

Green Streets Manor Woods & Wheaton Woods

Environmentally Friendly Landscapes for Healthy Watersheds



Presentation for the
Aspen Hill Civic Association
April 13, 2016



Working together for a cleaner, greener
economically vibrant community

www.montgomerycountymd.gov/watershedrestoration

Introductions

- **Rebecca Winer-Skonovd**
 - DEP Project Manager
- **Christy Ciarametaro**
 - DEP Watershed Planner, Wheaton Woods Green Streets
- **Ho-Ching Fong**
 - DEP Watershed Planner, Manor Woods Green Streets
- **Pam Rowe**
 - DEP RainScapes

Today's Agenda

- Watershed 101
- Stormwater 101
- What are Green Streets?
- Where Will Green Streets be?
- Maintenance
- RainScapes & Incentive Programs
- Q & A



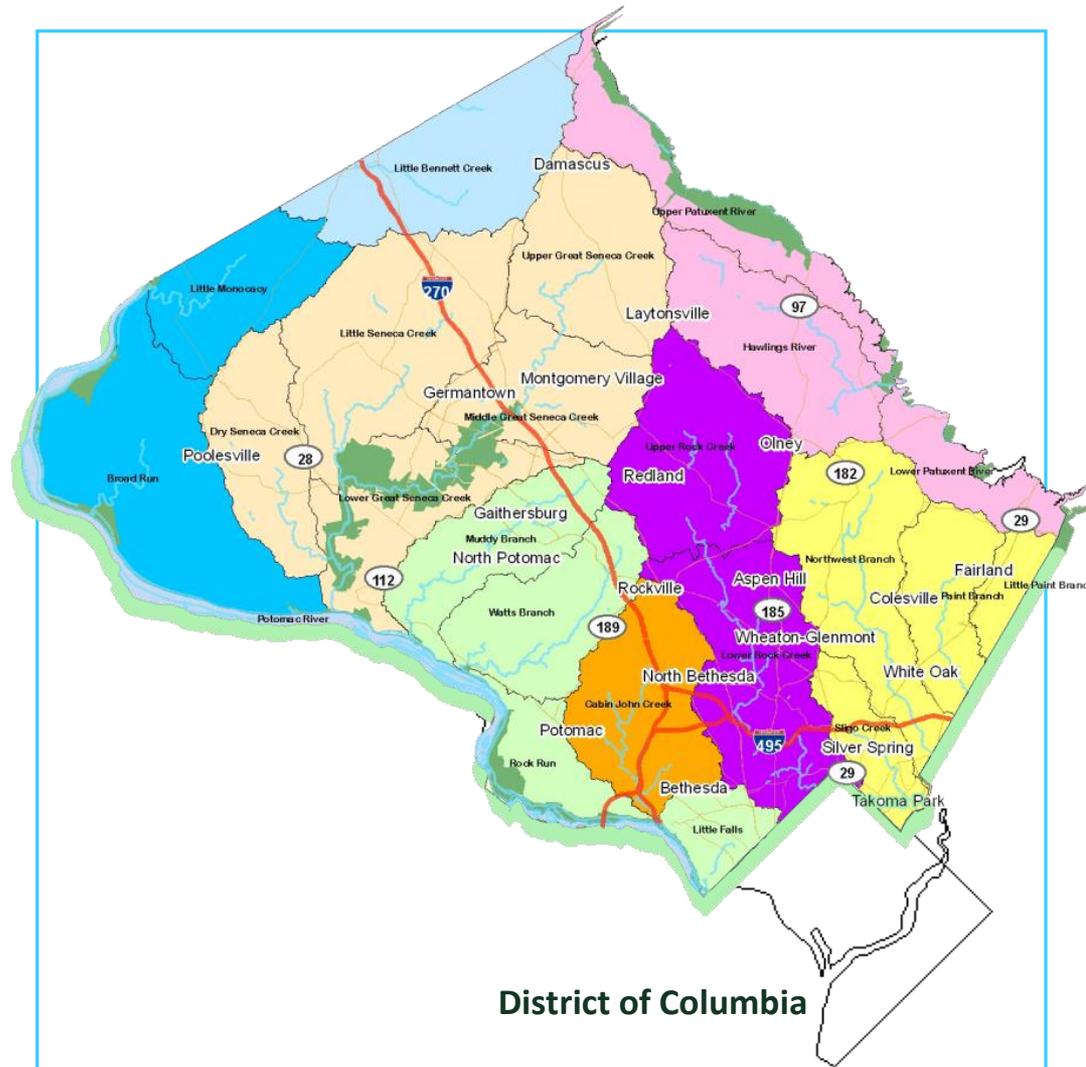
Watershed 101

What is a Watershed?

- A *watershed* is an area from which the water above and below ground drains to the same place.
- Different scales of watersheds:
 - Chesapeake Bay
 - Eight local watersheds
 - Neighborhood (to a storm drain)



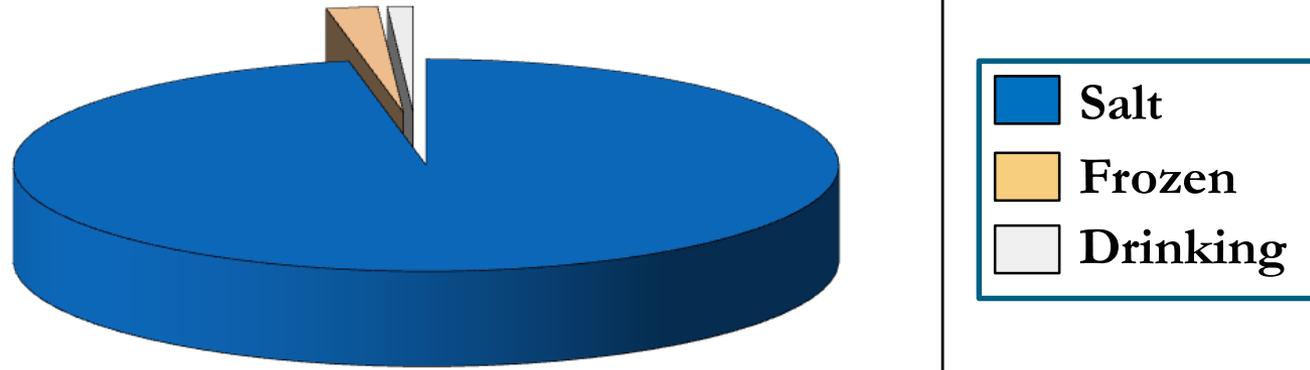
Watershed 101



- **Impervious:** Not allowing water to soak through the ground.

