

INFORMATIONAL BOOKLET

Horace City Council

April 4, 2017



FM AREA
DIVERSION
PROJECT



At a Glance FM Area Diversion Inlet and Control Structure

March 2017

ABOUT THE STRUCTURE

The Diversion Inlet and Control Structure is being built by Ames Construction Inc. from Burnsville, MN. The structure includes:

- Three 50-foot wide radial arm floodgates
- A service bridge across the top of the structure
- A mechanical platform and control building

The control structure at the inlet of the Diversion Channel allows:

- Water during a 100-year event to flow at 20,000 cubic feet per second into the Diversion Channel
- The structure is necessary to control impacts downstream

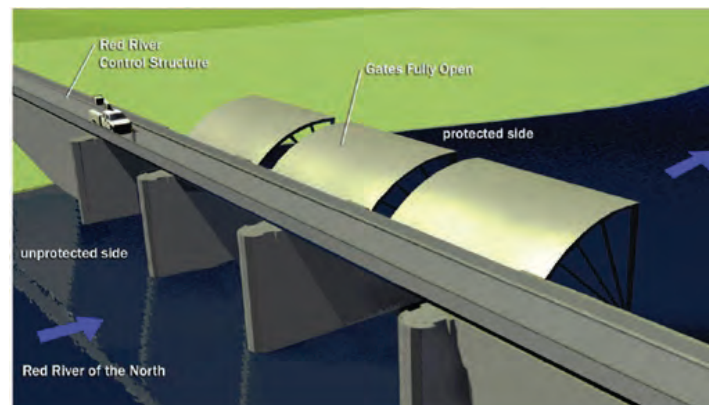
Construction of the structure is being administered by the U.S. Army Corps of Engineers.

CONSTRUCTION FACTS

- The structure is expected to be complete in 2020
- The contract to build the structure is \$46 Million
- Each radial arm flood gate weighs 87,000 pounds
- The structure is located just south of Horace near the intersection of County 16 and County 17
- Construction in the spring of 2017 will begin with preloading the site, or piling dirt to stabilize soils



A rendering of the Diversion Inlet and Control Structure.



Three radial arm floodgates control the amount of water that enters the Diversion Channel.

Please Join Us

Remembering the Flood of 1997 & Groundbreaking Event

1 p.m. Monday, April 17, 2017

Park and ride will be available

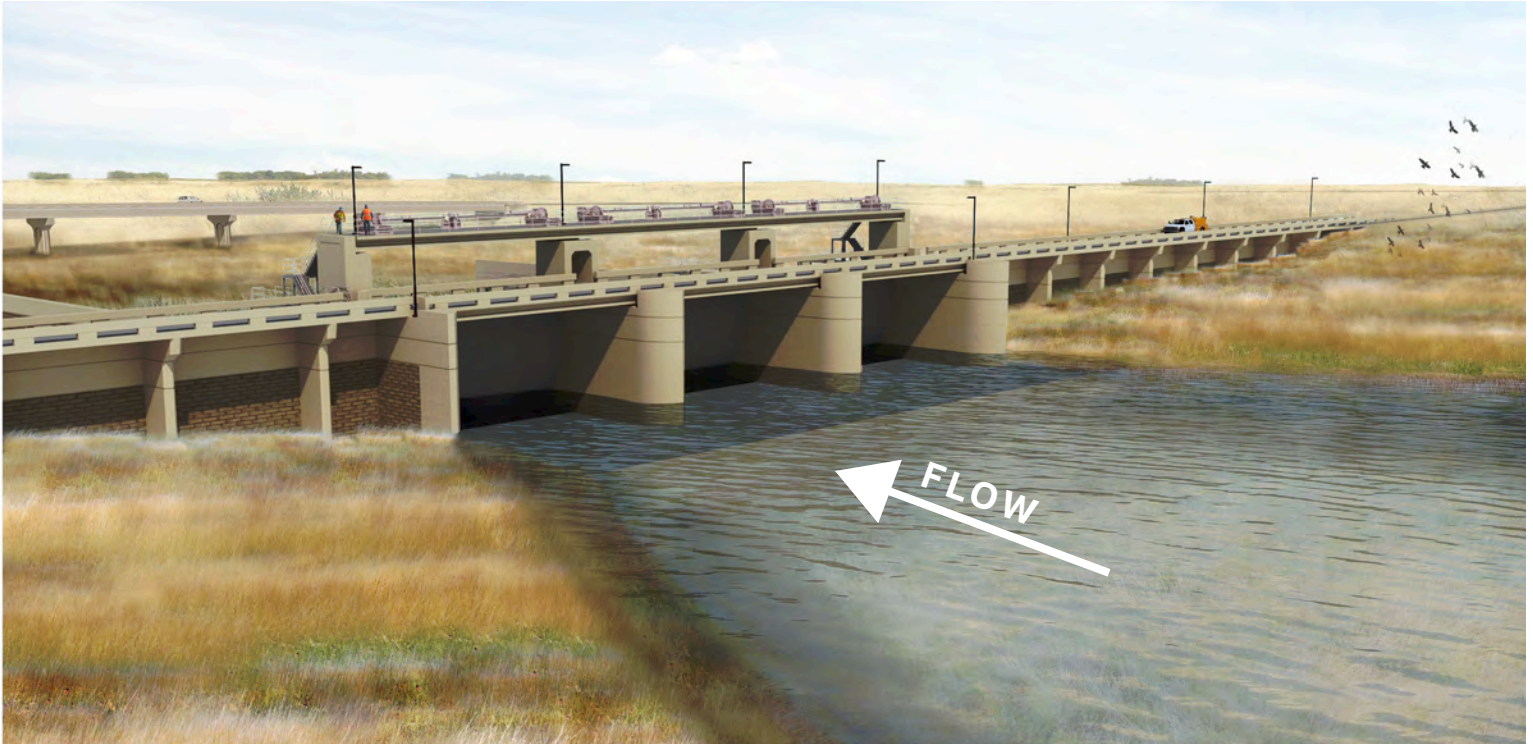
For more information visit
www.fmdiversion.com/97floodstories





FM AREA DIVERSION PROJECT DIVERSION INLET STRUCTURE

November 2016



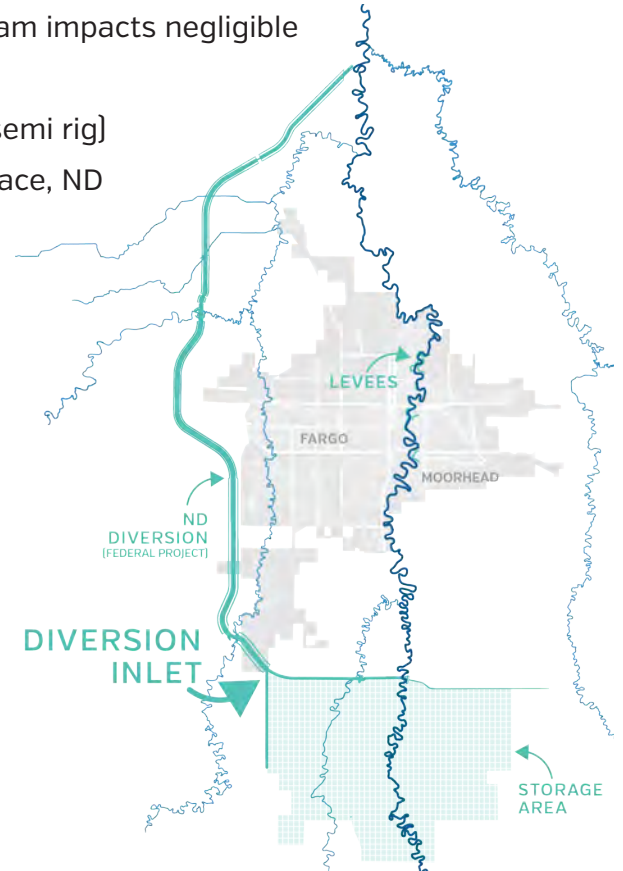
View of Inlet Structure (Looking Downstream from the Embankment Area) - GATES DOWN

