Coastal Watershed Restoration Planning Guidebook

North Carolina
Coastal Federation

Working Together for a Healthy Coast

Rationale for the Guidebook

- 3,573 square miles of legally impaired coastal waters in North Carolina in need of restoration
- The N.C. Coastal Federation developed the Watershed Restoration Guidebook with EPA funding
- Presents a novel method of stormwater runoff volume reduction
- Aligned with the EPA watershed management guidelines

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Guidebook Objectives

1. Establish long-term goals for improving or protecting coastal waters and subwatersheds
2. Develop strategies to accomplish these goals
3. Ensure stakeholder participation
4. Identify and analyze pollutant characteristics
5. Measure water quality goals
6. Result in management measures to meet the desired objectives

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Reduction Plan Development Phases

1. Introduction and background
    - Volume reduction philosophy
    - Regulatory background
2. Steps to develop the Watershed Restoration Plan
    - Partnerships
    - Establish goals and indicators
    - Watershed delineation
    - Find data
    - Volume reduction goals
    - Management techniques
3. Creating, funding, and implementing the Plan

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Volume Reduction Philosophy

Land use change

Hydrologic modification

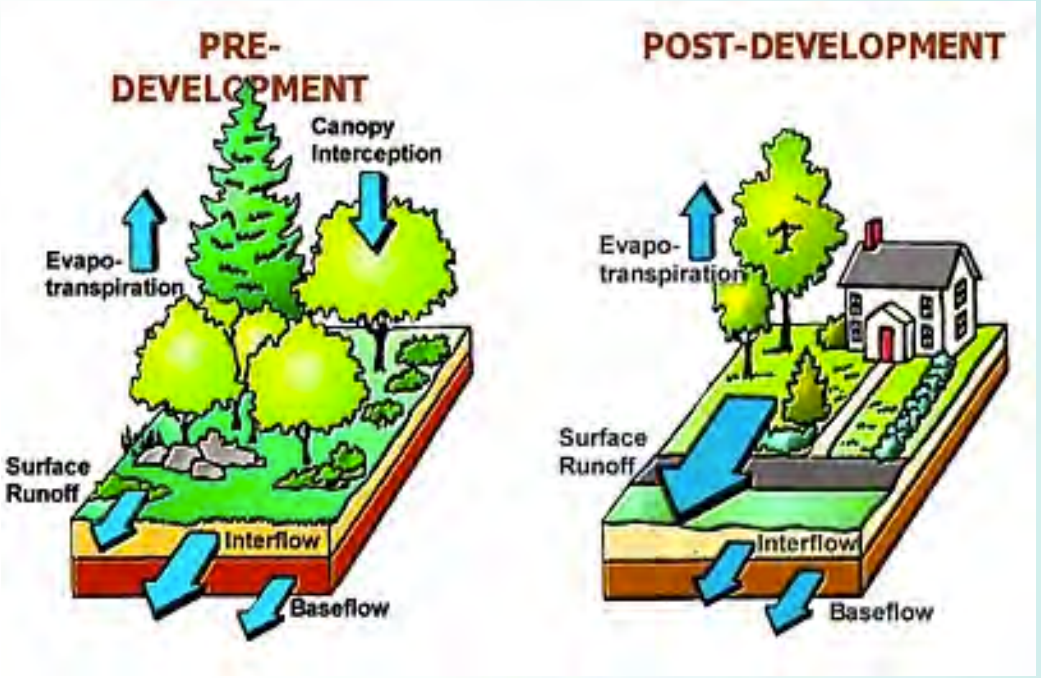
Increased stormwater runoff

Water impairments

Volume Reduction Philosophy

- **Traditional Methods:**
  - End of pipe treatment
  - Source treatment

- **Novel Method:**
  - Reduce the overall stormwater *volume* carried via impervious surfaces



Courtesy of the State of Maryland's StormwaterPrint

Regulatory Background

Clean Water Act 1972
- Existing and designated uses – 1975
- Section 303(d) – Impaired waters – TMDL

Clean Water Act in N.C.
- Redbook – Surface water quality standards
- Shellfish Sanitation and Recreational Water Quality (DMF)
  - SA – Market shellfish
  - SC – Aquatic life, secondary recreation
  - SB – Primary recreation

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Steps to Developing the Watershed Restoration Plan

Step 1: Establish partnerships and stakeholder integration

Step 2: Set:

- Goals
  - Primary goals
  - Secondary goals
- Indicators
  - Fecal coliform

Step 3: Delineate watershed boundaries:

