

# LID/ESD Maintenance



MONTGOMERY COUNTY, MD  
DEPARTMENT OF ENVIRONMENTAL  
PROTECTION



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JANUARY 23, 2013  
LANDSCAPE PROFESSIONALS TRAINING

# Stormwater Facility Inspection & Maintenance



- **PROGRAM DESCRIPTION**
- **KEY MAINTENANCE ELEMENTS**
  - plant practices
  - non-plant practices
- **CONTRACTOR OPPORTUNITIES**



# INSPECTION AND MAINTENANCE PROGRAM

- Over 6000 Total BMPs
  - Over 2,600 Ponds, Sand Filter, Infiltration Trench
  - Over 2,500 underground practices (hydrodynamic, UG storage, UG filters)
  - Over 1,500 LID/ESD (bioretention, dry wells)
- Water Quality Protection Charge funds program



# MAINTENANCE RESPONSIBILITY

- Primarily property owner
- 2003 started shared maintenance program for residential property owners
  - County perform structural maintenance
  - Residential property owner responsible for non-structural
  - Mostly for ponds and undergr
- Easements
- Maintenance Agreements



# MAINTENANCE - GENERAL



- Approx. 2,000 BMPs maintained in 2011
- Recommend monthly trash removal for aboveground facilities
- Twice a mowing and vegetation removal for ponds
- UG cleaned frequently
- Vegetated LID facilities should be maintained quarterly

# INSPECTION PROCEDURE CONT'D

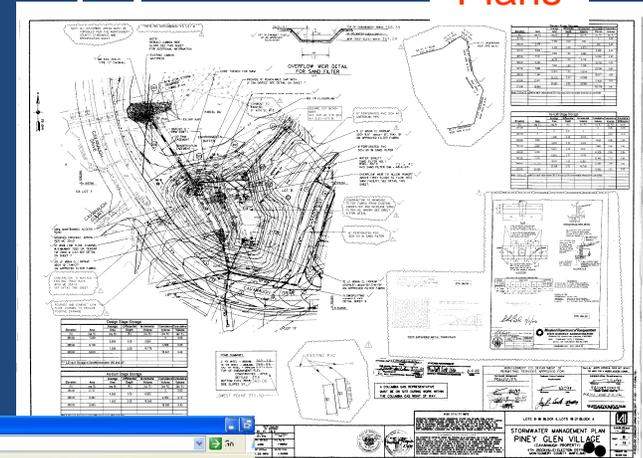
- Confined Space and Safety
- Developed inspection checklist for each type BMP
- Always supplement checklist with photos
- Keep checklist to one page
- Mobile ready



# FACILITY DATA

County maintains a database of all stormwater facilities, inspection reports, inspection photos, plans and asbuilts, etc.

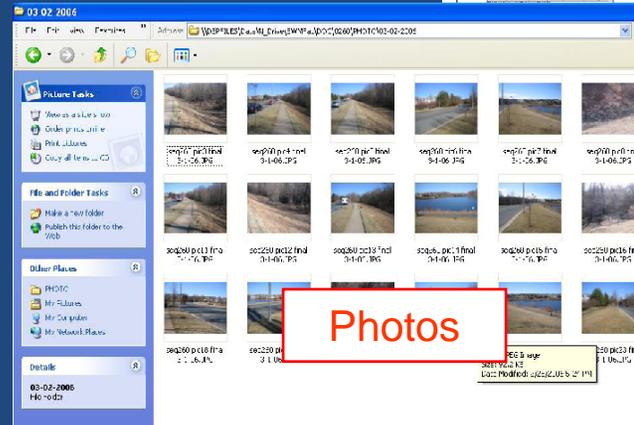
Plans



Facility Data

Infor EAM		List of Equipment Details	
Equipment	11411 [Crabbs]		
Type	Asset		
Class	PDWT [ Pond-w	Category	Installed
Department	SWM-DEP [Ow	Status	
Manufacturer			
Serial Number			
Location	INSP-REG02 [In		
User Defined Fields			
Sequence Number	259		
Sediment Control Permit #	9001180692		
Stormwater File Number			
Access Street	Redland Rd		
ADC Map Book	23406		
Owner	MCG		
Property Management Co.	DEP		
Property Street Address	Redland Rd		
Property City	Rockville		
Transfer Date			
Property Tax ID	01990426		
Property Description	Regional		
Easement Liber/Folio			
Covenant Liber/Folio			
Amended Covenant L/F			
GIS Drainage Area (Acres)			
Run Off Curve Number	95		
Permit Approval Date	07/01/1980		
Total Site Drainage Area	590		
MD North (MD_No)	475		
MD East (MD_E)	750		
State Watershed Number	02140206		
MOP Land Use/Cover	50		
Code			
MDE Structure Type	WP		
Property Zipcode	20855		
Remarks	Add GIS DA. AMB [Originally Maintained by WMD]; Structure_Details: High Hazard Dam		
03/30/2009 09:17		Montgomery County Government - Maryland	

Photos



# WORK ORDER

Infor EAM

Print Short WO Cards



<b>Work Order</b>	20969 (DEP)	Spring Mowing of DEP Owned SWF	<b>Scheduled Start Date</b>	04/01/2008			
<b>Status</b>	Work Completed			<b>WO Type</b>	PM		
<b>Parent Work Order</b>				<b>Class</b>	AGNS		
<b>Department</b>	SWM-DEP	Owned & Maintained by DEP	<b>Priority</b>				
<b>PM Code</b>	SPR-NSAG	Spring Non-Structural Maint DEP Owned SWF	<b>Warranty</b>	N			
<b>Cost Code</b>				<b>Safety</b>	N		
<b>Problem Code</b>				<b>Equip Criticality</b>			
<b>Reported By</b>				<b>Assigned To</b>	HSS		
<b>Project</b>				<b>Assigned By</b>			
<b>Standard WO</b>							
<b>Equipment</b>	11411 (DEP)	Crabbs Branch Regional					
<b>Location</b>	INSP-REG02 (DEP)	Inspection Region 2					
<b>Equipment Manufacturer</b>				<b>Estimated Hours</b>	1		
<b>Equipment Model</b>				<b>Estimated Cost</b>	0.00		
<b>Equipment Serial Number</b>				<b>Actual Cost</b>	0.00		
<b>Date Started</b>				<b>Date Completed</b>			
<b>Equipment Custom Fields</b>							
<b>Sediment Control Permit #</b>	9001180692						
<b>Sequence Number</b>	259						
<b>Property Street Address</b>	Redland Rd						
<b>Owner</b>	MCG						
<b>Property Management Co.</b>	DEP						
<b>Access Street</b>	Redland Rd						
<b>ADC Map Book</b>	23H06						
<b>Activities</b>							
<b>Activity</b>	<b>Trade</b>	<b>Est. Hours</b>	<b>People Req.</b>	<b>Task</b>	<b>Description</b>		
10	CMAINT	1	1	M-NS01	Fall/Spring Mowing, Debris removal, and Non-Structural Maint		
<b>Material List</b>							
<b>Activity</b>	<b>Store</b>	<b>Part</b>	<b>Description</b>	<b>UOM</b>	<b>Quantity</b>	<b>Price</b>	<b>Line Total</b>
10		AGB043 (DEP)	Removal And Disposal: Woody Debris	TON	1		
10		AGC083 (DEP)	Herbicide Application: Per 1,000 SF	MSF	1		
10		AGC085 (DEP)	Grass Mowing	AC	1		
10		AGC097 (DEP)	Animal Burrow Repair	EA	1		
10		AGG172 (DEP)	EQ Brush Chipper	DAY	1		
10		AGG173 (DEP)	EQ Chain Saw	DAY	1		
10		AGG187 (DEP)	EQ Weed Whacker or Weed Eater	DAY	1		

# INSPECTION PROCEDURES

- All inspections done by County contractor
  - Inspect each BMP at least every **three** years
  - Divided County into 3 areas
  - Over 1,500 inspections/year
- 
- ESD – will likely need more frequent inspections/monitoring – combined effort by County and property owner

# NOTIFICATION PROCEDURES



- The owner receives a maintenance **e-mail** and the **repair report/work order**
- The repairs must be completed within **60 days**.

