Stormwater and Green Infrastructure Basic Resource Guide for Homeowners

The Watershed Institute

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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

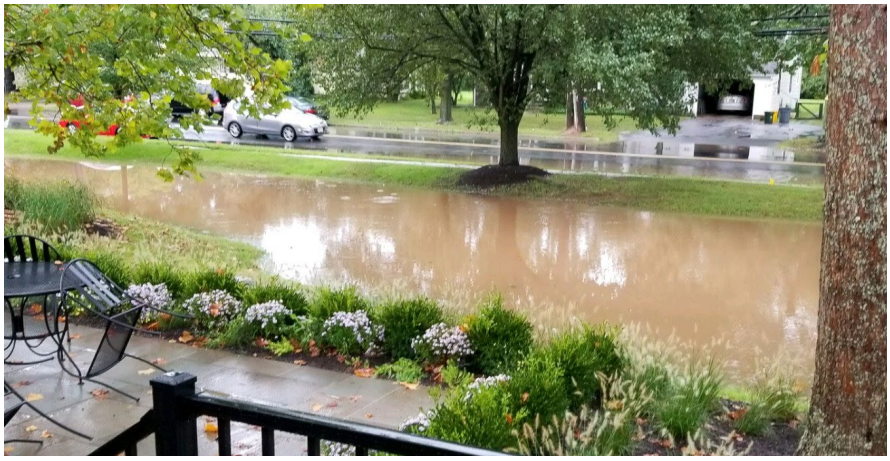
-ineffective at handling large volumes of water

-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

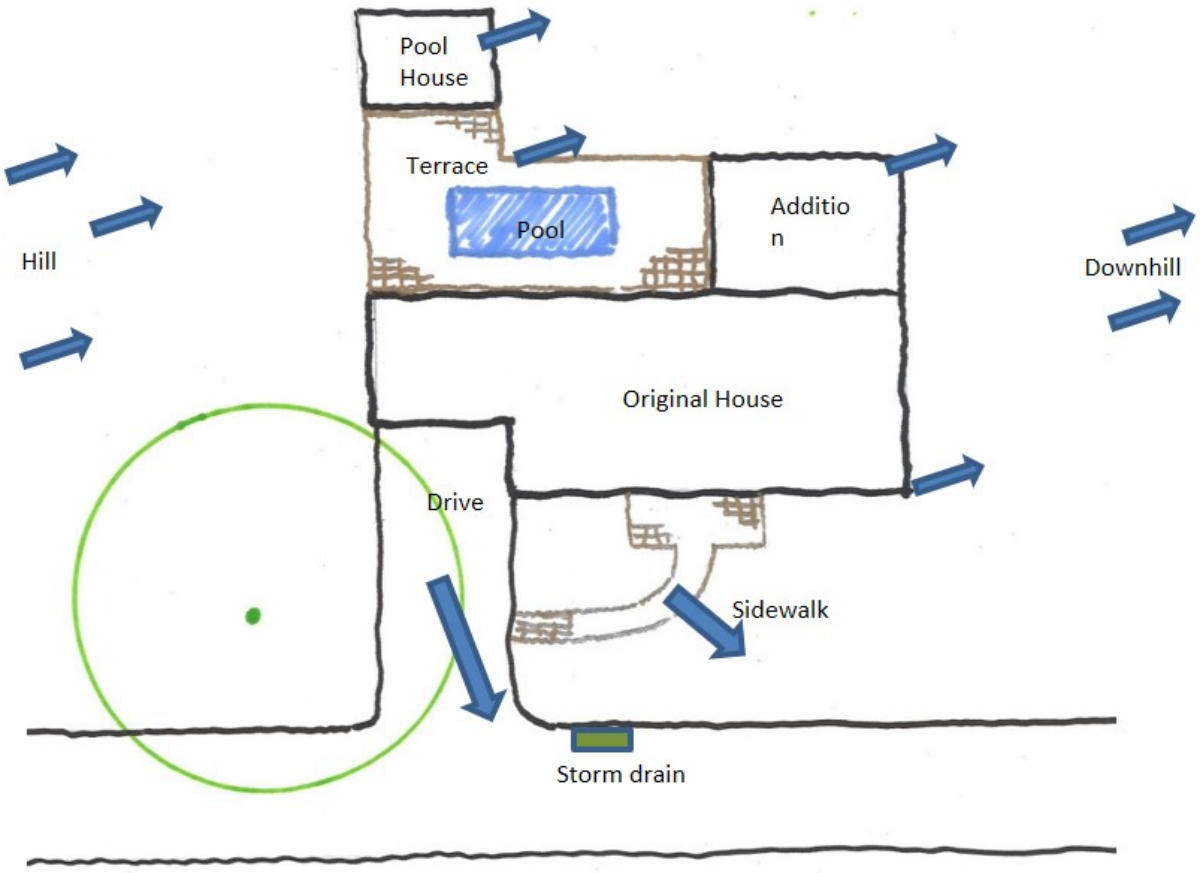
What you do on your property can impact stormwater

