Green Streets

Environmentally Friendly Landscapes
for Healthy Watersheds

Green Streets in Your Neighborhood

Department of Environmental Protection

Forest Estates

Introduction

THE BIG PICTURE...

The County plans to improve stormwater treatment on 4,300 acres by February 2015. That is a lot of ground to cover, and a variety of approaches are needed to meet this goal, given the extent of development in our County.

Just how big is 4,300 acres?

6.7 square miles. That's about three times the size of Takoma Park.

What are Green Streets?

Green Streets are roadway Low Impact Development (LID) designs that reduce and filter rainfall and pollutants that wash off surface areas (stormwater runoff), and enter our streams, degrading the water quality of our local streams and rivers. Green Streets is a County initiative that captures stormwater runoff in small landscaped areas that let water soak into the ground while plants and soils filter pollutants. Green Streets practices help to replenish groundwater and baseflows in our streams, rather than sending polluted and heated water through pipes directly into our streams. They also create aesthetically attractive streetscapes, provide natural habitat, and help visually to connect neighborhoods, schools, parks, and business districts.

Green Streets practices are constructed within the street right-of-way. Factors like utilities, existing drainage patterns, soils, tree impacts, the amount of runoff volume, and many other considerations are taken into account in the design of Green Streets.

Stormwater 101

As our neighborhoods were developed, the watersheds that support local streams were greatly altered. Buildings, roads, driveways and lawns have replaced much of the natural vegetation, forest cover, and soils that used to slowly filter rainwater. Development provides us with places to live, work, and play, but its hard surfaces prevent rainwater from soaking back into the ground and allow pollutants to enter local streams more easily. Rainwater falling on hard surfaces is directed to a storm drain where underground pipes transport it to local streams, along with pollutants it picks up along the way. In suburban areas, even lawns can act like a hard surface if they are highly compacted or do not drain well.

How Can I Get Involved

Many of the activities that you do on your property, in your yard, or in your neighborhood may directly affect the water quality of local streams. In addition to the amount of rainwater that may run off of your land, overfertilizing your lawns, car washing and car maintenance activities, if not properly done, can pollute runoff that flows to local streams. Preventing pollution at its source is part of the solution to ensuring that the County achieves healthy watersheds.

The County's RainScapes program promotes and implements projects on residential, institutional, and commercial properties to reduce stormwater pollution. The County offers technical and financial assistance to encourage property owners to implement eligible RainScapes techniques on their property. Visit www.rainscapes.org for more information and to apply online.

Collectively, we can help by participating in RainScapes and taking other easy everyday steps to prevent pollution. Go to www.montgomerycountymd.gov/protectyourwatershed for more information about what you can do to protect your watershed.

Techniques to Manage Stormwater Runoff

In the Forest Estates Neighborhood

How do Green Streets LID features work?

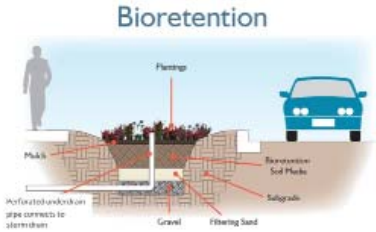
It depends on the type of practice, but generally, stormwater runoff from the roadway is diverted into an inlet opening in the curb, and is filtered through a mixture of highly permeable soils (sand, mulch, compost), then stored in an underlying gravel layer before percolating into the groundwater and/or entering into an underdrain that flows to the storm drain system. Runoff has an opportunity to cool down while the plants help absorb nutrients and microbes around the plant roots help to break down pollutants. When certain facilities are full after rain events, water may pond up to six inches before draining within 12 to 48 hours, depending on the type of facility and site conditions. Below are the three Green Streets practices used in the Forest Estates project.

Rain Gardens

- A shallow depression planted with native plants
- Typical profile has a three inch mulch layer, two feet of planting media, followed by one to two feet of gravel
- Collects, stores and allows rainwater from roofs, driveways, patios, or sidewalks to absorb into the ground
- Adds beauty to your lawn, with maintenance that varies based on the plants you select
- Requires adequate space and well-draining soils

Bioretention Gardens

- Very similar to a Rain Garden - a shallow depression planted with native plants
- Typical profile has a three inch mulch layer, two feet of planting media, followed by one to two feet of gravel
- Gravel layer has an underdrain pipe that is connected to a nearby storm drain to help drain the facility after rain events
- Collects, stores and allows rainwater from roadway to absorb into ground
- Adds beauty to your street with a variety of plants
- Requires adequate space, but does not require well-draining soils because it has an underdrain



Grass Bioswales

- Allow runoff to percolate into the ground, reducing the amount of runoff leaving the roadway
- Check dams can be used within a swale to slow the flow rate, promote infiltration, and create small, temporary ponding areas
- The vegetation covering the side slopes and channel bottom provides a filtration surface for the water and helps to reduce the flow velocity

Green Streets in Your Neighborhood

Frequently Asked Questions (FAQ)

Why did you create Green Streets in my neighborhood?

