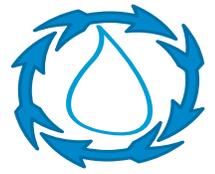


Hydrologic Cycle

Activity 4



What is a Watershed?

Objectives and Standards

- To learn what a watershed is, and understand the effects of topography, and pollution, on a watershed

NSTA Standards Addressed

Content Standards

A, B, D, F, G

4-H SET Abilities Addressed

Predict

Test

Draw/Design

Build/Construct

Observe

Communicate

Summarize/Relate

Interpret/Analyze/Reason

Troubleshoot

Compare

Background

A watershed is like a bowl in the Earth. The topography (hills and valleys) of a region create a series of high points where water flows away from, and a series of low points where water flows toward. When water falls from the clouds it becomes part of our topography here on Earth in the form of things like rivers and lakes. Sometimes water falls in an area and the topography underneath it dictates how much water is “caught” by each region during rains. This activity allows youth to create their own topography and see its effects on a watershed. Then it allows youth to explore what happens when those watersheds are contaminated.

CoCoRaHS Extension Ideas

In the Himalayas, for instance, the monsoonal rains are brought into the mountains by the ocean. When the rain falls, the topography of the mountains sends water running down the ocean-side of the mountains but prevents the opposite side of the mountains from receiving any water. Thus, the opposite side of the mountain has a desert. This is an extreme example of how topography can shape the climate in an area. On a map of the United States, find some other areas with a climate affected by watersheds in some way.

Supplies Needed

- parchment paper (without wax) or thick paper like that in a paper bag
- spray bottles
- flour
- confetti
- chocolate syrup
- cocoa powder
- crayons
- black and blue markers

Activity

1. Break into groups of 2-4.
2. Give each group a very large piece of parchment paper (2-3 feet in length is ideal), thick markers, crayons, cocoa powder, chocolate syrup, flour, and confetti.
3. Tell each group that they have inherited a large parcel of land and that they can develop in any way they see fit to create a city, a rural community, a forest preserve, or a combination of each. You may wish to assign groups distinct landscape types (i.e. one group should make an industrial landscape, another forested, etc.) to promote fair comparisons of land use at the end of the activity.
4. Using crayons, have youth divide the paper into 9-12 equal squares (use discretion based on size of parchment paper) and draw a landscape in crayon on their paper that includes at least one representative of each forested land, a farm, a house, an industrial building, where each square is colored in a specific color to represent land use. The amount of space each type of landscape takes up on the paper is up to them, as long as all are represented.
5. Tell youth to draw a road, in crayon, connecting the squares of different colors together. It can be as short or as long as desired.
6. Explain that the road represents highways traveled by numerous cars, the house represents cities, the farm represents agriculture, and the industrial building represents indus-

try.

7. Ball up the paper as a group and then straighten it out a bit. Encourage youth to have areas of high topography and low topography. Note, the activity only works with significant topography, therefore at least one spot on the paper should be about 6 inches higher than another.

8. Outline the high points on their topography in black. This outlines the different watersheds on their land. Ask them how they would define a watershed based on this activity.

9. After outlining the watersheds, use the blue marker to draw where they think water would travel if it were poured on the high points of the land, reminding them that water takes the easiest, quickest path down. Color in ponds and lakes in these areas with the blue marker.

10. Explain that using land for farms loosens the soil. Represent this by sprinkling cocoa powder on all of the squares on the farmland.

11. Explain that roads are often dirtied by gasoline and oil from cars. They are to represent this on their land by placing chocolate syrup (oil spills) on the roads.

12. Explain that both industries and cities create pollution by creating trash, contaminating rivers, and through other means. Represent this by sprinkling flour down on land used for industry, and confetti on land used for cities.

13. Represent a thunderstorm. Have each group use the spray bottle to spray water on their land, being sure that each youth gets a turn. Encourage them to describe what is happening to their land.

Discussion

Discuss the path that water takes. Where did water naturally flow? Can you find specific watersheds on your land? Discuss where snow might build up in the mountainous parts of the land and how areas would benefit from spring thaws. If only one portion of the landscape was sprayed how would that have affected the watershed? Explain that this would represent a rain shadow, and that mountains can trap rain clouds making one side of a mountain wet and lush, and the other side of the mountain desert-like. An example of that type of landscape can be seen on the west and east sides of the Rocky Mountains, with the west side receiving abundant rain and east sides receiving very little.

Land use affected the water. In the forested areas, water penetrates the land and is used by the trees, and the remainder spreads to streams and lakes without disturbing the sediments. Trees hold the dirt in place, without them the nearby stream and lake water get muddier. This hurts the water life, making it hard for those animals and plants to breathe. Industry and other human activity creates chemical pollution that eventually ends up in our streams and lakes. Our trash also contaminates our waterways.

Look at every group's land. Who had the cleanest waterway? Who had the dirtiest? What actions can we take in our lives to help keep our water clean and usable?





Please send us your feedback!

As a 4-H Educator, you know what has worked well, what has not, and how we can improve the *Tracking Climate in Your Backyard* curriculum. Please share your feedback about the curriculum. We'd love to receive copies of any reports or newspaper coverage about completed *Tracking Climate in Your Backyard* projects.

Fax or mail your completed feedback to Trisha Smrecak, Museum of the Earth, 1259 Trumansburg Rd., Ithaca, NY, 14850 or fax to: 607-273-6620.

Check the activity completed	Suggestions for improving the activity
Rainfall Activities <input type="checkbox"/> Make It Rain <input type="checkbox"/> Where Does the Rain Come From? <input type="checkbox"/> Stormy Weather	
Snowfall Activities <input type="checkbox"/> Confetti Snow Maps <input type="checkbox"/> How Much Water? <input type="checkbox"/> Edible Education <input type="checkbox"/> The Snowflake Game <input type="checkbox"/> Snow Journaling	
Temperature Activities <input type="checkbox"/> Energetic Weather <input type="checkbox"/> Shade of the Old Oak Tree <input type="checkbox"/> Temperature Through Time	
Wind Activities <input type="checkbox"/> Why Does the Wind Blow? <input type="checkbox"/> Make Your Own Wind Dial	
Hydrologic Cycle Activities <input type="checkbox"/> The Incredible Journey <input type="checkbox"/> Understanding Evapotranspiration <input type="checkbox"/> Pinecones: Mother Nature's Weather Forecasters <input type="checkbox"/> What is a Watershed?	
Climate Activities <input type="checkbox"/> Where is My Backyard? <input type="checkbox"/> Soak up the CO ₂ <input type="checkbox"/> Buckets O' CO ₂ : How Your Backyard Can Change the Ocean <input type="checkbox"/> Raise the Waters	
CoCoRaHS Participation <input type="checkbox"/> Precipitation measurements and other activities	

Please share your suggestions for improving the Tracking Climate in Your Backyard curriculum.

How have you used Tracking Climate in Your Backyard in your community?

Thank you for completing the Tracking Climate in Your Backyard curriculum feedback. We appreciate learning about how you are using the curriculum and receiving your suggestions for improving it.

Organization _____ Contact Person _____
 Email _____ Date _____