The Oxbow

FROM THE NORTH DAKOTA STATE WATER COMMISSION

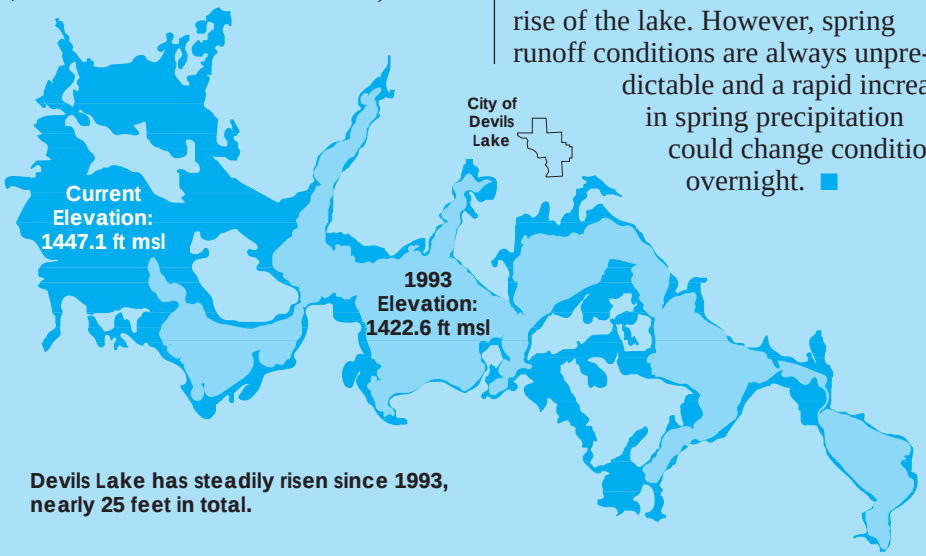
Devils Lake water level predictions made

By James Landenberger

The National Weather Service released their current 180-day long-range probabilistic forecast for Devils Lake on February 15, 2002. The Service's forecast suggests there is a 50 percent chance that Devils Lake will exceed its current elevation of 1447.1 feet-msl in the next 180 days. This means for the next six months, there is a 50 percent chance that inflow volumes to Devils Lake will equal overall evaporation from the lake.

Devils Lake iced-up at the current elevation of 1447.1 feet-msl last December. At this elevation, the lake has a surface area of 125,000 acres and is storing 2.4 million acre-feet of water. As of late February, the Devils Lake Basin had received below normal participation and a snow survey completed by the State Water Commission survey crew on February 14 found an average snow depth of only one to three inches with 0.40 - 0.90 inches of water basin-wide.

If drier weather continues through spring, the Devils Lake basin will likely experience below normal runoff volumes which will limit the rise of the lake. However, spring runoff conditions are always unpredictable and a rapid increase in spring precipitation could change conditions overnight. ■



Devils Lake has steadily risen since 1993, nearly 25 feet in total.

NAWS groundbreaking is scheduled

The long-awaited groundbreaking ceremony for the Northwest Area Water Supply project (NAWS) is scheduled for April 5, 2002 at the Minot Civic Center followed by a short photo session at the water treatment plant.

Two agreements must be completed with the Bureau of Reclamation before any ground disturbing activities can take place, including the largely ceremonial April 5 event. The State Water Commission at their February 20, 2002 meeting authorized State Engineer, Dale Frink, to execute those agreements.

It is anticipated that the groundbreaking ceremony will be attended by Governor Hoeven, Senator Kent Conrad, Congressman Earl Pomeroy, Reclamation Commissioner John Keys, State Engineer Dale Frink, representatives of the City of Minot, and members of the NAWS Advisory Committee.

