



## Water Quality Station Instructions

The purpose of this station is to determine the water quality of the stream. You will learn how to use water chemistry monitoring kits to measure the water's pH and the amounts of nitrate, phosphate, dissolved oxygen, and turbidity. You will learn healthy levels for each of these measurements, and what factors can cause them to become imbalanced. You will also determine the amount of water flowing in the stream.

After completing this station, you will have a better understanding of the connections between land use practices, water chemistry, and stream health.

To complete this station, follow the instructions below to gather data on various physical and chemical qualities of the stream.

### ***Air and water temperature***

Use the thermometers in the GREEN water monitoring kit to record the air and water temperature. Lower water temperatures enable the water to hold more oxygen, which in turn improves living conditions for aquatic plants and animals.

### ***Water chemistry***

Follow the instructions in your GREEN water monitoring kit to measure the dissolved oxygen, pH, nitrates, and **turbidity**. Record the data results and clean the vials for the next group. Following are some important things to remember for each chemical factor:

- **Dissolved oxygen:** Aquatic plants and animals need oxygen, just like those that live on dry land. Dissolved oxygen rates of 5 or greater support active plant and animal growth; aquatic plants and animals cannot live below a dissolved oxygen level of 1 or 2.
- **pH:** Using a numbered scale, pH identifies how acidic or alkaline the water is. Water that is too acidic (with a pH below 4) or too basic (with a pH above 9) will harm or destroy aquatic plants and animals. pH readings near the middle of the pH scale (between 5 and 8) better support living things.
- **Nitrates:** Higher levels of nitrogen are harmful to aquatic plants and animals. Fertilizers and other man-made products contain high levels of nitrogen that can pollute streams, causing nonnative aquatic plants to grow so much that they block sunlight needed by other plants critical to the stream ecosystem.
- **Turbidity:** Turbidity is a measure of the clarity of water. Dirty, cloudy water blocks sunlight that plants need for photosynthesis, and makes it difficult for animals and plants to “breathe” the oxygen present in the water.
- **Coliform bacteria:** Fecal coliform, found in animal droppings, can pollute streams, particularly in agricultural areas. This bacteria is toxic to aquatic plants and animals. To measure coliform bacteria levels, label a test tube with the date, time, and location of the sample. This sample must be taken back to the classroom to incubate for 48 hours before determining the results.



## Water Quality Station Instructions (con't)

### ***Turbidity tube test***

This is a fun way to visually measure the clarity of the water. Fill a plastic turbidity tube to the top with water from the stream. While looking through the top, allow water to flow out of the bottom by opening the small plastic tube. Record the level at which the black and white disc at the bottom of the tube becomes visible. Use the numbers on the white tape on the outside of the tube to determine your data results. Check to see how closely this matches your findings with the GREEN water monitoring kit. (Note: Unlike the GREEN water assessment, this test measures turbidity in centimeters.)