NEW YORK
STATE OF
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Department of
Environmental
Conservation

Stream Buffer Protection for Stormwater Management

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Hudson River Estuary Program

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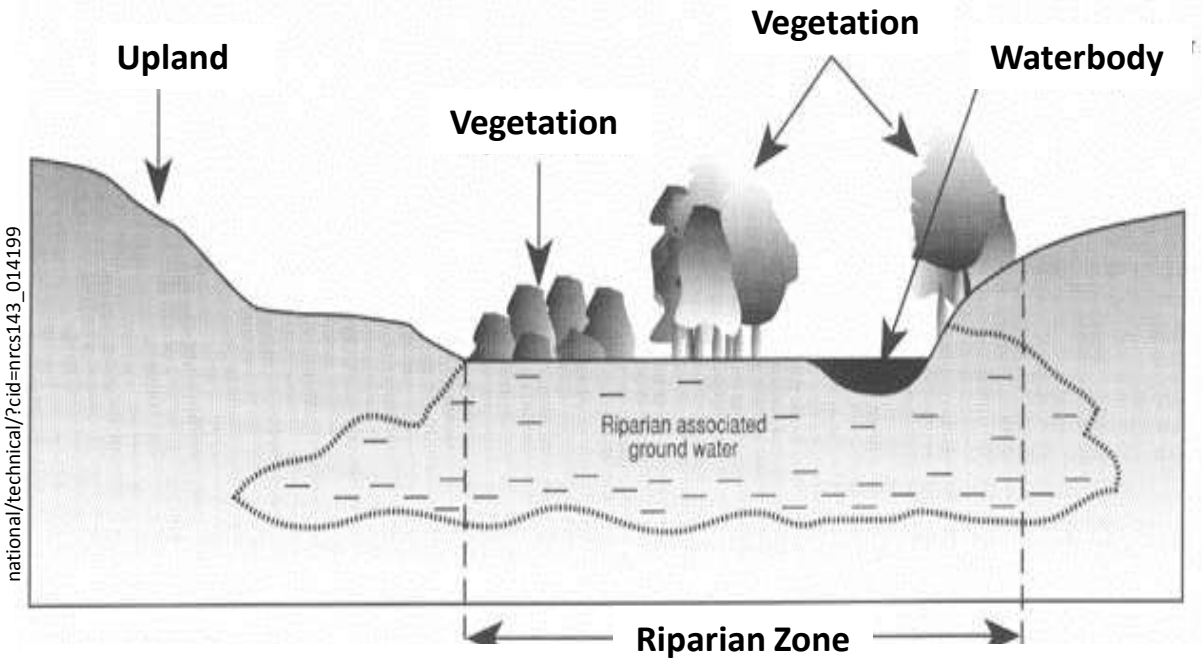
Learning Objectives

- What are the benefits of riparian buffers?
- What factors should your consider when you are deciding how much buffer area to protect?
- What state funding sources are available for riparian buffer protection and restoration?
- What are the requirements for using riparian buffers as a stormwater practice for runoff reduction?

