

The Oxbow

FROM THE NORTH DAKOTA STATE WATER COMMISSION

Discover Today's 2013 NORTHWESTERN MISSOURI RIVER WATERSHED



Since 1984, the State Water Commission has organized an annual Watershed Institute to train teachers and natural resource personnel to incorporate the Project WET (Water Education for Teachers) curriculum in their traditional and non-traditional classrooms. In the beginning, the Institute was held at the Western 4-H Camp, near Washburn, ND. In 2004, the organizers started moving the institute around the state so participants could gain a real world and hands on perspective of the contemporary water issues North

Dakota was facing. The Discover Today's Watershed Institutes have since visited all of the major watersheds in North Dakota.

This years Discover Today's Watershed Institute will be based in Williston, ND on the Williston State College campus. The focus of the institute is on northwestern Missouri River contemporary watershed management and water resource issues in the heart of North Dakota's oil patch. Participants will explore social, economic, and environmental issues and

concerns that are a direct result of the increased oil production and population growth in the northwest region.

Participants of the Institute will take part in many on-site tours and presentations led by professionals and scientists. Tours include the Williston Levee System, Lewis and Clark State Park, Missouri-Yellowstone Confluence Interpretive Center, Fort Buford, Fort Union Trading Post, Williston Public Works, oil field sites, and much more. While visiting some of these

sites, participants will conduct environmental investigations that include chemical, biological, and physical determinations. Experienced Project WET facilitators will help transfer the institute's field studies to practical applications for both the traditional and non-traditional classroom. Throughout the workshop, participants will also acquire valuable teaching resources that are classroom ready.

Participants of the 2012 Watershed Institute take a Tour of Baldhill Dam north of Valley City, ND.



Participants can earn four graduate credits (upon approval) through Minot State University, North Dakota State University or the University of North Dakota continuing education programs. While the program is designed for all elementary and secondary educators, many natural resource personnel and interested citizens have registered to be part of this unique opportunity. The Institute is funded by the ND State Water Commission, an EPA Section 319 Non-Point Source Pollution Grant,

and ND Water Resource and Soil Conservation districts.

The institute is available to the first 30 participants who register. The deadline to apply is June 14, 2013. It is anticipated that the demand for this workshop will be high and spaces will fill quickly. The registration fee for the Watershed Institute is \$300, which includes room, board, resource materials, and instructors. If the registrant is applying for graduate

credits for the course, there is an additional \$200 fee payable to the institution.

For more information about the 2013 Watershed Institute, please contact Tina Harding, Project WET Education Manager at 701-328-4833 or tinaharding@nd.gov. The complete brochure can be found on the SWC website (www.swc.nd.gov) under the Water Education tab.



The Watershed Institute provide hands on field experiences and classroom presentations.

Participant Objectives for the Northwestern Missouri River Watershed Institute include the following:

- Gain an understanding and experience incorporating and teaching institute curriculum materials in a variety of situations.
- Enhance knowledge, skills, motivation, and commitment to teach about contemporary watershed issues and concerns.
- Understand the foundation of water, science, social, and economic impacts on today's watershed.
- Understand why the watershed is important to North Dakota's wellbeing.
- Provide information and education resource materials pertaining to the watershed.
- Enhance critical thinking and information processing skills while developing a personal perspective of the watershed.



North Dakota State Water Commission
Todd Sando, P.E., State Engineer
900 East Boulevard Ave. • Bismarck, ND 58505
(701) 328-2750 • <http://swc.nd.gov>

The State Water Commission does not discriminate on the basis of race, color, national origin, sex, age, or disability in employment or the provision of services.

State Water Commission

SNOW SURVEY

In a region where significant flooding occurs frequently, a good understanding of the moisture content in the snowpack is an important tool for being able to predict spring runoff. In order to get more accurate snowpack moisture information in the state, the Water Commission's survey crew conducts targeted snowpack measurements as-needed, at various times during the winter.

The moisture content in snowpack is a powerful tool for aiding in the prediction of what kind of spring flooding may occur. This information can aid forecasters, emergency managers, cities, and counties in determining what, if any, flood protection measures need to be implemented. Remote sensing, such as satellite or aerial data collections are also valuable tools in helping to forecast spring conditions, but this data must be verified in the field. Physical measurements of snow moisture make remotely collected data more accurate.

The Water Commission's snowpack sampling areas are chosen in areas where there is insufficient information. Common

sampling areas are the Devils Lake and Pembina River basins, but on the ground conditions can lead to samples being taken anywhere in the state. Generally, four to twelve sites are chosen in a given basin, for the sampling crew to collect data. These sites are chosen based upon need, as determined by Water Commission staff, with input from involved entities, such as the U.S. Army Corps of Engineers, National Weather Service, cities, and counties.

Snowpack sampling involves travelling to predetermined locations within a basin, visually determining a site that is representative of snowpack in the area, and avoiding areas such as the only snowdrift in a bare field, or the only bare spot surrounded by 3-foot deep snow. The depth of the snow is measured with a yardstick, and then a snow sample is weighed, providing moisture content. This data is then provided to the Water Commission's collaborative partners.

Other entities also collect snowpack measurements related to their specific areas of interest. In North Dakota, groups such as the

National Weather Service (<http://www.nws.noaa.gov/om/coop/>), St. Paul and Omaha Districts of the U.S. Army Corps of Engineers (<http://www.nwd-mr.usace.army.mil/rcc/snowsurvey/snowsurvey.html>) and the Community Collaborative Rain, Hail and Snow Network (CoCoRaHS) (<http://www.cocorahs.org/>) all collect snowpack moisture information.

In addition to the State Water Commission's snow survey work, in 2010 the Atmospheric Resource Board (ARB) added snow moisture measurements to their observer network, which provides a statewide perspective. (More on ARB's efforts in their section of this issue of ND Water.) On the Water Commission's MapService (<http://mapservice.swc.nd.gov>) snowpack moisture content is available as an interactive map, using data from the National Weather Services Snow Data Assimilation System (SNODAS) (<http://insdc.org/data/g02158.html>). The Water Commission snow sampling team is one of many efforts being undertaken throughout the state. The trick is to utilize resources wisely, and to ensure that the data gets to the end user.

"What amazes me, are the citizen volunteers that are going out and collecting this data every day. The service these volunteers provide is extremely valuable. We are simply just trying to fill in the holes." explains Kelly Casteel, P.E., the manager of the Water Commission snow survey team.

The snowpack information provided by the Water Commission and its partners help to ensure more accurate predictions of spring runoff conditions, supporting the agency goal of managing the state's water resources for the benefit of its citizens.



A snow survey being conducted in Jan 2010.