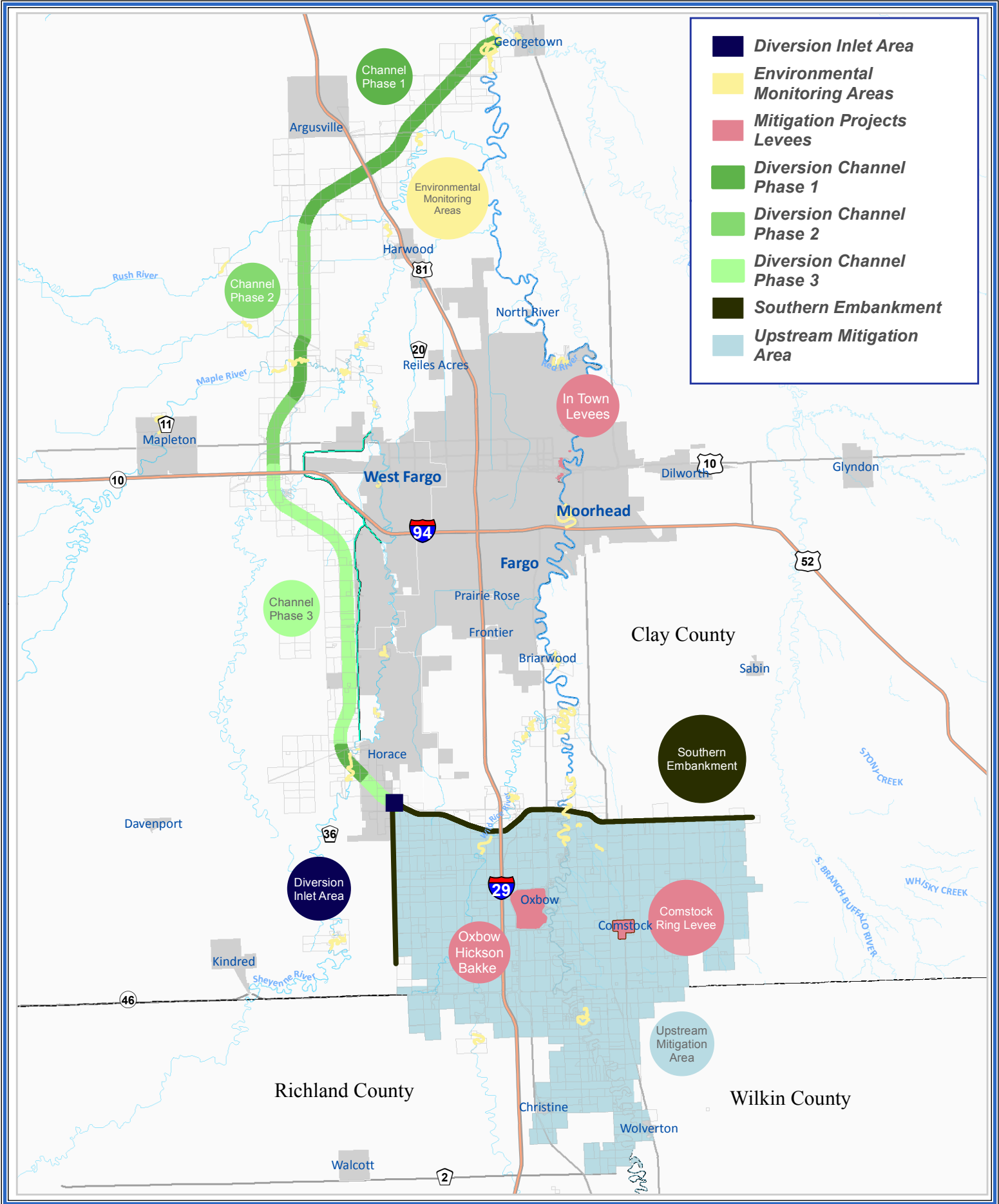
Diversion Inlet Structure is a gated control structure that will control the amount of water that enters the diversion channel from the upstream staging area. Features include three 50-foot wide tainter gates, a vehicle service bridge across the structure, mechanical platform and control building.

- ▶ A gated structure allows greater control in keeping downstream impacts negligible
- ▶ 100-year flood = 20,000 cubic feet per second [cfs]
- ▶ Each gate will weigh 87,000 pounds [Equal to a fully-loaded semi rig]
- ▶ Located in NE corner of County Roads 17 and 16, south of Horace, ND

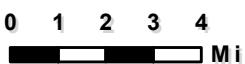
SCHEDULE

- | | |
|---|--------------------|
| ▶ Issued solicitation | ▶ 11 July 2016 |
| ▶ Opened proposals | ▶ 1 Sept 2016 |
| ▶ Award contract | ▶ Dec 2016 |
| ▶ Notice to proceed (14 days) | ▶ Dec 2016 |
| ▶ Contractor submittals and review | ▶ Jan - March 2017 |
| ▶ Contractor mobilizes and begins preload construction to stabilize soils | ▶ April 2017 |
| ▶ End of 275 day preload of site/ start construction of structure | ▶ Feb 2018 |
| ▶ Complete construction of Inlet | ▶ 2020 |





