Down

1. Rain and snow are forms of this
2. Water below the surface of the earth
3. The process that water moves through the soil
5. When water changes from a liquid to a gas
6. Groundwater influences lake and stream levels and this
9. Water is pumped out of the ground through this

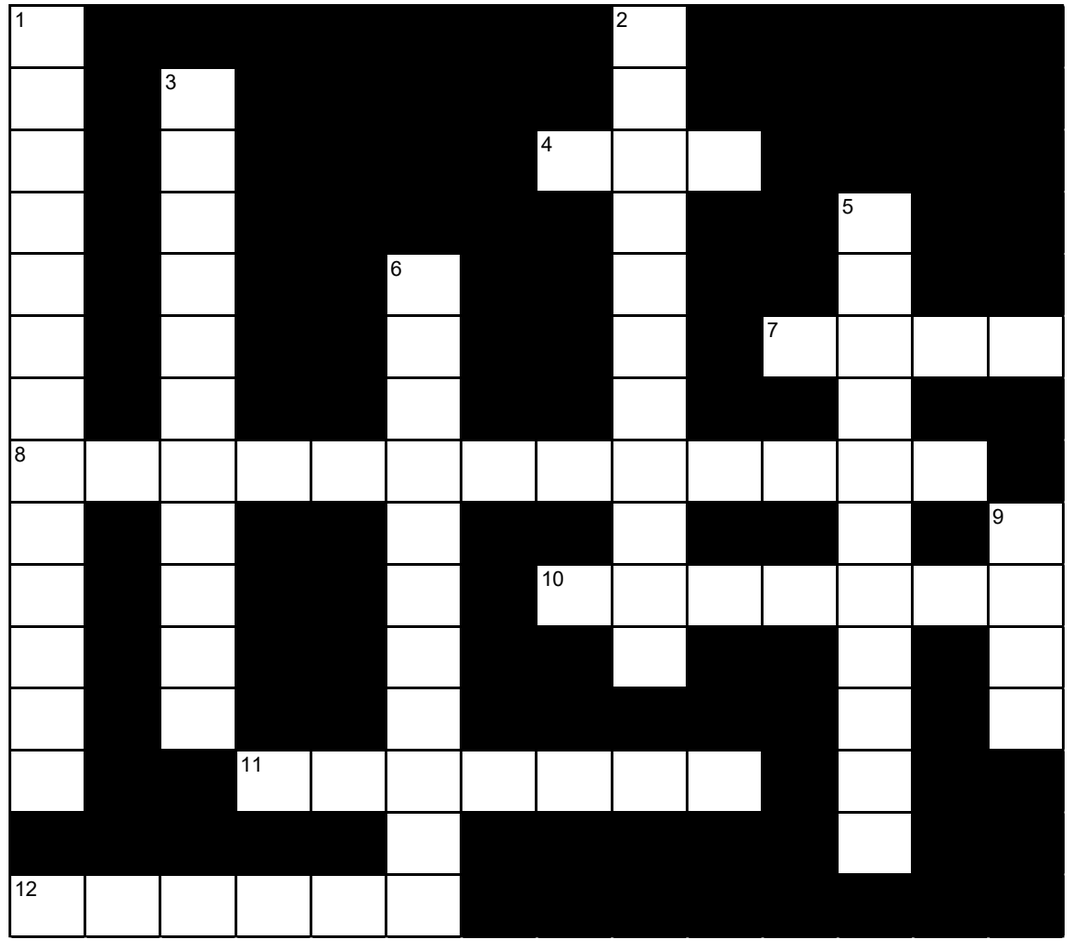
Across

4. If the water table is low, lake levels can be this
7. Where the land dips below the water table
8. Plants and animals, which consume water, release water vapor into the air through their pores and breathing
10. The type of lake with no inlet or outlet stream, whose main source of water is groundwater
11. Where all of the space between the grains of sand and water are completely filled with water
12. The high point in a water system where water flows from that point in one direction or the other

(Hint: Read the groundwater fact sheet.)

University of Wisconsin-Madison Extension Brown County
2019 Technology Way, Room 113
Green Bay, WI 54311
(920) 391-4616 / (920) 764-1915 or (920) 391-4663
patrick.nehring@wisc.edu or whitney.prestby@wisc.edu

Groundwater



UW-Madison Extension Brown County

Groundwater Fact Sheet

Water is present on the earth as a gas, a liquid, and a solid. Water is present in the air as a result of evaporation and transpiration. Evaporation takes place when water changes from a liquid into a gas as a result of being heated, like from the sun. Plants and animals, which consume water, release water vapor into the air through their pores and breathing. This process is called transpiration. The water in the air can be seen as clouds and fog. Clouds result when water vapor, water in a gaseous state, condenses into small droplets in the sky. As the water in the air condenses from a gas to a liquid, in falls to earth as precipitation. The most common forms of precipitation are rain and snow.

As the rain falls to the ground and the snow melts, primarily three things happen. Some of the water evaporates and returns to the sky as a gas. Some of the water is absorbed by plants. Some of the water flows downhill along the surface of the ground until it enters a body of water like a lake or stream. This is referred to as runoff. Some the water infiltrates or goes into the ground. Unlike runoff, the water that infiltrates the surface of the ground passes between the grains of sand and other particles in the soil or percolates through the soil. Through the percolation process, some of the impurities in the water become trapped in the soil.

