Learning from Challenges Faced by Others – Reflections for Ohio MS4s

OHIO STORMWATER CONFERENCE
MAY 10, 2018

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Biohabitats

CHESAPEAKE BAY TMDL

Established by U.S. EPA in 2010

Encompasses a 64,000-square-mile watershed

Set annual Bay watershed limits:

—185.9 million pounds of nitrogen

—12.5 million pounds of phosphorus

—6.45 billion pounds of sediment per year

Limits are further divided by jurisdiction and sector

Accountability framework includes the WIPs and two-year milestones

Designed to ensure all pollution control measures needed to fully restore the Bay by 2025

MARYLAND MS4 PROGRAMS

General Requirements

—Public Education and Outreach

—Public Involvement and Participation

—Illicit Discharge Detection and Elimination

—Construction Site Stormwater Runoff Control

—Post Construction Stormwater Management

—Pollution Prevention and Good Housekeeping

Chesapeake Bay Restoration

—Restore 20% of existing developed lands that have little or no stormwater management

—Address the water quality goals of the Chesapeake Bay TMDL by 2025

—Demonstrate progress toward meeting local stormwater wasteload allocations (WLAs)

MONTGOMERY COUNTY, MARYLAND

507 square miles

Over 1,000,000 residents

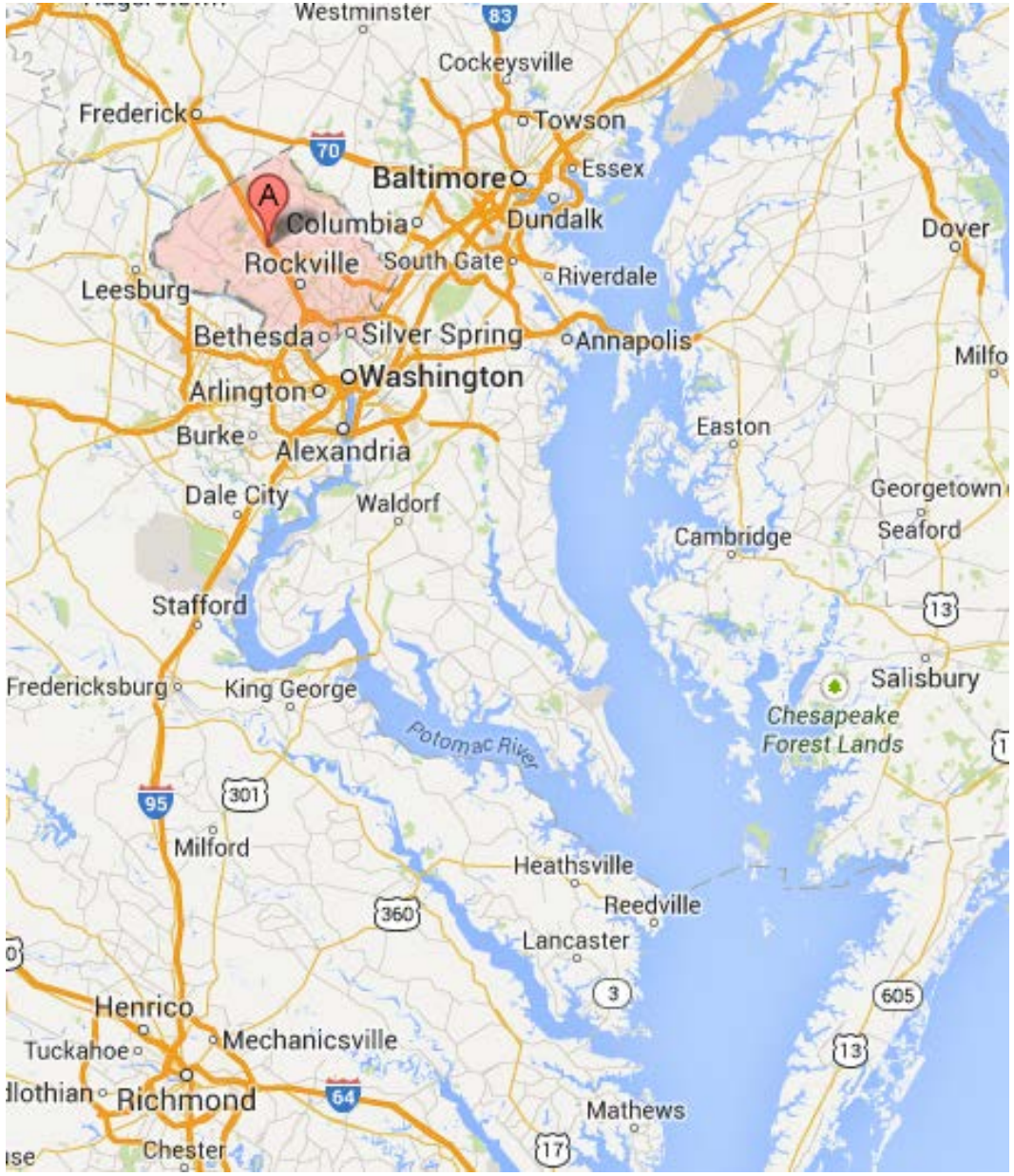
Near Washington DC & Baltimore

Incorporated cities –
Rockville, Gaithersburg

Unincorporated locales –
Bethesda, Silver Spring, Germantown

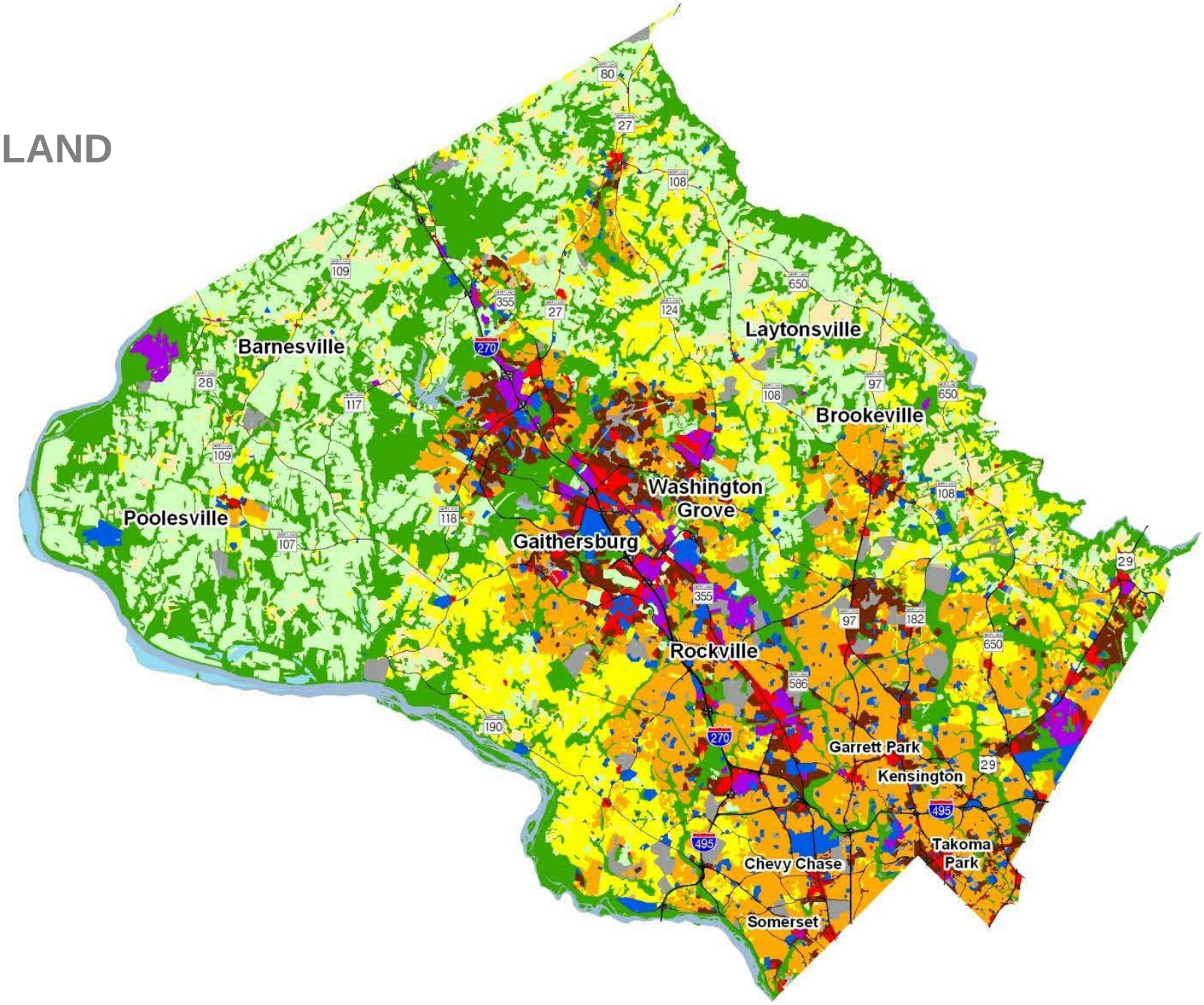
About 12% imperviousness

Over 1,500 miles of streams

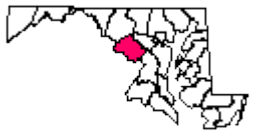


MONTGOMERY COUNTY, MARYLAND

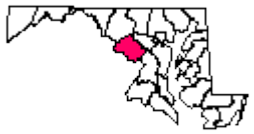
2010 Land Use / Land Cover



MONTGOMERY COUNTY, MARYLAND

County	Area (sq mi)	Population (2013)
 Montgomery County	507	1,016,677
 Cuyahoga County	1,246	1,263,154
 Franklin County	543	1,212,263
 Hamilton County	413	804,520

