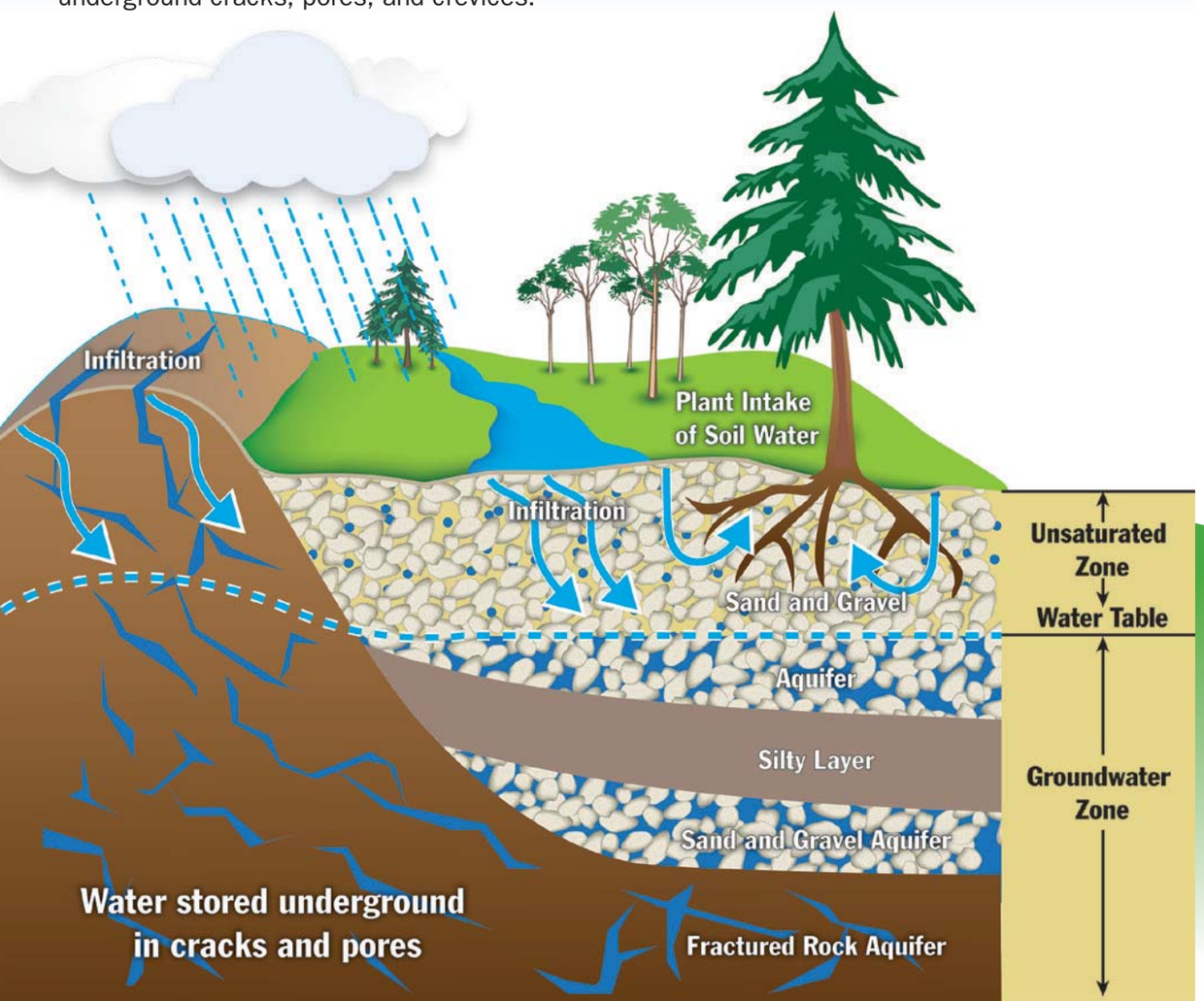
# Groundwater basics

A well is supplied with water from an underground water source known as groundwater. Groundwater is stored below the surface of the earth in aquifers, often between sediments and in bedrock fractures. It accumulates from surface water and precipitation – including rain and snow melt – infiltrating the earth and filling underground cracks, pores, and crevices.

There are good sources of information on groundwater in your area, such as water well records on file with the Department of Environment and Conservation, Water Resources Management Division. Before purchasing a rural property, you should always check surrounding water well records and ask for water quality results.




