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North Dakota Department of Water Resources Identifies Three Aquifers to Study for Managed Aquifer Recharge

Follows in-depth report on state's aquifers

Bismarck, ND – Following the completion of an extensive statewide assessment on Managed Aquifer Recharge (MAR) potential in the state, the North Dakota Department of Water Resources (DWR) has selected three aquifers with excellent MAR potential for further study.

MAR involves capturing excess surface water flows from rivers and streams (often in the spring) and storing the water in aquifers for later use.

DWR has contracted with INTERA, a leader in water resource management, planning, and development to create advanced numerical groundwater models for the three selected aquifers. These models will be used to simulate various scenarios, such as drought conditions or increased water withdrawals, to predict their effects on water levels and availability.

“As North Dakota faces increasing demand for water, the DWR is taking proactive steps to study these key aquifers and develop solutions to ensure they remain viable, particularly during periods of drought,” DWR Director Reice Haase said. “The extensive data we collected using technologies like Airborne Electromagnetic Surveys has allowed us to make informed decisions about where to further study MAR.”

The Aquifers in Focus

1. Elk Valley Aquifer – Grand Forks County

Spanning approximately 200 square miles, the Elk Valley aquifer is a crucial water source for both irrigation and public supplies. Despite its importance, there exists concern about its sustainability during a prolonged drought. The study will assess the aquifer’s resilience, address the 48 deferred water permit applications, and potential use of MAR to enhance its resilience and sustainability.

2. Spiritwood-Warwick Aquifer – Benson/Pierce Counties

This aquifer is part of a larger groundwater system extending from Canada to South Dakota and has experienced water level decline due to increased rural water use. The study will assess how much additional water can be safely withdrawn without jeopardizing existing users, and examine potential use of MAR.

3. Wahpeton Buried Valley Aquifer – Eastern Richland County

The Wahpeton Buried Valley aquifer has experienced nearly 50 years of declining water levels. Major water users—including the City of Wahpeton and industrial facilities—rely on this aquifer. The study will evaluate the present level of development, potential increased development to meet potential growing water demands (especially under future drought conditions), and the use of MAR.

These studies aim to strike a balance between current and potential additional water usage and long-term sustainability. This will include evaluating deferred water permit applications to determine which applications can be approved without adversely impacting water availability. The results of these studies will also help inform when and how MAR can be implemented to ensure agricultural, municipal, and industrial water needs are met in the years to come.

“North Dakota’s water resources are essential to the state’s growth and prosperity, and the proactive steps we’re taking today will ensure these critical aquifers continue to support our communities and economy in the future,” Haase said.

After completing the statewide assessment on MAR potential in the state, the DWR created an [interactive map online](#) that allows users to select aquifers across the state and learn about its potential for recharge, volume, square miles, and other scientific data.

For more information on the DWR’s MAR studies, go to https://www.dwr.nd.gov/pdfs/managed_aquifer_recharge_fact_sheet.pdf

For More Information Contact:

Cam Wright, Communications Manager
camwright@nd.gov

| (701) 328-2782

Department of Water Resources

1200 Memorial Highway
PHONE: (701) 328-2750

| Bismarck, ND 58504
FAX: (701) 328-3696

E-MAIL: dwr@nd.gov