

# **PROPRIETARY WATER QUALITY PRODUCTS AND THE METROPOLITAN ST. LOUIS SEWER DISTRICT'S STORMWATER MANAGEMENT PROGRAM**

## **INTRODUCTION**

*Nonpoint Source Pollution* has a great impact on the quality of surface waters. Stormwater best management practices (BMPs) help control nonpoint source pollution through various techniques that intercept, filter, and treat runoff from developed areas. The Metropolitan St. Louis Sewer District (MSD) recognizes that, over time, new structural BMPs will be developed, including many with proprietary designs. This document provides additional guidance concerning the use of proprietary devices within MSD's boundaries.

MSD has adopted regulations ("Rules and Regulations and Engineering Design Requirements for Sanitary Sewer and Stormwater Drainage Facilities," February 2006) that represent a more comprehensive approach to stormwater management, and include water quality standards that must be met at development and redevelopment sites. These standards, found in Section 4 of the regulations, apply to any construction activity disturbing, individually or in aggregate, 1 acre or more. While providing incentives and preference for nonstructural practices, these standards also address the design of structural BMP's to mitigate water quality and channel stability impacts.

## **BMP DESIGN**

While MSD regulations specify and allow certain structural BMP's, for specific guidance regarding structural BMPs, reference is made to the Maryland Department of the Environment's (MDE), April 2000, "Stormwater Design Manual, Vol. I and Vol. II." This publication outlines the selection, design and construction of various structural BMPs. The structural BMPs allowed for stormwater quality control are divided into five general categories as shown in Table 1.

TABLE 1: STRUCTURAL BMPs ALLOWED FOR “STAND ALONE” WATER QUALITY TREATMENT BY MSD

<i>Stormwater Ponds</i>	<i>Stormwater Filtering System</i>
<ul style="list-style-type: none"> <li>• Micropool Extended-Detention (ED) Ponds</li> <li>• Wet Ponds</li> <li>• Wet ED Ponds</li> <li>• Multiple Pond System</li> <li>• “Pocket Ponds”</li> </ul>	<ul style="list-style-type: none"> <li>• Surface Sand Filters</li> <li>• Underground Sand Filters</li> <li>• Perimeter Sand Filters</li> <li>• Organic Filters</li> <li>• Pocket Sand Filters</li> <li>• Bioretention</li> </ul>
<i>Stormwater Wetlands</i>	<i>Open Channel Systems</i>
<ul style="list-style-type: none"> <li>• Shallow Wetland</li> <li>• ED Shallow Wetland</li> <li>• Pond/Wetland System</li> <li>• “Pocket Wetland”</li> </ul>	<ul style="list-style-type: none"> <li>• Dry Swale</li> <li>• Wet Swale</li> </ul>
<i>Stormwater Infiltration</i>	
<ul style="list-style-type: none"> <li>• Infiltration Trench</li> <li>• Infiltration Basin</li> </ul>	

According to section 4.080.05 of MSD’s regulations, to be considered an effective BMP for stand-alone treatment of water quality, a design shall:

1. Capture and treat the water quality volume (stormwater quality design storm).
2. Remove 80% of the total suspended solids (TSS).
3. Have an acceptable longevity rate in the field.

MSD will consider for review and approval manufactured or proprietary BMPs meeting the applicable requirements, but not included in Table 1. MSD reserves the right to add, modify or delete approval criteria as deemed appropriate and without prior notice. Future criteria or requirements may also change due to any future changes in MSD’s MS4 permit.

**PROPRIETARY BMPS**

**Definition**

A proprietary BMP is a pre-fabricated stormwater treatment structure utilizing settling, filtration, absorptive/adsorptive materials, vortex separation, vegetative components, and/or other appropriate technology to remove pollutants from storm runoff. Proprietary BMPs are intended to capture sediments, metals, hydrocarbons, floatables, and/or other pollutants in stormwater runoff before being conveyed to a storm sewer system, or waterbody. A proprietary BMP is generally adequate for small drainage areas that contain a predominance of impervious cover that is likely to contribute high hydrocarbon and sediment loadings, such as small parking lots and gas stations. For larger sites, multiple BMPs may be necessary.

A manufactured treatment device must also have an appropriate maintenance plan. If privately owned, the device shall be protected by a reserved area, or other legal measures that prevent its neglect, adverse alteration, and/ or removal.