MONTGOMERY COUNTY, MARYLAND

County	
	Montgomery County	• 1 Phase 1 MS4 Permit with co-permittees (MCPS, 5 towns, 1 village) • 3 Phase II MS4 Permits
	Cuyahoga County	• 58 Small MS4 General Permits • 1 Individual MS4 Permit
	Franklin County	• 24 Small MS4 General Permits
	Hamilton County	• 11 Small MS4 General Permits

MONTGOMERY COUNTY, MARYLAND

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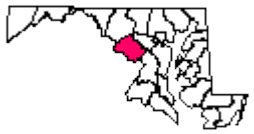 Montgomery County	• 1 Phase 1 MS4 Permit with co-permittees (MCPS, 5 towns, 1 village) • 3 Phase II MS4 Permits
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MONTGOMERY COUNTY'S "STORMWATER PERMIT"

Issued by Maryland Department of the Environment

NPDES MS4 Phase 1 permit

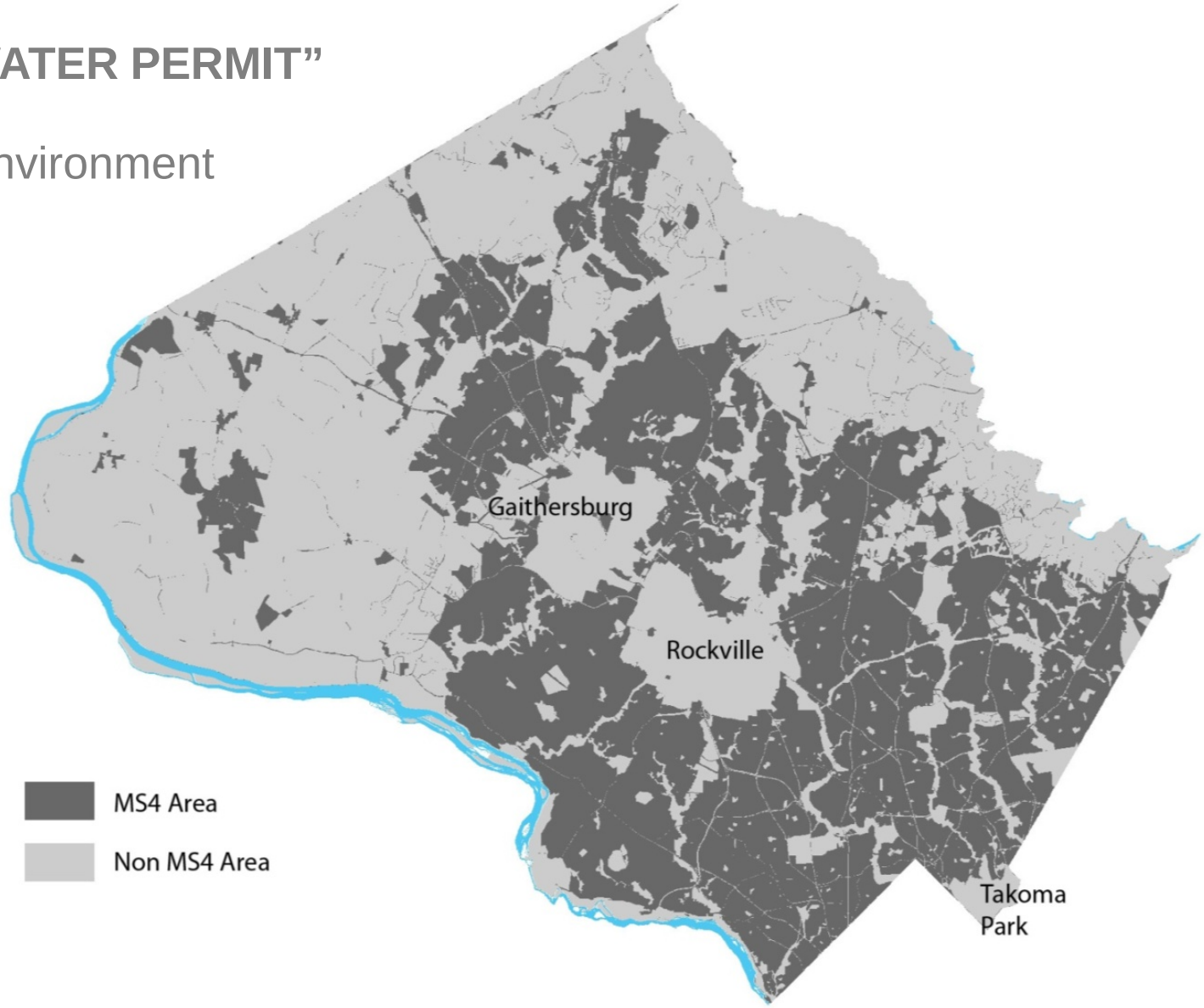
Permit term of five years

First permit issued in 1996

Third permit issued in 2010

Applies to entire County, including public schools, excludes agricultural lands and areas covered under other MS4 permits

Model for subsequent "3rd generation" permits in Maryland



REQUIREMENTS FOR CURRENT STORMWATER PERMIT

Accelerate watershed restoration

Achieve reductions for Total Maximum Daily Loads (TMDLs)

Use Environmental Site Design (ESD) to the maximum extent practicable (MEP)

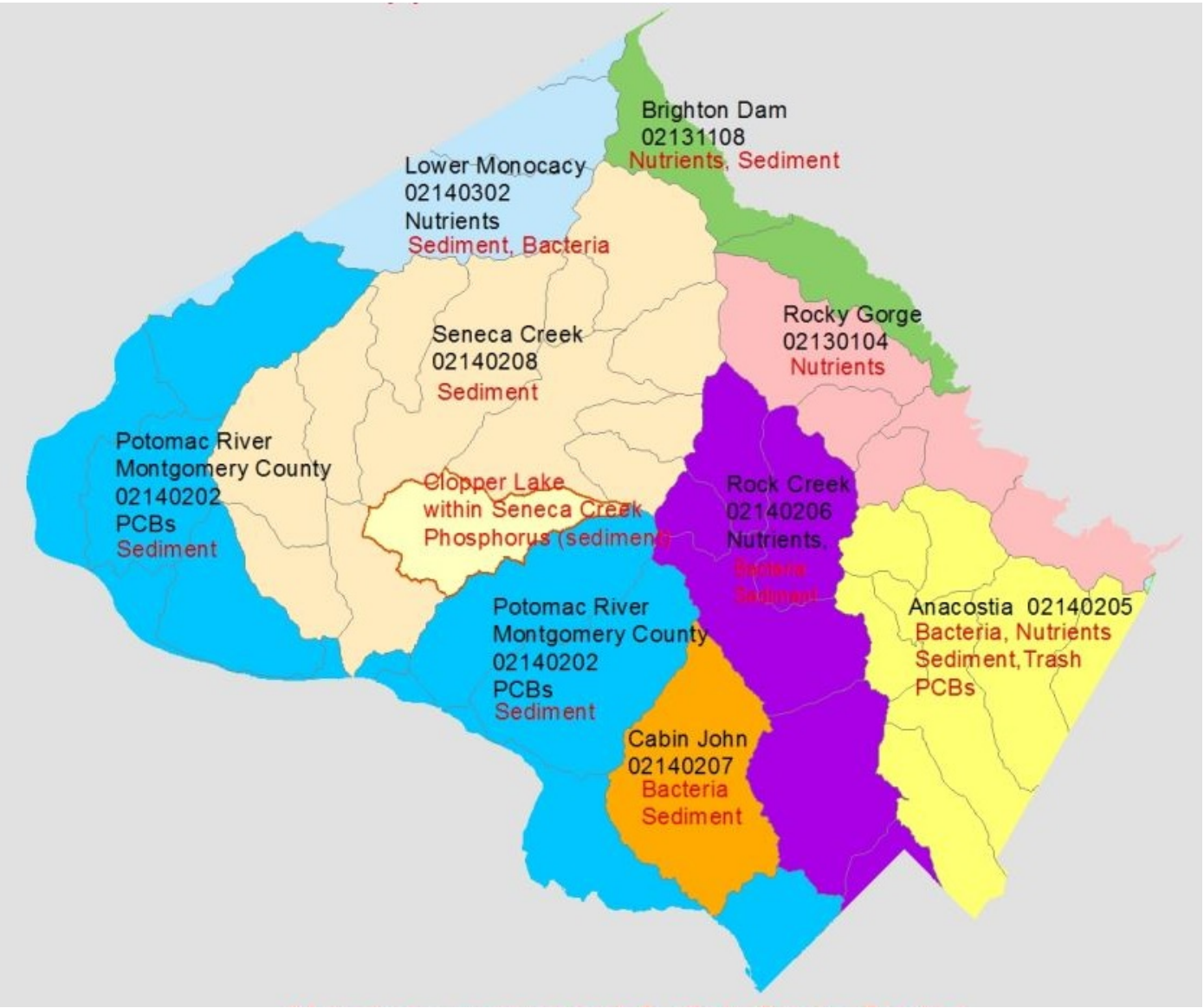
In addition to assuring public input and stewardship opportunities, interagency coordination, annual reporting, source identification, discharge characterization, monitoring, stormwater facility inspection and maintenance enforcement, and illicit discharge detection and elimination

ACCELERATING WATERSHED RESTORATION

Restore 20% of existing impervious area that is not currently treated

Description	Area (acres)	Area (sq mi)
Total County Area	324,552	507
Total Impervious Surface	35,965	56.2
County Area Subject to Stormwater Permit	138,649	216.6
Impervious Cover Subject to Stormwater Permit	25,119	39.2
County MS4 Area with MEP Stormwater Management	6,235	9.7
Under/Uncontrolled Impervious Area Subject to MS4 Permit	18,884	29.5
Impervious Area to Restore During Current Permit Cycle	**3,777**	**5.9**

ACHIEVING REDUCTIONS FOR TMDLS



Montgomery County watersheds on Maryland's Impaired List
EPA approved TMDLs shown in red
(January 2013)

