

Funding, Progress, and Other Issues Regarding Agricultural Nonpoint Source Pollution

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What is Nonpoint Source Pollution?

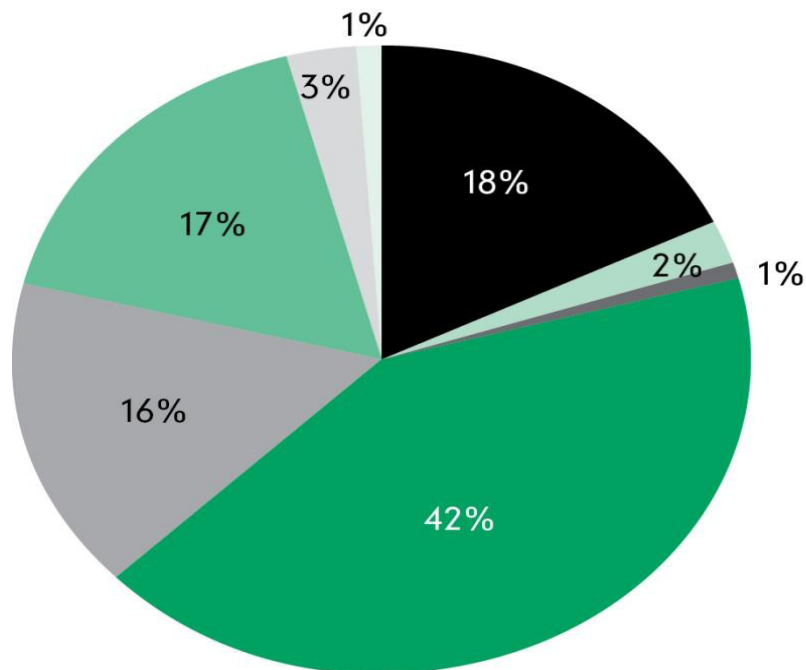
- Nonpoint source (NPS) pollution is caused by multi-source pollution being carried into streams, lakes, rivers, and the Chesapeake Bay by rainwater moving over land
 - It is produced by agriculture, construction, suburban lawn fertilization, urban stormwater runoff, and septic system failures
- NPS pollution includes four major forms of pollution: sediments, nutrients, pathogens, and toxic substances
- NPS pollution is generally controlled by the application of best management practices (BMPs)
 - Monitoring and verifying the NPS pollution reductions associated with BMP implementation is difficult, because there is no single discharge point or pipe
 - BMPs also are not always implemented on lands bordering streams, lakes, rivers, and the Chesapeake Bay
- Only one source of NPS pollution is regulated -- concentrated animal feeding operations, or CAFOs

2012 NPS Assessment Indicates Agriculture Largest NPS Problem Statewide

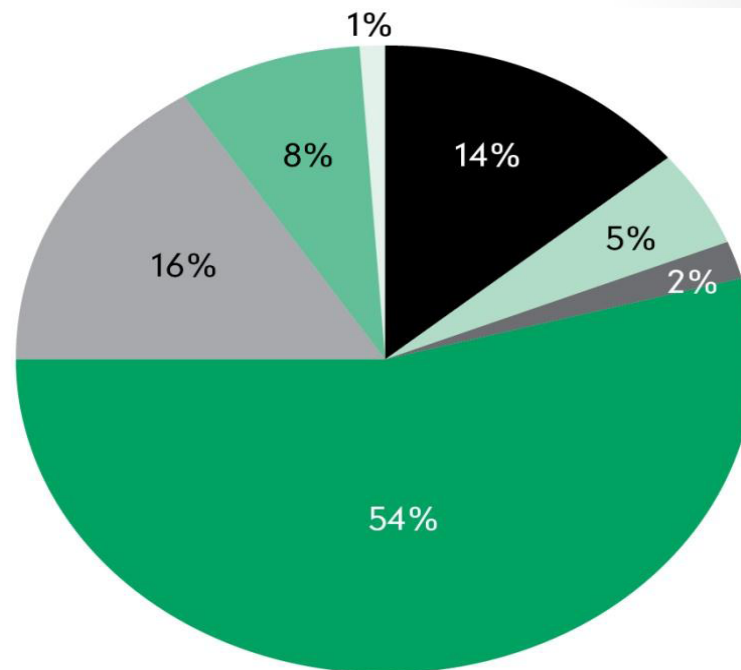
- Virginia's 2012 Nonpoint Source Assessment indicates agriculture is the primary source of NPS pollution statewide
 - Agriculture is the largest source of sediment pollution – 2.4 billion kg of sediment enters waterways from agriculture. Second largest source -- Forestry
 - Agriculture is also the largest source of nitrogen and phosphorus entering waterways – 29 million kg of nitrogen and 4.4 million kg of phosphorus. Second largest source – Urban sector