Watershed 101

Sources of Water



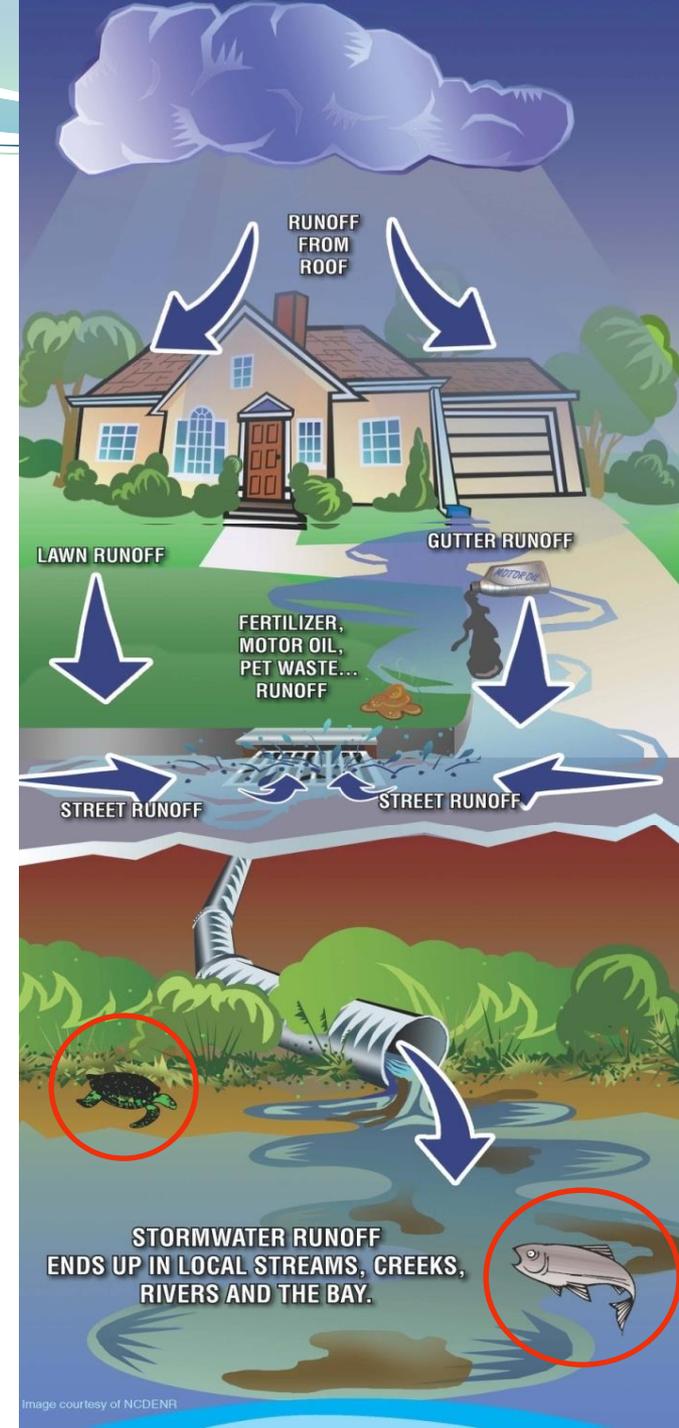
- About 97% is salt water
- About 2% is frozen
- Only 1% is available for drinking water
 - Across the Country, about 57% comes from groundwater sources
 - In Maryland, 74% is from surface water sources

Stormwater 101

What is Runoff?

- Water that does not soak into the ground becomes surface runoff. This runoff flows over hard surfaces like rooftops, driveways and parking lots collecting potential contaminants and flows:
 - Directly into streams
 - Into storm drain pipes, eventually leading to streams
 - Into stormwater management facilities, then streams

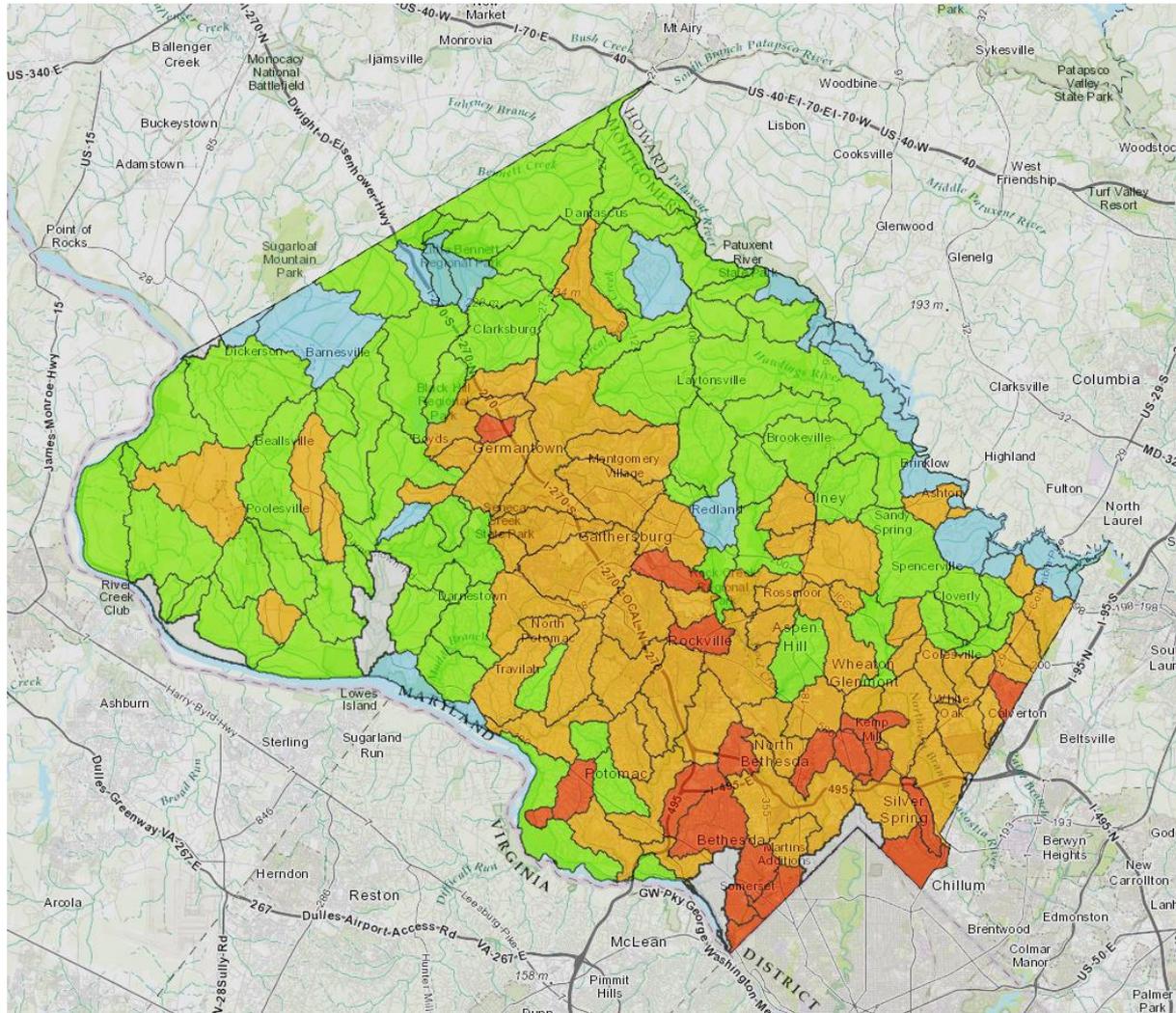
Two Major Issues:
Volume/Timing of Runoff
Water Quality



