

WORKSHOP ON GREEN STREETS

Metropolitan Washington Council of Governments April 8, 2013

STORMWATER RUNOFF*



- Rain and snowmelt create stormwater runoff because not all stormwater "percolates" into the ground
- Stormwater runs over the ground and eventually enters waterbodies (i.e. streams, rivers, or lakes)



TRANSPORT OF POLLUTANTS*

- A pollutant is a material or chemical that affects water quality of a receiving waterbody
 - Pollutants are transported during a storm event, and the pollutants are washed off with the stormwater
- Pollutants that are in the stormwater are then discharged into waterbodies (lake, river, stream, creek, etc.)

BEST MANAGEMENT PRACTICES (BMPs)*

Best Management Practices "BMP" means to reduce the pollution of surface waters from the impacts of human activity

Structural or Non-Structural

- Structural
 - Stormwater basin or pond
 - Silt fence
- Non-Structural
 - Maintenance practices
 - Prohibition of activities

Permanent or Temporary

- Temporary BMPs
 - Erosion control blanket
 - Silt fence
- Permanent BMPs
 - Stormwater basin or pond
 - Level spreaders



Virginia Stormwater Management Law is codified in Title 10.1, Chapter 6 of the Code of Virginia and the Virginia Stormwater Management Regulations are found at Chapter 60 and Chapter 30 of the Virginia Administrative Code (4VAC50-60-50, 4VAC50-30-40, 4VAC50-60-60, 4VAC50-60-70 & 4VAC50-60-80). The Law and Regulations together provide the authority and the technical criteria for the Virginia Stormwater Management Program (SWM Program).

VDOT is a MS4 General Permit Holder and executes Annual Agreement for its Standards and Specifications with **Virginia Department of Conservation & Recreation (DCR)** which includes SWM Program and Erosion and Sediment Control Program.

VDOT Roles and Responsibilities

• Central office staff will develop MS4 program wide policies and procedures, handle annual reporting, training, and assessment of VDOT's operations

 District staff will be responsible for implementation of various components of the program within the regulated area

The Virginia Stormwater Management Regulations are applicable to all Regulated Land Disturbance Activities (RLDA) undertaken by or for VDOT including, but not limited to projects and activities developed under the following plan processes:

- > RAAP
- > SAPP
- > Minimum
- No Plan
- PPTA
- Design Build
- Capital Outlay
- Rural Rustic
- Non Routine/Routine Maintenance Activities *
- All routine maintenance activities exempted by 2011 G.A. changes to the VSMP Law (Section 10.1-603.8)

SWM Requirements

SWM Requirements are applicable for those regulated land disturbance activities that disturb **one acre or greater** except in those areas designated as a Chesapeake Bay Preservation Area in which case the land disturbance threshold is **2500 square feet** or greater.

The following land disturbance activities are exempt for the VSMP Regulations for linear development projects (i.e., highway construction projects) where <u>all</u> the following conditions are met:

- > Less than one acre will be disturbed per outfall or watershed.
- There will be insignificant increases in peak flow rates downstream of the discharge point.
- There is no existing or anticipated erosion problems downstream of the discharge point.
- There is no existing or anticipated flooding problems downstream of the discharge point.

Typically applied on an outfall by outfall basis

SWM Requirements

As part of current VDOT Annual Agreement with DCR, following are design criteria addressing water quality under VDOT SWM Requirements:

Using Technology Approach:

- 1. Base the percent impervious cover on the <u>entire</u> post construction impervious area within the right of way plus permanent easement area per outfall.
- 2. Determine the required BMP based on the percent impervious calculated from No. 1 above.

Using Performance Approach:

Design the BMP for a water quality volume based on the net increase in impervious area plus 10% of the pre-construction impervious area. The goal is to determine BMP that would remove pounds of phosphorus to 10% less then existing loading.

