

Frequently Asked Questions: GDOT Manual on Drainage Design for Highways (2014 Edition)

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To submit additional questions for clarification, please email all questions and comments to DrainageManual@dot.ga.gov, or you may reach the GDOT Office of Design Policy and Support by contacting Brad McManus at (404) 631-1630 (bmcmanus@dot.ga.gov)

1. How do I specifically calculate Water Quality Volume for only the new impervious area for a project since GDOT is not required to provide water quality treatment for existing assets? **See supplemental information immediately following this FAQ document.**
2. Point of Clarification: **The Post-Construction Stormwater Report (Manual Appendix I) has been revised and the latest version can be found on the ROADS website.**
3. Point of Clarification: **Outfall level exclusions apply to all of the four stormwater requirements spelled out in the GDOT MS4 Permit. If an outfall level exclusion exists, the designer may still be required to provide a post construction BMP to prevent adverse impacts on the right-of-way or offsite.**
4. Clarify what “minimal increases in impervious area” and “negligible” increases in stormwater runoff are as specified in Outfall Level Exclusion #6. **Each minimal increase in impervious area claim at each outfall basin should be supported by calculations illustrating a negligible increase in post-condition flow rates. “Negligible” increases must be supported by reasons why the Engineer of Record makes this claim, and must also be agreed upon by the Department.**
5. What do we submit as a designer for GDOT Review? **At concept, designers must utilize the project resources they have available to conceptually analyze the project as a whole, by individual outfall basins, and if not determined excluded or infeasible, propose post-construction BMPs sized approximately from the information available. The level of detail should be sufficient to provide estimates of right-of-way needs and approximate cost estimates. For the concept level sizing simple spreadsheet calculations utilizing available data is sufficient. At PFPR, designers must have completed the entire Post-Construction Stormwater Report with all required attachments according to the guidelines provided within the document itself.**
6. For encroachment permit related development, funded by a private developer, that would trigger MS4 requirements, how are those MS4 requirements handled? **Since GDOT will ultimately be responsible for the improvements funded by the developer, scenarios that will involve MS4 permit requirements should follow the same procedure GDOT would follow for projects they would fund themselves. In other words, the policy and information contained in the Post-Construction Stormwater Report and**

Chapter 10 of the revised Manual will apply as it would for other GDOT projects. The reviewing District Office will coordinate with the Office of Design Policy and Support for final acceptance.

7. For detention design, GDOT allows the stacked/routed stormwater requirements to be addressed as the Georgia Stormwater Management Manual (GSMM) Blue Book states. In other words, 50% of the Water Quality Volume should be provided as “dead pool or permanent pool storage” for wet extended detention ponds. See the GSMM for further information.

Calculating Water Quality

- **Background:** GDOT is not required to provide water quality (retrofit) for their existing infrastructure assets. For all new projects, improvements to existing infrastructure or additions, water quality treatment must be provided for the new portion of the project. In most cases, this implies a reduction in the overall water quality volume that would otherwise be required to be treated.
- Once it has been determined that an outfall basin requires water quality treatment, the designer must follow the calculation process described below.

$$WQ_v = \frac{1.2 \times (R_v) \times A}{12}$$

Where: WQ_v = water quality volume (acre-feet)

R_v = volumetric runoff coefficient, shown below (dimensionless)

A = drainage area of the post-condition basin (acres)

$$R_v = 0.05 + 0.009 \left(\frac{I}{A} \right)$$

Where: I = percent impervious area (express as a whole number, not a decimal percentage, i.e. 80% = 80) See examples below where calculations of "I" and " R_v " are different given the site specific conditions.

A = drainage area of the post-condition basin (acres)

FOR NEW CONSTRUCTION PROJECTS:

A sample calculation follows for a 1.5-acre drainage area that is 80% impervious in its proposed condition:

$$R_v = 0.05 + 0.009(80) = 0.77$$

$$WQ_v = \frac{1.2(0.77)(1.5)}{12}$$

$$WQ_v = 0.116 \text{ ac-ft (5,053 ft}^3\text{)}$$

FOR PROJECTS WITH ADDITIONAL PROPOSED IMPERVIOUS AREAS:

A sample calculation follows for a 1.5-acre drainage area that is 60% in its existing condition and 80% impervious in its proposed condition (Note: Any use of the variable "A" will always refer to the post-basin size):

$$R_{V(Post)} = 0.05 + 0.009(80) = 0.77$$

$$R_{V(Pre)} = 0.05 + 0.009(60) = 0.59$$

$$R_{V(Post)} - R_{V(Pre)} = 0.77 - 0.59 = 0.18$$

$$WQ_v = \frac{1.2(0.18)(1.5)}{12}$$

$$WQ_v = 0.027 \text{ ac-ft (1,176 ft}^3\text{)}$$