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:

 # Square feet of impervious surface x 0.6 = # gallons of water produced in a 1" rainstorm

See below an example of a 400 square foot patio

400 SF Patio* 0.6 = **240 gallons of stormwater** in a 1" rain storm

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

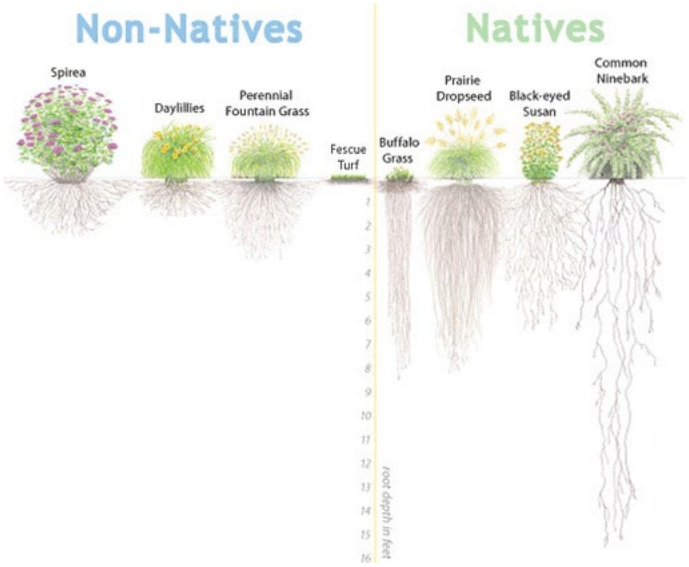
Factors that influence runoff:

- 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

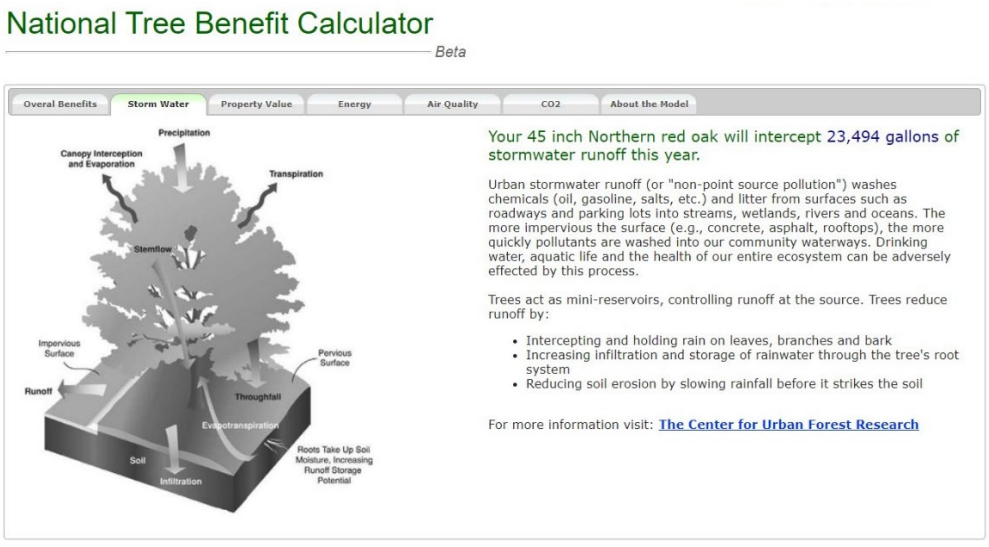
Why native plants?

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!



