Northern Middle Patuxent River Watershed Assessment

COMMUNITY MEETING NO. 1

June 30, 2015

clean H2OWARD

Howard County Stormwater Solutions

Meeting Outline

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

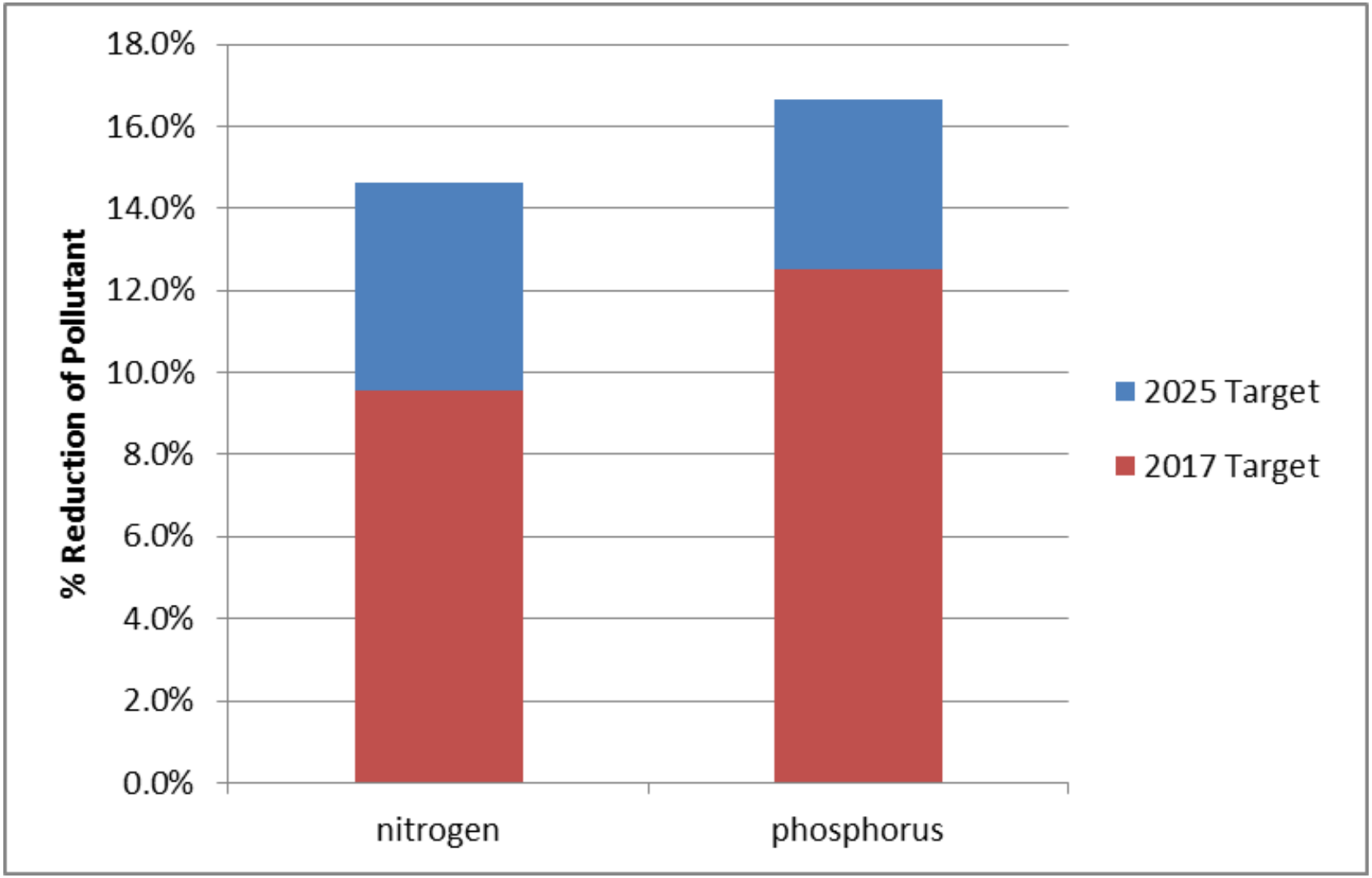
Why is the County doing a Watershed Assessment?

- 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

Urban Stormwater Sector Goals



General Strategies

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

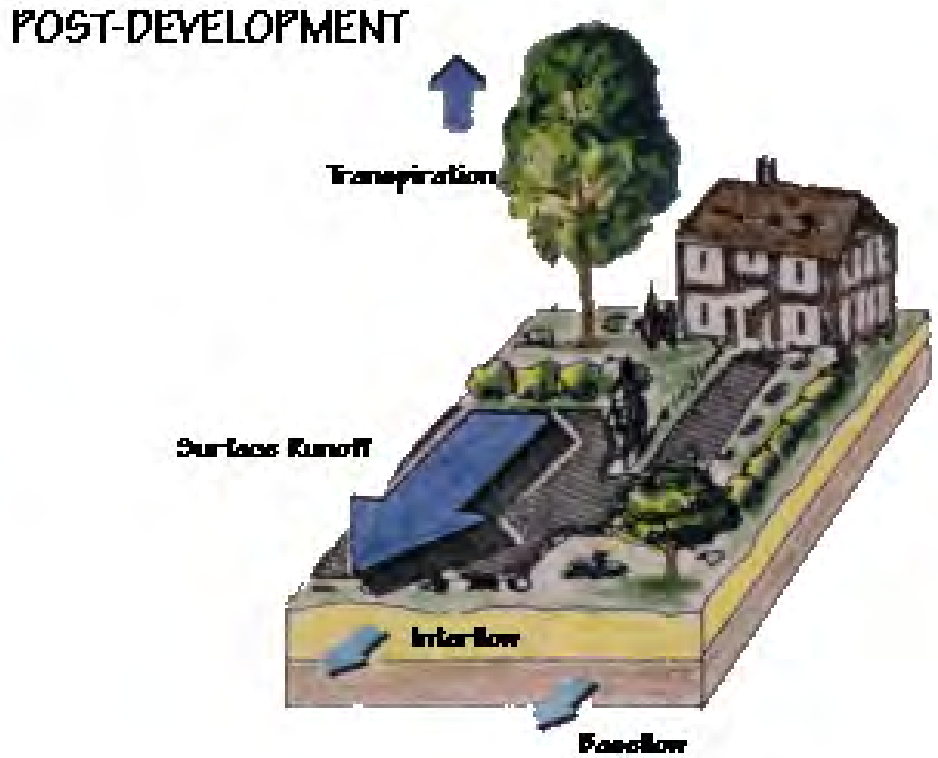
- Reduce negative impact of impervious surfaces
- Reduce levels of pollutants in waterways
- Reduce streambank erosion
- Increase forest area and connectivity of riparian habitats
- Increase public awareness and positive behaviors

Watersheds
101

What is a Watershed?
&
What is Stormwater Management?

75°
45°
Chesapeake
Bay
Watershed
NEW YORK
80°
42°
PENNSYLVANIA
40°
NJ
MARYLAND
D.C.
DE
WEST
VIRGINIA
36°
VIRGINIA
Chesapeake Bay
ATLANTIC OCEAN

WATER BALANCE



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

September 12, 2011
This Image is Available at
Maryland DNR's
www.eyesonthebay.net
Image courtesy of
MODIS Rapid Response Project
at NASA/GSFC
250 meter resolution
http://rapidfire.sci.gsfc.nasa.gov/
subsets/?AERONET_Wallops/

