Green Streets Springbrook/Homestead Estates

Environmentally Friendly Landscapes for Healthy Watersheds

Department of Environmental Protection
Montgomery County Maryland

First Public Meeting

February 26, 2014

JOHNSON, MIRMIRAN & THOMPSON
Engineering A Brighter Future®

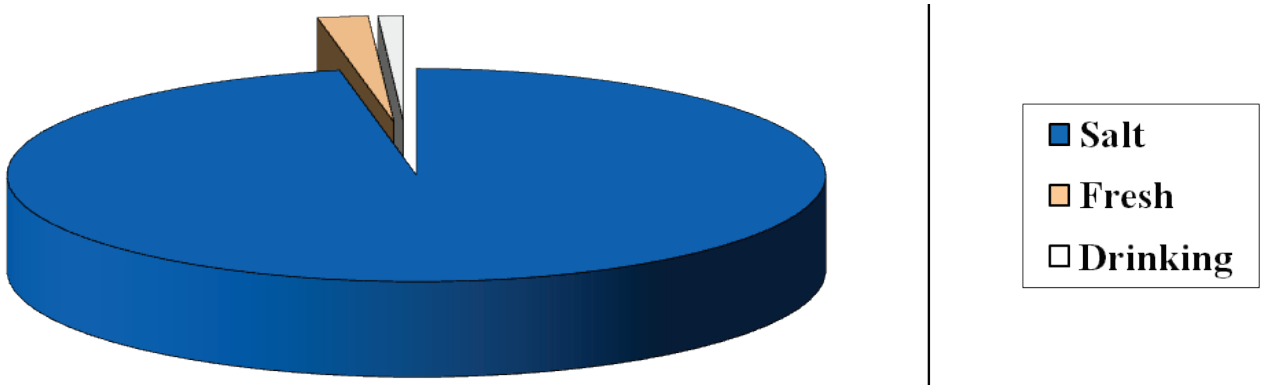
www.montgomerycountymd.gov/watershedrestoration

Today's Agenda

- Watershed 101
- What are Green Streets?
- Why Green Streets?
- Green Street Locations
- Green Streets Practices
- Your Green Streets Project!

Watershed 101

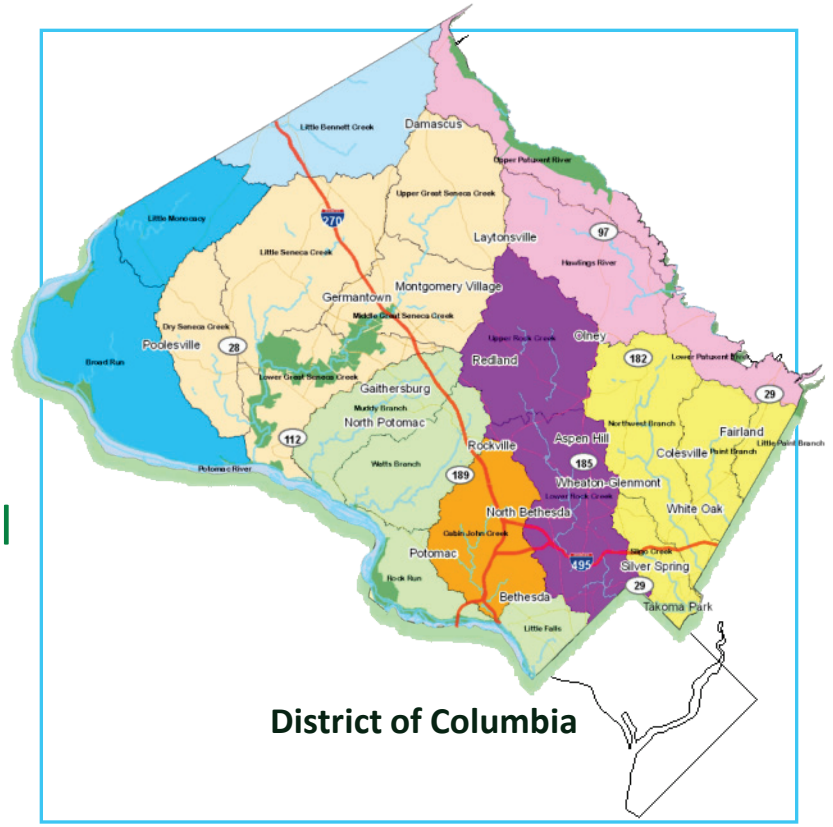
- **Sources of Water**



- About 97% is salt water
- About 2% is frozen
- Only 1% is available for drinking water
  - Across the Country , most drinking water is from groundwater sources
  - In Maryland , most drinking water is from surface water
- Potential for greater impacts from runoff in Maryland

