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Welcome to the quarterly newsletter from ESP Associates, PA (ESP). Each quarter, ESP produces an informational article about a particular topic that we feel may be of value to our clientele. We hope you find the material informative and we welcome the opportunity to assist you with any support that you may need. All articles presented are also available on our website www.espassociates.com.

BMP (a.k.a. Best Management Practice) – What is it and what is criteria for implementation?

Best Management Practices (BMPs) are permanent stormwater management facilities that provide treatment of stormwater prior to release back to the environment for such pollutants as total suspended solids (TSS), total nitrogen (TN) and total phosphorus (TP). These BMPs are required in most jurisdictions today in response to the Federal Water Pollution Control Act of 1972 (a.k.a. “Clean Water Act”) and federal Phase II Storm Water Rules as developed through it. For instance, the City of Charlotte has adopted the Post Construction Stormwater Ordinance as of July 1, 2008.

These facilities have an impact on development of any project. This impact can best be defined by identifying the options and incorporating the requirements beginning with the conceptual planning stage of a project. This allows the design to evolve and incorporate the facilities as a part of the development rather than being an afterthought, including estimated costs of the facilities.

Below, we list some of the criteria that can constrain the use of certain types of BMPs.

Environmentally Sensitive Areas

- Examples of environmentally sensitive areas are wetlands, streams, floodplains, and buffers that are required to remain undisturbed by governmental regulations. These features impact BMP locations because BMPs are not allowed to be located in these areas.

Drainage Area

- Drainage area is important to the selection of a BMP. A small drainage area can be controlled by a localized BMP (i.e. rain garden) where a larger drainage area may be more easily controlled by a regional type facility (i.e. wet pond).



Space Requirement

- The amount of space available for the location of a BMP also affects the decision of which BMP to use. Stormwater wetland and wet ponds generally require the largest land area while rain gardens, enhanced grass swales and sand filters can be used in smaller areas such as parking lot islands.

Topography

- Topography plays a significant role in the location of a BMP. It is difficult to build a stormwater wetland on the side of a slope with a 30% grade.

Soil Parameters

- The characteristics of the soil at the location of the BMP can have a significant impact – rock can affect excavation, a high water table can impact a BMP and sandy soils are not necessarily suitable for a pond.

Since each individual site has its own constraints that have to be identified, the proper planning of a project is critical to successful implementation. Potential typical BMPs are identified below with a brief description. It is important to note that one alternative for treatment includes the development of a BMP train (a series of facilities) to reach the required treatment levels.

- **Wet Pond** provides treatment through settling and nutrient uptake during storage period – detention can be easily combined since storage is provided above a permanent pool elevation.
- **Stormwater Wetland** provides treatment through the combination of wetland plantings within a shallow basin through settling and nutrient uptake in the plantings.
- **Bioretention** (a.k.a. Rain Garden) provides treatment via filtering through a mulch / prepared soil mix – generally used to treat small areas.
- **Dry Extended Detention Basin** provides treatment through settlement over a specific period of time for storage within the facility.
- **Grassed Filter Strip** provides treatment by slowing velocity of stormwater from an adjacent impervious area and allowing settlement and some infiltration.
- **Sand Filter** provides treatment through a dual chamber – one for settling and one that provides filtration of the runoff.
- **Grass / Enhanced Swale** provides treatment through settlement and infiltration.



As noted, each site has constraints and there are sites that require innovative or “special” attention to meet the treatment requirements while maximizing use of the site. Examples of this type of innovative approach include:

- **Underground Stormwater Management systems**
- **Green / Garden Rooftops**
- **Porous Pavement / Concrete**

Lastly, MAINTENANCE for any BMP is critical to successful treatment.

If ESP can be of assistance to you, please contact us. We have a vast array of expertise awaiting a client’s needs.

