

# Improving Community Resiliency with Green Infrastructure

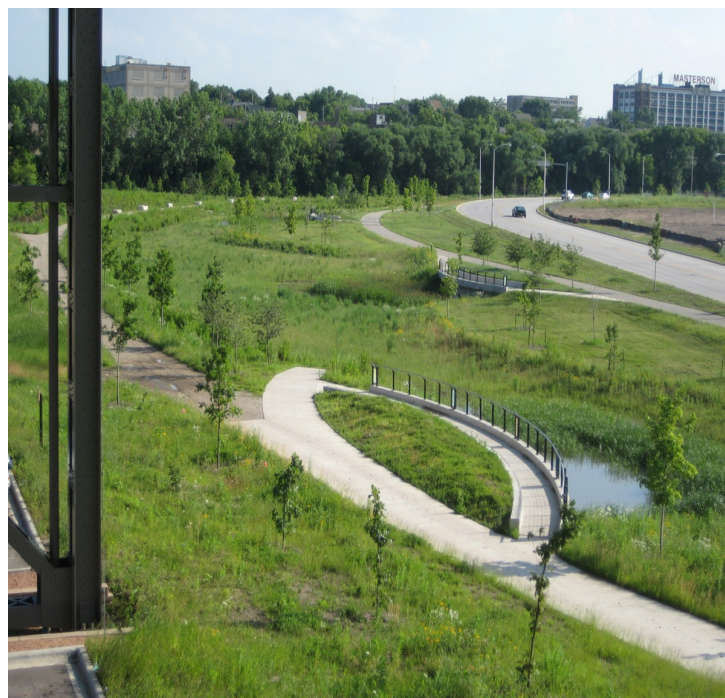
## What is green infrastructure?

Green infrastructure uses vegetation, soils, and natural processes to manage water and create healthier urban environments. The scale of green infrastructure ranges from urban installations such as rain gardens and green roofs up to large tracts of undeveloped natural lands. The interconnected network of green infrastructure can enhance the resiliency of infrastructure and communities by increasing water supplies, reducing flooding, providing climate adaptability, and improving water quality. Approximately one-third of the estimated growth in the 100-year floodplain over the coming decades is attributed to stormwater impacts of upstream development.

## Milwaukee, WI uses green infrastructure to improve water quality and enhance flood control

Milwaukee Metropolitan Sewerage District's (MMSD) green infrastructure program combines site scale practices and large scale open spaces. The *Greenseams* program permanently protects undeveloped properties within upstream watersheds to manage stormwater at its source, keeping water out of the combined sewer and mitigating downstream flooding by infiltrating it on site.

The Menomonee River Industrial Park contains the largest green infrastructure project in the Milwaukee area. Once a contaminated industrial site, this 70-acre stormwater park now manages runoff from adjacent development up to the 100-year storm event, as well as providing a high-value recreational asset.



*Menomonee River Green Infrastructure Project manages runoff on a former brownfield site. Photo credit: Milwaukee Metropolitan Sewerage District*

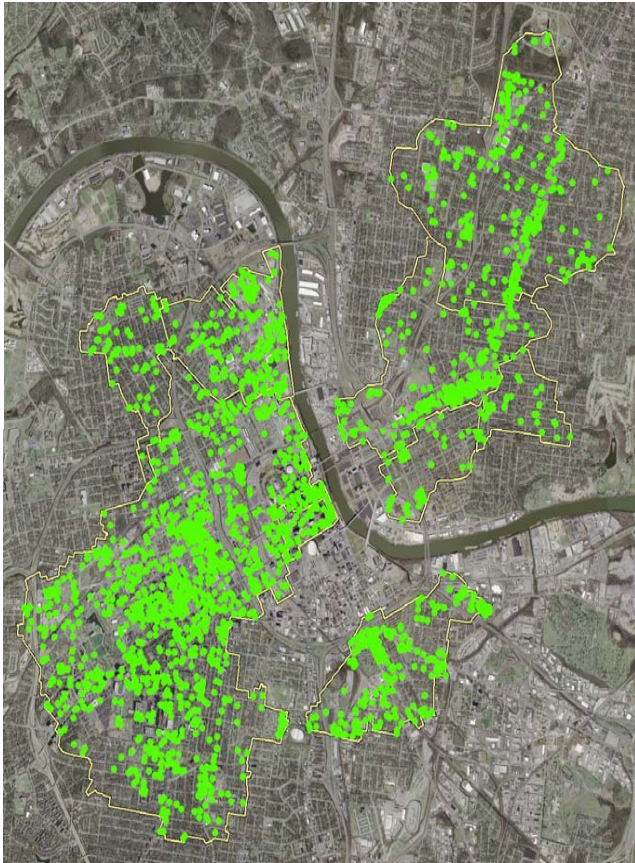


*Marsh restoration efforts restore shoreline in New Jersey. Photo credit: Delaware Living Shoreline Initiative*

## Living Shoreline Initiative uses natural processes to protect New Jersey coastline

A joint effort between the Partnership for the Delaware Estuary and Rutgers University seeks to stabilize New Jersey's eroding shorelines and tidal estuaries by restoring marshland vegetation.

Several pilot projects along the Maurice River use natural processes to slow down sediment and encourage vegetative growth. Increased vegetation along coastal waterways will protect eroding marsh edges and mitigate sea level rise. In contrast to hard structures such as bulkheads and sea walls, vegetative shorelines provide multiple ecosystem benefits such as improved water quality and aquatic habitat.



*Green infrastructure opportunities in downtown Nashville*  
**Photo credit:** Nashville Green Infrastructure Master Plan

## Enhancing resiliency to flooding and drought in Pima County, AZ

Pima County, home to Tucson, is encouraging the use of green infrastructure to mitigate flooding, improve water quality, and augment the supply of available water.

The City of Tucson has partnered with NGOs to install green infrastructure on residential collector streets, and has adopted an internal policy requiring all public streets to integrate green street concepts into the initial designs.

The green streets infiltrate rainwater to augment local water supplies while simultaneously reducing water pollution. They also help achieve Tucson's water conservation goals, which require rainwater to be used to help reduce potable water demand.

*Parking lot designed to infiltrate runoff in Tucson, AZ*  
**Photo credit:** Watershed Management Group

## Green infrastructure to reduce flood risk in Nashville, TN

Nashville is pursuing green infrastructure to reduce flood risk and CSOs, while restoring impaired streams and the endangered Nashville crayfish population.

To reduce flood risk, the "Nashville Naturally" open space plan calls for the protection of 22,000 acres over the next 25 years, including large-scale preserves in each bend of the Cumberland River. The network of open spaces will not only provide a buffer against floodwaters, but also improve water quality, protect agricultural soils, and offer recreational opportunities.

To address flooding and CSOs in the city center, Nashville has identified 50 potential site scale green infrastructure projects that can help reduce sewer overflows.

