



# 10 Mile Creek

## Limited Amendment

Public Hearing Draft  
Limited Amendment to the 1994 Approved and Adopted

# Clarksburg Master Plan & Hyattstown Special Study Area

to Allow an Exception to the Retail Staging Provisions

May 2011

Montgomery County Planning Department  
M-NCPPC  
MontgomeryPlanning.org

Community Workshop Two  
February 25, 2013



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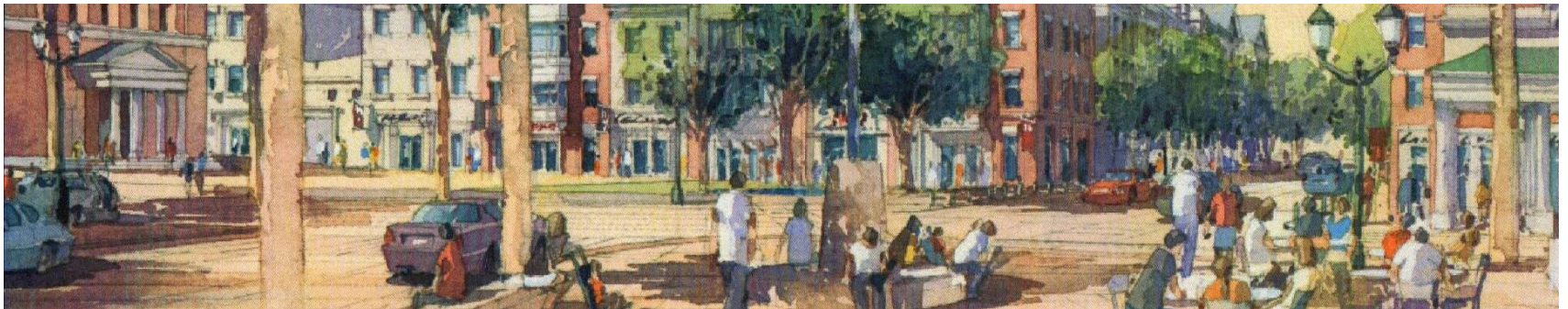
## Agenda

- Welcome/process/schedule
- Overview of what we heard last time
- Scenario - 1994 Master Plan and staging requirements
- SWM/ESD what has changed between 1994 and today
- Existing 10 Mile Creek watershed conditions
- Scenario analysis tools
- Q/A
- Review boards/one-on-one discussions
- Adjourn - 9:00



## Limited Amendment

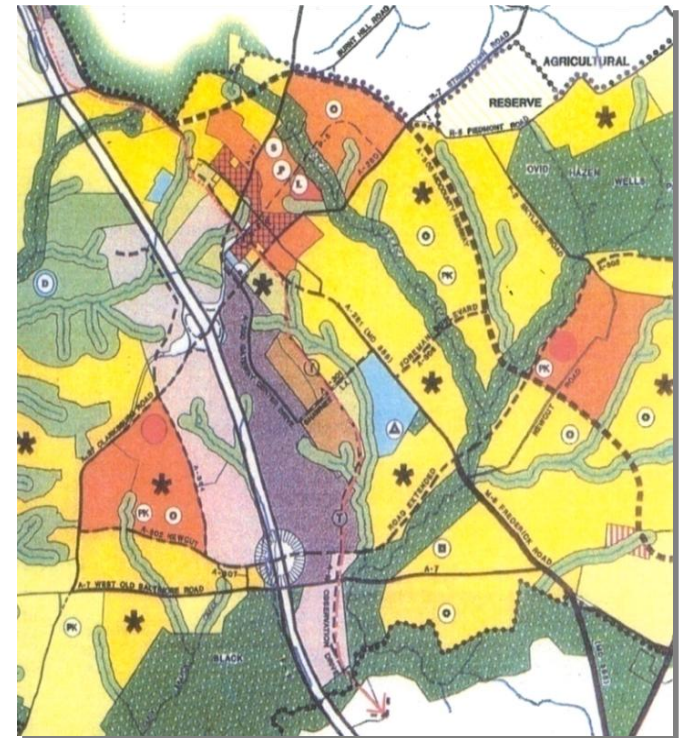
- October 9, 2012 - Planning Board authorized to proceed with a limited amendment to the Clarksburg Master Plan
- Limited to the Ten-Mile Creek watershed
- Goal - protect Clarksburg Town Center vision while protecting stream quality
- Consider development scenarios, impact avoidance, development guidelines and practices, mitigation and offsets to arrive at recommendations
- Does not consider land use or zoning changes outside this amendment and will not affect the progress of approved development





# 10 Mile Creek Limited Amendment

- Council Discussion
  - Limited in scope
  - Does not include the entire Town Center district
  - Commitments regarding Town Center remain intact
  - Planning decisions based on science
  - Protect creeks to a reasonable extent
  - Input from the public is important





## 10 Mile Creek

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- Environmental

- analyze existing water quality and natural resources
- analyze potential impacts of development
- recommend protective measures, guidance for development, and potential mitigation and enhancement projects

- Economic

- analyze potential real estate implications of development scenarios

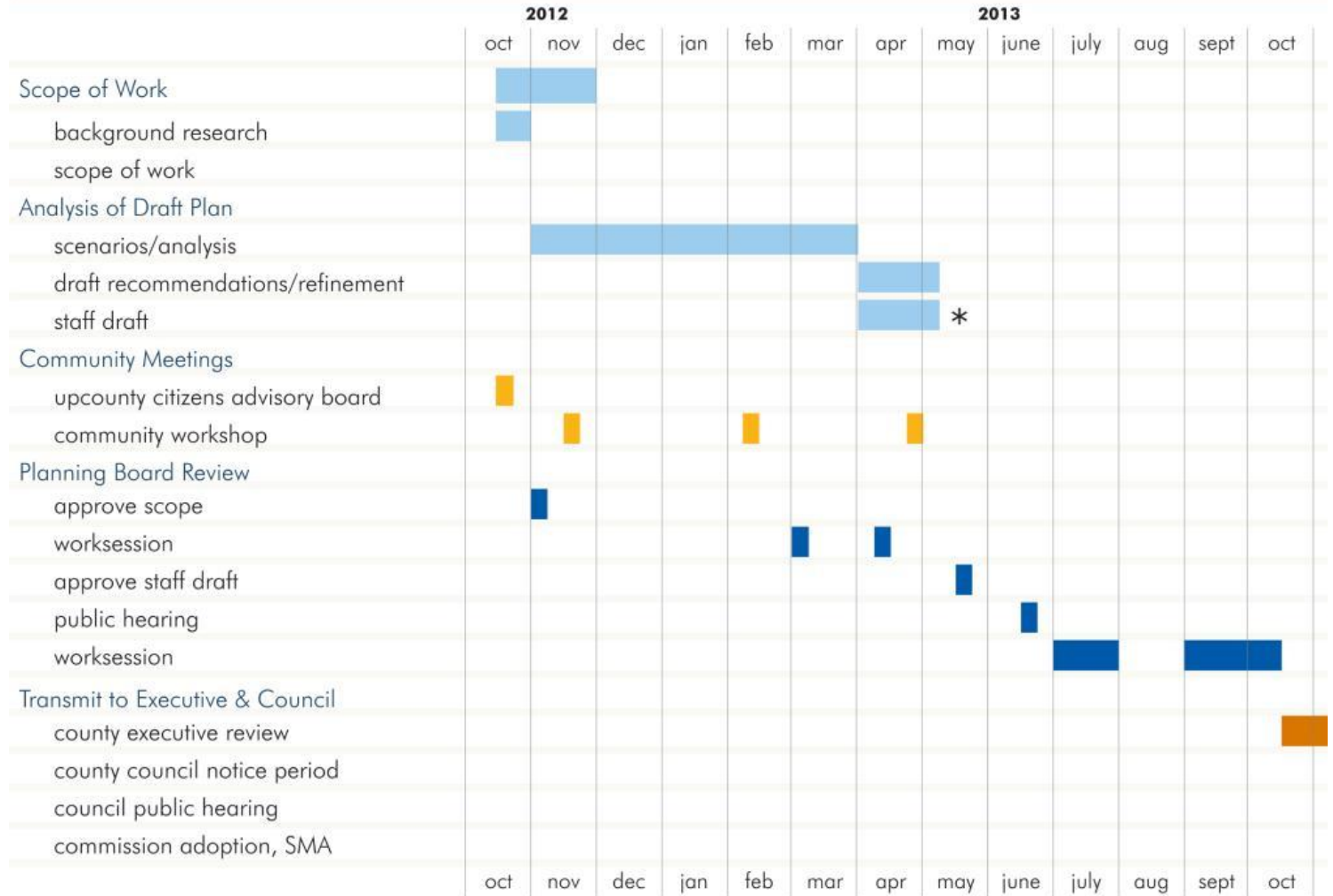
- Traffic/transportation

- analyze traffic and transportation issues of development scenarios



# 10 Mile Creek Limited Amendment

## Clarksburg Master Plan Limited Amendment for the Ten Mile Creek Watershed Area







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### Community Building

- Improve walkability
- Provide community facilities – but not in Ag Reserve
- Parkland and nature walks
- Smart development
- Plan development to maintain a rural agricultural nature
- Protect the historic district
- Provide promised core services in town center

### Economy

- Lack of the basic needs, stores restaurants , employment
- Support additional development
- Ensure town center areas are economically viable
- Attract business
- Measured residential growth and home businesses
- Limit retail to town scale
- Shopping similar to Kentlands



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## Transportation

- Improve walkability
- No transit = no development
- Bicycle lanes on Clarksburg Rd.
- Access to Metro and MARC, by shuttle?
- East-west public transit
- Too auto dependent
- Protect public safety
- Sufficient flow of traffic

## Environment

- Protect water quality, Ag Reserve and wildlife habitats
- Protect Ten Mile Creek and the lake
- Protect forest cover
- Lower ag nutrient loading
- Apply improved environmental technologies
- Balance development and environment
- Negotiate flexibility on locations

