Issues Identified in Using Watershed Model Output in WIP Planning

Presentation to
Water Resources Technical Committee
Nov. 12, 2011

Metropolitan Washington
Council of Governments

Today's Focus

- Model developments
- MAST/CAST data

CBP Watershed Model Developments

- July-September – EPA began issuing Phase 5.3.2 scenarios
  - Maryland issues MAST; later VAST and CAST released
  - Problems identified with: 2010 Progress scenario (NEIEN data entry), ag nutrient management, anomalies at segment-shed level, regionalization factors
- Mid-September -- Bay Program partners meet with EPA on modeling issues
  - including state secretary discussion on Sept. 16
- October – EPA issues revised Phase II guidance
  - Phase I WIPs need only be quantified (Scenario Builder input decks) at major basin level
  - Modeling anomalies to be dealt with on ad hoc basis (e.g. interim BMPs) in short term; revisions to model in long term

On Using MAST Data

- MAST/CAST/VAST updated Nov. 1
  - Loading data significantly different; discrepancies with watershed model output reduced
  - Further updates are planned
- Notes on following slides
  - Extent of BMP coverage – based on old MAST output, but this feature was not changed
  - Comparison of Urban Loading Rates - based on old MAST output; new data would change these numbers
  - Progress to Date - based on new MAST output

Extent of BMP Coverage

County	Percentage of Urban Acres Treated by BMPs in 2009 Progress Scenario	
	Impervious	Pervious
Frederick	41.9	44.4
Montgomery	32.6	40.6
Prince George's	19.9	37.9
Alexandria	34.6	32.9
Arlington	2.8	5.1
Fairfax	49.2	55.0
Loudoun	70.3	77.1
Prince William	39.1	43.7

Top BMPs:

- Stormwater Management by Era 1985-2002 (MD only)
- Wet Ponds and Wetlands
- Dry Extended Detention Ponds / Dry Detention Ponds with Hydrodynamic Structures

Comparison of Urban Loading Rates

(in pounds/acre)		Frederick	Montgomery	Prince George's	State
TN	Impervious	26.1	22.6	9.6	14.2
	Pervious	17.6	13.0	5.0	9.4
	All Urban	19.4	15.4	6.3	10.7
TP	Impervious	2.5	2.1	1.3	1.5
	Pervious	0.6	0.4	0.3	1.0
	All Urban	1.0	0.8	0.6	0.6
TSS	Impervious	1,224.4	1,364.0	394.3	928.2
	Pervious	193.8	206.5	68.3	141.8
	All Urban	417.4	493.0	165.0	344.0

