

Rolling Through the ‘Shed

Activity Overview: Students will pretend to be water droplets as they travel through the watershed. By wearing Velcro vests and rolling over exercise mats, the students will “pick-up” felt pieces representing different contaminants in the watershed. The activity takes about 15 minutes for a group of 10 students, allowing for time to put on the vest, and a debrief for the group at the end.

Objectives:

Students should learn to:

- Understand what a watershed is
- Describe different types of water contaminants
- Identify where different pollutants come from
- Describe ways in which they can adjust their actions to reduce watershed contamination

Materials

- 8 orange safety vests with Velcro
- Felt pieces of various colours (red, blue, green, yellow, black)
- 5 coloured exercise mats (Do not use the black mat on hot days)
- Map of pollutants
- Bin to put the felt in
- Laminated colour maps showing local watersheds

Set-Up: Organize the felt pieces so they have been sorted onto the proper exercise mat, according to the chart below.

Takedown: Put all the materials away in the proper place as it was found.

Safety: Make sure you have only one student roll down the mats at a time. **DO NOT USE BLACK MAT ON HOT DAYS (or, use black mats in a shaded area to avoid it absorbing heat).**

Vocabulary:

Watershed - a geographical region that is defined by how water moves over the earth’s surface. It is an area of land in which all the water (including rain and snow) drains or flows to the same place, a common waterway, such as a stream, lake, wetland or even an ocean.

What will I be doing? (Procedure)

*Before you start your presentation check with the teacher or chaperone that the entire group is present and ready to start. Remember that kids have more fun when they are **doing** an experiment and **discovering** the answer, rather than watching and listening. So, try to involve as many children as possible.*

Note that the different coloured pieces of felt represent different contaminants:

FELT COLOUR	CONTAMINANT
RED/PINK	Bacteria
BLUE	Nutrients, Dust
GREEN	Pesticides
YELLOW/ORANGE	Silt, Soil
BROWN/BEIGE	Gas, Oil

Set up the mats and felt according to the chart below. **DO NOT USE BLACK MAT IN THE SUN ON HOT DAYS – YOU CAN COMBINE TWO CATEGORIES IN ONE MAT**:

<u>ROADS MAT</u>	<u>AGRICULTURE MAT</u>	<u>AIR MAT</u>	<u>LAWNS/GOLF COURSES MAT</u>	<u>DEVELOPMENT MAT</u>
YELLOW/ORANGE (silt, soil)	RED/PINK (bacteria)	BLUE (nutrients, dust)	BLUE (nutrients, dust)	RED/PINK (bacteria)
BROWN/BEIGE (gas, oil)	BLUE (nutrients, dust)		GREEN (pesticides)	BLUE (nutrients, dust)
	GREEN (pesticides)			GREEN (pesticides)
				YELLOW/ORANGE (silt, soil)
				BROWN/BEIGE (gas, oil)

Part 1: Introduction – Welcome the students to the activity

Say: “Welcome to Rolling Through the ‘Shed. Today we will be learning about watersheds and what can happen when contaminants get in a watershed. We need to keep our lakes and well water pollution-free because different human activities can cause contaminants to enter the watershed, which affect water quality.”

Explain the concept of a watershed to the students:

Say: “When precipitation occurs, water travels down the watershed and ends up in Lake Ontario. As water travels through various sections within the watershed, it is possible for it to pick up various contaminants (bad things) along the way. Today we will be pretending to be water drops travelling through the watershed and eventually into Lake Ontario (where we get our drinking water in Peel!)”

Part 2: Activity – Students will pretend to be water drops as they travel through the watershed

Say: “The mats here represent Peel’s watershed, and the pieces of felt on top represent different contaminants. You will all roll through the watershed and get to see what kind of things you pick up along the way!” *Explain to the students what each mat represents: roads, agriculture, air, lawns/golf courses, development (construction).*

Have them put on a safety vest and roll across the exercise mats. (As they do this, the Velcro will pick up pieces of felt). **For safety reasons, allow only one (1) student to roll on the mats at a time.**

Note: As an accessibility option, as some students may not be able to roll across, the student can hold the vest and drag it across the mat.

When they arrive at the “lake” (the end of the mats), have them take off their vest and identify the contaminants that they picked up.

Using the map of pollutants, allow the student to attempt to identify contaminants they contacted and from what source. They should realize that even things that are not placed in the water directly can still be picked up by it. For example, pesticides on lawns, or gas/oil on roads or driveways enter the runoff from rain and then flow into larger water systems, polluting them.

Part 3: Wrap-up – Ask them to suggest ways that we can prevent pollution (listen to their answers)

Examples of answers:

- Don't use pesticides on lawns.
- Use cars less so we don't have to build as many new roads and reduce our car emissions (the dirty air that comes out of cars) which water picks up in the air (e.g., acid rain). Fewer roads mean less road salt in the winter -- road salt also pollutes our water.
- Save energy -- certain types of energy generation (e.g., coal powered) also leads to emissions which contribute to acid rain.
- We should also NEVER pour solvents, paints, motor oils or other chemicals down the drain because they end up in our water supply and harm plants, animals, and us.

Recall with the students what you have taught them in this activity.

Specifically remind them:

- Keep our lakes and well water pollution-free because different human activities can cause contaminants to enter the watershed, which affect water quality.

Background Information:

Watershed - a geographical region that is defined by how water moves over the earth's surface. It is an area of land in which all the water (including rain and snow) drains or flows to the same place, a common waterway, such as a stream, lake, wetland or even an ocean.

We all live in a watershed and our individual actions can directly affect it. Watersheds can be large or small. Every stream, creek or river has an associated watershed. When small watersheds are grouped together, they form a larger watershed. It is a relatively easy task to define watershed boundaries using a topographical map that shows stream channels.¹

Important Facts:

- All or a large part of the Credit and Humber River and Etobicoke and Mimico Creek watersheds are located within Peel Region.

- The natural boundaries of watersheds create regions that are the most suitable for protecting the environment, preventing water pollution, and preserving places for plants and animals to live.²
- Water moves downstream in a watershed, therefore any activity that affects the water quality, quantity, or rate of movement at one location can change the characteristics of the watershed at locations downstream. For this reason, everyone living or working within a watershed needs to cooperate to ensure good watershed conditions.

Human Uses for Watersheds include¹:

- Recreation: including boating, fishing, swimming, water-skiing, snow skiing, hiking, rock climbing, camping
- Water Consumption: including drinking, irrigation, gardening and lawns
- Industrial: including thermal cooling
- Extraction of Natural Resources: rock quarrying, aggregate (sand and gravel extraction), logging, including ore/mineral mining, commercial fishing
- Agricultural
- Housing Development
- Commercial Development



¹ Earthforce Watershed Teacher's Guide

² Region of Peel Planning Atlas