City of Hendersonville Developers Conference

March 25, 2004

Prepared By: Consoer Townsend Envirodyne Engineers, Inc.

City of Hendersonville

Introduction to Presentation

- Why are we here today?
  - Provide a brief history of stormwater issues, guidance and requirements
  - Provide information needed to fully comply with Hendersonville's NPDES Permit Implementation Program
  - Provide a forum for discussion

Background

- The Clean Water Act of 1972
  - Set the basic structure for regulation
  - Set effluent standards and water quality standards
  - No discharges without an NPDES permit
  - Amended in 1977, 1987

Background

- The Clean Water Act Amendments of 1987
  - Continued focus on toxics
  - Authorized citizen suits
  - Funded sewage treatment plants through construction grant program
  - Delegation of program from EPA to states, with EPA oversight
  - Began the focus on stormwater permitting with the Phase I regulations targeting large municipalities, industries, and construction sites greater than 5 acres

Background

- EPA Phase II Stormwater Permits
  - EPA Regulations Finalized in 1999 required states to have smaller municipalities develop stormwater program
  - Required construction sites one acre or greater (cumulative) to obtain NPDES Permits

Requirements Tennessee Department of Environment and Conservation

- TDEC Construction Permit
  - Notice of Intent must be filed 30 days prior to land disturbance
  - Storm Water Pollution Prevention Plan (SWPPP) prepared and onsite before grading begins
  - Install and maintain Erosion Prevention and Sediment Control (EPSC)
  - Permittee to complete site inspections
  - Upgrade EPSC when stormwater pollution is apparent
  - Notice of Closure submitted at end of project
- For Hendersonville
  - Must file NOI and obtain TNR# before receiving grading permit. The TNR# must be listed on the grading permit.

Background

- Are silt and suspended solids a problem in Tennessee?

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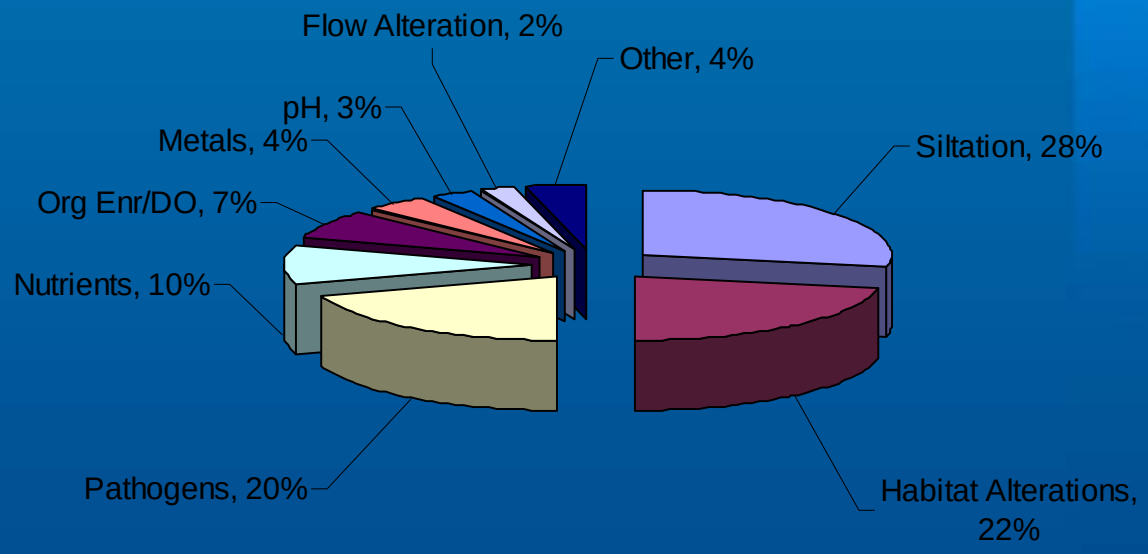
Background

- According to the State's 2002 305(b) water quality report, siltation is the largest cause of impairment to water quality in Tennessee streams.