# CONTRACTOR REQUIREMENTS

- A company that performs repair or maintenance on a stormwater management facility must:
  - Attend a training program approved by DEP
- Check DEP website for trained Contractor LIST:  
[www.montgomerycountymd.gov/stormwater](http://www.montgomerycountymd.gov/stormwater)
  - Click “Contractor Resources”

# CONTRACTOR REQUIREMENTS

- Follow Montgomery County Noise Control Ordinance
  - Call Mr. Steve Martin at 240-777-7746 for permit information
- SAFETY:
  - Follow Montgomery County and/or Maryland State Highway Administration Work Zone Traffic Control Standards
    - Call 240-777-2190 for permit information
  - Structural Work:
    - Maintain Confined Space Certification,  
<http://www.osha.gov>

# LID/ESD IN MONTGOMERY COUNTY

**1,532 ESD/LID Practices =  
24% of Stormwater Practices**

....and growing

# *PERMITTED* & RAINSCAPES LID/ESD IN MONTGOMERY COUNTY

Practice Type	Permitted	RainScapes Projects
Dry Wells / Micro-Infiltration	1,204	6
Bioretention / Microbioretention	207	2
Bioswale / Dry swale	42	2
Rain garden	26	82
Porous Pavement	24	15
Tree Box	19	0
Greenroofs	5	2
Rain Barrel	5	148
Canopy Trees	0	127
Pavement Removal	0	6
Conservation Landscape	0	72

# LID Site

## WATER FACILITIES KEY:

### SEDIMENT CONTROL FEATURES

- SEDIMENT TRAPS AND BASINS
- SEDIMENT FOREBAYS
- SUPER SILT FENCE

### WATER QUALITY FEATURES

- ON-LOT PRACTICES (see details below)
- MICRO BIOFILTRATION
- ROOFTOP DISCONNECTION
- BIOSWALE
- LANDSCAPE INFILTRATION
- PERMEABLE PAVEMENT
- SANDFILTER
- EXTENDED DETENTION (DRY) POND



# Maintenance Small On-Lot Stormwater Practices



## VEGETATED PRACTICES



**BIORETENTION,  
RAIN GARDEN,  
BIOSWALE**



**TREE BOX**



**GREEN  
ROOF**



**GRASS  
SWALE**

# ARE THEY DIFFERENT?



Bioretention



Micro-Bioretention



Landscape Infiltration



Rain Garden

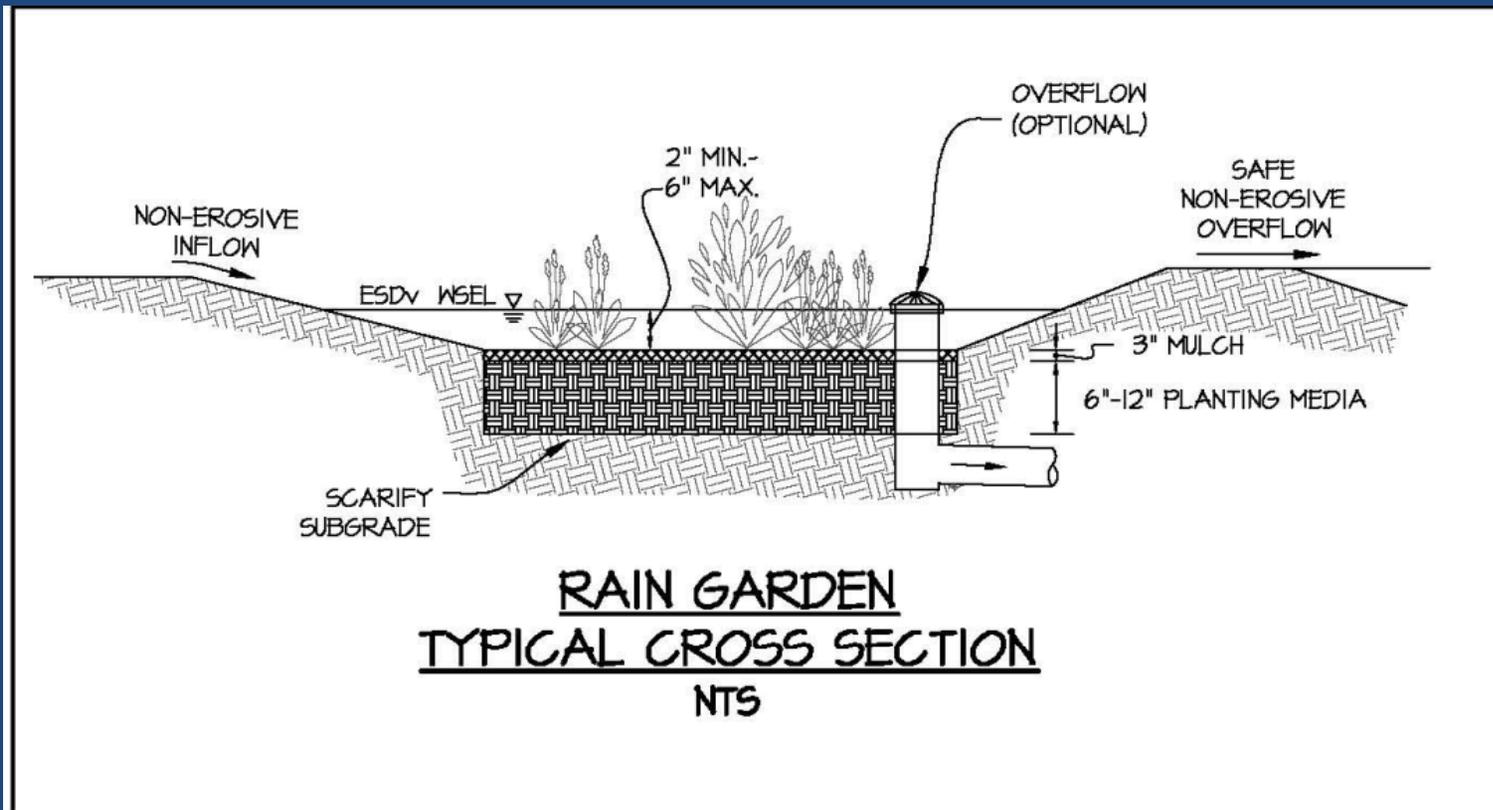
Drainage  
Area

Structural  
Components



INCREASING

# DEPARTMENT OF PERMITTING SERVICES STANDARD DETAIL



Vegetative Cover: Mature 85%

No Trees in Center

# MOST COMMON MAINTENANCE

- Removed weeds
- Remove sediment
- Repaired erosion, install riprap
- Replant
- Mulch to 3"



