

Non-Structural PCSM BMPs

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Learning Objectives

- Best Management Practices (BMPs)



Stormwater Control Measures (SCMs)

- Examine Benefits of Non-structural PCSM BMPs
- Non-Structural to Structural Design Process
- Overview of non-structural BMP options
- PCSM Credits on Spreadsheets



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Non-Structural PCSM BMPs

Goal:

To consider long-term resiliency in stormwater design

- Prevent problems from forming in first place
- Reduce maintenance costs
- Extend the life cycle of stormwater design to minimize future requirements for reconstruction
- Start managing stormwater as a resource!



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Environmental Benefits

- Maintains a more natural and functional landscape
- Manages stormwater closer to the source
- Mitigates flooding through reductions in peak flows
- Protects drinking water supply through groundwater recharge
- Protects water quality and aquatic habitat
- Encourages decentralized treatment, infiltration, and evaporation of precipitation, helping to prevent negative consequences associated with stormwater



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Economic Benefits

- Reduction in stormwater infrastructure costs
- Reduces overall development costs
- Reduction in maintenance costs
- May help to increase community marketability and property values



Social Benefits

- Preserves open space
- Provides recreational opportunities
- Improves neighborhood aesthetics
- Reduces noise pollution
- Reduces the heat island effect



Non-structural to Structural Design Process

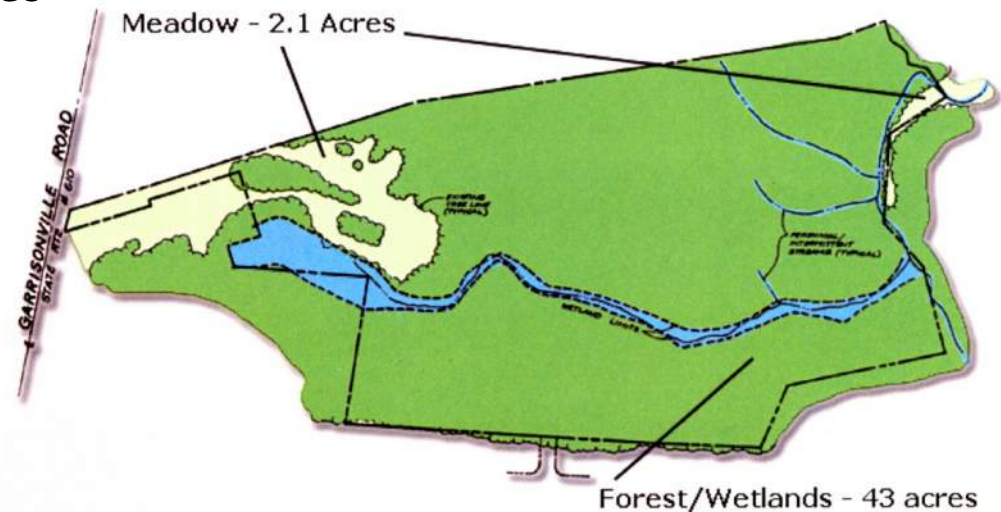
- Step 1 – Identify pre-development site conditions
- Step 2 – Layout development outside of sensitive areas / areas conducive to BMPs
- Step 3 – Identify Non-structural BMP Credit.
- Step 4 – Design structural BMPs to make up difference