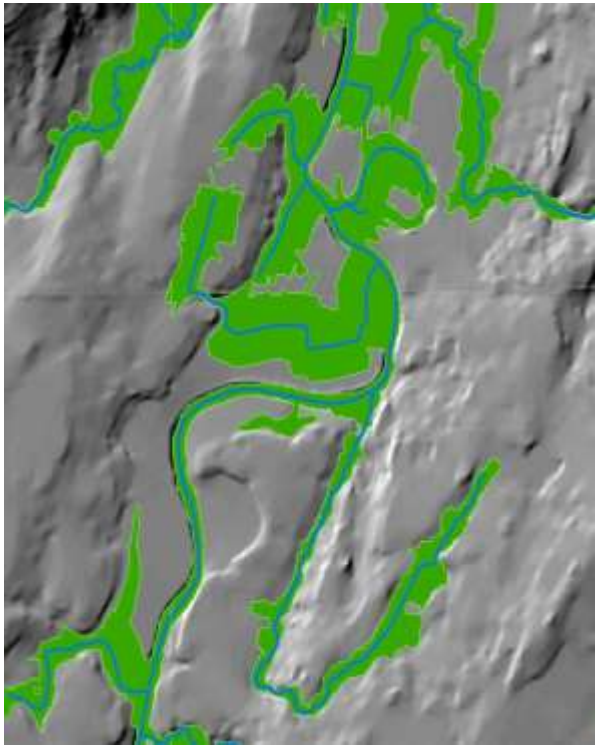
Outline

- Definitions
- Benefits of riparian buffers
- Prioritizing buffers for protection
- Promotion and Protection Tools
  - Funding sources
  - Stormwater runoff reduction

