

Notes 1.5 Water Underground

How Water Moves Underground

Water trickles down through particles of soil and the cracks and spaces in the layers of rock.

Effects of Different Materials

Different types of rock and soil have different sizes of spaces, or pores, between the particles. The larger the pores, the more easily water flows through the material. If the pores are interconnected, the ease of water flow increases.

Permeable materials are materials that allow water to flow through them.

Eventually water reaches layers of rock and soil that have few or no pore spaces, so they do not allow water to easily pass through them. This type of material is called impermeable.

Water Zones

Water collects at the top of an impermeable layer of soil and rock in a zone called the saturated zone. (It is saturated with water, meaning all the pores are filled with water.)

We call the top of the saturated zone the water table.

Above the water is an area in which some of the pores are filled with water, while others are filled with air. We call this area the unsaturated zone.

Bringing Up Groundwater

Aquifers

An underground layer of rock that holds water is called an aquifer.

Aquifers range in size from small patches to ones that are the size of several states.

The water in a aquifer is moving like a river underground. Water may stay in an aquifer for thousands of years before it makes it to the surface of the Earth.

Wells

Humans can access groundwater, by drilling a well below the water table.

Using Pumps

Pumping water from an aquifer can lower the water table. If more water is pumped out than replaced, the water table will become lower. This may require that the well be deepened.

Relying on Pressure

An artesian well, is a well in which the water rises to the surface due to pressure within the aquifer.

Spring and Geysers

Sometimes ground water reaches the surface naturally through cracks in the rocks. These springs usually contain water at normal temperatures.

Water sometimes reaches the surface as a fountain of boiling hot water and steam. Geysers form from heated water rising through cracks under great pressure. Pressure builds until the water and steam is released upward.