

Chesapeake Bay Stormwater Listening Session

Cambridge, MD

October 28, 2010

www.epa.gov/npdes/stormwater/rulemaking



U.S. Environmental Protection Agency



Purpose of Today's Session

- On December 28, 2009, EPA announced national rulemaking to strengthen its stormwater program.
- One of the preliminary considerations included exploring specific stormwater provisions to protect sensitive areas.
- Today's session will provide the public with an early opportunity to learn about and comment on stormwater requirements within the Chesapeake Bay watershed.

Agenda

- EPA introduction and short presentation
 - Purpose of Today's Session
 - Regulations
 - Chesapeake Bay Watershed Challenges
 - Stormwater Challenges
 - Preliminary Considerations to Address Challenges
- Oral comments by registered participants
- If time allows, additional discussion

The Clean Water Act: *The Objective*

“to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”



Photo Credit: NOAA's American Coastlines Collection. www.photolib.noaa.gov

The Clean Water Act: *The Goals*

- eliminating the discharge of pollutants into navigable waters; and
- achieving interim water quality that will protect fish, shellfish, and wildlife while providing for recreation (“fishable and swimmable”) in and on the water whenever attainable.

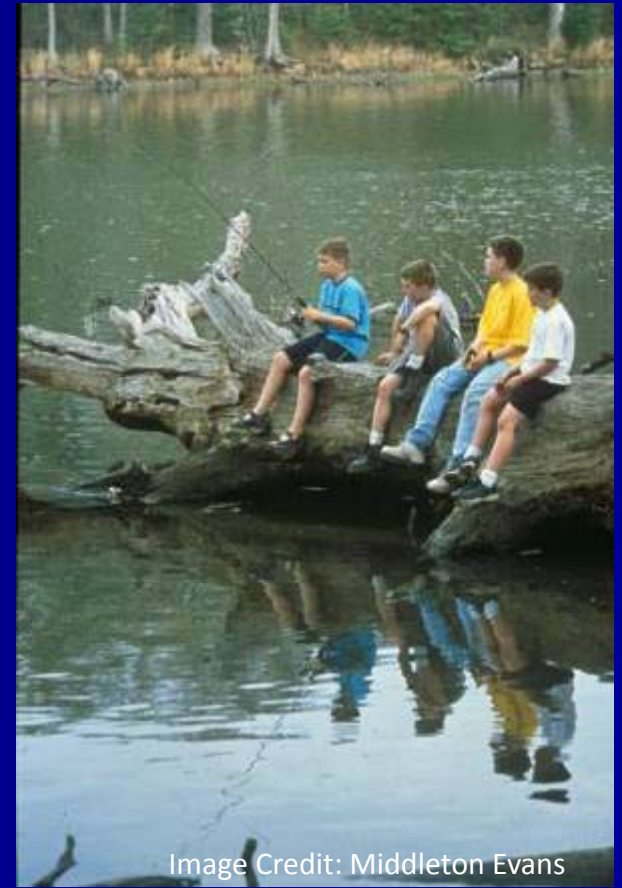


Image Credit: Middleton Evans

The Clean Water Act: *The Tools*

National Pollutant Discharge Elimination System (NPDES) permitting program authorizes and regulates certain discharges (§ 402), including stormwater discharges.



402(p) of Clean Water Act

- Section 402(p) established phased approach to permitting certain stormwater discharges
- Section 402(p)(4) required EPA to establish permit application requirements for industrial and medium and large municipal separate storm sewer discharges (100,000 population and greater)
- Section 402(p)(5) required EPA to
 - conduct a study to identify other discharges, assess their pollutant loadings and establish methods to control the pollutants and
 - submit the results in a report to Congress.
- Section 402(p)(6) provides authority for EPA to regulate other stormwater sources, based on the study, “to protect water quality”

Phase I Stormwater Regulations

- Finalized in 1990
- Regulates stormwater discharges from:
 - Medium and large municipal separate storm sewer systems (MS4s) in areas that serve 100,000 or more people
 - 10 categories of industrial operations including construction activity disturbing 5 acres or more
- Established:
 - Permit application requirements and deadlines
 - Requirements for a municipal stormwater management plan

