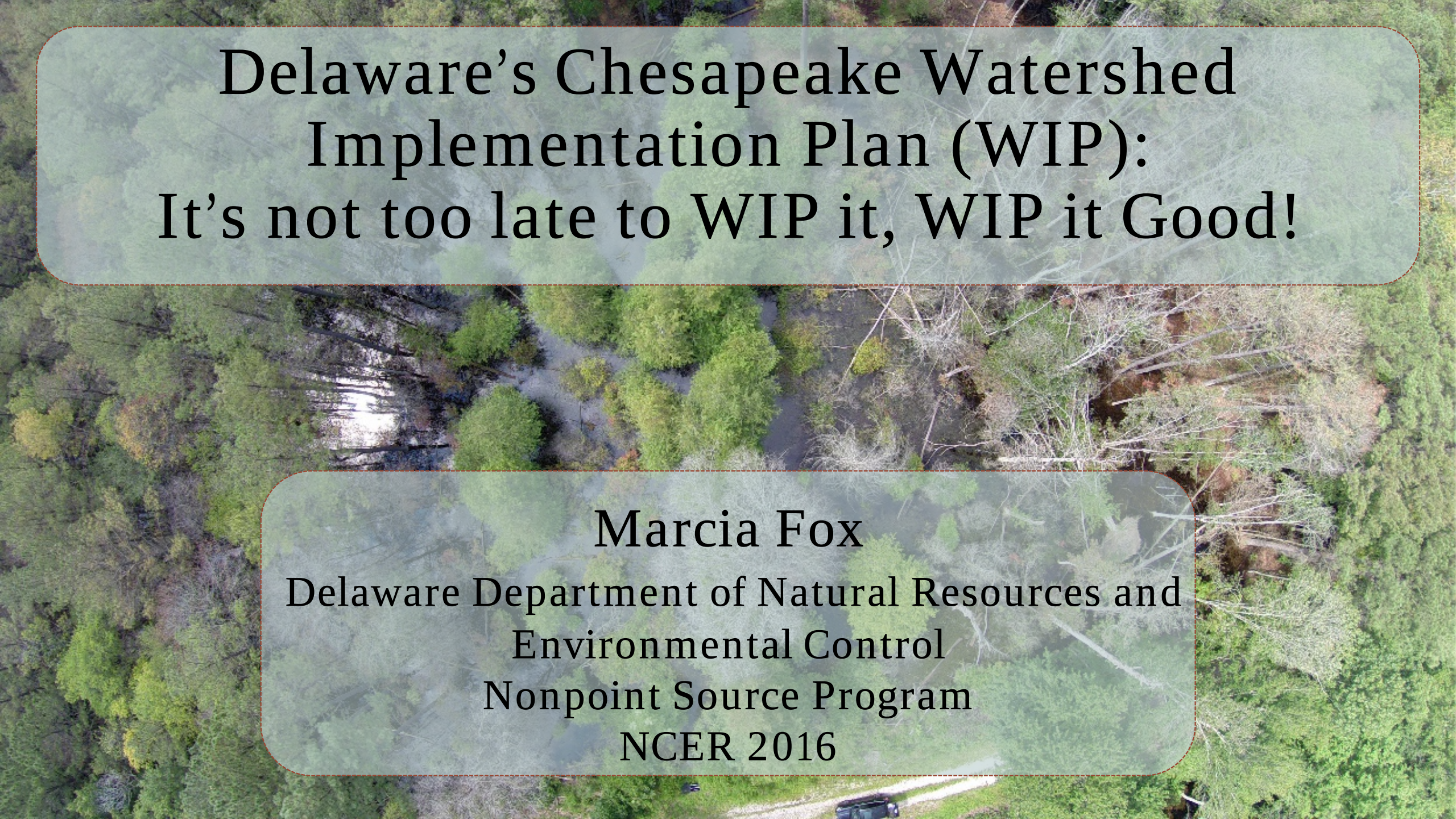
Watch Us WIP, Now Watch Us Bay Bay: Delaware's Choreographed Approach to Chesapeake Bay Restoration

Session Presenters

- Marcia Fox, DNREC, Nonpoint Source Program
- Brooks Cahall, DNREC, Drainage Program
- Melissa Hubert, DNREC, Drainage Program
- Tyler Monteith, DNREC, Nonpoint Source Program
- Debbie Absher, Sussex Conservation District

Delaware's Chesapeake Watershed Implementation Plan (WIP): It's not too late to WIP it, WIP it Good!



Marcia Fox

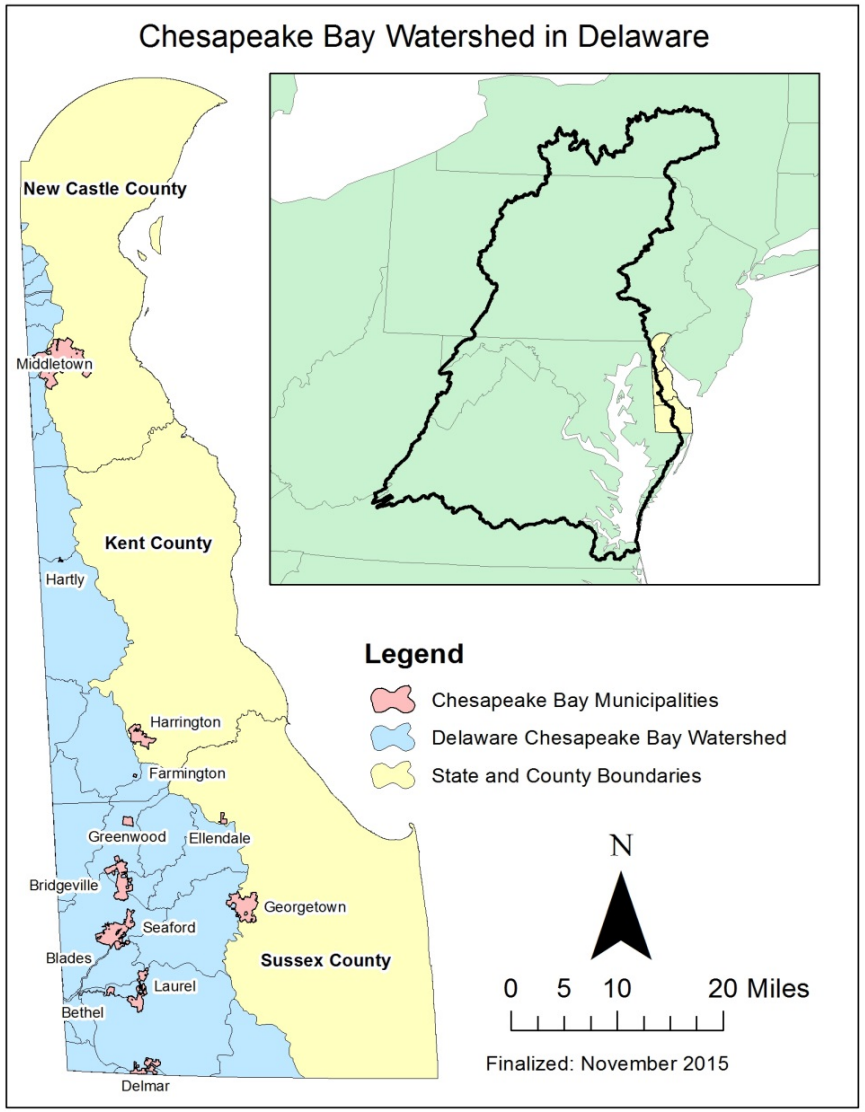
Delaware Department of Natural Resources and Environmental Control

