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Why we need to manage stormwater differently...

Conventional Methods of stormwater management

- low flow concrete channels
- storm drains

Faults of conventional methods

- concentrate flow
- ineffective at handling large volumes of water
- easily clogged
- they do not absorb or clean water
- does not mitigate effects of impervious surfaces
- does not filter stormwater of pollution or sediment
Looking in your own backyard

What you do on your property can impact stormwater

Patios, home additions, pools, tree removal, non-native plants can all contribute to increased problems from stormwater.

Calculating your home’s stormwater runoff

Think about the impervious footprint of your house which includes:

*Roofs, walkways, driveways, patios, pools, decks, home additions*

*Blue arrows indicate direction of stormwater flow, green circle is canopy of tree*
To approximate runoff use this formula:

\[ \text{# Square feet of impervious surface} \times 0.6 = \text{# gallons of water produced in a 1” rainstorm} \]

See below an example of a 400 square foot patio

400 SF Patio* 0.6 = \textbf{240 gallons of stormwater} in a 1” rain storm

That would fill up almost fifty 5-gallon buckets or four 55-gallon rain barrels!

Factors that influence runoff:

- Drainage Areas
- Amount and Intensity of Precipitation
- Land Cover (pavement vs. grass vs. forest)
- Slope
- Soils & Soil Compaction
- Ground Cover Condition (poor, fair, good)
- Type of Flow (sheetflow vs. concentrated flow)
Benefits of Native Plants and Trees

Why native plants?
See the graphic below to see the striking difference between non-native and native plant roots. These extensive, deep root structures allow native plants to absorb more water and also be more resilient during time of stress such as drought. See the Additional Resources section to find a list of native plant suppliers we use and trust.

How do trees help reduce stormwater?
Trees are sponges for water and are a great asset to a yard for their water infiltration, shade, and wildlife benefits. Below is a screenshot from treebenefits.com where you can calculate how much stormwater your tree will intercept. For example, a 45 inch Northern red oak will intercept over 23,000 gallons of water per year!

National Tree Benefit Calculator

Your 45 inch Northern red oak will intercept 23,494 gallons of stormwater runoff this year:

Urban stormwater runoff (or “non-point source pollution”) washes chemicals (oil, gasoline, salts, etc.) and litter from surfaces such as roadways and parking lots into streams, wetlands, rivers and oceans. The more impervious the surface (e.g., concrete, asphalt, rooftops), the more quickly pollutants are washed into our community waterways. Drinking water, aquatic life and the health of our entire ecosystem can be adversely affected by this process.

Trees act as mini-reservoirs, controlling runoff at the source. These reduce runoff by:
- Intercepting and holding rain on leaves, branches and bark
- Increasing infiltration and storage of rainwater through the tree’s root system
- Reducing soil erosion by slowing rainbeff before it strikes the soil

For more information visit: The Center for Urban Forest Research
Soil Testing/Aerating Your Lawn

Why should you test your soil?

Doing a soil test will allow you to understand the water infiltrating capacity and nutrient makeup of your lawn.

From years of lawn mowing and use, many lawns are compacted which means they cannot infiltrate water as well. Clay-dominant soils also have poor infiltration capacity. Aerating your lawn is a way to add space back into the soil which allows water to be absorbed.

Doing a soil test will also allow you to see if your lawn has nutrient deficiencies. If not, no need to add fertilizer. If yes, you can target your fertilization to that nutrient and use it sparingly.

Soil test kits can be purchased at your local Rutgers Extension Office.

Guide to soil type DIY test, can be found at nrcs.usda.gov
Types of Green Infrastructure

What type of green infrastructure can I add to my property?

Below are 6 common types of green infrastructure that can be installed on a residential property. It is up to your time, finances, and knowledge as to what you are able to create. Many of these can be DIY or you can call in professionals to for more complex projects. See the Watershed Institute Green Infrastructure Certified Landscapers chapter to find contact information for professionals. Click on the name of each type of project to learn more about it from the Watershed Stewards Academy Rainscaping Manual.

Rain Gardens

Green Roofs
Rain Barrels

Downspout Planters (“Rain Garden in-a-box”)
Meadows/ Conservation Landscapes

Pervious Pavement
Watershed Institute Green Infrastructure (WIGI) Certified Landscapers

Britney O’Donnell
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Becoming a River-Friendly Resident
Goals of the River-Friendly Program

- Inspire individual actions and habit changes
- Education, outreach, and awareness
- Encourage and incentivize change through recognition and promotion
- Recognize leaders in our communities who are setting great examples

The four goals of the River-Friendly Program are:

- Reduce pollution
- Conserve water
- Restore and improve habitat
- Educate others

Take the River-Friendly Resident Survey

Find the survey at: [https://www.njriverfriendly.org/resident](https://www.njriverfriendly.org/resident)

Additional Resources
Native Plant Suppliers

- Bowman’s Wildflower Preserve Nursery: https://bhwp.org/grow/native-plant-nursery/
- Gino’s Nursery: https://www.ginosnursery.com/
- Izel Plants: https://www.izelplants.com/
- The Pollen Nation: https://www.thepollennation.com/
- Toadshade Wildflower Farm: https://www.toadshade.com/
- Wild Ridge Plants: https://wildridgeplants.com/
- Ernst Seeds: https://www.ernstseed.com/
- Tree Authority: http://www.treeauthority.net/
- Kind Earth Growers (sells to the public 2x yearly): https://www.kindearthgrowers.com/

Wholesale only by mail (landscape companies can purchase)

- Northcreek Nursery: https://www.northcreeknurseries.com/
- New Moon Nursery: http://www.newmoonnursery.com/
- Kurt Bluemel Nursery: https://www.kurtbluemel.com/

Websites

- Green Infrastructure Champions, Rutgers University: http://water.rutgers.edu/Projects/GreenInfrastructureChampions/GIC.html
- Exploring Green Infrastructure: https://thewatershed.org/green-infrastructure-2/