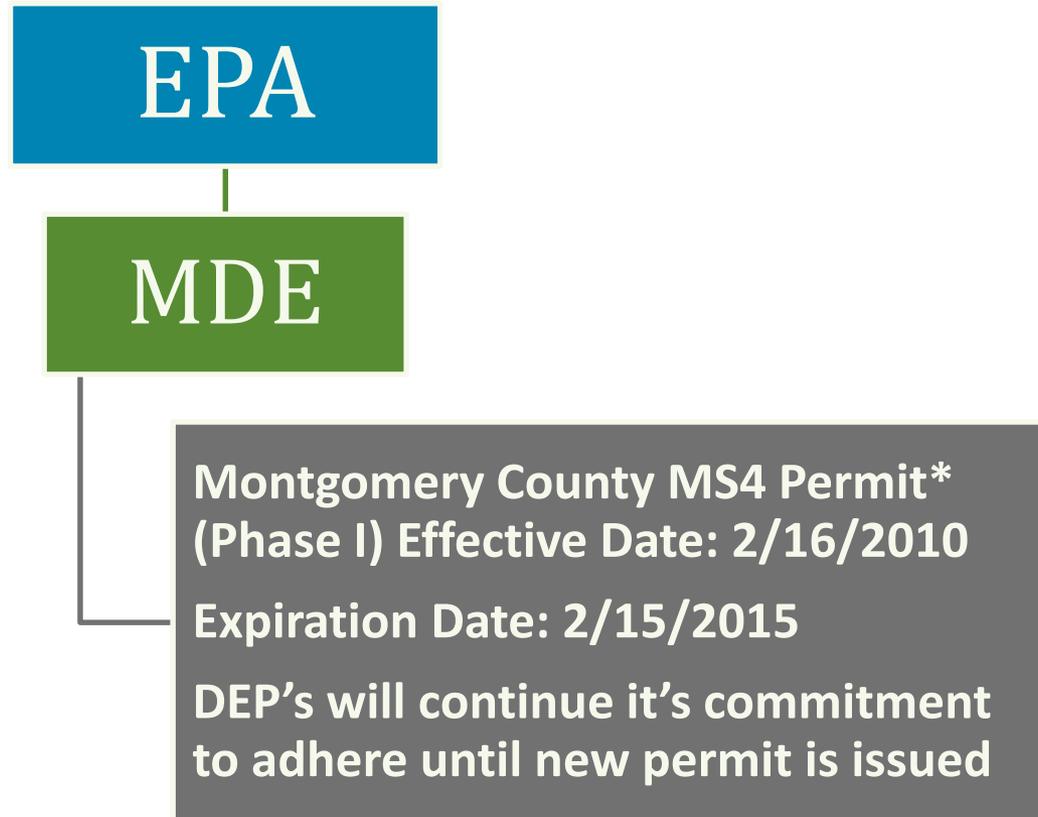
Stormwater 101: Runoff Impacts



Stormwater 101: County Stream Health

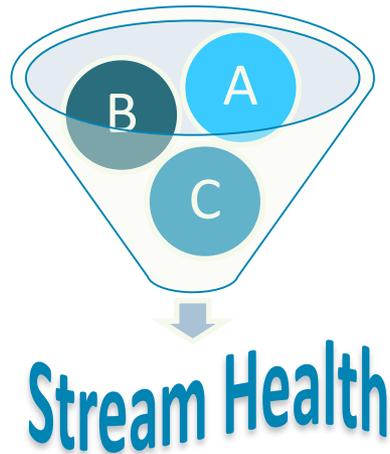


MS4 Permit: Overview



- MS4 = Municipal Separate Sewer System Discharge Permit
- Capture 20% of the uncontrolled impervious surfaces

MS4 Permit: Holistic Planning & Implementation



A Neighborhood Assessment

- New and Existing BMP Assessment
- Right-of-Way Assessment (Green Streets)
- Urban Reforestation Site Assessment



B Stream Corridor Assessment

- Erosion (Stream Restoration)
- Pipe Outfall (RSC)
- Inadequate Buffer
- Trash



C Partnerships with Other Departments and Agencies

MS4 Permit: Watershed Restoration Strategic Implementation Plan



**Stormwater Pond
Retrofits**



**Stream
Restoration**



Green Streets

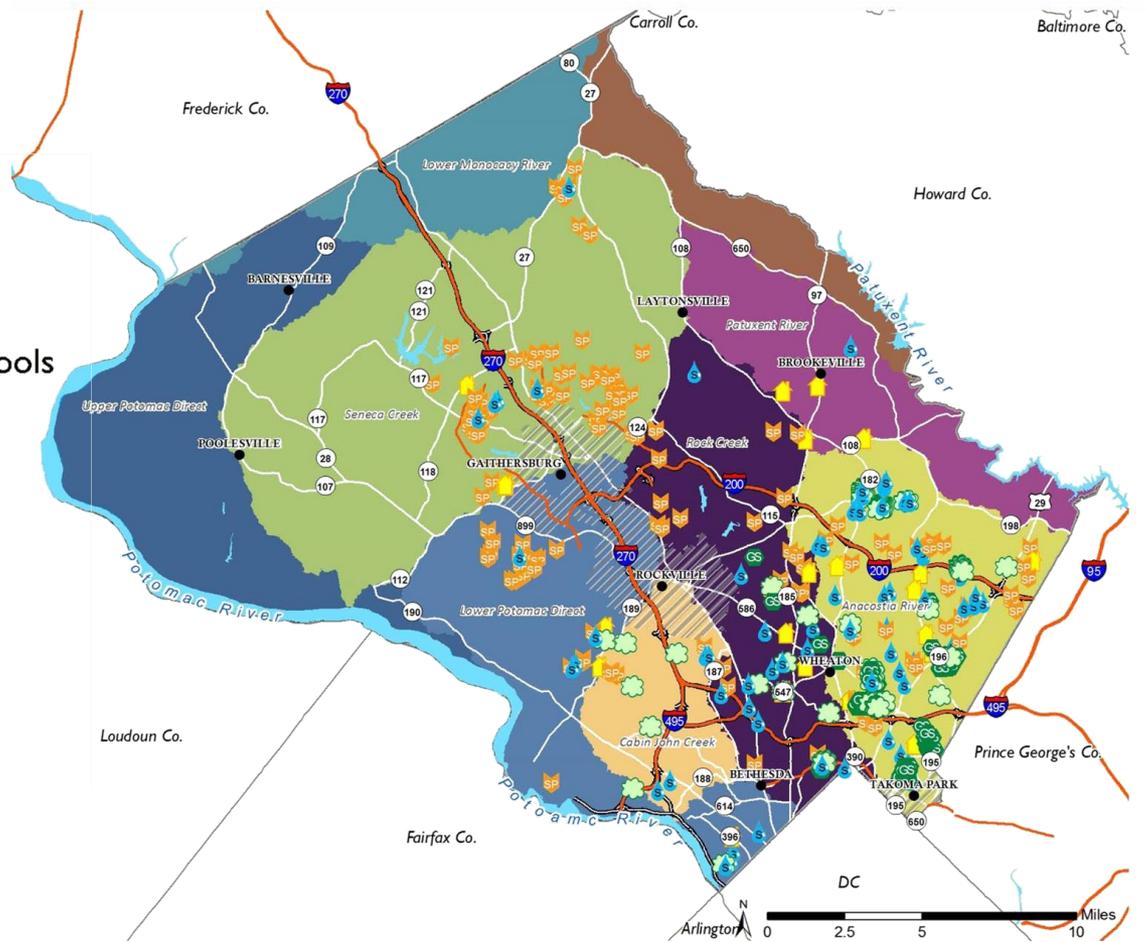


Government Facility

MS4 Permit: What is the County Doing to Protect Our Streams?

