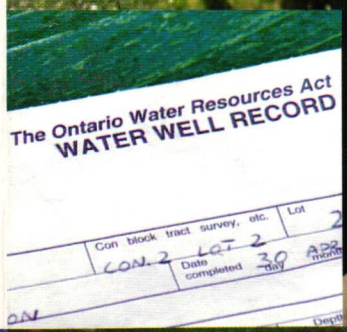
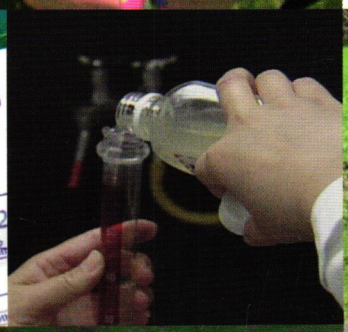
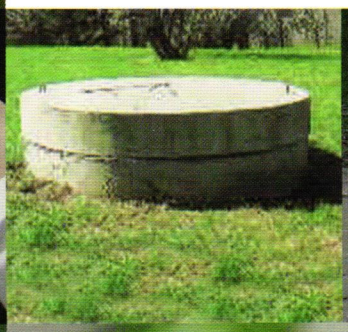
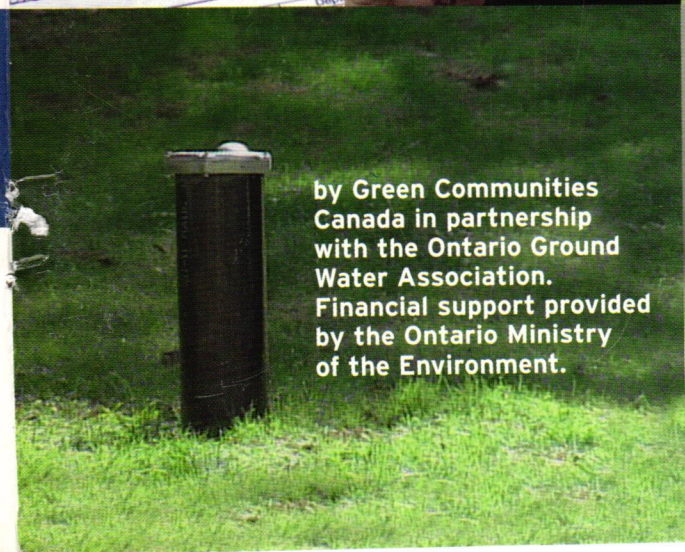
Well Aware

A guide to caring for your well and protecting your family's health.









by Green Communities Canada in partnership with the Ontario Ground Water Association. Financial support provided by the Ontario Ministry of the Environment.

Well Aware

Contents

Be well aware 1

***Well* Life Cycle**

- **Groundwater basics** 2
- **Well location** 4
- **Well construction** 6
- **Upgrading your well** 8
- **Well plugging and sealing** 10

***Well* Maintenance**

- **Protecting your well water** 11
- **Well inspection** 15

***Water* Quality**

- **Possible contaminants** 17
- **Water testing** 19
- **Bacterial contamination** 21
- **Treatment systems** 24