This project is part of the County's need to meet Federal and State mandates to control and treat stormwater runoff. The goal of this project was to reduce stormwater runoff, minimize pollution, promote infiltration, and restore stream conditions in the Northwest Branch, the Anacostia River, and the Chesapeake Bay.

When and where were the Green Streets practices installed?

The Department of Environmental Protection (DEP) installed 24 Green Streets practices concurrently with the Department of Transportation's roadway rehabilitation project from late November 2011 to April 2012. Landscaping was completed in late May 2012. The Forest Estates Green Streets practices are located within the County right-of-way areas (i.e. the grassy strip between the sidewalk and the curb).

Who is responsible for maintaining the Green Streets practices?

DEP is responsible for maintenance of the Green Street practices. DEP will monitor the practices regularly to make sure they are functioning properly. Our maintenance will ensure the plants are healthy; we will remove dead, diseased, or dying plants, replace plants as needed, replenish the mulch, regularly weed, and remove sediment and trash that accumulates in the facility. We know that the first two years are the most important when establishing the plants. Our plants are under warranty, and we will water and landscape to ensure the plants thrive during this critical time period.

How can I help?

The following are recommendations for residents to help maintain the Green Streets practices:

- For the initial plant and sod establishment, please keep large, heavy objects (such as garbage bags), off the newly planted sod. Cans and bags put out temporarily for trash collection day are okay.
- Please do not modify landscaping in any way. The plants are under warranty for two years and unauthorized alterations will void this warranty.
- When mowing the grass around the facility, try to keep grass clippings out of the practice because the clippings can clog the facility. Grass clippings, sediment, or debris left in the street and curb will also flow into the practice during rain events, so keeping these areas as clean as possible will help keep the practices working properly and looking nice.
- Please keep piles of leaves or snow out of the practices, as they can smother and crush the plants and clog the facility.
- Please try to walk around, and not through, the gardens, to protect the plants and prevent them from being trampled and compacting the soil.
- Please keep pet waste, herbicides, pesticides, and fertilizers out of the facilities – these materials pollute our streams.
- Communicate any major functional or aesthetic issues to the County. For example, if the facility takes more than 72 hours to drain after a storm, the plants are dying or dead, or if there is any damage to the practice.
- The County maintains these practices. If you have an interest in helping the practices in your neighborhood look good and function well, please call the Montgomery County Customer Service Center at 3-1-1 or send an email to AskDEP@montgomerycountymd.gov and ask for more information about our volunteer Stream Steward program.

How can I find out more information?

For more information, contact Jennifer St. John at:
jennifer.st.john@montgomerycountymd.gov
or 240-777-7740. Or visit our project webpage at:
www.montgomerycountymd.gov/restorationprojects
Click on Sligo Creek, then Forest Estates Low Impact Design Project.

Working Together - A Neighborhood Process

Project Selection
(November 2010)
- Project was selected based on the Department of Transportation's roadway rehabilitation schedule

Preliminary Design Phase
(February 2011)
- Opportunities were identified within the neighborhood based on available information and field visits by the County's project team

Concept Design Phase – 30 - 60%
(March 2011)
- Proposed designs were prepared utilizing detailed field survey and geotechnical information
- March 16, 2011 - Public meeting held to receive input from the community
- April 16, 2011 – Neighborhood walk held with Forest Estates residents
- Adjustments were made to design

