Appendix T

Proprietary Practices Approval Process

T.0 Proprietary Practice Consideration Overview

This appendix provides details on the information required to achieve DDOE approval for the use of a proprietary Stormwater Best Management Practice (BMP). An applicant seeking to use a proprietary BMP as part of their Stormwater Management Plan (SWMP) may consult DDOE for a list of existing approved proprietary BMPs. If the proposed proprietary practice is not on an existing approved list, the applicant will be required to file a proprietary practice application to document the efficiency of the proposed practice. No stormwater retention or total suspended solids (TSS) removal values will be assigned to un-approved proprietary BMPs.

Applications for a proposed proprietary practice may include a request for an assigned retention value, an assigned value for TSS removal, or assigned values for both retention and TSS removal. Assigned values will be based on annual performance of percent reductions observed for the 1.7 inch design storm event.

T.1 Approval Requirements

If the proposed BMP is not listed in Chapter 3 of the DDOE Stormwater Management Guidebook, or deviates significantly from the specifications listed in the manual, monitoring data demonstrating compliance with the general performance criteria must be submitted. The BMP application must be supported with a minimum of 3 field monitoring studies showing practice efficiency. DDOE will determine the specified retention or TSS removal percentage for the BMP and may put greater emphasis on studies performed in the region due to similar climatic conditions. DDOE prefers monitoring information conform to the Technology Acceptance Reciprocity Partnership (TARP) Tier II Protocol. Applicants that do not conform to the TARP Tier II Protocol must use standard ASTM sampling methods (Section T.3). DDOE reserves the right to request additional information in order to evaluate proprietary practice claims.

A minimum of 3 sites and/or 3 years of annual performance data are required for each supporting study (see T.1.1). This could be, for example, one BMP with 3 years of data or 3 BMPs with 1 year of data each.

Inflow and outflow monitoring must be continuous and include flows that bypass the BMP.

If field performance data are not available, DDOE may provide preliminary approval to a proprietary practice based on laboratory testing data (see Section X.1.2). Preliminary approval will allow a proprietary BMP to be installed at up to 3 sites in the District before field performance data must be submitted for future installations.

T.1.1 Approval Requirements: Submission of Field Studies

A complete application for approval of a proprietary practice based on field studies shall include a summary submission form for each supporting study (see Table X.1). Additionally, the application will include an appendices containing:

a. All findings from the study for each supporting project
b. Minimum maintenance needs to sustain stated practice efficiency

T.1.2 Approval Requirements: Laboratory Testing

If field performance data are not available, laboratory testing of the BMP is required as proof of concept before field demonstrations can be installed and monitored. Laboratory protocol for testing TSS must conform to the New Jersey Department of Environmental Protection (NJDEP) Protocol for Manufactured Filtration Devices for Total Suspended Solids Based on Laboratory Analysis (http://www.njstormwater.org/pdf/filter_protocol_12-15-09.pdf), and submitted with summary submission form (See Table X.1). Once requirements are satisfied, DDOE will provide preliminary approval for installation of the BMP at up to 3 sites.

Table T.1. Proprietary Practice Study Summary Submission Form

Applicant Information	Name:
	Address:
	City: State: ZIP:
	Phone: E-mail:
BMP Name	
Title and Purpose of Study	
Type of Study	Field Study: ☐ Laboratory Study: ☐
Study Location (for field studies)	Approximate Address:
	City: State: ZIP:
Study Length	Number of site years:
Type of BMP Being Evaluated	BMP intended to address (circle one): TSS Removal Retention Both
	Retention and/or TSS Removal Mechanism (e.g. gravitational settling):
Drainage Area Characteristics	Area:
	IC %:
	Runoff Volume from 1.2" Storm:
	Soil Type:
	Predominant Land Cover/Use:
Results	Particle Size Distribution (PSD) of influent sediment:
	Annual % retention of runoff:
	Annual %TSS load reduction:
Maintenance Needs	
Additional Notes	

T.1.3 Approval Requirements: Field Demonstration

Preliminary approval is intended to facilitate gathering of field performance data for a BMP. If preliminarily approved BMPs will be monitored following installation, the submission summary report must include all summary information from Table T.1. as well as:

c. Data Quality Assurance Project Plan
   Guidance can be found at: http://www.epa.gov/quality/qs-docs/g5-final.pdf
d. Monitoring setup
e. Data quality assessment
   Guidance can be found at: http://www.epa.gov/quality/qs-docs/g9s-final.pdf

Monitoring for TSS removal must be done in accordance with ASTM standard sampling and testing methods. The preferred method for estimating practice removal efficiency is the Summation of Loads (SOL) method:

SOL = (sum of outlet loads)/(sum of inlet loads)
Montitoring for retention

T.2 Calculation of TSS Loads and Retention Volume

TSS Loads are calculated by multiplying the average pollutant concentration during a storm by the flow volume of the same storm. This method includes flow that enters the practice as well as bypass flow.

