Nonpoint Source Pollution Management Program

January 2011

Dissolved Oxygen (DO)

What is it?

Oxygen that has been mixed into the water by; waves on lakes, tumbling water in rivers, and photosynthesis by algae and rooted aquatic plants.

Why test for it?

Like land organisms, aquatic animals need oxygen, specifically dissolved oxygen (DO) to live. Fish, invertebrates, plants and aerobic bacteria all require oxygen for respiration.

Waters with consistently high levels of DO are considered healthy and stable aquatic ecosystems that can support a variety of life. Low DO levels indicate a demand on the oxygen in a water body and may result from several scenarios.

What affects dissolved oxygen levels?

The capacity of water to hold dissolved oxygen is limited by the temperature and salinity of the water and atmospheric pressure.

Increased suspended solids can affect dissolved oxygen by causing waters to become warmer and lessen the ability of the water to hold oxygen. Cooler water has a higher potential level of DO. DO levels may also be affected by the decomposition of plants. Aerobic bacteria consume oxygen as they break down dead organic material. Plants also affect the amount of DO through respiration. When photosynthesis stops, plants and animals continue to respire and consume oxygen. Just before dawn DO falls to its lowest level.

How can we improve the DO capacity of a surface water?

Protection of the land in a watershed from erosion, by use of conservation tillage measures and giving urban runoff time to settle out before reaching our surface waters. Reduction of the amount of nitrates and phosphates which encourage excess plant growth will also be beneficial.

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