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

Harmful Pollutants in Runoff

Bacteria

Nutrients

Pesticides

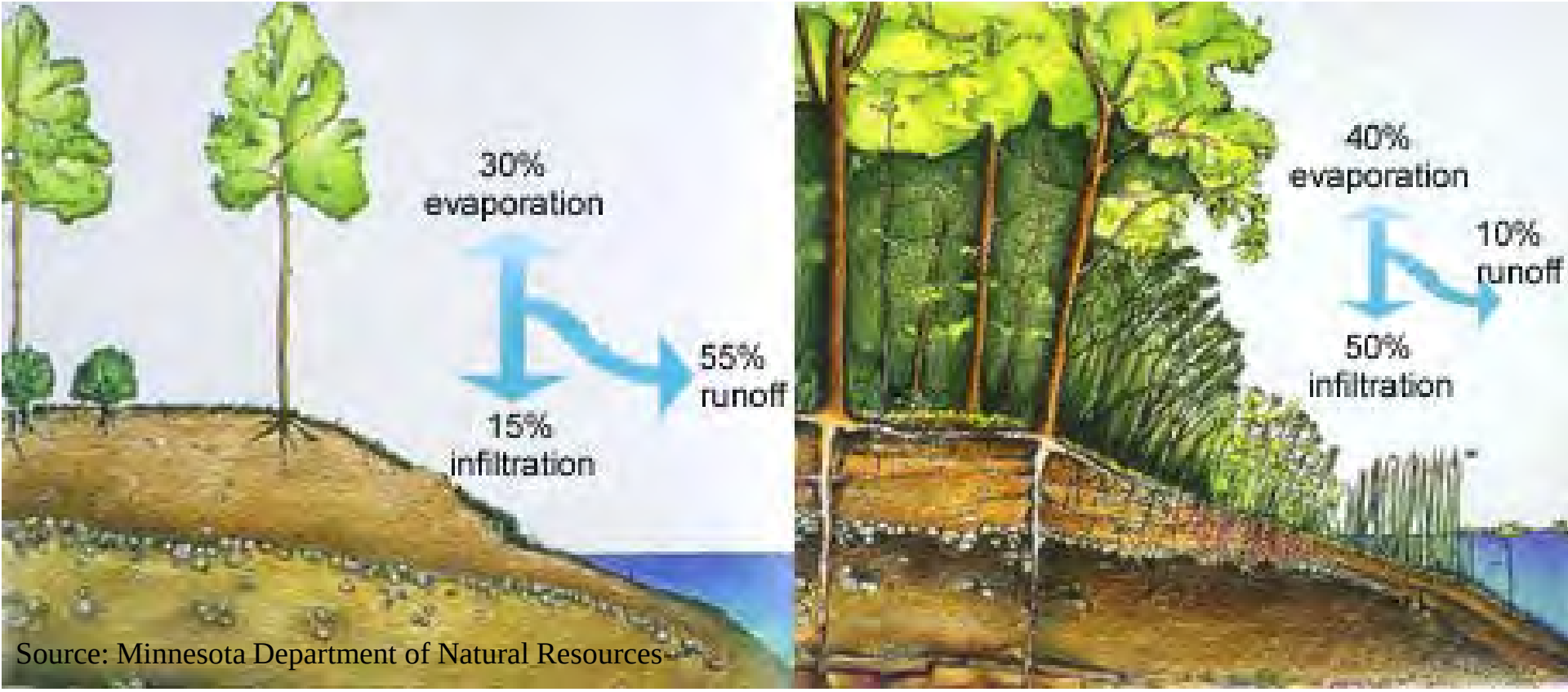
Oil & Grease

Muddy Water

Heavy Metals

(e.g. Zinc, Copper, Lead)

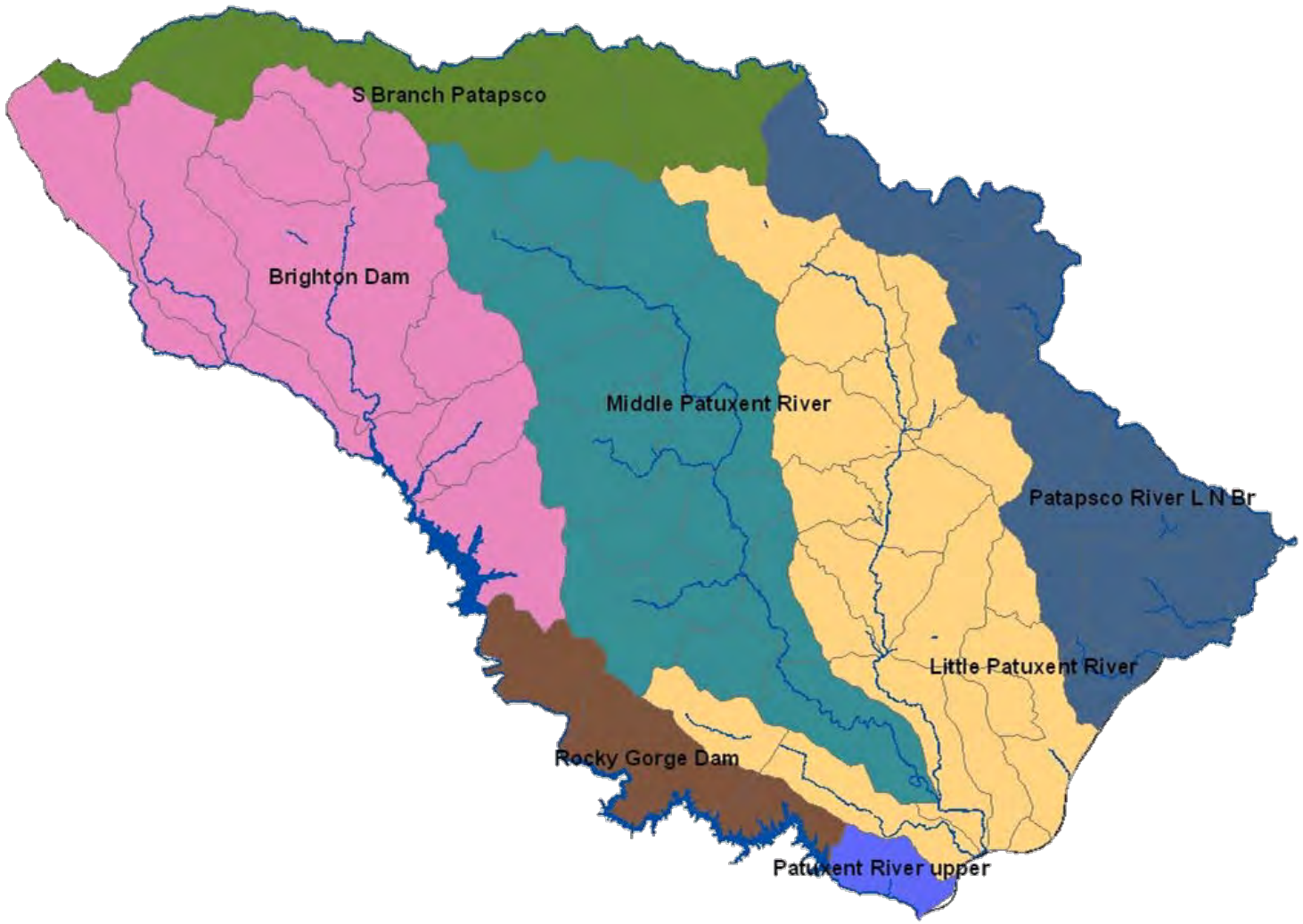
County = 13.6% Columbia ~ 15%-20%



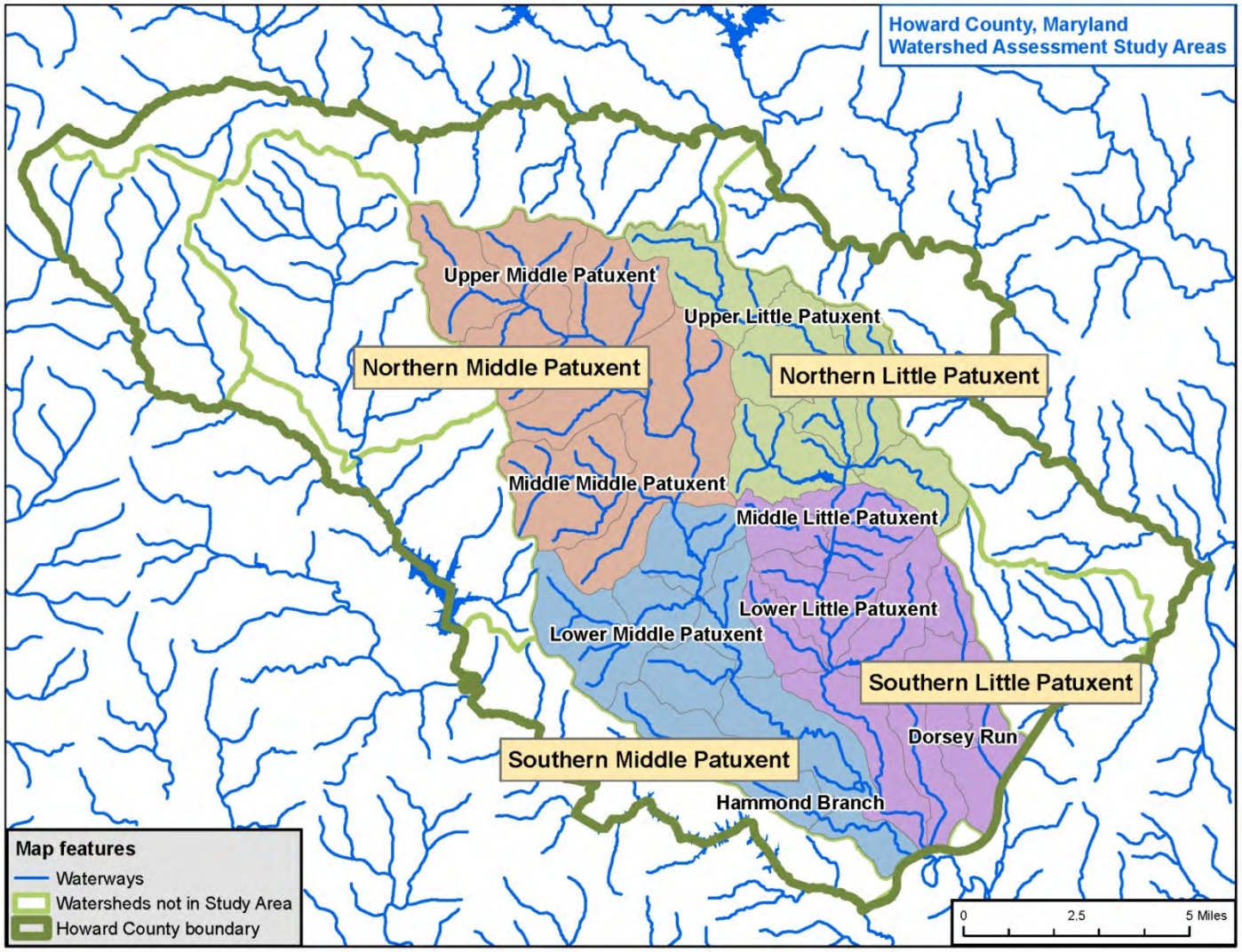
Source: Minnesota Department of Natural Resources

