Meeting Outline

• Welcome and Introductions
• Watersheds 101
• Overview of the Upper Little Patuxent Watershed Conditions
• Restoration Toolbox
• Open Forum
Watershed Management Goals

To restore, enhance and protect the Upper Little Patuxent River Watershed’s natural resources.

- Impervious Surface Treatment (10 percent)
- Water Quality
- Aquatic Habitat
- Forest Habitat, riparian
- Public Participation
General Strategies

• 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
• Protect private property
Watershed Management Approach

- Systematically study all Howard County watersheds
- Identify problem areas and the source of the problem
- Prioritize initiatives to address watershed issues (structural and non-structural)
- Acquire funding to perform projects (capital funds, grant funds)
- Educate the “public” on ways to improve the watershed they live, work, and play in.
Why the Upper Little Patuxent River Watershed?

- Little Patuxent Watershed Restoration Action Strategy (WRAS), 2002
- Howard County Watershed Prioritization, 2004
- Centennial and Wilde Lakes Watershed Restoration Plan, 2005
- Upper Little Patuxent Watershed Management Plan, (under development, 2008-2009)
- Columbia Association Watershed Study (Pending)
Why the Upper Little Patuxent River Watershed?

- Howard County Watershed Prioritization (2004)
- Watershed Restoration Action Strategy (WRAS) for entire Little Patuxent watershed
  - Bioassessment (2001)
  - Stream Corridor Assessment (2001)
  - Characterization (2001)
- MD Biological Stream Survey (1997, 2000)
- Howard County Biomonitoring (2001, 2006)
Why the Upper Little Patuxent River Watershed?

- ULP rated as high priority watershed, high impervious
- Countywide bioassessment ratings (averages)

<table>
<thead>
<tr>
<th>Year</th>
<th>Macroinvertebrates</th>
<th>Habitat</th>
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<tbody>
<tr>
<td>2001</td>
<td>Poor</td>
<td>Non-supporting</td>
</tr>
<tr>
<td>2006</td>
<td>Very Poor</td>
<td>Partially supporting</td>
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- Segments on Maryland 303(d) list for biological, cadmium, nutrients, sediment
- Headwaters of the Little Patuxent
What is a Watershed?
WATER BALANCE

PRE-DEVELOPMENT
- Canopy Interception
- Evapotranspiration
- Surface Runoff
- Baseflow

POST-DEVELOPMENT
- Transpiration
- Surface Runoff
- Interflow
- Baseflow
Geomorphological Impacts

- < 5%
- 8-10%
- > 65%
- 20%
- 30%
Now that’s a lot of erosion!
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)
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)
Watershed Study Overview

• Phase I – completed November 2007
  – Compilation and synthesis of previous studies and GIS data
  – Delineate watershed and subwatersheds
  – Identify data gaps
  – Scope Phase II
Watershed Study Overview

- Phase II – scheduled for completion early 2009
  - Conditions Assessment
    - Stream Corridor Assessment (SCA)
    - Pollutant loading estimates
    - Problem area prioritization
  - Community Meeting #1
  - Develop watershed management strategy
  - Develop concept plans and cost estimates for restoration and protection strategies
  - Implementation plan
  - Community Meeting #2 – Review of Draft Plan (Winter 2008)
  - Final Report
Upper Little Patuxent River Watershed Conditions

- Overview – Watershed and Subwatersheds
- Land Use
- Imperviousness
- Stormwater - Best Management Practices (BMPs)
- Pollutant Loading
- Stream Corridor Assessment
- Priority Areas for management strategies
Watershed Overview
Watershed Overview
Watershed Overview

- 17.3 square miles
- 44 miles of streams
- Major Roadways
  - Interstate 70 / US Route 40 / MD Route 144 / US Route 29 / MD Route 100
- Major Landmarks
  - Ellicott City, Carroll Farm, Turf Valley, Alpha Ridge
Subwatershed Overview
Land Use
### Land Use

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<tr>
<th>Use</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Residential</td>
<td>50</td>
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<td>Commercial</td>
<td>4</td>
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<tr>
<td>Industrial</td>
<td>0.5</td>
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<tr>
<td>Institution, Open Urban</td>
<td>12</td>
</tr>
<tr>
<td>Agriculture</td>
<td>15</td>
</tr>
<tr>
<td>Forest</td>
<td>20</td>
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Imperviousness
Imperviousness
Imperviousness
### Imperviousness

