EPA's Final Chesapeake Bay TMDLs Maryland and Virginia Phase I WIPs Preliminary Analysis

Presentation to
Water Resources Technical Committee
January 18, 2011

Metropolitan Washington Council of Governments

Today's Focus

- TMDLs & WIPs
  - Schedules
  - Key Features & Details
  - Updates to Bay Models
  - Response to Comments
- Phase I WIPs
  - Stormwater Comparison
- Next Steps

Schedule for Bay TMDLs & WIPs

2010

- July 1, 2010 – EPA issued Draft TMDL Allocations
- September 1 - States/District issued Phase I WIPs
- September 24 - EPA issued Draft Bay TMDLs
- September 24 – November 8 – Public Comment Period
  (for TMDLs & WIPs) [COG Comments Submitted to EPA & MD/VA]
- Late November – early December – States/DC Submit Final Phase I WIPs
- **December 29 – EPA Issues Final Bay TMDLs in Federal Register**

Schedule for Bay TMDLs & WIPs

2011

- June 1 – States/DC to submit Draft Phase II WIPs **[Deadline could be modified – Not Done Yet]**
  - Loads to be sub-allocated to local (county) level – MD plans to have county liaisons
- November 1 – States/DC submit Final Phase II WIPs
- December - EPA to potentially revised TMDLs - Based on refined Watershed Model (WSM)
- December 31 – Bay States must complete first set of 2-Year Milestones

2017

- Phase III WIPs to be Submitted – Draft by June 1, Final by November 1
- EPA to assess implementation progress
  - 60% of WIP Implementation to be Achieved & Ensure practices in place to achieve 2025 goal
- EPA to determine **whether** to use WSM updates for WIPs & revised TMDL – **and Revise TMDL if necessary**

2020

- Maryland expects to achieve 100% WIP Implementation

2025

- 100% of WIP Implementation to be Achieved Bay-wide

Key Features of Bay TMDLs

- **Final Allocations**
  - By State/District (e.g., Maryland, Virginia, District)
  - Major Tributary Basins (i.e., Potomac River)
  - By segment-shed (to match 92 separate Bay water quality segments)
  - More or less same as the Target Load Allocations (issued 7/1/10) -- the WIPs sub-allocate these by sources categories (WLAs and LAs)
  - Includes EPA obligations for explicit Nitrogen Reductions
    - Based on implementation of federal air regulations
- **Reasonable Assurance & Accountability Framework**
  - Phase I WIPS are main component; TMDL incorporates some aspects of WIPs coupled with federal "backstops"
  - 2-Year Milestone reporting (1st set to be completed by Dec. 31, 2011)
  - Potential for additional federal action

Bay TMDL – Final Allocations by Basin

Table ES-1. Chesapeake Bay TMDL watershed nitrogen, phosphorus and sediment final allocations by jurisdiction and by major river basin.

Jurisdiction	Basin	Nitrogen allocations (million lbs/year)	Phosphorus allocations (million lbs/year)	Sediment allocations (million lbs/year)
Pennsylvania	Susquehanna	68.90	2.49	1,741.17
	Potomac	4.72	0.42	221.11
	Eastern Shore	0.28	0.01	21.14
	Western Shore	0.02	0.00	0.37
	PA Total	**73.93**	**2.93**	**1,983.78**
Maryland	Susquehanna	1.09	0.05	62.84
	Eastern Shore	9.71	1.02	168.85
	Western Shore	9.04	0.51	199.82
	Patuxent	2.86	0.24	106.30
	Potomac	16.38	0.90	680.29
	MD Total	**39.09**	**2.72**	**1,218.10**
Virginia	Eastern Shore	1.31	0.14	11.31
	Potomac	17.77	1.41	829.53
	Rappahannock	5.84	0.90	700.04
	York	5.41	0.54	117.80
	James	23.09	2.37	920.23
	VA Total	**53.42**	**5.36**	**2,578.90**
District of Columbia	Potomac	2.32	0.12	11.16
	DC Total	**2.32**	**0.12**	**11.16**
New York	Susquehanna	8.77	0.57	292.96
	NY Total	**8.77**	**0.57**	**292.96**
Delaware	Eastern Shore	2.95	0.26	57.82
	DE Total	**2.95**	**0.26**	**57.82**
West Virginia	Potomac	5.43	0.58	294.24
	James	0.02	0.01	16.65
	WV Total	**5.45**	**0.59**	**310.88**
Total Basin/Jurisdiction Draft Allocation		**185.93**	**12.54**	**6,453.61**
Atmospheric Deposition Draft Allocationa		**15.7**	**N/A**	**N/A**
Total Basinwide Draft Allocation		**201.63**	**12.54**	**6,453.61**

[a] Cap on atmospheric deposition loads direct to Chesapeake Bay and tidal tributary surface waters to be achieved by federal air regulations through 2020.