Permit exclusion for industrial activities that are not exposed to stormwater

Phase II Stormwater Regulations

- Finalized in 1999
- Defines “small MS4” as any MS4 that is not “medium” or “large and includes systems such as large prison or hospital complexes, highways, public universities and military bases
- Regulates stormwater discharges from:
 - Small MS4s,
 - Located in an “urbanized area” as defined by the Bureau of Census, or
 - Designated by the NPDES permitting authority on a case-by-case basis.
 - Construction activities disturbing between one and five acres
- Requires NPDES permits for these discharges

Phase II Stormwater Regulations (Cont'd)

- Established six minimum control measures for small MS4 permits:
 1. Public Education & Outreach
 2. Public Participation/Involvement
 3. Construction Site Runoff Control
 4. Illicit Discharge Detection & Elimination
 5. Post-Construction Runoff Control
 6. Pollution Prevention/Good Housekeeping

MS4s in the Chesapeake Bay watershed

Pennsylvania, West Virginia, Delaware and New York

Phase II Jurisdictions

Maryland Phase I and II NPDES Jurisdictions

Phase I "Large" Jurisdictions

Phase I "Medium" Jurisdictions

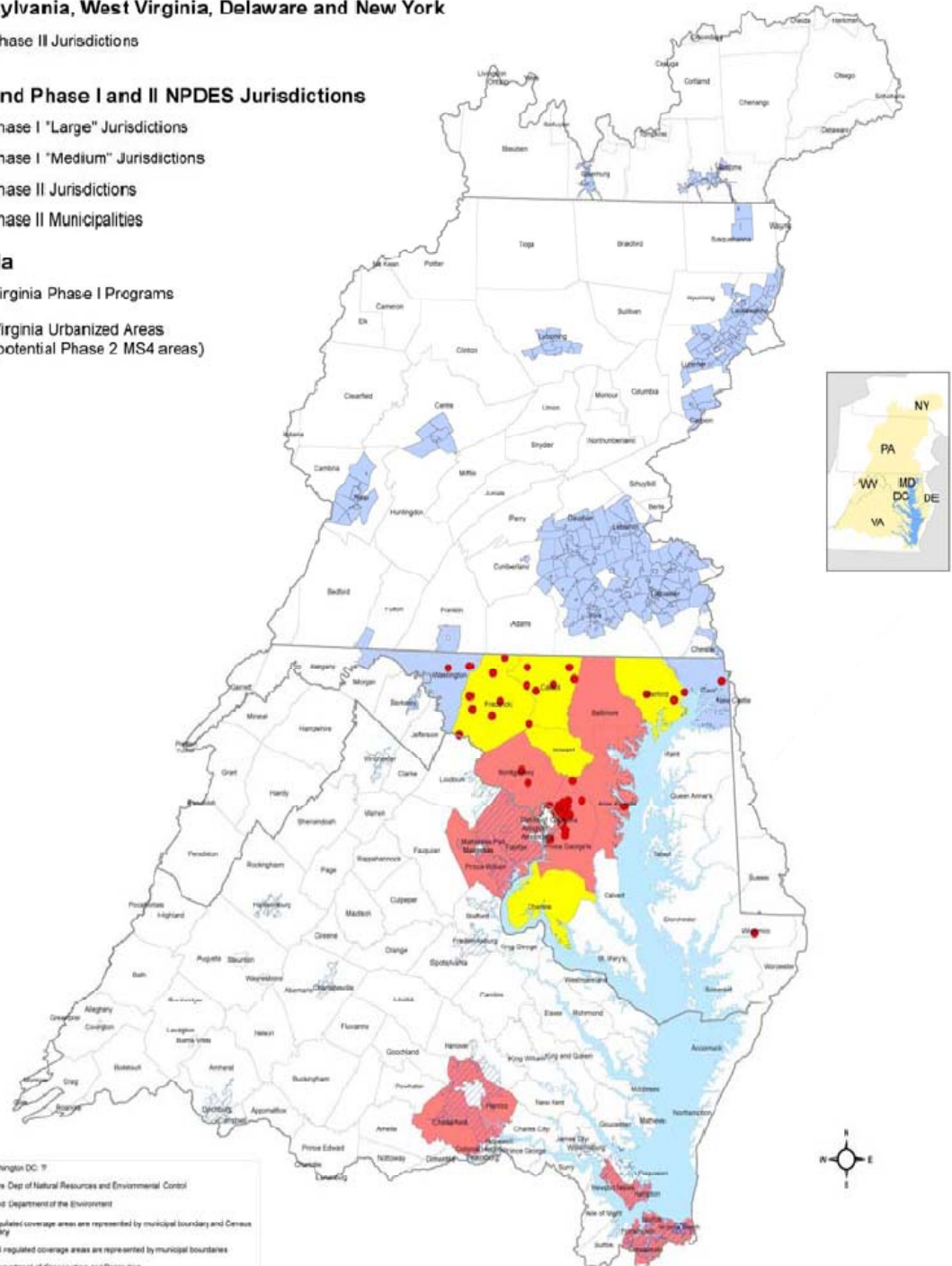
Phase II Jurisdictions

Phase II Municipalities

Virginia