# ESD/LID MAINTENANCE ELEMENTS- PLANTED PRACTICES



- ✓ MOWING
- ✓ WEEDING
- ✓ EDGING
- ✓ LEAF REMOVAL
- ✓ SEDIMENT REMOVAL
- ✓ MULCHING

- PLANTS
- ✓ PRUNING
  - ✓ REPLANTING
  - ✓ WATERING
  - ✓ DIVIDING PERENNIALS

# MAINTENANCE RECOMMENDATIONS

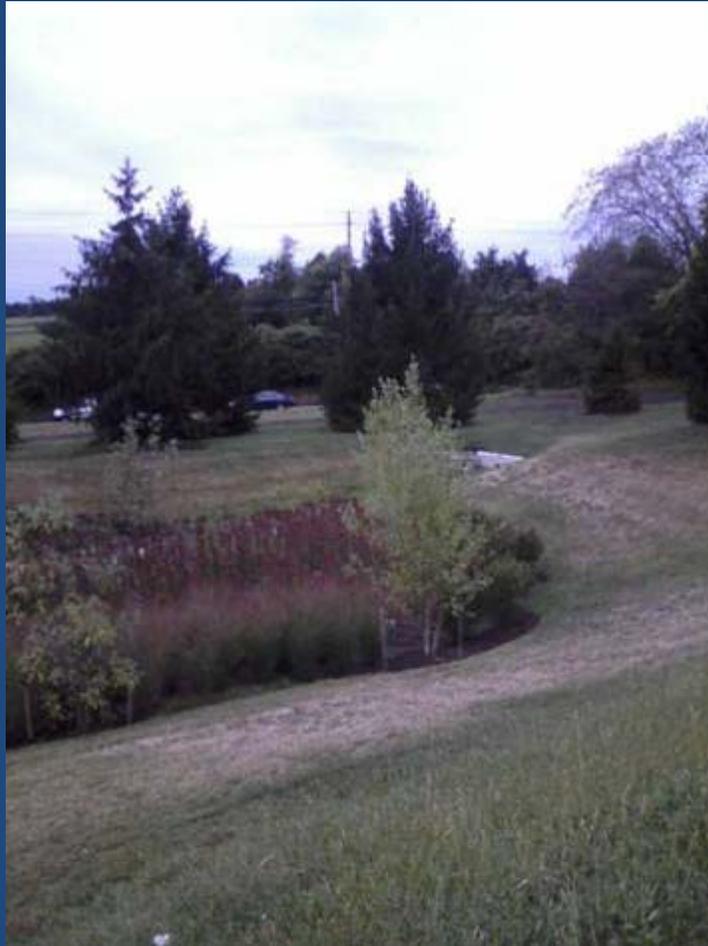
- Seasonal/Monthly Maintenance for bioretention

## Recommended timeframes for typical maintenance

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Remove Sediment Leaves, & Debris		✿			✿			✿			✿	
Remove Trash	✿	✿	✿	✿	✿	✿	✿	✿	✿	✿	✿	✿
Weeding				✿	✿	✿	✿	✿	✿	✿	✿	
Pruning		✿							✿	✿	✿	
Mulching				✿								
Watering, Replanting, Repair Eroded Areas	— — — A S N E E D E D — — —											

See the Vegetated Facility Maintenance Guidance Documents for additional information.

# Mowing



**ADJUST MOWER BLADE HEIGHT TO  
AVOID SCALPING**

# Mowing



NO GRASS CLIPPINGS

# Weeding

**NO PESTICIDE/  
HERBICIDE**



# MONTGOMERY COUNTY WEEDS

- Weeding
  - Keeping up with it as it goes will reduce the overall effort required
  - More dense planting will reduce problem
  - Careful selection of mulch source



# Rapid, dynamic systems – Maintenance timing MATTERS



Sligo Rec center Rain Garden  
Jan, April, May

# Edging



# LEAF REMOVAL



# LEAF REMOVAL

- Check and remove trash, organic debris and sediment from cell
- Remove leaves from cell
- Do not dump leaves into cell



## Recommended timeframes for typical maintenance

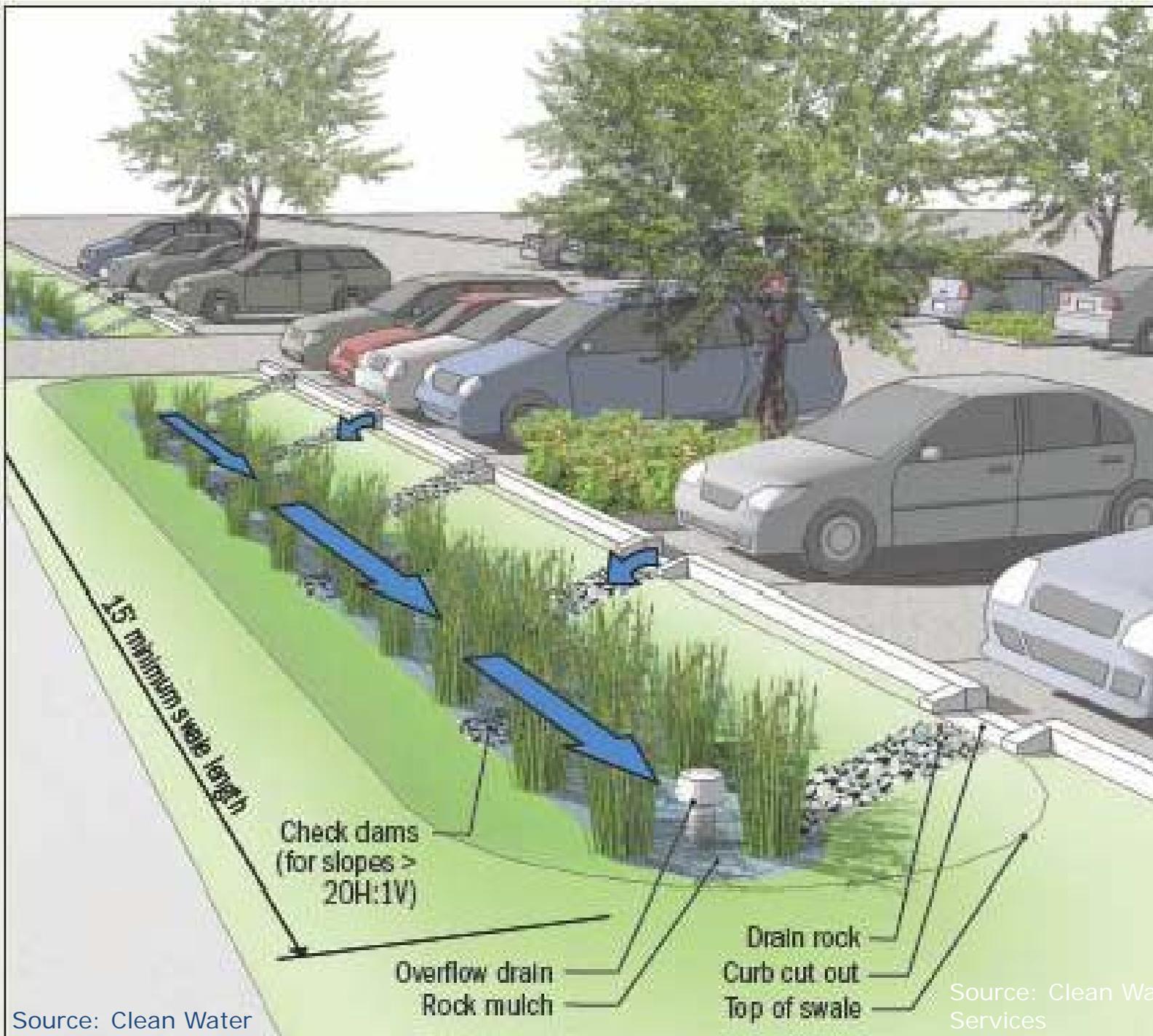
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Remove Sediment Leaves, & Debris		✿			✿			✿			✿	

