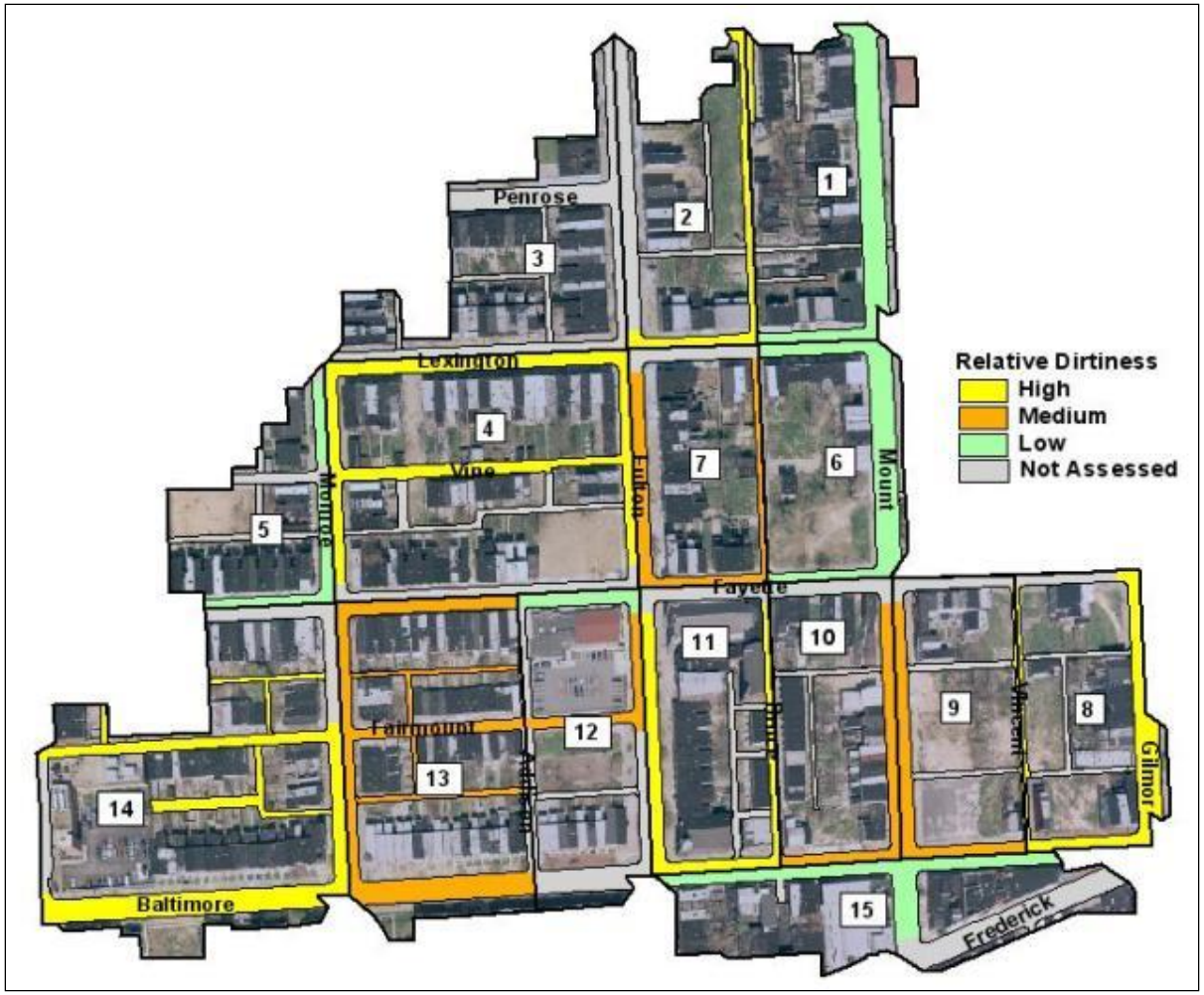
Street and Storm Drain Cleaning Expert Panel Report



Presentation Outline

- Schueler's lost decade
- Chronology of expert panel review process
- Everything you need to know about street cleaning in 5 slides
- Recommended street cleaning credit
- Q & A

Street Cleaning and the Chesapeake Bay
A Ten Year Journey

2006 USWG funds street sweeping research *

2008 CWP releases its research report *

2009 Pre-TMDL expert panel launched *

2010 First expert panel approved by USWG *

2011 Approved by WQGIT in March

2012 Locals revolt @ Baywide Stormwater Retreat*

2013 USWG votes to revisit street sweeping *

2014 - 2016 Second panel deliberates *

Chesapeake Bay Program
A Watershed Partnership

First Street Sweeping Panel Recommendation

Method 1: Mass loading approach, calculates sediment and nutrient removal based on the mass picked up by the sweeper fleet, with an adjustment for particle size

Method 2 : Qualifying street lanes method.