Virginia Phase I Programs

Virginia Urbanized Areas
(potential Phase 2 MS4 areas)



Data source: Washington DC: 17

Delaware: Delaware Dept of Natural Resources and Environmental Control

Maryland: Maryland Department of the Environment

New York: MS4 regulated coverage areas are represented by municipal boundary and Census Urban Area boundary

Pennsylvania: MS4 regulated coverage areas are represented by municipal boundaries

Virginia: Virginia Department of Transportation and Statewide

Number of Stormwater MS4 Permittees (as of Summer 2009)

	DC		DE		MD		NY	
Stormwater Permit Type	Bay-wide	DC-wide	Bay-wide	State-wide	Bay-wide	State-wide	Bay-wide	State-wide
MS4 Phase I	1	1	1	14	11	11	0	1
MS4 Phase II	0	0	0	3	82	82	34	502
Total	1	1	1	17	93	93	34	503
% Permittees in the Bay	100%		6%		100		7%	

	PA		VA		WV		Total	
Stormwater Permit Type	Bay-wide	State-wide	Bay-wide	State-wide	Bay-wide	State-wide	Bay	State
MS4 Phase I	0	2	11	11	0	0	24	40
MS4 Phase II	206	727	75	90	3	45	400	1449
Total	206	729	86	101	3	45	424	1489
% Permittees in the Bay	28%		85%		7%		29%	

Stormwater Challenges

1. Increased amounts of stormwater and pollutants...



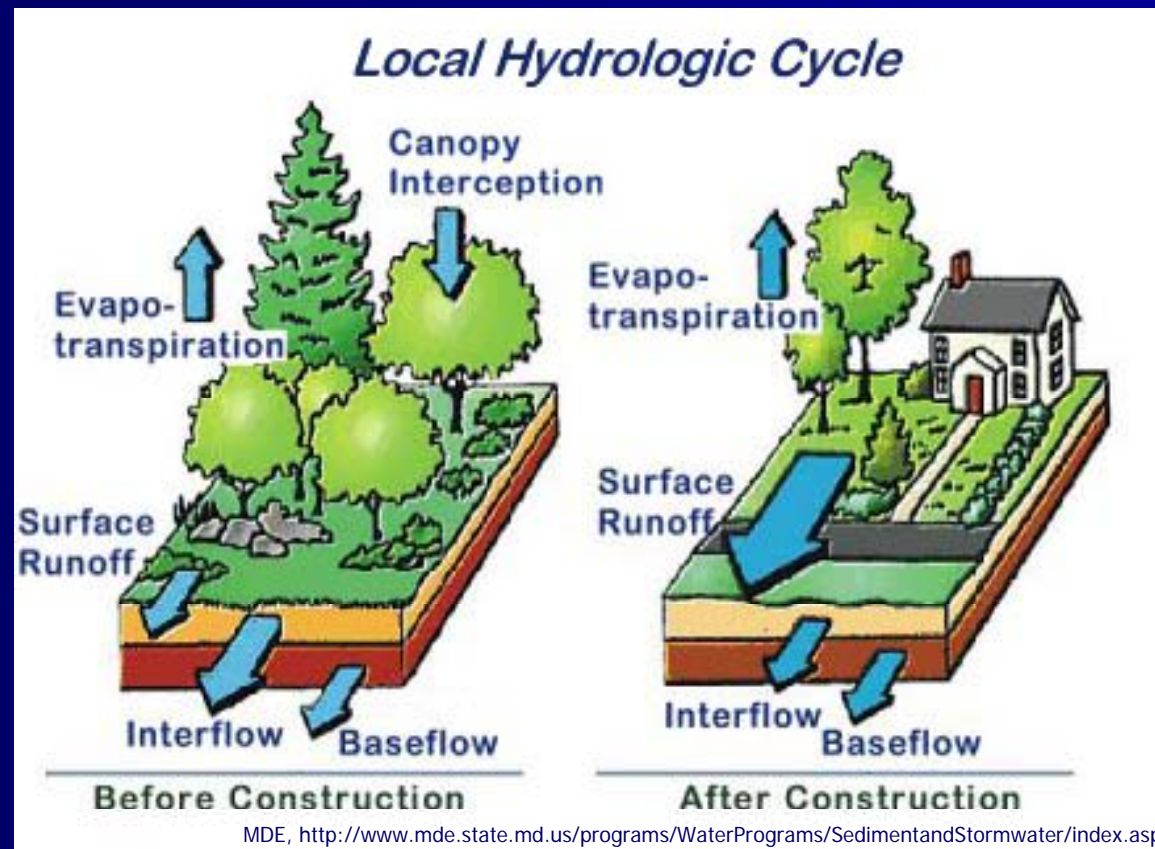
2. Enter the municipal separate storm sewer system (MS4) or is directly discharged to a nearby waterbody...



