
Understanding Nonpoint Source Pollution Lesson One: “The Movement of Water”

Academic Question: How does water move in and around your community?
What is a watershed?
What watershed is your school or community found within?

Objective(s):

- To identify a watershed and understand its processes
- To relate water movement in a watershed to local topography

Handouts:

[Watershed Survey](#)

Process (Activities):

1. Before you begin this lesson you will need the following supplies:
 - ~~✍~~ A large road map of Texas
 - ~~✍~~ A topographical map of your area.
 - ~~✍~~ A roll of tin foil (each small group will work with a 15 inch long piece of tin foil)
 - ~~✍~~ A watering bucket with a sprinkle nozzle (one per group)
2. Allow students to explore the concept of watershed by conducting the following simple experiment in small groups:
 - a) Slightly crumple a piece of 15-inch tin foil. Spread the tin foil out on a flat surface while still preserving the folds and indentations. This tin foil represents a land surface.
 - b.) Observe the tin foil contours. Where are the hilltops? Where are the valleys? Where is water most likely to pool? What pathways would rain follow across the terrain of the land surface?
 - c.) Using the following definition of a watershed, identify how many watersheds are found on your land surface.
A watershed is the area of land from which precipitation drains to a single point. Watersheds are sometimes referred to as drainage basins or drainage areas.
 - d.) Carefully sprinkle a small amount of water over the tin foil. Watch the movement of water over the land surface. Identify the watersheds.
3. Have students complete the Watershed Survey of a local waterway. Make copies of the topographical maps to allow students to work in collaborative groups of three or four students. Explain to students what a topographic map is and allow students to identify elevated and flat areas on their maps using the lines of relief.

Product/Application: Have students discuss their watershed models and simulate how water flows over their watersheds and into the waterways. Have students identify places that are most likely to be flooded. Allow students to apply their knowledge of watersheds by allowing them to observe runoff during a storm.

Assessment: Using the same piece of tin foil ask the students to create the following watershed characteristics:

1. Create a watershed that moves water quickly across the land surface.
2. Create a watershed in which the water moves slowly across the land surface.

3. Create a watershed in which the water movement gathers within the smallest land surface.
4. Create a watershed within a watershed.
5. Create two side-by-side watersheds.

Resources:

EPA's Surf Your Watershed <http://cfpub1.epa.gov/surf/locate/index.cfm> and EPA's Enviromapper for watersheds <http://map2.epa.gov/enviromapper/>. This interactive resource allows students to zoom in on their area of study, assess the water quality vulnerability, explore the different watershed tributaries, and much more. This web site can be used as a checkpoint for students to compare and contrast the boundaries of the watershed they traced to those mapped using the Enviromapper.

The Bureau of Economic Geology of the University of Texas has very inexpensive maps of Texas Geology, River Basins, Land Resources of Texas, Energy Resources, Mineral Resources, Geological Highway Map, and a Structure Map of the San Antonio Segment of the Edwards Aquifer and Balcones Fault Zone. For further information or to order, please contact the Publications Sales Office at 1-888-839-4365 or (512) 471-7144.

Time Frame: One 45 minute lesson

Grade Level: 6th-10th

TEKS Correlation:**Science**

Grade 6: 6.1, 6.2, 6.3, 6.4

Grade 7: 7.1, 7.2, 7.3, 7.4, 7.8, 7.12

Grade 8: 8.1, 8.2, 8.3, 8.4

Biology: (b)1, 12.D

Aquatic Science: (b)1, 4.B, 7B,C, 8.C,D

Environmental Science: (b)1, 5.A, B, C, E, F

Geology, Meteorology, and Oceanography: 10.C

Mathematics

Grade 6: 6.1, 6.8, 6.11, 6.12, 6.13

Grade 7: 7.3, 7.4, 7.9, 7.13, 7.14, 7.15

Grade 8: 8.5, 8.14, 8.15

Geometry: 6

Technology Applications (Computer Literacy)

Grades 6-8: 2, 4, 5, 7, 8

English

Grade 6: 6.1, 6.2, 6.5, 6.13, 6.17, 6.20, 6.22, 6/24

Grade 7: 7.1, 7.2, 7.5, 7.13, 7.17, 7.20, 7.22, 7.24

Grade 8: 8.1, 8.2, 8.5, 8.7, 8.10, 8.13, 8.17, 8.18, 8.20, 8.22, 8.24

English I: 1, 4, 6, 8, 13, 15, 16, 21

English II: 1, 4, 6, 7, 8, 13, 15, 16, 21