2012 NPS Assessment Statewide Pollutant Loads			
	Agriculture	Urban	Forestry
Total VA Land Acreage	5,957,955	2,654,341	16,285,678
% of VA Land Acreage	23.6%	10.5%	64.4%
% of Nitrogen Pollution	67.7%	24.3%	6.8%
% of Phosphorus Pollution	73.2%	14.7%	6.2%
% NPS Sediment Pollution	60.3%	4.2%	17.2%

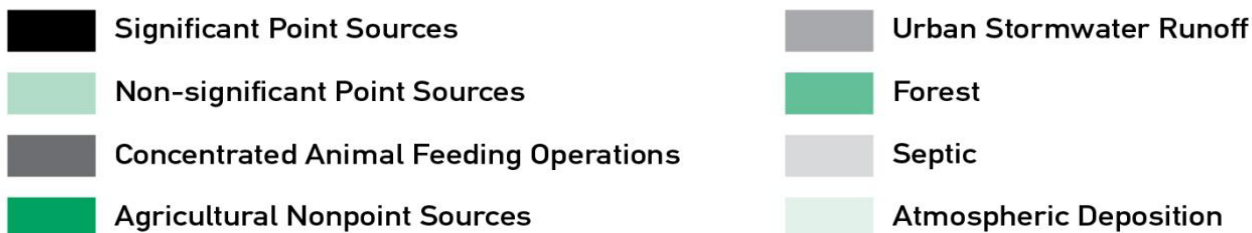
Chesapeake Bay Watershed Model Also Indicates Agriculture is Largest NPS Problem



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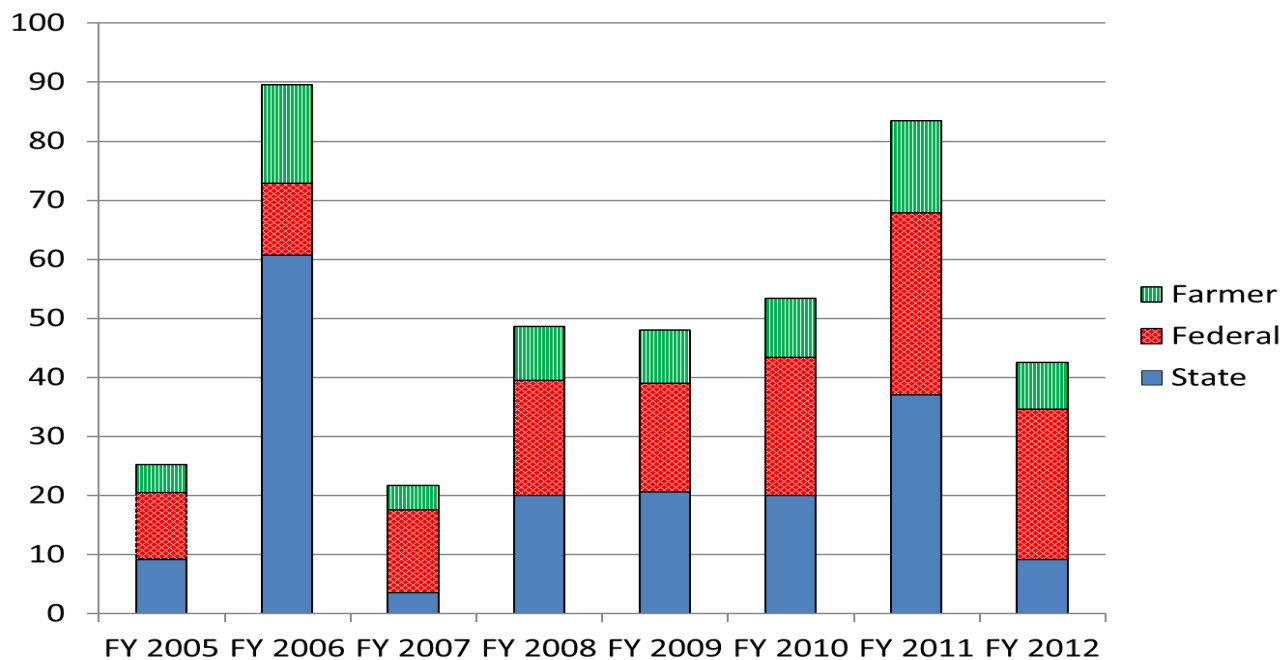


How is Agricultural NPS Pollution Controlled?