# SEDIMENT, DEBRIS REMOVAL



# KEEP FLOW PATHS CLEAR





Source: Clean Water

Services



# PLANTS - PRUNING

- Prune/cut back plants and remove cut material from the cell by April
- SWITCH GRASSES – Prune Mid-March, not below 6 inches

## Recommended timeframes for typical maintenance

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Pruning												

# PLANTS - WATERING

- Water until established
  - weekly May – Sept if it hasn't rained
  - water the equivalent of one inch of rain
- After established, only water if no rain > 10 days



# PLANTS - REPLANTING

- Need access path through
- Natives
- Deer resistant
- Flood tolerant
- Drought tolerant
- Salt tolerant



# PLANTS – DIVIDE PERENNIALS



# PREVENT DAMAGE – DON'T PLOW SNOW INTO



# Maintenance Small On-Lot Stormwater Practices



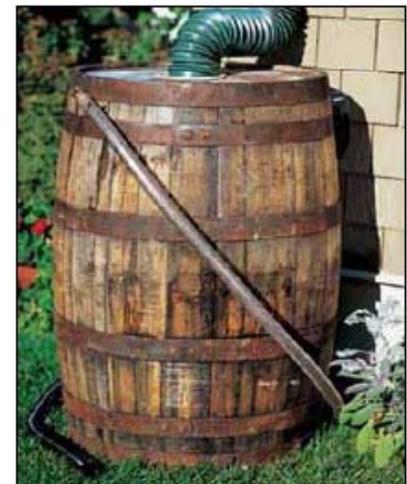
## NON-PLANT BASED PRACTICES



**PERMEABLE  
PAVEMENT**



**DRY WELLS**



**RAIN  
BARREL**

# Permeable Pavement Maintenance



## How to maintain your POROUS PAVEMENT

Montgomery County, Maryland Department of Environmental Protection Stormwater Facility Maintenance Program

### What is porous pavement?

Porous pavement allows water to soak through to the underlying soil which helps improve water quality and minimize flooding in our local streams. There are three types of porous pavement:

1. Porous asphalt
2. Porous concrete
3. Permeable interlocking pavers

Although porous pavement can replace many traditional asphalt and concrete surfaces, in Montgomery County it is most commonly found in walkways, parking lots, driveways, and patios.



Water draining through pervious concrete



Signs help prevent future repairs



### Actions you can take

#### Do...

##### Seasonally

- ✓ Inspect your porous pavement after storms to make sure that rainwater properly drains through the material.
- ✓ Pressure wash as needed to alleviate clogs in the pavement. Be sure to remove any washed out sediment.
- ✓ Inform contractors working on your property of the location of porous pavement areas to prevent damage. We recommend adding a sign that identifies the surface as porous.
- ✓ For permeable interlocking pavers, replace/replenish the top layer of stone between joints with new clean stone after sweeping, vacuuming, or power washing.

##### As needed

- ✓ For commercial parking lots, use a vacuum sweeper at least twice per year to remove sediment and debris.
- ✓ Remove leaves from surfaces during the fall.
- ✓ Remove snow with a rubber tipped shovel/plow or keep plow tip 1 inch above the surface. The remaining snow will melt and drain through the surface.

Porous pavement needs regular maintenance to continue to filter rainwater.  
**Removing Leaves and Tree Debris Sweeping**

#### Don't...

- ✗ Don't stockpile mulch, sand, silt, soil, or yard waste on porous pavement.
- ✗ Don't pile snow that contains sand or salt on your porous pavement.
- ✗ Don't replace vehicle fluids or wash your car over porous pavement.
- ✗ Don't apply sealants over porous pavement or repair the area with materials that do not let water pass through.
- ✗ Don't let large vehicles regularly drive on or turnaround on porous surfaces.
- ✗ Don't apply sand for winter snow removal on porous pavement or on adjacent areas, such as sidewalks, that may drain onto the porous pavement.

**Who is responsible for this maintenance?**  
As the property owner, YOU are responsible for all maintenance of your porous pavement.



# PERMEABLE PAVEMENT MAINTENANCE



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Montgomery County, Maryland | Department of Environmental Protection | Stormwater Facility Maintenance Program

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**Removing Leaves and Tree Debris Sweeping**

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# NEW WHITE OAK REC CENTER



# Permeable Pavement Maintenance

Pavement Type	<i>Schmutzdecke</i> Depth	Preventive Sweeper	Restorative Sweeper
Concrete Grid Pavers filled with sand	0.5 Inches	Mechanical	Mechanical
PICP filled with aggregate	1.5 to 2.0 Inches	Regenerative Air	Vacuum
Pervious concrete	If Sand: < 1 Inch	Regenerative Air	If Sand: Vacuum?
	If Silt/Clay: > 3 Inches		If Silt/Clay: Not known
Pervious asphalt	If Sand: < 1 Inch	Regenerative Air	If Sand: Vacuum?
	If Silt/Clay : > 3 Inches		If Silt/Clay: Not known



# Permeable Pavement Maintenance



## Recommended timeframes for typical maintenance

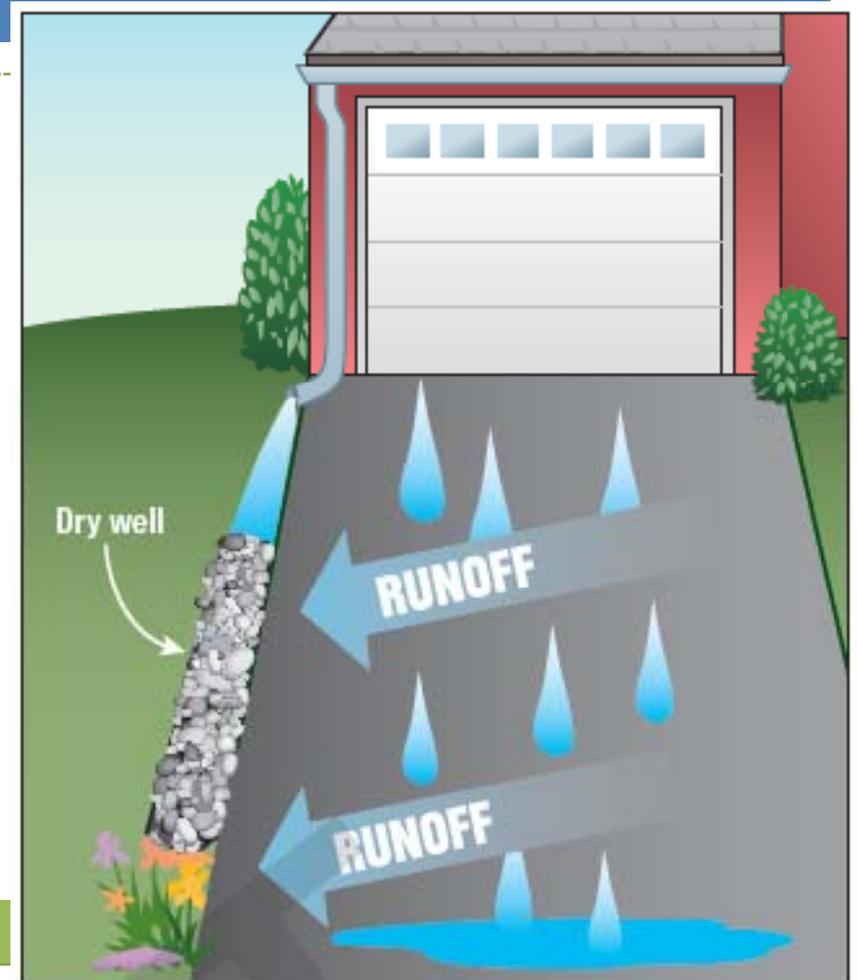
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Sweep/ Vacuum to Remove Leaves/Debris					✿						✿	
Pressure Washing												
Debris* Removal	✿	✿	✿	✿	✿	✿	✿	✿	✿	✿	✿	✿

\*Debris includes acorns, seeds, branches, grass clippings, sand/sediment, cigarette butts, trash, etc.