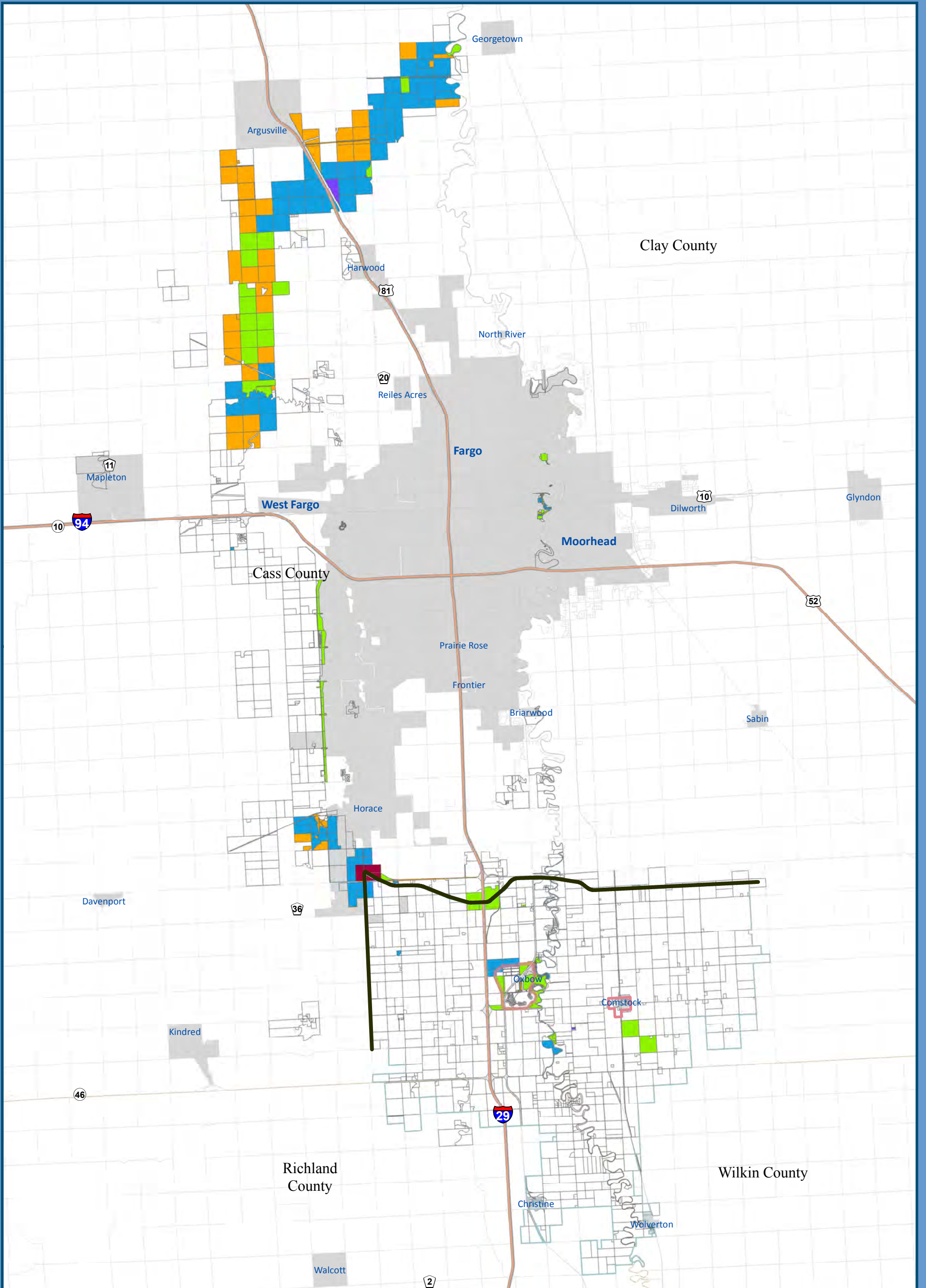
Maps are for graphical purposes only. They do not represent a legal survey. While every effort has been made to ensure that these data are accurate and reliable, The Diversion Authority does not guarantee the accuracy of the information, and waives any warranty or guarantee of any kind, express or implied. The data involved in the project is continuously refined and revised; you should not rely on this information for technical purposes or accuracy.



FM Area Diversion Key Acquisition Areas

3/10/2017

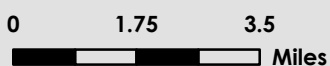




Any reliance upon this map is at user's own risk. AE2S does not warrant the map or its features are either spatially or temporally accurate or fit for a particular use.
 Date: 3/15/2017 | Coordinate System: NAD 1983 StatePlane North Dakota South FIPS 3302 Feet

STATUS

- Impacted Parcel
- Appraisal Pending
- In Negotiation
- Purchase Agreement Signed
- Acquired; Easement Secured
- Condemnation for Acquisition



Property Acquisition Status Report

3/15/2017



Informational Sheet

Richland County

Richland County Impacts

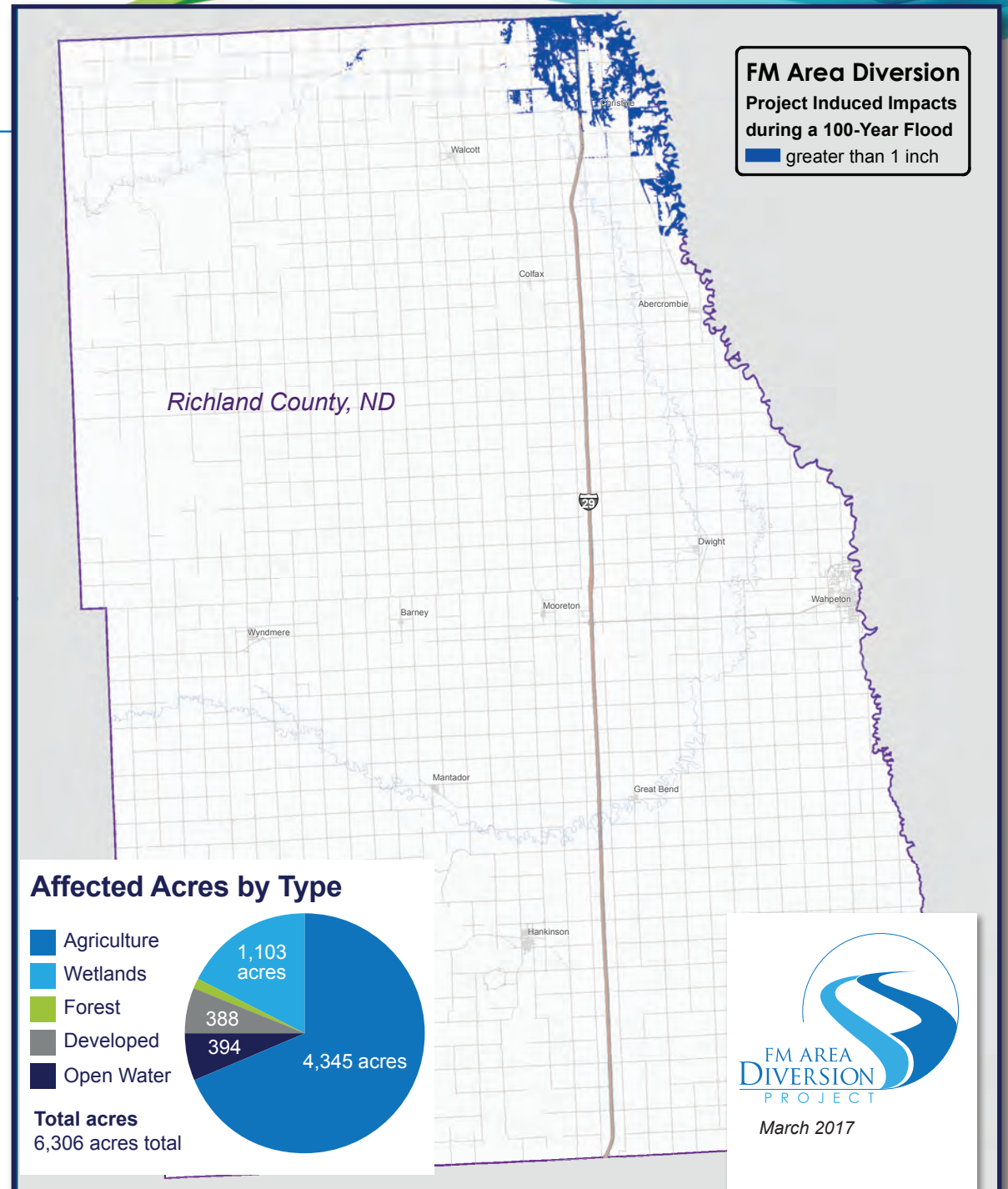
- Due to the dry dam, impacts would only be seen during large flood events when the Diversion Project was operated.
- There would be no impacts until water in the Red River exceeds 35 feet in Fargo. Thirty-feet is considered major flood stage.
- 42% of the acres impacted are already included in the current FEMA 100-year floodplain.
- If the Diversion Project would have been built 100 years ago, it would have operated an estimated 11 times for a total of 69 days.
- During a 100-year flood event, five residential structures would be impacted, two of these structures would be impacted with less than six inches during a 100-year event
- During a 100-year flood, approximately 6,300 acres would have an additional water between one inch to a maximum of three feet.
- The additional duration of flooding is estimated to be two to three days.

