

STORMWATER MANAGEMENT FOR LAND DEVELOPMENT IN PENNSYLVANIA: KEYS FOR SMART DESIGN

In many professions, and certainly in the building and land development fields, it's widely noted that the challenges of simply doing business seem to increase every year. Many of Liberty's land development and engineering clients would concur, and would probably agree that among their toughest tasks is keeping up with the ever-changing climate of environmental compliance.

In recent years, one of the most prominent hurdles in this area has been the large set of new requirements governing stormwater management. For those wondering where all these new rules have come from, it's important to note that in Pennsylvania they actually have their origin in the Stormwater Management Act of 1978 (also known as Act 167). More recently in 1999, the federal rules governing pollutant discharges were updated and expanded. The 1999 changes, collectively known as Phase II of the National Pollutant Discharge Elimination System (NPDES) program, established an extensive set of new stormwater permitting requirements for both the public and private sector. Specific requirements included the regulation of stormwater discharges from development sites as little as one acre in size, mandating local municipalities to adopt ordinances that control the volume of stormwater flows associated with construction, and to require long-term, post-construction maintenance plans for common-area stormwater management facilities. The resulting ordinances and control guidelines, largely defined by the issuance of Pennsylvania Department of Environmental Protection (DEP) Comprehensive Stormwater Management Policy in 2002, have been geared to encourage the development of sites that mimic, as closely as possible, the hydrologic conditions that were present prior to development. Specifically, this has meant promoting on-site infiltration of stormwater for smaller storms, and thereby reducing the total volume of surface runoff. While a full discussion of the origins and theory behind the stormwater regulations is well beyond the scope and reach of this short article, there are a few important considerations that land developers, engineers and builders should keep in mind when approaching their next project:

1. **Get The BMP Manual:** The Pennsylvania Department DEP finalized its Stormwater Best Management Practices (BMP) Manual in December 2006. Although it has justifiably found its share of critics, the BMP Manual represents the most comprehensive guidance on stormwater management that the DEP has issued to date. Your engineers and environmental consultants should be very familiar with this manual. Builders should also familiarize themselves with the manual, primarily for the purpose of cataloging the various BMPs that they may be constructing in the near future. The manual includes specifications, uses, and construction methods for over 34 different structural and non-structural BMPs.
2. **Plan for Stormwater Early:** With the emphasis now placed on infiltration and preserving the water balance of a particular site, pre-development studies have taken on a greater importance than ever before. Because the criteria for BMP selection will now hinge on location and soil type, developers should be thinking about stormwater management as early in the conceptual design process as possible, at the same time that due diligence assessments, water supply feasibility, and wastewater disposal options are being considered.

3. **Test Your Site for Infiltration:** To properly complete the required municipal and state planning applications, your engineers will need to have site-specific, quantitative infiltration data for the site. Be sure to perform field testing for stormwater infiltration early in the project timeline, including a preliminary site-wide feasibility evaluation if possible, and be aware of the methods your engineer or consultants are using. The field methods used will vary depending on the depth and type of your planned BMP. Some methods require safety factors or de-rating as part of final design, while others do not.
4. **Think Long-Term Maintenance:** While a primary effect of NPDES Phase II has been the new emphasis on infiltration, even more emphasis has been placed on finding suitable areas for stormwater BMPs and learning the proper construction and long-term maintenance strategies to keep them working properly. This departure from classical detention basin design demands more expertise – and more accountability – for your engineers and consultants than before, but it will also open the door to new and innovative site development techniques.
5. **Hire Informed Engineers and Consultants:** Most importantly, the engineers and consultants you choose should be able to advise you through this difficult area of compliance. The new requirements are encouraging a departure from the classical designs of the past, and sites will now look and function differently than before. As the DEP's stormwater guidelines continue to filter throughout the industry after its first five years of practical implementation, the net effort continues to be toward developments that are more capable of replicating the water budget that existed prior to development, without compromising the basic design and the ability to develop a site to the developers' (and ultimately the customers') wishes.

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