Definition – Riparian Area

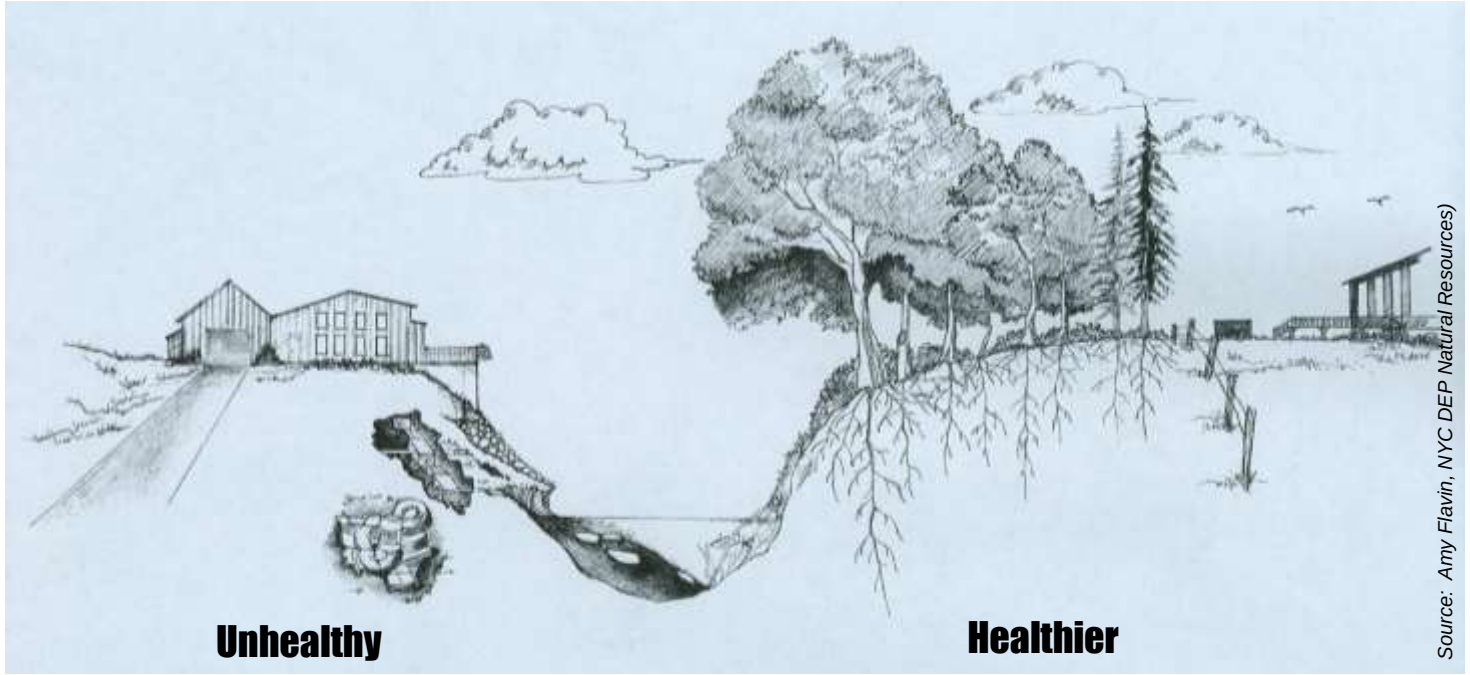


www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/?cid=nrcs143_014199



The interface between land and waterbody

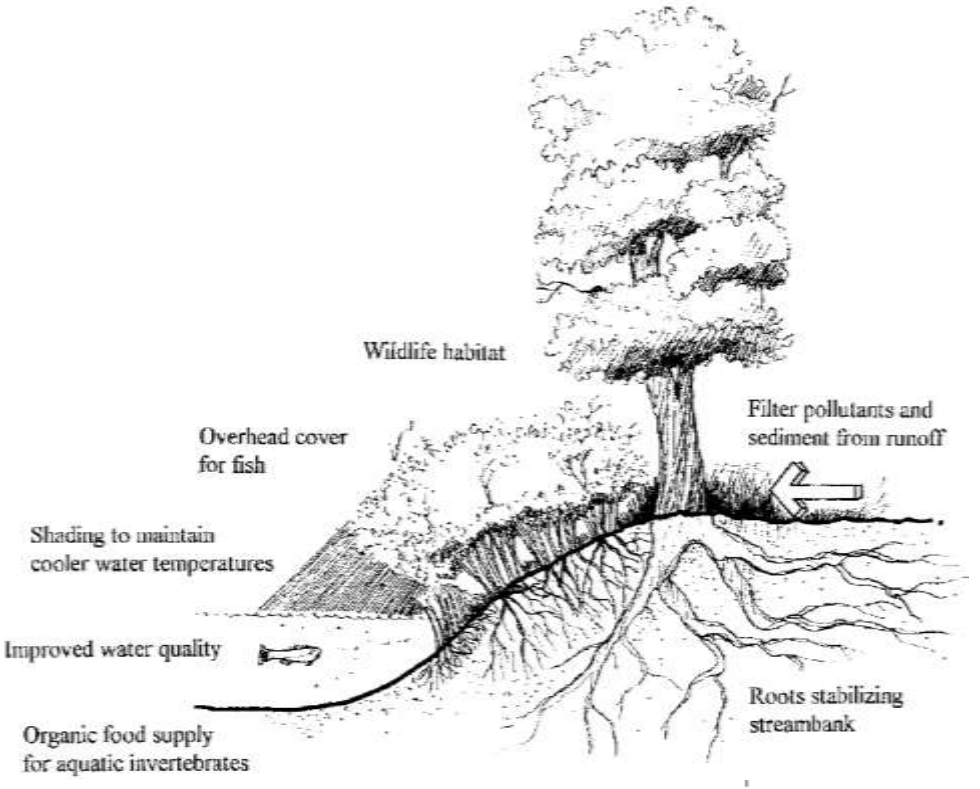
Definition - Riparian Buffer (Stream Buffer)



A vegetated protective area between a waterbody and human activity

Stream Buffer Functions

- Water Quality:
  - Temperature control
  - Pollution reduction
  - In stream pollution processing
- Groundwater recharge
- Flood control
- Erosion control
- Wildlife habitat
- Improved property value
- Recreation and Education