## **DESIGN CRITERIA**

The basic design parameters for a proprietary BMP will depend on the techniques it employs to remove particulate and dissolved pollutants from runoff. In addition, a proprietary BMP shall have a certified pollutant removal (TSS removal) rate. To achieve its assigned TSS removal rate, a proprietary BMP must treat the runoff generated by the stormwater quality “design storm.” Depending on the device’s pollutant removal technique(s), the primary design parameter for a proprietary BMP will normally be either the peak flow rate ( $WQ_f$ ) and/or total runoff volume from the stormwater quality design storm ( $WQ_v$ ). Devices that convey inflow with little or no storage and provide pollutant removal only through such techniques as vortex flow, filtration, and/or absorption are generally based on the peak flow rate of the stormwater quality design storm runoff. Devices that store and convey runoff more slowly and provide pollutant removal through such techniques as sedimentation and/or filtration may be based on the water quality volume.

In the selection of BMPs it should be noted that redevelopment projects, given existing site constraints, often pose significant challenges not encountered in new development. Additionally, different types of sites may produce different pollutant characteristics. Given the above it is reasonable that different sites may necessitate the use of different types of BMPs and what is suited for one site may not be suited for another. With this in mind MSD will consider the approval of proprietary BMPs for the following Use Level Designations.

**TABLE 2: PROPRIETARY BMP USE LEVEL DESIGNATIONS**

<b>USE LEVEL DESIGNATIONS</b>	<b>DEFINITION / USES</b>
General Use Level (GUL)	BMPs approved at this level may be used at all types of sites.
Redevelopment Use Level (RUL)	BMPs approved at this level may be used at non-residential redevelopment sites (i.e., total property area) less than five (5) acres in size.
Highway Use Level (HUL)	BMPs approved at this level may be used on public highway and public road projects.
Provisional Use Level (PUL)	BMPs approved at this level may be used only according to specific “provisions” outlined in the approval. This designation is intended only for use in certain and specific instances.

Regardless of the Use Level Designation, it should be noted that all BMPs should be utilized according to the applicable requirements of MSD regulations. Additionally, underground structural practices are not allowed on residential type projects. A site (i.e., total property area) is considered a redevelopment site if at least 20% of the existing site was impervious coverage as of January 15, 2000. Development of remaining pervious area(s) in succession will not be considered as redevelopment.

The design of all proprietary BMPs conforming to the GUL designation must be based upon the water quality volume. Proprietary BMPs conforming to the RUL, HUL and PUL designations may be based upon either the water quality volume ( $WQ_v$ ) or the water quality flow rate ( $WQ_f$ ). Procedures for calculating  $WQ_v$  are included in the MSD regulations, and procedures for calculating  $WQ_f$  are provided in Appendix D.10 of the Maryland Stormwater Design Manual.

In general, proprietary BMPs must be placed off-line. With the off-line BMP configuration, some of the runoff from storms larger than the stormwater quality design storm bypasses the device through an upstream diversion structure. This not only reduces the size of the required device overflow, but also reduces the device's long-term pollutant loading and associated maintenance, and reduces the threat of resuspension and release of trapped material by larger storm inflows.

The hydraulic design of all proprietary BMPs must consider tailwater effects of downstream waterways or facilities. This includes instances where the lowest invert in the outlet or overflow structure is below the flood hazard area design flood elevation and/or the 15-year 20-minute flood elevation of the receiving stream/ system and possibly the tailwater elevation of the downstream detention storage.

All subsurface or underground BMPs must be designed for HS-20 traffic loading at the surface. All joints and connections must be watertight and durable. The manhole cover or other approved permanent marker for the treatment device must clearly indicate that it is a pollutant-trapping device. Sufficient and suitable access must be provided for each chamber in the device for inspection and maintenance activities. This must include adequate clearance from adjacent structures to allow for placement and operation of maintenance equipment. All castings shall be standard castings where possible, or if not standard must be captive. Where applicable, all other materials and devices used in the BMP shall be in general accordance with the latest edition of the MSD Standard Construction Specifications for Sewers and Drainage Facilities.

### **PROPRIETARY BMP PERFORMANCE CERTIFICATION**

New stormwater BMP products keep appearing in the marketplace. Yet the availability of good data and information on some of these technologies is scarce. To address this problem MSD requires specific performance for each Use Level Designation and specific support and certification for that performance claim. Again, the required performance, or certification of the performance required, may vary according to the Use Level Designation. The minimum types of performance required and certifications required are outlined in Table 3, Proprietary BMP Performance Claims and Certification. Additional requirements may be set forth on an individual basis as dictated by MSD standards, or specific product or site requirements. Loss of required certifications may also result in loss of MSD approval.