- Do not seal or repave with non porous materials
- No Winter Sand

# Dry Well/Micro-Infiltration Maintenance

- **TYPICALLY  
LOCATED 20 FT  
FROM HOUSE**
- **SURFACE RUNOFF  
VS. DIRECT  
DOWNSPOUT  
CONNECTION**



# DRYWELL MAINTENANCE

- Maintenance: Pipes, gutters, downspouts cleaned

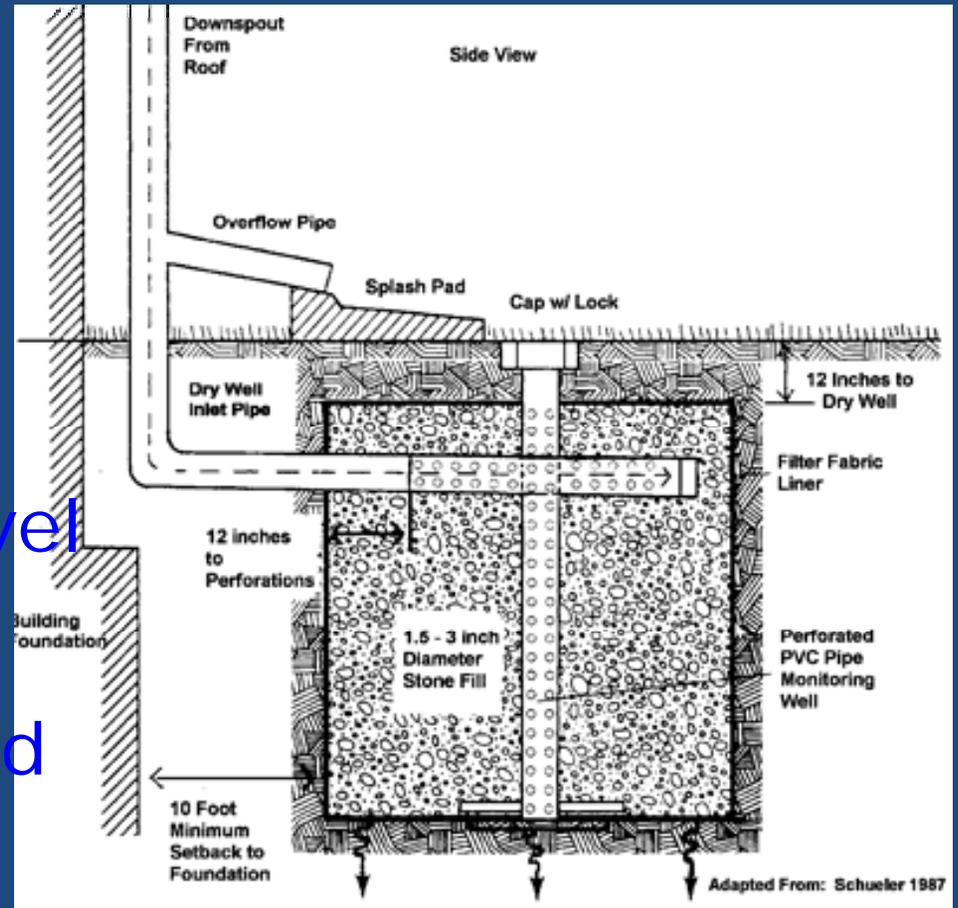


*Clean gutters will help keep debris from clogging your dry well*

Soil

Gravel

Sand



# Drywell Maintenance

## Recommended timeframes for typical maintenance

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Remove leaves and debris from gutters				✿	✿	✿	✿	✿	✿	✿	✿	
Maintain pipes and gutters	--- AS NEEDED ---											
Check gutters for ice damage	✿	✿	✿								✿	✿

\*Debris includes acorns, seeds, branches, grass clippings, sand/sediment, cigarette butts, trash, etc.



*Dry well downspout overflow for large storms*



# Rain Barrel Maintenance



Rain barrels with "planter tops"



## How to maintain your RAIN BARREL

Montgomery County, Maryland

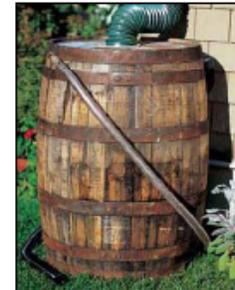
Department of Environmental Protection

Stormwater Facility Maintenance Program

### What are rain barrels?

Rain barrels collect rainwater from your roof downspouts for non-potable reuse. Rain barrels come in a variety of sizes, but a 55-gallon container is the most common size. Rain barrels can be added to any building with gutters and downspouts, but are most common on single family homes and townhomes.

Rain barrels need regular maintenance, similar to other features of your property, particularly:  
**Draining Water Before Every Storm**  
Removing Leaves and Debris



### Who is responsible for this maintenance?

As the property owner, YOU are responsible for all maintenance of your rain barrels.

### Actions you can take

#### Do...

##### As needed

- ✓ Check the entire system (e.g., gutters, debris filter, overflow pipe, fittings, spigot, etc.) to ensure the barrel is functioning properly.
- ✓ Place gutter guards and/or screens on top of roof downspouts and on top of the barrel to prevent leaves and sediment from entering the rain barrel.
- ✓ Remove leaves and other debris from the screen at the top of the barrel, the overflow pipe, and the roof gutters.
- ✓ Regularly use water collected in your rain barrel between rain events to make sure there is room to collect rainwater during the next storm. Drain your rain barrel before the winter season.
- ✓ If your barrel has a filter screen, make sure it is intact without holes and securely fastened to keep out mosquitoes.

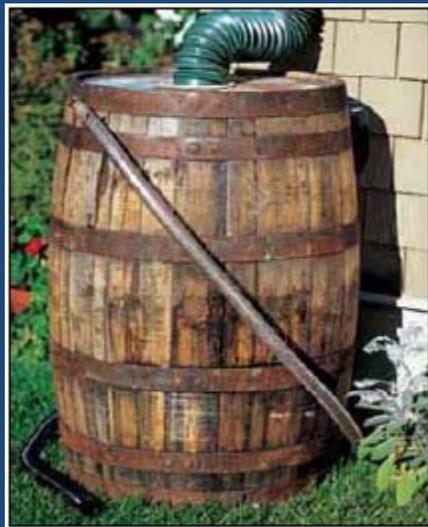
##### Seasonally

- ✓ Unless the rain barrel is made of a material specifically designed for freezing temperatures, disconnect it during the winter to avoid damage. Around Thanksgiving, disconnect the rain barrel from your downspouts, empty the barrel, wash out the barrel, and store it upside down in a protected location. Connect the barrel to your downspout around April Fool's Day.
- ✓ Open the rain barrel spigot if you expect to be away from your home for an extended period of time; make sure it will drain away from your foundation.
- ✓ Clean the barrel using a non-toxic substance such as vinegar to remove residue or algae.
- ✓ Clean out downspouts and roof gutters for the most effective mosquito control. However, if you find mosquitoes in your rain barrel, you may use dunks. A quarter dunk added monthly may be adequate for a 55-gallon rain barrel.