Key Features of Bay TMDLs

- **Margin of Safety**
  - Assumed to be implicit given models, water quality standards, & other TMDL assumptions
- **Growth**
  - Not accounted for beyond 2010 – except for wastewater plant permitted capacity
  - Up to States/District to define how growth is to be addressed in WIPs
- **Air Deposition**
  - 15.7 Mlb to be achieved by 2020 due to federal regulations - EPA responsibility
  - Recent air quality regulations & newer modeling of controls are NOT accounted for (noted at Sept. 28th state air quality meeting w/ EPA)
    - Not sure of actual impact to loads, but need to pursue/further evaluate implications

Key Features of Bay TMDLs

- **Climate Change**
  - To be addressed formally in 2017 reassessment
- **Federal Lands**
  - Only 5% Bay-wide (but 30% in District)
  - Federal commitments cited in President's Executive Order (but is it occurring?)
- **Recognition of Need for Offsets, Support for Water Quality Trading**
  - **Applicability to COG Region?**
  - **What options/scenarios are likely?**
- **Future Modifications -** Adaptive Management / Phased Approach
  - But, only two options noted that might result in changes in TMDLs:
    - 'State' exchanges of loads across tributaries – if local & Bay water quality standards still met
    - Modifications of Watershed Model Phase 5.3 – if required
- Changes in Modeling Assumptions - IF supported by Monitoring Data
  - Susquehanna River Dam (sediments)
  - Filter Feeders

TMDL Details

Table 9-2. Chesapeake Bay TMDL total phosphorus (TP) annual allocations[a] (pounds per year) by Chesapeake Bay segment[b] to attain Chesapeake Bay WQS

Segment ID	Jurisdiction	CB 303(d) Segment	TP WLA (lbs/yr)	TP Land Based LA (lbs/yr)	TP TMDL (lbs/yr)	TP 2009 Existing (lbs/yr)
POTTF_MD	VA	Upper Potomac River, MD	208,723	780,655	989,378	1,591,680
POTTF_MD	WV	Upper Potomac River, MD	63,734	519,726	583,459	819,300
POTTF_MD		Upper Potomac River, MD	527,724	2,041,307	2,569,031	3,666,438
POTTF_DC	MD	Upper Potomac River, DC	99,835	1,511	101,347	46,383
POTTF_DC	DC	Upper Potomac River, DC	107,806	1,801	109,607	34,853
POTTF_DC	VA	Upper Potomac River, DC	36,476	397	36,873	30,368
POTTF_DC		Upper Potomac River, DC	244,117	3,710	247,827	111,604
POTTF_VA	VA	Upper Potomac River, VA	201,920	32,105	234,026	193,977
PISTF	MD	Piscataway Creek	26,339	5,481	31,820	25,394
MATTF	MD	Mattawoman Creek	8,741	6,889	15,630	20,655
POTOH1_MD	MD	Middle Potomac River, MD Mainstem	592	3,603	4,195	4,415
POTOH1_MD	VA	Middle Potomac River, MD Mainstem	1,033	1,722	2,755	3,077
POTOH1_MD		Middle Potomac River, MD Mainstem	1,624	5,325	6,950	7,492
POTOH2_MD	MD	Middle Potomac River, MD Nangemoy Creek	4,809	5,234	10,043	11,413
POTOH3_MD	MD	Middle Potomac River, MD Port Tobacco River	1,116	8,243	9,358	9,972
POTOH_VA	VA	Middle Potomac River, VA	14,012	23,931	37,943	38,482
POTMH_MD	MD	Lower Potomac River, MD	22,450	88,603	111,053	125,786
POTMH_MD	VA	Lower Potomac River, MD	29	5,270	5,300	7,079
POTMH_MD		Lower Potomac River, MD	22,479	93,873	116,352	132,864
POTMH_VA	VA	Lower Potomac River, VA	14,146	84,514	98,660	135,581
RPPTF	VA	Upper Rappahannock River	99,695	630,035	729,730	875,321
RPPOH	VA	Middle Rappahannock River	51	19,923	19,974	23,141
RPPMH	VA	Lower Rappahannock River	7,522	94,953	102,475	130,960
CRRMH	VA	Corrotoman River	2,406	11,569	13,975	16,049
MPNTF	VA	Upper Mattaponi River	12,270	72,110	84,380	102,834
MPNOH	VA	Lower Mattaponi River	787	11,291	12,078	15,988
PMKTF	VA	Upper Pamunkey River	35,785	133,955	169,740	201,331
PMKOH	VA	Lower Pamunkey River	59,373	5,525	64,898	61,342
PIAMH	VA	Piankatank River	5,207	38,034	43,241	49,451
YRKMH	VA	Middle York River	2,736	28,149	30,885	39,514

