

Media Filters

To provide applicants and designers with more options for demonstrating compliance with the Water Quality pollutant-reduction requirement on non-infiltrating sites (Section 1.2.1), Philadelphia Water (PWD) is including guidance on **media filters** in the new Manual.

Use Pollutant-Reducing Practices to Help Meet the Water Quality Requirement

The new Water Quality requirement for non-infiltrating sites focuses on removing pollutants from stormwater runoff from all directly connected impervious area (DCIA) within the limits of earth disturbance. This requirement replaces the former requirement for non-infiltrating sites that required a reduction in the volume of stormwater runoff, but did not specifically require pollutant removal.

In areas where infiltration is infeasible, specific pollutant-reducing SMPs are now required to demonstrate compliance with the Water Quality requirement. A list of these approved SMPs can be found within Section 3.2.4 of the Manual in Table 3.2-2. One such SMP, Media Filters, for which PWD is providing expanded guidance, are introduced here.

What are Media Filters?

Media filters (also referred to as “filters”) are structures or excavated areas containing a layer of sand, compost, organic material, peat, or other filter media. They reduce pollutant levels in stormwater runoff by filtering sediments, metals, hydrocarbons, and other pollutants. Filtered stormwater is then released to a sewer, receiving water, or downstream SMPs. Media filters are designed to allow higher rates of stormwater flow than traditional filters. Sand and other rapid filter media facilitate a smaller SMP footprint by allowing for faster filtration of stormwater. Media filters can be combined with other SMPs in series to meet the Stormwater Regulations. The designer is referred to Section 3.2.4 for information on using SMPs in series.

When Can Media Filters be Used?

Media filters can be used on sites where vegetated SMPs are impractical due to limited surface area or other constraints. They can assist applicants in meeting the Water Quality requirement where infiltration is not feasible. Filters may be used alone in separate sewer areas, or upstream or downstream of detention practices as part of a series approach in combined sewer areas, to meet multiple Stormwater Regulations.

Updated Stormwater Regulations & Guidance Manual

On July 1, 2015, Philadelphia Water updated its Stormwater Regulations, Stormwater Management Guidance Manual (Manual), and Stormwater Plan Review Website to better align with program requirements from State and Federal regulations for managing stormwater.

The Manual will provide a streamlined approach to the review and approval process.

Regulations include four major Post-Construction Stormwater Management (PCSM) Requirements:

Water Quality

Channel Protection

Flood Control

Public Health and Safety (PHS) Release Rate

Help in Tackling Tough Sites

Media filters provide another option for developers in meeting the Water Quality requirements on constrained, non-infiltrating sites, where disconnected impervious cover (DIC) and/or bioretention SMPs may not be feasible.

Applicants submitting projects using media filters must:

- Demonstrate a maximum effluent event mean concentration of 15 milligrams per liter for Total Suspended Solids (TSS) at a point of analysis (POA) downstream of the SMP.
- Provide third-party certifications, product specifications, and manufacturer's installation guidelines for proprietary media filters;
- Include a construction sequence;
- Describe maintenance requirements, including product life and replacement schedule, if applicable; and
- Design a media filter per the design and material standards provided in Section 4.9 of the Manual if a proprietary media filter is not proposed for use.



Key Advantages

Filters have highly flexible designs and configurations that can be useful in meeting the Water Quality requirement where space-constrained, highly developed, or otherwise challenging locations prevent the use of traditional SMPs and infiltration is not feasible.

Filters can be designed to be visible from the surface or located completely subsurface.

Key Limitations

Filters require frequent maintenance to remain operational because they are highly loaded with pollutants.

Many of the ancillary benefits associated with surface vegetated SMPs, such as aesthetic value, improved air quality, and habitat creation, are lost when filters are non-vegetated or subsurface.

Filters do not reduce the volume of stormwater runoff like bioretention/infiltration practices and green roofs can.

Some filters have sizing requirements that result in large footprints due to filtration rates for filter media such as sand.