

Mitigation of Project impacts takes many forms based on the impact being caused.

Impacts may require purchase of property within the construction footprint, to providing additional crop insurance in areas impacted by floodwaters during Project operation.

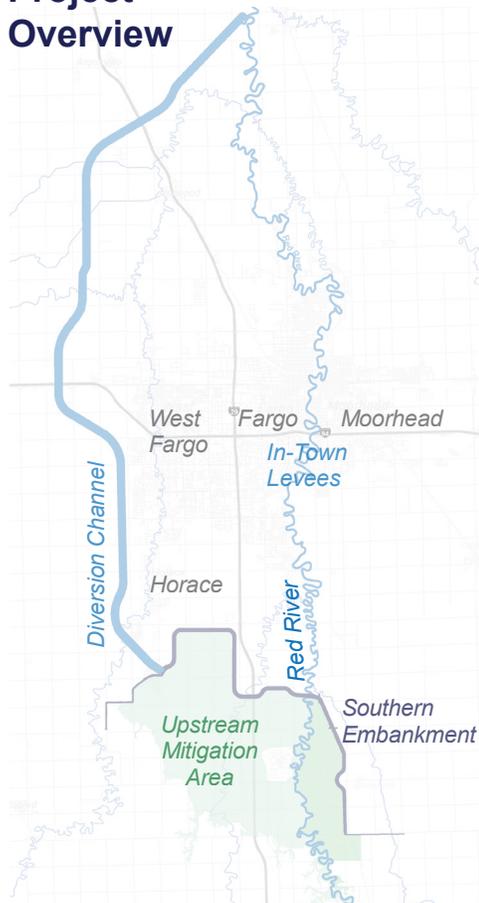
The Property Rights Acquisition and Mitigation Plan has been updated to address all impacts to property, and to incorporate a comprehensive suite of mitigation programs.

The plan has been approved by the ND Office of the State Engineer.

Mitigation

The Diversion Authority is committed to ensuring fair compensation for impacts caused by the Project.

Project Overview



	How was it developed?	Key components of implementation
 <p>Property Acquisition Process</p>	<ul style="list-style-type: none"> Federal and state laws Previous water resource projects that included property acquisition Permit conditions 	<ul style="list-style-type: none"> Being fair, friendly, and flexible Compensation through purchase of property right Market based appraisal
 <p>Agricultural Operations</p>	<ul style="list-style-type: none"> Multiple studies including two from NDSU about potential impacts Input from agriculture-based stakeholders Input from the Ag Policy Subcommittee of the Diversion Board Permit conditions 	<ul style="list-style-type: none"> Compensation through purchase of property right Post-Operation cleanup Summer Operation Supplemental Crop Loss Program Early Acquisition & Move to Reestablish Organic Farms Market based appraisal
 <p>Rural Impact Mitigation Program (Farmstead Re-establishment Program)</p>	<ul style="list-style-type: none"> Input from stakeholders Evaluation of other successful projects 	<ul style="list-style-type: none"> Potential financial allowances to help reestablish farmsteads, businesses and nonprofit organizations Forgivable loan Based on functionally equivalent operation
 <p>Flowage Easements</p>	<ul style="list-style-type: none"> Federal and state laws Phased study of comparable projects nationwide through Crown Appraisals Permit conditions 	<ul style="list-style-type: none"> Compensation through purchase of property right Market based appraisal
 <p>Post Project Operation Cleanup & Repair</p>	<ul style="list-style-type: none"> Evaluating post-flooding operations from other entities like FEMA Input from stakeholders and public comments Permit conditions 	<ul style="list-style-type: none"> Cleanup operations for private and public lands after the Project operates
 <p>Dispute Resolution Board</p>	<ul style="list-style-type: none"> Evaluating other projects like the Devils Lake outlet project Input from stakeholders and public comments 	<ul style="list-style-type: none"> Administrative process for property owners to bring forward claims of damage caused by the Project



Mitigation Plan Overview

Agriculture Operations

May 2020

Studies Conducted to Developing Mitigation for Agriculture

The NDSU Department of Agribusiness was asked to study how the temporary storage of floodwaters would affect crop production and agricultural revenues in the area upstream of the FM Area Diversion Project.

Specifically, NDSU studied how the effects of flooding align with regional planting and increasing the understanding of how Project operation may impact planting dates, yield reductions and revenue reduction.

Hydrology

- Substantial acreage within staging area is not adversely affected.
- The majority of adversely affected acreage would have potential planting delays of one to five days.
- Some storage tracks will have substantially adverse effects. It is hard to make generalizations that represent all situations.

