

10.0 LOW IMPACT DEVELOPMENT

The County encourages developers and property owners to adopt the principles and practices of Low Impact Development (LID) to achieve storm water control and improve the quality of runoff from developed areas. LID can be described as the effort to create a hydrologically functional landscape in a developed area that mimics the natural hydrologic regime. This objective is accomplished by:

- Minimizing storm water impacts to the extent practicable by utilizing techniques such as reducing imperviousness; maximizing onsite retention and infiltration of storm water by conserving natural vegetation and habitats (particularly freshwater wetlands of all sizes); maintaining natural drainage courses; reducing the use of pipes; and minimizing clearing and grading to reduce sedimentation.
- Providing runoff storage measures dispersed uniformly throughout a site's landscape using a variety of detention, retention, and runoff practices.
- Maintaining predevelopment time of concentration by strategically routing flows and controlling discharge.
- Implementing effective public education programs encouraging property owners to use pollution prevention measures and properly maintain the on-lot hydrologically functional landscape management practices.

10.1 LID STRATEGIES

The County encourages developers and property owners applying for storm water permits to use LID strategies in their site designs and storm water management plans where possible. Some of the strategies that can provide improved storm water management and reduce the total pollutant exports include the following:

Reducing Road and Driveway Widths

Reducing road and driveway widths reduces the amount of impervious area on a site. Roads are often designed with excessive widths which inadvertently increase impervious area and, in turn, increase both storm water runoff and the transport of nutrients and other pollutants. Applicants for storm water permits should show that they have reduced road and driveway widths appropriately while maintaining a standard consistent with health and safety requirements, and meeting the requirements of the County's Land Use Ordinance.

Reducing Parking Areas

Similar to road and driveway widths, parking areas (both the number and size of spaces) are often designed with little consideration of their impact on storm water and water quality impacts. Some effective methods for reducing the impervious area created by parking facilities are the use of angled parking, smaller parking spaces, median rather than maximum lot size, and pervious parking materials.

Many of these strategies for reducing the hydrologic footprint of parking lots also help promote a more appealing aesthetic. Vegetated swales, bioretention areas, depressed (rather than raised) parking lot islands, and decorative porous pavers all enhance the appearance of standard asphalt lots.

Minimizing Use of Curb and Gutter

Curb and gutter design is often used for storm water control in areas where they are not required and where alternative designs such as vegetated swales are feasible. In the application for a storm water permit, the applicant should present information about the development's street design plan and show that alternatives to curb and gutter use have been considered and implemented whenever possible. Useful alternative approaches include designs that allow sidewalk, driveway, and parking lot flows to drain away from street gutter and pipe systems and into vegetated swales or bioretention areas. These systems should use flush surface curbstones that allow sheet flow off of the impervious surface while providing lateral support for the pavement. Where both curb and gutter are necessary, the use of frequent curb cuts shall be used to divert a portion of the runoff onto vegetated areas.

Cluster and Open-Space Developments and Traditional Neighborhood Developments

Among the strategies for improved storm water management are the use of innovative community and subdivision designs that significantly reduce the impact of new development on water quality and required municipal services. The County will encourage these innovations through evaluation of its current land use ordinances with respect to storm water management BMP design. There are several model programs that define traditional neighborhoods as rectangular block development with mixed residential and commercial land use. In addition to this approach, there are a number of alternative design philosophies that encourage human-powered modes of transportation, such as walking and biking, and are characterized by mixed residential/commercial land use including abundant open green space and parks, recreational areas, and open space preservation areas. Because these types of development inherently reduce automobile travel and promote increased use of alternative transportation modes, including mass transit and pedestrian travel, there are additional storm water and water quality benefits from the reduction in automobile-associated pollutants. The use of these LID design concepts is encouraged by the County.

Maintaining Green Space

How a development and its residents manage green space has an important impact on water quality. In dense urban settings, rain gardens can be used to reduce runoff from buildings and create a pleasant environment. Rain garden systems consist of piping roof storm water into a cistern that bleeds the water into a nearby, vegetated area ideally planted with native vegetation that has been selected for specific nutrient and contaminant uptake capacity. Filtration through the vegetation and soil removes pollutants from the water and reduces the impacts of the impervious roof area.

Disconnecting Impervious Surfaces

One of the methods that can be used to reduce the amount of runoff from a development site is the disconnection of impervious surfaces. This practice can be implemented in many ways, including:

- Leaving a 2 foot or 3 foot wide pervious strip between the edge of a street and the beginning of a driveway or sidewalk.
- Using pervious pavement stones along strips of parking lots and in sections of sidewalks.
- Ensuring that rooftop drain water passes over a pervious strip before running onto a paved lot or into a storm water collection system.

These simple techniques are valuable methods for reducing the quantity of storm water leaving a project and improving the quality of that storm water.

10.2 REFERENCES

Low-Impact Development Design Strategies, An Integrated Design Approach, Prince George's County, Maryland Department of Environmental Resources, January 2000.

Better Site Design, An Assessment of the Better Site Design Principles for Communities Implementing Virginia's Chesapeake Bay Preservation Act, Center for Watershed Protection, Inc, Elliot County, Maryland 21043.

<http://www.lowimpactdevelopment.org/>, Low Impact Development Center, Beltsville, Maryland 20705.