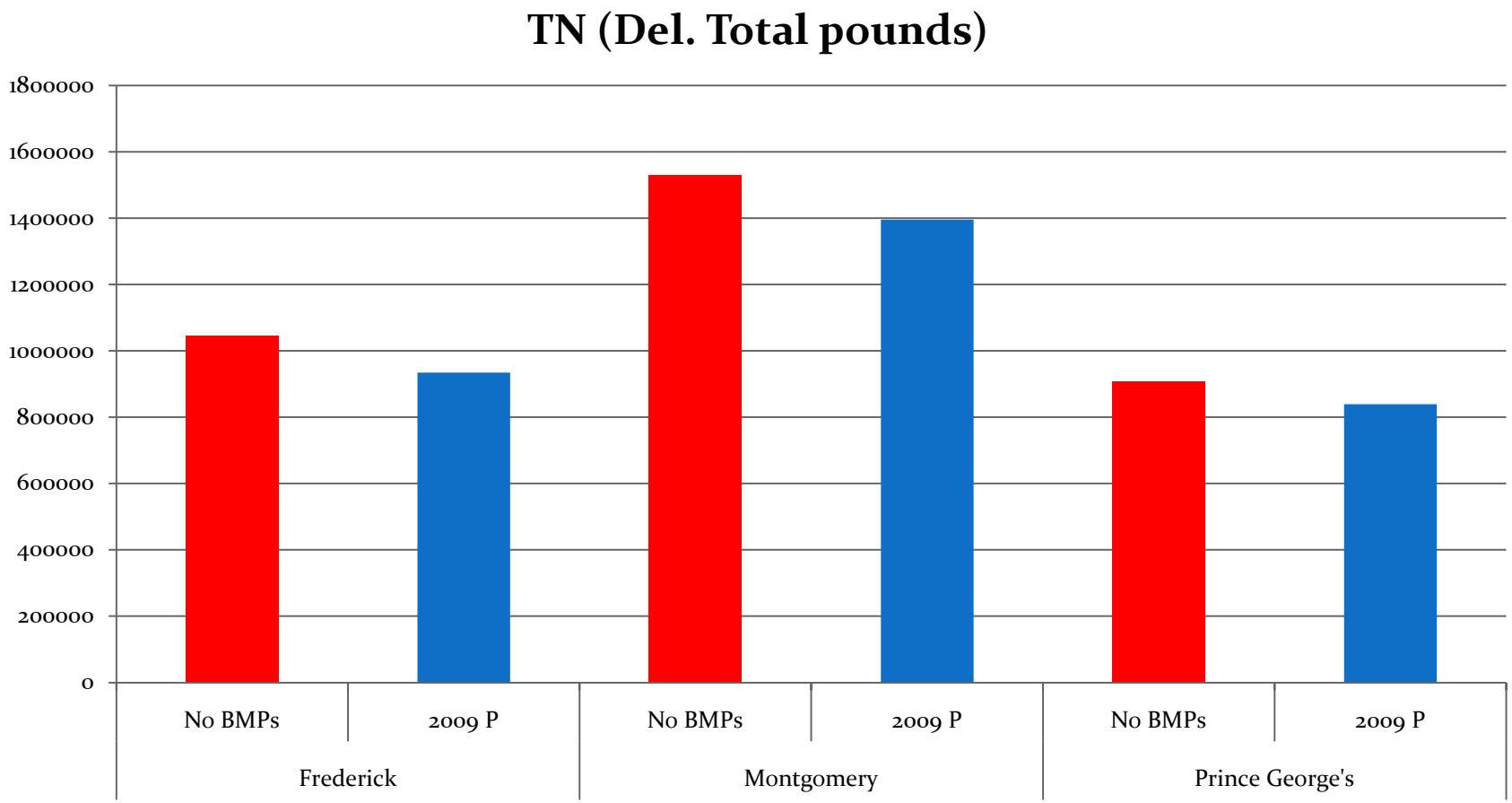
Calculated from MAST 2009 Progress/No BMP scenario and edge-of-stream loads to normalize for delivery factors and BMP coverage; excludes construction and extractive urban land uses

Comparison of Urban Loading Rates

(in pounds/acre)		Alexandria	Arlington	Fairfax	Loudoun	Prince William
TN	Impervious	7.9	12.2	17.8	20.3	12.4
	Pervious	4.6	10.4	9.2	13.0	8.2
	All Urban	6.2	11.1	11.9	15.9	9.6
TP	Impervious	1.2	1.5	1.6	1.9	1.2
	Pervious	0.1	0.6	0.3	0.5	0.4
	All Urban	0.6	1.0	0.8	1.1	0.7
TSS	Impervious	1,705.3	1,195.4	973.8	826.0	1025.3
	Pervious	186.5	182.2	146.2	120.9	163.3
	All Urban	939.8	593.1	460.4	555.2	540.1

Calculated from CAST 2009 Progress/No BMP scenario and edge-of-stream loads to normalize for delivery factors and BMP coverage; excludes construction and extractive urban land uses

Urban Load Reductions: Progress to Date



All loads shown in delivered pounds

Urban Load Reductions – Current Progress

County		TN (total pounds)	TP (total pounds)	TSS (total pounds)
Frederick	No BMPs	1,043,957	61,072	42,279,161
	2009 Progress	934,204	50,307	31,709,340
	% Reduction	**10.5%**	**17.6%**	**25.0%**
Montgomery	No BMPs	1,528,527	92,756	108,628,504
	2009 Progress	1,395,716	75,959	83,603,046
	% Reduction	**8.7%**	**18.1%**	**23.0%**
Prince George's	No BMPs	907,264	116,430.90	82,241,876
	2009 Progress	838,889	97,904.00	66,274,720
	% Reduction	**7.5%**	**15.9%**	**19.4%**