- Through voluntary programs as opposed to regulatory means
 - Farmers are encouraged to install agricultural BMPs through the use of state and federal cost-share
- Virginia's cost-share program funds 40 different BMPs, but directs most of the dollars to five priority BMPs, including:
 - (1) Nutrient management (reduced fertilizer use), (2) cover crops, (3) continuous no-till, (4) livestock exclusion, and (5) riparian buffers. These practices are thought to be the most efficient and cost effective
- Virginia's program relies on soil and water conservation districts (SWCDs) to recruit farmers to implement BMPs, allocate cost-share to farmers, and inspect BMPs for proper installation and maintenance
- Farmers must first agree to installation of BMPs on their land and must be willing to assume about 25% of BMP costs
 - BMP funding from DCR and the Natural Resources Conservation Service (NRCS) normally capped at flat rate or 75% of costs
 - However, farmers also can receive low interest loans from DEQ and tax credits to offset their share of BMP implementation costs




Agricultural BMP Cost-Share Funding





- State funding for cost-share programs between FY 2005 and FY 2012 totaled \$180.1 million, but fluctuates dramatically
 - This funding is derived from (1) year-end GF surpluses, (2) GF dollars, (3) WQIF interest and the WQIF Reserve, and (4) the recordation tax
- NRCS funding for cost-share programs for the period totaled \$155 million
 - This funding is derived from four programs (1) the Chesapeake Bay Watershed Initiative, (2) CREP, (3) EQIP, and (4) the Wildlife Habitat Incentives Program (WHIP)
- Farmers' costs for BMPs for the period totaled \$77.1 million

