Chesapeake Bay Program
TMDL Phase II WIP

Planning Process Overview

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Agenda

- Introduction to DPW – SWMD
- Water Quality 101
- Chesapeake Bay TMDL Program
- City’s Planned Approach
- Stakeholder Participation
Who in the City is responsible to water quality?

- DPW
  - Bureau of Water / WW
  - Bureau of Solid Waste
  - Maintenance Division
    - Env. Engr
    - Storm Drain Eng.
  - SWMD
    - Plans Review
    - WQ Monitoring

350 + BMPs • 52,438 storm drain inlets • 27,561 manholes
44 miles of streams • 1,146 miles of storm drain pipes • 1,709 outfall
We are all in a watershed
**Ground Cover & Stormwater Runoff**

- **Forest**
- **Grass**  
  \[ \times 4^* \]
- **Bare Earth**  
  \[ \times 24^* \]
- **Pavement**  
  \[ \times 33^* \]

*Note: Increase based on a 5-year storm (3.2 in). For larger storm, the difference decreases.*

*As runoff increases, more pollution can enter into our storm system and end up in the harbor!*
Urban Sources of Pollution

- Trash & Debris
- Sewage
- Animal Waste
- Building Materials
- Lawn Fertilizer
- Detergents
- Exposed Soils
- Industry Activities
- Vehicles
Regulatory Mandates

- SSO Consent Decree
- MS4 Permit
  - Impervious Area Treatment
  - Trash Reduction Strategy
  - Public Outreach / Education
  - TMDL Implementation Plan
    - 16 TMDLs approved
    - Sediments, nutrients, bacteria and PCBs
    - WLAs for Lake Roland, Gwynns Falls, Baltimore Harbor, Back River, and Patapsco River
Chesapeake Bay TMDL

- Maximum amount of pollutant a water body may receive and still meet its water quality standards
- MDE: Watershed Implementation Plan
  - Phase 1 in September 2010 – Major basin / jurisdiction scale for Chesapeake Bay
  - Phase 2 in November 2011 – County segment level & identify specific controls to be implemented by 2017
  - Phase 3 in 2017 – Modifications of TMDL & identify changes
- Waste Load Allocations
  - Sediment
  - Nutrients: Phosphorus and Nitrogen

“Pollution Diet”

Largest TMDL Programs in USA to date
6 States ● 92 segments ● 6,400 sq. miles
Bay TMDL Background

- Court Settlement: Required Chesapeake Bay TMDLs to be completed by December 2010
- EPA Led a Regional TMDL Development Process
  - Sets limits, by State, on Nutrient & Sediment Pollution
- EPA Required Watershed Implementation Plans:
  - Allowed States to Allocate Loads
  - Supports “Reasonable Assurance” of Implementation
  - Part of new federal “Accountability Framework” to Ensure Results
**Highlights of Phase II WIP**

- **Allocations:** For the major source sectors
- **2-Year Milestone Commitments for 2012 & 2013:**
  - Implementation Actions
  - Program Development Actions
- **2017 Interim Strategy:** Plausible actions for achieving 70% of the Final Target by 2017.
  - Implementation Actions
  - Program Development Actions
Major Source Sectors

- Wastewater
- Regulated Stormwater
- Septic Systems
- Agriculture
- Concentrated Animal Feeding Operations (CAFO)
- Atmospheric Sources
- Other

Urban setting limits the number of sources
Failure to do any of the following:

- Develop and submit Phase I, II and III WIPs;
- Develop two-year milestones;
- Achieve two-year milestones;
- Develop appropriate mechanisms to ensure that non-point source load allocations are achieved.
- Develop National Pollutant Discharge Elimination System (NPDES) permits consistent with the waste load allocations of the Bay TMDL
Possible EPA Consequences

- Expand NPDES permit coverage to currently unregulated sources;
- Object to NPDES permits, increase program oversight;
- Require net improvement offsets;
- Require additional reductions from point sources;
- Increase and target federal enforcement and compliance assurance;
- Condition or redirect EPA grants; and
- Federal promulgation of local nutrient water quality standards.
Bay TMDL Schedule

