

# The Oxbow

FROM THE NORTH DAKOTA STATE WATER COMMISSION

## Another Not So Simple Solution

By Patrick Fridgen

As the oil industry continues to expand at an incredible rate in the western part of North Dakota, they also have a growing need for reliable water supplies to support drilling operations. For example, the North Dakota Industrial Commission estimates that anywhere from 1.5 to 3 million gallons (4.6 to 9.2 acre-feet) of water are required to drill a single Bakken Formation well. Take that amount of water times the estimated 1,800 new wells per year, for the next several years, and that adds up to a fair amount of water that has to come from somewhere.

Unfortunately, in the western portion of the state where much of this drilling is taking place, it's quite dry. And other than the Missouri River system, there is little surface water available. As a result, the oil industry has had to rely heavily on groundwater. But, it has been determined that groundwater cannot supply oil field needs without damage to the resource.

Conversely, the state continues to see record high water levels in Devils Lake as it continues its relentless rise. Put these two situations together, and you get a common question that is posed to Water Commission staff on an increasing basis – “why can't Devils Lake floodwater be used in the oil fields to support drilling operations?”

Not that many years ago, Lake

Sakakawea was in the grasp of a years-long drought and its water level was nearing record low levels. During that same time, we were still seeing record high water levels in Devils Lake. Naturally, government officials were often asked a similar question at that time – why not just transfer abundant Devils Lake water to the drought-stricken Missouri River system?

At that time, a similar article was developed, and many of the same issues that made that project prohibitive, hold true for this one – and here's why:

- Geographically speaking, Devils Lake and the eastern edge of “oil

country” are at least 150 miles apart, and there are several hundred feet of up-hill elevation change to contend with from east to west. Push further west, and we're talking about over 200 miles of distance, and even more elevation to overcome with pumps. Thus, the development of such a project, which would likely involve a pipeline, would be incredibly expensive. (Consider the fact that the state's emergency Devils Lake outlet to the Sheyenne River had a price tag of \$39 million to transfer water 14 miles – with much of it gravity flow downhill via open channel.) In addition, operation and maintenance costs would be extremely high.

- Economics and engineering aside, Devils Lake water would have to be routed along Lake Sakakawea, which already runs right through the heart of oil country, and has more than enough water in it to support oil development. In fact, it is estimated that the amount of water required to support the entire western North Dakota oil industry for two years, would only require an inch of water off of Lake Sakakawea. Granted, access and permitting requirements have held up some water supply projects out of

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PHOTO: ND OIL & GAS

Sakakawea, but they pale in comparison to all of the permitting requirements that would face a Devils Lake diversion project of this magnitude.

- The Province of Manitoba and the Canadian government would likely object, as such a project could involve the transfer of Devils Lake

water across the Mouse River/Hudson Bay basin divide. Manitoba has already filed a lawsuit against the Northwest Area Water Supply project that diverts treated water from Lake Sakakawea (across the Mouse River/Hudson Bay drainage basin divide), to Minot. Thus, there is some expectation they would object

to transporting untreated Devils Lake water across that divide to oil fields in the Missouri River basin.

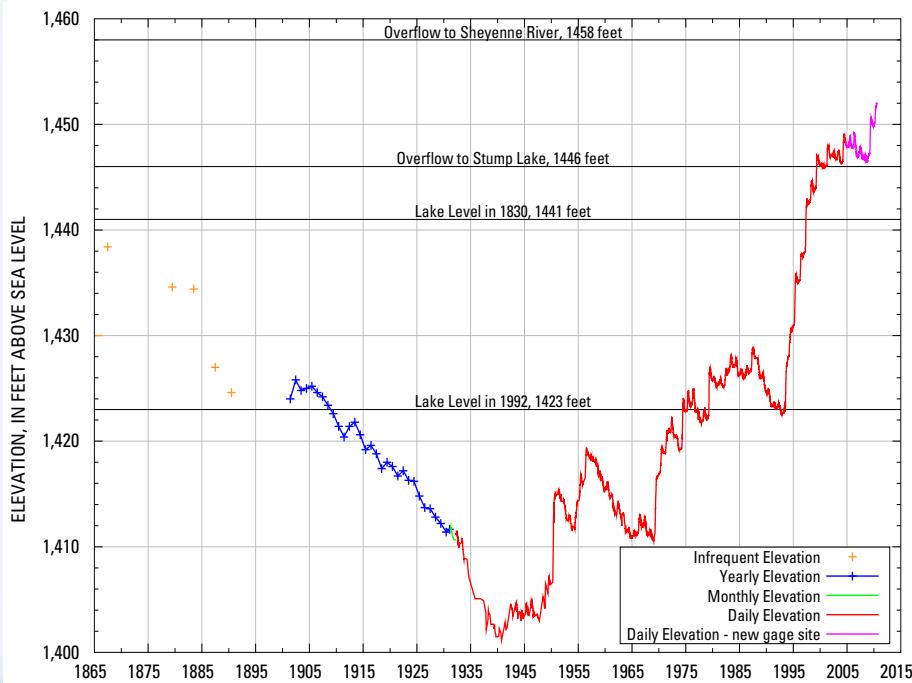
- Generally speaking, environmental concerns, and land acquisition difficulties alone would be extremely difficult and time consuming to overcome.