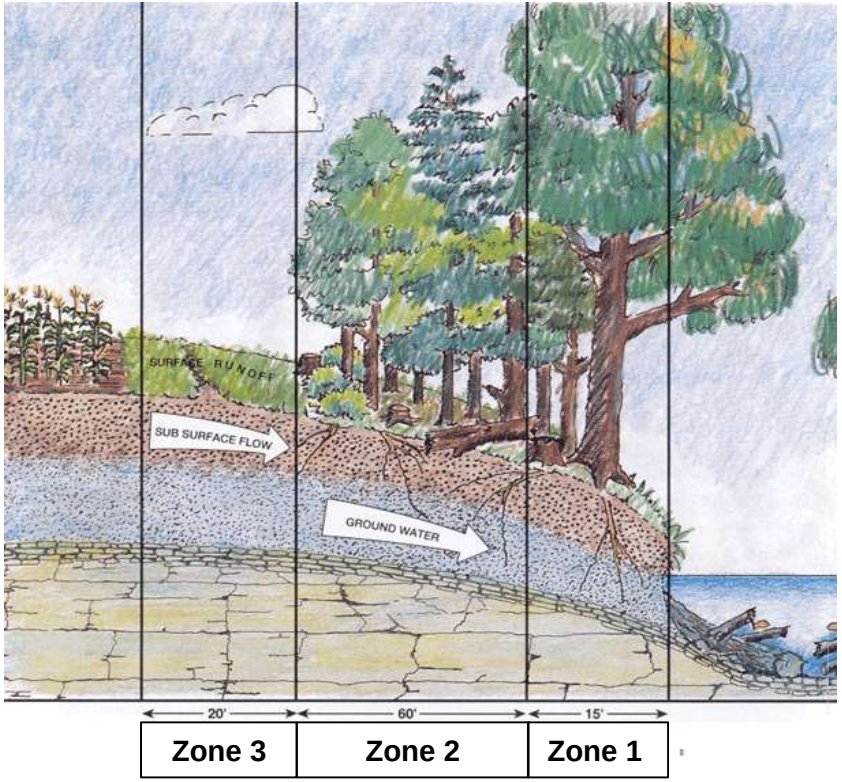

Why Protect?
Forested
Mowed to the edge

Buffer Protection steps

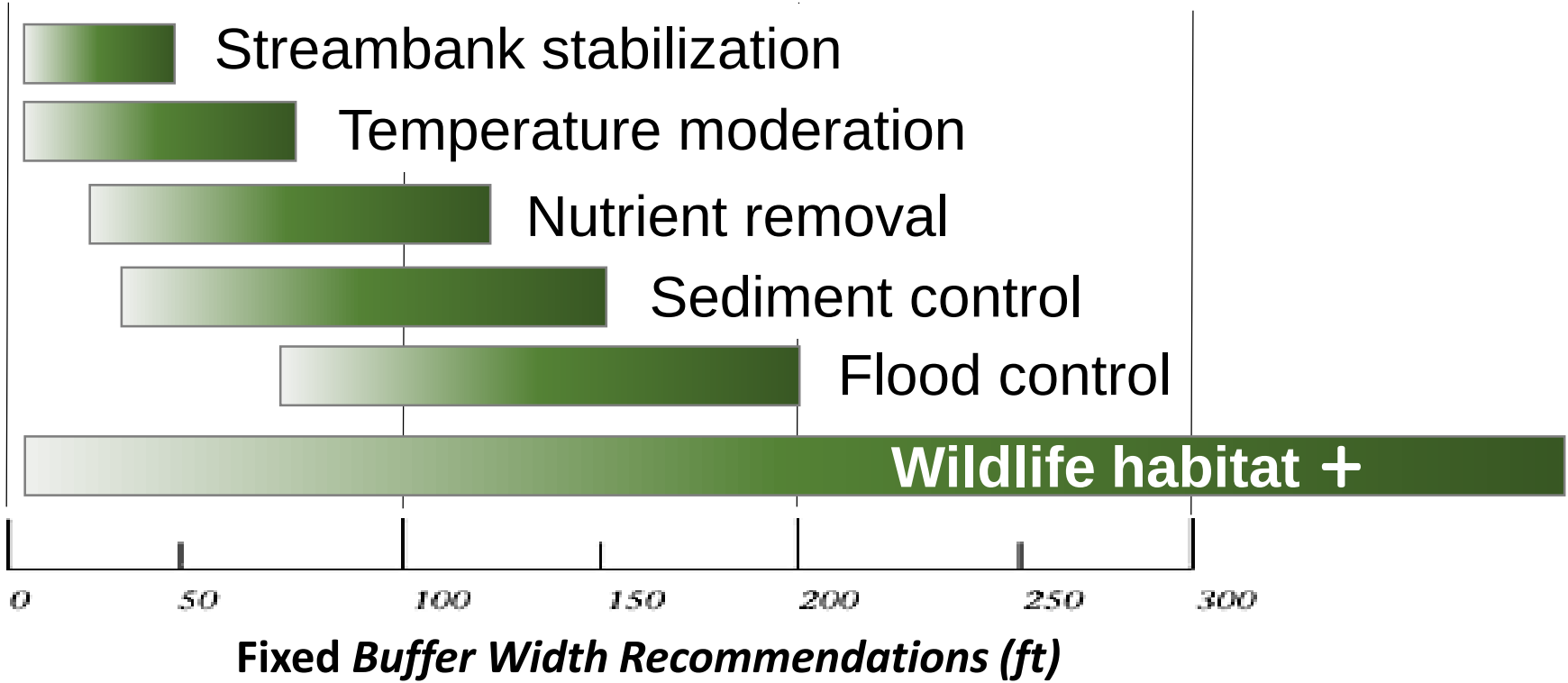
- Define the goals of protection
  - Local/regional/watershed planning
- Define targets for protected area
  - Area, Vegetation, Allowed Uses
- Find the tool for protection
- Implement Protection
- Monitor and Maintain

