

Montgomery County Recreation Department Administrative Office Stormwater Retrofit Project



MCRD Administrative Office
February 26, 2015



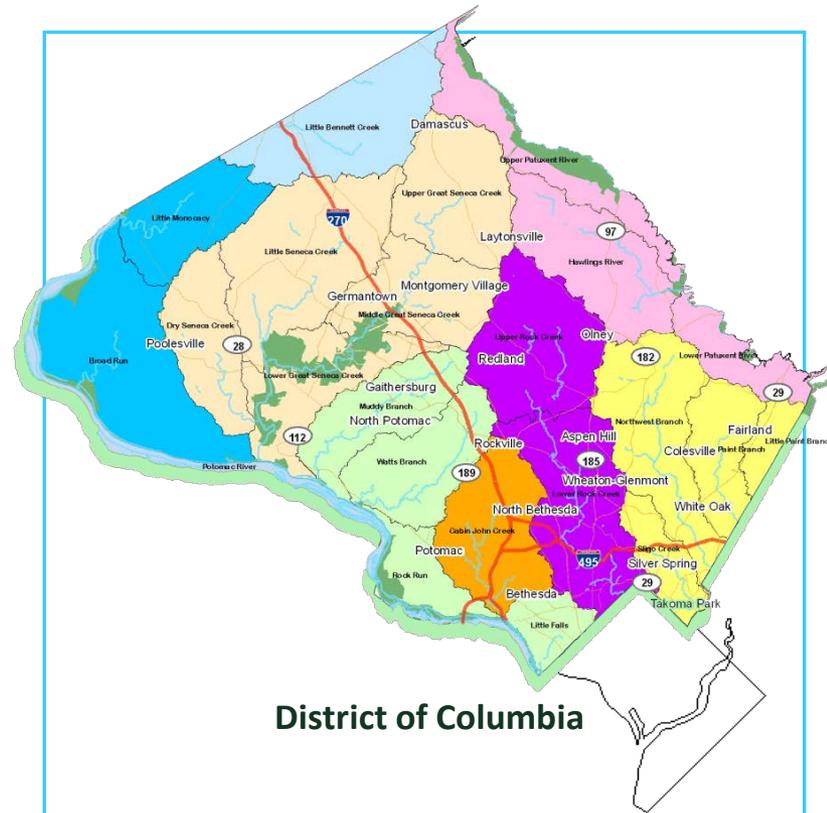
Introductions

- Doug Marshall
 - Watershed Planner, Montgomery County Department of Environmental Protection
- Ryan Gardiner
 - Project Manager, DEP Consultant (Brown and Caldwell)
- Lucia Noya
 - Project Manager, Rummel, Klepper & Kahl (RK&K)
- Kristianne Sandoval
 - Project Engineer, Rummel, Klepper & Kahl (RK&K)

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*



District of Columbia

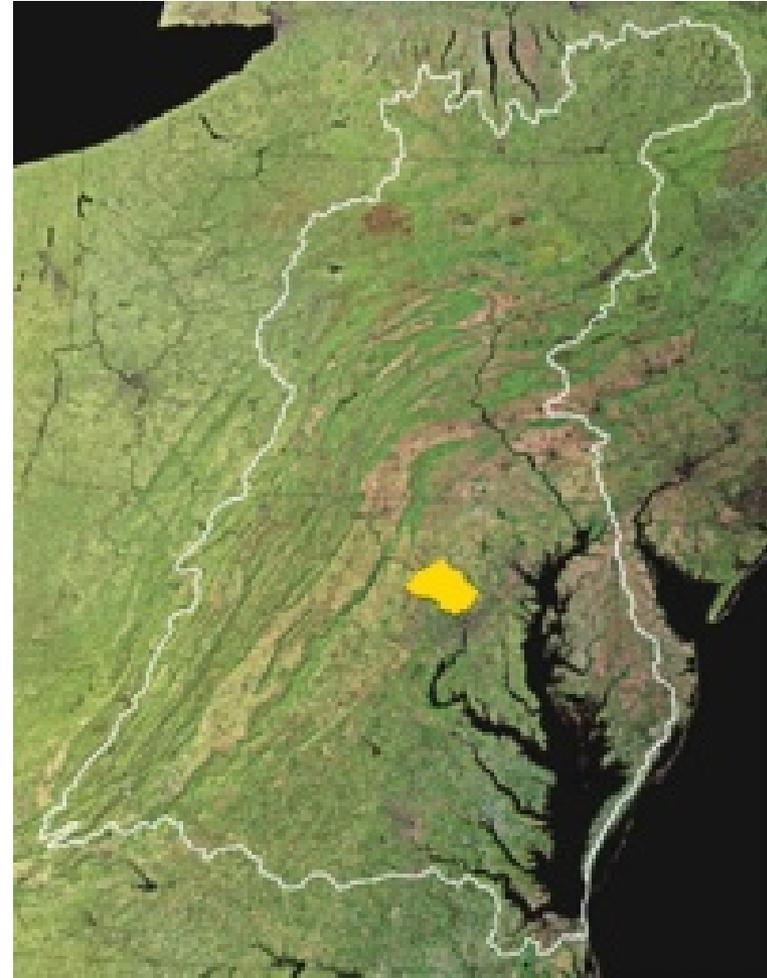
Impervious

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)

