

- MFDA

Supporting Partners

- NDDOT
- MNDOT
- Cass County
- Clay County
- MN & ND Townships



Local Entity Flood Protection & Associated Infrastructure (LFPAI)

THE CITY OF Fargo FAR MORE

MOORHEAD MINNESOTA

CCJWRD
Cass County Joint Water Resource District

CASS COUNTY GOVERNMENT

CLAY COUNTY

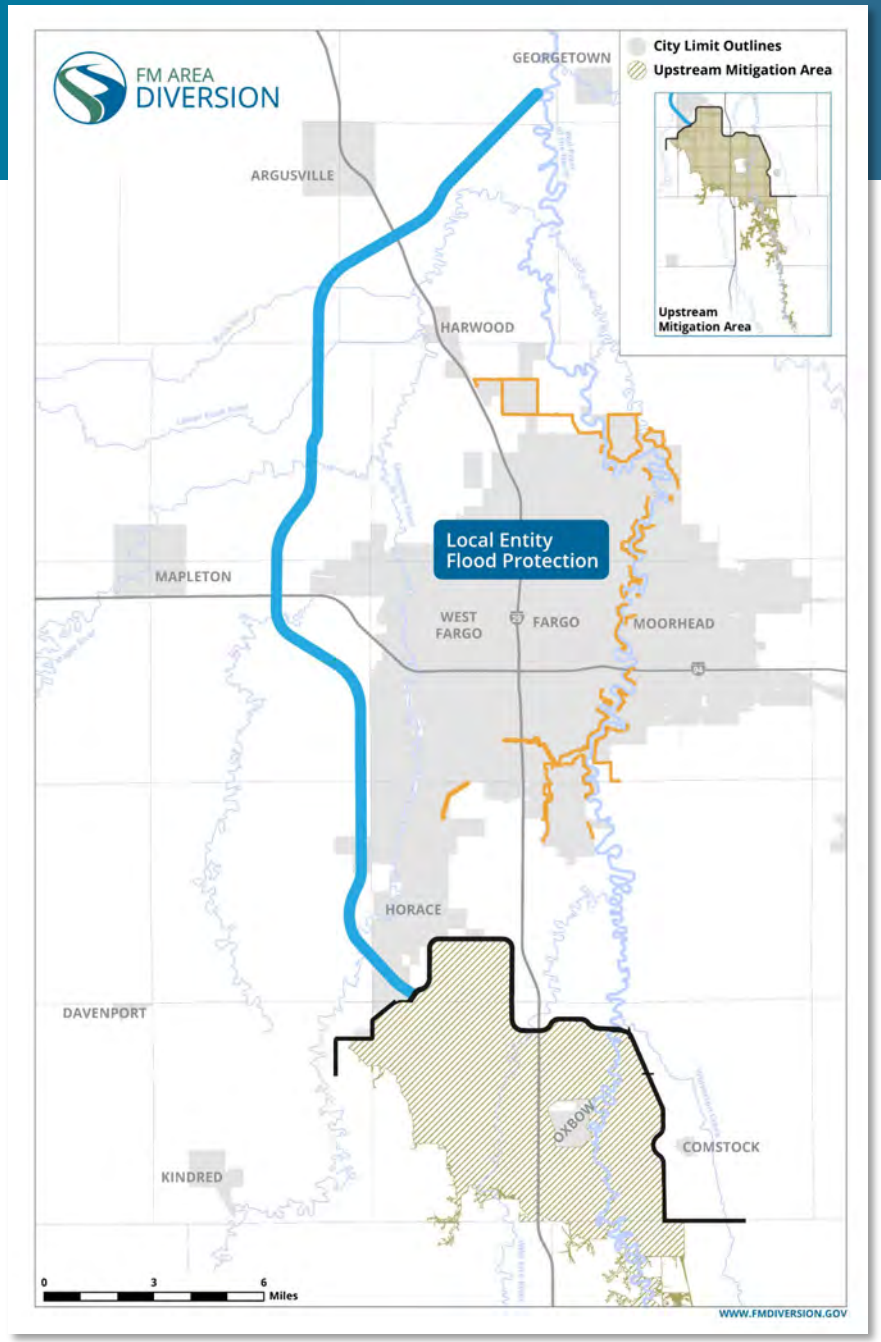
Components

Levees & floodwalls

Stormwater lift stations

County & township road improvements and grade raises

Goal: safely pass as much as 37 feet of water through town during a 100-year flood without the need for emergency measures