Water quantity control shall be governed by the Virginia Erosion and Sediment Control Regulation Minimum Standard - 19 (MS-19) that requires an adequate receiving channel for stormwater outfalls

Current BMP Selection Table 11-1 VDOT Drainage Manual as well as IIM-195.7

Water Quality BMP	Treatment Volume	Target Phosphorus Removal Efficiency	Percent Impervious Cover**
Vegetated filter strip Grassed swale		10% 15%	16-21%
Constructed wetlands Extended detention Retention basin I	2xWQV 2xWQV 3xWQV	20% 35% 40%	22-37%
Bioretention basin Bioretention filter Extended detention-enhanced Retention basin II Infiltration	4xWQV 1xWQV	50% 50% 50% 50% 50%	38-66%
Sand filter Infiltration Retention basin III with aquatic bench	2xWQV 4xWQV	65% 65% 65%	67-100%

*Innovative or alternate BMPs not included in this table may be allowed at the discretion of DCR and VDOT. **Percent Impervious Cover: The ratio of the new impervious area and the area within the right-of-way and easements per project outfall.

Current Directive on Low Impact Development (LID) Practices use within VDOT Maintained Right of Way

Currently, DCR has no published credits for LID practices in meeting water quality requirements. However, such practices are being requested as a means to improve water quality. If there is a proposal to use LID practices to meet water quality requirements, VDOT would need to get DCR concurrence on a project by project basis.

Language in the VDOT Subdivision Street Acceptance Policies is encouraging LID practices, even to the allowance of such inside VDOT right of way (with acceptable maintenance agreements with the locality). For those items inside the right of way, either VDOT maintenance personnel would have to agree to the future maintenance requirements or VDOT would have to execute agreements with the Locality for them to maintain such facilities (assuming the facilities are constructed in conjunction with a subdivision development or County project).



SAMPLE SWM Agreement with Locality

Stormwater Device Agreement Dated: _____SAMPLE Development

STORMWATER DEVICE LOCATED WITHIN VDOT RIGHT-OF-WAY AGREEMENT FOR

DEVELOPMENT

THIS AGREEMENT, is made this ______ day of ______, and the between the Board of Supervisors of _______ (the "County"), party of the first part, and the Commonwealth of Virginia, Department of Transportation ("VDOT"), party of the second part, for the purpose of satisfying 24VAC30-92-120. L of the <u>Secondary Street Acceptance</u> <u>Requirements</u> for the addition of secondary streets within the development commonly known as

RECITALS

R-1 WHEREAS, the County approved the creation of the development known as which includes the construction of new streets intended to be taken into the secondary system of state highways.

R-2 WHEREAS, included in said development is the design and construction of streets which include certain stormwater devices and facilities for removing water from said streets.

R-3 WHEREAS, a prerequisite for accepting any street into the secondary system of state highways, the provision of an adequate and acceptable method and related devices for transporting stormwater runoff from said streets to a natural water course is required.

R-4 WHEREAS, pursuant to 24 VAC 30-92-120.L.2 of the <u>Secondary Street</u> <u>Acceptance Requirements</u>, when stornwater devices are approved by the locality to be located in the Virginia Department of Transportation's right-of-way and incorporated into stornwater drainage facilities, the governing body of the locality shall acknowledge that VDOT is not responsible for the operation, maintenance, or liability of the stornwater management device, facility or facilities associated with the development prior to the transfer of jurisdiction over the street to VDOT.

NOW, THEREFORE, in consideration of the premises, the mutual covenants stated herein, and other good and valuable consideration the receipt and sufficiency of which is acknowledged by all parties hereto, the parties hereto agree as follows:

 The County acknowledges that VDOT has no responsibility or liability due to the presence in the street right of way of the stormwater and drainage devices or treatments, or both.

 The County will not seek indemnification or contribution from VDOT to correct damages arising from improper maintenance or construction of these stormwater devices and facilities.

3. The County assures the burden and all costs of inspection, maintenance, future improvements to the devices and treatments, or other costs related to the placement of devices or treatments within the VDOT right-of-way are and shall be provided from sources other than those administered by VDOT.