Define Targets for Protected Area

- Width / Area
- Vegetation
  - Types (grasses, trees and shrubs)
  - Species (Native, existing)
  - Size (shade, erosion hazard)
- Inputs to allow / avoid
  - Land use, stormwater, floodwaters
- Uses to allow / avoid
  - Public Access / Recreation



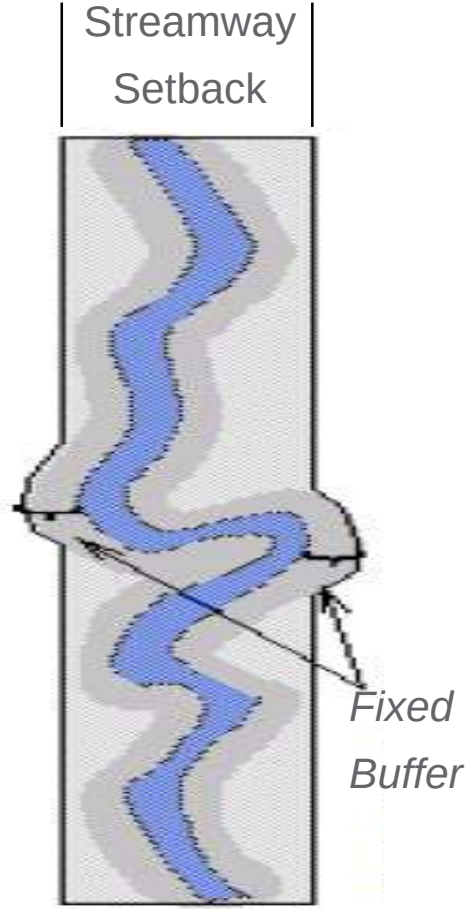
Target Widths to protect for:



Adapted From: USDA and USEPA. 1997 Chesapeake Bay Riparian Buffer Handbook

Target Areas to protect for:

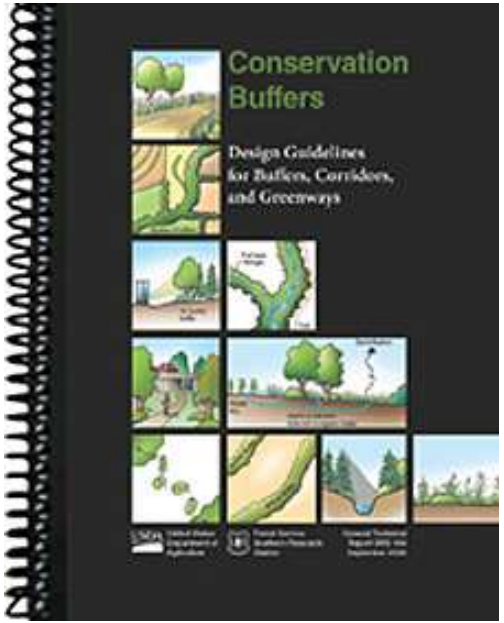
- Stream Erosion
  - Streamway (Meander Belt +)
- Reduced Flooding
  - Floodplain, Wetlands, Headwater streams
- Wildlife
  - Corridors, headwaters, mature forests
- Other Conservation Priorities
  - E.g. Highly erodible areas, Sensitive areas, Corridors



Mecklenburg, D. (1996).