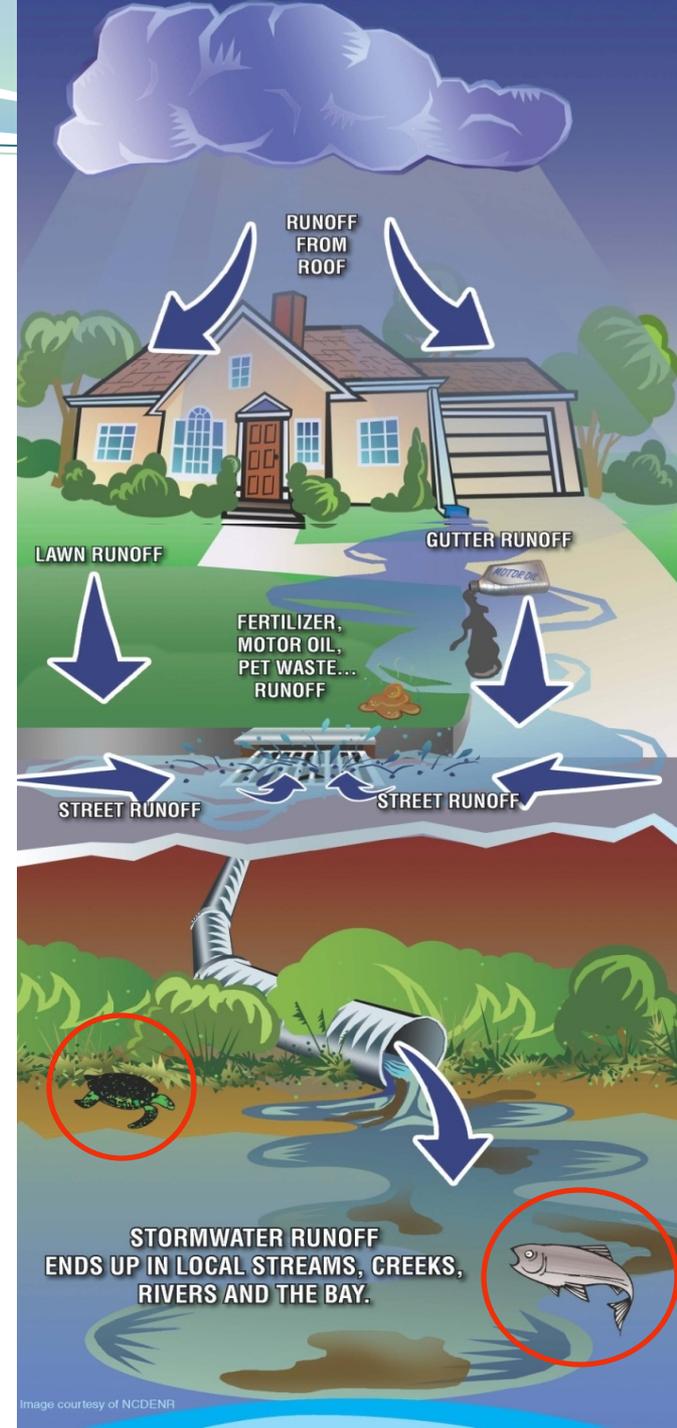


Watershed 101

What is Runoff?

- Water that does not soak into the ground becomes surface runoff. Runoff flows over hard surfaces like rooftops, driveways and parking lots collecting potential contaminants and flows:
 - Directly into streams
 - Into storm drain pipes, then streams
 - Into BMPs, then streams

Two Major Issues:
Volume/Timing of Runoff
Water Quality



Watershed 101

Urban Impacts to Streams



Stream in a Watershed with 8% impervious cover.