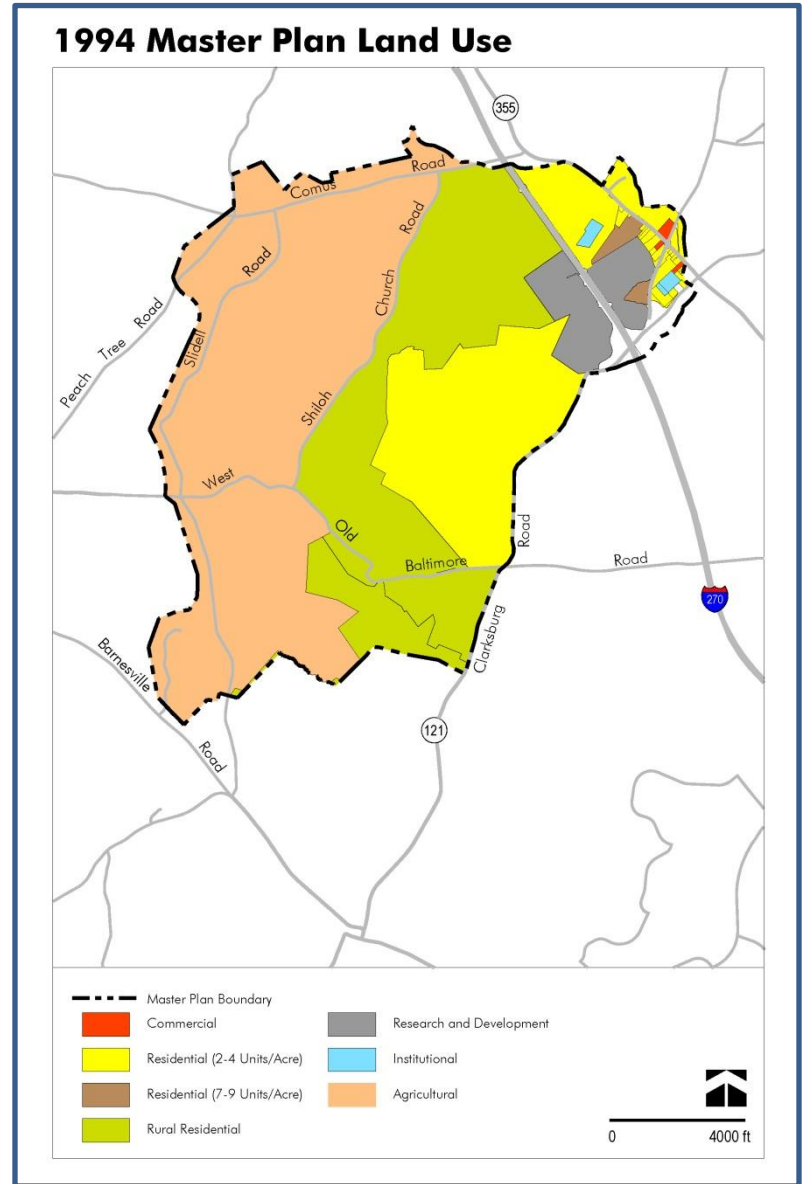




# 10 Mile Creek Limited Amendment

## *Watershed recommendations*

- Low density patterns and best management practices - most effective way to maintain quality
  - 64% of Ten Mile Creek watershed designated for ag. preservation/rural uses
- Mitigation strategies for rest:
  - Lower densities at edges
  - Added green buffers
  - Park dedication
  - Caps on imperviousness and development

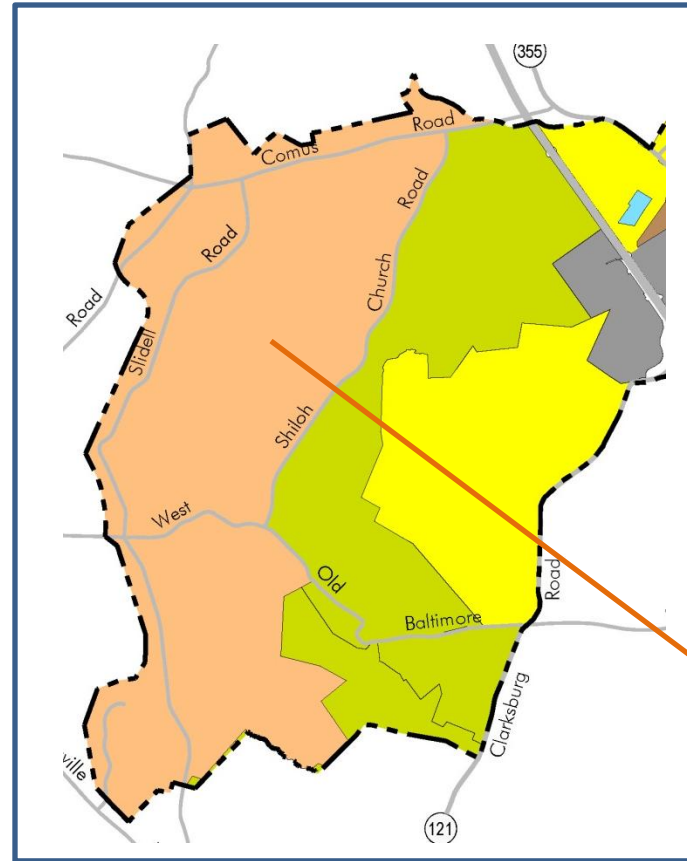




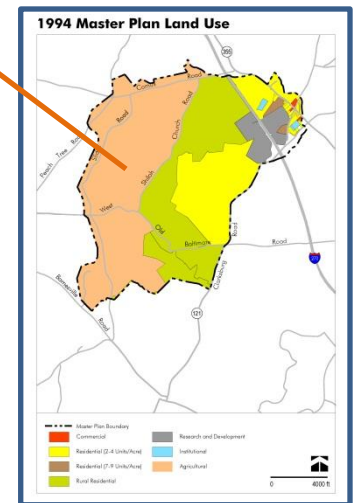
## 10 Mile Creek Limited Amendment

### Land Uses—West of I-270

- Largely ag and rural residential land uses
- “Balanced approach”: protect resources and provide housing/jobs
- 25 acre densities w. of creek and Shiloh Church
- 1-5 acre densities between Shiloh Church and Clarksburg roads
  - TDR zone provides housing
  - Added parkland and buffers



- Employment at I-270
  - Caps on density and imperviousness

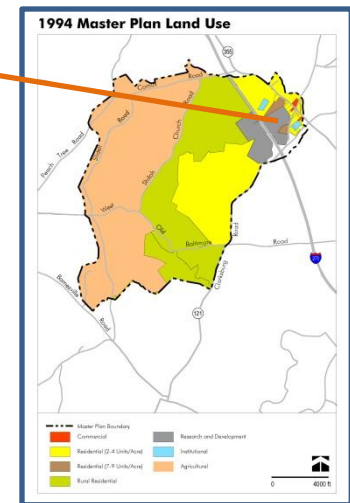




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## Land Uses—East of I-270

- Mitigation strategies based on land uses
  - Lower densities nearer Comus
  - Development focused nearer transit
- Floating PD zones chosen to achieve mixed use objectives





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## *Staging*

“....the staging of development is critical if Clarksburg is to coordinate the timing of development with the provision of public facilities, develop a strong community identity and protect environmentally fragile watersheds.” (p. 187)

- Stage 4 includes Ten Mile Creek watershed
- Triggers
  - Baseline biological assessment of Little Seneca and Ten Mile creek watersheds undertaken for at least three years
  - 2,000 building permits in Newcut Road and Town Center districts
  - First Water Quality Review Process report done
- Triggers met; Council ordered limited amendment in response



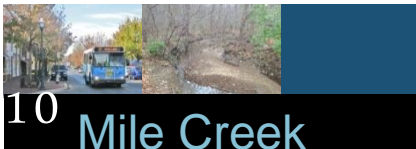
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# Different Stormwater Practices

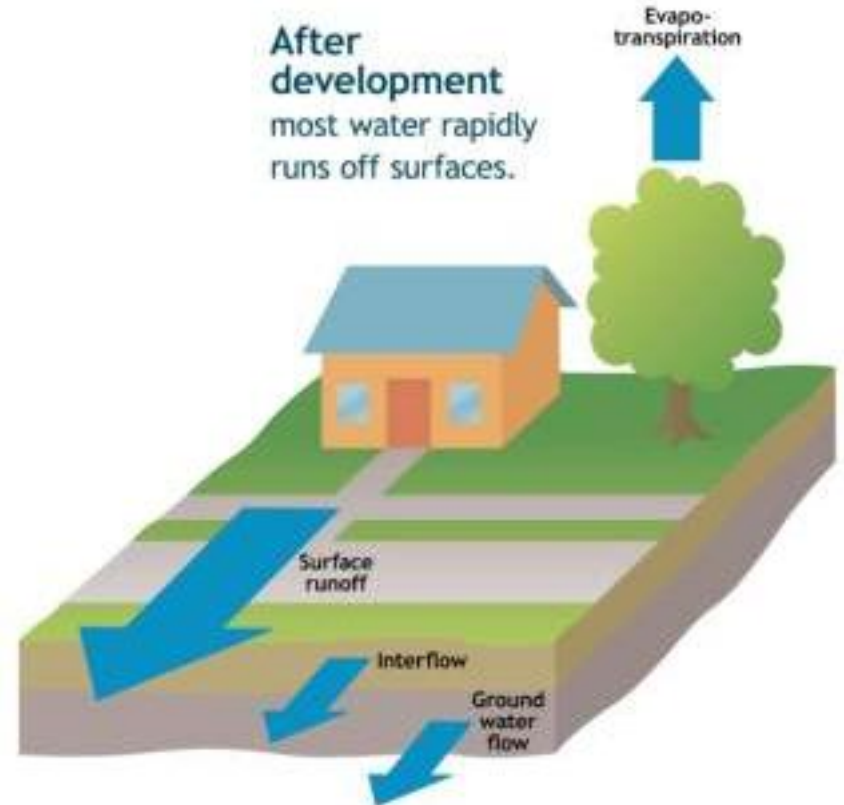
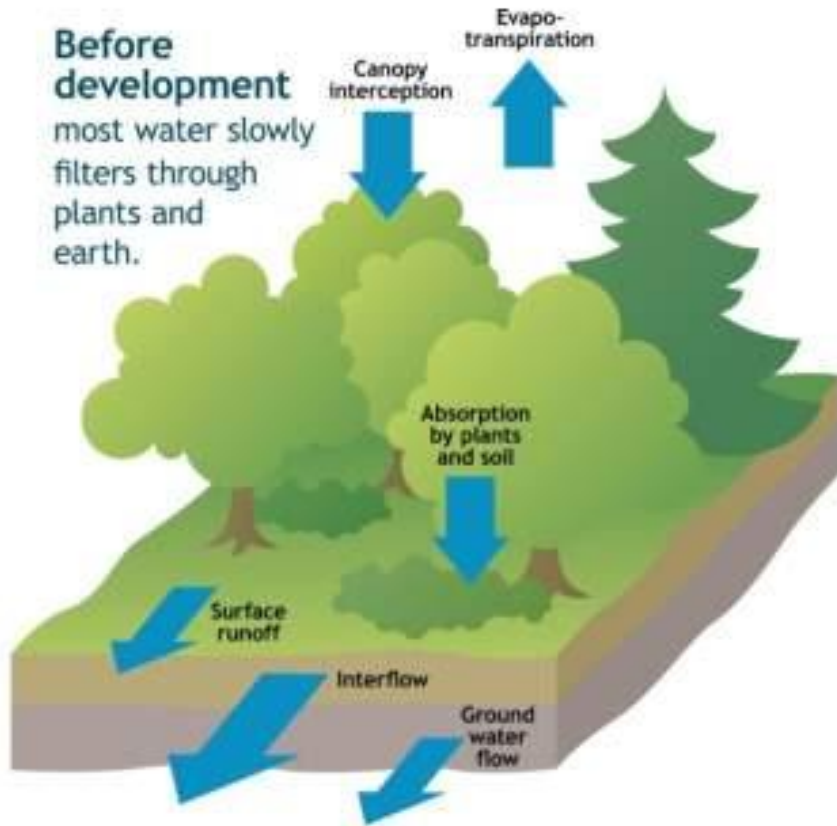
- Stormwater Before in Clarksburg
  - Focused on retention, detention and filtering
  - Gradual release of water to stream to reduce immediate impact
  - Special Protection Area requirements also included measures in series
- Environmental Site Design
  - Designed to more closely mimic natural systems in terms of how water gets to the stream
  - More, smaller treatment systems closer to the source of the runoff
  - Cannot replace the biological and nutrient cycling components of natural systems (plants, animals, carbon sequestration, cooling effects)
  - Cannot eliminate the impact of development