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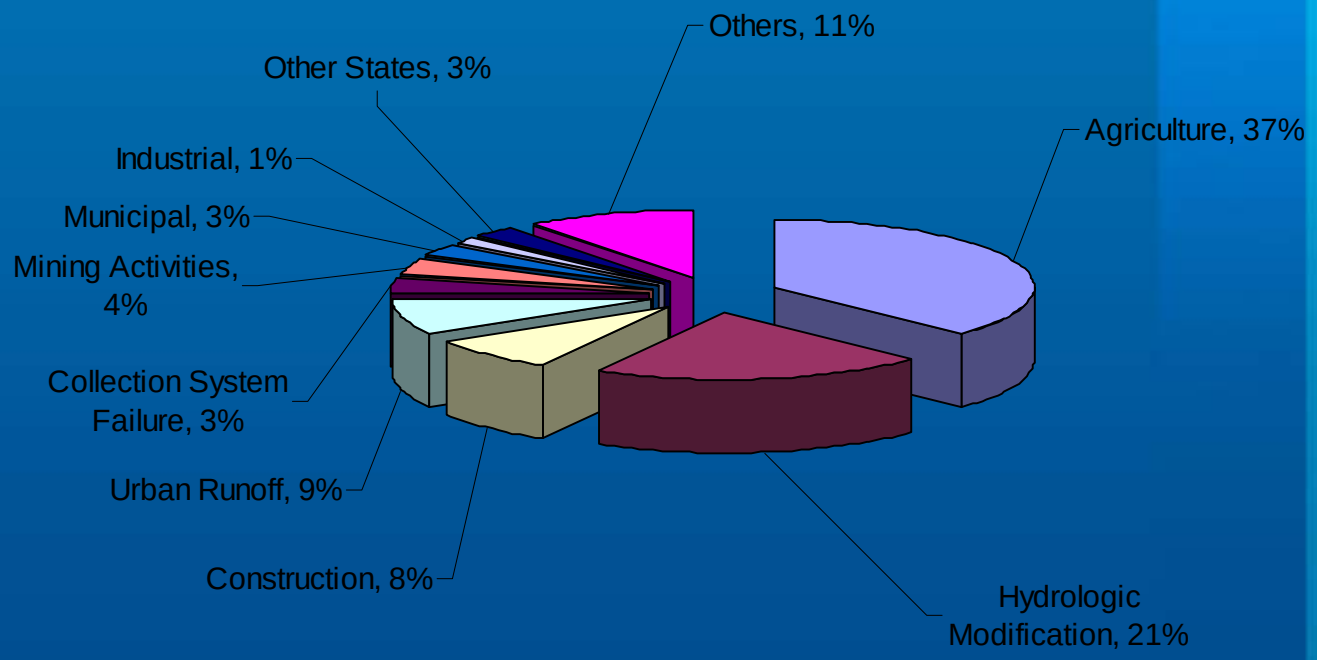
Background