Restoration Projects

-  Stream Restoration
-  Government Facilities and Schools
-  Green Streets
-  Reforestation and Other
-  Stormwater Pond

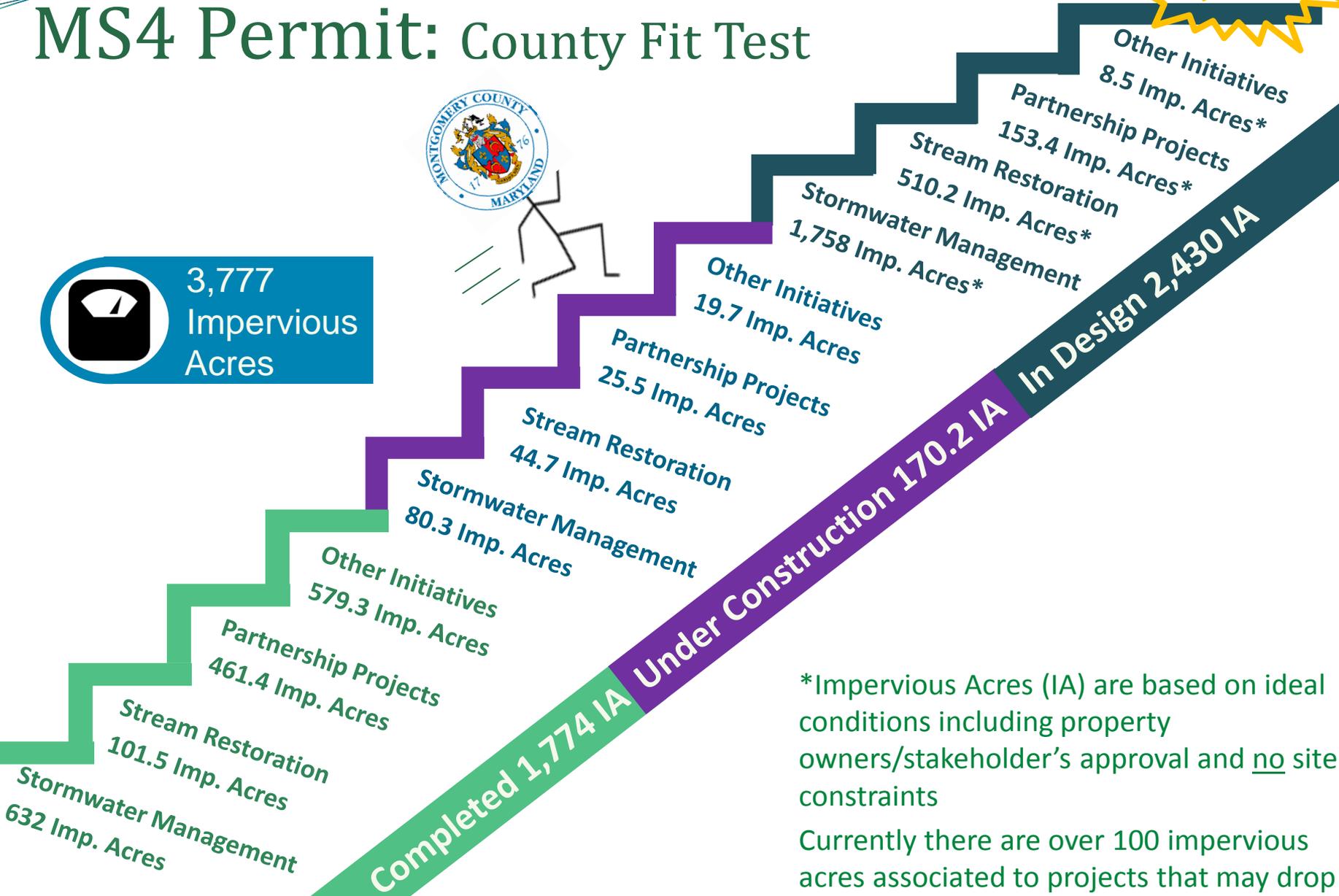


MS4 Permit: County Fit Test

4,374*



3,777
Impervious
Acres

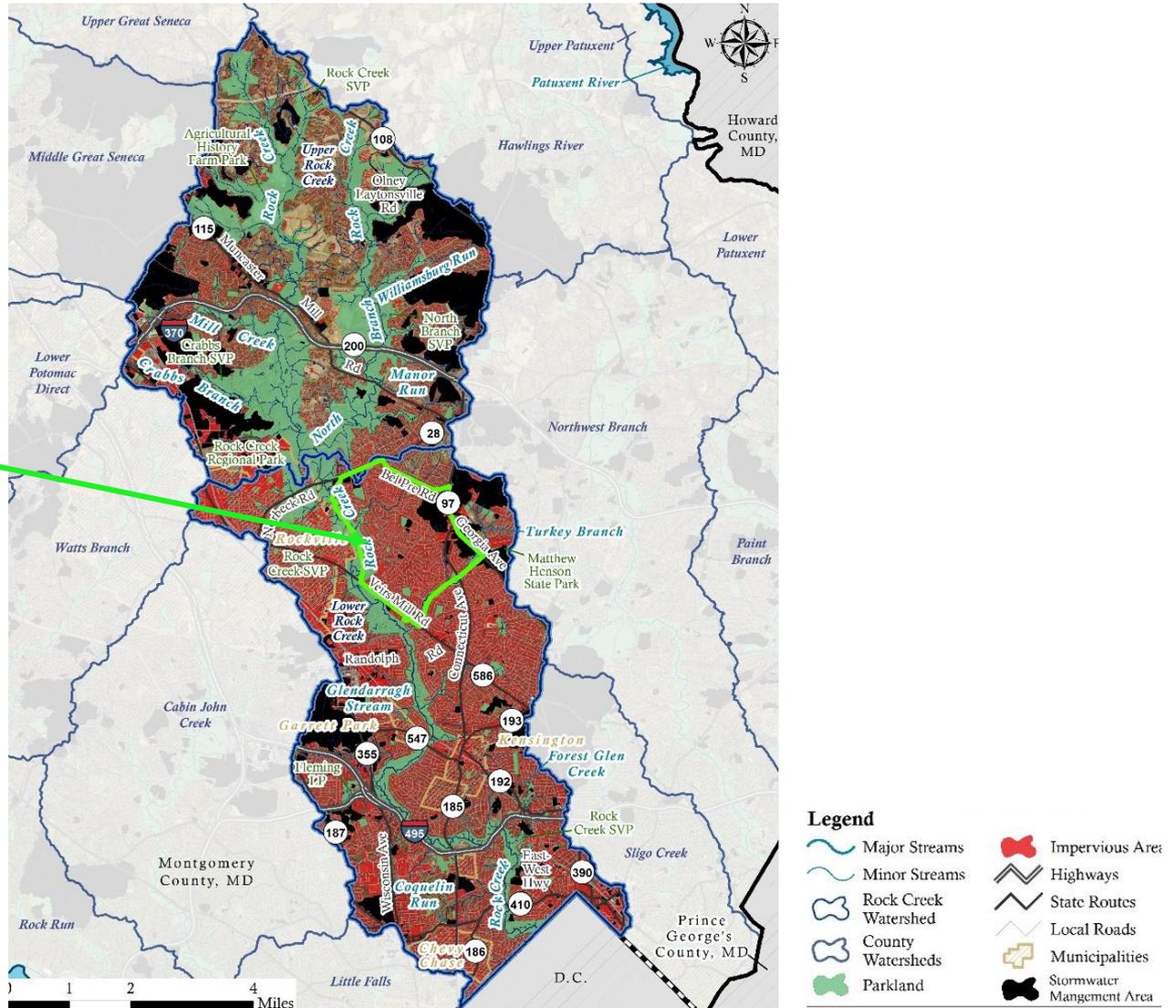


*Impervious Acres (IA) are based on ideal conditions including property owners/stakeholder's approval and no site constraints

Currently there are over 100 impervious acres associated to projects that may drop

