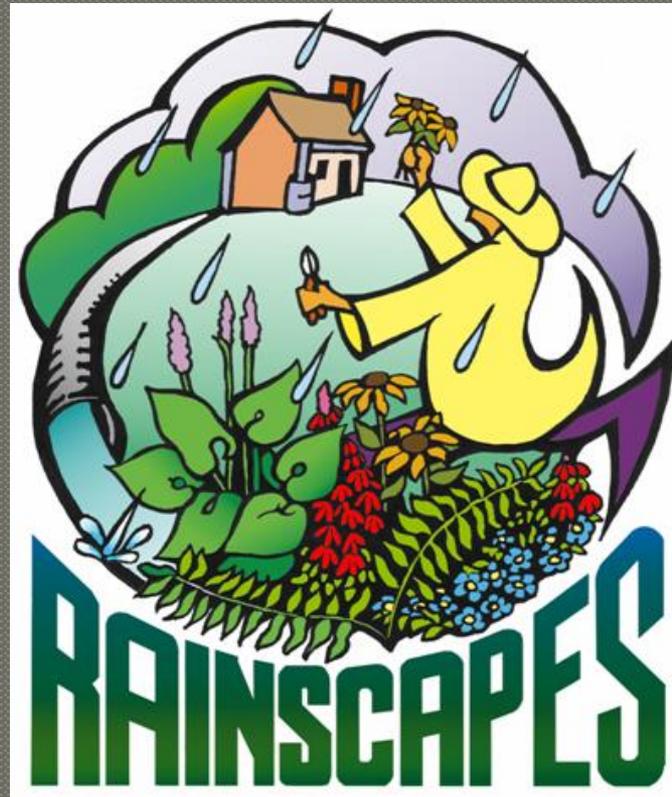


Harvesting the Rain



Rain Barrel Workshop
April 1 & 2, 2016



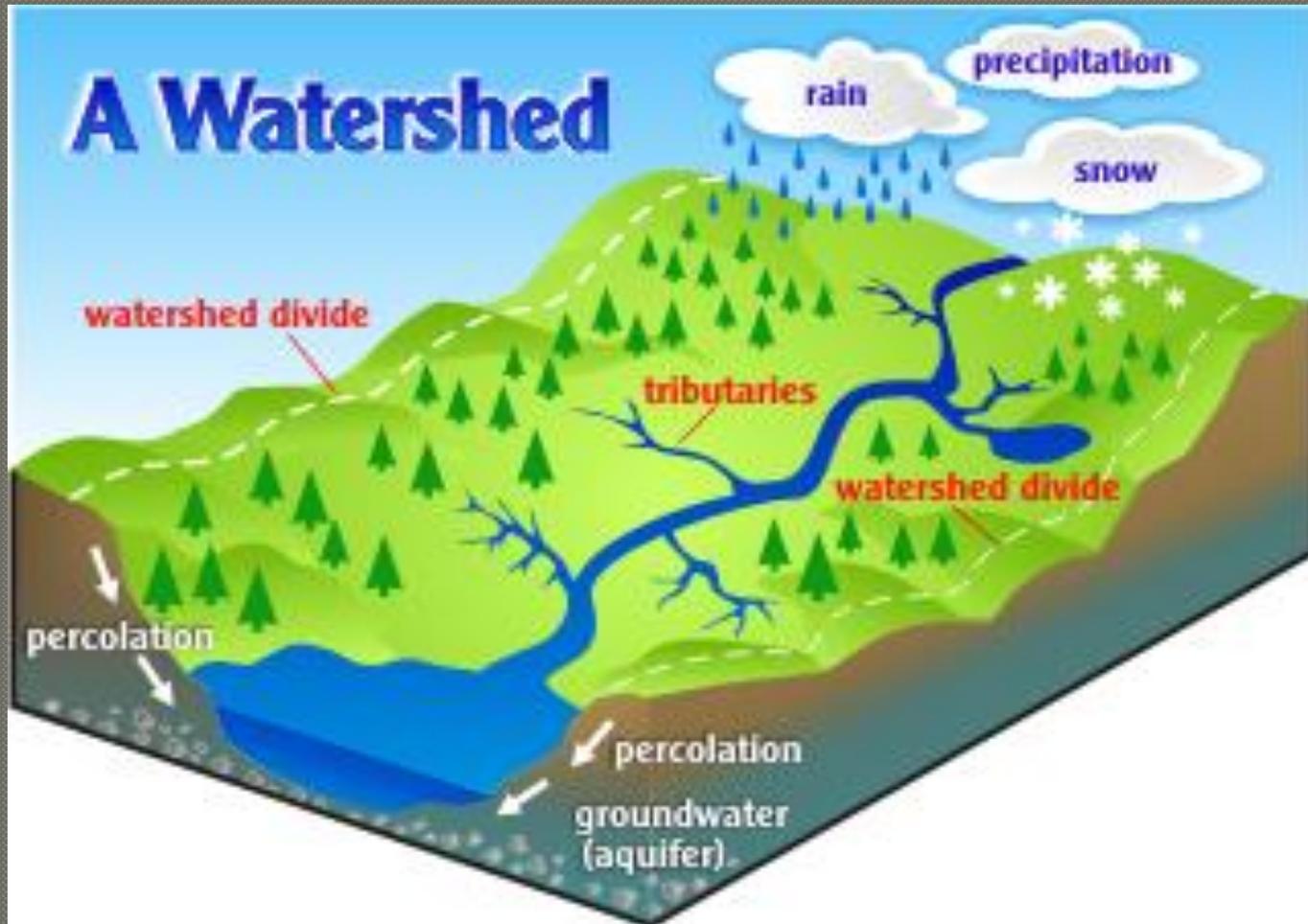
Agenda

- Watershed overview
- Hydrology basics
- Regulatory environment
- Why do we need Rain Barrels?
- Steps to a Rain Barrel
- Types of RainScapes and resources
- Discussion/ Build a barrel

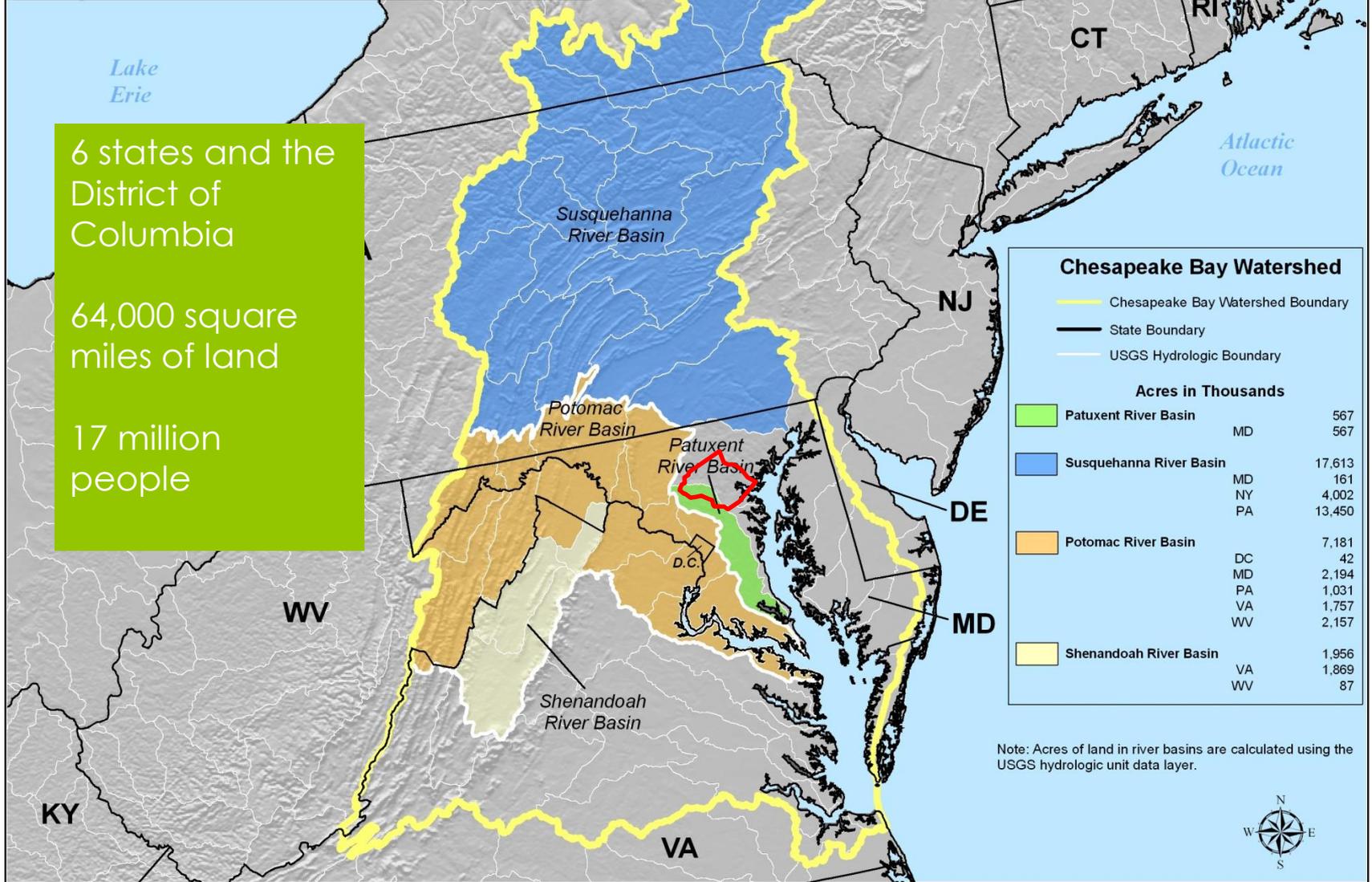


What is a watershed?

