Meet the BMP:
Filtration Practices for Clean Water

RCWD
RICE CREEK WATERSHED DISTRICT

Overview

Stormwater runoff is rainfall or snowmelt that flows over roofs, roads, parking lots, and other hard surfaces where water is unable to soak into the ground. These hard surfaces are called "impervious surfaces." Stormwater runoff can cause erosion, flooding, and pollution of lakes and streams.

There are different tools and strategies that are used to manage stormwater. These tools and strategies are called **Best Management Practices or BMPs**. Three of the most common types of BMPs are infiltration BMPs, filtration BMPs, and stormwater ponds. The most recognized filtration and infiltration BMPs are raingardens.

This document is designed to familiarize small business and homeowners with filtration BMPs that are easily adopted in residential and commercial settings.

Filtration BMPs remove pollutants and reduce flooding from stormwater runoff by directing it through a filter. Once filtered , clean stormwater is drained to a nearby storm sewer.

How does filtration improve water quality and reduce flooding?

Filtration BMPs use sand, soil, or mulch to filter stormwater. Sediment is trapped and removed when water flows through these materials. Deep-rooted native plants are often included in filtration BMPs to remove harmful nutrients and pollutants. Plants absorb stormwater through their roots and use the water and nutrients to grow. Once stormwater soaks through a filtration BMP, it is captured by an underground drain and sent to the storm sewer.

What conditions are necessary for filtration practices to perform well?

Water professionals consider location of the water table and size of the drainage area (the area of land directing water to the BMP) when designing filtration BMPs. Proper conditions are essential for filtration BMPs to improve water quality and flood control. Filtration BMPs should drain completely within 48 hours after a stormwater event. Filtration BMPs are often used in conditions where infiltration isn't appropriate or possible. Examples include areas with compacted soils, contaminated soils, or potential for groundwater contamination.

The picture to the left shows a common type of filtration BMP known as a biofiltration raingarden. Native plants found in biofiltration raingardens are important for the effectiveness of this BMP. The deep roots of native plants absorb water and remove excess pollutants including nitrogen and phosphorus. Native plants in raingardens provide other benefits to the environment including habitat for wildlife and food for pollinators.

Visit **www.ricecreek.org** or the website of your soil and water conservation district for more information:

Anoka Conservation District: www.anokaswcd.org

Ramsey County Conservation Department: www.ramseycounty.us/residents/environment/soil-water-conservation

Washington Conservation District: www.mnwcd.org

Common Types of Filtration BMPS

Filtration Basins and Biofiltration Rain Gardens

Filtration basins are shallow depressions designed to capture and filter stormwater before it enters the storm sewer system. These basins use sand or a sand-soil mix to trap sediment and pollutants. Biofiltration raingardens (see right) use native vegetation that absorb pollutants for additional treatment. Stormwater in most Minnesota communities is not treated before entering storm sewers unless a BMP like a filtration basin is used.

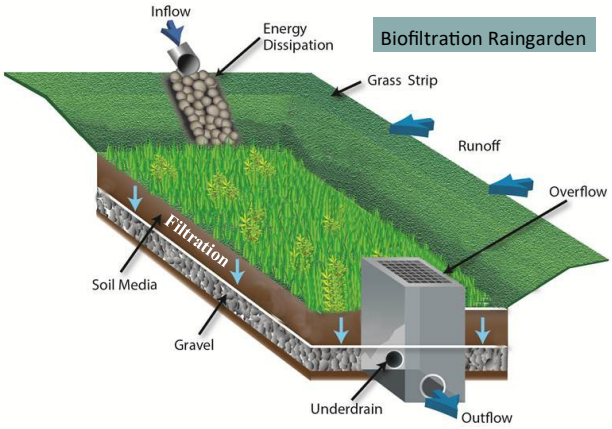

Image Courtesy of the Minnesota Pollution Control Agency

Permeable Pavement

Permeable pavement refers to a pavement surface that contains open spaces for runoff to be directed and filtered. Permeable pavement is used in parking lots, driveways, sidewalks, bike paths, and low speed roads. The graphic to the right shows how permeable pavement works. Runoff is filtered through a layer of sand and exits through an underground drain.

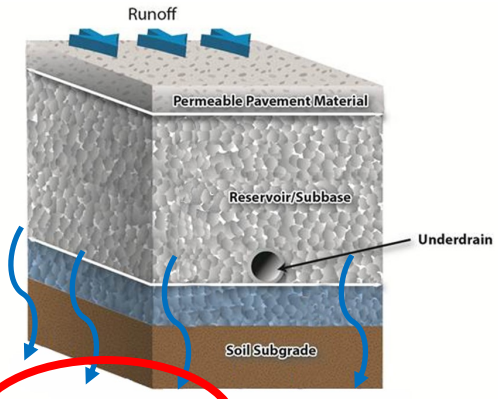

Image Courtesy of the Minnesota Pollution Control Agency

Maintenance of Filtration BMPs

	Biofiltration Basin (Includes Native Plants)	Filtration Basin (Grass or no Plants)	Permeable Pavement
Key Maintenance Issues	• Inlet clogging • Surface clogging from sediment, organic matter, and trash • Erosion of basin slopes • Weeds overtaking native species	• Inlet clogging • Surface clogging from sediment, organic matter, and trash • Erosion of basin slopes	• Surface Clogging from sediment, organic matter, and trash
How and When to Maintain	• Remove sediment, trash, and debris from inlet and basin as needed • Remove weeds as needed • Regularly check slopes for erosion and stabilize with mulch as needed • Each Spring: remove sediment, debris, and trash accumulation, cut back last year's vegetation • Each Fall: remove sediment, debris, and trash accumulation, replace dead vegetation as needed • Every 3-5 Years: remove and replace the top 2-5" of filter media	• Remove sediment, trash, and debris from inlet and basin as needed • Regular check for erosion and apply mulch as needed • Each Spring: remove sediment, debris, and trash accumulation, mow to 3-4" to prepare for summer growth • Each Fall: remove sediment, debris, and trash accumulation, mow to 2" or preferred lawn height • Every 3-5 Years: remove and replace the top 2-5" of filter media	• Maintenance of permeable pavement is usually performed by professionals because it requires special vacuum sweeper equipment. Contact RCWD for a list of contractors providing maintenance services • Each Spring: vacuum pavement and inspect for damage • Each Fall: vacuum pavement and inspect for damage

There are other types of filtration BMPs that are less commonly found in residential and commercial settings. Underground filtration BMPs are used to save space in urban areas and redevelopment projects. These engineered systems store and filter stormwater beneath parking lots, roads, or landscaped areas. Underground filtration systems are rarely used in residential or small business settings due to their high cost and complexity of maintenance.

RCWD
RICE CREEK WATERSHED DISTRICT

The Rice Creek Watershed District is approximately 185 square miles of urban and rural lands in Anoka, Hennepin, Ramsey, and Washington Counties. Its mission is to manage, protect, and improve the water resources of the District through flood control and water quality projects and programs. It was established by the Minnesota Board of Water and Soil Resources on January 18, 1972.