- 12 digit Hydrologic Unit Codes (HUC)
- My Waters Mapper (http://watersgeo.epa.gov/mwm/)
- USGS Stream Stats – smaller than 12 digit HUC (http://water.usgs.gov/osw/streamstats/north_carolina.html)

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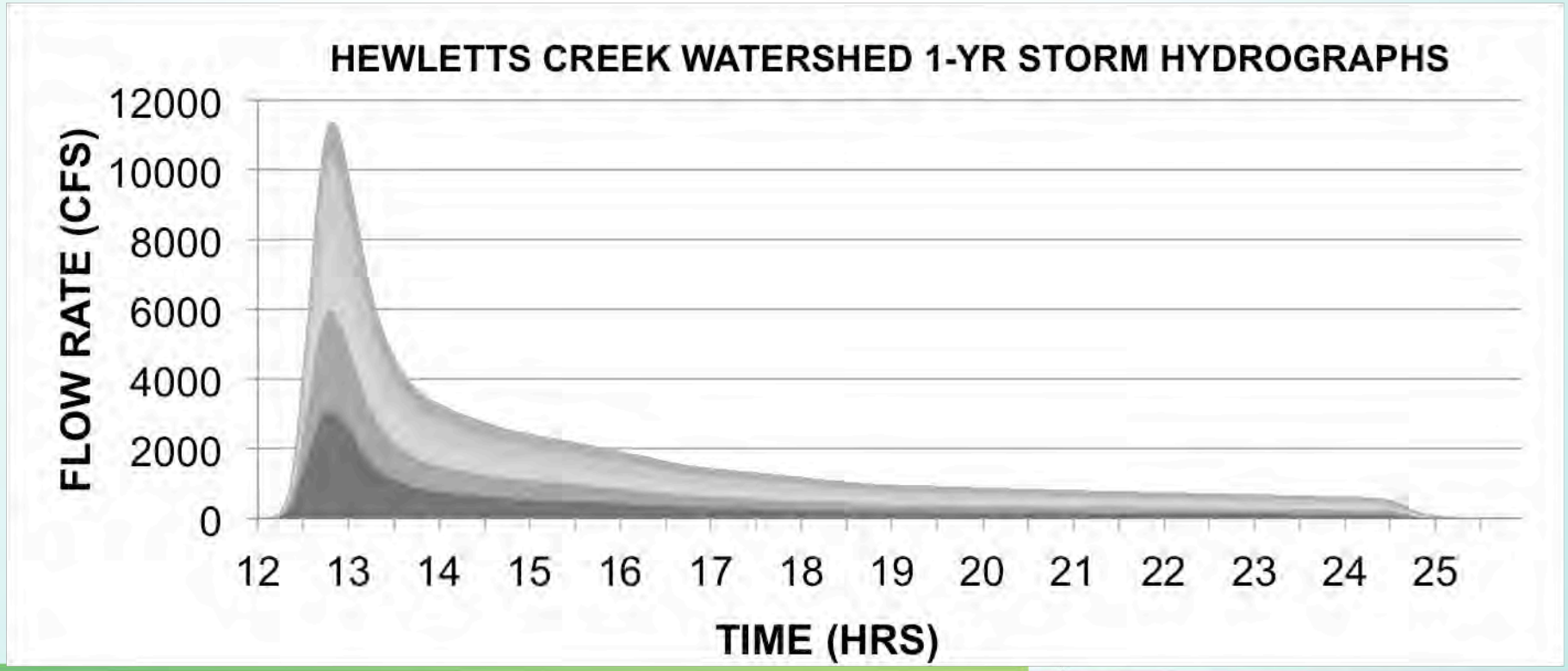
Step 4: Finding Data

Types of Useful Data				
Physical and Natural Properties	Land Use and Population Characteristics	Waterbody and Watershed Conditions	Pollutant Sources	Waterbody Monitoring
Watershed boundaries	Aerial photography	Water quality standards	Point sources	Water quality
Hydrology	Land use and land cover	305(b) report	Animal operations	Flow
Topography	Existing management strategies	303(d) list	Wastewater	Biology
Soils	Demographics	TMDL report	Nonpoint sources	Geomorphology
1 yr./ 24 hr. storm		Source Water Assessments	Stormwater	
Habitat				
Wildlife				