Step 1: Pre-Development Conditions

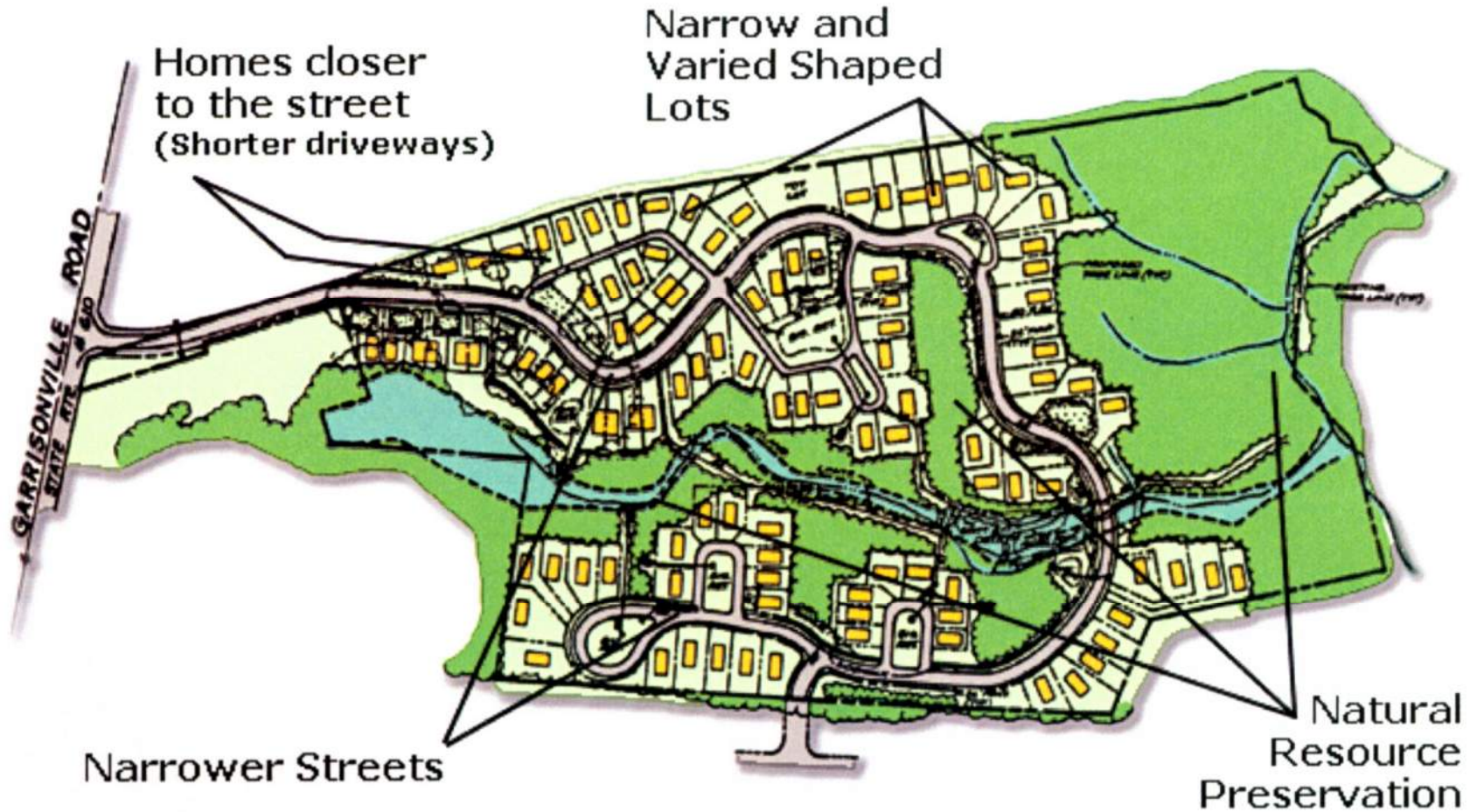
Medium Density Residential Development

- Topography
- Soils, including infiltration capabilities
- Vegetation
- Hydrologic Characteristics
 - Perennial and ephemeral drainageways
 - Wetlands
 - Riparian and floodplain buffer areas
- Depth to groundwater
- Geology
- Man-made features/urbanization



