

PC-11 PERIMETER SAND FILTER

Reference: Maryland Stormwater Design Manual.

Definition and Purpose

Perimeter sand filters are used to capture and treat a volume of stormwater runoff. This BMP consists of an underground concrete vault with distinct chambers designed for various levels of treatment. Flows enter the structure through surface grates and exit the structure through underground pipes. Generally, one chamber collects sediments while the other chamber filters runoff.

Appropriate Applications

Upstream grass channels, grass filter strips, or other BMPs can be used to help remove sediments and particulates before they enter the filter. Upper chamber filters out finer materials and sediments. Flows percolate through a sand filter in the lower chamber and into an underdrain system. A perimeter sand filter is:

- Used to enhance stormwater quality.
- Subject to clogging if moderate to high levels of silts and clays flow into facility and should not be used while construction is occurring in the upstream catchment.
- Most effective in treating runoff from small storms or early stages of larger storms.
- Particularly useful at sites with limited space for water quality treatment such as parking lots or in high-value real estate areas. Filter vaults can be installed under parking lots and streets, but maintenance access needs to be considered.
- Also practical for small sites with flat terrain or a high water table.
- Generally used where sediment loads are low and there is no base flow.
- Used to treat drainage areas of 5 acres or less.
- Useful in watersheds where groundwater quality is a concern or where low-permeability soils prevent infiltration.

Design Parameters

- Generally, basins are designed to infiltrate retained runoff within a 40-hour period.
- A dense vegetative cover needs to be established over all contributing pervious areas before runoff can be conveyed to the filter.
- Screens/grated inlets should be considered in design to keep debris out of filter chambers.

BMP Objectives

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|-------------------------------------|------------------------------|
| <input checked="" type="checkbox"/> | Perimeter Control |
| <input type="checkbox"/> | Slope Protection |
| <input type="checkbox"/> | Borrow and Stockpiles |
| <input checked="" type="checkbox"/> | Drainage Areas |
| <input checked="" type="checkbox"/> | Sediment Trapping |
| <input checked="" type="checkbox"/> | Stream Protection |
| <input type="checkbox"/> | Temporary Stabilizing |
| <input type="checkbox"/> | Permanent Stabilizing |

Maintenance and Inspection

- Conduct inspections as required by the NPDES permit or contract specifications during construction.
- Periodic inspection and maintenance will be required based on post-construction site conditions.
- Make any repairs necessary to ensure the measure is operating properly.
- Regular maintenance is necessary to remove surface sediment, trash, debris, and leaf litter.
- Outlets and chambers need to be cleaned/repared when drawdown times in the filter exceed 36 hours.
- In certain cases, layers of sand will need to be replaced every 3 to 5 years.