

THE CHESAPEAKE BAY TMDL: Restoring Waters of Pennsylvania and the Chesapeake Bay

August 2011

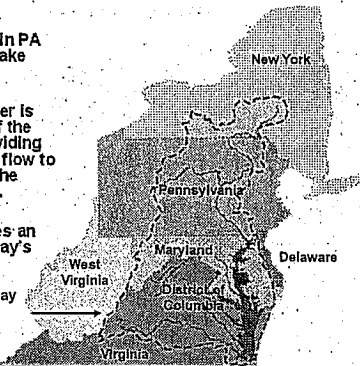
Chesapeake Bay TMDL

- Dec 29, 2010: The Environmental Protection Agency (EPA) published a Total Maximum Daily Load (TMDL) for the Chesapeake Bay.
- Identifies reductions of Nitrogen, Phosphorus and Total Suspended Solids from Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia and the District of Columbia.

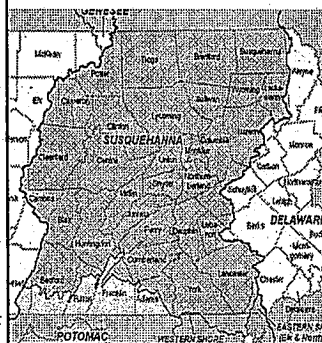
Chesapeake Basin

- Over 50 % of the land in PA drains to the Chesapeake Bay.
- The Susquehanna River is the largest tributary of the Chesapeake Bay, providing 90% of the freshwater flow to the upper bay and ½ the total flow into the Bay.
- PA's Potomac provides an additional 2% of the Bay's freshwater flow.

Chesapeake Bay
Watershed
Boundary



PA's portion of the Chesapeake Bay Watershed



PA encompasses 35.2% of the Bay watershed -- that's 14,358,159 acres.

- Four PA watersheds
- Susquehanna River (13,298,520 acres, 32.6%)
 - Potomac River (1,012,222 acres, 2.5%)
 - Eastern Shore (40,262 acres, 0.1%)
 - Western Shore (7,155 acres, 0.02%)

Impaired PA waters due to major sources:

- Agriculture 3,558 m.
- Mine drainage 1,952 m.
- Urban runoff/stormwater 518m.

PA Reduction Targets -
Phase 5.3 Watershed Model
Nitrogen (TN), Phosphorus (TP), Suspended Solids (TSS)
Million Pounds/Year

	TN	TP	TSS
1985	135.17	5.08	2,971
2009	106.41	3.96	2,576
Final 2010 TMDL	73.93	2.93	1,983.78
<i>Remaining Reductions</i>	<i>32.48</i>	<i>1.03</i>	<i>592.22</i>
60% by 2017	19.488	0.618	355.332

Nitrogen Loads
Delivered to Chesapeake Bay
Phase 5.3 Watershed Model

	2009 Loads	2025 WIP Input Deck
Sector	Nitrogen (lbs/yr)	Nitrogen (lbs/yr)
Agriculture	59,864,000	34,059,000
Forest	22,684,000	23,497,000
Point Source	12,792,000	10,195,000
Urban/Developed	6,704,000	4,106,000
Septic	3,290,000	2,613,000
Air Deposition to Water	1,079,000	1,089,000
Totals	106,413,000	75,559,000

Phosphorus Loads
Delivered to Chesapeake Bay
Phase 5.3 Watershed Model

	2009 Loads	2025 WIP Input Deck
Sector	Phosphorus (lbs/yr)	Phosphorus (lbs/yr)
Agriculture	1,755,000	1,010,000
Forest	617,000	645,000
Point Source	1,174,000	1,052,000
Urban/Developed	378,000	232,000
Septic	0	0
Air Deposition to Water	41,000	42,000
Totals	3,965,000	2,981,000

Suspended Solids Loads
Delivered to Chesapeake Bay
Phase 5.3 Watershed Model

	2009 Loads	2025 WIP Input Deck
Sector	Total Suspended Solids (tons/yr)	Total Suspended Solids (tons/yr)
Agriculture	895,000	632,000
Forest	249,000	274,000
Point Source	8,300	5,500
Urban/Developed	131,000	79,000
Septic	0	0
Air Deposition to Water	0	0
Totals	1,283,300	990,500

**PA Chesapeake Bay Watershed
Implementation Plan (WIP)**

- **Three Key Elements:**
 - Milestone Implementation and Tracking;
 - Advanced Technologies & Nutrient Trading; and
 - Enhancing Compliance Efforts.

**PA Chesapeake Bay Watershed
Implementation Plan (WIP)**

- **Four Approaches for each Element:**
 - Continue existing programs;
 - implement new programs, or increase the capacity of existing programs;
 - Implement new regulations or laws
 - Improve the data that is reported to EPA Watershed Model.