# 10 Mile Creek

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# Stormwater Impacts





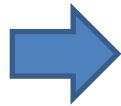


## Limited Amendment

- Small scale stormwater management
- Non-structural techniques
- Better site planning
- Mimic natural hydrology
- Minimize the impact of development

## Introduction to ESD

- Conserve natural features
- Minimize impervious surfaces
- Slow down runoff
- Infiltrate and evapotranspirate
- Innovative technologies



Typical Centralized Detention Pond

Small Scale, Integrated ESD Practices



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### **Alternative Surfaces**

- Green Roofs
- Permeable Pavements
- Reinforced Turf

### **Non-Structural Practices**

- Disconnection of Rooftop Runoff
- Disconnection of Non-Rooftop Runoff
- Sheetflow to Conservation Areas

## **ESD Practices**

### **Microscale Practices**

- Rainwater Harvesting
- Submerged Gravel Wetlands
- Landscape Infiltration
- Infiltration Berms
- Dry Wells
- Micro-Bioretenion
- Rain Gardens
- Swales
- Enhanced Filters
- Soil Compost Amendments
- Stormwater Planters
- Expanded Tree Pits
- Stormwater Curb Extensions
- Foundation Planters



# 10 Mile Creek

## Limited Amendment

### Rooftops



### Around Buildings



### Streets and Streetscapes



# ESD Landscape Positions

### Parking Lots



### Walkways and Other Paved Areas



### Landscape







# 10 Mile Creek

## Limited Amendment

# Rooftops → Green Roofs



Gibbs Elementary, LEED, Germantown



University of Maryland Shady Grove



Eastern Village Condo Green Roof



# Around Buildings → Disconnection of Rooftop Runoff



Rockville Senior Center, Source: Biohabitats



Gaithersburg Community Center, Source: Biohabitats

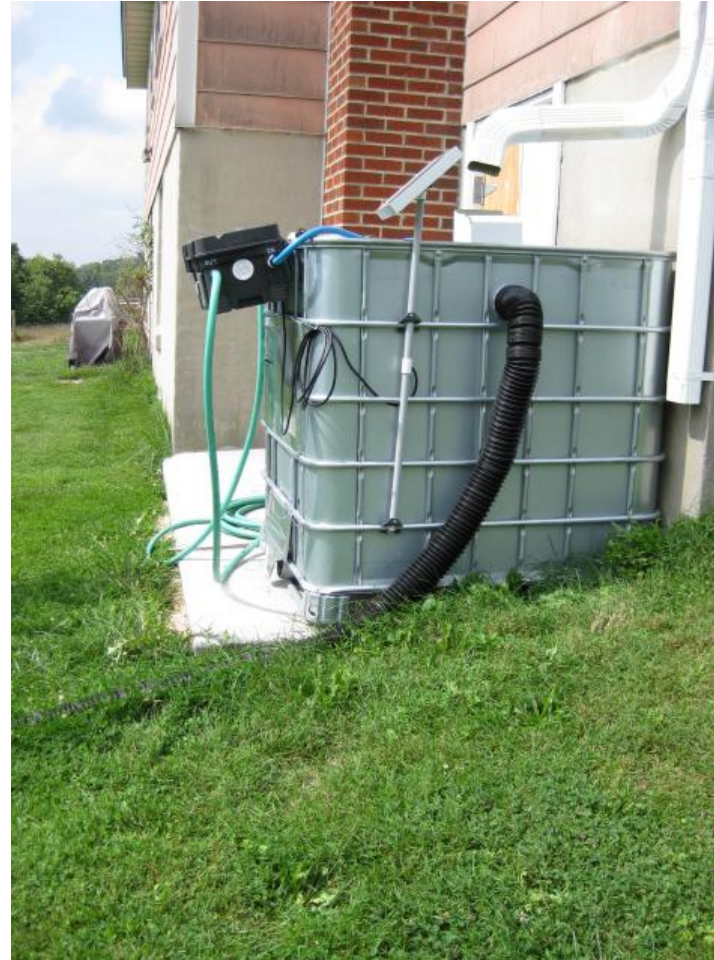


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# Around Buildings → Rainwater Harvesting



Rockville Senior Center Rain Barrel, Source: Biohabitats



Rainscapes Cistern





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# Around Buildings → Microscale ESD Practice



Lafayette College, PA, Source: Biohabitats Photo Simulation



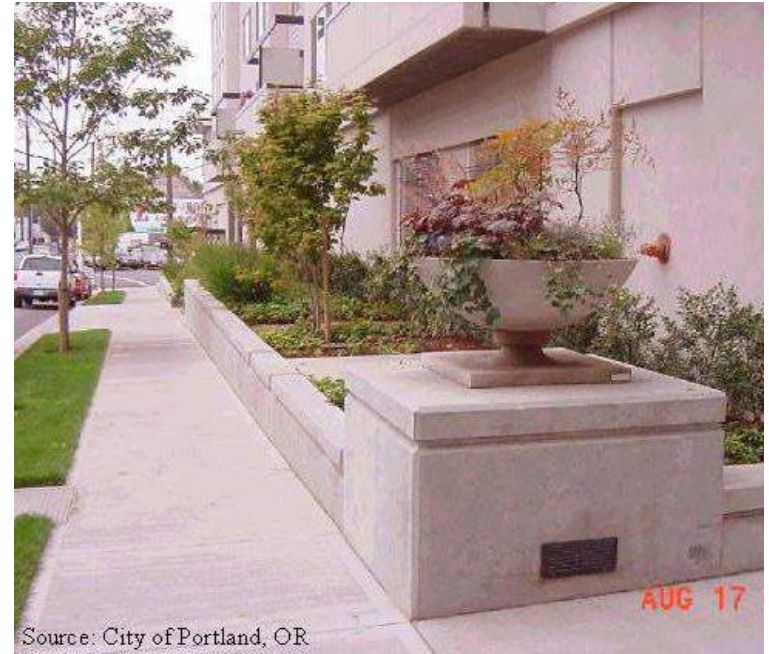
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Portland, OR, Source: City of Portland, OR

## Around Buildings → Foundation Planters


Washington, DC, Source: U.S. EPA



Source: City of Portland, OR

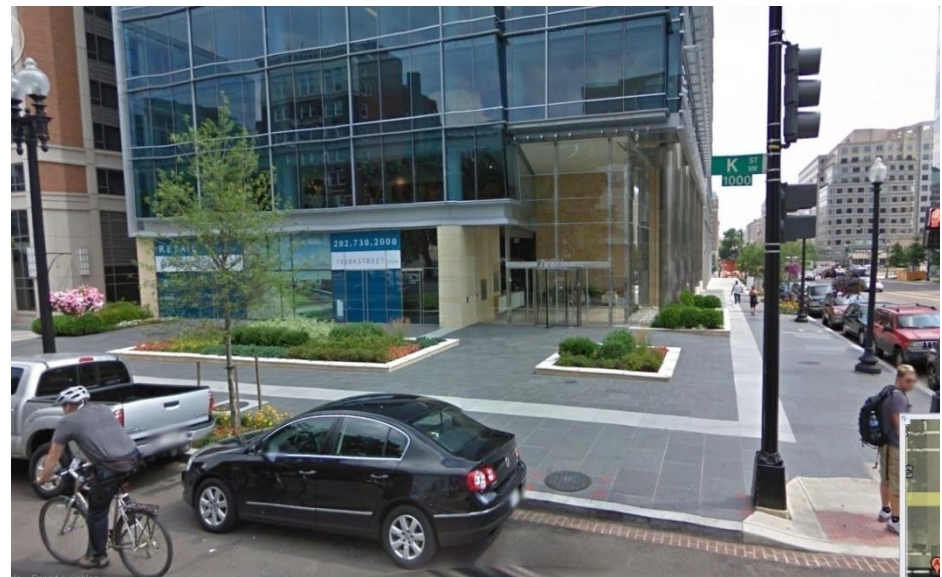
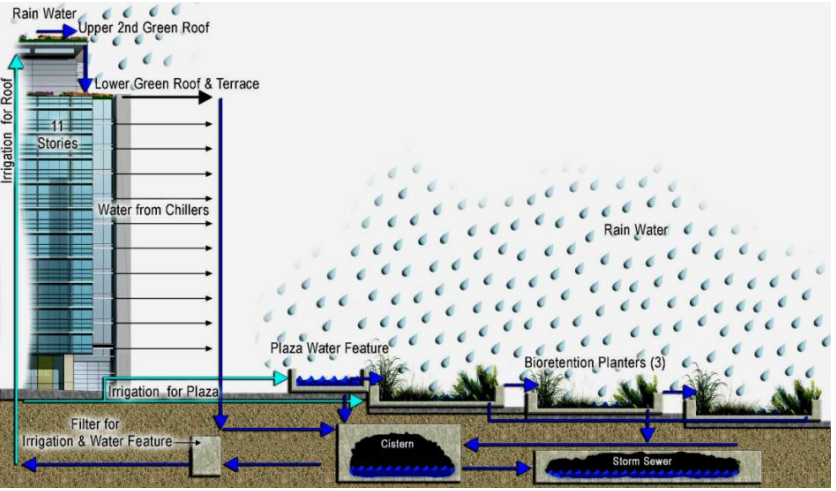
Portland, OR, Source: City of Portland, OR





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# Around Buildings → Bioretention



1050 NW K St, D.C. by Timmons Group



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# Streets and Streetscapes →

## Swales, Stormwater Planters, Curb Extensions



Fernwood Road dry swales, Source: DOT





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# Streets and Streetscapes →

## Swales, Stormwater Planters, Curb Extensions



Cloverly Elementary



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# Streets and Streetscapes →

## Swales, Stormwater Planters, Curb Extensions



Gaithersburg, MD, Source: Gallagher, Christine. 2009. "Green Streets Low Impact Development Initiative in Gaithersburg, MD"





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# Parking Lots → Permeable Pavements



Bethesda Methodist Church pervious concrete



Navy Yard, Washington, DC



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# Parking Lots → Micro-bioretentation, Swales



Colesville Health Center, Source: MC DEP





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# Parking Lots → Micro-bioretenention, Swales



Portland, OR, Source: Portland 2004 Bureau of Environmental Services Manual



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# Walkways and Other Paved Areas → Permeable Pavements





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# Walkways and Other Paved Areas → Permeable Pavements



Good Hope Road pervious concrete sidewalk, DOT





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## Landscape → Microscale Practices

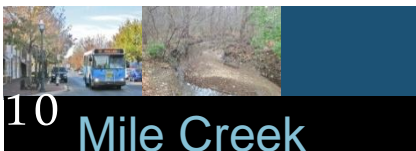


Dennis Avenue, Source: MC DEP



Sligo Creek Recreation Center, Source: MC DEP





# 10 Mile Creek

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# Streets and Streetscapes → Stormwater Planters



Source: Portland 2004 Bureau of Environmental Services Manual, Appendix H: Stormwater Management Facility Photos, September 2004 Stormwater Management. <http://www.portlandonline.com/BES/index.cfm?c=35122> Manual.



