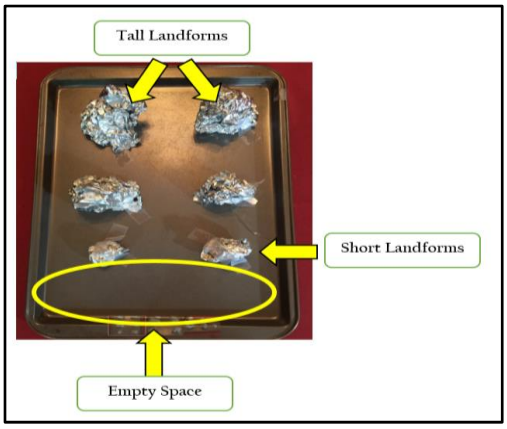
Steps

**“Natural Watershed Model”**

- ☐ Assemble your base using a flat tray **with edges**. These edges are necessary to prevent spills.

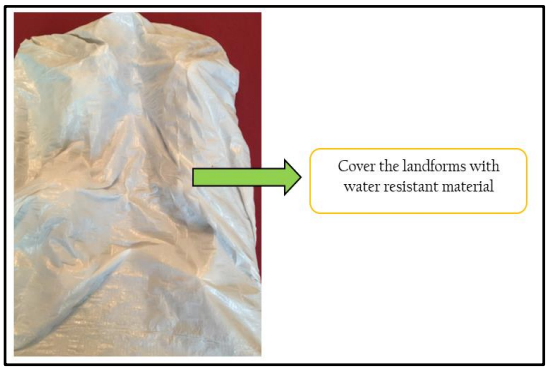
- ☐ Crumple the aluminum foil or paper-like material to begin forming varying heights of “land” features. Make sure your structures vary in height. The top of the model should be higher than the bottom of the model. You will need 5 or 6 different shapes.

- ☐ When you have several crumpled shapes begin adding them to the base of the model, add the landforms, and secure them with tape.
  - Place taller features toward the back. This will be important in later steps.
  - Make sure you don’t overcrowd your model, save free space at the bottom of the watershed.



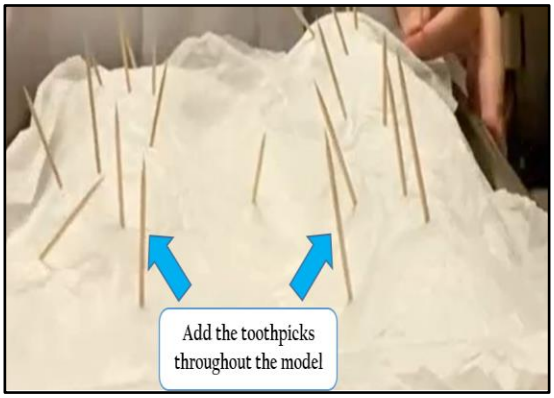
- [ ] Completely cover the tray with water resistant material such as aluminum foil, parchment paper or a white trash bag. It should fit over all of your land features as well and be snugly tucked in the spaces made by the understructure

    - You can tape down the parchment paper or a trash bag underneath the base of the model.

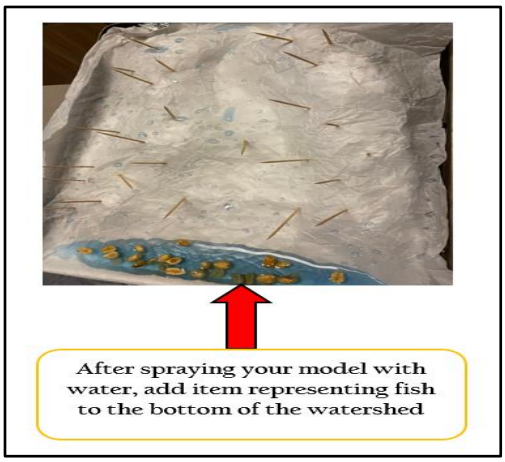



- [ ] Create a 10 cm tall incline for the model using materials that cannot be damaged by water. If using books, be sure to place the books in plastic covering such as a trash bag or baggie.
- [ ] Set one end of the model on the books and leave the other end on the work surface. The model should look like a ramp with hills and valleys.


- [ ] Time for the toothpicks. Pierce a minimum of 30 toothpicks, through the overlying material across the watershed model.
    - These will model trees and plants.



- ☐ Fill your spray bottle or water bottle with holes in it with water. Begin spraying your model generously in all areas of the model to simulate rainfall.
- ☐ Observe what happens to the water. Draw, describe, or photograph your observations.
- ☐ Add some beans, nuts or grains to the accumulation of water found at the bottom of the watershed to represent fish.




- ☐ Using paper towels or a cloth, dry off the landforms in the model to remove any excess water. Leave the accumulation of water with the fish in the tray.

**"Human Footprint Watershed Model"**

- ☐ Using small items such as small blocks, dice, Legos or figurines (you can even draw the models on index cards and cut out) add some houses, a factory, a farm, and any of your favorite places on this Earth to the model. As you add the items to the model, think about the community. Where would a neighborhood, a farm, a factory or even your favorite shopping areas go in this model? Feel free to be creative to the community you build on the model.
- ☐ Each of the added human items in the model have some impact, referred to them as pollutants. Using the two different spices, the food coloring/oil and the small seeds/non-water soluble spices decide which one will represent the following pollutants in the model: pesticide, fertilizer, chemical waste, and plastic waste. Create a key of your choices. See example below.

*Pollutants Key example:*

| Item from the materials list | Pollutant (Human Impact) |
|---|---|
| What item best represents a pesticide? _____ | Pesticide (What would this look like and where should it go in the model?) |
| What item best represents a fertilizer? _____ | Fertilizer (What would this look like and where should it go in the model?) |
| What item best represents chemical waste? _____ | Chemical Waste (What would this look like and where should it go in the model?) |
| What item best represents plastic waste? _____ | Plastic Waste (What would this look like and where should it go in the model?) |

- ☐ Add the pollutants around the house, farm, factory, or other human areas. Each pollutant represents something specific to the key developed above. For example:
    - A pinch of cinnamon (Spice #1) can represent fertilized lawns and be sprinkled around the houses.
    - A pinch of chili powder (Spice #2) will represent pesticides on a farm and be sprinkled around the farm.
    - A pinch of pepper or sesame seeds (not water soluble) will represent plastic waste sprinkle the seeds where you find human activity in your model.
    - A few drops of food coloring around the factory can represent chemical waste.
    - *If you think of other pollutants, feel free to add it to the model.*

- ☐ Begin spraying your model generously in all areas of the model to simulate rainfall.
- ☐ *Reflection Questions:*
    - What did you notice about the two models?
    - What are some differences between the natural model and the human footprint model?
    - How do human activities impact the environment they inhabit?