Stream in a Watershed with 20% Impervious Cover

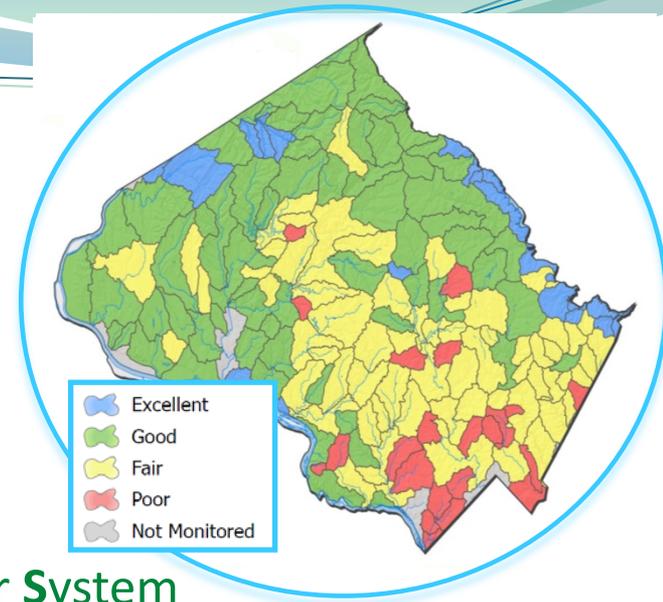


Stream in a Watershed with 30% impervious Cover.

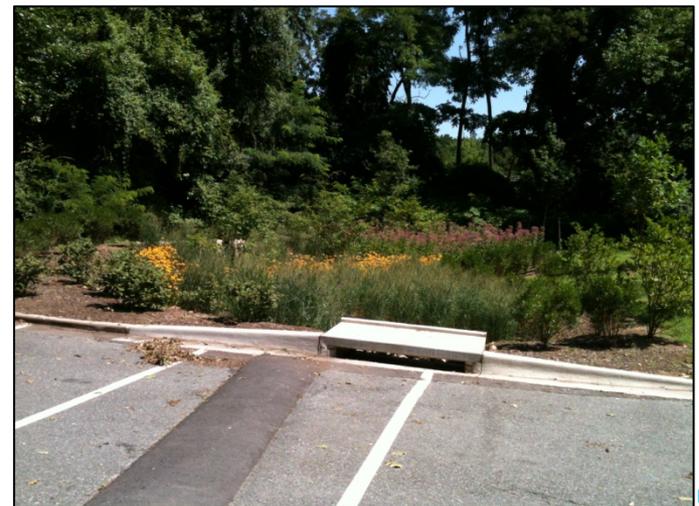
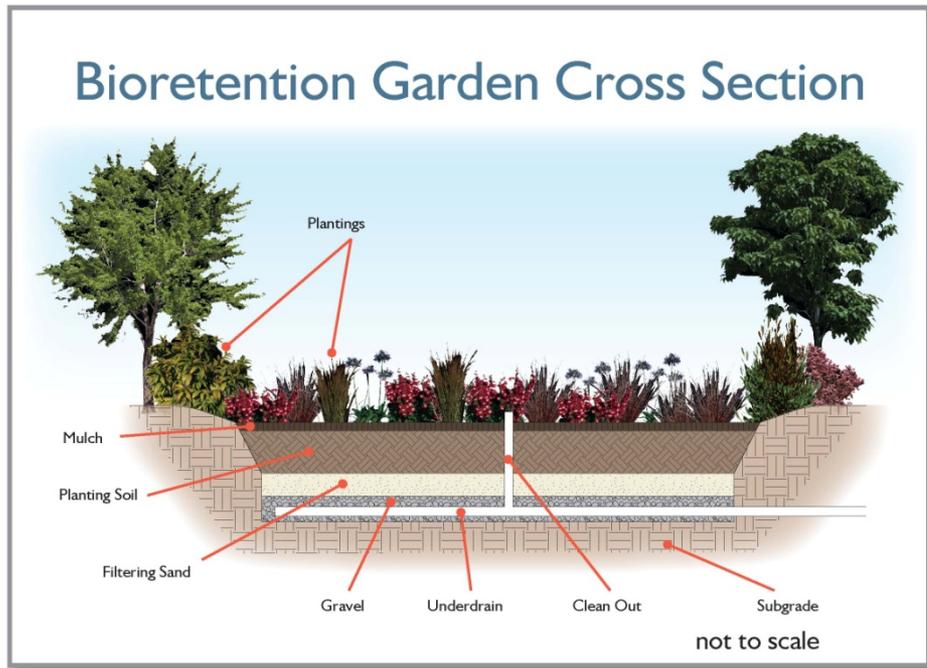
Watershed 101

What is the County doing to protect and restore our Streams?