Lansing, MI



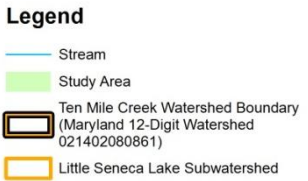
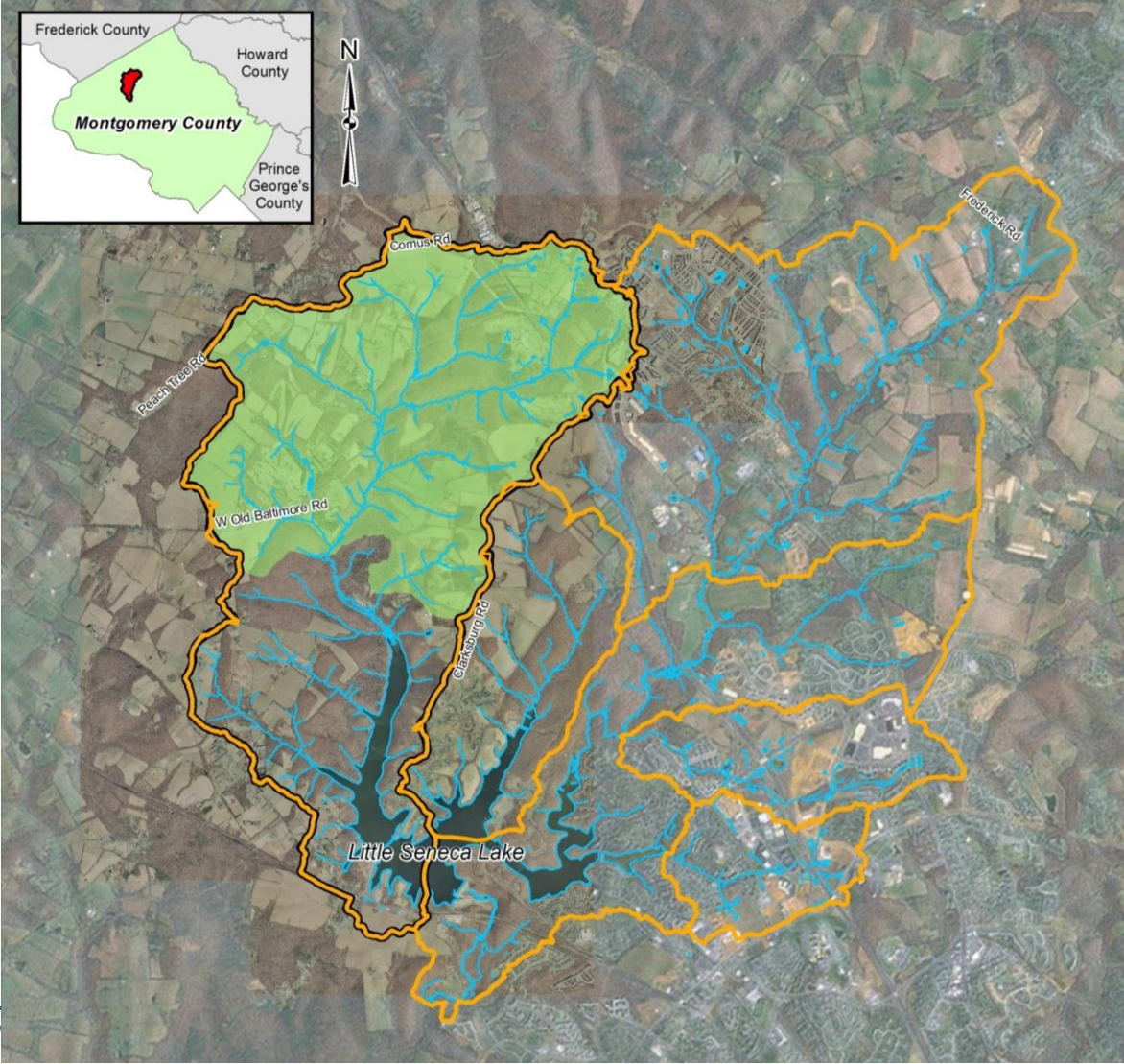
Source: Seattle Public Utilities. "Bioretention". [www.ci.seattle.wa.us/util/naturalsystems/](http://www.ci.seattle.wa.us/util/naturalsystems/)



# 10 Mile Creek

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# Little Seneca Lake & 10 Mile Creek





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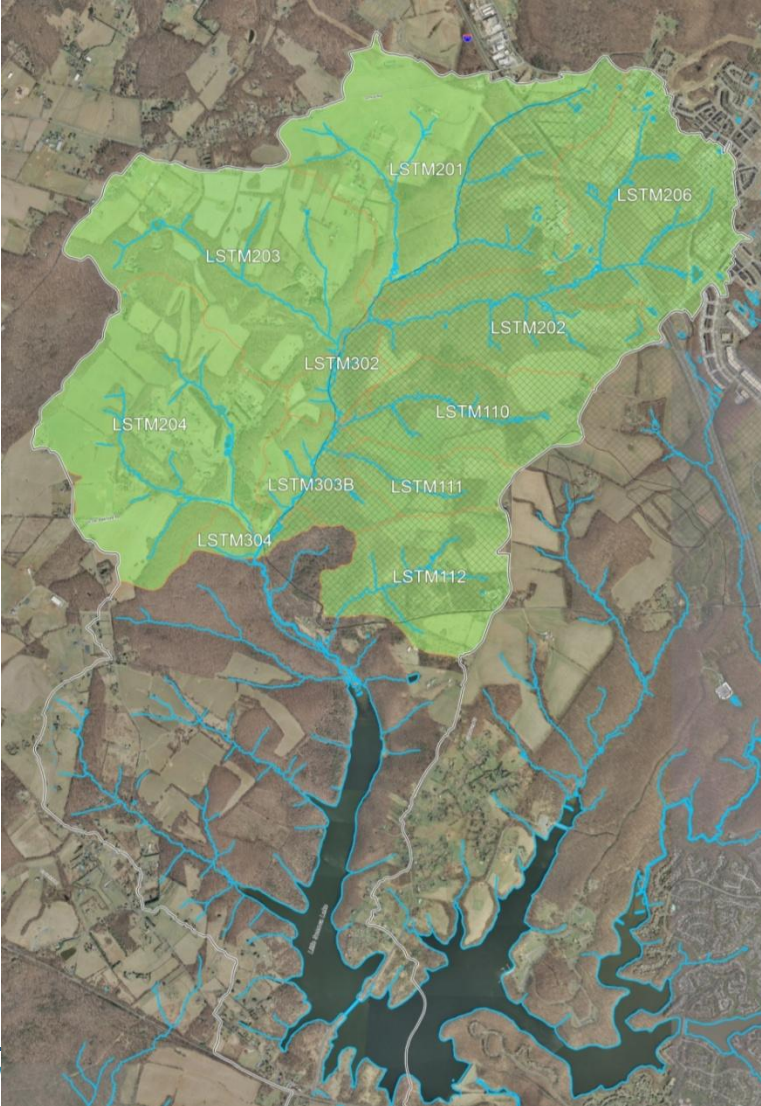
# Existing Conditions





# 10 Mile Creek Limited Amendment

## Watershed & Study Area



Northwestern Montgomery County

Originates just north of Frederick Road

Drains to Little Seneca Lake

4.8 square miles with 22 miles of stream

Dominated by forest cover & agricultural land  
uses west of I-270

Eastern portion within Clarksburg  
Special Protection Area (SPA)

### Legend

- Stream
- Special Protection Area
- Subwatersheds
- Study Area
- Ten Mile Creek Watershed Boundary (Maryland 12-Digit Watershed 021402080861)

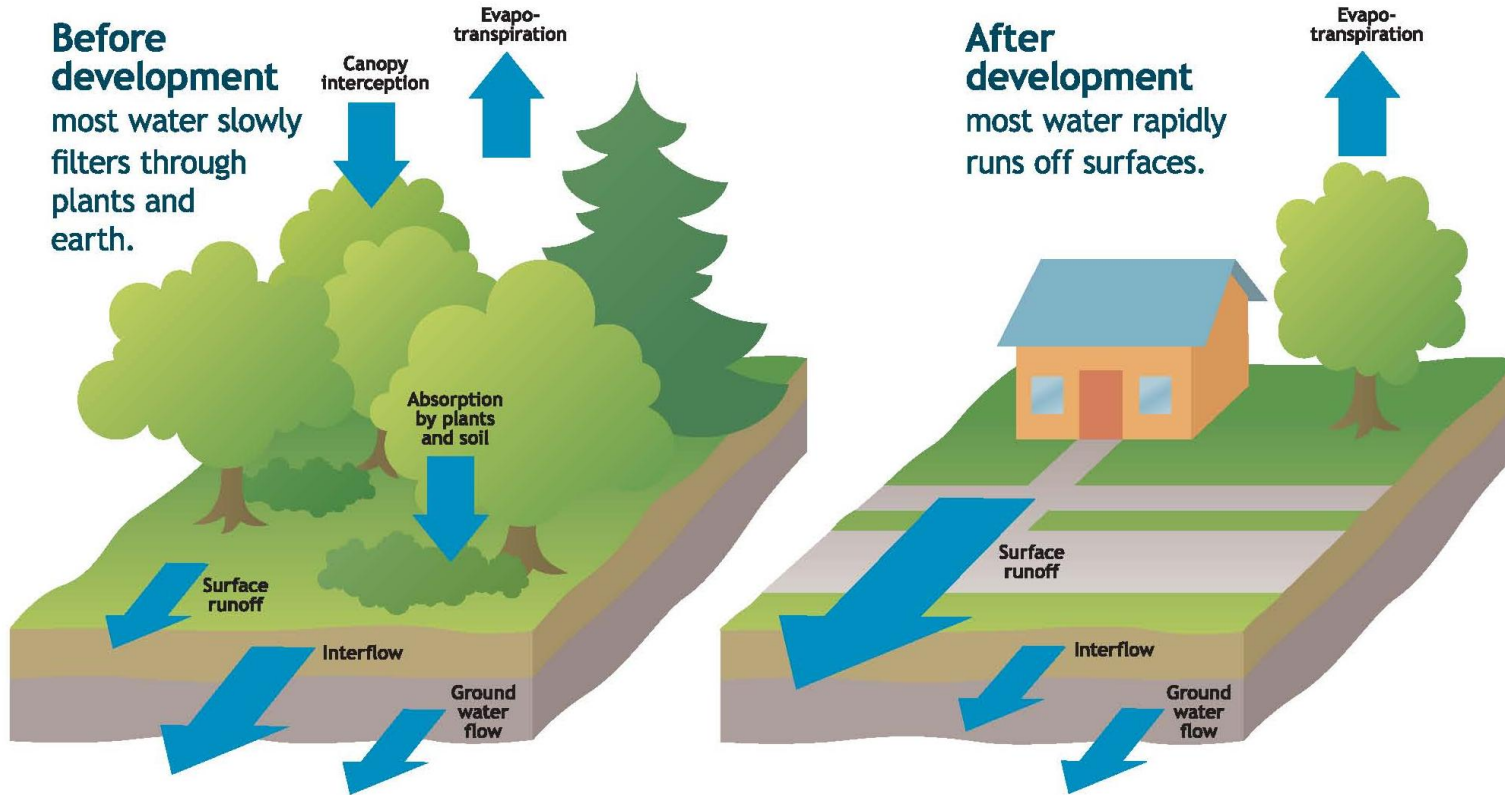


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## Understanding Existing Conditions