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



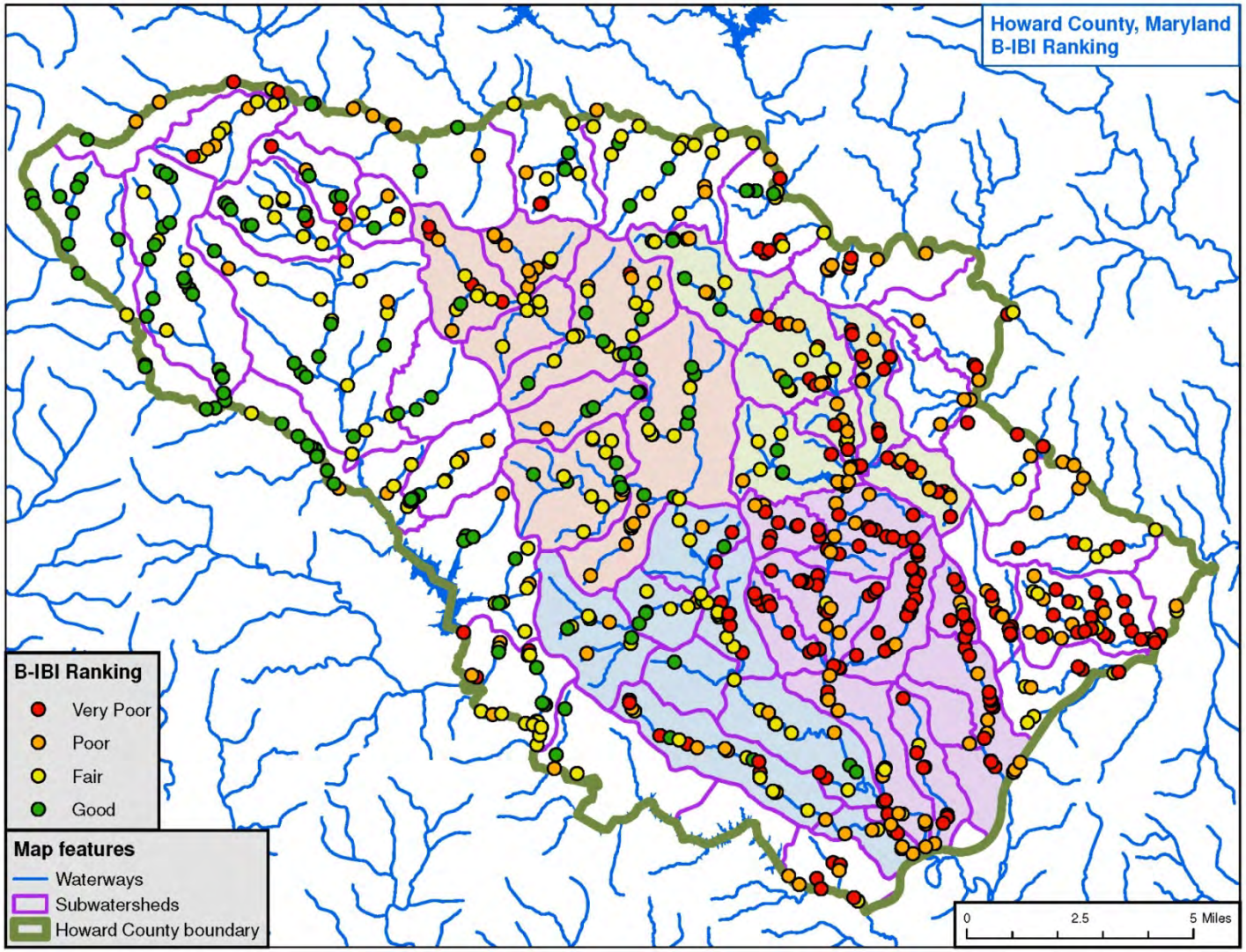
Watershed Study Overview

- Phase I – completed mid-July 2015
  - 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

