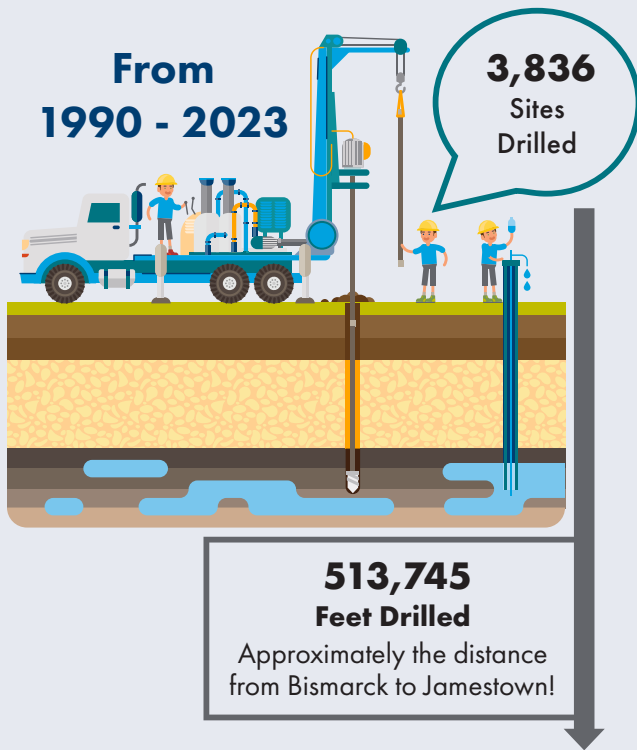


# DWR'S DRILLING PROGRAM



## About The DWR Drilling Program

The drilling program supports Department of Water Resources (DWR) Appropriation Division in the management of groundwater resources by constructing monitoring wells at selected depths in aquifers throughout the state. Data collected from monitoring wells are used to create and build groundwater models that are used in decision-making for consideration of approving water permits.

## Even With Our Extensive Network Of Wells...

New drilling is still required to determine the sustainability of additional pumping from aquifers. As North Dakota's aquifers become more developed, it becomes more challenging to appropriate additional water from these aquifers. Additional drilling data is necessary to complete groundwater models to make important water management decisions. Today, much of the drilling completed is to maintain one of the nation's largest monitoring well programs by replacing old monitoring wells.

## What Information Do We Collect, Where Is It Stored, & Why Is It Important?

Samples of sediments are collected while drilling. After a borehole is completed, and prior to well construction, a geophysical survey (Natural Gamma, Self-Potential (SP), Single Point Resistance (SPR), Resistivity) of the borehole is completed. These surveys use site investigation methods to extract core soil samples across a site, allowing for a picture to be built up of how the site has formed over time, and to identify any layers, features or areas which might be archaeologically significant.

Once a monitoring well is constructed, water level and water quality data can be collected. Water levels can be collected by manual measurements at annual, quarterly, or monthly frequencies. If a Pushing REmote SENSors (PRESENS) monitoring system is put in place, real-time monitoring is available.

In 2011, our drilling program assisted in the Missouri River flood effort in the Bismarck/Mandan area by quickly completing a monitoring well network adjacent to the river, so the public could be informed about rising groundwater levels that could potentially flood basements and property.

## The Roots Of North Dakota's Drilling Program

The drilling program began in the early 1950s when the State Water Conservation Commission picked up a small drill rig that was part of a surplus sale. The agency was ramping up to begin the County Groundwater Studies that began in 1955. One of the main goals of the County Groundwater Studies was to better map the groundwater resources throughout the State by completing exploratory drilling to determine the depth and extent of the aquifers throughout North Dakota. This project was financed by the State, and completed cooperatively with the U.S. Geological Survey, ND Geological Survey, and the State Water Commission.

**4,100** Across the state, DWR monitors more than **4,100 OBSERVATION WELLS**

In 1967, with the County Groundwater Studies in full swing, a much larger drill rig, a Failing 1250 was purchased, capable of drilling to depths greater than 1,000 feet. Because the Commission owned its own drill rig and hired a contract drill company to run a second rig, North Dakota, in cooperation with the U.S. Geological Survey, was able to complete one of the most extensive groundwater studies in the nation. The final county study report was completed in 1985.

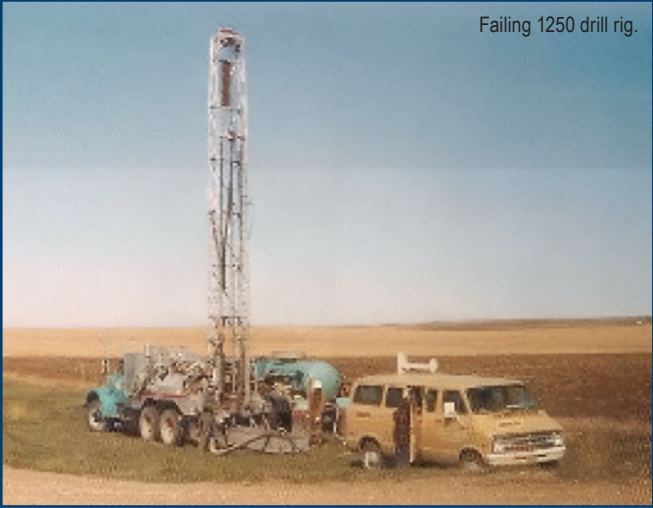
In the late 1970s, the drilling program work was slowly migrating from exploratory drilling to groundwater management drilling. With the combination of the public having a better understanding of the groundwater resources available in North Dakota, along with the advancements of center pivot irrigation technology and higher commodity prices, farmers became more interested in irrigation, especially after an extremely dry 1977. The Appropriation Division's focus was gradually shifting from, 'Where are the water resources (aquifers)?' to 'How much water is available in these aquifers?'

In 2006, the Failing 1250 was retired and replaced with a Failing 1500 drill rig. The drilling program is purchasing the fourth drill rig in its history (Versa-Drill 140X), with an expected delivery date of October 2024.

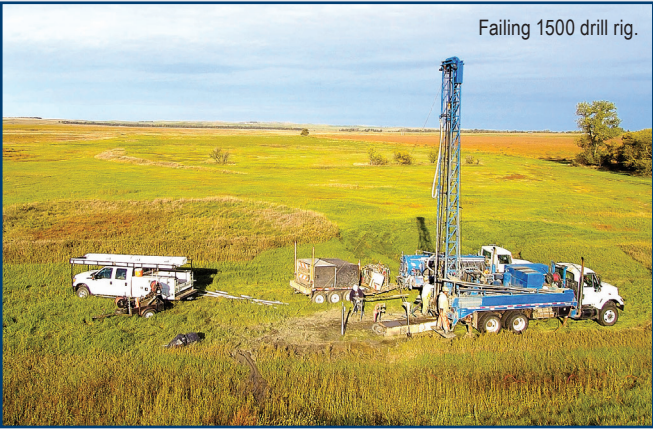
For the last 70 years, North Dakota has been gathering groundwater information through its drilling programs. The Department of Water Resources is committed to continuing to collect and analyze up-to-date information to better gauge our water resources with innovative technology, including our cutting-edge Pushing Remote SENSors (PRESENS) and Airborne Electromagnetic Surveys (AEM) programs.



Small surplus drill rig.



Failing 1250 drill rig.



Failing 1500 drill rig.

**SCAN  
ME FOR  
MORE  
PRESENS  
INFO**