Nonpoint Source Program

NCER 2016

Chesapeake Bay Watershed

- Six-state, 64,000 sq. mile watershed
- 10,000 miles of shoreline
- Over 3,600 species of plants, fish and other animals
- $750 million to local economies
- Home to 18 million people
- Since 2000, Delaware has participated in the Chesapeake Bay Program
- Executive Order 13508 (May 2009)
  - Increased focus and emphasis on Bay restoration; **accountability**



Delaware Watersheds

Accountability Framework

Establish Bay TMDL

Establish Bay TMDL

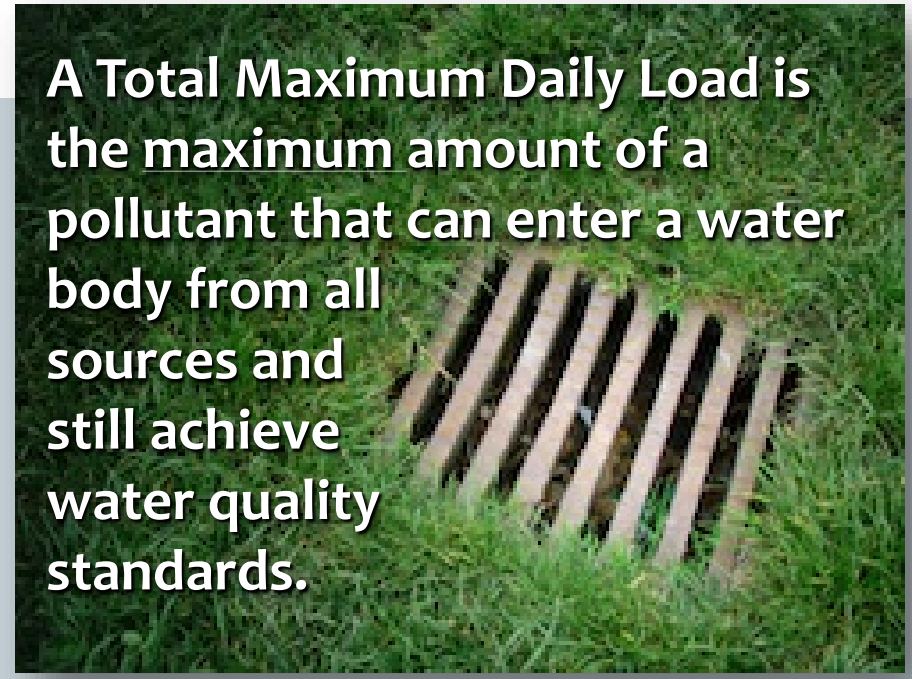
Set 2-Year Milestones

Monitor Progress

Delaware Watersheds

About the Chesapeake Bay TMDL

- Builds on previous water quality efforts in Nanticoke, Chester, Choptank, Marshyhope, and Pocomoke
- Sediment in addition to Nitrogen and Phosphorous
- Each state provided with an “allocation” for nitrogen, phosphorus, and sediment
- 60% by 2017; 100% by 2025
- We are required to develop a three-phase Watershed Implementation Plan (WIP)



It’s been called a “pollution diet”

Required reductions of:
•29% for Nitrogen
•19% for Phosphorus
•<10% for Sediment

Delaware Watersheds

Accountability Framework

Establish Bay TMDL

Develop Watershed Implementation Plans

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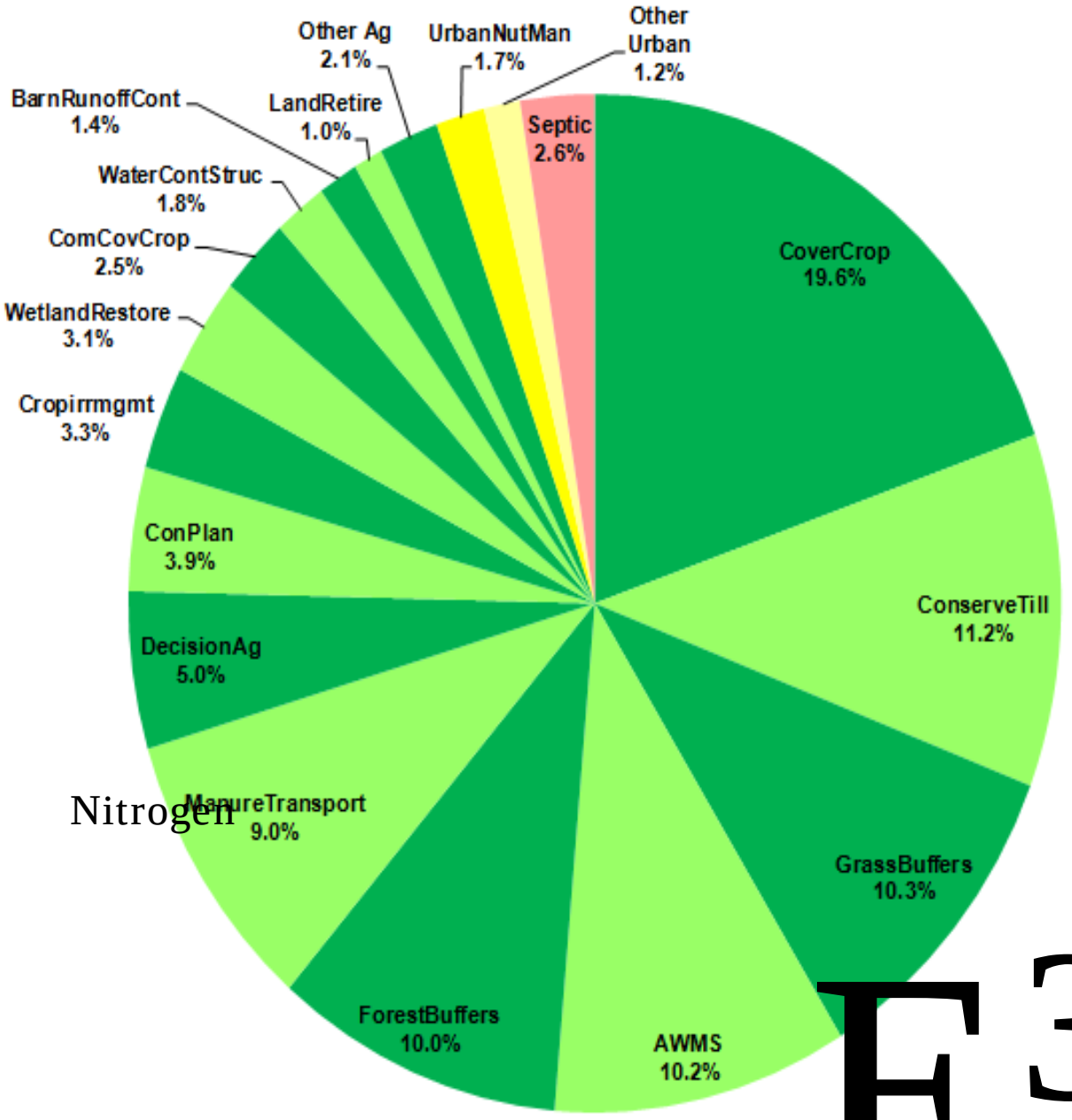
Monitor Progress