<table>
<thead>
<tr>
<th>County</th>
<th>Total Area (sq miles)</th>
<th>Impervious Area (sq miles)</th>
<th>Impervious Percent</th>
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<tbody>
<tr>
<td>County</td>
<td>253</td>
<td>28.6</td>
<td>11</td>
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<tr>
<td>ULP</td>
<td>17.3</td>
<td>2.84</td>
<td>16</td>
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<tr>
<td>Percent of County</td>
<td>6.8</td>
<td>9.9</td>
<td>na</td>
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</tbody>
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Imperviousness

Percentage of Impervious Area by Subwatershed

- 3 - 7
- 20 - 21
- 8 - 13
- 22 - 25
- 14 - 19 ~ Streams
Stormwater BMPs
Stormwater BMPs

Percentage of Area Treated by BMPs
- 1 - 3
- 4 - 12
- 13 - 15 Streams
- 16 - 25
- 26 - 31
Stormwater BMPs

Percentage of Area Treated by BMPs

- Streams
- Impervious_all_ULP_notcleaned
- 1 - 3
- 4 - 12
- 13 - 15
- 16 - 25
- 26 - 31
Pollutant Loading - Results
Pollutant Loading - Results
Stream Corridor Assessment

- Teams walked 44 miles
- Identified
  - Channel Alteration
  - Erosion Site
  - Inadequate Buffer
  - Pipe Outfall
  - Exposed Pipe
  - Fish Barrier
  - Trash Dumping
  - Construction
  - Unusual Condition
  - Representative Site
- Scored 1-5 for Severity, Correctibility and Access
Stream Corridor Assessment

- 1049 points
- 24 points per mile

- Pipe Outfalls 571 (54 percent)
  - One outfall or culvert every 406 feet of stream
- Erosion Site 257 (25 percent)
Stream Corridor Assessment

Severity of Points per Subwatershed

Subwatershed: Font Hill Trib 1, Font Hill Trib 2, Little Patuxent 1, Little Patuxent 2, Little Patuxent 3, Little Patuxent 4, Little Patuxent 5, Plumtree Branch 1, Plumtree Branch 2, Red Hill Branch

Data Points: 5, 4, 3, 2, 1
Priorities and Next Steps

- **Candidate Sites**
  - Most severe and correctible SCA data points
  - Concentrations of untreated impervious
  - Buffer enhancement that connect habitats

- **Develop Detailed Strategies and Concept Plans**
  - Cost, benefits, constraints

- **Implementation Plan**
  - Rank the strategies and concepts
  - Schedule
  - Monitoring approach
  - Identify funding sources
Restoration Toolbox
Bioretention Facility
Sand Filter
Retrofit Existing Pond
Stream Restoration
Riparian Buffer Enhancement
What can homeowners do to improve the water quality in the Upper Little Patuxent River watershed?
Everyday Things

Pick up after your pet
Reduce the amount of fertilizer you use
Reduce runoff from your yard
  Disconnect your downspouts
  Reduce turf area
Remember that anything that runs off your driveway or lawn ends up in the creek
  Oil leaks
  Pesticides
Plant a tree
Reduce, Reuse and Recycle!!
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
Grrrr, bark, woof. Good dog.

District of North Vancouver
Bylaw 5981-11(i)
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
When you’re fertilizing the lawn, remember you’re not just fertilizing the lawn.

You fertilize the lawn. Then it rains. The rain washes the fertilizer along the curb, into the storm drain, and directly into our lakes, streams, and Puget Sound. This causes algae to grow, which uses up oxygen that fish need to survive. So if you fertilize, please follow directions and use sparingly.

A cooperative venture between the department of Ecology, King County and the cities of Seattle and Tacoma.
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 eventually, the storm drain
Volume Reduction

- There are both simple and complex ways to reduce runoff from your yard
  - downspout disconnection
  - rainbarrels
  - rain gardens
  - lawn conversion
Bad Approach . . .
Good Approach . . .
Overfertilization?
Too much turf?

Disconnected impervious
Lack of riparian buffer.
Summary

• County has completed the initial assessment phase of the ULPR study. There is still more work to be done and we will report back again Winter 2008.

• Water quality improvements can be derived from large and small efforts.

• **YOU** can make a difference!