



DEPARTMENT OF WATER RESOURCES PROMOTES EDUCATION AND ADVOCACY EFFORTS FOR DAM SAFETY IN NORTH DAKOTA

North Dakota has a long-established record of managing water resources through the construction of dams and supporting dam safety in the state. Historically, dams have been utilized to maximize the versatility of water resources and minimize potential destruction from floods and drought. Dams have been used regularly to provide storage for drinking water, irrigation, flood control, and open water for navigation and recreation, as well as support for water quality, fire protection, wildlife habitat, and creating kinetic energy sources.

Dams are essential components of the state's infrastructure with most early dam construction being initiated by the federal government. In the 1930s, dams were constructed in North Dakota primarily for irrigation and livestock water supply purposes. Dams originally resulted from New Deal programs like the Civilian Conservation Corps and Works Progress Administration and provided water use and management opportunities not otherwise available in the western United States.

The Department of Water Resources (DWR) administers the North Dakota Dam Safety Program, which implements safety, education, and smart, efficient infrastructure, along with proper management of the state's dams. The DWR's Dam Safety Section is responsible for dam inspections, dam owner outreach and coordination, emergency preparedness, and permitting of North Dakota's existing and potential dams. The agency also works tirelessly to ensure sound management of the state's dam inventory of approximately 3,300 dams.

While dams are essential components of the state's infrastructure system, they also present potential hazards, including failure and unpredictable flow conditions near low head dams. Education, awareness, and public outreach is especially imperative when it comes to low head dams, which can be found in rivers and streams across the country and are common in North Dakota.

Most low head dams in the state were constructed in the 1930s and are simple concrete or rock masonry structures that span the width of a river or stream and raise the upstream water level until it reaches a height sufficient to flow over the dam. Low head dams can create dangerous conditions and have been referred to as "drowning machines" and "killers in our rivers" by the Association of State Dam Safety Officials (ASDSO).



DWR's Dam Safety Program continually updates, maintains, and improves the state's inventory of dams.

According to ASDSO, many deaths at low head dams occur when people have drowned while attempting to rescue another person. Accidents and fatalities have also resulted from first responders attempting to rescue victims. Regrettably, like many other states, North Dakota has endured multiple fatalities at low head dams throughout the years.

“The possible adverse roller effect created by a low head dam can be extremely dangerous and cause potentially fatal circumstances,” stated DWR Dam Safety Manager Karen Goff, P.E. “Hazardous conditions are greatly dependent on the flow of the river and the level of danger on low head dams may vary. This often provides the recreationalist with a false sense of security and can ultimately lead to a very unexpected and dangerous situation.”

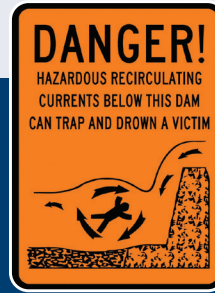
Now and in the future, the Department of Water Resources is committed to continue working with local dam owners and the public to help reduce potential risks, provide educational guidance regarding low head dams, and offer funding assistance to manage these structures statewide.

Earlier this year, the DWR and other organizations commemorated May 31, National Dam Safety Awareness Day to: remember the lessons learned from past dam failures; support reliable dam safety programs; promote public safety; and recognize the importance of vital infrastructure.

In 2022, the DWR released an update of the statewide Probable Maximum Precipitation (PMP) data after the completion of a two-year study conducted by Applied Weather Associates (AWA). The updated PMP values help dam designers ensure that critical dams in the state are reviewed with a public safety-first mindset by leveraging standards necessary to evaluate performance under the most extreme rainfall the atmosphere may produce.

The agency is also working on updating and improving the North Dakota Dam Design Handbook. The Handbook was written in 1985 and dam design best practices have notably evolved since then. At a national level, other states and agencies across the country are continually updating their design standards and practices to ensure that dams are designed using the most up to date methods.

To stay current with best practices associated with dam design across the country, in 2018 the Dam Safety Section began to review standards, designs, and requirements that may be useful for the state of the practice in North



DANGER: LOW HEAD DAMS

Because low head dams are known to be dangerous, the Department of Water Resources is providing free cautionary safety signs to the owners of these dams that may be in your area.

The DWR will provide up to two signs per dam, free of charge. However, installation efforts will be a local responsibility. For more information on these free dam safety signs, please call (701) 328-4960 or email kdkelly@nd.gov.

Dam Safety team members utilize technology like the rover when conducting dam inspections. A rover is a remotely operated vehicle that assists with safe and efficient dam inspections and provides access to confined spaces.



Dakota. This project is being funded by National Dam Safety Program (NDSP) grants through the Department of Homeland Security (DHS), and the Federal Emergency Management Agency (FEMA).

“The Department of Water Resources will continue to emphasize public safety, develop innovation, and implement smart-efficient infrastructure throughout North Dakota,” stated DWR Director Andrea Travnicek. “In addition, the DWR will pursue collaboration with the public, stakeholders, legislators, and technical experts to gather information as guidance, safety recommendations, and future manuals are developed.”

For additional information regarding North Dakota’s Dam Safety Program, please visit http://dwr.nd.gov/reg_approp/dam_safety/ or contact DWR’s Dam Safety Manager, Karen Goff, at (701) 328-4953.