

Green Streets Franklin Knolls & Clifton Park

Environmentally Friendly Landscapes
for Healthy Watersheds



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Introductions

- Jennifer St. John

- Watershed Planner, Montgomery County Department of Environmental Protection (MCDEP)

- Paul Bogle

- Project Engineer, MCDEP

- Craig Carson

- Restoration Program Manager, MCDEP

- Kimi Schmidt

- Project Consultant, McCormick Taylor and Associates (MTA)

- Frank Kingsley

- Roadway Maintenance Project Manager, Montgomery County Department of Transportation (MCDOT) , Division of Transportation Highway Maintenance Section

Outline

- Stormwater 101
- What are Green Streets?
- Green Streets Project Selection
- Green Streets Goals
- Project Location
- Green Streets Practices
- Green Streets Opportunities
- Other Project Locations
- FAQs
- RainScapes Rebate Program



Stormwater 101

■ Impervious (hard surfaces)
= Increased runoff & pollutants

■ Reduced groundwater
recharge (infiltration)

■ Increased storm flows &
decreased base flows

■ Streams eroded, incised

■ Infrastructure threatened

■ Storm drain
systems convey
heated, dirty
water directly to
streams

■ Degraded aquatic habitat
& water quality



What are Green Streets?

- Environmental Site Design (ESD) or Low Impact Development (LID) located within street right of way areas.



- Examples:
 - Rain gardens
 - Bioretention gardens
 - Bioswales
 - Tree Box filters
 - Curb extensions
 - Pervious sidewalk
 - Permeable pavement

What are Green Streets?

- Stormwater runoff is captured and filtered in small landscaped areas that allow water to soak into the ground while plants and soils filter pollutants
- Replenish groundwater and stream baseflows, rather than sending polluted, heated water through pipes directly into our streams



- Create aesthetically attractive streetscapes that visually connect neighborhoods, schools, parks, and business districts



- Provide natural habitat



Green Streets Project Selection

- MCDEP plans Green Streets projects:
 - For priority areas identified in Watershed Studies or Restoration Plans, and/or
 - Concurrently with the Department of Transportation's (MCDOT's) planned roadway maintenance and/or rehabilitation work.