A watershed is an area of land that drains its stormwater into a body of water.



This is the Chesapeake Bay watershed



6 states and the District of Columbia

64,000 square miles of land

17 million people

Chesapeake Bay Watershed

- Chesapeake Bay Watershed Boundary
- State Boundary
- USGS Hydrologic Boundary

Acres in Thousands

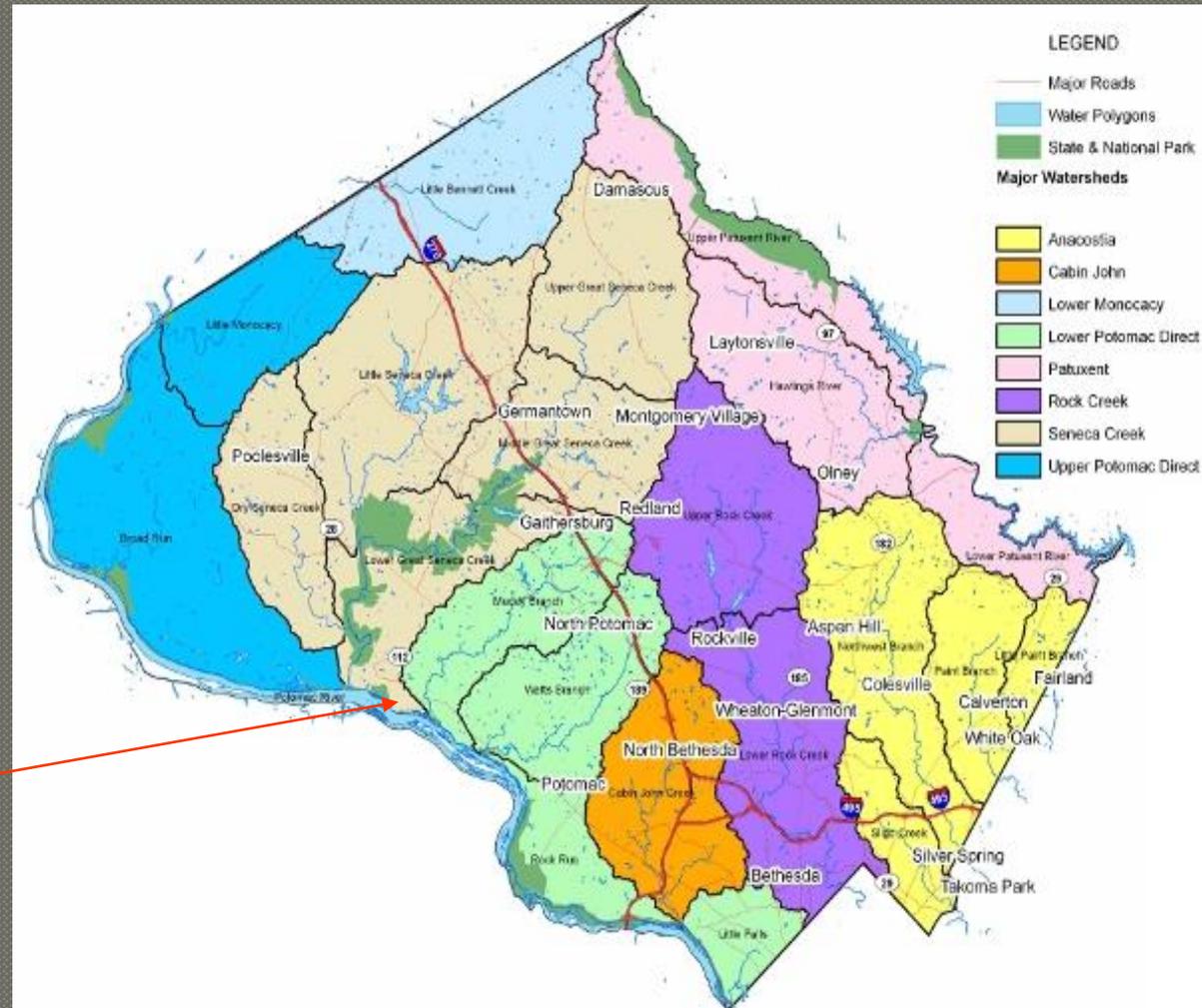
River Basin	State	Acres (Thousands)
Patuxent River Basin	MD	567
	MD	567
Susquehanna River Basin	MD	17,613
	NY	4,002
	PA	13,450
	PA	13,450
Potomac River Basin	DC	7,181
	DC	42
	MD	2,194
	PA	1,031
	VA	1,757
Shenandoah River Basin	WV	2,157
	VA	1,956
	WV	87

Note: Acres of land in river basins are calculated using the USGS hydrologic unit data layer.