- Sources of Stormwater Impact In Tennessee



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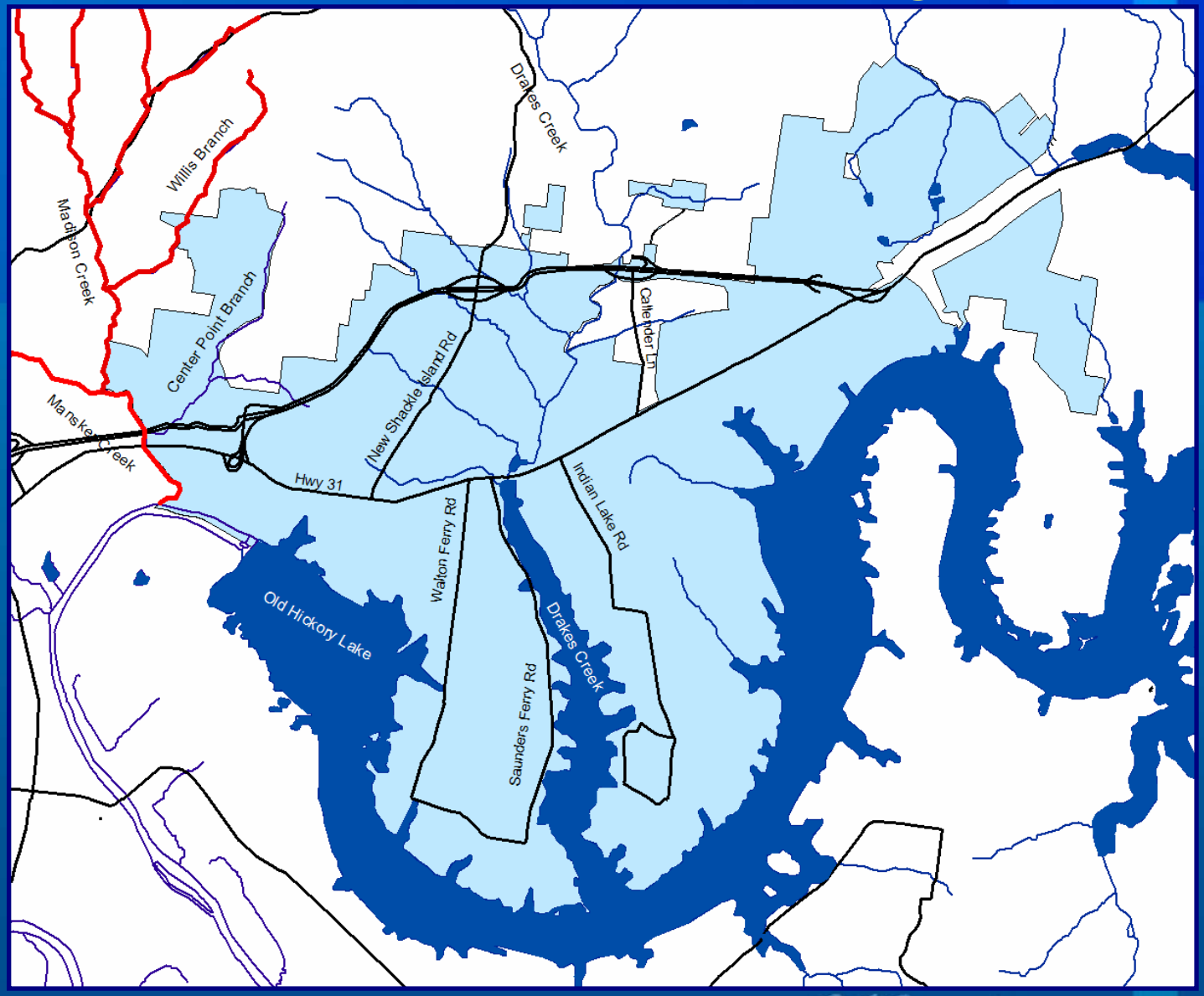

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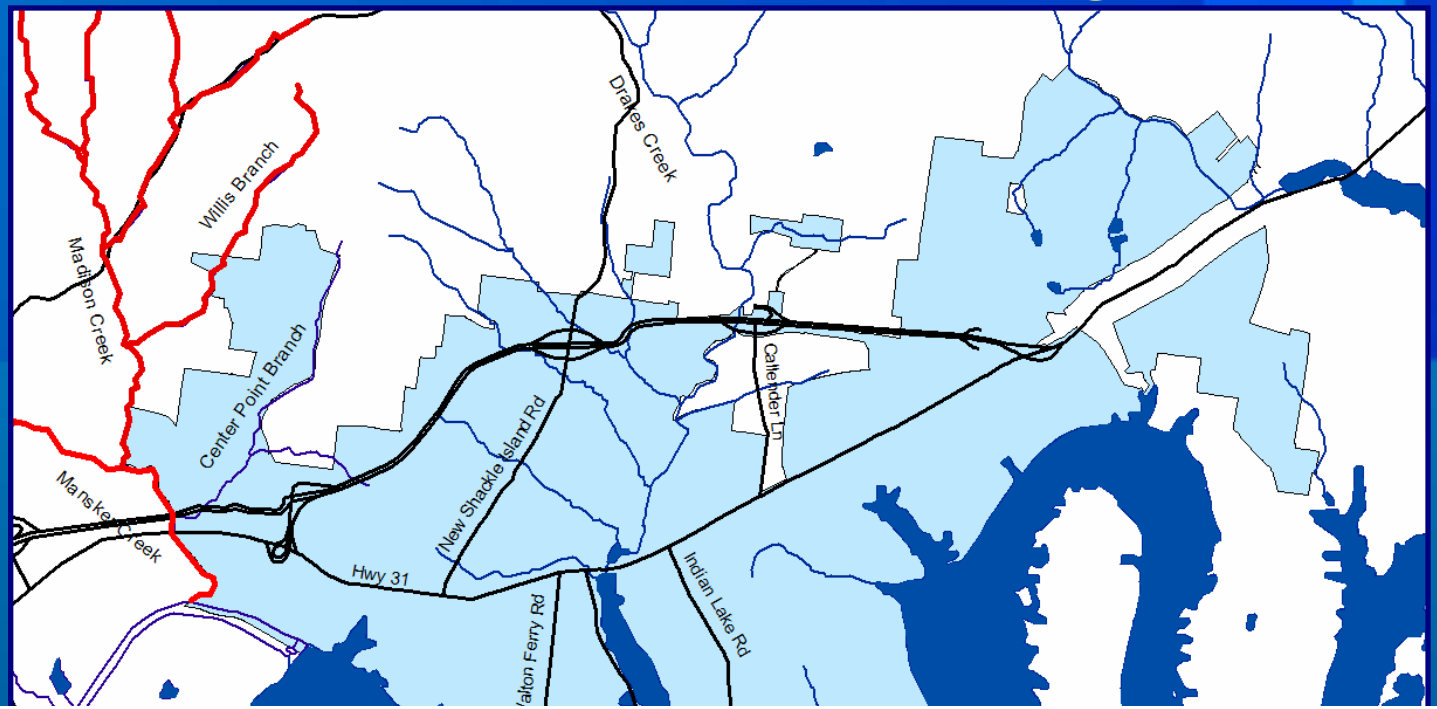