In other NAWS-related news, at their February 20 meeting the Commission approved a contract for 7.5 miles of main transmission pipeline to S.J. Louis construction, contingent upon legal review and written concurrence by the Bureau. And, the Commission adopted a resolution authorizing the Chief Engineer and Secretary to the Commission to initiate condemnation proceedings to acquire property interests needed for pipeline construction. ■

NOTICE:

The U.S. Army Corps of Engineers will be soliciting public comments on the Devils Lake outlet Draft Environmental Impact Statement April 8, 9, and 10. Please see the following schedule for dates, times, and locations of those hearings.

April 8, 7:00 p.m.
Valley City, Eagles Club

April 9, 1:00 p.m.
Spirit Lake Reservation
Tribal Community Building, Ft Totten

April 9, 7:00 p.m.
Devils Lake,
Ramsey County Courthouse

April 10, 2:00 p.m.
Grand Forks, City Council Chambers

COMMISSION MEETING MINUTES

The North Dakota State Water Commission (Commission), chaired by Governor John Hoeven, acted on several items of business and was given status reports on continuing water management projects and programs at the February 20, 2002 meeting in Bismarck.

With regard to the state's Devils Lake outlet project, the Commission approved $750,000 for final engineering design. It is expected that the final design will be completed by May 1, 2002, which will then be followed by a construction bid process. Bids will be awarded sometime in the end of May.

Also with the state's outlet project, the Commission approved $325,000 for land acquisitions along the outlet route. The acquisitions will include pumpsite locations, a 250-ft wide right-of-way for the open channel, a 100-ft wide right-of-way for pipeline, and small parcels that would be severed by the alignment. In total, approximately 700 acres will be impacted by the outlet alignment. In breaking the costs down, $226,000 is the estimated cost for land, and $99,000 is the cost for appurtenance, contingencies, and legal fees.

Another Devils Lake related action item included the Commission's approval of $25,000 for a reconnaissance study to look at the potential of using irrigation as a means of water utilization and management in the Devils Lake basin. The study will be conducted by Bartlett and West Engineers.

The Commission approved several actions related to the Northwest Area Water Supply project (see related *Oxbow* story).

In their final action item, the Commission passed a resolution of appreciation to Ray Oliger, who retired from the Commission January 31, 2002. In Ray's 16 years of employment with the Commission's Regulatory Division, he provided invaluable expertise and skills in the management of sovereign lands, processing of construction permits, wetland restorations and creations, and coordinating responses to solicitations for reviews. ■

Study highlights lack of useful flood data in Red River Valley

A recently published North Dakota State University (NDSU) study, titled *Estimating Watershed Level Flood Damage in the Red River Valley of the North*, took a closer look at historic flood damage estimates in two subwatersheds in the Red River Valley – the Wild Rice in Minnesota and the Maple in North Dakota.

"What we found was that flood damage estimates between 1989 and 1998 were substantially inaccurate for both watersheds. Flood damage information, in terms of accuracy, availability, and geographic detail just isn't available to individuals making damage estimates - and that causes problems" said NDSU Professor, Steve Shultz.

When the researchers examined previous agricultural flood damage estimates for specific years in the Maple watershed, they found that flood damage estimates could have been undervalued by as much as 340 percent. Similar results surfaced when they looked at agricultural damages in the Wild Rice watershed. It was estimated by the researches that previous estimates should have been nearly 200 percent greater.

Nonagricultural flood damage estimates developed by the researches suggest a completely different scenario. They found that by identifying the actual township location of nonagricultural damage payments made by FEMA (along with a simple population distribution adjustment within the county); nonagricultural damage estimates decreased by 80 percent in the Maple watershed, and 27 percent in the Wild Rice.

"The only way to avoid this problem is if disaster relief agencies increase the geographic specificity of their damage payment data," continued Shultz. "For disaster agencies to keep more specific geographic information on their payments, it's going to increase the cost of doing business for them. But, until that level of information is available, flood damage estimates will likely continue to be inaccurate – not just in the valley, but nationwide."