- From a long-term investment perspective, a Devils Lake to oil country pipeline would be quite risky for two reasons. First off, it is the nature of Devils Lake to fluctuate from nearly dry, to overflowing, over the course of different climate cycles. As recently as 1992, the Devils Lake basin had gone through several years of drought, and water levels were so low that the fishery was in danger of collapse. The lake has been on an incredible rise since that time, but this suggests that over the long term, Devils Lake is not a reliable source of water. Closely related is the fact that the oil industry has not always been reliable itself either. Major changes in oil, or even natural gas prices, could prompt several drilling companies to take their rigs elsewhere (as North Dakota has seen in the past) – leaving a very expensive water supply line behind.

- And finally, trucking water from Devils Lake to the eastern portion of North Dakota’s oil fields would be at least 300-400 miles round-trip. If 8,000-gallon tanker trucks are used in a 3 million gallon Bakken Formation fracture drilling job, that’s 375 truck-loads of water. That many truckloads from Devils Lake at 400 miles round-trip are equal to 150,000 miles of water-hauling via truck for a *single* well. Obviously, this option would not be feasible either.

Again, this is a common question that is heard frequently by State Water Commission staff. But as the above information suggests, the many problems associated with such options make them prohibitive to pursue.

**WATER SURFACE ELEVATION, DEVILS LAKE, NORTH DAKOTA (Courtesy: USGS)**



Typically, 7,500- to 8,000-gallon tanker trucks are used to transport water for drilling operations in western North Dakota.

PHOTO: ANGELA MAGSTADT



## Project WET Facilitators Receive Awards for 2010

Project WET facilitators promote, organize, and conduct Project WET events for K-12 formal and non-formal educators and students. A network of facilitators that deliver Project WET programs is essential, and ideally, they should be located in all areas of North Dakota. Facilitators are the local contact for all interested individuals or groups that would like to become involved in a water education event. Facilitators can be anyone who is interested in delivering the message of wise water management, protection, and stewardship to North Dakota's educators and students.

For the year 2010, there were 15 Project WET facilitators who received awards for their hard work and dedication to water education efforts throughout the state.

As in the past, all of the Project WET facilitators who received awards were recognized for their achievement in water resource education through a Project WET facilitator name badge and pin. In addition, based upon the level of their award, varying-shaped wooden plaques with engraved nameplates were handed out – along with a wide assortment of Project WET promotional items.

The following Project WET facilitators were award recipients for 2010:

### **First Mate Award (1-74 hours):**

Sandy Seifert, retired teacher and school administrator, Scranton

### **Navigator Award (75-149 hours):**

Darlene Boyle, Indian Education



From left to right: Sandy Seifert, Kayleen Marmon, Jim Meske, CaraLee Heiser, and Mitchell Bechtold.



From left to right: Melody Staebner, Kim Belgarde, Virginia Deitz, Darlene Boyle, Lori Clark.

Program, Fargo/West Fargo Schools  
Lori Clark, Urban Conservationist, Cass County SCD, Fargo  
Amber Mattson, Indian Education Program, Fargo/West Fargo Schools (*not pictured*)  
Melody Staebner, Indian Education Program Coordinator, Fargo/West Fargo Schools

### **Captain Award (150-299 hours):**

Michelle Bechtold, elementary educator, Belfield Public School  
Bill Gion, Safety Coordinator, Wyoming Casing Service, Inc., Dickinson (*not pictured*)

CaraLee Heiser, secondary science educator, Dickinson Public Schools

Jim Jeske, retired secondary science educator, Killdeer  
Hank LaBore, elementary educator, Standing Rock/Ft. Yates Community Schools, Ft. Yates (*not pictured*)  
Kayleen Marmon, elementary educator, Belfield Public Schools

### **Commodore Award (300-499 hours):**

Dave Marquardt, elementary educator, Fargo Public Schools (*not pictured*)  
Dianne Ornberg, elementary educator, Fargo Public Schools (*not pictured*)

### **Admiral Award (500+ hours)**

Virginia Deitz, elementary educator, Fargo Public Schools

### **2010 Project WET Educator Facilitator of the Year Award**

Kim Belgarde, elementary educator, Fargo Public Schools



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