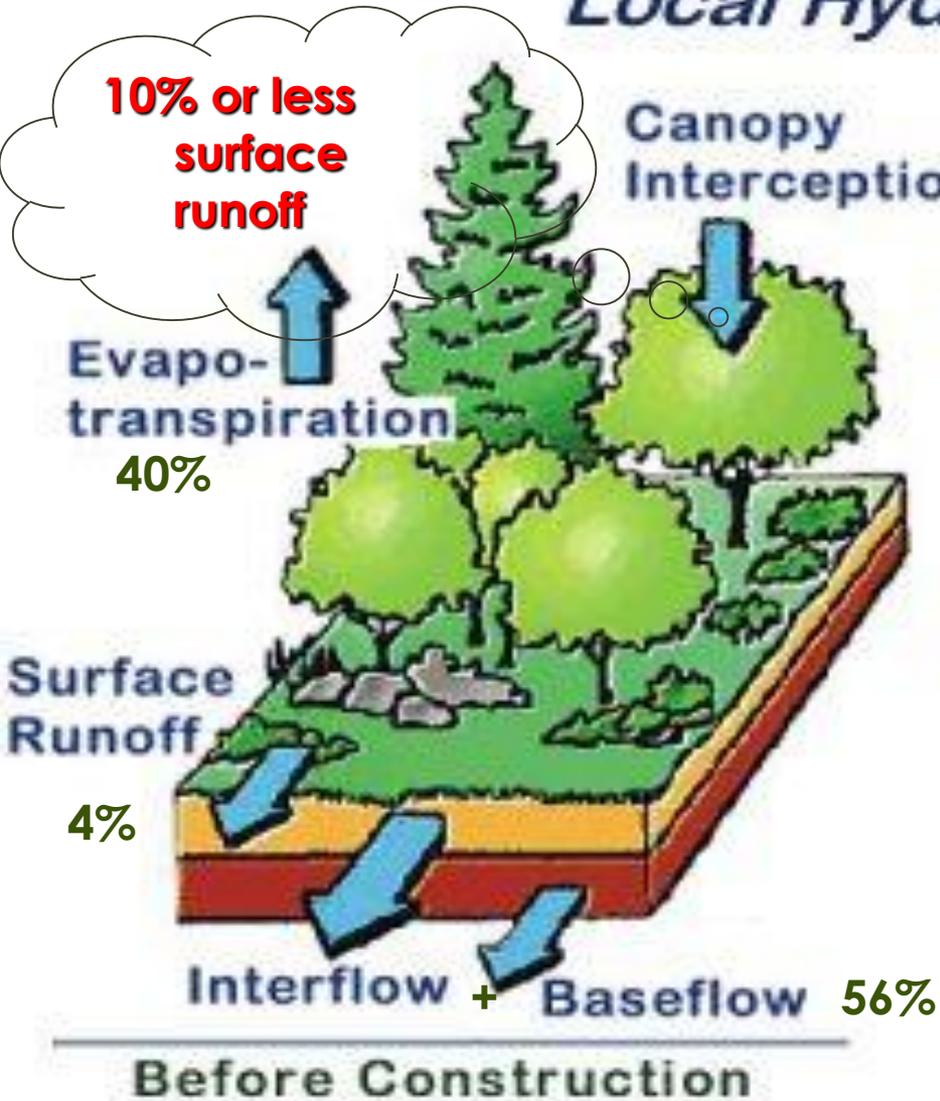
Montgomery County Watersheds

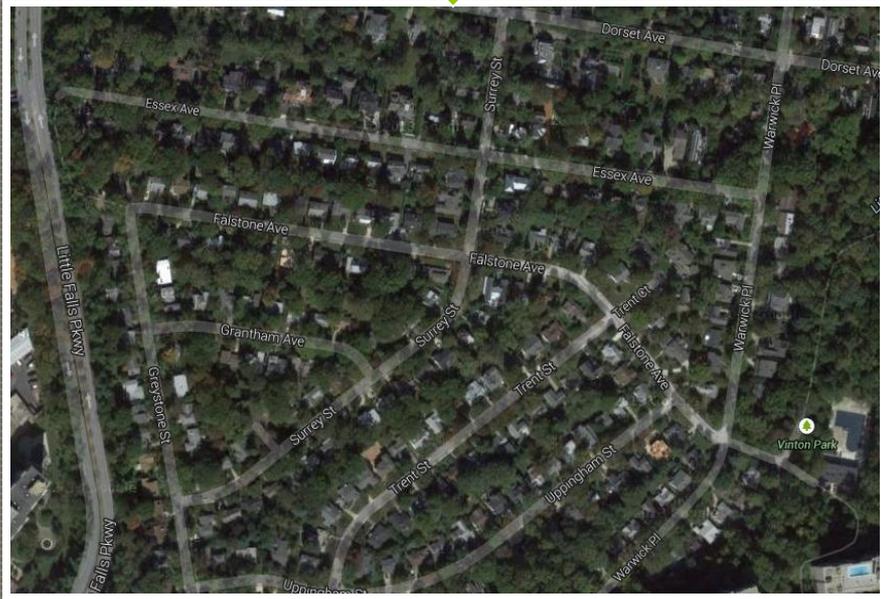
1. Anacostia
 2. Cabin John
 3. Lower Monocacy
 4. Lower Potomac Direct
 5. Patuxent
 6. Rock Creek
 7. Seneca Creek
 8. Upper Potomac Direct
- Potomac River



HOW did our current stream conditions occur

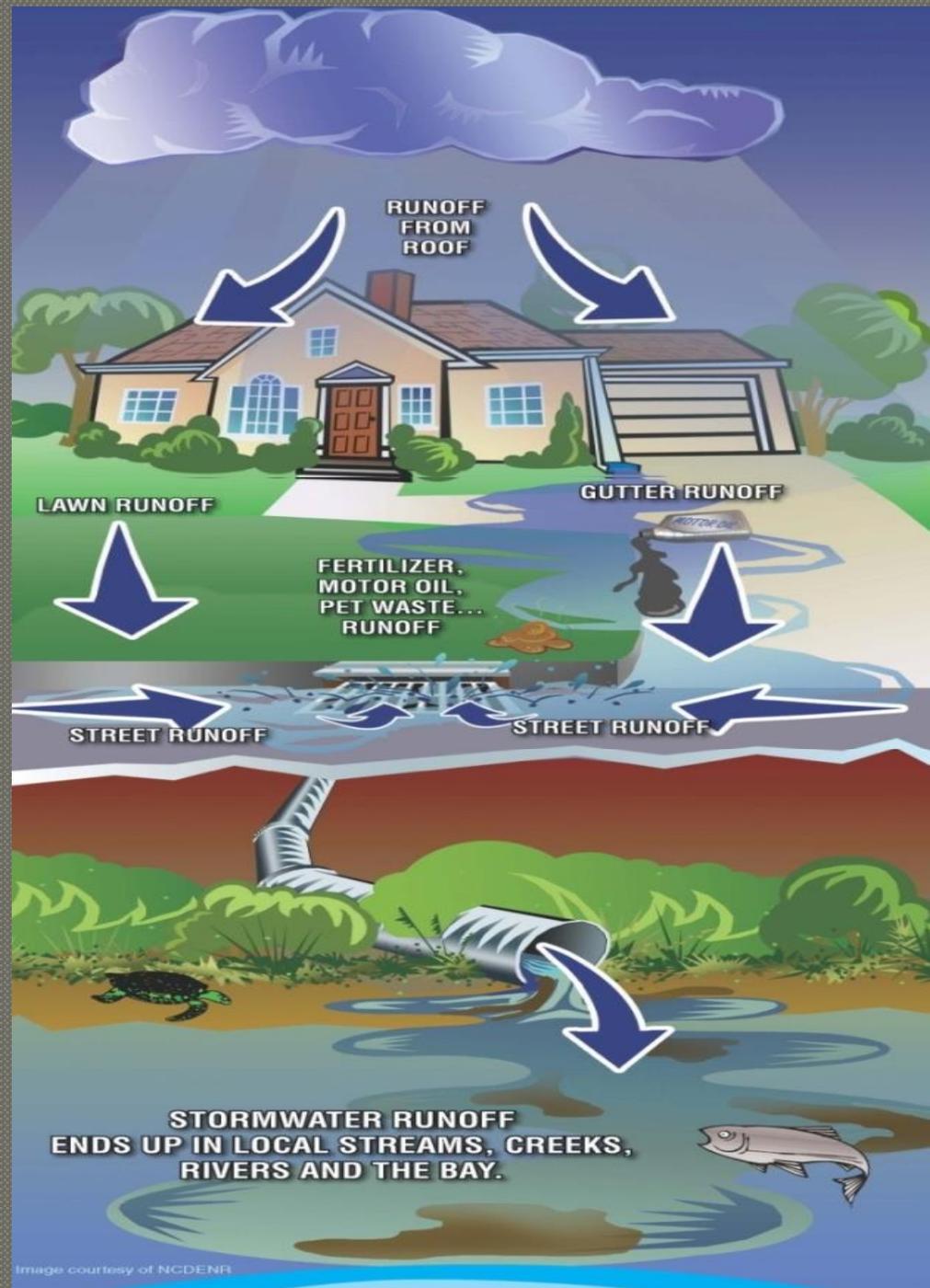
Local Hydrologic Cycle





Stormwater Runoff

Rainwater that flows off impervious surfaces such as rooftops, driveways, roads and sidewalks picking up pollutants on the way, also chemicals from our lawns.



What is in stormwater runoff?



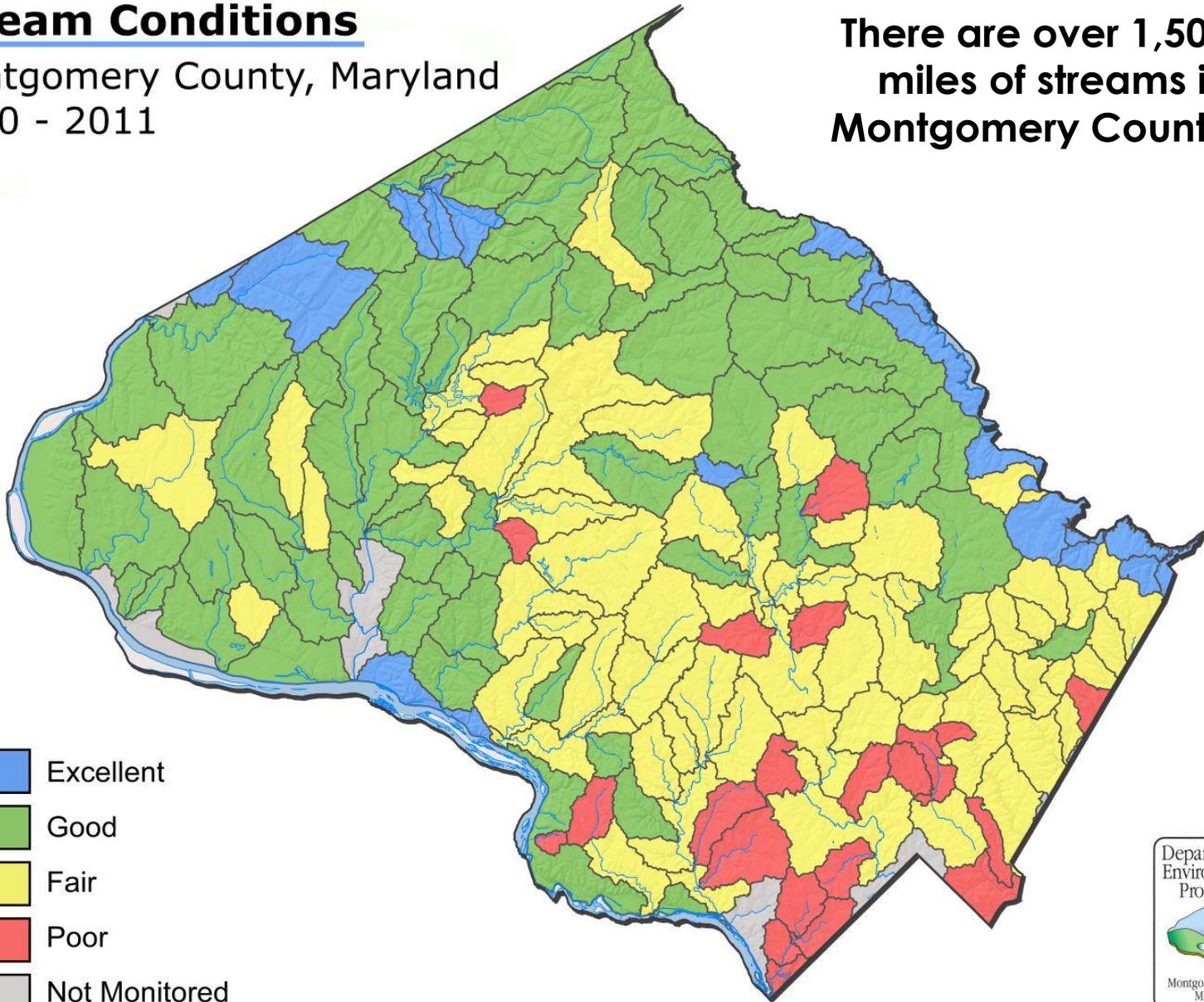
Don't forget about water volume and velocity!