Rock Creek & Aspen Hill Civic Association

Aspen Hill Civic Association

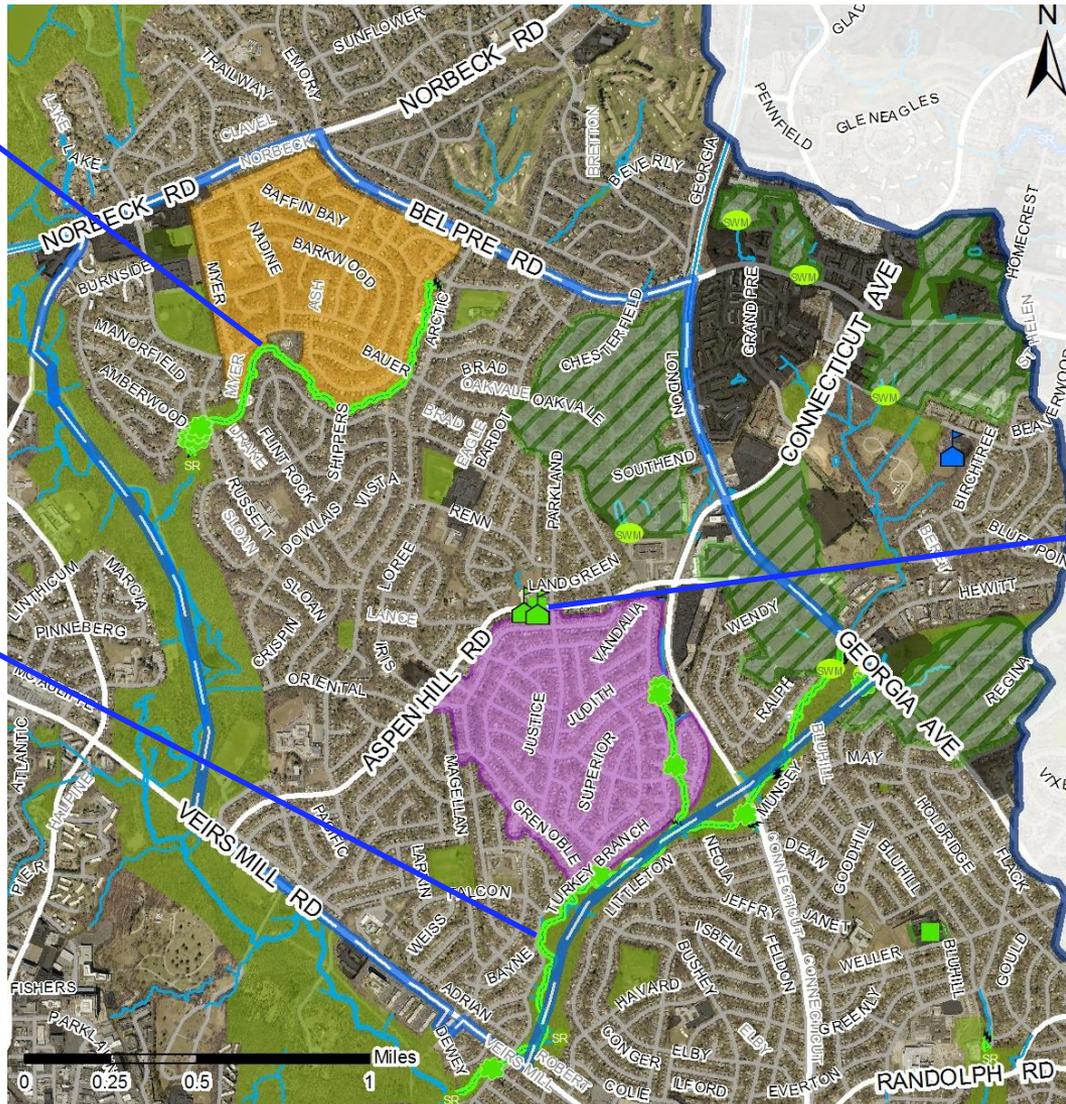


Rock Creek & Aspen Hill Civic Association

Sycamore Creek Stream Restoration

Turkey Branch Stream Restoration

Aspen Hill Library



- | | |
|------------------------------------|------------------------------------|
| Aspen Hill Civic Association | School and Government Facilities |
| Streams | Complete |
| Minor Roads | In construction |
| Major Roads | In design |
| Parks | Stormwater Pond Complete |
| Stormwater Management Area | Stormwater Pond In construction |
| Stormwater Pond Locations Complete | Stormwater Pond In design |
| Stormwater Pond In construction | Stream Restoration Complete |
| Stormwater Pond In design | Stream Restoration In construction |
| | Stream Restoration In design |
| | Reforestation |
- Green Streets Projects**
- Manor Woods Green Streets
 - Wheaton Woods Green Streets

What are Green Streets?

