

Rocky Gorge Dam and Patuxent River Upper Watershed Assessment

COMMUNITY MEETING NO. 1

June 21, 2016



Meeting Outline

- Welcome and Introductions
- Reasons for Study
- Watersheds 101
- Overview of Current Watershed Conditions
- Restoration Toolbox
- Q&A – Information Stations



Why is the County doing a Watershed Assessment?

- Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) permit
 - Permit requires treatment of 20% of currently untreated impervious
 - Perform a comprehensive watershed assessment for the entire County within five year permit term
 - Little and Middle Patuxent Rivers in FY15 (Permit Year 1)
 - Patapsco and Mainstem Patuxent Rivers in FY16 (Permit Year 2)
 - Develop a Countywide restoration plan in Year 1 (CIS)
- Total Maximum Daily Load (TMDL) “pollutant diet” for nutrients
- Looking for cost-effective opportunities for environmental restoration

Chesapeake Bay TMDL

- Chesapeake Bay TMDL Sectors:
 - Agriculture
 - Forest
 - Septic
 - Wastewater
 - Urban Stormwater
- NPDES Permit Year 1 - Restoration Plans for All Existing TMDL Waste Load Allocations
- All Sectors – Reduce Phosphorus (P) by ~30% and Nitrogen (N) by ~40% (approx half of total reduction is urban stormwater)
- Meet 60% by 2017 and 100% by 2025

General Strategies

To restore, enhance and protect the County's natural resources.

- Reduce negative impact of impervious surfaces
- Reduce levels of pollutants in waterways
- Reduce streambank erosion
- Increase forest area and connectivity of riparian habitats
- Increase public awareness and positive behaviors



Watersheds

101

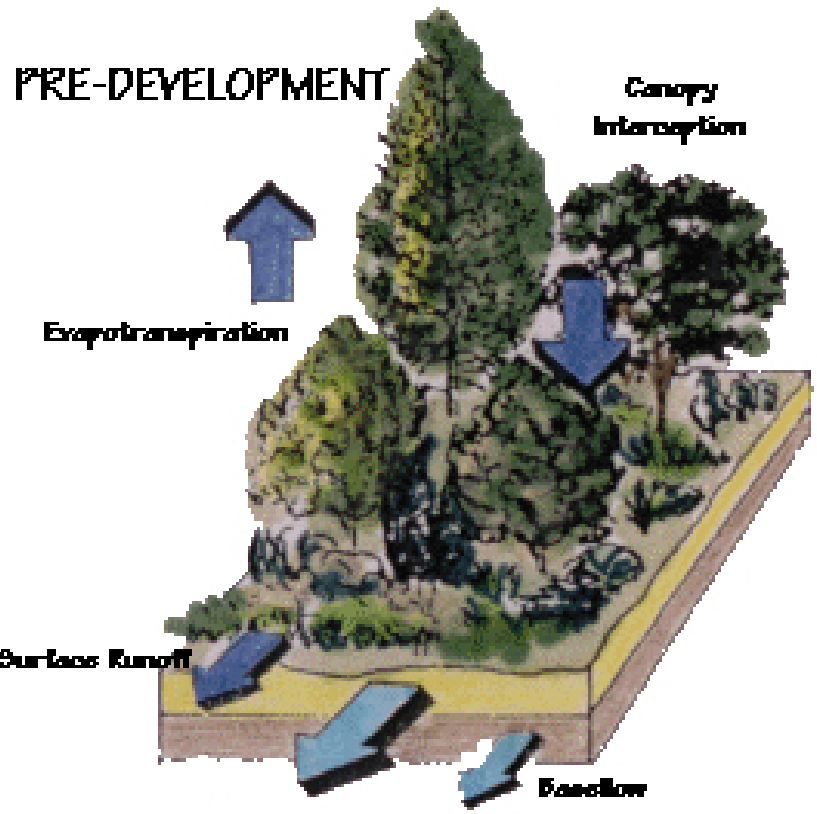


What is a Watershed?
&
What is Stormwater Management?

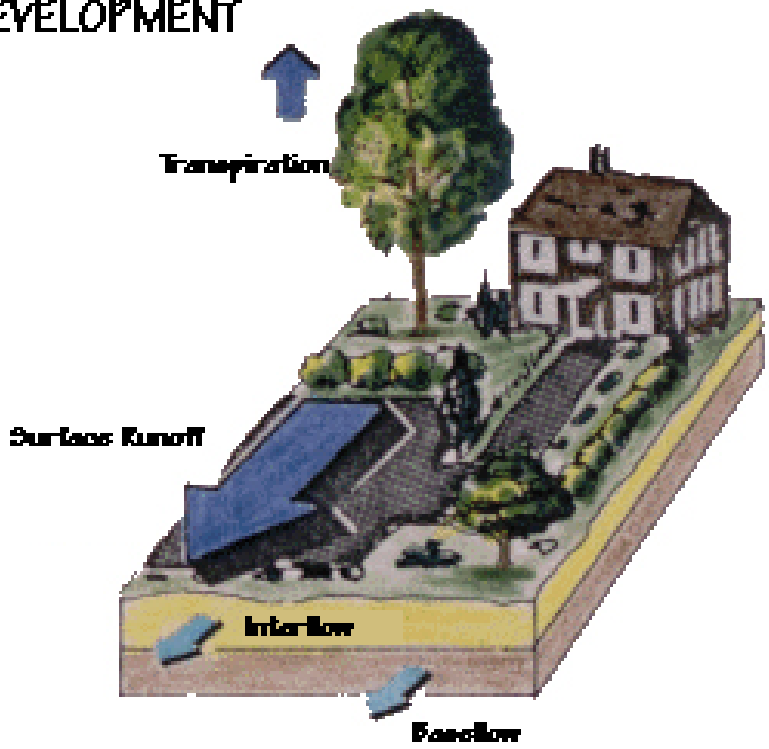


WATER BALANCE

PRE-DEVELOPMENT



POST-DEVELOPMENT



Where does storm water go?

- A. To a wastewater treatment plant so pollutants and trash can be removed before the water goes to a nearby stream.
- B. To a nearby stream without any treatment.
- C. To a stormwater management pond for pollutant removal and then to a nearby stream.
- D. B or C



The Problem



Pollutants build up on impervious surfaces and wash off into the stream system when it rains



Harmful Pollutants in Runoff



Bacteria

Nutrients

Pesticides



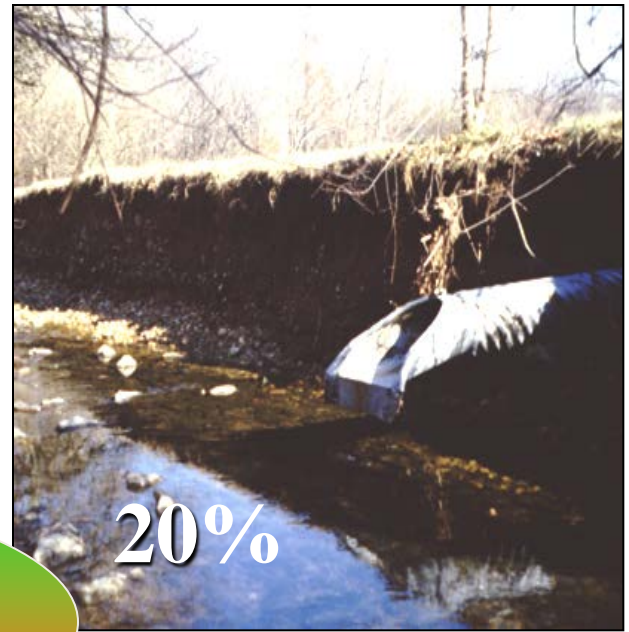
Oil & Grease

Muddy Water

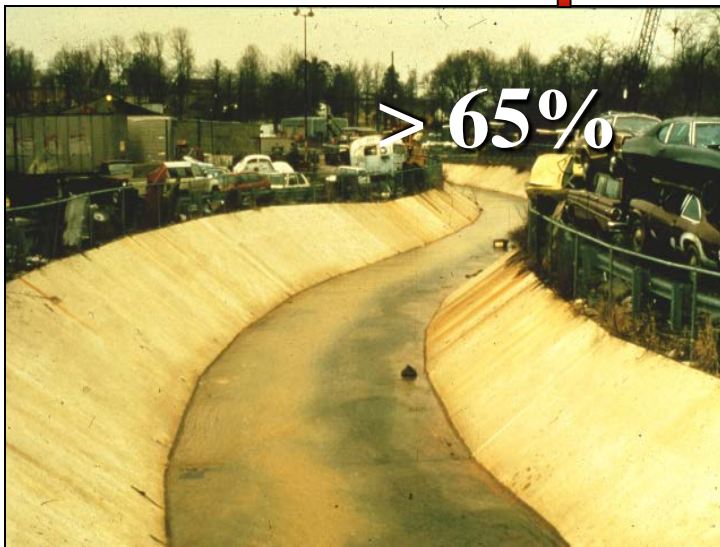
Heavy Metals

(e.g. Zinc, Copper, Lead)

