Cooperative Watershed Planning

A Baltimore Experience

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About the Center for Watershed Protection

- Non-profit 501(c)3, non-advocacy organization
- Work with watershed groups and local, state and federal governments
- Provide tools to manage watersheds and protect and restore streams, lakes and rivers
- 20 staff in Ellicott City, MD
- 2 websites
  - www.cwp.org
  - www.stormwatercenter.net
Overview

• Introduction to Project/Partner Collaboration
• Watershed Characteristics
• Restoration Assessments and Opportunities
• Pilot Downspout Disconnection Program
• Outcomes and Future Goals
Background

- **Baltimore County, Baltimore City, Herring Run Watershed Association and Jones Falls Watershed Association**

- **EPA Region III funding to create small watershed action plans (SWAPs) for Jones Falls and Back River (Herring Run)**
  - Extensive fieldwork completed – streams, uplands, retrofitting
Characteristics of the Watersheds

- Urban watersheds with TMDLs for Nutrients, Sediment, Bacteria
- Future TMDLs likely for biological impairment and trash
- Chesapeake Bay nutrient reduction goals
- Back River / Herring Run 59 sq miles - 33% Impervious Cover
- Jones Falls 58 sq miles -- 25% IC
Jones Falls Watershed
Figure 6. Back River Biological Sampling Data

Legend
- \(\text{Yellow} \) Baltimore City
- \(\text{Red} \) Back River Subwatersheds Study Area
- \(\text{Major Roads} \)
- \(\text{Waterbody} \)
- \(\text{Streams} \)

Baltimore County Benthic IBI Stations
2005
- \(\text{Orange} \) Poor
- \(\text{Red} \) Very Poor

2003
- \(\text{Orange} \) Poor
- \(\text{Red} \) Very Poor

Baltimore City Benthic IBI Stations
2002 - 2006
- \(\text{Orange} \) Poor
- \(\text{Red} \) Very Poor

Miles
0 1.2 2.4
Field Assessments

• Neighborhood Source Assessment
• Hotspot Site Investigation
• Retrofit Reconnaissance Investigation
• Institutional Assessments
• Illicit Discharge and Detection Investigation
Neighborhood Source Assessment

• Not a lot of room for retrofit practices
• Downspout disconnection seen as one of the biggest opportunities
• Site specific pet waste, lawn care and trash issues
Upland Pollution Prevention Assessments (USSR) at Schools/ Businesses

- Frequent dumping of wash water and signs of paint and floor stripping materials entering the storm drain system
  - Estimated 200,000 gallons of wash water entering the storm drain system and in turn streams in the County alone
  - Wash water is often high in nutrients and contains surfactants which inhibit oxygen transfer of fish gills

- Toxic and harmful substances transported from “hotspot businesses”
School Hotspots
Business Hotspots

Grease

Restaurants

Grease and carpet cleaner

Auto repair

Anti-freeze

Industrial 55gal drums
Institutional Assessments

Impervious cover removal and tree planting

Downspout disconnection
Retrofits

Large retrofits

Smaller on-site retrofits

Have ID opps to treat over 1 square mile of IC in Herring Run
Illicit Discharge Detection and Elimination

1. Training watershed associations and City and County staff in Outfall Reconnaissance Investigation (ORI) and testing
2. Testing of outfalls in Jones Falls and Herring Run watersheds
3. Distribution of CWP Illicit Discharge and Detection Manual (IDDE)
One small leak of sewage 1 gallon per minute = 525,000 gallons per year and 130 lbs of nitrogen – it would take 13 one acre bioretention retrofits to equal the nitrogen reduction benefits of removing 1 sewage leak ($260,000 vs $5 - $10k in costs)
Downspout Disconnection
Lower Jones Falls
Recommended Action: Downspout Redirect

Downspout Redirect
NSA's with Downspout Redirect recommended

Other Layers
Baltimore City Boundary
Lower Jones Falls Planning Area
Lower Jones Falls Subwatershed Boundaries

Prepared by Watershed Monitoring and Management
Baltimore County Department of Environmental Protection and Resource Management
Source Location: R:\depts\DEPRM\projects\SWA_Pe\WQCA\Lower Jones Falls Characterization/Characterization Report\Maps
Date: 11.05.07
Summarize Downspout Disconnection Programs

• Most programs goal is to reduce CSO’s
• Boston, MA- Mandatory program
• Portland, OR- Voluntary program- use stormwater utility, provide incentives for homeowners
Example Benefits of Downspout Disconnection

- Set a target of 1000 homes for disconnection
- Estimate costs
  - Incentive program -- $12.50 per house – all downspouts disconnected = 500 homes -- $6,250
  - Verification cost $15/hr– 250hrs = $3,750
  - Total = $10,000
- Funded by the City and Chesapeake Bay Trust (Still missing funding for incentives and training support from Portland, OR)
Downspout Disconnection Program

Unit Cost ($/cf treated)
Perspective

- Disconnecting between 13-20 impervious acres – significant reduction in stormwater
- Cost estimate $25 - $30k vs. an estimate of $20-30k per impervious acre using traditional stormwater BMPs (not including land costs)
- $1/13^{th}$ to $1/20^{th}$ the Cost – no maintenance costs and no land costs
Proposed TSS Reductions Back River

- Impervious Cover
- Disconnection
- Structural Stormwater Management Practices
- Riparian Buffers
- Catch Basin Cleanouts
- Land Reclamation
- Stormwater Retrofits
- Illicit Connection Removal
- SSO Repair/Abatement
- Street Sweeping
- Channel Protection
- Erosion and Sediment Control
- Impervious Cover Reduction
- Structural Stormwater Management Practices
- Impervious Cover Disconnection
Project Outcomes

1) Herring Run Watershed Association screening outfalls, pilot disconnection program through a contract with the City

2) Implementing stormwater demonstration projects

3) Jones Falls Watershed Association and Baltimore Harborkeeper increasing staff – illicit discharge capacity -- City/County improving programs

4) Continued funding for IDDE, downspout program and stormwater retrofit projects

5) Restoration Strategy to address key pollutants
Future Goals

- Successful city/county watershed association downspout disconnection program
- Significant reductions in illicit discharges
- Large scale stormwater wetlands in Herring Run park
- Assist the urban tree canopy and street tree effort
- Continue to assist/create a holistic school greening program
- Secure a large funding source for implementation – that includes large behavior change component
Where we work

- Nationally (example projects)
- Watershed Planning /Stormwater Retrofits– NY Bronx River, TN, SC, VA, MD, PA, NOAA Coral Reef Program – Puerto Rico, Guam, St. John etc
- Stormwater Manuals for NY, VT, MD, VA, DE, MN, GA
- Workshops/Trainings
- Particularly attracted to watershed planning/implementation projects that have want to create watershed group/ municipal partnerships
- [www.cwp.org](http://www.cwp.org) or [www.stormwatercenter.net](http://www.stormwatercenter.net)
The Southeast Stormwater Institute is an intensive, interactive three-day learning experience specifically designed to help public and private sector stormwater professionals:

- Develop or improve municipal stormwater programs, particularly NPDES Phase II permit programs;
- Strengthen stormwater design, construction, and maintenance skills for innovative practices in coastal and non-coastal settings; and
- Understand and apply volume reduction criteria, green infrastructure credits, and the new Georgia Coastal Stormwater Supplement.

SAVE THE DATE!
October 14-16, 2008
Savannah, GA