

Sustainable Site Design for Water Resources Preservation and Protection

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With the steady advancement of development pressures in the Southern US over the past decades and the anticipated growth yet to come, water resource protection has become a high priority for communities across the nation and with the current cycle of droughts, it has become particularly important in the Southern US.

Sustainable design encompasses many areas of the site design approach. Sustainable site design, Low Impact Development, Storm Water Mitigation and Water Quality enhancement measures cannot be well applied as an after thought, but instead must be an integral part of the original planning process for any site.

Our goal initially is to preserve as much of the pre-developed hydrological cycle as possible and preserve critical areas of the site to not only enhance the aesthetics of the site, but to also minimize the impacts of grading and storm water on the site in order to protect water quality and deliver a project that is sustainable. This approach can foster a sense of pride in the community and deliver state of the art facilities for their long term enjoyment while going a long way towards protecting the environment and water quality.

WK Dickson employs a wide variety of construction techniques and storm water best management practices (BMPs) in order to retain more storm water on site, force percolation back into surrounding soils and greatly reduce the need for dangerous and unsightly storm water detention ponds. The detention facilities that may be needed are typically much smaller and are designed as shallow lagoons with plantings to enhance aesthetics and water quality improvement through the actual removal and conversion of a majority of the pollutants in the runoff, which renders these pollutants harmless and non-toxic.

Storm water treatment can be achieved through the use of such measures as bio-basins and rain gardens, bio-swales, creation of fresh water wetlands, filter berms and the use of permeable paving in lieu of impervious surfaces. Such steps, properly designed and implemented, can reduce actual storm water runoff by 50% or more and in some instances can eliminate the need for detention basins entirely. A secondary benefit of bio-infiltration areas is that they normally do not require irrigation since they periodically receive rain water to sustain the plant growth, which is normally native material that is accustomed to local rainfall events.

This presentation highlights several constructed projects that illustrate these techniques and quantifies the savings in construction costs that utilization of LID design principals can realize for clients.