



Conservation
ONTARIO
Natural Champions

HIGHLY VULNERABLE AREAS

What are Highly Vulnerable Areas?

In addition to protecting wellheads and surface water intakes, the *Clean Water Act, 2006* recognizes the importance of protecting two other highly vulnerable areas: *significant recharge areas* and *highly vulnerable aquifers*.



Photo by H.Sellers

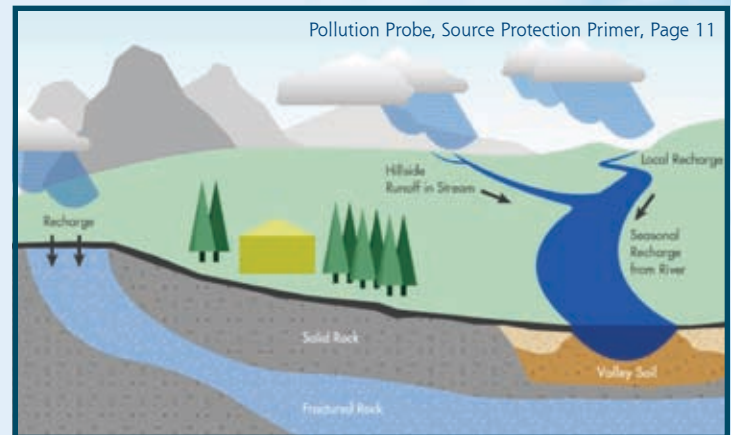
The Oak Ridges Moraine is a good example of a significant recharge area.

Significant Recharge Areas

An aquifer is an area of soil or rock under the ground that has many cracks and spaces and has the ability to store water. Water that seeps into an aquifer is called *recharge*. Much of the natural recharge of an aquifer comes from rain and melting snow.

The land area where the rain or snow seeps down into an aquifer is called a *recharge area*. Recharge areas often have loose or permeable soil, such as sand or gravel, which allows the water to seep easily into the ground. Areas with shallow fractured bedrock are also often recharge areas.

A recharge area is considered significant when it helps maintain the water level in an aquifer that supplies a community with drinking water. Under the *Clean Water Act, 2006*, it may also be considered significant if it plays a necessary role in recharging cold water streams that some kinds of fish need to live.



The land area where rain or snow seeps underground into an aquifer is called a **recharge area**.

Highly Vulnerable Aquifers

Aquifers are areas of soil or rock under the ground where cracks and spaces allow water to pool. They are considered highly vulnerable based on a number of factors, including how deep it is underground, what sort of soil or rock is covering it and the characteristics of the soil or rock surrounding it. Soil or rock that has many

large cracks and spaces, and is looser rather than more compact, determines how easy and how quickly it is for water to flow into an aquifer. The faster water is able to flow through the ground to an aquifer, the more vulnerable it is to contamination.

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Why do

Highly Vulnerable Areas Need Protection ?

In addition to rain and melting snow seeping into the ground to recharge an aquifer, pollutants can also seep into the ground, contaminate the groundwater in an aquifer and therefore contaminate the water in a drinking water well. Protecting *highly vulnerable areas* such as *significant recharge areas* and *highly vulnerable aquifers* is a good way to prevent municipal drinking water from becoming polluted.

Much can be done to prevent contamination of *highly vulnerable areas*. Under the Clean Water Act, 2006 local Source Protection Committees will develop plans for protecting *significant recharge areas* and *highly vulnerable aquifers*. They will look at potential sources of contamination in their area and what needs to be done to manage existing and future land and water uses that pose a threat. Protecting *highly vulnerable areas* ensures a healthy supply of water now and in the future.



Photo by H.Sellers

What are

Potential Sources of Contamination in Highly Vulnerable Areas ?

Pollutants from a variety of activities on the land can seep into the ground and move toward a *significant recharge area* or *highly vulnerable aquifer*. Examples of activities that could negatively affect groundwater if not managed properly include:

- Chemical storage
- Accidental spills of hazardous materials
- Spreading of sewage treatment sludge
- Septic systems
- Storage and spreading of road salt
- Underground storage tanks
- Animal feedlots
- Underground pipelines or sewers
- Use and spilling of fertilizers and pesticides
- Landfills
- Private wells and abandoned wells

What are

the Benefits of Protecting Highly Vulnerable Areas ?