"We promote the protection and conservation of our water."

## Department of Environment and Conservation Offices


**St. John's Headquarters**
4th Floor Confederation Building
West Block • Phone: 709.729.2563

**Grand Falls - Windsor Regional Office**
Provincial Building
3 Cromer Avenue • Phone: 709.292.4997

**Corner Brook Regional Office**
9th Floor Sir Richard Squires Building
84 Mount Bernard Ave. • Phone: 709.637.2431

**Happy Valley - Goose Bay Regional Office**
2 Tenth Street • Phone: 709.896.5542

**email: water@gov.nl.ca**
**Web: www.gov.nl.ca/env/waterres**


Newfoundland Labrador
Environment and Conservation

WHAT YOU NEED TO KNOW

# groundwater WELLS

## Well Basics: Placement and Construction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# Household water use

It is important to know how much water your household will need. In Canada, an average household with indoor plumbing uses 300 to 450 litres of water a day per person. A normal water well can fulfill this requirement for a family residence by producing about 5 litres per minute. Household water use depends on family size, lifestyle, lawn and garden watering, water conservation practices, etc. If your drinking water well produces less than 5 litres per minute, you must implement water conservation practices to ensure your water supply is sustainable.

# Types of water wells

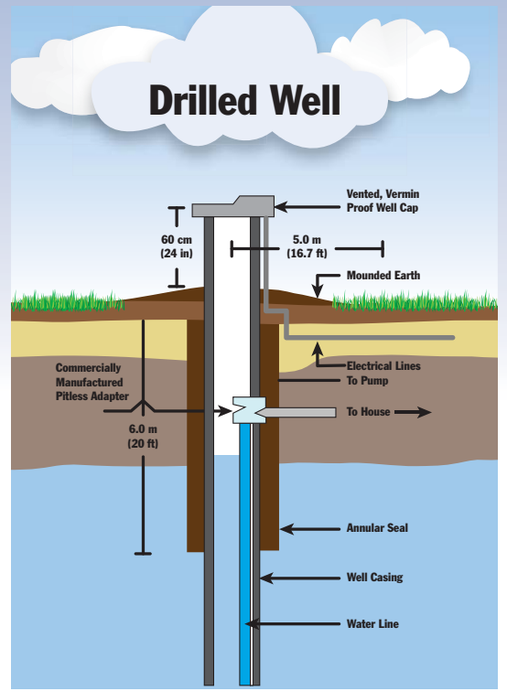
There are two main types of water wells found in Newfoundland and Labrador: dug (or shallow) wells, and drilled wells.

- Dug wells provide a cheap and low-tech method of accessing groundwater resources; however, the disadvantages associated with dug wells are numerous.
- In general, dug wells are less reliable than drilled wells and are much more vulnerable to contamination.
- Dug wells are typically 3.7 to 7.6 metres (m) deep and have a diameter of about 1m. They are typically excavated by shovel or backhoe.
- Drilled wells obtain water from deep groundwater aquifers and are typically about 45m deep and have a diameter of 15 centimetres.

# Locating a well

Location plays an important role when planning a new well.

- A water well should not be placed just anywhere on a property.
- Wells and well-related equipment must be sited such that they are easily accessed at all times for cleaning, treatment, repair, testing, and visual examination.




- Always hire a well driller licensed by the Department when installing a water well.
- All drillers who construct water wells are required to follow design and construction standards, which include minimum separation distances from potential sources of contamination. A well must be located at least 16m from a septic tank and leach field.
- Anyone constructing a drilled well is required to submit a well completion report describing the well design, construction, and yield, as well as its location and a description of the geology encountered.

# Well construction

A properly constructed water well forms an effective barrier against surface run-off that may enter and contaminate the well.

- New wells should be lined with a watertight steel casing designed to prevent the walls of the well from collapsing.
- Well casing must be of sufficient length below ground to keep contaminants out of the well water, and must extend above the surface (never bury your well).
- The earth surrounding a wellhead should slope away from the well as a further precaution against contaminants.
- When a well is drilled, the hole in the ground is bigger than the well casing. The resulting gap – known as the annular space – must be filled with a watertight sealant, such as bentonite grout, which does not shrink or crack under the ground.
- Your well must extend above the surface at least 0.4 m and must be capped with a commercially manufactured vermin-proof well cap.
- Vermin-proof caps prevent entry of foreign material such as vermin, insects, and decaying plant material.