All loads shown in delivered pounds

Urban Load Reductions – Future Requirements

Jurisdiction/Source*	Total Nitrogen (% reduction required from 2009 progress loads to 2020 target)	Total Phosphorus (% reduction required from 2009 progress loads to 2020 target)
Frederick County		
5.3.2 Urban	**9.5**	**14.4**
Progress to date	10.5	17.6
Montgomery County		
5.3.2 Urban	**12.3**	**8.6**
Progress to date	8.7	18.1
Prince George's County		
5.3.2 Urban	**24.5**	**35.4**
Progress to date	7.5	15.9

* Derived from MDE"s Phase II target load summary data

Other Issues

Corbin meeting talking points

FLEXIBILITY – EPA and the states should continue to provide state/ local governments with as much flexibility as possible in developing Phase II WIPs

- Support EPA's recent decision that states need only quantify targets and reduction plans at the major basin level for the Phase II WIPs.
- Local load allocations should not be used to establish quantitative reduction targets in MS4 permits or in the TMDL.
- EPA should finalize trading rules; states should enhance trading mechanisms and local governments should be given the data they need to evaluate the use of trading as a WIP implementation strategy.

Corbin meeting talking points

COST/BENEFIT ANALYSIS – EPA and the states should continue to focus resources on developing cost/benefit information and develop ways to ensure that the information can be continuously upgraded with new data.

- EPA/states should create a template for reporting locally generated BMP cost information and a process by which cost data can be continuously upgraded.
- Local governments want to comment on potential economic benefits of environmental sector jobs, assuming that is part of the benefits calculation.

Corbin meeting talking points

SCHEDULE – EPA and the states should continue to reconsider schedule/expectations in response to model changes, delays in providing information to local governments and other factors.

- Detailed local plans should not be required until accurate local data has been provided by EPA and the states in consultation with local governments; permit language specifying consistency with applicable wasteload allocations needs to be appropriately flexible.
- Availability of state and federal funding should be a major factor to be considered during the mid-course correction planned for 2017; lack of local funding to achieve projected rates of implementation is grounds for extending the final implementation deadlines (2020 in Maryland; 2025, everywhere else)

Corbin meeting talking points

ADAPTIVE MANAGEMENT -- EPA and the states should make fuller use of " Adaptive Management" – a process under which water quality improvement efforts are continuously refined to take advantage of new knowledge -- in the administration of the TMDL/WIPs

- Maintain a flexible approach to how we measure progress toward TMDL goals, especially at the local level.
- Support continued watershed model development with local government input. This includes renewed emphasis on the reduction efficiencies of established BMPs and a streamlined process for the approval of new BMPs.

General Assembly schedules

- Virginia
  - Nov. 21 – Dec. 5: prefiling period
  - Jan. 11 – March 11: “long” session
- Maryland
  - Jan . 11 – April 9: in session

Potential legislation

MD

- Changes to Bay funding measures – coming from Task Force on Sustainable Growth and Wastewater Disposal
  - Increase Bay Restoration Fund ("flush tax") from $30 to $60 – 90/household/year
  - Cover ENR funding shortfall; potentially provide funds for stormwater retrofits
- Return of previous legislation that would require local adoption of stormwater utilities

Potential legislation

VA

- Revision to Nutrient Credit Exchange Program – coming from legislative study commission
  - Allow trades between and among wastewater, stormwater, ag and septic sectors
- Initiative to provide additional funding for WQIF
  - Cover ENR funding shortfall; potentially provide funds for stormwater projects

What is MAST (CAST)

- Maryland Assessment and Scenario Tool (successor to Vortex, COAST)
- Online means of deriving nutrient and sediment load estimates that are consistent with watershed model (**Version 5.3.2**)
- Two main uses
  - Directly estimate loads from different scenarios (close approximation of actual model output)
  - Export files for input into CBP modeling system (via state gatekeepers)
- Developed by ICPRB and J7 for Maryland; Bay Program will tweak to come up with Chesapeake Assessment and Scenario Tool