Percent Removal			
Technology	TSS	TP	TN
Mechanical	10	4	4
Regenerative/Vacuum	25	6	5

Both methods only apply to streets that are swept biweekly **(26 times per year)** or more frequently.

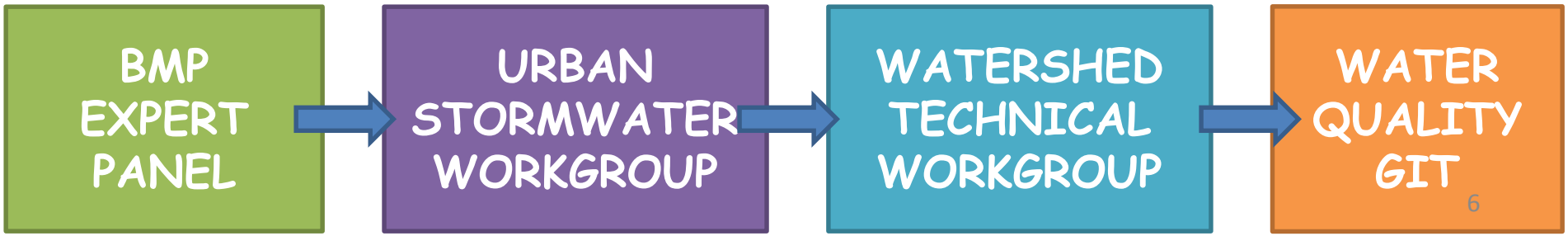
Why a New Panel was Launched

- Urban Work Group Quickly Realized the 2010 Credits Needed to be Re-visited
- No reporting, tracking and verification protocols
- Need to assess new monitoring studies in the last 5 years
- The two crediting methods gave different answers, leading MS4s to shop for which one gives the most credit
- Locals: Sweeping too frequent to get credit for most streets

2015 Street Cleaning Review Process

Chesapeake Bay Program
A Watershed Partnership

8/15 Coordination with CBPO Modeling Team
9/15 Expert Panel Reaches Consensus
9/15 Debut Webinar
9/15 Start of 30 Day Comment Period
10/15 Presented to Urban Work Group
11/15 Revised Report and Response to Comments
12/15 Calls/Meetings with MDE and PADEP
12/15 Expert Panel Poll # 1

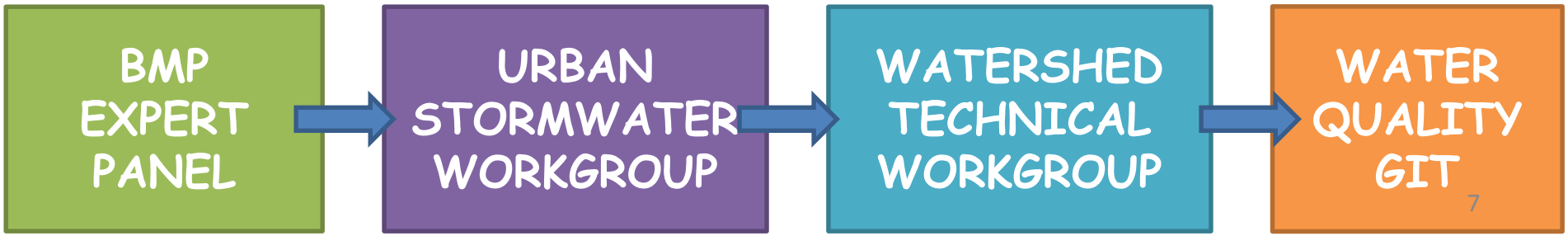


2016 Review Process

1/16 Third Draft of Panel Report and Second Version of Response to Comments
1/16 Approved by USWG w/ VADEQ Objections
2/16 Presented to WTWG (No Action)
2/16 Comment Deadline Extended
3/16 Third version of RTC and Second Version of Scenario Builder
3/16 'Decisional" WTWG Meeting

