

# Menu of Stormwater Best Management Practices (BMPs) for the Rivanna River Watershed

Rivanna River Basin Commission  
Technical Advisory Committee



Graphic from Oxford, NC "Keeping it Clean Downstream"

# Integrating Stormwater BMPs with Rivanna Basin Hydrology

- *Why?*

*To manage stormwater volumes and quality in such a way as to replicate the functions of the forested system – infiltration and groundwater recharge – without scouring stream channels.*

- *When?*

*Stormwater BMPs can be integrated as part of new development and redevelopment. Opportunities to integrate BMPs also exist as retrofits on sites that were developed without or with limited stormwater management.*

- *Where?*

*Public properties, commercial and industrial properties, single and multi-family residential properties, urban/suburban/rural/agricultural/silvicultural areas.*

- *Who?*

*Property owners with goals to improve the performance of their sites with respect to stormwater management and associated watershed improvement opportunities.*

# Menu of Practices

- Green Roof
- Impervious Disconnection
- Raintanks & Cisterns
- Permeable Pavement
- Grass Channels
- Bioretention
- Water Quality Swale
- Infiltration
- Extended Detention Pond
- Soil Amendments
- Filtering Devices
- Stormwater Wetland
- Wet Pond
- Riparian Buffer

# Green Roof

- Vegetated rooftop
- Absorbs water, slows runoff, cools water



Charlottesville City Hall & Police Building



Albemarle County Office Building

# Impervious Disconnection

- Make sure rooftop & driveway water does not go directly to storm drains or streams
- Direct flow to areas where it can be collected, absorbed, infiltrated



Guildford Farm, Greene County

# Raintanks & Cisterns

- Collect water from rooftops (and other surfaces)
- Reuse for outdoor & indoor uses



Charlottesville – 6<sup>th</sup> Street  
Urban Farm



Albemarle County system:  
Provides indoor water use,  
including drinking water



Fluvanna County system: Provides  
water for greenhouse and indoor use

# Permeable Pavement

- Use paver blocks or special concrete or asphalt that allow water to pass through.
- Can infiltrate or filter runoff, and also treat runoff from other parking areas.



Charlottesville – Belmont BBQ  
Parking Area



Albemarle County Office Building

# Grass Channels

- Runoff flows through grass instead of asphalt or concrete.
- Some runoff infiltrates or is slowed down.
- Can be alternative for curb & gutter in road section.



Along Route 29 North



# Bioretention

- Also known as “rain garden”
- Water filters through special soil mix, organic matter, and vegetation
- Can be used in parking lot islands, as part of open space, or on lots



Greenleaf Park, City of Charlottesville



Monticello High School

# Water Quality Swale

- Similar to Bioretention, but long and skinny. May also be along a minor slope.
- Often used along parking lots



Charlottesville Catholic School



River Bluff, City of Charlottesville

# Infiltration

- Engineered trench where water collects and percolates into the ground
- Often limited by poor soils or shallow bedrock



Nelson County church parking lot with series of infiltration chambers



Sanitation District #1 of Northern KY

# Extended Detention Pond

- Modified stormwater basin that allows some water to pond temporarily so that pollutants can settle out
- Also used to control downstream flooding
- Most common stormwater practice in our area (and across the country)



Foxcroft in Albemarle County

Neighborhood basin in Albemarle

# Soil Amendments

- Add compost/organic material to soil to increase water holding capacity – turn it into a better “sponge”
- Can be used in conjunction with vegetated “filter strip” designed to receive runoff from impervious areas



# Filtering Device

- Engineered structure where water filters through sand or another media
- Sometimes used at gas stations or other pollution “hotspots”
- Often in an underground vault



Gas station in Crozet



Target - Route 29 North



Wilco - Route 29 North

# Stormwater Wetland

- Basin with areas of marsh and open water designed to remove pollutants



Ivy Creek School, Albemarle County

# Wet Pond

- Lake or pond designed to treat stormwater
- Can be small (one site) or large, regional ponds



Four Seasons  
Pond



Forest Lakes - Albemarle County

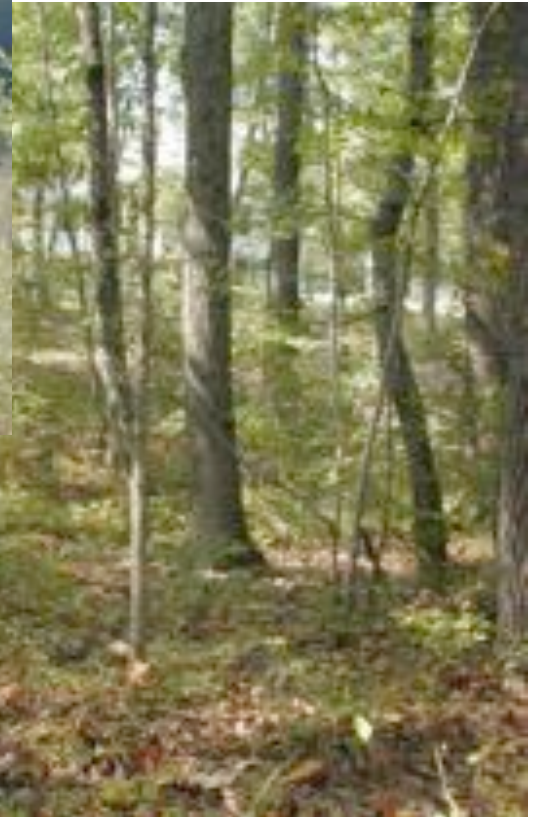


# Riparian Buffer

- Area of vegetation along a stream or other waterbody
- Can intercept and clean water flowing from upland developed areas



Albemarle County: Buffer planted along Moorman's River



Fluvanna County existing wooded buffer protected with permanent easement



Albemarle County: Natural regeneration of permanent buffer easement along North Fork Rivanna River