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.

Conductivity

Conductivity is the ability of a solution to carry an electrical current. It is affected by the concentrations and types of ions in solutions. It is also affected by temperature. Inorganic ions tend to be better carriers of electrical current and tend to have a higher conductivity than solutions containing mostly organic ions. Ocean waters will have very high conductivity relative to fresh waters.

Because of the close correlation between changes in conductivity and levels of total dissolved solids, the measure of conductivity is used to asses the degree of mineralization and the physiological effect of ions on plants, animals and chemical equilibrium.

The basic problem with conductivity is too much salt in the water. If it becomes excessive, some organisms "dry out" because water is sucked out of their membranes. Conductivity can also be an indicator of different sources of water: some sources contain much higher salt concentrations than others, and those differences can be used as tracers for finding sources of materials.

Causes:

- Frequently the salts are simply naturally-occurring ions like calcium, magnesium, potassium, sodium, chloride, and sulfate.
- Human and animal wastes may have fairly high concentrations of salts, sometimes to excessive levels, so increased salt may mean animal wastes are entering the stream
- Large fertilizer inputs also raise the salt levels, and many industrial wastes are high in salts.
- Many organic materials, like sugar, do not conduct electricity, so an industrial waste may be high in sugar but he conductivity of the solution can still be quite low.

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.