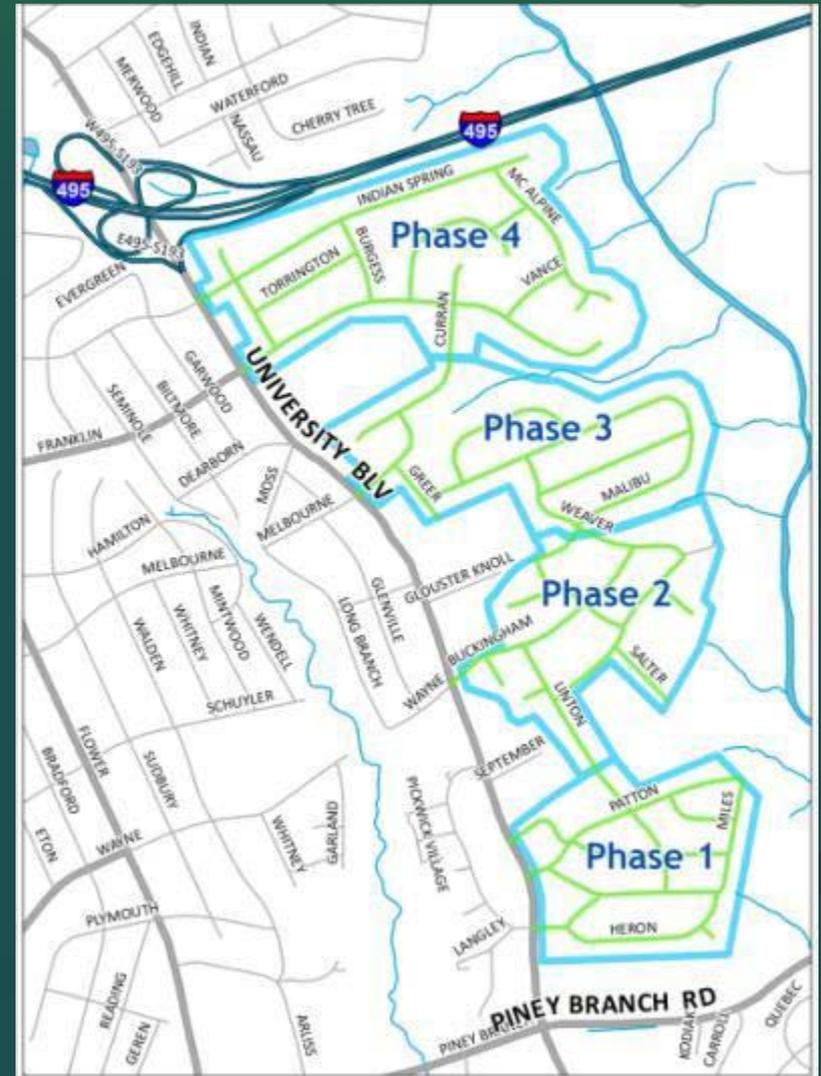
Green Streets Goals

- Maximize stormwater management to improve stream conditions
- Improve water quality treatment
- Encourage infiltration of runoff from roadways, parking lots, and other impervious surfaces
- Fulfill the requirements in the County's National Pollutant Discharge Elimination System (NPDES) permit (issued in 2010), which requires:
 - New stormwater management for 20% of existing impervious area that is currently unmanaged (~ 4,300 acres).
 - Meet goals set forth in the "Potomac River Watershed Trash Treaty"
 - Identify pollution sources and improve water quality in all county watersheds
 - Increase use of Environmental Site Design (ESD), or Low Impact Development (LID)



Project Location

- Due to the large project area, the project was divided into four phases:
 - Phase 1 – Clifton Park Village
 - Phase 2 – Montgomery Knolls
 - Phase 3 – Montgomery Knolls
 - Phase 4 – Franklin Knolls



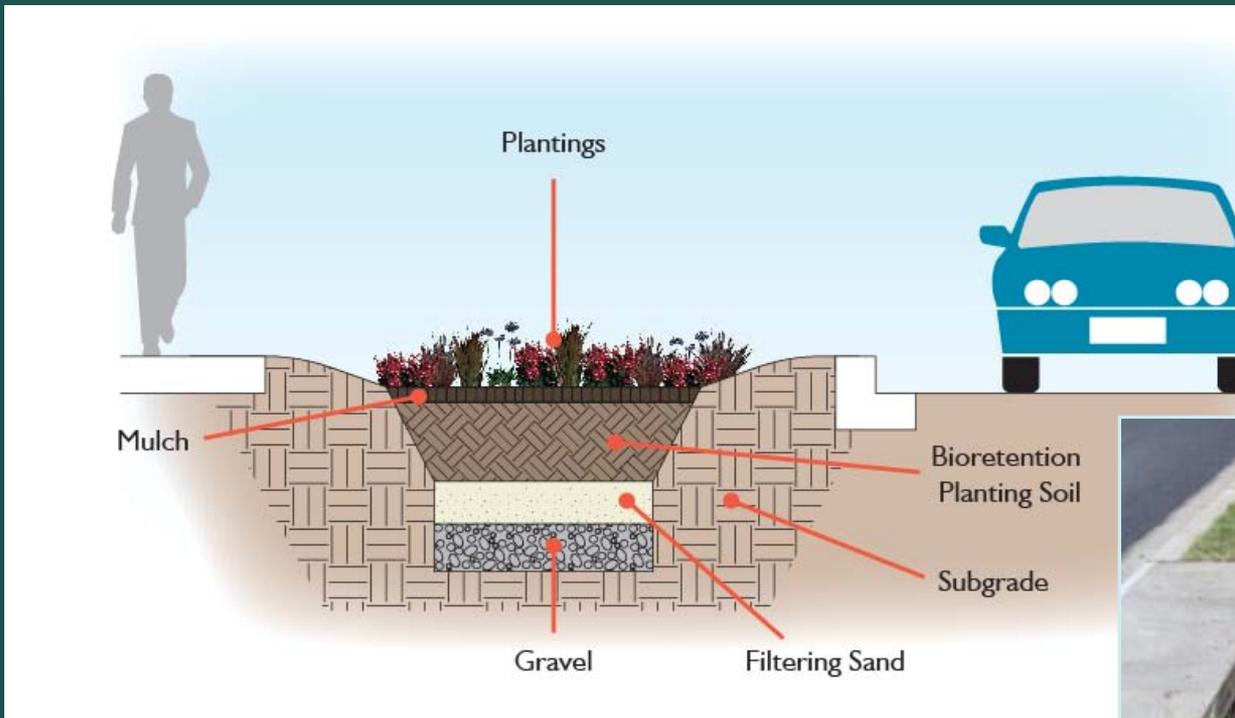
Green Streets Practices

- Potential Green Streets Practices:
 - Rain Garden
 - Bioretention Garden
 - Tree Box Filter
 - Permeable Pavement & Pavement Removal
 - Curb Extension
 - Grass Bioswale