Watershed 101

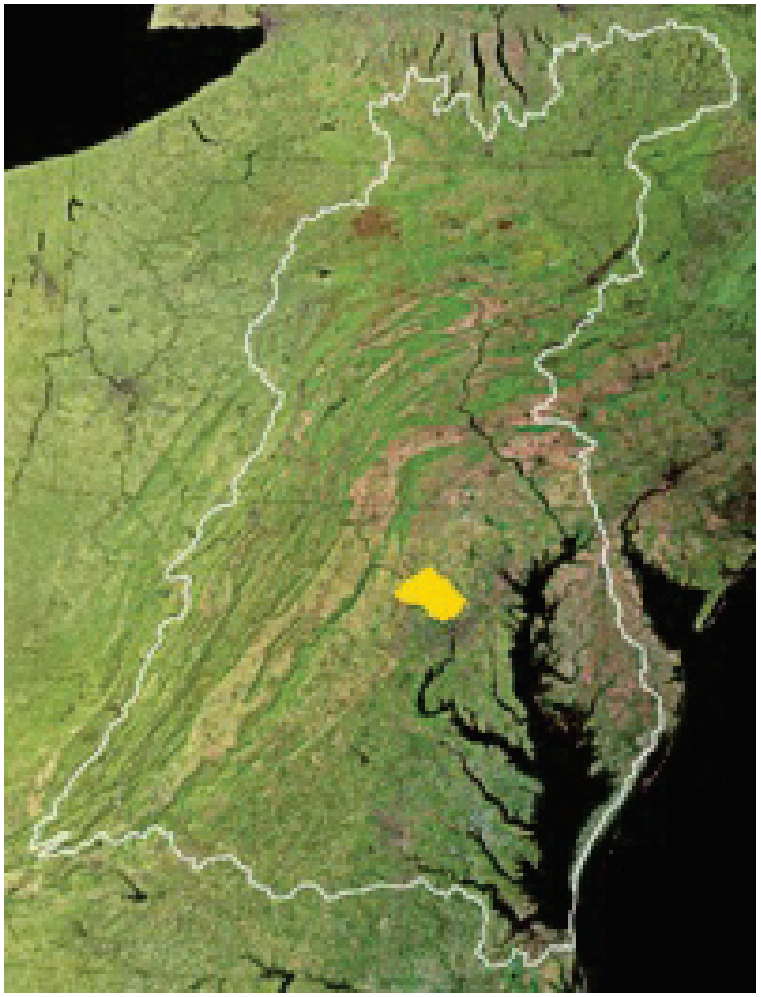
- **Montgomery County, MD**
  - 507 sq. miles
  - 1,000,000 people
    - Second only to Baltimore City within Maryland in average people per square mile
    - 184 languages spoken
  - About 12% impervious surface overall
    - About the size of Washington DC
  - Over 1,500 miles of streams
  - Two major river basins:
    - Potomac
    - Patuxent
  - Eight local *watersheds*



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

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)



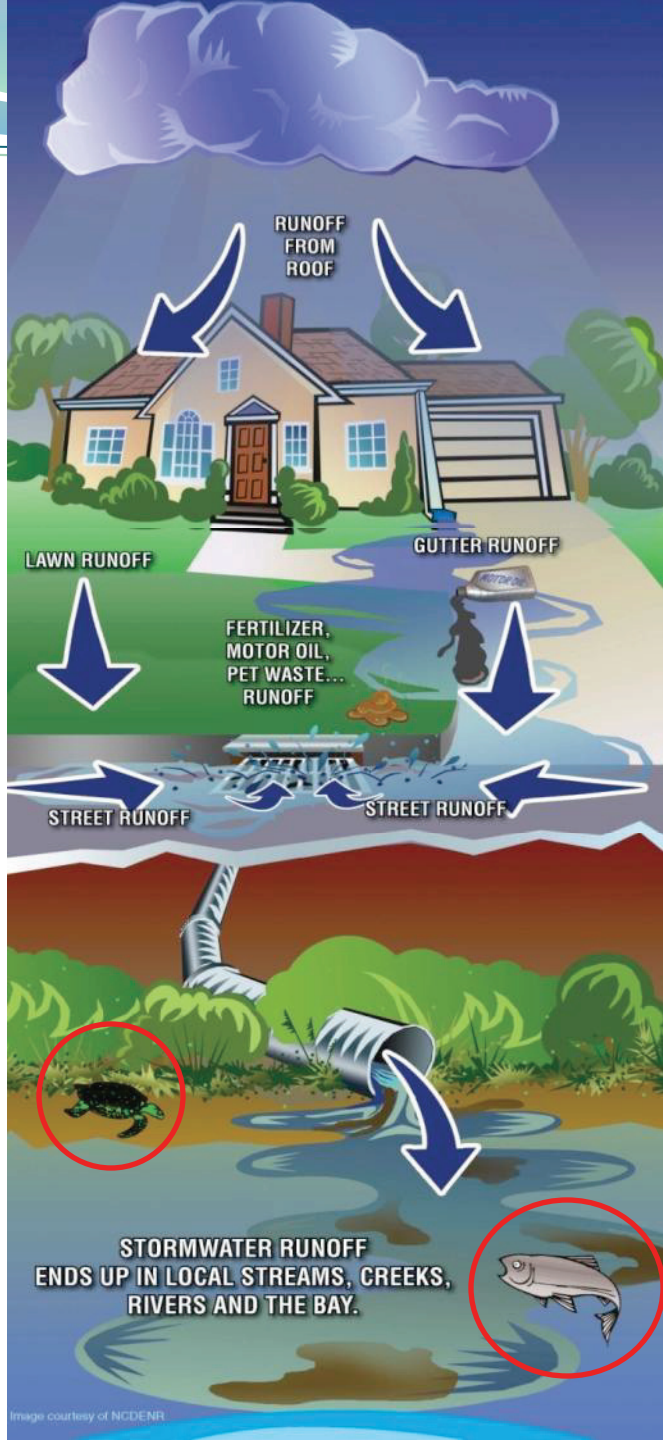
Watershed 101

- **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:

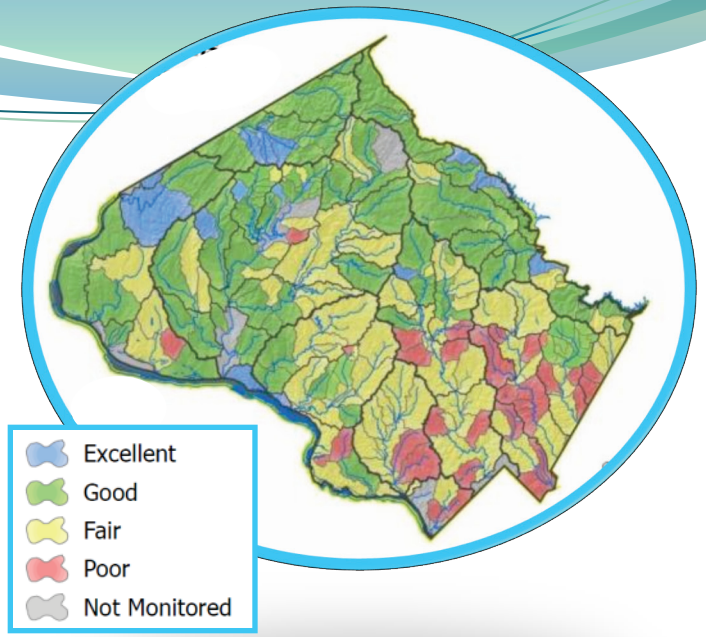
Volume/Timing of Runoff

Water Quality



Watershed 101

- **What is the County doing to protect our Streams?**



- Must meet regulatory requirements
  - Federal Clean Water Act permit program
  - **MS4** = **M**unicipal **S**eparate **S**torm **S**ewer **S**ystem
- Applies to all large and medium Maryland jurisdictions
- County Programs
  - Restore our streams and watersheds
    - Add runoff management
  - Meet water quality protection goals
    - Reduce pollutants getting into our streams
  - Educate and engage all stakeholders
    - Individual actions make a difference
  - Focus on watersheds showing greatest impacts

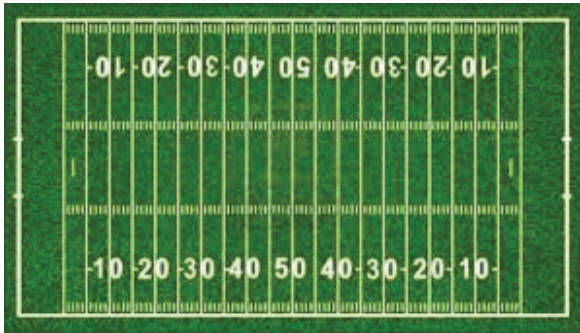
What is the County Doing to Protect our Streams?

- Montgomery County is responsible for:
  - What goes into our storm drain pipes
  - What comes out of them
  - What flows into the streams

- DEP is adding stormwater management for 20 % of impervious surfaces

  (4,292 acres = 6.7 square miles)… About three times the size of Takoma Park.

That's equivalent to 3,307 football fields!



What are Green Streets?

- Small scale stormwater practices located within street right of way areas.

- Approx. 1/3 of impervious surfaces in our County are roadways.

RAIN GARDEN, BIORETENTION

BIOSWALE, GRASS SWALE

TREE BOX

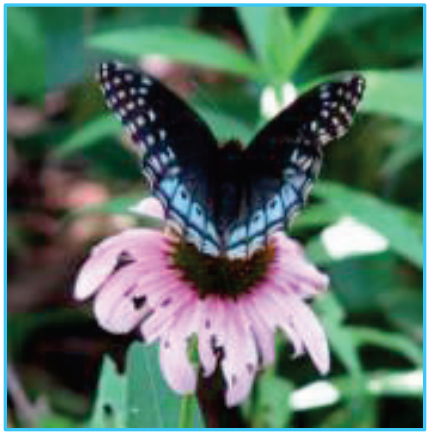
PERVIOUS PARKING & WALKING PATHS

Why Green Streets?

- Replenish groundwater and improve flow in local streams
- Water can soak into the ground while plants and soils filter pollutants

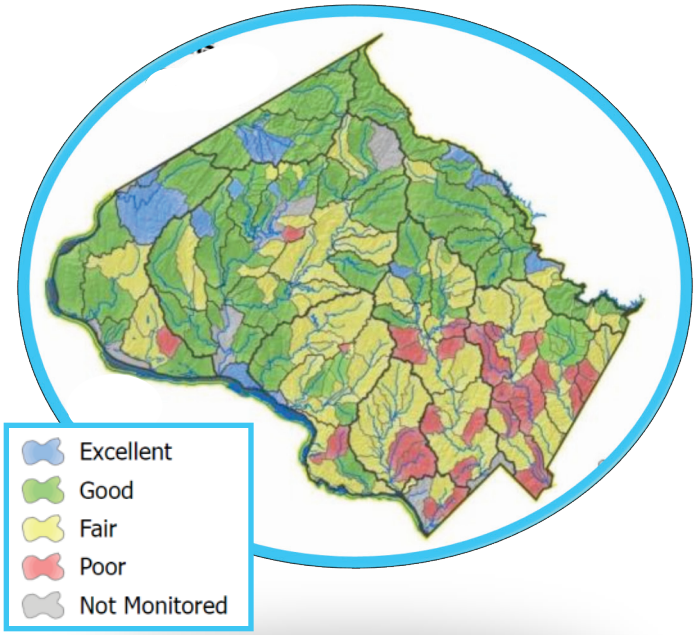
- Create aesthetically attractive streetscapes

