

The Oxbow

FROM THE NORTH DAKOTA STATE WATER COMMISSION



The George K. Dike Survey Party of 1903.



GLO Plat survey note archival results in wider availability of info

By Rod Bassler and Lee Krein

The North Dakota Office of the State Engineer and State Water Commission (SWC) are responsible for the preservation and dissemination of official General Land Office government survey plats (GLOs) and notes for the State of North Dakota. Many of these documents are as old, or older than the state itself. Even though steps have been taken to protect these maps and notes throughout the past 100 years, the media (including paper, microfiche, and film) are getting older and decaying, and some of these documents have been ruined or lost due to water damage or fire. It was for these reasons that the SWC made the decision to preserve these resources in an electronic format, while the remaining documents are still in fairly good condition.

In the fall of 2002, the SWC started scanning the GLOs with the intent of preserving these valuable resources. The plats have been scanned at quality levels that make them at least

as good as the originals when plotted out at original sizes. In addition, the notes were scanned so they are as legible as the original copies. The GLO plats are also geo-registered for use in our enterprise GIS so they can be overlaid with contemporary map data. This provides an incredible amount of information, allowing the comparison of map features from 100 years ago, with those that we see around us today. The electronic format also allows for many copies to be made and distributed, which better safeguards them for the future. The other obvious benefit is that the notes and plats can be made available via the Internet; any time of the day or night, at no cost to the user.

The SWC started with all of the paper survey records in our inventory, which included the GLO plats and the re-survey notes. Within the next year, over 2,800 GLOs were scanned, geo-registered, and quality control checked. The re-survey notes include approximately 850 additional scans.

The original notes for all of the government surveys were more problematic. These survey notes, which included the vast majority of the notes in the SWC's collection, were converted to microfilm and microfiche many years ago. At the time, this was a popular method of archiving paper materials. Unfortunately, the limited shelf life of film and the labor-intensive methods of retrieving the data makes them cumbersome to store, maintain, and distribute. This made the idea of creating electronic copies that much more attractive. However, it was expected that the job of scanning the notes would be extremely expensive and time consuming.

A lucky break materialized when SWC staff members attended a meeting with the U.S. Bureau of Land Management (BLM) in the fall of 2002. The BLM indicated that they were approaching the same task and had started scanning the original notes, leaving the GLO plats and re-survey notes for their last task.



At Left:
The General Land Office (GLO) plats were scanned and then geo-registered for use in the SWC enterprise GIS, so they can be overlaid with contemporary map data. This allows comparison of map features from 100 years ago, with those that we see around us today.

Below:
The State Land Department of 1915.



Since the SWC already had that part of their objectives completed, both agencies agreed to exchange data. This was quite fortunate for both agencies, and has resulted in significant savings of time and money. The BLM is planning to have their part in the project finished toward the end of 2004. That data will be made available via the SWC website as soon as possible.

Currently, anyone can obtain the GLO plats and re-survey records via the Internet delivery system on the SWC's website. The system is currently dealing with over 10,000 directories and files, but is handling the load with ease. The address for the website is:

www.swc.state.nd.us/dataresources/glosearchform.html.

You can search for GLO plats and their associated notes (right now, only the re-survey notes) by entering the specific township and range, or you can get all of the notes and plats for any of the counties in North

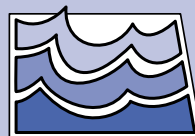
Dakota. Further, the SWC will be adding what is available for those townships that border North Dakota in the neighboring states of South Dakota, Montana, and Minnesota.

For now, if you need the original survey note descriptions, or you just want paper copies, you can simply contact the SWC. (Paper copies are

available at a minimal fee).

For more information or questions regarding the above archiving efforts, or for help retrieving information from the SWC website, please contact via e-mail:

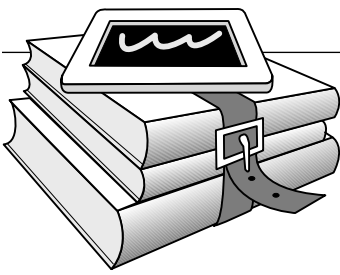
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THE WATER PRIMER

