

# Urban Development: Put a 'LID' on it

**F**or years, urban sprawl and infill have reshaped the nation's landscape. And while current economic conditions may have slowed development, they have not stopped it. Conservation districts provide a wide range of services aimed at reducing the impact of development on communities' natural resources. According to an inventory conducted by NACD in 2007, two-thirds of districts focus on soil interpretation and protection, and more than half provide assistance with tree planting, invasive species management and small acreage farming. Fifty percent also address stormwater management, including the 26.5 percent of districts that are involved in low impact development (LID).

The U.S. Environmental Protection Agency (EPA) defines low impact development as an approach to land development that works with nature to manage stormwater as close to its source as possible. In essence, LID treats stormwater as a resource rather than a waste product. The principles and practices can be applied to new development, redevelopment or as retrofits to existing development, ranging from high density ultra-urban settings to low density areas. Overall, LID helps improve water quality and reduces damaging peak discharges of stormwater runoff.

## Low Impact Development

LID is seen as a more resource-friendly alternative to conventional stormwater management practices, which quickly move water away from developed areas, usually changing the natural hydrologic functions. This often results in lost filtration and infiltration capacity. Streams and waterways can be eroded by the runoff volume and velocity resulting from conventional practices, and groundwater reservoirs can become depleted. Large areas of land must be allocated as storage ponds, which can cause safety and health problems and often are aesthetically unappealing. And the costs of inspecting and maintaining these ponds can be high.

While LID requires a more detailed site design, greater construction oversight and increased landowner education, it offers numerous environmental and economic benefits, as outlined below.

## BENEFITS OF LID

### ENVIRONMENTAL

- Preserves integrity of ecological and biological systems (i.e. hydrologic cycle, soil health, stream channels, etc.)
- Protects site and regional surface and ground water quality, and recharges aquifers
- Reduces impact on native plants and animals
- Reduces potential for health issues (i.e. West Nile virus)

### ECONOMIC

- Lowers costs of development, such as land clearing, grading and infrastructure
- Reduces municipal infrastructure and utility maintenance costs
- Reduces liability and safety concerns
- Increases development and community marketability

## Northern Virginia SWCD, Virginia

During 2008 - 2009, the District partnered with the Fairfax County Department of Public Works and Environmental Services (Stormwater Planning Division), the Northern Virginia Regional Commission, Angler Environmental and the local supervisor's office on a three-part project that involved installing a residential low impact development demonstration at a private residence in Falls Church; providing community education on sustainable stormwater management; and providing technical and financial support to community residents. The project stemmed from a year-long community-based stakeholder process that identified residential low impact development education and implementation as a priority for solving drainage, water quality and erosion concerns in this suburban community. A grant from the Chesapeake Bay Restoration Fund partially funded the innovative project. For more information, contact NVSWCD's Christin Jolicoeur at [christin.jolicoeur@fairfaxcounty.gov](mailto:christin.jolicoeur@fairfaxcounty.gov)

Equipment operators, NVSWCD's Asad Rouhi and Fairfax County staff work on connecting rear downspouts to the infiltration trench in the Falls Church demonstration project.



# LID in Five Steps

“Reining in the Storm - One Building at a Time,” a video made by Virginia Village Productions for the Virginia Department of Conservation and Recreation and the Northern Virginia Regional Commission, outlines five key elements of low impact development.

**1** **Conserve land resources** and natural site assets, such as hydrologic functions. This can be done by directing development away from sensitive environmental areas, preserving native vegetation and soils and maintaining existing drainage courses.

**2** **Minimize the impact** of any changes, using methods such as directing runoff through natural areas and using alternatives to pavement. “Reining in the Storm” quoted a study that showed in order to offset damage to water quality, six square feet of heavily planted landscape is needed for every one square foot of pavement.

**3** **Decentralize water flow.** This is accomplished through a system of small-scale controls located near sources of runoff that will store, infiltrate, filter and release water in a natural way. Examples include disconnecting impervious surfaces, reducing curbs and minimizing road and sidewalk widths.

**4** **Create “storage”** in the landscape where water can infiltrate. Introducing bioretention areas, revegetation, soil amendments and green roofs are effective ways to create storage areas. This can also be accomplished by minimizing impervious surfaces.

**5** **Provide necessary maintenance.** Outreach and education must be available for government officials to help them understand the importance and value of LID practices. Similarly, homeowners must be taught how to protect and maintain LID. Without this support, LID measures can lose their effectiveness.

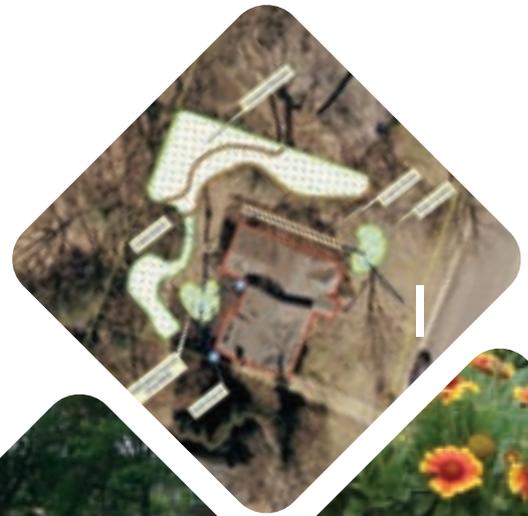


Photo credit: Nancy Arazan



# Districts and LID

Districts are known for championing voluntary conservation efforts on private lands that don't just solve, but also prevent natural resource problems. Low impact development fits right into that philosophy because LID prevents environmental damage by enabling a developed site to maintain its ecological and biological functions. In fact, private landowners and developers often voluntarily implement LID practices, recognizing that the benefits of LID outweigh the costs.