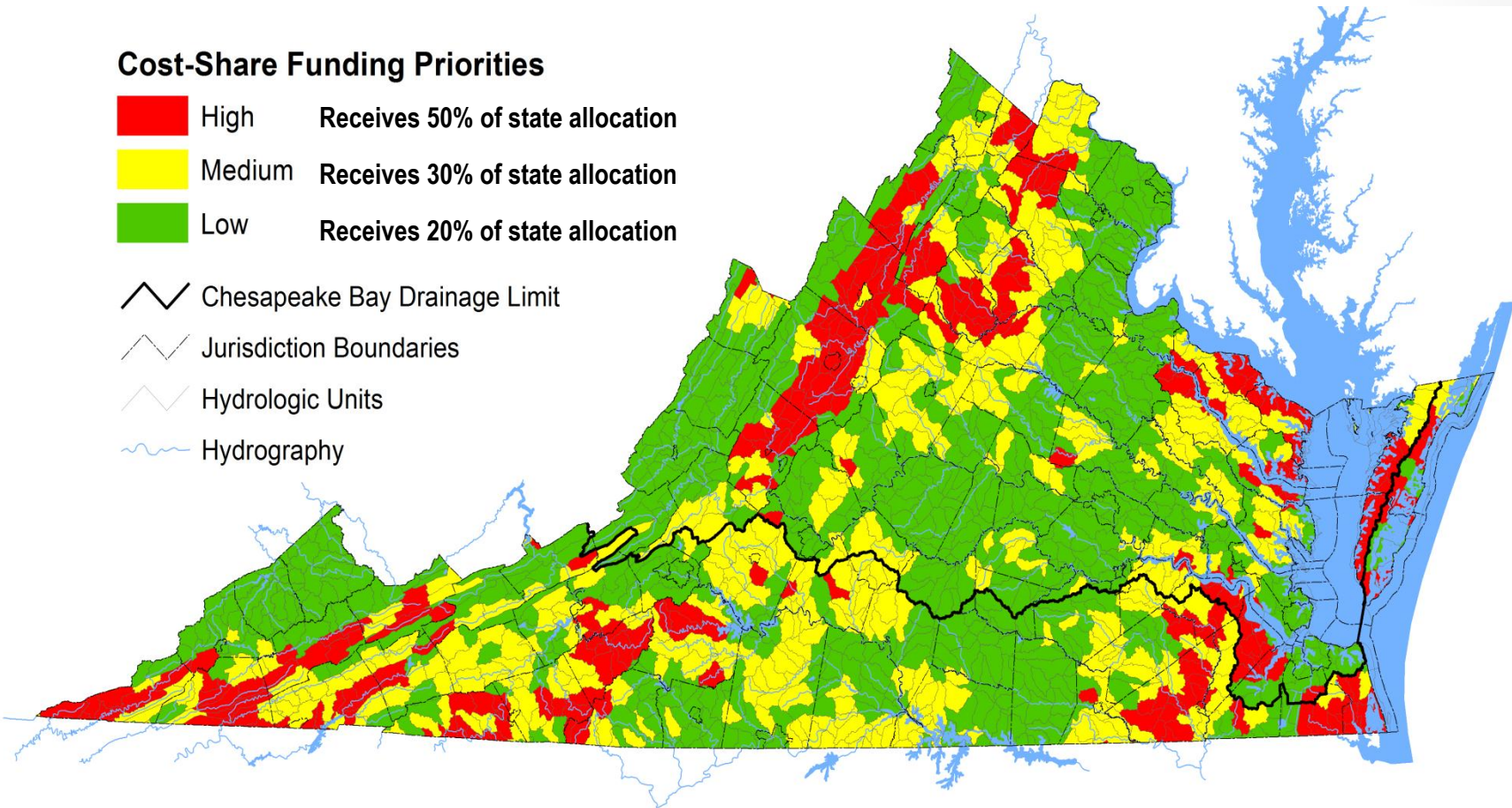


State Cost-Share Funding Allocated Based on Prioritization Formula

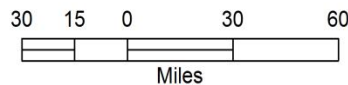
Cost-Share Funding Priorities

-  High Receives 50% of state allocation
-  Medium Receives 30% of state allocation
-  Low Receives 20% of state allocation

-  Chesapeake Bay Drainage Limit
-  Jurisdiction Boundaries
-  Hydrologic Units
-  Hydrography



DATA SOURCES:
RANKED WATERSHED NPS LOADS: VPI-BSE, VADCR & USEPA
HYDROLOGIC UNIT BOUNDARIES: VADCR
JURISDICTION BOUNDARIES: VADCR
HYDROGRAPHY: USGS



BMPs and Nutrient Reductions Achieved in 2012

Program Year 2012 Completed BMPs by Drainage Area