5 of 6 VADEQ/MDE Objections Satisfied.
Mass Loading Objection Unresolved
Lacking consensus, bumped up to WQGIT

Chesapeake Bay Program
A Watershed Partnership



Review Process
continued

Chesapeake Bay Program
A Watershed Partnership

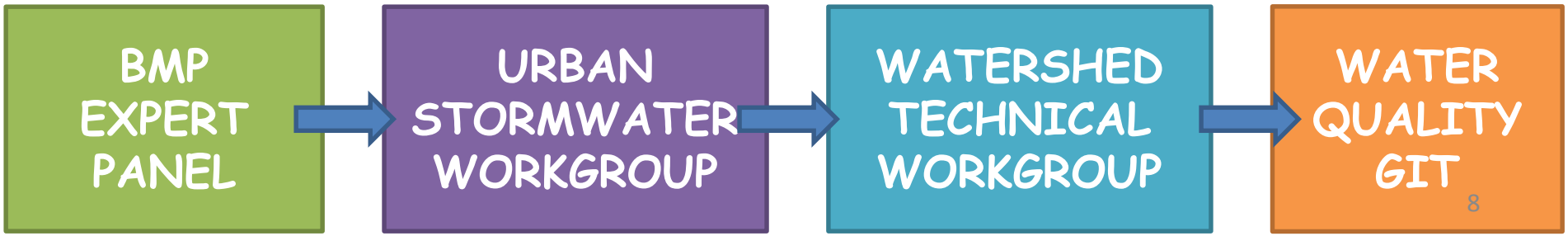
3/25 VADEQ Releases Proposal for "SCP-12"

3/28 WQGIT meeting – Bay states request more time for review and opinion of expert panel

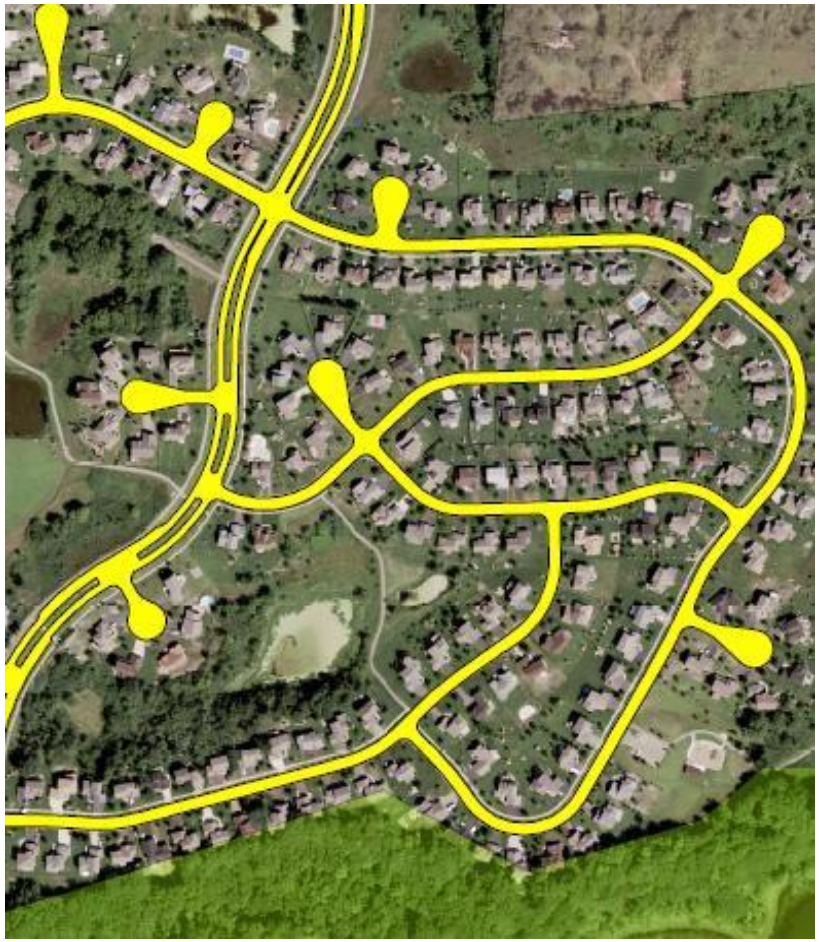
4/15 Second Expert Panel Poll

4/25 Second WQGIT meeting, members polled
No consensus
Elevate to Management Board

