

**BOWMAN GRADE 3 WINTER NATURE WALK**  
**Looking at a watershed**

**OBJECTIVES:**

- Understand the concepts of watersheds.
- Familiarize students with compass rose and orienting themselves with a compass

**PREPARATION:**

**Room Parent**

- **Logistics:**
  - **Time:** 30 minutes
  - **When:** Late winter before ground thaws and is muddy.
  - **Groups:** 4
  - **Sites:** 1) Bridge 1 in woods 2) inlet on Philip Road, 3) stream fork at northwest side of field. 4) Bridge at side of parking lot in woods. See map. To avoid crowding at sites assign groups numbers and then move according to following flow:  
1234  
2143  
3412  
4123
- Schedule parents. Copies of walk are available in cabinet.
- Remind teacher to send out to note to ask children to wear warm clothes.
- Ensure no overlaps with other classes by checking the schedule in the BBB cabinet. Update BBB calendar in cabinet with class time by writing Time/Grade/Teacher in correct date.

**PTA BBB Coordinator**

- Ensure that Watershed kit is complete and in cabinet
- Make copies of Base Watershed Map and leave in cabinet

**Teacher**

- Send note home with children before walk to request appropriate dress- warm clothes, boots etc.
- Complete the “Pre-Walk” Activities.
- Complete “Post-walk Curriculum Integration Opportunities”

**Questions/Comments?**

Contact the current PTA Bowman Big Backyard Coordinator.

**MATERIALS:**

- Measuring stick (1/group)
- Thermometer (2/group)
- Compasses (1/student)
- Base map showing roads and school (1/student)
- Clipboard/pencils (from classroom)

**ACTIVITIES:**

- Draw a map of the waterways behind Bowman School.
- Determine and label direction of water flow.
- Measure depth of streams and water temperatures in late winter (to be compared to the depth in late spring.)

**PRE-WALK ACTIVITIES TO BE LED BY THE TEACHER**

1. Give children experience reading maps and directions from the “compass rose” symbol. Allow students to practice finding north with a magnetic compass.
2. Explain the concept of a watershed. A definition from the EPA watershed website:  
<http://www.epa.gov/owow/watershed>

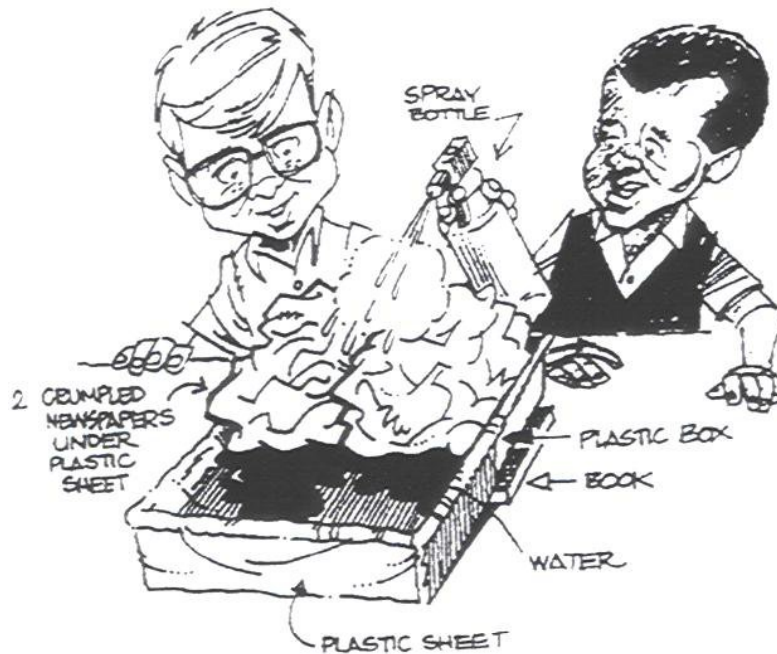
“A watershed is the area of land where all of the water that is under it or drains off of it goes into the same place. John Wesley Powell, scientist geographer, put it best when he said that a watershed is:

"that area of land, a bounded hydrologic system, within which all living things are inextricably linked by their common water course and where, as humans settled, simple logic demanded that they become part of a community." “

Watersheds come in all shapes and sizes. They cross county, state, and national boundaries. In the continental US, there are 2,110 watersheds; including Hawaii Alaska, and Puerto Rico, there are 2,267 watersheds.

3. Demonstrate a model watershed. Directions are attached.

## Applying Analogy and Models to Understanding Environmental Issues



The WATERSHED MODEL drawing is from *Watersheds: Where We Live* from the Poster Series by the Water Resources Education Initiative, U.S. Geological Survey. See PART III, p. 116 for ordering information.

WATERSHEDDING Activity is from *The Water Planet*, Summer 1993, Vol 5, No. 4, *Science is Elementary*, p.32.

GRASPING GROUNDWATER Activity was originally developed by Barbara Waters for the *Groundwater Resource Guide, 1990*; Cape Cod Environmental Education Resource Center and reprinted in *The Water Planet*, p.33/34.