USING ENVIRONMENTAL SITE DESIGN (ESD) TO THE MEP

Preserve natural features

Better site planning and design

Minimize development footprint

Mimic natural hydrology

Slow down and break up runoff

Infiltrate and evapotranspire

Small scale stormwater management practices distributed across sites

Typical Centralized Detention Pond

Small Scale, Integrated ESD Practices

COUNTY PROGRESS TO DATE

Departmental restructuring

Increased internal staff capacity

Dedicated funding source

MS4 program management consultant

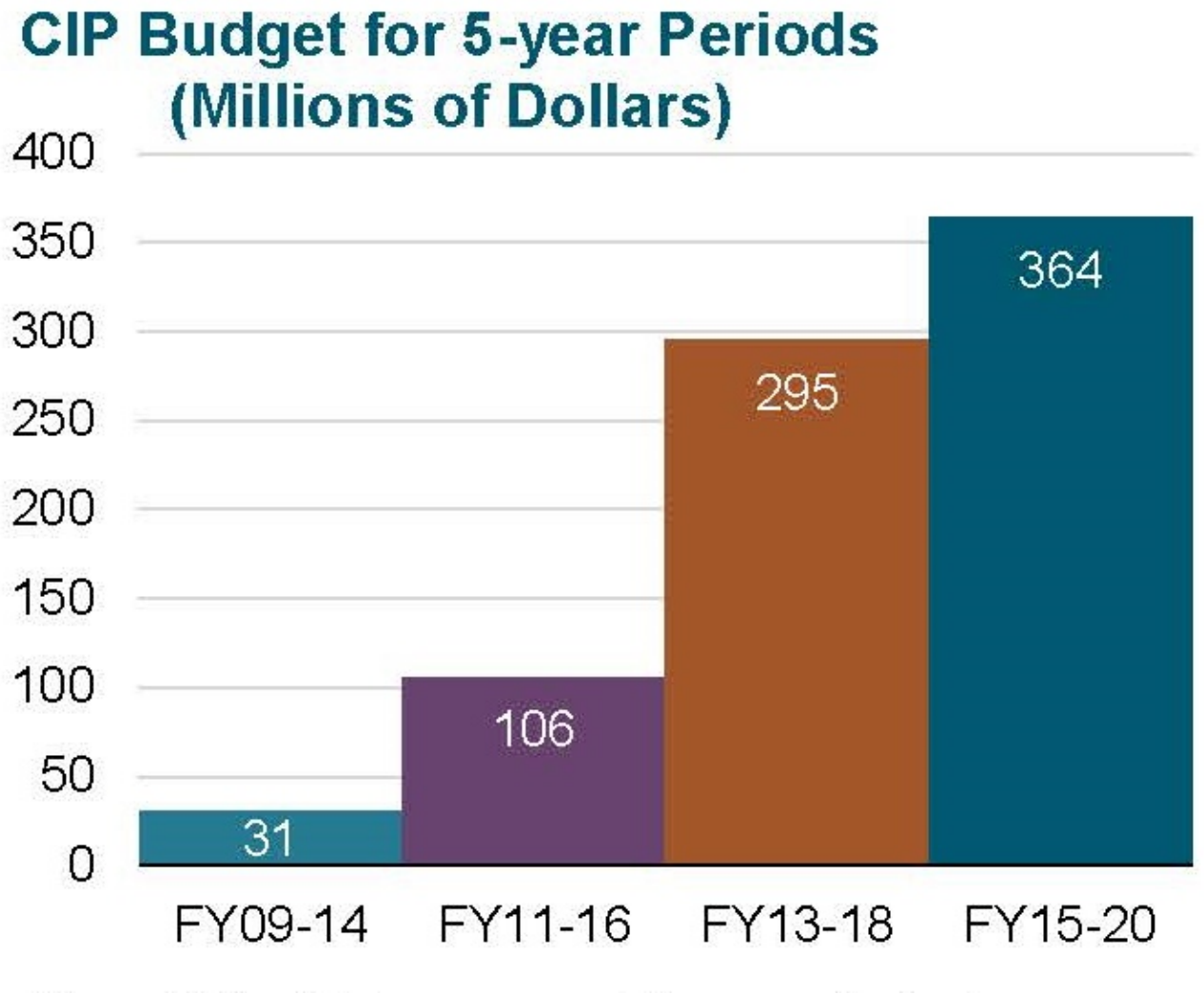
Eight on-call “WREs”
(water resource engineering teams)

Six on-call construction contractors

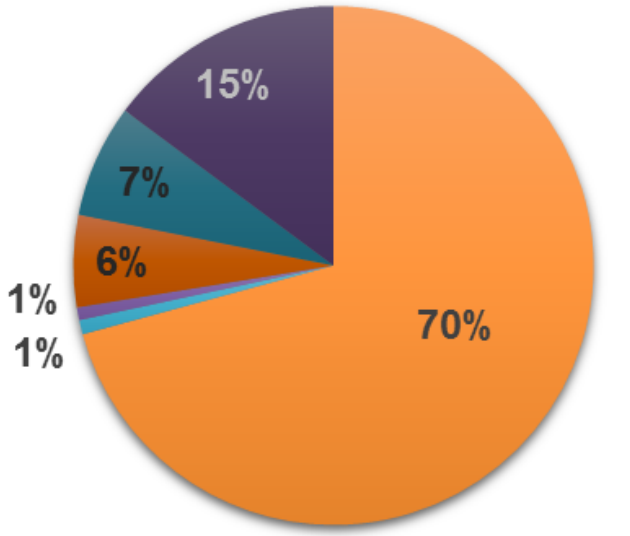
Maintenance contractors

Three pay-for-performance contracts

160+ projects in design and construction

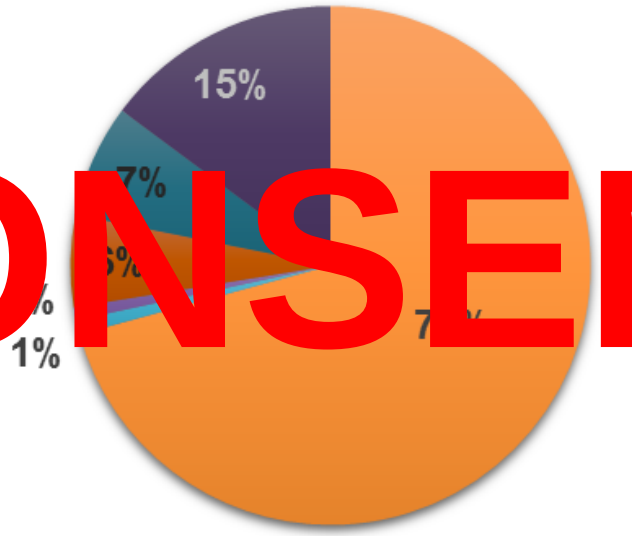


COUNTY PROGRESS



		Complete	In-Construction	In-Design	Total
Capital Improvement Projects		**663.6**	**152.2**	**2268.8**	**3084.6**
	Stream Restoration	88.7	57.5	510.2	**656.4**
	Green Streets	19.1	0.6	91	**110.7**
	Government Facilities	3.2		34.1	**37.3**
	Stormwater Retrofits	552.6	94.1	1633.5	**2280.2**
RainScapes and WQPC Credits		**38.8**			**38.8**
	RainScapes	15.8			**15.8**
	WQPC	23.0			**23.0**
Complementary		**6.1**	**19.7**	**8.5**	**34.3**
	Reforestation	6.0	19.7	8.5	**34.2**
	Impervious Surface Removal	0.1	0.03		**0.1**
Management Programs		**248.6**			**248.6**
	Street Sweeping	162.6			**162.6**
	Catch Basin Cleaning	86.0			**86.0**
New Development and Redevelopment		**305.2**			**305.2**
	MCPS	12.8			
	M-NCPPC	3.3			
	Private	53.4			
	New BMPs Treating Existing Impervious	235.7			
Agency Partnerships		**463.5**	**25.5**	**153.3**	**642.3**
	ICC	252.7	16.9	58.8	**328.4**
	WSSC	23.2	8.6	94.5	**126.3**
	DGS	0.9			**0.9**
	MCPS	0.7			**0.7**
	DOT	50.0			**50.0**
	USACE	136.0			**136.0**
Total		**1725.8**	**197.4**	**2430.6**	**4353.8**

COUNTY PROGRESS



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- New Development and Redevelopment
- Agency and Department Partnerships