3. Which can lead to stream degradation and increased pollutants entering waterbodies



Alteration of Hydrologic Cycle

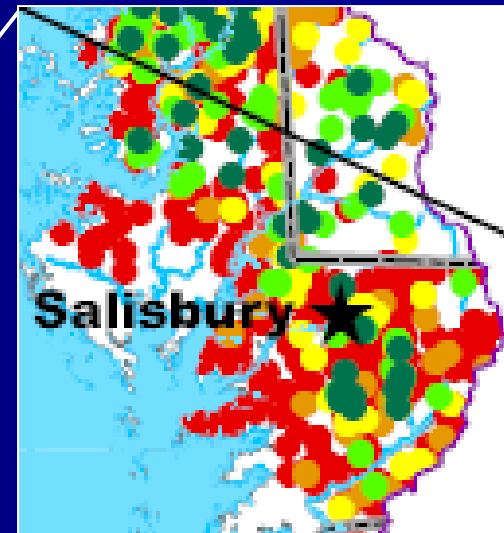
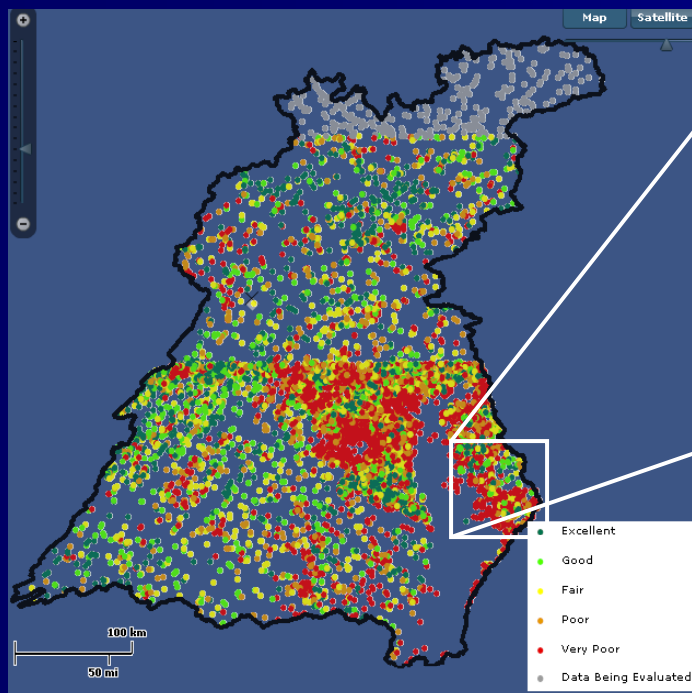