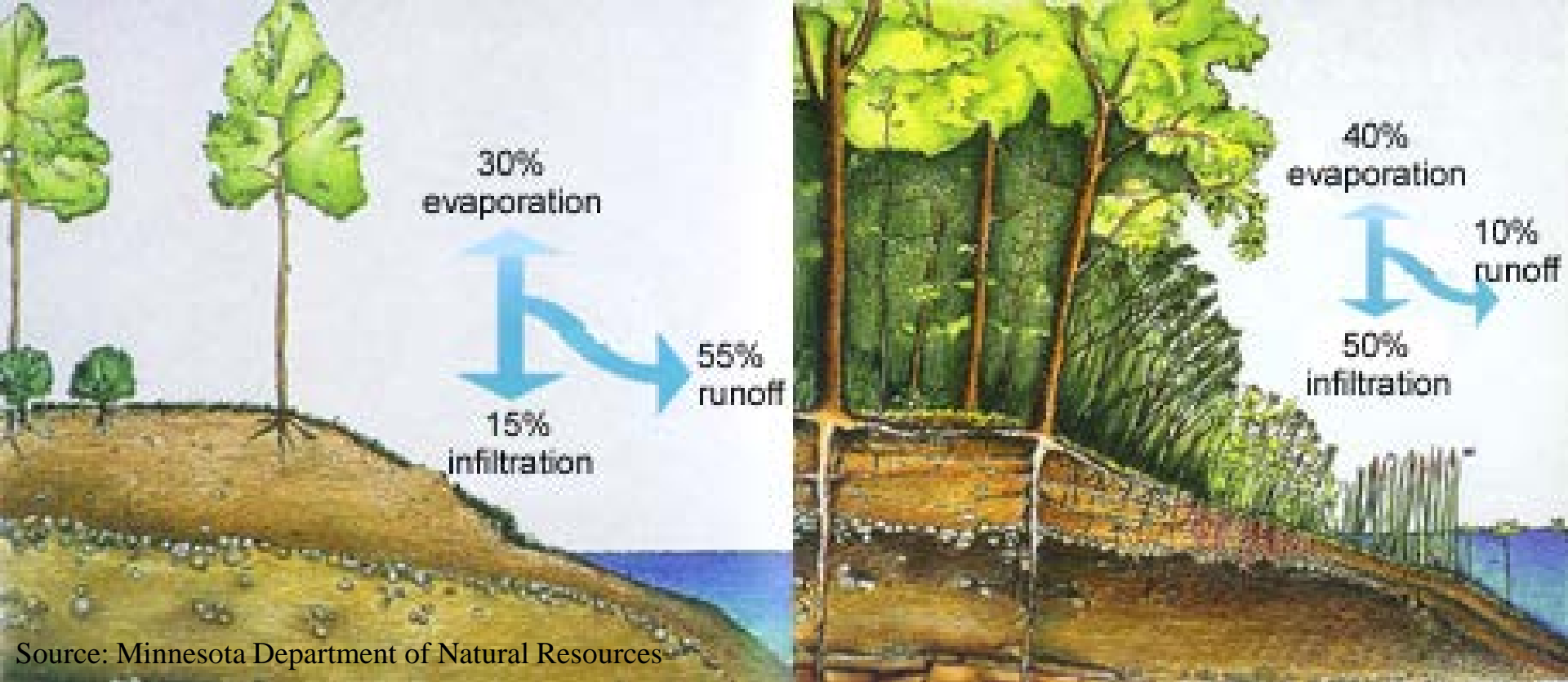




Impervious Cover

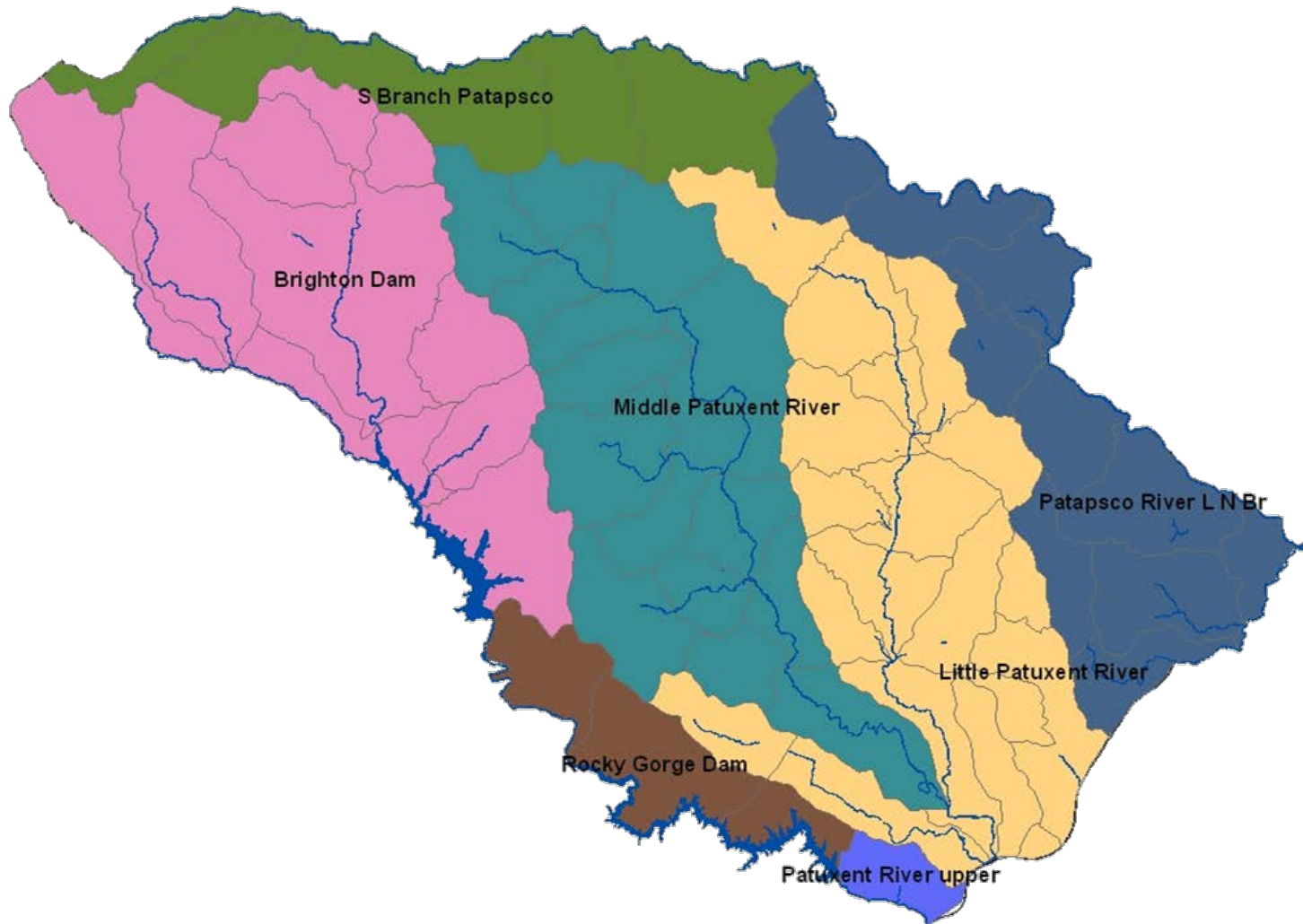


County = 13.6% Columbia ~ 15%-20%

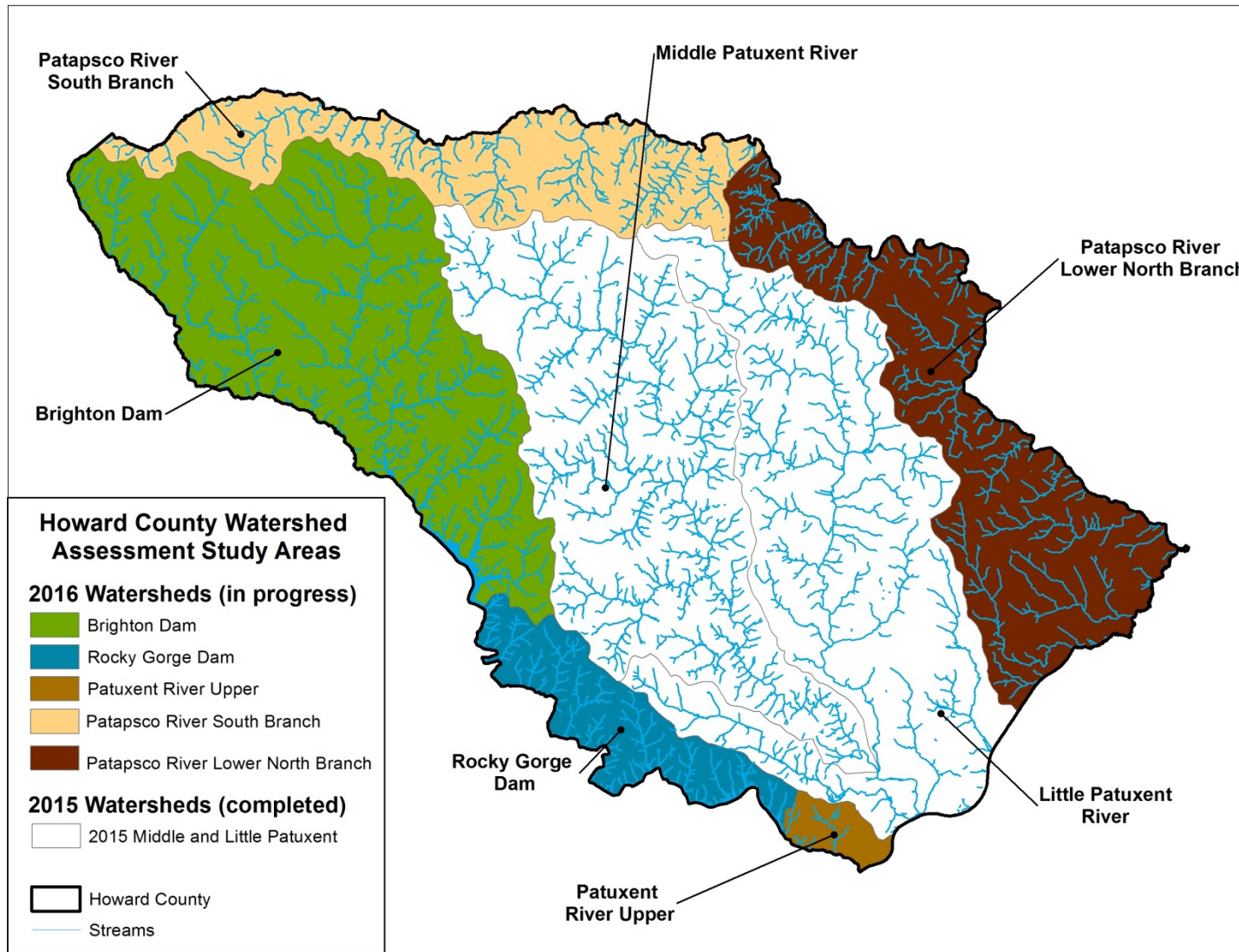


Water quickly runs off a shoreline cleared of natural vegetation, washing nutrients and pesticides into the water. A natural shoreline holds rainfall, which soaks into the soil; less water, soil and chemicals run into the lake or river. Shoreline and aquatic plants anchor shoreline areas, helping to protect them from erosion due to runoff and waves (Source:MN DNR)

