



McGill Smith Punshon, Inc.

Fall 2011

VISIONS

**STORMWATER BEST
MANAGEMENT PRACTICES**

CREATING YOUR VISION

www.mcgillsmithpunshon.com



STORMWATER BEST MANAGEMENT PRACTICES

Stormwater consists of rain water or melted snow that runs off lawns, streets, and other sites. In natural sites, stormwater is absorbed into the ground and filtered, replenishing nearby aquifers, streams and rivers. In developed areas, impervious surfaces (pavement, roofs, etc.) prevent this natural replenishment, and water instead often runs into drains and sewer systems. Negative side effects of this process can include flooding, erosion, contamination, and the destruction of natural habitats.

The goal of good stormwater management is to limit the adverse affect to natural hydrology. The process involves the implementation of "best management practices" by civil engineers and landscape architects. Utilizing best management practices in stormwater results in developments that adequately control stormwater quality and quantity.

The conventional method for managing stormwater is a **stormwater basin**, which collects water and slowly releases it at a controlled rate to mitigate the probability of flooding downstream areas. A **detention basin** is typically dry, in which the majority of surface water evacuates after the peak of the rain fall event. A **retention basin** has a permanent pool of water (a lake or pond). Additional storage is made available to control peak runoff. While effective for flood control, basins are limited in terms of water quality treatment and preventing impact to stream systems.

Sustainable Stormwater Options

Various options and techniques are now available to help provide more sustainable stormwater solutions. Some of these include:

- ▶ **Bioretention Systems** use vegetation to remove pollutants from stormwater runoff. **Rain gardens** are a type of Bioretention System that filters stormwater by percolation into



Creative stormwater management helped save on construction costs for the Vintage Club development

the ground, where deep-rooted native plants increase water absorption, while filtering out pollutants.

- ▶ **Pervious pavement** allows percolation or infiltration of stormwater through the surface into the soil, below where the water is naturally filtered and pollutants may be removed. In clayey areas, a layer of stone aggregate is under the pervious pavement to detain storm water runoff.
- ▶ **Rock check dams** are used where stormwater runoff is concentrated. The rock dams reduce erosion and trap sediment generated from adjacent areas.
- ▶ **Mulching** is the application of grass, hay, wood chips, wood fibers, straw, or gravel to stabilize soil surfaces, improve stormwater infiltration, and retain moisture. **Mulch matting** is made from materials such as wood fibers that are formed into sheets and are more stable than loose mulch.

- ▶ **Post-construction** stormwater management features such as **micro pools** (a type of forebay) are used in detention basins to capture sediment.

- ▶ **Pre-engineered** stormwater management features are also available, such as cartridges installed inside of catch basins that separate oils from the water.

Case Study: The Vintage Club

An example of a project that utilized stormwater best management practices is the Vintage Club, a recently built mixed-use development in the City of Montgomery, Ohio.

"The City of Montgomery's code requires vertical curb on public and private streets. During the preliminary development plan process, we were made aware of a Planning Commission member's desire to apply 'green solutions' to the plan," recalls Richard Arnold, MSP's Vice President of Land Development and the Project Manager. "We requested that the curb be waived over a ¼ mile length of road, and in return, the owner would construct a bio-swale to address storm water quality management. The Planning Commission granted the variance. The final result was that the owner saved \$85,000 in construction costs, and the City of Montgomery gained an environmentally-friendly solution to treating some of the stormwater runoff."

For More Information

For more information about storm water best management practices, please contact Richard Arnold, LEED AP, MSP's Vice President of Land Development, at 513-759-3247.