Chapter 11 – Proprietary Stormwater BMPs

Introduction

What's New in this Chapter?

- Describes uses and limitations of proprietary stormwater BMPs
- Identifies recommended third-party BMP performance verification programs for use in Connecticut
- Provides general design criteria and maintenance requirements for proprietary BMPs

Proprietary stormwater Best Management Practices (BMPs) are manufactured systems that use proprietary settling, filtration, absorption/adsorption, vortex principles, vegetation, and other processes to remove pollutants from stormwater runoff. Proprietary BMPs are commonly used as pretreatment for other BMPs (see Chapter 13) or as treatment systems in retrofit applications where physical site constraints limit the use of other retention and/or treatment BMPs. Common types of proprietary BMPs include hydrodynamic separators, media filtration devices, and catch basin inserts. This category of stormwater BMPs also includes new and emerging technologies that are continually coming onto the market.

Underground storage and infiltration systems are not considered Proprietary BMPs since treatment typically occurs in the soil below the structure, not in the structure itself. Chapter 13 - Structural Stormwater BMP Design Guidance provides design guidance for underground storage and infiltration systems.

Uses and Limitations of Proprietary BMPs

Proprietary BMPs can be used for the following applications:

- **Pretreatment.** Proprietary BMPs may provide pretreatment for stormwater before discharging to another structural stormwater BMP. Chapter 13 - Structural Stormwater BMP Design Guidance provides design guidance for proprietary BMPs when used as pretreatment. Proprietary BMPs should meet all of the following criteria to qualify as acceptable for pretreatment:
    - Remove a minimum of 50% TSS, based on pollutant concentrations or loads, as verified by a recommended independent third-party stormwater BMP performance verification program (refer to the Third-Party Performance Verification section for recommended programs)
    - Be designed per the manufacturer's recommendations

- Be designed as off-line systems or have an internal bypass to avoid large flows and resuspension of pollutants
- If designed in an on-line configuration, proprietary pretreatment devices should be designed in accordance with the manufacturer's recommendations and any applicable use limitations upon which the third-party performance certification are based.

- **Treatment.** Proprietary BMPs may be used as stand-alone treatment systems to provide additional stormwater treatment (without retention) credit toward Standard 1 – Runoff Volume and Pollutant Reduction (Chapter 4 - Stormwater Management Standards and Performance Criteria). Proprietary BMPs cannot be used to meet the retention requirements of Standard 1 since they do not provide infiltration or runoff reduction. Proprietary BMPs should meet all of the following criteria to qualify as acceptable for treatment:
  - Remove a minimum of 80% TSS, based on pollutant concentrations or loads, as verified by a recommended independent third-party stormwater BMP performance verification program (refer to the Third-Party Performance Verification section for recommended programs)
  - Be designed per the manufacturer's recommendations
  - Be sized to treat runoff associated with the Water Quality Volume (WQV) or associated peak flow rate (Water Quality Flow or WQF)
  - Be designed as off-line systems or have an internal bypass to avoid flows in excess of the WQF and resuspension of pollutants
  - If designed in an on-line configuration, proprietary pretreatment devices should be designed in accordance with the manufacturer's recommendations and any applicable use limitations upon which the third-party performance certification are based.

Third-Party Performance Verification

For proprietary stormwater BMPs to be considered acceptable for use as pretreatment or treatment, the project proponent should demonstrate that the system pollutant removal performance has been verified by a recommended independent third-party stormwater BMP performance verification program. The following third-party BMP performance verification programs are recommended for proprietary BMPs used in Connecticut. These programs have been active and robust in laboratory and/or field testing of various stormwater products and practices for over a decade.

- **New Jersey Corporation for Advanced Technology Stormwater Technologies (NJCAT).** NJCAT is a public-private partnership that was created to help bring innovative

energy and environmental technologies to market. NJCAT administers the proprietary stormwater BMP verification/certification process created by New Jersey Department of Environmental Protection (NJDEP). NJCAT works with manufacturers of proprietary devices to develop quality assurance plans and conduct performance testing. NJCAT also works with independent reviewers to evaluate the results to ensure accuracy and protocol compliance. Once data has been reviewed, deemed accurate and in compliance with the protocols, NJCAT then issues a final verification report that is posted in their on-line verification database. The reports posted in the NJCAT verification database may be used as documentation of pollutant removal performance for proprietary stormwater BMPs in Connecticut, regardless of certification by NJDEP for compliance with the New Jersey stormwater requirements.