Area	Farmers	Completed BMPs	Treated Acres	Tons of Sediment Reduced	Pounds of Nitrogen Reduced	Pounds of Phosphorus Reduced	State Cost Share Payment
Chesapeake Bay	1,648	9,829	191,973	856,861	4,664,351	1,145,304	\$10.1 million
Southern Rivers	1,001	6,060	86,559	725,736	3,946,902	977,683	\$6.9 million
Totals	2,649	15,889	278,533	1,582,596	8,611,253	2,122,987	\$17.0 million

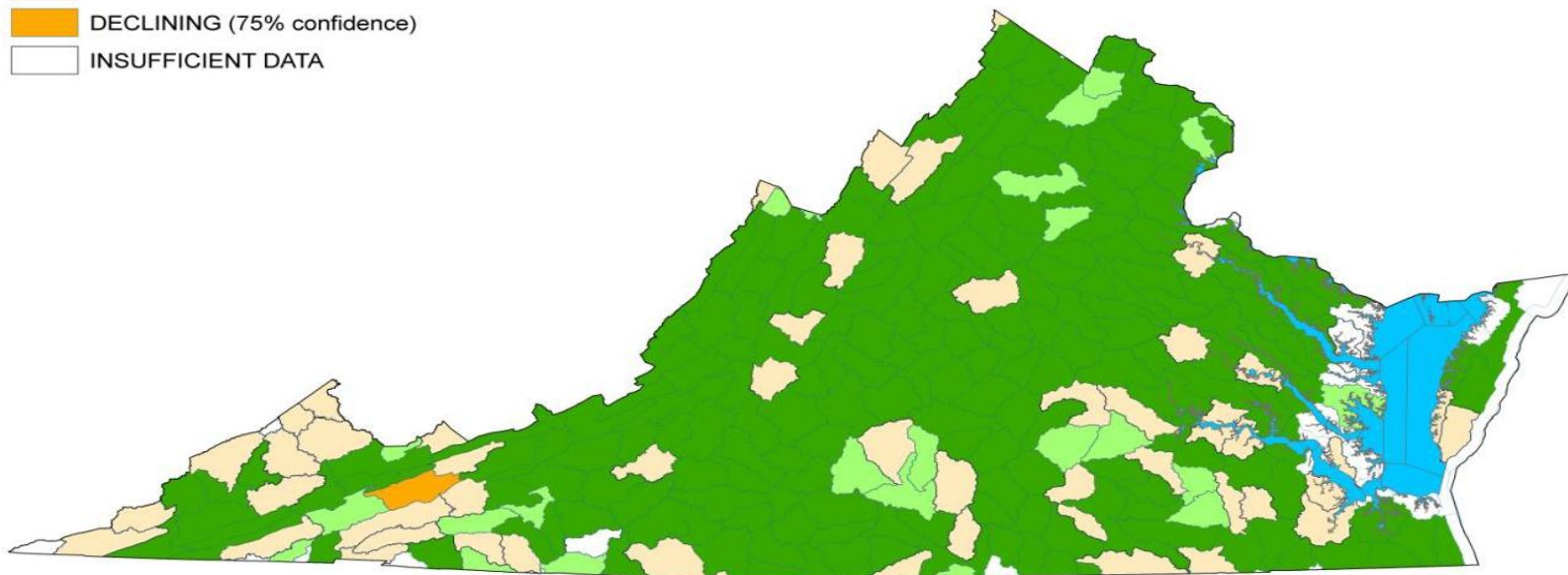
- 90 percent of all state cost-share funding in 2012 supported implementation of the five priority BMPs (\$15.3 million)
 - Exceeds SWCDs requirement to use 80% of funding for the five priority BMPs
 - Five priority BMPs: (1) nutrient management, (2) cover crops, (3) livestock exclusion, (4) continuous no-till systems, and (5) riparian buffers