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	Impervious Surface Removal	0.1	0.03		**0.1**
Management Programs		**24**			**2**
	Street Sweeping	162			**1.6**
	Catch Basin Cleaning	86.6			
New Development and Redevelopment		**305.2**			**305.2**
	MCPS	12.8			
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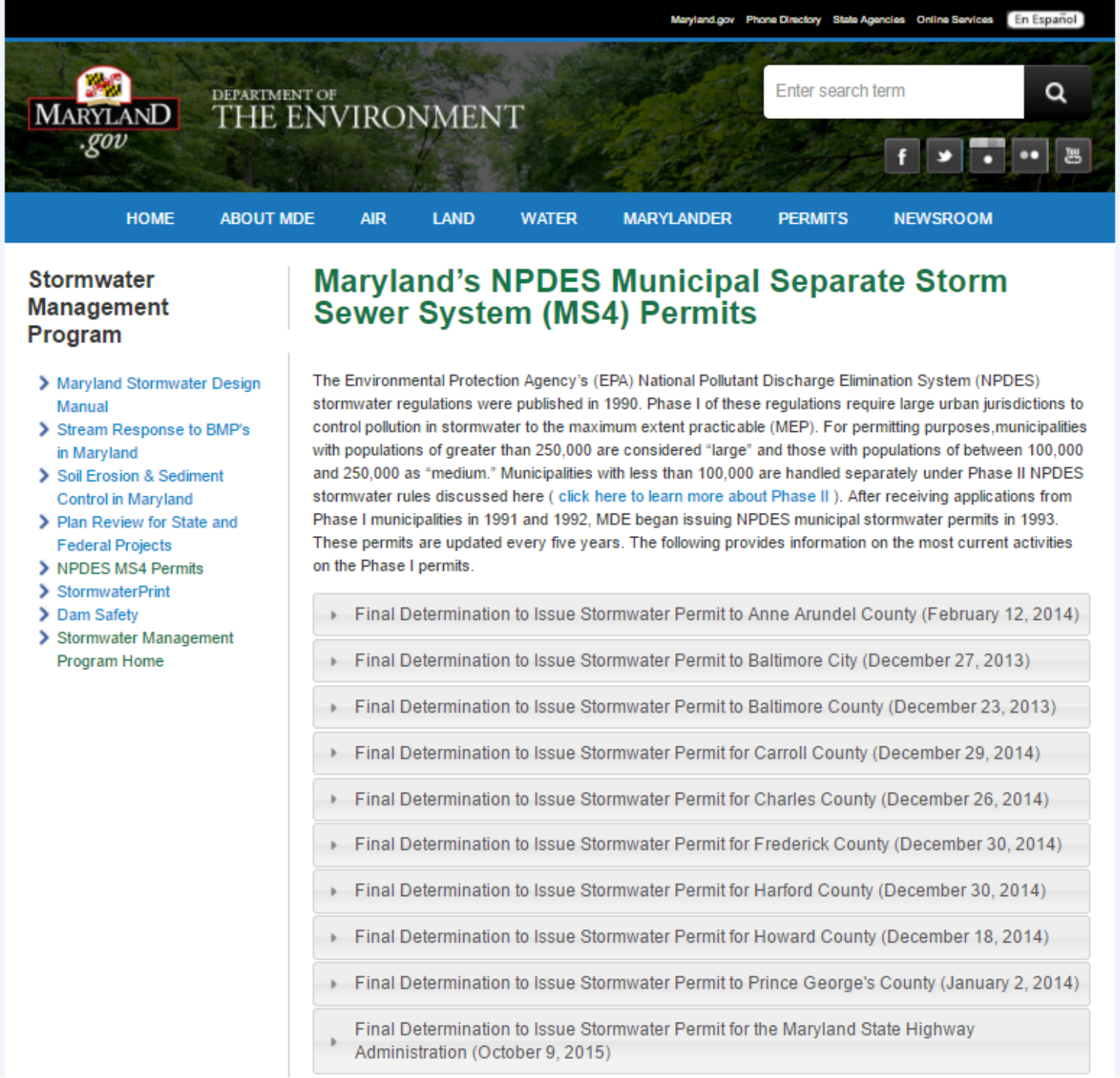
CONSENT DECREE

IT'S NOT JUST MONTGOMERY COUNTY



IT'S NOT JUST MONTGOMERY COUNTY

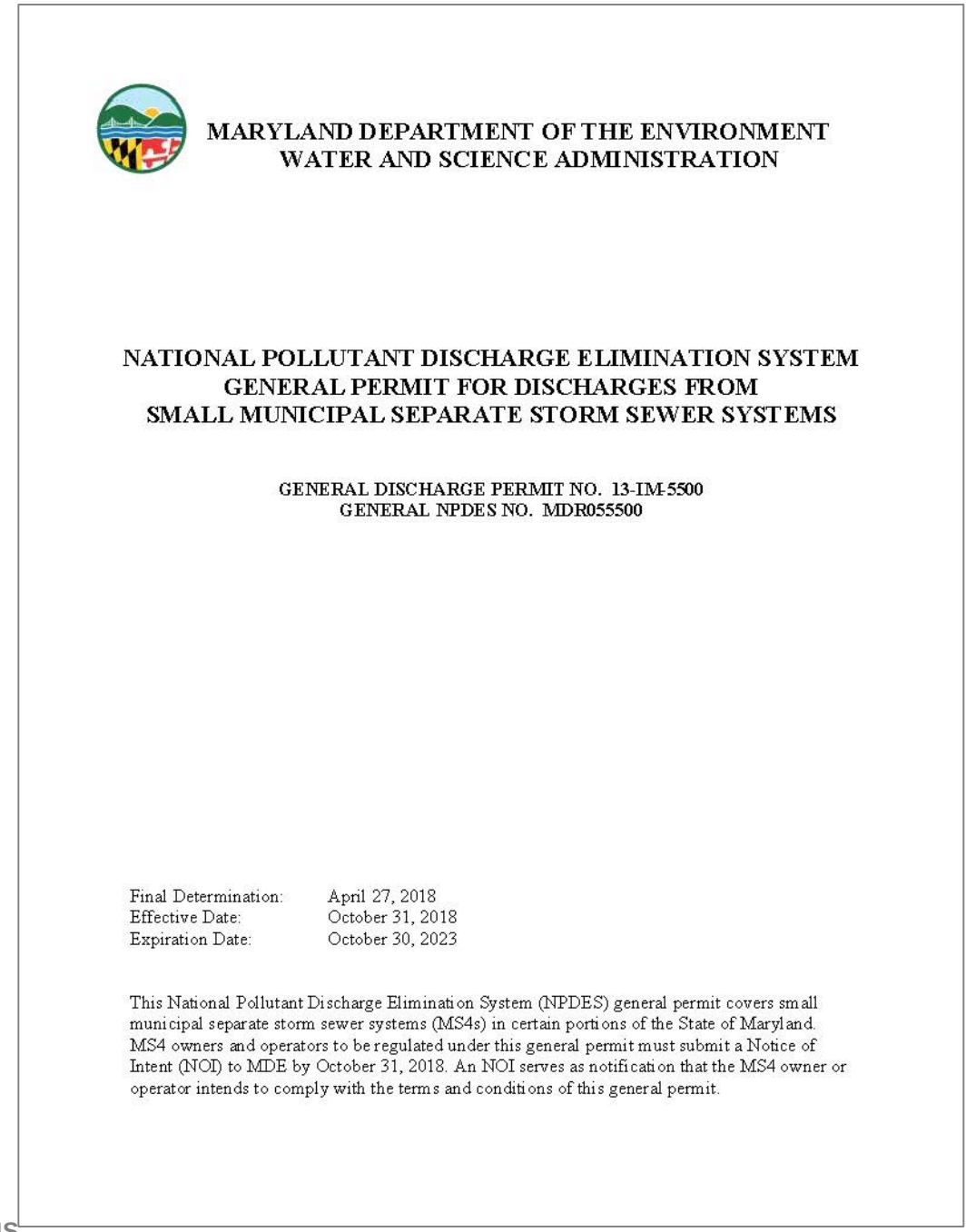
Maryland's NPDES Municipal Separate Storm Sewer System (MS4) Phase II General Permits

Minimum Control Measures

Chesapeake Bay Restoration and Meeting Total Maximum Daily Loads

—commence restoration efforts for twenty percent of existing developed lands that have little or no stormwater management

—perform watershed assessments, identify water quality improvement opportunities, secure appropriate funding, and develop an implementation schedule to show the twenty percent impervious area restoration requirement will be achieved by 2025



MARYLAND DEPARTMENT OF THE ENVIRONMENT
WATER AND SCIENCE ADMINISTRATION

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
GENERAL PERMIT FOR DISCHARGES FROM
SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS

GENERAL DISCHARGE PERMIT NO. 13-IM-5500
GENERAL NPDES NO. MDR055500

Final Determination: April 27, 2018
Effective Date: October 31, 2018
Expiration Date: October 30, 2023

This National Pollutant Discharge Elimination System (NPDES) general permit covers small municipal separate storm sewer systems (MS4s) in certain portions of the State of Maryland. MS4 owners and operators to be regulated under this general permit must submit a Notice of Intent (NOI) to MDE by October 31, 2018. An NOI serves as notification that the MS4 owner or operator intends to comply with the terms and conditions of this general permit.

CHALLENGES FROM THE BEGINNING

Jurisdictional buy-in

Internal program capacity

External capacity – design and construction

Permitting agencies capacity

Procurement process

Design – permitting – construction timeline

Untested and “young” technologies

Stakeholder concerns (private property owners, public scrutiny)

Future maintenance burden

$$

HERE'S HOW MARYLAND MS4S ARE SUCCEEDING

They are taking a **watershed approach** –
applying a **wide range of management practices,**
while relying on **alternative delivery mechanisms**
and **external partnerships,**
to implement projects that will be evaluated through
robust **monitoring and assessment programs.**