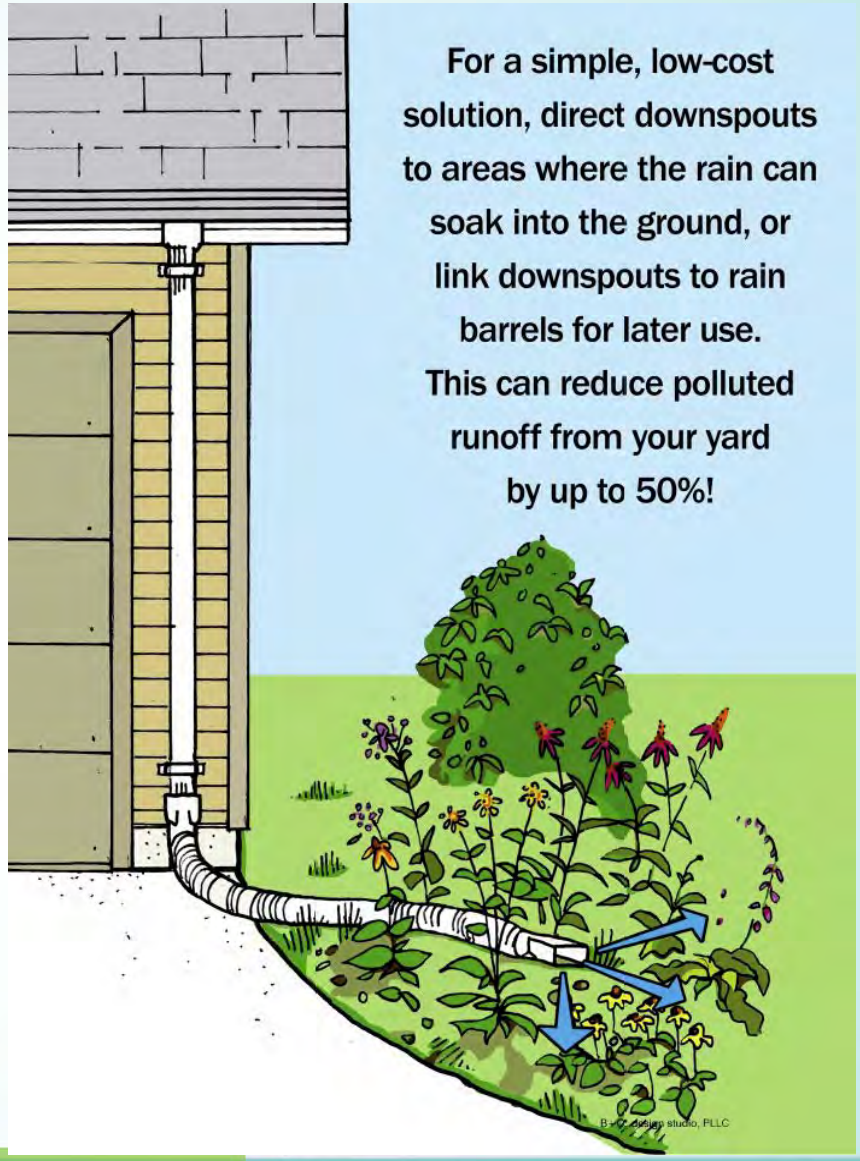
Step 5: Establish Volume Reduction Goals

1. Formalize baseline year
2. Gather necessary data – historic land use, rain fall, history of water closures
3. Establish volume reduction goal using the 'Runoff Calculation Tool'
    - A hydrograph shows change in stormwater runoff through time



Step 6: Identify Management Techniques

Low Impact Development:
- Native landscaping
- Disconnected impervious surfaces
- Redirected downspouts
- Rain barrels
- Permeable pavements
- Rain gardens
- Cisterns
- Artificial wetlands



Design and Implement the Plan

1. Select management strategies
2. Establish measurement criteria
3. Develop measureable milestones
4. Develop monitoring components
5. Define partner responsibilities
6. Create implementation budget
7. Identify necessary technical assistance
8. Identify funding resources and opportunities
9. Develop implementation schedule
10. Measure progress and evaluate Plan

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Conclusions

Easily adaptable method to address issue of Stormwater Reduction

- Strategy is flexible and broadly applicable
- Resources available to find data applicable to local watersheds

Alternative to CWA Section 303(d) List TMDL requirements

Products and services which can be derived from the Guidebook

- Hydrographs
- Management Plan
- Preventative Measures for Coastal Contamination
- Appendix of Resources

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Find the Guidebook at:

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NCCOAST.ORG

3609 N.C. 24, Newport, NC 28570

252.393.8185