Field parameters and what they mean

As water quality is sampled, certain parameters can be determined on the spot with properly calibrated field monitors without the need of laboratory analysis. These parameters are dissolved oxygen, temperature, pH and conductivity. Each of these is discussed below.

Initial water quality testing performed by DENR staff on site at Duke Energy's Dan River power plant on Tuesday showed no deviation from normal levels for each of these parameters.

pH – This is a measure of how acidic or basic the water is. Normal range for this is 6-9 standard units (su). Higher pH levels indicate a more "basic" environment where metals are more stable. The lower the pH reading, the more acidic the water composition is. More acidic water will increase the dissolve rate of metals, and make the metals more available for biological uptake.

Conductivity – Conductivity measures how well water conducts electricity. There is no water quality standard for conductivity as it is somewhat dependent on stream location and the soil composition of the streambed. Range of conductivity for our ambient monitoring (not associated with a particular pollution event) in the Dan River waters near this area is from around 45 micro Siemen per centimeter (us/cm) at 25 degrees Centigrade to 225 us/cm at 25 degrees Centigrade. Water that contains more ions – charged atomic particles – has higher conductivity readings. High conductivity prompts us to look further for a pollution source. In cases where a pollution source is not visually apparent, following the trail of conductivity readings helps us to locate the source of pollution.

Dissolved oxygen (DO) – The water quality standard for dissolved oxygen is not less than a daily average of 5.0 milligrams per liter with a minimum instantaneous value of not less than 4.0 mg/l for non-trout waters like the Dan River. Low DO levels mean that less oxygen is available to aquatic life. Low oxygen levels can cause problems for aquatic animals such as fish and aquatic bugs. It can affect their ability to reproduce or to survive.

Temperature – Water temperature can inhibit or encourage bacterial growth and possibly play a part in chemical reactions. The warmer the water, the more likely that bacterial development will occur.