

## Activity 6: Defining Our Watershed

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Juvenile steelhead. Illustration by Duane Raver/  
U.S. Fish and Wildlife Service.

### **Overview**

Your local creek is only one part of a watershed, which includes all the land that drains into that creek. As participants learn more about the needs of salmon and steelhead, they will find that people’s activities throughout the watershed can affect salmon and steelhead habitat. In this activity, participants are introduced to the concept of watershed, and then learn to use a topographic map to find the boundaries of your local watershed.

### **Background Information**

A watershed is all the land that “sheds” water into a particular body of water. The boundaries of a watershed are the mountains, hills, and other high points where land slopes toward the water.

Learning about the area of land that drains into a body of water is critical to understanding how well that water can support salmon and steelhead. Everything that occurs in the watershed affects the water and, thus, the possible salmon and steelhead habitat within it. For more information about watersheds, see the [Background Information in the Unit Overview](#).

Participants learn to use a topographic map in this activity to help them understand the features of the landscape. This type of map, which uses lines to represent specific elevations, is a representation of a three-dimensional surface on a flat piece of paper.

### **Objectives**

Participants will: (1) make a simple model of a watershed, (2) learn to read a topographic map, and (3) use a topographic map to identify the boundaries of their local watershed.

### **Time**

Setting the Stage: One group session

Activity, Part One: One group session

Activity, Part Two: One group session

### **Materials**

- Topographic maps of your community, 1 per team (see [Advance Preparation](#))
- Colored pencils or crayons

- Sheets of scratch paper, 1 per person
- Blue, black, brown, and red water-based pens\*
- Paper towels for each person
- Spray bottle of water\*
- Materials needed for topographic map activity you choose (see [Advance Preparation](#))
- Completed “Creek Walk Checklist” worksheets from [Activity 5: Salmon and Steelhead Creek Walk](#)
- Camera (optional)

\* = Included in Adopt-A-Watershed Kit

### **Advance Preparation**

1. Obtain several copies of a topographic map of your community, one copy for each team. The map should include the locations of both your school or meeting place and the study site. If your watershed is large, it may spread over multiple topographic maps. Possible sources include:
  - [Topozone](#) offers interactive topographic maps of the entire United States. You can search for a map and print it for free.
  - The [USGS website](#) sells 1:24,000-scale maps of the United States. You can find and order the map you need online.
2. Choose one of the following lessons to help participants learn to read topographic maps. Read through the lesson plan and get ready to teach it for Part One.
  - [“Potato Mountain: Reading/Understanding Topographic Maps”](#) - Participants map a carved potato to practice with topographic maps in this lesson plan from Penn State Sustainable Forest program.
  - [“Contour Maps with Dogstails”](#) - In this lesson plan from National Geographic, participants slice lumps of clay to learn how to read topographic maps.
  - [“How to Read a Topographic Map”](#) - This set of lesson plans from the United States Geological Survey uses sample maps to help participants learn about topographic maps.
3. Gather all the materials you need.

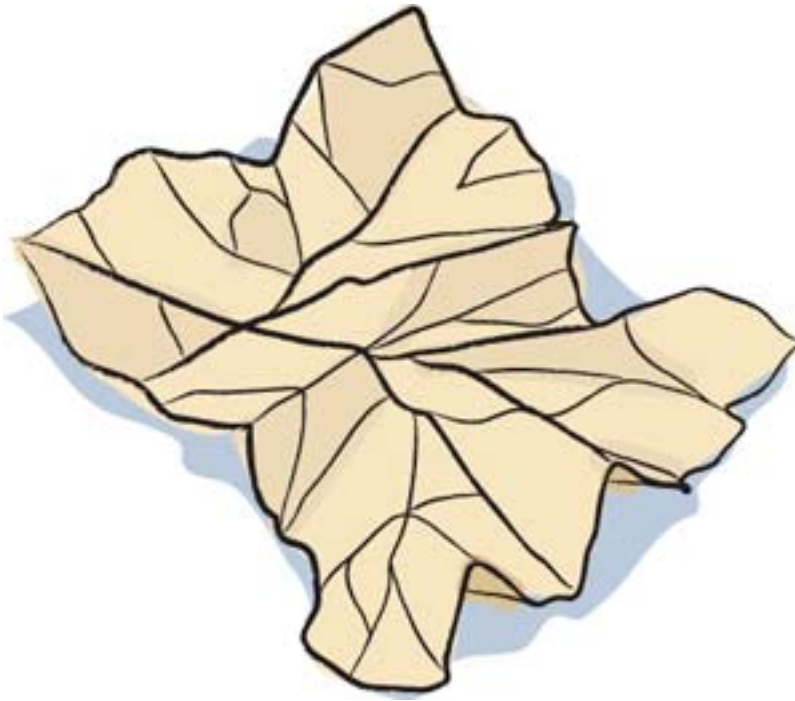
### **Setting the Stage**

1. Ask participants, “Where do you think the water in our creek comes from? What is a watershed?” If participants are not familiar with the concept of watershed, explain what it means.

