

Green Stormwater Infrastructure List of Resources

Prepared by the Urban and Community Forestry Green Stormwater Infrastructure Committee
May 2018

This list provides online resources to promote urban trees and forests as a complementary solution to engineered structures for improving water quality and stormwater management. The same trees and forests used to meet stormwater management or MS4 permit requirements also increase forest canopy cover. This resource list supports public and private partners in their search for quality information.

Case Studies (Success Stories)

- [Delaware Municipal Actions for Water Quality - Case Studies](#)
- [Maryland Mount Rainier](#)
A town that replaced streets that had impervious surfaces with pervious surfaces and utilized bioretention planters and trees as stormwater management.
- [Maryland Baltimore](#)
Blue Water Baltimore uses a [holistic set of programs](#) from [arts and education](#), to stormwater management projects, to [legal and legislative advocacy](#), to involving public and private partners to improve water quality.
- [New Jersey Camden SMART \(Stormwater Management and Resource Training\) Initiative](#)
A community-driven movement to protect human health, improve conditions for economic development, improve water quality, and enhance the quality of life for Camden City residents and the Delaware River watershed through the use of green infrastructure techniques.
- [New Jersey Newark DIG Project](#)
A project whose goal is the establishment of sustainable green infrastructure to manage stormwater runoff, improve water quality and resiliency to flooding, and reduce combined sewer overflows, focusing on the Passaic River and its tributaries.
- [New York Green Infrastructure Examples for Stormwater Management in the Hudson Valley](#)
This website contains links of examples of stormwater management projects in the Hudson River Valley that use green infrastructure.
- [Ohio Groundwork Cincinnati](#)
A community-based, boots-on-the-ground nonprofit that focuses on youth, environmental education, restoration of the river, transformation of derelict properties, planting trees and edible gardens, building trails, providing a Green Jobs site, and engaging the public. Groundwork Cincinnati works with other Groundwork trusts in cities across the Nation to engage inner-city residents in urban transformation.
- [Pennsylvania TreePhilly](#)
An initiative dedicated to making Philadelphia the City of Arborly Love. Launched in response to Mayor Nutter's Greenworks goal to ensure each Philadelphia neighborhood has at least 30% tree canopy coverage through treekeepers, yard trees, and street trees programs.
- [Pennsylvania Green Pittsburgh](#)
The city is a partner in TreeVitalize, a regional program aimed at planting 20,000 trees in the city by 2012. As part of this program, the city planted more than 700 trees in 2008, and 1,000 in 2009.

Calculators to Determine Tree Planting Credit per TMDLs

- [Maryland Total Maximum Daily Load \(TMDL\) Implementation and Watershed Implementation Plans](#)
- [Minnesota Stormwater Management Manual: Calculating Credits for Tree Trenches and Tree Boxes](#)
Discusses how tree trench/tree box practices can achieve stormwater credits; includes both tree systems with and without underdrains.
- [National Stormwater Calculator](#)
A calculator that estimates the annual amount of rainwater and frequency of runoff from a specific site in the United States (including Puerto Rico) based on the user's site's land cover information and selected low impact development controls from seven green infrastructure practices, including street planters, rain gardens, and porous pavement.
- [New York City Green Infrastructure Program](#)
- [Pennsylvania Department of Environmental Protection, BMP Effectiveness Values for MS4 Communities](#)
- [Center for Watershed Protection Accounting for Trees in Stormwater Models and Calculators](#)
Summarizes methods and tools to account for green infrastructure reductions in runoff. Lists methods for incorporating green infrastructure into runoff models and the models and calculators for estimating the functions, benefits, and economics of green infrastructure.
- [Center for Watershed Protection National Tree Crediting Tools for Urban Trees](#)
Newly released science-based, national stormwater crediting tools for quantifying stormwater and water quality benefits of urban trees.
- [Chesapeake Bay Program Urban Tree Canopy Expansion Credit](#)
BMP credits for urban tree canopy expansion and urban forest planting approved by EPA and State agencies for credit under Chesapeake Bay TMDL.
- [EPA Green Infrastructure Modeling Tools](#)
A variety of models are available for assessing the performance of green infrastructure practices in the urban environment.
- [The National Green Values™ Calculator](#)
A tool for comparing the performance, costs, and benefits of Green Infrastructure, or Low Impact Development, to conventional stormwater practices (based on Great Lakes region). Can be used to get a general sense of how green infrastructure works in other areas.
- [National Tree Benefits Calculator](#)
Enables users to make simple estimations of the benefits individual trees provide, including interception of stormwater runoff in gallons, based on i-Tree's street tree assessment tool.

Updated Stormwater Management Manuals that Include Tree Planting

These publications use green infrastructure methods to manage or reduce stormwater runoff and to mitigate events leading to combined sewer overflow. Websites offer guidelines, recommendations (such as performance goals), and tools (such as credit calculations, design specifications, and ordinance guidelines).

