MAPPING YOUR WATERSHED

Objective:

Students will investigate what the contour lines on a topographical map mean.

Materials:

- A clear plastic box
- Masking tape
- Ruler with centimeters
- A pencil
- A container of water to fill the plastic box
- A top ographical map
- Modeling clay

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Procedure:

- 1. Using the modeling clay, build a single hill on the bottom of the plastic box, making sure that the hill is not taller than the box. The hill should be simple in form with gently rising sides.
- 2. Placing a strip of masking tape vertically on the outside of the plastic box, mark off 1-cm increments on the tape, starting at the bottom.
- 3. Pour water into the box until the water level reaches the first mark on the tape.
- 4. Using the pencil point make a groove in the clay at the waterline, making sure the groove completely encircles the hill.
- 5. After making the groove along the first "shoreline" add more water until the water reaches the second mark on the tape. Etch a groove along this second "shoreline".
- 6. Continue filling the box with water and marking shorelines until the hill is totally submerged or "flooded".
- 7. Carefully pour the water out of the model while leaving the clay hill in the box. Then place the lid on the box and tape a piece of clear acetate on top of the lid.
- 8. Have everyone look onto the box from the top and from the sides. The side is the view that we see with elevation. The view from the top is the view the top ography map shows, a series of lines that represent changes in elevation. As you look at a top omap, the view from the top is what you are seeing. The centimeter marks can represent a hundred feet in elevation gain, the place where each line on the top omap is drawn. If the hill is steep in places, the lines will be closer together. If the slope is very gentle, the lines will be spread far apart.
- 9. Repeat the exercise building more complex slopes that are very steep, very gentle, with valleys cutting into it, curvy, etc so the students can compare this experiment to a real topo map. Have the students mold a landscape and map it. Compare this to a real topo map of your area.
- 10. Put up the over-head of the topo map. Ask the students to mark the tops of hills. Ask them to determine the direction water will flow using arrows to show the direction. Water will drain down the hills toward the valleys.

Note:

This activity will work best when the landscape is not just a single hill but when the contour lines resemble a real topo map. Try several attempts until you achieve this. It will be easiest for the students to understand when it resembles an actual map.

Wrap Up:

Take a topo map of your area and take a short walk with it. Go up the places where the lines are close together and feel the steepness. Walk where the lines are spread out and enjoy walking with ease. Look at the landscape and compare it to the map. Would you take a map like this when you were hiking in an unfamiliar area? How about in a familiar area? Are there any landmarks on the map you recognize? Could you use a compass with the map if you were lost? Can this type of map help you locate a watershed? Can it help you predict any areas that might be introducing contaminants to the water supply? What else could you use this type of map for?