Richland County Mitigation

- Flowage Easements will be purchased on impacted land. They will be valued by independent, professional appraisal.
- Development can continue.
- Impacted residences and structures will be acquired in accordance with state and federal law.
- Project impacts will be mitigated consistent with the Mitigation Plan online at www.fmdiversion.com/studies-technical-documents/

Richland County Benefits

- 1,872 Richland County residents, 22% of the county workforce, work in Fargo-Moorhead.
- Flood protection for regional resources including healthcare, entertainment, universities/colleges, transportation and other services.



Informational Sheet

Wilkin County

Wilkin County Impacts

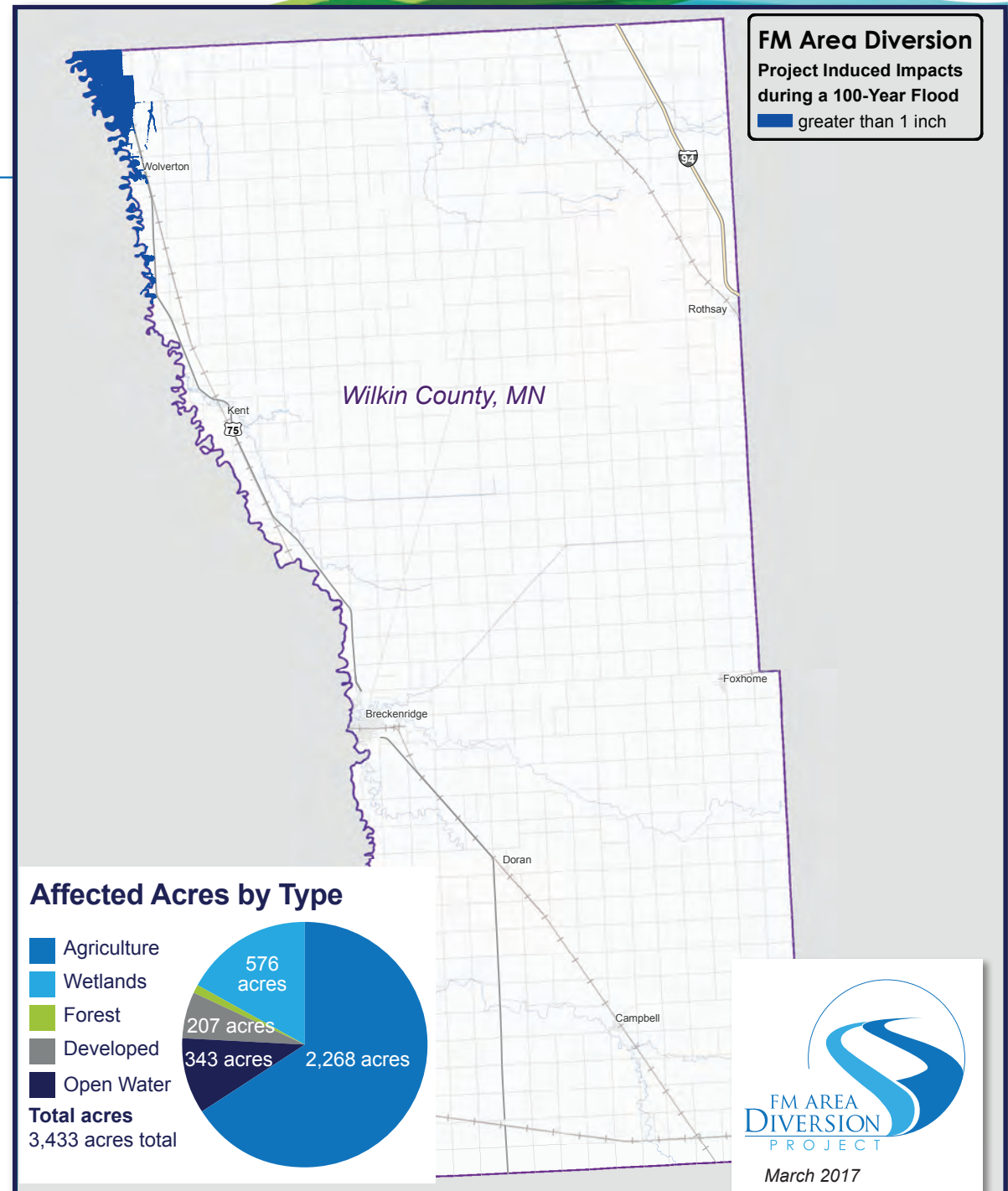
- Due to the dry dam, impacts would only be seen during large flood events when the Diversion Project was operated.
- There would be no impacts until water in the Red River exceeds 35 feet in Fargo. Thirty-feet is considered major flood stage.
- 46% of the acres impacted are already included in the current FEMA 100-year floodplain.
- If the Diversion Project would have been built 100 years ago, it would have operated an estimated 11 times for a total of 69 days.
- During a 100-year flood event, six residential structures would be impacted.
- During a 100-year flood, approximately 3,443 acres would have an additional water between one inch to a maximum of three feet.
- The additional duration of flooding is estimated to be two to three days.

Wilkin County Mitigation

- Flowage Easements will be purchased on impacted land. They will be valued by independent, professional appraisal.
- Development can continue.
- Impacted residences and structures will be acquired in accordance with state and federal law.
- Project impacts will be mitigated consistent with the Mitigation Plan online at www.fmdiversion.com/studies-technical-documents/

Wilkin County Benefits

- 318 Wilkin County residents, 8% of the county workforce, work in Fargo-Moorhead.
- Flood protection for regional resources including healthcare, entertainment, universities/colleges, transportation and other services.





