

The Oxbow

FROM THE NORTH DAKOTA STATE WATER COMMISSION

The Mighty Mo: A River of Discoveries

By Bill Sharff

The Missouri River in North Dakota is the lifeblood of our state and the heart of our natural, cultural, economic and social landscape. River managers, decision-makers, and stakeholders, as well as everyday people in the Missouri River basin face difficult and controversial issues that beg for resolution. The many uses of Missouri River water complicate the possibility of unified resolutions to these Missouri River issues. However, all agree compromises must be made on these issues for the well being of the river and its natural and human inhabitants.

Forty-six North Dakota K-12 educators came face-to-face with Missouri River issues while attending the Project WET Explore Your Watershed first annual "Discover Today's Missouri River" Institute, July 20-25, 2003 at the Western 4-H Camp near Washburn, North Dakota.

The institute included seven Missouri River issue segments, two issue reports, two major half-day environmental investigation segments, seven Missouri River use field tours, navigation of four major Project WET teacher curriculum guides, eleven hands-on activities from the guides, two environmental model demonstra-

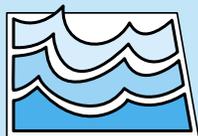
tions, and daily generation of idea pools, personal journaling, and an institute evaluation. Twenty-three water use tour guides and Missouri River resource professionals and scientists presented and led discussions on a number of Missouri River issues. Additionally, participants were able to observe Lake Sakakawea from pontoons donated by Captain Kit's Marina.

The institute put great emphasis on participant journaling. Each participant constructed and decorated their journals with materials that reflected Missouri River water uses. Each day of the institute, participants were required to journal different concepts like their current river perspectives, reflect on river issues and highlights of their environmental investigations, and explain hands-on activities completed and how they could be integrated into their classrooms.

Activities from three all new Project WET Activity Guides (Healthy Water, Healthy People; Watershed Managers; and Discover the Missouri River) were completed throughout the week. Missouri River topics covered through the activities correlated to the water use tours and to the issue discussions by presenters.

Valerie Johnson, grades 5-8 teacher from Marmarth said, "Quality, quality, quality. I loved the whole institute. Thanks so much for this unique learning opportunity." Tiffany Fitzgerald, eighth grade teacher from Bismarck felt the institute was, "Exceptional, I would highly recommend the class to all other teachers. Job well done." Benita Saur, grades 9-12 teacher from Mandan, commented, "I'm so glad I took this class. It was organized, informative and fun – what more could I ask for." Melisa Rames, grade 7 teacher from Fargo, said, "Outstanding! I love these Project WET classes. Keep it up!" Brantley Forgy, grades

Participants of the 2003 Discover Today's Missouri River Institute.



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7-12 teacher from Killdeer, said, "I have taken many classes in the last 20 years and this one rates as the best."

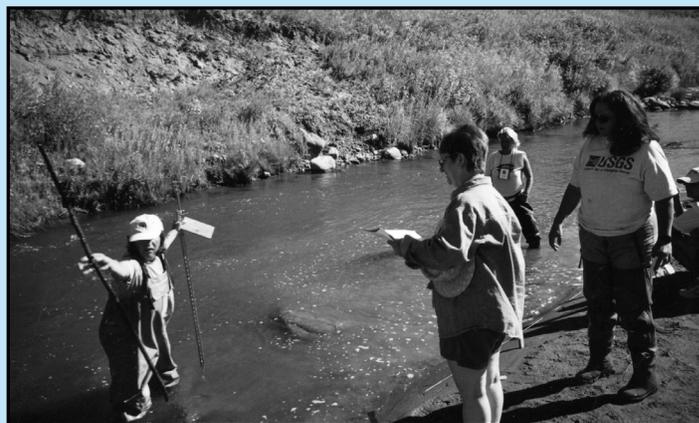
The Missouri River Institute was taught by several Project WET facilitators besides Project WET director Bill Sharff including, Jim Collins, WET facilitator and North Dakota Department of Health employee; Angie Bartholomay, WET facilitator and science teacher from Bottineau; and Pam Hintz, WET facilitator and science teacher from Elgin/New Leipzig. Many professionals representing local state and federal agencies and organizations were also involved in the instruction.

The institute was funded in part by an EPA Section 319 Non-point Source Pollution grant, the State Water Commission, local county water resource districts, soil conservation districts, and local school districts.