Third party certification of all performance claims is required. This certification of performance may be provided by the New Jersey Department of Environmental Protection (NJDEP) or by the Washington State Department of Ecology. The NJDEP certification utilizes the New Jersey Center for Advanced Technology (NJCAT) verification as conducted according to the Technology Acceptance and Reciprocity Partnership (TARP) Protocol. Washington State Department of Ecology utilizes the Technology Assessment Protocol - Ecology (TAPE). In addition to all certifications and laboratory test data, all performance claims should be supported by field test data.

**TABLE 3: PROPRIETARY BMP PERFORMANCE REQUIREMENTS AND CERTIFICATIONS**

<b>USE LEVEL DESIGNATION</b>	<b>PERFORMANCE REQUIREMENT</b>	<b>CERTIFICATION REQUIREMENT</b>
General Use Level (GUL)	The BMP must be able to achieve a removal rate of 80% Total Suspended Solids (TSS) from stormwater runoff generated by the stormwater quality design storm.	Final certification of proprietary BMP performance claims by the NJDEP in accordance with TARP Tier II protocol, or General Use Level Designation for Basic Treatment by the Washington Department of Ecology.
Redevelopment Use Level (RUL)	BMP must sequester all non-aqueous phase hydrocarbon, scum, and floating debris and achieve an instantaneous removal rate of 80% TSS for the storm water quality design storm. TSS removal efficiency shall be based on an influent concentration of <300 mg/L and OK-110 particle size distribution.	Interim certification of proprietary BMP performance claims by the NJDEP in accordance with a NJCAT technology performance verification, or General Use Level Designation for Pretreatment by the Washington Department of Ecology.
Highway Use Level (HUL)	BMP must sequester all non-aqueous phase hydrocarbon, scum, and floating debris and achieve an instantaneous removal rate of 80% TSS for the storm water quality design storm. TSS removal efficiency shall be based on an influent concentration of <450 mg/L and OK-110 particle size distribution.	Interim certification of proprietary BMP performance claims by the NJDEP in accordance with a NJCAT technology performance verification, or General Use Level Designation for Pretreatment by the Washington Department of Ecology.
Provisional Use Level (PUL)	A specific Total Suspended Solids (TSS) removal rate applicable to the use requested is required.	Third party documentation from a public agency or testing agency confirming removal efficiency is required.

MSD may allow use of some RUL approved proprietary or manufactured BMPs at redevelopment sites larger than 5 acres, and these BMPs would be provided the PUL designation in addition to the RUL designation. (However, the paragraphs below will also be strictly required in concert with this enlargement.) The additional PUL designation will be limited to proprietary devices, such as proprietary filters, that have conditional interim certification of proprietary BMP performance claims by the NJDEP in accordance with NJCAT technology performance verification program. These devices must also be actively pursuing field testing in accordance with NJCAT Tier II protocol and final certification by the NJDEP.

Key provisions of the PUL approval will include a firm due date for obtaining the final certification and some form of annual reporting during the testing period. Annual reporting shall include results from the TARP monitoring or a letter from NJCAT/NJDEP stating the results of the quarterly performance monitoring reports. Annual reporting will allow the manufacturer and MSD to identify any performance or operational issues during TARP testing and address them or revoke the PUL designation. Also, given the uncertainty of design flow rates tested in the laboratory versus actual flow rates encountered in the field, MSD may require for devices not holding Tier II certification a reduced allowable flow rate in the design of the BMP. In no case will the PUL approval date extend beyond the expiration date of the current MSD Small MS4 permit. If final certification is not obtained by the due date, MSD may revoke BMP approval from that date forward.

For larger site development projects, MSD does not believe the sole use of a BMP filter device is sufficient to address a site's obligation to manage site stormwater to the maximum extent practicable (MEP). These devices do not minimize stormwater pollutant loading at the point of generation nor do they mimic a site's natural runoff condition (i.e., these devices accept whatever loading and pollutants are created). For these larger sites, MSD's goal is that the overall stormwater management plan also includes practices that minimize directly connected impervious areas, stormwater pollution, and stormwater runoff. While MEP is not a required percentage or amount, the goal is that the volume of runoff treated by proprietary filters will be less than or equal to the volume of runoff managed by other practices that minimize stormwater pollution and runoff (with an emphasis on non-structural methods). In this way, proprietary devices should be treated as a supplementary (rather than a primary) means of meeting MSD's Small MS4 permit requirements. Table 4 below summarizes how this policy would be generally applied to redevelopment sites.

