Patapsco River Lower North Branch Watershed Assessment

COMMUNITY MEETING NO. 1
June 23, 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?
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)
Breakdown of Study Areas

Howard County Watershed Assessment Study Areas

2016 Watersheds (in progress)
- Brighton Dam
- Rocky Gorge Dam
- Patuxent River Upper
- Patapsco River South Branch
- Patapsco River Lower North Branch

2015 Watersheds (completed)
- 2015 Middle and Little Patuxent
- Howard County Streams
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
Patapsco River Lower North Branch

- 37.9 square miles
- 24,232 acres
- 4,425 total impervious acres
- 3,855 County impervious area
- 8,340 wooded acres
- 1,772 stormwater BMPs treating 1,688 acres of impervious surface
## Imperviousness

<table>
<thead>
<tr>
<th></th>
<th>Total Area (sq miles)</th>
<th>Impervious Area (sq miles)</th>
<th>Impervious Percent</th>
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</thead>
<tbody>
<tr>
<td>County</td>
<td>253</td>
<td>34.3</td>
<td>13.6%</td>
</tr>
<tr>
<td>Patapsco River LNB</td>
<td>38</td>
<td>6.9</td>
<td>18.2%</td>
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<tr>
<td>Percent of County</td>
<td>15%</td>
<td>20%</td>
<td>n/a</td>
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Imperviousness
Stormwater BMPs

Stormwater Management Coverage
- Stormwater Management BMPs
- Treated Areas
- Untreated Impervious Surfaces
Land Use

Patapsco River Lower North Branch Land Use Percentages

- Residential [40.3%]
- Commercial; Industrial; Institutional [11.9]
- Transportation [2.2%]
- Other [4.7%]
- Agriculture [6.6%]
- Forest [34.4%]
- Water [0.0%]

Patapsco River Lower North Branch
Field Assessments and Results
Field Assessment
Sites Assessed:

- 130 Outfall stabilizations
- 86 Tree planting sites
- 65.0 Stream miles
- 56 New BMP sites
- 65 BMP conversions
Assessment Sites – Patapsco River LNB

Sites Assessed:

- 106 Outfall stabilizations
- 36 Tree planting sites
- 33.7 miles of stream
- 43 New BMP sites
- 48 BMP conversions
Assessment Recommendations – Patapsco River LNB

High Priority Sites:
- 23 Outfall stabilizations
- 18 Tree planting sites
- 32 Stream sites
- 8 New BMP sites
- 27 BMP conversions

Medium Priority Sites:
- 7 Outfall stabilizations
- 5 Tree planting sites
- 32 Stream sites
- 27 New BMP sites
- 13 BMP conversions
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

PLAN
- PARKING LOT
- SHEETFLOW
- STONE DROP
- GRASS FILTER STRIP
- OPTIONAL SAND LAYER
- BIORETENTION AREA
- GRAVEL CURTAIN DRAIN OVERFLOW
- BERM

PROFILE
- 6"-9" PONDING
- 2-3" MULCH
- 4" PLANTING SOIL
- FILTER FABRIC
- GRAVEL

TYPICAL SECTION
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 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!