Land Use & Land Cover  
Community Features  
Natural Features

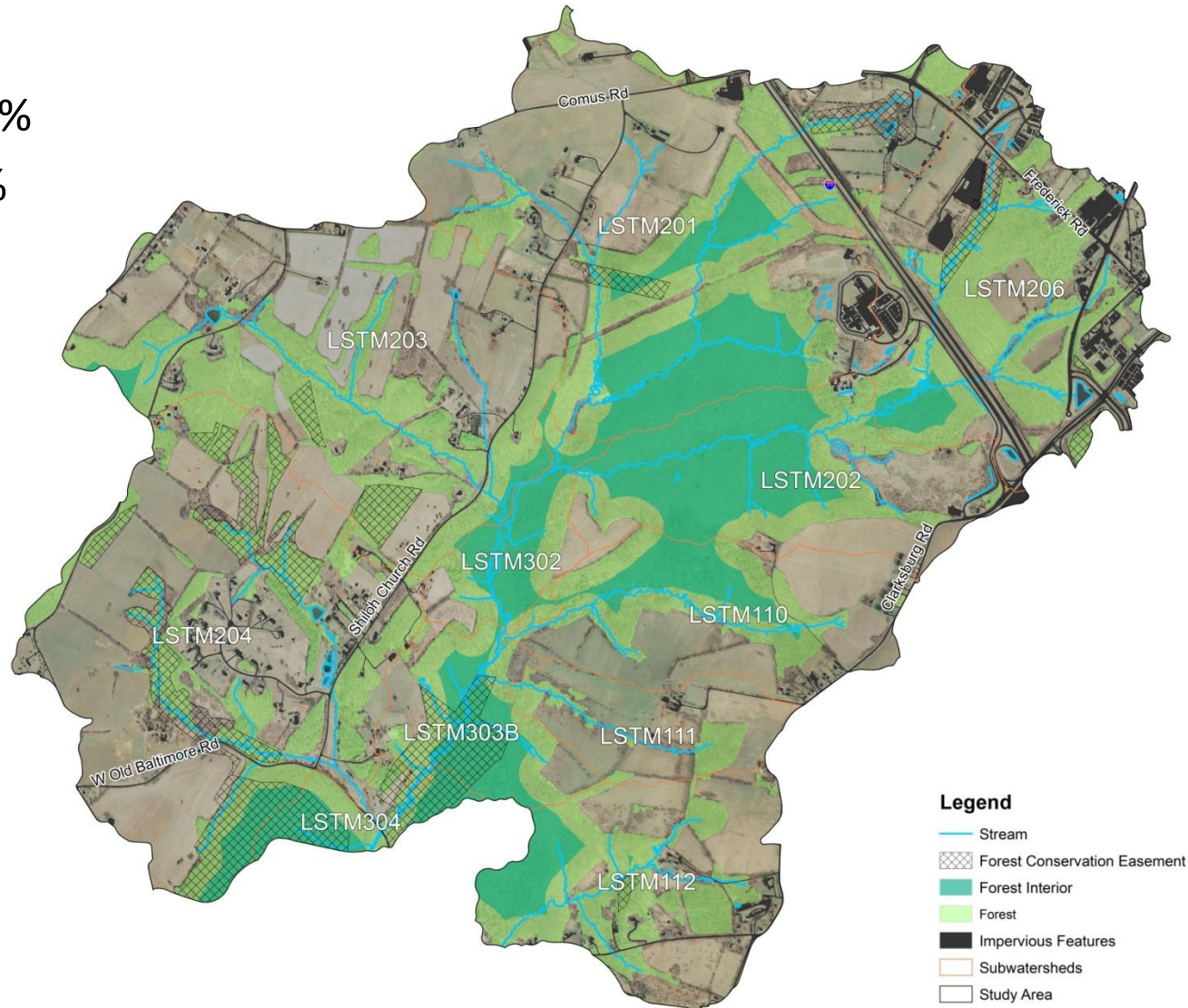




# Limited Amendment

Forest 46%  
Imperviousness 4%

# Existing Land Cover



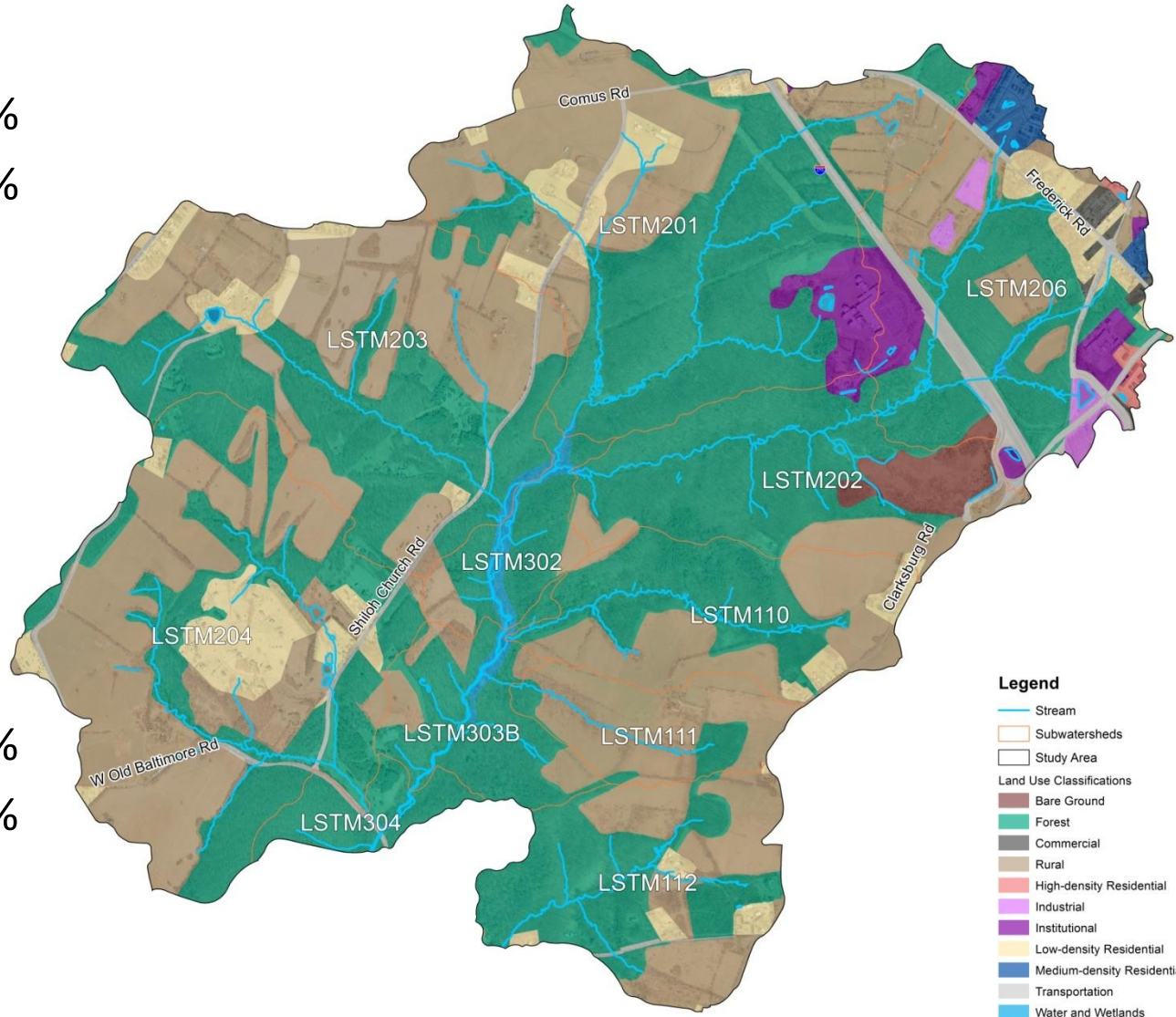




# 10 Mile Creek Limited Amendment

# Existing Land Use

Forest	46%
Rural	38%
Low Density Res.	7%
Transportation	3%
Institutional	2%
Bare Ground	1%
Water & Wetlands	1%
Medium Density Res.	1%
Industrial	1%
Commercial	<1%
High Density Res.	<1%



**Legend**

- Stream
- Subwatersheds
- Study Area
- Land Use Classifications**
- Bare Ground
- Forest
- Commercial
- Rural
- High-density Residential
- Industrial
- Institutional
- Low-density Residential
- Medium-density Residential
- Transportation
- Water and Wetlands

