

Private Well Testing Program

Fiscal Year 2025 Summary

June 2025

Overview

Groundwater is the primary source of drinking water for many rural Nebraskans. In the Southwest Nebraska Public Health Department (SWNPHD) district there are over 2000 registered domestic wells (*State of Nebraska Department of Natural Resources, 2025*). Unlike public water systems, which are regulated by the federal Environmental Protection Agency (EPA), it is the responsibility of private well owners to monitor and maintain the safety of their water. Knowing how and when to test their well water is essential to ensuring safe drinking water for these families.

To support this need, the SWNPHD well testing program provides free paper test strips to detect nitrates and nitrites, which are harmful contaminants commonly found in Nebraska groundwater due to agricultural by-products such as fertilizers and animal waste. Human consumption of these contaminants at high levels can be especially harmful to infants, potentially causing 'blue baby syndrome', as well as similar respiratory issues in pregnant women. They can also lead to birth defects, premature birth, and increased risk of cancer, which continues to be studied. While not as precise as laboratory testing, paper test strips serve as a low stakes introduction for well owners to begin monitoring water quality. The health department also provides additional information on well water lab testing, recommended testing frequency, and other water contaminants that well owners should be aware of.

Program Methods

The SWNPHD well testing program began as a partnership with the University of Nebraska-Lincoln (UNL) Citizen Science Water Quality project, led by Dr. Shannon Bartelt-

Hunt. Through this collaboration SWNPHD adopted the project’s testing schedule, acquired paper test strips for distribution, and exchanged local well testing data.

In fiscal year 2025, SWNPHD offered well tests during the months of September 2024 and May 2025. In September, residents could participate at McCook and Ogallala office locations, as well as at four partner sites - UNL Extension offices in Beaver City, Curtis, Imperial, and Trenton. In May, testing was available again at the McCook and Ogallala offices and additionally at the Dundy County fair. During each testing window, well-owners were invited to pick up water collection kits with instructions and return with tap water samples for testing. A SWNPHD staff member assisted residents with testing and provided a brochure with the results and additional well testing resources. The information collected included well location, test results, and a brief survey completed by the owner. All testing data were exchanged with UNL partners via their online collection form: <https://eqclab.unl.edu/citizen-science-water-quality-data/>.

Well Test Results

A total of 144 wells were tested during fiscal year 2025 (84 in September and 60 in May). Notably, half of all the wells tested were in Keith County.

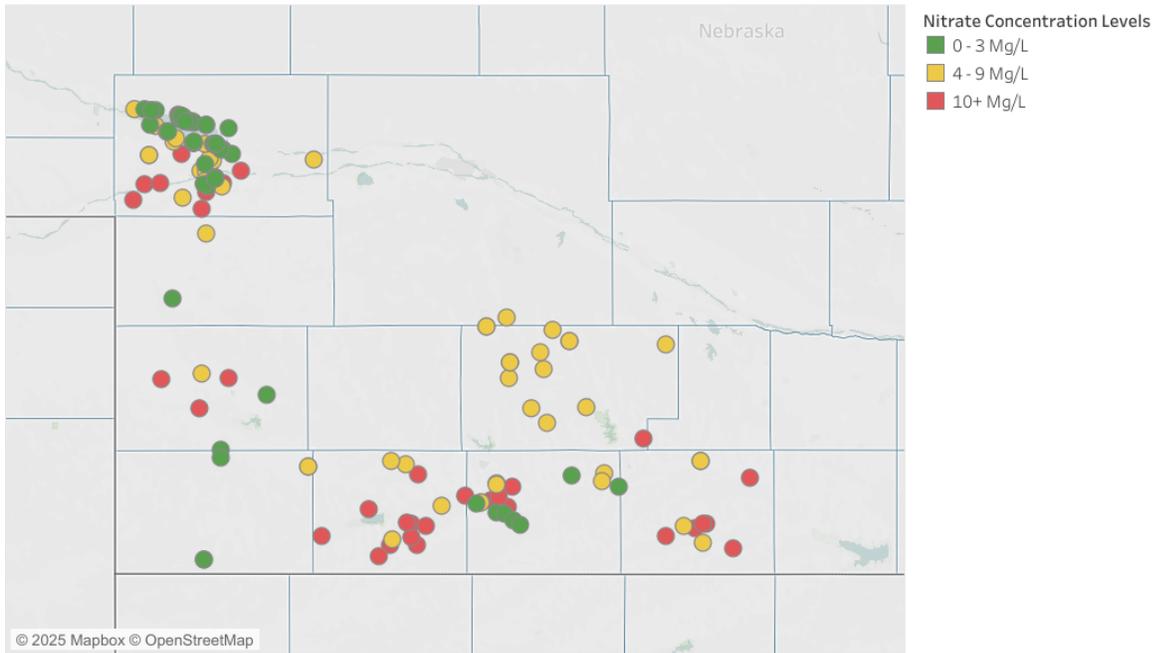
- **Nitrate Results:** All wells that tested above the EPA’s maximum contaminant level (MCL) of 10 mg/L for nitrate are marked in red on the first map below. Since recent studies suggest potential health risks even at lower nitrate levels between 3 to 10 mg/L, all wells that tested within this range are shown in yellow. Wells that tested below 3 mg/L of nitrates are marked in green. Wells in Hitchcock and Furnas counties most commonly exceeded the MCL or fell within the warning range. Additionally, nearly all wells in Frontier County tested within the warning range. It is important to remember that many factors can influence water contamination so well owners at any location should regularly test their water.