#### Don't...

- ✗ Don't leave water in your rain barrel for long periods of time.
- ✗ Don't drink the water in your rain barrel or use the water inside your home or for your pets. This water should only be used as non-potable water.
- ✗ Don't let kids play in or around rain barrels.
- ✗ Don't forget to reconnect your rain barrel every year after the winter frost season.
- ✗ Don't spray the water directly on vegetables or leaves, as it may contain bacteria from the roof.
- ✗ Don't let the barrel foundation become uneven or unstable. A full 55-gallon barrel weighs 450 pounds and can tip over on an unstable surface.

# RAIN BARREL MAINTENANCE



## Recommended timeframes for typical maintenance

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Leaf and Debris Removal				✿	✿	✿	✿	✿	✿	✿	✿	
Water Drainage				✿	✿	✿	✿	✿	✿	✿	✿	
Monitoring				✿	✿	✿	✿	✿	✿	✿	✿	
Seasonal Preparation				✿							✿	



Clean gutters will help keep debris from clogging

# VIDEO

- [http://www.youtube.com/watch?feature=player\\_embedded&v=coFbdMB-q0U](http://www.youtube.com/watch?feature=player_embedded&v=coFbdMB-q0U)
- `<iframe width="640" height="360" src="http://www.youtube.com/embed/coFbdMB-q0U?feature=player_embedded" frameborder="0" allowfullscreen></iframe>`

# VIDEO

Stormwater BMP & LID Maintenance



Maintenance

00:03 / 15:00

YouTube

# Tree Box Maintenance



# TREE BOX MAINTENANCE

- Remove trash, organic debris from inlet throat and within the box
- Weed & Prune as necessary
- Water trees as necessary (> 4 weeks without rain)
- Leaves can collect in the throat and usually buildup in November
- \* *Filterra* – mulch 2 times/yr



# Green Roof Maintenance



North Bethesda  
Center,  
17,500sqft,  
Photo: Hvdrotech

# GREEN ROOF MAINTENANCE



## Recommended timeframes for typical maintenance

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Weeding				✿	✿	✿	✿	✿	✿	✿	✿	
Watering	— — — A S N E E D E D — — —											
Inspect Drains		✿			✿			✿			✿	

# LESSONS LEARNED – HELPFUL TIPS

- Know Predominant Weeds on-site
- Obtain Design Plan
- Do not use fertilizer or herbicide



## THINGS TO LOOK FOR:

- Water Drains within 2 – 3 days
- Water enters facility – Inlet or flow path not blocked



# WATER QUALITY PROTECTION CHARGE (WQPC) CREDIT

- Future Contractor Opportunity!
- Proposed Reduced Fee for maintained practices:
  - Max 50% for traditional structural bmps
  - Max 60% for ESD/LID on Nonresidential or Multifamily
  - Max 50% for ESD/LID on Single Family Residential
- *Bill 34-12 At County Council now....stay tuned*

# INTERESTED IN CONTRACTOR RECOGNITION?

- **New:** Green business certification
- **Considering AWARDS:** Best Maintained private bioretention, rain garden, or bioswale
- **Consider VOLUNTEERING?** Contractors that adopt-a-rain garden and volunteer to maintain a public rain garden at a Green Street, library, etc.

# Questions?



AMY STEVENS

[AMY.STEVENS@MONTGOMERYCOUNTYMD.GOV](mailto:AMY.STEVENS@MONTGOMERYCOUNTYMD.GOV)

CHRISTY CIARAMETARO

[CLC@MONTGOMERYCOUNTYMD.GOV](mailto:CLC@MONTGOMERYCOUNTYMD.GOV)



# MAINTENANCE RESOURCES

- MC Stormwater Facility Maintenance:  
<http://www.montgomerycountymd.gov/stormwater>
- NEW DEP Maintenance Landscape Architect
- BMP Maintenance E-newsletters - Quarterly

## Stay Connected!

Subscribe to the occasional email bulletin [Stormwater BMP Maintenance Newsletter](#)

## View our quarterly newsletters

- [November 2012](#) (PDF, 3 pp, 328K)
- [July 2012](#) (PDF, 3 pp, 355K)
- [May 2012](#) (PDF, 2 pp, 61K)
- [February 2012](#) (PDF, 2 pp, 141K)
- [November 2011](#) (PDF, 2 pp, 128K)
- [July 2011](#) (PDF, 2 pp, 102K)
- [April 2011](#) (PDF, 2 pp, 92K)
- [January 2011](#) (PDF, 2 pp, 547K)
- [October 2010](#) (PDF, 2 pp, 30K)

## Stormwater BMP Maintenance E-Newsletter



Summer Edition, July 2012

**In this E-Newsletter:**  
**Summer Maintenance Tips**  
**Feature Topic – Serious Pond Structural Failure**  
**Fall 2012 Contractor Training Added**  
**New 2012 Maintenance Fact Sheets - Coming August 2012!**  
**Stream Steward Volunteer Opportunities!**  
**Resources for More Information**

### Summer Maintenance Tips

- ✓ **Avoid the use of fertilizers, pesticides, and herbicides in and around your stormwater facilities — these products pollute our streams.** If manual removal of invasive weeds has been ineffective, limited applications of aquatic-friendly herbicide may be applied by a qualified professional certified by the State of Maryland.
- ✓ **Removing non-native invasive weeds as soon as you see them in your bioretention facility or sand filter will help to prevent more significant repairs later on.** Ask DEP for a copy of your bioretention design if you are unsure what plants should be there. Replenishing mulch to a 3 inch depth (but no deeper) can also help to reduce weeds.



Well maintained bioretention with native plants



Poorly maintained bioretention with mostly non-native invasives



# MAINTENANCE CONTRACTOR LISTS

Services & Info.  
County Cable 6

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DEP Home Page

- Air
- Climate Change
- Community Concerns
- Energy
- Trash & Recycling
- Water

Contact DEP

I Need Assistance

News

Local Green News

Videos

Calendar of Events

Internships

About DEP



## Department of Environmental Protection

### Stormwater Facility Maintenance: Contractor Resources

The Department of Environmental Protection's (DEP) Stormwater Facility Maintenance Program relies on skilled and knowledgeable contractors to perform maintenance on stormwater management facilities. A company that performs maintenance on a stormwater management facility must hold a certificate of attendance from an approved training program. DEP offers a list of all the companies that have completed the required training.

Download a [list of contractors approved by the County for maintenance of aboveground structures](#)  (PDF, 4 pp, 50K)

Download a [list of contractors approved by the County for maintenance of underground structures](#)  (PDF, 3 pp, 34K)

#### How Can My Company Become Certified To Perform Maintenance in Montgomery County?

Montgomery County regulations require that a company that performs repair or maintenance on a stormwater management facility must:

... have demonstrated experience in stormwater management facility construction.