Step 2 Layout Conservation Development

Medium Density Residential Development



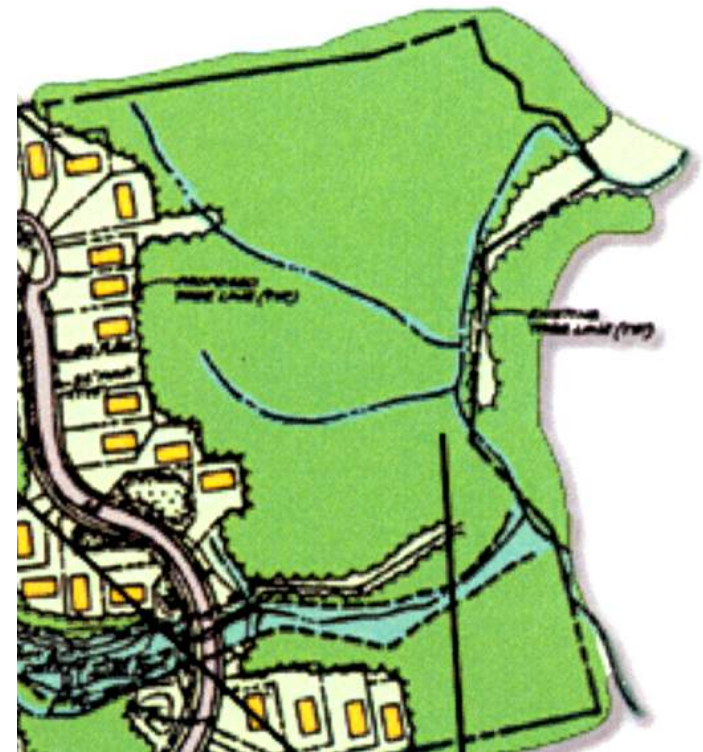
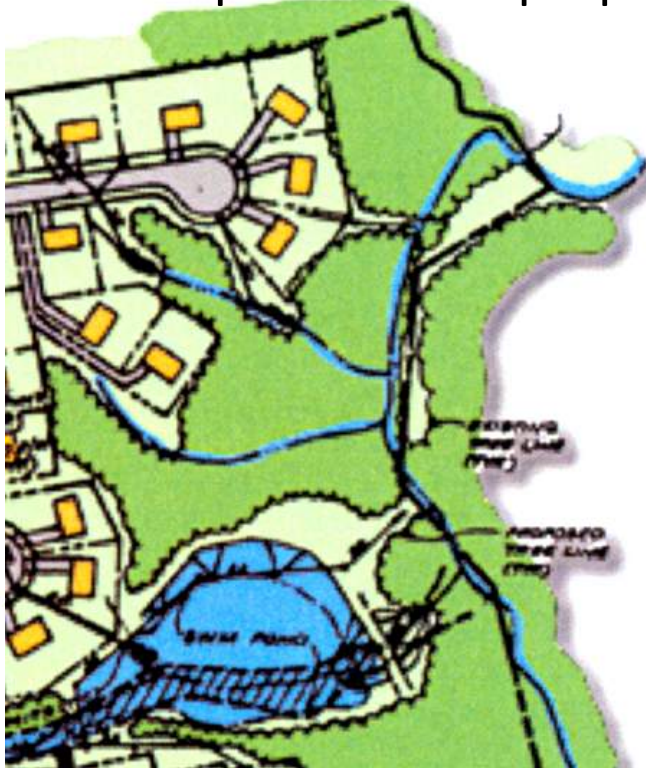
Step 2 Conventional Development