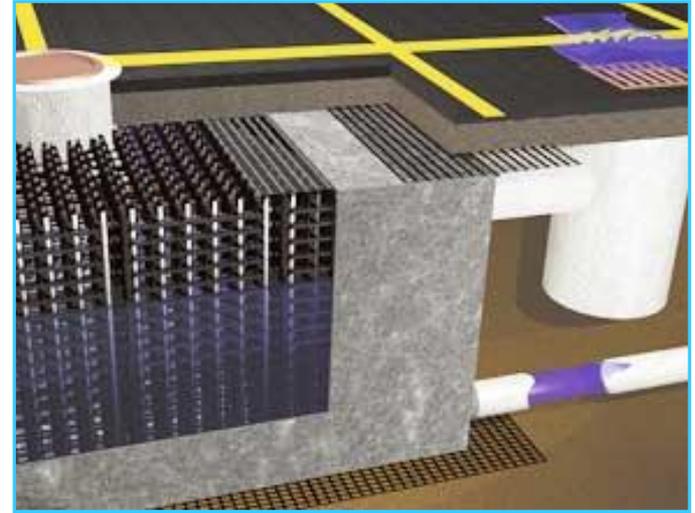
Green Streets Practices



**RAIN GARDEN,
BIORETENTION,
BIOSWALE**



TREE BOX

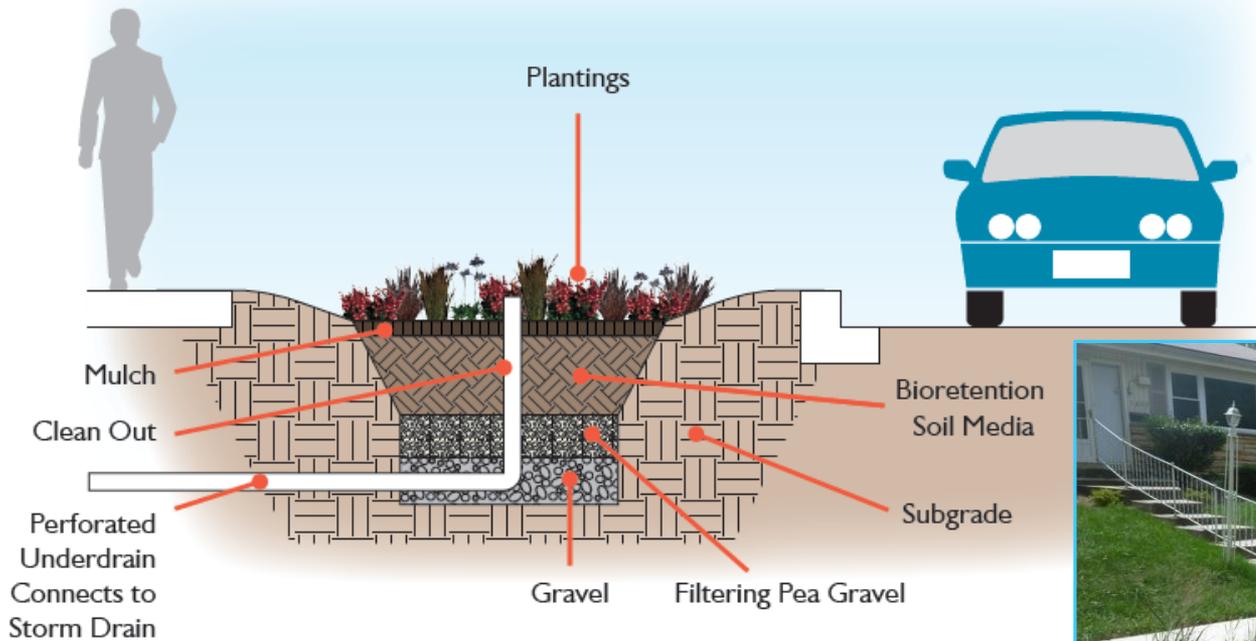


**INFILTRATION STRUCTURE IN
CURB INLET,
RAINSTORE® INFILTRATION**

Source: <http://invisiblestructures.com/rainstore3.html>

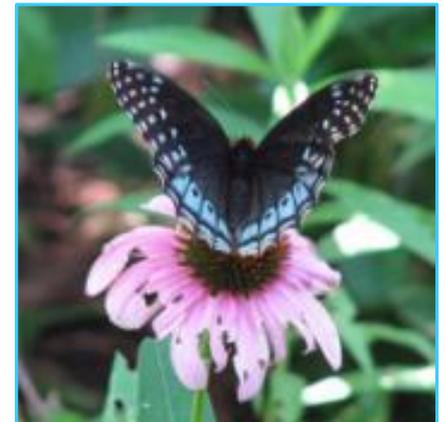
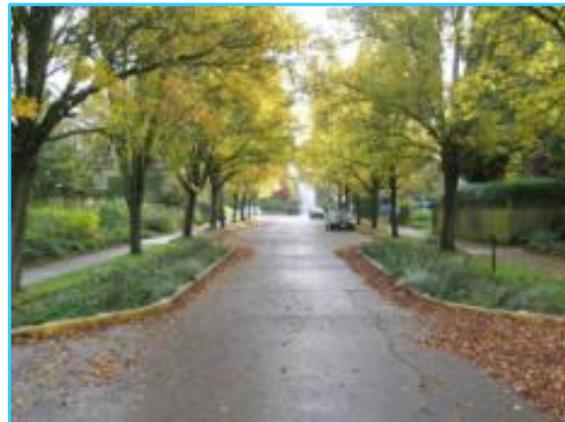
What are Green Streets?

Green Streets Practices

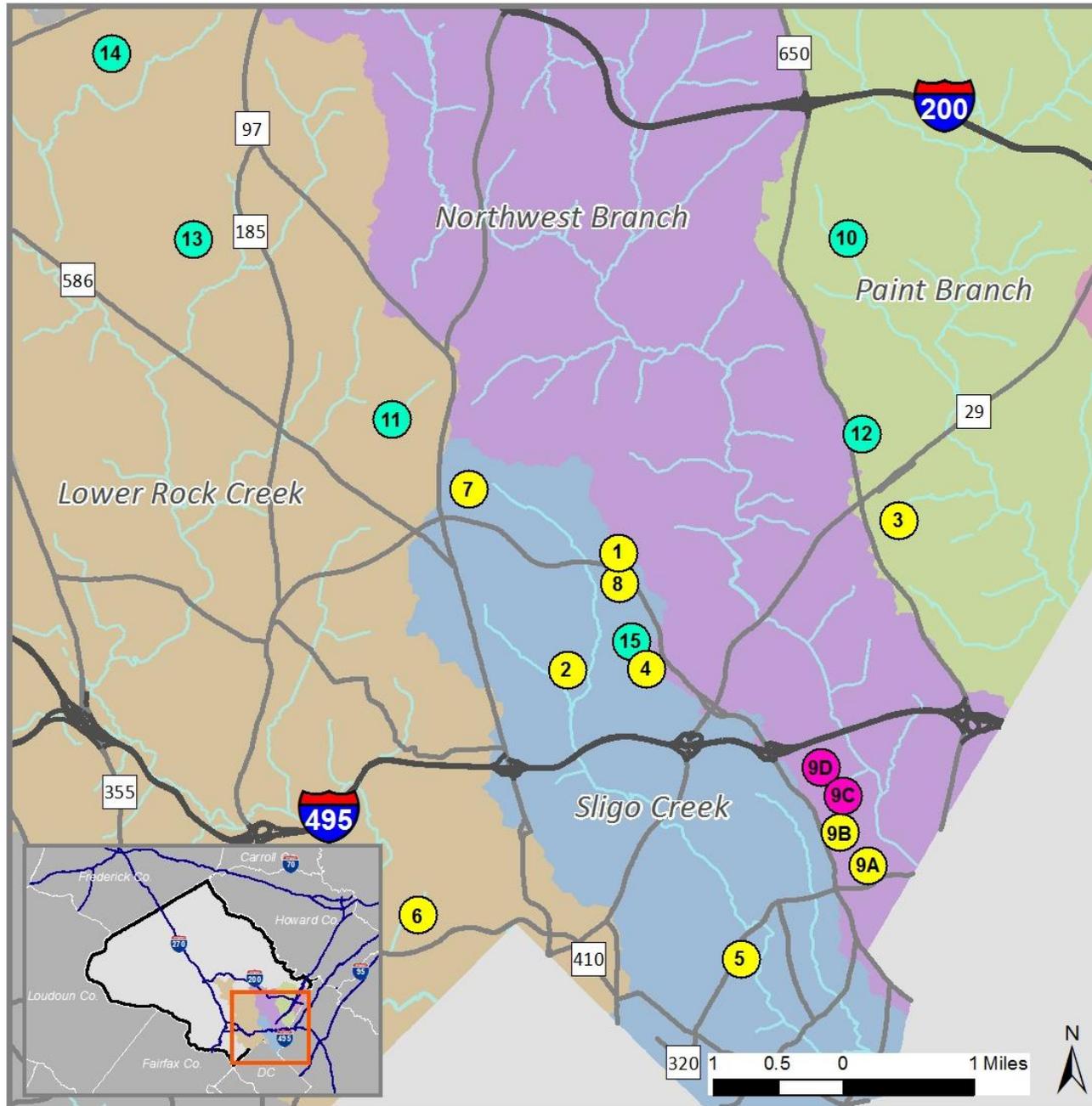


Why Green Streets?

- Replenish groundwater and improve flow in local streams
- Water can soak into the ground while plants and soils filter pollutants
- Create aesthetically attractive streetscapes
- Provide natural habitat
- Capture runoff closest to its source



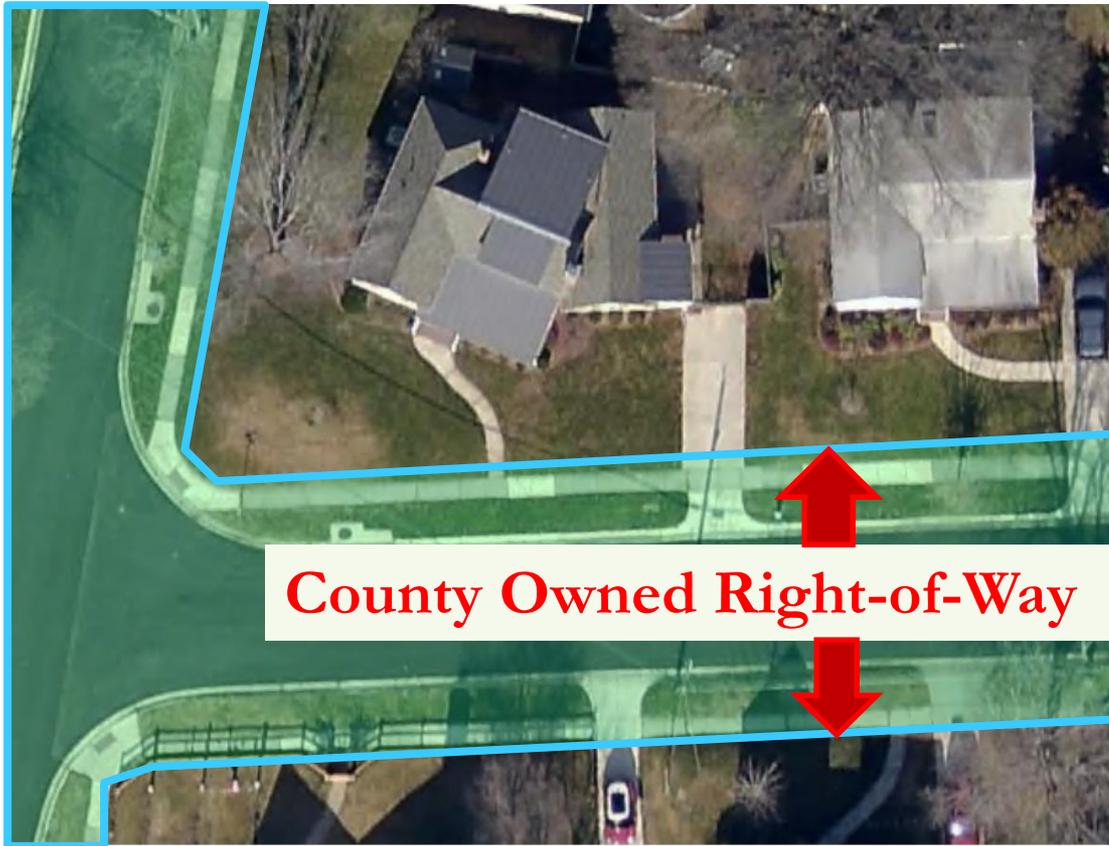
Montgomery County Green Streets (March 2016)