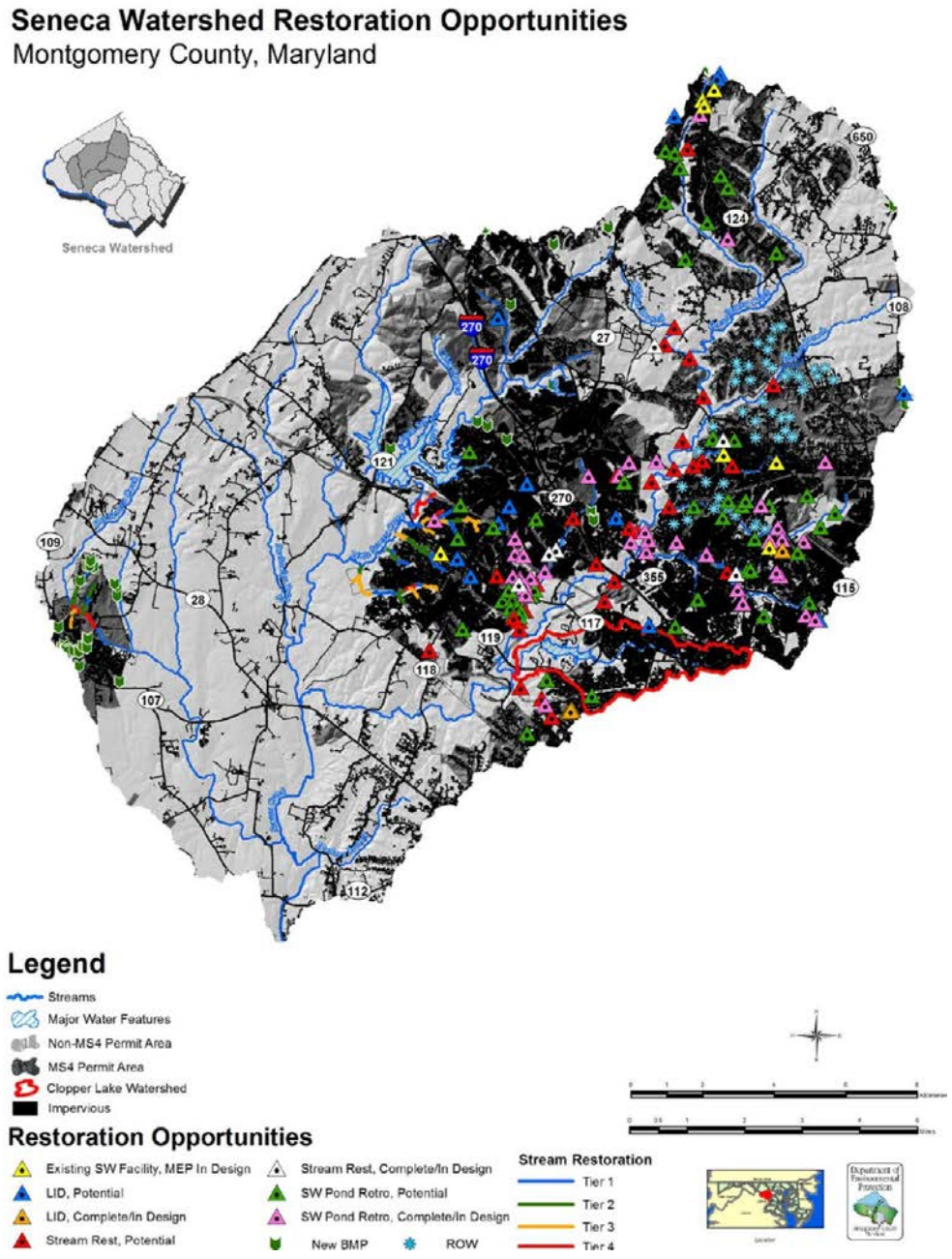
WATERSHED PLANNING

Identifies stormwater management projects, watershed restoration projects and programmatic actions

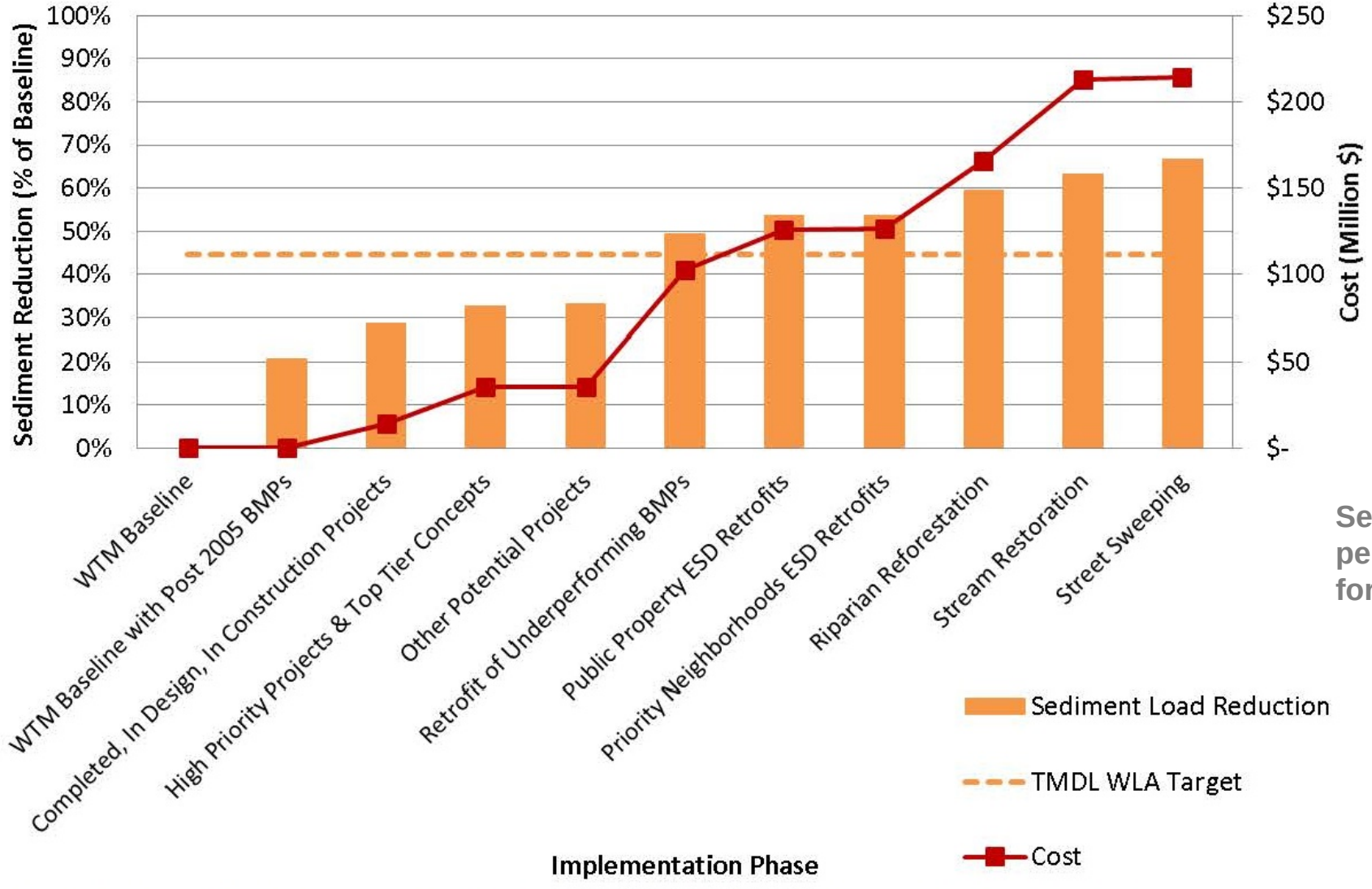
Estimates potential pollutant load reduction

Determines ability to meet applicable TMDLs and watershed restoration requirements

Provides a schedule and cost estimate



WATERSHED PLANNING



Sediment reduction per restoration implementation phase for Seneca Creek watershed

QUESTIONS FOR DISCUSSION

Take a watershed approach

—What are the drivers for watershed planning? How will projects be implemented? How can the watershed plan output facilitate project implementation?

Apply a wide range of management practices

—What mix of projects will provide the most benefit? Are you considering projects at a variety of scales?

Explore alternative delivery mechanisms

—Have you streamlined permitting? Have you streamlined procurement? Are you entering a race to the bottom?

Nurture external partnerships

—Are the local NGOs your friend or foe? Have you built partnerships with those who have common interests?

Develop robust monitoring and assessment programs

—Are you monitoring the BMP? Or the improved health of the receiving waters?