County Watersheds



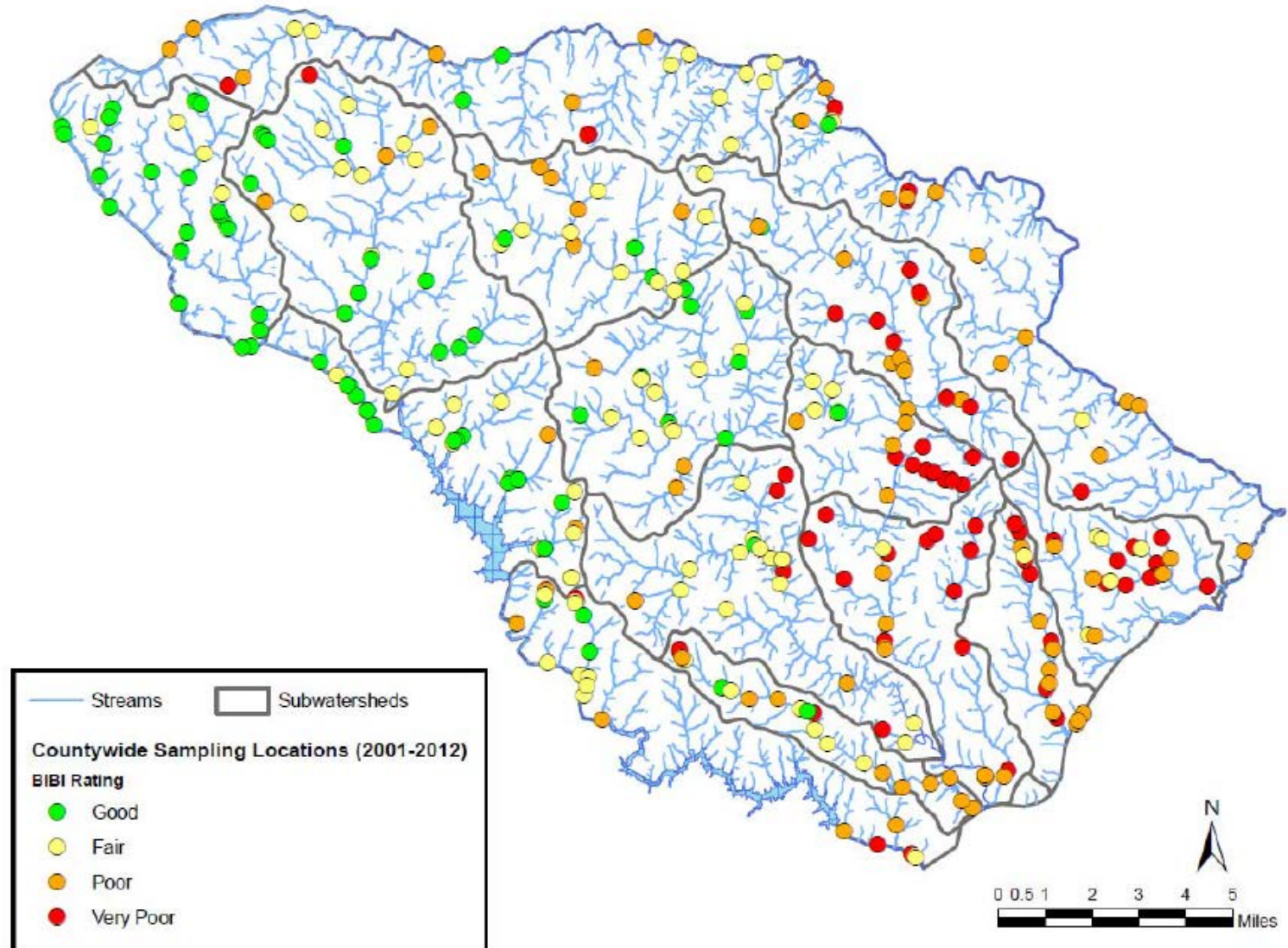
Breakdown of Study Areas



Watershed Study Overview

- Phase I – completed mid-July 2016
 - Desktop Analysis
 - Handheld Tablet Setup and Programming
 - Consultant Field Calibration and Training
 - Field Assessment (Approx. 3 months)
 - Review and Compile Field Data
 - **Community Meetings - #1**
 - Prepare Site Ranking and Prioritization

Monitoring Results – Biological Health



Project Types Being Investigated

- Retrofit of Existing BMPs
- New BMPs
- Outfall Stabilization
- Stream Restoration
- Reforestation/Riparian Buffers

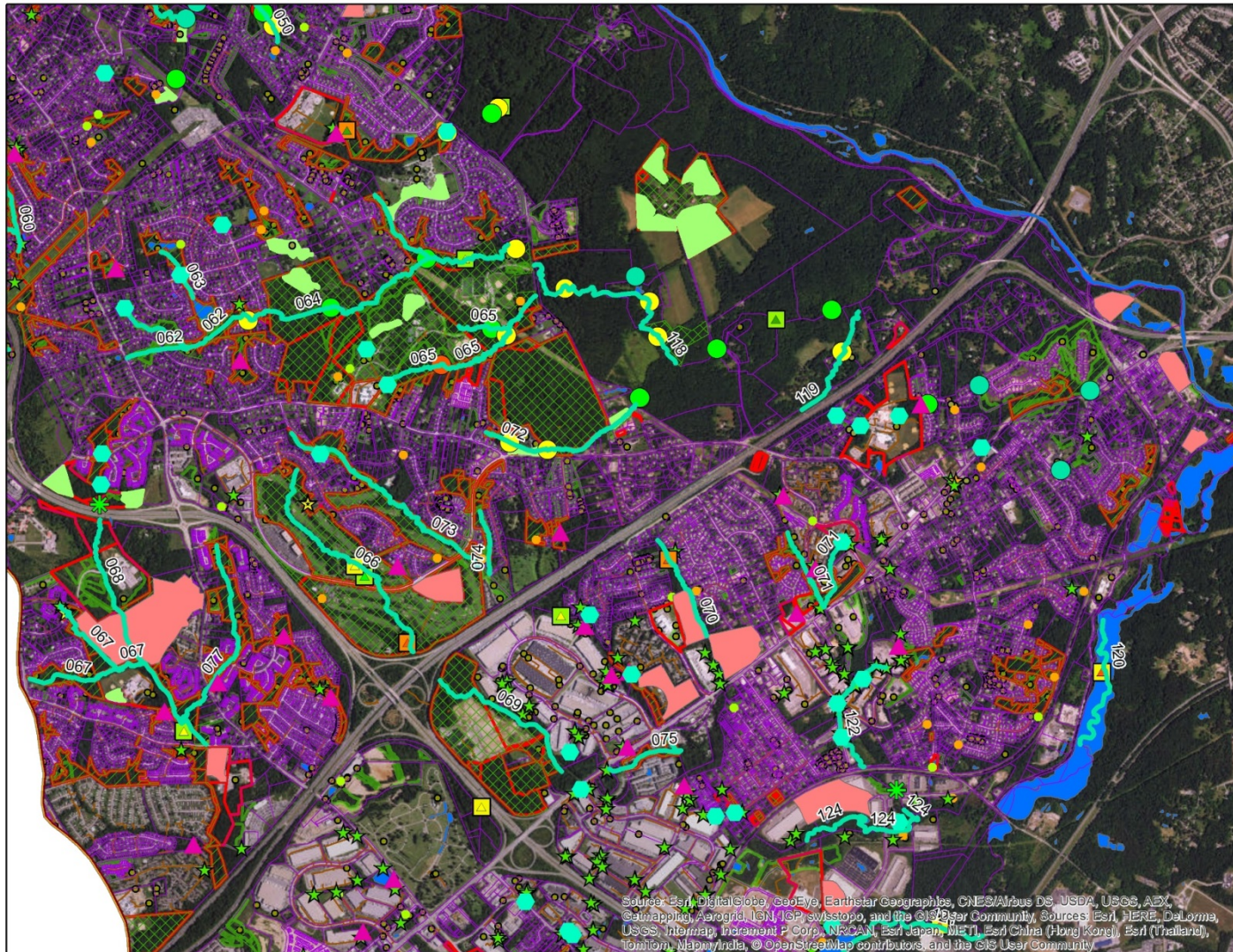
- Source reduction?

Desktop Analysis

- Data Review and Processing
 - Previous Studies
 - Existing Monitoring Results
 - Drainage Complaint Database
 - GIS Queries
- Create GIS Maps and Overlays
- GIS Review (Office)
 - Multiple Day Review of All Sites From GIS Analysis
 - Generated Final Map and List of Sites For Field Review

Desktop Analysis

Sample composite GIS map used for final office review

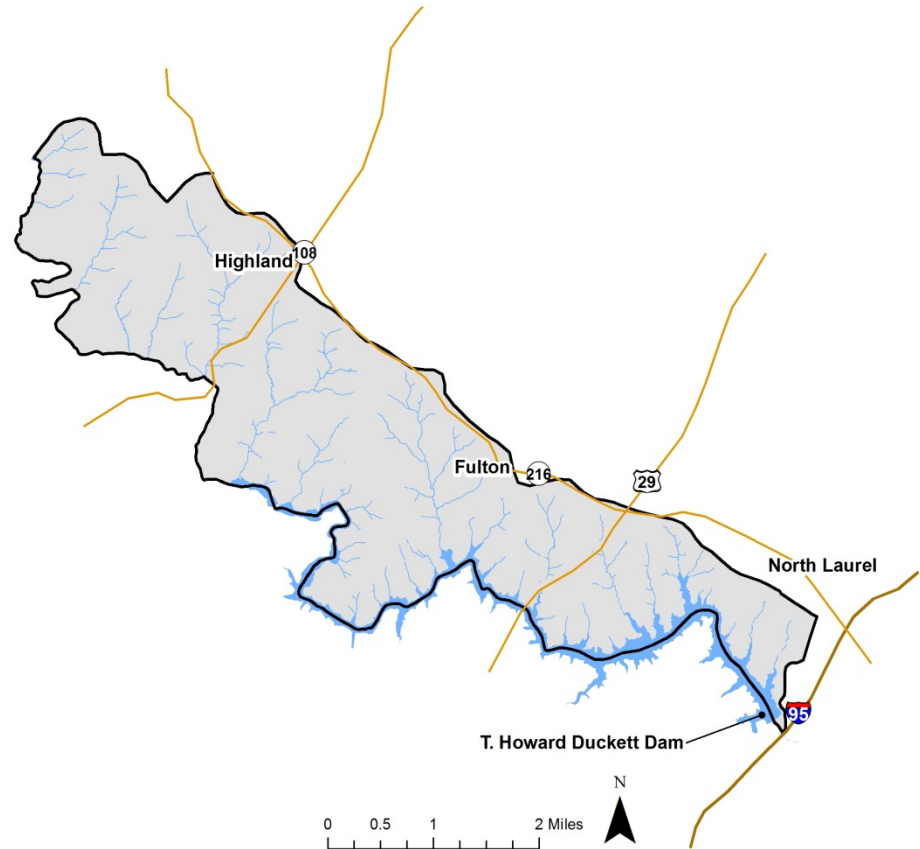


Watershed Characteristics

Rocky Gorge Dam Watershed

Rocky Gorge Dam

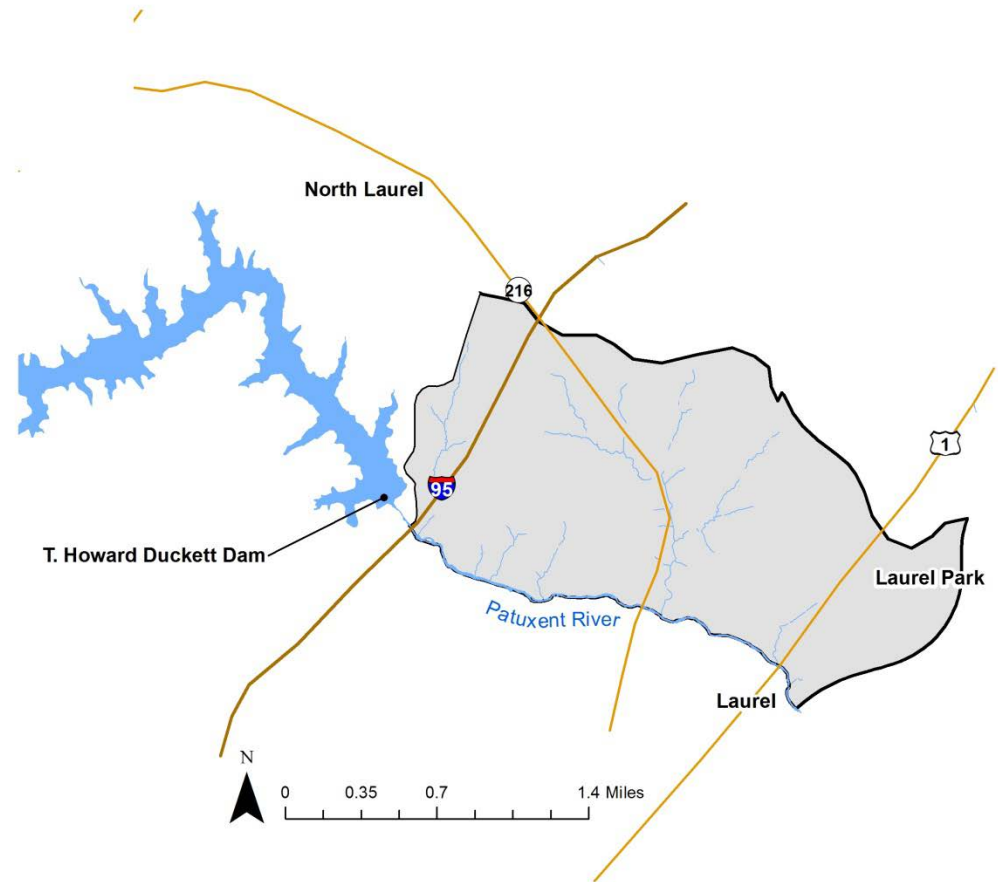
- 12.5 square miles
- 8,006 acres
- 585 total impervious acres
- 531 County impervious area
- 2,729 wooded acres
- 150 stormwater BMPs treating 160 acres of impervious surface