- [Maryland Stormwater Design Manual , Volumes I and II \(October 2000, Revised May 2009\)](#)
- [Michigan Low Impact Development for Michigan Manual](#)
- [Minnesota Minimum Design Standards \(MIDS\)](#)
- [New Jersey Green Infrastructure in New Jersey](#)

- [New Jersey Stormwater Best Management Practices Manual](#)
Provides guidance, methods, and examples that meet the Rule’s standards, including “impacts of development on runoff” and “landscaping for stormwater management.”
- [New York State Stormwater Design Manual 2015](#)
- [Vermont Green Stormwater Infrastructure](#)
- [Vermont Green Infrastructure Sizing Tools and Model Ordinances](#)

Funding for Tree Planting as a Component of Green Infrastructure

- [DC RiverSmart Washington](#)
Provides financial incentives to help District property owners install green infrastructure such as rain barrels, green roofs, rain gardens, permeable pavement, and shade trees. Incentives programs can include a site evaluation and up-front funding or a rebate or a discount.
- [Maryland Chesapeake & Atlantic Coastal Bays Trust Fund: Cost-Effective Non-Point Source Pollution Reduction Grants](#)
- [Michigan Financing Green Infrastructure Guide](#)
Water pollution control revolving fund loans.
- [New York Green Innovation Grant Program](#)
Supports projects across New York State that utilize unique stormwater infrastructure design and create cutting-edge green technologies.
- [Pennsylvania Infrastructure Investment Authority \(PennVest\)](#)
- [Pennsylvania DCNR Bureau of Forestry TreeVitalize](#)
A partnership-based urban forestry program committed to restoring tree cover in Pennsylvania communities; offers tree planting grants to communities once a year.
- [Pennsylvania Horticultural Society, Plant One Million Program](#)
- [Pennsylvania Western Pennsylvania Conservancy](#)
- [EPA Urban Waters Small Grants](#)
- [NRPA Financing Green Infrastructure Projects, Great Urban Parks Campaign Briefing Paper](#)

Outreach

- [EPA “Soak up the Rain” Campaign](#)
A stormwater public outreach campaign to raise awareness about the problem of polluted stormwater runoff and the need to take action to reduce runoff and its costly impacts. Outreach tools and other resources are available on the website.
- [FEMA Climate Resilient Mitigation Activities: Green Infrastructure Methods](#)
- NOAA Sea Grant

Guides & Educational Resources

- [Connecticut University CLEAR Webinar Series](#)
Provides information and assistance to land use decisionmakers and other audiences through research, outreach, and training programs focused on the relationship of natural resource protection to land use planning and management. Addresses the overlapping issues of water management, land use planning, climate resiliency, and geospatial (mapping) technology.

- [DC Greening DC Streets](#)
A guide to green infrastructure (permeable pavement, bioretention, tree space design) with design examples for various housing types.
- [Maryland Green Pattern Book](#)
Using vacant land to create greener neighborhoods in Baltimore.
- [New Jersey Rutgers Cooperative Extension Water Resources Program](#)
Identify and address community water resource issues using sustainable and practical science-based solutions through research, project development, assessment, and extension to address Agricultural Water Management, Stormwater Management & Green Infrastructure, and Watershed Planning & Restoration.
- [New Jersey Water Resources Program, Rutgers Cooperative Extension Fact Sheets](#)
- [Pennsylvania State University Extension, Green Infrastructure Webinar Series](#)
- [Environmental Finance Center Holistically Analyzing the Benefits of Green Infrastructure, Guidance for Local Government](#)
Intended to help smaller local governments with MS4 permits evaluate the benefits of green infrastructure by detailing how combining green and gray infrastructure systems lowers costs, solves systemic water challenges, and enhances a community's quality of life.
- [Environmental Law Institute and Amigos Bravos Step-by-Step Guide to Integrating Community Input into Green Infrastructure Projects](#)
Provides details and tips to help local governments move through the decisionmaking process in eight, easy-to-digest steps to implement green infrastructure projects in their communities.
- [EPA Green Infrastructure Webcast Series](#)
A webcast series for those starting to implement green infrastructure as well as those enhancing established programs. Beginning in 2014, the series features leading academics and professionals sharing their expertise on a range of topics related to green infrastructure.
- EPA G3 Website ([subscribe](#))
Green Streets. Green Jobs. Green Towns. Sponsored by Office of State & Watershed Partnerships, Watershed Protection Division, U.S. EPA Region 3.
- [EPA Storm Smart Schools: A Guide to Integrate Green Stormwater Infrastructure to Meet Regulatory Compliance and Promote Environmental Literacy](#)
A Green School Grounds project focused on green infrastructure practices for stormwater management on school grounds while incorporating environmental literacy.
- [EPA Urban Waters Resources](#)
- [Georgetown Climate Center](#)
A toolkit of strategies to manage stormwater, reduce urban heat island effects, improve air quality, and promote economic development and other sustainability goals.
- [NASF Trees, Forests and Stormwater: A Primer for State Foresters](#)
Briefing paper discusses the sources and effects of stormwater and green infrastructure approaches on improving water quality, and describes how urban watershed forestry practices can improve overall watershed health. Included is a case study of a city in Vermont using an urban tree canopy study to strategically plant trees to meet water quality targets.
- [NRPA New Guide on How Urban Parks Can Help Fight Flooding](#)
A technical guide outlining the nuts and bolts of green stormwater infrastructure in parks, including how to engage communities and secure funding.

- [NRPA Great Urban Parks Campaign Resources](#)
An evidence-based educational resource for park and planning professionals to improve equity through green infrastructure and maximize multiple benefits.
- [USFS Trees & Stormwater](#)
Comprehensive national resource includes a document builder, hundreds of case studies, videos, methods and best practices, benefit calculators, and other tools on how adding trees can boost overall system performance, often at lower costs.
- [USGS](#)
Abstract and paper: “Evaluation of leaf removal as a means to reduce nutrient concentrations and loads in urban stormwater.”
- [USFS Urban Forest Connections Webinar Series](#)