Water Quality Data Indicates Bacteria Levels in Streams and Rivers Improving

Integrated Water Quality Trends 1991 to 2010 Bacteria in Rivers and Streams

STREAM BACTERIA

-  SIGNIFICANT IMPROVEMENTS (90% confidence)
-  IMPROVING (75% confidence)
-  NO CHANGE (less than 75% confidence)
-  DECLINING (75% confidence)
-  INSUFFICIENT DATA



Previously Impaired Virginia Waters Have Been Fully or Partially Delisted

Water Quality Restoration Progress* in Virginia



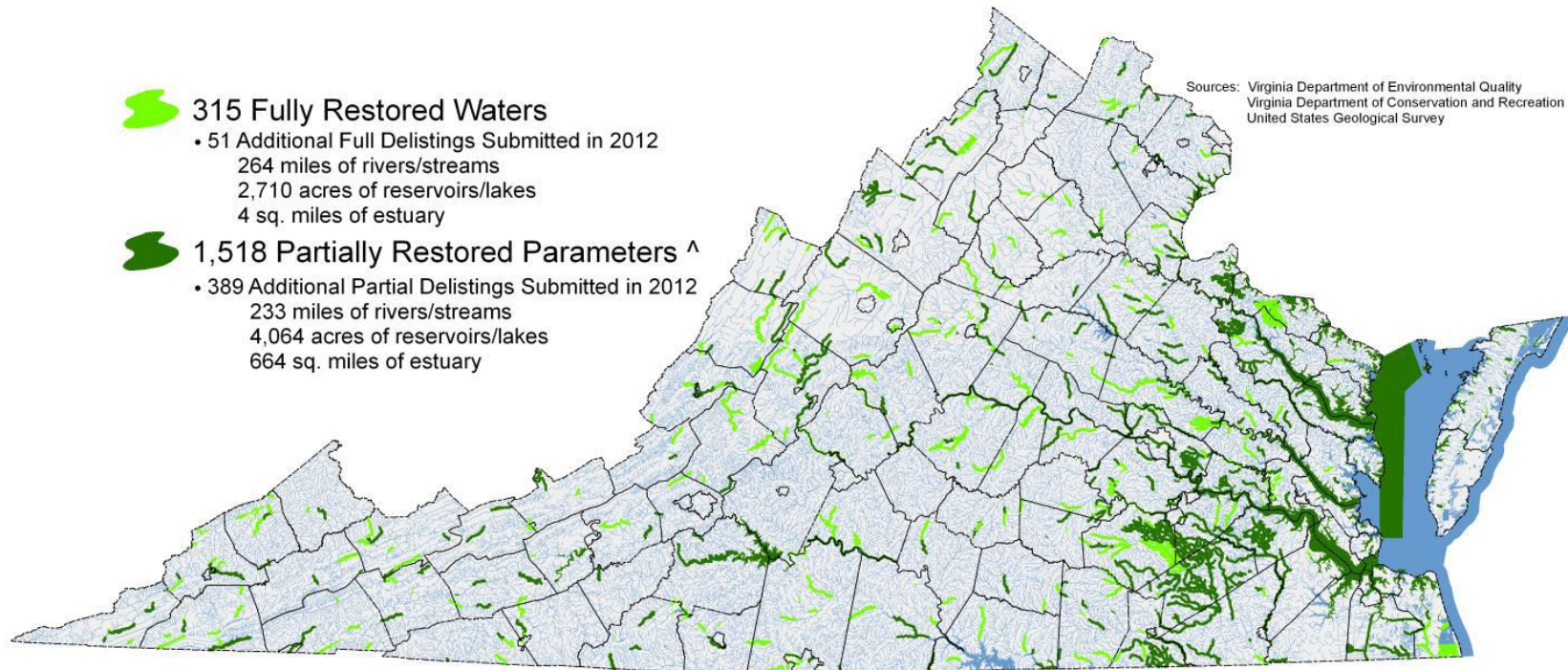
315 Fully Restored Waters

- 51 Additional Full Delistings Submitted in 2012
- 264 miles of rivers/streams
- 2,710 acres of reservoirs/lakes
- 4 sq. miles of estuary



1,518 Partially Restored Parameters [^]

- 389 Additional Partial Delistings Submitted in 2012
- 233 miles of rivers/streams
- 4,064 acres of reservoirs/lakes
- 664 sq. miles of estuary



Sources: Virginia Department of Environmental Quality
Virginia Department of Conservation and Recreation
United States Geological Survey

* Restoration progress (i.e. Delist status) is cumulative thru February 2012.

[^] Partial delisting totals are parameter based but include over 700 water bodies.

443 amended water permits are not included in the numbers above which equates to 273 Fully Delisted Part 2 facilities and 170 Partially Delisted Part 2 facilities.

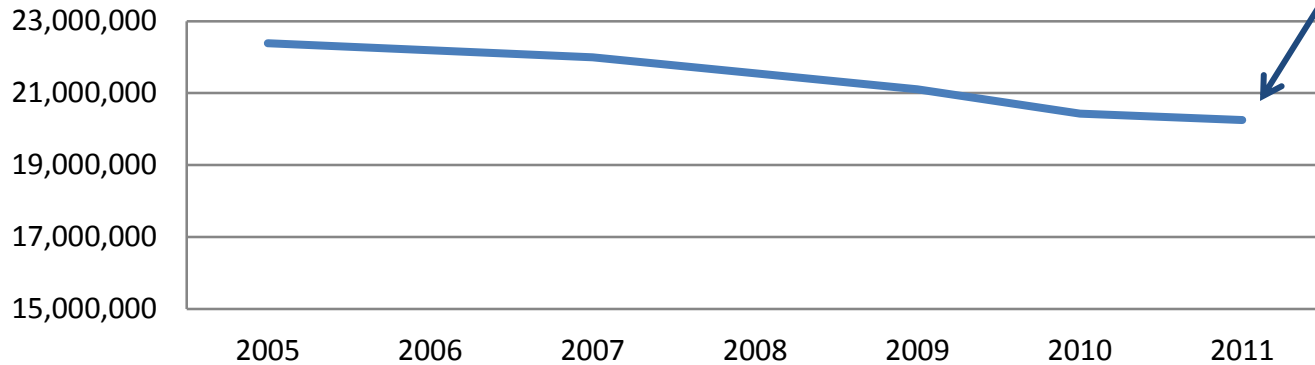
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Chesapeake Bay Watershed Model Indicates Agricultural BMPs Reduce NPS Pollution