- **July 2011**: EPA sets TMDL for 5 MD basins
- **August 2011**: MDE distributes local allocations to Counties & the City
- **October 2011**: City submits 2 yr Milestone Commitment and Phase II WIP to MDE
- **Jan. 31, 2012**: EPA provides comments
- **Dec. 1, 2011**: MDE submits state WIP to EPA
Baltimore’s Strategy

- **Municipal Wastewater Treatment Plants**
  - Major Municipal WWTP
  - Major Industrial WWTP
  - Minor Industrial WWTP
  - Sewer Overflow Elimination

- **Regulated Stormwater**
  - MS4 Permit Compliance
    - Impervious Surface Reduction
    - Stormwater Treatment
    - Urban Tree Plantings
  - Enhanced urban nutrient management (fertilizers)

ENR Upgrades to meet 85% Nitrogen Reduction Goal
Elements of Bay TMDL WIP

- List of Allocations
- Strategies to Achieve Reductions (Plan A)
  - Scenario Builder/Accounting
  - Limited BMPs
- Tracking and Reporting
- Contingency Plan (Plan B)
  - New BMPs
  - Source Reduction
  - Better Efficiency Data

Progress Measurements:
BMP Implemented + Water Quality Measurements
Baltimore Strategy (Plan A): Regulated Stormwater

1 Large Stormwater BMP Projects
- Large Stormwater Pond / Wetland Projects
- Average Treatment Area = 400 acres Impervious Surface
- Most Cost-Effective (Construction and Maintenance)
- Available Locations are Limited

20 Stream Restoration Projects
- Preferred methodology utilized by the City, although considered non-traditional
- Average Treatment Area = 150 ac Impervious Surface
- Equivalent to 48,000 LF Restoration (9 miles)
Baltimore Strategy (Plan A): Regulated Stormwater (cont.)

340 Urban ESD BMP Projects
- Small Retro-fit Projects Promoted by MDE / EPA
- Average Treatment Area = 0.5 acres Impervious Surface
- Most visible improvement + Partnership Opportunities
- High Construction Costs, plus Regular Maintenance

160 Impervious Removal Projects
- Replace pavement with grass and other vegetation (shrubs and trees)
- Equivalent to 80 acres of pavement removal
- Visible Improvement + Partnership Opportunities
- High Construction Costs, plus Regular Maintenance
MS4 Implementation Plans = Greater Detail

- **Locations**
  - Pollution Loadings
  - Project Availability
  - Property Ownership
  - Community Acceptance

- **Schedule**
  - Permit Requirements
  - Other Construction Projects
  - Funding Constraints

Sept 2011

Sept 2012
Minimizing Costs for Implementation

- State / federal grants
- Inter-agency project coordination
- Standardization of new design techniques
- Quantify benefits of non-traditional BMPs and stewardship practices
- Use of local / recycled Materials
- Partnership programs for construction and maintenance of BMPs
Stormwater Treatment & Development

- **Re-development:**
  Impervious cover previously untreated is now treated (50%).

- **New Development:**
  Treats new impervious cover.
  No additional burden to the City.

- **Fee In-Lieu (Offset Fee):**
  New impervious cover is not treated prior to construction.
  Fee typically does not cover all costs.
Beyond Development Regulations: Water Quality Improvements

Prevent
- Waste programs
- Vehicle trip reductions
- Phosphate – free fertilizer

Reduce
- Pavement removal
- Green roofs
- Tree & shrub planting

Capture & Collect
- Dry Sweeping
- Stream Cleanups
- Neighborhood Cleanups

Treat
- Ponds / wetlands
- Stream Restoration
- Retro-fit micro-BMPs
Stakeholder Participation

- Knowledge
  - Studies / assessment
  - Land use changes
  - Environmental programs
- Education / Outreach
- WIP work group
- Tracking and reporting
- Partnerships for grants
- Legislative support

Public - private partnerships will be the key to a successful water quality improvement program in the City and in the Chesapeake Bay.
Summary

- **Bay TMDL program**
  - One of many requirements that shape the MS4 permit
  - Accountability framework to ensure results
  - Flexibility in implementation and evaluation
- **Much to do in a very short time**
  - DPW responsible for preparation of WIP and reporting to MDE
  - Stakeholders (public and private) will help with the details
- **The “plan” is only the beginning**
  - Implementation
  - Maintenance