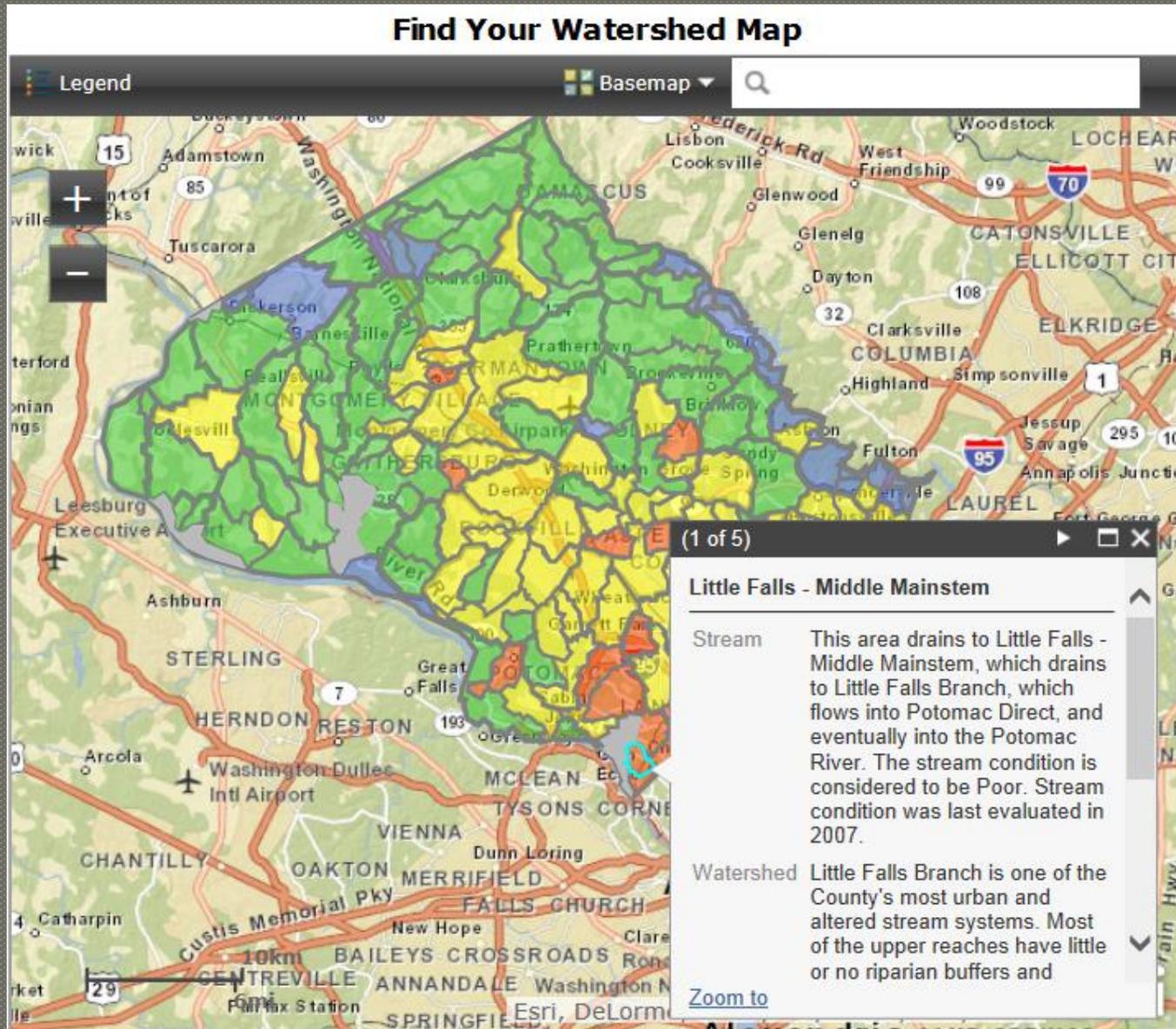
Stream Conditions

Montgomery County, Maryland
2000 - 2011

There are over 1,500 miles of streams in Montgomery County



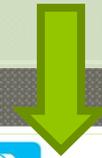
Interested in your local stream conditions?



Federal

State

County



1972

Clean Water Act

NPDES (National Pollutant Discharge Elimination System) Permit Program

1987

MS4 (Municipal Separate Storm Sewer System) Permit Program

Expanded Point Source discharge pollutant measures to require municipalities to get permits for stormwater runoff discharge

2007

Maryland Stormwater Act

effective May 2010

Maryland Stormwater Design Manual included a new Chapter 5

requires environmental site design to the maximum extent practicable

"ESD to the MEP"



DEPARTMENT OF ENVIRONMENTAL PROTECTION

MONTGOMERY COUNTY • MARYLAND

Montgomery County

NPDES MS4

Permit =

Stormwater Discharge Permit

2010-2015

Old approach to storm water management



Catches stormwater fun off at the bottom of the hill
Concentrated water flow and pollutants

**We cannot do this
anymore....**



ASPECTS OF ENVIRONMENTAL SITE DESIGN

- Small scale vegetative practices integrated throughout the site as close to the source as possible



RainScapes convert yard spaces into attractive and functional landscapes that soak up the rainwater



What was lawn is now a Rain Garden



Asphalt Drive before

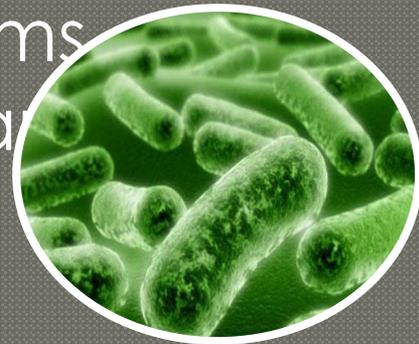


Permeable Interlocking Concrete Pavement after

Infiltration!

Soil is Mother Nature's Filter

- The minerals in soil act as a filter.
- Soil is full of carbon from decaying plants and animals. Carbon is a great filter.
- Healthy soil is full of micro organisms that can help break down pollutants such as heavy metals.