Hiring a contractor 26

Your well records 27

Resources 27

Water quality testing diary 29

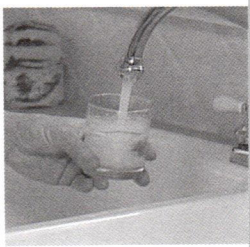
Well maintenance diary 30

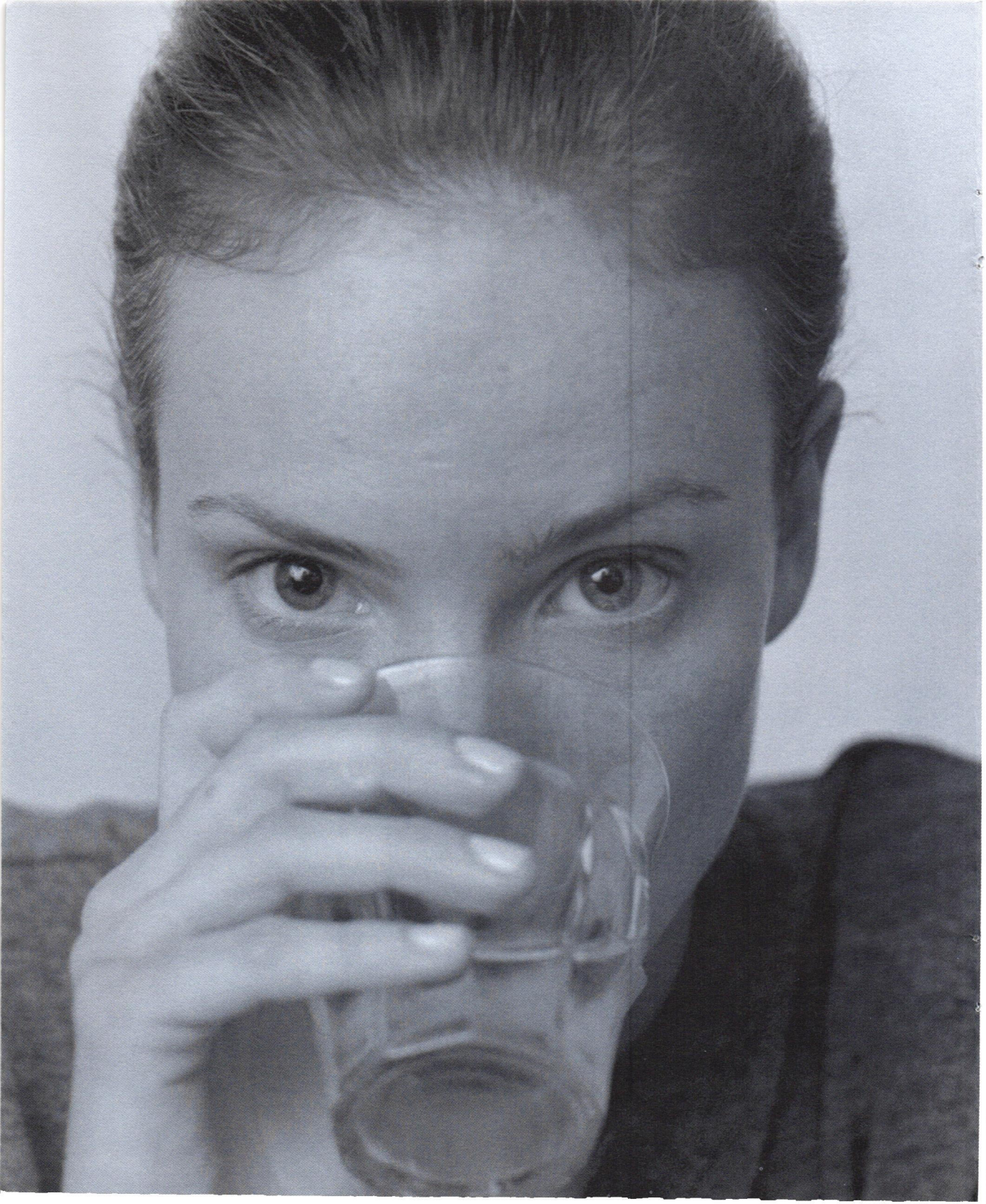
The *Well Aware* booklet was compiled by Green Communities Canada, in partnership with the Ontario Ground Water Association. Project editor: Clifford Maynes. Design: Creative Feats Inc., Stratford.

Thanks to representatives of the Ontario Ground Water Association, Ministry of the Environment, Green Communities Canada, Canadian Institute of Public Health Inspectors (Ontario Branch, Inc.), Association of Supervisors of Public Health Inspectors of Ontario, and the Ontario Federation of Agriculture for comments and suggestions. Special thanks for permission to use materials from: *Best Management Practices: Water Wells*, Agriculture and Agri-Food Canada, and the Ontario Ministry of Agriculture and Food; the *Well Aware* video, the *Well Aware* Video Working Group; and *How Well is Your Well*, Canadian Institute of Public Health Inspectors (Ontario Branch, Inc.). All responsibility for content rests with GCC.

