Water Quality Parameters Analyzed in the McKenzie Watershed

The focus of this series is on some of the water quality parameters analyzed in the McKenzie River Watershed. Anyone interested in learning more or volunteering for water quality efforts is encouraged to contact the MWC at (541)687-9076.

Dissolved Oxygen (DO)

Oxygen is as important to life in water as it is to life on land. Most aquatic plants and animals require oxygen for survival and the availability of oxygen affects their growth and development. The amount of oxygen found in water is called the dissolved oxygen concentration (DO). DO is a very important measure of the health of a stream – the presence of oxygen in water is a positive sign, the absence of oxygen in the water is often a sign that the stream is polluted. DO levels vary from stream to stream, as do organisms' tolerance for dissolved oxygen levels.

For short periods of time water may become supersaturated, holding more oxygen or other gases than it is supposed to. Supersaturation can also be harmful to aquatic organisms, causing a condition called gas bubble disease, which is similar to the bends disease that deep sea divers may get if they surface too fast.

Lack of sufficient levels of dissolved oxygen required by most aquatic organism for respiration. Some organisms have adapted to low oxygen in water or are able to ingest air directly.

Causes:

- Rapid decomposition of organic materials, including dead algae, shoreline vegetation, manure or wastewater sources, decreases O_2 concentrations.
- High ammonia concentrations in the stream use up oxygen in the process of oxidization NH_4^+ to NO_3^- (nitrification).
- At higher temperatures, less oxygen can dissolve in water.
- Lack of turbulence or mixing to expose water to atmospheric O_2 results in low dissolved oxygen concentrations in the stream.

Student Watershed Research Project: A Manual of Field and Lab Procedures. 3rd Edition, 1996. A Saturday Academy Publication Oregon Graduate Institute of Science and Technology.