	COMPLETE
1	Arcola Avenue
2	Forest Estates
3	White Oak
4	Dennis Avenue
5	Sligo Park Hills
6	Donnybrook
7	Amherst
8	Breewood
9A	Franklin Knolls - Phase 1
9B	Franklin Knolls - Phase 2
	IN CONSTRUCTION
9C	Franklin Knolls - Phase 3
9D	Franklin Knolls - Phase 4
	IN DESIGN
10	Cannon Road
11	Glenmont Forest
12	Springbrook \ Homestead Estate
13	Wheaton Woods
14	Manor Woods
15	McDonald Knolls \ Ballantrae \ Sligo Estates

Where will Green Streets be?

- Selected areas within the County Right-of-Way (ROW)



With Sidewalk



Without Sidewalk

Where will Green Streets be?

Constraints that we Consider:

- Driveways
- Trees
- Utilities
- Parking demand
- Slope
- Soils

Where will Green Streets be?

Wheaton Woods



Avoiding
Utility

Avoiding
House Connections

Avoiding 22"
Norway Maple Tree

Possible Rain Garden

Buffer from Driveways

Where will Green Streets be?

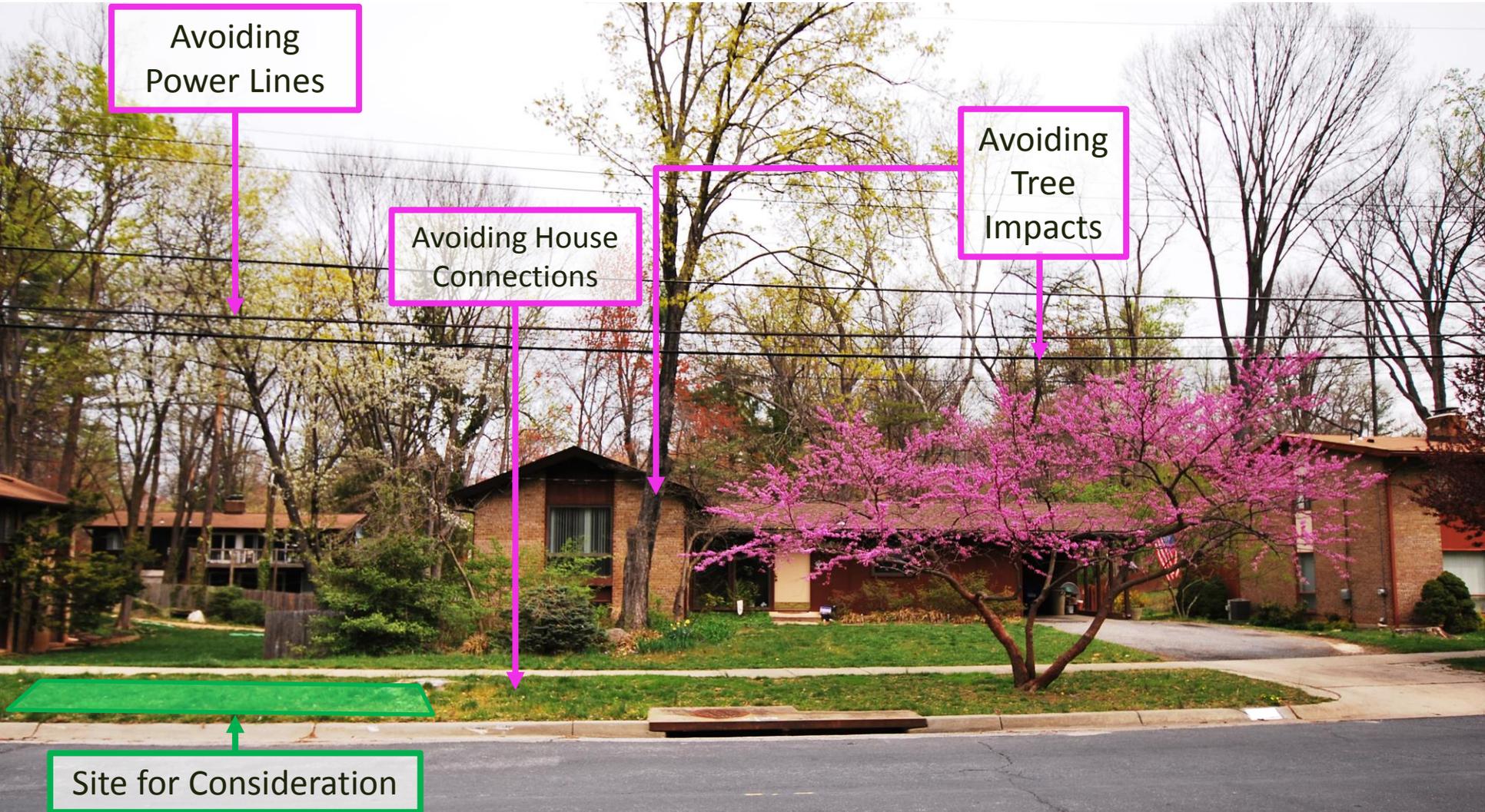
Manor Woods

Avoiding
Power Lines

Avoiding House
Connections

Avoiding
Tree
Impacts

Site for Consideration



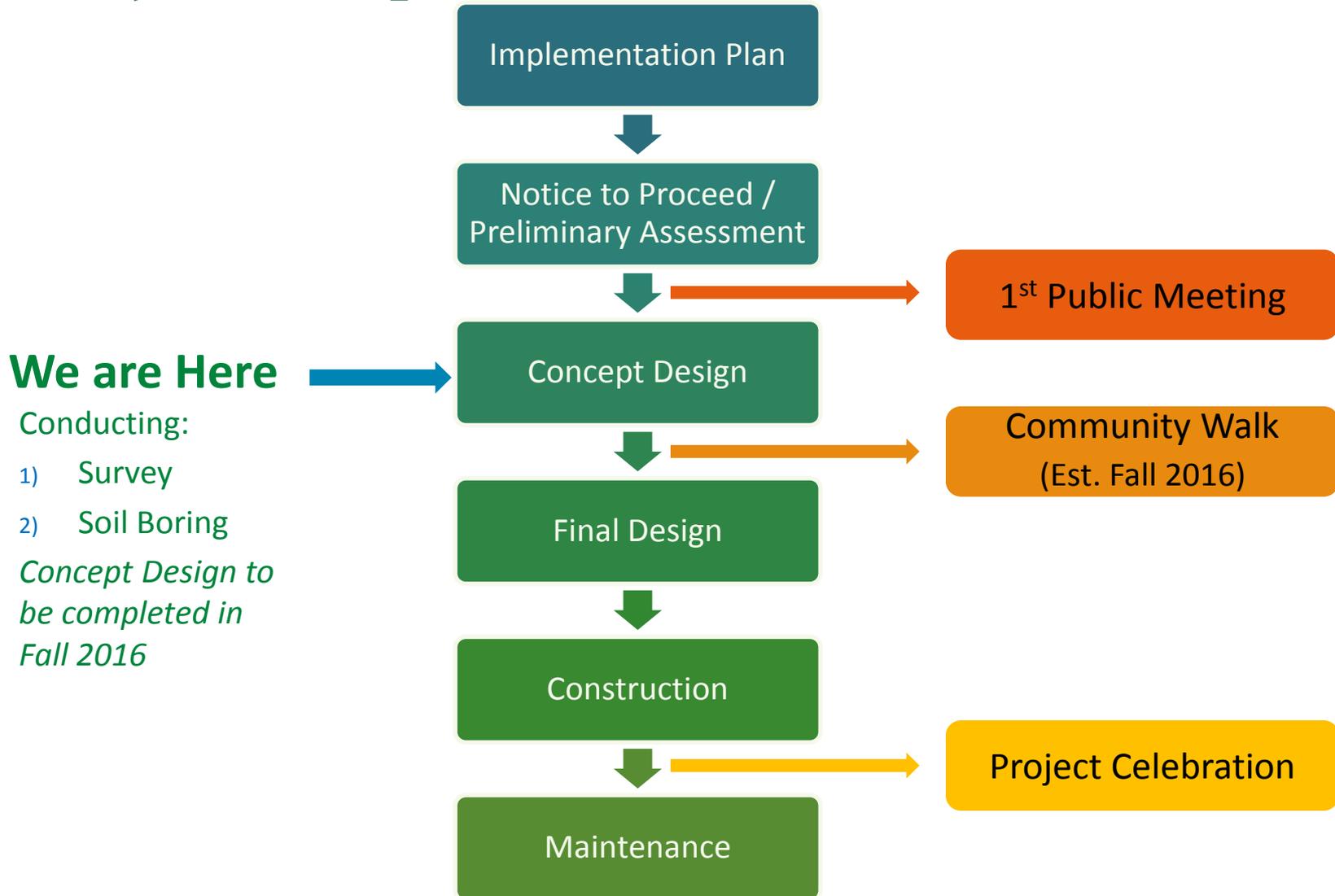
Where will Green Streets be?

Soil Boring

- Collect information about soil conditions
- Utility locations are spray painted first and a 6-inch hole will be covered while crews check water absorption over 24 hours