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

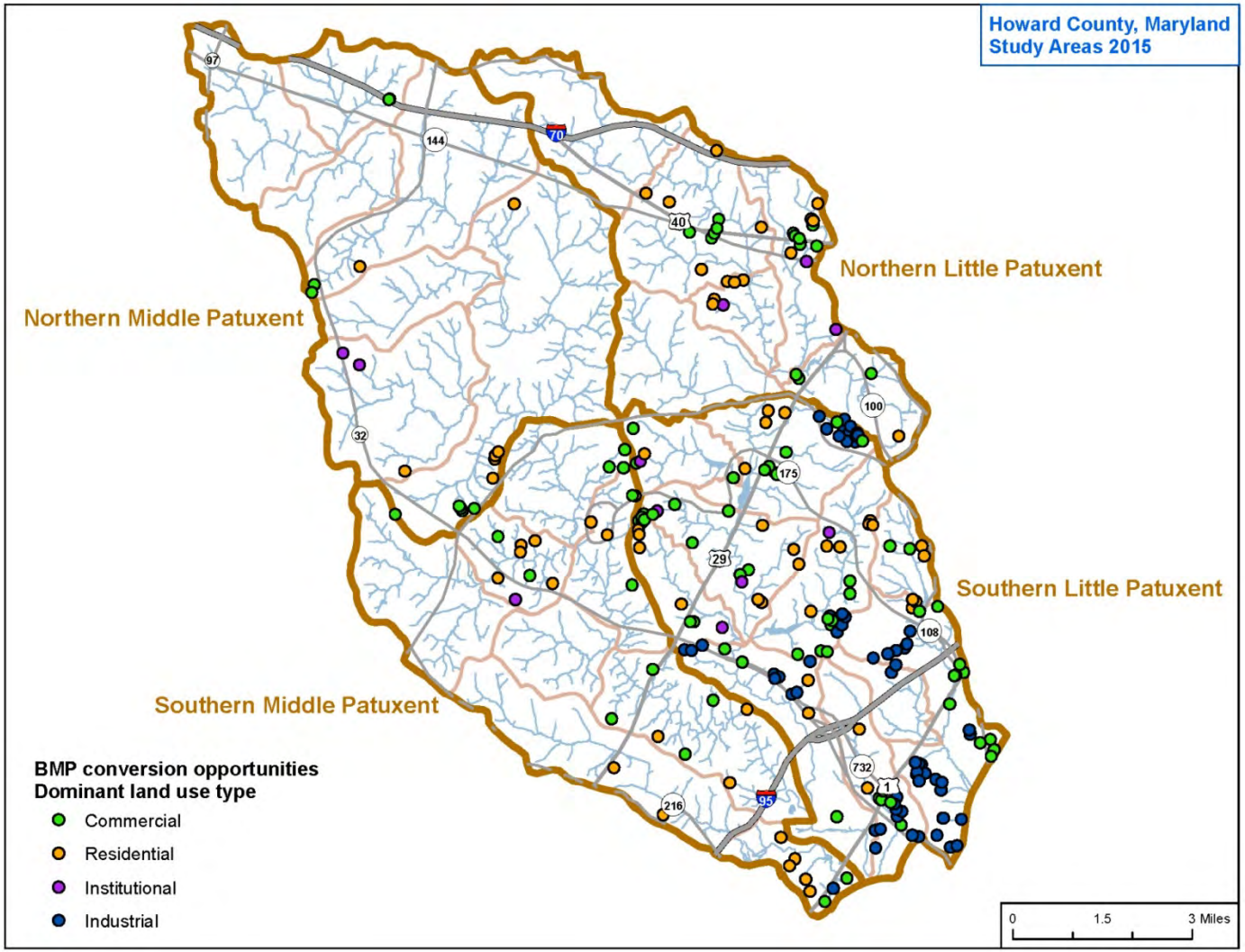
Monitoring Results – Biological Health



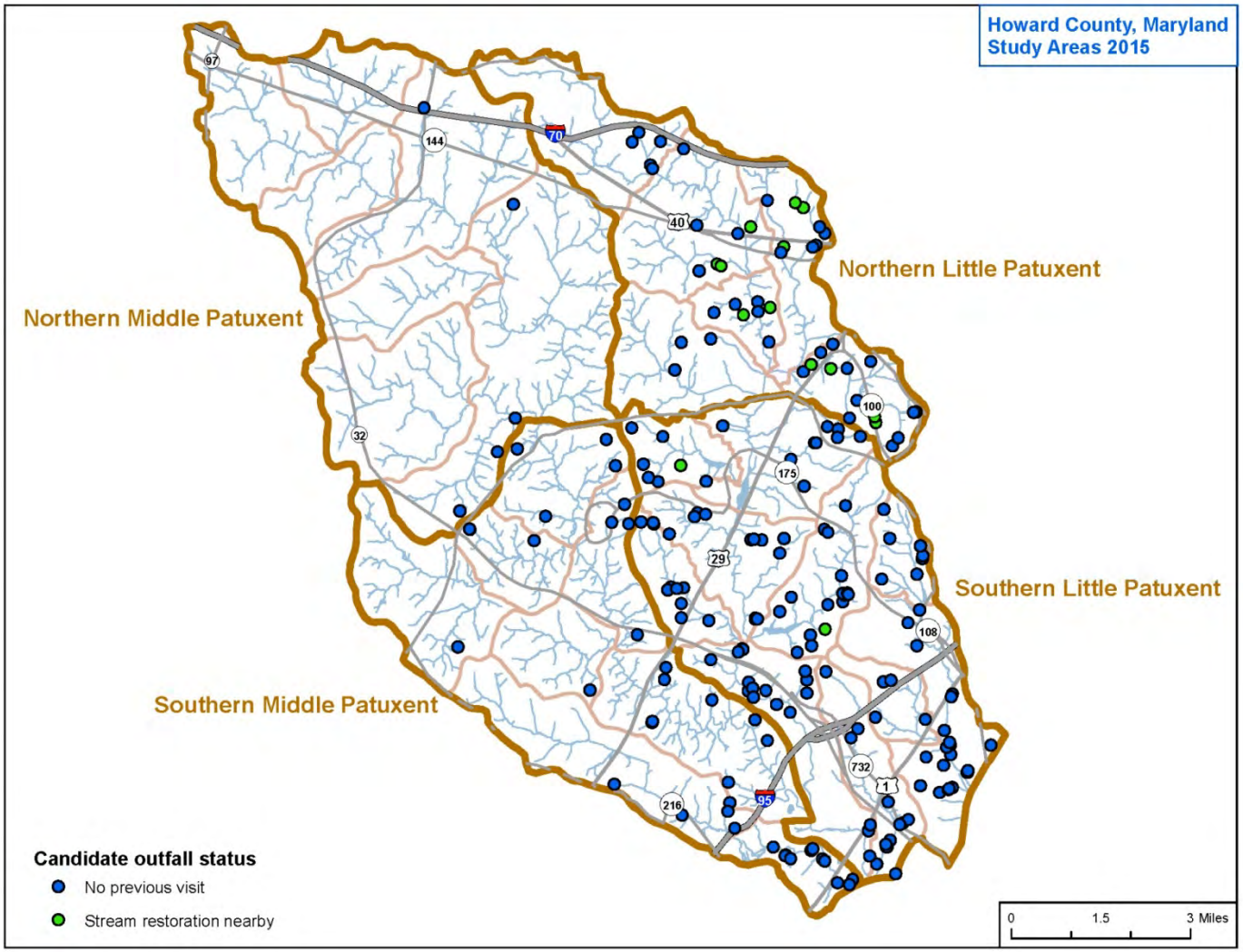
Project Types Being Investigated

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

BMP Retrofit Opportunities

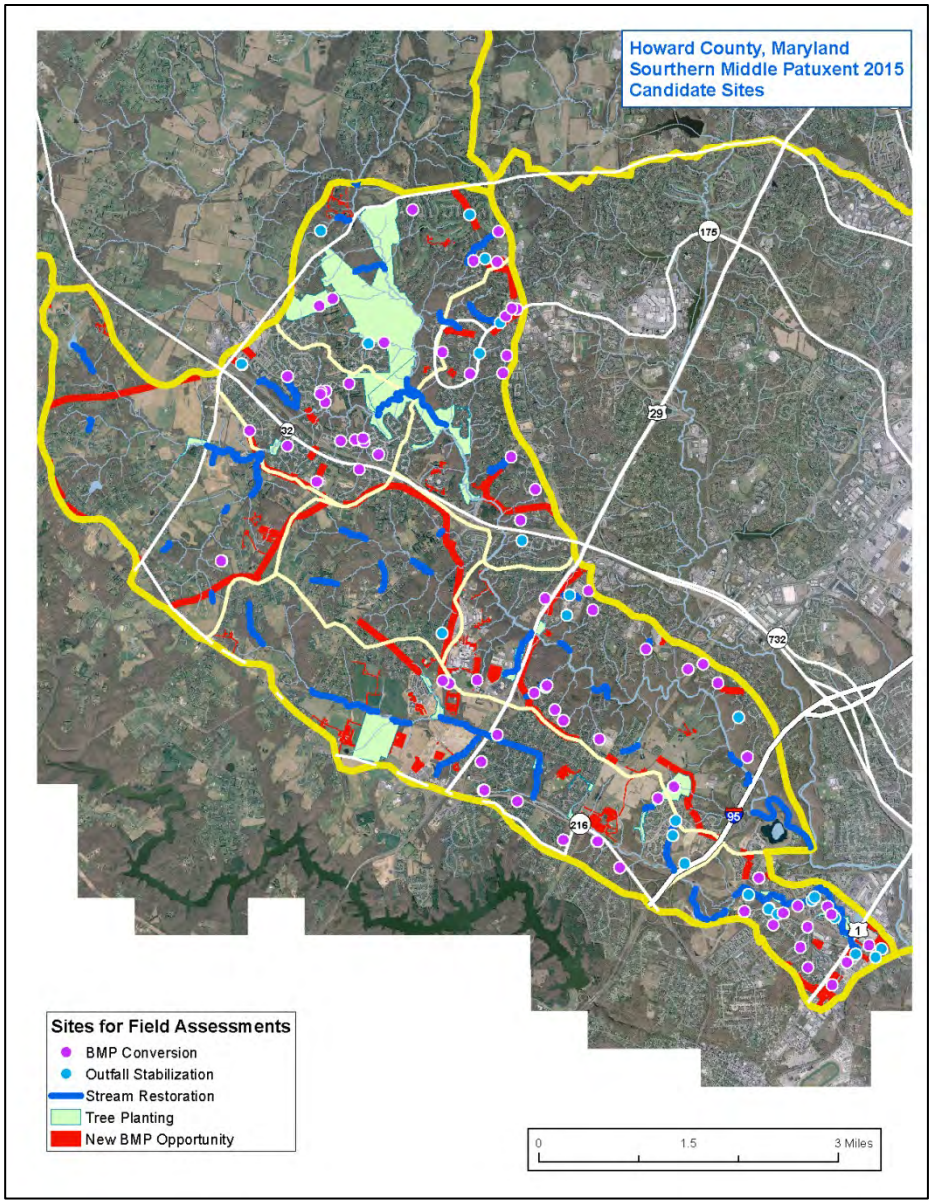


Outfall Stabilization Opportunities



Desktop Analysis

Sample composite GIS map used for final office review

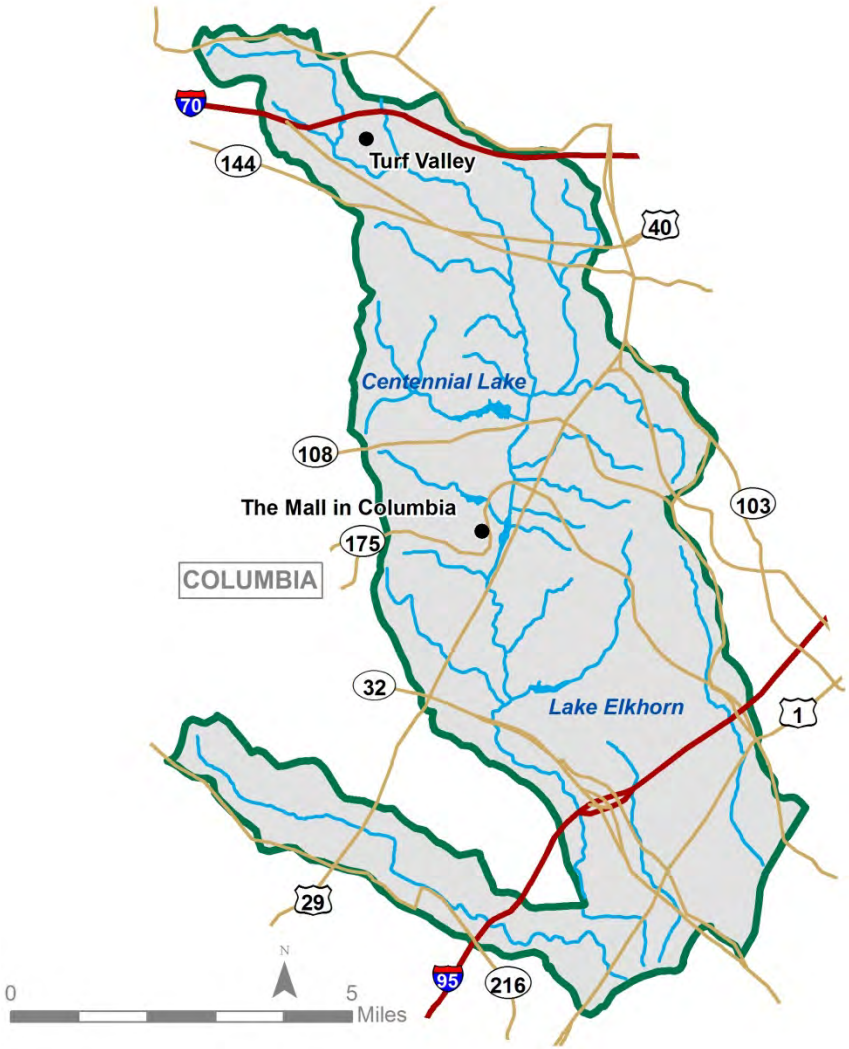


Watershed Characteristics

Little Patuxent River Watershed

Little Patuxent River

- 59 square miles
- 37,727 acres
- 9,688 impervious acres
- 9,043 wooded acres
- 190 miles of streams
- 1,746 stormwater BMPs treating 47 of impervious