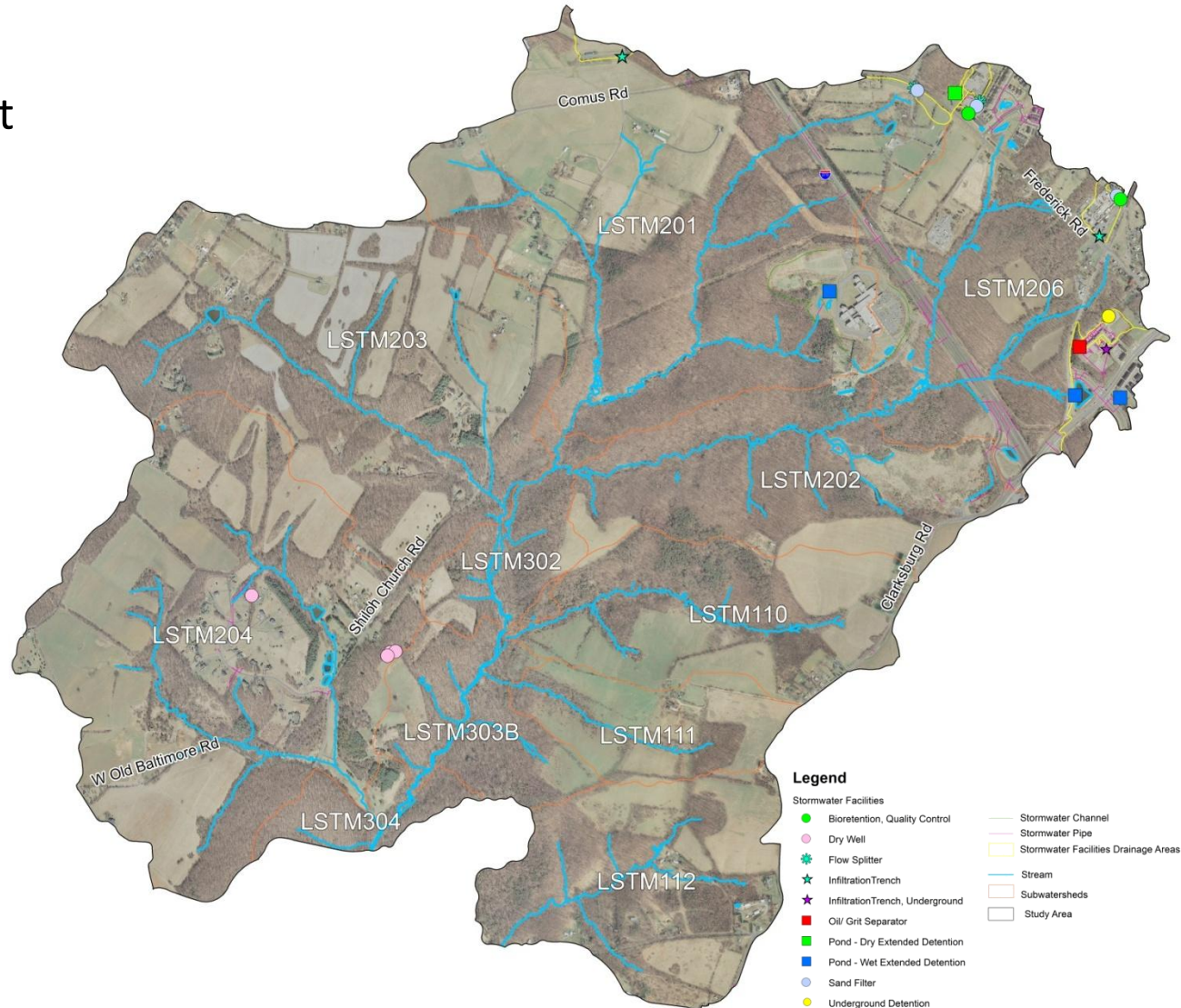


# 10 Mile Creek

## Limited Amendment

### Stormwater management

# Community Features





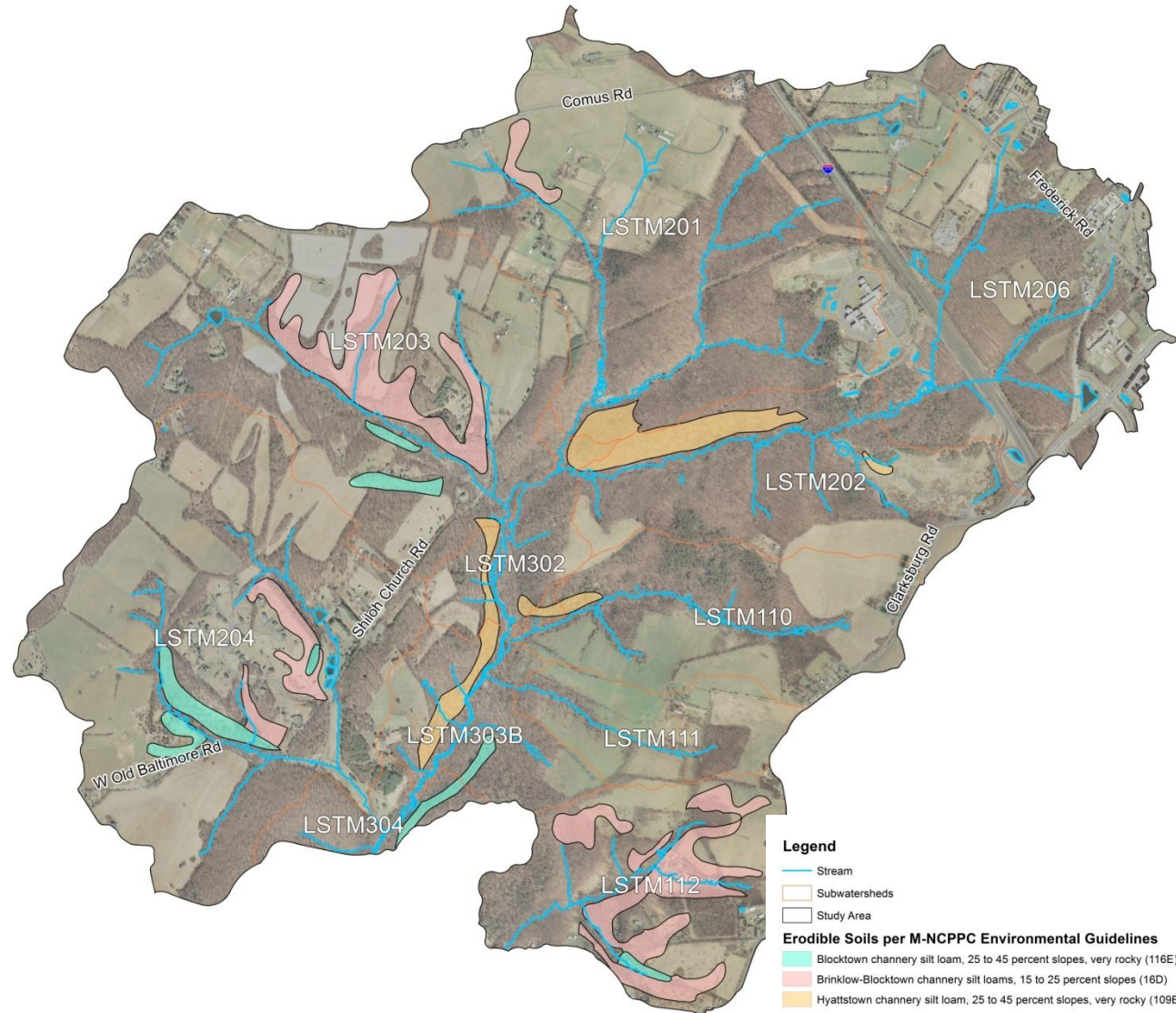


# 10 Mile Creek

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# Topography, Geology & Soils

Steep slopes  
Shallow bedrock  
Erodible soils



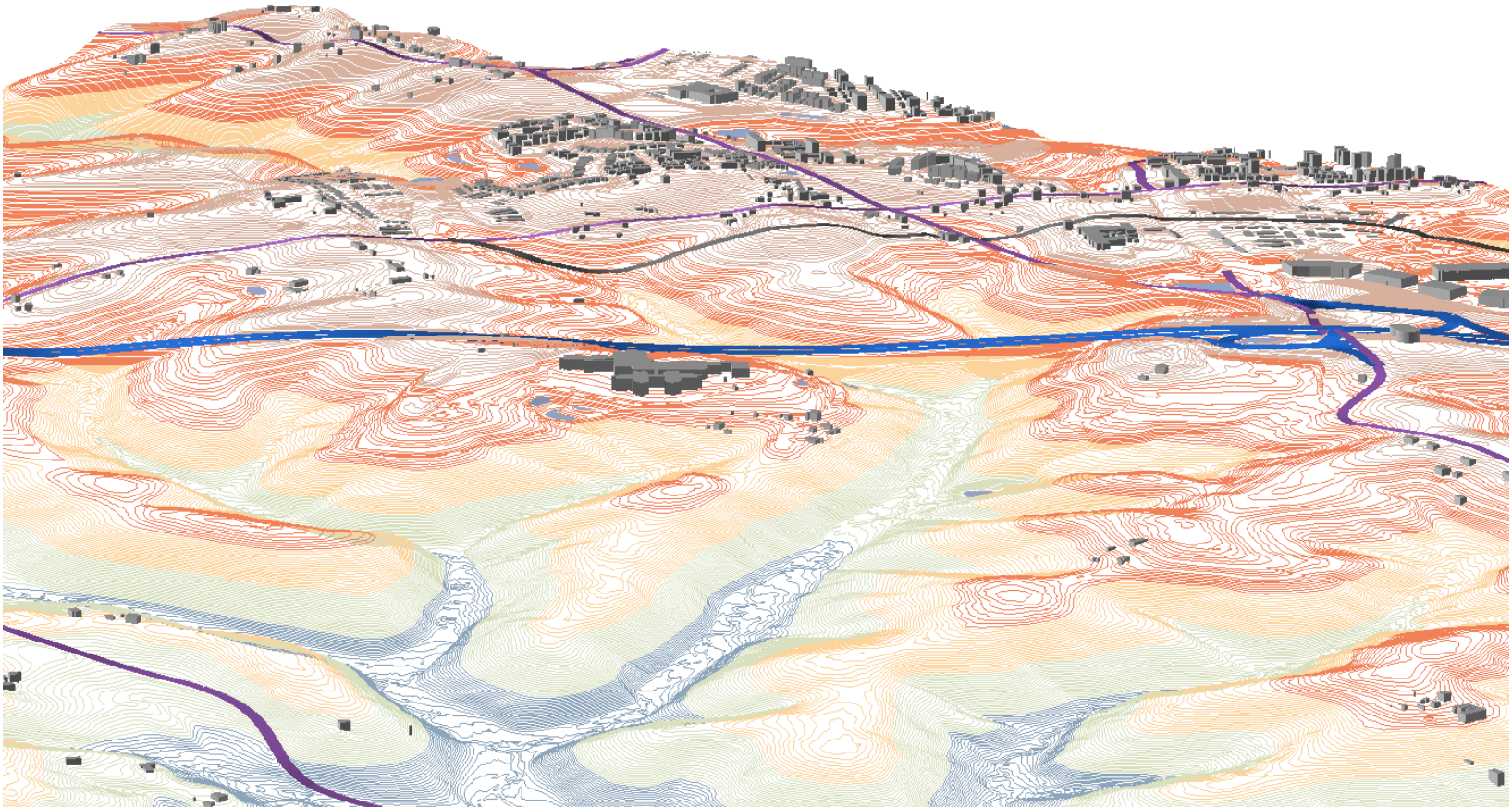




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# Topography, Geology & Soils