- Provide natural habitat

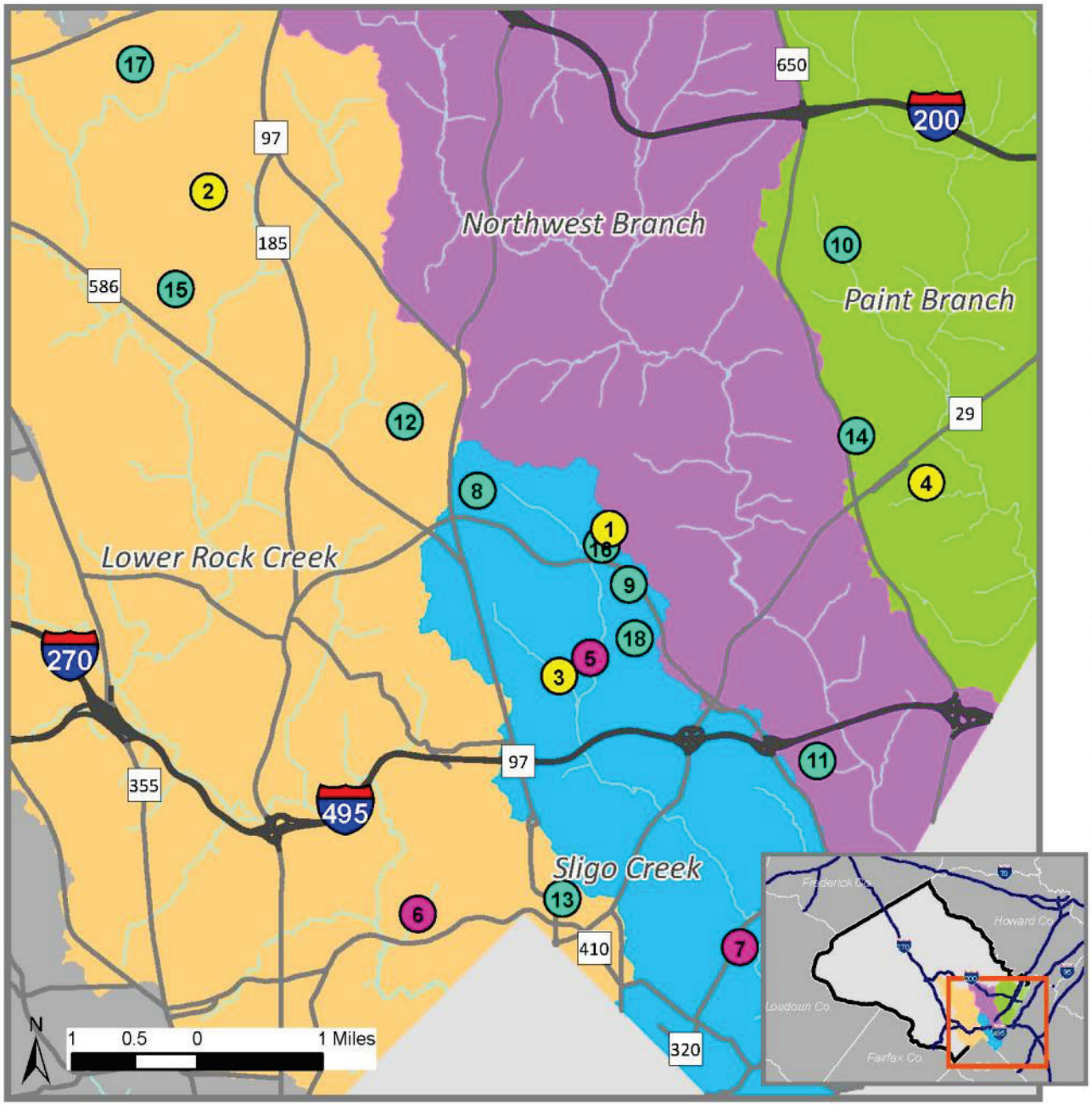


Where will Green Streets be?

- MCDEP plans Green Streets projects:
  - For priority areas identified in Watershed Studies or Restoration Plans
  - Coordinate with Department of Transportation's road & sidewalk improvements