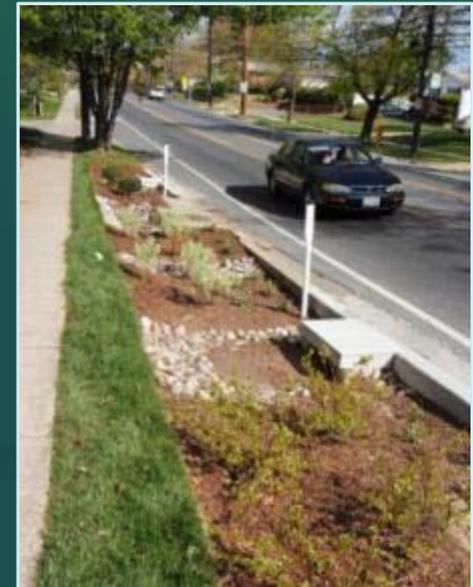
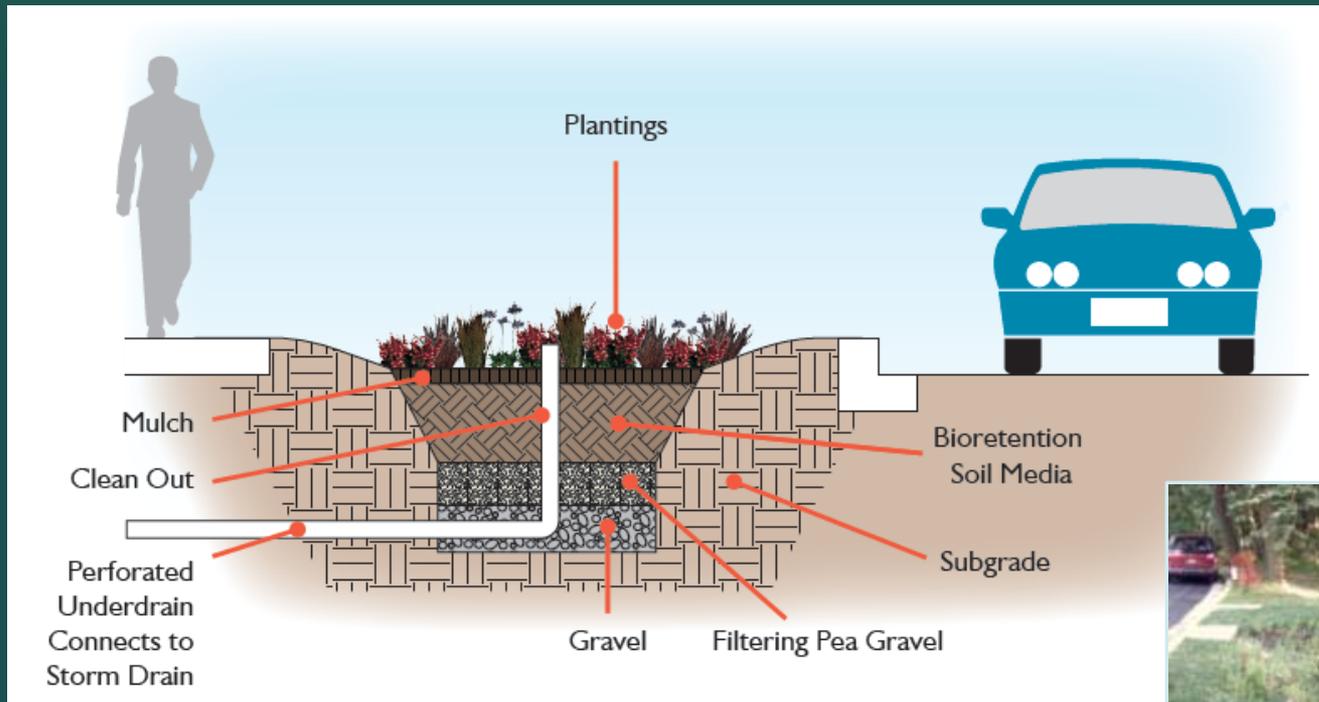
Green Streets Practices