**TABLE 4: RESTRICTIONS ON PROPRIETARY BMP USE AT REDEVELOPMENT SITES**

<b>SITE SIZE</b>	<b>DISTURBANCE SIZE</b>	<b>RESTRICTION</b>
<5 ACRES	<5 ACRES	RUL or GUL approved devices may be solely used
>5 ACRES	<2.5 ACRES	RUL+PUL or GUL approved device may be solely used
>5 ACRES	>2.5 ACRES	RUL+PUL or GUL approved devices shall supplement other practices that minimize stormwater pollution and runoff to the MEP.

## **MAINTENANCE**

Effective performance of any BMP requires regular and effective maintenance. The following requirements must be included in a proprietary BMPs maintenance plan.

### **General Maintenance**

All proprietary BMPs should be inspected and maintained in accordance with manufacturer's instructions or MSD's requirements (if more stringent). In addition, all device components expected to receive and/or trap debris and sediment must be inspected for clogging and excessive debris and sediment accumulation at least seasonally or annually, as appropriate. Disposal of debris, trash, sediment, slurry, and other waste material shall be done at suitable disposal/recycling sites and in compliance with all applicable local, state, and federal regulations. Generally, for devices with the RUL and HUL designation confined space entry requirements shall not be required to complete maintenance of the BMP.

### **Vegetation**

In those BMPs utilizing vegetation, the trimming of vegetation must be performed on an appropriate and regular schedule based on specific site conditions. Vegetated areas must be inspected at least annually for erosion and scour as well as unwanted growth, which should be removed with minimum disruption to the planting soil bed and remaining vegetation. All use of fertilizers, mechanical treatments, pesticides, herbicides, and other means to ensure optimum vegetation health in devices utilizing vegetation should not compromise the intended purpose of the device. All vegetation deficiencies should be addressed in a timely manner and without the use of fertilizers and pesticides whenever possible.

## **Structural Components**

All structural components must be inspected for hardening, cracking, subsidence, spalling, erosion, and deterioration at least annually, and be kept in good repair.

## **Other Maintenance Criteria**

The maintenance plan must indicate the maximum level of oil, sediment, and debris accumulation allowed before removal is required. These levels should then be monitored during device inspections to help determine the need for removal and other device maintenance. More frequent monitoring should be done initially until a pattern of stability, performance and effectiveness is established. Logs and other records of inspection, maintenance and repair shall be kept for the previous three (3) full years.

## **PROPRIETARY BMP REVIEW**

MSD shall consider proprietary BMPs for approval and use, only if the BMP meets all the applicable performance criteria. To facilitate the product review process a detailed application format is attached at the end of this document and labeled as a *Proprietary BMP Application*. Manufacturers should submit complete application packets to MSD for review and approval. Depending upon the results of this application process, proprietary BMPs may be approved for use on projects within the District boundaries.

Five (5) completed copies of the *Proprietary BMP Application* shall be submitted to:

Metropolitan St. Louis Sewer District  
2350 Market Street  
St. Louis, MO 63103-2555

Attn: Engineering Division/ Development Plan Review/ BMP Selection Committee

Applications shall be placed in a three (3) ring binder 8 1/2" x 11" sheets should be used whenever possible. Larger sheets should be firmly attached or included in folders. Different sections of the application should be clearly indicated.

Applications should include all data requested and be arranged in the indicated sections and use a readily readable style. Different sections of the application should be clearly indicated from each other. Note that information beyond that requested, differing formats, and "boiler plate" inserts are not required nor desired.

Any questions regarding the Proprietary BMP Application should be directed to the attention of MSD's Development Plan Review Section. All applications will be reviewed in the order that they are received. MSD reserves the right to request additional information not included. Approvals for proprietary BMPs shall be for limited duration only (generally a period of two years) and MSD reserves the right to periodically review and revise all applications and approvals.