FM AREA
DIVERSION
PROJECT

November 2016

Informational Sheet

Farm Impacts & Mitigation

UPSTREAM RETENTION AREA

The FM Area Diversion Project includes upstream retention of flood waters during times of extreme flooding. This is an essential component to safely control the flood waters upstream and downstream of the metro area and is the most effective and efficient storage. In the past 100 years, the Project would have operated 11 times for a total of 69 days.

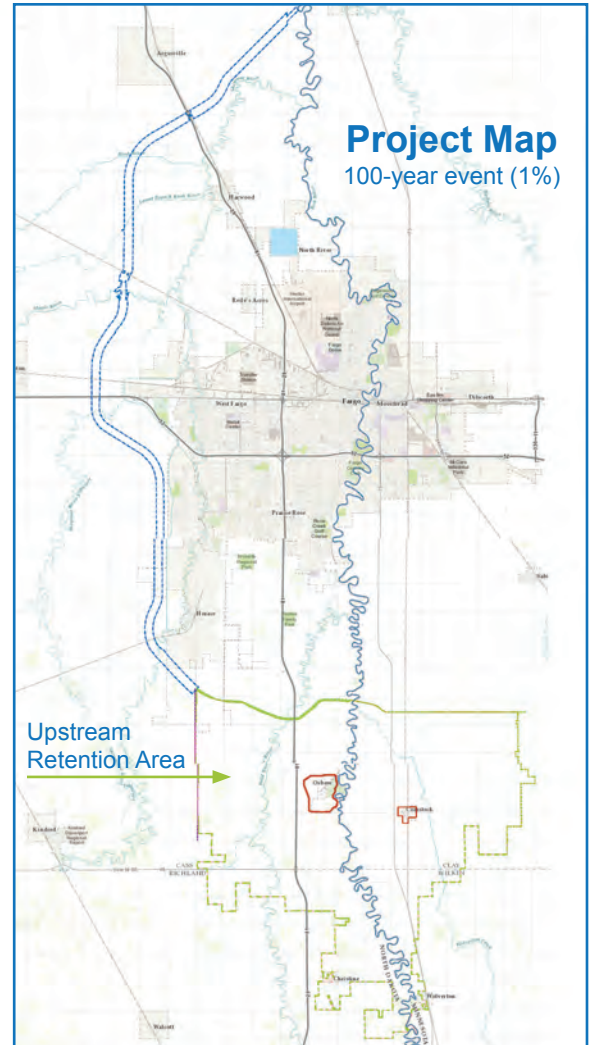
During operation of the Project, the upstream retention area will temporarily store various amounts of flood waters, depending on the magnitude of the flood event. The retention area will not be used every year and will not be used until a flood event exceeds 35-foot flood stage through Fargo-Moorhead. An NDSU study concluded there is an 85% chance every year that no water will be stored upstream. Under an extreme flood event, such as the 100-year flood, the upstream retention area will impact about 39,000 acres, and approximately half of those acres would be impacted today under the same flood event without the project.

AGRICULTURAL RISK STUDY OF IMPACTS

NDSU Agribusiness and Applied Economics department studied the risks and impacts of the Project on farm revenue in the upstream retention area. The study identified the following:

- The study indicated that “the key is to determine when producers can begin planting and if planting is delayed due to the diversion what, if any, planting delays cost the producer in lost revenue.”
- Accordingly, the NDSU research team studied two particular dates:
 - When flood water leaves the land, and
 - When spring planting begins in the retention area.
- Historical data indicates that spring planting starts most frequently about the same time as the effects of man-made flooding are over.
- Between 10,800 and 18,500 acres (depending on flood event size) will flood due to diversion that would not flood otherwise.
- Cumulative revenue losses across the entire study area ranged from \$0 in the best-case (no flood) situations to slightly over \$3 million per event over the entire area of 39,000 acres in the worst-case (extreme flood) situations.
- Conclusions from the study indicated that “there is a high-probability of incurring planting delays associated with man-made water storage. But, planting delays created by the proposed FM Diversion, at this time, do not appear to be extensive – at least not several weeks in length. Large delays are possible, but those situations are not as likely as shorter delays.”

“The study considered numerous factors and concluded that the revenue losses to agricultural producers would not be substantial.”