Montgomery County Green Streets



	COMPLETE
1	Arcola Avenue
2	Aspen Hill Library
3	Forest Estates
4	White Oak

	IN CONSTRUCTION
5	Dennis Avenue
6	Donnybrook
7	Sligo Park Hills

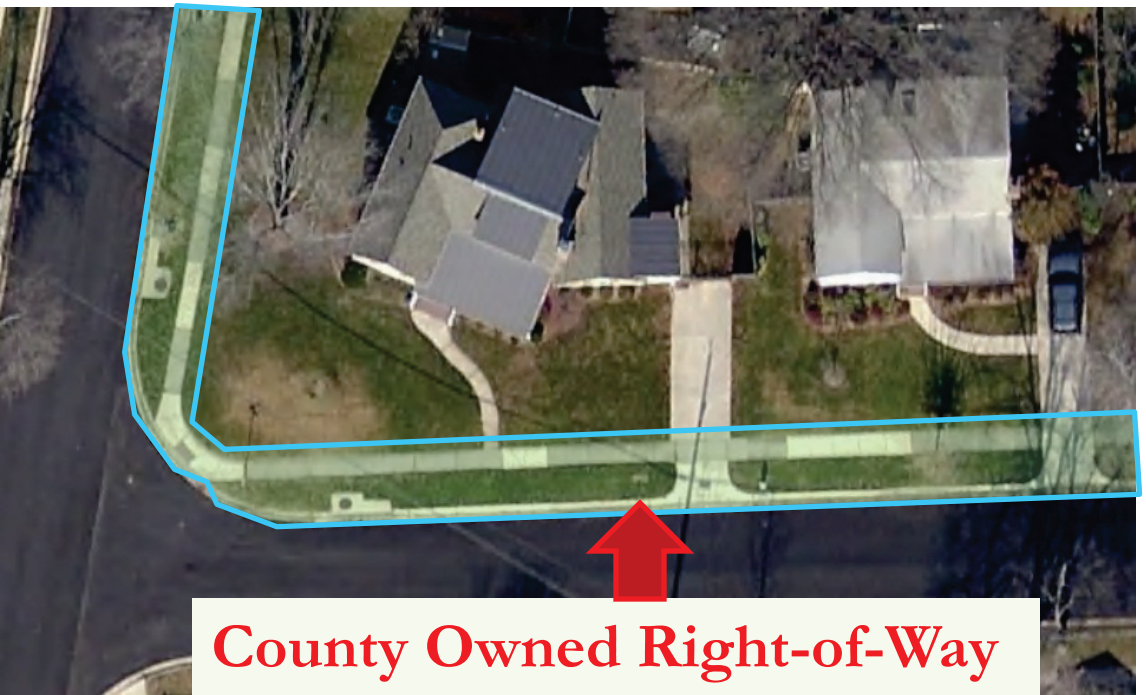
	IN DESIGN
8	Amherst
9	Breewood
10	Cannon Road
11	Franklin Knolls and Clifton Park
12	Glenmont Forest
13	Spring Street and Second Street
14	Springbrook \ Homestead Estate
15	Wheaton Woods
16	University Towers
17	Manor Woods
18	McDonald Knolls \ Ballantrae\Sligo Estates

Where will Green Streets be?

