Nashua River Watershed Investigations for Grades K-8

Lesson # 2-1

Title: 2-1 How Water Shapes Our World

Grade Level & Standard: Grade 2
2-ESS2-4 Observe how blowing wind and flowing water can move Earth materials from one place to another and change the shape of a landform. Examples of types of landforms can include hills, valleys, river banks, and dunes.

Objective: To observe how flowing water and moving air can move Earth materials from one place to another and change the shape of the landform.

Vocabulary:

- **Water body** - a body of water can either be freshwater or saltwater. Fresh water includes streams, rivers, ponds, and lakes. Seas and oceans are made of salt water. Many bodies of water are connected, but they each have their own characteristics and uses.
- **Landform** - any natural formation of rock and dirt, found on Earth. A landform can be as large as a mountain range, or as small as a hill. It can be as large as a continent, or as small as a pond. Geologists study how landforms are created, and how they interact with one another. Beaches, valleys, hills, cliffs, ridges are all landforms.

Discussion Points: Why are mountains and hills different shapes and sizes? Where do streams, brooks, and rivers flow to? Wind and water is a very powerful tool for shaping the land upon which we live today.

Materials:

- 2 Plastic storage containers low sides & rectangular
- 1 Plastic storage container with higher sides & rectangular

© Nashua River Watershed Association, Inc. Duplication permitted other than for commercial purposes.

- sand, stones, shells, pebbles
- Cornmeal (optional alternative for #3 station)
- piece of flat styrofoam to fit in one end of container
- Two 3-4 in Styrofoam or block of wood to wedge one end of containers
- Large funnel
- Tubing & clamp system (optional)
- Two plastic plaster scrapers
- Paper straws
- 16 - 20 oz bottles filled with water for pouring
- Towels

Wave bottle

- 16 oz - 1 liter clear bottles, mineral oil, water, blue/green food coloring
- Optional: glitter, sequins.

Procedure (30-45 minutes): This lesson has three components which can be used as three stations for one lesson day or set up over several days as daily hands-on labs. It could also be used as a demonstration.Attached data sheet allows students to create their own land forms at each station. *Adult supervision at each station is necessary to instruct the procedure.*

Station 1 - River Formation: Set up plastic container (we use 24x18x6 in but smaller would work too) with 3 inches of sand. Add a half dozen rocks (2-4 in diameter) of different shapes. Tilt the container by placing a 3-4 inch object under one short edge and push all the sand and rocks up toward that edge. Hold or attach a large funnel just above the sand at the top of the "landform" and slowly pour water through funnel so that water creates a "valley" through sand and rocks. Students can change the rock locations and reset the sand between turns suing the plaster scraper. Note how a river valley is formed.

Station 2 - Beach Formation and Waves: Set up a plastic container with sand, pebbles, small shells at about 2-3 inches and push all the sand to one end. Tilt the container by placing a 3-4 inch object under one short edge and push all the material up toward that edge to make the "beach" using the plastic scraper. Fill the low end with water so that it just reaches the edge of the beach sand. Place a long flat piece of styrofoam in the water and have each student gently press down in a rhythm to start the wave action. Watch what happens to the beach. Make 2-4 "wave bottles" using empty one liter plastic bottles. Fill ½ mineral oil and ½ water. Add blue/green food coloring. (can add sequins or glitter too). Cap

© Nashua River Watershed Association, Inc. Duplication permitted other than for commercial purposes.

tightly and have children hold bottle horizontally while tilting it back and forth to watch how a wave moves.

Station 3 - Wind and Land: Set up a plastic container (use a deeper-sided one for this activity) with 3-4 inches of cornmeal or sand across the bottom. Set in some big and little rocks. Using paper straws, have each student take turns blowing gently while moving their straw to different parts of the landform. Note changes between and near rocks.

Data Sheet: (attached)

- Drawing Landforms

Extension:

- **Types of Landforms for kids -a Video Lesson**
  https://www.youtube.com/watch?v=LwNfvyCXh1k

Ocean Wave & River Formation Station Materials
How Water Shapes Our World Lesson 2-1

© Nashua River Watershed Association, Inc. Duplication permitted other than for commercial purposes.

NAME:_____

STATION 1 DRAW A RIVER	
STATION 2 DRAW AN OCEAN BEACH WITH WAVES	
STATION 3 DRAW MOUNTAINS AND HILLS WITH WIND	

© Nashua River Watershed Association, Inc. Duplication permitted other than for commercial purposes.

© Nashua River Watershed Association, Inc. Duplication permitted other than for commercial purposes.