NJCAT Verification Database

- **Technology Assessment Protocol – Ecology (TAPE), Emerging Stormwater Treatment Technologies, Department of Ecology, Washington State.** TAPE is the Washington State Department of Ecology's process for evaluating and approving emerging stormwater treatment BMPs. The TAPE program provides a rigorous evaluation protocol and peer-reviewed regulatory certification process that is recognized by many jurisdictions in the United States. TAPE evaluations must be conducted in the field, at a site in the Pacific Northwest or at an Ecology approved Stormwater Technology Evaluation Facility, which includes the University of New Hampshire Stormwater Center. Proprietary BMPs that are certified by TAPE for General Use Level Designation (GULD) for pretreatment (50% TSS removal) and/or basic treatment (80% TSS removal) are suitable for pretreatment and treatment, respectively, in Connecticut. GULD certification designates technologies whose evaluation report demonstrates confidently it can achieve Ecology's performance goals.

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- **Other Equivalent Programs.** Other equivalent independent, third-party stormwater BMP performance verification programs, at the discretion of the review authority. Such programs may include a future national testing and verification program for proprietary stormwater BMPs (Stormwater Testing and Evaluation for Products and Practices or "STEPP"), which is being led by the National Municipal Stormwater Alliance (NMSA).

  Stormwater Testing and Evaluation for Products and Practices (STEPP)

A proprietary stormwater BMP is presumed to achieve the assigned pollutant removal efficiency provided the conditions under which it is proposed to be used are similar to those in the performance testing. Key considerations in making this evaluation include:

- Design flow rate or runoff volume
- Particle size distribution

- Pollutant loading
- On-line versus off-line configuration
- Tailwater effects
- Maintenance

General Design Criteria

The following are general design criteria for proprietary stormwater BMPs, in addition to the design criteria specified by the device manufacturer and any design criteria and/or use limitations upon which the third-party performance certification is based.

- The proprietary BMP should be designed and installed with the same configuration utilized during the performance verification testing.
- Locate proprietary BMPs to be accessible for maintenance and/or emergency removal of oil or chemical spills.
- Designs for hydrodynamic separators may not include grate inlets directly into the unit unless they were specifically tested with this type of inlet.
- Proprietary BMPs subject to vehicular loading should be designed for at least HS-20 traffic loading at the surface.
- All joints and connections should be watertight.
- The manhole cover, or other approved permanent marker, should clearly indicate that the BMP is a pollutant-trapping device.
- Proprietary BMPs should be designed to safely convey overflows to downgradient drainage systems, including overflow structures designed to provide safe, stable discharge of stormwater runoff in the event of an overflow.
- Any connection to downgradient stormwater management facilities should include access points such as inspections ports and manholes for visual inspection and maintenance, as appropriate, to prevent blockage of flow and ensure operation as intended.
- Tailwater effects should be considered based upon the manufacturer's recommendations.

Maintenance of Proprietary BMPs

Proprietary devices should be inspected and maintained regularly for continued effectiveness as pretreatment or treatment systems. The following minimum maintenance guidelines are recommended for proprietary stormwater BMPs.

- Maintain proprietary BMPs in accordance with the manufacturer's guidelines.

- Perform inspections of proprietary devices a minimum of 2 times per year – in late Spring after snowmelt and in late Fall after leaf fall and before the first snowfall.
- During inspections, examined the device for standing water. If standing water is present in the device, and standing water is not a component of the design, take corrective action and revise the maintenance plan to prevent similar failures in the future.
- Clean proprietary BMPs when pollutant removal capacity is reduced by 50% or more, or when the pollutant storage capacity is reduced by 50% or more.
- Typical maintenance includes removal of accumulated oil and grease, floatables, and sediment using a vacuum truck or other catch basin cleaning equipment.
- The Operation and Maintenance (O&M) Plan should indicate the maximum allowable level of oil, sediment, and debris accumulation. These levels should be monitored during inspections to ensure that removal of these materials is performed when necessary.
- Dispose of material removed from the device in accordance with CT DEEP guidelines (see Chapter 6 - Source Control Practices and Pollution Prevention) and other state and federal requirements by a properly licensed contractor.

Refer to Chapter 7 - Overview of Structural Stormwater Best Management Practices for additional design considerations to facilitate and reduce maintenance and for general inspection and maintenance requirements. Maintenance provisions for proprietary stormwater BMPs should be included in the required O&M Plan and Stormwater Management Plan (see Chapter 12 – Stormwater Management Plan).