SWNPHD Fiscal Year 2025
Total Private Well Tests by County

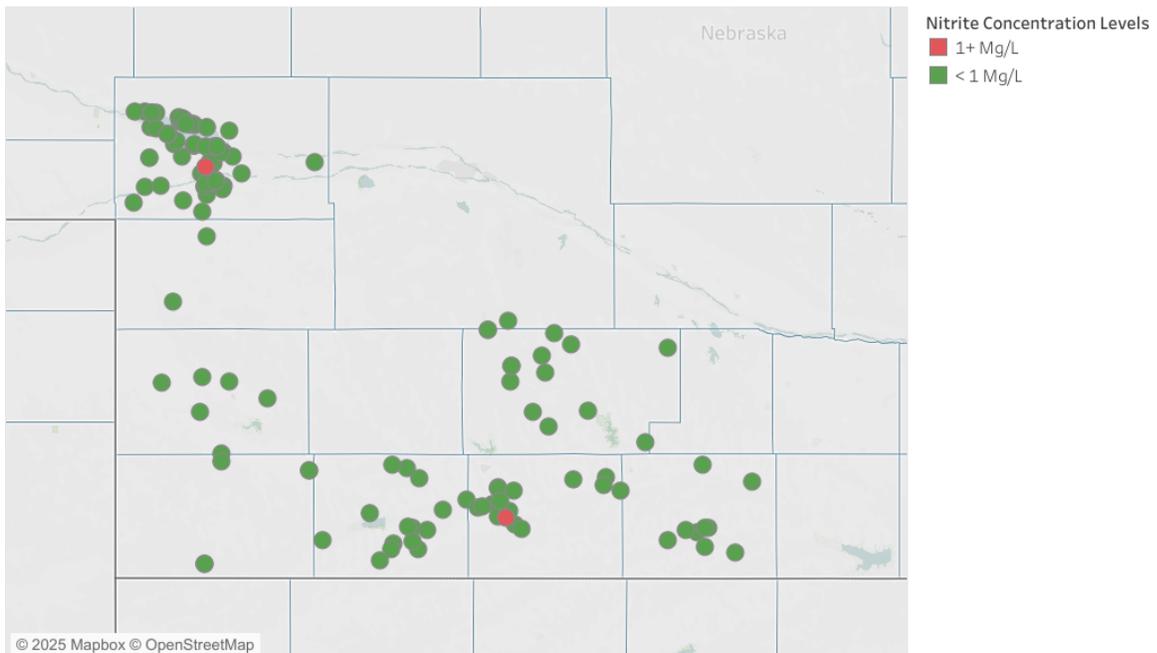
County	September		Grand Total
	2024	May 2025	
Keith	38	35	73
Red Willow	4	12	16
Hitchcock	14	2	16
Frontier	9	7	16
Furnas	9		9
Chase	6		6
Hayes	1	2	3
Dundy	1	2	3
Perkins	2		2
Grand Total	84	60	144

- Nitrite Results: Nitrite is less concentrated in groundwater. However, when consumed nitrites can pose health risks at much lower levels than nitrate. The EPA’s MCL for nitrite is 1 mg/L. Only two wells in the district exceeded this threshold and are shown in red on the second map below.