Stormwater Device Agreement Dated: _____SAMPLE Development

4. The Courty shall require that a detailed concept plan for the device and facility has been provided to VDOT which complies with the department's Drainage Manual and the Department of Conservation and Recreation's Stormwater Handbook.

5. The County shall not request VDOT accept a street for maintenance as part of the secondary system of state highways until a professional engineer licensed by the Commonwealth or the manufacturer of the stormwater device as required by VDOT, certifics the construction of any stormwater drainage facility placed within the right of way of such street to plans reviewed by VDOT.

6 All related adjustments and improvements to the stormwater devices and facilities shall not be at VDOT's expense and, for that portion of such devices and facilities that exist outside of VDOT right-of-way, shall be contained within an appropriate easement.

 The Courty shall not request VDOT accept a street for maintenance as part of the secondary system of state highways until the developer or County has applied for an inplace permit for the stormwater facilities and has furnished all required information and data to the agency concerning the pertinent Municipal Separate Storm Sewer System permit.

 VDOT agrees to issue an in-place permit for the stormwater facilities in conjunction with the acceptance of the street into the secondary system of state highways if the facility and the new street meet the appropriate requirements contained in the Secondary Street Acceptance Requirements.

9. The parties expressly do not intend by execution of this Agreement to create in the public, or any member thereof, any rights as a third party beneficiary, or to authorize anyone not a party hereto to maintain a suit for any damages pursuant to the terms or provisions of this Agreement. In addition the parties understand and agree that this Agreement is not to be construed as an indemnification against third party claims.

Stormwater Device Agreement Dated:	SAMPLE
Development	

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	(Name	£'	Title)

COMMONWEALTH OF	VIRGINIA	DEPARTMENT	OF
TRANSPORTATION			

	By: Commonwealth Transp	ortation Commissioner
COMMONWEALTH OF VIRGINI		
(Name)		, acknowledged the
foregoing instrument before me this	day of	,
	NOTARY PUBLIC My commission expires:	Notary registration number
COMMONWEALTH OF VIRGINI	A, CITY OF RICHMOND, to wit	
(Name)		, "Commonwealth
Transportation Commissioner", part before me this day of		d the foregoing instrument

NOTARY PUBLIC	Notary registration number
My commission expires:	Notary registration multic
MV commission expires:	

Use of Manufactured Best Management Practices (BMP)

VDOT prefer to only use manufactured BMPs (and the oil grit separators are just one of many types) as a <u>last resort</u>. Use of such facilities requires review and approval by VDOT Central Office - Location and Design - Hydraulic Section.

Other conventional (and not so conventional) surface facilities are preferred where VDOT will have maintenance responsibility.

Recent examples of Projects that are proposed or utilizing manufactured BMPs that VDOT has accepted or will accept are:

- Route 234 Widening in mid-1990s
- Springfield Interchange in sometime mid-2006
- Saratoga Park and Ride Lot off Route 234 & Balls Ford Road (PW County) under construction
- Route 50/Courthouse Road under construction
- Telegraph Road Widening in Fairfax County advertised for construction
- Lorton Road Construction Fairfax County Administered Construction, VDOT Maintained - advertised for construction

Use of Manufactured Best Management Practices (BMP)

BMPs ENVISIONED:

- Bioslope (Ecology Embankment)
- Compost Amended Soils
- Bioretention Filter
- Natural Dispersion
- Level Spreader
- Porous Asphalt
- Underground Sand Filter
- Proprietary Underground BMPs such as Filterra, StormCeptor, DC Sand Filter etc.