5/19 "Decisional" Management Board Meeting



Quick Review of the Expert Panel Findings



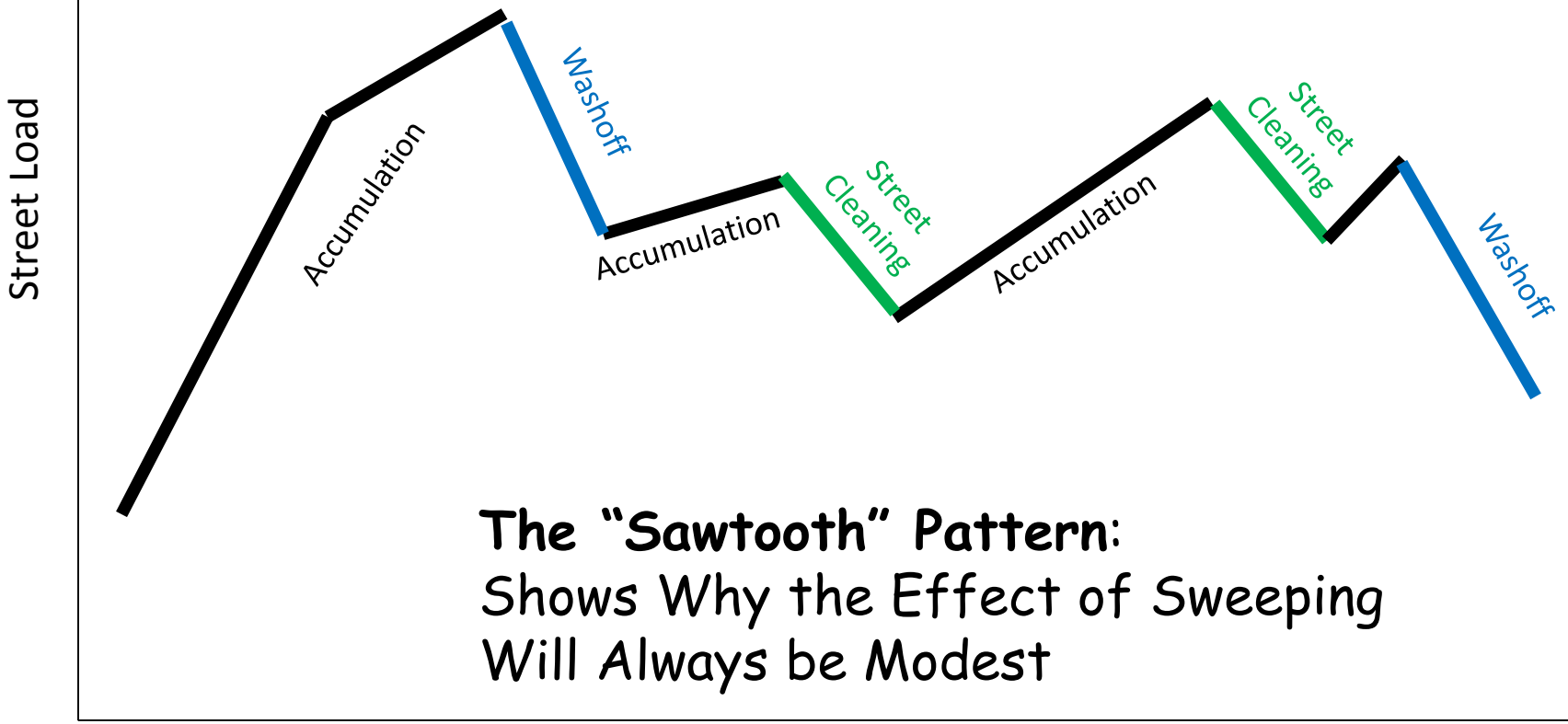
- Street dirt is complex
- Rain works against you
- Technology matters
- Frequency matters
- Water quality benefit is very modest

Science of Street Dirt

Particle Size Distribution		
Coarse Grained	Medium Grained	Fine Grained
25 %	65 %	10 %