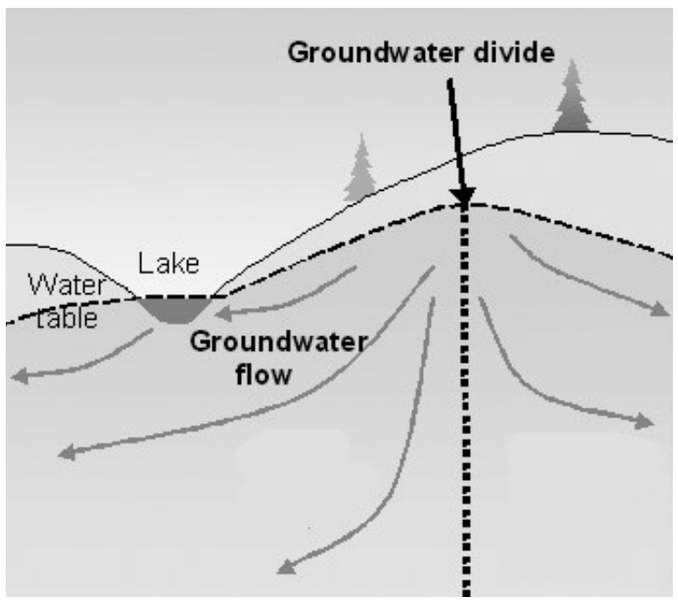


Diagram courtesy of the University of Wisconsin-Extension Lakes Program

Eventually, all of the space between the grains of sand and rock become completely filled with water. This area is called the aquifer. Aquifers in Wisconsin are either sand, gravel, sandstone, or fractured dolomite, limestone, or granite. The top of the aquifer or the level at which the ground becomes completely full of water is the water table.

Like runoff and streams above ground, groundwater always flows from high areas to low areas. There is no great underground river, instead the groundwater is constantly moving through the spaces between the grains of sand and cracks in the rocks. The highest point on the land, for example the top of a hill, is called a divide, because it is the place where water divides and flows in different directions. Similarly, a highpoint in the groundwater table is called a groundwater divide, because the groundwater flows from that point in one direction or the other. The groundwater divide and the movement of the groundwater is similar, but does not exactly match the movement of water on the surface.

Lakes are located where the land dips below the water table. A lake whose main source of water is groundwater with no inlet or outlet streams, is called a seepage lake. Water levels on seepage lakes can change substantially between winter and summer and year-to-year, because their water level is a reflection of the elevation of the water table. If the water table is low, lake levels can be low.

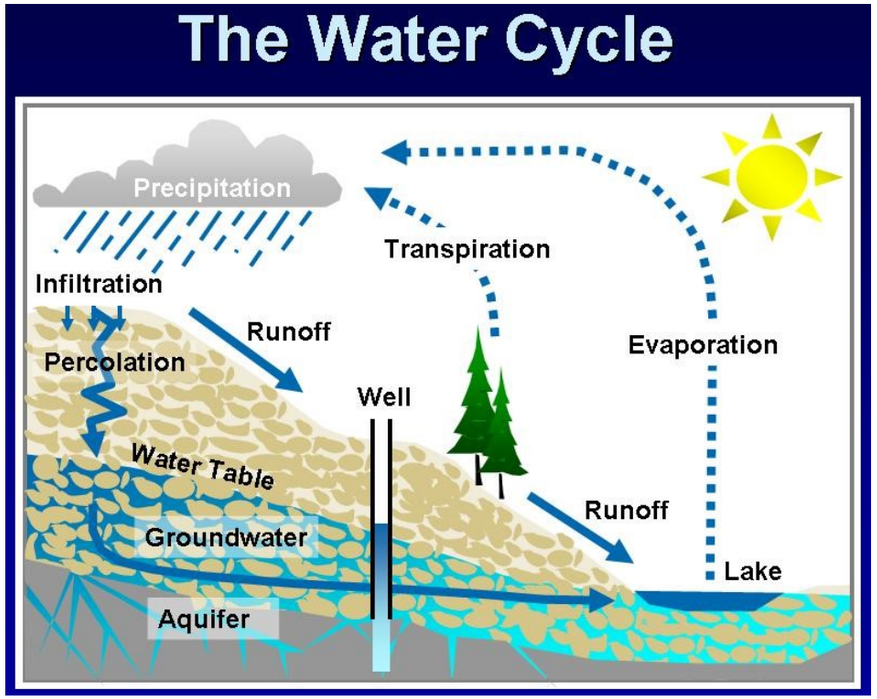


Diagram courtesy of the University of Wisconsin-Extension Central Wisconsin Groundwater Center

Another way that people come in contact with groundwater are through wells. A well is like a straw that has been inserted in to a milkshake. As water is brought to the surface, the water that is between the grains of sand and rock next to the well rushes in to fill the space of the water that was removed. This is why a number of small wells can have the same impact on the level of the groundwater table as on large well.

Groundwater is important. In addition to drinking water, groundwater is used to prepare food, like pasta and rice. Water is important to grow plants like apples, potatoes for potato chips, cotton for clothing, trees for houses. Water is an important part of manufacturing. Water is needed to make concrete and paper. The primary source of water used by towns villages, and cities in Wisconsin is groundwater. Groundwater is also important for recreation and wildlife. Groundwater influences lake and stream levels and temperature.