Funding provided by the Ontario Ministry of the Environment.

Order bulk copies from: Green Communities Canada, Box 928, Peterborough, ON K9J 7A5, (705) 745-7479, info@wellaware.ca **See:** www.greencommunitiescanada.org





Be *well aware*

Your family's health *depends* on it!

Your well taps into one of nature's treasures – cool, clean groundwater.

You and your family depend on this precious resource every day for cooking, washing, and a continuous supply of safe drinking water.

About this booklet

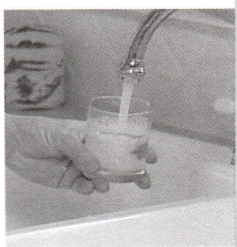
As a private water well owner, it is your job to be well aware — to understand the basics of well maintenance and operation, and to take the necessary actions to keep your water wells in safe running order. This booklet is a guide to caring for your wells.

To improve your working knowledge of wells and the **well life cycle**, read the sections on groundwater and well location, construction, upgrading, and proper plugging and sealing of unused wells.

For an outline of your ongoing responsibilities as a well owner, read the sections on **well maintenance**, including well water protection and pollution prevention. An inspection and maintenance routine is recommended for every well on your property.

For a better understanding of **well water quality** issues and what to do about them, read the sections on groundwater basics, potential water contaminants, testing, remedies, and treatment systems.

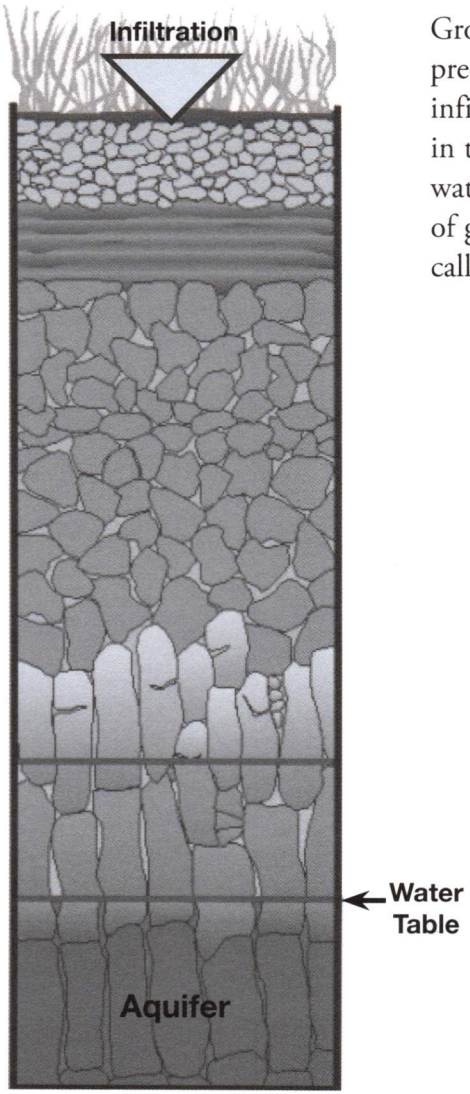
The back of the booklet includes information about **hiring contractors** and using your **well records**. Further **resources** and contacts are listed. And handy **diaries for water testing and well maintenance** are included.



It's the law. REGULATION 903 of the Ontario Water Resources Act sets out your obligations as a well owner under Ontario law.

Groundwater basics

Your well gets its water from an underground water source called groundwater.