## **FIELD MONITORING REQUIREMENTS**

Regardless of previous certifications or field testing MSD will require field monitoring of all types of proprietary BMPs installed in the service area. Generally, this monitoring will apply to the first of each type of unit installed in the service area. Typical monitoring guidelines are as follows:

1. A manufacturer's or vendor's representative must be onsite during the proprietary BMP installation to ensure the product's installation requirements are met.
2. Shop drawings indicating elevations of flowlines, weirs, pipe inverts, etc. will be required prior to installation.
3. The manufacturer or vendor must arrange for an as-built survey to the proprietary BMP to be performed by a Missouri-registered Professional Land Surveyor once the device has been installed, and prior to any testing or monitoring.
4. The manufacturer or vendor must perform quarterly inspections of the proprietary BMP during its' first year of operation, which will include visual inspections and quantitative analysis of the service's Sediment Removal Efficiency, especially as compared to the design efficiency. MSD requests to be invited to these inspections to further enhance familiarity and understanding of the device.
5. Formal reports shall be submitted to MSD, at the time of as-built submittal and at each quarterly inspection. The reports shall include summaries, quantitative analysis mentioned in item 4, photographs of the structure inlet, internal conditions of the structure, the filters, and outfall conditions, etc. The reports shall also evaluate the performance of the owner's adherence to the approved maintenance program, and offer suggestions for any areas of improvement.



## **REFERENCES**

Metropolitan St. Louis Sewer District:

<http://www.stlmsd.com>

Maryland Department of the Environment, Water Programs

<http://www.mde.state.md.us/Programs/WaterPrograms/index.asp>

Maryland Department of the Environment Storm water Design Manual:

[http://www.mde.state.md.us/Programs/WaterPrograms/SedimentandStormwater/stormwater\\_design/index.asp](http://www.mde.state.md.us/Programs/WaterPrograms/SedimentandStormwater/stormwater_design/index.asp)

New Jersey Department of Environmental Protection, Bureau of Sustainable Communities and Innovative Technologies

<http://www.state.nj.us/dep/dsr/bscit/IEETMain.htm>

New Jersey Stormwater BMP Manual

[http://www.state.nj.us/dep/stormwater/bmp\\_manual2.htm](http://www.state.nj.us/dep/stormwater/bmp_manual2.htm)

Ohio Department of Transportation, Approved Devices

<http://www.odotonline.org/materialsmanagement/qpl.asp?specref=ss-995>

Ohio Department of Transportation, Office of Structural Engineering, Post Construction Stormwater Management

<http://www.dot.state.oh.us/se/hy/post%20construction.htm>

U.S. Environmental Protection Agency Environmental Technology Verification Program

<http://www.epa.gov/etv/verifications/verification-index.html>

Washington State Department of Ecology Stormwater Treatment Technologies

<http://www.ecy.wa.gov/programs/wq/stormwater/newtech/technologies.html>

# THE METROPOLITAN ST. LOUIS SEWER DISTRICT'S PROPRIETARY BMP APPLICATION

## CONTENT OF APPLICATION

### Cover Letter and Review Request

This section shall include:

1. A signed cover letter, limited to three (3) pages in length, introducing and properly naming the manufacturer and the proprietary BMP. This letter should include the following:
  - a. A description of the construction of the proprietary BMP and its method of operation (i.e., filtering, settling, or hydrodynamic separation).
  - b. An outline of the types of sites where the BMP would be most applicable.
  - c. A listing of the states or localities where the BMP is currently approved for use.
  - d. A brief history of the manufacturer and a description of their involvement in the field of storm water quality.
  - e. A request that MSD consider the use of the proprietary BMP as a stand-alone water quality treatment device at a specific Use Level Designation and a statement certifying that the device meets all of the applicable requirements for that Use Level Designation.
2. The following information should be provided in the format given and included as a separate page.

Technology Name \_\_\_\_\_

Indicate Use Level Designation      **GUL**      **RUL**      **HUL**      **PUL**

Vendor Name \_\_\_\_\_

Contact Name \_\_\_\_\_

Address (street, city, state, zip) \_\_\_\_\_

Phone, Fax, e-mail address \_\_\_\_\_

## **Product Catalog Data**

This section shall include:

1. A detailed description of the operation of the device, including depiction of the flow path.
2. Complete engineering drawings or catalog sheets, to scale, of the BMP. Views should be provided from at least two directions.
3. Specific details shall be provided of any special equipment or devices contained in the BMP.
4. A listing of, and data pertaining to, plantings used in the device.
5. A listing of any industry construction standards used during the manufacturer of, or applicable to the design of the device.
6. Any construction specifications or installation instructions recommended for use in site construction plans or specifications.

