

Collecting Stormwater Samples

Background

Use this handout to learn how to collect stormwater samples for the stormwater chemistry portion of the Score Four: Topography, Landuse, and Stormwater Chemistry lesson.

The following pictures, suggestions, and guidelines for collecting stormwater samples were taken from *How to do Stormwater Sampling: A guide for industrial facilities*, Washington State Department of Ecology (<https://fortress.wa.gov/ecy/publications/publications/0210071.pdf>).



Materials

Suggested materials for stormwater sampling:

- Sampling bottles or other clean containers
- When needed, a pole to hold sample bottles and filament strapping tape (or other tape to attach bottle to pole)
- Powder-free disposable nitrile or latex gloves
- Notebook to write down observations and keep records.

When to Sample

Be sure to check weather forecasts to plan ahead. Collect stormwater samples during or immediately after a storm, within the first 12 hours of stormwater discharge, if possible.

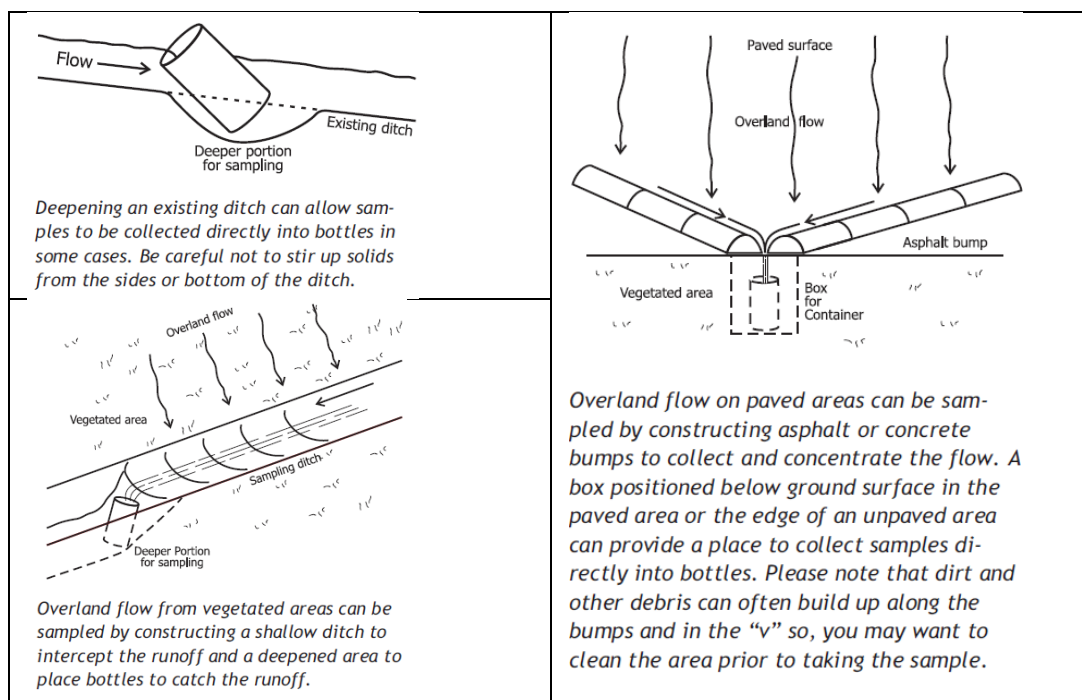
Where to Collect a Sample

Listed below are different locations from which you can collect a stormwater sample. Examine your school campus to determine the most preferable location to collect your sample (safest, easiest, likely source of pollutants).

- **Sampling where stormwater discharges from a pipe into a receiving water**
 - If stormwater is being discharged through a pipe into a ditch, creek, or other receiving water, it can be readily sampled as it falls from the pipe before it reaches the receiving water, if the discharge pipe is safely accessible and not submerged. Hold the bottles with the bottle opening facing into the flow. Take care not to overfill them. You may need to fasten the collection bottles to a pole to reach the pipe.
- **Sampling from a manhole**
 - If you want to sample from the manhole of a municipal storm sewer, contact the municipality beforehand. Discuss safety concerns when talking to the municipality about sampling. Open a manhole with a hook or pick axe, exercising care not to drop the manhole cover on hands or feet. **Do not, under any circumstances, enter the manhole.**
 - Sample the flow in the manhole from above ground by taping the sampling bottles, one at a time, to a pole and lowering the pole into the manhole. Each bottle can be fastened to the pole by holding the bottle against it and wrapping tape tightly around the bottom and the top of the bottle as you hold the bottle firmly to the pole. Filament strapping tape works well for this purpose, as it is waterproof and strong. If the flow in the storm sewer is shallow, the bottle may have to be positioned horizontally with the bottle's opening somewhat higher than its bottom. To avoid picking up extras solids in your sample, be careful not to scrape the bottle against the sides of the pipe.

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- **Sampling from a drainage ditch or swale**
 - Sample the water in the ditch by placing the bottle where the flow is free, with the bottle opening facing upstream. If you cannot reach a freely flowing portion of the ditch by hand, you may need to attach the bottles, one at a time, to a pole for sampling. If the ditch or swale is too small or shallow to sample, you can deepen a small area prior to the rainfall to gain enough depth of flow to sample directly into the bottles. Allow sufficient time after disturbing the bottom for the solids to settle, so they do not become part of your sample.
- **Sampling sheet flow**



- **Sampling from a stormwater detention pond or other BMP**
 - Sample as the stormwater flows out at the discharge point. Ponds may hold stormwater for a time before discharge begins. Sample within the first 12 hours from when the pond begins to discharge.

How to Collect a Sample

Suggested guidelines:

- Wear disposable powder-free gloves when sampling.
- Grab samples with the stormwater entering directly into bottles
- When holding the sample bottle, keep your hands away from the opening in order to prevent contaminating the sample.
- Always hold the bottle with its opening facing upstream (into the flow of water) so that the water enters directly into the bottle and does not first flow over the bottle or your hands.

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- Sample where the water has a moderate flow and, if possible, some turbulence, so that the stormwater discharge will be well-mixed and the sample will be representative. Sampling in still water should be avoided.
- Sample from a central portion of the stormwater flow, avoiding touching the bottom of channels or pipes so as not to stir up solid particles.
- Do not rinse or overfill the bottles. Fill the bottle to about ½ inch of the top (not quite full) to ensure that no preservative is lost. As soon as the sample is collected, cap the bottle and label it.

Do's and Don'ts



DO always wear gloves when taking samples.



DO NOT touch openings of bottles. Keep bottles clean to prevent contamination.



DO NOT sample in stagnant areas with little flow. **DO NOT** stir up bottom sediments or allow foreign materials to enter sample bottle.



DO NOT allow bottle lids to touch the ground. Keep lids clean to prevent contamination.



DO attach a bottle to a pole for sampling, if necessary. A boathook is used in this example, and the bottle is attached with filament strapping tape.



If the water is too shallow to sample with the bottle upright on the pole, try taping it on sideways, but tilted up slightly.



DO NOT sample with the bottle facing downstream, when using a pole or sampling by hand. Water flowing past your container, pole, or hand and into the container can be contaminated by such contact.



DO sample with the opening of the bottle facing upstream, into the flow so the water will enter directly into the bottle.