

Tongue River Watershed Dam No. M-4 Rehabilitation Project Pembina County, North Dakota

Fact Sheet
March 2017

History of the Dam:

The dam, known locally as Renwick Dam, was constructed in 1962 by the Pembina County Water Resource District with the assistance of the USDA Natural Resources Conservation Service (NRCS).

The dam is located five miles west of the City of Cavalier in Icelandic State Park, a popular recreation area with camping, boating and a beach with public swimming. It is one of 10 dams in the Tongue River Watershed.



The project included raising the height of the dam and installing a roller compacted concrete spillway in the center of the dam.

Why Rehabilitate the Dam?

In 1978 the North Dakota State Water Commission determined that the dam was a high hazard structure and was in need of maintenance and rehabilitation.

The high hazard rating was based on the potential loss of life if the dam breached due to numerous homes, businesses, public care facilities, roads and bridges existing in the downstream breach zone.

Project Partners:

- Pembina County Water Resource District
- North Dakota State Water Commission
- Red River Joint Board
- Pembina County
- City of Cavalier
- USDA NRCS

Rehabilitation Details:

The project was completed in two phases. Phase one completed in 2012 raised the height of the dam by five feet and settlement plates were placed across the new fill material to monitor any settlement prior to phase two. Phase two included excavation of a new 500-foot wide spillway near the center of the dam. Concrete retaining walls over 20-foot in height were constructed along both sides of the spillway.

The stepped spillway was then constructed with air-entrained roller compacted concrete. A five-foot thick stilling basin was constructed at the bottom of the spillway and then 32 one-foot thick steps each 500 feet wide were constructed to the top of the spillway.

A 2,200-foot long two-lane road was constructed along the upstream face of the dam to provide access to Icelandic State Park located on the north side of the lake.

Project Cost:

The NRCS provided technical assistance and 65 percent of the design and construction cost (\$5.8 million); the North Dakota State Water Commission provided \$1.5 million; the Red River Joint Board, \$800,000; Pembina County, \$800,000; and the City of Cavalier, \$56,000.

Benefits:

Rehabilitation extended the life of the dam for another 100 years and will provide flood protection for buildings, transportation services land, crops, and the City of Cavalier. The 181 surface acre lake created by the dam is a major recreational area.

For More Information Contact:

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