SWEMA FACT SHEET

Bioretention Soils & Soil-Based Filter Media

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Bioretention soils and soil-based filter media is typically a sand filter to which amendments are added to remove dissolved pollutants. The soil mix used for bioretention systems is central fro determining flow control and water quality treatment performance. To perform properly, the soil must provide desired infiltration rate, support vegetation and soil and provide water quality treatment. Specifications for biofiltration soil are outlined by each state.

SWEMA Bioretention Maintenance Procedures

Bioretention systems should be maintained regularly to ensure successful operation of both water quality and hydraulic performance, and extend the longevity of these operations. Maintenance should occur annually at a minimum, and ideally be scheduled in the spring to remove fall and winter debris, i.e. leaves from trees and accumulation of road salts and sands. Each bioretention system should have a tailored maintenance schedule, since the maintenance activities will vary by site depending on land use and the plant palette selected. The maintenance and inspection procedures outlined below are in accordance with recommendations provided in many regulatory BMP manuals.

Inspection Procedures

During the first year of vegetation establishment, inspections are necessary to ensure the system is functioning as designed. Initial inspections should involve at least one visit to the site installation following a large storm event, i.e. ½ inch storm depth or greater. Additionally, the following should be noted during an inspection:

- Standing water: If water is still present 48 hours after a large rain event, the clean out pipe should be inspected for standing water. Water should be poured into the clean out pipe to ascertain whether the under drain system is functioning properly. If a piped under drain system is present, observations should be made where the pipe discharges to ensure the standing water is not due to a site issue downstream. Snaking of the pipe will be necessary if it is clogged. If the clean out pipe is free of water, the issue is likely surface occlusion or clogging within the media bed, and immediate maintenance will be required to remedy the issue. Check for clogged or slow-draining soil media, a crust formed on the top layer, inappropriate soil media, or other causes of insufficient filtering time, and restore proper filtration characteristics. Remove accumulated sediment and, if necessary, the top few inches of bioretention media depending on the severity of the occlusion.

- Scour: Evidence of scour on the bioretention bed surface area should be alleviated by the addition of energy dissipater stones, pavers, matting or other erosion control. Remediate any concentrated flows that may be causing the scour.
- Erosion: areas that appear eroded within the contributing drainage area or around the bioretention area should immediately be stabilized with grass or other surface cover.
- Plant replacement: Some plant die off is not uncommon during the first

year, and therefore plant replacement may be necessary. Plant replacement may also be necessary due to plant die off from hard winter or salt exposure, and should be substituted with hardier plant species.

- Mulch floatation: If mulch floatation is evident, a mulch substitute will be necessary unless it is fresh mulch, which typically floats after the first few events.
- Irrigation: Water requirements should be based on local climate. Watering should occur weekly during the first 2 months for moderate to heavy rainfall areas, and then as needed during the first growing season, depending on rainfall. For bioretention systems in drier climates, supplemental irrigation during the first 2-3 years after planting will be necessary. Little additional water after this period should be required for drought tolerant vegetation, with the exception of extended drought periods. Maintenance plans should include a watering schedule encompassing this information.
- Maintenance frequency: Sediment loading will vary from site to site, and inspections should be performed at least twice throughout the first year following installation to evaluate whether maintenance frequency must be altered for the system to function as designed.
- Sediment buildup: Remove sediment accumulation at curb cuts or other entry points that inhibit flow into the bed. Other signs of bypass should also be evaluated.

Resources:

Low Impact Development Center. April 2010. Low Impact Development Manual for Southern California. Prepared for the Southern California Stormwater Monitoring Coalition, in cooperation with the State Water Resources Control Board. https://www.casqa.org/sites/default/files/downloads/socallid-manual-final-040910.pdf

Prince George's County, Maryland. Environmental Services Division. Dept. of Environmental Resources. Revised 2007. Bioretention Manual.

U.S. Environmental Protection Agency. September 1999. Stormwater Technology Fact Sheet Bioretention. EPA Fact Sheet: Stormwater Technology Fact Sheet Bioretention

Virginia Department of Environmental Quality. January 2013. Draft Virginia DEQ Stormwater Design Specification No. 9: Bioretention. Version 2.0. http://www.deq.virginia.gov/fileshare/wps/2013_DRAFT_BMP_Specs/