Plus trash, litter, leaves, pollen hydrocarbons & toxins

Rain storms are also pretty efficient at cleaning the street, moving smaller particles, and they come every 4 to 5 days



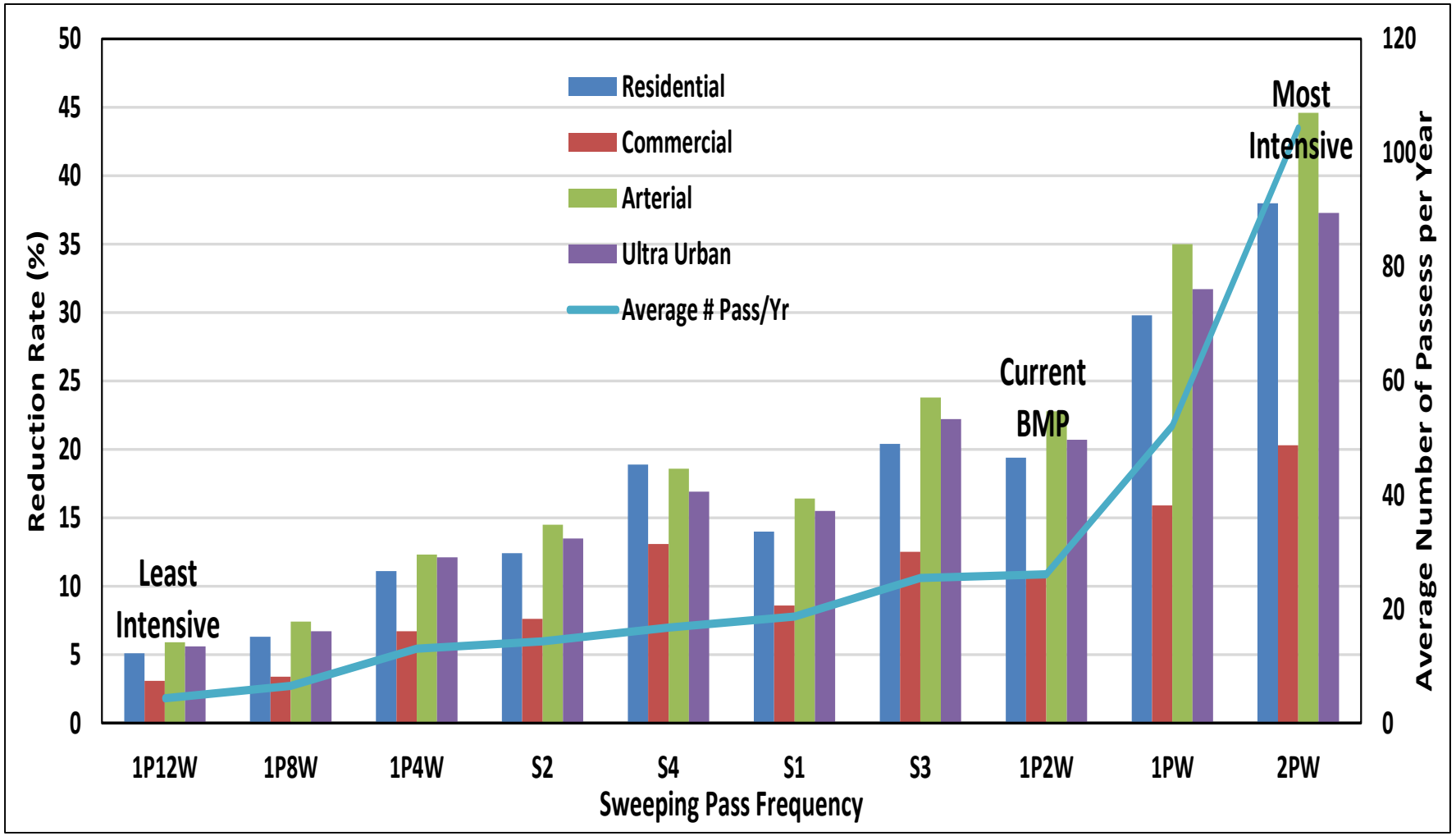
The "Sawtooth" Pattern:
Shows Why the Effect of Sweeping Will Always be Modest

