Appendix K: Proprietary Practice Approval Process

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K.1 Proprietary Practice Consideration Overview

This appendix provides details on the *<local jurisdiction>* approval process for the use of a proprietary stormwater best management practice (BMP). If a proposed BMP is not listed in Chapter 3 of this Manual, or deviates significantly from the specifications listed in this Manual, an application with or prior certified approvals sufficient to demonstrate compliance with the stormwater performance standards of the *<local jurisdiction>* stormwater program must be submitted to *<local jurisdiction>*. To differentiate between a traditional stormwater BMP, a proprietary practice, or manufactured BMP, the term Manufactured Treatment Device (MTD) will be utilized for the class of practices that require an approval from *<local jurisdiction>*.

<local jurisdiction> recognizes the value of innovative stormwater pollutant removal technologies where available site area is limited and often constrained by utilities and other factors. However, *<local jurisdiction>* also acknowledges that the resources required to develop and implement a testing program for the purposes of evaluating the performance of new MTDs are beyond the current capacity of *<local jurisdiction>*. Further, *<local jurisdiction>* recognizes that there are other state and potentially national programs being developed to provide for this testing. Therefore, until such time that *<local jurisdiction>* develops a MTD performance testing and verification program, *<local jurisdiction>* will accept performance testing and compliance with the New Jersey Department of Environmental Protection's (NJDEP) Protocol for Total Suspended Solids Removal as outlined in this Appendix.

K.2 Types of Manufactured Treatment Devices

There are numerous MTDs currently available. The various configurations and stormwater treatment objectives represented by this general category of stormwater BMPs will continue to evolve and expand along with stormwater regulations and land development trends. It is not expected that a standard categorization of MTDs here can accommodate this growing industry. However, in order to best address the current regulations and foreseeable regulatory framework, the following represents the types of MTDs and performance goals that will be considered by <*local jurisdiction*> 's stormwater program:

Hydrodynamic Separators (HDS). The term hydrodynamic has been used to describe a family of MTDs that rely on a wet chamber or manhole to encourage gravity separation or dynamic settling of solids during flow conditions (as opposed to quiescent settling within vaults or chambers sized comparably to wet ponds). In most cases the total area of the wet chamber has been reduced through the application of dynamic settling, or vortex (as borrowed from technology applied to remove coarse solids from combined sewer overflows). The term hydrodynamic has therefore been loosely applied to the entire category of practices that are designed to achieve physical settling within a small treatment area, with or without a vortex component. < *local jurisdiction* > considers these practices to be applicable as pretreatment devices to be placed in series upstream of a primary (filtering) MTD or a retention or

pollutant removal practice included in Chapter 4 of this Manual. Pretreatment is typically an essential element of the primary BMP's performance and designed maintenance interval and therefore no additional retention or pollutant removal credit is awarded.

Maintenance of HDS is typically performed with a vacuum truck to evacuate captured sediment and floatables from the unit. Maintenance is normally performed from the surface without need for confined space entry. Depending on the loading from the site, maintenance frequency will typically range from once per year to once every 3-5 years. For the longer maintenance intervals, it is important to ensure that there is adequate storage capacity for accumulated sediment and annual inspection is highly recommended. (SWEMA 2015)

Filtering Treatment Devices. A broad category of MTDs use a filter media contained within an engineered structure. These systems are usually housed within rectangular vault or round manhole structures. Many technologies incorporate sumps or chambers as pretreatment to encourage sedimentation within the structure. This reduces loading on the filtration media or membrane and reduces the overall maintenance frequency and cost for the technology. Manufactured filtration systems use a customized gradation of filtration media or porous membranes to remove stormwater pollutants. Common media include expanded perlite, zeolite and sand as well as other specialized media to target soluble pollutants through chemical processes. Media is generally housed in removable cartridges or compartments within a concrete vault or manhole structure. Flow enters the system and passes through the media where solids are physically filtered from the flow stream and soluble pollutants attach to specialized media. In some cases, the filter media itself may be the proprietary product, while others may also include the media container (cartridges, tubes, etc.), and/or the overall structure geometry and hydraulic components as the proprietary product.

Within the classification of filtering treatment systems are tree box filters. Tree box filters are widely deployed as stormwater treatment BMPs, normally in standalone applications. However, tree box filters can also be used as pretreatment for infiltration, rainwater harvesting and detention.

Pretreatment upstream of tree box filters is not a requirement but can be used in conjunction with tree box filters to reduce maintenance frequency. Tree box filters are based on bioretention technology principles and can also be engineered for enhanced pollutant removal and hydraulic performance, allowing for a smaller footprint and ease of construction and maintenance. Tree box filters target the removal of suspended solids, total and dissolved nutrients and metals, oil and grease, volatile organic carbons (VOCs) and semi-volatile organic carbons (SVOCs), bacteria and trash and debris.

Maintenance of tree box filters is typically performed with a rake and shovel to remove spent mulch and captured sediment, trash and debris from the system. The media surface is replenished with new mulch and the plant is pruned or replaced as necessary. Maintenance is performed from the surface, without need for confined space entry or specialized tools. Depending on the loading from the site or climate location, maintenance frequency will typically range from once to twice per year.