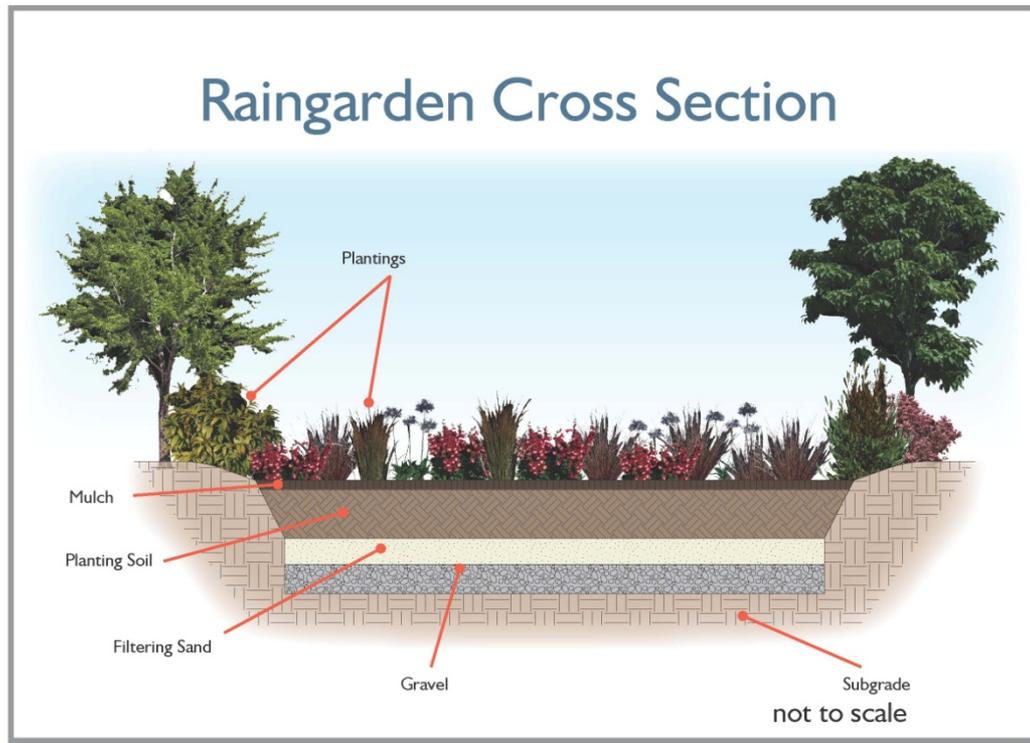
- Must meet regulatory requirements
 - Federal Clean Water Act permit program
 - MS4 Permit - Municipal Separate Storm Sewer System
- Add stormwater management for 20% of impervious surfaces or 4,292 acres (2,815 acres in design & 400 acres completed or under construction)
- County Program Goals
 - Restore 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



Examples of New Stormwater Management Practices Environmental Site Design (ESD)

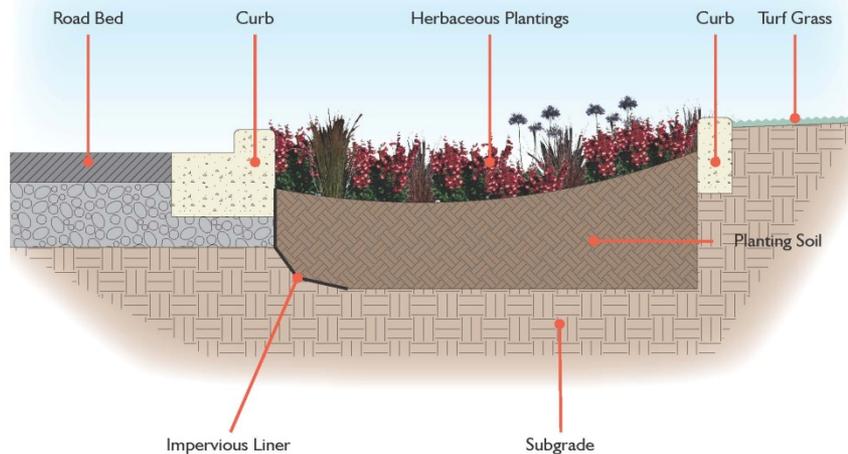


Examples of New Stormwater Management Practices Environmental Site Design (ESD)



Examples of New Stormwater Management Practices Environmental Site Design (ESD)

Curb Extension Filter Cross Section

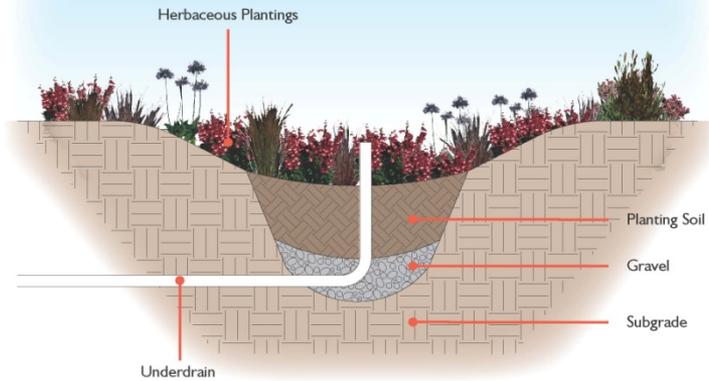


not to scale



Examples of New Stormwater Management Practices Environmental Site Design (ESD)

