

WELLHEAD PROTECTION PROGRAM

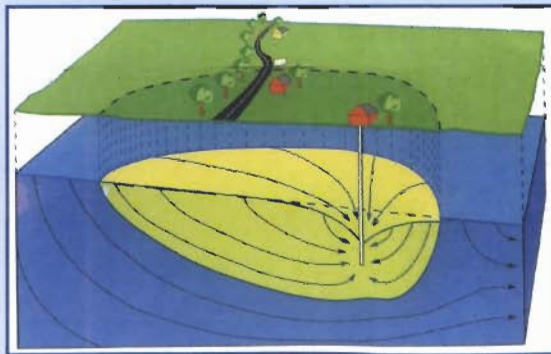
"The key to maintaining clean groundwater supplies is prevention"

The cost of removing contaminants from groundwater is extremely expensive and time consuming. In one particular case, cleaning up a leak in a gasoline storage tank near one community's wellfield required millions of dollars and up to five years to complete.

WHAT IS A WELLHEAD PROTECTION AREA (WHPA)?

A wellhead protection area is defined as the surface and subsurface area surrounding a well or wellfield (group of wells) that supplies a public water supply system. This is an area through which contaminants are likely to move toward and eventually reach a water well or wellfield.

The boundaries of these wellhead protection areas are located based on various factors such as well pumping rates, rate of groundwater movement, aquifer boundaries, and degree of water confinement. All of these characteristics have a direct effect on the likelihood and extent of well contamination.



HOW CAN YOU PROTECT A WELLHEAD AREA?

Step 1: Form a Planning Team

A planning team may vary in size and membership from one community to another, however, it is important that the planning team represents all interests in your community. If there are already existing groups in your community that have worked together successfully on local or provincial issues in the past it may be useful to build a planning team around them.



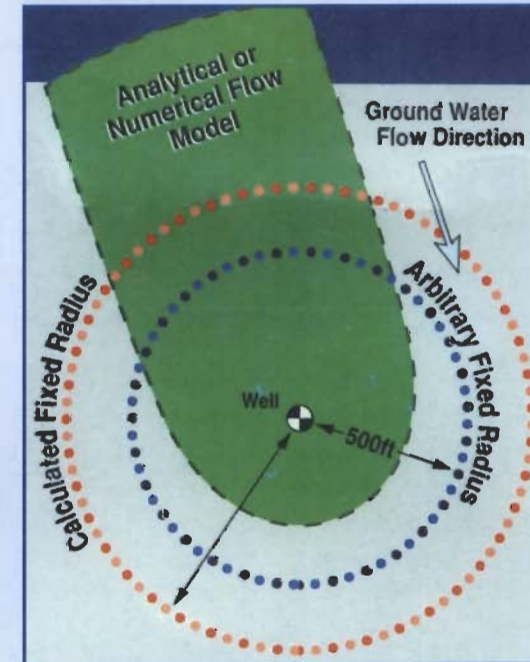
Consider including representatives from the following groups on your planning team: elected officials; representatives of provincial government agencies such as health, planning, and natural resources; local businesses; land developers; community service organizations such as the Legion, Rotary Club, or Lions Club; environmental groups; public interest groups; farmers; local volunteer fire department; and interested citizens.

Step 2: Delineate the Wellhead Protection Area

Once the planning team has been formed its first objective will be to delineate the land area that will need to be managed to protect your community's groundwater supply.

There are several different methods of delineating WHPAs. They range from drawing a circle with a specified radius, representing distance from a well, to using more detailed calculations or computer models. Deciding on which method to use will depend on the availability of existing information and the manpower or resources that can be applied to the project.