Patuxent River Upper Watershed

Patuxent River Upper

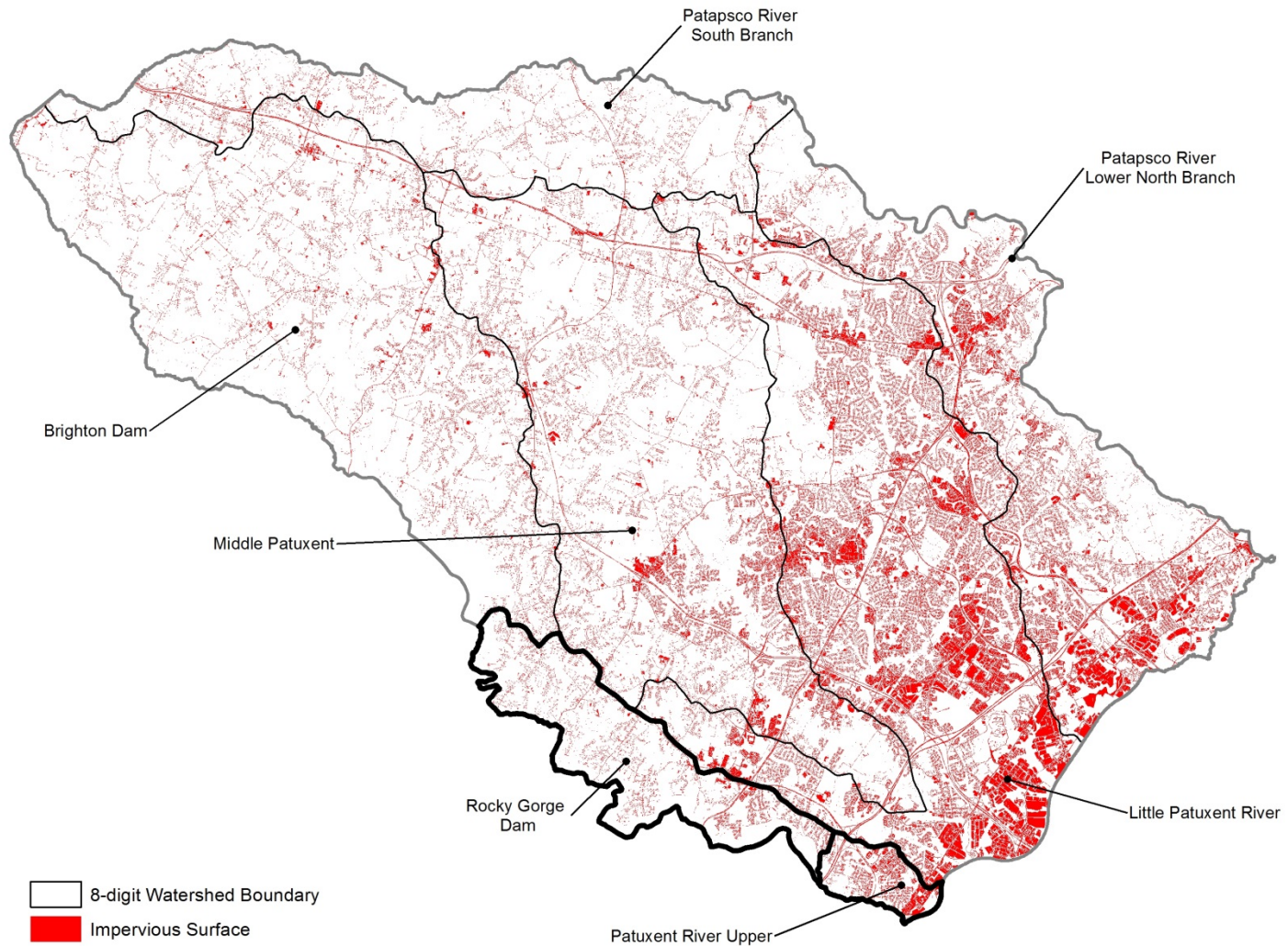
- 2.7 square miles
- 1,725 acres
- 439 total impervious acres
- 381 County impervious acres
- 478 wooded acres
- 134 stormwater BMPs treating 153 acres of impervious surface



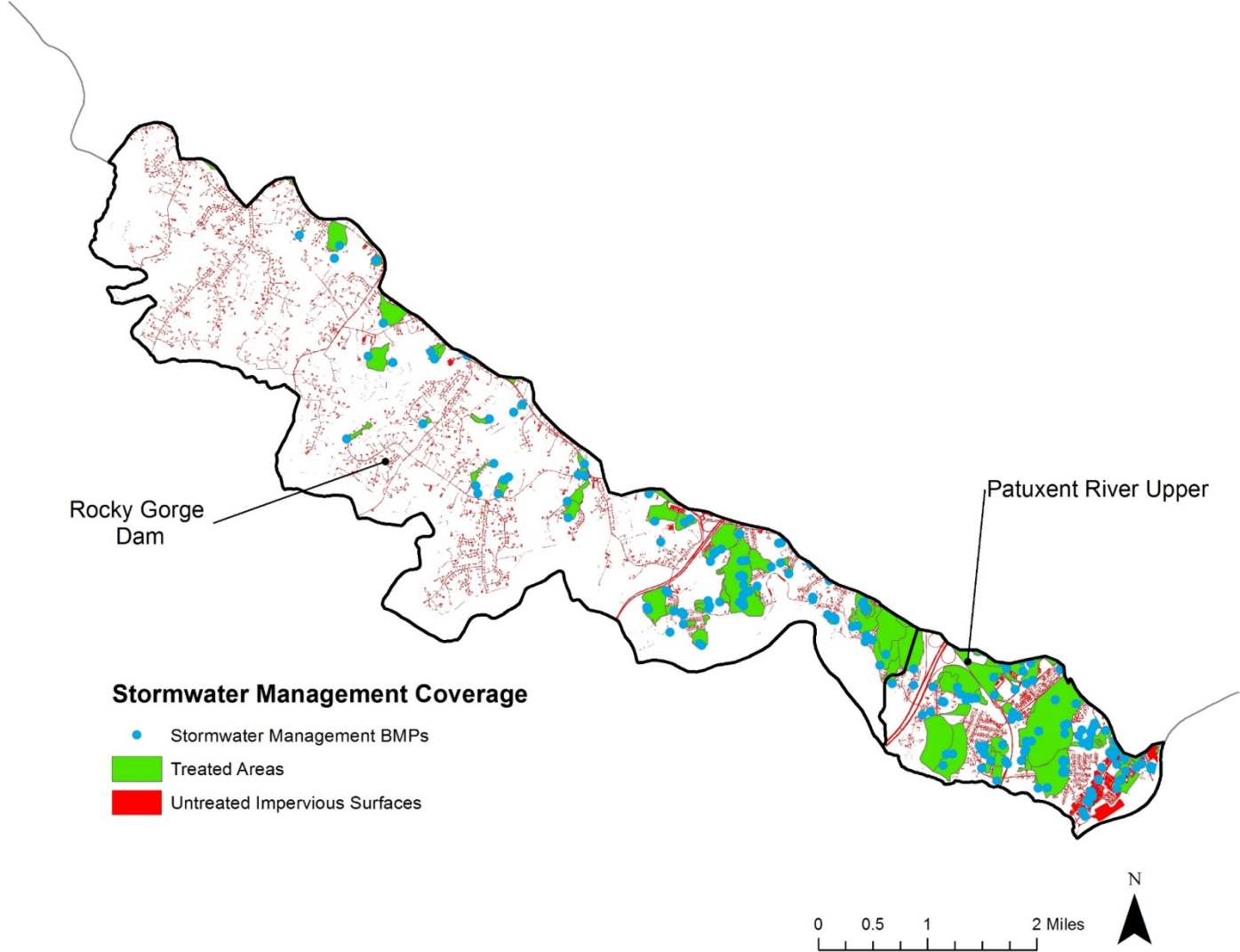
Imperviousness

	Total Area (sq miles)	Impervious Area (sq miles)	Impervious Percent
County	253	34.3	13.6
Rocky Gorge Dam	12.5	0.9	7.2
Percent of County	5%	3%	n/a
Patuxent - Upper	2.7	0.7	25.9
Percent of County	1%	2%	n/a