- Siltation currently impacts 4,163.5 stream miles 2,686 lake acres in Tennessee.
  - 2.5 miles in Hendersonville
    - 1.5 Miles of Mansker Creek
    - > 1 Mile of Madison Creek

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Background

- Siltation causes impairment by altering the waters physical, chemical, and biological properties.

Drakes Creek

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Background

- Pollution due to siltation also has a significant economic impact due to:
  - Increased water treatment costs
  - Increased maintenance
  - Direct impacts to navigation (dredging for boat dock access)
  - Increased possibility of flooding

Background

- $5 Million spent to dredge clean Drakes Creek.
- Silt in many areas may be carried to streams and rivers downstream of their source. In Hendersonville it stops in our lake!

Drakes Creek

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Background

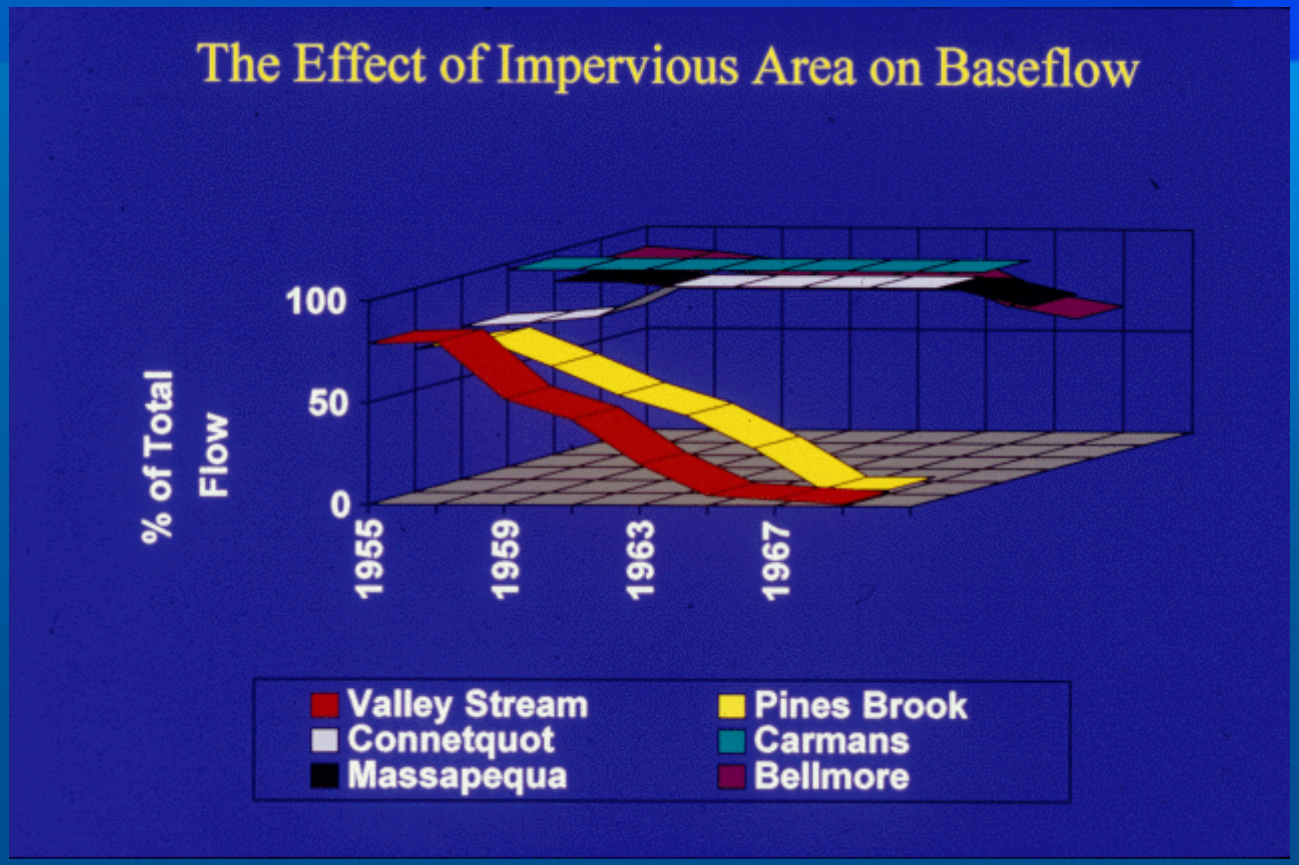
- Developed areas can also cause stormwater flow concerns
  - In a forest, rain soaks into the ground and is either taken up by tree roots or continues to move down through the soil and into the groundwater.
  - When rain falls on impervious cover, it cannot soak into the ground and instead becomes stormwater runoff.
  - Impervious cover produces 16 times more stormwater runoff than forest.