The Chesapeake Bay Watershed

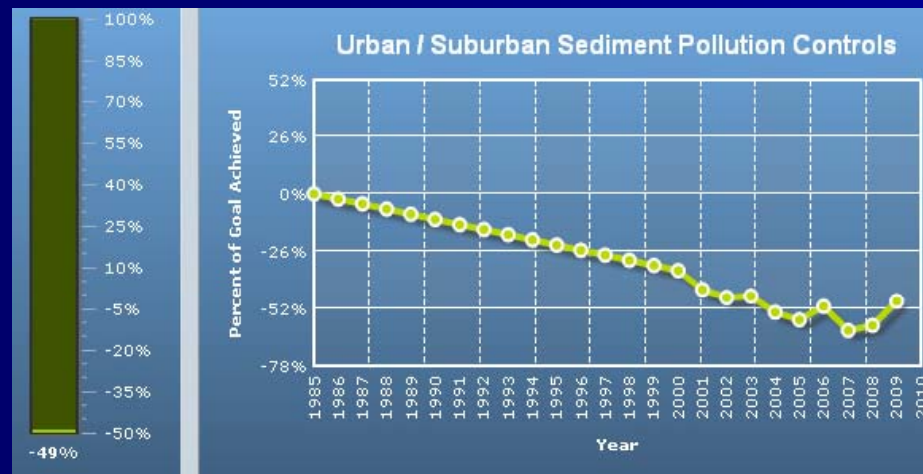
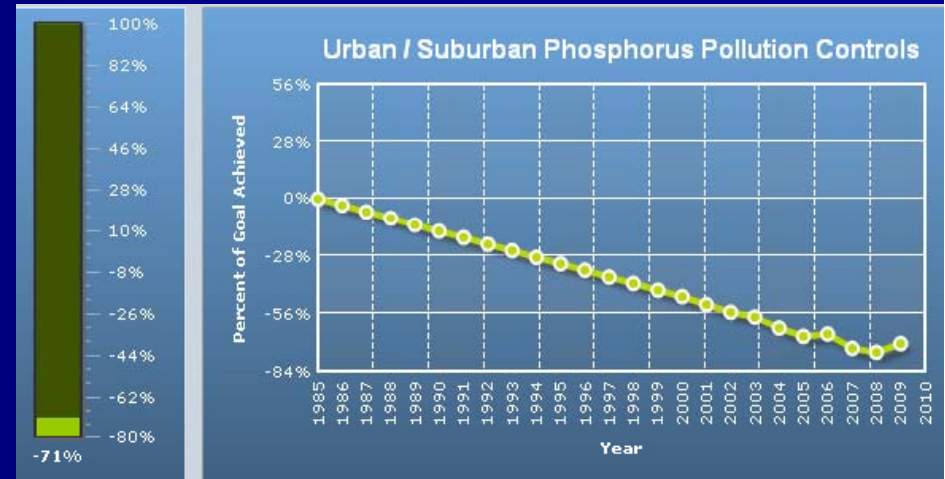
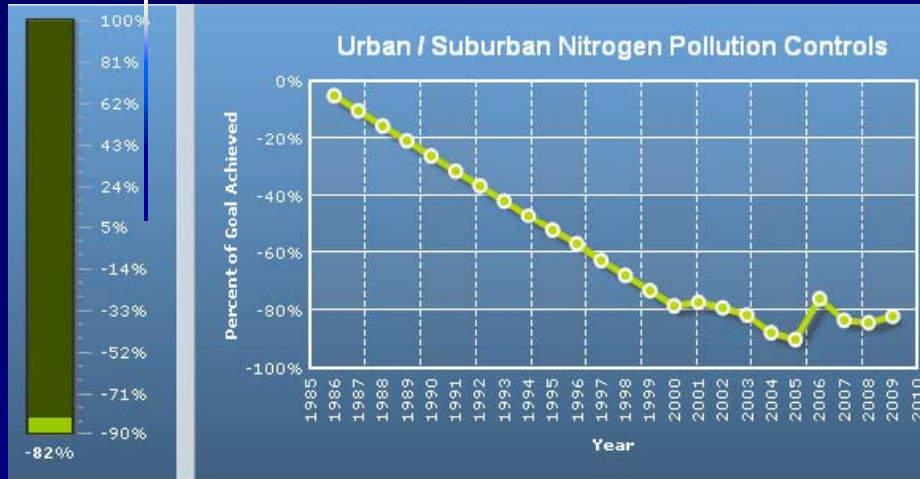
- Over 64,000 square miles of land drain into the Chesapeake Bay or its tributaries
- Major urban areas include:
 - Baltimore, MD
 - Harrisburg, PA
 - DC
 - Annapolis, MD
 - Richmond, VA
 - Hampton Roads, VA (Norfolk-Virginia Beach)



Chesapeake Bay Watershed: Stream Health



Chesapeake Bay Watershed: Stormwater Challenges



Chesapeake Bay Watershed Stormwater Challenges (Cont'd)

From the Office of Inspector General Report (2007)*:

- “New development is increasing nutrient and sediment loads at rates faster than loads are being reduced from developed lands.”
- “To meet the reductions in loads laid out by the jurisdictions, the adaptive management approach of the federally mandated municipal stormwater program needs to be accelerated.”