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

With Sidewalk

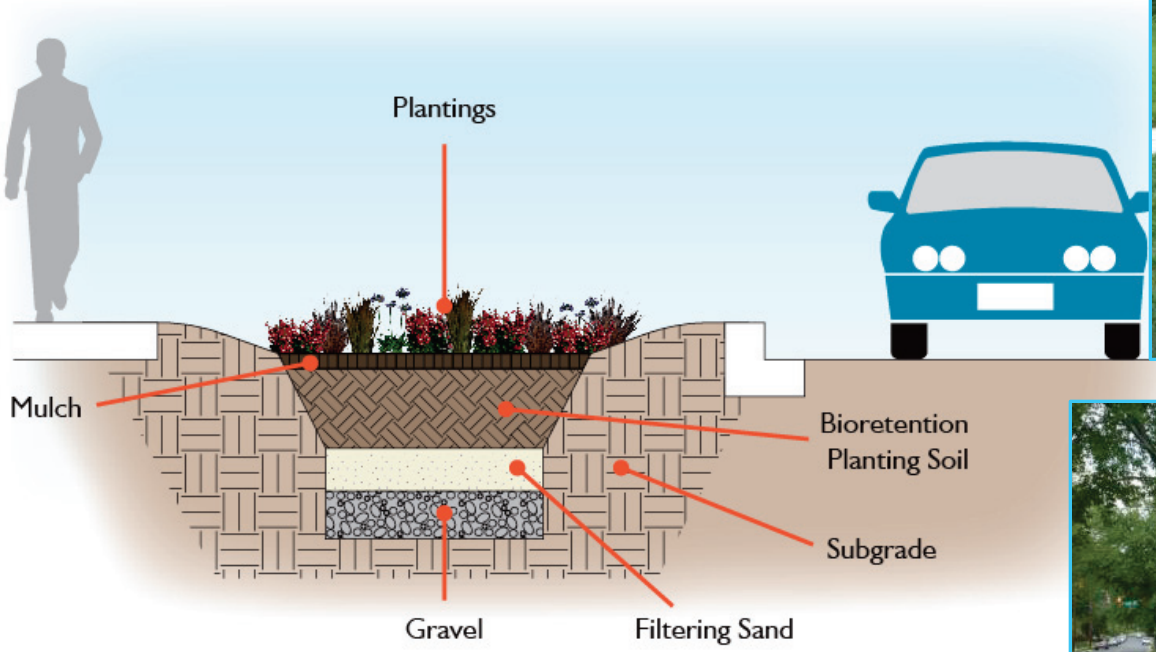
Without Sidewalk



County Owned Right-of-Way

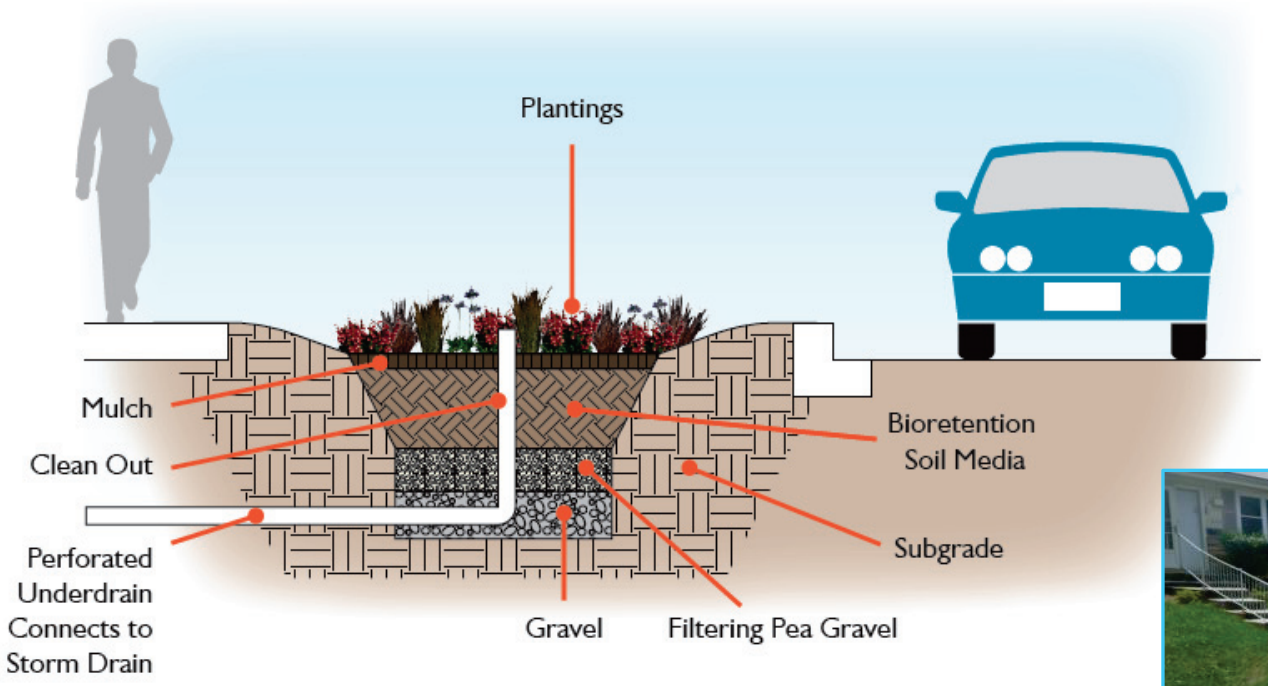
Green Streets Practices

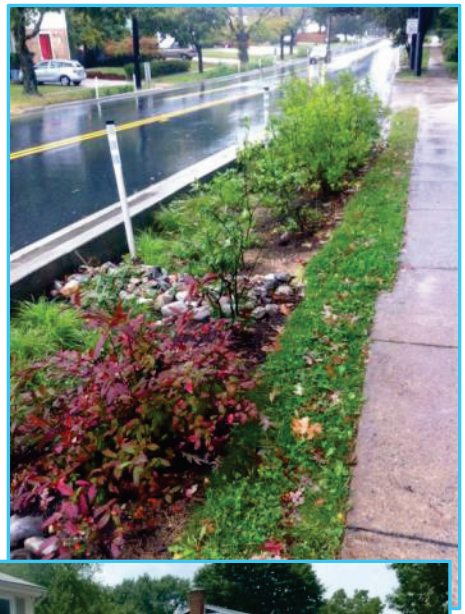
- Rain Garden



Green Streets Practices

- Bioretention





Green Streets **Practices**

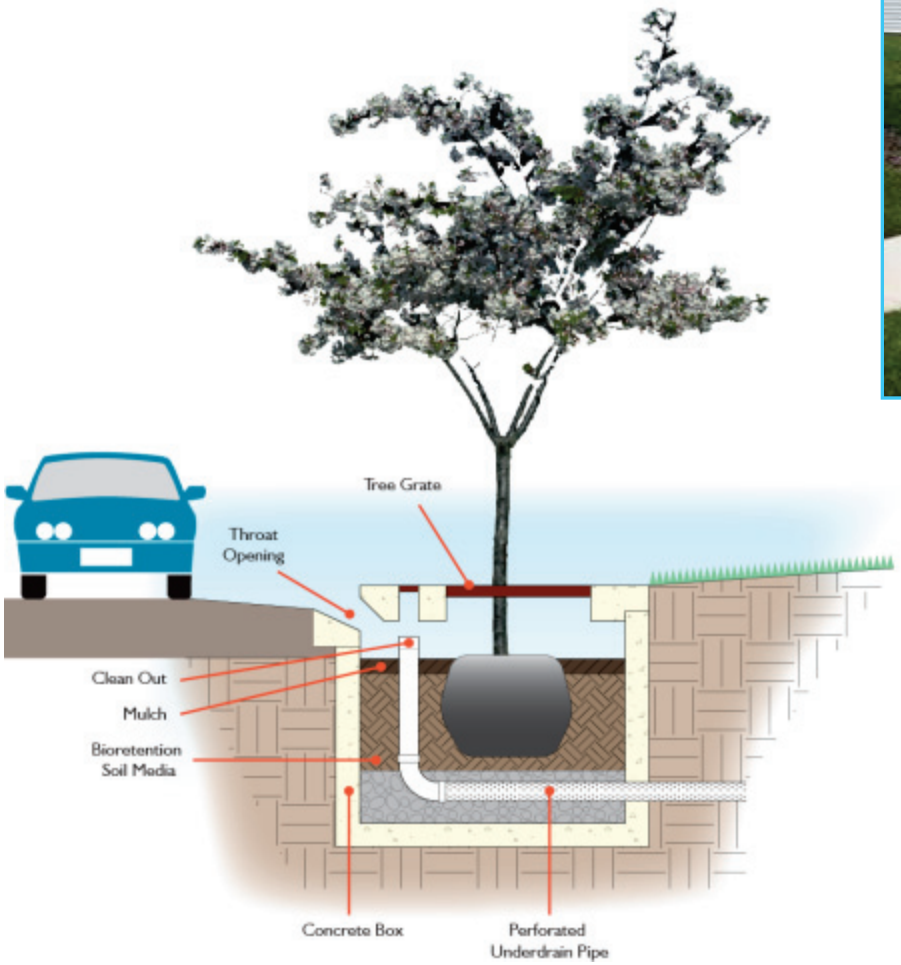
- Curb Extension Bioretention

Green Streets Practices

- Bioswale/Grass swale

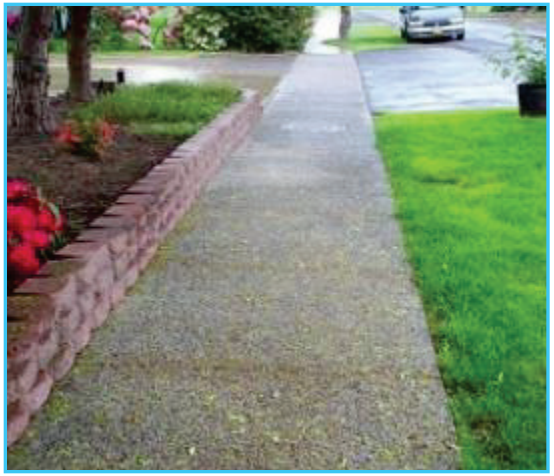
Green Streets **Practices**

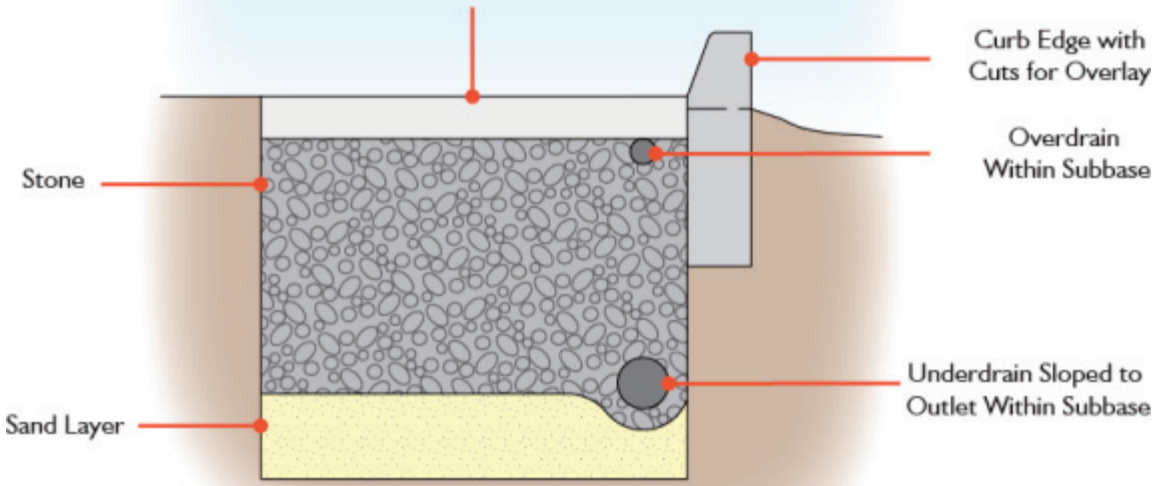
- Tree Box Filter



Green Streets **Practices**

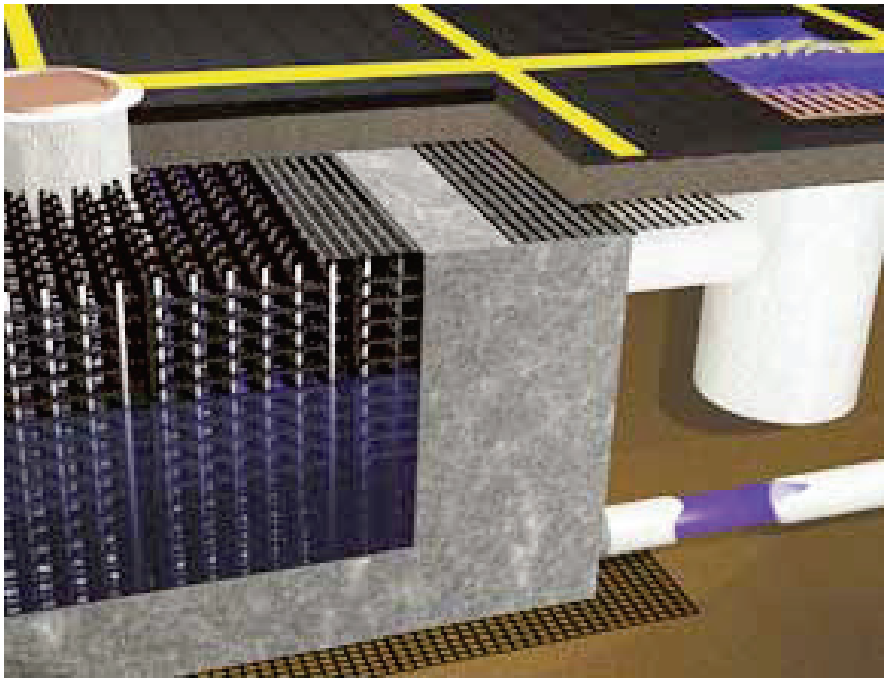
- Pervious Parking & Walking Paths





Green Streets **Practices**

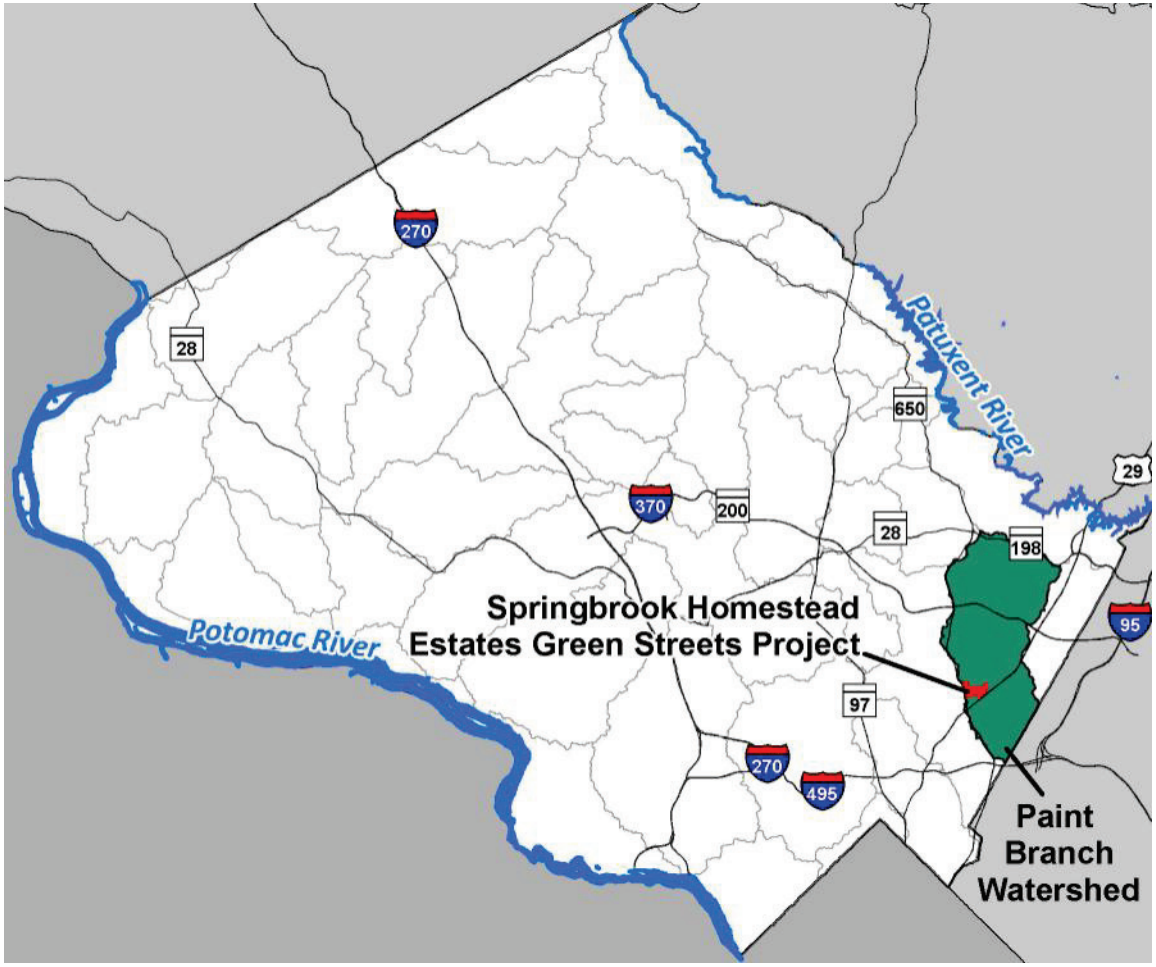
- Small Scale Underground Stormwater Practices
  - Rainstore ® Infiltration



Source: http://invisablestructures.com/rainstore3.html

