

# HOW LOW CAN YOU GO?: THE WATER TABLE AND AQUIFER

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## OBJECTIVES

At the end of this lesson, the students will be able to do the following:

1. Build a model of an aquifer.
2. Demonstrate, orally or in writing, an understanding of the zones associated with water tables.
3. Create a plastic bag book to illustrate the water table;
4. Give an oral or written definition of the new terms: aquifer and water table.

**SUBJECTS:** Science, Fine Arts

**TIME:** 45 minutes plus observation time

## BACKGROUND INFORMATION

Without precipitation, groundwater could not form. Plants use some of the water that infiltrates the ground, but some of it moves down to an aquifer. At the bottom of the aquifer is rock through which water cannot pass. This is the impermeable rock layer. The downward movement of the water stops here. In an aquifer, the rocks are saturated with water. The top of the aquifer is the water table.

The water table often follows the shape of the land. A spring may be found where the water table reaches the land surface. If groundwater is used faster than it is replaced, the water table will sink farther below the surface of the Earth.

## TERMS:

**Aquifer:** Porous, water-bearing layers of sand, gravel, and rock below the Earth's surface, reservoir for groundwater.

**Water table:** Upper surface of the zone of saturation of groundwater.

## MATERIALS:

- \* Jar
- \* Sand
- \* Gravel
- \* Water (colored blue)
- \* Grease pencil or masking tape
- \* Ice
- \* Blue drink mix
- \* Impermeable paper

## PROCEDURE

### I. Setting the stage

- A. Ask students, "Have you ever walked in a mud puddle? What did it look like and feel like?" Compare a mud puddle to a water table.

### II. Activities

- A. Simulating the water table.  
(Science TEKS K.10A,B, 1.10A,C, 2.7B)
  1. Fill the jar with a mixture of sand and gravel. You may wish to use all gravel.
  2. Slowly pour in blue water. Observe what happens to the water. Add until a section of the sand near the bottom of the jar is saturated.
  3. Wait until all the water has had a chance to sink in. With a grease pencil or a strip of masking tape, mark the jar at the place that separates the saturated soil from the rest of the soil.
  4. On a piece of paper make a diagram of the jar. Label the impermeable layer, the aquifer, and the water table. Suggestion: Do as a whole class once the individual pictures have been drawn. Discuss the meaning of each zone.
  5. Put the jar on a window ledge and observe it each day for the rest of the week.
  6. Relate the experiment to what happens underground.

### III. Follow-Up

- A. Does the water table change each day? Hypothesize about the changes. Can you prevent the lowering of the water table in the jar? Devise an experiment to check your hypothesis.  
(Science TEKS K.2B,D,E, K.10A,B, 1.2B,D,E, 1.10A,B,C, 2.2B,E,F, 2.7B)
- B. Make a drinkable water table using small pieces of ice and blue presweetened drink.

#### **IV. Extension**

A. Make a class plastic re-sealable bag book to illustrate the water table. Have the students work in groups to make each of the three pages. Use regular 8 ½" x 11" paper.

**(Fine Arts TEKS K.2A,B,C, 1.2A,B,C, 2.2A,B,C)**

1. Page one - write "grass" color green
2. Page two - write "dirt" (unsaturated zone) color brown
3. Page three - write "aquifers" draw rocks and color blue
4. Insert each page in a gallon-size resealable plastic bag. Stack the pages in order and staple together.

#### **RESOURCE**

"The Water Sourcebook: A Series of Classroom Activities for Grades K-2 Produced for Georgia Water Wise Council," Education Research and In-Service Center, University of North Alabama.