

Commission in order to determine if any additional work will be required prior to freeze-up.

This phase of the project involved a detailed site investigation of the site to gather data. The data will be used to determine the most likely cause(s) of the failure. The information will also be used to design the repair of the existing concrete chute spillway, or in the design of a new spillway.

The site investigation was conducted on July 31, 2003. Several members of the Commission staff

## Mount Carmel Dam repairs move forward

By Brad Benson

In response to the Mount Carmel Dam failure that occurred in March, 2003, the Commission advertised for engineering services to perform a forensic analysis of the spillway failure, and to assess the emergency actions taken to stabilize the embankment. The Commission also requested assistance in the design of a new spillway or possibly to have the selected firm design a new spillway system. The Commission requested the firm have experience in: 1) the assessment of dam failures; 2) embankment design and construction in cold climates, and 3) have experience in geotechnical issues which included the principals of seepage and the design of filters and drains.

Based on the information provided in the proposals, the following four firms were selected to be interviewed: Barr Engineering Company, Minneapolis, MN; Bartlett & West Engineers, Inc./Boyle Engineering Corporation, Bismarck, ND; GEI Consultants, Inc., Englewood, CO; and Hanson Professional Services, Inc./Lightowler Johnson Associates, Springfield, IL. Based on the interviews, GEI consultants, Inc. (GEI) was selected to perform the work.

GEI provided a scope of services identifying the following four main areas to be investigated:

1. Safety Assessment and Failure Modes Evaluation;
2. Repair Alternatives Formulation;
3. Design, and;
4. Bidding and Construction.

Currently, the Commission has entered into a contract with GEI to complete Phase 1. Phase 1 looks at the emergency actions taken by the



Photo 1: View under the concrete chute spillway at Mount Carmel Dam.

Photo 2: Left downstream portion of spillway where fill will be placed to prevent access.



along with representatives from GEI participated in the site investigation. The Commission's survey crew was also present to obtain elevation data on the concrete chute spillway in order to determine the amount of movement of the structure.

The investigation involved going underneath the concrete chute spillway (Photo 1) in order to identify the main seepage paths underneath the structure and to assess the overall condition of the spillway.

As a result of the site visit, there was some additional work required at the dam before winter freeze-up. The left downstream portion of the concrete chute spillway is exposed. Therefore, fill will be placed at this location to prevent access by the general public to the area underneath the structure (Photo 2).

Fill will also be placed at the area where the sheet-pile cofferdam intersects the earthen embankment to prevent flow from entering the cofferdam during periods of high water surface elevations.

Fill will also be placed at the exit of the emergency spillway to prevent flow from breaking out of the spillway and flowing along the downstream toe of the embankment.

In addition to the placement of fill at the specified locations, there will be a geotechnical exploration program conducted at the dam this fall. The drilling program will obtain subsurface geologic information which will be used in the final three phases of the project.

The exploration program will also include the installation of monitoring devices. The monitoring devices are necessary to obtain information and to monitor the condition of the existing embankment and to monitor the embankment after major construction activities are completed next year.

## EPA releases request for proposals for FY 2004 Wetlands Protection Project Grant

On October 5, 2003, the U.S. Environmental Protection Agency released their annual request for proposals (RFP) for projects seeking awards from the Consolidated Funding Process (CFP). Under the FY 2004 CFP, there are five different grants for which applicants can seek funding:

1. The National Pollution Discharge Elimination System;
2. The Total Maximum Daily Load Program;
3. The Regional Geographic Initiatives;
4. The Source Water Grant; and
5. The Wetlands Protection Project Grant.

Eligible project sponsors can apply for funding from the first four grants directly through EPA. However, project sponsors applying for funding through the Wetlands Protection Project Grant are asked to submit proposals to the State Water Commission first.

EPA requires that proposals submitted through the CFP be post-marked no later than December 5, 2003. Because Wetland Protection Project Grant proposals are expected to go through the State Water Commission first, proposals for the wetlands grant should be received by the SWC Planning and Education Division at 900 East Boulevard Ave., Dept. 770, Bismarck, ND 58505-

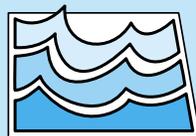
0850, no later than November 21, 2003.

Eligible applicants for the FY 2004 Wetlands Protection Project Grant include state, tribal, and local governments. For the other four funding areas: state water pollution control agencies, interstate agencies, other public or non-profit agencies, institutions, organizations, and individuals are eligible. For-profit organizations are not eligible to apply directly to EPA for these funds.

For additional information about EPA's Consolidated Funding Process, or for the FY 2004 full text RFP, please go to EPA's CFP website at [www.epa.gov/region08/cfp](http://www.epa.gov/region08/cfp). Or, if you have specific questions about the Wetlands Protection Project Grant, you can contact Patrick Fridgen at the State Water Commission at (701)-328-4964, or via email at [pfridgen@state.nd.us](mailto:pfridgen@state.nd.us).