Middle Patuxent River Watershed

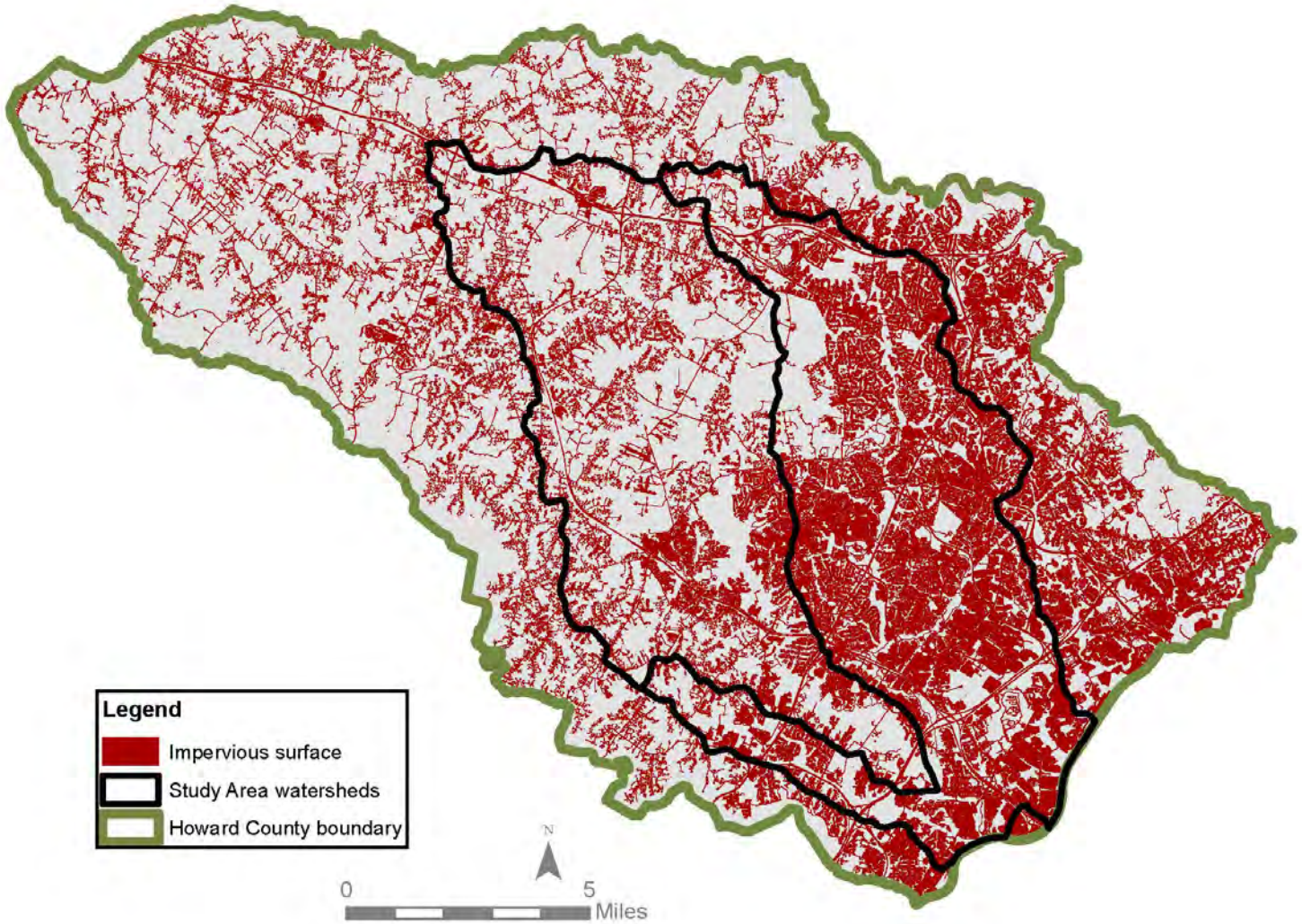
Middle Patuxent River

- 58 square miles
- 37,074 acres
- 3,675 impervious acres
- 12,367 wooded acres
- 227 miles of streams
- 593 stormwater BMPs treating 40 of impervious

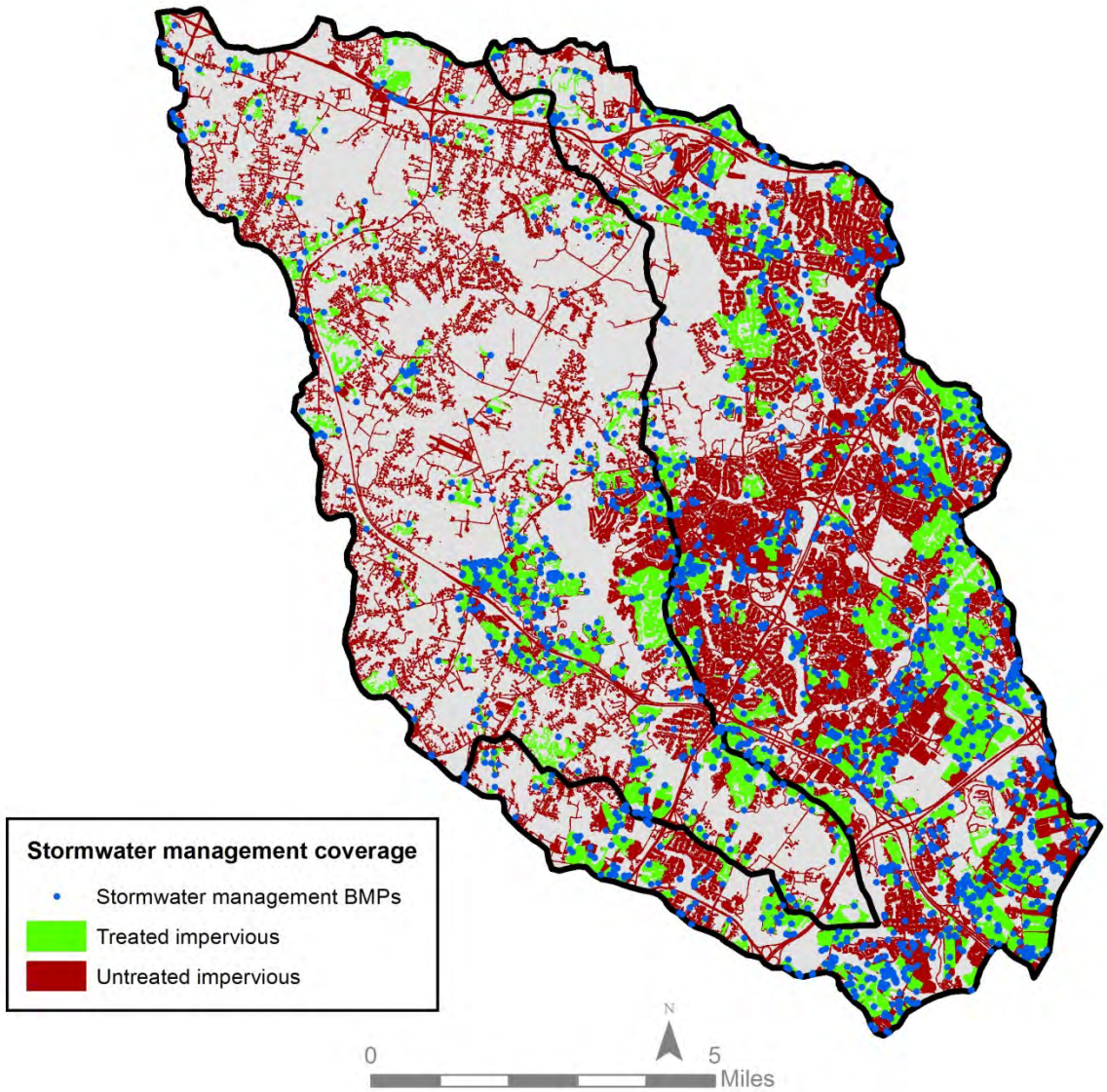
Imperviousness

	Total Area (sq miles)	Impervious Area (sq miles)	Impervious Percent
County	253	34.3	13.6
Little Patuxent	59	15.1	25.6
Percent of County	23%	44%	n/a
Middle Patuxent	58	5.7	9.8
Percent of County	23%	17%	n/a