# 10 Mile Creek

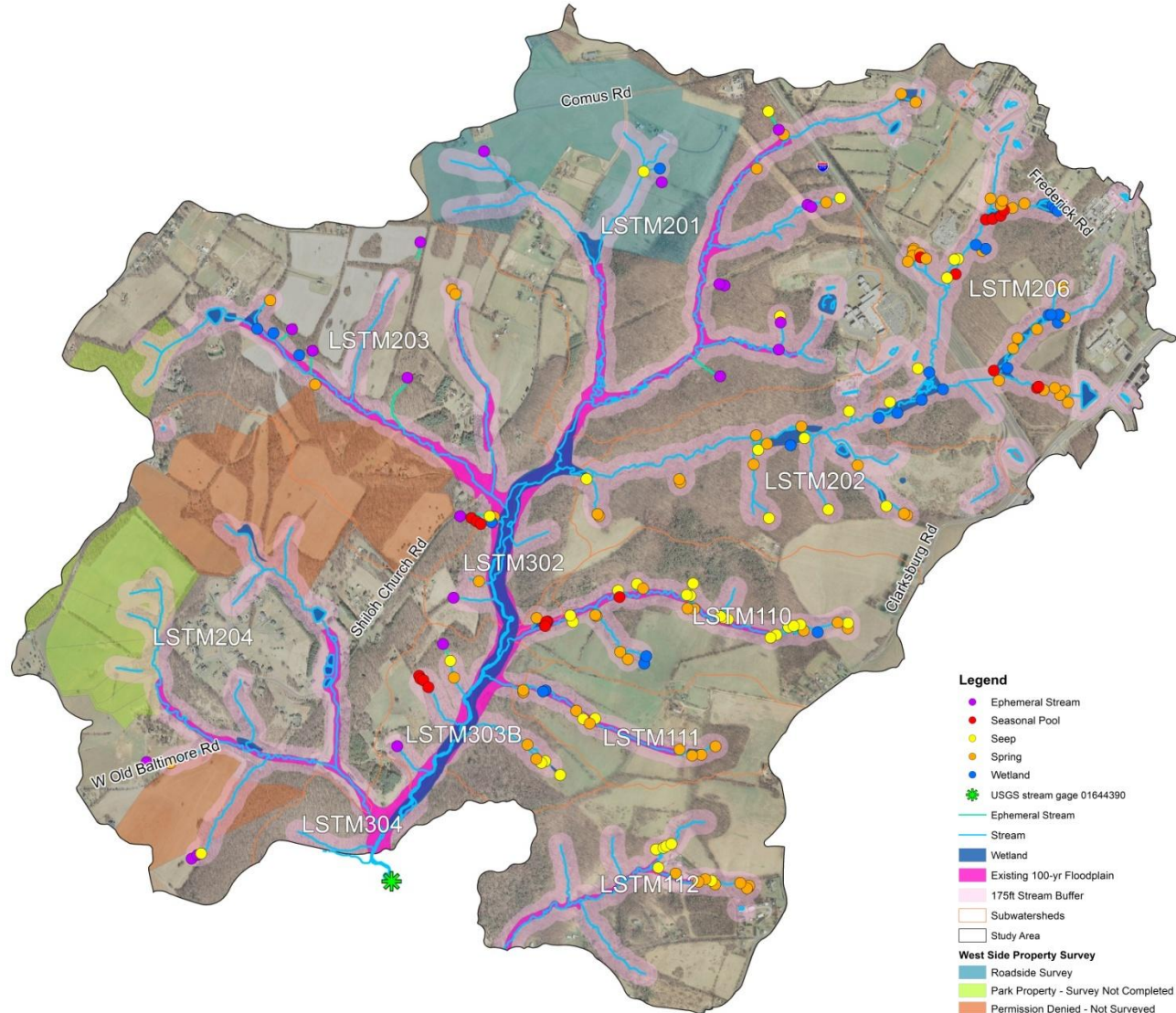
## Limited Amendment

Streams

Wetlands

Springs & Seeps

# Surface Waters







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# Geomorphology (Stream Form)







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# Water Quality





# 10 Mile Creek

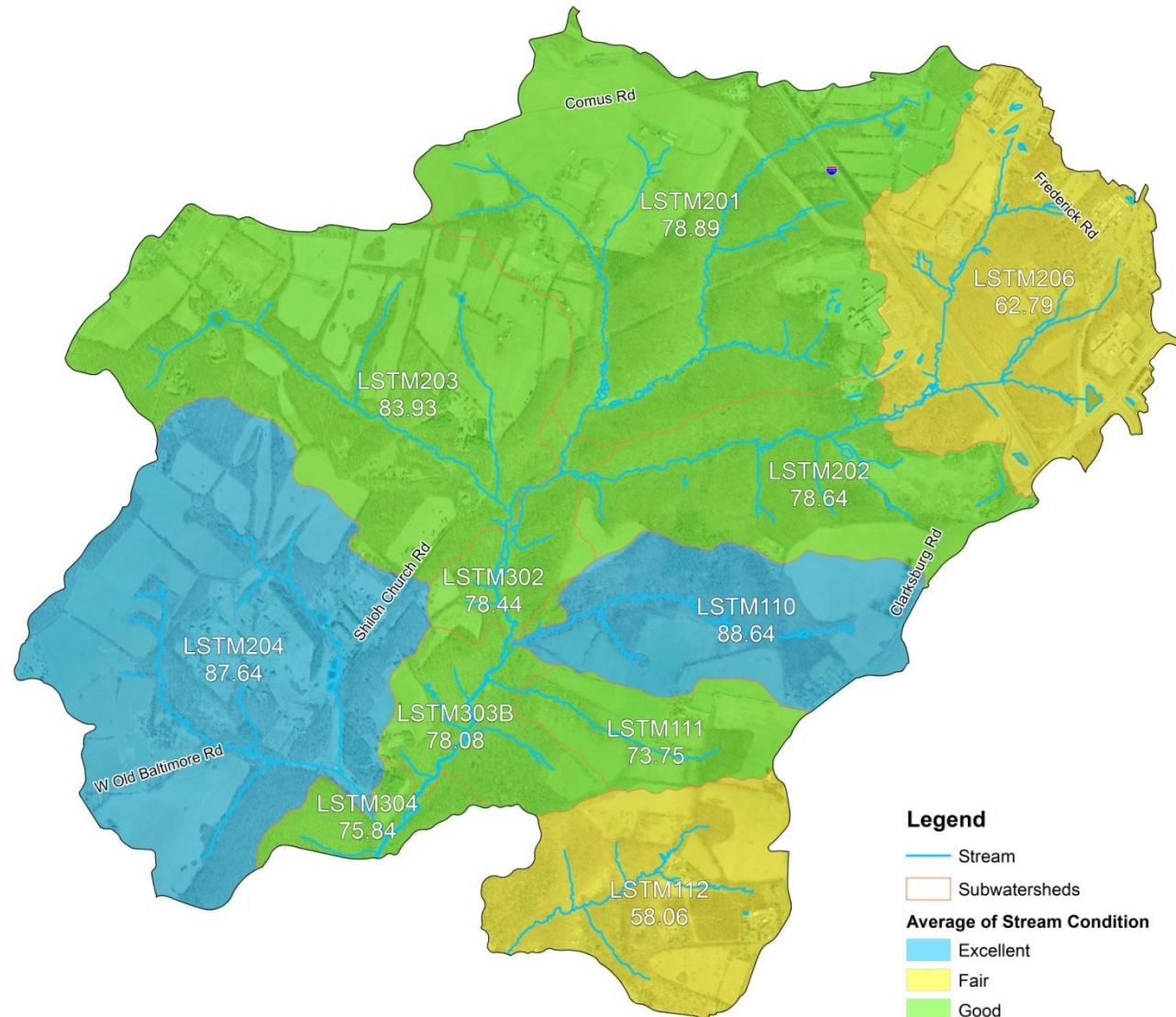
## Limited Amendment

# Aquatic Habitat & Biology

Benthic (Bugs)

