
SQUAMISH RIVERS

Make a Watershed Model

Grades: K-3

Subject, Science

Time required: 30-60 minutes
& 45 minutes sand play

Key Concepts:

You can help make your watershed a good place for both people and wildlife

Objectives:

Students will predict where water will flow in watersheds and understand the impact of water flow in their school yard.

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Key Words:

Watershed, streams, lakes, rivers, wetlands, pollution

Skills:

Gathering information, organizing, discussion, analyzing, interpreting



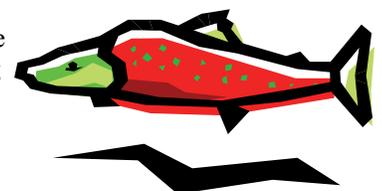
Background:

Puddles, streams, rivers, and lakes all have something in common. They collect water that is drained from watersheds. Watersheds are like funnels; they are drainage basins where surface water runs off and drains into a common collection site. Watersheds are separated from each other by land forms (ridges or mountain divides). Water falling on each side of the divide drains into different watersheds and collection sites.

Surface runoff flows over a school's grounds on its way to the collection site (a local stream for example), therefore, schools are part of a watershed. The analogy of a huge deciduous tree may be helpful in explaining the concept of watersheds. When rain falls, one drop may join with others to form a rivulet. These rivulets join together (streams), which then join along branches (rivers), then trunk of the tree (large river leading to the ocean). It is important to realize how we affect water as it passes by us. Everything we do

Materials:

- Chalk
- Popsicle sticks, bread tags or chips
- Sand pile, sponges, watering can, plastic sheet
- digging tools, rocks (optional)



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Background continued:

affects the plants and animals using the water downstream. People who get their drinking water directly from streams and rivers are acutely aware of upstream activities such as livestock using the river (thus disturbing the channel bottom) or an upstream municipal sewage treatment plant. Groundwater sources of drinking water can also be impacted by activities in the watershed. Pollution can make its way through the watershed drainage into aquifer re-charge areas. If the water contains contaminants, then that aquifer water quality may be compromised.

For the purposes of teaching the watershed concept, it is recommended to focus on a small watershed – play in a sand watershed model. Or, you can do a rainy day hike on the school grounds to investigate the flowing water into a puddle. Be sure to dress for the weather!

Procedure:

1. Use chalk to draw a large tree-like structure on a paved area of the school playground. (See diagram). Make sure there are enough “twigs” for each student at the tip of the “tree.”
2. Give each student a blue chip/token or a bread tag. The tokens represent a water drop.
3. Ask students to walk down their twigs onto the nearest branch where they will join with other students. They should link hands. Like a grand march, keep joining the groups together until they are groups walking down the trunk of the tree.
4. Explain that they started as individual water drops and they then joined with others into streams and rivers to form the water flow in their watershed.
5. Repeat the procedure but give students in one branch a Popsicle stick or other (non-blue) token. These tokens represent pollution such as an oil spill. Have students do the Grand March of the raindrops one more time.
6. When students have completed this exercise, ask them to summarize the general pattern of water flow through the watershed. If possible, point out local mountains where the rain drops start and then local streams and rivers where the drops eventually collect.
7. For the second part of this activity, gather students in the sand area of your school playground. (Extra sand may have to be delivered prior to completing this activity. Sand should be left in a pile or piled up to make a “mountain” prior to beginning.)
8. Ask students to guess where on the sand “mountain” the watershed “twigs and “branches” might be located. Point out that the smaller twigs (streams) are located in the uppermost areas of the mountain and the larger branches (rivers) are like the trunk of the tree which leads to the ocean. The ocean is located at the base of the mountain.
9. Have students dig out the streams and rivers of the watershed. Rocks may be placed for added dimensions. Wetlands, lakes and ponds can be added using sponges to represent them (water is stored in wetlands, lakes, and ponds similar to a sponge).
10. When students are satisfied with their watershed, carefully lay a plastic sheet over the watershed. Tuck plastic into the created streams & rivers. Sponges should be transferred to on top of the sheet. Rocks

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can be placed around the sheet to keep it in place (optional).

11. Ask students to predict what will happen when water is poured onto the watershed. Pour water from the watering can onto the watershed beginning at the mountain top and discuss what happens.
12. Repeat the exercise as many times as you have time for, changing the features of the watershed.

Extensions:

1. Add pollution to the watershed by placing food colour in a small sponge at a location in the watershed prior to pouring on the water. Have students predict what will happen to the pollution. How can we clean up pollution in the watershed?
2. Go on a rainy day hike around your school yard. Have students work in small groups to investigate sites of flowing water on the school grounds. They should observe water colour and which way water is flowing. Children can use natural material (twigs and the like) to make tiny “boats” to float down the “river” to the ocean (puddle).

Evaluation:

Have students:

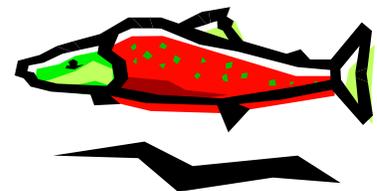
1. compare their ideas about watersheds from before and after the activity;
2. Draw their idea of local watershed using a local river like the Mamquam River as a focus. Students can draw features from the mountains to the estuary and Howe Sound;
3. Discuss reasons why their watershed and school grounds must be kept clean.

Community Connections:

1. Invite a member of a local streamkeeper group or fish and wildlife club to tell about your local watershed.

Resource:

This activity has been adapted from “Making a Watershed Model” from Water Stewardship (1995), and “Rainy Day Hike” from Project WET (1996).



Watershed Drainage Pattern