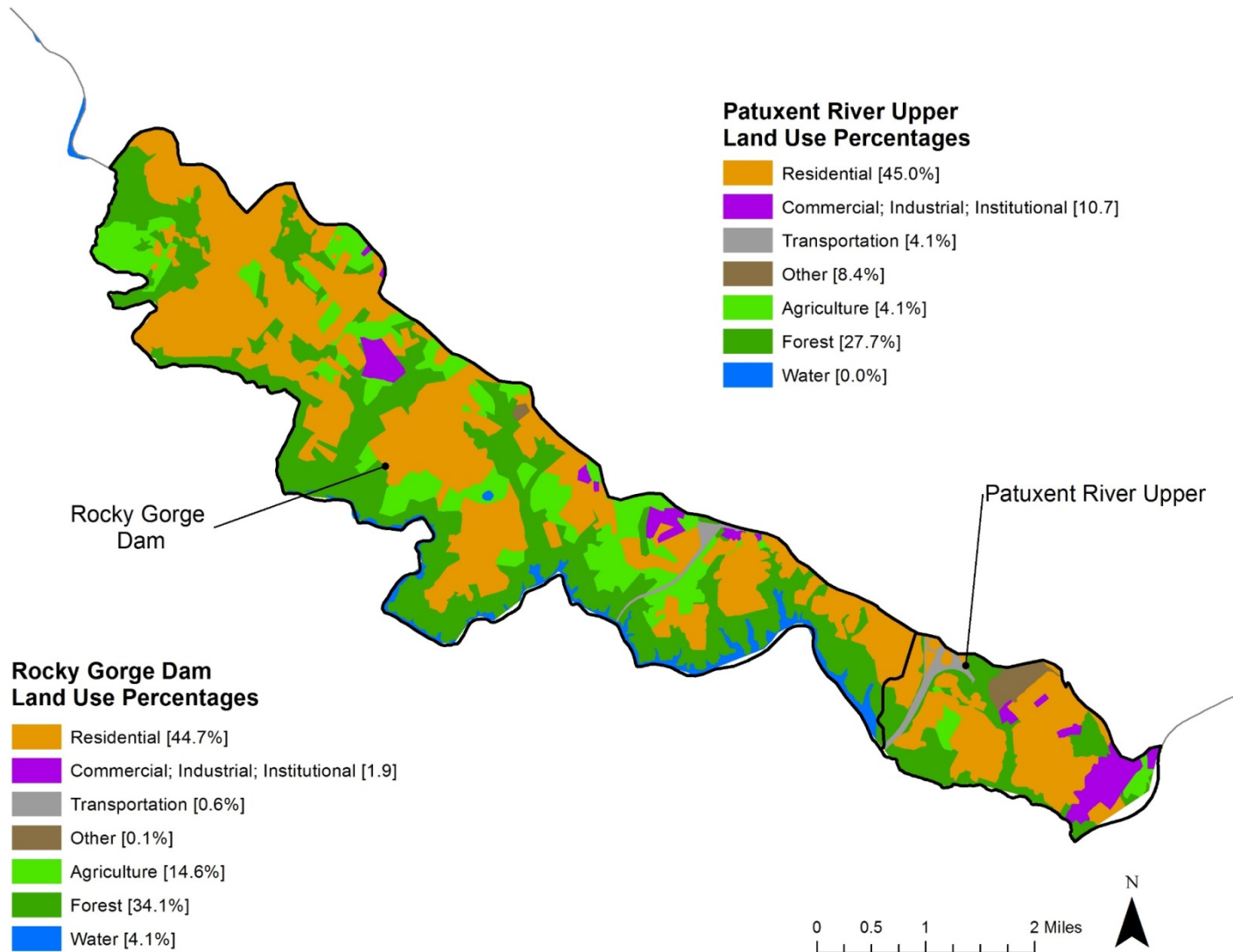
Imperviousness



Stormwater BMPs



Land Use



Field Assessments and Recommendations

Field Assessment

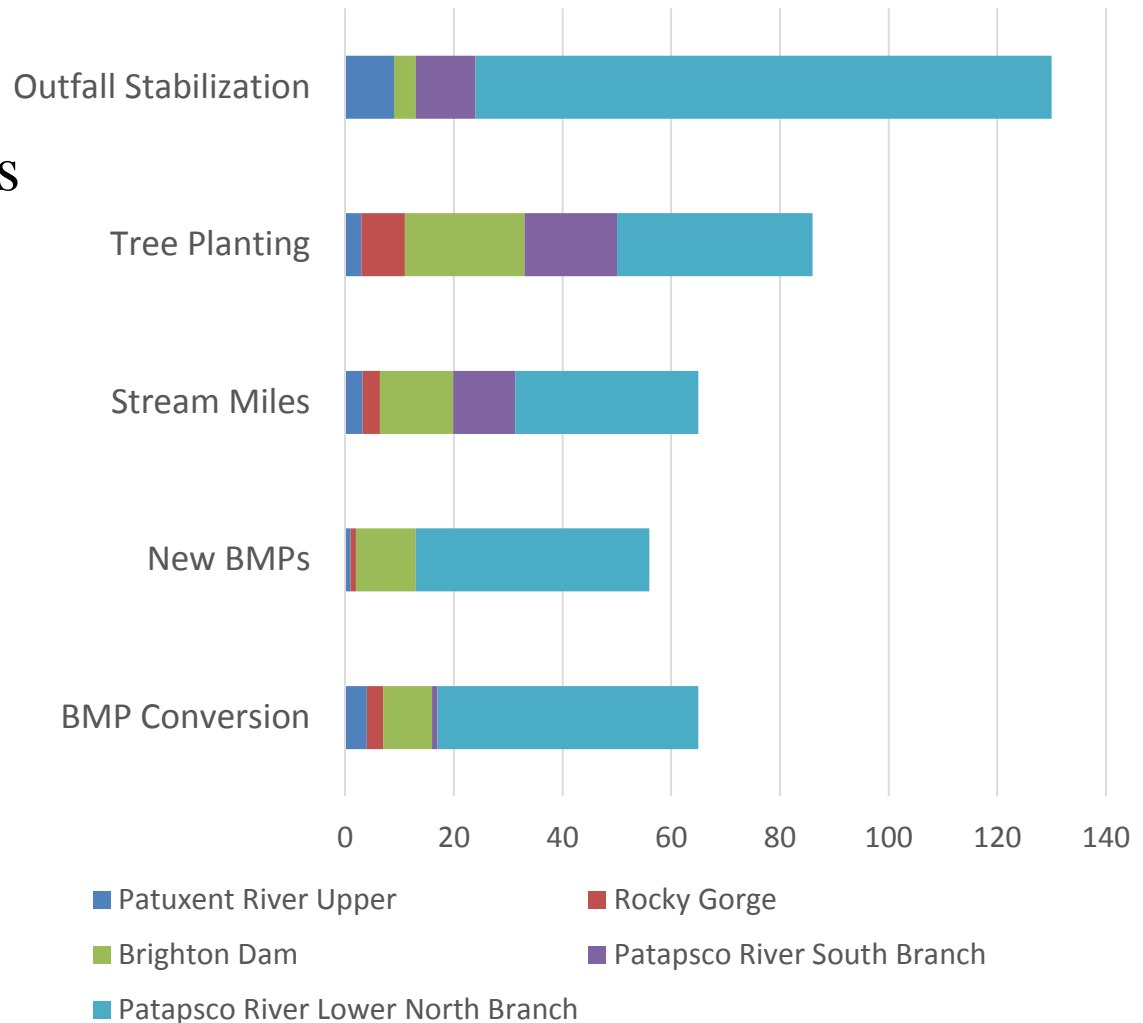


Assessment Results - Total

Sites Assessed:

- 130 Outfall stabilizations
- 86 Tree planting sites
- 65.0 Stream miles
- 56 New BMP sites
- 65 BMP conversions

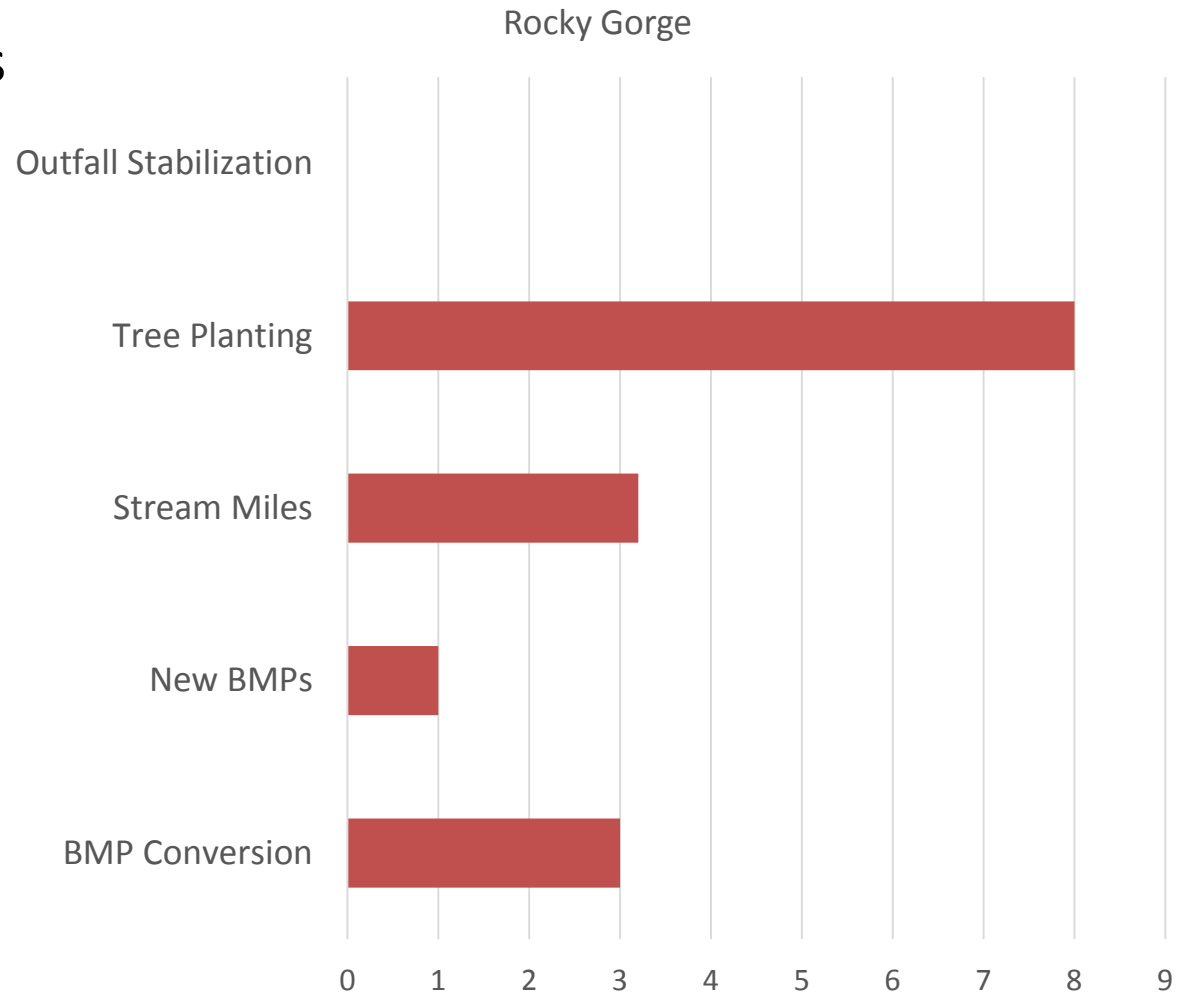
2016 Assessment Totals



Assessment Sites – Rocky Gorge

Sites Assessed:

- 0 Outfall stabilizations
- 8 Tree planting sites
- 3.2 miles of stream
- 1 New BMP sites
- 3 BMP conversions