Background

- Impervious Cover
  - Any hard surface that restricts the absorption of rainwater
    - Roads
    - House and building roofs
    - Parking lots

Background

Such impervious areas can cause a headwater stream that was once perennial to become intermittent. One example is a set of streams in the Long Island, New York region. The graph shows the predominantly agricultural watersheds that have been able to sustain flow during dry weather.



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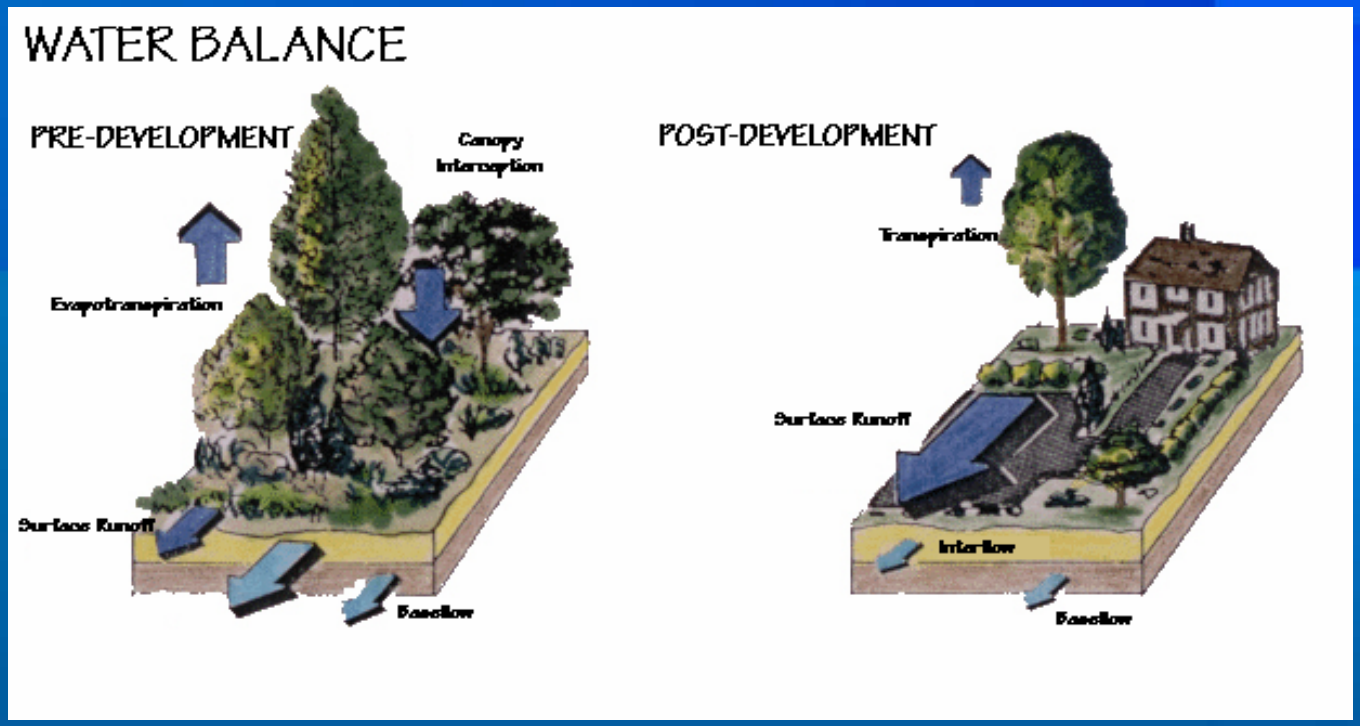