MANAGEMENT PRACTICES

Green Infrastructure

Rainwater harvesting

Rainwater interception

Functional landscapes and conveyance

Green parks and public spaces

Outfall treatment

Riparian corridor restoration

MANAGEMENT PRACTICES

Riparian Corridor Restoration

MANAGEMENT PRACTICES

Outfall Restoration

BEFORE

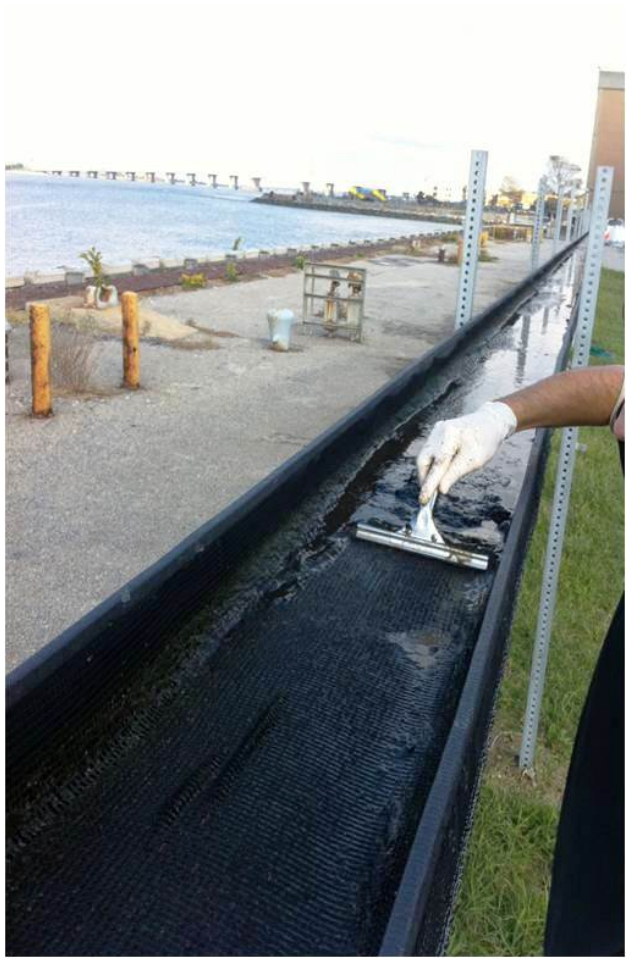
AFTER

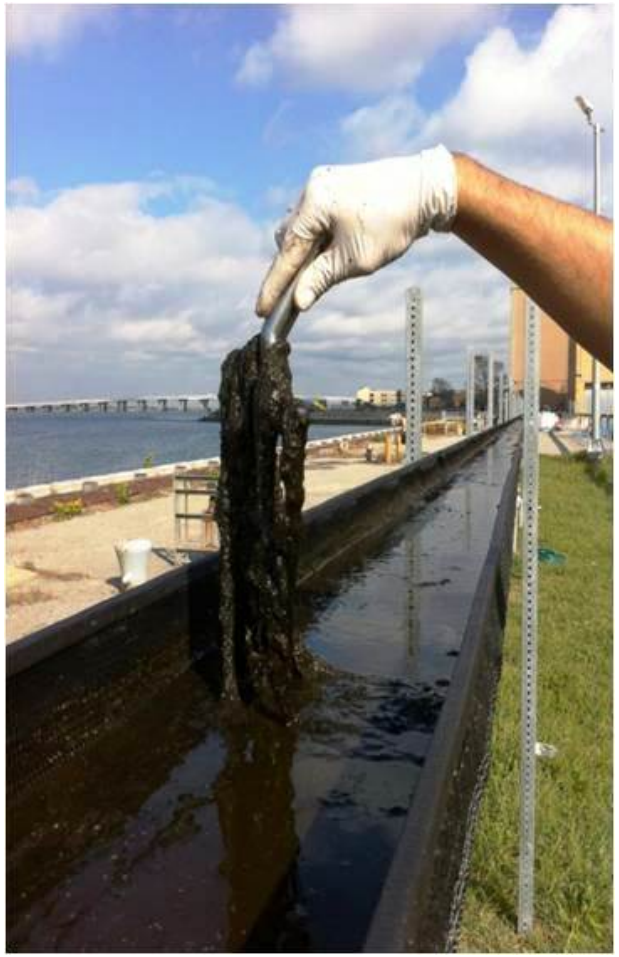
MANAGEMENT PRACTICES

Floating Wetlands

MANAGEMENT PRACTICES

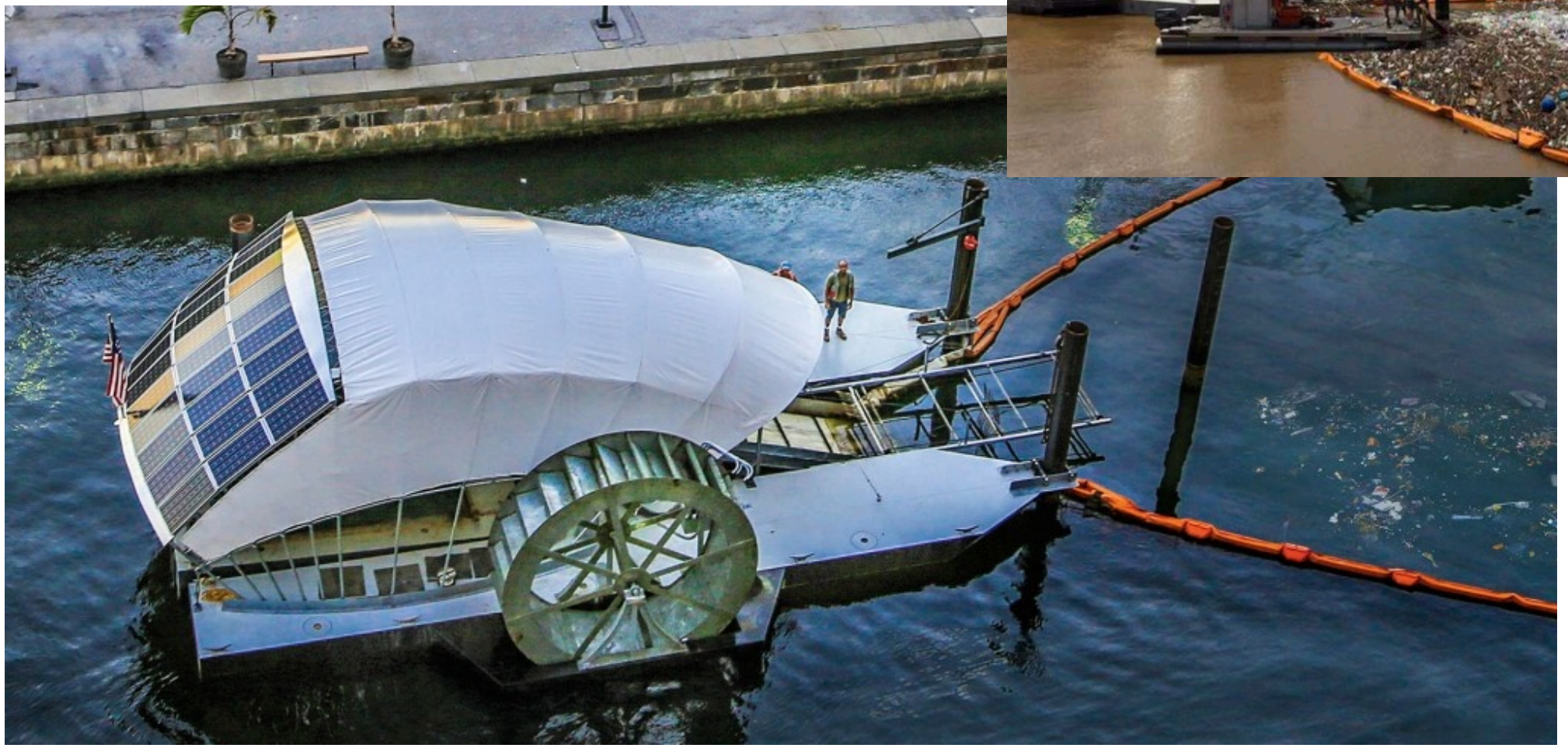
Algal Turf Scrubbers





MANAGEMENT PRACTICES

Mr. Trash Wheel



MANAGEMENT PRACTICES

U.S. EPA Chesapeake Bay Program “Expert Panels”

Urban Stormwater Retrofits

Urban Stream Restoration

Urban Nutrient Management

Urban Street Sweeping

Enhanced Erosion and Sediment Control

Urban Filter Strips

Floating Treatment Wetlands

Illicit Discharge Detection

Shoreline Management

Crediting Residential BMPs

https://www.chesapeakebay.net/who/group/urban_stormwater_workgroup

Recommendations of the Expert Panel to Define
Removal Rates for
Individual Stream Restoration Projects

Joe Berg, Josh Burch, Deb Cappuccitti, Solange Filoso, Lisa Fraley-McNeal, Dave Goerman, Natalie Hardman, Sujay Kaushal, Dan Medina, Matt Meyers, Bob Kerr, Steve Stewart, Bettina Sullivan, Robert Walter and Julie Winters

Accepted by Urban Stormwater Work Group: **February 19, 2013**
Approved by Watershed Technical Work Group: **April 5, 2013**
Final Approval by Water Quality Goal Implementation Team: **May 13, 2013**
Test-Drive Revisions Approved by the Expert Panel: **January 17, 2014**

Prepared by:
Tom Schueler, Chesapeake Stormwater Network
and
Bill Stack, Center for Watershed Protection

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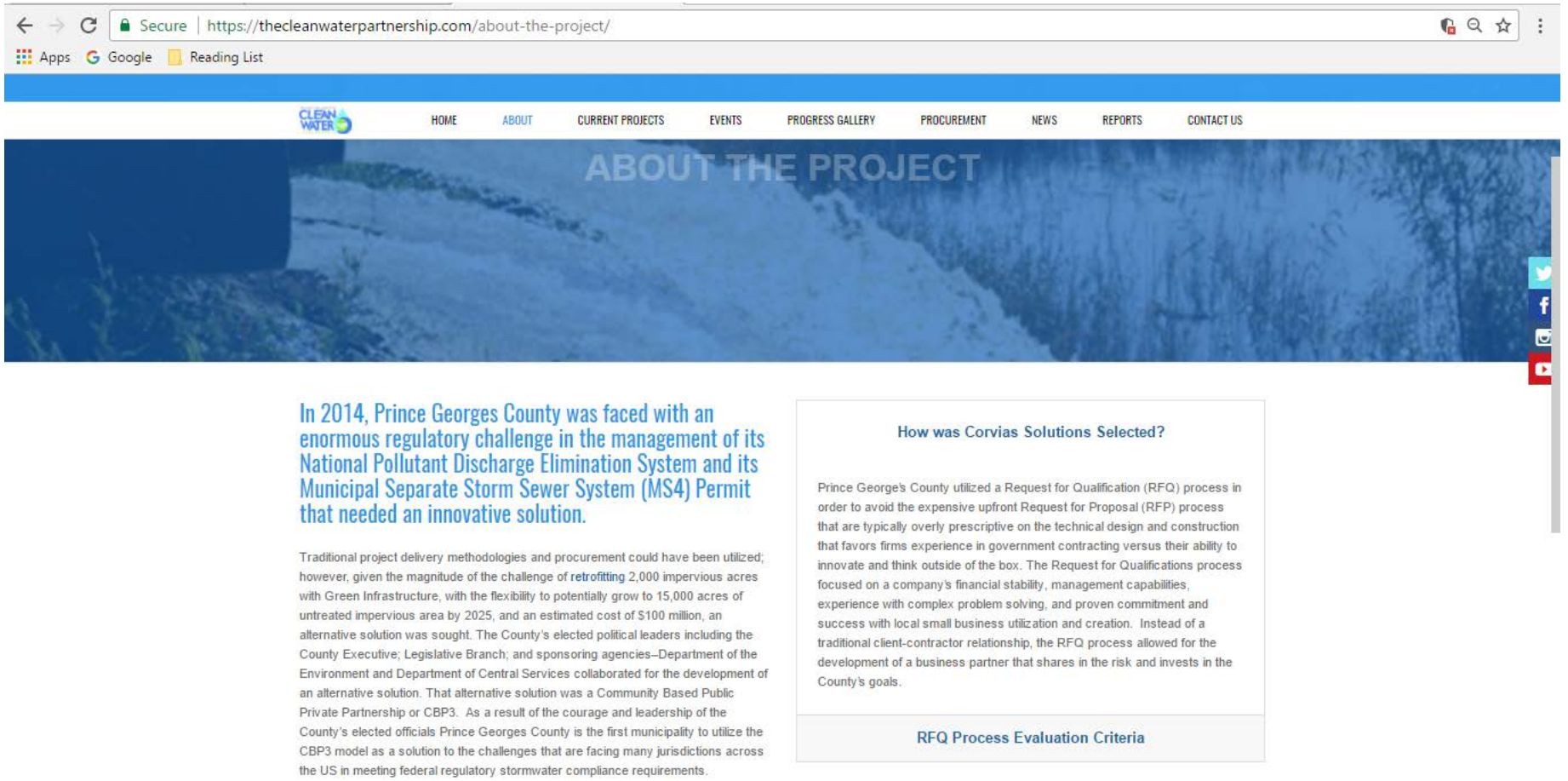
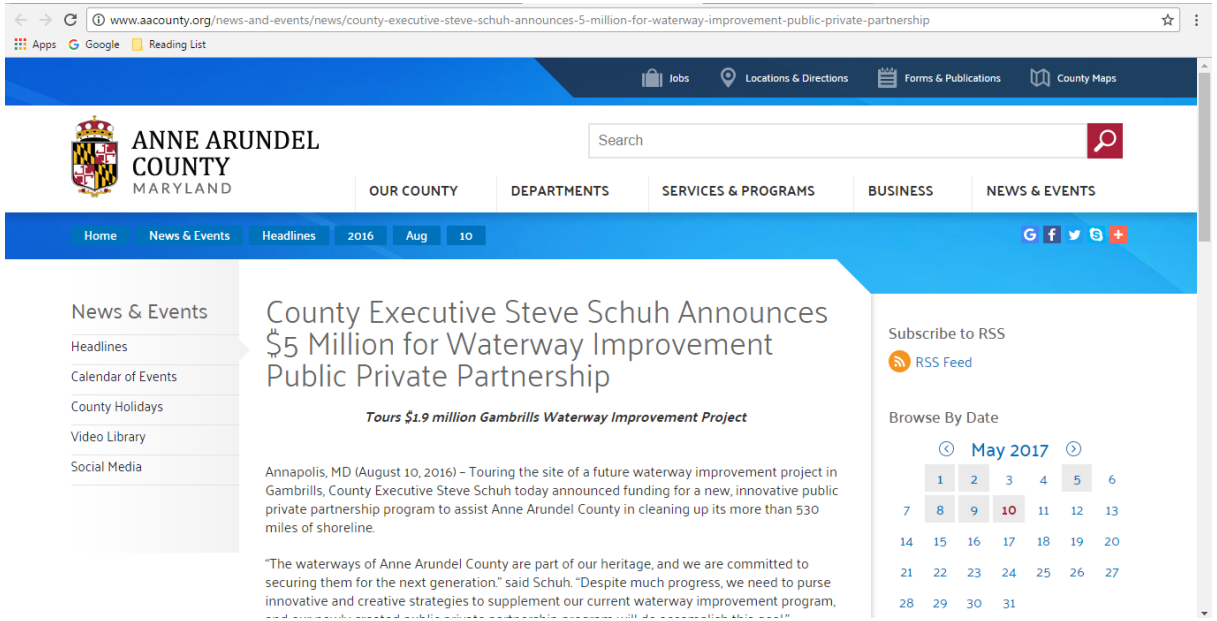
ALTERNATIVE DELIVERY