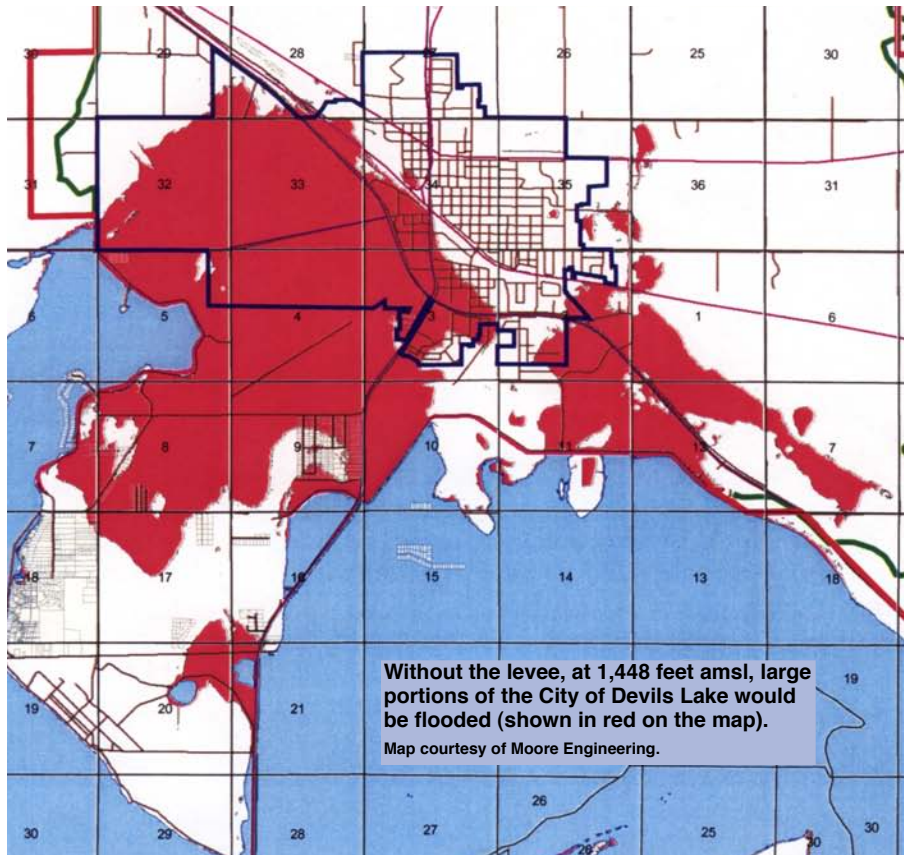
Devils Lake: Raising the Levee

By Michael Noone

In the spring of this year, the ongoing flooding crisis around Devils Lake worsened when a heavy rain event fell on still snow-covered ground. All of this moisture, coupled with the precipitation from several significant rain events led to Devils Lake climbing from 1,446.5 feet above mean sea level (amsl) to approximately 1,449.1 feet amsl in only a few months, inundating 18,500 acres of land and filling the lake with an additional 337,000 acre-feet of water.

The most recent flooding has led to many difficulties, including millions of dollars in road reconstruction and damages to homes. It has also forced the U.S. Army Corps of Engineers to begin the process of raising the levee that protects the City of Devils Lake from Devils Lake itself. If there were no levee, at 1,449 feet amsl, large portions of the City of Devils Lake would be under nearly 25 feet of water.

The original levee was constructed in 1984, but the inexorable rise of Devils Lake has meant that the levee itself must rise too, in order to



protect the city. Since its construction in 1984, the levee has been lengthened and raised four times, at a cost of over \$51 million.

The most recent phase of construction, known as Stage III, was triggered when Devils Lake exceeded an elevation of 1,448 feet amsl, because of the severe damages that would occur if the levee were overtopped. The current levee, at 7.2 miles in length and a top elevation of 1,457 feet amsl, protects to an elevation of 1,451 feet amsl.

On July 14, 2004, the Corps announced their intentions to initiate the next raise of the levee when they began advertising the construction

contract, with a schedule to award the contract by late August. Construction is expected to be completed by the fall of 2005.

This round of construction will raise the levee to an elevation of 1,460 feet amsl, which will provide protection from Devils Lake to 1,454 feet amsl. The total cost for this phase of construction is estimated at \$8.5 million.

Despite the high cost of raising the levee, the latest round of construction will be relatively in-

expensive compared to what will be required if the lake rises even higher. The most recent stages of construction on the levee consisted primarily of adding material to the top of the structure. If the levee needs to be raised beyond Stage III, the structure must be widened and lengthened as well. If this is required, it is estimated that it will cost tens of millions more.

Raising the Devils Lake levee is only one important part of the three-pronged approach to reducing flood damages in the Devils Lake basin, which includes infrastructure protection, an outlet to the Sheyenne River, and upper basin water management.