Soil Testing/ Aerating Your Lawn

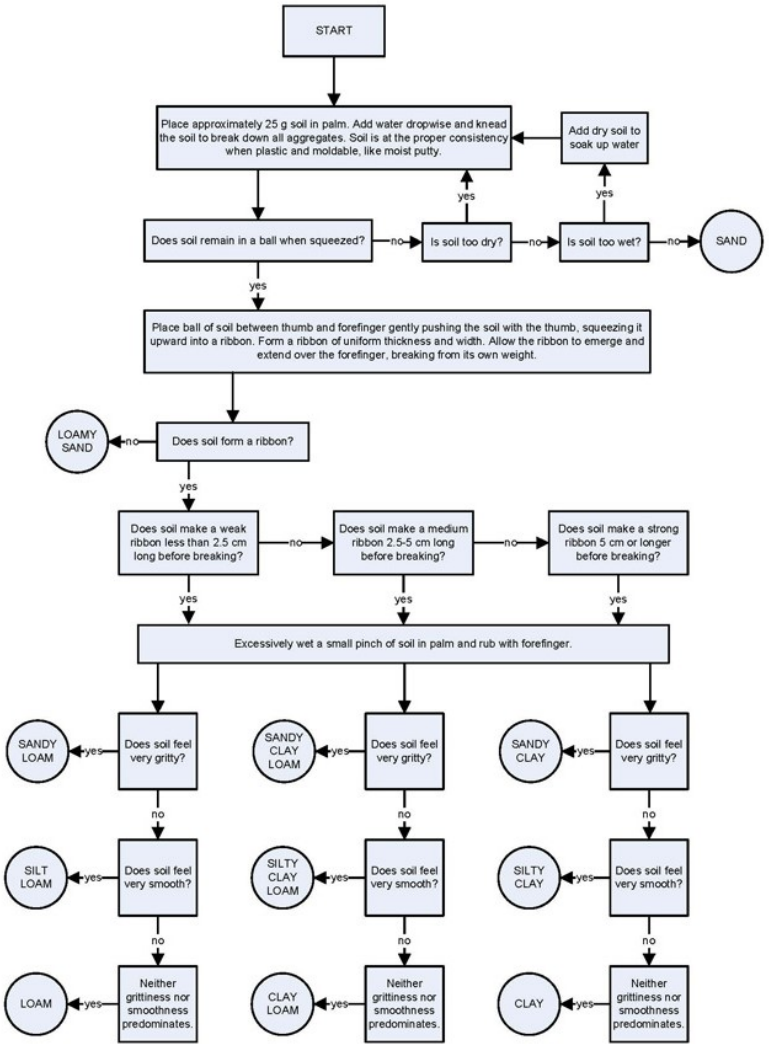
Why should you test your soil?

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

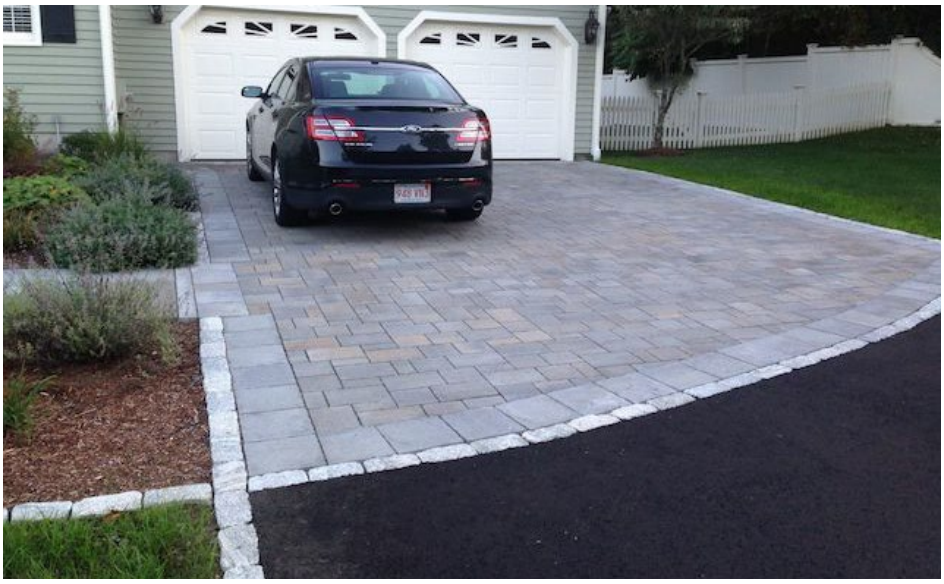
Green Roofs

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

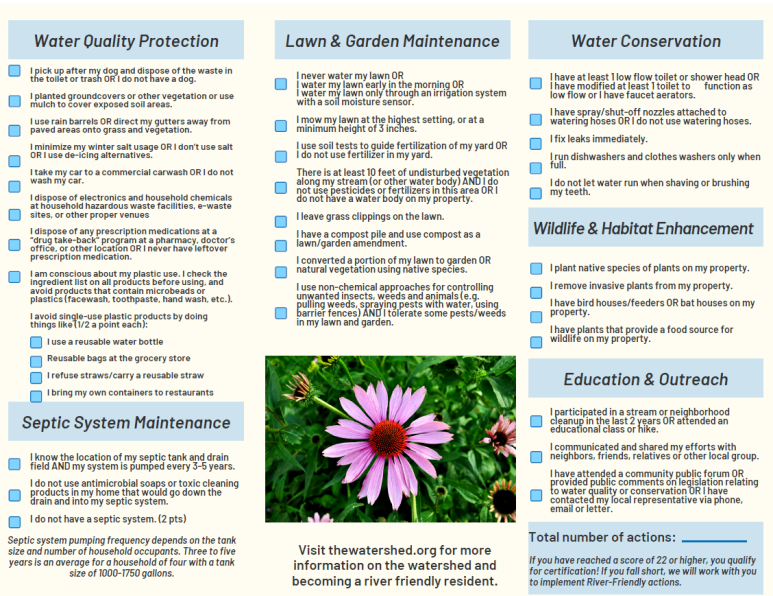
- Inspire individual actions and habit changes
- Education, outreach, and awareness
- Encourage and incentivize change through recognition and promotion
- Recognize leaders in our communities who are setting great examples

