



Green Infrastructure 101

Larger, stronger storms are occurring more often and are expected to become still more frequent and intense. Rather than sending stormwater directly into rivers and streams, increasing the likelihood of flooding, communities and businesses can adopt policies and land management practices that help to slow stormwater, spread it out and allow it to infiltrate into the ground. Everyone in all parts of a watershed can and should participate in applying Green Infrastructure concepts to their property to reduce the volume of stormwater running into flood-prone areas.

Why it Matters

By using multiple strategies to keep stormwater close to where it falls and using it or letting it infiltrate into the ground rather than rushing it off your property and into streams and rivers, flooding can be reduced and water quality in lakes and rivers can be improved. Less stormwater runoff helps reduce the cost of stormwater pipes, drains, ditches and treatment systems that are expensive to build and maintain, as well as to replace and upgrade. In places with combined stormwater and sewage treatment systems, less runoff can also prevent polluting sewer overflows during heavy storm events.

How to Apply Green Infrastructure

Green infrastructure can function at two different scales that are both important for making our communities less vulnerable to flooding.

- 1. Large Scale Green Infrastructure.** At the town or region-wide scale, green infrastructure means an interconnected network of waterways, wetlands, floodplains, woodlands and other naturally occurring and human-built features that manage stormwater, remove pollutants, reduce soil erosion and provide other ecological, and environmentally-sustainable services.

Upland forests in a healthy watershed are one type of large-scale green infrastructure that have enormous flood control capabilities. Rain falling on forested hills is absorbed by trees and topsoil, much of it infiltrates into the ground recharging the aquifers while woody vegetation and uneven ground captures and slows the runoff, reducing the amount of stormwater flowing into rivers and lakes.

The critical functions that forests, wetlands and other natural systems provide for flood control can be protected and enhanced through local conservation, land management and development regulation to promote the following measures:

- Preserve vegetation on steep slopes.
- Maintain vegetated buffers along streams, rivers and lakes.
- Preserve natural drainage features and natural depressions that help to hold stormwater.
- Conserve forests, wetlands and floodplains.
- Plan for compact development where buildings and pavement serve multiple functions and are designed for walkability.
- Implement urban forestry practices.

2. Property or Neighborhood Scale Green Infrastructure. At the property or neighborhood-level, green infrastructure refers to stormwater management approaches and technologies that mimic the ways that large-scale green infrastructure works to reduce flooding. These techniques help property owners infiltrate, evaporate, capture and reuse stormwater to maintain or restore the natural water systems and reduce the negative impacts of stormwater runoff in and around developed areas. When everyone participates in adopting green infrastructure practices on individual properties, damage from flooding can be reduced.

Property owners can implement measures to promote green building and green site design, and municipalities can promote these measures through bylaws and incentives.

- Minimize new pavement and impervious areas.
- Minimize soil compaction and add organic soil amendments to lawns and gardens to improve the absorptive capacity.
- Create depressions in the landscape such as rain gardens, vegetated swales, low areas in lawns and other measures to capture and infiltrate stormwater.
- Route roof runoff over lawns and reduce the use of storm sewers and ditches.
- Direct flow from impervious surfaces onto vegetated areas, where it can soak into or filter over the ground.
- Capture roof runoff in rain barrels and cisterns for irrigation and other outdoor uses.
- Install green roofs to absorb rainwater.
- Install dry wells that release roof runoff and other collected runoff into the ground for infiltration in the surrounding ground.

These techniques are often called Green Stormwater Infrastructure (GSI) and the planning approach is referred to as Low Impact Development (LID). For more information and details, see the [Agency of Natural Resources Green Infrastructure Fact Sheet](#) and the [Green Infrastructure](#) page. See these concepts presented in an engaging, animated video on [Sustainable Drainage Systems](#). All types of green infrastructure are about bringing together natural and built environments and [using the landscape as infrastructure](#).

MULTIPLE BENEFITS OF GREEN INFRASTRUCTURE

Beyond flood control, protecting natural landscape systems and using green infrastructure to manage stormwater on your property offers a host of benefits that include:

- Natural filtering of pollutants from stormwater.
- Decreasing the need for expensive man-made stormwater treatment facilities.
- Minimizing landslides and other hazards.
- Providing habitat for wildlife.
- Improving air quality (forests and trees).
- Reducing energy use (shade and protection from trees and insulation from green roofs).
- Improving plant health by making rainwater more available (gardens and landscaping).
- Recharging groundwater for water supplies and to buffer against drought.
- Reducing the potential for pollution from sewer overflows in places where stormwater and wastewater treatment systems are combined.