**PA Chesapeake Bay Watershed
Implementation Plan (WIP)**

- **Built with Significant Public Input**
- **Advisory Committee Meetings**
- **Over 125 Individuals Volunteered for Workgroups:**
 - WIP Management Team
 - Agriculture Workgroup
 - Urban/Suburban/Rural Workgroup
 - Wastewater Workgroup

**Milestone Implementation
& Tracking**

Milestone Implementation & Tracking

- Chesapeake Bay Model is only reflective of the data entered.
- Common discussion point at workgroups: Agricultural and stormwater BMPs are in place that have not been reported.
- WIP Solution: Un-reported/Under-reported BMP Initiative.
- External groups interested in helping.

Milestone Implementation & Tracking

- Pilot projects in Lancaster and Bradford Counties provided data on unreported and under-reported BMPs.
 - Lancaster County: Survey results for "Core 4" practices exceeded predicted numbers.
 - Bradford County: 85 % of no-till activities are not cost-shared; municipal street cleaning is not reported.

Milestone Implementation & Tracking

- WIP solutions for improving BMP reporting include:
 - New, clear guidance for 49 Chesapeake Bay technicians FTEs in 36 conservation districts in FY 2011-12 workplans;
 - Implementation Grant resources will be assigned to tracking & reporting, including reporting for special projects;
 - Work with NRCS and NASS; and
 - Better use of DEP's "BMP Tracker".

Milestone Implementation & Tracking

- "Million Pound" Project
 - Goal: Million pounds of reductions annually through grants and other funding sources.
 - PennVEST and Green Initiatives could provide \$20 million.
 - Growing Greener
 - Special Watershed Consideration given for Chesapeake Bay Nutrient Reductions.

Milestone Implementation & Tracking

- **Regulation Revisions**
 - Chapter 102
 - Addition of E&S Plan requirements for Animal Heavy Use Areas and additional vegetative cover or BMPs for fields within 100 feet of a stream.
 - Earth disturbance: More protective BMPs in High Quality (HQ) and Exceptional Value (EV) watersheds.

Milestone Implementation & Tracking

- Pennsylvania Point Source Strategy developed in December 2006 does not change.
 - Significant Facilities: Cap Load Allocation based on Design Flow at 6 mg/l TN and 0.8 mg/l TP
 - 3-phase 10 year strategy
 - Cap load met in first 5 year phase. 63 plants – 85%
 - Phase 2 (50 plants – 10%) & Phase 3 (70 plants – 5%) to maintain the cap load into the future as systems approach design capacity
 - Non-significant: Cap Load Allocation based on Design Flow at 8 mg/l TN and 1 mg/l TP
 - 0.2 mgd to 0.4 mgd first
 - Significant Industrial Facility Plan completed.
 - 30 significant industrial dischargers: Discharge more than 75 lbs/day of TN and/or 25 lbs/day of TP.
 - All industrial dischargers with a potential to discharge nutrients (significant and non-significant) will be required to monitor for nutrients.

Milestone Implementation & Tracking

- **New Point Sources- Zero Net Load**
 - Options:
 - Land Application of Effluent With Crop Uptake;
 - Recycle and Reuse of Effluent;
 - Load Offsets; or
 - Purchasing Credits (Trading).
 - **New On-lot Systems – No New Requirements**
 - **Connection to Existing Point Source**
 - No New Requirements.
 - Point Source Decision Whether It Can Meet Its Cap Loads.

Milestone Implementation & Tracking

- **Identify and implement new BMPs such as Legacy Sediment removal.**
- **County Initiatives**
 - Lancaster County Clean Water Consortium
 - Lycoming County Chesapeake Bay Initiative
- **Air Reductions (State)**
 - Anti-Idling Law;
 - Glass Melting Furnaces;
 - Cement Kilns; and
 - Renewable Energy/Energy Efficiency (RE/EE) and Demand Reductions.

Milestone Implementation & Tracking

- Forestry
 - Integrating State Forestry Assessment & Report
 - Urban Tree Canopy
- Resource Extraction
 - Draft Stormwater General Permit for mining activities
- Pennsylvania Phosphate Reduction Act of 2008
 - Mandates virtually no phosphate in dishwashing detergent, effective July 1, 2010.

Advanced Technologies & Nutrient Trading

Advanced Technologies & Nutrient Trading

- 100 proposals have been submitted
- 68 have been approved
 - over 3 million nitrogen (N) credits, 280,000 phosphorous (P) credits
- 10 contracts completed:
 - 7 for new development
 - 2 for existing WWTP facilities
 - 1 industrial source

Credit Generating Activities

Agricultural BMPs	No-till, cover crops, riparian buffer, stream bank fencing, rotational grazing, field lane stabilization, manure storages, mortality composters, poultry manure export
Manure Technology	- Bion Environmental Technologies- Dairy - Cove Area Regional Digester (CARD)- Dairy Manure Processing - EnergyWorks- Poultry Manure Processing - ElectroCell- Hog Manure Processing
Point Source	- Milton Regional Sewer Authority - City of Lancaster Advanced Wastewater Treatment Plant - Northwestern Lancaster County Authority - Bellefonte Wastewater Treatment Plant - Berwick Area Joint Authority

Nutrient Credit Clearinghouse

- The Nutrient Credit Clearinghouse will:
 - Purchase nutrient credits as needed to establish a portfolio of available nutrient reduction credits; and
 - Sell nutrient reduction credits for a set price and time period.
- 2 Auctions were held in the Fall of 2010. As a result, PENNVEST will purchase 62,000 nitrogen credits for a total of \$176,590.