Photo Credit: Chesapeake Bay
Program www.chesapeakebay.net

**Development Growth Outpacing Progress in Watershed Efforts to Restore the Chesapeake Bay*
<http://www.epa.gov/oig/reports/2007/20070910-2007-P-00031.pdf>

The Relationship between this Stormwater Rulemaking and the Chesapeake Bay TMDL



- The Chesapeake Bay Total Maximum Daily Load (TMDL) sets limits on the amount of nitrogen, phosphorus, and sediment that can be discharged into the Bay and each of its tributaries by different types of pollution sources.
- Stormwater is one of these sources.

The Relationship between this Stormwater Rulemaking and the Chesapeake Bay TMDL (Cont'd)

- Regulatory considerations included in the stormwater rule will help decrease the amounts of nitrogen, phosphorus, sediment, and other pollutants that are found in stormwater.
- Current activities
 - Review of Watershed Implementation Plans (WIPs)
 - Listening Sessions

Preliminary Considerations to Address these Challenges



- Considerations are not mutually exclusive.
- EPA signed a settlement agreement with the Chesapeake Bay Foundation and others promising to take a number of actions to restore and preserve the Chesapeake Bay.

Designate Additional Discharges to be Regulated

- Expanding the number of regulated MS4 dischargers
- Designating additional discharges
- Regulating stormwater discharges that are currently unregulated



Photo Credit: Chesapeake Bay Program www.chesapeakebay.net

Types of Discharges



Require Additional Chesapeake Bay-only MS4 Provisions

- Requirements related to turf management, pesticide usage, fertilizer usage, buffers, etc.



Photo Credit: Chesapeake Bay Program www.chesapeakebay.net

Fertilizer Restrictions in the Chesapeake Bay Watershed

- Phosphorus Restriction: Annapolis, MD
 - limits the use and sale of residential lawn fertilizer to help restore the Bay.
 - applies to all land located in the city limits and all land owned by the city.
 - As of January 1, 2010, city businesses are not allowed to stock phosphorus-containing lawn fertilizers on their shelves.

Fertilizer Restrictions and Water Quality Improvements

- Phosphorus Restriction: Ann Arbor, MI (2007)
 - Limited application timeframes
 - Limits on application sites
 - No phosphorus fertilizers may be used except in a few cases
 - Requires commercial applicators to register with the City and report usage annually
 - Inspections and educational component

Fertilizer Restrictions and Water Quality Improvements (Cont'd)

~Results~

- Study showed that phosphorus levels in the Huron River decreased an average of 28% after the ordinance was adopted.

(Lehman et al. *Reduced River Phosphorus Following Implementation of a Lawn Fertilizer Ordinance*. Lake and Reservoir Management. 2009.)

Establish New and Redevelopment Standards

- Standards for discharges from newly developed and redeveloped sites.
- Examples of existing standards are based on:
 - Minimum storm volume to be retained on site (e.g. first 1", 95th percentile storm event).
 - Limiting total impermeable surface
 - Percent removal of pollutants (e.g. 80% TSS)