Targets to protect for:

- Surface Runoff –
  - High stem density, plants adapted to sediment build up
- Subsurface runoff –
  - roots that intercept, high root biomass
- Nitrogen -
  - Best in wet hydric soils
- Phosphorus -
  - Buffer outside of flooded areas
- Stream Erosion -
  - woody species with deeper roots, plants that will re-sprout



Bentrup, G. (2008). *Conservation buffers: design guidelines for buffers, corridors, and greenways*. Asheville, NC: USDA, USFS, Southern Research Station.

Buffer Protection and Promotion Tools

Site Scale:

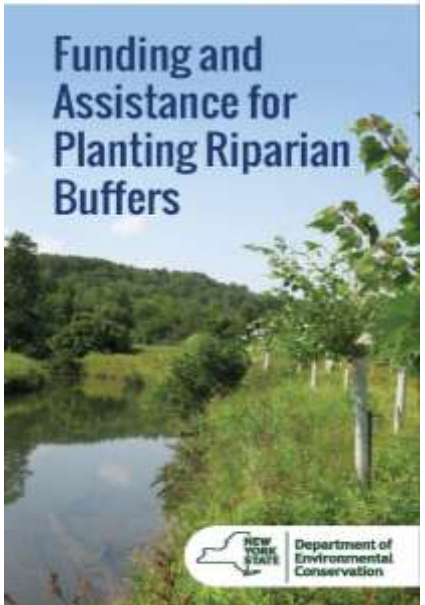
- Grant Funding for Protection and Restoration
- Development Stormwater requirements

Regional/ Municipal Scale:

- Regional and Municipal Planning
  - Watershed planning, Open Space Plan
- Municipal Ordinances
  - Watercourse Protection, Buffer law, Overlay zones, Critical Environmental Areas

State funding for restoration and protection:

- NYS Dept of Agriculture and Markets
  - Ag Nonpoint Source Abatement and Control
- NYS Environmental Facilities Corporation
  - Green Innovation Grant Program
- NYS Dept of Environmental Conservation
  - Water Quality Improvement Project (WQIP)
  - Hudson River Estuary Grants
  - Trees for Tribs



Green Innovation Grant Program (GIGP)

Establishment or Restoration of Floodplains, Riparian Buffers, Streams or Wetlands

- Floodplain restoration and replanting
- Lake-side tree planting
- Wetland construction
- Brownfield to park with wetland and buffer

Berm Removal and Replanting, Tioga County

Water Quality Improvement Program (WQIP)

- Riparian restoration grouped with Streambank Stabilization
  - Score higher points when combined

- Source Water funds for
  - Easement / land acquisition around **public** surface water source
  - High Priority for buffer directly around the reservoir
  - Protect existing buffer or pay for restoration
  - 4 more years of funding

Hudson River Estuary Grants

- **Local Stewardship Planning**
  - Watershed planning
  - Conservation planning (NRI, Open Space plans)
  - Green infrastructure projects

- **Tributary Restoration and Resiliency**
  - Aquatic passage

Trees for Tribs

- Native trees and shrubs
- Plant protection
- Planting recommendations
- Education and planting demonstrations

- *Applicant provides labor and maintenance*

Buffers can help you meet MS4 requirements:

Minimum Control Measures:

2 - Public Participation

- Volunteer tree planting
- Volunteer maintenance

5 - Management of Post Construction Site Runoff

Trees for Tribs in Village of New Paltz

Riparian Buffers in the Stormwater Manual

Chapter 5: Green Infrastructure Practices

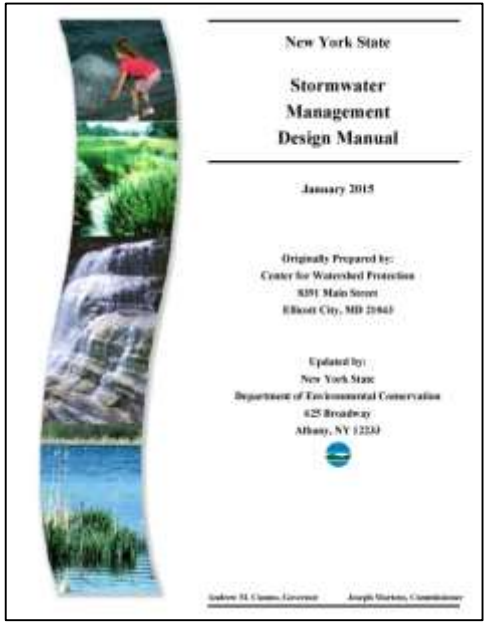
5.1: Planning for GI: Preservation of Natural Features and Conservation Design

