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Sediment Quality Indicators

Sediment quality sampling examines characteristics of river, stream, or lake **substrate**. Substrate refers to the organic and inorganic materials that make up the bed of a river or stream. Inorganic material originates from erosion of minerals within the surrounding basin or river channel and banks, or enters the river in large quantities through mass wasting (for example, landslides). The deposition of sediment into waterbodies is called sedimentation or siltation. Inorganic sediment material includes:

- Fine material, such as clay, silt, and sand, with particle diameters less than 2 mm;
- Coarse material, including gravel, cobble, and boulders; and
- Bedrock.

Organic material within the sediment includes animal matter, aquatic plants, leaves, flowers, pollen, and even whole branches and trees. This organic matter can be degraded by physical, chemical, and biological processes, resulting in the formation of smaller organic particles and the release of dissolved organic matter and nutrients. Large organic debris (e.g., fallen trees) can affect stream substrate by changing flow patterns in microhabitat such as debris jams and pools.

Sediment is transported primarily during periods of high river flow. The relatively large size and density of substrate particles leads to transport by rolling, sliding, or saltating ("bouncing") along the streambed rather than by suspension in the water.

The composition of river sediment, and its interaction with other environmental factors, can affect the species composition, density, diversity, and biomass of aquatic biota. Mixed substrates provide a greater range of surfaces available for colonization, and provide more complex microhabitat and micro-flow patterns. In general, increased substrate stability, complexity, and organic matter content lead to higher diversity and abundance of aquatic organisms.

The following sections further describe characteristics of sediment commonly assessed:

- [Physical Indicators](#)
- [Chemical Indicators](#)

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