

Ground Water Under the Influence: Part 1

Introduction to groundwater, the water cycle and threats to groundwater supplies

Throughout the winter season you may have noticed changes in the quality of your drinking water. If so, you are one of many who have experienced a marked difference in the color, taste and even odour of their water this season. Such events are common to those who rely on a well or spring as a water source. Whether you have done so for years or for just a short time it may leave you wondering: Just how safe is my water to drink? How can I protect the quality of my water? Does this mean I need to install a treatment system? Do I need to find a new water source or drill a new well?

The first step you can take is getting informed. You are your own best advocate. Understanding the basics of ground water, well maintenance and water quality can help you to be prepared. There are reliable trustworthy materials available from provincial and federal websites aimed at providing insight into guidelines and regulations for safe drinking water and source protection.

Understand where water comes from -

water is the single most recycled resource we have and we don't even have a hand in the process. Water falls as rain or snow to the earth where it replenishes surface waters such as lakes, rivers and oceans or provides much needed moisture to millions of square kilometres of forests, plains and their ecosystems. It is always on the move and when it is exposed to the atmosphere it evaporates and becomes part of the weather system to be rained down all over again. But how is groundwater part of this cycle?

Water that is absorbed into the earth percolates down through layers of soil or other sediment to rest in saturated ground – known as an *aquifer* and becomes groundwater. An aquifer can be likened to a sponge. As it soaks up and stores water, it insures that the surrounding area will have an available long-term water supply. Aquifers that are shallow and have an impermeable layer beneath them are referred to as '*unconfined*'. The upper level of the unconfined aquifer is subject to atmospheric pressure – this is the water table (see figure). Deep aquifers with

impermeable layers above and below are '*confined*' aquifers.

Water moving through an aquifer flows down into natural discharge points which include springs, lakes or rivers – often it is pumped for human use. Left to its natural cycle, discharge may take a few days or several hundred years. This in itself is the greatest reason why groundwater needs to be protected from:

1) *Contamination* - any contaminant that enters a groundwater source can remain there for years at highly concentrated levels near the point of pollution. Restoring groundwater can be time consuming and expensive—much more difficult than taking preventative measures in the first place.

2) *Over drafting* – refers to the removal of groundwater faster than it is being replenished – this is becoming more common in drier climates with densely packed soils and over developed areas. Depletion cannot be remedied.

In our next newsletter we will continue with the topic of groundwater and how it is influence by surface water. Until then check out the

websites below for more information:

Visit:

[BC Groundwater Stewardship](#)
[The Groundwater Foundation](#)
[Canadian Groundwater Association](#)

Glossary

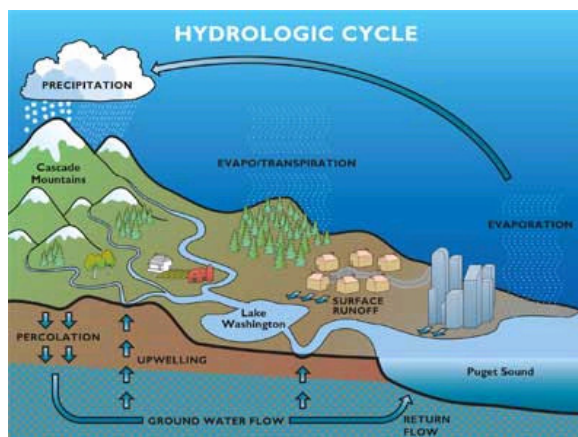
Ground water: refers to water below the surface of the ground and is found in the spaces between rocks and sediments. Ground water includes confined and unconfined aquifers.

Aquifer: an underground geological formation able to store and yield water.

Water Table: the top of an unconfined aquifer; indicates the level just below which soil and rock are saturated with water.

Over drafting: withdrawing more water than nature can put into an aquifer.

Impermeable layer: a layer of earth, such as clay or bedrock that water cannot pass through.



*Figure taken from www.kingcounty.gov/environment