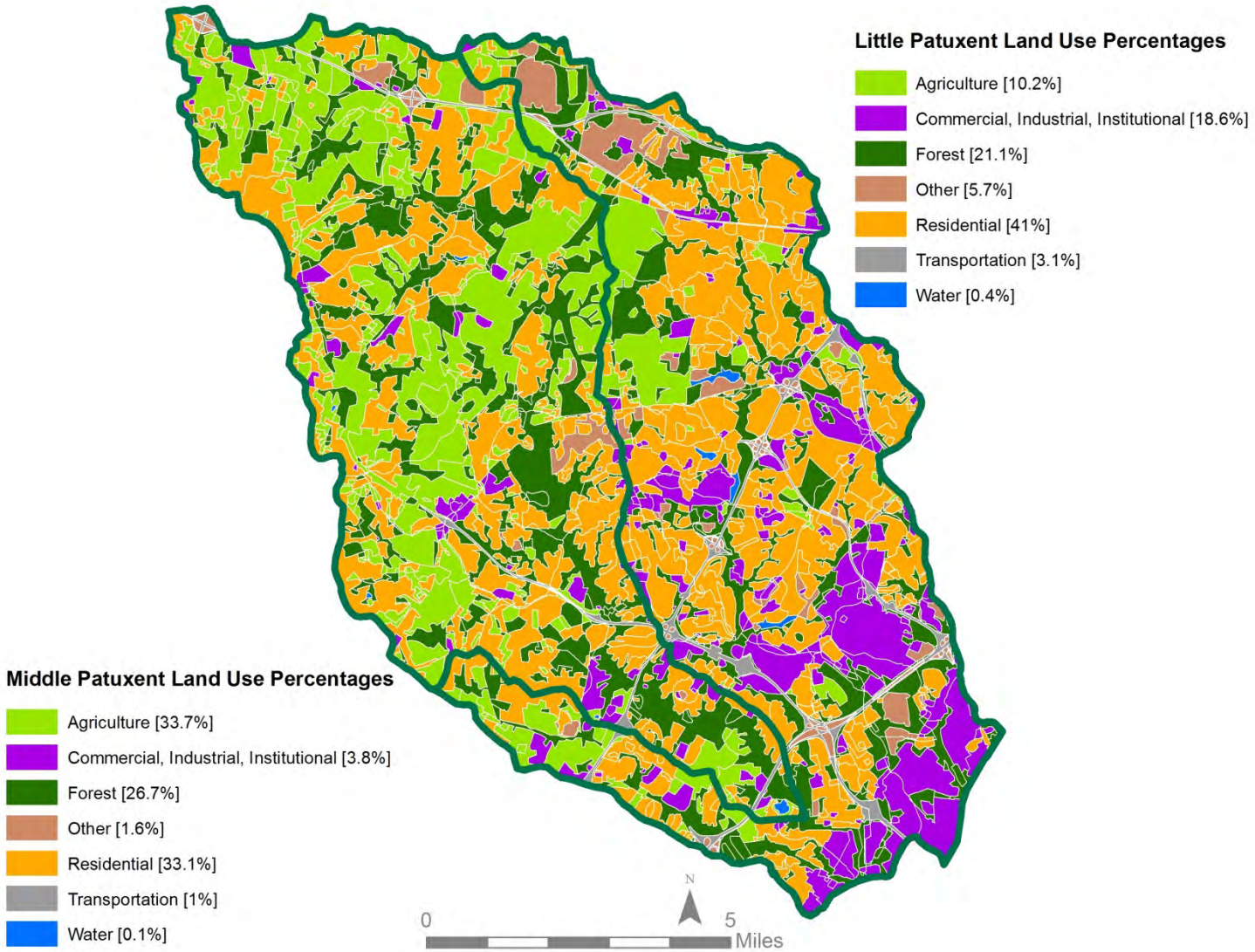
Imperviousness



Stormwater BMPs



Land Use


Little Patuxent Land Use Percentages
Agriculture [10.2%]
Commercial, Industrial, Institutional [18.6%]
Forest [21.1%]
Other [5.7%]
Residential [41%]
Transportation [3.1%]
Water [0.4%]
Middle Patuxent Land Use Percentages
Agriculture [33.7%]
Commercial, Industrial, Institutional [3.8%]
Forest [26.7%]
Other [1.6%]
Residential [33.1%]
Transportation [1%]
Water [0.1%]
N
0
5
Miles