Green Streets Springbrook/Homestead Estates

Project Location within County



Green Streets **Springbrook/Homestead Estates**

Study Area Description

- 170 ac. Project area
- 42 ac. Impervious area (24%)
- Anacostia River Sub-Watershed of the Washington Metropolitan Area Watershed (02-14-02-05); Tanley Road Tributary to Paint Branch
- Watershed Composition: Single Family Residential
- Bounded by MD 650 to west, US 29 to south, Jackson Road to north, Paint Branch to east
- Landmarks: White Oak Middle, White Oak Library

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Green Streets **Springbrook/Homestead Estates**

Existing Conditions/Neighborhood Background

- Residential single family homes developed in 1950's and 1960's
- No official existing SWM – Landscaping, grass channels
- Storm drain infrastructure – Fair condition, shallow
- Receiving stream condition – Stable; impaired health

Green Streets **Springbrook/Homestead Estates**

Existing Conditions/Neighborhood Background

Typical Sections of Roadway

Green Streets **Springbrook/Homestead Estates**

Key Physical Issues Driving Design

- Open vs. Closed Section Roadway
- Limited Existing Storm Drain (infiltration)
- Driveways (culverts)
- Trees (critical root zone)
- Utility Poles
- Steep Slopes (>6%)

Green Streets **Springbrook/Homestead Estates**

Preliminary Results

- 205 Proposed Practices
  - 66% Bioswale
  - 17% Rain Garden
  - 14% Bioretention
  - 2% Tree Box Filter
  - 1% Permeable Pavement/Removal
- Total Impervious Area Treated: 8.9 ac. (21% of 42 ac. total)
- Total Area Treated: 35.4 ac. (21% of 170 ac. project area)

Maintenance

- MCDEP will visit monthly (on average)

- We will:
  - Water plants, if needed
  - Replace plants as needed
  - Replenish mulch
  - Remove weeds
  - Remove sediment & trash