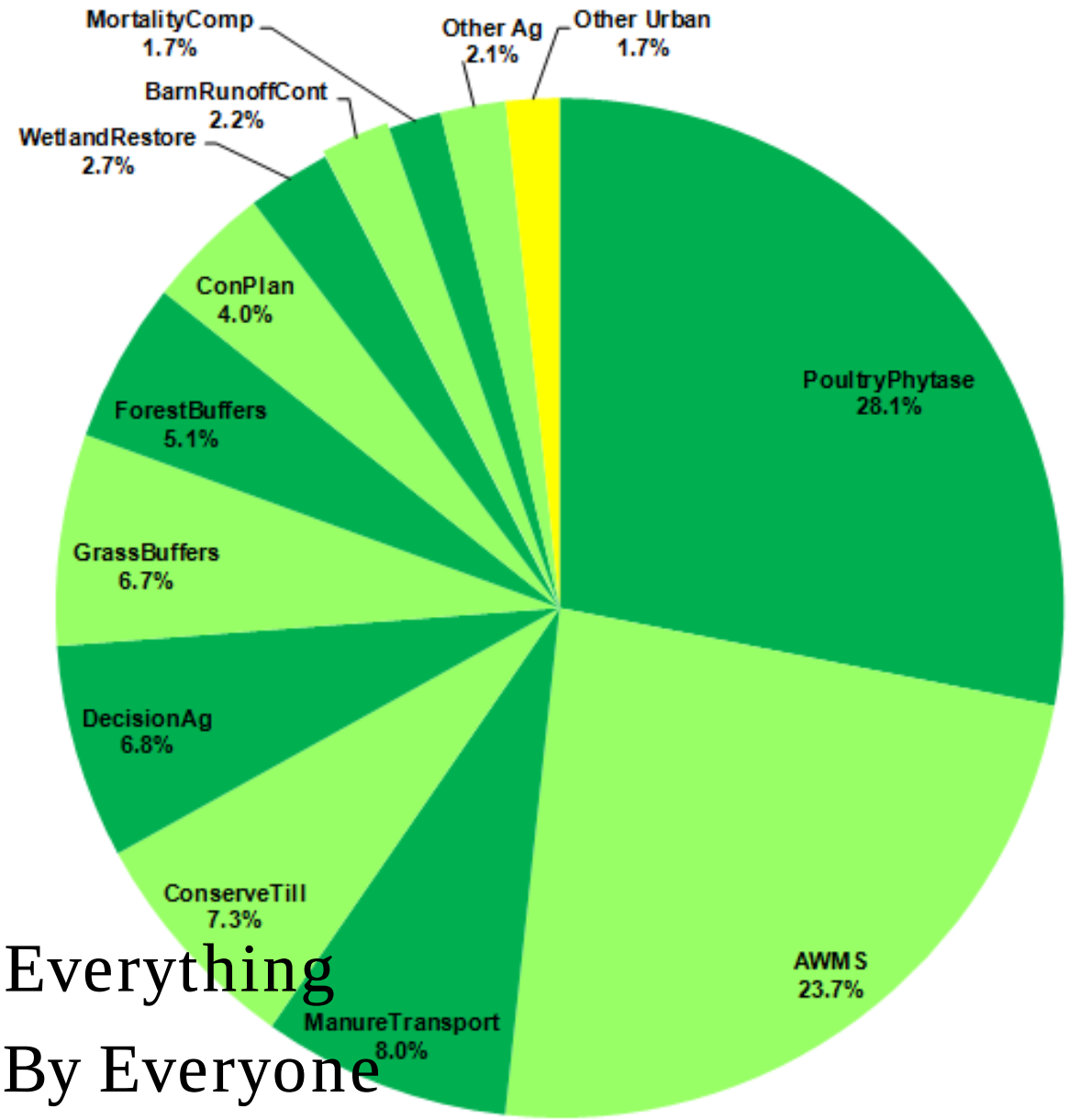
Delaware Watersheds



Nitrogen

E3

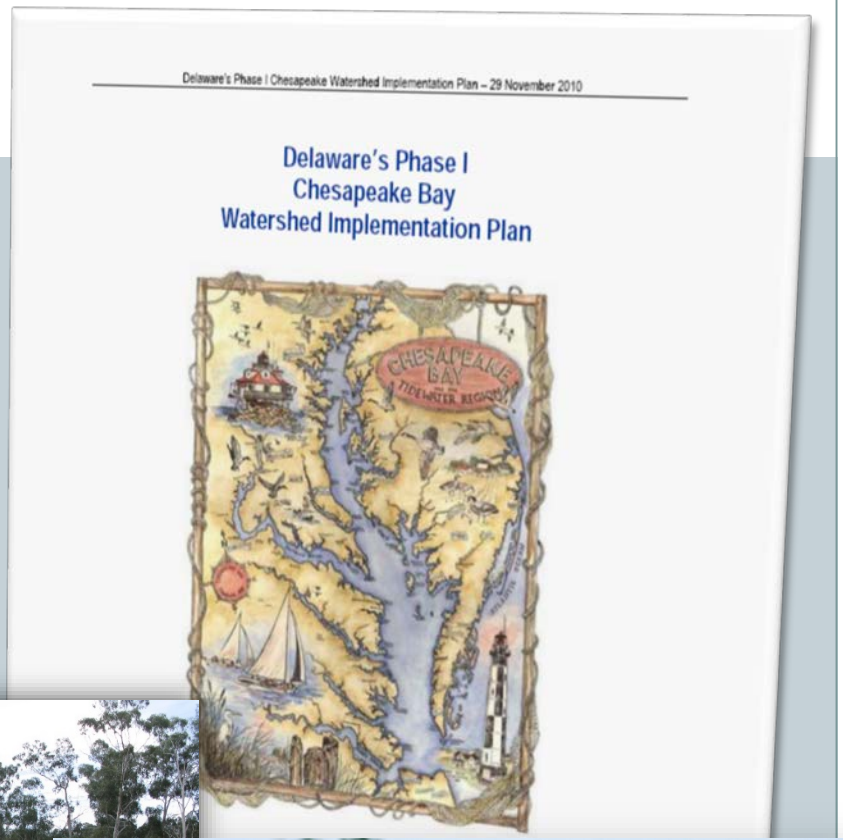
Everything
By Everyone
Everywhere



Phosphorus

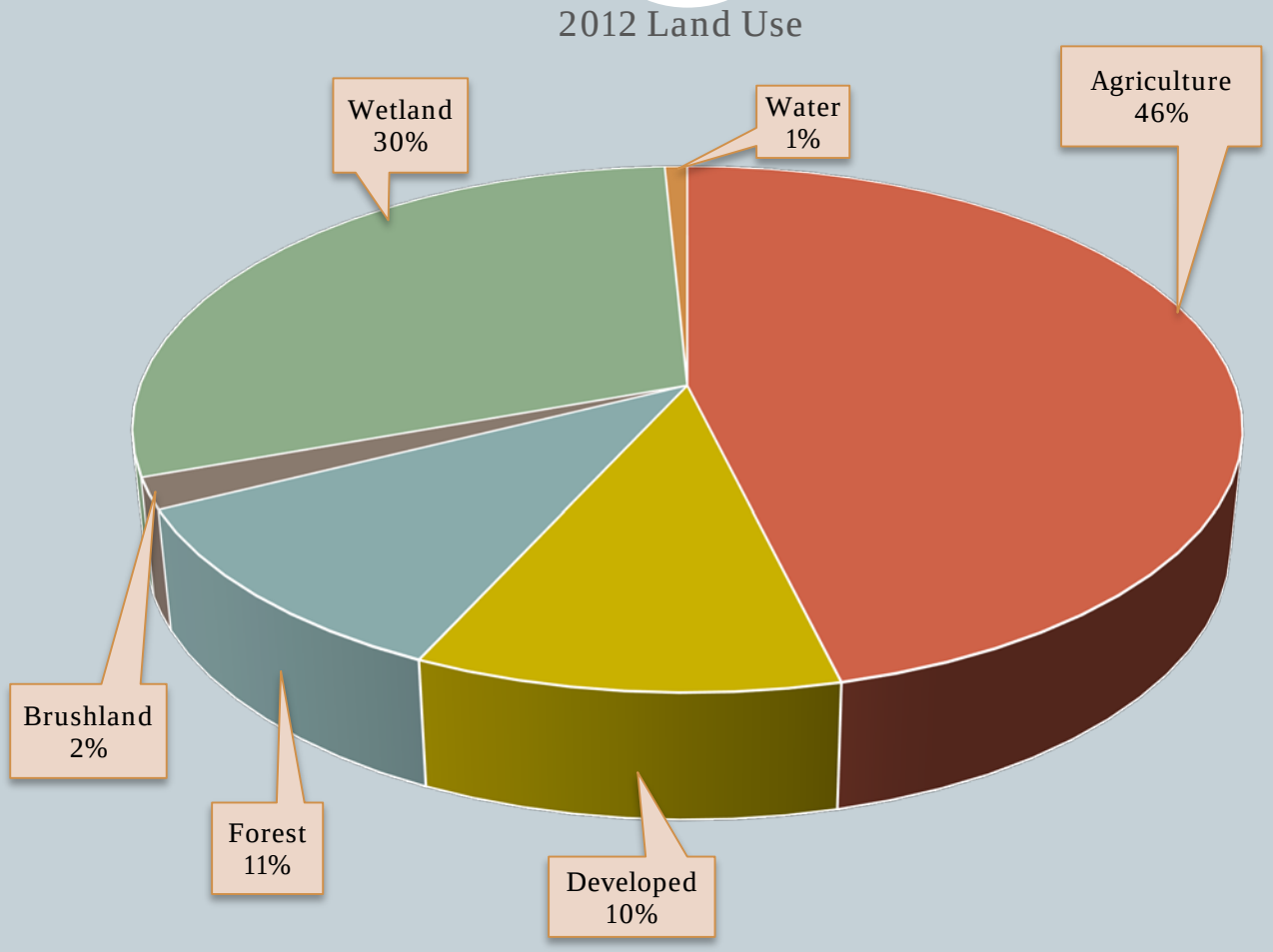
Delaware's WIP

- Phase I –November 29, 2010
  - Showed that DE can meet federal water quality standards by 2025 without requiring any drastic or punitive measures (backstops)
  - Phase I WIP established the Bay TMDL
- Phase II – March 30, 2012
  - More specific and localized
  - Who will do what and when?
  - Clear and quantitative goals
- Phase III – Due 2017
  - How are we going to get to 2025?