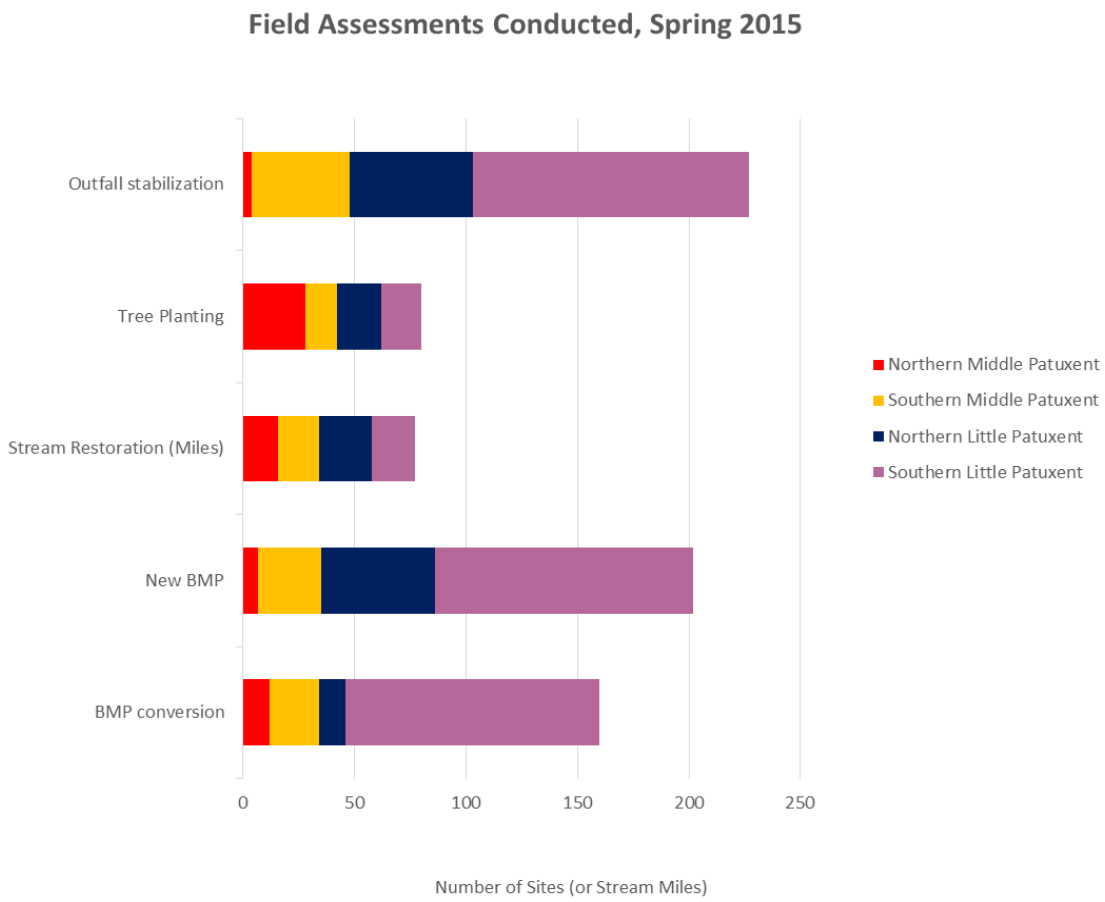
Field Assessments and Results

Field Assessment

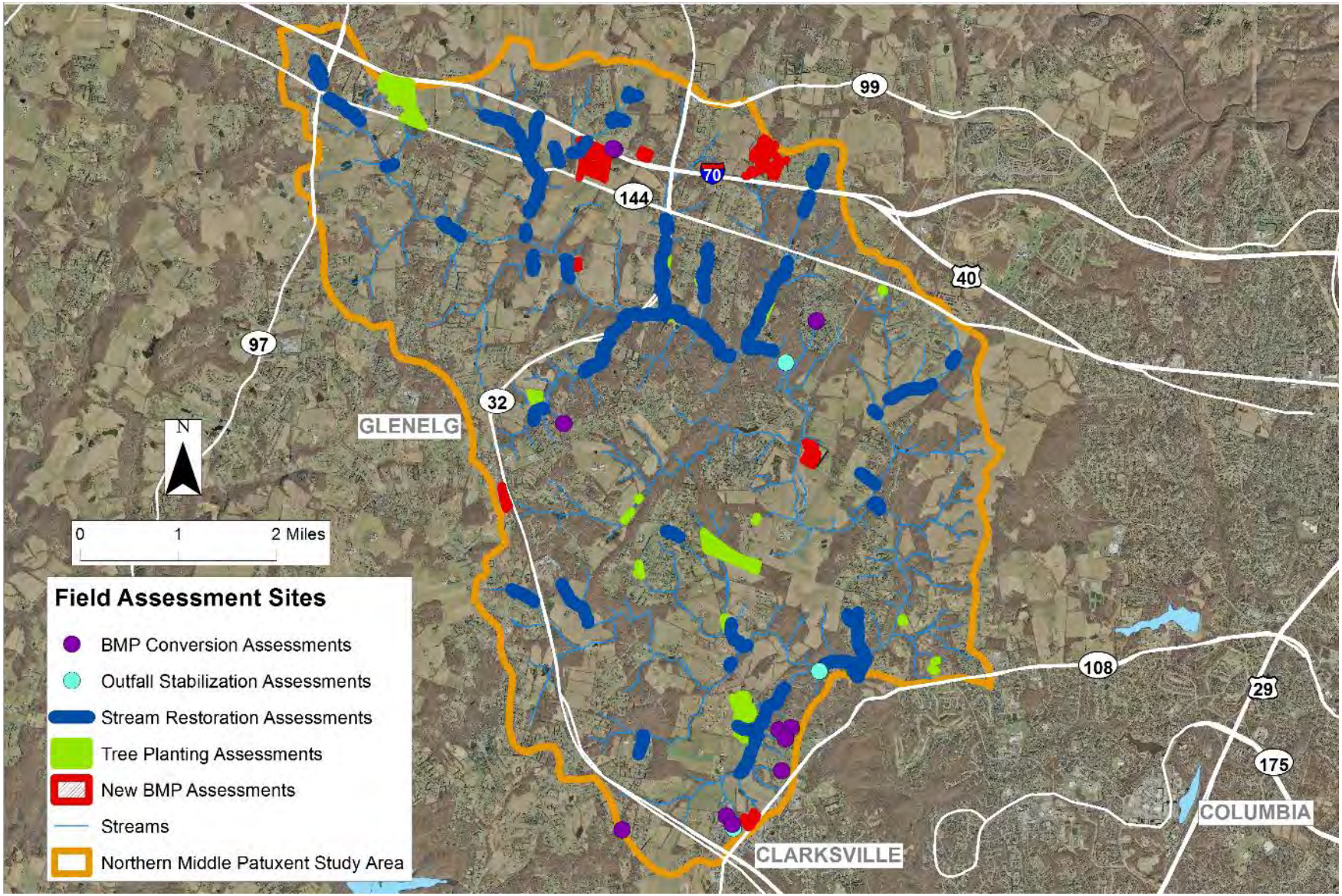
Field Assessment Results - Total

Sites Assessed:

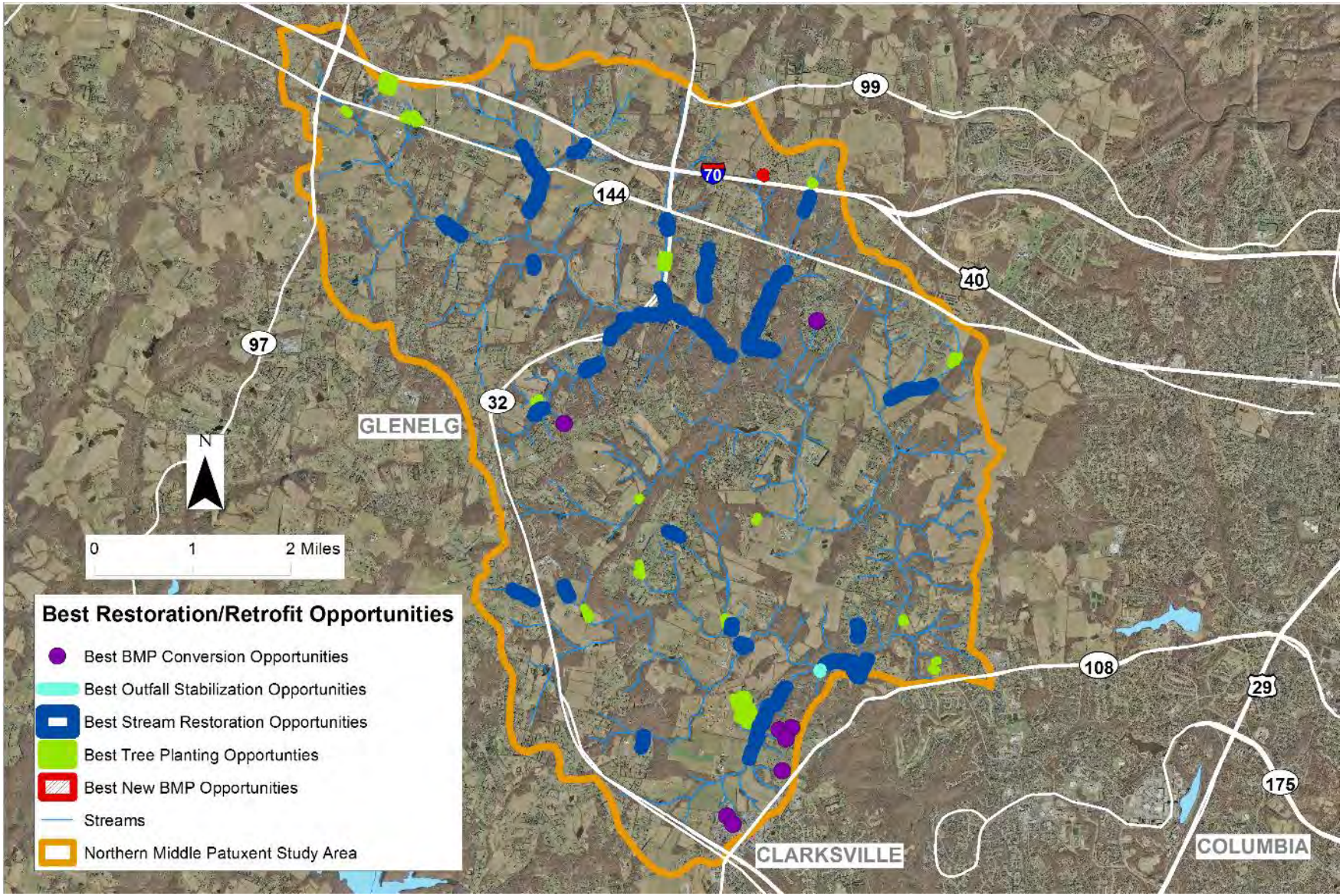
- 227 Outfall stabilizations
- 80 Tree planting sites
- 77.1 Stream miles
- 202 New BMP sites
- 160 BMP conversions



Field Assessment Sites - NMP



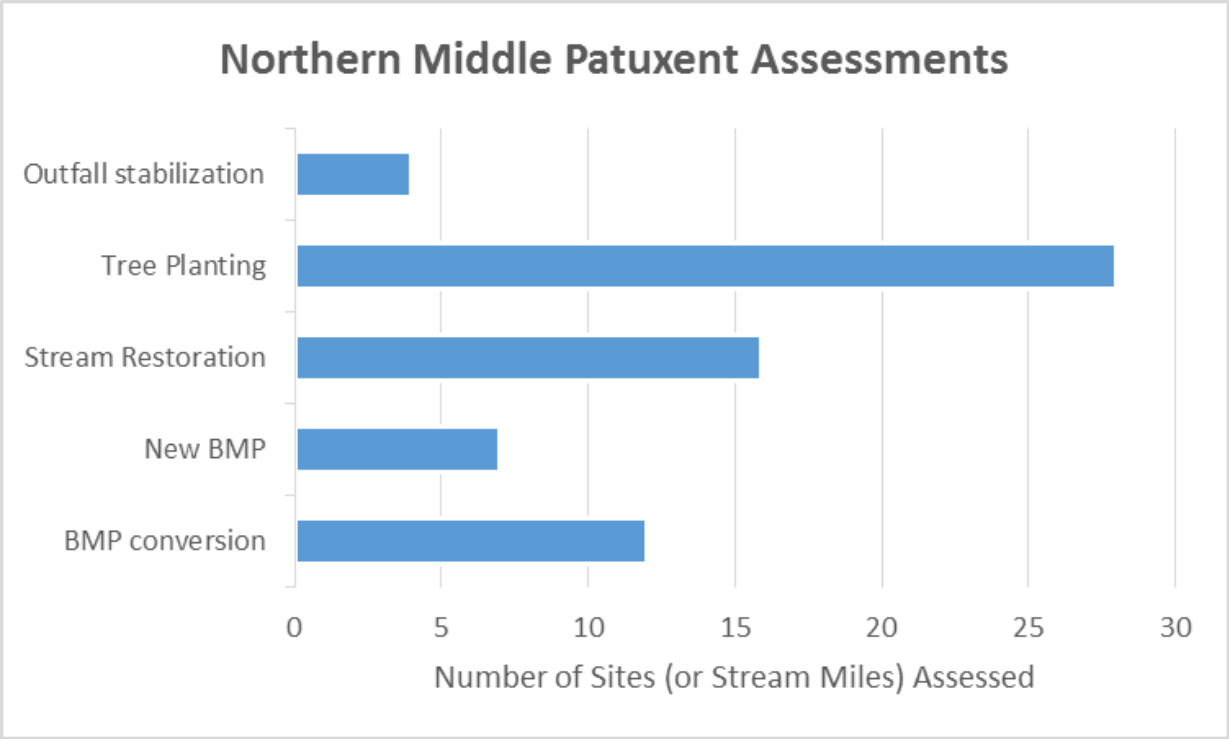
Field Assessment Results - NMP



Field Assessment Results - NMP

Sites Assessed:

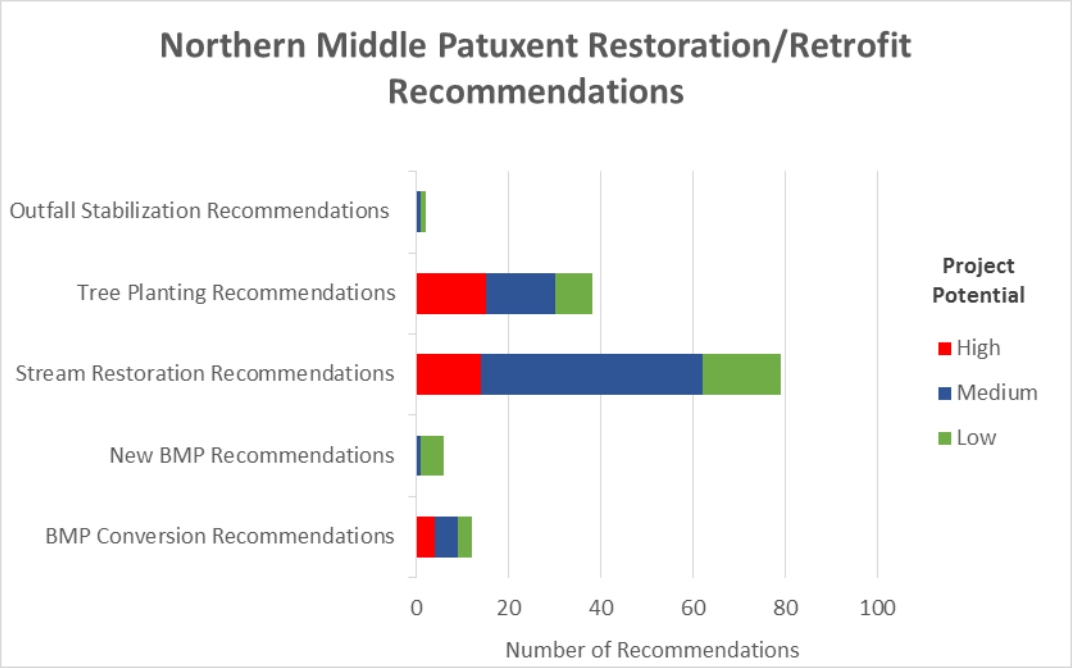
- 4 outfall stabilizations
- 28 tree planting sites
- 16 miles of stream
- 7 new BMP sites
- 12 BMP conversions



Field Assessment Results - NMP

High Priority Sites:
- 0 outfall stabilizations
- 15 tree planting sites
- 14 stream sites (2.3 miles)
- 0 new BMP sites
- 4 BMP conversions

Medium Priority Sites:
- 1 outfall stabilizations
- 15 tree planting sites
- 48 stream sites (7.1 miles)
- 1 new BMP sites
- 5 BMP conversions

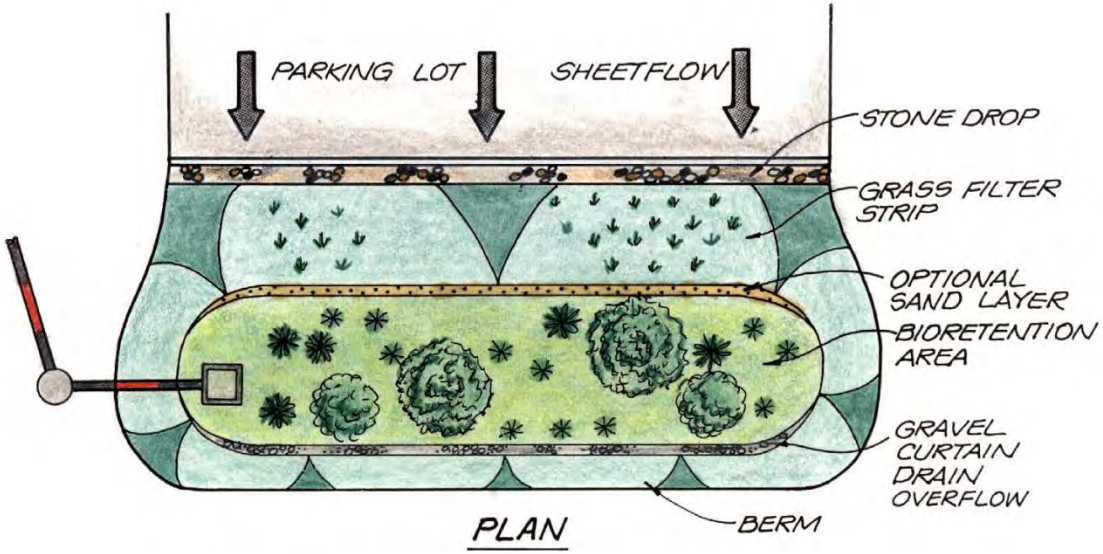


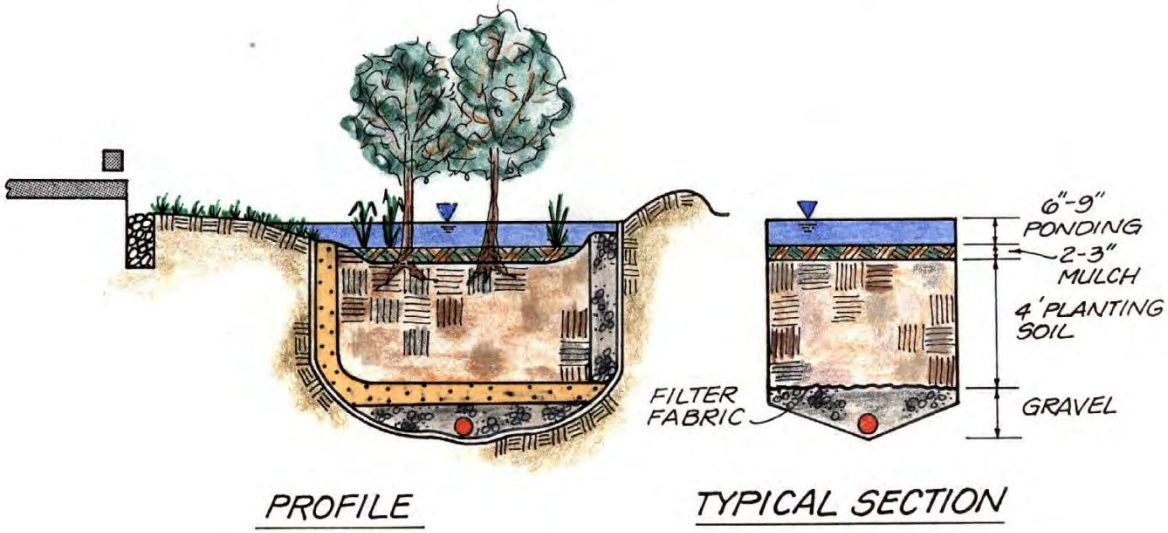
Watershed Study Overview

- Phase II – scheduled completion end of 2015
  - Perform Concept Level Designs (Including Cost Estimates)
  - Rank sites ($/acre of impervious treated)
  - Input to restoration plan (CIS)
  - Generate Draft Watershed Report
  - Community Meetings - #2 (October 2015)
  - 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

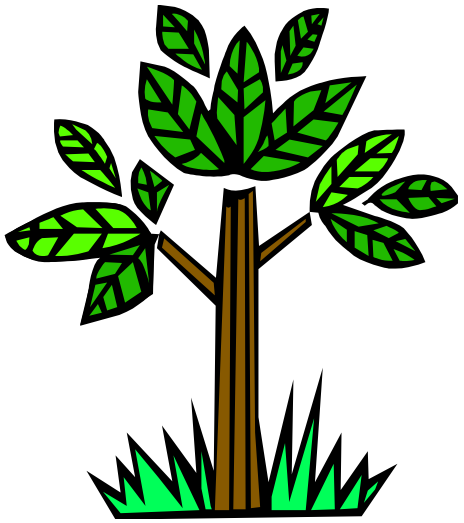
Outfall Stabilization

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

Photo: LID Center

Lack of
riparian buffer.

What can be recycled in the blue carts?

❖ Paper & Cardboard

❖ Glass Bottles and Jars

❖ Metal

❖ Plastic

Want to learn more about stormwater?

Office of Community Sustainability

www.cleanwaterhoward.com

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Howard County Stormwater Solutions

Summary

- County has completed the initial assessment phase of the Little and Middle Patuxent River watershed study. There is still more work to be done and we will report back again Fall 2015.
- The County continues to strive for water quality improvements through large and small efforts.
- **We can ALL make a difference!**