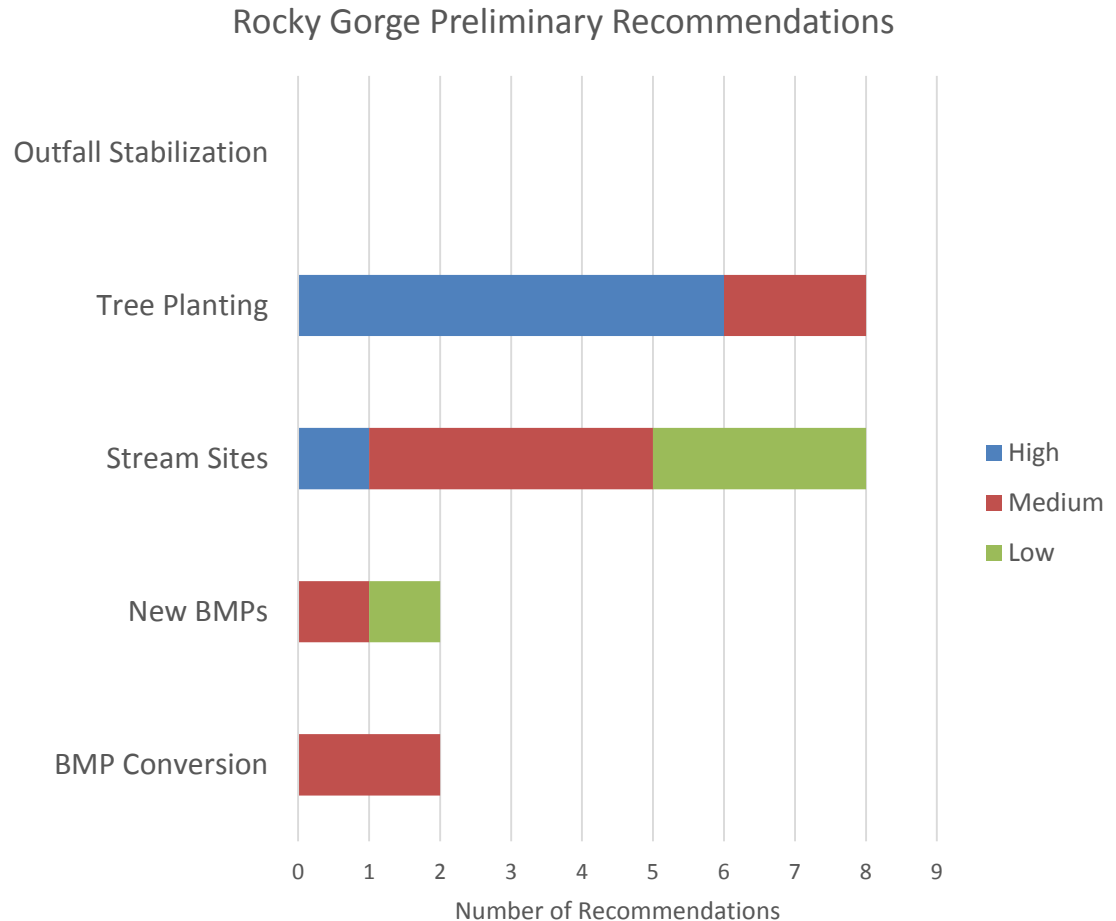
Assessment Recommendations – Rocky Gorge

High Priority Sites:

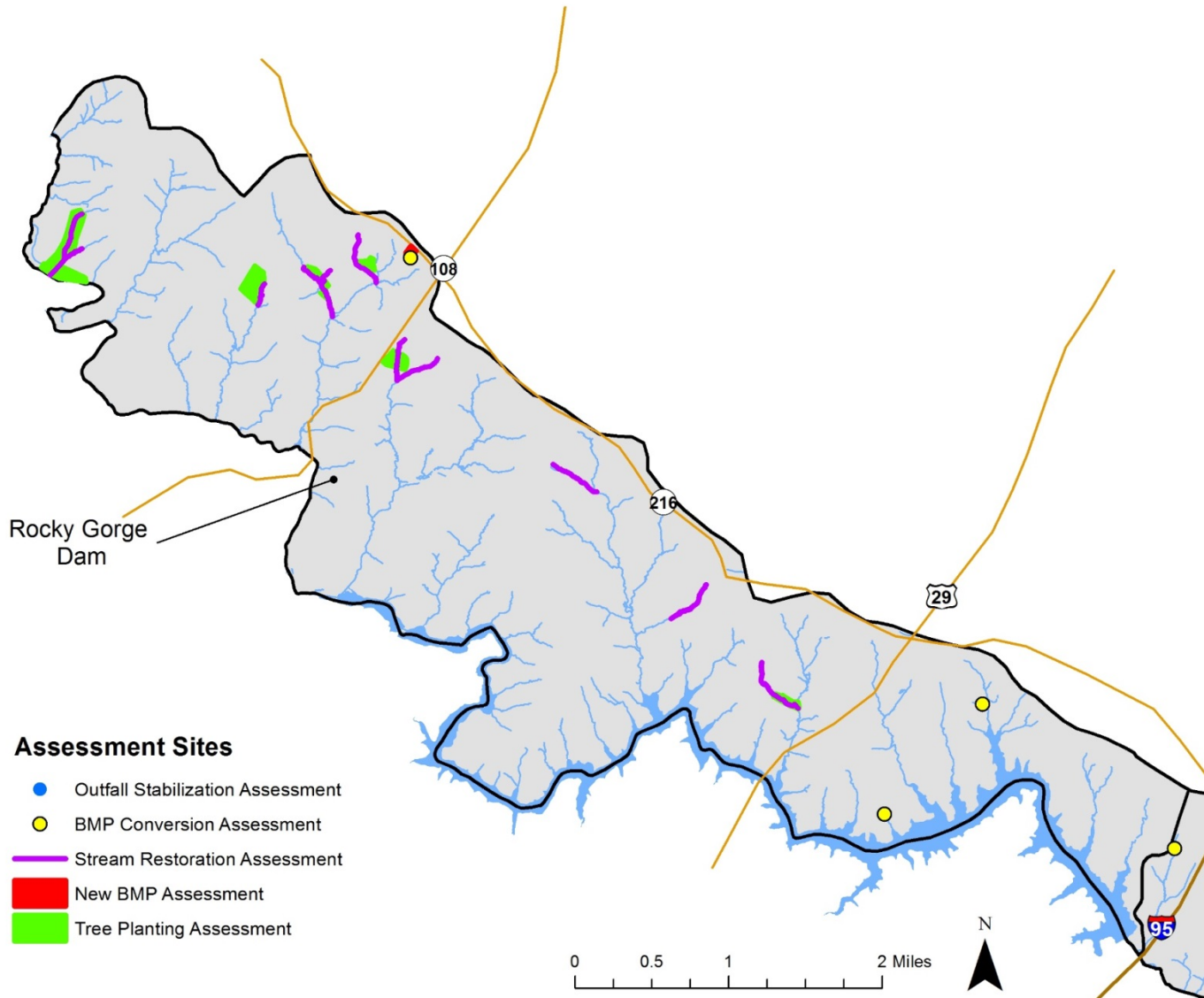
- 0 Outfall stabilizations
- 6 Tree planting sites
- 1 Stream sites
- 0 New BMP sites
- 0 BMP conversions

Medium Priority Sites:

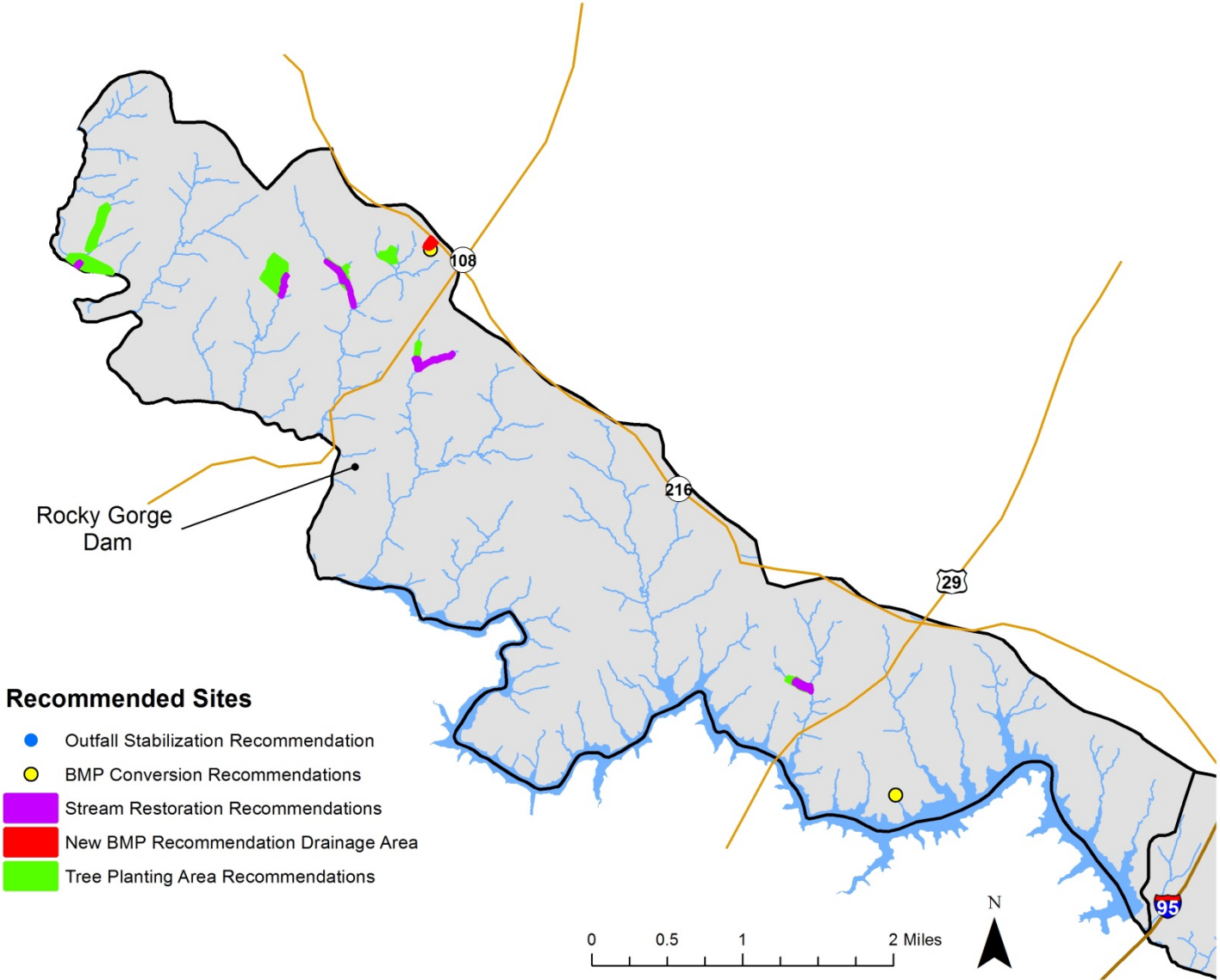
- 0 Outfall stabilizations
- 2 Tree planting sites
- 4 Stream sites
- 1 New BMP sites
- 2 BMP conversions