TMDL details

Table 9-4. Edge of Stream (EOS) WLAs (Annual) for the 478 significant permitted dischargers to meet TMDLs to attain the Chesapeake Bay WQS

Permit Name	NPDES ID	Jurisdiction	Segment ID	TN EOS WLA (lbs/yr)	TP EOS WLA (lbs/yr)	TSS EOS WLA (lbs/yr)
BLUE PLAINS	DC0021199	DC**	POTTF_DC	4,689,000	203,854	8,198,328
INVISTA (DUPONT-SEAFORD)	DE0000035	DE	NANTF_DE	171,818	0	749,208
LAUREL	DE0020125	DE	NANTF_DE	8,528	2,132	31,978
BRIDGEVILLE	DE0020249	DE	NANTF_DE	9,746	2,436	36,547
SEAFORD	DE0020265	DE	NANTF_DE	24,364	6,091	48,729
COX CREEK	MD_COXCRK	MD	PATMH	231,101	3,614	193,606
HART MILLER	MD_HARTMI	MD	MIDOH	0	0	0
MASONVILLE DMCF	MD_MASNV	MD	PATMH	231,101	3,614	193,606
W R GRACE	MD0000311	MD	PATMH	310,721	1,782	334,037
MD & VA MILK PRODUCERS	MD0000469	MD	PAXTF	5,431	543	42,150
ISG SPARROWS POINT (BETHLEHEM STEEL CORP)	MD0001201	MD	PATMH	131,420	25,400	85,863
CONGOLEUM	MD0001384	MD	PATMH	4,005	160	19,324
NEWPAGE	MD0001422	MD	POTTF_MD	12,733	597	124,473
ERACHEM	MD0001775	MD	PATMH	13,809	58	8,352
NSWC-INDIAN HEAD	MD0003158	MD	MATTF	1,777	727	41,937
WINEBRENNER WWTP	MD0003221	MD	POTTF_MD	12,182	914	91,367
CRISFIELD	MD0020001	MD	TANMH_MD	12,182	914	91,367
CHESTERTOWN	MD0020010	MD	CHSMH	18,273	1,371	137,050
INDIAN HEAD	MD0020052	MD	MATTF	6,091	457	45,683
BOONSBORO	MD0020231	MD	POTTF_MD	6,100	484	48,424
FEDERALSBURG	MD0020249	MD	NANOH	9,137	685	68,525
EMMITSBURG	MD0020257	MD	POTTF_MD	9,137	685	68,525
EASTON	MD0020273	MD	CHOOH	48,729	3,655	365,467
CHESAPEAKE BEACH	MD0020281	MD	CB4MH	18,273	1,371	137,050
DENTON	MD0020494	MD	CHOTF	9,746	731	73,093
LA PLATA	MD0020524	MD	POTOH2_MD	18,273	1,371	137,050
DELMAR	MD0020532	MD	WICMH	10,355	777	77,662
PERRYVILLE	MD0020613	MD	CB1TF	20,101	1,508	150,755
PRINCESS ANNE	MD0020656	MD	MANMH	11,512	1,151	115,122

