

Potential Project Modifications for F-M Task Force

This is a consensus document created by the Technical Advisory Group: Bob Zimmerman-Moorhead Engineer, Nathan Boerboom-Fargo Engineer, Gregg Thielman-Diversion Authority Engineer; Kent Lokkesmoe-DNR Manager; Suzanne Jiwani—Floodplain Engineer; Jill Townley—EIS Manager

Design Considerations

- a. Allow greater downstream flood impacts.
- b. Stage increase at Canadian border.
- c. Expand internal storage in the protected area.
- d. Move the Overflow Embankment further west.
- e. Move alignment of the dam further north.
- f. Finish appropriate in-town works.
- g. Current and future FEMA accreditations
- h. Running more water through town (from 35 feet; up to 37 feet or up to 39 feet).
- i. Maintain Federal Authorization
- j. Ability to fight floods greater than 100-year
- k. Wild Rice –only (diversion) + max height levees

Safety

- a. Limit risk of a high hazard dam.
- b. Magnitude of residual risk as it relates to life and safety

Operation

- a. Limit frequency of operation of the staging area
- b. Limit number of control structures or closure structures requiring human intervention for flood risk reduction

Land Use Plans and Regulations

- a. Meet local ordinances and plans.
- b. Other development restrictions (e.g., the area below the dam and between the confluence of the Wild Rice River and Red River; areas requiring significant fill).
- c. Limit stage increase at Clay-Cass/Wilkin-Richland County borders.
- d. Create a restricted development zone downstream of the dam based on safety concerns (depth x velocity)

Mitigation

- a. To be determined

- b. Note that acquisition or easements needed to develop the project including the staging area are conditions of the permits.

Key Criteria (in no particular order)

- a. Satisfy Task Force Charter
 - i. FEMA Accreditation (Y or N).
 - ii. Maintain Federal Authorization (Y or N)
- b. Meets laws and ordinances
 - i. ND Statute and Rules (Y or N)
 - ii. MN Statute and Rules (Y or N)
 - iii. Local Ordinances (Y or N)
- c. Minimize Residual Risk (e.g., Level of Protection (floods greater than the 100-yr flood do occur);
 - i. Life and Safety – Evacuation (Frequency when evacuation needs to take place);
 - ii. Length of levee/dam embankment (feet);
 - iii. Height of levee/dam embankment (and depth of water along the face of embankment) (feet);
 - iv. Internal floodplain/drainage (Number of systems needed).
 - v. Dam Breach No-build zone/Hydraulic Shadow (acres)
- d. Reduce Floodplain Impacts
 - i. New Acres Added to floodplain
 - 1. State (Acres by state)
 - 2. County (Acres by county)
 - ii. Existing Floodplain Acres Protected vs. Acres Flooded
 - 1. State (Acres by state)
 - 2. County (Acres by county)
- e. Reduce Environmental Effects (Similar, Better, Worse)
- f. Limit impacts to Structures (e.g., Residential, Commercial, other)
 - i. New Structure Added to floodplain
 - 1. State (Structures by state)
 - 2. County (Structures by county)
 - ii. Existing Floodplain Structures Protected vs. Structure Flooded
 - 1. State (Structures by state)
 - 2. County (Structures by county)
- g. Resilience/Robustness of Design
 - i. Maintain FEMA Accreditation if Future Hydrology Changes (Similar, Better, Worse)
 - ii. Capability to fight floods larger than the 100-year (Similar, Better, Worse)
- h. Cost and Engineering Feasibility (Similar, Better, Worse)
- i. Upstream and downstream impacts for 50-, 100-, and 500-year flood events (feet at key locations, county borders, and cities).
- j. Impacts at the U.S./Canadian border (0.04' at Drayton).