Prince George's County: Public-Private Partnership



ALTERNATIVE DELIVERY

Anne Arundel County: Pay for Performance



Capital Gazette

News / Government

First water quality partnership signed under new Schuh initiative

County Executive Steve Schuh surveys, a watershed improvement project in Gambrills. (Amanda Yeager / Capital Gazette)

By Amanda Yeager · Contact Reporter

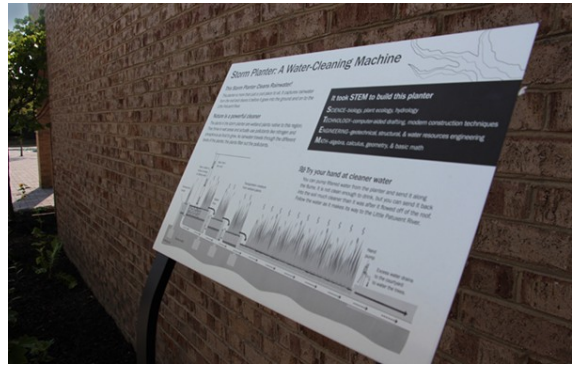
MAY 5, 2017, 12:42 PM

Anne Arundel County is contracting with the private sector to strengthen water quality protections for the Severn Run, Patapsco and Patuxent waterways, County Executive Steve Schuh announced Friday.

Schuh said the county has signed a $3.8 million agreement with Resource Environmental Solutions, a national firm with a regional office in Odenton, that will pay for restoration of 2,500 linear feet of stream

ALTERNATIVE DELIVERY

Howard County: Design-Build



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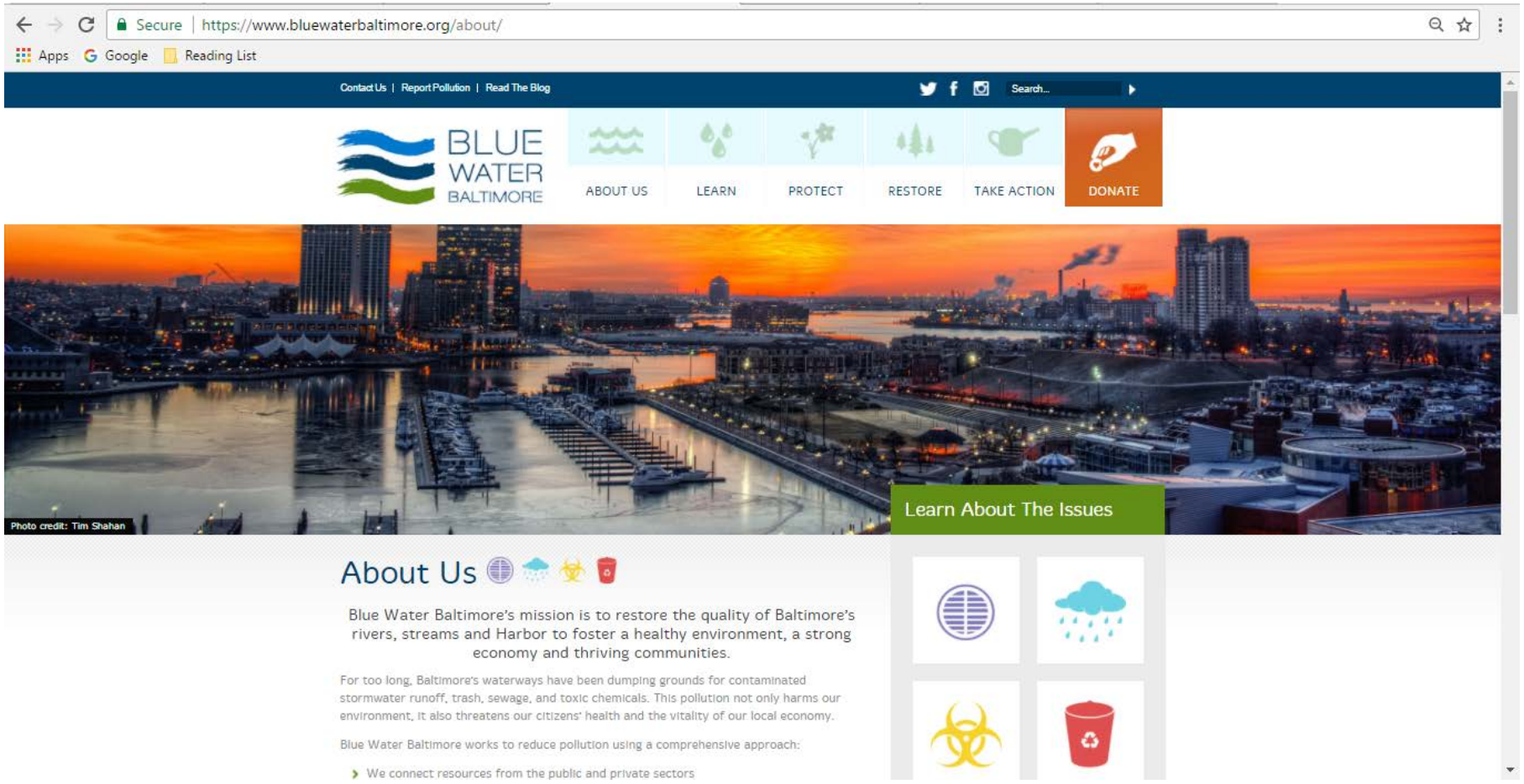
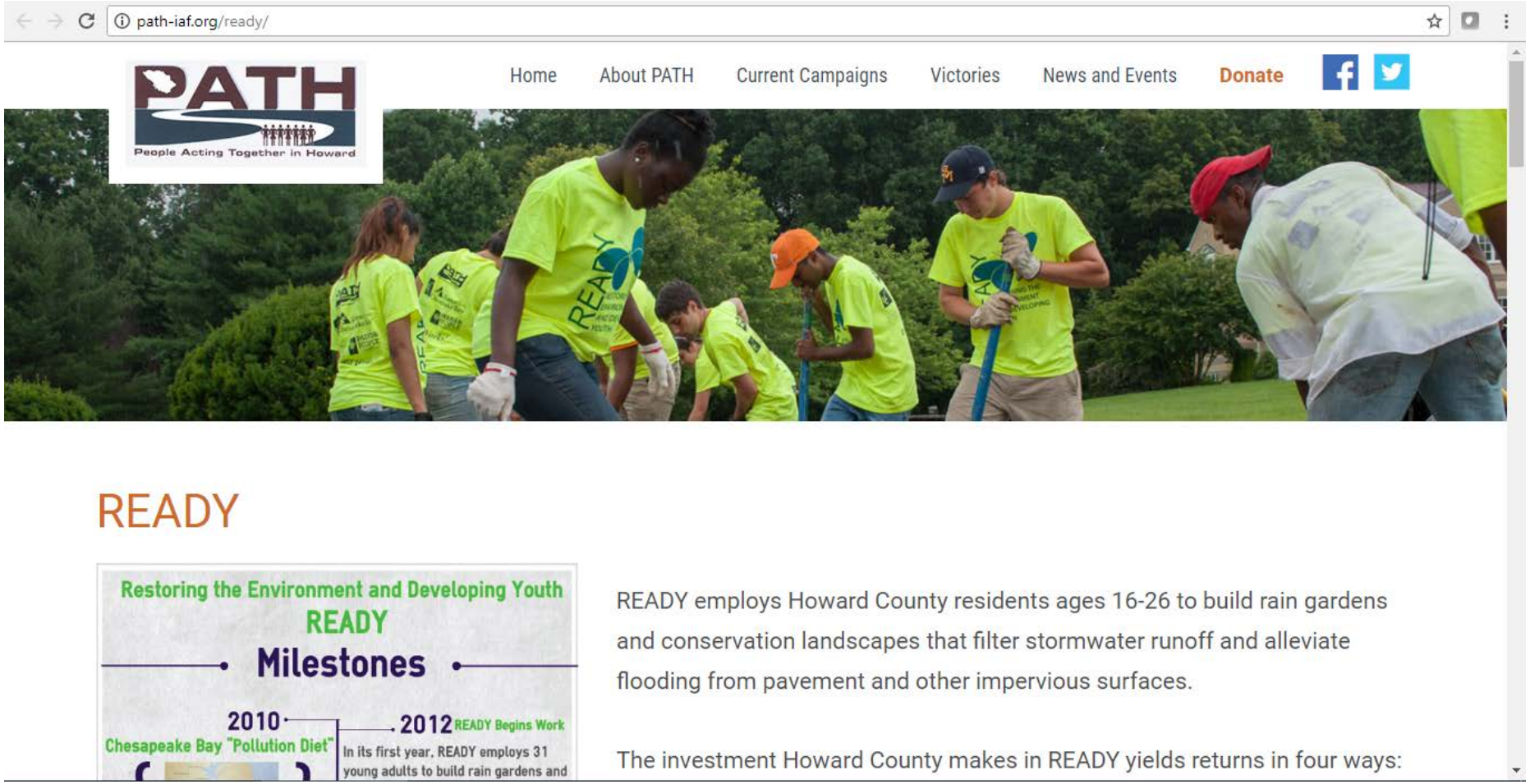
EXTERNAL PARTNERSHIPS