When necessary, < *local jurisdiction* > will determine if the design, sizing, filter media, or other characteristics deviate significantly from the specifications listed in this Manual and therefore requires an approval.

Retention Devices. The current category of retention devices is limited to storage chambers, vaults, perforated pipes, and other forms of supplemental storage volume. These devices generally serve to supplement a primary retention practice such as infiltration, bioretention, etc., by providing additional storage within or adjacent to the practice. Alternatively, these devices may also supplement a pollutant removal practice by creating additional runoff storage volume. In either case, the devices are not considered treatment MTDs. Rather, these storage elements allow the primary BMP to capture and

retain or treat a larger volume of runoff and are therefore considered part of the primary BMP, and not an additional treatment mechanism. Therefore, no additional pollutant removal is credited.

K.3 Proprietary Practice Approval Process – Background

The MTD performance certification program in New Jersey, implemented by NJDEP and NJCAT, provides a continuous evaluation of the effectiveness of the testing and verification protocol. The laboratory testing of filter products may be supplemented by optional field testing to demonstrate system longevity and corresponding expected maintenance intervals. The protocol, New Jersey Department of Environmental Protection Process for Approval of Use for Manufactured Treatment Devices January 25, 2013 (NJDEP 2013a), requires that MTD's obtain verification through NJCAT. The NJCAT Verification process, Procedure for Obtaining Verification of a Stormwater Manufactured Treatment Device from New Jersey Corporation for Advanced Technology January 25, 2013 (NJCAT 2013), and the NJDEP protocol can be found on NJDEP's website, http://www.njstormwater.org/treatment.html. The new protocol includes a formal transition process that recognizes existing MTD certification and allows sufficient time for recertification under the new protocol. In addition, the new NJ protocol remains consistent with the < *local jurisdiction*> stormwater program's treatment objectives (TSS) and performance goals (80 percent reduction). To allow for the use of effective MTDs, < *local jurisdiction*> will accept the existing NJDEP certifications and implement the same expiration schedule of those existing certifications and accompanying verification/certification renewal as required by NJDEP's new protocol. < *local jurisdiction*> will apply the stormwater retention volume (SWRv) treatment requirements to the specific MTD unit sizing formula as verified and certified by NJCAT and NJDEP, respectively.

K.4 MTD Current Approval Status

< *local jurisdiction*> will accept MTDs for use that have a current NJDEP verification/certification as conditioned upon those items referenced in Transition for Manufactured Treatment Devices dated July 15, 2011 (NJDEP 2011) as follows:

- All MTDs that have a MTD Laboratory Test Certification for 80 percent TSS removal will be approved for use by < *local jurisdiction*> until the NJDEP published certification expiration date (determined in conjunction with NJDEP's January 25, 2013 adoption of the new testing protocols; NJDEP 2013b);
- All MTD's that have a MTD Laboratory Test Certification for 50 percent TSS removal will be approved for use by < *local jurisdiction*> for pretreatment upstream of MTDs and, on a case by case basis, upstream of applicable practices listed in Chapter 4 until the NJDEP published certification expiration date (determined in conjunction with NJDEP's January 25, 2013 adoption of the new testing protocols; NJDEP 2013c);
- All MTDs that have a MTD Field Test Certification for 80 percent TSS removal will be approved for use by < *local jurisdiction*> until the NJDEP published certification expiration date (determined in conjunction with NJDEP's January 25, 2013 adoption of the new testing protocols; NJDEP 2013b).

All manufacturers seeking acceptance for use in the Southern Lowcountry based on certification by NJDEP must submit evidence of NJDEP Verification/Certification (Certification Letter) and documentation representing how the MTD design and sizing is affected by the application of the stormwater performance standards as detailed in Chapters 2 and 4, and as compared to that of the NJDEP. The application of a specific MTD sizing criteria or model on a given development site must be rated for a Treatment Flow Rate (as defined by the new 2013 protocol) equal to or greater than the < *local jurisdiction*> Stormwater Retention Volume (SWRv) design storm peak flow rate. Refer to Appendix

G for guidance on the computational methodology for computing the < *local jurisdiction*> SWRv design peak flow rate. Developers and consultants may review available products that have been certified by the NJDEP and select the one most appropriate for their site. For most recent MTD approvals consult NJDEP website http://www.njstormwater.org/treatment.html.

K.5 References

The National Environmental Laboratory Accreditation Conference (NELAC) Institute (TNI) Available at: http://www.nelac-institute.org/

New Jersey Corporation for Advanced Technology (NJCAT) Technology Verification Program and Testing Protocols available at: http://www.njcat.org/

New Jersey Corporation for Advanced Technology (NJCAT) Technology Verification database available at: http://www.njcat.org/verification-process/technology-verification-database.html

New Jersey Corporation for Advanced Technology (NJCAT 2013). Procedure for Obtaining Verification of a Stormwater Manufactured Treatment Device from New Jersey Corporation for Advanced Technology January 25, 2013. Available at: http://www.njstormwater.org/pdf/njcat-mtd-process-1-25-13.pdf

New Jersey Department of Environmental Protection (NJDEP) 2011 Transition for Manufactured Treatment Devices, July 15, 2011. Available at: http://www.njstormwater.org/pdf/mtd-certification-process-7-13.pdf

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