Updates to Bay Models

Phase 5.3.2 Watershed Model

- **Planning to calculate a separate effectiveness for N & P**
  - Present version used a single, combined effectiveness
  - This will help inform nutrient trading ratios for each basin
  - This will also narrow the trading ranges
  - It will also help inform changes to the Phase II WIPs
- **Delivery Factor Method**
  - Planning to change and make allocations using a constant Delivery Factor for each basin
  - This will make credit more proportional to nutrient reduction efforts.
  - Responsibility will shift (slightly) from the headwater states to the tidal states, and from point sources to nonpoint sources.
  - This will also provide stability for trading and for WIP development.

Updates to Bay Models

Phase 5.3.2 Watershed Model

- **Land Use**
  - The estimated amount of impervious (1st column of numbers) and pervious (2nd column) land has changed significantly again (see table next slide).
  - Based on a combination of land cover, roads, housing, impervious and road width coefficients, and state mining data.
  - Ground truthing shows the new method captures 94% of impervious surfaces in Montgomery County (vs. 74% with previous method).
  - CBPO looking for more local data to use in ground truthing.

Potomac Model

- Have finally run the Potomac version of the WQM.
- It is able to replicate pH and algal values pretty well.
- Will be comparing results of various scenarios to the District pH standard by February 1st.

Updates to Bay Models

Model Version (Data Year)	Impervious Surface (acres)	Pervious Surface (acres)
Phase 5.2 (2002)	799,989	3,591,799
Phase 5.3 (2002)	675,917	1,885,935
Phase 5.3.1 (2001)	1,587,575	5,896,707
Phase 5.3.1 (2001) (Excl wooded residential)	1,569,377	3,442,346
Phase 5.3.2 (2001) (Excl wooded residential)	1,265,488	3,366,565

TMDL Comments - Common Themes

- EPA has failed to:
  - Adequately engage affected entities
  - Underestimated financial burdens & hence feasibility
  - Set unrealistic implementation schedule (i.e., for 2017 and for 2025)
  - Failed to allow sufficient time for input/comment
  - Not provided sufficient details to assess actual responsibilities & impacts
- Technical basis is flawed
  - Watershed model (WSM) assumptions & loads
    - Percent impervious assumptions, land cover data – not valid
    - Tables not clear and all loads Not accounted for (CSOs, errors for various WWTPs, practices missing, etc.)
  - WSM fails to incorporate/credit all practices (Ag & Urban)
  - Not all proposed practices are appropriate/feasible

TMDL Comments - Common Themes

- Legal Issues – unreasonable or inappropriate action
  - Seeks to control growth and local/state prerogatives
  - Exceeds EPA's regulatory authority or assumes where no authority exists
    - (e.g., SW – maximum extent feasible vs. proposed levels of effort)
  - EPA shouldn't be issuing the TMDL (states should)
  - EPA has no implementation authority
  - May not be appropriate as a 'national model'
  - Imposition of Backstops exceeds EPA's authority
- Must assess cost/financial burden given scale/scope/impacts
  - Unaffordable, costs to implement (esp. SW & Ag) much higher than assumed
- Must ensure that flexibility (adaptive management) is used
- Must ensure that Water Quality Trading is viable
- Must allow sufficient time for input (e.g., **extend Phase II WIP deadline)**

EPA's Response to TMDL Comments

- Funding Issues
  - Officially outside the scope of the TMDL

    "EPA does not consider funding to be relevant to the TMDL, but instead to the implementation of the TMDL."

  - Note increased EPA and SRF funding for Bay and cite studies showing the costs of different forms of current pollution (e.g. mercury contamination)
- Engagement / schedule and deadlines
  - Cite hundreds of meetings held, LGAC involvement
  - May extend Phase II WIP deadline

EPA's Response to TMDL Comments

- Retrofit feasibility
  - Sidestep cost and site constraint concerns

    "EPA believes that it will not be possible to meet allocations for urban stormwater discharges without retrofit programs."
- Model flaws
  - Cite open process, peer review, etc; do not acknowledge any model flaws
- Legal issues
  - Did not acknowledge that these have any validity