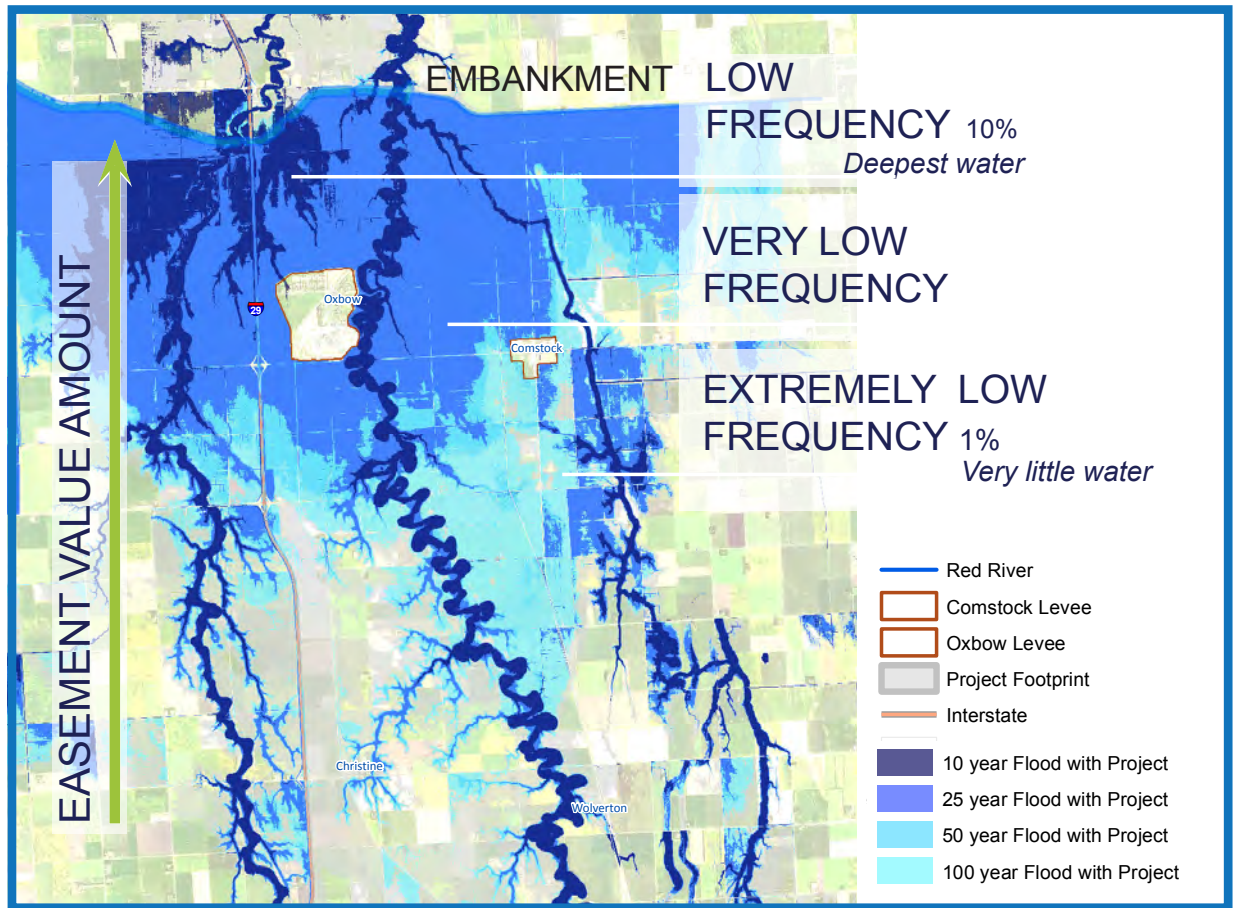


AT A GLANCE

- The retention area will not be used every year. The area will only be used when a flood event exceeds 35-feet
- There is an 85% chance every year that no water will be stored upstream.
- Smaller storage areas distributed upstream do not provide the level of protection necessary and would have greater impacts.
- Upstream retention in planned location is most effective and efficient because it is close to the area being protected.

MITIGATION: FLOWAGE EASEMENTS

- Upfront payment to property owners impacted by the retention of flood waters.
- Easement provides legal ability to temporarily and occasionally retain flood waters.
- Easement will allow farming to continue, however, development may be regulated depending on extent of impacts.
- Easement value is determined by a market-based appraisal, considering depth, duration, and frequency of flooding, highest and best use of the property, and property impacts.
- Easement values will vary by parcel with the general trend of higher easement values closer to the embankment and lower easement values farther from the embankment.



- Easements are required by Federal law for the Project.
- The purchase of flowage easements is included in the Project cost estimate and financial plan.

MITIGATION: SUMMER FLOOD CROP INSURANCE

- On-going payment to producers for the crop loss caused by summer operation of the Project.
- Summer operation of the Project is extremely unlikely, but summer operation could cause devastating damage to growing crops.
- Diversion Authority has committed to provide greater mitigation than required by Federal or State laws, and greater than what has historically been provided.
- Diversion Authority will either purchase an insurance product or self-fund the program, and provide coverage free of charge to producers.
- Ongoing O&M costs incurred after initial Project construction will be paid by sales taxes or a maintenance assessment to the properties benefited by the Project.



Presentation to: Horace City Council

Presented By:

Jason Benson, Cass County Engineer

Rocky Schneider, AE2S

Over 8 Years of Study of Permanent Flood Protection for Fargo-Moorhead

- ▶ 2008-2011: Federal Feasibility Study
- ▶ 2012: Post Feasibility Southern Alignment Analysis
- ▶ 2013: Supplemental Environmental Assessment
- ▶ 2015: NDSU's Agricultural Risk Study
- ▶ 2013-2016: Minnesota DNR EIS

Project Purpose:

The purpose of the Project is to reduce flood risk potential on local streams, qualify substantial portions of the F-M urban area for 100-year flood accreditation, and reduce flood risk for floods exceeding the 100-year flood or greater. (MN DNR EIS)

Project Receives Federal Approvals

- ▶ Project Authorized in 2014 by Congress
- ▶ Diversion was 1 of 26 water projects Authorized
- ▶ Federal Appropriations for Construction received in 2016
- ▶ 'New Start' Secured as 1 of 6 New Projects in the Country



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Project Benefits



1 in 5

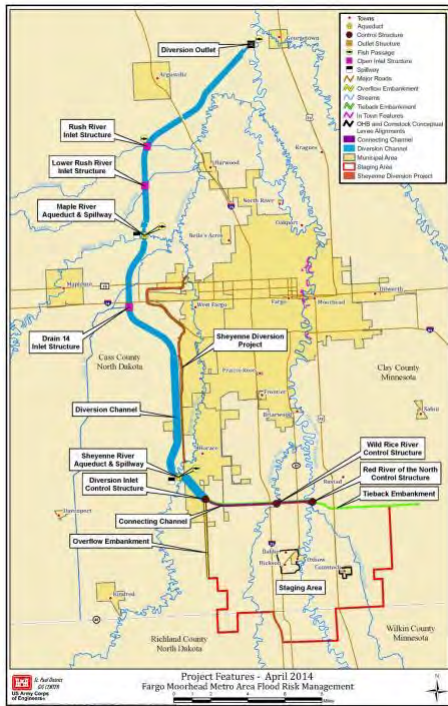
Of all North Dakotans will benefit from Project

**\$19
Billion**
Property value
that benefits

**\$5.48
Billion**
Wages in
FM Area

**\$14.5
Billion**
FM Area
GDP

**\$213M
\$87M**
ND & MN
Annual
Income and
Sales Tax



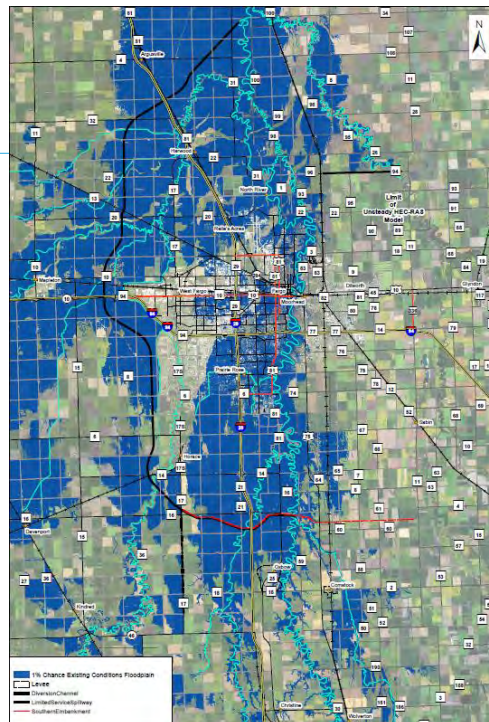
FM Area Diversion Project

- ▶ 30 miles of channel (1,500 feet wide)
- ▶ 150,000 acre-feet of upstream retention
- ▶ 50 Million cubic yards of dirt
- ▶ Flood protection from 6 rivers
- ▶ 16 bridges
- ▶ 2 aqueduct structures
- ▶ 28 Million gallons of diesel fuel
- ▶ 230,000 people protected
- ▶ \$30 Million for recreational features

Flooding without the FM Diversion

FM Area
100-year event

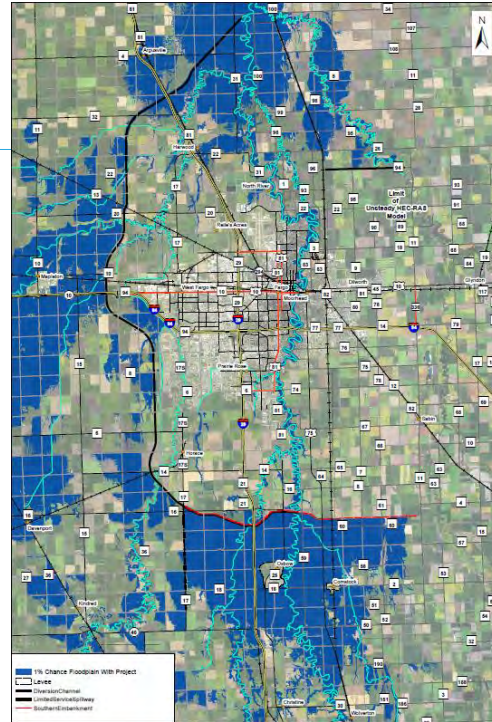
(Phase 8 Mapping)