SWNPHD Fiscal Year 2025
Well Testing Nitrate Results



SWNPHD Fiscal Year 2025
Well Testing Nitrite Results

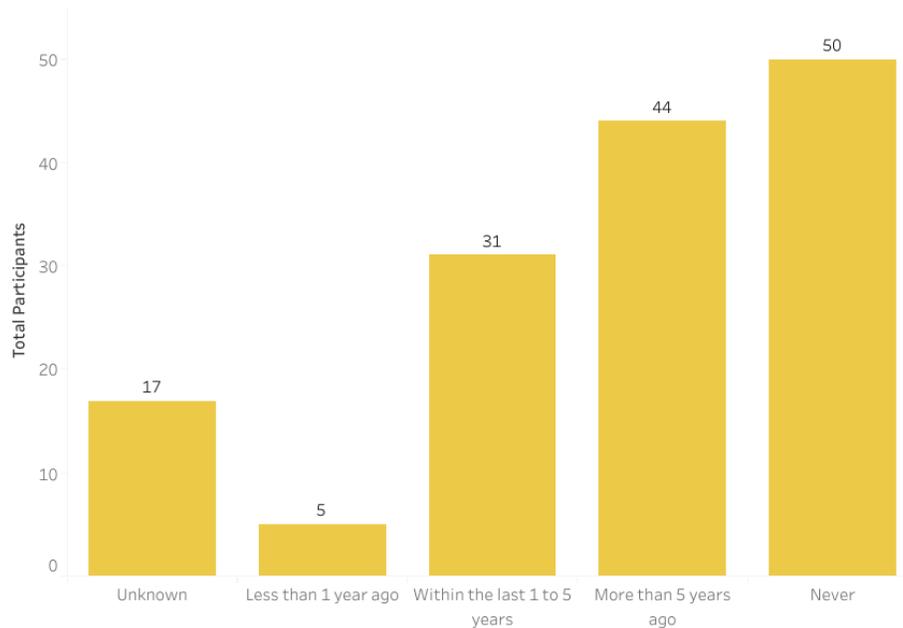


Although the EPA does not designate an MCL for phosphates, they can also be an indicator of agricultural influence. SWNPHD conducts phosphate paper strip tests for research and data sharing purposes in partnership with the UNL Citizen Science Water Quality project.

Survey Results

Participants were asked to complete a brief survey to help SWNPHD understand testing habits and motivations among local well owners.

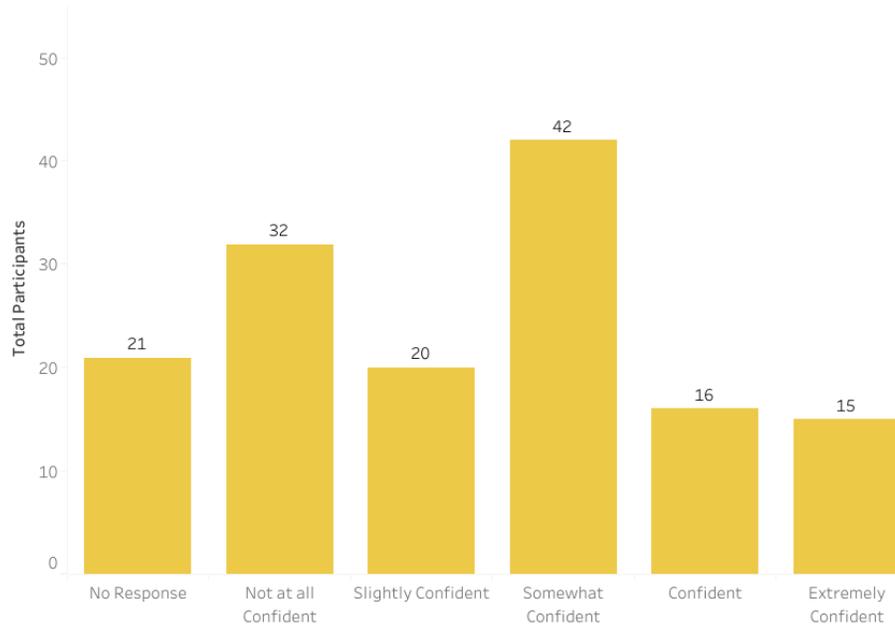
When was the last time you've tested your well water?



