

Incorporating Innovative Stormwater Management Technologies into a Sustainable Integrated Use System¹

A sustainable approach to water management has been implemented in association with the LEED inspired construction of a new 12,500 square foot corporate headquarters building in Chattanooga, TN. The integration of stormwater management technologies serve to reduce pollution from stormwater runoff, limit the disruption to the natural site hydrology by reducing impervious cover, increase infiltration, utilize water that would otherwise have been lost, reduce wastewater generation, and minimize potable water use. Innovative, cost-effective technologies designed to capture, treat, harvest and reuse waters derived from both stormwater and roof runoff are described.

Stormwater and roof runoff are captured and piped to an underground treatment train system constructed of HDPE. This system provides treatment by hydrodynamic separation and filtration technologies. The hydrodynamic separator removes debris, coarse sediment and free floating oil; while filtration provides simultaneous removal of fine-grained sediment, residual oil and waterborne pathogens using a proprietary antimicrobial technology. Harmful microorganisms are destroyed on contact with the media at stormwater flow rates. The treated, non-toxic water is subsequently harvested within a 13,000 gallon (100 year storm volume equivalent) underground modular and lined polypropylene storage unit. Stored water is then used for non-potable property applications including landscape irrigation, an outdoor fountain, and a variety of other building processes. Elsewhere on the property, infiltration is enhanced through the use of a combination of load-supporting drivable grass and gravel paving technologies in the vehicle parking areas. These unique features also serve to reduce the urban heat island effect caused by traditional paving materials; and, enhance the viewscape of the area.

The incorporation of these stormwater technologies into a sustainable integrated use system requires advanced design planning compared to traditional water management practices. The benefits of their implementation can be realized in terms of practical uses and operational costs of water usage. As witnessed during the drought of 2007 in the southeastern states, their implementation would have addressed environmental health, used water that otherwise would have been lost, and reduced potable water demand.

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