Glen Foerd on the Delaware

Watershed Science

This lesson is part of an ongoing monthly series that encourages young adults to learn about the environment through hands-on activities. These activities are recommended for ages 8+ and are designed using materials that most households have on-hand.

Where does water come from? Why is it important? What is a watershed? This month, we will explore how water moves on Earth, what a watershed is and why it's important, and find out what watershed area we live in!

Did you know that the water we use today is the same water the dinosaurs used! So how does it move around the earth? Let's find out by making our own model of the water cycle!

Model Water Cycle

Materials:

- ❑ 1-quart sized freezer bag
- ❑ 1 permanent marker
- ❑ 1 cup of water
- ❑ Tape *recommend using clear packing tape
- ❑ Blue Food Coloring *recommended but not necessary
- ❑ Nature Journal (Click here for activity sheet)

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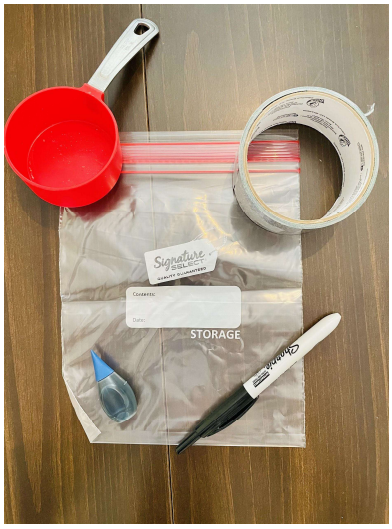
Directions:



1. Using a permanent marker, draw a water scene on the outside of the bag including water/waves at the bottom of the bag and clouds and the sun at the top of the bag.
2. Fill the measuring cup with 1 cup of water and add 2 drops of blue food coloring. Carefully stir in food coloring.
3. Slowly pour the water into the freezer bag and seal the bag completely.
4. Tape bag to a sunny window using tape. Choose a window that gets the most sunlight during the day.
5. Check on the bag during the day/several times a day and observe the changes.
6. Record observations in your nature journal.

What exactly is happening?

As the sun heats the water, the water molecules begin moving faster and faster. These molecules turn into water vapor that rises to the top of the bag. This process is called **evaporation**. As more water vapor collects, the water molecules combine and form tiny water droplets that we can see. This process is called **condensation**. Once enough droplets form, they become heavy and fall back into the water. This rain is called **precipitation**. This process then repeats!

Why is this important?

All water on our planet has been here since the Earth was formed. Water is constantly moving in the water cycle (evaporation, condensation, and precipitation). The water cycle keeps our water clean, causes some of our weather, and regulates (or controls) the temperature on our planet. We also need water to drink, clean, cook, and play in!

So now that we understand how the water cycle works, let's take it further and explore the waterways near us!

What is a watershed? A watershed is an area of land that drains surface water (and groundwater) into a body of water, such as a creek, river, lake, bay or ocean. Let's take a closer look and build our own model watershed!

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Model Watershed

Materials:

- ❑ Blank sheet of paper
- ❑ Markers (2 different colors)
- ❑ Spray bottle filled with water
- ❑ Baking sheet *recommended
- ❑ Paper towels *for clean-up
- ❑ Nature Journal (from January Activity)

Directions:

1. Crumple the sheet of paper into a tight ball.
2. Carefully, uncrumple the paper so there are high points and low points on the paper. The high points on the paper represent ridges and the low points represent valleys. The piece of paper now is a model of a watershed!
3. Outline the high points (ridges) with one color marker.
4. Outline the low points (valleys) with the other color marker.
5. Place the piece of paper (the watershed) on a baking sheet.
6. What happens to the watershed when it rains? Record your guess (hypothesis) in your nature journal!
7. Create a rainstorm by gently misting (spraying) the watershed with a spray bottle full of water.
8. What happened to the watershed when it rained? Was this what was expected? Record your observations in your nature journal.

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What exactly is happening?

As water (rainfall, snow, hail) hits the land, the water that is not absorbed into the ground runs downward. This downward movement is due to gravity pull. Water will continue moving until it reaches a large body of water such as a creek, river, lake, bay or ocean. This area of land that the water drains from is called a watershed. On the model, notice how the white paper represents the land. As the paper got 'rained on' the blue marker mixed with water and ran down the side of the paper ending once it hit the baking tray.

Each watershed is named after the body of water that the water flows into. Philadelphia and Glen Foerd are part of the Delaware River Watershed. The Delaware River Watershed covers parts of Delaware, New Jersey, New York, and Pennsylvania. This watershed is divided into 4 smaller regions: Upper Delaware Region, Central Delaware Region, Lower Delaware Region, and Delaware Bay Region. Each region is then divided into smaller sub-regions. Our sub-region is part of the Upper Estuary Watershed in the Lower Delaware Region.

Glen Foerd is located on the Poquessing Creek and Delaware River, so we are part of the Poquessing Creek Watershed, a smaller watershed within the Upper Estuary Watershed. This is also known as a watershed address and is just like your street address. Therefore, Glen Foerd's watershed address is Poquessing Creek, Delaware River, Lower Delaware Region, Delaware River Watershed. What's your watershed address? For more information on your watershed address visit the Coalition for the Delaware's website http://www.delriverwatershed.org/the-watershed.

Why is this important?

We all live in a watershed even if there is no visible body of water nearby! Watersheds are an important natural resource for humans and wildlife. As water runs downhill, it carries whatever is on land, such as oil from cars, trash and debris, and exposed soil from construction sites or farms. All this will end up in our waterways! Therefore, our activities on land affect the water and our water quality. Watersheds provide many benefits to us and the environment, such as cleaning and filtering water, improving water quality, reducing flooding risks, and providing a home for wildlife. Adding trash, oils, and excess sediment into the water can greatly impact a watershed ability to provide these necessary functions.

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Want to know more? Join us next month as we continue our watershed science adventure and create our very own water towers!

Want to share your project with us? Email us at kateriley@glenfoerd.org with Watershed Science as the subject. We would love to see your work!