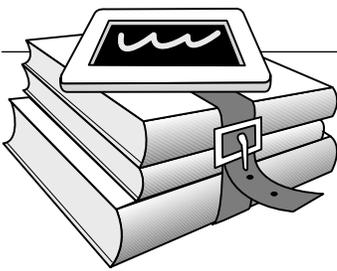
MISSOURI RIVER INSTITUTE PRESENTERS AND TOPICS

Presenter/Tour Guide	Affiliation	Topic/Issue
Terry Steinwand	Game & Fish Dept.	Missouri System Fishery
Rose Hargrove & Todd Lindquist	U.S. Army Corps of Engineers	Missouri River Management
Jim Bach	Western States Power Admin.	Power Brokering
Paul Picha	State Historical Society	Archeological Preservation
Jonathan Bry	(formerly) Sierra Club	Riverfront Preservation
Andy Mork	BOMMM Board Chairman, Farmer	Bank Stabilization, Delta Formation, Irrigation
Dave Patience	Land Development Consultant	River Development (Housing)
Carl Hokenstad	Bismarck City Planning	River Zoning/Planning
Paul Blumhardt	Bismarck City Forester	River & Urban Woodlands
Jackson Bird	State Forestry Dept.	River & Urban Woodlands
Ron Sando	Environmental Consultant	Missouri River Corridor Plan
Bruce Engelhardt	State Water Commission	River Basin Issues
Jim Lennington	State Water Commission	Water Supply/Distribution
Patrick Isakson	Game & Fish Dept.	Endangered Species, Habitat
Troy Leingang	Falkirk Mine	Mine Operation
Rob Holm	U.S. Fish & Wildlife	Garrison Dam Fish Hatchery
Kelly Kiemele	Tesoro Oil Refinery	Mandan Tesoro Plant
Melton Olin	Stanton Power Plant	Stanton Plant Operation
Charlie Jaszkwowiak	Bismarck Water Treatment Plant	Bismarck Water Treatment
Kathleen Rowland	U.S. Geological Survey	Stream Flow Measurements

Below: Bruce Engelhardt, State Water Commission, gives a presentation on Missouri River basin issues. At Right: Andy Mork, Chairman of BOMMM Board, discusses Missouri River bank stabilization, irrigation, and delta formation issues.



At Left: Jim Bach, Western States Power, discusses the processes involved in distributing power from the Missouri River. Above: Kathleen Rowland (right), USGS, instructs participants how to measure streamflow and velocity at the Knife River.



THE WATER PRIMER

Understanding Wetland Storage: Part III

By Michael Noone

This, the third and final article in a series examining wetland storage, will compare the results of various studies already completed, and look at what progress has already been made towards wetland restoration in the Devils Lake basin.

So, Which Study Is Correct?

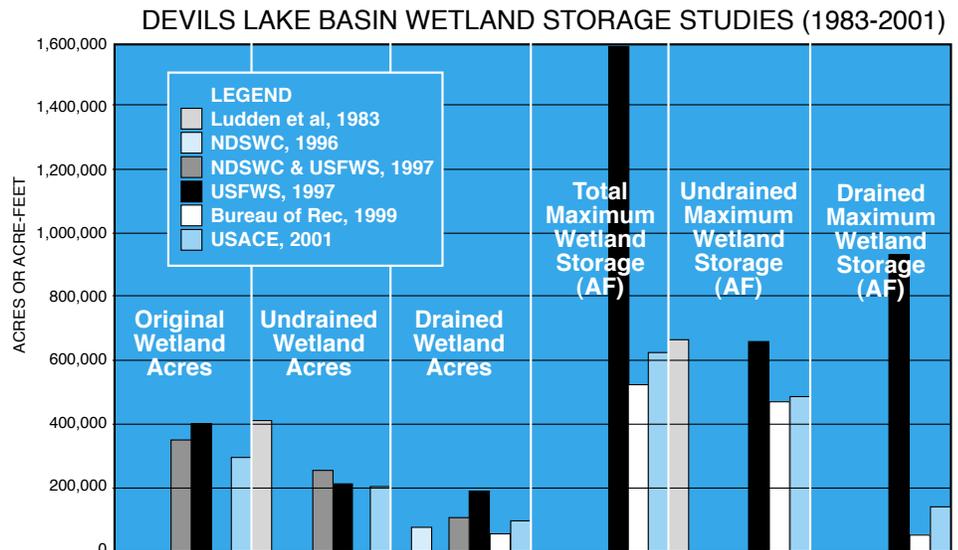
Over that last 20 years, studies on depressional storage in the Devils Lake basin have been performed by various private, state, and federal agencies. The accompanying figure provides a simplified comparison of results from six studies on wetland storage in the Devils Lake basin.

A concern that has been raised regarding the Devils Lake outlet is the lack of definitive answers about wetland storage in the upper basin. As was explained in the second article of this series, while it is possible to devise a study that would provide even more accurate estimates of wetland storage than the six studies in the figure, the costs of such a study would likely be prohibitive.

While no study is perfect, the similarity of the results generated by the majority of the profiled studies indicates that it is highly likely that the numbers already generated represent a good estimate of wetland storage in the Devils Lake basin.

Wetland Restoration and Conservation

A claim frequently made by those opposed to the Devils Lake emergency outlet is that wetland restoration in the upper basin is the only solu-



tion to flooding in the basin. A fact often ignored is that there has already been a significant amount of wetland restoration and preservation in the Devils Lake basin.

In total, approximately 14,000 acres of wetlands have been restored, protected, or enhanced in the Devils Lake basin for the dual purposes of water storage and wildlife habitat. In the future, an additional 13,000 acres of wetlands are proposed for restoration, protection, and enhancement. If all of the proposed projects were to be completed, the total acreage in the basin would be 27,000 acres.

In their 2001 study, West Consultants estimated that there were 92,429 acres of possibly drained depressions in the Devils Lake basin. That means that as much as 15 percent of possibly drained wetland acres in the basin may have been restored, protected, or enhanced. If all of the projects were completed, that could mean the restoration of

nearly 29 percent of the possibly drained wetland acres. This represents a significant amount of wetland restoration, and in fact, few other areas in the region can boast of such success. Despite the high percentage of wetlands in the basin that may have been restored, Devils Lake remains at a very high level.

In the last three articles, we have laid out the differences between a depression and a wetland, identified some of the difficulties in quantifying wetland storage, examined the numerous studies that have been conducted on wetland storage in the Devils Lake basin, and finally, we have explained the significant progress that the basin has made in the process of wetland restoration.

As you can see, wetland storage is a complex issue. Hopefully, these articles have provided a better understanding of wetland storage, which will allow for a more comprehensive discussion of the subject in the future.