■ Rain Garden



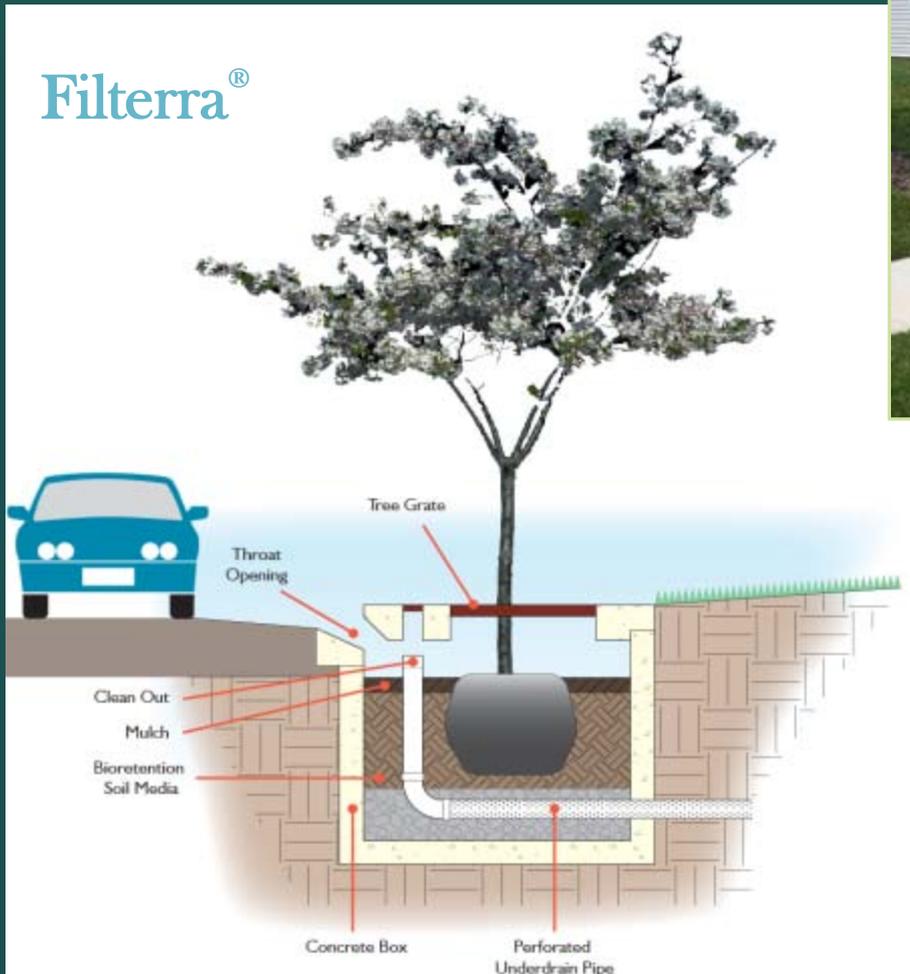
Green Streets Practices

■ Bioretention Garden



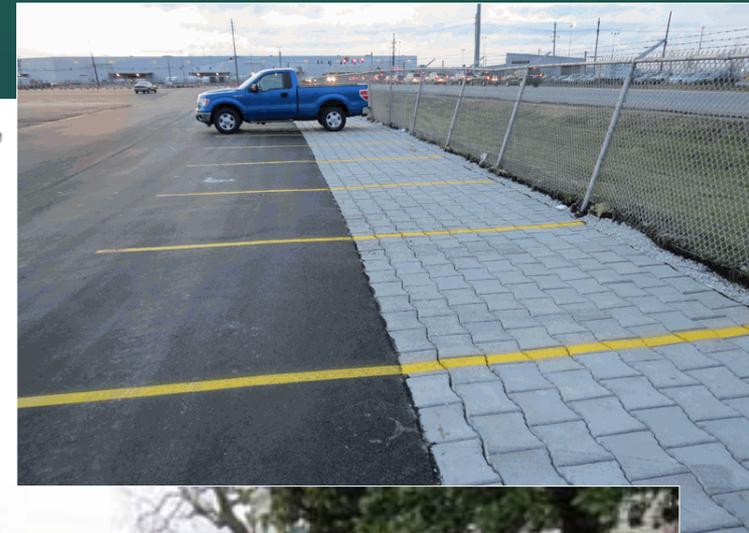
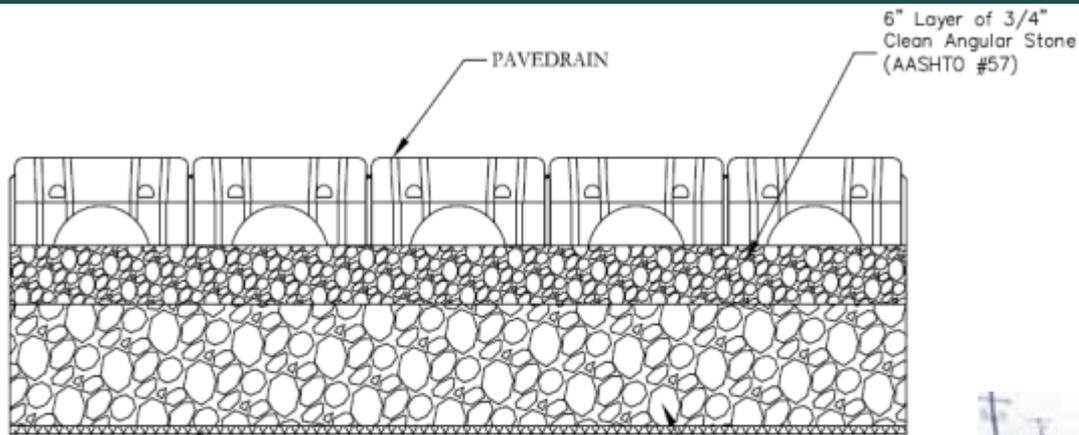
Green Streets Practices