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



Water Quality Protection

- I pick up after my dog and dispose of the waste in the toilet or trash OR I do not have a dog.
- I planted groundcovers or other vegetation or use mulch to cover exposed soil areas.
- I use rain barrels OR direct my gutters away from paved areas onto grass and vegetation.
- I minimize my winter salt usage OR I don't use salt OR I use de-icing alternatives.
- I take my car to a commercial carwash OR I do not wash my car.
- I dispose of electronics and household chemicals at household hazardous waste facilities, e-waste sites, or other proper venues
- I dispose of any prescription medications at a "drug take-back" program at a pharmacy, doctor's office, or other location OR I never have leftover prescription medication.
- I am conscious about my plastic use. I check the ingredient list on all products before using, and avoid products that contain microbeads or plastics (facewash, toothpaste, hand wash, etc.).
- I avoid single-use plastic products by doing things like (1/2 a point each):
  - I use a reusable water bottle
  - Reusable bags at the grocery store
  - I refuse straws/carry a reusable straw
  - I bring my own containers to restaurants

Septic System Maintenance

- I know the location of my septic tank and drain field AND my system is pumped every 3-5 years.
- I do not use antimicrobial soaps or toxic cleaning products in my home that would go down the drain and into my septic system.
- I do not have a septic system. (2 pts)

Septic system pumping frequency depends on the tank size and number of household occupants. Three to five years is an average for a household of four with a tank size of 1000-1750 gallons.

Lawn & Garden Maintenance

- I never water my lawn OR I water my lawn early in the morning OR I water my lawn only through an irrigation system with a soil moisture sensor.
- I mow my lawn at the highest setting, or at a minimum height of 3 inches.
- I use soil tests to guide fertilization of my yard OR I do not use fertilizer in my yard.
- There is at least 10 feet of undisturbed vegetation along my stream (or other water body) AND I do not use pesticides or fertilizers in this area OR I do not have a water body on my property.
- I leave grass clippings on the lawn.
- I have a compost pile and use compost as a lawn/garden amendment.
- I converted a portion of my lawn to garden OR natural vegetation using native species.
- I use non-chemical approaches for controlling unwanted insects, weeds and animals (e.g. pulling weeds, spraying pests with water, using barrier fences) AND I tolerate some pests/weeds in my lawn and garden.

Visit thewatershed.org for more information on the watershed and becoming a river friendly resident.

Water Conservation

- I have at least 1 low flow toilet or shower head OR I have modified at least 1 toilet to function as low flow or I have faucet aerators.
- I have spray/shut-off nozzles attached to watering hoses OR I do not use watering hoses.
- I fix leaks immediately.
- I run dishwashers and clothes washers only when full.
- I do not let water run when shaving or brushing my teeth.

Wildlife & Habitat Enhancement

- I plant native species of plants on my property.
- I remove invasive plants from my property.
- I have bird houses/feeders OR bat houses on my property.
- I have plants that provide a food source for wildlife on my property.

Education & Outreach

- I participated in a stream or neighborhood cleanup in the last 2 years OR attended an educational class or hike.
- I communicated and shared my efforts with neighbors, friends, relatives or other local group.
- I have attended a community public forum OR provided public comments on legislation relating to water quality or conservation OR I have contacted my local representative via phone, email or letter.

Total number of actions: _____

If you have reached a score of 22 or higher, you qualify for certification! If you fall short, we will work with you to implement River-Friendly actions.

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/
- Pinelands Nursery: http://www.pinelandsnursery.com/p/home-page.html
- Kurt Bluemel Nursery: https://www.kurtbluemel.com/

Websites

- Jersey Friendly Yards (Rain Gardens): https://www.jerseyyards.org/create-a-jersey-friendly-yard/rain-gardens/
- Green Infrastructure Champions, Rutgers University: http://water.rutgers.edu/Projects/GreenInfrastructureChampions/GIC.html
- Exploring Green Infrastructure: https://thewatershed.org/green-infrastructure-2/
- Rain Garden Manual of New Jersey: http://water.rutgers.edu/Rain_Gardens/RGWebsite/RainGardenManualofNJ.html
- Native Plant Society of NJ Rain Garden Manual: https://www.soildistrict.org/wp-content/uploads/2012/07/RainGardenManualNJ.pdf