- This diagram shows how development and its corresponding increase in impervious cover disrupts the natural water balance. In the post-development setting, the amount of water running off the site is dramatically increased.

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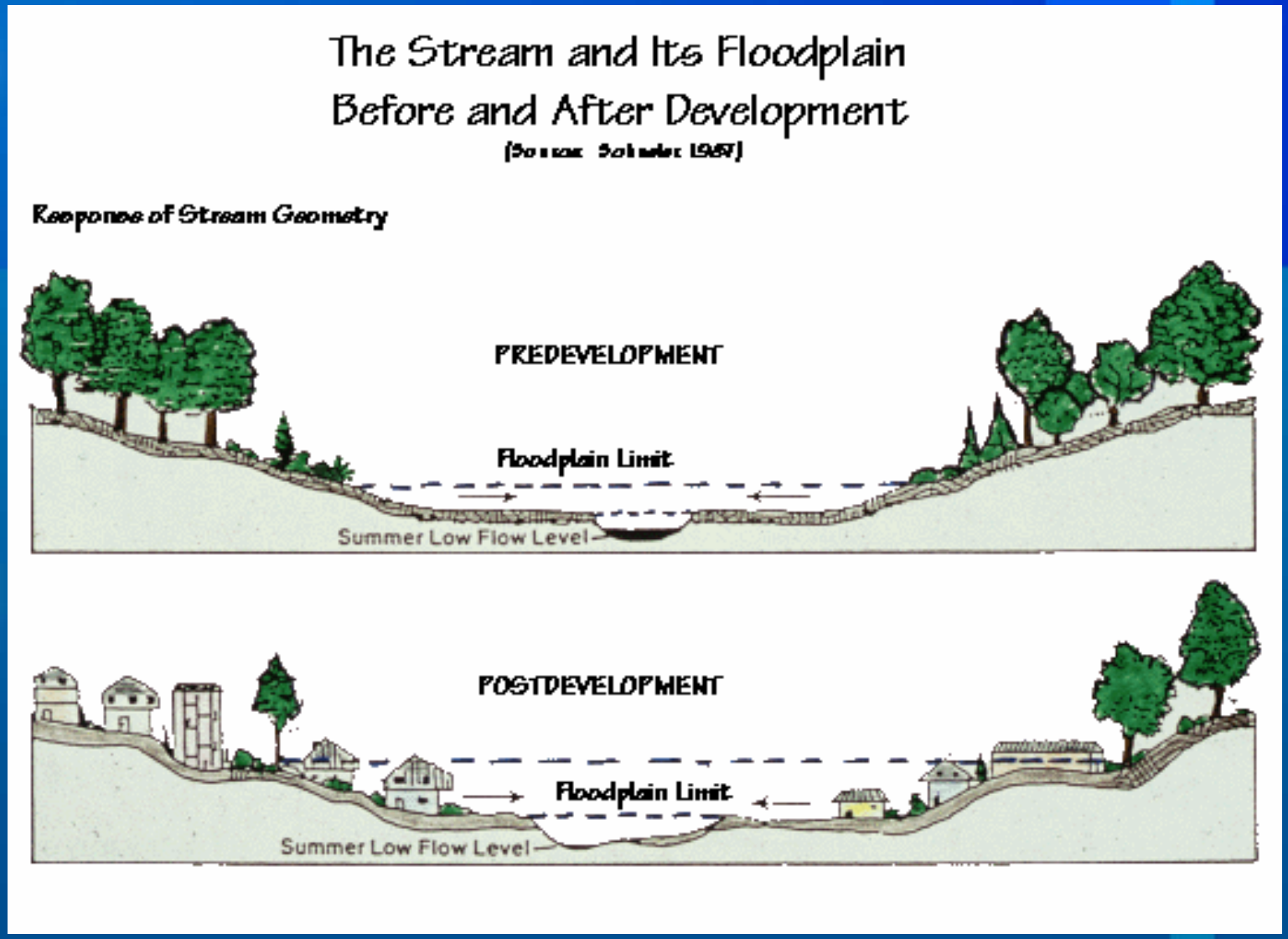
Background