■ Tree Box Filter



Green Streets Practices

■ Permeable Pavers & Pavement Removal



Green Streets Practices

■ Curb Extensions



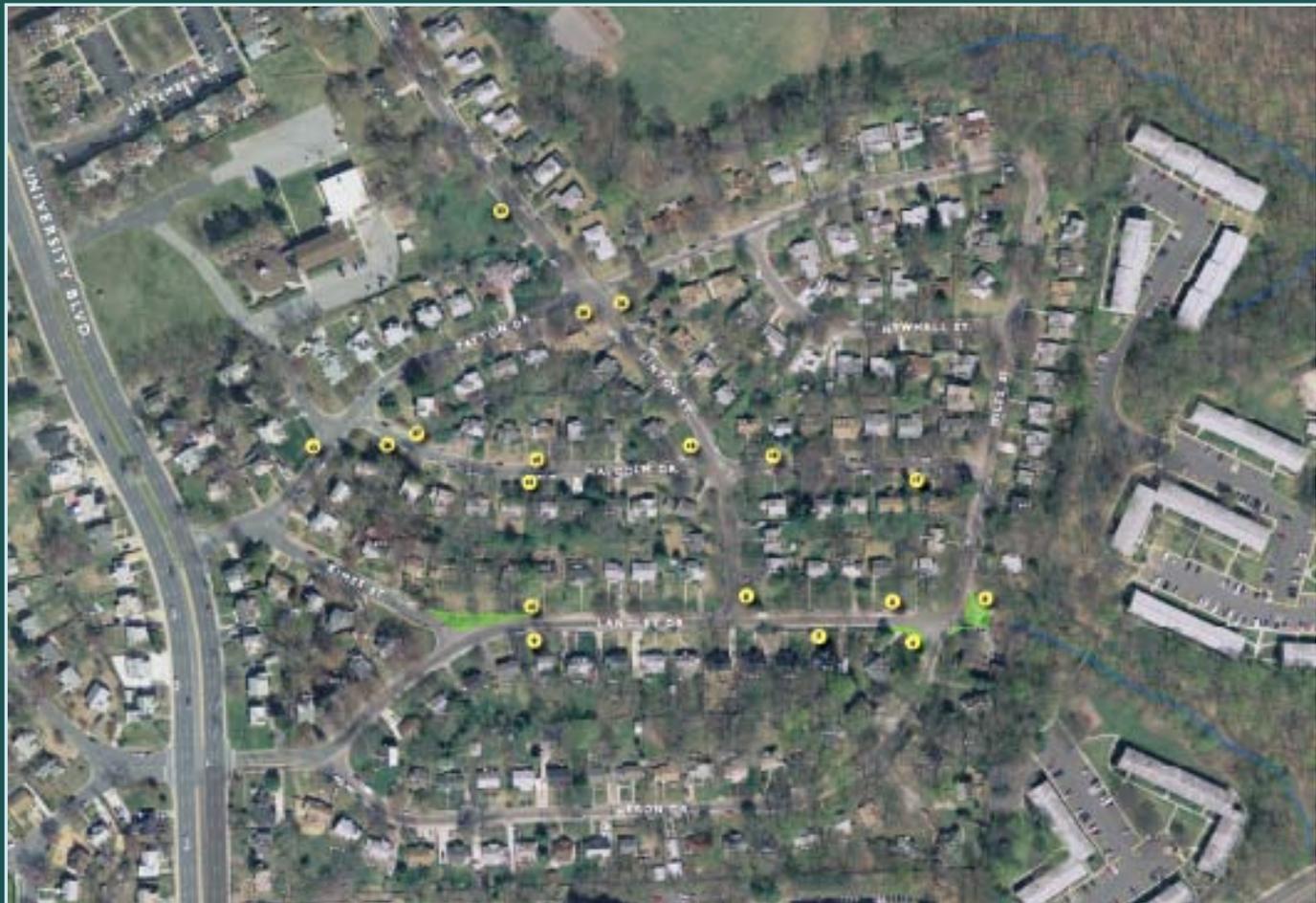
Green Streets Practices

■ Grass Bioswales



Green Streets Opportunities

- Phase 1



Green Streets Opportunities

■ Phase 2



Green Streets Opportunities

■ Phase 1 Concept Design



Green Streets Opportunities

■ Phase 1 Concept Design



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Other Green Streets Locations

■ Completed Projects:

Sligo Creek

- Arcola Ave
- Forest Estates Neighborhood

Lower Rock Creek

- Aspen Hill Rd (in front of library)



Arcola Avenue



Forest Estates Neighborhood



Aspen Hill Road

Other Green Streets Locations

■ In-Design or In-Construction Projects:

Sligo Creek

- Dennis Ave (In-Construction)
- Amherst Ave
- University Towers
- Sligo Park Hills Neighborhood
- Breewood Neighborhood

Northwest Branch

- Franklin Knolls & Clifton Park Neighborhoods

Paint Branch

- SHA ICC – Upper Paint (In-Construction)
- MCDOT – Rainbow Drive (In-Construction)
- White Oak (In-Construction)



MCDOT – Rainbow Dr
Under Construction



SHA (ICC) Kingshouse Rd
Under Construction



White Oak - Under Construction

Green Streets Locations

■ Construction Process



Before



During



After

Frequently Asked Questions

- How do the Green Streets practices work?
- Depends on type of practice, but generally:
 - Stormwater runoff from the roadway is diverted into an inlet opening in the curb, and is filtered through a mixture of highly permeable soils (sand, mulch, compost), then stored in an underlying gravel layer before percolating into the groundwater and/or entering into an underdrain that flows to the storm drain system.
