



Loudoun County, Virginia

Department of Building and Development


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Technical and Procedural Newsletter

December 15, 2015

To: Members of the Land Development and Home Building Community

From: Michael Seigfried, Director 

The purpose of this correspondence is to inform the Land Development and Home Building Community of technical and procedural updates that have recently transpired. Please distribute this information to applicable personnel within your organization.

IN THIS EDITION:

The 3rd in a series of newsletters providing updated information on the County procedures and technical criteria for Land Development Application (LDA) Projects and certain grading projects in meeting the Virginia Stormwater Management Program (VSMP) requirements.

APPLICABLE STANDARDS:

Loudoun County SWM Ordinance (Chapter 1096) and Loudoun County Facilities Standards Manual (FSM) Chapters 1 and 5.

DISCUSSION:

Department staff continues to receive guidance from the Virginia Department of Environmental Quality (DEQ) on various VSMP issues. In addition, they frequently receive input from industry on ways to improve and streamline the permit process. The following items address those topics and associated documents that are in need of clarification or amending.

In the final section of this newsletter, we include new information which is not directly related to new VSMP requirements but rather to specific hydraulic criteria in Chapter 5. Based upon discussions with the engineering community and research by B&D staff, alternate guidance for determining allowable pipe flow velocities is provided.

Please note: In this newsletter, “project” equates to “land-disturbing activity.”

Paying Local (County) VSMP Fees One Time Only – Staff revisited this issue with DEQ, which yielded the following result:

Although the County cannot require that the entire local VSMP be paid at the time of SWPPP

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(Stormwater Management Plan, Erosion & Sediment Control Plan, and Pollution Prevention Plan) submission, **the operator/applicant may choose to pay the entire fee.**

A Few More Permitting Items – These items may also help expedite the process:

1. **Notices of Termination (NOTs) for Permitted Land-disturbing Activities:**
 - We have made a decision not to require NOTs for the construction of single family homes within a common plan of development (CoPD) which disturb less than 1 acre. Since final stabilization is the primary consideration for issuance of NOTs for the construction of these homes, the inspection prior to occupancy by Zoning Division staff will insure that all disturbed areas are adequately stabilized.

2. **VSMP Permit Modifications:**
 - As previously noted in the B&D Newsletter of May 15, 2015, the primary reason that Modifications are required is an increase in the project disturbed area beyond the amount that was permitted in the Registration Statement.

New Information: Modifications are also are also required for any change in the information provided in the original Registration Statement except for the “estimated project and completion date.” Other changes, such as the alteration of drainage areas, proposed impervious and lawn areas, and the re-location of BMPs, do not typically require a Permit Modification – but will need to be addressed via the plan review process (e.g., site plan amendments) and through an update to the SWPPP.

3. **Operator/Applicant Acquires Lots in a CoPD (Reminder)** – The following steps must accompany the acquisition of lots for the construction of single family homes (e.g., homebuilder purchases 15 lots in a residential subdivision where the infrastructure is completed by the original developer):
 - A. The Operator must submit a “VSMP Application for Single Family Detached Lots.” Please utilize the form found on the County VSMP website (www.loudoun.gov/loudounvsmp).
 - B. A local VSMP fee of \$209.00/lot must be submitted with the application.
 - C. No State fee is required for lots with less than 5 acres of land disturbance (calculated for each lot).
 - D. A SWPPP (including the Pollution Prevention Plan) must be prepared and submitted for the entire group of lots (vs. individual SWPPPs for each lot).
 - E. There is no need for an additional grading permit and E&S bond as long as the original developer’s permit remains active.

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4. Land Disturbing Activities in Towns (other than Leesburg) - VSMP Fees to the County as well as the State must be paid prior to the issuance of the grading permit and the start of any land-disturbing activity. It is recommended that they accompany the submission of the E&S and SWM Plans to avoid delays in project start-up.

Geotechnical Requirements for Bioretention Facilities – Consistent with other practices that utilize infiltration (e.g., dry swales,* wet swales, infiltration trenches, etc.), the goals of a bioretention facility design include volume reduction, infiltration, pollutant reduction, and groundwater recharge (after filtering by in situ soil). The following geotechnical requirements need to be addressed to insure these goals are met. For additional design details for the various types of Bioretention measures, see Design Specification No. 9 in the Va. BMP Clearinghouse.

*Dry swales are essentially bioretention facilities formed in a linear channel.