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In-Town Flood Protection

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THE CITY OF Fargo FAR MORE

CASS COUNTY GOVERNMENT

Construction Overview

Projects began in 2009 to allow for up to 37 feet of floodwater to flow safely through town

Project Details

18 stormwater lift stations

259 property acquisitions

4.4 miles county road improvements/ grade raises

26.2 miles of levees/floodwalls

In-Town Flood Protection

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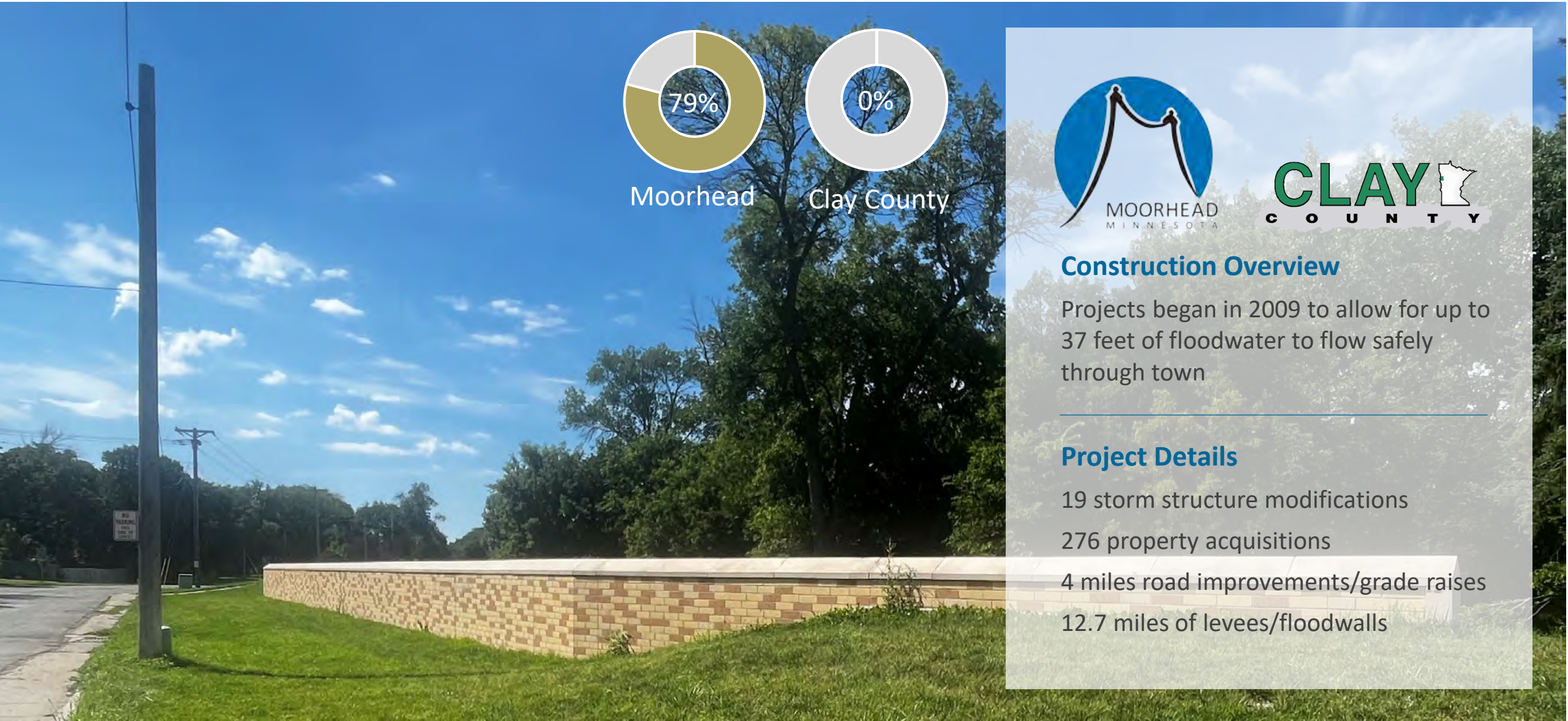

