Low Impact Development and Environmental Site Design: Building 32 Bioretention Area

What are Low Impact Development Designs?

Low Impact Development (LID) designs are stormwater structures that are intended to reduce stormwater volumes and improve water quality. These designs allow the stormwater to be filtered through a natural system before it runs off into surface waters. Incorporating more natural designs for stormwater management structures facilitates the infiltration of stormwater back into the water table. Replenishing the water table allows for groundwater and surface water recharging. Examples of LID designs include bioretention areas/rain gardens, green roofs, pervious surfaces, open meadows, vegetative swales, converting turf to shrubs and trees, reduced pavement widths, shared or shorter driveways, cluster development, rain barrels, and eliminating curbs and gutters. Many of these structures are commonly incorporated into new designs to meet the requirements of the Maryland Stormwater Management Act of 2007, which was created to improve the quality of water in the Chesapeake Bay and its tributaries.

Ways to Improve Water Quality and Cash Flow

The U.S. Environmental Protection Agency (EPA) recently released a report on the cost analysis of LID. The study revealed that in most cases integrating LID designs into projects reduced costs by 15 to 80% over conventional stormwater control methods. Most of the savings were seen in the reduction of concrete and other hard materials used to control stormwater flows. The study looked at the short term effects of using LID designs; however, there are many long term benefits to using LID designs. For instance, conventional storm water structures are costly to maintain and replace, while LID designs require only minor upkeep. LID has shown to reduce pollutants in stormwater, such as metals, by 20 to 40%. In addition, LID minimizes the need for larger stormwater management structures because it reduces stormwater volumes by 20%. Decreasing the load on the stormwater structures leads to improved water quality. The full EPA report about LID can be downloaded at www.epa.gov/nps/lid.

LID Practices at Goddard

Goddard has developed plans for a pilot LID project in the form of a bioretention area to be installed near Building 32. During the week of September 29, construction will begin in the grassy area adjacent to the parking lot, just past the road leading to the main entrance of the building. This bioretention basin will consist of a shallow landscaped depression filled with native shrubs and grasses that allows for the natural filtration of pollutants from stormwater runoff. Construction should be completed by November 2008.

For additional information contact: Janine Pollack (Janine.Pollack@nasa.gov)