A very clear benefit of protecting *highly vulnerable areas* is preventing drinking water contamination. It costs a lot less to protect water in the first place than to clean it up after it has been contaminated. Other benefits include:

- Protecting public health
- Ensuring a long-term supply of clean water
- Not having to drill new wells when old ones become contaminated
- Ensuring a positive climate for economic growth
- Reducing the cost of water treatment



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What can

You do to Protect Highly Vulnerable Areas ?

To find out if you live near a *significant recharge area* or *highly vulnerable aquifer*, contact your local conservation authority. You can find out which conservation authority you live in at www.conservation-ontario.on.ca.

Even if you don't live near one of these *highly vulnerable areas* it is important to take steps to protect groundwater. Everything is connected through the water cycle and it is important to remember everyone lives downstream. What you do today can affect local water quality. These are some of the things you can do to protect your *highly vulnerable areas*:

1

Conserve water. Not only is conserving water helpful to maintaining a constant supply of drinking water, too little water in a source can mean contaminants are more concentrated and, therefore, may be above acceptable levels.

2

Dispose of hazardous waste properly. Take unused paints, cleaners, pesticides, and medical prescriptions to your local hazardous waste facility. Take used engine oil to recycling facilities. Use drop cloths or tarps when working with hazardous materials such as paints, driveway sealers or wood stain to prevent spills from leaking into the ground. If a spill occurs, clean it up with an absorbent material such as kitty litter or sawdust and scoop the contaminant into a container.

3

Use non-toxic products for cleaning and environmentally-friendly soaps, shampoos and personal care products. Remember that what you use in your house goes back down your drain.

4

Clean up pet waste which contains nutrients and pathogens that can run into storm sewers during a rain storm.

5

Prevent pollutants from entering into runoff by reducing or eliminating the use of pesticides, fertilizers, sidewalk salts and by not over-watering your lawn. If you run an agricultural operation and haven't already, consider developing and implementing a Nutrient Management Plan.

6

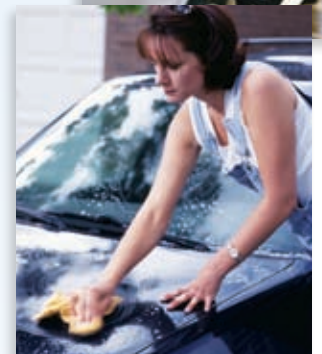
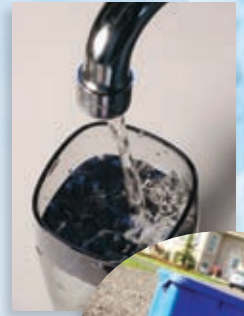
Take care when refueling gas tanks for cars, lawn mowers, chainsaws, weed trimmers, tractors or other machinery to avoid spilling fuel on the ground. Also take care when changing engine oil. One litre of gas or oil can contaminate a million litres of groundwater.

7

Take your car to commercial car washes designed to prevent pollutant runoff from entering storm sewers. Use commercial car washes that use water efficient sprays, reducing their water consumption.

8

Stay informed and get involved in your local source protection process. To find a Drinking Water Source Protection Planning Region or Area near you go to www.conservation-ontario.on.ca



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Some additional ways to protect *highly vulnerable areas* for those who live on rural properties include:

1

Keep your septic system in proper working order and empty the tank regularly.

2

Protect and maintain your private well. Wells provide pathways for contaminants to enter the groundwater. If you have a well, be sure it is sealed properly and if you own a well you no longer use, have it properly decommissioned by a licensed well technician. Test your well water regularly to ensure the water is safe to drink.

3

Manage animal waste on farms to prevent water contamination. If you operate a farm, contact your local Ontario Soil and Crop Improvement Association (OSCIA) at www.ontariosoilcrop.org or your local conservation authority at www.conservation-ontario.on.ca for information about workshops you can take to assist you in developing an Environmental Farm Plan (EFP) for your farm business.

4

Manage livestock grazing. Overgrazing exposes soil and increases erosion.

5

Protect the vegetation along the banks of ponds, streams and lakes to help control erosion, provide food for aquatic life, and maintain cooler water temperatures necessary for some species of fish.

For More Information on Highly Vulnerable Areas

Please contact your local Source Protection Region or Area:



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www.conservation-ontario.on.ca

For more information on the Source Protection Program, please visit the Ministry of the Environment's website:
www.ene.gov.on.ca/en/water/cleanwater/sourceprotection.php

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