#### Quick Links

**On this page**

- [How Can My Company Become Certified?](#)
- [DEP Stormwater Facility Maintenance Contractor Training](#)
- [DEP Training Materials](#)
- [Interim Certification Test](#)

**Related Topics**

- [Stormwater Pollution](#)
- [Stormwater Facility Maintenance Maintenance Transfer Process](#)

#### Get Help

**For questions about contractor resources and training, contact DEP:**

311  
Email: [askdepr@montgomerycountymd.gov](mailto:askdepr@montgomerycountymd.gov)



# 2-PG MAINTENANCE FACT SHEETS

## How to maintain your POROUS PAVEMENTS

Montgomery County, Maryland  
Department of Environmental Protection  
Stormwater Facility Maintenance Program

**What is porous pavement?**  
Porous pavement can replace traditional concrete surfaces with a material that allows water to pass through to the underlying soil. Porous asphalt, or permeable pavers, can also be used on other hard surfaces such as parking lot sidewalks.



## What is a swale?

A swale is an open or covered channel designed to collect and transport stormwater runoff. Swales can be found in many types of areas, including parking lots, streets, and other hard surfaces.

**How does it work?**  
Swales collect runoff from the surrounding area and transport it to a stormwater management facility.



## How to maintain your SWALES

Montgomery County, Maryland  
Department of Environmental Protection  
Stormwater Facility Maintenance Program

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A swale is an open or covered channel designed to collect and transport stormwater runoff. Swales can be found in many types of areas, including parking lots, streets, and other hard surfaces.

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## How to maintain your GREEN ROOFS

Montgomery County, Maryland  
Department of Environmental Protection  
Stormwater Facility Maintenance Program

**What is a green roof?**  
A green roof is a roof that is partially or completely covered by a specifically designed soil and vegetation system.

**How does it work?**  
The roof of a house or building is covered with a waterproof membrane. This is followed by a drainage layer, a layer of soil, and a layer of vegetation. The vegetation helps to absorb and retain water, reducing the amount of runoff that enters the stormwater system.



## How to maintain your DRY WELLS

Montgomery County, Maryland  
Department of Environmental Protection  
Stormwater Facility Maintenance Program

**What is a dry well?**  
A dry well is a small, unexcavated underground pit that is used to collect and store stormwater runoff. It is typically constructed from concrete or masonry and is located in an area where runoff is not desired.

**How does it work?**  
Stormwater runoff enters the dry well through a pipe or opening. The water then infiltrates the surrounding soil, which helps to reduce the amount of runoff that enters the stormwater system.

**What are the benefits?**

- Reduce the amount of runoff leaving your property
- Remove pollutants
- Improve health of streams and rivers
- Help to reduce soil erosion and sedimentation



## How to maintain your RAIN GARDEN, BIOSWALE, AND MICRO-BIORETENTION AREA

Montgomery County, Maryland  
Department of Environmental Protection  
Stormwater Facility Maintenance Program

**What are rain gardens, bioswales, and micro-bioretention facilities?**  
Rain gardens, bioswales, and micro-bioretention facilities are functional landscaping features. In rain gardens, bioswales, and micro-bioretention areas, water is collected from roof drains, driveways, and sidewalks, and is then filtered through a layer of soil, sand, and organic material. This helps to remove pollutants and sediment from the runoff before it enters the stormwater system.

**How do they work?**  
Rain gardens, bioswales, and micro-bioretention areas are designed to collect and filter runoff from the surrounding area. The runoff enters the facility through a pipe or opening, and is then filtered through a layer of soil, sand, and organic material. This helps to remove pollutants and sediment from the runoff before it enters the stormwater system.




## How to maintain your NON-STRUCTURAL PRACTICES

Montgomery County, Maryland  
Department of Environmental Protection  
Stormwater Facility Maintenance Program

**What are non-structural practices?**  
Non-structural practices are measures that can be taken to reduce the amount of runoff that enters the stormwater system. These practices include installing rain gardens, bioswales, and micro-bioretention facilities, as well as using permeable pavement and green roofs.

**How do they work?**  
Non-structural practices are designed to reduce the amount of runoff that enters the stormwater system. These practices include installing rain gardens, bioswales, and micro-bioretention facilities, as well as using permeable pavement and green roofs.




## How to maintain your MICRO-BIORETENTION, RAIN GARDENS, AND BIOSWALES

Montgomery County, Maryland  
Department of Environmental Protection  
Stormwater Facility Maintenance Program

**What are micro-bioretention, rain gardens, and bioswales?**  
Micro-bioretention, rain gardens, and bioswales are functional landscaping features. In micro-bioretention, rain gardens, and bioswales, water is collected from roof drains, driveways, and sidewalks, and is then filtered through a layer of soil, sand, and organic material. This helps to remove pollutants and sediment from the runoff before it enters the stormwater system.

**How do they work?**  
Micro-bioretention, rain gardens, and bioswales are designed to collect and filter runoff from the surrounding area. The runoff enters the facility through a pipe or opening, and is then filtered through a layer of soil, sand, and organic material. This helps to remove pollutants and sediment from the runoff before it enters the stormwater system.





## How to maintain your RAIN GARDEN, BIOSWALE, AND MICRO-BIORETENTION AREA

Montgomery County, Maryland  
Department of Environmental Protection  
Stormwater Facility Maintenance Program

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**Actions you can take**

**Do...**

- Regularly inspect the facility for signs of erosion, sedimentation, or unhealthy vegetation.
- Remove weeds and invasive plants.
- Remove sediments, trash, and debris in and around the bioretention area and from the inlet channels or pipes.
- Inspect your facility about twice a year to ensure that the water is properly filtered and that the facility is properly functioning.

**Don't...**

- Apply excess salt and sand that could harm the facility during winter months.
- Don't use stoves and lawn care products.
- Don't use herbicides or pesticides.

**How will I know if other maintenance is required?**  
We recommend that you visually check your bioretention facility regularly. An annual visual inspection of your bioretention facility during its inspection, you will create a record of condition with a work order that shows a list of items that need to be performed to restore your facility to proper working condition.

**Who is responsible for this maintenance?**  
As the property owner, you are responsible for all of the maintenance of your rain garden, bioswale, and micro-bioretention facility.

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Department of Environmental Protection  
Stormwater Facility Maintenance Program

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**How do they work?**  
Non-structural practices are designed to reduce the amount of runoff that enters the stormwater system. These practices include installing rain gardens, bioswales, and micro-bioretention facilities, as well as using permeable pavement and green roofs.

**What are the benefits?**

- Remove pollutants
- Improve health of streams and rivers
- Help to reduce soil erosion and sedimentation
- Improve the quality of the Chesapeake Bay

**Why is it important to maintain your non-structural practices?**  
An unwell-maintained non-structural practice may:

- Stop sending the rain water to vegetated areas and allow large amounts of sediment, trash, and pollutants to enter the local streams.
- Show signs of erosion and contribute to sediment pollution.

By maintaining your non-structural practice, you are doing your part to help the environment and protect your local streams and the Chesapeake Bay.

**Who is responsible for this maintenance?**  
As the property owner, you are responsible for most of the maintenance of your non-structural practice. The DEP will perform maintenance on the soil and piping as needed.

