RiverSmart Homes: Adaptive Management and Program Results

Andrew Oetman, District Department of the Environment, District of Columbia
Overview...
5 Years. 6917 Installations.

- 4212 RiverSmart Homes
- **Total Installs**
  - Trees = 3,259
  - Rain Gardens = 495
  - Rain Barrels = 2,334
  - BayScaping = 707
  - Permeable Pavers = 122
- 3,381,868 Gallons Retained Per Year
- Compounded Total Gallons Retained Since Fall 2009: 38,662,202 Total Gallons Retained.
Impervious Area in the District of Columbia relative to Chesapeake Bay Watershed

Map of impervious area in Chesapeake Bay watershed

Map of impervious area in Washington DC
RiverSmart Home Goals

- Reduce quantity and improve quality of stormwater runoff
- Recharge groundwater
- Habitat diversity
- Promote water conservation
- Promote watershed stewardship
RiverSmart Homes

BayScaping

Rain Gardens

Permeable Pavement

Rain Barrels

Shade Trees
Rain Gardens

- 24” depth (18” soil mix and 6” ponding)
- 50 sq ft surface area
- Bioretention mix with 30% void space
- Downspout extension
- 355 gallons retention
- Or 475 square feet of impervious treated in a 1.2” rain
- Annual Retention 6,808 gallons
- Rebate option…up to $1,000
BayScaping

- Downspout disconnect
- Slope stabilization
- 120 square feet
- 32 gallons of plants
- Annual Retention 1,748 gallons
Rain Barrels and Cisterns

- 132 gallons
- 51” by 27 ¼ ”
- Copayment is $45
- Rebate option ($1 per gallon)
- Annual Retention 3,000 gallons
Shade Trees

- No limit to medium, evergreen and large trees
- $50 copayment
- Rebate option $100 or $50
- Annual Retention 1,294 gallons

**Ornamental:**
- Sweetbay Magnolia
- Dogwood
- Witchhazel

**Medium:**
- Yellowwood (Cladrastis kentukea)
- Black gum/Tupelo (Nyssa sylvatica)
- American Hornbeam (Carpinus caroliniana)
- Honey Locust (Gleditsia triacanthos)

**Evergreen:**
- American Holly (Ilex opaca)
- Southern Magnolia (Magnolia grandiflora)
- Deodar Cedar (Cedrus deodara)

**Large:**
- Sweetgum (Liquidambar styraciflua)
- Tulip tree (Liriodendron tulipfera)
- Sycamore (Platanus occidentalis)
- White Oak (Quercus alba)*
- Swamp White Oak (Quercus bicolor)
- Red oak (Quercus rubra)*
- American Basswood (Tilia Americana)
- Sagbark Hickory (Carya ovata)

- Only one ornamental per property allowed
Pervious Pavement

- Driveway draining to alley or street
- Patios with area drain
- Must remove existing impervious surface
- ICPI certified contractors
- Homeowner pays balance over $1,200
- Annual Retention 4,086 gallons*

*based on average project area of 209 sq ft.
How It Works

- Homeowner/Renter with Permission Signs up online
- DDOE Audits property and recommends LID
- Homeowner elects features to install
- Non-Profit Partners Install Features
- DDOE inspects a percentage of completed projects
DDOE refers homeowner to appropriate non-profit partner(s)

RiverSmart Homes Installations:

- Casey Trees
  - $50 copayment per tree
  - Tree audit
  - No limit to number of trees
  - Homeowners have 19 native species to choose from

- DC Greenworks
  - $45 copayment
  - Up to two per property
  - 130 gallon rain barrel manufactured by RiverSides (Toronto)
  - Includes a 30’ soaker hose

- Alliance for the Chesapeake Bay
  - $75 for a rain garden
  - $100 for BayScaping
  - $1200 for pervious pavers or concrete removal
Ultimately What Are the Results

- Historic Participation 2%-3%
- 60% of Homeowners Elect to Install 1.67 Features per home
- Weighted average annual stormwater retention per practice 2,255 gallons (*1.67) = 3,766 gallons retained per participant
Installation Rates

4,141 installations from 6,902 audits- 60%

*Data taken from May 2009 to June 2013

Follow-through rate of 60%
Targeted Watershed Installations

- Focused installation to have a greater impact overall
  - Look for streams that are more impacted
  - Historically low participation areas
  - Neighborhoods with historic flooding issues
  - Areas with high visibility to increase public education
RiverSmart Homes Applicants, Installed LID, and RSC Sites
Washington D.C.