5.1.2: Preservation of Buffers

5.3: Green Infrastructure Techniques

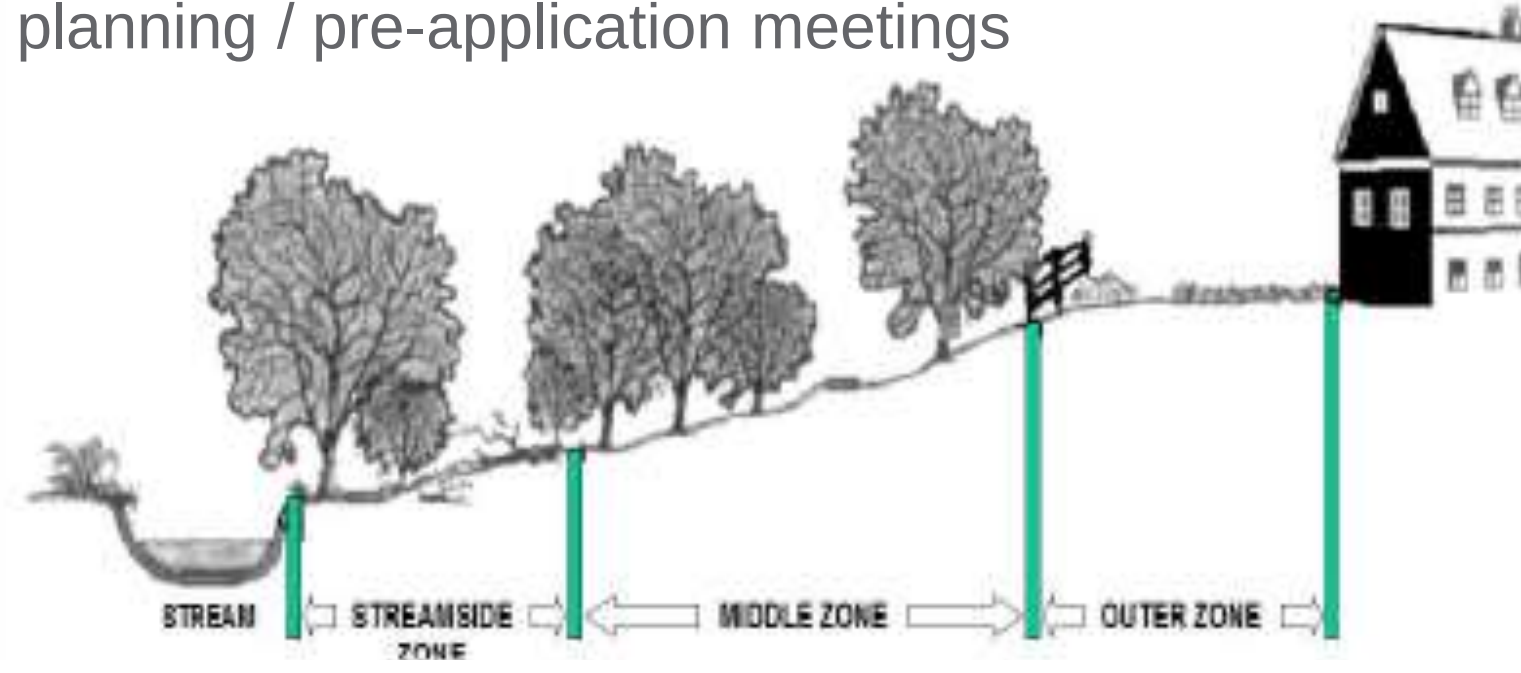
5.3.1: Conservation of Natural Areas

5.3.2: Sheetflow to Riparian Buffers or filter strips



5.1.2: Preservation Of Buffers

- Guidance to Define, Delineate and Preserve Buffers
- Useful for planning / pre-application meetings