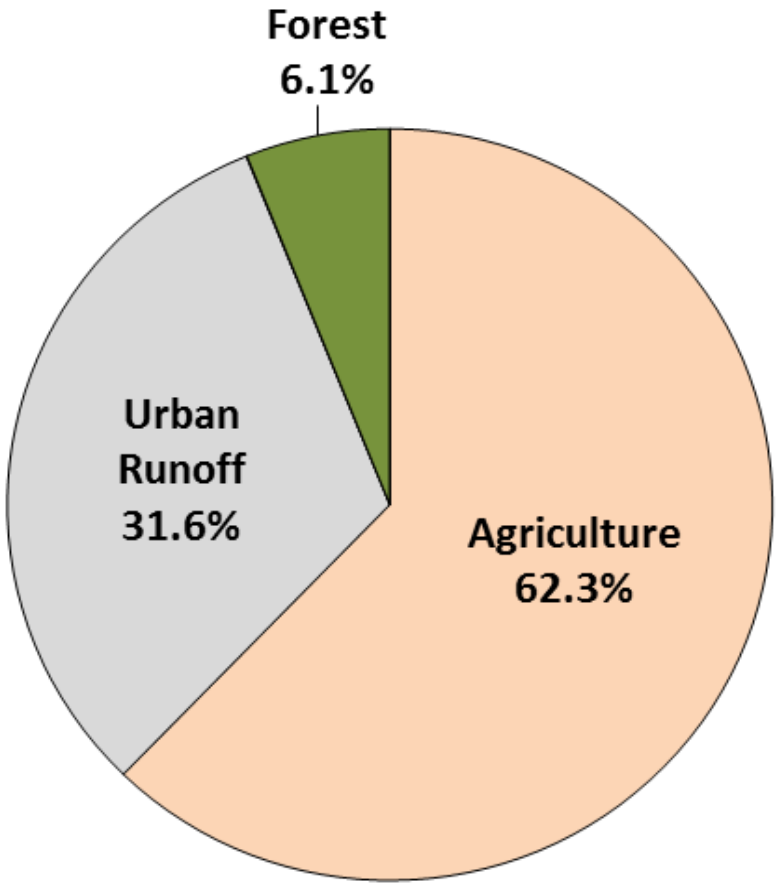
Delaware Watersheds

Land Uses in Watershed

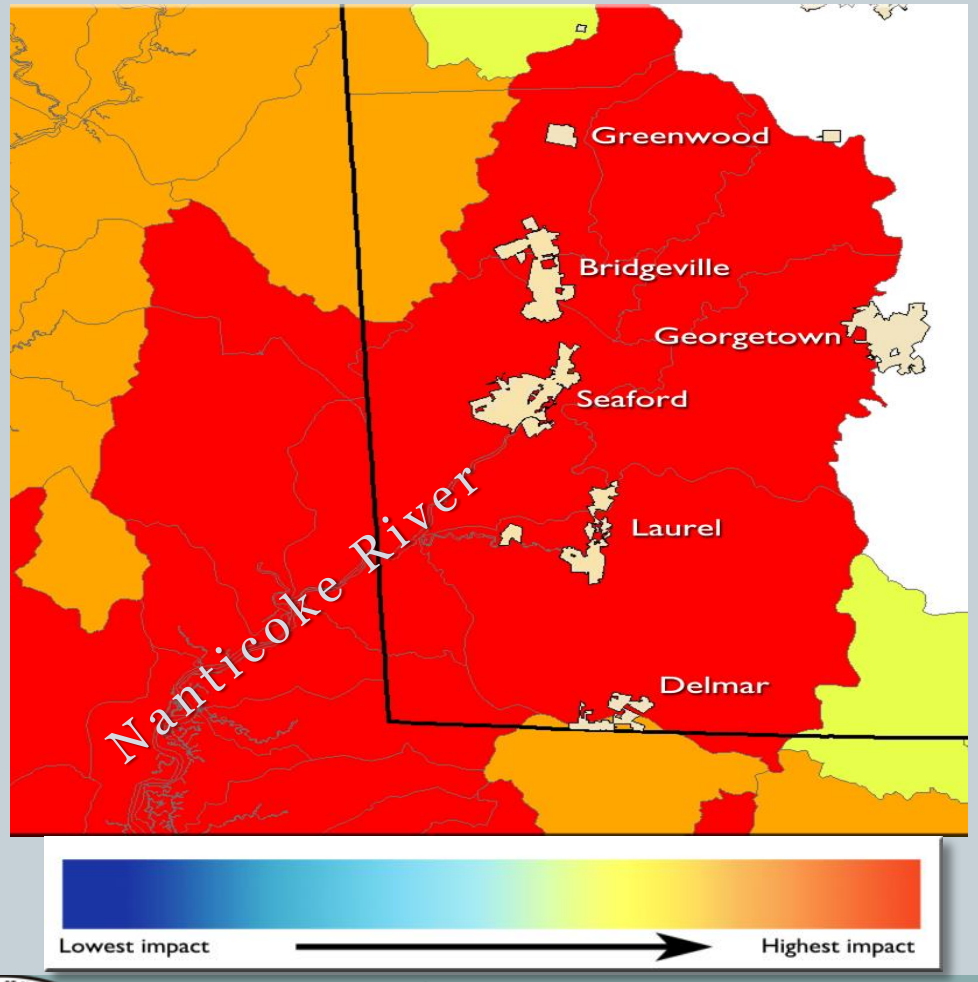


Delaware Watersheds

Nutrient Sources in Watershed



Delaware's Impact

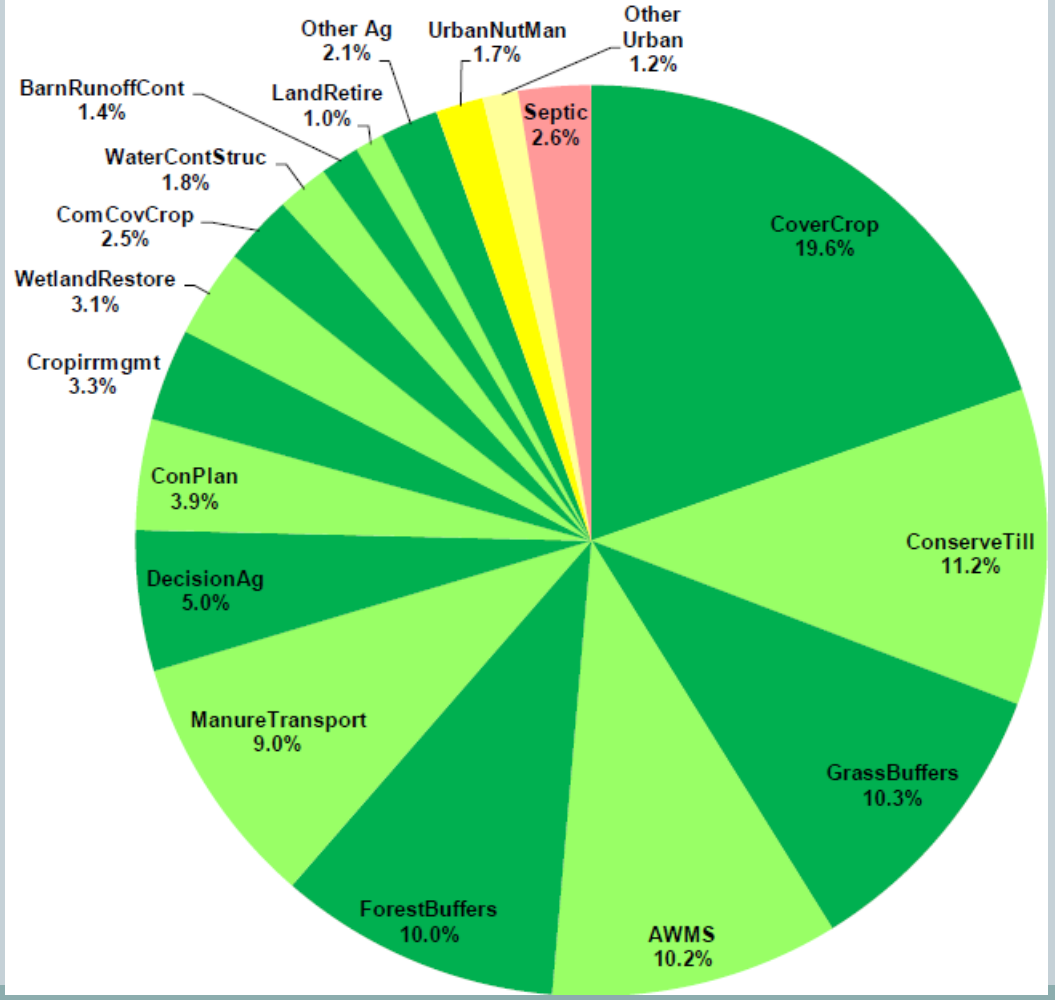


Sandy soils, closeness to the Bay, ditching practices