Interactive Trail *Draft 4*

The trail begins at the Ela Sanctuary Information Station

Answer all questions in your notebook.

Exercise 12

Station 7

Soiled Soils

Good **soil** is needed to produce food and other crops needed by humans. We will compare the soil in the footpath, near the power poles and in the wooded area near the poles. *(4.102, 5-1.05, 5-4.22)*

Part 1

1. Why is the soil near a river usually very good soil for growing things?
2. Early settlers cut down the trees near riverbanks to develop more farmland. What problems has this practice caused? *(5-1.08)*
3. People like to build houses overlooking rivers. Why is this sometimes a problem?
4. Take a cup of soil from each location. Use a piece of clear tape to collect a soil sample from each cup. Examine the soil from all three locations with the magnifying glass. Note the **size** of the particles, the **color** of the particles and the **hardness** of the particles. Place this information in the following table:

Area	**Path**	**Open Area**	**Wooded Area**
Color of particles			
Size of particles			
Shape of particles			
Plant materials			
Insects			
Worms			
Odor			
Hardness (probe depth)			
Time for water to reach the bottom of the cup			
Amount of water passing through the cup (oz)			
pH			
Iron			
Soil temperature			

5. Drag a magnet through the soil at each location to detect the presence of iron. Estimate the amount of iron particles present in each sample with 1 being the lowest amount of iron and 3 being the highest.
6. Clay particles are smaller than sand particles. Can you determine which is more common in each sample? Use a magnifying glass. Record which type of particle seems to be the most common in each sample.
7. Use the screwdriver to probe the ground in all three areas. Push the screwdriver into the ground with the same amount of pressure using the palm of your hand in all three locations. Measure the depth of the probe. Do this by measuring the length of the screwdriver and subtracting the length of the part of the screwdriver that does not go into the ground from the total length of the screwdriver blade. *(4.102, 5-1.05, 5-4.22)*
8. Which soil is more **compact**? Why is this soil more compact? *(5-1.08)*
9. Which soil has the most organic (once living) materials in it?
10. Where do **organic** materials come from? *(4-7.05, 5-7.06)*
11. Which soil had the most clay?
12. Which soil had the most sand?

Part 2

1. Poke a hole in the bottom of each cup and use the **graduated cylinder** to pour 100 milliliters of water into each cup. Time how long it takes for the water to pass through the soil to the bottom of the cup.
2. Hold the graduated cylinder under the hole in the cup and then measure how much water actually passes through the cup.
3. In general, soils with a **pH** near 7 are neutral and better for growing things. Use the pH paper test strip to determine which location has the pH that is best for growing plants?
4. Dig a small hole in the soil at each location and place your thermometer partially into the hole so the bulb of the thermometer is about two inches below the ground. Fill in the hole with dirt to bury the thermometer base and leave the thermometer in place for about three minutes and record the temperature in the table.
5. Which soil is the warmest? *(4.102, 5-1.05, 5-4.22)*
6. Check the air temperature and compare the soil temperature with the air temperature. Give a possible explanation for any change you note in the comparison. *(4-1.03, 5-1.06)*