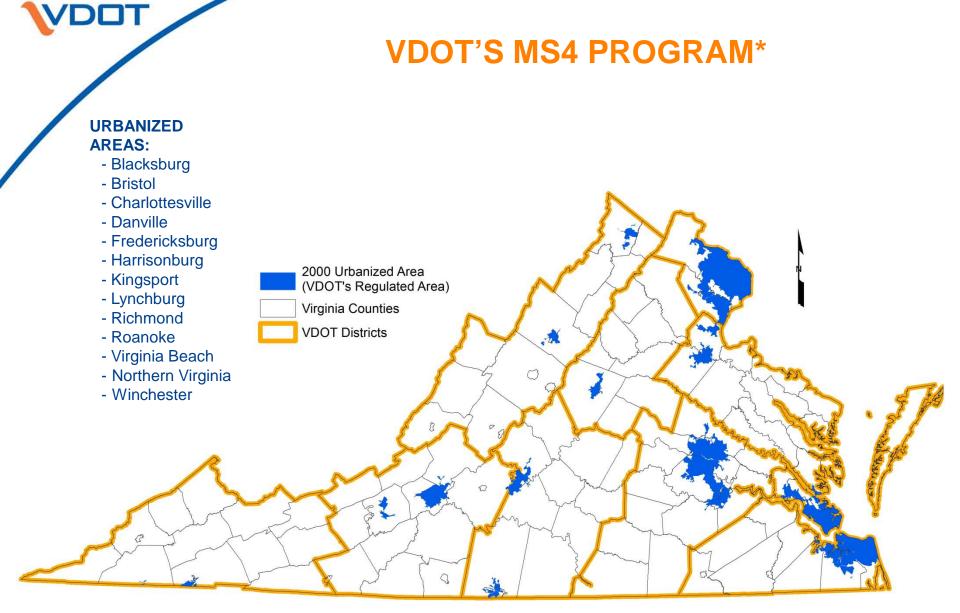
VDOT'S MS4 PROGRAM*

<u>Municipal Separate Storm Sewer System (MS4)</u>



www.virginiadot.org/programs/stormwater_management.asp

*From VDOT-CO MS4 Presentation



VDOT's MS4 Permit applies only in the 13 urbanized areas (according to 2000 Census)

OVERVIEW OF VDOT'S MS4 PROGRAM*

All right-of-way & property within urbanized areas

- > 9,000 miles of roads, bridges, and tunnels
- > 600 stormwater basins
- > 30,000 regulated outfalls

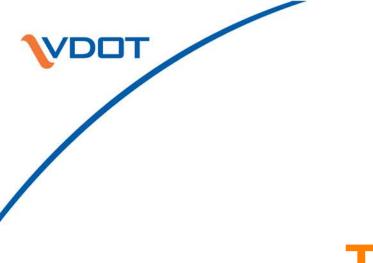
VDOT facilities within urbanized areas

- 34 Area Headquarters
- 9 Residency Complexes
- 5 District Complexes
- 3 Central Office Bldgs.
- 17 Rest Areas

- 7 Storage Areas
- 2 Weigh Stations
- 22 Residual Properties
- 40 Park & Ride lots
- Bridge & Tunnel Facilities

Reference Documents for VDOT relative to ESC, SWM & VSMP (Design, Construction & Maintenance)

- 2007 Road and Bridge (R&B) Specifications (also include any supplemental sections).
- 2008 Road and Bridge (R&B) Standards and its latest updated version.
- April 2002 VDOT Drainage Manual (latest version in July 2012)
- Informational and Instructional Memorandums (IIM):
 - IIM-LD-11.27 (for Erosion and Sediment Control)
 - IIM-LD-110.21 (General Notes)
 - IIM-LD-122.13 (for Roadside Development)
 - IIM-LD-191.2 (for Hazardous Material/WasteSites)
 - IIM-LD-195.7 (for Storm water Management Requirements), SWPA 12-01, SWPA 12-02 & SWPA 12-03
 - IIM-LD-233 (for Natural Channel Design)
 - IIM-LD-242.3 (for VSMP Construction Permit)
 - IIM-LD-244.1 (for Pipe Rehabilitations)
 - IIM-LD-246.2 (for Stormwater Pollution Prevention Plan (SWPPP))
- Construction Manual
- o Inspection Manual
- o Locally Administered Projects Manual
- o Design Build Manual
- o IDDE Manual
- Other manuals (for Design, Construction and Maintenance) which can be checked in at: <u>http://www.virginiadot.org/business/manuals-default.asp</u>



Thank You

Pawan Sarang, P.E. VDOT – Northern Virginia District Drainage Engineer