Value of Using Native Plants



- Deeper roots – absorbs more water and helps with erosion

- Uses no fertilizer

- Uses little or no pesticides



- Does not require watering after establishment

Provides wildlife habitat

Bees

Cephalanthus occidentalis
Button Bush



Birds

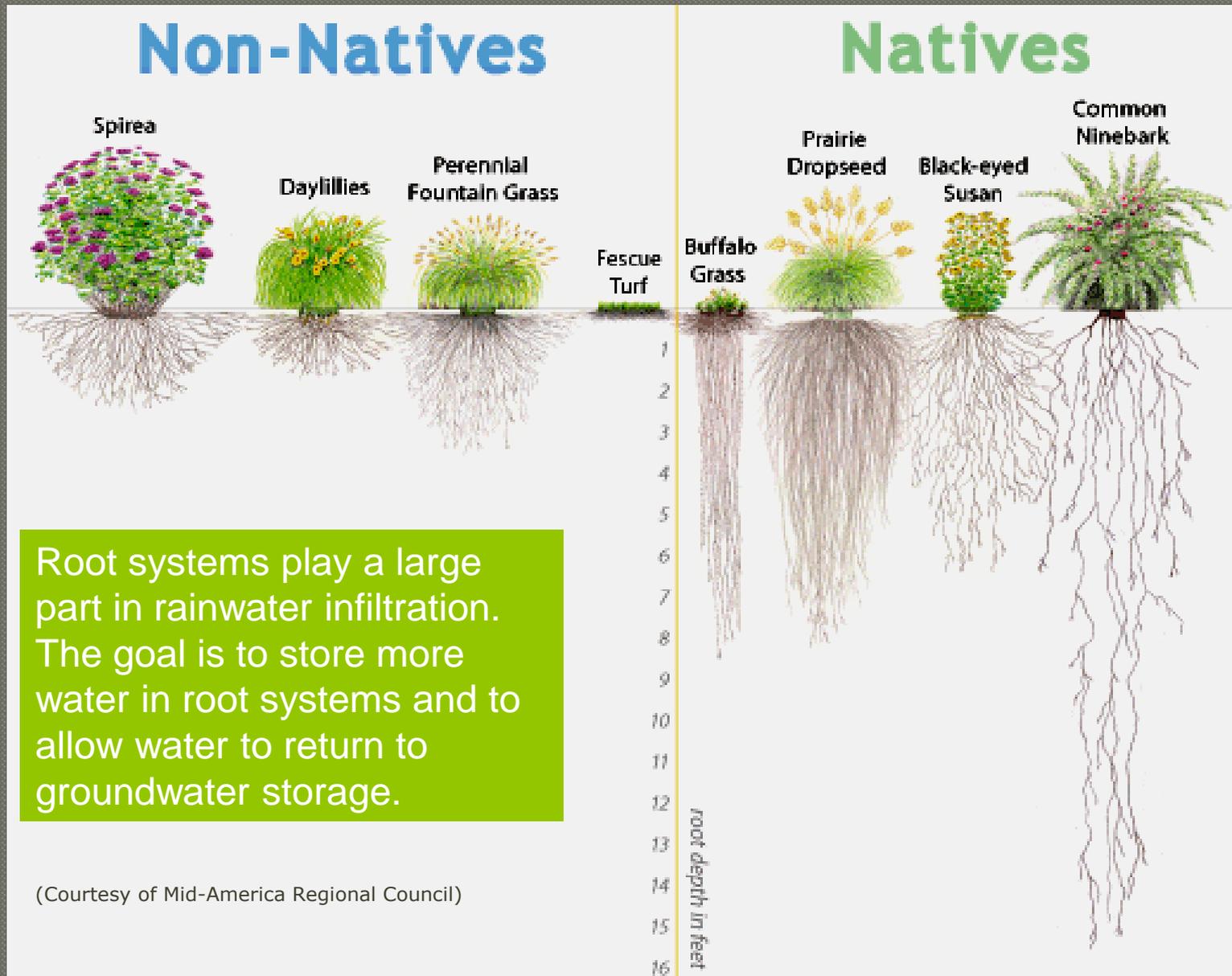
*Ilex
verticillata*
Winterberry



Butterflies

Asclepias tuberosa
Butterfly Weed

Why we care about roots!

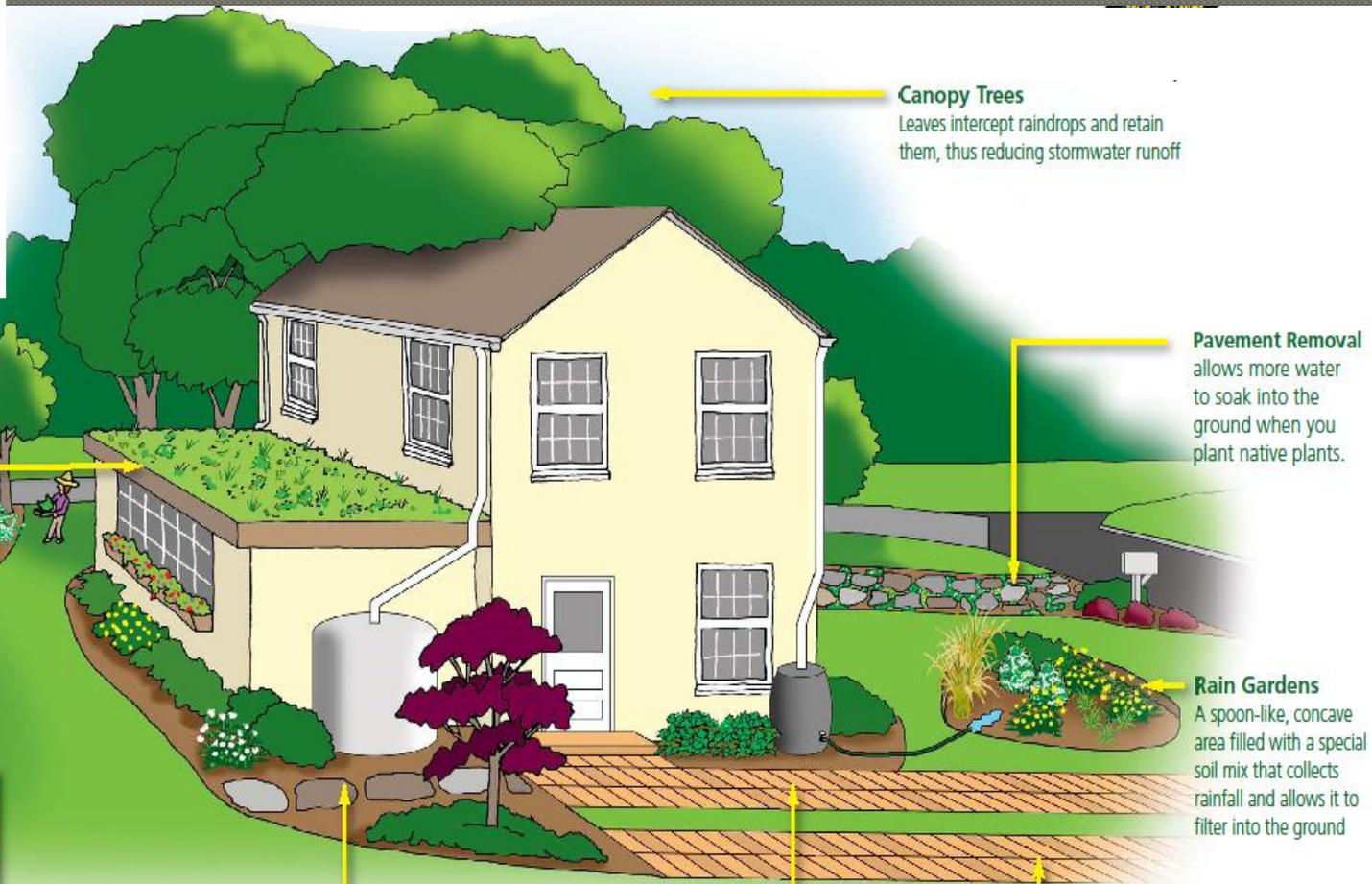


Root systems play a large part in rainwater infiltration. The goal is to store more water in root systems and to allow water to return to groundwater storage.

(Courtesy of Mid-America Regional Council)



Rainscapes Techniques in Action



Canopy Trees
Leaves intercept raindrops and retain them, thus reducing stormwater runoff

Pavement Removal
allows more water to soak into the ground when you plant native plants.

Rain Gardens
A spoon-like, concave area filled with a special soil mix that collects rainfall and allows it to filter into the ground

Permeable Surfaces
allow rainwater to rapidly infiltrate and enter the ground where it is naturally filtered

Rain Barrels
collects and stores rain water from rooftops

Cistern
Larger than a rain barrel, cisterns perform the same water harvesting benefits and are no more aesthetically intrusive than an air conditioner.

Green Roof
".623 gallons of water falls on each sq. ft. of roof during the during a normal rainstorm of 1". A 1000 sq. ft conventional roof can shed 623 gallons when there is an inch of rain. Green roofs reduce and clean this stormwater runoff before it hits the ground.

Conservation Landscape
Loosened and improved soil, planted with easy-to-maintain native plants that soak up the rain.

Dry Well
collects stormwater from rooftops or driveways and filters the rainwater through a small stone-filled pit, then into the underlying soils



RainScapes Rewards Incentive Program

- **Rebates for single family residences:**
 - \$2,500 per property
with lifetime project caps
- **Rebates for multi-family/commercial / institutional:**
 - \$10,000 per property
with lifetime project caps
- All County property owners **outside** of municipalities Rockville, Gaithersburg and Takoma Park are eligible for rebates



Rewards Rebate Program: Rain Gardens

- Residential: **\$1,200** per garden or a square foot amount based on soil depth, which ever is greater
- Commercial : **\$2,500** per garden or a square foot amount based on soil depth, which ever is greater
- Sized for 1" rainfall volume minimum
- 75% plants must be native
- **Site must pass a perc test**



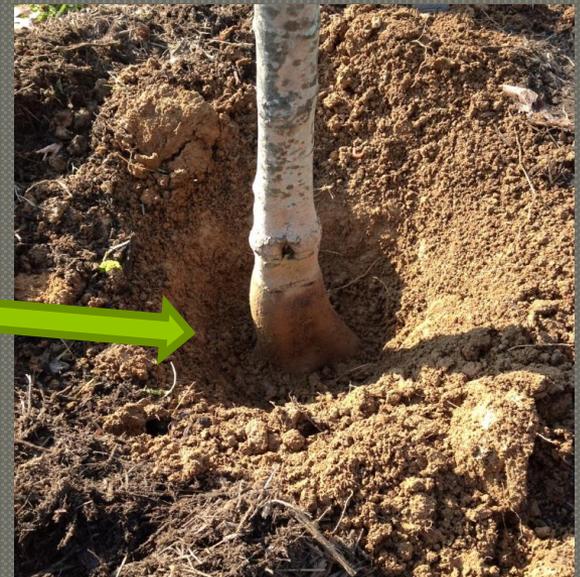
Rewards Rebate Program: Conservation Landscaping

