

Water Quality Station

Some notes for setting up the station:

- Set up the Enviro-Scape model and have plenty of water and paper towels for cleaning it between groups
- Calibrate the pH and turbidity meters. The pH meter gets crazy if it spends the day in the sun, try to keep in some shade or in its case when not in use.
- Create a polluted sample – this is just creek water with a small amount of dirt to change the turbidity and a small amount of lemon juice to change the pH.
- Collect a fresh creek sample right before the students get to the station. It might be good to check the temperature right after it is collected, this is one parameter that will change upon standing. This will need to be done before each group.

1.) When the students get to the station we start with introductions

- Your name
- Where you work
- Your background – schooling/work experience

2.) Next we give them an introduction to the station – the Water Quality Station

- We will be checking the creek for a couple of water quality parameters: Temp, Turb., pH, DO
- Looking at the big picture – what is going to affect the quality of water in our creek
- Ask for a definition of a watershed. The water shed we are standing in is easy to see, just look up at the ridge tops

3.) Lead into how all water is connected

- Ground water flows through the ground like surface water flows under the ground
- Ask if they know where their drinking water comes from
- Talk about how human activities on the earth surface affect water quality

4.) This discussion leads into using the Enviro-Scape – Make this as hands-on and interactive as possible.

- Have the students look at the model and describe what they see, what is represented on the model – like the golf course
- There are 5 different contaminants that are added to the model. (Fertilizer, Pesticides, Industrial Waste, Oil/Automotive fluids, Sediment) Have student volunteers add these contaminants to the model in areas where the contaminants may be found.
- While the contaminants are being added ask for the definitions of point source pollution and non-point source pollution. Talk about the different contaminants and if they would be point or non-point source pollution.

- Finish with the model by making it rain and talking about what happened and what could have been done differently to protect the quality of the river and lake.

5.) At this time we move on to analyzing the creek water.

- Have the students get their worksheets ready for this portion of the station. There are questions that we usually ask out loud to the group for the group to answer and then record their answers.
- With each water quality indicator have the students predict what they think the result will be.
- We try to have different students help with each of the different tests.

Temperature

- Ask what units temperature is measured in.
- Have the students predict what they think the result will be and then test the creek water. Also test the polluted sample for comparison.

Turbidity

- What is turbidity a measurement of? What does water look like that has high turbidity?
- What instrument do you use to measure the turbidity of a sample?
- A good real world example of turbidity is the amount of dirt that comes off washing one car or truck, then have them visualize how much sediment that would be if everyone in town washed their car.
- We have a chart for the students to look at that shows how the increase in turbidity over a period of time affects fish.

pH

- Ask the students about the pH scale, what it is and what it is a measurement of.
- Go over the pH scale chart that shows common household products.
- We usually bring both pH strips and our field pH meter to test the water. This allows us to talk about the accuracy in different methods.

Dissolved Oxygen

- We have HACH field test kits to use for the DO analysis. Make sure the students wear glove for this test and that the waste is collected for proper disposal.

We wrap up the station by talking about point and non-point source pollution examples and which water quality indicator it may affect. We also help them with any unanswered questions that they have for their scenario in Watershed Wonders.