- RiverSmart Washington
- Spring Valley
- Hickey Run
- Bloomingdale
- Alger Park
Targeted Watershed Campaign

Smaller lots size, Higher Home Density
- Permeable Pavers
- Green Roofing

Assess installation opportunities based site conditions.

Larger Lot Size, Lower Home Density
- Rain Gardens
- Trees, Landscaping
Hickey Run

- Hickey Run, Anacostia River
- 826 acres, 1200 homes
- Low Density, .68 acres/Home
- 2.5% = 30 homes, (3766*30) 112,980 gallons retained
- 10X Goal of 25% Participation = 300 homes, 1,298,000 gallons retained annually
Become a Hickey Run Hero...

(Sustainable DC Neighborhood Challenge: RiverSmart Homes Expanded)

Who: District Department of the Environment and Sustainable DC would like to help you install green features on and around your home!

What: Install rain gardens, BayScaping, rain barrels, green roofs, pervious pavers, and remove unwanted concrete driveways and patios.

In addition to our standard RiverSmart incentives, Hickey Run homeowners will be eligible to receive BONUS FUNDING ($1200) for one additional rain garden, BayScape or pervious paver project!

Where: If you live in the blue shaded area on the map, your home and/or business is likely eligible for several grants and rebates.

How: Sign up on our website for RiverSmart Homes: [http://green.dc.gov/service/riverrsmart-homes-application](http://green.dc.gov/service/riverrsmart-homes-application) Or, Contact us at HickeyRun.Hero@dc.gov or call 202-535-1738.

Why: By installing sustainable landscape features, you can beautify your yard, increase your property value, reduce basement flooding, reduce mosquitoes, and reduce overall energy use all while helping to restore Hickey Run!

Fill out the enclosed survey for a chance to win a FREE SOAKER HOSE!
Bloomingdale

- Bloomingdale Neighborhood, CSO
- 450 acres, 1100 homes
- Higher lot density, .41 acres/home
- 2.5% = 27 homes, (3766*27) 101,682 gallons retained
- 10X Goal of 25% Participation = 275 homes, 1,035,650 gallons retained annually
**Bloomingdale Targeted Incentives**

**dooe.dc.gov**  **anacostiaws.org**

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**RAIN BARREL/CISTERN PROGRAM**

Rain barrels and cisterns are effective at capturing localized stormwater runoff to help control full-scale flooding. Through the District’s Rain Barrel/Cistern Program, DOOE offers residents in the area indicated on the map the option of selecting a rain barrel or a cistern to help reduce the stormwater runoff that can flow from their properties into the streets and add to larger flooding problems. The Rain Barrel/Cistern Program is funded by DC Water.

*This program, originally offered to residents of Bloomingdale and LeDroit Park, has been expanded.*

**How it Works**

DOOE will meet with homeowners and:
- Perform a quick stormwater audit.
- Provide instructions on usage.
- Ensure that the correct size of rain barrel/cistern is installed.
- Provide information on how to maximize the performance of your rain barrel/cistern.

**To Apply**

Please send an email to wpd.intern@dc.gov or call (202) 671-3041 to schedule an appointment with DOOE.

For more information visit: dooe.dc.gov/riversmarthomes

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**Three Targeted Incentives for the Bloomingdale Sewershed available NOW:**

- **Green Roof Rebate ($15)**
  - Residential properties 2,500 sq. ft. or less, qualify for $15 per sq. ft. of new green roof installed.
  
  For more information go to: AnacostiAWS.org/green-roofs

- **Permeable Pavement Rebate ($10)**
  - Impervious surface removed and replaced with permeable pavement qualifies for $10 per sq. ft.
  - Installer must be an ICPI certified contractor
  - Maximum rebate of $5,000 per property

- **Impervious Surface Removal Rebate ($5)**
  - Impervious surface removed and replaced with vegetation qualifies for $5 per sq. ft.
  - Homeowner may perform work
  - Maximum rebate of $2,000 per property

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dooe.dc.gov/service/riversmart-targeted-incentives-bloomingdale-sewershed

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**DC Water**

**Office of External Affairs**

**5000 Overlook Avenue, SW**

**Washington, DC 20032**
Future Outlook

- Average of 1501 installations per year
- 898 Participating Homes
- Average weighted treatment of 3,766 gallons per year
- Total Annual Average Retention 3,381,868 Gallons
- Compounded Total gallons retained by 2025 216,000,296 Gallons*

10 Years Down the Road

Total Gallons Retained 177,338,094

Gallons Retained By Practice

Number of Installations
Questions?

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