5.3.1: Conservation of Natural Areas

- Subtract conserved area from contributing area
- Must preserve indefinitely
- Conserved area must be at least 10,000sq ft
- Runoff cannot directed into the buffer

www.co.dutchess.ny.us/EnvironmentLandPres/fittinginto.pdf

5.3.2: Sheetflow to Riparian Buffers

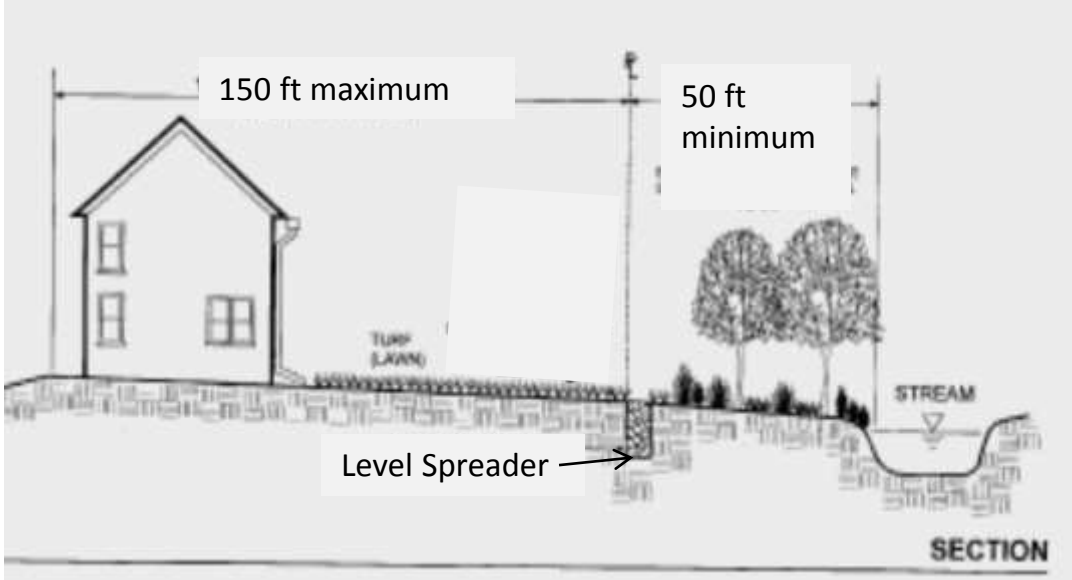
Contributing Site Requirements

- Maximum contribution length:
  - 150ft pervious cover
  - 75ft impervious
- Runoff must be:
  - Sheet Flow (with up to 3% slope)
  - Level Spreader

5.3.2: Sheetflow to Riparian Buffers

Buffer Requirements

- Minimum buffer width:
  - 50ft for <8% slope
  - 75ft for 8 -12% slope
  - 100ft for 12 -15% slope
- Fully Vegetated
  - maintained natural
- No overflow to waterbody



5.3.2: Sheetflow to Riparian Buffers

Where it will work best

- Stable perennial stream on site
- Existing riparian buffer vegetation
- Slope: < 3% in contributing area
  < 8% in buffer
- Soils: Hydrologic group A and B
- Receiving mostly pervious area runoff
- Where local laws already require a buffer!

Riparian Buffers for stormwater reduction

Perceived Limitations:

- Requires a stream on site
- Loss of buildable space
- Risk of failure from stream erosion
- Potential areas for pests
- Requires maintenance
- Inappropriate for higher pollutant loading

Riparian Buffers for stormwater reduction

Benefits:

- Reduce erosion (prevent land loss!)
- Help keep structures out of the floodplain
- Reduce pollutant load
- Protect stream and shoreline habitats
- Inexpensive
- Opportunity for recreational uses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Thank You

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