

In North Dakota, private well owners are responsible for ensuring that their water supply wells are properly constructed.

What do I need to drill a well in North Dakota?

Know if you need a permit.

If your well will draw over 12.5 acre-feet (4,073,000 gallons) of water per year, it needs to be permitted by the North Dakota State Water Commission (swc.nd.gov | 701-328-2750). A permit is not needed for wells that draw less than 12.5 acre-feet per year.

Know your water needs.

Determine the use of the well water and estimate your daily water use, accounting for peak usage times. These may affect well construction such as pump sizing and whether a particular groundwater source is adequate in quantity or quality for your needs.

Know who can install your well.

Anyone who is hired to construct, install, or repair a well, pump, or pitless unit must be licensed by the State Board of Water Well Contractors. The Board maintains a list of licensed contractors (bwwc.nd.gov | 701-328-2754). Individuals may install or repair wells on their own property without licensure from the Board, but hiring a licensed contractor is recommended.

Know if groundwater is a viable water source in your area.

Some areas of North Dakota do not have easily accessible groundwater or the groundwater is not of high enough quality for drinking and home use. Check with local well contractors to get estimates of the costs required to install a well on your property and of any potentially necessary treatment systems. Consider these costs in comparison to hooking your house up to a rural water system if one is available in your region.

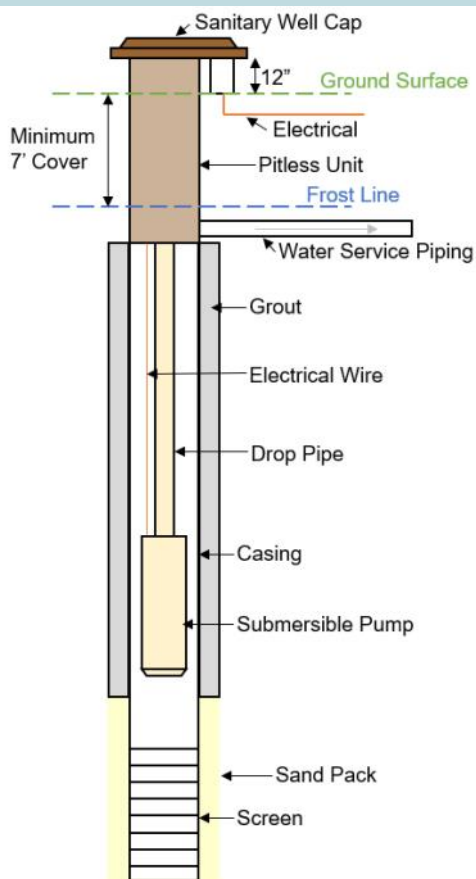
Where should my well be located?

To reduce the risk of contamination to a well, the North Dakota provides guidelines for locating wells. Well locations should be:

- On high ground
- At least 50 feet from septic tanks, absorption fields, privy pits, barnyards, and feedlots
- At least 50 feet from the high water mark of lakes, streams, sloughs, or ponds
- At least 30 feet from sewer lines and 20 feet from overhead power lines
- At least 10 feet from basements or pits and 2 feet from eaves of buildings
- Outside of basements, pits, or other below-ground spaces
- Reasonably accessible for repair, cleaning, testing, or inspection

Be mindful of other nearby contaminant sources including waste disposal sites, fuel storage sites, and fertilizer or pesticide storage or mixing sites.





How should my well be constructed?

Details on well construction can be obtained by contacting a local well contractor or by reviewing North Dakota Administrative Code 33.1-18-01 (Water Well Construction and Water Well Pump Installation). Basic well construction and terms are summarized below and in the diagram to the left.

- **Casing** - Pipe installed into a drilled hole to provide access to the aquifer.
- **Screen** - A slotted opening at the bottom of the casing where water enters the well from the aquifer.
- **Grout** - Provides a watertight seal between the well casing and surrounding materials.
- **Pitless unit** - A factory-assembled unit that includes the well cap, prevents contaminants from entering the well near the surface, conducts water from below the frost line to prevent freezing, and provides access to the well's interior components such as the pump.

Wells in North Dakota have been constructed using several different methods. Wells can be driven, drilled, or dug.

- **Drilled wells** are the most common well type and are the least susceptible to contamination. Drilled wells can be both shallow or deep. They are often constructed by using a rotary drill bit and circulating drilling fluids to bring drill cuttings to the surface. A screen and casing is set in the drilled hole. A sand pack is installed between the screen and the aquifer. The space between the casing and the drill hole is grouted to prevent water from moving in this space. Most water supply wells are 4 or 5 inches in diameter and have metal or plastic casing.
- **Driven wells** (also known as sand-point wells) are installed by driving lengths of small diameter (less than two inches) pipe headed by a screened drive point into the ground. These wells are difficult to drive to depths over 30 feet and consequently are limited to areas with sandy soil and a shallow water table. As a result of their shallow depth, they are more susceptible to contamination and are not recommended for drinking water use.
- **Dug wells** are characterized by their large diameter (often greater than 18 inches) and are often shallow as a result of their hand-dug nature. They are at the highest risk for contamination because they are shallow and are at risk of animals or debris falling into the well. Installation of new dug wells is not recommended.



Where can I get more information?

The North Dakota Department of Environmental Quality
Groundwater Protection Program
deq.nd.gov/wQ/1_Groundwater/

North Dakota State Water Commission
swc.nd.gov

North Dakota State University
Extension
www.ag.ndsu.edu/publications/environment-natural-resources

Well Owner Resources
www.wellowner.org

Feel free to use this information, but please credit the North Dakota Department of Environmental Quality.