The TSS removal value is calculated by the following equation:

(1-Annual TSS Load Out /Annual TSS Load In) x 100%

Where:

Annual TSS Load Out = Sum of all TSS Loads leaving or bypassing the BMP.
Annual TSS Load In = Sum of all TSS Loads directed to the BMP.

The retention value is calculated by the following equation:

(1-Annual Outflow/Annual Inflow) x 100%

Where:

Annual Outlflow = Sum of all flow leaving or bypassing the BMP
Annual Inflow = Sum of all flow directed to the BMP

T.3 ASTM Standard Methods

The following table lists ASTM standards. Follow the appropriate standards based on the type of practice and situation when setting up a monitoring project.

ASTM Standard	Title
D3370	Practices for Sampling Water.
D4840	Guide for Sampling Chain of Custody Procedures.
D5612-94 (1998)	Standard Guide for Quality Planning and Field Implementation of a Water Quality Measurement Program.
D5847-99a	Standard Practice for Writing Quality Control Specifications for Standard Test Methods for Water Analysis.
D5851-95	Standard Guide for Planning and Implementing a Water Monitoring Program.
D6145097	Standard Guide for Monitoring Sediments in Watersheds.
D3977-97	Standard Test Method for Determining Sediment Concentration in Water Samples.
D5907-96a	Standard Test Method for Filterable and Non-filterable Matter in Water.
D6362-98	Standard Practice for Certificates of Reference Materials for Water Analysis.
D5906-96	Standard Guide for Measuring Horizontal Positioning During Measurements of Surface Water Depths.
D5073-90 (1996)	Standard Practice for Depth Measurement of Surface Water.
D5413-93 (1997)	Standard Test Methods for Measurement of Water Levels in Open-Water Bodies.
D5243-92 (1996)	Standard Test Method for Open-Channel Flow Measurement of Water Indirectly at Culverts.
D5130-95	Standard Test Method for Open-Channel Flow Measurement of Water Indirectly by Slope-Area Method.
D5129-95	Standard Test Method for Open Channel flow Measurement of Water Indirectly by Using Width Constrictions.
D3858-95	Standard Test Method for Open-Channel flow Measurement of Water by VelocityArea Method.
D5614-94 (1998)	Standard Test Method for Open Channel Flow Measurement of Water with Broad-Crested Weirs.
D5242-92 (1996)	Standard Test Method for Open-Channel Flow Measurement of Water with Thin-Plate Weirs.
D5640-955	Standard Guide for Selection of Weirs and Flumes for Open-Channel Flow Measurement of Water.
D5089-95	Standard Test Method for Velocity Measurements of Water in Open Channels with Electromagnetic Current Meters.
D4409-95	Standard Test Method for Velocity Measurements of Water in Open Channels with Rotating Element Current Meters.
D5390-93 (1997)	Standard Test Method for Open Channel Flow Measurement of Water with Palmer-Bowlus Flumes.

D1941-91 (1996)	Standard Test Method for Open Channel Flow Measurement of Water with the Parshall Flume.
D4375-96	Standard Practice for Basic Statistics in Committee D-19 on Water.
E178	Practice for Dealing with Outlying Observations.

T.4 References

MDE. 2011. Facts About… Maryland's Stormwater Program & Proprietary Practices. Maryland Department of the Environment. Available at: http://www.mde.maryland.gov/programs/water/stormwatermanagementprogram/documents/www.mde.state.md.us/assets/document/proprietary%202005.pdf

NJDEP, 2009. Protocol for Manufactured Filtration Devices for Total Suspended Solids Based on Laboratory Analysis. New Jersey Department of Environmental Protection. Available at: http://www.njstormwater.org/pdf/filter_protocol_12-15-09.pdf

TARP. 2003. Stormwater Best Management Practice Demonstrations (TARP Tier II Protocols). The Technology Acceptance Reciprocity Partnership. Available at: http://www.dep.state.pa.us/dep/deputate/pollprev/techservices/tarp/pdffiles/Tier2protocol.pdf

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USEPA. 2006. Data Quality Assessment: Statistical Methods for Practitioners. United States Environmental Protection Agency. EPA QA/G-9S. Available at: http://www.epa.gov/quality/qs-docs/g9s-final.pdf