

Low Impact Development



What is it?

Low Impact Development (LID) refers to methods of development that use or mimic natural processes for managing stormwater on the site while still achieving water protection goals. LID strategies aim to improve onsite water management by using features that support infiltration, evapotranspiration, and natural irrigation of the landscape. LID provides a more sustainable model by promoting conservation utilizing the natural features of the site and reducing impacts on ecosystems and infrastructure.

Why is it Important?

Traditional urban and suburban development increases the variety and amount of pollutants carried by stormwater into our surface waters because much of the land surface is covered by buildings, pavement, and compacted landscapes. These surfaces do not allow rain and snow melt to soak into the ground, which greatly increases the volume and velocity of stormwater runoff.

Polluted runoff can have many adverse effects on plants, fish, animals, and people. For example, high levels of nutrients can lead to algal blooms. When algal blooms decompose, they consume oxygen, which fish and other aquatic life need to survive. In extreme cases, the decomposition of algae can lead to “dead zones” where all the oxygen is consumed and no aquatic life can survive.

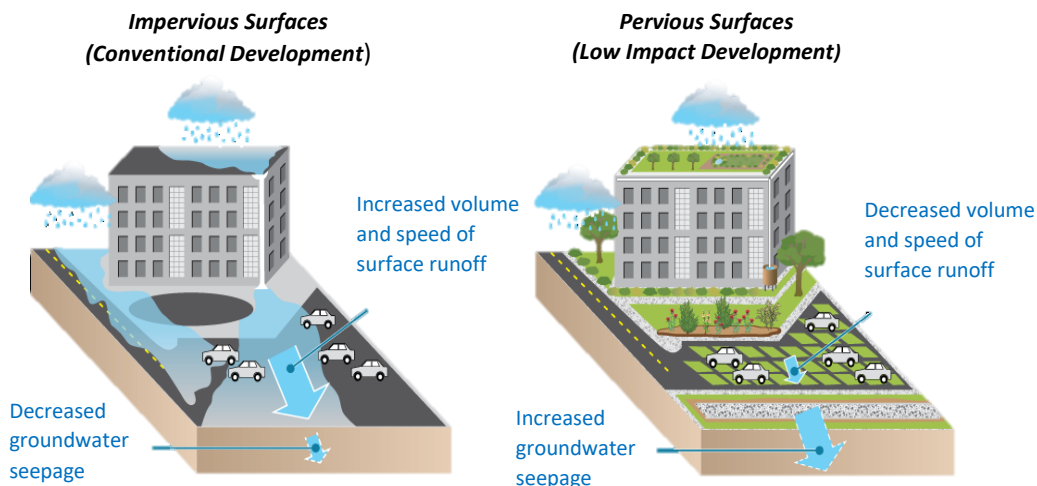
LID strategies aim to reduce the amount of polluted runoff that enters our local streams and waterways. LID strategies work with nature to manage stormwater as close to its source as possible. By implementing LID principles and practices, water can be managed in a way that reduces the impact of built areas and promotes the natural movement of water within an ecosystem or watershed.

Common pollutants found in runoff

- Sediment
- Nutrients (nitrogen, potassium, phosphorous) from fertilizers
- Oil, grease, and toxic chemicals from motor vehicles
- Deicing salts
- Heavy metals from roof shingles and industrial uses
- Bacteria and nutrients from animal waste



Algal bloom in the Chesapeake Bay.



Conventional development versus Low Impact Development

(Source: Chesapeake and Atlantic Coastal Bays Trust Fund, 2013).

Examples of LID



Bioretention Basin

Bioretention areas are designed to capture and treat the “first flush” of runoff which carries the majority of pollutants. The surface layer of rocks slows the speed of the runoff, while the underlying soil mix filters particles and removes some of the dissolved pollutants. An underdrain covered by geotextile fabric collects the runoff and routes it to the storm sewer system.



Permeable Paving-Porous Concrete

Permeable paving allows runoff to penetrate the surface and pass through into an underlying stone reservoir for storage and infiltration into the groundwater supply. Porous asphalt, pavers, and concrete are some examples of permeable paving.



Source: <http://soilandwater.bee.cornell.edu>

Vegetated Detention Basin

Detention basins hold runoff temporarily, allowing it to drain at a pre-determined rate. Detention basins that are vegetated also allow for infiltration of runoff and blend in with the surrounding natural landscape.



Rain Barrel

Rain barrels connect to downspouts for capturing roof runoff for later use. There is typically a spigot at the base of the barrel that can be connected to a hose, making it easy to use the collected rainwater for watering lawns and gardens. Rain barrels help to decrease runoff while conserving water.



Rain Garden

Rain gardens are a form of bioretention, with varying layers of stone, mixed aggregate, and a special mix of soil, to enhance filtration and infiltration. Runoff is directed to the rain garden where it can infiltrate and be filtered by the plants in the garden. Rain gardens are ideal for residential areas, and can also provide food and habitat for wildlife.

If you are interested in learning more about LID or stormwater management, or are interested in seeing examples of Low Impact Development and Stormwater Best Management Practices (BMPs) firsthand, the Conservation District has implemented many practices onsite and offers a BMP Tour. Call the Conservation District with any questions or to schedule a tour.

For more information on LID visit:

<https://www.epa.gov/nps/urban-runoff-low-impact-development>