Bioswale Cross Section



not to scale

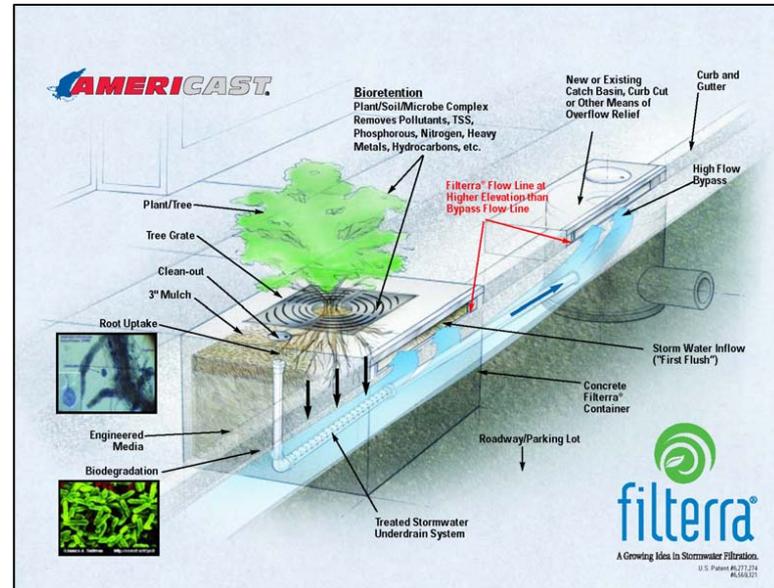
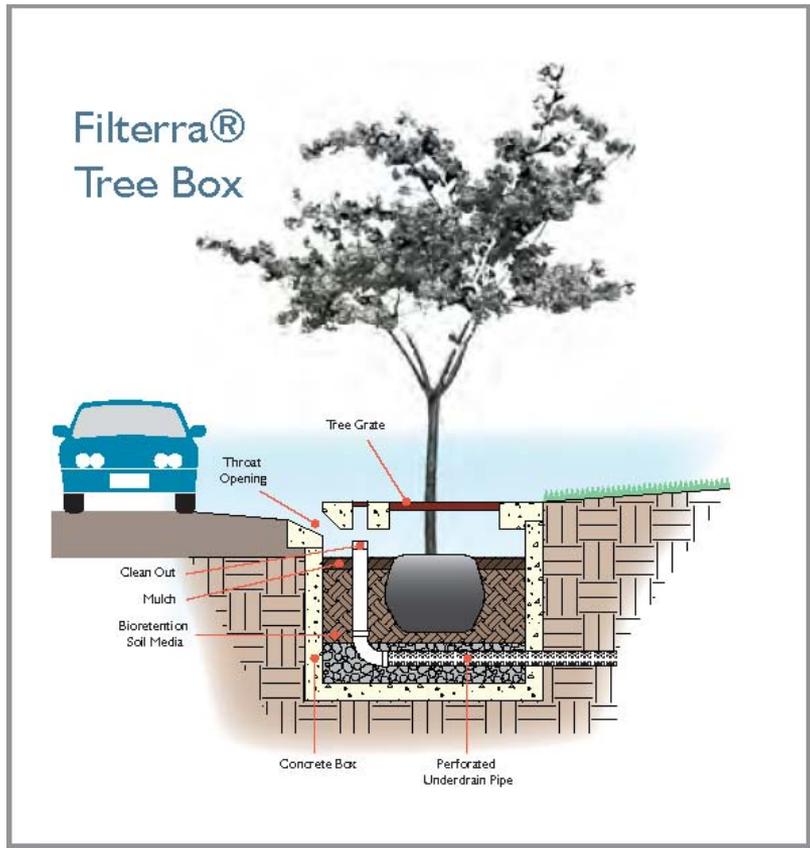


Examples of New Stormwater Management Practices Environmental Site Design (ESD)

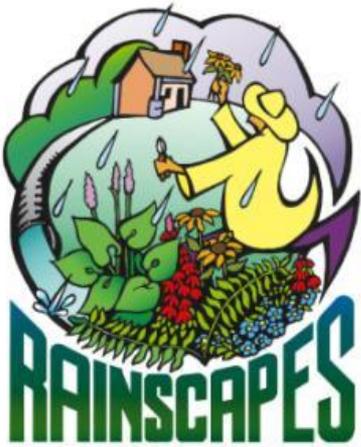
Green Streets



Examples of New Stormwater Management Practices Environmental Site Design (ESD)