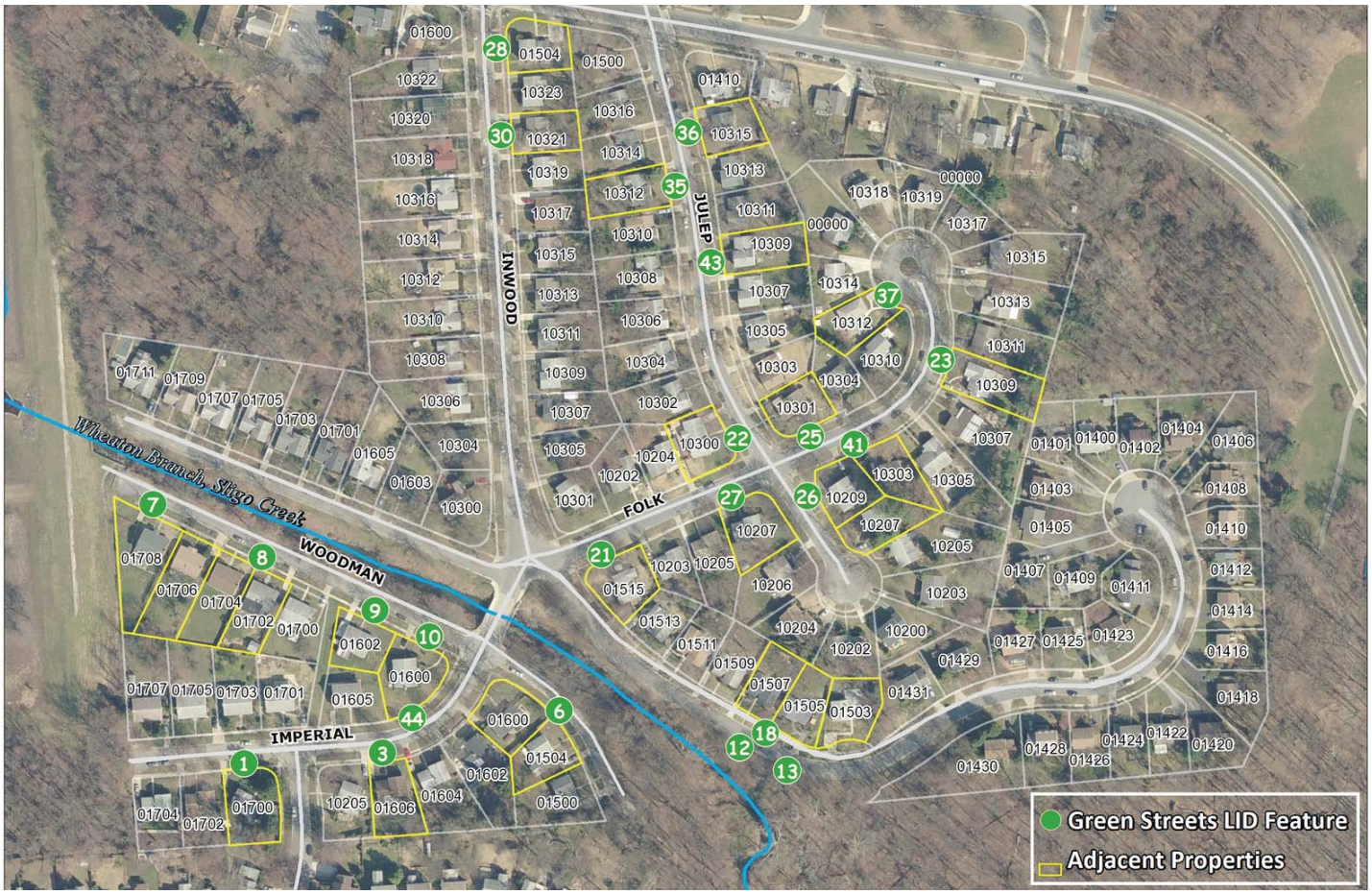
Design Phase – 60 - 90%
(September 2011)
- Further public outreach and design revisions
- September 16, 2011 – Mailing to update residents on project status and schedule
- November 7 and 14, 2011 – Targeted door to door visits to distribute information to adjacent property owners

Final Design and Construction
(November 2011 – May 2012)
- Designs are finalized
- Facilities are constructed
- Facilities are planted

Maintenance
(Starting June 2012)
- Final inspection
- As-builts drawings are accepted
- Facilities are entered into the MCDEP maintenance system
- Facilities are inspected and maintained on a routine basis

Green Streets in Your Neighborhood

Forest Estates Green Streets Facility Locations



ID	LID FEATURE TYPE	ID	LID FEATURE TYPE
1	Bioretention Garden	23	Rain Garden
3	Rain Garden	25	Bioretention Garden
6	Rain Garden	26	Rain Garden
7	Bioretention Garden	27	Rain Garden
8	Bioretention Garden	28	Rain Garden
9	Bioretention Garden	30	Rain Garden
10	Bioretention Garden	35	Rain Garden
12	Bioretention Garden	36	Rain Garden
13	Bioswale	37	Rain Garden
18	Bioretention Garden	41	Rain Garden
21	Bioretention Garden	43	Rain Garden
22	Rain Garden	44	Rain Garden