Pounds Nitrogen

Nitrogen Levels

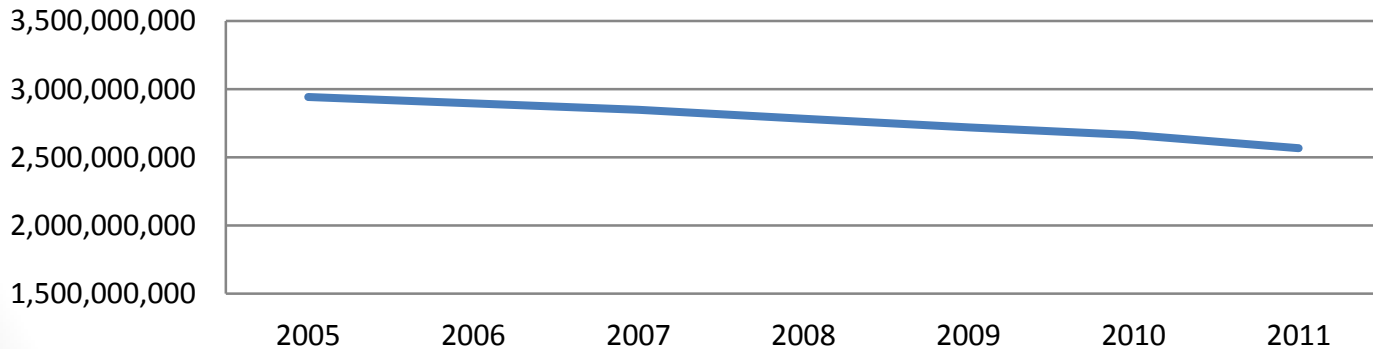


2011 Nitrogen level meets required interim milestone for 2013

By 2025, Virginia must reduce Nitrogen to 15.4 million pounds

Pounds Sediment

Sediment Levels



By 2025, Virginia must reduce Sediment to 1.6 billion pounds

Watershed Implementation Plan (WIP)

- Despite significant progress in restoring the health of Virginia waters, in 2011 EPA imposed a Total Maximum Daily Load (TMDL) for the Chesapeake Bay in 2011
 - A TMDL is the maximum amount of pollution a body of water can receive and still meet water quality standards. TMDLs are prepared for all impaired waters
- EPA's TMDL required the Bay states to develop WIPs to achieve the TMDL
 - EPA's TMDL requires full restoration of the Chesapeake Bay's health by 2025, but also required that 60% of restoration be achieved by 2017
- Governor McDonnell submitted Virginia's WIP on November 29, 2010
 - WIP assumes a significant increase in the agricultural BMP implementation
- Governor McDonnell submitted an EPA required revision to the WIP (Phase II) on March 30, 2012
 - This EPA-required revision was designed to allocate nutrient reductions to local level and further refine the first WIP's strategies
- Phase III of the WIP will be released in 2017

WIP-Related Agricultural BMP Costs

- Implementation of Virginia’s WIP would require significantly more funding than is currently provided
- DCR estimated costs for higher BMP implementation rates of \$844.5 million between FY 2011 and FY 2017 and \$950.9 million between FY 2017 and FY 2025
- Examples of DCR cost estimates for the most significant BMPs are shown below:

BMP Practices	Units	Total Cost 2012-2017	Total Cost 2017-2025
Pasture Fencing	Linear Feet	\$409.6 million	\$353.6 million
Animal Waste Systems	Systems	\$76.2 million	\$115.8 million
Wetland Restoration	Acres	\$110.3 million	\$76.9 million
Cover Crops	Acres	\$26.4 million	\$78.4 million
Forest Buffers	Acres	\$37.2 million	\$36.2 million
Prescribed Grazing	Acres	\$12.1 million	\$41.5 million
Remaining BMPs		\$172.5 million	\$248.7 million
Total		\$844.5 million	\$950.9 million

WIP Implementation May Be Unrealistic

- DCR produces an annual “Needs Assessment” showing the funding required for agricultural BMPs and technical assistance
- This Needs Assessment is primarily driven by:
 - WIP BMP implementation costs
 - Southern Rivers TMDLs
- Needs Assessment does not mirror available funding
 - Large share of state BMP cost-share funding is dependent on surpluses and the recordation tax
 - ✓ For 2013, surplus and recordation tax could yield \$26 million for BMPs
 - Federal cost-share funding appears to average about \$19.4 per year
 - ✓ Federal budget reductions may impact future federal cost-share payments
 - The level of BMPs SWCD technical staff can actually install is between \$25.8 and \$28.1 million in BMPs per year
 - Greater use of low interest Agricultural BMP loans and Agricultural BMP tax credits could help increase use of BMPs, but WIP’s higher implementation rates may still be difficult to achieve

Farmers May Not Willing to Implement Agricultural BMPs at WIP Level

- Many farmers implement BMPs not only to improve the environment, but because they improve their “bottom line”
 - Includes nutrient management and continuous no-till systems
 - Farmers historically pay about 23% of BMP costs
- WIP assumes farmers will pay more for BMPs in future years and that about 2.5 times as many farmers will implement BMPs
 - Including five strategies that are not implemented now
- May not be realistic to assume completely voluntary actions will yield those implementation rates

Current and Projected Agricultural BMP Implementation Levels			
BMP Practice	2009 % Treatment	2017 % Coverage	Additional Implementation
Grass Buffers for Cropland Specialty Crops	9.0%	30.0%	3.3 times
Wetland Restoration	0.05%	0.15%	7.1 times
Continuous No-Till	11.0%	35.0%	3.2 times
Cover Crop Standard Planting	4.0%	10.0%	2.5 times
Stream Protection with Fencing	15.0%	45.0%	3.0 times
Nutrient Management Hay	18.0%	90.0%	5 times
Nutrient Management Pasture	5.0%	15.0%	3 times
Non-urban Stream Restoration	0.02%	0.11%	5.5 times