- **\$2.00-\$3.00 per square foot/microberms**
- Minimum 250 square foot conversion of turf area or invasive species.
- Impervious surface must drain into site
- 75% Native Plants



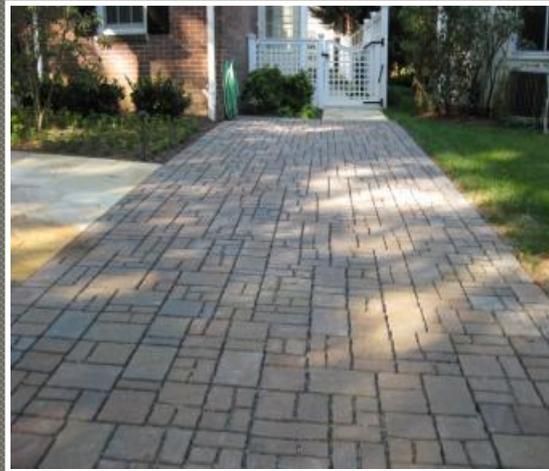
Rewards Rebate Program: Tree Canopy Basic Requirements

- Will eventually shade or cover impervious surface-reduces heat pollution
- 10'-15' away from permanent buildings
- Tree is on our published canopy trees list
- Planted between September 15 and April 30th
- Root flare is exposed
- \$200.00/tree



Rewards Rebate Program: Permeable Paver Retrofit

- Installed by a certified ICPI contractor with an additional certification in PICP
- Replaces existing impervious surface
- A downspout filter must be used if the downspout is connecting into the pavement.
- If downspout is connected to the system add \$4.00/sq ft of impervious surface that downspout is handling.



\$1,200 or \$4.00 a square foot IA treated.

Whichever \$ amount is greater.

Rewards Rebate Program: Pavement Removal

\$4 per square foot for conversion to a conservation landscape

\$2 per square foot for conversion to turf.



Rewards Rebate Program: Green Roofs

- **\$10/ SF**
- Minimum 250 square feet
- *Must be on an existing roof*



Rewards Rebate Program: Rain Barrels

- \$1.00 per gallon
- \$250 maximum per property
- ***must capture 200 gallons***



Rewards Rebate Program: Water Harvesting: Cisterns

- **\$1 per gallon**
- 250 gallon minimum
- \$500 maximum rebate



Rewards Rebate Program: Dry Wells



- \$1.00 per Gallon
- \$600 **per property**
- May be linear drywell – DIY
OR
- conventional drywell – contractor installed

Rebate Schedule on line

RainScapes Technique	Maximum Residential Rebates \$2500/parcel	Maximum Commercial, Multi-Family, HOA common land, and Institutional Rebates \$10,000/parcel
Canopy Trees	\$200/tree; # trees determined by space on parcel. Must shade or cover impervious area	\$200/tree; # trees determined by space on parcel. Must shade or cover impervious area
Conservation Landscaping - Replacement of turf or invasive species	\$2.00/square foot with no ponding \$3.00/square foot with 2" of ponding Project must replace turf or invasives Project needs to intercept runoff 250 square foot minimum	\$2.00/square foot with no ponding \$3.00/square foot with 2" of ponding Project must replace turf or invasives Project needs to intercept runoff 350 square foot minimum
Dry Wells	\$1.00 per gal ; \$600 maximum	\$1.00 per gal; \$600 maximum
Green Roofs	\$10/square foot, 250 square feet minimum	\$10/square foot; 300 square feet minimum
Permeable Pavers and Porous Concrete	\$4/square feet or \$1200, whichever is greater; 100 square feet minimum	\$4/square feet or \$5000, whichever is greater; 100 square feet minimum
Pavement Removal	\$4/square foot if replacing with conservation landscaping \$2/square foot if replacing with turf 100 square feet minimum	\$4/square foot if replacing with conservation landscaping \$2/square foot if replacing with turf 300 square feet minimum
Rain Garden	Based on square foot of ponding area and soil replacement (media)depth: 1' of media: \$5/ square foot 2' of media: \$7/square foot 3' of media; \$9/square foot or \$1200/ rain garden, whichever is greater – see RS design manual for sizing charts	Based on square foot of ponding area and soil replacement (media)depth: 1' of media: \$5/ square foot 2' of media: \$7/square foot 3' of media; \$9/square foot or \$2500/ rain garden, whichever is greater – see RS design manual for sizing charts
Water Harvesting: Cisterns	\$1/Gallon (minimum 250 gallons, up to 500 gallons)	\$1/ Gallon (minimum 250 gallons, up to 2000 gallons)
Water Harvesting: Rain Barrels	\$250 (must capture 200 gallons if single family home; 100 if Townhome); \$1/gallon	\$250 (must capture 200 gallons); \$1/gallon



RainScapes Rewards

[Apply Online](#)[My Application\(s\)](#)[Preview Application Forms](#)[Contact Us](#)

RainScapes projects are designed to slow the speed of rainwater runoff, increase the groundwater supply by making it easier for water to soak into the ground and reduce the total amount of dirty water which ever reaches our streams. Rain Gardens, Conservation Landscapes and Canopy trees, as well as projects such as Permeable Paver Retrofits are examples of types of projects which have multiple benefits and are particularly well suited to soaking water into the ground and reducing stormwater runoff. Additional environmental benefits from those projects and other RainScapes projects such as rain barrels, cisterns and green roofs include reduced energy costs, reduced potable water consumption and improved air quality in our neighborhoods. Dry wells are also an option, and are particularly useful when combined with other types of RainScapes projects such as conservation landscaping and rain gardens.

Before you decide to implement a RainScapes project most suited to your environmental goals, please download and read the Requirements and Guidelines document(s) located in the 'Resources' box on the right. When you are ready to apply for a rebate, please use the links below.

All rebate projects, except rain barrel projects, must be preapproved prior to installation.
Rain Barrel projects must meet our criteria, but can be submitted for rebate without preapproval.

The money for rebates is allocated on a first-come, first-served basis.

[I am applying for RainScapes rebates, for the first time..](#)

[I have already applied for RainScapes rebates..](#)

Resources

[RainScapes Terms](#)

Requirements & Guidelines

- [Cisterns](#)
- [Conservation Landscaping](#)
- [Dry Well](#)
- [Green Roof](#)
- [Pavement Removal](#)
- [Permeable Pavers](#)
- [Rain Barrel](#)
- [Rain Garden](#)
- [Tree Canopy](#)

JUST APPLY!!!!!!

- We will come out for a preliminary site inspection
- Locate possible project sites
- You will need to submit a plan
- We review the plan
- You get approval to go ahead with the project
- Contact us when you are finished for final inspection
- Submit copies of receipts and signed POA
- Rebate check in 4-6 weeks

Subscribe to our Gazette for e-mail Bulletins

What are RainScapes?

lements projects which reduce stormwater n properties within Montgomery County. The County the form of RainScapes Rewards Rebates) to ible RainScapes techniques on their property.



Rain gardens are one type of RainScape

On this Page...

- RainScapes
- Types of RainScapes
- Benefits of RainScapes
- Who Can Participate?
- Resources and Calendar
- Partnerships

Related Links...

- RainScapes Rewards Rebates
- RainScapes for Landscape Professionals
- RainScapes for Schools
- RainScapes Neighborhoods

Sign up for THE RAINSCAPES NEWSLETTER!



Click Here

property owners in Montgomery County to decide if es are a great addition to private homes, businesses, ere to answer questions and help with your project.

nScape on your property, DEP recommends everyday ff from your yard.

scapes@montgomerycountymd.gov.

asons for installing RainScape projects. It focuses o rmwwater runoff and add beauty to a property.



Go to Rainscapes.org and Click "Rainscapes for Landscape Professionals"

Scapes for Landscape Professionals

s, landscape architects, landscape designers, stone success of widespread adoption of RainScapes on unty. The RainScapes program offers these s that educate them on all aspects related to he landscape professionals will be added to our (B) allowing county property owners to pick the best ect.

nScape Professional? sionals who attend RainScapes trainings and are

mental and "green" communities.

nd other outreach campaigns.

of Montgomery County. Stormwater runoff is a uburban communities and the skills learned will only

event stormwater runoff through landscaping could within the RainScapes program.

ainScapes Landscape Professionals Gazette



On this Page...

- Benefits of RainScapes to Professionals
- Resources & Course Content

Related Links...

- What are RainScapes?
- RainScapes Rewards Rebates
- RainScapes at Schools
- RainScape Neighborhoods

Sign up for THE RAINSCAPES NEWSLETTER!