## WATERSHEDDING

## Objective:

Students will begin to explore the movement of water and possible pollutants through a watershed by creating a very simple model.

## Materials:

- spray bottle
- water
- blue and red food coloring
- newspaper
- plastic tub or wash basin
- white plastic bag (24" x 30")
- paper towels

## Procedure:

1. Divide students into groups and provide each group a tub and newspaper. Each student in the group should lightly crumple a sheet of newspaper and place it along the inside edge of the basin. A space should remain in the center bottom of the tub. The paper represents rocks and hillsides within a watershed.
2. Place a plastic bag over the tub and newspaper, pushing it gently down into the center, and

overlapping the sides of the basin. Fill the spray bottle with water and blue food coloring. Create a rain storm by having each student in a group spray five times into the watershed. Observe the water action in the model. What was noted?

3. Place a sheet of two attached paper towels over the watershed and pushed gently down into the middle and up against the sides. The paper towel represents soil, plants, and trees in the watershed. Create another rain storm (5 sprays per student). Observe the action of the water this time. What was different? Why?
4. Place a drop of red food coloring on one paper towel hillside to represent pollution entering the system. Create a third rainstorm and observe the movement of the pollution through the watershed. What was observed? Why? How might pollution move through your own watershed? Could it affect your drinking supply?

Adapted from *Water Watcher*, Massachusetts Water Resources Authority, 1987.

## **NATURE WALK: TO BE LED BY BIG BACKYARD VOLUNTEER**

### **1. Define watershed.**

Snow and ice melt in late winter. Some of this liquid water evaporates, but some seeps through the earth and some rolls off the land into streams. The area of land that catches precipitation and drains it into a stream is called a WATERSHED. In this walk children will observe the schoolyard and adjacent conservation land and make a simple map showing the places where water is flowing.

### **2. Orient students with compass rose.**

- Give each student a base map on a clipboard. . Go outside and ask the students to find Bowman on the base map. Have them find the North arrow on the map. Add South and West to the compass rose.
- Turn the clipboards under the compass until the north arrow on the map and the red end of the compass needle are pointing in the same direction. Check the alignment of the maps.
- Have the students point to North, South, East and West.

### **3. Visit sites:**

#### **Site 1 at Bridge 1.**

- Cross in to Dunback Meadow Conservation land, which belongs to all of us in Lexington, and follow the path and boardwalks to the bridge
- Ask the students add this bridge to their maps.
- Use the tape on the measuring stick and compasses to determine the direction of the flow. Label maps using an arrow to indicate direction.
- Measure the temperature and depth of the water. Note this information on the maps.
- See where the water comes from and where it goes.

#### **Site 2 On Phillip Road**

- Walk up Phillip Road until students find the pipe flowing under the road into the stream.
- Ask: *Where does the water come from? What land is it draining?*
- Determine direction of flow.
- Label maps using an arrow to indicate direction.

#### **Site 3 at Northwest corner**

- Follow stream along edge of playground towards parking lot. Let the students discover where the two branches of the stream come together.
- Add details to map.
- Determine the direction of the flow. Label maps using an arrow to indicate direction.

**Site 4 Bridge 2 in woods at side of parking lot**

- Ask the students add this bridge to their maps.
- Use the tape on the measuring stick and compasses to determine the direction of the flow. Label maps using an arrow to indicate direction.
- Measure the temperature and depth of the water. Note this information on the map.
- See where the water comes from and where it goes.

**4. Wrap up**

- Ask: *What did the group learn about the flowing water near Bowman? What would you still like to know about it?* Record those questions. Suggest children wash their hands when the return to school.
- Ask children to keep their maps for subsequent class follow-up.
- Complete walk evaluation report and leave in BBB cabinet.

**POST-WALK CURRICULUM INTEGRATION OPPORTUNITIES**

1. Have students trace over their pencil streams in blue marker. Compare other maps showing Bowman to the ones the students made. Ask: *Which of these other maps look most like theirs. Which give more information? Which give less information?* You may wish to add a scale to your map.
2. Brainstorm a list of questions and note which ones the students might be able to answer through direct observation or experiment.



**NATURE WALK EVALUATION**  
(Please leave in Big Backyard Room)

**Walk Leader:** \_\_\_\_\_

**Grade and Teacher:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Children in Group:** \_\_\_\_\_

**1. What parts of the walk interested the children the most? (check all that apply)**

Using a compass	Site 1 Bridge	
Taking temperatures	Site 2 Phillip Rd	
Observing water flow	Site 3 NW Corner	
	Site 4 Bridge	

Other: \_\_\_\_\_

**2. What parts were not successful? (check all that apply)**

Using a compass	Site 1 Bridge	
Taking temperatures	Site 2 Phillip Rd	
Observing water flow	Site 3 NW Corner	
	Site 4 Bridge	

Other: \_\_\_\_\_

**3. This walk was: (circle one) TOO LONG JUST RIGHT TOO SHORT**

**4. The children seemed adequately prepared: (circle one) YES NO**

**5. This was a good working group: (circle one) YES NO**

**6. I felt adequately prepared to lead this walk: (circle one) YES NO**

**7. Other comments or suggestions:**