RainScapes Techniques at home



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

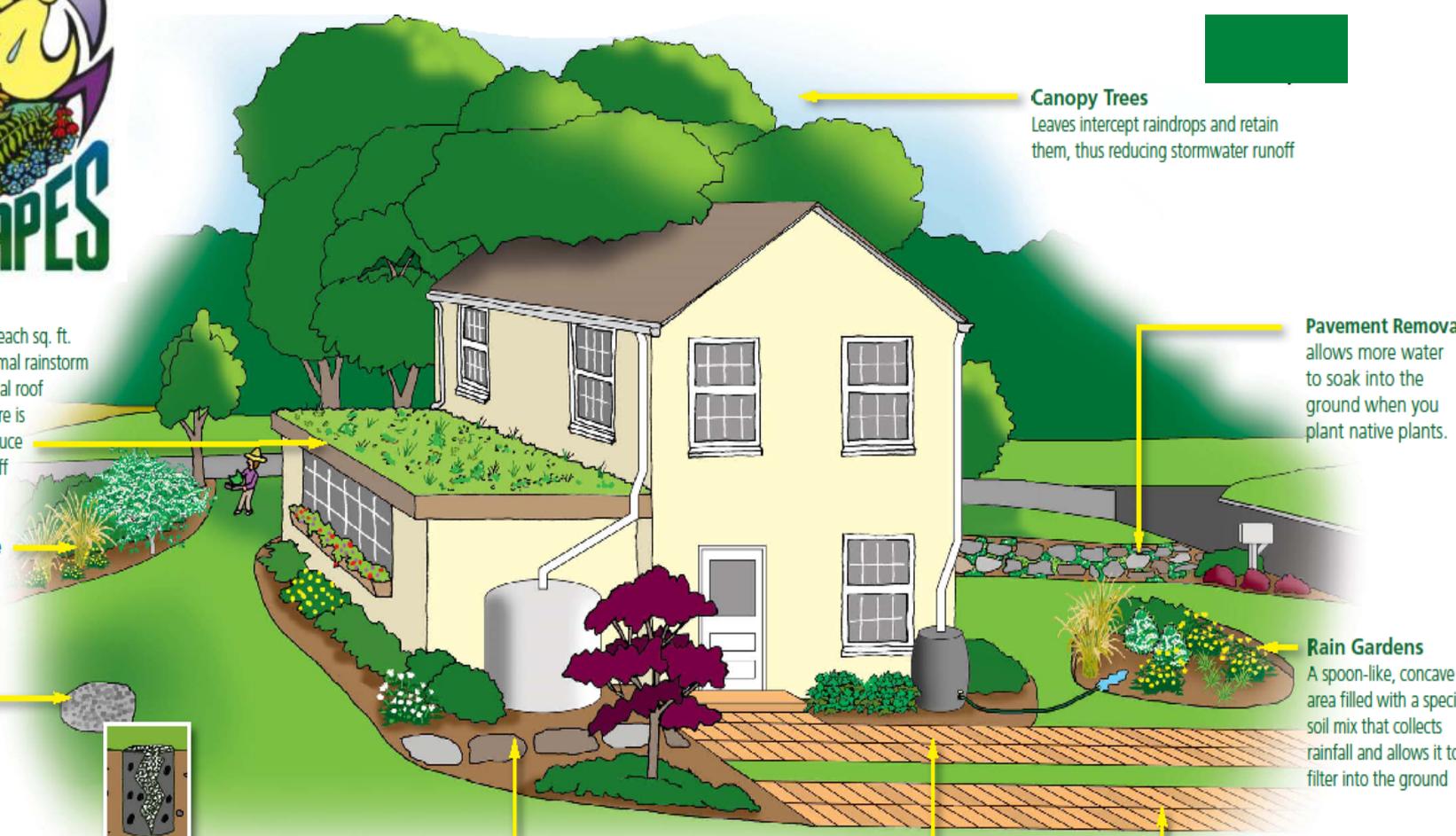
Larger than a rain barrel, cisterns perform the same water harvesting benefits and are no more aesthetically intrusive than an air conditioner.

Rain Barrels

collects and stores rain water from rooftops

Permeable Surfaces

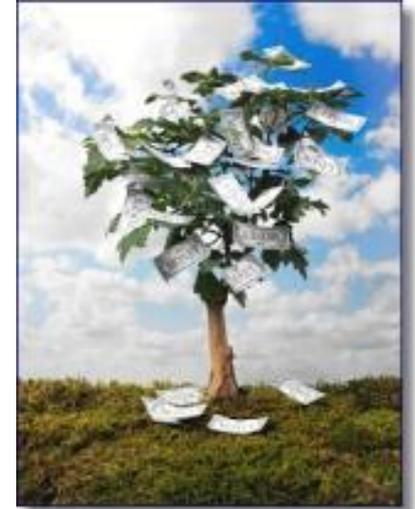
allow rainwater to rapidly infiltrate and enter the ground where it is naturally filtered