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Background

In watersheds with less than 5% impervious cover, streams are typically stable and pristine, maintaining good pool and riffle structure, a large, wetted perimeter during low flow, a good riparian canopy coverage.

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Background

Photo Copyright 1999, Center for Watershed Protection

While this stream at 8-10% impervious cover is still relatively stable, signs of stream erosion are more apparent and include loss of the wetted perimeter, more eroded material in the banks, and debris.

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Background

At 10% impervious cover, the stream is slightly more visibly impacted. The stream shown here has approximately doubled its original size, tree roots are exposed, and the pool and riffle structure seen in sensitive streams is lost.

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Background

Active erosion becomes much more evident at 20% impervious cover with decreased substrate quality due to more material "flushing" through the system.

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Background

The surrounding area of this stream is also approximately 20% impervious cover and shows stream erosion that is much worse than in the previous slide due to an absence of vegetation to hold together bank structure.

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Background

This stream has a surrounding area of approximately 30% impervious cover. The large amount of impervious cover has increased the size of the stream by a factor of five to ten. The manhole in the middle of the diagram was originally in the floodplain and is an indicator of the degree to which channel erosion has occurred.

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Background

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In many highly urbanized areas, natural streams have been channelized to speed runoff along, but these fail to provide any habitat value.

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Hendersonville examples…

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Good and Bad BMPs

CONSTRUCTION ENTRANCE

Vehicle Mud Removal Area

No Construction Entrance Pad or Vehicle Mud Removal Area

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RUNOFF CONTROLS

Silt Fence

No Erosion Control

Failed Erosion Controls

No Erosion Control By The Lake

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STORM SEWER INLET

No Inlet Protection -Watch your Step!

No Inlet Protection

No Inlet Protection

Improperly Positioned

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OTHERS

Erosion

Improper Fuel Staging Area

Stockpile Needs Seeding

Needs Stream Crossing

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Insufficient Seeding

Permanent Geomat

Great Start – Needs Finishing

Great Start – Needs Finishing

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Muddy Stream Near Construction Area Entering the Lake

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Background

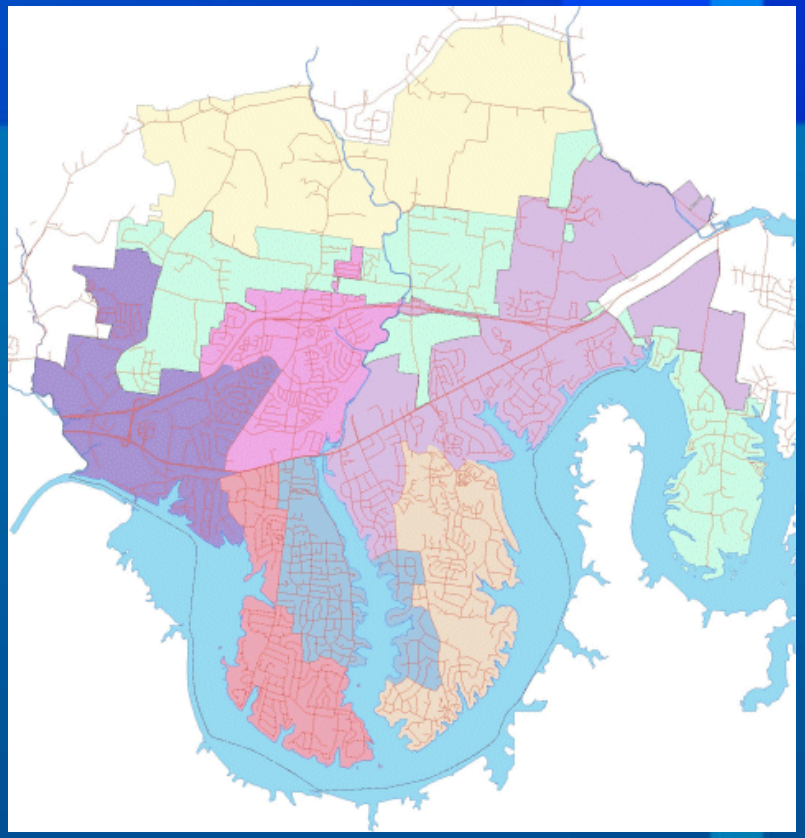
- So what can be done to reduce the negative impacts of stormwater runoff?
  - Education
  - Better practices for existing potential pollutant sources (garages, restaurants, etc.)
  - Better planning practices for future growth
  - Better practices to limit impacts of growth by using best management practices
  - Public involvement
  - A STORMWATER CONTROL PROGRAM