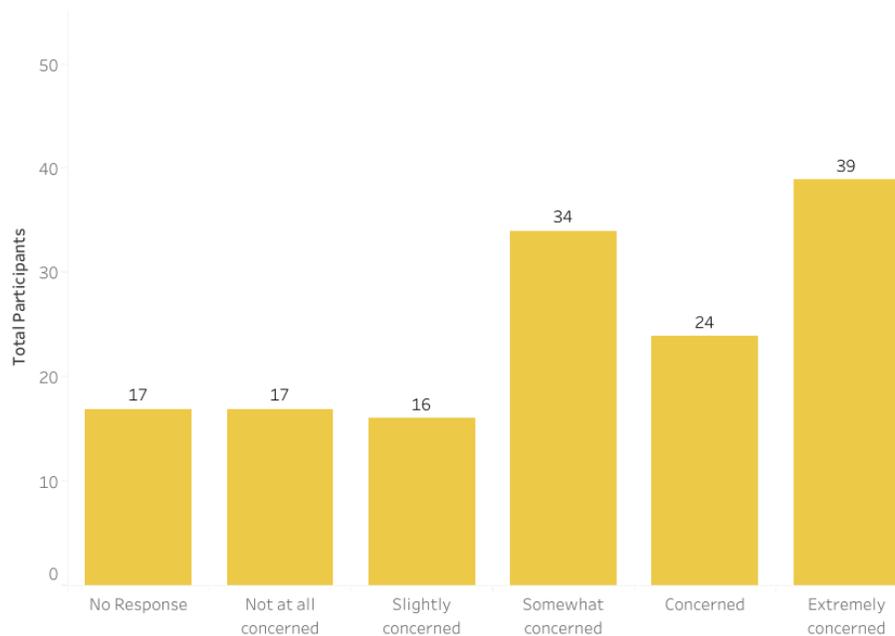
It's recommended that private well owners test their well annually for nitrates, nitrites, and bacteria. This practice helps to ensure that well owners are aware of potential contamination and review the continued effectiveness of any filters or water treatment devices. Still, one-third of participants reported never having tested their well, and nearly another third had not done so in the last 5 years. These findings highlight a need for greater public education and outreach on well testing in Southwest Nebraska.

Furthermore, when asked about their confidence in testing, nearly two-thirds of participants reported feeling only “somewhat” or “not at all” confident. Despite this, concern for water quality was high, with two-thirds responding that they were at least “somewhat” to “extremely” concerned about the safety of their drinking water.

How confident are you that you know how and when to test your well?



How concerned are you about the quality and safety of your well water?



All together, the survey results suggest that while well owners care about water safety, many lack the knowledge or confidence to take action. In fiscal year 2026, SWNPHD plans to continue promoting testing and treatment awareness through a dedicated webpage and social media campaigns. Ongoing distribution of paper test strips will allow for continued outreach and data collection to better serve the community.

Citations

State of Nebraska Department of Natural Resources. (April 1, 2025) Summary of non-Abandoned Registered Wells First Quarter 2025. <https://dnr.nebraska.gov/sites/default/files/doc/ground-water/reports/2025/SummarynonAbandonedRegisteredWellsFirstQuarter2025.pdf>

University of Nebraska Lincoln, Environmental Quality and and Communities Research Lab. (2025) Water Quality + Citizen Science. https://eqclab.unl.edu/water-quality-citizen-science/?fbclid=IwY2xjawJiY9JleHRuA2FlbQlxMAABHuAjk5MaGPLFjzmabcVblHJ7hua6V-RJs80Prkn47Cs_hpNFLh69emM617ck_aem_3b_bXWibZpthGNRZDbPvww

United States Environmental Protection Agency. (June 2025) National Primary Drinking Water Regulations. <https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations>