State Technical Committee Meeting
November 8, 2018 at 10:00 a.m.
NRCS State Office Conference Room

A G E N D A

10:00 – 10:15	Welcome and Opening Remarks Importance and Role of Committee	NRCS – Jack Bricker, Chair NRCS – Julie Hawkins
10:15 – 10:45	An update of the Chesapeake Bay Watershed Implementation Plan (WIP III)	DEQ – James Davis-Martin
10:45 – 11:30	Recent findings from Smith Creek and understanding nutrient trends in the Chesapeake Bay Watershed	USGS – Jimmy Webber
11:30 – 12:30	Legacy Sediments	Water Science Institute – Joseph Sweeney
12:30 – 1:15	LUNCH (on your own)	
1:15 – 1:30	Conservation Reserve Program, Conservation Reserve Enhancement Program, Emergency Conservation Program	FSA – Emily Horsley
1:30 – 2:00	Agricultural Conservation Easements	NRCS – Diane Dunaway
	Conservation Innovation Grants	NRCS – Blaine Delaney
	Regional Conservation Partnership Program	
	Environmental Quality Incentive Program	NRCS – Patrick Vincent
	Conservation Stewardship Program	
2:00 – 2:30	Agency Updates	All
2:30	Adjourn	

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Next Meeting – TBA

Role of the State Technical Committee

State Technical Committee Meeting

November 8, 2018

USDA Conservation Program Delivery is a locally led process that seeks input from the State Technical Committee and Local Working Groups on conservation program delivery. While neither has implementation or enforcement authority, USDA gives strong consideration to their recommendations.

Local Working Groups (LWG) are subcommittees of the State Technical Committee and provide recommendations to USDA on local and state natural resource priorities and criteria for conservation activities and programs. Each year LWGs meet and on behalf of the State Technical Committee, NRCS works through and considers all comments and recommendations.

Responsibilities of State Technical Committees

It is the responsibility of the State Technical Committee to –

(1) Provide information, analysis, and recommendations to USDA on conservation priorities and criteria for natural resources conservation activities and programs, including application and funding criteria, recommended practices, and program payment percentages.

(2) Identify emerging natural resource concerns and program needs.

(3) Recommend conservation practice standards and specifications.

(4) Recommend State and national program policy based on resource data.

(5) Review activities of the local working groups to ensure State priorities are being addressed locally.

(6) Make recommendations to the State Conservationist on requests and recommendations from local working groups.

(7) Assist NRCS with public outreach and information efforts and identify educational and producers' training needs.

NRCS State Technical Committee Membership

November 8, 2018

- American Farmland Trust
- Black Family Land Trust
- Center for Conservation Incentives, Environmental Defense Foundation
- Chesapeake Bay Commission
- Chesapeake Bay Foundation
- Chesapeake Wildlife Heritage
- Chickahominy Indian Tribe
- Chickahominy Indian Tribe - Eastern Division
- Defenders of Wildlife
- Delmarva Poultry Industry, Inc.
- Deputy Secretary of Natural Resources for the Chesapeake Bay
- Ecology and Environment, Inc.
- Ecosystem Services
- Friends of the Rappahannock River
- Kego Tank Farm
- Maryland-Virginia Milk Producers Co-op
- Mattaponi Pamunkey Monacan Foundation
- Monacan Indian Tribe
- Nansemond Indian Tribe
- National Wild Turkey Federation
- Pamunkey Tribe
- Piedmont Environmental Council
- Rappahannock Indian Tribe
- Shenandoah AREC
- Shenandoah Valley Battlefields Foundation
- Southern States Cooperative, Inc.
- Sustainable Chesapeake
- SW Virginia Agriculture Association, Inc.
- Tellus Agronomics
- The Nature Conservancy
- Trout Unlimited
- Upper Mattaponi Indian Tribe
- U.S. Army Corps of Engineers, Norfolk District
- U.S. Environmental Protection Agency, Chesapeake Bay Office
- U.S. Geological Service
- U.S. Fish & Wildlife Service
- U.S. Forest Service

- USDA 1890 Program Manager, VSU
- USDA Farm Service Agency
- Virginia Agribusiness Council
- Virginia Association for Biological Farming
- Virginia Cattlemen's Association
- Virginia Conservation Network
- Virginia Cooperative Extension
- Virginia Corn Board
- Virginia Cotton Grower's Association
- Virginia Crop Production Association
- Virginia Dept. of Agriculture & Consumer Services
- Virginia Dept. of Conservation & Recreation, Division of Soil & Water Conservation
- Virginia Dept. of Conservation & Recreation, Natural Heritage
- Virginia Dept. of Conservation & Recreation, Office of Land Conservation
- Virginia Dept. of Environmental Quality
- Virginia Dept. of Forestry
- Virginia Dept. of Game and Inland Fisheries
- Virginia Farm Bureau Federation
- Virginia Forestry Association
- Virginia FSA State Committee
- Virginia Grain Producers Association
- Virginia Institute of Marine Science
- Virginia Marine Resources Commission
- Virginia Nursery & Landscape Association
- Virginia Outdoors Foundation
- Virginia Peanut Grower's Association
- Virginia Pork Council
- Virginia Poultry Federation
- Virginia Sheep Industry Board
- Virginia Society of Ornithology
- Virginia Soybean Association
- Virginia State Dairymen's Association
- Virginia State University
- Virginia Tech - CSES
- Virginia Tech - College of Natural Resources
- Virginia Waterfowlers Association
- Virginia Wine Board
- Virginia United Land Trusts
- Wetlands Watch

SWCD WIP 3 Process

James Davis-Martin
Department of Environmental Quality

WIP III Planning Process

- Local WIP III Planning Process Inputs
  - 2017 Progress BMPs
  - WIP II Planned BMPs
  - BMP Cost Effectiveness data
  - BMP Co-Benefits data
- Resulting Programmatic Actions
  - Will answer the question WHO? Federal, State and Local partners.
  - Will answer the question HOW? Identified programs, funding and authorities.
- Resulting WIP III BMP Scenario
  - Will answer the question WHEN? No later than 2025
  - Will answer the question WHAT? The right mix of BMPs.
  - Will answer the question HOW MUCH? The level of BMP implementation

Challenges & Successes to Date

- 14 of 15 PDCs Participating
  - Localities and Stakeholders meeting to discuss and plan for Bay restoration
  - Working to develop realistic implementable scenario and programmatic actions
- 4 of 4 SWCD Areas Participating
  - SWCDs Reviewing WIP2 Scenarios and developing preferred implementation scenario
  - 170+ recommendations for modifications to VA Cost-Share Program to drive implementation
- Struggling to find implementation scenarios that are realistic and satisfy local planning goals

When? – What is your schedule?

- Draft Local Planning Goals: May – July 2018
- SWCD Meetings: May – November 2018
- PDC Meetings: July – November 2018
- Final Local Planning Goals: December 2018
- Stakeholder review: February-April 2019
- Draft WIP: April 12, 2019
- Public Review/Input: April 12 – June 7, 2019
- Final WIP: August 9, 2019

Row Labels	Feeding Space	Row Crops	Pasture	Hay	Other Ag	Grand Total
Average N/P Loading per Acre	**186/10**	**15/0.44**	**5/0.69**	**5/0.33**	**2/0.59**	**8/0.54**
Culpeper Soil Conservation District	258	43,803	90,797	59,657	31,769	**226,283**
Lord Fairfax Soil Conservation District	323	37,102	93,047	64,648	24,605	**219,726**
Shenandoah Valley Soil Conservation District	1,017	58,718	76,437	51,757	9,901	**197,830**
Thomas Jefferson Soil Conservation District	181	22,342	80,023	57,905	16,349	**176,799**
Headwaters Soil Conservation District	463	32,468	88,675	42,242	12,753	**176,601**
John Marshall Soil Conservation District	202	25,704	62,650	22,245	9,747	**120,548**
Northern Neck Soil Conservation District	7	89,807	4,766	3,161	1,006	**98,747**
Three Rivers Soil Conservation District	17	82,393	7,211	3,622	3,835	**97,078**
Hanover-Caroline Soil Conservation District	52	64,980	10,695	13,657	1,488	**90,871**
Piedmont Soil Conservation District	169	21,265	37,350	23,498	4,606	**86,888**
Loudoun Soil Conservation District	132	12,339	43,550	24,435	3,805	**84,260**
Mountain Soil Conservation District	65	3,313	52,925	14,718	8,355	**79,375**
Natural Bridge Soil Conservation District	110	4,267	50,402	16,511	7,585	**78,875**
Peter Francisco Soil Conservation District	124	6,721	34,811	22,368	5,963	**69,987**
Robert E. Lee Soil Conservation District	91	3,215	31,142	18,178	7,778	**60,405**
Eastern Shore Soil Conservation District	103	55,445	966	504	821	**57,838**
Mountain Castles Soil Conservation District	65	4,605	22,724	15,611	7,288	**50,293**
Peanut Soil Conservation District	11	42,889	3,730	2,667	475	**49,773**
Monacan Soil Conservation District	58	13,301	17,889	8,429	3,504	**43,180**
Tri-County/City Soil Conservation District	60	12,007	11,465	14,720	4,712	**42,964**
Tidewater Soil Conservation District	11	25,588	1,954	3,057	392	**31,001**
Colonial Soil Conservation District	9	22,680	2,959	2,096	2,755	**30,499**
Prince William Soil Conservation District	36	4,208	5,113	5,736	5,068	**20,161**
James River Soil Conservation District	16	7,729	2,441	2,748	1,964	**14,898**
Henricopolis Soil Conservation District	8	1,821	389	409	2,953	**5,579**
Appomattox River Soil Conservation District	3	2,292	1,330	935	459	**5,018**
Virginia Dare Soil Conservation District	2	2,959	293	131	93	**3,478**
Blue Ridge Soil Conservation District	5	58	1,469	1,193	351	**3,077**
Peaks of Otter Soil Conservation District	8	127	-	1,692	921	**2,748**
Northern Virginia Soil Conservation District	22	52	89	76	17	**257**
Skyline Soil Conservation District	0	27	58	30	19	**134**
Grand Total	**3,627**	**704,225**	**837,349**	**498,636**	**181,336**	**2,225,173**

Row Labels	2025 % of Bay Ag Acres	WIP 2 Ag Reductions	WIP3 Ag Reductions
Culpeper Soil Conservation District	10.17%	8.48%	14.79%
Lord Fairfax Soil Conservation District	9.87%	8.99%	5.65%
Shenandoah Valley Soil Conservation District	8.89%	16.51%	11.01%
Thomas Jefferson Soil Conservation District	7.95%	3.57%	1.89%
Headwaters Soil Conservation District	7.94%	6.11%	4.17%
John Marshall Soil Conservation District	5.42%	2.98%	2.85%
Northern Neck Soil Conservation District	4.44%	8.42%	10.28%
Three Rivers Soil Conservation District	4.36%	7.51%	9.89%
Hanover-Caroline Soil Conservation District	4.08%	4.51%	3.36%
Piedmont Soil Conservation District	3.90%	2.24%	1.44%
Loudoun Soil Conservation District	3.79%	2.46%	0.41%
Mountain Soil Conservation District	3.57%	1.32%	1.05%
Natural Bridge Soil Conservation District	3.54%	1.78%	2.70%
Peter Francisco Soil Conservation District	3.15%	1.79%	1.81%
Robert E. Lee Soil Conservation District	2.71%	1.77%	4.41%
Eastern Shore Soil Conservation District	2.60%	8.71%	7.16%
Mountain Castles Soil Conservation District	2.26%	1.24%	2.45%
Peanut Soil Conservation District	2.24%	2.01%	1.25%
Monacan Soil Conservation District	1.94%	1.56%	2.13%
Tri-County/City Soil Conservation District	1.93%	1.69%	2.85%
Tidewater Soil Conservation District	1.39%	2.17%	0.84%
Colonial Soil Conservation District	1.37%	1.69%	2.18%
Prince William Soil Conservation District	0.91%	0.44%	1.13%
James River Soil Conservation District	0.67%	0.85%	1.61%
Henricopolis Soil Conservation District	0.25%	0.54%	2.12%
Appomattox River Soil Conservation District	0.23%	0.15%	0.26%
Virginia Dare Soil Conservation District	0.16%	0.33%	0.32%
Blue Ridge Soil Conservation District	0.14%	0.04%	0.03%
Peaks of Otter Soil Conservation District	0.12%	0.13%	-0.08%
Northern Virginia Soil Conservation District	0.01%	0.02%	0.03%
Skyline Soil Conservation District	0.01%	0.00%	0.01%
Grand Total	**100.00%**	**100.00%**	**100.00%**

Dissecting Drivers of Nutrient Trends in Chesapeake Bay Streams, with highlights from Smith Creek

November 8th, 2018

Jimmy Webber

jwebber@usgs.gov

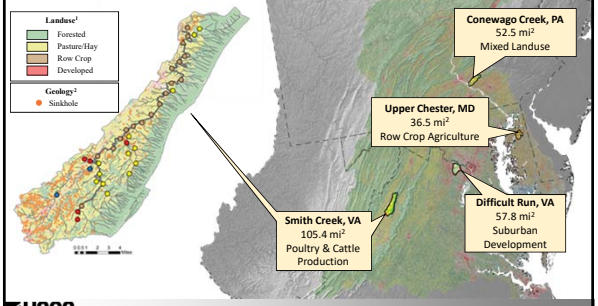
Prepared with major contributions by USGS scientists in the **Pennsylvania**, **Maryland-Delaware-DC**, and **Virginia-West Virginia** Water Science Centers

Objective: To help managers make more informed decisions by summarizing the current understanding of why nitrogen and phosphorus loads have changed through time in Chesapeake Bay streams.

USGS

1

Results and interpretations from monitoring in the Showcase watersheds help inform Bay-wide conditions



USGS

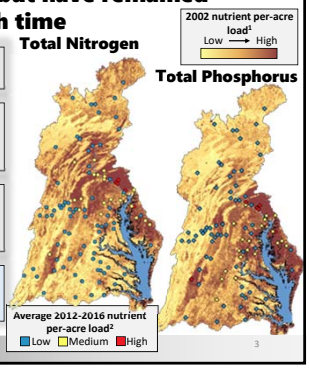
¹Landuse from NLCD 2011 ²Sinkholes from Hubbard (1983)

Nitrogen and phosphorus loads vary throughout the watershed based on human activities and environmental settings, but have remained relatively similar through time

Nutrient loads measured in streams throughout the watershed are highly variable as a result of:

1. The amount of nutrients applied to the landscape or added directly to streams (*"nutrient inputs"*), which reflects the intensity of human activities.
2. The movement of nutrients from the landscape to streams (*"nutrient transport"*), which is primarily a function of geologic setting and climatic conditions.

Nutrient loads may change over time as a result of changing nutrient inputs or changing nutrient transport



USGS

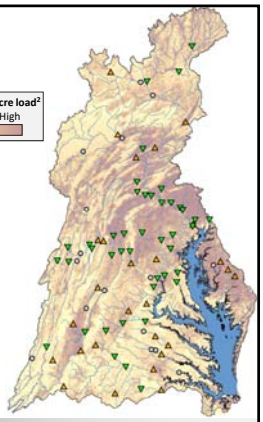
¹Ator and others, 2011.

3

Nitrogen load trends result from changing nitrogen inputs or transport

In the most recent ten year period (2007 – 2016)[1]:

2002 TN per-acre load[2]
Low → High



% of sites improving: 50% — Improving sites have a median change of -10%

% of sites Degrading: 31% — Degrading sites have a median change of +7%

% of sites with no trend: 19%

The nontidal monitoring webpage has been updated with 2016 & 2017 results: https://cbrim.er.usgs.gov/index.html

USGS

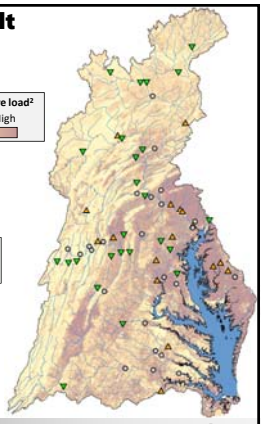
[1]Moyer and others, 2017 [2]Ator and others, 2011

4

Phosphorus load trends result from changing phosphorus inputs or transport

In the most recent ten year period (2007 – 2016)[1]:

2002 TP per-acre load[2]
Low → High



% of sites improving: 38% — Improving sites have a median change of -23%

% of sites Degrading: 26% — Degrading sites have a median change of +21%

% of sites with no trend: 36%

The nontidal monitoring webpage has been updated with 2016 & 2017 results: https://cbrim.er.usgs.gov/index.html

USGS

[1]Moyer and others, 2017 [2]Ator and others, 2011

5

What are the primary drivers of nutrient trends?

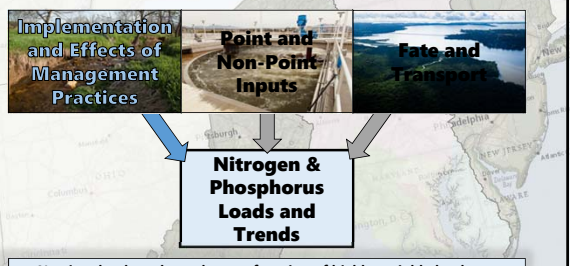
Nitrogen & Phosphorus Loads and Trends

Nutrient loads and trends are a function of highly variable land use, inputs, and environmental settings. Integrative tools have been developed that account for many of these interactions.

USGS

6

What are the primary drivers of nutrient trends?



Nutrient loads and trends are a function of highly variable land use, inputs, and environmental settings. Integrative tools have been developed that account for many of these interactions.

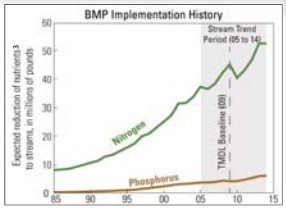
USGS

7

The implementation of management practices intended to reduced nutrient transport has increased through time, but expected reductions have not occurred in all streams.

In 2014, management practices are estimated to have reduced **11%** of the nitrogen and **19%** the phosphorus load in Chesapeake Bay streams[3].

Field scale studies have highlighted the benefits of various management practices, but it remains a challenge to identify management practice effects at an integrated watershed scale[4,5].



USGS

[3]Sekellick and others, in review [4]Staver and Brinsfield, 1998 [5]Liu and others, 2017

8

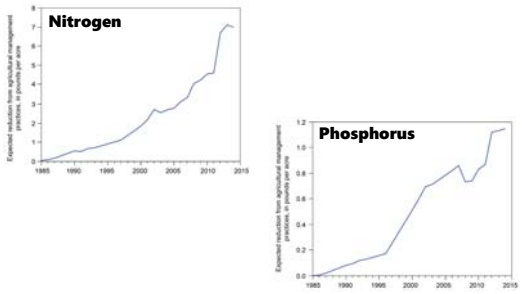
Smith Creek: Nutrient management, cover crops, and cattle exclusion fencing are commonly implemented practices

Applied Practices for the Smith Creek 10 digit HUC for the period of FY10-17- report date 12/19/2017

Practice Code	Practice Name	Units	Sum of Applied Amount	Count of Applied Amount
313	waste storage facility	no	25.0	25
315	herb. Weed control	ac	276.3	37
328	conservation crop rotation	ac	1,694.1	152
329	residual and tillage mgmt- no till	ac	999.6	64
340	cover crop	ac	3,223.6	175
344	residual mgmt, seasonal	ac	245.2	7
345	residue and till age mgmt, reduced till	ac	841.9	21
367	roofs and covers	no	15.0	15
382	fence	ft	138,212.0	111
472	access control	ac	473.1	109
484	mulching	ac	17.9	10
490	tree/shrub site prep	ac	3.2	7
512	forage and biomass planting	ac	600.8	64
516	livestock pipeline	ft	76,936.0	82
528	prescribed grazing	ac	726.3	48
533	pumping plant	no	18.0	18
558	roof runoff structure	no	18.0	18
561	heavy use area protection	ac	24.7	62
575	trails and walkways	ft	5,466.0	15
578	stream crossing	no	21.0	20
580	streambank and shoreline protection	ft	2,133.0	6
590	nutrient management	ac	5,825.7	351
591	amendments for the treatment of ag waste	ani unit	4,098.0	12
595	integrated pest management	ac	9.8	6
612	tree/shrub establishment	ac	15.9	10
614	watering facility	no	121.0	111
620	underground outlet	ft	4,489.0	10
633	waste recycling	ac	1,163.8	112
642	water well	no	10.0	10
645	upland wildlife habitat mgmt	ac	86.5	8
647	early successional habitat development/mgmt	ac	14.2	10

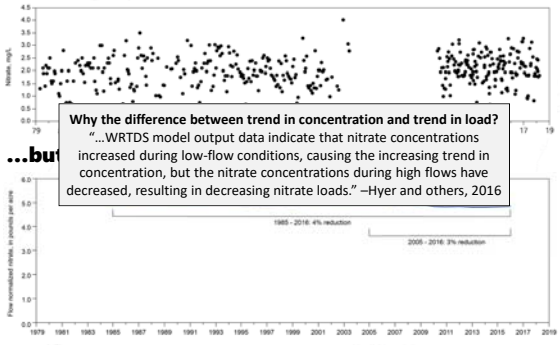
USGS

Smith Creek: Expected nutrient reductions from agricultural management practices have increased through time



USGS Data from Chesapeake Bay Watershed Model v5.3.2, reported by Sekellick and others, 2017

Smith Creek: Nitrate concentrations haven't decreased over time…



Why the difference between trend in concentration and trend in load?
"…WRTDS model output data indicate that nitrate concentrations increased during low-flow conditions, causing the increasing trend in concentration, but the nitrate concentrations during high flows have decreased, resulting in decreasing nitrate loads." –Hyer and others, 2016

…bu

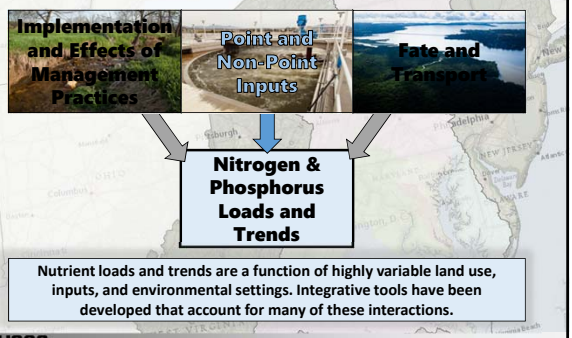
USGS Data available online: https://cbrim.er.usgs.gov/index.html

Why are nutrient loads not responding to management practice effects in all streams?

- The expected reductions from management practices may be overly optimistic.
- Management practice effects may be outweighed by new nutrient applications.
- Our monitoring networks may not be sensitive enough to detect the level of change that has occurred.
- Management practices may not target the dominant nutrient sources or transport pathways within a watershed.
- Time lags between implementation and monitoring may have not aligned.

USGS 12

What are the primary drivers of nutrient trends?

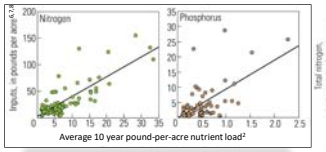


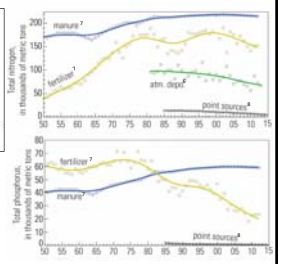
Nutrient loads and trends are a function of highly variable land use, inputs, and environmental settings. Integrative tools have been developed that account for many of these interactions.

USGS

13

The load of nutrients delivered to streams is primarily determined by the mass of nutrients applied in the watershed





Changes in nutrient inputs do not fully explain nutrient trends because of highly variable interactions between landuse, inputs, and environmental setting.

But...

A significant, long-term reduction in nutrient inputs is the most effective way to reduce nutrient loads.

Additional nutrient sources include inputs from urban areas and naturally occurring phosphorus in sedimentary rocks.

USGS ²Moyer and others, 2017 ⁶National Atmospheric Deposition Monitoring Program (NADP) ⁷Sekellick, 2017 ⁸Chesapeake Bay Program (CBP) nutrient point source database

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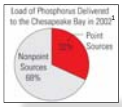
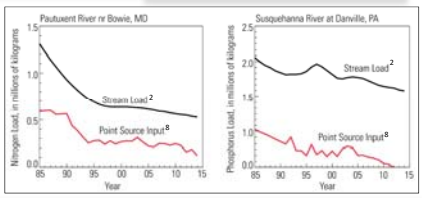
Reduced point source inputs have improved nutrient loads in some streams

Point source inputs include industrial and municipal wastewater discharges and combined sewer overflows.

Water-quality responses to point source reductions can be observed relatively quickly because inputs are delivered directly to streams.





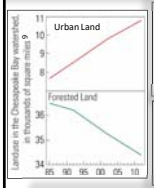
Continued improvements in wastewater treatment may be limited by available technology. Declines in non-point source inputs will be necessary to achieve continued nutrient reductions.

USGS ¹Ator and others, 2011. ²Moyer and others, 2017 ⁸CBP nutrient point source database

15

Urbanization typically adds nutrient inputs *to a watershed*

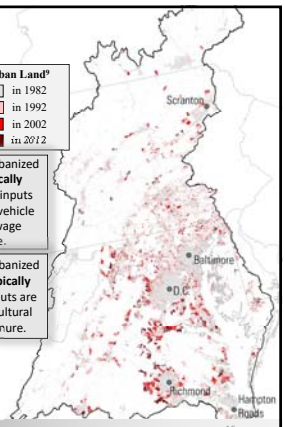
About 3,000 square miles of urban land were added to the watershed over the past 30 years, typically at the expense of forested land[9].



Nutrient loads in recently urbanized forested watersheds **typically increase** as a result of new inputs that include lawn fertilizer, vehicle emissions, septic and sewage effluent, and pet waste.

Nutrient loads in recently urbanized agricultural watersheds **typically decrease** because urban inputs are typically smaller than agricultural inputs of fertilizer and manure.

As population continues to grow in the watershed, effective management of urban nutrient loads will be needed to achieve mandated load reductions.



USGS [9]Falcone, 2015.

16

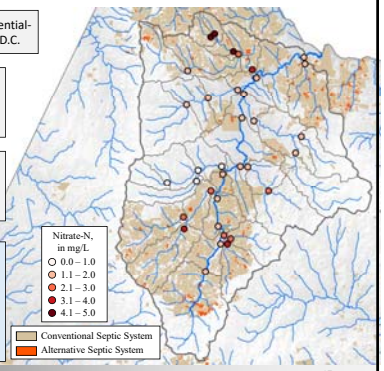
Diffuse wastewater inputs can be important sources of nitrogen delivered to streams from urban watersheds

Difficult Run is a 56 square mile residential-urban watershed near Washington D.C.

Water-quality sampling revealed that the high nitrogen concentrations were derived from areas with a high density of septic systems[1].

Nitrogen loads are contributed by the discharge of septic system effluent to groundwater, in addition to other diffuse urban inputs[1].

Management activities for nitrogen would likely be most effective by the ongoing maintenance of septic systems, the management of fertilizer applications, and the possible expansion of the sanitary-sewer infrastructure.

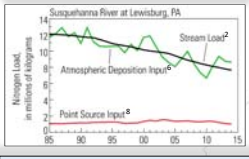


USGS [1]Hyer and others, 2016

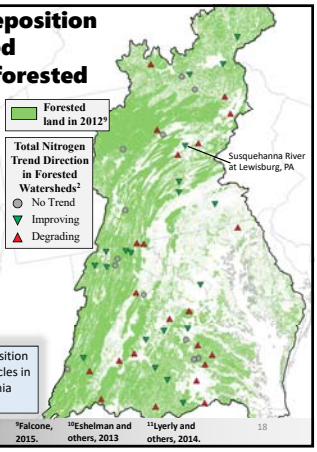
17

Reduced atmospheric deposition of nitrogen has improved nitrogen loads in some forested *watersheds*[10]

Atmospheric deposition is a relatively minor source of nitrogen to the bay, but can be a large source in heavily forested areas where other inputs are limited.



Larger reductions of atmospheric nitrogen deposition have been offset by the growing number of vehicles in the watershed and increased rates of ammonia volatilization from poultry houses[11].



USGS [2]Moyer and others, 2017 [6]NADP [8]CBP nutrient point source database [9]Falcone, 2015. [10]Eshelman and others, 2013 [11]Lyerly and others, 2014.

18

The intensity and location of agricultural practices has been redistributed throughout the watershed

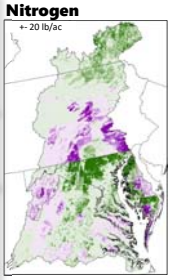
Manure and fertilizer are the largest nutrient sources in the watershed and, despite an increase in management practices, inputs have not been consistently reduced throughout the watershed[12].

Intensification of animal agricultural practices has most commonly occurred from poultry expansion[12].

Field-scale studies have demonstrated that long-term, significant reductions of agricultural inputs will eventually result in reduced nutrient loads[13,14].

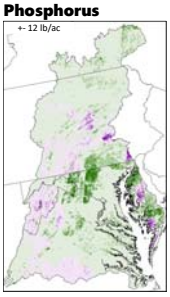
Nitrogen

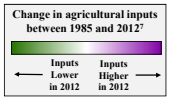
+- 20 lb/ac



Phosphorus

+- 12 lb/ac

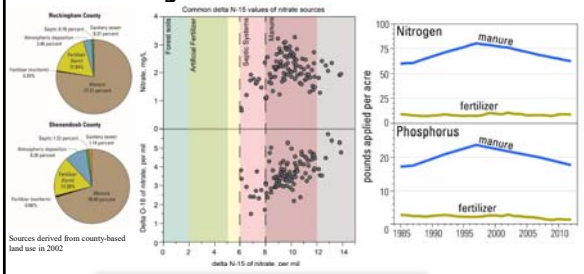




USGS [7]Sekellick, 2017 [12]Keisman and others, in review [13]Denver and others, 2010 [14]McCoy and others, 2010

19

Smith Creek: Manure is the dominant source of nitrogen in the watershed



Management practices that reduce applications of manure and fertilizer would be important for reducing nutrient loads

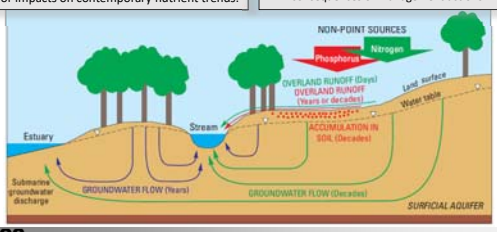
USGS Reported in Hyer and others, 2016

Reductions in nutrient inputs do not always result in improved loads

Why?

Historical agricultural inputs of fertilizer and manure have resulted in **nitrogen storage in groundwater** and **phosphorus storage in soils**. The legacy effects of these processes can have major impacts on contemporary nutrient trends.

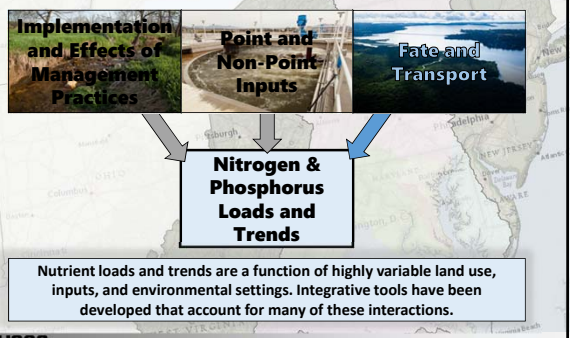
The **geology** and **climate** of the watershed can strongly influence the transport of nutrients from the landscape to streams. These factors can mitigate the benefits of or exacerbate the consequences of management actions.



USGS Figure adapted from [15]Ator and Denver, 2015

21

What are the primary drivers of nutrient trends?



Nutrient loads and trends are a function of highly variable land use, inputs, and environmental settings. Integrative tools have been developed that account for many of these interactions.

USGS

22

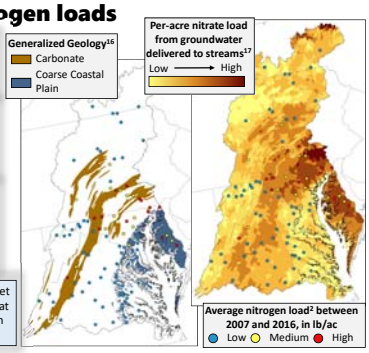
High groundwater nitrogen concentrations (nitrate) can result in large nitrogen loads

Groundwater nitrogen concentrations are highest in **agricultural watersheds** because inputs of fertilizer and manure commonly exceed crop needs[16].

Low denitrification rates are associated with geologic properties such as sinkholes and porous soils. These features result in increased groundwater nitrogen transport[16].

The largest nitrogen loads occur in **carbonate** and **coastal plain** streams because intense agricultural activities and low denitrification rates result in high amounts of nitrogen in the groundwater.

Effective management actions would target these areas by implementing practices that better control the application of nitrogen and its movement to groundwater.



USGS

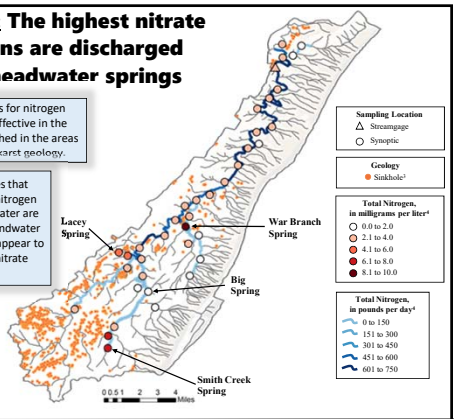
[2]Moyer and others, 2017 [16]King and Biekman, 1974 [17]Terziotti and others, 2018

23

Smith Creek: The highest nitrate concentrations are discharged from some headwater springs

Management activities for nitrogen would likely be most effective in the upper part of the watershed in the areas that are underlain by karst geology.

Management activities that reduce the amount of nitrogen transported to groundwater are important because groundwater discharge to the stream appear to be driving increased nitrate concentrations.



USGS

[1]Landuse from NLCD 2011 [2]Geology from Dicken and others (2005) [3]Sinkholes from Hubbard (1983) [4]Total nitrogen concentrations from May 2013 synoptic sampling event.

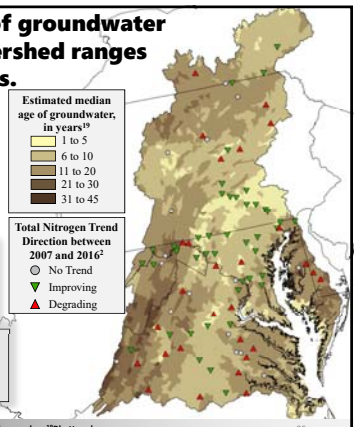
Reported in Hyer and others, 2016

The residence time of groundwater throughout the watershed ranges from days to decades.

Distribution of age from runoff, soil water, and groundwater entering a typical stream in the Bay watershed[18]

Groundwater contributions of nitrate to streams may mitigate the observed effects of BMPs in areas with long residence times.

The residence time of groundwater in carbonate areas tends to be shorter than on the Coastal Plain, where decades-old nitrate can contribute to streams[15].



USGS [2]Moyer and others, 2017 [15]Ator and Denver, 2015 [18]Lindsey and Phillips, 2003. [19]Bhatt and others, 2017.

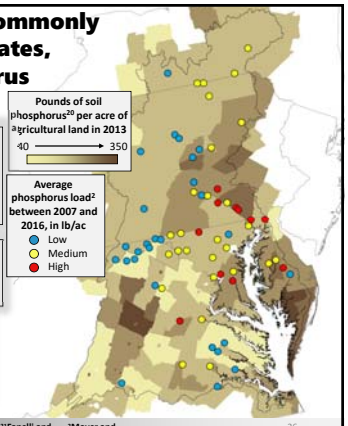
25

Agricultural inputs commonly exceed crop uptake rates, resulting in phosphorus saturated soils

While sediment erosion is the primary delivery vector of phosphorus to streams, up to half of the load in some agricultural streams is exported in dissolved form (orthophosphate) where soils have become phosphorus saturated[21].

Expected water-quality improvements from manure and fertilizer input reductions may be offset by legacy phosphorus stored in soils.

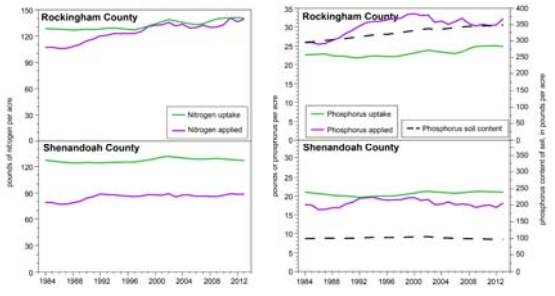
Effective phosphorus management in agricultural settings will need to implement practices that address dissolved and sediment-bound phosphorus.



USGS [20]Chesapeake Bay Watershed Model version 6 calibration inputs [21]Fanelli and others, 2017 [2]Moyer and others, 2017

26

Smith Creek: Nutrient applications that exceed crop uptake requirements can lead to nitrate storage in groundwater and phosphorus storage in soils



USGS Data from Chesapeake Bay Watershed Model, available online: https://cast.chesapeakebay.net/

The delivery of nutrients from streams to the estuary varies throughout the watershed

Nitrogen may be lost in streams as a result of biological processing and denitrification.

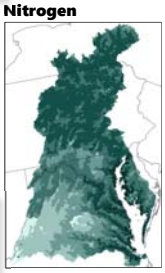
These processes tend to be greater in warmer streams and can be influenced by climatic variability[1].

Chemical and physical processes can **retain** phosphorus in-stream, but there are no natural processes that **remove** phosphorus from the stream corridor.

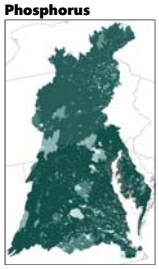
Sediment bound phosphorus can be stored behind impoundments or in streambeds and floodplains and can be remobilized during high flow[1].

Reservoirs on the lower Susquehanna, including the Conowingo Dam, have reached their capacity for retaining sediment and attached phosphorus[21,22]

Nitrogen



Phosphorus



Percent of nutrient load delivered to downstream receiving waters[1]

20 40 60 80 100

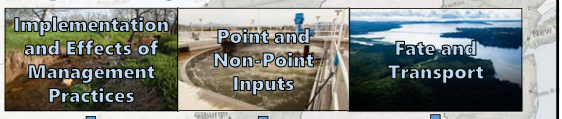
USGS

A USGS webinar on the water-quality effects of the Conowingo reservoir infilling is available online: http://epawebconferencing.acms.com/p29j5q7he49/

[1]Ator and others, 2011. [21]Hirsch, 2012 [22]Zhang and others, 2013

28

Dissecting Drivers of Nutrient Trends in Chesapeake Bay Streams



While the implementation of management practices has increased through time, nutrient trends do not consistently align with expected reductions.

Changes in nutrient inputs do not fully explain nutrient trends, but a significant, long-term reduction of nutrient inputs is the most effective way to improve nutrient loads.

The movement of nutrients from the land to streams to the bay is unequal throughout the watershed and is heavily influenced by geology, climate, and impoundments.

Nutrient loads and trends are a function of highly variable land use, inputs, and environmental settings. Integrative tools have been developed that account for many of these interactions.

USGS

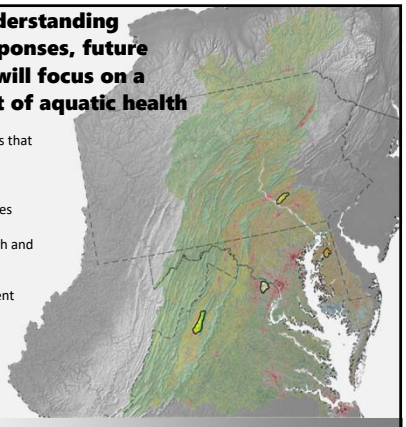
29

In addition to understanding water-quality responses, future study objectives will focus on a broad assessment of aquatic health

What are the aquatic stressors that affect recreational species in agricultural watersheds?

How are management practices affecting the restoration and conservation of freshwater fish and their habitats?

Which agricultural management practices provide the highest benefits for fish and stream habitats?

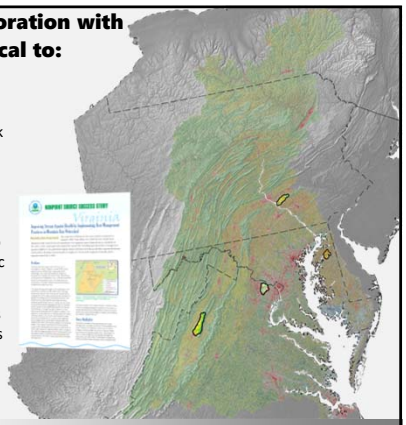


USGS

Continued collaboration with NRCS will be critical to:

1. Maintain focused management practice investments in Smith Creek
2. Quantify and analyze management practice information
3. Exchange information to help address future aquatic resource objectives
4. Share the success of this research among colleagues

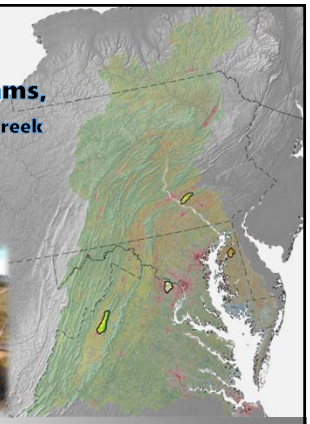
Thank you for your support and advocacy of this science!



USGS

Dissecting Drivers of Nutrient Trends in Chesapeake Bay Streams, with highlights from Smith Creek

Jimmy Webber
USGS Virginia and West Virginia Water Science Center
Richmond, VA
jwebber@usgs.gov



USGS

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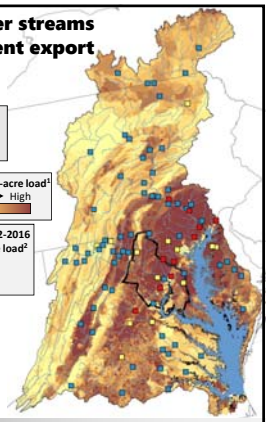
USGS

SSC: Urban, Piedmont, headwater streams have the greatest rates of sediment export in the Chesapeake watershed

Sediment export rates are lower in agricultural streams, but agricultural areas are more widespread than urban piedmont watersheds.



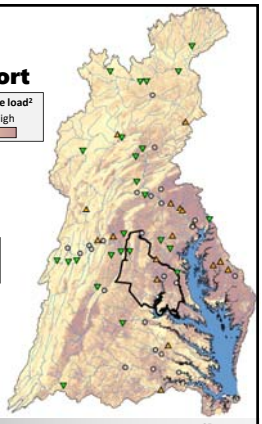
USGS [1]Ator and others, 2011 [2]Moyer and others, 2017

34

Trends in phosphorus loads result from changing phosphorus inputs or transport

In the most recent ten year period (2007 – 2016)[1]:

2002 TP per-acre load[2]
Low → High



% of sites improving: **38%** — Improving sites have a median change of -23%

% of sites Degrading: **26%** — Degrading sites have a median change of +21%

% of sites with no trend: **36%**

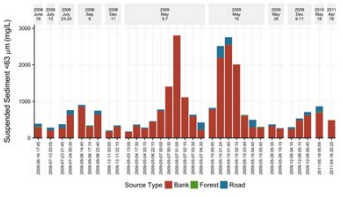
USGS [1]Moyer and others, 2017 [2]Ator and others, 2011

35

SSC: Major sediment sources vary temporally and spatially in streams throughout the watershed

Major sediment sources include agricultural land, urban areas, and stream banks[1].

Most fine-sediment transported during storm events in Upper Difficult Run is derived from bank material[2].



Practices associated with stream restoration are important in urban areas and headwater streams where **bank erosion** is commonly a dominant source of sediment export.

Practices associated with preventing soil erosion are important in agricultural areas where upland sediment is commonly mobilized to streams.

Practices associated with floodplain protections are important in larger order streams where **floodplains can trap most upstream eroded sediment.**

USGS [1]Noe and others, in Review [2]Cashman and others, in Review

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The Water Science Institute would like to thank NRCS and the Steinman Foundation for their support of this project.

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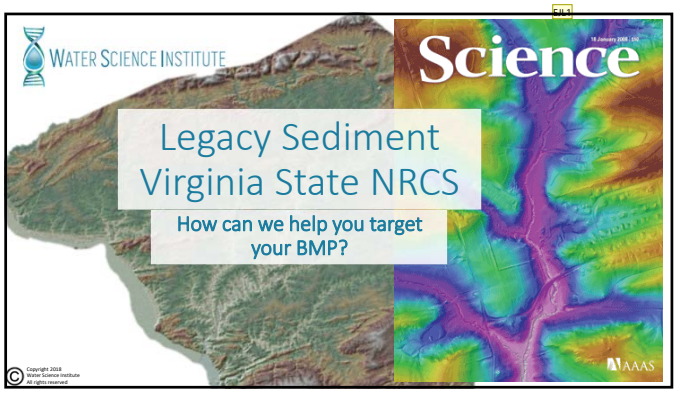


Historic mill dams

- 363 dams in Lancaster
- 301 dams in York
- 109 dams in Dauphin

Slide 2

EJL1 Evan J. Lewis, 3/15/2018

Virginia mill dams

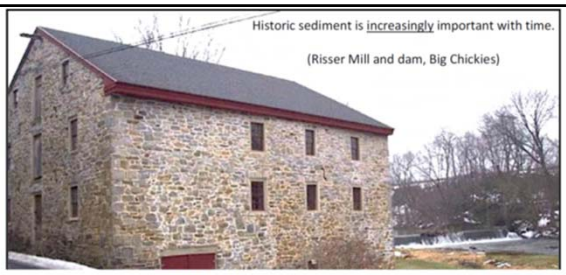
United States Census of 1840: Map of mill density by county

Fauquier county mill dams

United States Census of 1840: Map of mill density by county

Albemarle county mill dams

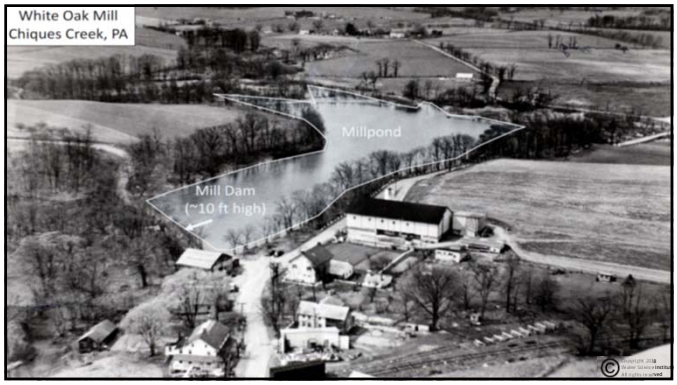
United States Census of 1840: Map of mill density by county

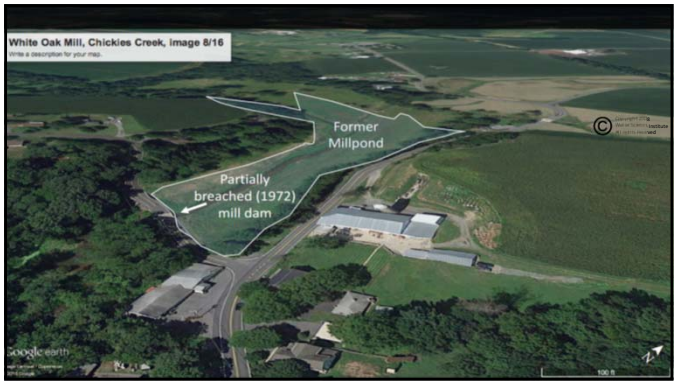


1. Historic sediment (typically 2 to 14 ft thick) is ubiquitous along valley bottoms in the Mid-Atlantic region.
2. Low-order streams are heavily milled and impacted by stored historic sediment. **BASE LEVEL RISE**
3. Low-order (1st, 2nd, 3rd) streams comprise 89% of Chesapeake Bay watershed area.
4. Banks are higher immediately upstream of dams and other grade control structures.
5. Bank erosion rates are greatest after dam breaching. **BASE LEVEL FALL**

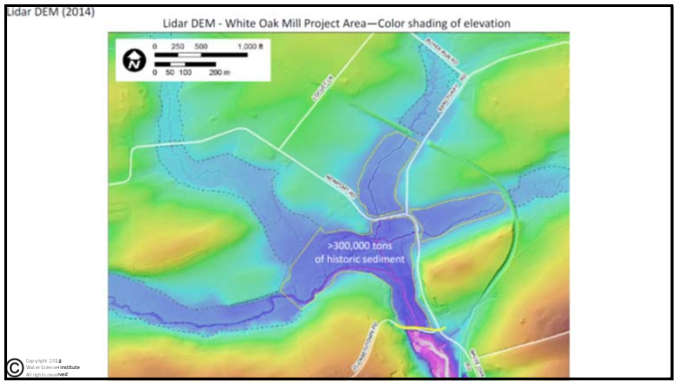
Indian Run, PA – Stobers Dam breach, 2011
Height 14 ft (4.3 m)

Indian Run, PA – Stobers Dam breach, 2011

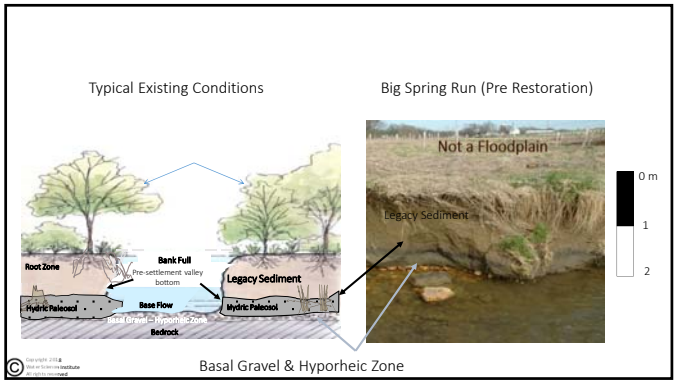

White Oak Mill
Chiques Creek, PA
Millpond
Mill Dam
(~10 ft high)


White Oak Mill, Chickies Creek, image 8/16
Former
Millpond
Partially
breached (1972)
mill dam


Indian Run, PA – Stobers Dam breach, 2011
Knickpoint in 2012---BASE LEVEL FALL


Lidar DEM (2014)
Lidar DEM - White Oak Mill Project Area—Color shading of elevation
>300,000 tons
of historic sediment

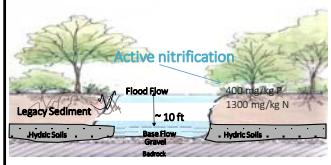

Legacy Sediment In Lancaster
.....hmmm


Typical Existing Conditions
Big Spring Run (Pre Restoration)
Root Zone
Bank Full
Pre-settlement valley bottom
Legacy Sediment
Hydric Paleosol
Base Flow
Mydric Paleosol
Bedrock
Not a Floodplain
Legacy Sediment
0 m
1
2
Basal Gravel & Hyporheic Zone

Legacy Sediment Removal Restore Functioning Wet Meadow Ecosystem

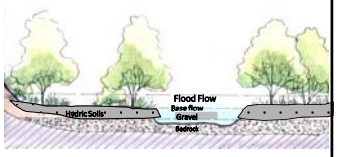
Mesic Wasteland

Existing Condition



Tussock-Sedge Wet Meadow

Restoration Target



Legacy Sediment In Lancaster

Legacy Sediment In Lancaster

What did the Pre-Settlement Landscape Look Like?

Tussock-sedge wet meadows from valley wall to valley wall,
and *no* evidence of buried single-thread meandering stream channels.

Restoration Target: Vestige of a Holocene pre-settlement landscape (Chester Co.): Never dammed, no legacy sediment, bog turtle habitat, 20 ka paleoclimate record (Martin 1958).

Big Spring Run Floodplain Wetland Restoration

Before – April 2004

After - June 2013

BSR Before Wetland Restoration

8 April 2005

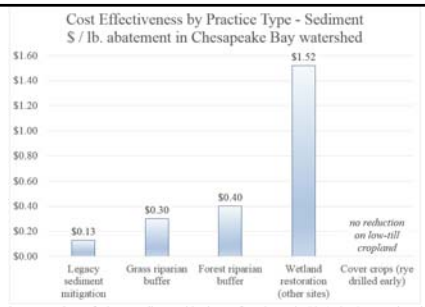
Big Spring Run After Wetland Restoration

Restoration completed November 2011

Legacy Sediment

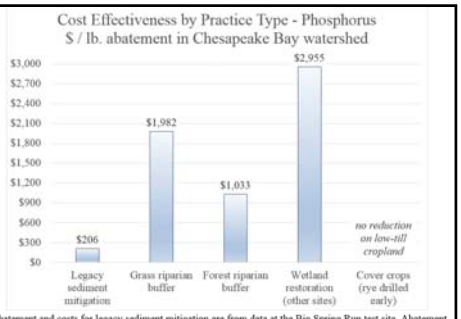
- Sediment Removed: ~21,955 tons
- Sediment Source: 85-100 % from banks
- Sediment Load Reduction: ~120 tons/yr
- **Total P Removed:** ~50,500 lbs
- **Total Sorbed P Removed*:** ~35,128 lbs
- **Total N Removed:** ~63,600 lbs
- **Nitrate Reduction:** 15% in base flow
- **Total P Reduction**: 26% in storm flow
- **Carbon Storage**: 7,300 lbs/yr
- **Water Storage**: 2.7 million gallons inc. (50 %)
- Groundwater: 10% more output
- **Up/Down Peak Delay in flow**: 17 min inc.
- **Surface Water T:** ~8-15° C drop
- **Biological Indicators:** Shift from upland dominated to aquatic ecosystem dominated floodplain area based on biological indicators - vascular plants, diatoms, amphibians.

Economics



Notes: Abatement and costs for legacy sediment mitigation are from data at the Big Spring Run test site. Abatement from buffers, cover crops, and wetland restoration at sites not containing legacy sediments is from the Chesapeake Bay Program (CBP) watershed model. Cover crops do not reduce Sediment and Phosphorus from low-till cropland. Costs for buffers, cover crops, and wetland restoration are based on USDA Natural Resource Conservation Service and Farm Service Agency payment schedules and Wieland et al. (2009).

Economics



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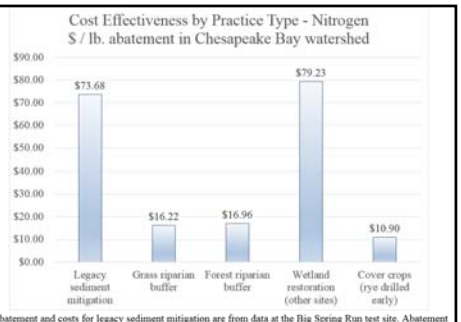
Economics



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Economics

Acres needed to match Big Spring Run abatement: Chesapeake Bay watershed averages

Practice type	**Acres needed for each pollutant**		
	Sediment	*Phosphorus*	*Nitrogen*
	[1]	[2]	[3]
Forest riparian buffer	79	126	6
Grass riparian buffer	79	324	7
Wetland restoration at other sites	80	97	7
Cover crops (rye planted early)	-	-	36

Notes:
[1] to [3] calculated as BSR total abatement (= abatement from Table 2 x 4.7 acres) divided by the abatement per acre of each practice.

Economics

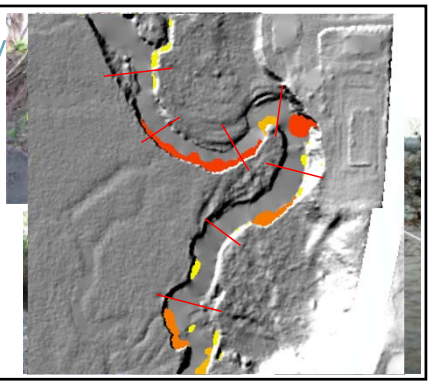
Summary of legacy sediment cost-effectiveness in comparison to other conservation practices

Practice Type	$ / lb. abatement, edge-of-stream			$ / lb. abatement, in the Bay		
	Sediment	Phosphorus	Nitrogen	Sediment	Phosphorus	Nitrogen
Legacy sediment mitigation	$0.08	$142.69	$30.74	$0.13	$205.02	$73.20
Grass riparian buffer	$0.18	$1,379.51	$6.81	$0.30	$1,982.05	$16.22
Forest riparian buffer	$0.24	$719.23	$7.12	$0.40	$1,033.38	$16.96
Wetland restoration (other sites)	$0.91	$2,056.83	$33.28	$1.52	$2,955.21	$79.23
Cover crops (rye drilled early)	-	-	$4.58	-	-	$10.90

Notes: Abatement and costs for legacy sediment mitigation are from data at the Big Spring Run test site. Abatement from buffers, cover crops, and wetland restoration at sites not containing legacy sediments is from the Chesapeake Bay Program (CBP) watershed model. Cover crops do not reduce Sediment and Phosphorus from low-till cropland. Costs for buffers, cover crops, and wetland restoration are based on USDA Natural Resource Conservation Service and Farm Service Agency payment schedules and Wieland et al. (2009).

Traditional Survey Methodology

- Using 2D data to represent 3D space
- High uncertainty
- Laborious, time consuming and expensive



Erosion hotspots (DEM differencing)

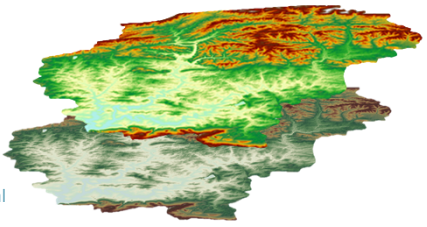
2014 Lidar

-

2008 Lidar

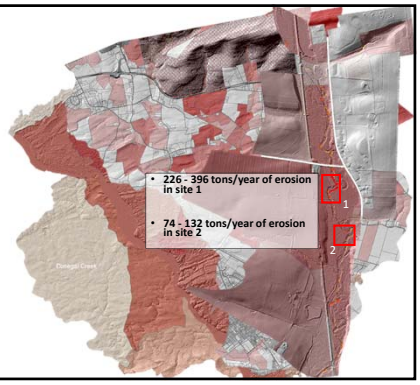
=

Vertical and horizontal Change



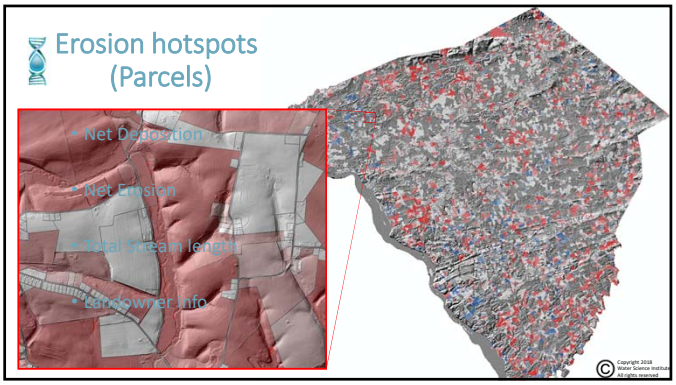
Narrow down areas of interest

- Hydrological unit code 10
- Hydrological unit code 12
- Parcels
- Area of Interest



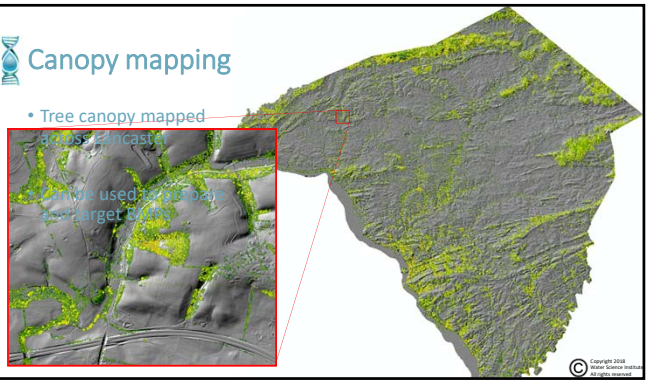
Erosion hotspots (Parcels)

- Net Deposition
- Net Erosion
- Total Stream length
- Landowner info



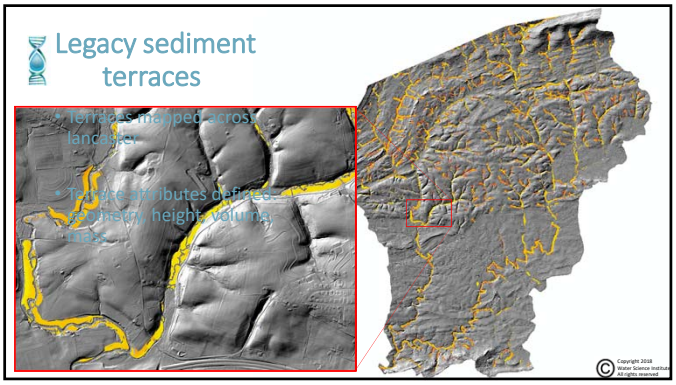
Canopy mapping

- Tree canopy mapped across Lancaster
- Now used to target BMPs



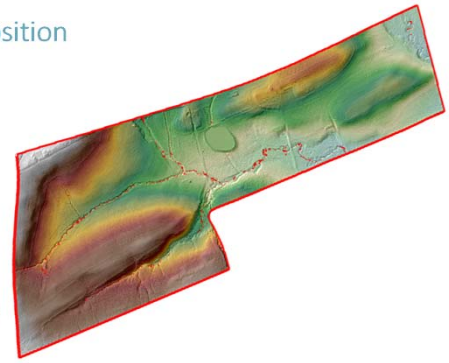
Legacy sediment terraces

- Terraces mapped across landscape
- Terrace attributes defined: geometry, height, volume, etc.



Erosion/Deposition Targeting

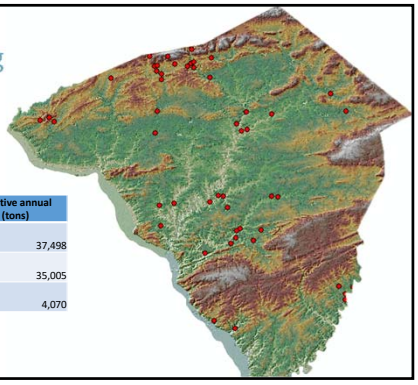
- Parcels grouped
- Stream length calculated
- Volume calculated
- Annual loading factor



Erosion Targeting

- Top 50 sites
- Site 1
- Site 18

	cumulative stream length (ft)	Cumulative annual erosion (tons)
Top 50 sites	311,878	37,498
Top 20 sites	174,738	35,005
Top 4 sites	11,337	4,070



Site 1

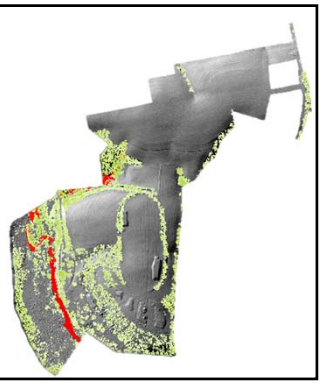
Stats:
Address - 465 SPEEDWELL FORGE RD

Stream Length - 890.45 (m)
2921.45 (ft)

Annual Erosion - 0.60 (tons/ft)
34997.62 (ft^3)

Load Factor - 1.22 (m^3/m)
11.98 (ft^3/ft)

Canopy - Thin



Site 2

Stats:
Address- 1736 BEAVER VALLEY PIKE

Stream Length- 955.01 (m)
3133.25 (ft)

Annual Erosion - 0.52 (tons/ft)
32693.47 (ft^3)

Load Factor - 1.06 (m^3/m)
10.43 (ft^3)

Canopy - Absent

Site 12

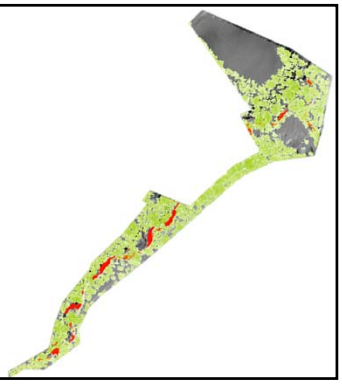
Stats:
Address - 2855 SAFE HARBOR RD

Stream Length - 797.51 (m)
2616.50 (ft)

Annual Erosion - 0.25 (tons/ft)
13045.35 (ft^3)

Load Factor - 0.50 (m^3/m)
4.99 (ft^3/ft)

Canopy - Thick



Site 18

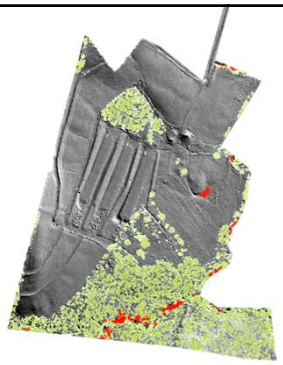
Stats:
Address - 916 TERRE HILL RD

Stream Length - 939.80 (m)
3083.340526 (ft)

Annual Erosion - 0.20 (tons/ft)
12668.93 (ft^3)

Load Factor - 0.41 (m^3/m)
4.11 (ft^3/ft)

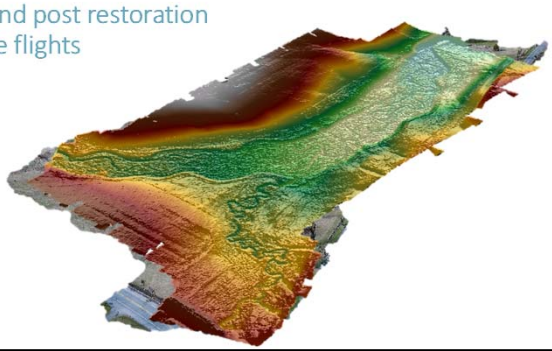
Canopy - Thick



Drone Surveys

- Orthophotos
- Digital Elevation Models
- Vegetation Maps
- Water temperature

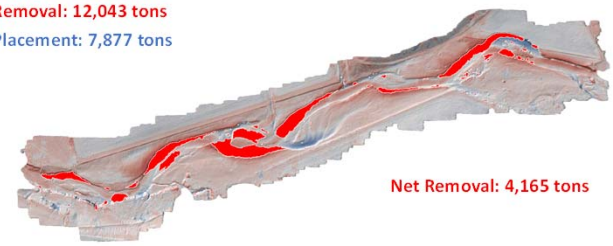
Pre and post restoration drone flights



2014-2016 LiDAR differencing and (DoD) bank stabilization project

Removal: 12,043 tons

Placement: 7,877 tons



Net Removal: 4,165 tons

Parcel Report

PREPARED FOR

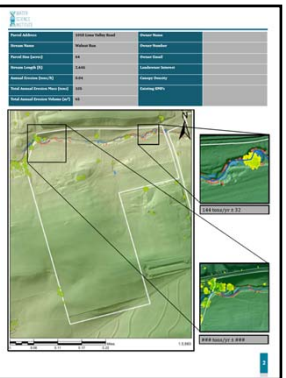
Strasburg Township

PREPARED BY

Water Science Institute

P.O. Box 4995, Lancaster, PA, 17604

Jon Stewart | Executive Director | jon@watersciencelnstitute.org



This material is based upon work supported by the Natural Resources Conservation Service, U.S. Department of Agriculture, under number 69-3A75-17-12.

Any opinions, findings, conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of the U.S. Department of Agriculture.

CRP/CREP Enrollment

Prepared 11/8/2018

SU51 CREP (2018)

CREP signup offered throughout 2018. All other types of CRP enrollment was suspended or limited. This effective limited the 2018 enrollment in VA to CREP.

Re-Enrolled Contracts

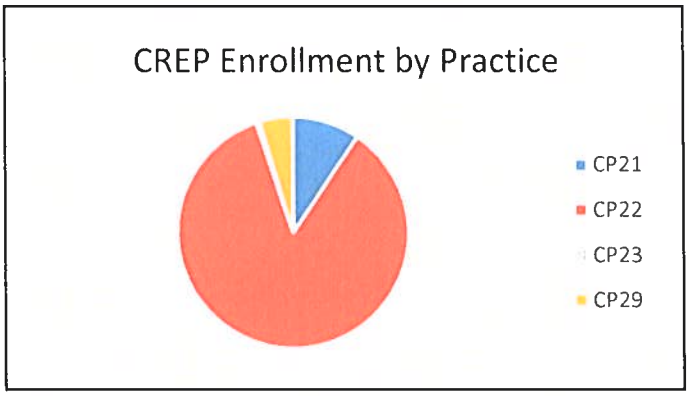
Contract Acreage	Practice Code
112.99	**CP21 Total**
1,191.77	**CP22 Total**
24.61	**CP23 Total**
7.30	**CP29 Total**
1,336.67	**Grand Total**

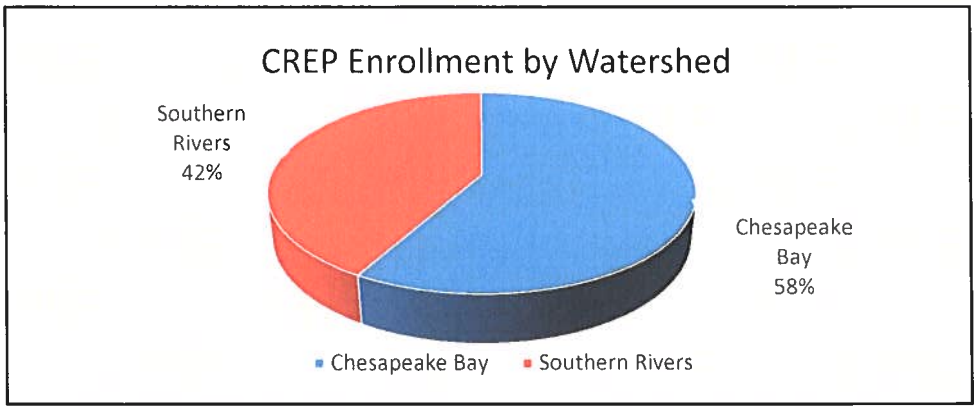
New Contracts

Contract Acreage	Practice Code
17.14	**CP21 Total**
221.17	**CP22 Total**
33.10	**CP23 Total**
4.50	**CP29 Total**
275.91	**Grand Total**

Total CREP (Active Contracts)

Contract Acreage	Practice Code
2,360.39	**CP21 Total**
16,781.40	**CP22 Total**
123.48	**CP23 Total**
808.41	**CP29 Total**
20,073.68	**Grand Total**





Total Non-CREP (Active Contracts)

A total of17,625.39 is enrolled in various 'General' and 'Continuous' conservation practices including:

- Grass Cover/Tree Cover
- Grassed Waterways
- Longleaf Pine
- Quail field borders
- Shallow Water Impoundments

CRP Grassland

Bedford	11.8
Franklin	59.35
King George	22.9
Mecklenburg	71.36
Pittsylvania	143.04
Russell	609.16
Scott	275.98
Grand Total	**1193.59**

Agricultural Conservation Easement Program (ACEP)

Components: Agricultural Land Easement (ALE) & Wetland Reserve Easement (WRE)

FY-18 Highlights

- **Closed** 5 easements: 2 ALE, 3 WRE.
  All Legacy program easements are closed, i.e. FRPP, GRP, WRP.
- **Monitored** 100% of NRCS-held and -funded easements.

FY-19 Highlights

- **New applications**: 9 Total: 6 ALE, 3 WRE. Total funds requested: approx. $3.3 million
  (Last year's initial allocation: $918,900 . Are waiting for FY-19 allocations.)
- **In progress:** 5 easement acquisitions: 4 ALE, 1 WRE; 5 WRE restorations.
- **Website** is updated for FY-19, until new Farm Bill changes arrive.
- **WRE payment**: the purchase valuation will utilize a Geographic Area Rate Cap (GARC) percentage of a 5% reduction, applied to individual property appraisals, as done in recent years. This is under final review at the national NRCS office.
- **Higher WRE payment** per-acre rate caps have been requested for 20 counties with special values. These higher value counties have high development pressure and networks of tributaries flowing through the Chesapeake Bay Watershed. Boosting WRE enrollment in these counties would improve habitat throughout the watershed and ultimately the Bay.)

Through FY-18: All VA Easements Acquired with NRCS Funds

139 Total Perpetual Easements

- 57 Agricultural Land Easements (ALE & FRPP)
- 20 Grassland Reserve Program Easements (GRP)
- 62 Wetland Reserve Easements (WRE & WRP)
- **14,726 acres total** - the 139 total easements
  (**4,564** held by NRCS; **10,162** held by other organizations, partially funded by NRCS.)
- **Wetland restoration** – WRE, WRP easements were restored
  (except for the newly acquired 5 in progress.)

Diane D. Dunaway | Easement Program Manager | 804.287.1634 | Agricultural Conservation Easement Program | Natural Resources Conservation Service USDA | VA NRCS Easement Website

VIRGINIA's CIG PROGRAM

The purpose of the **Conservation Innovation Grants (CIG)** Program is to ***stimulate the development and adoption of innovative conservation approaches and technologies***, while leveraging the Federal investment in environmental enhancement and protection in conjunction with agricultural production.

Virginia CIG Program History:

- Began in 2010
- $75,000 is the maximum award for a State CIG grant
- 38 CIG grants with $2.3 million in awards

Virginia's Soil Health Initiative

We are using the CIG Program to spearhead our Virginia Soil Health Initiative. To date, we have invested in 18 CIG projects that address improving soil health, such as Hanover-Caroline SWCD's ***"Feasibility of Multi-species Cover Crops in Central Virginia Cropping Systems to Affect Soil Quality"*** project. Hanover-Caroline District staff worked closely with district staff with Henricopolis, Tidewater and Northern Neck SWCDs to recruit 35 producers to grow 5-acre plots of multi-species cover crops on their farms. By the response of the participants, the project was an overwhelming success! They embraced the project in the first year with great enthusiasm, and many participants expanded the program of their own accord by planting more acreage in the second and third years of the project, paying for the extra cover crop seed themselves.

SOME CIG EXAMPLES

Dr. Michael Flessner (Virginia Tech) is researching additional benefits that cover crops can provide besides building soil health through his CIG project ***"High Residue Cover Crops for Weed Suppression and Impact on Cash Crop Performance"***, such as:

- To evaluate and demonstrate innovative weed suppression with high-residue cover crops, including suppression of herbicide-resistant horseweed and summer annual weeds through competition by fall-seeded cover crops.
- To evaluate and demonstrate innovative opportunities for increased use of cover crops in cotton and other southeastern Virginia cropping systems, including precision planting of forage radish as a substitute for under-row subsoiling and use of crimson clover as a nitrogen source for cotton.

Grazing Management

Two of Virginia's 8 CIGs addressing grazing management resource concerns are spreading the word across the state through farm demonstrations about the importance of reducing the amount of toxic fescue that cattle, sheep and horses consume. Toxic fescue is not only an animal health issue because of heat stress, but it also reduces net profits through reductions in weight gain and reproduction performance. Virginia Tech's ***"Demonstrating Conversion of Wildtype to Novel***

Endophyte Fescue Pastures for Greater Livestock Performance and Better Environmental Outcomes" project led by Dr. John Fike; two of his project's objectives are:

- Documenting endophyte infection rate and ergot alkaloid levels on six demonstration farm pastures and three or four farms surrounding each demonstration site.
- Demonstrating the process of converting toxic tall fescue pastures to nontoxic Novel Endophyte tall fescue pastures on five or six demonstration farms.

Large Animal Mortality

Virginia Cooperative Extension Agent Bobby Clark has led three Virginia Tech CIG projects that addressed large animal mortality resource concerns, such as:

- ***"Screening and Beneficial Re-Use of Large Animal Mortality Compost" –*** producers are able to rent an Allu Bucket Grinder to enable them to sift the large, uncomposted bones from their large animal mortality compost piles, so that they can then land apply this valuable resource.
- **"Aboveground Burial for Managing Catastrophic Loss of Livestock"** - to demonstrate the use of aboveground burial as a technique for disposal of catastrophic Large Animal Mortality.

Virginia CIG Projects have also focused on the following topics: Manure Injection, Using Drones to Map Invasive Plant Species, Slug Management in Corn and Soybeans, Silvopasture, High Tunnel Production Technologies, Containerized Longleaf Pine Production, Agroforestry Riparian Forest Buffers, Evaluation of the Edge Effect in Grain Cropping Systems, Precision Agriculture and Strategically Reducing Phosphorus Excretions in Grazing Beef Cattle.

FY2019 Virginia CIG Program

- Stacey Bradshaw will direct the Virginia CIG Program beginning on January 2, 2019.
- We will select potential FY2019 CIG Topics by Thanksgiving.
- Amount of CIG funding has not been determined yet for FY2019.
  - NRCS state offices are allowed to use up to 5% of their EQIP allocation for CIG; however, we normally use between 1-2% in Virginia.
- We expect to announce the FY2019 CIG offering this winter.

Regional Conservation Partnership Program (RCPP)

There are 10 RCPP Projects in Virginia: **11.8.2018**

2015 RCPP Agreements (September 30, 2019 end date)

68-33A7-15-001 - Virginia Department of Forestry (State Funding Pool)

Forests - Fundamental for Conservation in Virginia

Total EQIP Financial Assistance (FA) = **$940,000**

Forests are fundamental to conservation in Virginia. Productive and well-managed forests enable producers/owners to retain forests for long-term benefit. Implementation of forestry practices will conserve natural resources and improve forest health, condition and habitat. This project will bring focused EQIP funds for practices to producers in Virginia to implement good forestry and conservation practices.

CAP 106 Forest Management Plans; Site Preparation (490, 394 & 338); Tree Establishment (612 & 391); Forest Stand Improvement (666); and Critical Area Protection (342).

68-3B19-15-020 - Maryland Department of Agriculture (CCA Funding Pool) – DE, MD & VA

(Maryland NRCS - Lead State) VA Partners: DCR, CBF & DOF –

Accelerating Chesapeake Bay Watershed Implementation Plans (WIPs)

Total EQIP FA = **$1,621,535; (Agreement Extended to 9/30/2020)**

The purpose of this program is to protect water quality by fencing livestock from surface water features in selected TMDL, Bay watersheds. DCR, CBF, DOF, SWCDs and NRCS have partnered to provide livestock producers an additional funding opportunity to install creek and cross fencing, alternative water systems and to establish or protect existing forested buffers.

68-2D37-15-763 - National Fish & Wildlife Foundation (CCA Funding Pool) – MD, PA & VA

(Pennsylvania NRCS - Lead State) VA Partners: TU and SVSWCD –

Comprehensive Watershed Conservation in Dairy and Livestock Landscapes of the Chesapeake Bay Watershed;

Total EQIP FA = **$992,000**

- Three Rockingham County sub-watersheds are being targeted
  - Dry Fork (within the Smith Creek Showcase Watershed)
  - Linville Creek
  - Long Meadow-North Fork Shenandoah River
- Focus Conservation Efforts on:
  - Livestock Exclusion, Forested Riparian Buffer Establishment and Improve Manure Management

2016 RCPP Agreements (September 30, 2021 end date)

68-33A7-16-944 – **The Nature Conservancy** (National Funding Pool) – TN & VA
(Virginia NRCS - Lead State) VA Partners: 3 SWCDs - *Upper Clinch-Powell Watershed Partnership*

Total EQIP Financial Assistance (FA) = **$2,040,000**

Implement conservation practices, such as livestock exclusion, to improve water quality to protect endangered and threatened species of mussels and fishes in targeted sections of the Clinch-Powell Watershed in Northeast Tennessee and Southwest Virginia (Scott, Lee and Russell counties).

68-33A7-16-942 – **Shenandoah National Park Trust** (State Funding Pool) ***Blue Ridge PRISM Landowner Programs Expansion;* Blue Ridge PRISM is the LEAD Virginia Partner**

Total EQIP Financial Assistance (FA) = **$643,915**

This project will target ten nonnative, invasive plants in a 10-county area bordering the Shenandoah National Park: Albemarle, Augusta, Clarke, Greene, Madison, Nelson, Page, Rappahannock, Rockingham and Warren. The 10 targeted invasive plants are Ailanthus (Tree of Heaven), Autumn Olive, Chinese Privet, Garlic Mustard, Japanese Honeysuckle, Japanese Stiltgrass, Kudzu, Mile-a-Minute Vine, Multiflora Rose and Oriental Bittersweet.

2017 RCPP Agreements (September 30, 2022 end date)

68-33A7-17-077 – **Virginia Marine Resources Commission** (State Funding Pool) ***Oyster Bottom Restoration through Aquaculture;* Virginia Institute of Marine Science is the LEAD Virginia Partner**

Total EQIP Financial Assistance (FA) = **$776,284**

VMRC and VIMS technical partners assist successful applicants in locating a source of shell for bottom preparation in the project, and they assist with the logistics of purchasing, transporting, and deployment of the shell onto a suitable grow-out site. The shell is deployed at a rate of 4,000 - 5,000 bushels of shell per acre. Shell costs are currently $3.00 to $5.00 per bushel; therefore, oyster bed restoration costs $12,000 to $25,000 per acre. Once the shell is deployed in the spring, the oyster farmer begins the spat on shell production process. To complete the project, oyster farmers must deploy 1000 bushels of spat on shell per acre on the restored oyster bottom. We expect this funding to restore between 40-50 acres of oyster bottom.

A-33A7-17-078 - **Sustainable Chesapeake** (CCA Funding Pool) – MD & VA
(Virginia NRCS - Lead State) VA Partners: DCR and SVSWCD
Engaging Small AFOs in the Nutrient Management Planning Process;

Total EQIP Financial Assistance (FA) = **$651,000**

This project's general approach is to reduce nutrient and sediment loss associated with small dairy AFOs by encouraging the development and implementation of CNMPs (Comprehensive Nutrient Management Plans). This comprehensive approach will not only develop a NMP (Nutrient Management Plan), but provide an evaluation of whether the farm has the necessary infrastructure to implement the NMP. In addition, the CNMP will identify resource concerns in the production and land treatment areas. By working on a CNMP as an integral part of the nutrient management

planning process, farmers will be well-positioned to implement the *"Avoid, Control, and Trap"* (ACT) model resulting in improved local and regional water quality and habitat.

2018 RCPP Agreements (by September 30, 2023 end date; dates vary by a few weeks in ezFedGrants)

NR1833A7XXXXM002 – Virginia Tech/Virginia Cooperative Extension (State Funding Pool)
Franklin County Dairy AG and Water Protection; **VA Partners: BRSWCD, Ferrum College and DCR.**

Total EQIP Financial Assistance (FA) = **$637,500**

Franklin County, Virginia, is home to 40 dairy farms with 80% of these farms having structures 60 years old or more that sit directly on or less than 35 feet from streams that drain into three major Total Maximum Daily Load (TMDL) waterways, the Pigg, Blackwater, and Smith Rivers. The project will focus on supporting local dairy producers going through multi-generational transitions by improving farm infrastructure. These improvements will address resource concerns and implement whole farm sustainable practices, while also incorporating educational outreach to producers and local students from area high schools and Ferrum College. The project's general approach is to reduce nutrient and sediment loss associated with small dairy AFOs by supporting and implementing the relocation of waste storage facilities, heavy use areas, and related farm structures to an area outside the flood zone and directly off streambanks.

NR1833A7XXXXM001 - Sustainable Chesapeake (CCA Funding Pool) – DE, MD & VA
(Virginia NRCS - Lead State) VA Partners: DCR and Colonial SWCD
Chesapeake Bay Farm Stewardship & Preservation;

Total EQIP Financial Assistance (FA) = **$1,363,240**

Total ACEP-ALE Financial Assistance (FA) = **$208,000**

The project brings advanced nutrient management planning (precision agriculture) resources on the Delmarva Peninsula and western Bay Shore coastal plain regions where farmland is in close proximity to the Chesapeake Bay and where on-the-ground conservation will have the greatest impact on reducing nutrient loading to the Chesapeake Bay. Agriculture is a predominant land use in these regions of Delaware, Maryland and Virginia, and farmers in these regions have a track record for leadership in conservation practice implementation. Sustainable Chesapeake will work with project partners to identify watersheds where resources will be targeted that: 1) are located in areas with sufficient technical assistance capacity to deliver additional financial assistance resources; 2) areas identified as high priority for watershed restoration due to habitat value and restoration potential; 3) areas where on-going collaborative efforts are aligned to accelerate conservation implementation; and 4) areas where achievement of water quality targets is a primary concern for meeting TMDL water quality goals. In Virginia, ACEP-ALE funds will be used to purchase a conservation easement to protect farmland from future development.

NR185C16XXXXC011 – **The Nature Conservancy** (National Funding Pool) – KY, TN & VA **(Kentucky NRCS - Lead State)** ***Working Forests for Wildlife.***

Total Healthy Forests Reserve Program (HFRP) Financial Assistance (FA) = **$1,296,665**

TNC seeks to integrate the Healthy Forests Reserve Program (HFRP) with their established voluntary carbon program (Working Woodlands) to conserve 25,000 high priority acres in Kentucky, Virginia, and Tennessee. Programmatic goals of HFRP include enhancing forestland resources to increase the likelihood of recovery of threatened or endangered species, improving biological diversity, and increasing carbon sequestration. By integrating an emerging voluntary forest carbon market with HFRP and improving forest management at a regional scale, this proposal addresses 100% of the programmatic goals of HFRP. Partners propose to take responsibility for 100% of outreach and marketing, Restoration Plan creation (Forest Stewardship Council certification and carbon project development), and, in at least 2 states, due diligence contracting. This project meets multiple overarching NRCS goals as well: It seeks to address sustainable forest and carbon market development in a focal area comprised of a high percentage of strike force counties and fits seamlessly into NRCS's new 5-year initiative to improve forest health in Appalachia while helping the Golden-winged Warbler.

STC Meeting Report - 11/8/2018
FY18 EQIP Budget Allocation

Fund Category	Account Name	Allocated	Contracts	Contract Approval	Remaining Funds
	Virginia	**$27,895,362.00**	**641**	**$27,787,059.06**	**$108,302.94**
Cropland	Beginning Farmer - Cropland	$374,999.58	10	$374,999.58	$0.00
	Cropland - Christiansburg	$32,309.00	2	$32,309.00	$0.00
	Cropland - Farmville	$199,082.00	6	$199,082.00	$0.00
	Cropland - Harrisonburg	$1,030,744.30	16	$1,030,744.30	$0.00
	Cropland - Smithfield	$1,123,120.48	19	$1,123,120.48	$0.00
	Socially Disadvantaged - Cropland	$28,380.00	1	$28,380.00	$0.00
	StrikeForce - Cropland	$3,074,813.56	67	$3,074,813.56	$0.00
	Cropland Total	**$5,863,448.92**	**121**	**$5,863,448.92**	
Livestock	Beginning Farmer - Livestock	$545,177.72	18	$545,177.72	$0.00
	Livestock - Christiansburg	$1,893,175.49	27	$1,893,175.49	$0.00
	Livestock - Farmville	$3,424,241.52	53	$3,424,241.52	$0.00
	Livestock - Harrisonburg	$4,404,196.66	39	$4,404,196.66	$0.00
	Livestock - Smithfield	$96,579.00	2	$96,579.00	$0.00
	StrikeForce - Livestock	$6,359,879.54	56	$6,359,879.54	$0.00
	Socially Disadvantaged - Livestock	$675,992.96	12	$675,992.96	$0.00
	Livestock Total	**$17,399,242.89**	**207**	**$17,399,242.89**	
High Tunnels	High Tunnel Systems	$530,363.64	54	$530,363.64	$0.00
	StrikeForce - High Tunnel Systems	$497,012.38	54	$497,012.38	$0.00
	High Tunnel Total	**$1,027,376.02**	**108**	**$1,027,376.02**	
Wildlife	American Black Duck	$58,224.00	3	$58,224.00	$0.00
	Northern Bobwhite in Working Grasslands	$407,449.32	20	$407,449.32	$0.00
	Wildlife - Aquatic	$18,788.00	1	$18,788.00	$0.00
	Wildlife - Habitat Maintenance	$154,941.35	14	$154,941.35	$0.00
	Wildlife - Wildlife Habitat Creation	$589,441.79	50	$589,441.79	$0.00
	Widlife Total	**$1,228,844.46**	**88**	**$1,228,844.46**	
Conservation Activity Plans	CAPS-Conservation Activity Plans	$56,382.16	20	$56,382.16	$0.00
	StrikeForce - CAPS	$43,335.34	17	$43,335.34	$0.00
	FY18 On-Farm Energy CAPS	$3,299.00	1	$3,299.00	$0.00
	CAPs Total	**$103,016.50**	**38**	**$103,016.50**	
Forestry	Forestry - Longleaf/ Shortleaf Pine & Hardwood Mgmt	$203,885.45	20	$203,885.45	$0.00
	Forestry SDA Initiative	$272,834.98	29	$272,834.98	$0.00
	Forestry Total	**$476,720.43**	**49**	**$476,720.43**	
National Initiatives	FY18 Organic Certified	$66,625.54	3	$66,625.54	$0.00
	FY18 Organic Transition	$70,098.94	5	$70,098.94	$0.00
	Golden Winged-Warbler	$271,029.00	5	$271,029.00	$0.00
	Long Leaf Pine Initiative	$138,766.36	5	$138,766.36	$0.00
	Lower Cowpasture Restoration Project	$134,332.00	3	$134,332.00	$0.00
	NWQI - Smith Creek - Gap Creek	$11,284.00	2	$11,284.00	$0.00
	NWQI - Smith Creek - Mountain Run	$195,302.00	4	$195,302.00	$0.00
	NWQI - Smith Creek - War Branch	$350,972.00	3	$350,972.00	$0.00
	National Initiative Total	**$1,238,409.84**	**30**	**$1,238,409.84**	
CIG Grants	**FY18 CIG State Component**	$450,000.00	0	$450,000.00	$0.00
Reserve Funds	**FY18 EQIP Reserve**	$108,302.94	0	$0.00	$108,302.94
	Total	**$27,895,362.00**	**641**	**$27,787,059.06**	**$108,302.94**

FY18 RCPP Budget Allocation					
Fund Code	**Account Name**	**Allocated**	**Contracts**	**Contract Approval**	**Funds Remaining**
RCPP-DCR	**Accelerating Chesapeake Bay Watershed Implementation**	$1,621,534.72	53	$1,593,454.36	$28,080.36
RCPP-TNC	**Upper Clinch-Powell Watershed Partnership**	$2,040,000.00	42	$2,014,147.19	$25,852.81
RCPP-VRMC	**Oyster Bottom Restoration through Aquaculture**	$776,284.00	14	$280,000.00	$496,284.00
		$4,437,818.72	**109**	**$3,887,601.55**	**$550,217.17**

FY18 Conservation Stewardship Program

Fund Pool	Contracts	Acres
CSP Renewals	20	10,241.60
CSP General Signup	140	53,868.95

State Technical Committee Meeting
NRCS State Office, Richmond, Virginia

Thursday, November 8, 2018 @ 10:00 a.m.

	Name (Please print.)	Agency	Email
1	Doug Moyer	USGS	dlmoyer@usgs.gov
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