There are a number of roles that districts can take in advancing low impact development. The first is to educate local government officials, developers, communities and homeowners about the need for, and value of, low impact development. In many areas, districts have conducted this outreach through workshops and onsite demonstrations. Another critical aspect of LID education is helping local officials review their ordinances. Often there are barriers to LID practices that can be replaced with regulations and technical information that both allow and encourage their use.

As developers embrace LID concepts, and local governments facilitate their use, districts can assist with site design, redesign and approval. Applying LID practices to new developments—or retrofitting older ones—requires thorough planning and preparation. Sites must be studied and changes carefully calculated to ensure that existing drainage patterns and soil health are protected.

Districts, often working in conjunction with local government, can also conduct construction site inspections. LID implementation requires great attention to detail and process. For example, installing curb cuts too early in the development process can cause excess water to build up in areas that aren't yet designed to handle it.

Another important role for districts—one that is often overlooked by others—is ensuring that LID sites are adequately maintained. Once the developers and government officials have moved on to newer sites, communities and homeowners are left to oversee the aesthetics and functioning of LID measures. Over time, sediment accumulation, soil modification and other factors can reduce LID performance. Districts can help prevent this by educating landowners about the functioning and maintenance requirements of LID through workshops and demonstrations.

## LID Resources

Numerous resources are available on low impact development, including the following. Share your favorite one with NACD by emailing Deb Bogar at [deb-bogar@nacdnet.org](mailto:deb-bogar@nacdnet.org).

- U.S. Environmental Protection Agency Office of Water: [www.epa.gov/nps/lid/](http://www.epa.gov/nps/lid/)
- Center for Watershed Protection: [www.cwp.org/Resource\\_Library/index.htm](http://www.cwp.org/Resource_Library/index.htm)
- Low Impact Development Center: [www.lowimpactdevelopment.org/](http://www.lowimpactdevelopment.org/)
- Nonpoint Education for Municipal Officials: <http://nemo.uconn.edu/tools.htm>

# The LID Partnership

Narrator Frank Stasio, with National Public Radio at the time, in the previously mentioned "Reining in the Storm" closes by saying:

*"Only through the partnership of landowners, contractors, and the government can this change begin. The quality of our water depends upon our ability to construct buildings and develop [Virginia's] land. It must be done in a way that does not pass the costs of building to downstream taxpayers. Low Impact Development allows nature, as it did for millions of years, to provide, once again, an abundance of clean, life-sustaining water."*

The nation's conservation and natural resource districts are crucial to this partnership. With their local relationships, outreach capabilities, technical expertise and commitment to helping landowners and users, districts can help establish standards for improving and maintaining the environmental health and functions in developed and developing areas through approaches such as Low Impact Development.

## Washington CD, Minnesota

Due to rapid growth in the county, the Washington Conservation District in Minnesota is actively involved in stormwater management efforts, including low impact development. One of the challenges they faced was developing design standards because existing city rules and zoning ordinances were set up to promote conventional stormwater practices like retention ponds. The District and other stormwater professionals statewide worked to secure legislation creating consistent performance standards, zoning codes and model ordinances. Jay Riggs, District Manager, co-testified in support of the Minimum Impact Design Standards (MIDS) bill as it went through the legislative process. Over the next three years, he and other professionals in Minnesota will create a menu of runoff management techniques that will allow developers to customize stormwater treatment for a site rather than just using pipes and ponds. For information, contact Jay Riggs at [jriggs@mnwcd.org](mailto:jriggs@mnwcd.org).



*The Washington Conservation District was involved in securing state legislation for Minimum Impact Design Standards.*

## East Multnomah SWCD, Oregon

Because many urban areas in Oregon's East Multnomah Soil and Water Conservation District were built before Low Impact Development methods were common, the District offers a wide variety of programs to help residents become familiar with sustainable stormwater management. In all of their LID work, the District strives to offer tools and information people can use to make good decisions about managing rainfall runoff on their own property. These include naturescaping workshops, which encourage landscaping with native plants; workshops that teach landowners about rain gardens and a "Register Your Rain Garden" initiative on the District website; an annual stormwater festival; and a display at the District-owned office building that showcases a wide variety of sustainable stormwater management practices. For more information, contact Candace Stoughton at [Candace@emswcd.org](mailto:Candace@emswcd.org).



*The East Multnomah CD placed this downspout planter on their office building to absorb some of the stormwater runoff from the roof.*

*This supplement was prepared with assistance from Diane Hoffman and Christin Jolicoeur, Northern Virginia SWCD, VA; Candace Stoughton, East Multnomah SWCD, OR; Jay Riggs, Washington CD, MN; and Stacy Smith, Whidbey Island CD, WA.*

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