Baltimore City + Blue Water Baltimore



EXTERNAL PARTNERSHIPS

Howard County + READY Program



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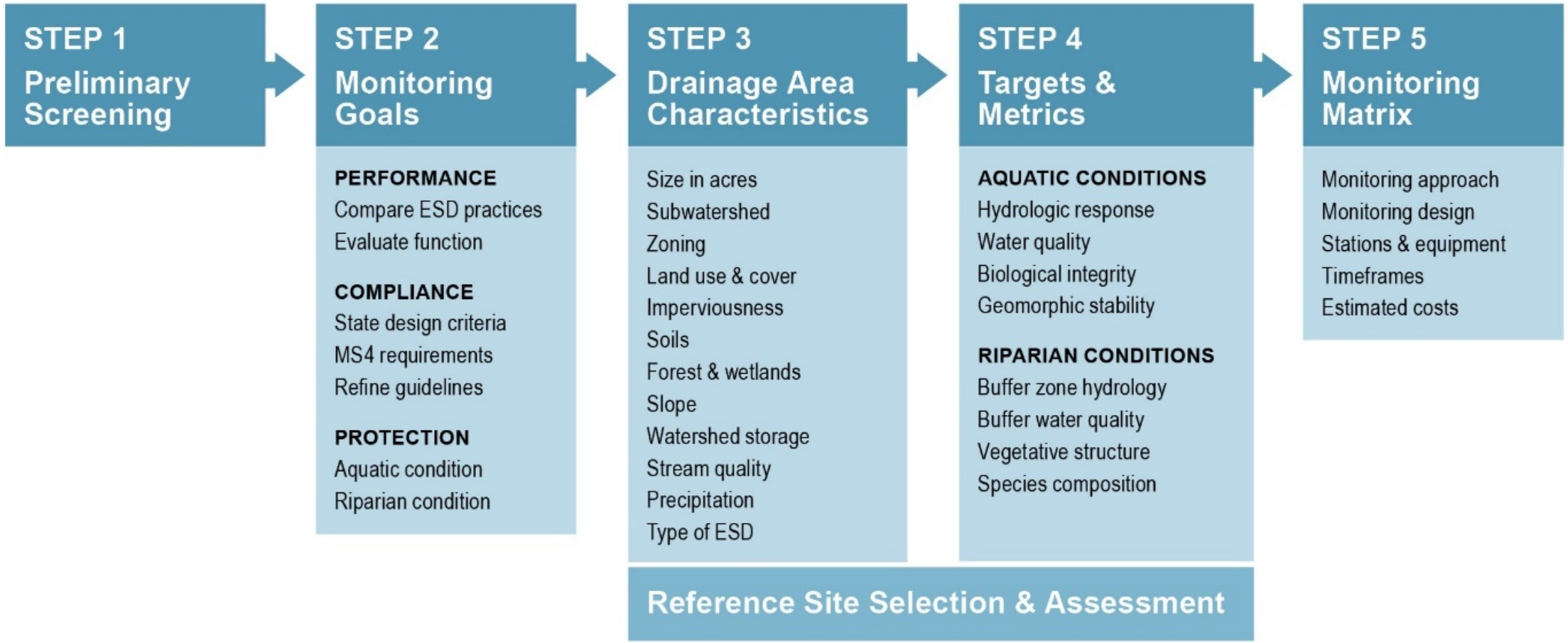
MONITORING AND ASSESSMENT

Montgomery County Special Protection Area (SPA) Program



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LESSONS LEARNED FOR OHIO MS4s

Take a **watershed approach**

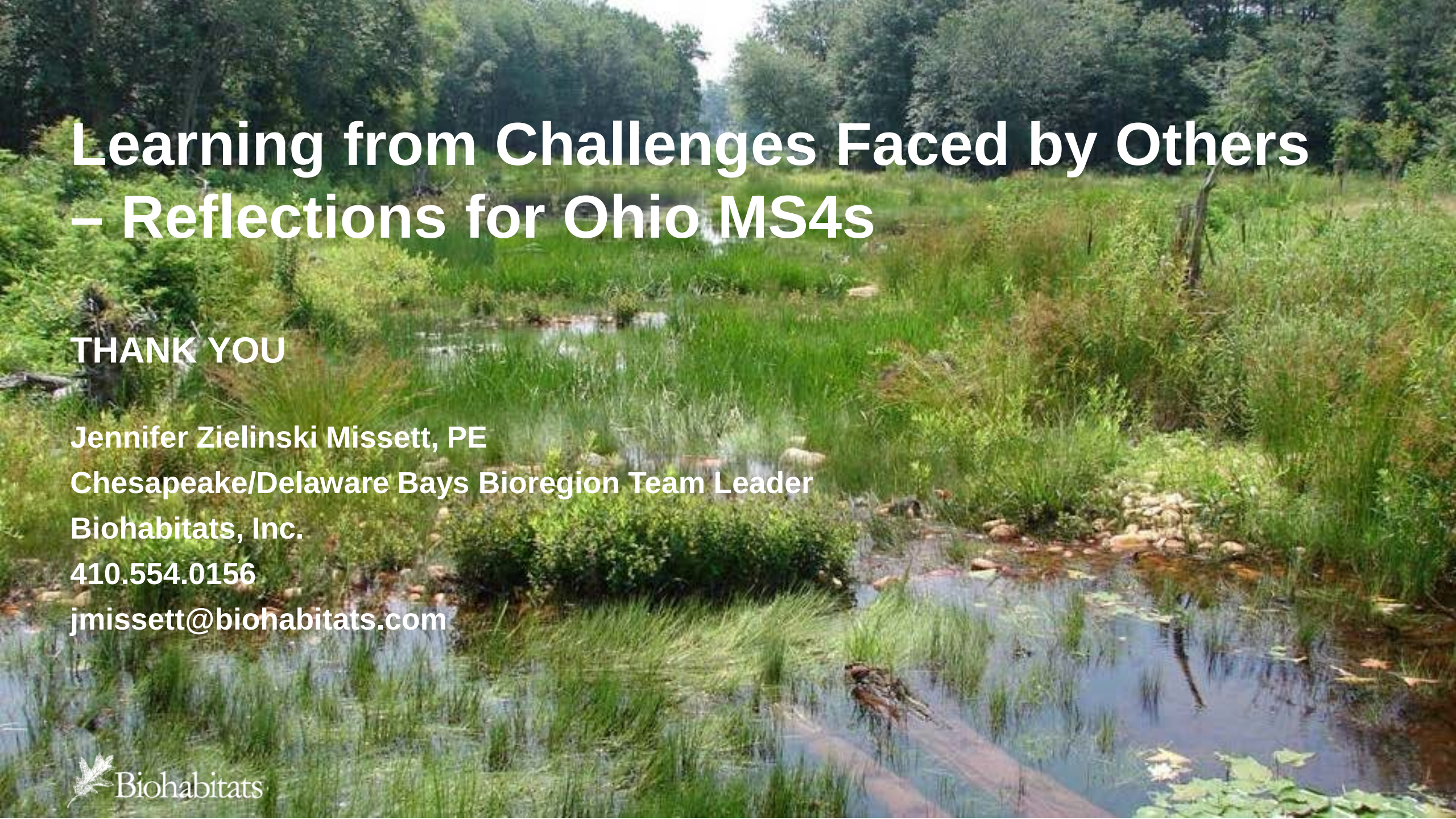
Apply a **wide range of management practices**

Explore **alternative delivery mechanisms**

Nurture **external partnerships**

Develop robust **monitoring and assessment programs**

Don’t forget about **maintenance** and **dedicated funding**



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THANK YOU

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