Saturated layers below the water table that transmit significant quantities of groundwater are called aquifers. Credit: *BMP: Water Wells*

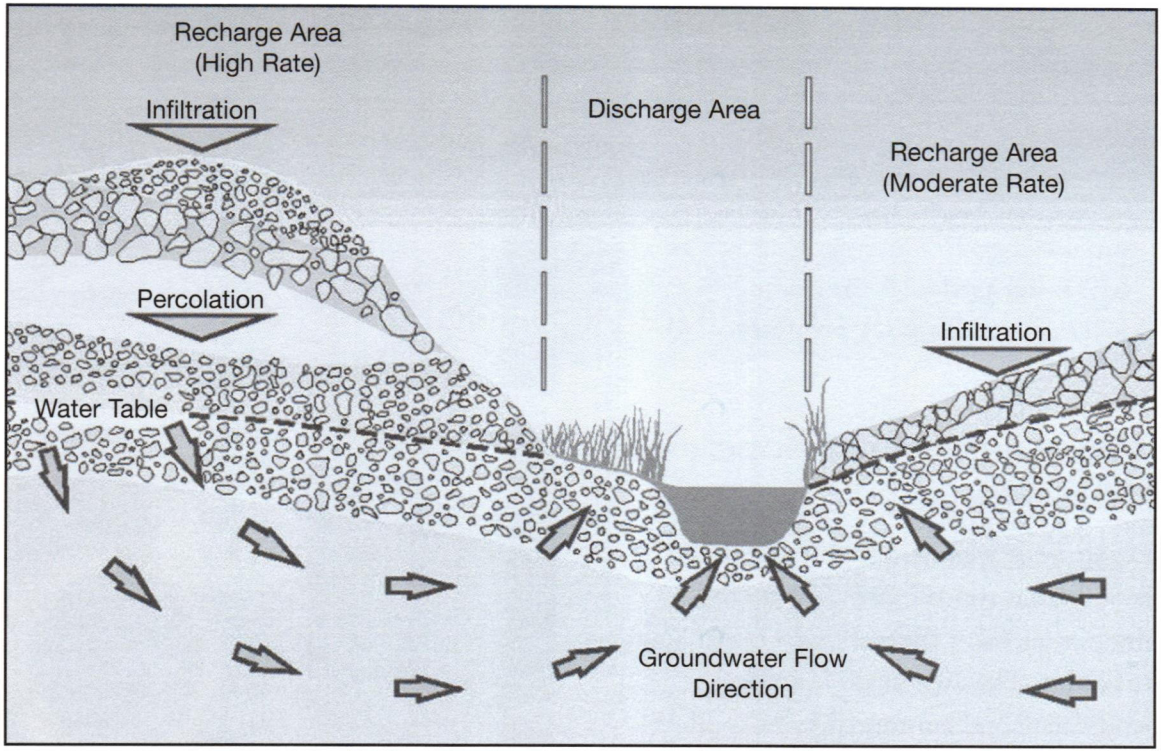
Groundwater originates from surface water and precipitation, including rain and melting snow, that has infiltrated the earth, filling the cracks and open spaces in the rocks and the soil. Saturated layers below the water table that store and transmit significant quantities of groundwater – i.e., enough to supply a well – are called *aquifers*.

Keeping it clean

Surface spills of contaminants like fuel can infiltrate the soil and contaminate groundwater. The risk of contamination is greatest where the ground surface is highly water permeable, e.g., in areas with coarse soils or fractured bedrock at or near the surface.

Groundwater can also be contaminated by underground sources, such as leaking fuel storage tanks or malfunctioning septic systems. Poorly constructed or deteriorating wells can act as a direct pipeline for surface pollutants to contaminate the aquifer. Unused and unmaintained wells are a special concern if they haven't been safely plugged and sealed.

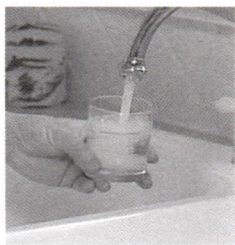
Depending on the type of soil or rock, groundwater may be filtered and very clean. But once an aquifer is contaminated, it can take a very long time to recover, if ever.



Compared to surface water, groundwater usually moves very slowly – from a few millimetres to a few metres a day. Groundwater affects the quality and quantity of surface water where it discharges into streams, rivers, wetlands, and lakes. Credit: *BMP: Water Wells*

Groundwater *flows*

It is impossible to determine the exact direction of groundwater flow based on surface features alone. However, we know that water in the aquifer near a pumping well will flow toward the well.



The danger to your well of groundwater contamination is greatest when the contaminant source is close to your well. However, on rare occasions contaminants have been known to spread over several kilometres.