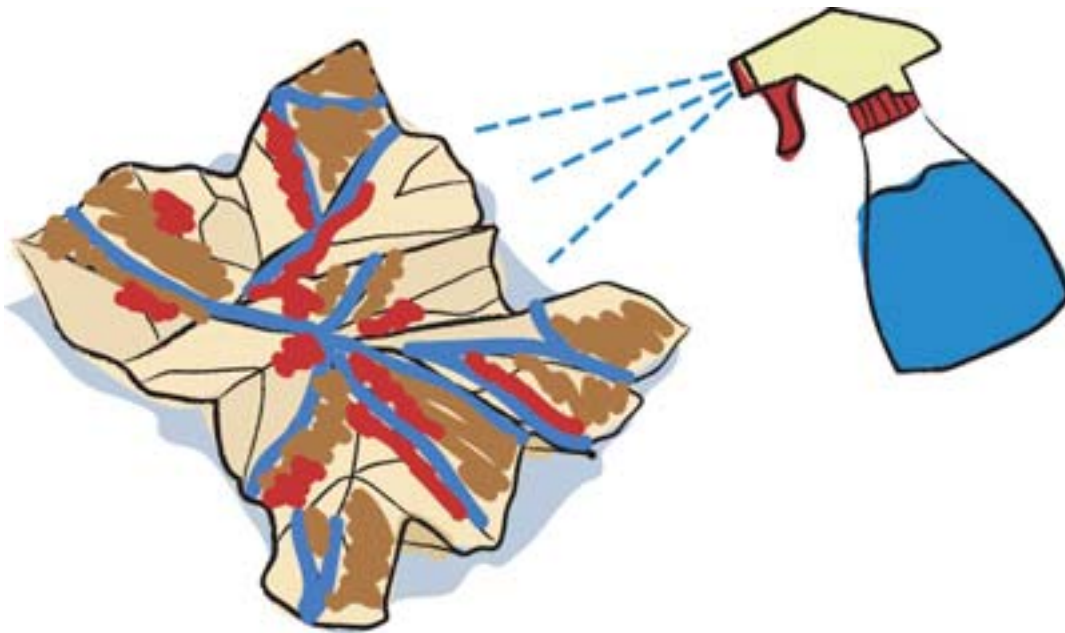
2. Conduct a quick demonstration of a watershed by having participants make a watershed model using a sheet of scratch paper. Have participants:
- Crumple up the scratch paper into a loose ball.
  - Open up the paper and place it on a desk or table without flattening it completely. It should have various relief features on it that resemble mountain ridges and valleys.
  - Use blue water-based pens to mark the “creeks” on their paper and where they think water will collect as it runs downhill.
  - Use black water-based pens to outline the ridges that separate one creek from another creek.
  - Use brown water-based pens to draw exposed soil that could wash away in the watershed.
  - Use red pens to draw possible pollutants they may find in their watershed, such as soap from washing cars, parks with lots of dog poop, or pesticides on lawns.
  - Place paper towels underneath the model.
  - Keep the model on the desk and spray a very light mist of water over it.
  - Observe where water runs down and where it collects.
  - Describe ways that the model is similar to and different from the local creek.



*Crumpled Paper Watershed Stage 1*



*Crumpled Paper Watershed Stage 2*



*Crumpled Paper Watershed Stage 3*

Note: For another quick and simple model of a watershed using your hands and a spray bottle, see the 4-H curriculum [\*From Ridges to Rivers: Watershed Explorations\*](#).

## **Conducting the Activity**

### *Part One – Learning to Read a Topographic Map*

Using the lesson plan you have selected, give participants practice learning to read a topographic map (see [Advance Preparation](#)).

### *Part Two – Outlining Our Watershed*

1. Give each team a copy of the topographic map of your community. Help participants get oriented to the map by giving them major streets, highways, or other landmarks in your area and having them find them on the map.
2. Ask teams to find where your school or meeting place is on their map, and mark the location using a crayon or colored pencil.
3. Have the teams find the creek where your study site is located, and mark the creek along its entire length. Also have them mark your study site.
4. Help participants find the contour lines and the markings that tell the elevation. Have participants use these lines to find out the elevation of your school or meeting place and the elevation of the study site.
5. Explain to participants that to locate the watershed that drains into your creek, they should look for the highest ridges or hills around the creek. These ridges are called the drainage divides, and they separate one watershed from another. Have participants outline the shape of the watershed by following the highest contour line that surrounds your creek. They should mark this shape using a colored pencil.
6. Ask participants to think about whether water would flow in the direction of higher or lower elevations. Then, help them to determine the direction of water flow across the watershed. They should draw blue arrows showing the direction of flow across the land to the creek water.
7. Have participants locate and mark other places they are familiar with within the watershed such as parks, the library, or certain stores.
8. Have participants add to the map any human structures they found on their creek walk.

## **Wrap-Up**

1. Lead a discussion about what participants learned from the mapping activity:
  - What barriers are there along our creek?
  - How much land drains into our creek? What is the approximate area?
  - What relationship is there between the boundaries of our community and the boundaries of the watershed?
  - How does the land that drains into the creek influence the creek itself?

- Why might it be important to consider the land that drains into our creek when we are thinking about salmon and steelhead?

2. Have teams add copies of their maps to their portfolios.

### **Enrichment**

Within urban environments, creeks are sometimes piped underground to avoid roads, factories, or housing. If your creek seems to “disappear” from the map somewhere along its course, it may be underground for that part. Find out what might be in the way of the creek, and how human constructs affect the creek’s flow.