STREAM TABLES
ACTIVITY 1

Introduction:

Most of us have seen streams or rivers. When we're walking or driving, we cross them by using bridges. There are times when it seems we have to cross a stream several times to get where we want to go. The paths rivers and streams follows can vary, and their paths are dependent on a number of factors. Also, people have historically used rivers for a variety of purposes, including travel, drinking water supplies, and removal of waste materials. In this activity, you will explore how streams make their paths and identify some of the factors that determine what that path looks like.

Objectives: Upon completion of this activity, the student should be able to . . .

1. Identify at least two types of stream paths
2. Name at least three factors that affect the path a stream takes
3. Describe the effects of each of the three factors in objective #2 on the type of path a stream makes

IL State Standards: The IL State Standards addressed by this activity are . . .

12.E.3a – Analyze and explain large-scale dynamic forces, events and processes that affect the earth's land, water, and atmospheric systems.
13.B.3d – Analyze the interaction of resource acquisition, technological development and ecosystem impact

Materials:

1 Wallpaper tray or square dish pan
2 Wood blocks same size
3 One-gallon buckets
1 Tube, narrow and flexible, 60 cm long
1 Acetate or plastic dam
1 Box food coloring
1 Gallon of fine sand
1 Long wood block for smoothing sand
1 Plastic cup for dipping
1 Paraffin or plastic block
6 Cotton swabs
Paper towels and water

Procedures:

A. Put the sand in the wallpaper tray. Pile most of the sand toward one end of the tray, and smooth the top of the sand so it makes a wedge (see Figure 1). You will need to soak the sand so that it is wet but not so much that excess water runs out at the "shallow end."

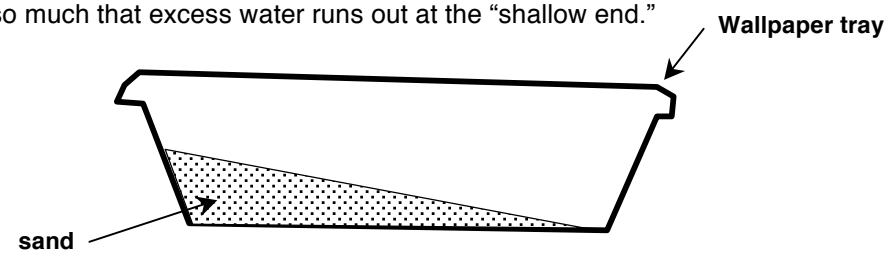


Figure 1

B. Fill one of the one-gallon buckets with water – to about 3/4 full. Turn another bucket upside down and place it next to the end of the wallpaper tray that has the thickest layer of sand. Then, set the water-filled bucket on top of the upside down bucket.

C. Take the flexible tube and dip one end of it into the bucket of water. Slowly lower the tubing into the water, being sure the end does not come up out of the water. Eventually, you should end up with the entire tube filled with water – and underwater in the bucket.

D. You are now going to siphon water out of the water bucket and onto the sand. To do this, pinch the top end of the tubing tightly so no water can escape from it. Pull some of the tubing out of the bucket and move its end to rest just over the end of the wallpaper tray. When you release the pinching on the tubing, water should flow from it and into the tray. If this does not happen, try to siphon again.

E. As the water runs from the tube onto the sand, you should observe that it makes a stream in the sand. Carefully observe the path the stream makes. Allow the water to run for about five minutes (or as long as the water bucket contains water). Be sure to write down your observations in the Data Sheet below. Also, as the water runs down the sand, it will collect at the other end of the tray. You may need to use the plastic cup to dip this water out and dump it into the third gallon bucket – so the tray does not overflow onto the table or floor. (See Figure 2.)