Click Here

or Landscape Professionals of Environmental Protection on Flickr

Click "Sign up for The RainScapes Newsletter"



RainScapes Landscape Professionals List

-Attended RainScapes Training-

Updated on:
Monday, March 11, 2013

Firm	# of Rainscapes	RainScapes Installed	Company Website	E-Mail	First Name	Last Name	Phone
Stadler Nurseries	80	Tree Canopy	http://www.stadlergardencenters.com/index.php	debbie.fried@gmail.com	Debbie	Friedmann	301-944-1190
Goshen Enterprises, Inc.	20	Tree Canopy	www.goshenenterprises.com	kevin@goshenenterprises.com	Kevin	Bohrer	301-869-8544
Backyard Bounty	9	Rain Garden, Conservation Landscape	www.backyardbounty.net	info@backyardbounty.net	Edamarie	Mattei	301-221-4931
John Shorb Landscaping Inc.	7	Rain Gardens, Conservation Landscapes	http://jsli.com	rasma@johnshorblandscaping.com	Rasma	Plato	301-897-3603 x105
American Plant Landscape Division	6	Rain Garden, Dry Well, Conservation Landscape, Tree Canopy	susy@apfgarden.com	dsaltmann@gmail.com	Susana S.	Altmann	301-351-9909
Father Nature Restorative Landscaping	5	Rain Garden, Conservation Landscape, Rain Barrels		info@father-nature.com	Luke	Jessup	240-602-1235
Fine Earth Landscape, Inc.	4	Conservation Landscape, Permeable Paver Retrofit	www.fineearth.com	Joel@fineearth.com	Joel	Haffner	301-370-0470
J & G Landscaping Design, Inc.	4	Permeable Paver Retrofit, Pavement Removal, Dry Well	www.jglandscape.com	jpotter@jglandscape.com	Jeffrey	Potter	301-476-7600
Matts Habitats	4	Conservation Landscape, Tree Canopy		thenaturalcapital@gmail.com	Matt	Cohen	202-841-1874
Rain Barrels by Aquabarrel.com	4	Rain Barrels, Cistern		info@aquabarrel.com	Barry	Chenkin	301-253-8855
American Plant	3	Rain Garden, Conservation Landscaping		donnae@apfgarden.com	Donna	Evans	(cell) 240-388-3752
AW Landscapes	3	Rain Garden		Alan@awlandscapes.com	Alan	Walcoff	

Rain Barrel 101



Rain Barrels

- Designed to capture a portion of the water from your rooftop
- Today's are 55 gallons
- Many different sizes and designs
- Can be connected to each other for more storage
- When used properly they are an effective RainScape technique.



How to use them properly

- Use barrels that are designed well
- Install barrels according to instructions
- Empty barrels before the next rain event
- Monitor for mosquitoes suggest emptying barrel 2 days after rain event
- Maintain the barrel (winterization and cleaning)



How to Install Rain Barrels

Step 1: Assessment

- **Are you allowed to install rain barrels?**
 - ✓ Some HOA's don't allow rain barrels
- **Where will you put the barrels?**
 - ✓ Do you have room for the barrel?
 - ✓ Can you install the barrel on a level and safe area?
 - ✓ Will it be easy to access?
- **Do you have basement flooding issues?**
 - ✓ What's the cause of your basement flooding?
 - ✓ Gutter repair necessary before installation?

How to Install Rain Barrels

Overflow very important

- **What will you do with the overflow and what direction should it go in?**
 - ✓ Which side of the barrel should overflow be on?
 - ✓ Overflow should go down hill from the barrel
 - ✓ No pop-ups, not enough pressure
 - ✓ At least 4' from your foundation
 - ✓ Buried pipes need to daylight



How to Install Rain Barrels

Step 2: Installation

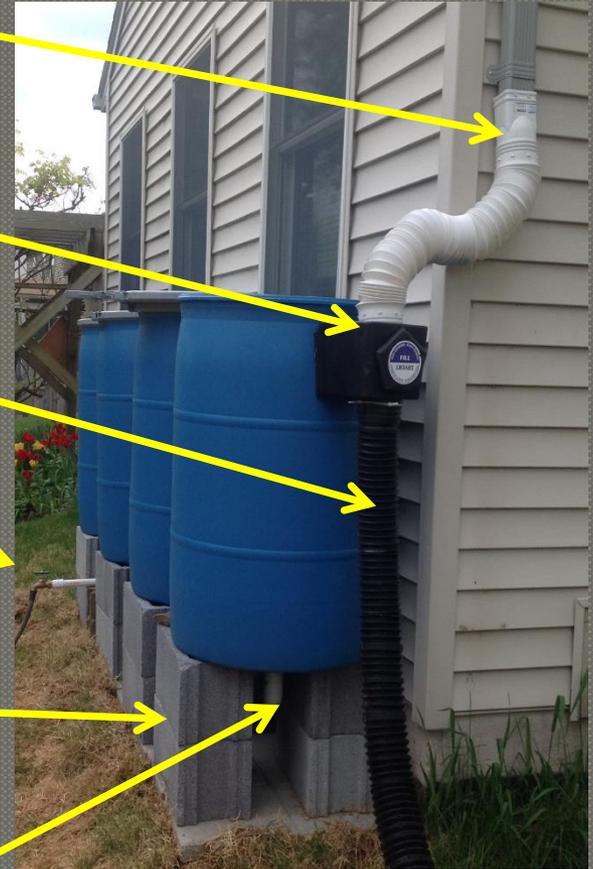
➤ **Measure and cut downspout**

- ✓ Place foundation material and barrel in front of downspout
- ✓ Based on your diverter, measure where you want to cut the downspout
- ✓ **Measure twice, cut once!!!**
- ✓ Cut downspout in place or remove downspout and cut.



How to Install Rain Barrels

- Downspout Flex Pipe
- Attach diverter
- Attach overflow (direct towards pervious surface)
- Attach hose if needed note connection from bottom of barrel
- Place barrel on foundation and make sure it's level and sturdy A full rain barrel can weigh over 400 lbs allow space for bottom drain assembly



How to Install Rain Barrels

Step 3: Maintenance

- Observe barrel during and after first rain event
 - ✓ Did it fill up?
 - ✓ Did the overflow work properly?
 - ✓ Is it still level?
 - ✓ Is it leaking?
- Winterize
 - Divert water away from barrel
 - Clean barrel
 - Flip barrel over if necessary



Assemble parts

- 55-gallon pre-drilled plastic barrel
- **Basic Rain Barrel Parts Kit: (Included)**
 - ✓ Shut off valve
 - ✓ 3-piece hose connection assembly
 - ✓ Diverter assembly and filter
 - ✓ Mosquito dunk
- **You Provide or Buy Separately:**
 - ✓ Downspout-to-barrel connection
 - ✓ Overflow pipe
 - ✓ Additional Mosquito control
 - ✓ Elevated base – block, brick , etc.
 - ✓ Garden hose – soaker hose preferred
 - ✓ Caulk or Teflon tape