Summary of Final Phase I WIPs

- EPA and states/District worked to address EPA objections to draft WIPs
- TMDL cites "specific improvements"
  - More stringent TN and TP limits for James WWTPs
  - Language pledging to pursue state funding legislation in Maryland and Virginia
- As a result, EPA eliminated most backstops
  - Only remaining ones are for NY wastewater, PA urban stormwater and WV agriculture
  - However, EPA expressed concern about viability of certain pollution reduction pledges in various states (including VA) and **may re-institute backstops**

WIP Comparison - Stormwater

Maryland

Allocations (to 2017)

- Statewide aggregate for MS4 WLA; not broken down
- Based on retrofitting 30% of pre-1985 impervious acreage (a 25 % TN reduction) for Phase Is; retrofitting 20% of pre-1985 impervious acreage for Phase II;

Virginia

Allocations (to 2025)

- Statewide aggregate for MS4 WLA; not broken down
- Based on reducing 2009 progress loads 6 – 9 % for TN, 7.25 – 16 % for TP and 8.75 to 20 % for TSS

WIP Comparison - Stormwater

Maryland

New Development

- Continuation of current state stormwater program requirement (post-development runoff standard of "woods in good condition"

Re-Development

- Continuation of current state stormwater program requirement (treat or remove 40 % of existing imperviousness)

Retrofit

- Treat 20 – 30 % of pre-85 imperviousness, but "alternatives" will be considered

Nutrient Management

- Includes fertilizer restrictions, plan requirements

Virginia

New Development

- No increase above allowable 2025 average load/acre

Re -Development

- Anticipated reductions of 20% under new state stormwater management regulations

Retrofit

- Not specified: *"On developed lands, the implementation of additional BMPs will be necessary to meet the allocated pollutant reductions"*

Nutrient Management

- Includes fertilizer restrictions, plan requirements

WIP Comparison - Stormwater

Maryland

Phase I Permit Conditions (to 2017)

- Conduct "systematic" watershed assessment for all watersheds
- Develop implementation plans for all applicable WLAs (TN, TP and TSS for each county-segment-shed)
- Complete 30% retrofit of pre-85 impervious acres to the MEP – or alternatives
- Have ongoing iterative process for implementing BMPs if WLAs are not being met

- **Phase II - ?**

Virginia

Phase I Permit Conditions (to 2025)

- Divided into 3 5-year cycles:
- 1st cycle (2011 – 2015)
  - Implement nutrient management requirements
  - Develop action plan for achieving 35 % of total reductions in 2nd cycle
  - Redo ordinances, etc.
- 2nd cycle (2016 – 2020)
  - Achieve 35 % of total reduction needed
  - Plan for 100 % of total reductions in 3rd cycle
- 3rd cycle (2021-2025)
  - Achieve 100% of total reductions needed

Phase II - ?

WIP Comparison - Stormwater

Maryland

Cost impact

- Preliminary analysis assumes retrofit cost of $18,000/acre including alternatives

Measuring Progress

- Not clear if state will use CBP watershed model
- By November 2011 pledge to implement electronic tracking of BMPs through new Maryland Chesapeake Bay Implementation Tracking center

Virginia

Cost impact

- To be considered: *"Adjustments to this plan will be considered based on cost effectiveness and other options"*

Measuring progress

- Not clear if state will use CBP watershed model: *"We will use the model as a management tool, but we will tailor our actions within real scientific, ec0nomic, social and political frameworks"*
- BMP tracking thru DCR's new Stormwater Management Enterprise web site

COG Next Steps

- Assist members in development of Phase II WIPs
  - Watershed model analysis - ?
  - Share findings in regard to data assumptions etc.
  - Develop data on regional costs (e.g., for retrofits)
  - Gather WWTP LOT costs for region (VA-DEQ request)
- Track legislative, regulatory and legal actions
  - Stormwater permitting for the Bay
  - Virginia's state stormwater management regulatory updates
  - Farm Bureau Bay TMDL litigation
  - WWTP permitting issues (e.g., request to go beyond ENR)

COG Next Steps

- Pursue retrofit alternatives
  - Viable trading mechanisms
  - Residual designation authority - ?
- Support for state, federal funding initiatives
  - Maryland's Bay Restoration Fund increase
  - Stormwater funding in federal transportation bill
- Other support?

- Recommendations/Alerts to CBPC?