Aquifer Geology

Splash! Austin
Sheffield Education Center

Permeable Game

The ground beneath our feet might be rock, gravel, sand, or clay. Each type of particle has a different shape that makes different size spaces. Model these particles with the children's bodies.

1. Find a clear space, or move the desks to one side of the room.

2. Tell the students they are to become part of a model of a small piece of ground. First, the class will become gravel. Each piece of gravel is full of bumps and lumps, and so they are to stick out their arms, and move apart until they cannot touch each other. Chose three students to become water molecules. Ask them to move through the gravel to the other side of the room.

3. The next particle the class will model is sand. Sand is smaller, so students will put their hands on their hips with elbows out and move closer together. Pick another three students to move through the group as water molecules. Notice any difference?

4. Finally, the class becomes clay particles, very flat particles that lay against each other. Students cross their arms over their chests, and move within 5 inches of each other. Can the three water molecules find a way through the model of the clay ground?

5. Some water molecules may find a path only part way through the clay particles. How would this look in a real pot of clay?

Which aquifer would "recharge" or refill the quickest, one with gravel layers, one with sand layers, or one with clay layers?

Speed at Barton Springs

City scientists measured the time a special water dye took to travel through the aquifer from a recharge feature on Williamson Creek to Barton Creek, a distance of 4 miles. Thirty six hours later the dye showed up just above Barton Springs pool. The average travel time was 10 feet per minute, or 0.1 miles per hour, actually very speedy for an underground water flow.

Materials needed: chalk, tape measure or yard stick, and watch with a second hand

On a sidewalk in the schoolyard, mark the starting line with chalk and mark off a distance of 50 feet. Ask students to show you how fast they think water moves through our aquifer. Time their walks. To resemble the speed of water moving through Barton Springs aquifer, it would take them 5 minutes to walk 50 feet. To help them figure their speed in miles per hour, use the following conversion:

___seconds x .029 = miles per hour.

There is an aquifer in the panhandle of Texas where water moves 1 foot per year. Can your students move that slow?

How fast does water move through the aquifer?

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