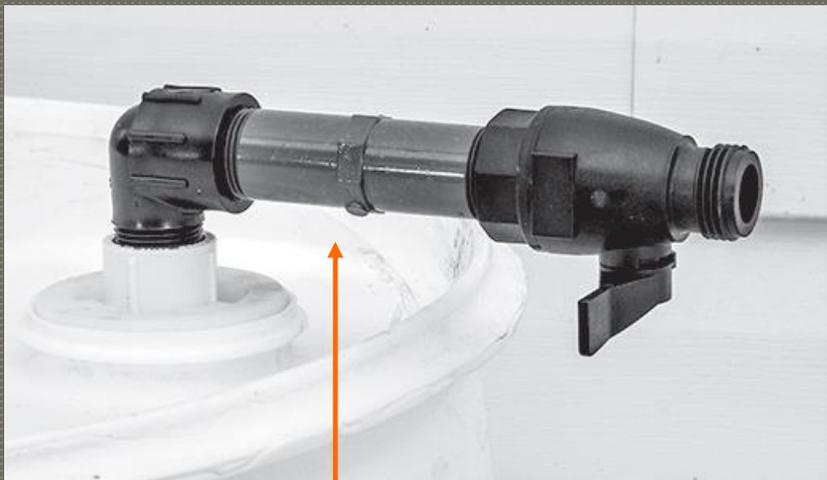


PARTS provided



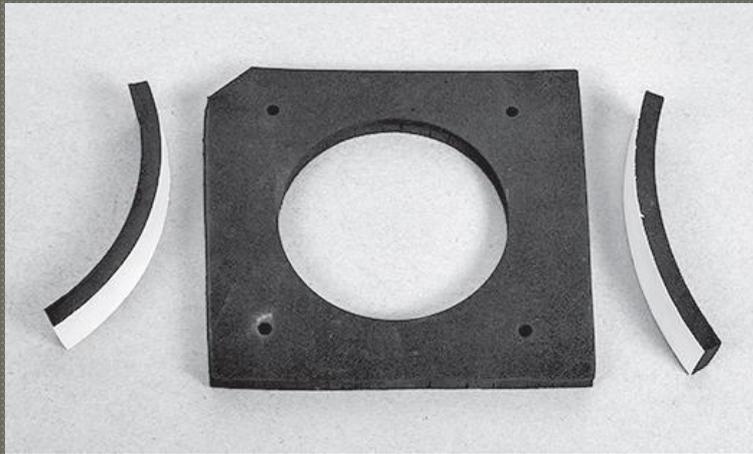
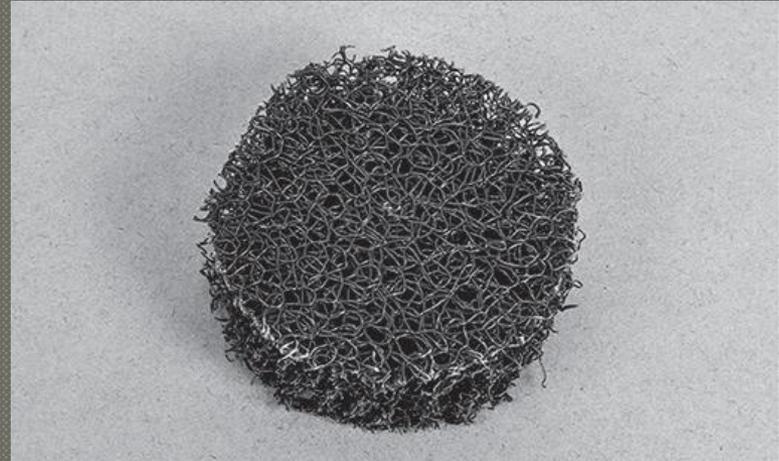
pre-drilled
'bung'

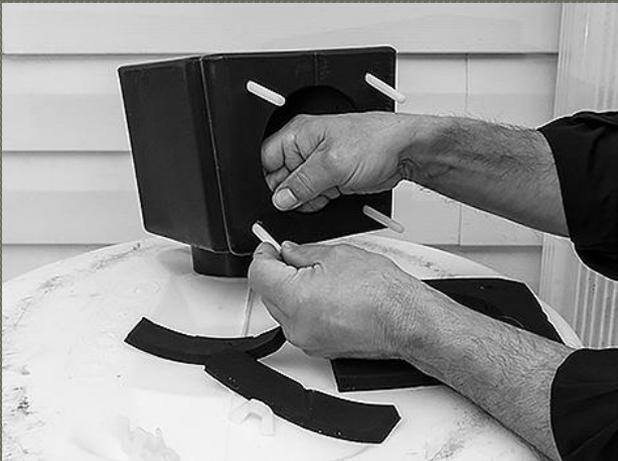
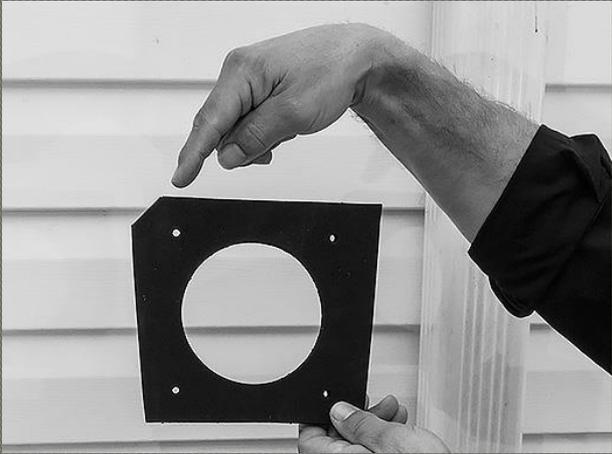
Diverter with filter



*shut-off valve with 3-piece hose assembly

*need to seal joint outside barrel with silicon
caulk





Select hose connection location



Perpendicular?
Left or right?



Parallel?
Front or back?

Water Quality Protection Charge (WQPC) Credit Program

Once you install a RainScapes project you are eligible to apply for WQPC credit to reduce this annual charge (included with your property taxes)

A1

Montgomery County Department of Environmental Protection
WATER QUALITY PROTECTION CHARGE
SINGLE FAMILY RESIDENTIAL CREDIT APPLICATION
Regulated by the Code of Montgomery County Regulations (COMCOR) 19.35.01.05

**APPLICATION MUST INCLUDE A COPY OF PROPERTY TAX BILL AND
SUPPORTING DOCUMENTATION INCLUDING PHOTOS OF THE PRACTICES FOR THE CREDIT**

EMAIL TO:
WQPC.Credits@montgomerycountymd.gov

MAIL TO:
WQPC Credits, Dept. of Environmental Protection, 255 Rockville Pike Suite 120, Rockville, MD 20850

I am the (check one): Owner Authorized Agent
(If Authorized Agent, please attach copy of document creating authorization)

Property Account No: (eight digit number)

Owner Name:

Premise Address:

Owner/Agent Address:

Phone Number:

Phone Number (Premise):

Email Address:

Application Checklist

1. Complete the stormwater treatment calculator
2. Complete the maintenance checklist/agreement
3. Provide photos of stormwater treatment

Print and sign the credit application and submit all required and supporting documentation by either email or mail. The email and mailing addresses are listed on this page and on the instructions.

Include photographs of each stormwater management facility or system. At least one of the photographs must feature a picture of the entire house showing the location(s) of each facility or

Ready | Instructions | Application | SFR Credit Calculator | Maintenance Checklist

My Green Montgomery

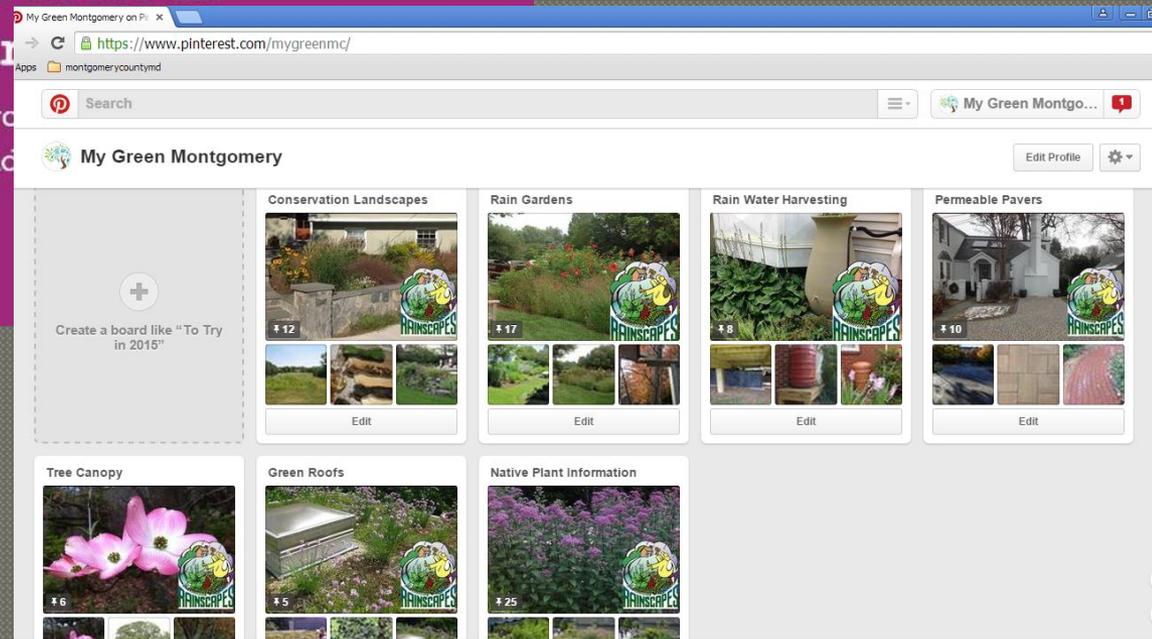
Like us on Facebook and find us on Pinterest!



My Green
MONTGOMERY.ORG

Your guide to living a green life in
Montgomery County, Maryland

- ▶ Get money saving tips for home & work
- ▶ Find events on the community calendar
- ▶ Read local news & inspiring stories



My Green Montgomery on Pinterest: X
→ <https://www.pinterest.com/mygreenmc/>
Apps montgomerycountymd

Search

My Green Montgomery

Create a board like "To Try in 2015"

- Conservation Landscapes (12 pins)
- Rain Gardens (17 pins)
- Rain Water Harvesting (8 pins)
- Permeable Pavers (10 pins)
- Tree Canopy (6 pins)
- Green Roofs (5 pins)
- Native Plant Information (25 pins)

Our upcoming workshops:

Rain Gardens and Conservation landscape
Combo class: Brookside Gardens

- May 19 4-7pm
- May 21 10-1pm

FREE!

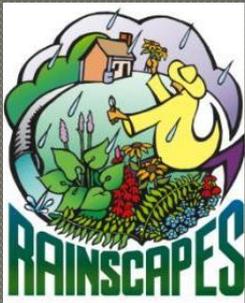
Montgomery County

GREEN
FEST

Saturday, April 30
11 am - 4 pm

Takoma Park
Community Center





RainScapes Team

Program Contacts

- **RainScapes Program**
- www.rainscapes.org
- **Email:**
rainscapes@montgomerycountymd.gov

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