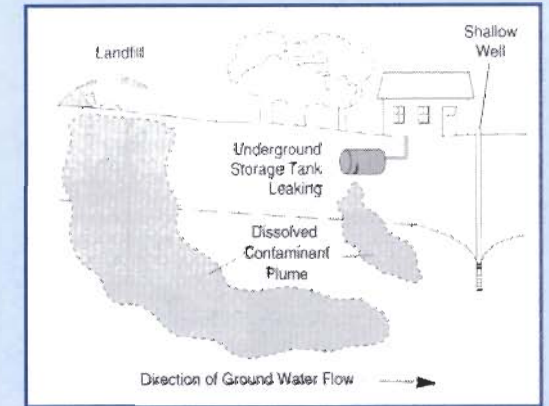
Maps of your area can be obtained from town council offices or Department of Natural Resources, Crown Lands Regional Offices. These maps should include detailed information on the natural surface and subsurface features of the area, and should show the location of all public water supply wells and other water bodies.



Step 3: Identify Potential Sources of Contamination

After the wellhead protection area has been mapped, you can begin to identify and locate the potential threats to the quality of your groundwater supply. Any pollutants that are released in your wellhead protection area have the potential to reach your well and contaminate your water supply.

Information on the potential sources of contamination can be obtained from visual inspection, from your local police or volunteer fire department (information on underground fuel storage tanks and hazardous materials storage), or from land use maps available from the Provincial Department of Natural Resources, Crown Lands Division.



A thorough inventory of potential contaminant sources must also include an evaluation of possible future land uses within the wellhead protection area. For example; it will enable you to determine the potential number of residential units (and septic systems) that can be constructed within the WHPA.

Certain contaminants can pose health risks even in very small quantities. For example; less than 1 gallon of gasoline can contaminate 1 million gallons of groundwater to the point that the well water is unusable for drinking purposes.

Step 4: Manage the Protection Area

The management of land uses within the wellhead protection area is the responsibility of local or municipal governments. This responsibility is an opportunity to preserve a resource critical to future growth and development. Wellhead protection area management methods can be divided into two main categories: regulatory and nonregulatory controls.

Regulatory Controls:

Local governments must have the statutory authority to adopt specific laws for groundwater protection. This authority helps to regulate human activities to protect the public health, safety, or general welfare. Local planners generally have many regulatory options to protect groundwater supplies. These include:

Zoning Regulations

- developing zoning regulations
- prohibiting various groundwater threatening uses
- issuing special/conditional use permits
- transferring development rights between users
- requiring registration of toxic and hazardous materials
- promoting cluster or planned unit development

Subdivision Regulations

- establishing drainage requirements
- limiting impervious surface areas such as parking lots, etc.

Environmental and Health Regulations

- regulating construction of underground fuel storage systems
- requiring septic system upgrading where necessary
- regulating toxic and hazardous materials handling
- protecting private wells

Nonregulatory Controls:

Nonregulatory controls are those that do not involve the regulation of private property. These controls are available to all municipal and local governments regardless of provincial legislation. They include:

- acquiring land through purchase, donations, and conservation easements within the wellhead protection areas
- establishing "best management practices" for forestry and agricultural activities
- carrying out public education programs on wellhead protection
- carrying out groundwater monitoring programs
- establishing joint agreements with abutting communities or government installations
- managing pumping rates and water withdrawals
- managing stormwater flow and artificial recharge

Each wellhead protection program will be unique. Often a combination of techniques may be more effective than any individual action. Developing a wellhead protection program is an ongoing process and new techniques can be added to supplement a program as needs, financing, or technologies change.

Step 5: Plan for the Future

Even with a comprehensive wellhead protection program, accidents can sometimes occur. For this reason, local governments need to be prepared in case of an accident or if the water supply becomes contaminated. In addition, communities should project water supply needs into the future and anticipate the need for new water supplies based on growth and water demand projections.

Be reasonable in your management approach. Don't propose more regulation than is necessary and be sure that your recommendations are supported by sound science, and not opinions.

Remember not to lose sight of your ultimate goal which is protection of your community's groundwater resource. To achieve this you will need the cooperation of a broad range of individuals and organizations. By protecting the quality of your groundwater you will ensure that good quality water is available for both present and future generations.

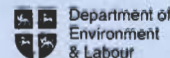
For more information on how to protect your groundwater resources contact:

**Water Resources Management Division
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PUBLIC GROUNDWATER SUPPLIES

WELLHEAD PROTECTION PROGRAM



This brochure outlines an easy-to-follow, five step process which communities and local service districts can follow to protect their public water supply wells.