

Many North Dakotans use private wells for their source of drinking water. Well owners are responsible for ensuring that their well water is safe to drink.

Why should I test my well water?

Unlike community water systems that must ensure they provide safe drinking water to consumers, private well owners are responsible for ensuring that their well water is safe to drink. Testing a water sample from a new or existing well will confirm the safety and quality of the water for drinking. Well water can be contaminated by both naturally occurring sources and human activities.

How often should I test my well water?

Avoid drinking well water until it is confirmed to be free of any contamination. There are several instances when testing well water is advised:

- Following well installation and before the well is placed into service
- Following significant periods of non-use
- Upon purchase of a home with a drinking water well
- After flooding events
- If contamination is suspected or a change in quality is noticed
- At regular intervals to maintain confidence in water quality

What should I test for?

A typical private well water analysis includes a bacterial test, general chemistry (mineralogical) analysis, and nitrate test. A trace metal analysis or arsenic analysis may also be of interest. Targeted analyses for specific contaminants are often available.

Where can I get my well water tested?

Several laboratories around the state will test well water for chemical and/or bacterial contamination. Contact your local lab for pricing and test availability. Analysis suites vary by lab. For assistance locating a lab, contact the North Dakota Department of Environmental Quality.

What materials do I need to test my water?

Laboratories often will provide kits and instructions for collecting water samples. Follow any lab-specific instructions, especially regarding sample preservation and how soon the sample needs to be tested at the lab following collection. Some laboratories may be able to send a staff member to sample your well; however, they generally charge for sampling services.

Where should I collect a water sample from?

Collect a water sample from a tap before the water goes through any household water treatment system to analyze the quality of your raw water source. Collect a sample from a tap after water goes through a household water treatment system to analyze the treated water quality. We recommend collecting samples both before and after treatment (if used).



What do my sample results mean?

The table below provides commonly measured analytes in private well drinking water tests. Maximum recommended concentrations are listed. The values provided are for public drinking water supplies and do not apply to private well owners, though they can be used as guidelines to assess well water quality.

| Common Water Test Analyte | Recommended Concentration | Notes |
|-------------------------------------|------------------------------|---|
| Total Dissolved Solids (TDS) | < 500 mg/L (S) | The sum of all dissolved minerals in the water. Water over 500 mg/L is drinkable, though it may deteriorate plumbing. |
| Hardness | Not Established | Result of the presence of calcium and magnesium. Hard water (>120 mg/L) may form a scale on surfaces and decrease the effectiveness of soap. |
| Alkalinity | Not Established | The capacity of water to neutralize acids. Not detrimental to humans, but may correlate with high pH or TDS. |
| Iron (Fe) | < 0.3 mg/L (S) | Common metals found in North Dakota groundwater. Water exceeding the recommended concentrations may have a metallic taste or odor and leave discoloration on fabrics, fixtures, or surfaces. |
| Manganese (Mn) | < 0.05 mg/L (S) | |
| Sodium (Na) | < 20 - 200 mg/L | An important and natural component in water. The American Heart Association recommends that people with heart or kidney conditions should not drink water with sodium concentrations above 20 mg/L. The World Health Organization suggests that water should have less than 200 mg/L sodium for optimal taste. |
| Sulfate (SO₄) | < 250 mg/L (S) | High concentrations may have a laxative effect on individuals, an odor, or leave scales on surfaces. |
| Chloride (Cl) | < 250 mg/L (S) | High concentrations may negatively impact taste or be corrosive to pipes and plumbing fixtures. |
| Fluoride (F) | < 2 mg/L (S) | Optimal concentration (1.2 mg/L) helps limit tooth decay. |
| pH | Good between 6.5 and 8.5 (S) | Indicates if water is acidic or alkaline (basic). Acidic waters below pH 6 may be corrosive to pipes. Alkaline waters above pH 8.5 may have a bitter taste. |
| Nitrate (NO₃) | < 10 mg/L as N (MCL) | High concentrations are dangerous for infants and normally indicate contamination of the water supply. Elevated levels of nitrate often originate from feedlots, septic systems, or fertilized croplands. |
| Arsenic (As) | < 10 µg/L (MCL) | Naturally occurring and common in North Dakota groundwater. May have adverse health effects. |
| Total Coliform Bacteria | None | Human and animal wastes are common sources of bacteria in water. Coliform bacteria are widespread and not all types are harmful. However, the detection of any may indicate potentially disease-causing <i>E. coli</i> is present and further testing may be needed. Shock chlorination can be used to disinfect a well that has bacterial contamination. A detailed guide for proper well disinfection can be found on our website (deq.nd.gov/flood). |

MCL - Maximum contaminant level allowed in public water systems to minimize health risks. S - Secondary regulation set to provide thresholds before adverse aesthetic, taste, or odor effects are noticed.

Where can I get more information?

Links to publications with more information about private well testing, water quality constituents of concern in North Dakota, and interpreting your water test results can be found on our website at deq.nd.gov/wq/1_groundwater/.