- Evaluate infiltration rate and soil type
- The hole will be restored to existing conditions



Project Implementation Process



Maintenance

- MCDEP will visit **monthly** (on average)
- We will:
 - Water plants, if needed
 - Replace plants as needed
 - Replenish mulch
 - Remove weeds
 - Remove sediment & trash
- Factsheet



Incentive Programs



- 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



Tree Montgomery



RainScapes Techniques

Green Roof

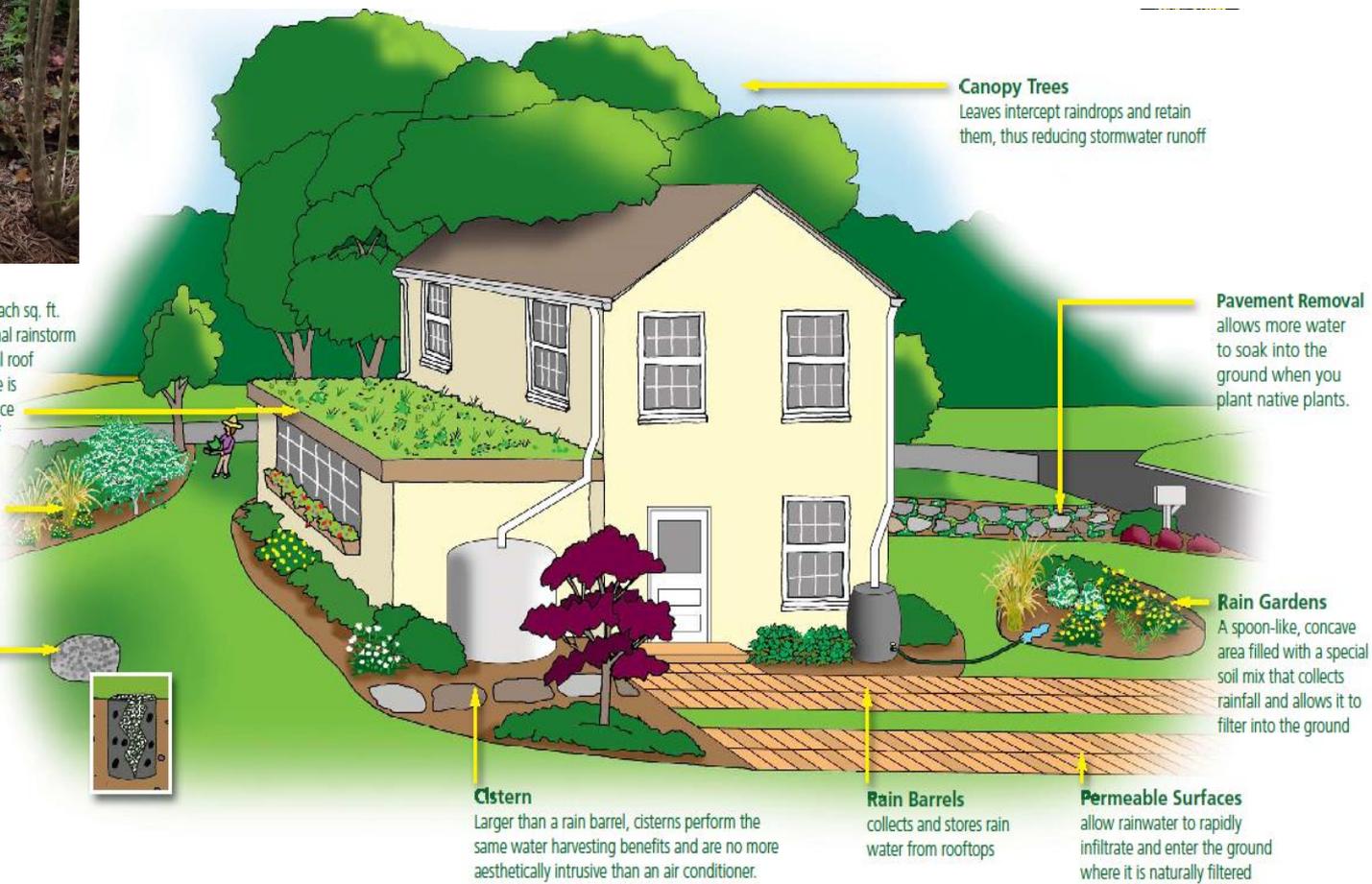
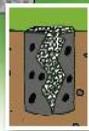
* 623 gallons of water falls on each sq. ft. of roof during the during a normal rainstorm of 1". A 1000 sq. ft conventional roof can shed 623 gallons when there is an inch of rain. Green roofs reduce and clean this stormwater runoff before it hits the ground.

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



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

Cistern

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

Rain Barrels

collects and stores rain water from rooftops

Permeable Surfaces

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

Questions?

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