Assessment Sites – Rocky Gorge



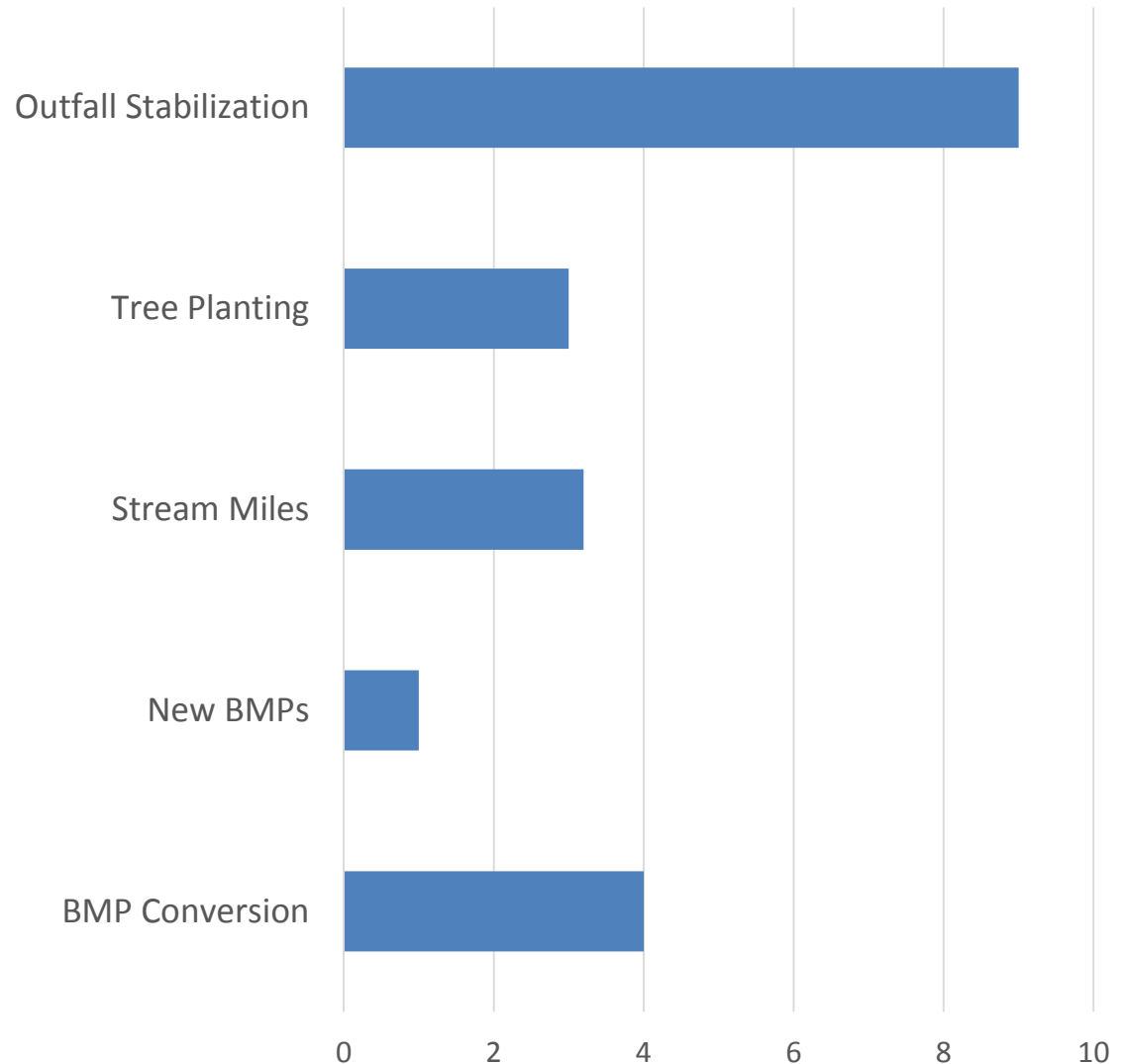
Recommended Sites – Rocky Gorge



Assessment Sites – Patuxent River Upper

Sites Assessed:

- 9 Outfall stabilizations
- 3 Tree planting sites
- 3.2 miles of stream
- 1 New BMP sites
- 4 BMP conversions



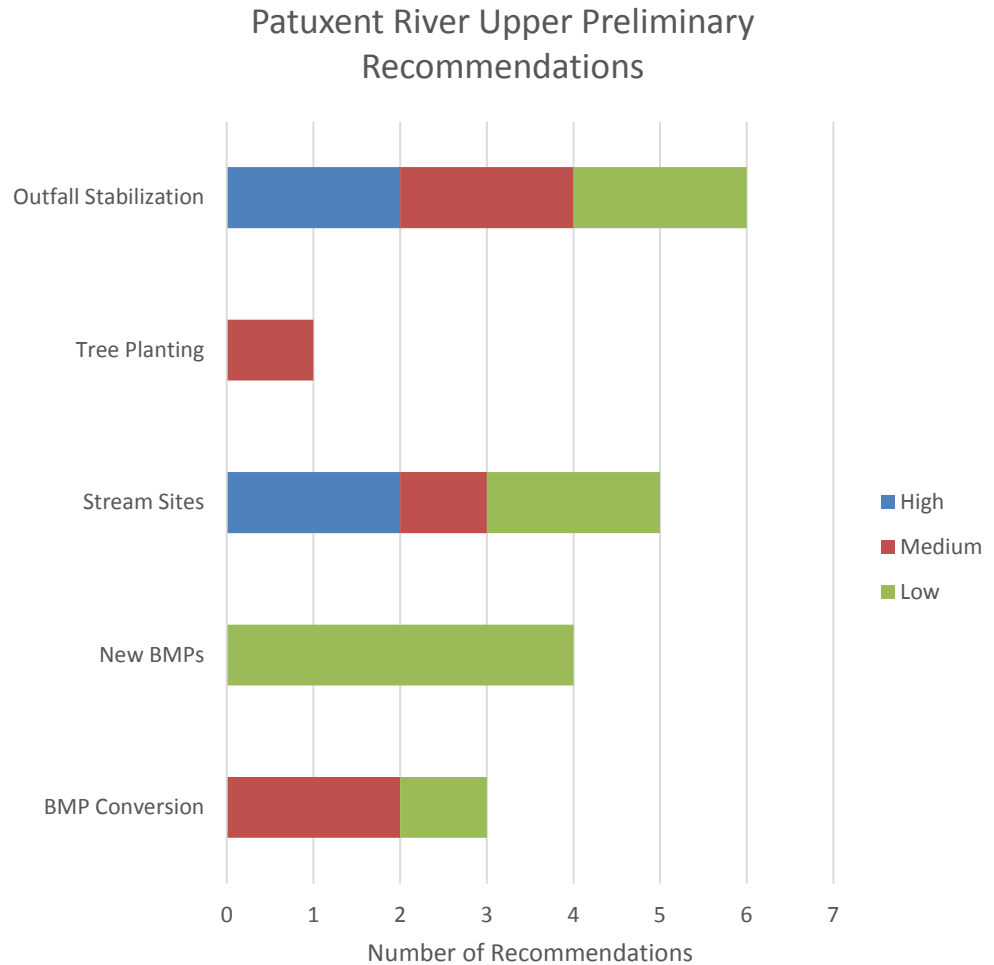
Assessment Recommendations – Patuxent River Upper

High Priority Sites:

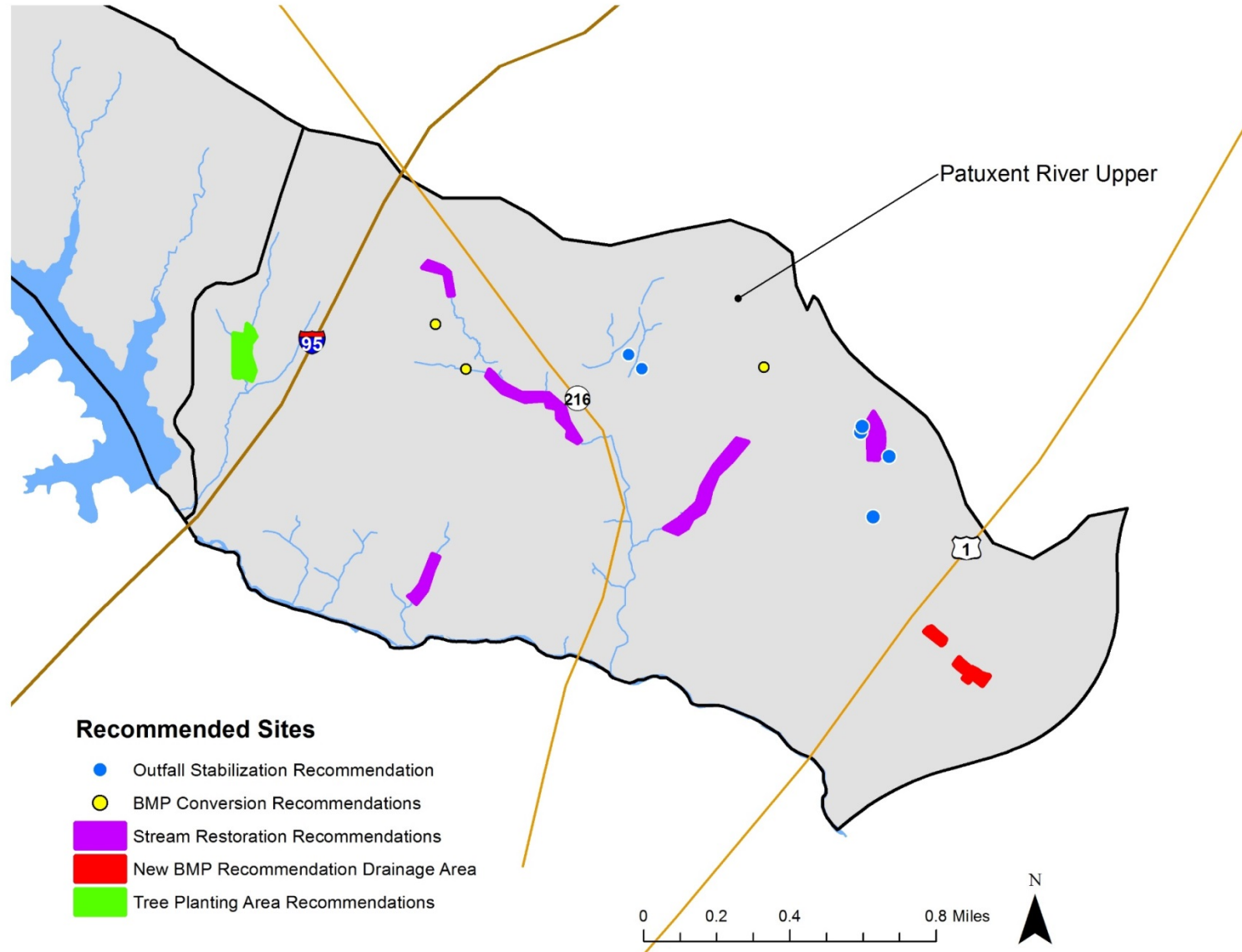
- 2 Outfall stabilizations
- 0 Tree planting sites
- 2 Stream sites
- 0 New BMP sites
- 0 BMP conversions

Medium Priority Sites:

