

**GUIDELINES AND STANDARD PROCEDURES for the
USE OF AUTOMATIC SAMPLERS FOR THE
COLLECTION OF SURFACE WATER-QUALITY
and SEDIMENT DATA**

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ABSTRACT

The importance of fluvial sediment, dissolved and suspended pollutants, nutrients, and bacteria to the quality of aquatic and riparian systems is well established. The U.S. Environmental Protection Agency identifies sediment and sediment related constituents as the most widespread pollutant affecting the beneficial uses of the Nation's rivers and streams. The evaluation of sediment and water quality as they relate to agriculture, urbanization, highway and residential construction, mining, industrial discharge, and other activities requires extensive data collection, the effects of which often impact small- to medium-size drainage basins the most. These basins are the hardest to sample due to the rapid rate at which water-quality and sediment concentrations can change during a hydrologic event. Some studies require frequent collection of samples at many sites in a basin.

In this presentation, an automatic sampler is a device that pumps a volume of water/sediment mixture from a stream, lake, reservoir, or storm drain and places it in a container for further physical, chemical, or biological analyses. An automatic sampler collects a sample on command from some internal or external control unit. The command to sample (often referred to as "triggering" the sampler) might come from an operator during a site visit or through a remote communication link. In addition, the command could be issued automatically at a fixed schedule in time, or it may be issued in a simple or complex way based conditions measured by instream or stream bank sensors. The logic for sensor-triggered sampling typically is programmed into the sampler's internal controller or an external data-collection platform or special-purpose computer.

This presentation outlines the guidelines and standard procedures for the use of automatic samplers for collection of surface-water and suspended-sediment samples by the U.S. Geological Survey that are contained in a recent report by the same title. The report gives a general background into how automatic samplers work; how to install, service, and calibrate them; what material can be used in their construction when certain constituents are collected; standard operating procedures; and quality-control considerations.

KEYWORDS

Automatic samplers, autosamplers, suspended sediment, water quality, sampling, pumping samplers