all contribute to our high impact on the Chesapeake Bay Watershed.

The good news is the steps we take to reduce pollution will be very effective at improving Bay quality.

Delaware Watersheds

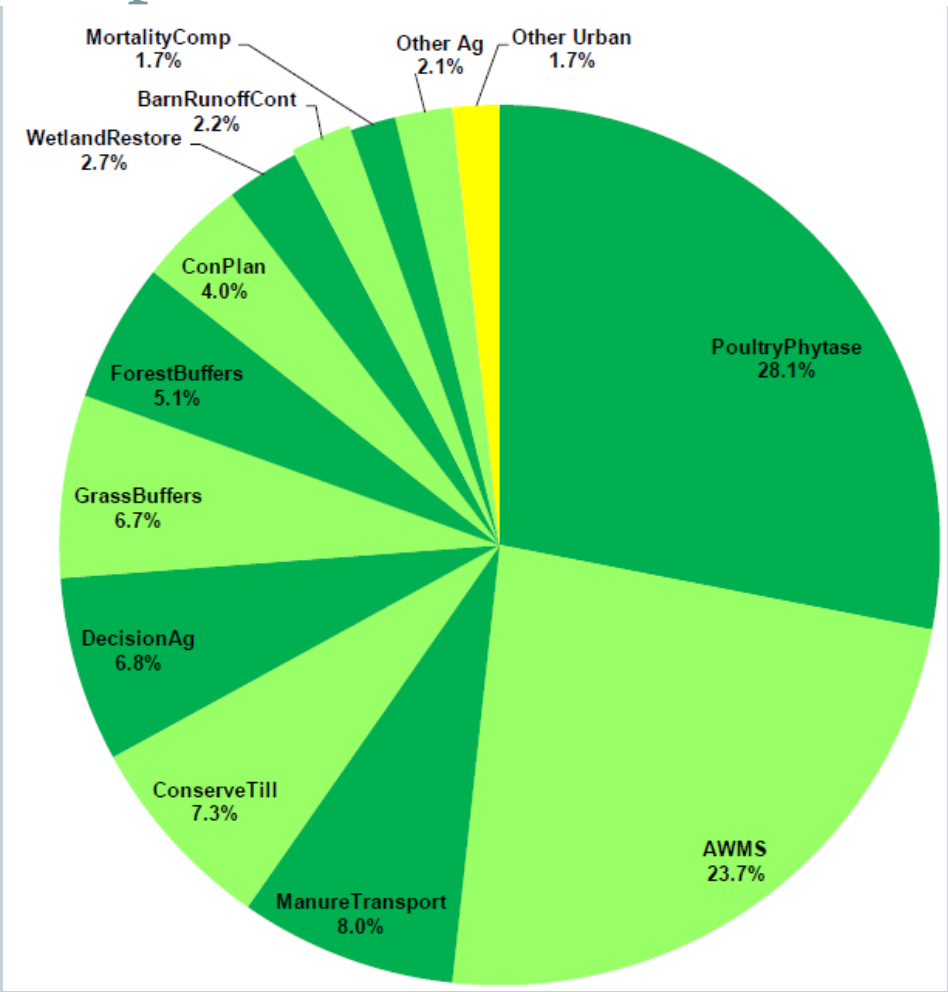
Relative Contribution to WIP-Planned Nitrogen Load Reductions



Agriculture – 94.4%
Urban – 2.9%
Wastewater – 2.6%

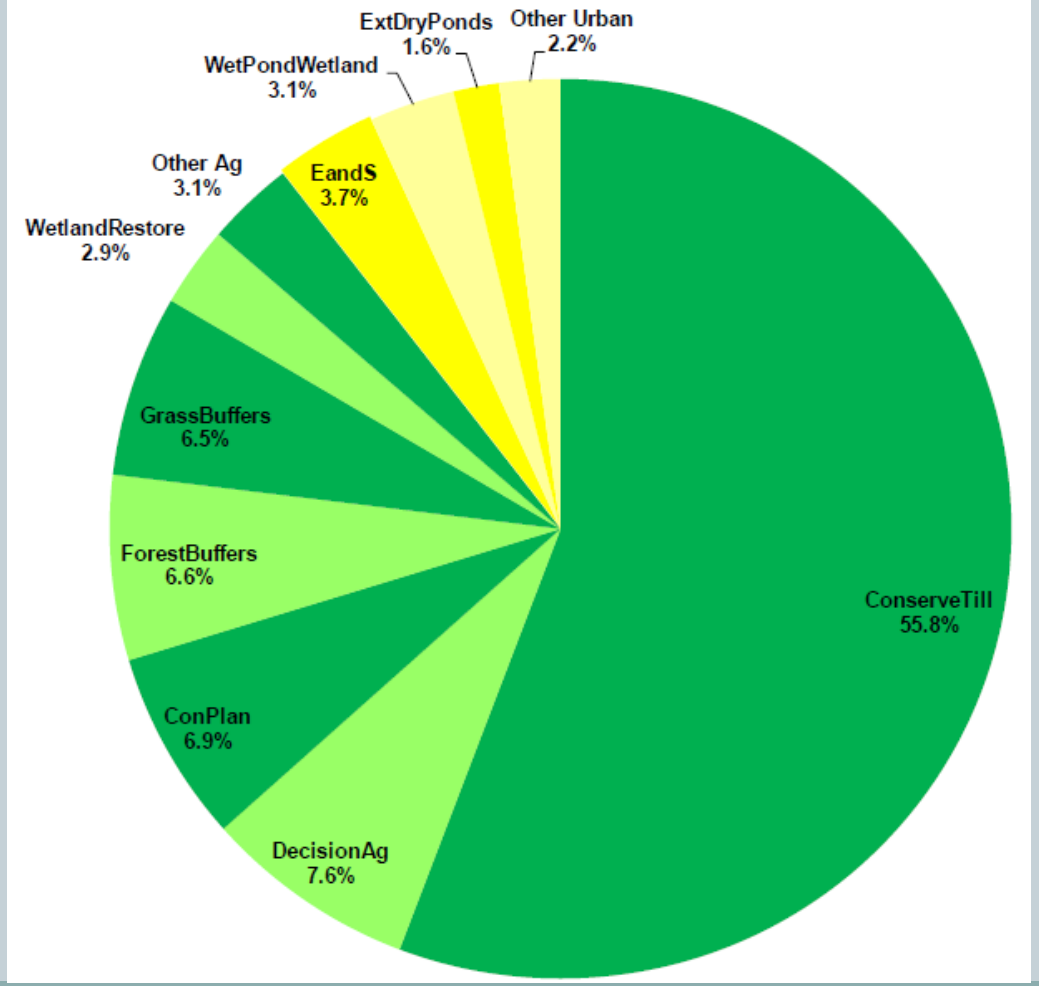
Delaware Watersheds

Relative Contribution to WIP-Planned Phosphorus Load Reductions



Agriculture – 98.3%
Urban – 1.7%

Relative Contribution to WIP-Planned Sediment Load Reductions



Agriculture – 89.4%
Urban – 10.6%

Accountability Framework

Establish Bay TMDL

Set Two Year Milestones

Set 2-Year Milestones

Monitor Progress

Milestones

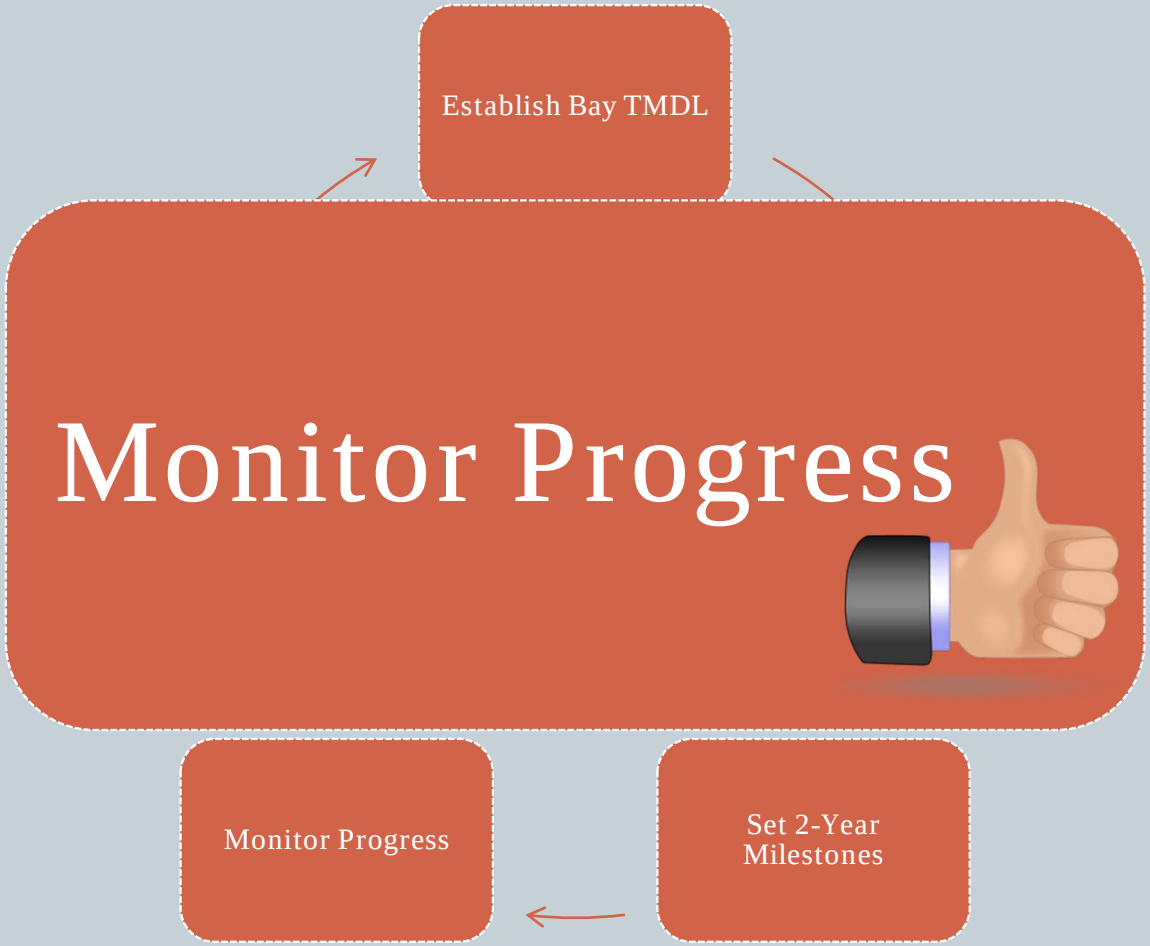
Programmatic

- Identify the means of support to enable implementation (e.g., funding, authorities, enhancing existing programs and resources, designing and establishing new programs, studies, etc.).
  - Funding
  - Tracking & Reporting
  - Program Development
  - Outreach and Education

Numeric

- The amount of various types of restoration activities, e.g. structural BMPs, which have geo-located coordinates.

Accountability Framework

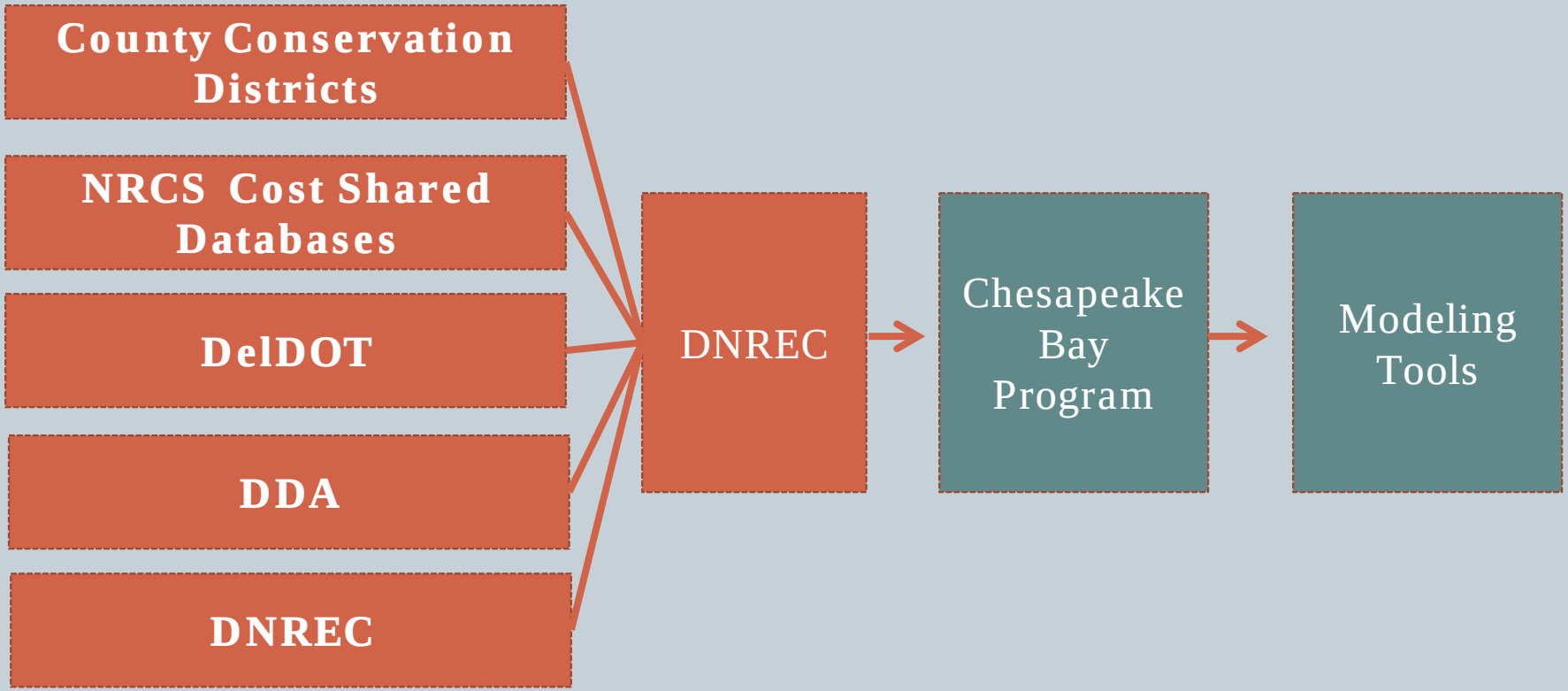


Delaware Watersheds

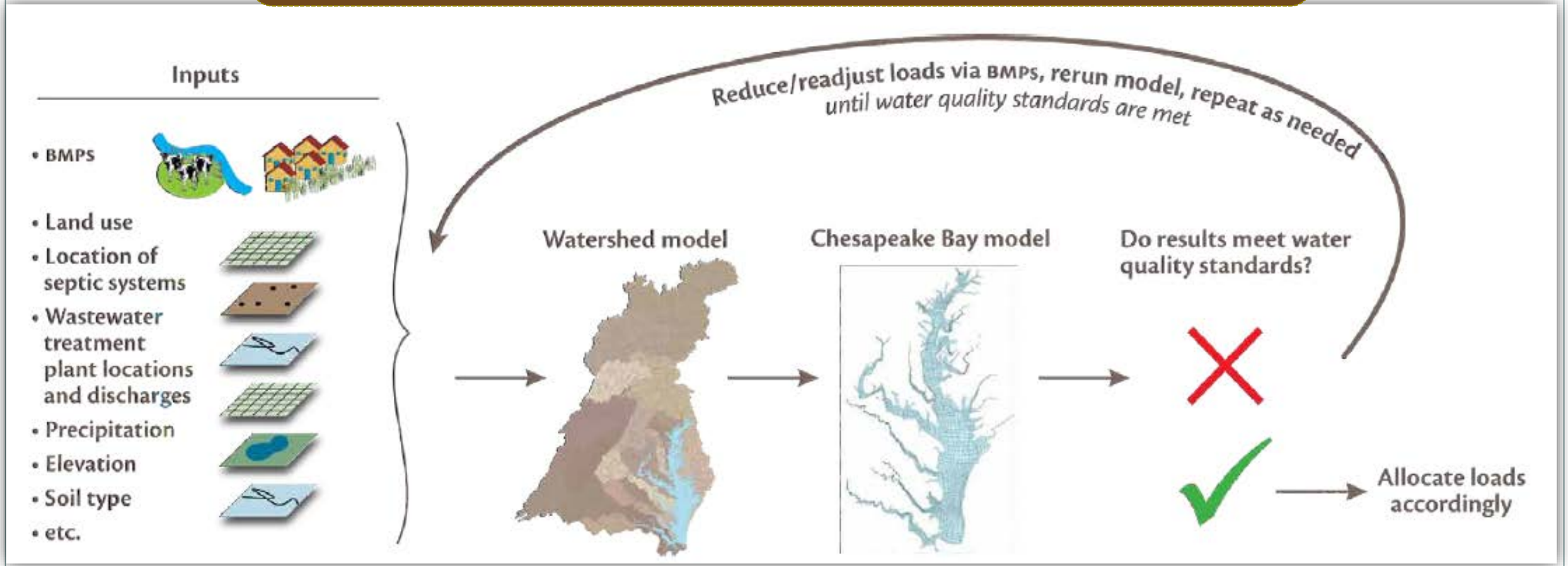
What types of BMPs?

- Cover crops
- Manure sheds
- Composters
- Heavy use area protection
- Large animal mortality rendering
- Manure handling equipment
- Grassed waterways
- Stream bank protection
- Vegetative filter strips
- Water Control Structures
- Manure Transport
- Nutrient Management Planning

BMP Data Flow



How do we know we're meeting our goals?



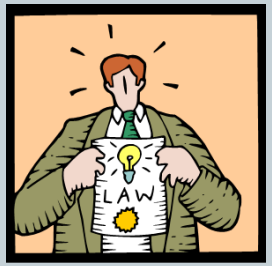
Numeric Progress

Pollutant Control Practices (acres)	2012 Submission	2013 Submission	2014 Submission	2015 Milestone	2015 Submission	2025 Milestone
Nutrient Management	195,033	154,556	163,004	183,600	103,424	174,907
Cover Crops	49,830	49,786	30,921	50,000	68,964	85,619
Grass Buffers	774	774	775	904	776	8,297
Forest Buffers	2,226	2,226	2,493	2,230	2,493	7,020
Wetland Restoration	2,694	2,697	2,699	2,652	2,717	5,725
Conservation Tillage + High Residue Tillage	115,683	112,875	107,424	130,000	119,969	154,210
Tree Planting	149	502	504	520	561	930

Accountability Framework

Establish Bay TMDL

Employ Federal Steps if Inadequate Progress



Set 2-Year Milestones

Monitor Progress

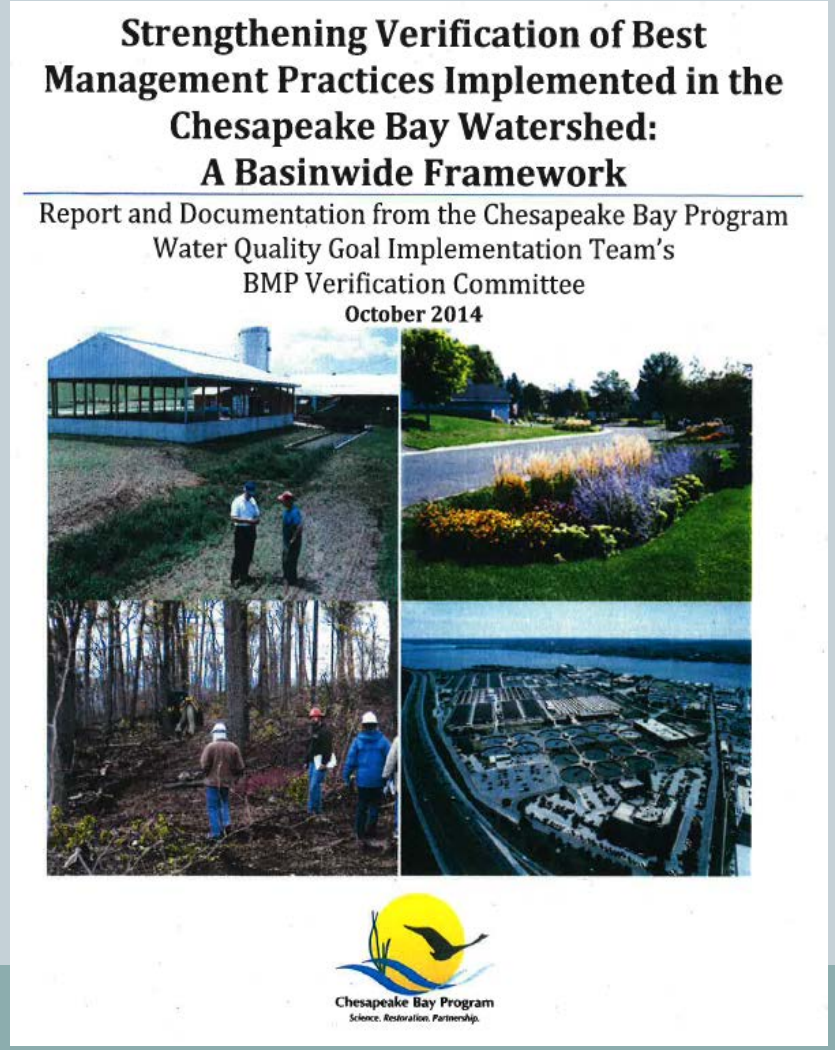
Consequences of missing goals

Missing goals could mean increased and direct regulation by EPA of

- Expanding coverage of NPDES permits to sources that are currently unregulated.
- Increasing oversight of state-issued NPDES permits.
- Requiring additional pollution reductions from federally regulated sources.
- Increasing federal enforcement and compliance.
- Prohibiting new or expanded pollution discharges.
- Redirecting EPA grants.
- Revising water quality standards to better protect local and downstream waters.
- Discounting nitrogen, phosphorus and sediment reduction progress if jurisdiction cannot verify proper installation and management of controls.

2015 Projects and Efforts

- Verification
  - Jurisdictions are expected to adopt verification programs incorporating verification protocols.
- Historical BMP Clean Up
  - Have the opportunity to clean up data for new Phase 6 Model.
- Increased Funding
  - Signatory Grant
  - NRCS, RCPP funding
- 2016-2017 Milestone Development
- Pilot Agricultural Projects/Studies
  - UD Ditch and Irrigation Studies
  - Cropland Roadside Transect Survey
  - SCD Air Seeder Program



Delaware Watersheds

Delaware
Loads and Goals
(4/4/16)

Jurisdiction	Source	2009 Progress TOTN (M lbs/year)	2015 Progress TOTN (M lbs/year)	2015 Milestone TOTN (M lbs/year)	2015 Target TOTN (M lbs/year)	2017 Milestone TOTN (M lbs/year)	2017 Target TOTN (M lbs/year)	2025 Target TOTN (M lbs/year)
DE	Agriculture	3.45	**3.06**	3.24	2.97	2.86	2.81	2.38
DE	Urban Runoff	0.39	**0.42**	0.44	0.37	0.43	0.36	0.34
DE	Wastewater+CSO	0.14	**0.03**	0.06	0.18	0.03	0.19	0.22
DE	Septic	0.15	**0.17**	0.19	0.13	0.18	0.12	0.10
DE	Forest+	0.34	0.34	0.34	0.35	0.33	0.35	0.35
DE	AllSources	4.47	**4.03**	4.28	3.99	3.83	3.82	3.39

Jurisdiction	Source	2009 Progress TOTP (M lbs/year)	2015 Progress TOTP (M lbs/year)	2015 Milestone TOTP (M lbs/year)	2015 Target TOTP (M lbs/year)	2017 Milestone TOTP (M lbs/year)	2017 Target TOTP (M lbs/year)	2025 Target TOTP (M lbs/year)
DE	Agriculture	0.311	**0.235**	0.261	0.278	0.241	0.268	0.239
DE	Urban Runoff	0.0209	**0.0196**	0.0205	0.0197	0.0202	0.0193	0.0183
DE	Wastewater+CSO	0.0055	**0.0054**	0.0099	0.0080	0.0054	0.0088	0.0110
DE	Forest+	0.0081	0.0080	0.0083	0.0082	0.0079	0.0083	0.0084
DE	AllSources	0.345	**0.268**	0.299	0.314	0.275	0.304	0.277

Jurisdiction	Source	2009 Progress TSS (M lbs/year)	2015 Progress TSS (M lbs/year)	2015 Milestone TSS (M lbs/year)	2015 Target TSS (M lbs/year)	2017 Milestone TSS (M lbs/year)	2017 Target TSS (M lbs/year)	2025 Target TSS (M lbs/year)
DE	Agriculture	64	**45**	50	65	43	65	65
DE	Urban Runoff	29	**27**	31	28	30	28	27
DE	Wastewater+CSO	0.20	**0.01**	0.01	0.50	0.01	0.60	0.87
DE	Forest+	6.0	6.0	5.9	6.1	5.6	6.1	6.3
DE	AllSources	99	**78**	87	99	79	99	100

Loads meet trajectory targets.
Loads don't meet trajectory targets but are within 5%.
Loads don't meet trajectory targets by relatively large amount.
2015 Progress **bold type** = 2015 Progress load meets jurisdiction's 2015 Milestone goal.

Moving Forward...and WIP it ...

- Annually submit numeric progress
- Submit 2 Year Milestones
- Participate in Partnership Workgroups and Strategies
- Real world progress in water quality can be made outside of CBP approved practices (e.g., irrigation reducing nutrient application rates on crops during dry years).
- Continue to communicate load and BMP changes

WIP it good…

- Historical BMP Clean Up
  - Have the opportunity to clean up old data with new Phase 6 Model.
- Verification
  - Jurisdictions are expected to adopt verification programs incorporating verification protocols.
- Signatory on the CB Agreement

Ditch at Deep Creek Delaware. Photo courtesy of Delaware Forest Service.

Marcia Fox

DNREC Nonpoint Source Program

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