Medium Density Residential Development

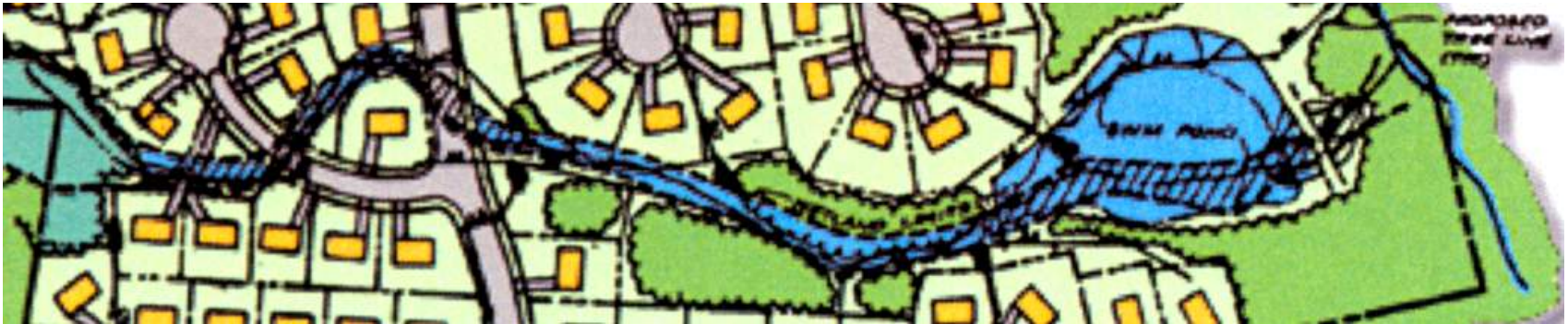


Step 3 Protect & Preserve Natural Landscape Processes

- Protect Natural Stormwater Features and Preserve Natural Open Spaces
- Receive credit towards the management of the net change in volume, water quality and rate up to the 2 year/24-hour storm event.
- Must be protected in perpetuity



Step 3 Riparian Buffer Protection



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Riparian Buffer Establishment & Enhancement

- Involves a new or enhanced permanent area of revegetation or reforestation located adjacent to surface waters.



Reduce Impervious Cover

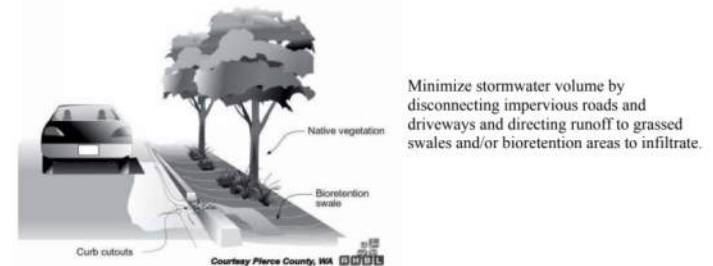
- Reduce Street/Driveway Imperviousness
 - Reduce road widths and lengths
 - Cul-de-sacs with vegetated islands
- Reduce Parking Imperviousness
 - Reduce parking ratios and sizes
 - Utilize porous surfaces for overflow parking



Disconnection of Impervious Surface with Filter Strip

- Rooftop Disconnection
 - Existing downgradient yard area opportunities
 - Existing downgradient vegetated areas/woods with potential level spreader
- Disconnect from Storm Sewers
 - Rain gardens
 - Side/front yard swales

BMP 5.8.2: Disconnection from Storm Sewers



Minimize Earth Disturbance & Minimize Maintenance

- Orient buildings to fit the natural topography
- Define disturbance zones for site
- Construct retaining walls, where possible



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Re-Vegetation and Soil Restoration

- Minimize soil compaction
- Soil restoration
- Native species plantings



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Source Control-Street Sweeping

- Can be claimed as a water quality “Other Credit” by attaching pollutant load reduction calculations to the spreadsheet (consistent with BMP manual or other technically sound methods)



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Step 4 Structural PCSM BMPs

- Exhaust all Nonstructural BMPs options
- Then, move to
 - Infiltration-Based BMPs
 - Non-Infiltration Based BMPs
 - Managed Release Concept
 - Etc.



PCSM Spreadsheets-Non-Structural BMP Volume Credits

- There is no limit on the amount of non-structural BMPs volume credit where **valid** non-structural BMPs from the PA Stormwater BMP manual will be implemented.
 - Any non-structural BMP shall have supporting calculations attached to the permit application that substantiate the “CREDIT”
 - Non-structural SCMs are still considered a PCSM BMP and adequate information must be provided (details, notes, long-term O&M, etc.)



PCSM Spreadsheets

If claiming *Other* non-structural BMP water quality credits, enter a description of the non-structural BMP(s), the calculated pollutant load reductions, and attach the supporting documentation to the permit application.

Other (attach calculations)

Description:

TSS	TP	TN



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PCSM Spreadsheets

- Rooftop disconnection, always claim too much area.
- Watch your Chapter 8 credits. Push to make sure you meet the key design elements of the BMP
- PCSM Spreadsheet may not directly give you these credits but you should still move in this direction first.

Non-Structural BMP Volume Credits:

☐ Tree Planting Credit

☐ Other (attach calculations):

Description:

CREDIT (CF):



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Covered Topics

- Examine benefits of Non-structural PCSM SCMs
- Take path from non-structural to structural PCSM BMPs
- Overview of non-structural BMP options
- PCSM Credits on Spreadsheets



Questions?

