Introduction: A watershed is an area of land that drains water into a specific body of water. Watersheds provide critical environmental services and drinking water for many people. In this lesson, "Build a Watershed", students will learn what a watershed is, how water moves throughout a watershed, and will build their own representative model to facilitate further understanding. Students can continue their learning or participate in a group discussion using the questions located on Page 2 of the lesson.

Objectives:
- Learn what watersheds are and their importance
- Discover how pollutants can move throughout a watershed and affect other areas
- Investigate what watershed the students live in
- Develop a model of a watershed
- Observe how water changes the land.

Vocabulary
- Ecosystem—a biological community of interacting organisms and their physical environment.
- Pollution—the presence in or introduction into the environment of a substance or thing that has harmful or poisonous effects.
- Sediment—particulate matter that is carried by water or wind and deposited on the surface of the land or the bottom of a body of water, and may in time become consolidated into rock.
- Waterbody—any significant accumulation of water, including oceans, lakes, rivers, ponds, canals and wetlands.
- Watershed—an area of land that drains water into a specific body of water.

Teacher Strategy
1. Ask students if they know what a watershed is. What watershed do they live in?
2. Watch this video, What is the Watershed to review watershed basics with your class.
3. Complete the model watershed activity. After building your own watershed, use these follow up questions to review with students:
   - How did the water flow? Did it move uphill or downhill?
   - Did it pool or collect in any areas? What would these areas represent in a real watershed?
   - Did the glitter or sprinkles move with the water? How does this relate to pollution and litter?
   - How would the actions of people living upstream affect those living downstream?
   - How does the movement of sediments affect the shape of the landscape?

Grade Level: 2-5
New York State Science Learning Standards:
- 2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area.
- 2-ESS2-1. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.
- 3-ESS2-3. Plan and conduct an investigation to determine the connections between weather and water processes in Earth systems.
- 4-ESS2-2. Analyze and interpret data from maps to describe patterns of Earth’s features.
- 5-ESS2-1. Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.
- 5-PS2-1. Support an argument that the gravitational force exerted by Earth on objects is directed down.

Extended Resource: Locate which watershed your school is in, as on online interactive with students

Extended Resource: Map of the Hudson River Watershed
Everyone lives in a watershed! A watershed is an area of land that drains water into a specific body of water. In this activity you will be able to create your own watershed. You will observe how rain travels, making its way over landscapes, down hills and mountains, and into bodies of water like streams, rivers, lakes, and oceans. While completing this activity make your own observations on the movement of water in your watershed. Before you begin, be sure to check out the “Questions to think about” section below to help you!

Build a Watershed - Student Sheet

Name: 
Date: 

- A tray, pan, or storage container that can get wet!
- Old newspaper that can be crumpled, plastic bottles, cans, paper cups, or florist foam to create your landscape.
  - Plastic wrap, tin foil, or garbage bag.
  - A notebook or other item to elevate your tray.
  - Tape
  - Food coloring (Optional)
  - Spray bottle (Optional)
- Sprinkles, sand, hole punched paper, or objects from outside like small rocks or leaves (Optional)

The Hudson River Watershed

- Almost 5 million people live in The Hudson River Watershed.
- Five states are included in the Hudson River Watershed: New York, New Jersey, Connecticut, Massachusetts, and Vermont.
- 93% of the Hudson River Watershed is in New York State.
- The Hudson River has more than 65 major tributaries (A stream or river that flows into a larger stream or river).
- The Mohawk River is the largest tributary that flows into the Hudson River.
- The Hudson River Watershed is about 13,390 square miles! (That is about the size of 1/4th of New York State!)
Instructions:

1. First, set your tray or pan on a flat surface.
2. Crumble your pieces of paper into different shapes and sizes and attach these or your other landscape objects to the bottom of your tray, taping them down so that they do not move.
3. Place a book, or other object underneath the tray to raise one side higher than the other.
4. Next, cover your model with plastic wrap, a garbage bag or tinfoil, pressing down gently so that there are visible features like grooves and wrinkles in your material. (This will allow you to see how water will run down landscapes like mountains and hills)
5. Take your water and if available add food coloring. This will help you to see the runoff of water better.
6. Using a spray bottle or slowly dripping water onto your model, cover the different areas and features. This water will act as the rain.
7. Make observations on how the water interacted with your model.

Example Photos:

Step 2
Step 4 using plastic
Step 4 using aluminium foil

Optional Continued Learning:

8. Dry off the plastic and repeat for more opportunities to observe.
9. Now, scatter the sprinkles or other objects across your landscape. These will represent sediment and pollutants or litter.
10. Add water to your watershed model again and observe how these particles have moved with the water.
11. Take a bucket of clean water and go outside. When you pour the water on the ground or pavement, where do you think this water goes? What body of water will it be making its way to?
Write your answers to the questions below while observing your watershed model

Why is it important that we keep our watershed clean?

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

How can pollution effect the health of your watershed?

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

Use this space to write your other observations as well as any questions you have:

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________