Flooding with the FM Diversion

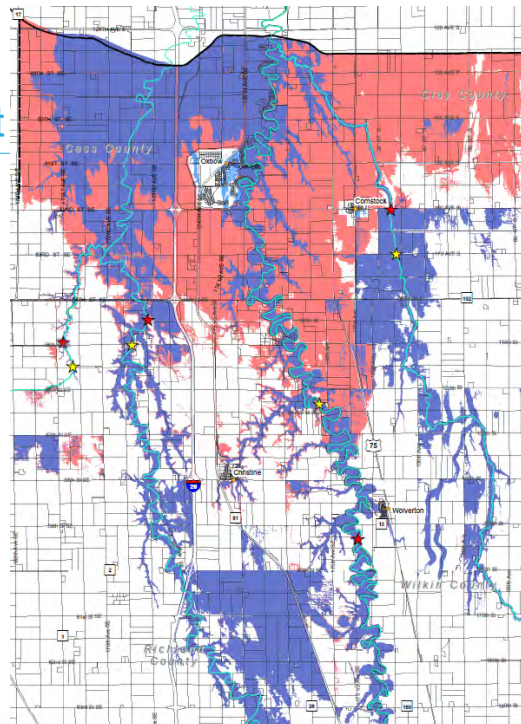
FM Area
100-year event

(Phase 8 Mapping)



Upstream Retention 100-year Flood Event

- ▶ 85% chance that the Diversion will not operate in any given year
- ▶ Red River at 35 feet through Fargo-Moorhead
- ▶ Retention area utilized
 - ▶ Results in almost no downstream impacts
- ▶ Impacts are mitigated
 - ▶ Approximately 100 residences
 - ▶ Ring levee protects Oxbow-Bakke-Hickson and Comstock.



Diversion Authority Mitigation Plan

- ▶ Detailed 177-page Mitigation Plan released in September, includes:

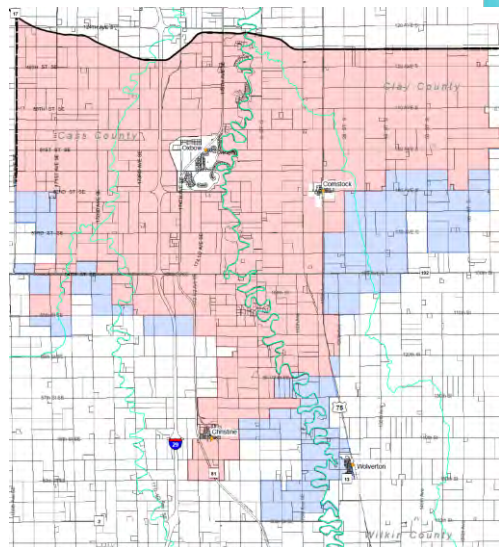
- ▶ Property Mitigation
- ▶ Agricultural Mitigation
- ▶ Operational Mitigation
- ▶ Structural Mitigation
- ▶ Environmental Mitigation



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Agricultural Mitigation

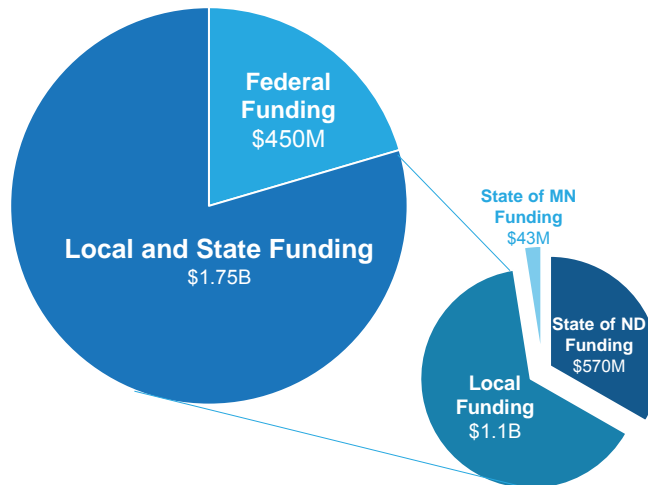
- ▶ Flowage Easements
 - ▶ A one-time payment made to provide the legal ability to inundate property as part of the operation of the Project
- ▶ Replacement Income (“Crop Insurance”)
 - ▶ Conceptual plan to provide a crop insurance-like product to financial protect against summer operations
- ▶ Post Operational Clean-Up



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Flood Protection Funding Breakdown


Cost estimate: \$2.2 Billion



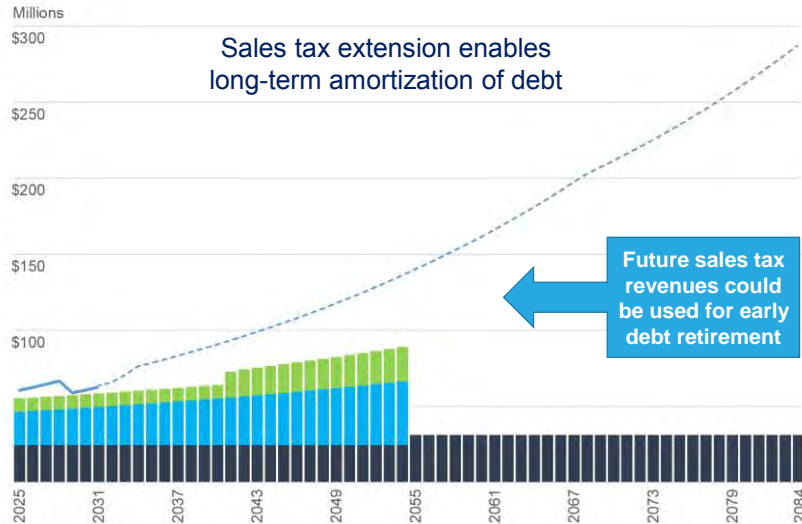
Financial Plan Takes a Multi-Generational Approach

- **Key features of the Financial Plan include:**
 - Long-term extension of existing sales taxes at current rates (subject to voter approval in Cass County and Fargo on Nov. 8, 2016)
 - Assessment District mechanism to improve credit ratings and access sales tax growth
 - No special assessments required to be paid by property owners
 - Multiple financing tools to achieve a prudent, robust, and cost-effective financial profile

Extension of Existing Fargo and Cass County Flood Protection Related Sales Taxes

	City of Fargo		Cass County
	½ ¢	½ ¢	½ ¢
Current Expiration Date	2032	2029	2031
Purpose	Infrastructure & Flood Control	Flood Control	Flood Control
Sales Taxes to be Extended	1½¢ 		