**You can prevent the loss of your non-structural practice and save on maintenance costs by keeping your site clean and regularly inspecting and maintaining the facility to ensure it is functioning properly.**

## How to maintain your MICRO-BIORETENTION, RAIN GARDENS, AND BIOSWALES

Montgomery County, Maryland  
Department of Environmental Protection  
Stormwater Facility Maintenance Program

**What are micro-bioretention, rain gardens, and bioswales?**  
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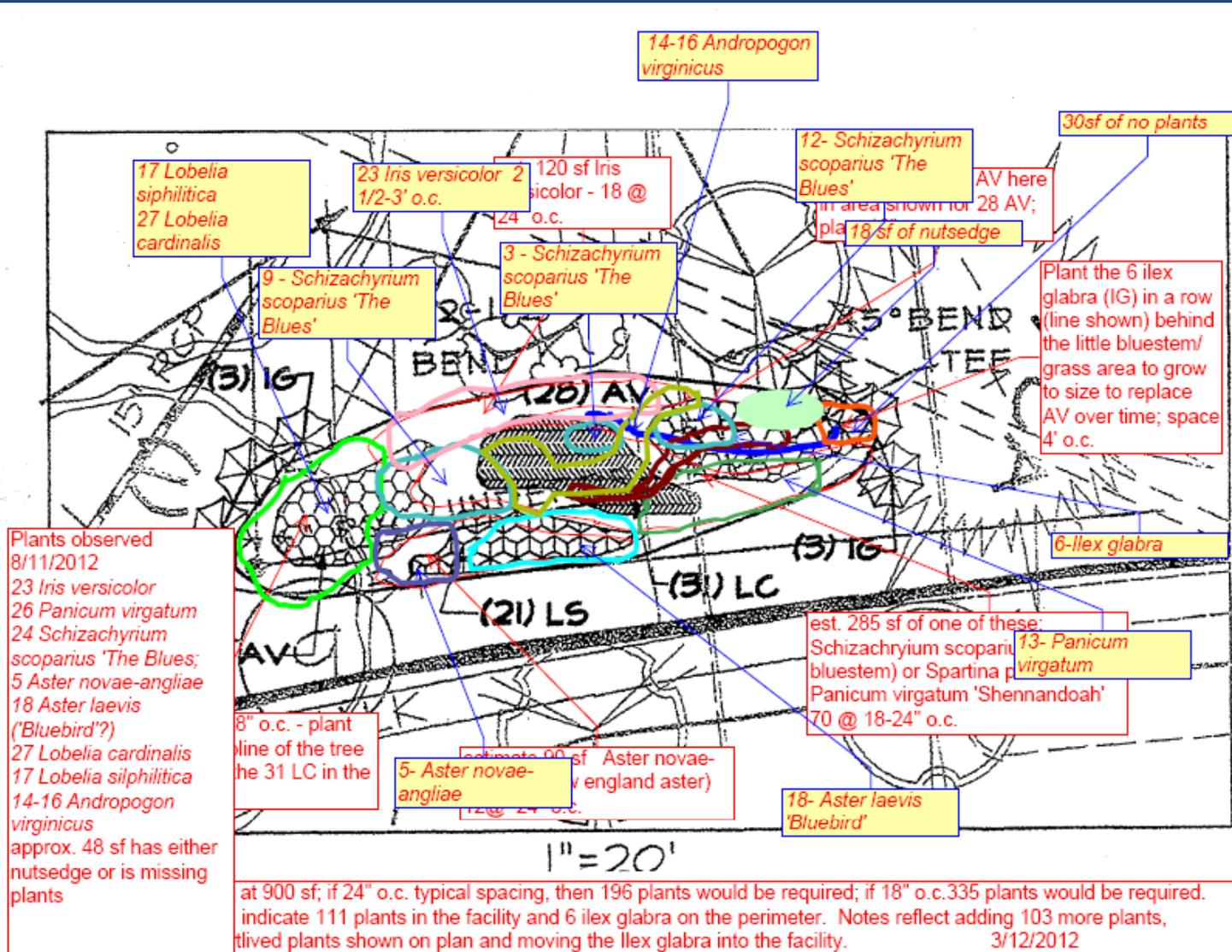
**Why is it important to maintain your micro-bioretention, rain gardens, and bioswales?**  
An unwell-maintained micro-bioretention, rain garden, or bioswale may:

- Stop sending the rain water to vegetated areas and allow large amounts of sediment, trash, and pollutants to enter the local streams.
- Show signs of erosion and contribute to sediment pollution.

By maintaining your micro-bioretention, rain garden, or bioswale, you are doing your part to help the environment and protect your local streams and the Chesapeake Bay.

**Who is responsible for this maintenance?**  
As the property owner, you are responsible for most of the maintenance of your micro-bioretention, rain garden, or bioswale. The DEP will perform maintenance on the soil and piping as needed.

# ASK DEP FOR EXISTING PLANS / DESIGNS



# OTHER MAINTENANCE OUTREACH

- Property Management Company communications
- Individual and direct communication to property owner when maintenance/repair is needed
- 4 Inspectors directly work with property owners

The screenshot shows the website for the Department of Environmental Protection (DEP) in Montgomery County. The page is titled "Stormwater Facility Maintenance Program". The navigation bar includes links for RESIDENTS, GOVERNMENT, BUSINESSES, and CULTURE & LEISURE. The main content area describes the program's role in inspecting and maintaining public and private stormwater management facilities. It lists current maintenance projects for Lake Whetstone and Gunners Lake, each with a link to a material testing report. A "Quick Links" sidebar on the right provides additional resources like "Where are the County's Stormwater Facilities?" and "How do Stormwater Facilities work?". The "Get Help" section at the bottom right provides contact information for DEP, including a phone number (311) and an email address (askdep@montgomerycountymd.gov).

SEARCH

NEW I Want To ...

Services & Info.  
County Cable 6

DEP Home Page

Air  
Climate Change  
Community Concerns  
Energy  
Trash & Recycling  
Water

Contact DEP

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About DEP

The Paperless Airplane

MyMontgomery Find County

RESIDENTS GOVERNMENT BUSINESSES CULTURE & LEISURE

DEP Home : [Water](#) : Stormwater Facility Maintenance Program

ADD THIS

**Department of Environmental Protection**

## Stormwater Facility Maintenance Program

The Stormwater Facility Maintenance Program is responsible for inspecting and ensuring maintenance of all public and private stormwater management facilities within Montgomery County. The program is paid for by the [Water Quality Protection Charge](#). It is vital that the structures be maintained in working order so they function as intended, providing protection and stormwater management for our parks, schools, and businesses.

### Current Maintenance Projects

#### Lake Whetstone

A public meeting was held on Tuesday evening, December 13th 2011.

- [Meeting Presentation](#)
- [Material Testing Report](#)

#### Gunners Lake

- [Material Testing Report](#)

### What are stormwater facilities?

Stormwater management facilities are structures that are used to remove pollutants, prevent stream damage and erosion, prevent flooding, and protect public health. The structures can be on the surface (e.g., wet and dry ponds, bioretention basins, sand filters) or underground (e.g., infiltration trenches, oil grit separators, and

### Quick Links

**On this page**

- [Where are the County's Stormwater Facilities?](#)
- [How do Stormwater Facilities work?](#)
- [Inspection and Maintenance](#)
- [Common Problems](#)
- [Maintenance Responsibilities](#)
- [Common Questions](#)
- [Current Projects](#)
- [Related Links](#)
- [Laws and Regulations](#)
- [Stay Connected!](#)

**Related Topics**

- [Contractor Resources](#)
- [Easements and Maintenance](#)
- [Maintenance Transfer Process](#)
- [Stormwater Pollution](#)
- [What To Do About Problems](#)

### Get Help

**For questions about stormwater facility maintenance, contact DEP:**  
311  
Email: [askdep@montgomerycountymd.gov](mailto:askdep@montgomerycountymd.gov)

# SCHEDULED CONTRACTOR TRAINING SESSIONS

- RainScapes  
Spring training for Professionals will be announced via the RainScapes Gazette for Landscape Professionals

- **Thursday, March 7, 2013**  
Montgomery County  
Executive Office  
Building, Lobby  
Auditorium,  
101 Monroe Street  
Rockville, MD. 20850.