What Does Your Aquifer Look Like?

Adapted from The Groundwater Foundation

This activity is a quick and easy way to visually demonstrate the stratigraphic layers of aquifers and learn basic vocabulary.

Objectives-

- ✓ Understand the movement and processes affecting groundwater

Estimated Time-

- ✓ 45 minutes – 1 hour

Materials-

- ✓ 2 clear cups
- ✓ Sand, gravel and aquarium rock
- ✓ Pitcher of water

Vocabulary-

1) Groundwater - water contained under the ground's surface, between particles of and in the cracks of sand, soil and gravel; a common source of water for drinking and irrigation.

2) Aquifer – the geologic formation of sand, soil and gravel where groundwater is stored.

3) Surface water – any body of water above ground: lake, pond, stream, river etc.

4) Contamination – an impurity in air, soil or water that can cause harm to human health or the environment.

5) Water table – the top of the saturation zone.

6) Saturation zone – the area where water fills the spaces between soil, sand and rock underground.

7) Infiltration - to increase the amount of groundwater through precipitation or surface water that absorbs into the aquifer, also called recharge.

8) Recharge – (infiltration)

9) Porosity – spaces between grains of sand, soil and gravel for water to travel through and the amount of connectedness between those spaces.

Vocabulary, continued-

10) Permeability – any material that allows water to penetrate through

Procedure-

1) Fill 2 cups with layers of sand and gravel to about 3/4ths from the top of each cup. Remember that in nature, aquifers consist of layers of sand, gravel and rock.

2) In one of the cups, pour water slowly into it. Watch how the water fills the spaces between the particles of sand and gravel. Does the water appear to move faster through the sand or faster through the gravel? Why?

3) Now continue to fill this cup with water to the top (above the top of the sand and gravel). Water that is located above ground, like rivers and lakes, is called surface water. Water below the ground's surface is called groundwater

4) In the second cup, pour water into the cup until the water line is about one inch below the top of the sand/gravel. Look closely at this line created by the water. This line is called the water table. Water below the water table is called the saturation zone.

5) Now pretend that your pitcher of water is a large rain cloud and pour some more water into your second aquifer until the water table is about one half an inches below the surface of the gravel. Your groundwater supply has just been recharged. This is what happens when it rains or snows and water infiltrates (or sinks) into the ground.

Procedure Extensions-

1) Use liquid food coloring or powdered drink mix to represent a source of groundwater contamination.

2) Sprinkle or pour the contamination on the surface of the gravel. Sprinkle water to represent rain on top of the gravel and contaminant. Observe and discuss what happens.