Summary of Cash Flows After Construction



FM Metro Area Diversion Split Delivery Construction

Non-Federal Sponsors

Diversion Channel and Associated Infrastructure

USACE

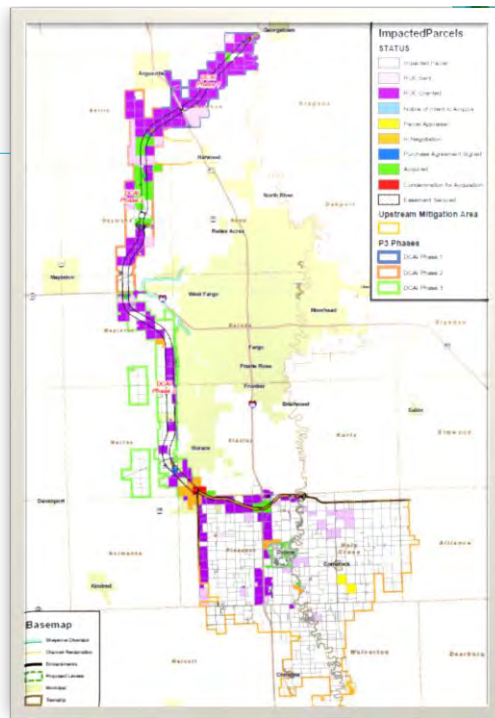
Southern Embankment and Associated Infrastructure



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Property Acquisition

- ▶ 1,650 parcels impacted
 - ▶ 840 flowage easements
- ▶ 94 properties acquired
- ▶ Federal construction will begin on the Diversion Inlet, South of Horace, ND
 - ▶ Bids have been received; contract award expected in October
- ▶ Properties along the Diversion Channel will begin in late 2016



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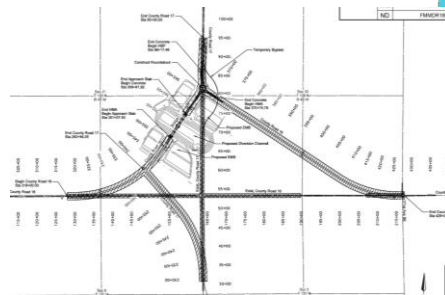
Diversion Inlet Control Structure



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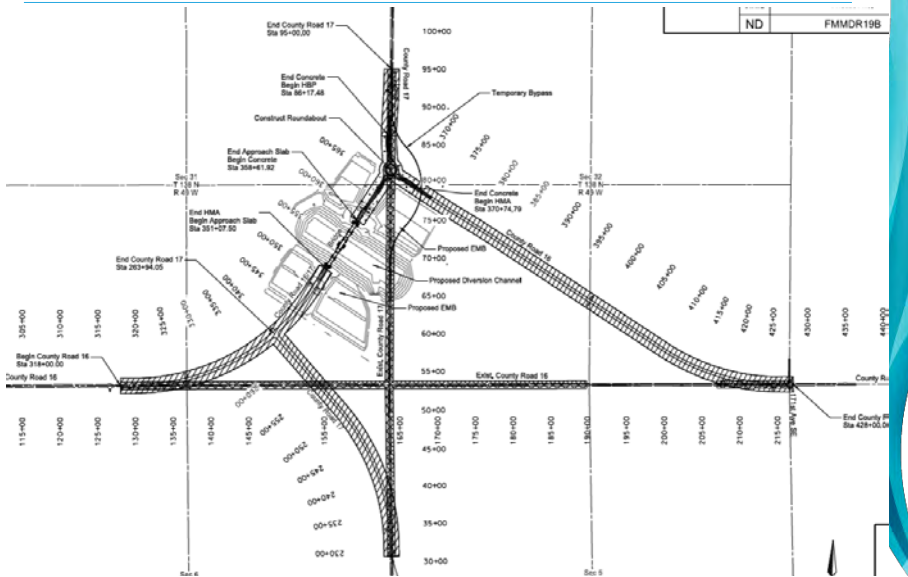
CR16/17 Realignment

- ▶ CR16/17 realignment scheduled to begin in 2017
- ▶ Construction phasing being designed to limit traffic interruptions



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CR16/17 Realignment



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www.FMDiversion.com

The screenshot shows the homepage of the FMDiversion.com website. At the top, there is a search bar and a navigation menu with links for HOME, CONSTRUCTION UPDATES, ABOUT THE PROJECT, NEWS, MEETINGS, MEDIA, LIBRARY, FAQs, PPP/PS, and CONTACT US. The main content area features several news items:

- Pledge \$450M to project:** Accompanied by a cartoon illustration of project leaders.
- Six Contractors Interested in Building the P3 Portion of the FM Area Diversion Project:** Accompanied by an image of a road construction site.
- Diversion Authority Releases Detailed Mitigation Plan:** Accompanied by an image of a document.
- Commanding General of the Corps visits Fargo-Moorhead:** Accompanied by a photo of a meeting.

About the FM Diversion

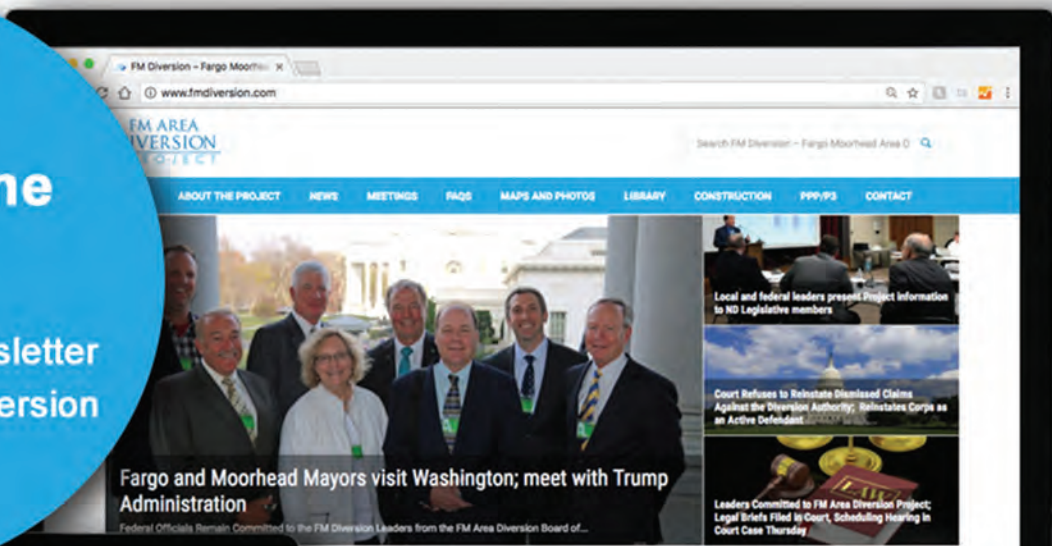
The Diversion would protect 1 in 5 of all

Drag the arrows to see conditions before and after the project.

Sales Tax Information

UPCOMING MEETINGS

Find us online
FMDiversion.com
@FMDiversion
Sign up for our Newsletter
Youtube.com/FMDiversion



on Project will protect 1 in 5 North Dakota residents.

