LESSON: GROUNDWATER DEMONSTRATION

Grade level: 4th through 5th grade

4-ESS2-1. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.

5-ESS2-1. Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.

INTRODUCTION

Comprehension of the critical role played by water in support of all life on Earth is an essential foundational element of the Inland Empire Resource Conservation District's (IERCD's) Water Conservation classroom presentation. This activity is being provided to increase student awareness of water uses and benefits prior to program facilitation, and encourages development of this knowledge in a free-form, group exercise. The suite of concepts and vocabulary covered will depend on length of activity facilitated by the participating teacher, but at any length should increase student preparation for IERCD program participation. It would also be suitable for post-program facilitation, to reinforce concepts and vocabulary covered during the program for maximum content retention.

OBJECTIVE

By completing the activities, the students will:

- Learn how groundwater flows into the ground through a demonstration.
- Learn how groundwater gets filtered through the different types of soil.

BACKGROUND

An aquifer takes a long time to form; some aquifers are millions of years old. An aquifer is an underground layer of water-bearing permeable rock, rock fractures or unconsolidated materials, from which groundwater can be extracted using a well. Water slowly infiltrates into permeable surfaces over

time, eventually this water will reach the water table. In reality it could take many years for water to reach the water table, which is why water conservation is so important. People are drawing up water faster than they are recharging the aquifers. Groundwater supplies are replenished, or recharged, by rain and snow melt that seeps down into the cracks and crevices beneath the land's surface.

SUMMARY

This activity demonstrates how water infiltrates into the ground and how infiltration is impacted through the different types of soil.

MATERIALS

- 6 Clear plastic cups approximately 16 – 20 ounces; 3 for project, 3 for drainage.
- Gravel
- Sand
- Clay
- Soil
- Magnifying glass (optional)
- 3 separate cups of water 8 ounces each (per group)

SKILLS DEVELOPED

- Listening
- Analyzing
- Critical Thinking

DIRECTIONS

1. Split students in groups of 3 or 4. Have each group place large gravel, sand and clay in *separate* clear cups. Have students look closely at each cup.

2. To demonstrate how ground water moves through underground rock formations, pour water into each cup. Observe and discuss the result with the students.

3. Inquiry: Which cup allowed the water to soak down the fastest? The slowest? How would the different materials influence water movement in natural systems?

4. Now poke a hole at the bottom of each bottle, drain and capture the water.

5. Next add soil on top of the gravel, sand, and clay; pour dirty water over the soil to demonstrate the filtration that occurs in the ground. Capture the water in clear cups to be examined by the class.

EXTENSION

Discuss with the class the possible contaminants that can make their way to groundwater and then have student's research threats to groundwater in their region. For more content visit:

http://www.groundwater.org/get-informed/groundwater/contamination.html