Climate Smart Communities – Green Infrastructure Case Studies

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Presentation Outline

- Hudson River Estuary Program
- Impact of stormwater
- NYS Stormwater Management Design Manual
- Examples of practices
- Benefits
- What you can do

Rain garden, Piermont Library
Hudson River Estuary Program

Core Mission

• Ensure *clean water*
• Protect and restore fish, wildlife, and their *habitats*
• Provide water recreation and river *access*
• Adapt to *climate change*
• Conserve world-famous *scenery*
Hudson River Estuary Watershed
Importance of Watershed

The land and water that drain to a common outlet

From NEMO
Impervious Surfaces and Stormwater

From EPA

NYS Department of Environmental Conservation
The Problem with Impervious Surfaces

From EPA
The Problem with Impervious Surfaces

From EPA
Stormwater Carries Pollutants

- Most stream impairments in the Hudson Valley due to polluted runoff
  - Documented for ~35% of streams
- Traditional stormwater management
  - Impervious surface -> storm sewer -> streams
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Stormwater Carries Pollutants

- Water *quality* problems
  - Sediment
  - Nutrients
  - Road salt
  - Oil/grease
  - Trash

- Water *quantity* problems
  - Flooding
  - Erosion
Overflowing Sewage

• Wet weather leads to overflows
  – Combined sewer or separated sewer
• Impacts public health, water recreation
• Degrades water quality
What is Green Infrastructure?

- Different approach to stormwater - natural and engineered systems that mimic nature
- Manage runoff by maintaining or restoring natural hydrology
  - allow stormwater to *infiltrate* and be used by plants
Gray vs. Green Infrastructure
Green Infrastructure

- Scales – site, sewer-shed, municipality, watershed, region
- Provides multiple benefits
  - Slows the flow of runoff
  - Removes pollutants
  - Keeps water out of the storm sewer system
  - Adds vegetation to the landscape
Green Infrastructure Requirements

- August 2010 - Updated NYS Stormwater Design Manual
- Chapter 5 – Green Infrastructure
- **New** development – use green infrastructure
1. Planning
   A. Preserving natural areas
   B. Reducing paved surfaces
2. Green infrastructure practices
1. Planning
   A. Preserving natural areas
   B. Reducing paved surfaces
2. Green infrastructure practices

NYS Stormwater Design Manual

Avoid stormwater
NYS Stormwater Design Manual

1. Planning
   A. Preserving natural areas → Avoid stormwater
   B. Reducing paved surfaces → Reduce stormwater

2. Green infrastructure practices
1. Planning
   A. Preserving natural areas
      ➔ Avoid stormwater
   B. Reducing paved surfaces
      ➔ Reduce stormwater

2. Green infrastructure practices
   ➔ Manage stormwater
1. Green Infrastructure Planning

A. Preserve natural areas – reduce disturbance, cluster development
1. Green Infrastructure Planning

A. Preserve natural areas – reduce disturbance, cluster development

B. Reduce paved surfaces – driveways, parking lots, roads, etc.
2. Green Infrastructure Practices

• Natural features and engineered practices that infiltrate runoff on-site
  – Treat stormwater closer to where the rain falls
  – Several small practices instead of one large one

• Examples on HREP website:
  http://www.dec.ny.gov/lands/58930.html