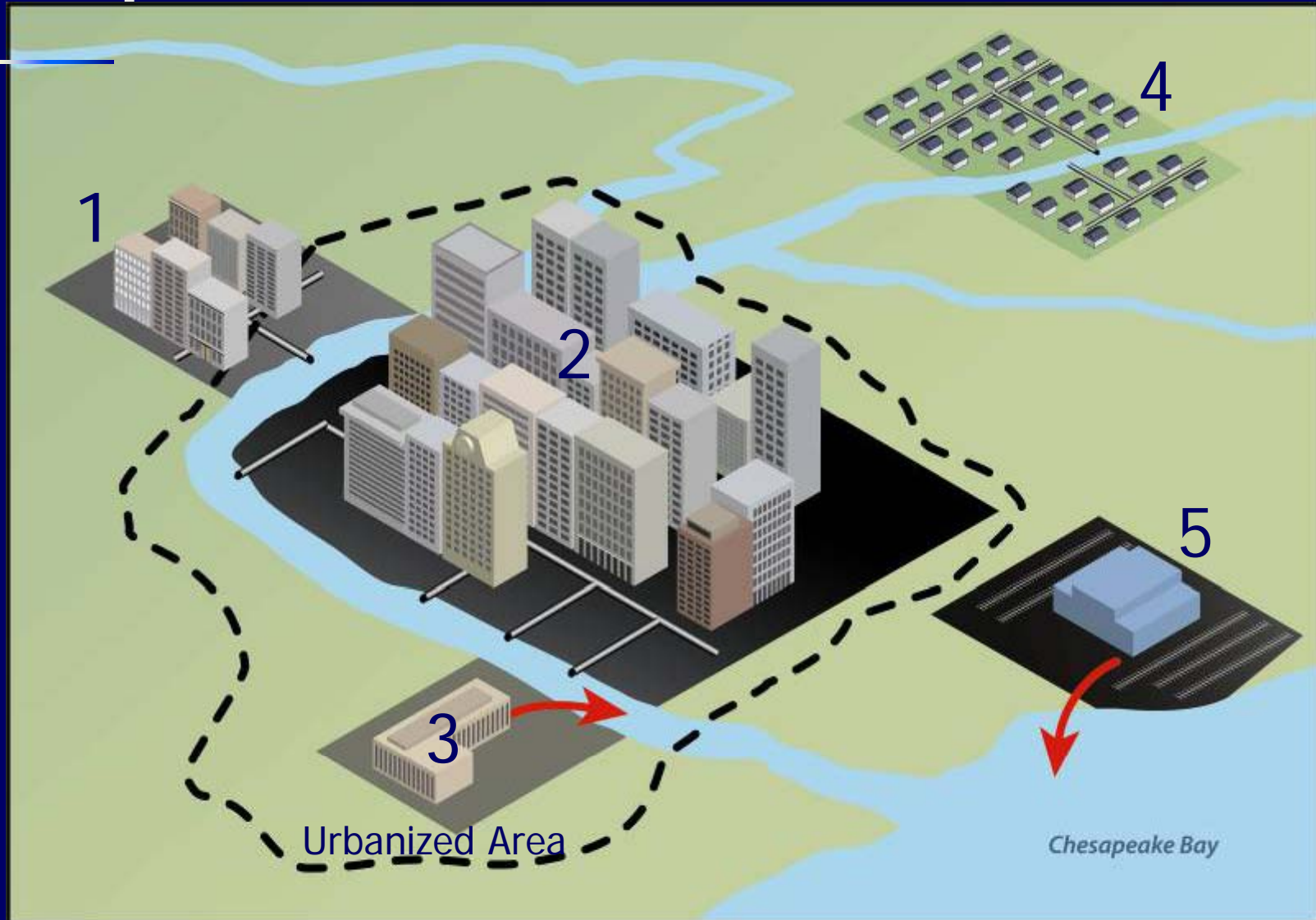


Photo Credit: Chesapeake Bay Program
www.chesapeakebay.net

Examples of 95th Percentile Storm Event in the Chesapeake Bay

City	95 th Percentile Event Rainfall Total (in)	City	95 th Percentile Event Rainfall Total (in)
Washington, DC	1.7	Williamsport, PA	1.4
Baltimore, MD	1.6	Lynchburg, VA	1.5
Salisbury, MD	1.7	Norfolk, VA	1.7
Binghamton, NY	1.2	Richmond, VA	1.7
Elmira, NY	1.2	Romney, WV	1.2
Harrisburg, PA	1.4		

Performance Standard Implementation



Green Infrastructure Approaches Mimic Natural Hydrologic Site Conditions

Infiltration ~ Evapotranspiration ~ Capture & Use



- Protecting areas with natural ecological functions
- Amended soils
- Impervious cover removal
- Bioretention
- Permeable pavements
- Green roofs
- Cisterns & rain barrels
- Trees & expanded tree boxes
- Reforestation & restoration
- Infill & redevelopment
- Parking & street designs
- Water conservation

Examples of Green Infrastructure

Vegetated Buffers



Pocket Wetlands



Rain Barrels



Green Walls



Grass Swales



Parking Lot Infiltration Areas



Green Roofs



Rain Gardens



Permeable and Porous Pavements



Planters



Bioinfiltration



Curb Extensions



Green Infrastructure Benefits

- Cleaner water
- Stable hydrology/baseflow maintenance
- Reduced flooding
- Climate change mitigation and adaptation
- Cleaner air
- Reduced urban temperatures
- Jobs creation
- Water supply
- Energy savings
- Cost savings
- Habitat protection
- Community benefits (recreation, public health)