Other Sources of Funding for BMP Implementation

- Farmers can use low interest loans from the Clean Water Revolving Loan Fund to finance BMPs and their share of BMP state and federal cost-share
- Loans are available for facilities and structures like animal waste control facilities, grazing land protection, and no-till planters and drills
- However, use of the BMP loan program has been inconsistent
 - The number of loans closed fluctuates considerably each year
 - About \$5 million available every year, but in 2005, 2010, and 2012 much less was used

Farmers Have Not Fully Used Agricultural BMP Tax Credits

- Farmers may claim BMP tax credits for their BMP implementation costs
 - Credit cannot exceed \$17,500
 - Credit must be authorized by SWCD after approval and completion of BMP
- If BMP tax credit exceeds farmer income tax, excess is refundable as of July 1, 2011
 - Could increase utilization
 - There is no cap on the amount of authorized tax credits that may be claimed

Tax Year	Total SWCD Authorized Grants	Individual Claimed Amount	Corporate Claimed Amount	Total Amount Claimed
2006	\$869,315	\$498,926	\$14,458	\$513,384
2007	\$951,297	\$568,205	\$24,396	\$592,601
2008	\$1,090,708	\$673,402	\$19,699	\$693,101
2009	\$1,224,572	\$535,552	\$10,161	\$545,713
2010	\$785,304	\$510,229	\$13,304	\$523,533

What Happens if WIP BMP Implementation Does Not Achieve Outlined Reductions?

- EPA has stated that if progress is not achieved, it could take several actions, including:
 - Federal regulation of currently unregulated activities
 - Federal review of Virginia permits
 - Requiring additional reductions from point sources
 - Conditioning or redirecting Virginia's use of existing and future EPA grants
- WIP also outlines actions that could be requested if voluntary BMPs do not achieve required nutrient reductions, including mandating:
 - Nutrient management plans
 - More stringent soil conservation plans
 - Livestock stream exclusion
 - Grass or forest buffers between all types of cropland and hay fields

Should Virginia Prioritize Existing BMPs?

- Because of low funding levels, imperative to ensure available funding is directed to most cost-effective activities in most critical areas
 - Consideration should be given to determining when agricultural BMPs have become sufficiently widespread that funding should be directed to other BMPs
 - ✓ DCR should develop some guidelines for determining when to reallocate BMP cost-share from widespread practices to other BMPs
- Should Virginia distribute Southern Rivers funding to specific waterways rather than all affected waterways?
 - No similar state and federal penalties exist for the Southern Rivers TMDLs
 - Prioritization has been used in Virginia previously

Impaired Streams	\$ in millions				
	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Stroubles Creek	\$0.27	-	-	-	-
Falling River	\$0.25	\$0.25	\$0.25	\$0.25	-
Pigg River – Franklin	\$0.50	\$0.50	\$0.50	\$0.50	-
Pigg River – Pittsylvania	\$0.75	\$0.75	\$0.75	\$0.75	-
Lewis Creek	\$0.16	\$0.16	\$0.16	\$0.16	\$0.16
Back Creek	\$0.67	\$0.67	\$0.67	\$0.67	\$0.67
Lower Banister River	-	\$1.0	\$1.0	\$1.0	\$1.0
Clinch River – Downstream	\$1.10	\$1.10	\$1.10	\$1.10	\$1.10
Remaining Southern River Costs	\$7.44	\$11.36	\$18.1	\$21.35	\$24.62
Total	\$11.14	\$15.79	\$22.50	\$25.78	\$27.55

Conclusions

- Agriculture is largest source of nonpoint source pollution
- Virginia and the federal NRCS have provided substantial cost-share funding to implement BMPs
- BMPs appear to reduce nitrogen and sediment pollution from agriculture
- Despite current reductions in agricultural NPS pollution, the Chesapeake Bay TMDL and the additional WIP-related agricultural BMP implementation costs associated are substantial
- WIP may not be realistic
 - Does not account for actual capacity to install BMPs
 - High BMP implementation rates, fluctuations in the number of agricultural BMP loans issued, and currently unused tax credits indicate farmers may not implement BMPs as proposed in WIP
- Moving forward, the General Assembly may wish to request some guidance from DCR about when existing BMPs should be considered standard operating procedure for farmers, and whether the distribution of funding for Southern River TMDLs could be prioritized