1. A geotechnical report must be prepared and the recommendations from the report must be incorporated into the design as per FSM 6.157.
2. The use of an impermeable liner/separator encompassing a bioretention facility may be necessary to allow its construction when the Seasonal High Water Table (SHWT) or bedrock is too close to the bottom of the BMP. Per recent guidance from DEQ, the use of an impermeable liner which does not allow infiltration into in situ soil precludes the use of Level 2 Design. They note that “gravel sumps” (associated with Level 2 Designs) are intended to provide the pollutant removal and runoff reduction benefits of infiltration over time, even when soil conditions are not optimal (i.e., underdrains are employed).
3. Minimum 2’ Depth from the Bottom of the Facility to the SHWT – Maintaining this separation prevents the saturation of the planting and engineered media zones and the resultant damage to plantings, as well as an overall reduced effectiveness. One of the 3 methods found in FSM 5.225.B.7 must be used to establish the SHWT (not simply one set of soil borings at one point in time). If the investigation yields that 2’ of separation does not exist, an impermeable clay or geotextile liner may be used around the entire perimeter of the facility without the approval of an FSM Waiver request. Notably, if the SHWT is located above the lowest elevation of the bioretention measure (i.e., it moves up along its side slopes) there will be a potential for saturated soil along its perimeter and stability problems. In that scenario, a global stability analysis is required.
4. Minimum 2’ Depth from the Bottom of the Facility to Bedrock (Outside of Limestone Overlay District [LOD]) – Geotechnical investigation (i.e., borings) must be done to verify bedrock depth. If the investigation yields that 2’ of freeboard does not exist, the approval of an FSM Waiver request will be necessary. A potential solution may be the use an impermeable geotextile lining (vs. a clay liner) to prevent the discharge from the BMP infiltrating into the fissures in the rock horizon, potentially injecting stormwater directly into groundwater.
5. If Located Within LOD – Level 2 Bioretention Designs are prohibited. Level 1 Designs may be utilized with a minimum 3’ separation from the bottom of the facility to Karst features along with the use of an impermeable geotextile liner. If there is less than 3’ of separation, the approval of an FSM Waiver will be necessary.

6. Minimum Infiltration Rate of Underlying Soil – Minimum infiltration rates of the in situ soil below the reservoir layer must be provided to determine if underdrains are required. Importantly, as noted above, infiltration is a desired feature of a bioretention facility as it enhances pollutant removal and stormwater volume reduction.

Project Grandfathering – Existing Facility Utilized for Stormwater Treatment – We continue to review a number of proposed projects that seek to utilize existing BMPs to meet stormwater quality and quantity requirements. While existing BMPs can be utilized, the following must be considered:

1. The treatment provided by the BMPs must result in **the project fully meeting the II.C Technical Criteria**. This must be demonstrated with a detailed design of the facility, including all associated calculations. Notably, staff has received several plans from applicants who cannot locate calculations for older BMPs.
2. The B&D Newsletter of December 28, 2011 contains detailed information on the II.C quantity criteria; either the performance-based or technology-based methodology must be used to address water quality.
3. If the treatment provided by the existing BMP strategy does not meet II.C, the State requires that the II.B Technical Criteria be implemented. Based upon recent discussions with DEQ concerning this requirement, staff offers the following:
 - A. Calculations May Be Performed “After the Fact” – new/updated calculations may be provided (e.g., when they cannot be located for an older facility) to accurately model the level of treatment provided by an existing facility. However, the project in question must have been included in the original treatment area of the facility and new BMPs cannot be added to allow the project to fall under the old II.C criteria.
 - B. The **“less than 16% impervious”** designation (based upon the “applicable area”) may be used to satisfy the II.C water quality requirements.

“Grading Only” Plans – Grading only plans which are not considered typical site plans or construction plans but qualify as land-disturbing activities (requiring a grading permit) still have to meet the following VSMP criteria:

1. **Disturbed Area < 1 Acre (not in a CoPD):**
 - A. No VSMP Permit Required.
 - B. No water quality requirements have to be met.
 - C. Water Quantity - Must meet II.C criteria - MS#19 Criteria of the Va. Erosion & Sediment Control Regulations (reference the B&D Newsletter of December 28, 2011).

2. **Disturbed Area of 1 Acre or Greater (or located in a CoPD):**

A. Project Grandfathered or Vested

- i. Local VSMP Permits required; State Permit required (unless < 5 acres disturbed for residential).
- ii. Water quality – II.C criteria have to be met.
- iii. Water Quantity - Must meet II.C criteria - MS#19 Criteria of the Va. Erosion & Sediment Control Regulations (reference the B&D Newsletter of December 28, 2011).

B. Project not Grandfathered or Vested

- i. Water quality – new II.B criteria found in FSM 5.230 have to be met.
- ii. Must meet new water quantity criteria (II.B) – channel protection (energy balance), and flood protection as found in FSM 5.230.

Storm Sewer Design Velocities

Section 5.220.B.7 of the FSM states,

“Storm sewers shall be designed to provide a minimum velocity of no less than 3 feet per second for the design flow. Pipe velocities shall not exceed 10 feet per second to avoid abrasion.”

Based upon discussions with the engineering community and research of literature related to pipe material durability, we believe that the maximum flow velocity (10-year storm frequency) threshold of 10 feet per second is overly conservative. Higher velocities, at least up to 18 feet per second, have not been correlated with cavitation or undue abrasion of pipe materials. Therefore, effective immediately, only flow velocities under 3 feet per second and over 18 feet per second will require approval of a formal FSM waiver by the Director.

Notably, storm sewer within a VDOT right-of-way is subject to VDOT review, and designs may have to meet a lower maximum flow velocity.

Reminder –

County VSMP Website: Please go to www.loudoun.gov/loudounvsmp to find templates for VSMP documents, a schematic of the VSMP Permit Approval Process, helpful Q & A's, etc.

If you have questions or comments regarding this newsletter or any other program elements, please call Jimmy Edmonds, B&D VSMP Administrator, at (703) 737-8052.