

## Glossary of Monitoring Terms

### Conductivity

Conductivity measures ion concentration in water that can carry electricity dependent on temperature. The standard measurement is in siemens per meter, but fresh water monitoring measures in micro-siemens per centimeter. Local geology, natural occurrences, regulated discharges, and pollution can influence conductivity. Organic elements, those containing carbon, have low conductivity values. Whereas, elements, such as dissolved salts and inorganic ions, increase conductivity. Thus, estuaries and sea water have higher levels of conductivity than fresh water. In the streams and lakes, conductivity levels remain relatively constant and range between 150-300  $\mu\text{s}/\text{cm}$  depending on the watershed.

### Dissolved Oxygen

Dissolved oxygen (DO) measures microscopic oxygen gas molecules in water in milligrams per liter (mg/L). The amount of DO contributes to various biological processes in waterways and can be a limiting factor for aquatic life. On average, DO ranges from 6 mg/L to 12 mg/L. Seasonally and daily, DO levels fluctuate. Colder, winter water holds more dissolved oxygen than warmer, summer water. Photosynthesis also drives daily DO levels. During the day, aquatic plants produce oxygen from photosynthesis. At night, aquatic life consumes oxygen, resulting in a diurnal oxygen cycle. Algal blooms alter this diurnal cycle by using more oxygen during the day than aquatic life produces, which can cause hypoxic conditions. The North Carolina State Standard for DO is  $<4$  mg/L.

### Macroinvertebrate:

An insect that lives in the water during its early stage of development and then emerges from the water as a winged adult. Examples of Macroinvertebrate include stoneflies, caddisflies, mayflies, and mosquitos.

### pH

pH is the measure of hydrogen ions in a solution. All aqueous solutions can be measured to determine pH value. Values range from 0 to 14 on a unit less scale. Solutions with a pH value below 7 are acidic, and solutions with a pH value above 7 are basic (alkaline). Pure water is neutral with a pH of 7. In general, pH in the streams and lakes in Mecklenburg County read around 7 but fluctuate regionally and seasonally. The North Carolina State Standard for pH ranges between 6 and 9.

### Temperature

Temperature changes daily and seasonally, which affects aquatic life and water chemistry. Due to water's high specific heat constant, it retains heat longer than the air temperature but also takes longer to heat up than the air temperature. Besides sunlight, industry and urban runoff can increase water temperature. Aquatic organisms have an optimal temperature range for survival as well as other biological processes, such as reproduction. The North Carolina State Standard for temperature is  $32$  °C.

### Turbidity

Turbidity measures water clarity dependent on the amount of suspended particles. There are several different methods for measuring turbidity. NTU devices use a  $90^\circ$  angle to measure how light scatters. Muddy and murky streams and lakes are a visual sign of an increase in turbidity. Turbid streams and lakes can be attributed to upstream construction, pollution, rain events, and other natural occurrences. For streams, the North Carolina State Standard is 50 NTU. For lakes, the North Carolina State Standard is 20 NTU.