Credit: Adapted from R. Bannerman and Bill Frost

New sweepers work

Mechanical Broom sweepers do not

Sediment Reduction Based on Street Type and Cleaning Frequency



Source: Tetra Tech, 2014

Recommendations of Second Expert Panel

Recommendations of the Expert Panel to Define Removal Rates for Street and Storm Drain Cleaning Practices

Sebastian Donner, Bill Frost, Norm Goulet, Marty Hurd, Neely Law, Tom MaGuire, Bill Selbig, Justin Shafer, Steve Stewart, Jenny Tribo

FINAL REPORT

September 18, 2015

Prepared by:

Tom Schueler, Chesapeake Stormwater Network
Emma Giese, Chesapeake Research Consortium
Jeremy Hanson, Virginia Tech
David Wood, Chesapeake Research Consortium

Street Cleaning Credit

- The standard unit is curb miles swept
- One impervious acre is equal to one curb-lane mile swept on one-side only
- Credits provided for 11 street cleaning practices (SCPs)
- Credit must be calculated every year

Pollutant Reductions Associated with Different Street Cleaning Practices

Practice #	Description [1]	Approx Passes/Yr [2]	TSS Removal (%)	TN Removal (%)	TP Removal (%)
SCP-1	AST- 2 PW	~100	21	4	10
SCP-2	AST- 1 PW	~50	16	3	8
SCP-3	AST- 1 P2W	~25	11	2	5
SCP-4	AST- 1 P4W	~10	6	1	3
SCP-5	AST- 1 P8W	~6	4	0.7	2
SCP-6	AST- 1 P12W	~4	2	0	1
SCP-7	AST- S1 or S2	~15	7	1	4
SCP-8	AST- S3 or S4	~20	10	2	5
SCP-9	MBT- 2PW	~100	0.7	0	0
SCP-10	MBT- 1 PW	~50	0.5	0	0
SCP-11	MBT- 1 P4W	~10	0.1	0	0

AST: Advanced Sweeping Technology

MBT: Mechanical Broom Technology

Q&A

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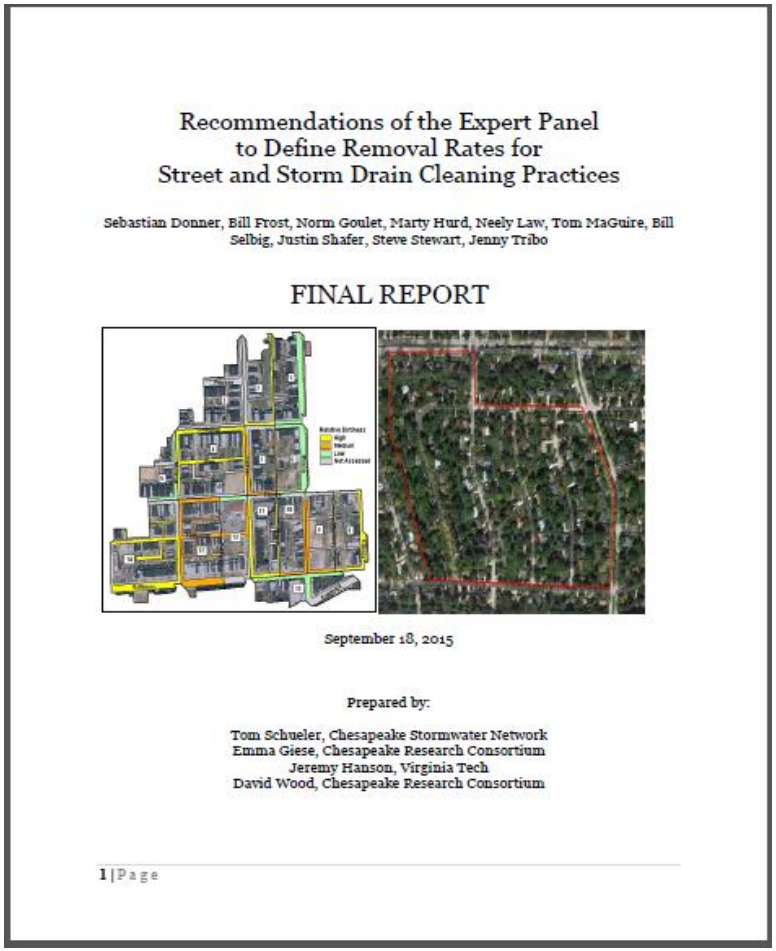

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Management Board May 19,2016