The study in question was published in Natural Hazards Review in February, 2002. For further information you can contact Dr. Steve Shultz at (701) 231-8935 or email sshultz@ndsuext.nodak.edu. ■

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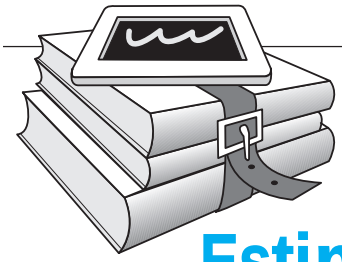

Estimating Snowpack Runoff: How it's done, why it's important

The amount of runoff generated by snowpack melting in the spring is a topic of great concern throughout North Dakota. When in excess, snowpack can be the cause of devastating floods, but when absent, it can threaten areas with extreme drought.

So how is the depth of snowpack converted into an amount of spring runoff anyway? A general rule of thumb is that for every ten inches of snow, one inch of water is generated. However, as most North Dakotans know from personal experience, not all snow is created equal. Light, fluffy snow obviously produces less water than does the thick, slushy mess that is the bane of anyone without a snow blower. The range of water produced by snow can vary from 0.4 inches of snow producing 0.10 inches of water, to 5 inches of snow producing 0.1 inches of water. However the more typical range is 0.6 to 1.1 inches of snow producing only 0.1 inches of water.

Variations in snow density can result from the temperature of the air when the snow was produced, to differences in the temperature of the location where the snow accumulates. Snow in large drifts is also compressed by the weight of the snow on top of it. Wind is another force that compresses snow, causing those concrete hard drifts that concentrates snowpack in more localized areas.

The National Oceanic and Atmospheric Administration (NOAA) forecasts the amount of runoff that will to be generated by the snowpack. Personnel from NOAA travel widely around the area and take samples of the snowpack to acquire a representative sample. The snow's density is measured and converted to inches of water. Satellite and fly over generated imagery is also used as a tool, especially in large or inaccessible areas. Data collected is averaged over an area, and projections are made based on how quickly the area is expected to warm up.

Large watersheds, such as those that feed into Lake Sakakawea can have snowfall sources and thus runoff many miles removed from where the water ends up. Eastern Montana, where Lake Sakakawea gets most of its water, has been in the grips of a strong drought in recent years. As a result, water levels in Lake Sakakawea have dropped approximately 14 feet in the last three years.

As of February of this year, the U.S. Army Corps of Engineers predicted the 2002 Missouri River basin runoff above Sioux City, Iowa, to be 20.3 million acre-feet (MAF). That is only 80 percent of normal, which is approximately 25.2 MAF. Last year's runoff above Sioux City was 22.5 MAF.

Under a lower decile runoff scenario, which unfortunately is a possibility, Lake Sakakawea may only reach an elevation of 1828.4 feet msl by the end of April. Then, it's elevation could fall below 1825 feet msl by early August, and 1820.5 feet msl by the end of the year if dry conditions persist.

Lack of runoff has put Lake Sakakawea's fishery in extreme peril due to the potential loss of cold water habitat, which is vital to both the non-game and game fish species. Loss of these important fisheries would have a disastrous effect on the region's 84.7 million-dollar recreation industry.

However, fishermen and boating enthusiasts are not the only people who can suffer from deficient runoff or lack of snowpack. Agricultural interests also find themselves directly impacted. Insufficient moisture left in the soil profile during spring can ultimately contribute to stressed crops and reduced yields if dry conditions persist through the summer.

If you would like to find out how much water is in the snow around your home, place a several inches in diameter cylindrical tube in your yard, away from any buildings or trees. Measure the depth of the snow after a snowfall, and then melt the snow to find out how much water the snow contains. After you have done this, you will be well on your way to understanding how much moisture is in snow.

If you have further questions about snowpack, runoff, or any other meteorological issue, please contact the Atmospheric Resources Board of the North Dakota State Water Commission, (701) 328-2750. ■