MOORHEAD MINNESOTA

CLAY COUNTY

Construction Overview

Projects began in 2009 to allow for up to 37 feet of floodwater to flow safely through town

Project Details

19 storm structure modifications

276 property acquisitions

4 miles road improvements/grade raises

12.7 miles of levees/floodwalls

Mitigation Features & Associated Infrastructure (MFAI)

US Army Corps of Engineers ®

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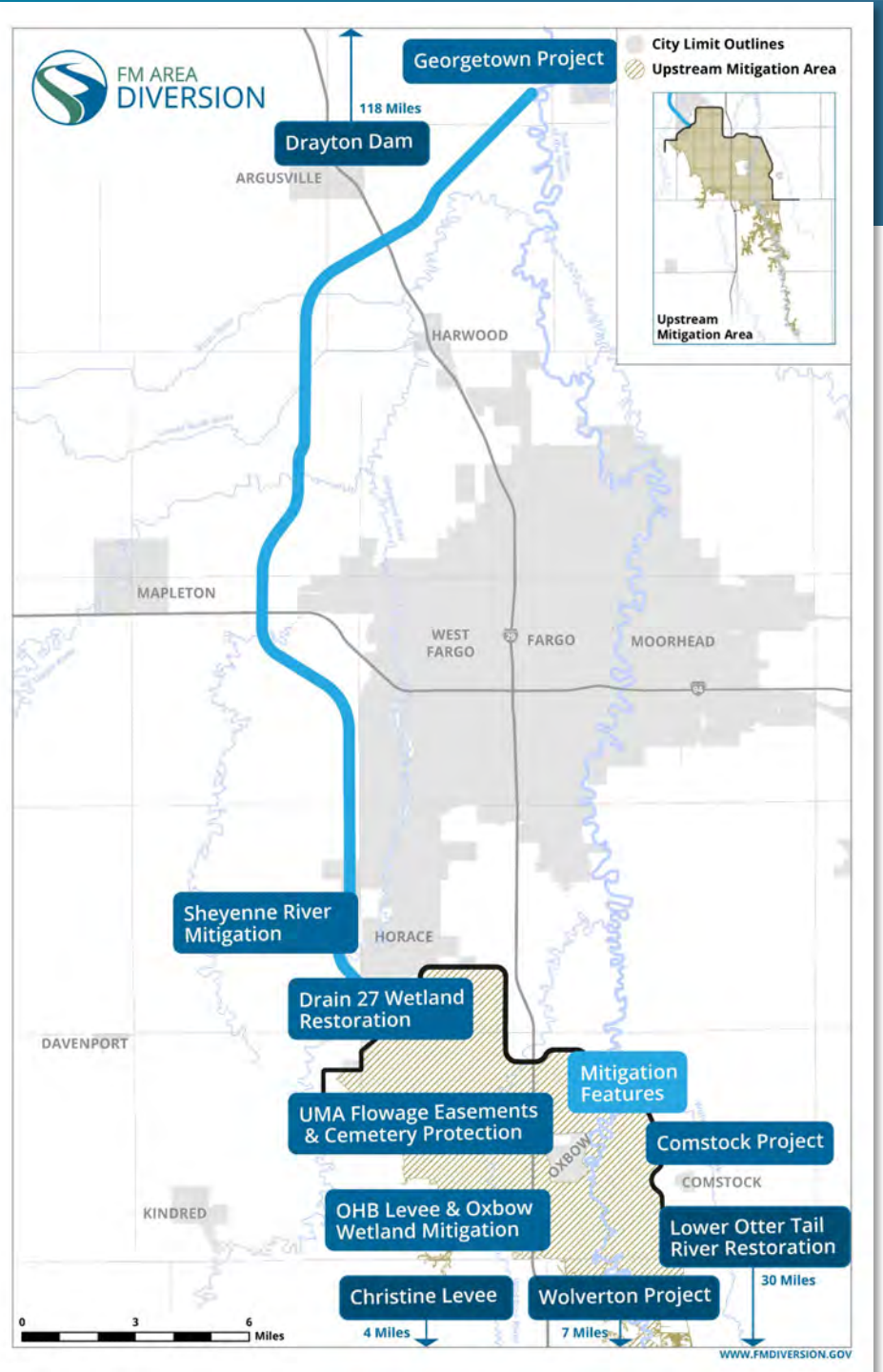
Components