■ RainScapes Rewards

■ Incentive Program

- **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
- All County property owners **outside** of municipalities Rockville, Gaithersburg and Takoma Park are eligible for rebates



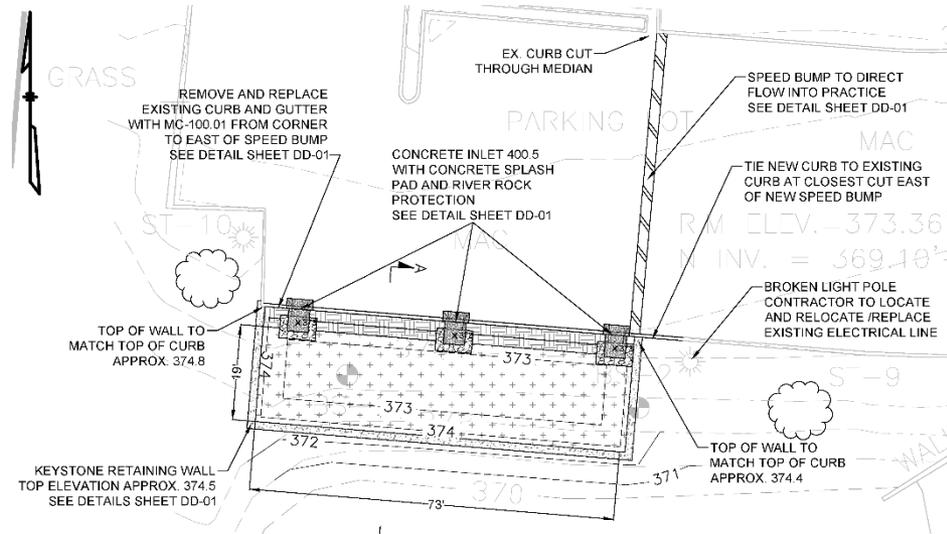
What's Being Proposed for Montgomery County Recreation Department Administrative Office?





Four Bioretention Facilities

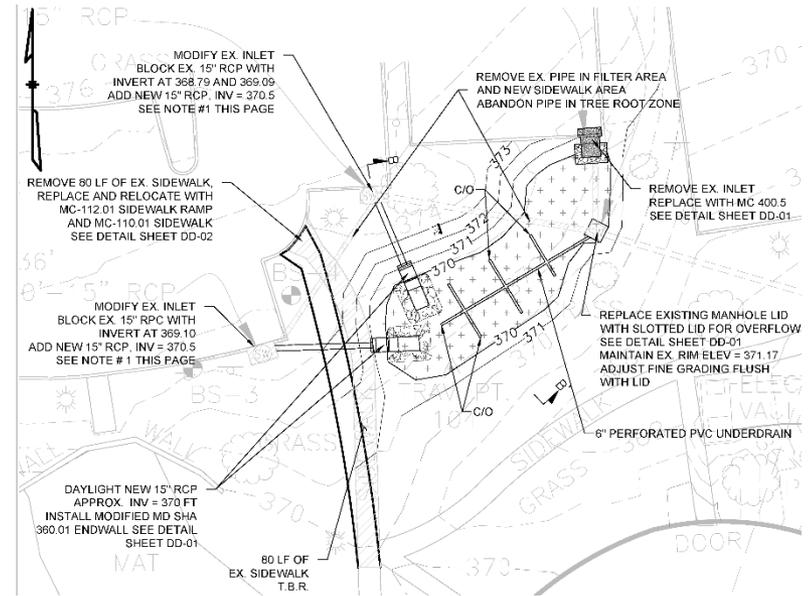
Bioretention #1



- Location: southern edge of parking lot, north of sports fields
- Keystone retaining wall border
- Treat and infiltrate parking lot runoff