The Hendersonville Program

- The City was required to obtain coverage under the Phase II stormwater permitting program
  - Coverage obtained in March of 2003
  - Permit No. TNS075353
  - 5-year permit cycle
  - Currently in the first year of permit implementation
  - In various stages of implementation for the different elements of the permit

The Hendersonville Program

- The City of Hendersonville Program coverage area
  - 34.3 square miles within the corporate boundary
  - 19.6 square miles additional area within the urban growth boundary



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The Hendersonville Program

- Elements of Stormwater Program
  - Public Education
  - Public Participation
  - Illicit Discharge Detection and Elimination
  - Construction Site Runoff Program
  - Post Development Runoff
  - Pollution Prevention and Good Housekeeping
  - Annual Report

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The Hendersonville Program

- Public Education
  - Get the information out to the community!
  - Hotline for issues/complaints
    - Phone number to be established
  - Website available for information
    - www.hvilletn.org/Dept/PW/pubworks.htm

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The Hendersonville Program

- Public Participation
  - Provide an opportunity for the public to get involved
  - Advisory Committee
  - Stream clean-up groups
  - Storm drain marking program
  - Volunteer stream monitoring

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The Hendersonville Program

- Construction Site Runoff Program
  - Land Disturbance Ordinance
  - Soil Erosion Control Plan review procedures
  - Enforcement policies, procedures and penalties
  - Staff enforcement officer
    - Mark Buckreis
  - Best Management Practices (BMPs) for construction site phasing and clearing

The Hendersonville Program

- Land Disturbance Ordinance
  - Passed by the Board of Aldermen in 2003
  - Contains requirements and information covering
    - Land disturbance permits
    - Waivers to such permits
    - Stormwater system design and management standards
    - Post construction inspection requirements
    - Existing location and development requirements
    - Illicit discharges from land disturbance activities
    - Enforcement authority and procedures
    - Penalties
    - Appeals process

The Hendersonville Program

- Best Management Practices (BMPs) for construction site phasing and clearing
  - Currently in development
  - Creating and following a work schedule that balances timing of land disturbance activities and the installation of measures to control erosion and sedimentation
  - Reduces on-site erosion and off-site sedimentation

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- Post Development Runoff Program
  - Post-construction runoff ordinance
  - Post-construction BMPs
  - BMP maintenance requirements

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The Hendersonville Program

- What to expect in the coming months
  - Public education activities
  - Public participation opportunities
  - BMP development and distribution
  - In the process of refining construction site requirements and implementation of requirements
  - Post construction ordinance development and implementation
  - More opportunities to receive additional information about the stormwater program

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The Hendersonville Program

- Who should I contact to…
  - Schedule erosion control inspections
  - Schedule pipe inspections
  - Any other field inspection requests
  - Erosion control plan review
  - Erosion control plan revision approval

- Chip Moore, City Design Engineer
  - 590-4637

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The Hendersonville Program

- Alternate or emergency contact
- Jerry Horton, City Engineer
  - 822-1016, jhorton@hvilletn.org

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- Erosion Control Enforcement Officer
- Mark Buckreis
  - 822-1016

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The Hendersonville Program

- Issues not pertaining to stormwater pollution and erosion control such as drainage capacity, roadway specifications, or subdivision regulations

- Duane Allen, Assistant City Engineer
  - 822-1016

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Summary

- Stormwater runoff has a major impact on our community and our environment if not effectively managed
- Regulations now require strict adherence to requirements
- Program is currently in the process of full implementation
- As implementation occurs, more information will be shared
- Use the contacts list to obtain answers to specific questions at any time

Questions and Answers

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