Economic & Historical Observations

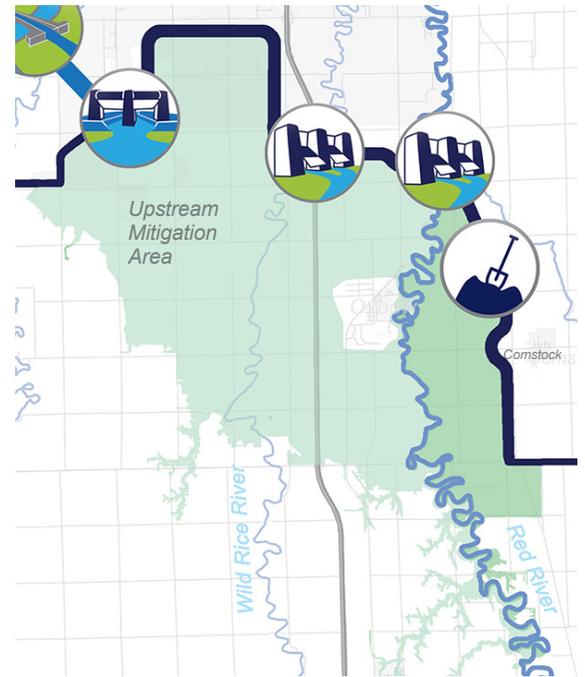
- Economic conclusions are influenced by high acreage of soybeans -- 50% of land is in soybeans. Soybeans have later planting dates so they are less sensitive to yield reductions.
- Economic losses are sensitive to dry-down requirements.
- Combinations of a long, or late-occurring flood and relatively early planting start dates are required to produce more pronounced levels of planting delays.

During a 25-year or Larger Flood Event with the Project in Place

- There is a high probability of modest revenue losses (<\$25/acre) due to planting delays.
- There is a low probability of greater revenue losses due to planting delays.

NDSU Study of Agriculture in Upstream Mitigation Area

- 241 individual storage areas totaling more than 54,000 acres.
- Exceeds the designation of the staging area provided by USACE (28,000 acres of inundated lands).
- Data from HEC-RAS 9.1 hydrology model provided by FM Diversion Authority.
- Study used entire acreage of a storage area if any portion of the area was inundated.
- Study used 10,000 simulations to produce results.

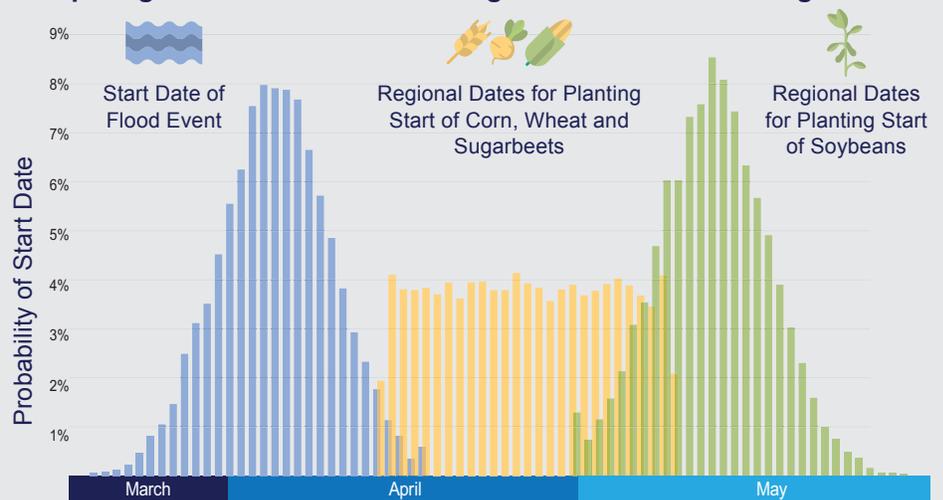


How often will the Project have impacts?

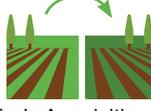
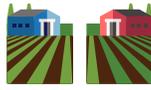
The Diversion Authority asked NDSU to research this question specifically and their research determined there is some but not extensive overlap between planting dates and flood event dates. The study evaluated numerous flood simulations and determined, especially with a crop like soybeans, the likelihood of a spring flood event and project operation impacting planting would be fairly minimum.

Calendar Analysis

Comparing Flood Start Dates and Regional Historical Planting Dates



How will the Impacts be Mitigated for Agriculture Operations?

