

Key Features of High Performance Biofiltration

High Performance Biofiltration complements the increasing focus on Low Impact Development (LID). Compact and sustainable high performance biofiltration systems provide value in land savings as well as easy installation and maintenance.

How do you ensure the LID solution you specify will live up to expectations?

QUALITIES OF HIGH PERFORMANCE BIOFILTRATION

- **High Pollutant Removal** – Acceptable removals of all major stormwater pollutants, including TSS, phosphorus, and metals should be verified through multiple, third party field tests meeting nationally recognized protocol requirements.
- **Active Biological Processes** – Ecosystems facilitated by plants and organics are essential for replenishment of the media's adsorption capacity and to long term pollutant removal including phosphorus, nitrogen, and metals.
- **High Biofiltration Media Flow Rate** – High flow rates allow for reduced footprint, ideal for accomplishing LID goals in urban environments.
- **Proven Longevity** – Biofiltration systems are designed to function long-term without the need for media replacement. Third party testing should be conducted on installed systems of varying ages to prove performance over time.
- **Easy Routine Maintenance** – Proper design should allow for maintenance intervals no more than twice per year and at minimal cost.



QUESTIONS ENGINEERS SHOULD ASK REGARDING MANUFACTURED BIOFILTRATION BMP'S

- Can the manufacturer provide third party verified pollutant removal testing AND long-term performance testing?
- Are plants and organic materials incorporated into the design to facilitate biological processes necessary for media longevity?
- How many components must be maintained and at what frequency to ensure proper system functionality?

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WHY ARE PLANTS AND ORGANIC MATERIAL IMPORTANT IN BIOFILTRATION SYSTEMS?

Biofiltration media remains in operation for the life of the system. Plants and organics facilitate a sustainable biological cycle within the Filterra system. This biological cycle is essential for regenerating the system's hydraulic function and pollutant removal capacity through decomposition, degradation and uptake of captured pollutants. Biofiltration systems lacking a sustainable biological cycle will suffer from reduced pollutant removal performance and increased maintenance frequency over time.

1 Organic Mulch Layer

- Filters heavy sediment to protect media from excessive loading and scour.
- Organic molecules and microorganisms within the mulch help to trap and degrade metals and hydrocarbons.
- Provides water retention for plants.
- Decomposes to replenish system organics as they are consumed within the media.

2 Filterra Media

- Filters fine pollutants and nutrients.
- Organics remove dissolved metals through cation exchange.
- Organics serve as food source for root-zone microorganisms.

3 Root-Zone Microorganisms

- Facilitate regeneration of media pollutant removal capacity.
- Digest and transform organics, organic pollutants and inorganic nutrients into forms easily absorbed by plants.

4 Plant Roots

- Absorb stormwater and pollutants transformed by microorganisms, regenerating media pollutant removal capacity.
- Provide hospitable environment for root-zone microorganisms.
- Penetrate media to ensure long term hydraulic performance.

5 Plant Mass

- Utilizes nutrients including N and P for plant health.
- Integrates heavy metals into biomass.
- Provides evapotranspiration of water within the system.