For more information visit:
www.pennvest.state.pa.us

Enhancing Compliance Efforts

Enhancing Compliance Efforts – Point Sources

- Pennsylvania Point Source Strategy developed in December 2006 does not change.
- Nutrient Trading Program provides options for compliance.

Enhancing Compliance Efforts – NonPoint Sources

- Chesapeake Bay Regulatory and Accountability Program (CBRAP)
 - Additional funding from EPA.
 - Four new staff positions:
 - Provide compliance and inspections actions for Pennsylvania's CAFO, stormwater, and agriculture regulatory programs; and
 - Support a targeted watershed approach.

Enhancing Compliance Efforts – NonPoint Sources

- **Targeted Watershed Approach:**
 - Identify high priority watersheds to conduct farm assessments to determine status of BMP implementation and compliance with regulatory requirements.
 - EPA projects in Watson Run and Muddy Run in Lancaster County similar to the targeted approach under this initiative.
 - Modeled upon an approach taken by DEP in Spring Bank Run (Northcentral regional office).

Enhancing Compliance Efforts – NonPoint Sources

- **Stormwater:**
 - Chapter 102 and incorporation of Post Construction Stormwater Management requirements.
 - Revising PAG-13.

Legislative Initiatives

- **Support Technology Funding;**
- **Stormwater Legislation;**
 - Integrated Water Resources Planning
- **Urban Nutrient Management; and**
- **Support additional/continued funding for projects such as REAP and Act 167.**

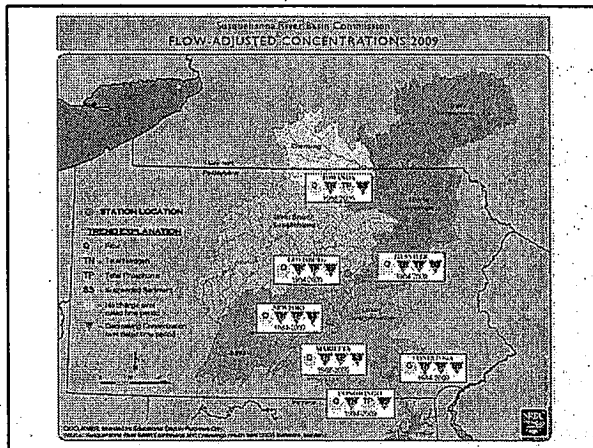
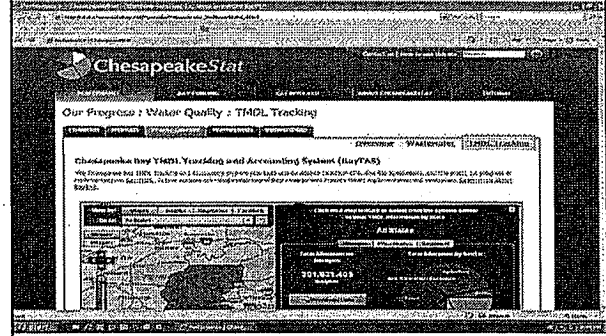
EPA and the TMDL

- **EPA praised Pennsylvania for the significant improvements.**
- **EPA will regularly oversee each of the jurisdictions' programs to make sure they implement the pollution control plans, remain on schedule for meeting water quality goals and achieve their two-year milestones.**

EPA and the TMDL

- Regarding Pennsylvania Sectors:
 - Growth and Trading
 - Positive Comments
 - Agriculture and Wastewater
 - Enhanced Oversight
 - Stormwater
 - Backstop Allocation/Adjustment

EPA and the TMDL



Next steps

- Implementation of Phase 1 WIP
- Phase II WIP Schedule
 - March 31, 2011 - EPA distributes State Phase 2 WIP Guide to the Jurisdictions.
 - April 30, 2011 - EPA distributes Federal Agency Phase 2 WIP Guide.
 - May 9, 2011 - EPA distributes 2-Year Milestone Guide to the jurisdictions.
 - June 30, 2011 - EPA completes two agreed-upon changes to Watershed Model, and proposes nitrogen, phosphorus and sediment allocations for 19 state-basins.
 - August 1, 2011 - EPA finalizes nitrogen, phosphorus and sediment allocations for 19 state-basins.
 - November 1, 2011 – Draft 2012-2013 milestones due to EPA.
 - December 15, 2011 - Draft Phase 2 WIPs due to EPA.
 - January 7, 2012 - the 2012-2013 milestones due to EPA.
 - February 15, 2012 - EPA provides comment on draft Phase 2 WIPs.
 - March 30, 2012 - final Phase 2 WIPs due to EPA.

Questions

www.epa.gov/chesapeakebaytmdl

**www.dep.state.pa.us
"DEP Programs A-Z" click Chesapeake
Bay**