 - When certain facilities are full after rain events, water may pond up to 6 inches before draining within 12 to 48 hours.



Frequently Asked Questions

- Who is responsible for maintaining Green Streets practices?
 - MCDEP is responsible for maintenance
 - MCDEP will monitor the practices regularly to make sure they are functioning properly. MCDEP will:
 - Ensure that plants are healthy
 - Water during initial plant establishment
 - Remove dead, diseased, or dying plants
 - Replace plants as needed
 - Replenish mulch
 - Regularly weed
 - Remove sediment & trash



Frequently Asked Questions

- How Can I Help?
 - Become a **Watershed Keeper** and help MCDEP by adopting projects on public property, such as Green Street practices, tree plantings, or trash clean ups.
 - Adoption of a project may require routing visual inspection, removing trash or debris, and weeding as necessary.
 - Volunteers will communicate with MCDEP staff any major issues with their adopted project, as instructed during project-specific training.



Frequently Asked Questions

■ How Can I Help?

■ RainScapes Rebate Program

- The County's RainScapes program promotes and implements projects on residential, institutional, and commercial properties to reduce stormwater pollution.



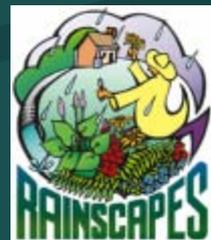
- Maximum Rebates: **\$1,200** residential **\$5,000** commercial/
institutional

■ RainScapes Techniques:

- Downspout Diversion
- Rain Barrels, Cisterns* (water re-use)
- Rain Gardens*
- Permeable Pavers*
- Green Roofs*
- Conservation Landscaping*
- Urban Tree Canopy*
- Pavement Removal*
- Dry Wells*
- Soil Reconditioning and Amendment

* Eligible for Rebate

Visit www.rainscapes.org for more information and to apply online.



Questions?

