

Sampling Equipment for Off-Site Storm Water Discharge

Some states participation in the Phase I of the NPDES Program require monitoring of storm water that leaves sites greater than one acre in size. Samples should be collected within 45 minutes of the time when the surge of the sediment passes through the collection point. The person preparing the monitoring component of the Erosion, Sedimentation and Pollution Control Plan should evaluate each site before recommending which device of the three techniques described below should be used.

Manual grab sample A wide-mouth (clean) jar is used to extract a sample from the middle (left to right, and top to bottom) of the stream at the calculated elevation when the crest passes the sampling site.

Advantage: For construction of short duration or in non-rainy seasons, this is a real money saver.

Disadvantage: If the stream is wide and /or deep the sample location may be difficult to reach. When discharge occurs late at night or early morning someone has to be on the site.



Rising stage sampler Before the advent of the electronic methods currently used, federal and state agencies used this simple device. The sampler is set at a pre-determined elevation, so that on the rising stage of the stream flow, a sample is collected and retained.

Advantage: The rising stage sampler is a low-cost method. Consider this one for remote sites, or when you can't arrive when the peak runoff passes the sampling point.

Disadvantage: Burying the collection jar into the streambed can be difficult for low-flow sites.



Automatic Sampler This technique uses a battery-powered device to sense the rainfall and the rise in the stream flow before sampling is initiated. The sample is withdrawn by a peristaltic pump. The process is clean, and can be used for remote sites.

Advantage: The sampler is triggered when the stream level has risen to a known elevation as a result of a specific rainfall event. A person does not have to be present. When telemetry is used, the device will notify you that conditions are such that a sample has been taken. Several sources offer a solar-panel to maintain battery strength. Most samplers have a back-flush program that “cleans” the intake tubing after each sample is taken.

Disadvantage: In setting up the sampler, the installation should keep the difference in elevation from the water intake to the actual pump to a minimum. Peristaltic pumps do not effectively lift water/sediment more than about five feet in elevation above the stream. If your sampler sits on a high bank above a stream, this can be a problem.

Common to all three samplers

- Some potential users are concerned about sampler damage by vandalism or large floods. Both have been minimal in our experience.
- The elevation of the water intake port must be adjusted for each anticipated rainfall event.

Cost consideration

Costs vary from free (manual grab sampler) to \$2,000 for an automated sampler outfitted with telemetry. Selection should consider the length of the sampling period, the time of year, site conditions and a cost/labor factor.