## **Product Performance Claim and Certification**

This section shall include:

1. Proprietary BMP applications must provide data that support the manufacturer's claim of TSS removal for each model. The application should also provide a summary table of BMP models and the peak water quality volume or flowrate that each model can treat and achieve the required TSS removal.
2. TSS removal efficiency shall be appropriately verified, and a complete copy of the appropriate verification shall be attached. Also provided should be the name and contact information of a representative of the verifying agency.
3. Regarding the field site studied, please complete the attached page, and provide an outline of the field testing with supporting data.

## Stormwater BMP Demonstration Summary

Technology Name \_\_\_\_\_

### 1. General Information

Vendor Name \_\_\_\_\_

Address (street, city, state, zip) \_\_\_\_\_

### 2. Test Site Information

Site Name \_\_\_\_\_

Address (street, city, state, zip) \_\_\_\_\_

Land Use:

Commercial/Office    Residential    Industrial    Open    Other (specify) \_\_\_\_\_

Total Contributing Drainage Area (Ac) \_\_\_\_\_

### 3. Watershed Information

Watershed Name \_\_\_\_\_

Total Watershed Area (Ac) \_\_\_\_\_

Percent of Impervious Area in Watershed \_\_\_\_\_

### 4. Precipitation Information

Regional Climate Station \_\_\_\_\_

Average Number of Storms per Year \_\_\_\_\_

Average Annual Rainfall (in) \_\_\_\_\_

### 5. BMP Information

Date System Installed \_\_\_\_\_

Dates Tested/Sampled \_\_\_\_\_

Storm precipitation (for each storm event during testing) \_\_\_\_\_

Total Storm Flow Volume Into BMP (For Each Event) \_\_\_\_\_

Total Storm Flow Volume Bypassed (For Each Event) \_\_\_\_\_

Type of Samples Collected (e.g., flow-weighted, composite) \_\_\_\_\_

Parameters and Units Measured \_\_\_\_\_

Analysis Method \_\_\_\_\_

## **Product Design Criteria**

This section shall include:

1. Sample proprietary BMP sizing calculations, for a site typical to the St. Louis area. These calculations would include how to size and select the device as well as how to size and select any special components.
2. A sample site layout plan showing a typical layout for a site in the St. Louis area. This layout should include any typical methods of pretreatment required.

## **Cost Information**

This section shall include:

1. Sample cost data for a site typical to the St. Louis area. This shall include:
  - a. Device, material and shipping cost for the proprietary BMP.
  - b. Typical installation costs.
  - c. Typical annual maintenance costs.

## **Product Sample Maintenance Plan**

A sample maintenance plan must be provided for the proprietary BMPs and, at a minimum, must include the following:

1. The person or persons responsible for the preventative and corrective maintenance of the stormwater management measure. In the instance of a proprietary BMP, the manufacturer, a manufacturer's representative, or the owner may perform maintenance.
2. Specific preventative and corrective maintenance tasks such as removal of sediment, trash, and debris; mowing, pruning, and restoration of vegetation; restoration of eroded areas; elimination of mosquito breeding habitats; control of aquatic vegetation; and repair or replacement of damaged or deteriorated components.
3. A schedule of regular inspections and tasks.
4. Cost estimates of maintenance tasks, including sediment, trash, and debris removal.
5. Detailed logs of all preventative and corrective maintenance performed at the stormwater management measure, including all maintenance-related work orders.
6. Maintenance equipment, tools, and supplies necessary to perform the various preventative and corrective maintenance tasks specified in the plan. Sources of specialized, proprietary, and nonstandard equipment, tools, and supplies should also be provided. Limitations on the use of any reconditioned parts must be addressed.
7. Recommended corrective responses to various emergency conditions that may be encountered at the stormwater management measure.
8. Maintenance, repair, and replacement instructions for specialized, proprietary, and nonstandard measure components, including manufacturers' product instructions and user manuals.
9. Procedures and equipment required to protect the safety of inspection and maintenance personnel.
10. Approved disposal and recycling sites and procedures for sediment, trash, debris, and other material removed from the measure during maintenance operations or in a general ease the types of facilities where disposal or recycling may typically occur.