- Cemetery mitigation*
- Christine Levee*
- Comstock Project*
- Drain 27 Wetland Mitigation
- Drayton Dam
- Flowage easements*
- Georgetown Project*
- Lower Otter Tail River Restoration Project
- OHB Levee
- Oxbow Wetland Mitigation
- Sheyenne River Mitigation
- Wolverton Project*



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** Projects being completed by MFDA and member entities; other projects being completed by USACE*

Oxbow Wetland Mitigation

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Project Overview

Contractor: Industrial Builders Inc.

Start Date: Fall 2020

Completed: Spring 2023

Component Details

Size: 10.6 wetland acres with 8.2 acres of 50-foot upland buffers

Growth: 63.1 acres of seedlings planted

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Drayton Dam Mitigation

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Project Overview

Contractor: HSG Park Joint Venture (USACE Contractor)

Start Date: May 2022

Scheduled Completion: Fall 2023

Location: 120 miles north of Fargo-Moorhead

Component Details

- Constructing a rock rapids fishway structure
- Offsets project impacts to biotic connectivity on the Red River

Drain 27 Mitigation

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Project Overview

Contractor: HSG Park Joint Venture (USACE contractor)

Start Date: Spring 2022

Completed: Fall 2022

Component Details

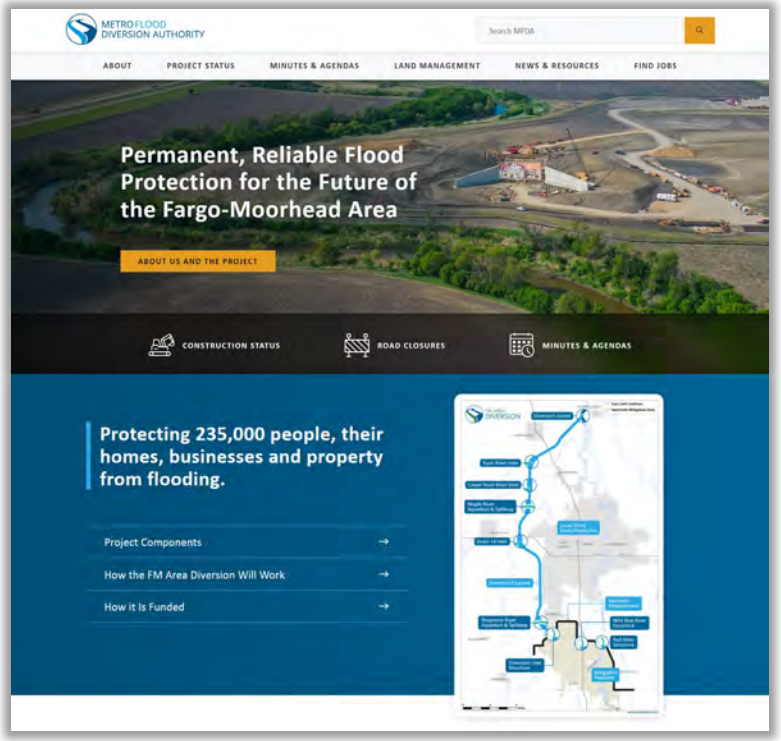
Size: 320 acres of wetland

Excavation: 436,000 cubic yards

Native Plant Seeding: 485 acres

April 2023

Stay Connected



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