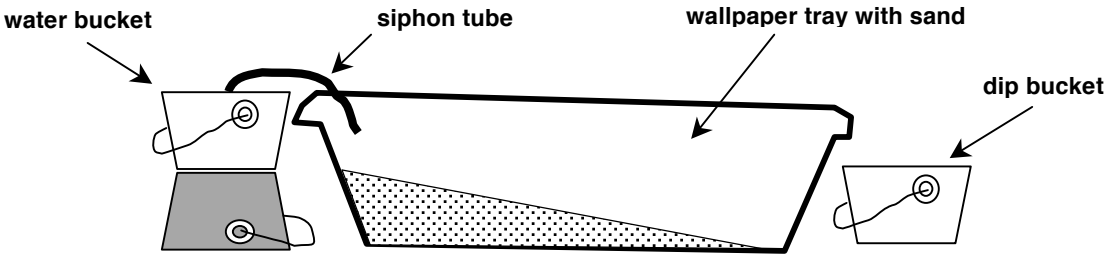


Figure 2

F. Use your finger or the smoothing board to try to make different pathways for the stream water to follow. Observe how the water flows, and what paths it actually takes.

Questions:

1. How does increasing the slope, or steepness, or a stream affect the path it makes?
2. Sometimes, the amount of water moving in a stream has an effect similar to that of increasing the slope of a stream. If you could double the amount of water flowing through the tray, what do you think the stream path would look like? Explain why you think so.
3. Look at the page of "Geologic Landforms" on the next page. For streams flowing like the one you made in this activity, which geologic feature is most likely the one formed? Explain why you think so.

Data Sheet:

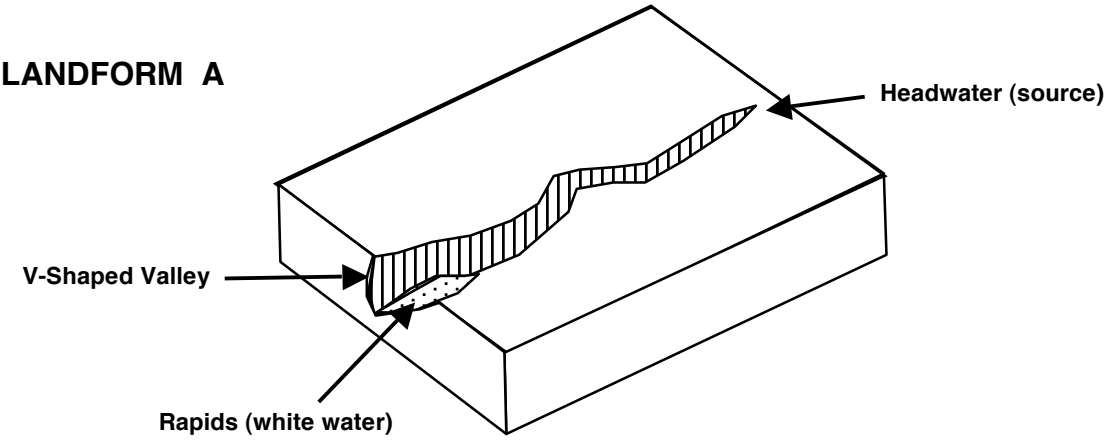
ACTIVITY #1: Flat Tray
Observations

Draw the stream path in the space below:

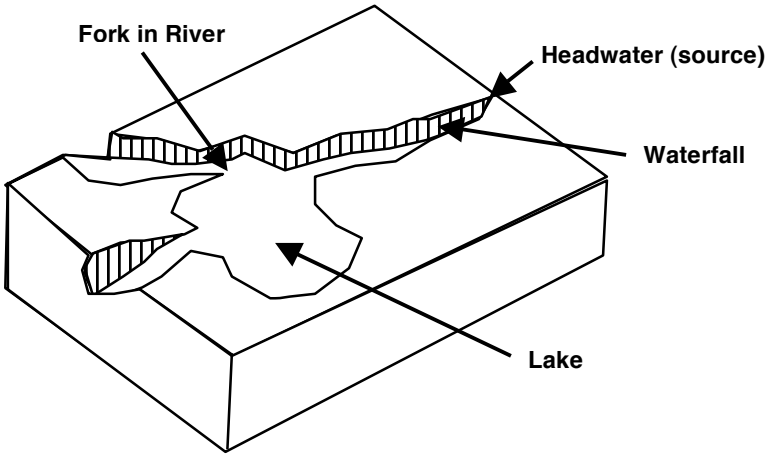
Resource: Great Exploration in Math and Science. (1989). *River cutters*. Berkeley, CA: Lawrence Hall of Science, California State Board of Regents.

GEOLOGIC LANDFORMS

LANDFORM A



LANDFORM B



LANDFORM C