Require Retrofitting of Stormwater Management Controls with Improved Stormwater Control Measures

- Consider stormwater requirements for already developed areas
- Make retrofitting structural stormwater controls mandatory for existing development where water quality impairments exist



Schedule

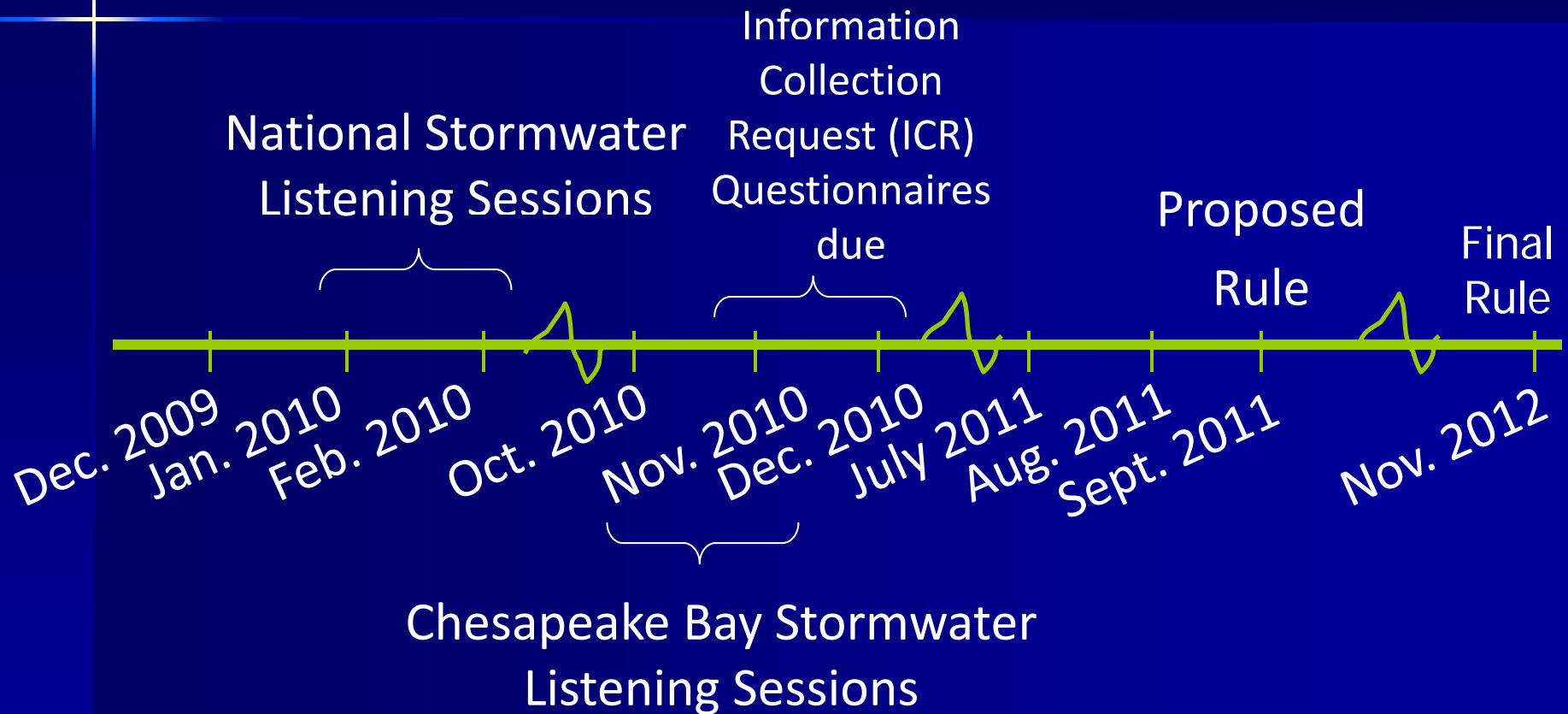




Photo Credit: NOAA's American Coastlines Collection. www.photolib.noaa.gov

Reminders:

- “Virtual Listening Session” Webcast on November 16, 2010
- Submit written comments today in person or to www.regulations.gov, Docket ID No. EPA-HQ-OW-2009-0817 by December 7, 2010
- www.epa.gov/npdes/stormwater/rulemaking
- Contact: Rachel Herbert
202-564-2649; herbert.rachel@epa.gov