## Swenson and Olin reappointed to SWC by Hoeven

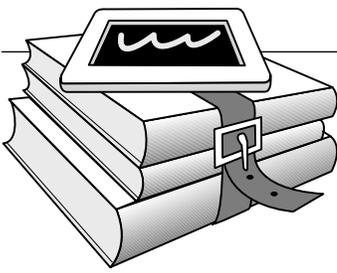
Harley Swenson of Bismarck and Jack Olin of Dickinson have been reappointed to six-year terms on the State Water Commission. Swenson is a consulting civil engineer with Swenson, Hagen and Company, and Olin is the past president of Dickinson Redi-Mix. The State Water Commission Board is chaired by Governor Hoeven.



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# THE WATER PRIMER

## Drought Disaster program has busy year

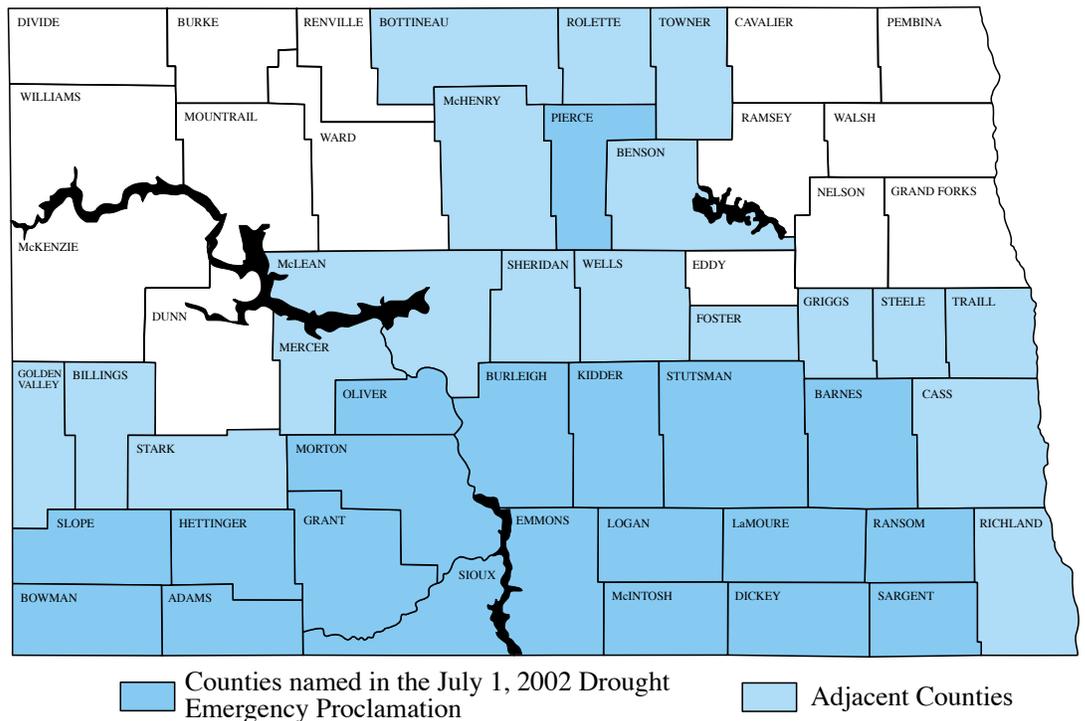
By Michael Noone

Having reached the end of a very dry summer, the State Water Commission's Drought Disaster Livestock Water Supply Project Assistance Program (Program) has been very helpful to many drought-stricken North Dakota ranchers. Thus far, hundreds of applications have been sent out by State Water Commission staff, or provided by Farm Service Agency employees.

Under the Program, cost-share assistance of up to 50 percent, but no more than \$3,500 of eligible costs is intended for those North Dakota livestock producers who receive at least half of their yearly income from farming or ranching.

The Program, established by the State Legislature in 1991, is designed to provide cost-share assistance for livestock producers experiencing water shortage problems to establish a sustainable, quality water supply for their livestock. In 2002, Governor John Hoeven made eligible for assistance those counties designated as being in a "drought emergency," and those adjacent to them (see map.) The State Water Commission then responded by allocating \$200,000 to fund the Program.

The majority of applications for



the Program have come from those counties in the south-central portions of the state, where drought has hit the hardest. By mid-October 2003, 95 livestock producers had received assistance for a total of over \$163,000. Approximately 50 percent of projects receiving assistance have been newly drilled wells, nearly 30 percent have been water table or spring fed dug-outs, and the remaining projects have been extensions from existing rural water connections or existing wells.

The popularity of the program, coupled with continued drought, have resulted in increasing demand for cost-assistance through the Program. Unfortunately, high demand has meant that nearly all of the \$200,000 allocation has been spent, but applications continue to come in.

Because of this continued demand, the State Water Commission will consider allocating additional funding in the coming months. And, despite a high degree of interest from area ranchers, a limited number of well drillers and dragline operators have also limited the amount of projects that could be completed this summer.

Governor John Hoeven, the State Water Commission, and the Drought Disaster Livestock Water Supply Project Assistance Program have played an important role in ensuring that our ranchers will be able to provide water supplies for their livestock in this severe drought.

For more information, please call the State Water Commission at: (701) 328-4989.