Lesson 9

Water Flows

How are puddles and reservoirs alike?
How does water flow differently over grass and parking lots?

GOAL To understand and predict the flow of rain water through observing features of the land.

OBJECTIVES Students will:

- ✓ predict where rain water will form puddles
- ✓ recognize the difference between pervious and impervious surfaces
- ✓ identify causes of erosion

MATERIALS **clipboard, pencils, paper**

CORE CURRICULUM CONTENT STANDARDS

- **Science 1(1,4-7), 7(3,4,7), 8(2,6)**
- **Social Studies 9(3-5), 10(3), 12(1-7)**

VOCABULARY **pervious, impervious, erosion, storm drain, orient**

PROCEDURES

1. Have students refer back to their watershed model. Ask what affected the direction of the flow of water. (*elevations*) Have students walk outside into their schoolyard with a clipboard, paper, and pencil. Students may work in groups or pairs.
2. Have students determine which direction is North. Draw an arrow on the paper and write "N" for the direction of north. Instruct students to draw a square with a flag on top for the school building. Ensure that school building is oriented properly.
3. Have students draw parking lot, field, etc. on their sheets.
4. Divide student into groups or pairs so that different groups are observing different areas of school grounds. Have students predict where the catch basins or puddles will form on the school grounds. Have students mark on their sheets with an "x".
5. After rain (*at a later time or date*), determine whether predictions are correct. Have students check their "x's" to actual puddles.
6. While students are outside, explain *impervious* and *pervious* surfaces. When it rains and the water is able to filter down into soil, then that is considered a pervious surface. If the rain "runs off" into a storm drain and is not able to penetrate or filter down through the surface, it is considered impervious. Ensure that students are familiar with the term *storm drain*.

7. Ask students what areas in the schoolyard would be considered impervious (*parking lot*) and what areas would be considered pervious (*grass, landscaping*).
8. Determine whether they are familiar with the term *erosion*. If there is no grass or vegetation and the soil "runs off" into the storm drain, this is considered erosion. Ask students if they see any potential areas of erosion (*uncovered soil*).
9. Have students mark these areas on their sheets. After rain storm, have students observe where the water flows. Does anything flow with it? Is there any difference in flow between those areas that are pervious and those that are not?

EXTENSIONS

1. Take a walk along the Farmington River bank. Observe if there is erosion or if there is a lot of vegetation (trees, plants). Draw or describe in writing what the bank looks like.
2. Have students look around their houses or apartments. Ask what areas are considered impervious or pervious surfaces. (*Those that absorb water such as grass or landscaping are considered pervious; those that are pavement and water "runs off" are considered impervious).*

RESOURCES

Charles, Dr. Cheryl, Hawksong Associates, Project Wild Aquatic Education Activity Guide, 1992, Council for Environmental Education, Gaithersburg, MD 20878.

GLOSSARY

erosion - the group of natural processes, including weathering, dissolution, abrasion, corrosion, and tranportation, by which material is worn away from the earth's surface
impervious - incapable of being penetrated
orient - to align or position with respect to a point or system of reference
pervious - open to passage or entrance; permeable
storm drain - a storm sewer