	What is the impact?	Mitigation Available to Help Reduce Risk and Protect Agricultural Operations
Spring Operation <i>Major flooding events when the Red River exceeds 37-feet</i>	When floodwaters are held in the Upstream Mitigation Area it may impact how quickly the land is able to dry out and be planted.	 Compensation through Purchase of Easement  Prevent Plant  Crop Insurance  Post-Operation Cleanup Insurance Products offered by the Federal Government
Summer Operation <i>Historic rainfall or other event that would cause the Project to operate when crops are growing</i>	In the unlikely event the Project operates during the normal growing season, it would be likely damaging to crops growing in the fields. Holding floodwaters in the Upstream Mitigation Area could damage the plants.	 Compensation through Purchase of Easement  Summer Operation Supplemental Crop Loss Program  Post-Operation Cleanup
Organic Farmland <i>Certified land in Upstream Mitigation Area</i>	Land that is certified to produce organic crops can not sustain floodwater impacts and retain certification.	 Compensation through Property Right  Early Acquisition & Move to Reestablish Organic Certification
Farmsteads or Businesses <i>Location may be altered by Flowage Easement Requirements</i>	Farm operations located within the Upstream Mitigation may need to be moved due to Flowage Easement requirements.	 Compensation through Property Right  Farmstead Re-Establishment Program  Relocation Benefits



Dispute Resolution Board

- Informal, administrative forum for property owners to file claims for damages
- Modeled after a similar process created for the North Dakota State Water Commission (NDSWC) for the Devils Lake outlet project



Summer Operation Supplemental Crop Loss Program

- The Program would provide producers with coverage for the risk associated with Project induced flooding on growing crops if the Project operates during the summer.
- This Program is important because it is anticipated that producers will not be able to utilize the federal crop insurance programs for damages caused by operation of the Project



Relocation Benefits

- Potential financial allowances to help relocate those impacted by the Project.



Post-Project Operation Cleanup & Repair Plan

Operation of the Project may cause debris to accumulate within and along the edges of the Upstream Mitigation Area.

- The plan for private-lands is patterned after well-known clean-up week where items can be piled up for collection. Property owners can also seek assistance with debris removal.
- The public-lands repair and debris clean-up plan is patterned after the approach FEMA uses for post-disaster damage. This includes assessment and reimbursement.



Farmstead Re-Establishment Program

- Potential financial allowances to help reestablish farmsteads, businesses, and nonprofit organizations.
- The assistance will be in the form of a forgivable loan based on actual costs for a functionally equivalent operation.



Mitigation Plan Overview

Flowage Easements

Flowage Easements will be purchased and applied to properties in the upstream mitigation area. The value of each flowage easement will be determined through a market based appraisal considering all affects of additional flooding, and the highest and best use of the property to determine the market value of the easement.

Developing Flowage Easements

Phase 1 Report

Provides foundation for mitigation values

Categorized two types of impact



Easement Impact - 8% to 10%
Damage caused by development restrictions



Flood Impact - 7% to 25%
Damage caused by water on the property during extreme flooding events and Project operation

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Phase 2 Report

Modeling of actual impact across the property

Parcel-specific data with an appraisal

The Diversion Authority retained an appraisal firm to help inform the flowage easement process.

Phase 1 of the study has been completed. Phase 2 of the study will start soon and will establish specific easement values.



Informational Overview

Property Acquisition Process

- There is a well-defined process for property acquisition that follows local and state law. A complete list of steps is available at FMDiversion.gov/property
- The main point of contact for every property owner is their land agent. All property owners that are impacted will have an individual land agent to work with them.

Flowage Easement

Land subject to a flowage easement is privately owned land that has certain perpetual rights granted. Namely the right to flood it in connection with the operation of the Project or other potential restrictions in regards to development or habitation.

Implementing Flowage Easements

Four specific Zones clarify the type of Flowage Easement that will be needed on specific properties.

Zone	Definition	Zone Easement Requirements
Zone 1 <i>Required by USACE</i>	An area defining the volume of floodwater storage required to ensure proper operation of the Project.	<ul style="list-style-type: none"> - Development of insurable structures not allowed - Existing structures must be removed - Placement of fill not allowed - Limited potential to map some structures out of Zone 1
Zone 2 <i>Required by USACE</i>	An area outside of Zone 1 where the Project causes more than 1-foot of impact.	<ul style="list-style-type: none"> - Development with certain restrictions allowed and vary by Zone
Zone 3 <i>Required by ND Office of the State Engineer</i>	An area in North Dakota outside of Zones 1 and 2 where the Project causes more than 0.5-feet of impact.	
Zone 4 <i>Required by the Minnesota DNR</i>	An area in Minnesota outside of Zones 1 and 2 where the Project causes more than 0.1-feet of impact.	

Legend

- Embankment
- Diversion Channel
- Upstream Mitigation Area / Flowage Easement Zone**
 - Zone 1
 - Zone 2
 - Zone 3
 - Zone 4