Fish

Stream quality is  
GOOD overall





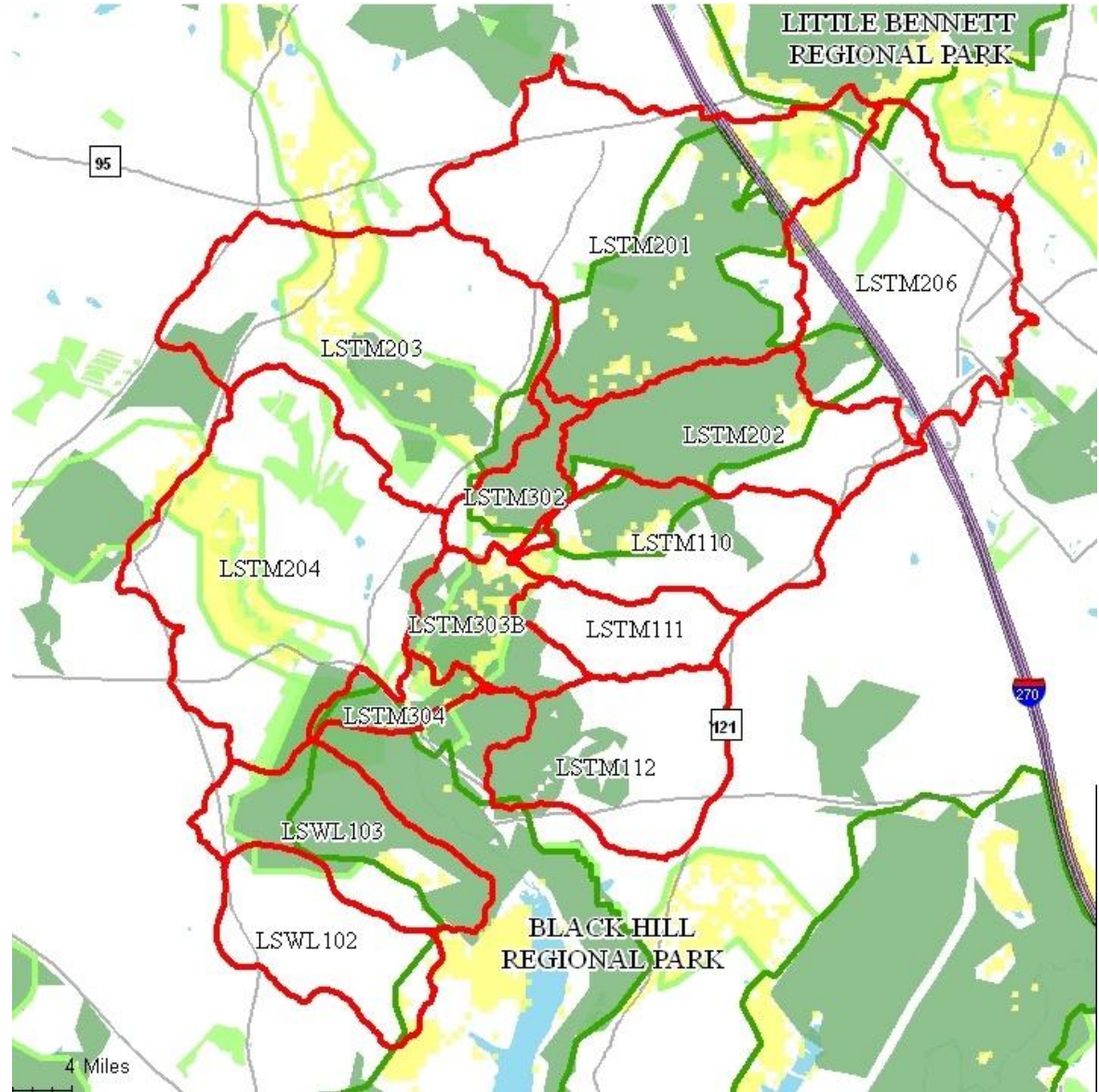


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- Hubs
- Corridors
- Gaps

# Upland Habitat & Biology





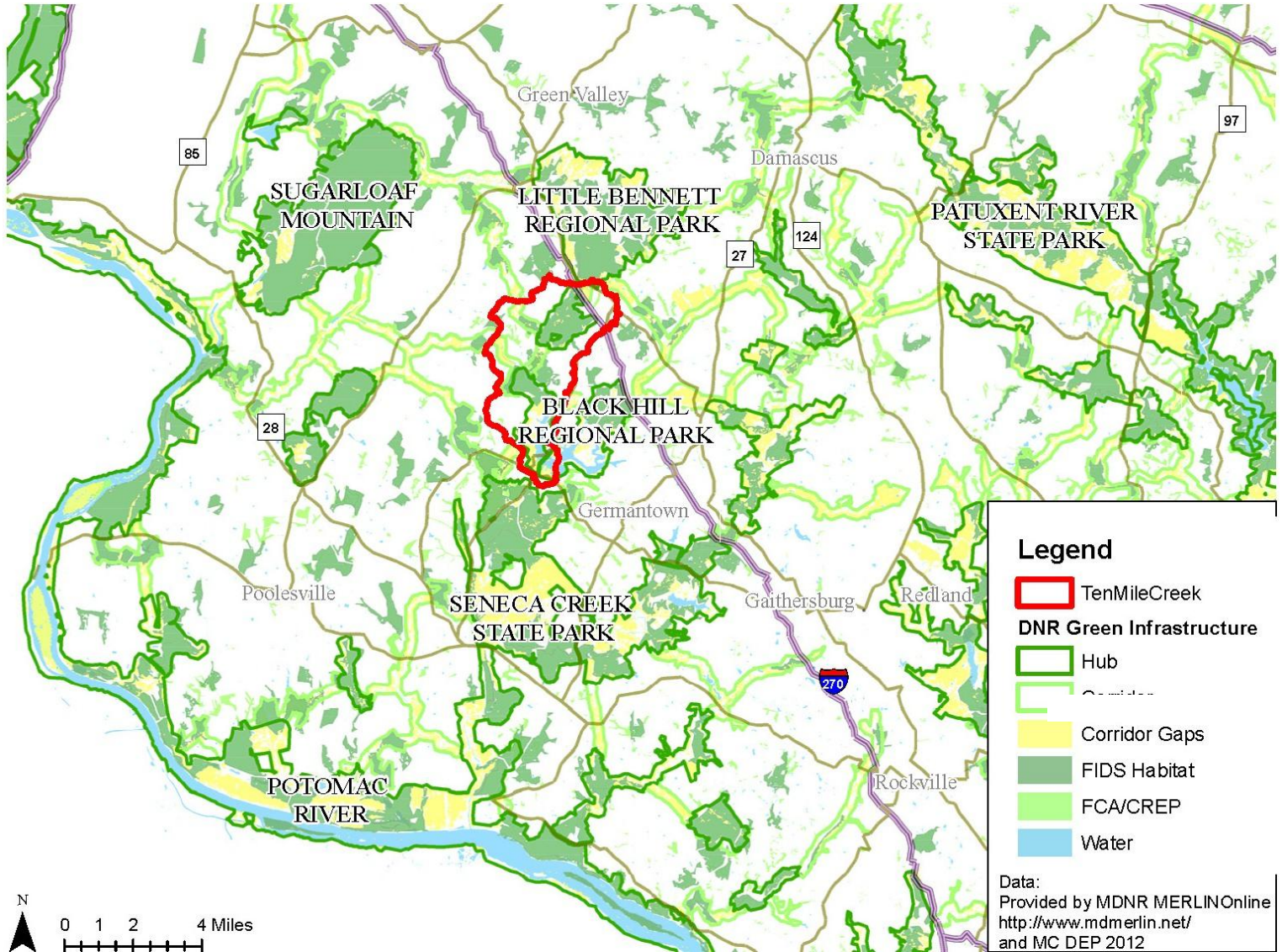


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Hubs  
Corridors  
Gaps

# Upland Habitat & Biology





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## High Quality & Sensitive Conditions

Long-term monitoring by DEP indicates the overall biological community is healthy and diverse. Used as a reference stream in Montgomery County.

Roughly half of the watershed is forested with approximately 4% imperviousness.

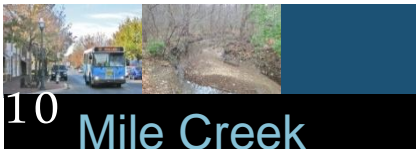
Mainstem characterized by high concentrations of wetlands and interior forest.

Slopes are steep and soils are generally rocky, with shallow to moderate depth to bedrock.

No evidence of widespread, long-term channel instability and flood flows still access the floodplain.

In-stream habitat conditions show signs of decline since 2007, indicative of a watershed that is sensitive and responding to various stressors.

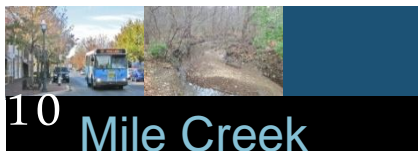
Biological quality remains unchanged in the majority of the watershed.



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# Analysis Underway

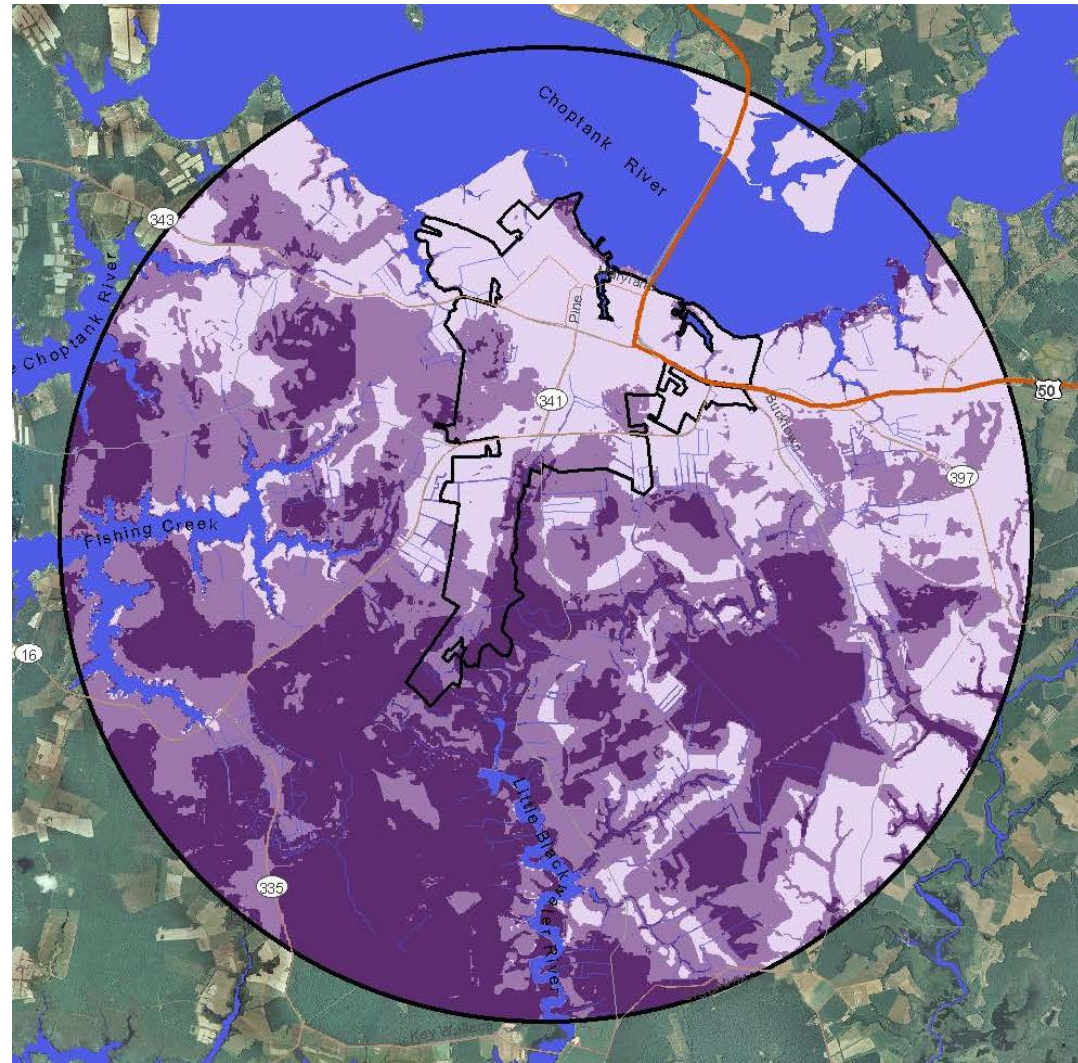




## Limited Amendment

# Analyzing Potential Development Scenarios

- Pollutant Modeling
  - Nutrients
  - Sediment
- Spatial Watershed Analysis
  - Land Use & Land Cover
  - Forest & Interior Forest
  - Floodplains
  - Streams
  - Wetlands
  - Steep Slopes
  - Erodible Soils



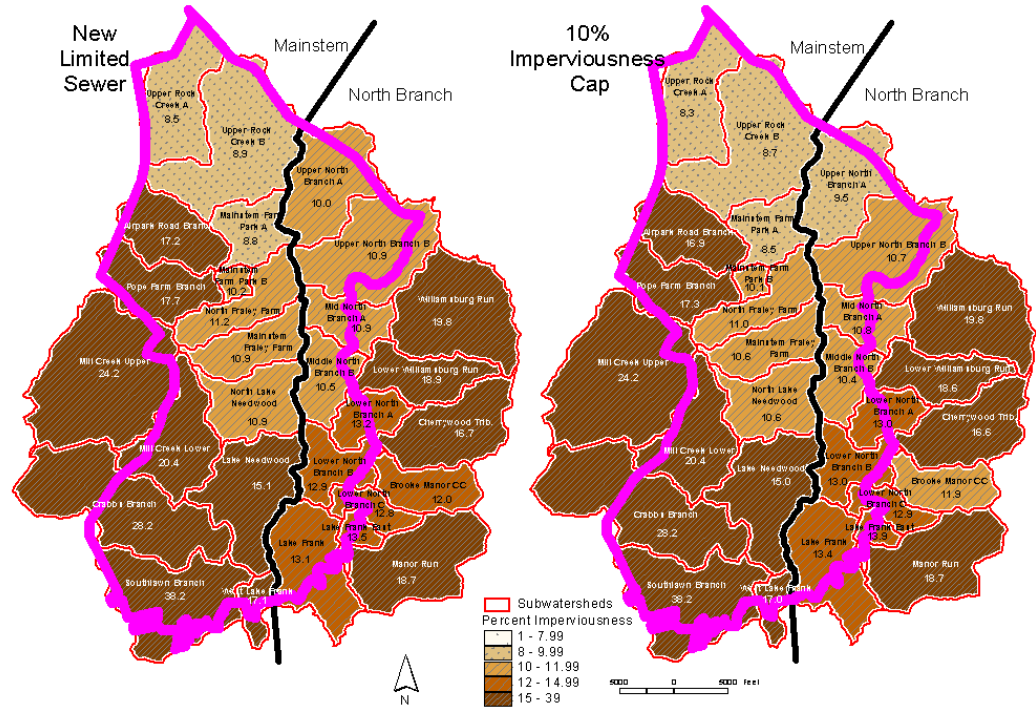


# 10 Mile Creek Limited Amendment

## Analyzing Potential Development Scenarios

- Hydrologic Modeling
  - Stream Flow
- Imperviousness Analysis
  - Comparison to similar watersheds
  - Some judgment to account for ESD benefit

Projected Imperviousness of Buildout





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# Questions?