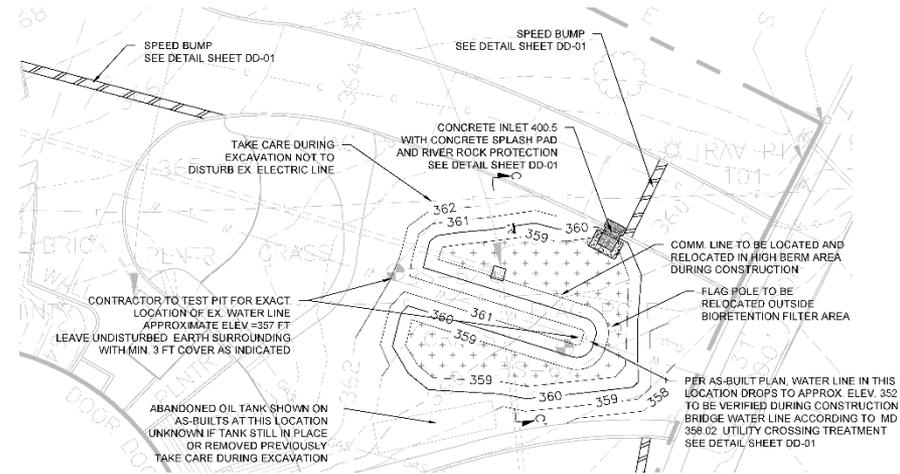
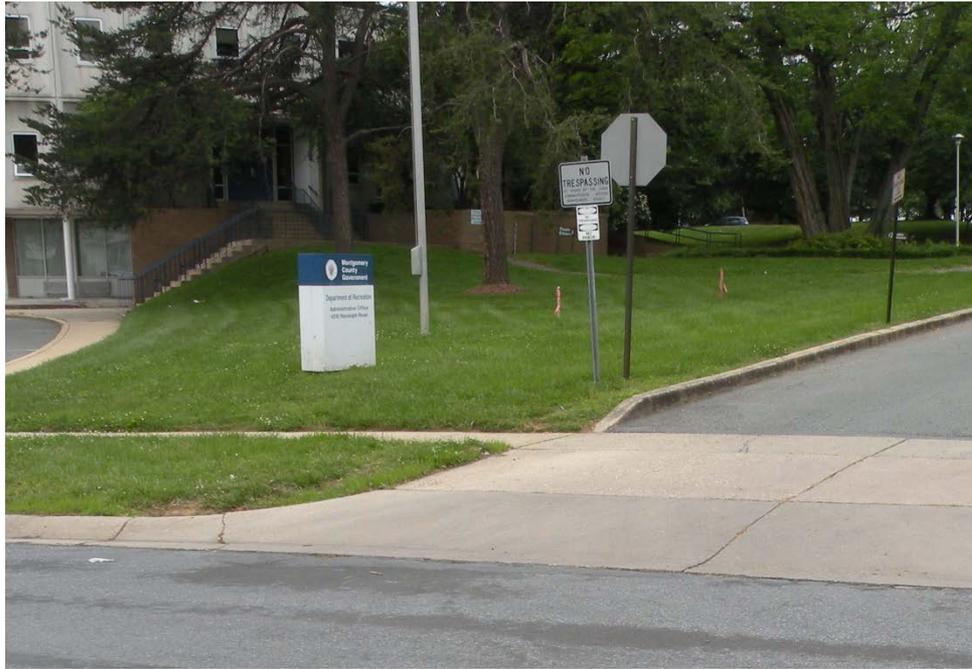
Bioretention #2



- Location: East of playground, South of parking lot
- New/modified curb inlets with river rock
- Re-align sidewalk (ADA compliant)
- Treat and infiltrate parking lot runoff



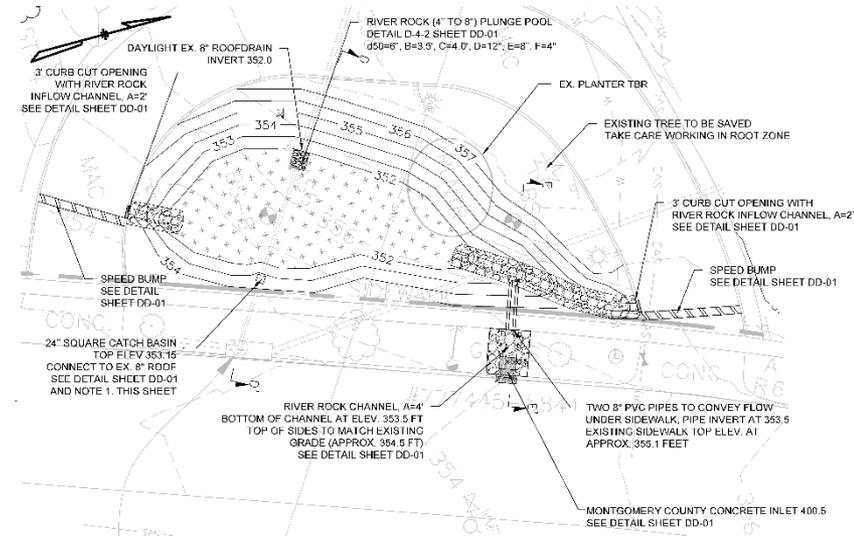
Bioretention #3



- Location: East of building between driveways
- Speed bump to direct runoff
- Designed around existing water supply line
- New curb inlet with river rock
- Treat and infiltrate driveway runoff



Bioretention #4



- Location: East of building, west of Bushey Drive
- Intercept pipe conveying rooftop runoff
- Curb cuts/inlets with river rock
- Treat and infiltrate rooftop, driveway, and roadway runoff

Questions?

FOR MORE INFORMATION:

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