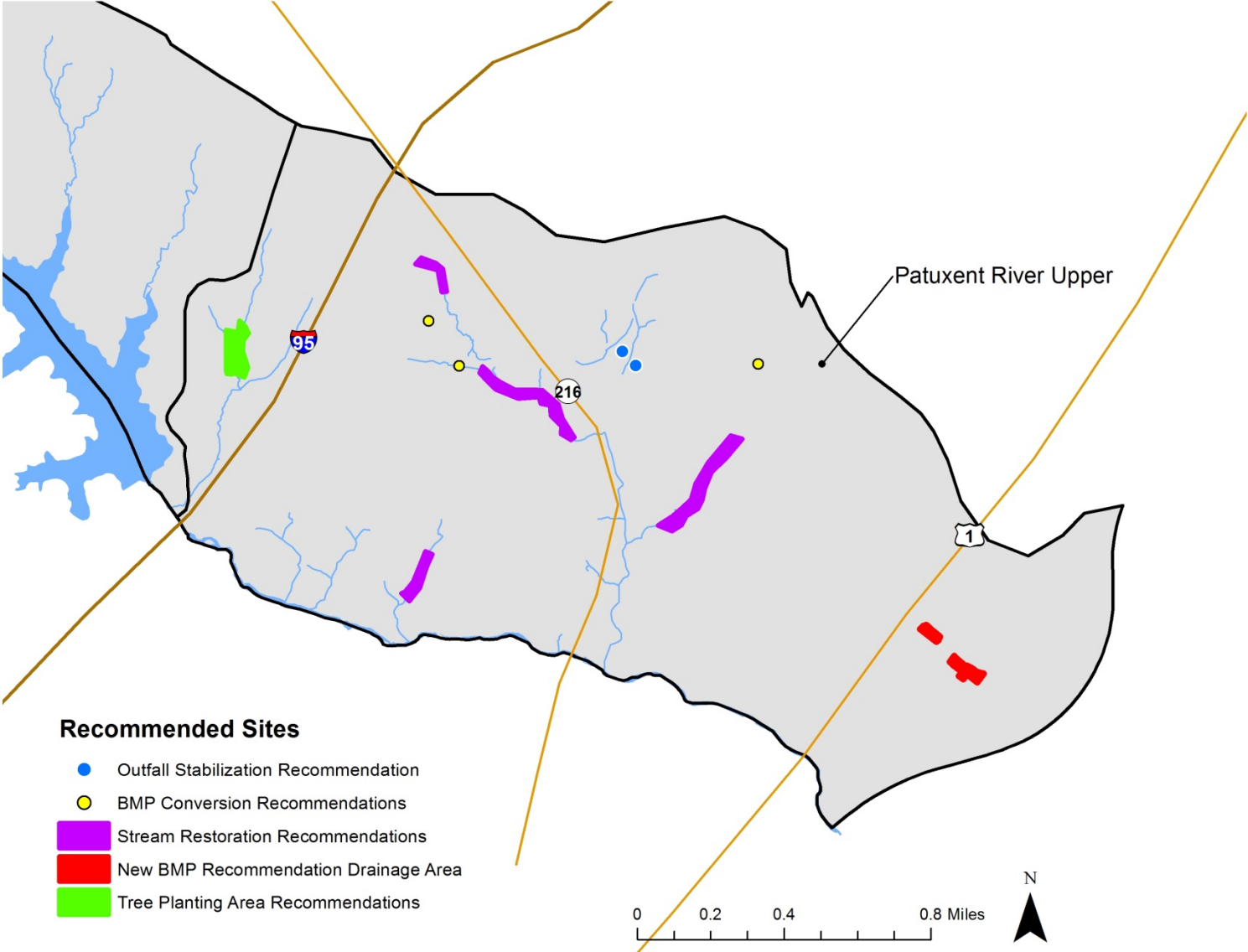
- 2 Outfall stabilizations
- 1 Tree planting sites
- 1 Stream site
- 0 New BMP sites
- 2 BMP conversions



Assessment Sites – Patuxent River Upper



Recommended Sites – Patuxent River Upper



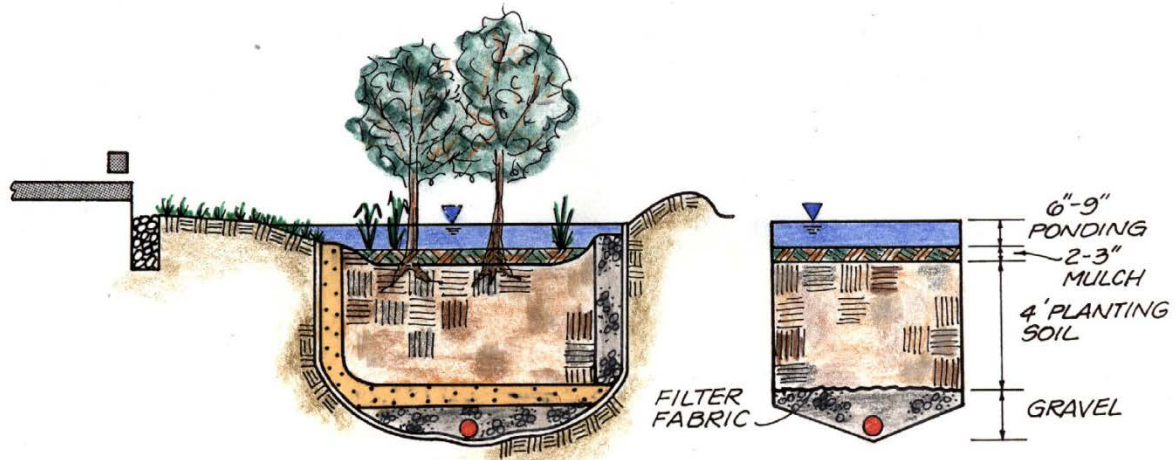
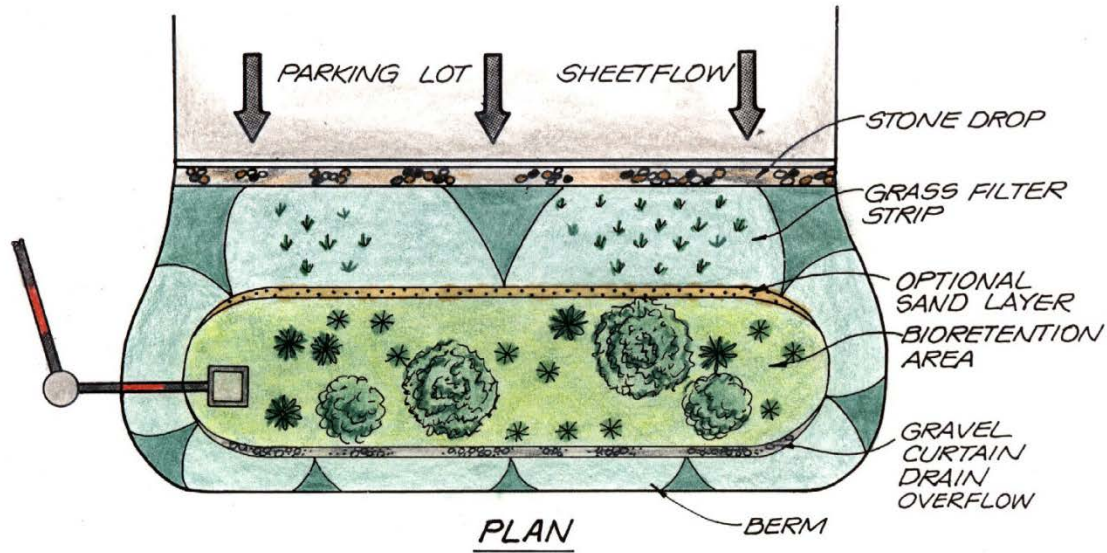
Watershed Study Overview

- Phase II – scheduled completion end of 2016
 - Perform Concept Level Designs (Including Cost Estimates)
 - Rank sites (\$/acre of impervious treated)
 - Input to restoration plan update (CIS)
 - Generate Draft Watershed Report
 - Community Meetings - #2 (Fall 2016)
 - Review and Comment Period
 - Final Report to MD Department of the Environment

If we build it, they will come . . .



Restoration Toolbox



BIORETENTION FILTER

Bioretention Facility



Bioretention



Pond Retrofit Project



Pond Retrofit Project



Permeable Pavement



Outfall Stabilization



Stream Restoration



Riparian Buffer Enhancement

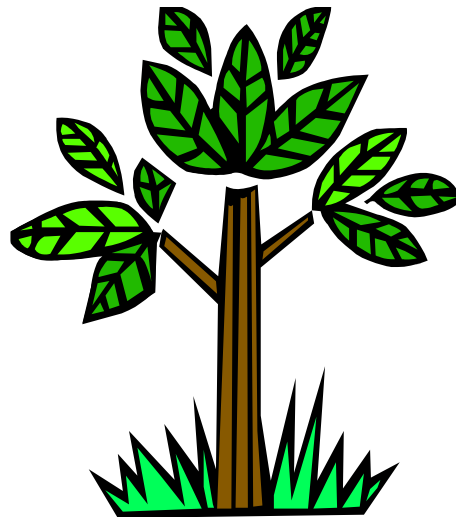


Riparian Buffer Enhancement





What can homeowners do to improve the water quality in the their watershed?



Everyday Things

Reduce the amount of fertilizer you use

Remember that anything that runs off your driveway or lawn ends up in the creek

Oil leaks

Pesticides

Pick up after your pet

No dumping

Reduce runoff from your yard

Disconnect your downspouts

Reduce turf area

Plant a tree

Reduce, Reuse and Recycle!!



Frequent Fertilizers

Nutrient runoff from lawns can cause eutrophication in streams, lakes & estuaries

52% of people who fertilize OVER-fertilize

People who over-fertilize put on more nutrients than farmers do to grow our food

Turf grass is single largest crop by area in the Chesapeake Bay Basin



Chronic Car Washers

55-70% of households wash their own cars

60% are “chronic car washers” who wash their car at least once a month

70-90% report that their wash water drains directly to the street and the storm drain



Poor Pooch Poop Scoopers

- 41% of people own dogs
- Of dog walkers, **41% admit they rarely or never clean up**
- Of these, 44% would not clean up even with a fine, complaints, collection or disposal methods
- However, 63% agreed that pet wastes contribute to water quality problems



**Attention
Dog Guardians**

Pick up after your
dogs. Thank you.

Attention Dogs

Grrrrr, bark, woof.
Good dog.

District of North Vancouver.
Bylaw 5981-11(i)



Volume Reduction

There are both simple and complex ways to reduce runoff from our yards

- downspout disconnection
- rain barrels
- rain gardens
- lawn conversion

Bad Approach



Good Approach



Rain Barrel



Overfertilization?
Too much turf?



Disconnected impervious



Rain Garden



Lack of
riparian buffer.

What can be recycled in the blue carts?

❖ Paper & Cardboard



❖ Glass Bottles and Jars



❖ Plastic



❖ Metal



Want to learn more about stormwater?

Office of Community Sustainability

www.cleanwaterhoward.com



Summary

- County has completed the initial assessment phase of the Patuxent and Patapsco River watershed study. There is still more work to be done and we will report back again Fall 2016.
- The County continues to strive for water quality improvements through large and small efforts.
- **We can ALL make a difference!**