

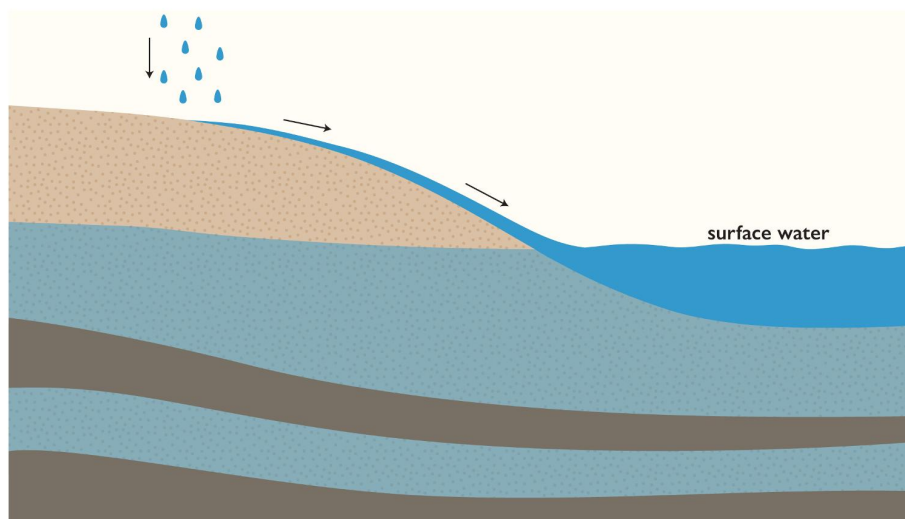


Mapping the Groundwater

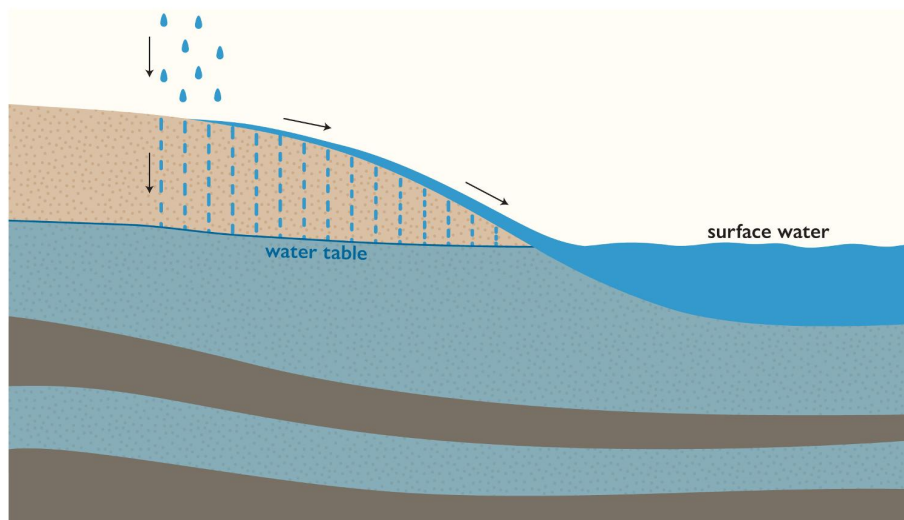
Rona Kobell

Groundwater is one of our most valuable resources. Half of this country's population gets drinking water from supplies under the ground. And many more rely on it to irrigate crops that provide the food we eat.

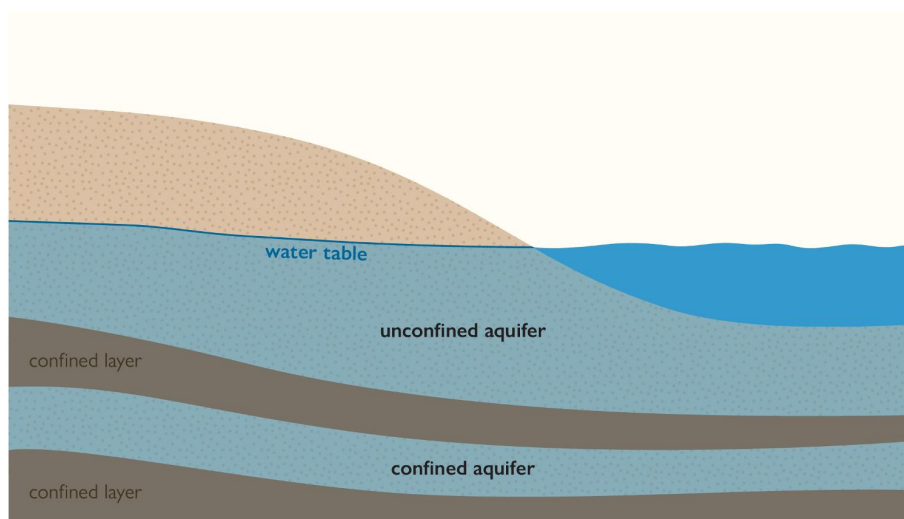
How does groundwater work?



When it rains, much of the water runs off the land and into streams. This is called **surface water**—it's all the water we see.



But some of the water hits the ground and seeps through the soil. That which is not taken up by plants sinks deeper, through porous sediments or cracks in rocks, to reach the **water table**—the top of a zone in which these openings are saturated with water, which started as raindrops.



Groundwater can accumulate in aquifers—underground layers of water-bearing permeable rock, rock fractures, or unconsolidated materials such as gravel, sand, or silt—that receive water from rain falling on the ground above.

It may sit in an aquifer for decades before it eventually flows out into surface water. Or, the water may be pumped from a well drilled by a town, homeowner, farmer, or business.

The upper surface of an **unconfined** aquifer, also called the water table, remains at atmospheric pressure, allowing it to rise and fall. A **confined** aquifer is an area below the land surface, with a layer of impermeable material both above and below it that places the water within it under pressure.

Groundwater issues

Concerns about groundwater relate to both quality and quantity: In an unconfined aquifer, groundwater can be more susceptible to contamination from fertilizers, septic tanks, and pharmaceuticals. In that case, communities may be forced to drill deeper wells into confined aquifers where contaminants are less likely to penetrate.

Increased demands due to population growth and farm irrigation puts pressure on water resources by extracting more water from aquifers than rainwater can naturally replace. In addition, saltwater intrusion from rising sea levels contaminates aquifers, making it more difficult to secure fresh water for drinking or irrigation.

Header image: Groundwater seep in Gambrill State Park on Catoctin Mountain in Frederick County, Maryland. Photo, J. Adam Frederick / MDSG

Graphics: Jenna Clark / MDSG

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