pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Chesapeake Bay Program Office

Countywide Action Plans

Pennsylvania's Phase 3 Chesapeake Bay Watershed Implementation Plan

Cumberland County

Healthy Waters, Healthy Communities

Tom Wolf, Governor

Patrick McDonnell, Secretary

Chesapeake Bay Total Maximum Daily Load (TMDL)

- Established in 2010
  - Reductions of nutrient pollution (nitrogen and phosphorus) and sediment for all states in the Chesapeake Bay watershed
  - Goal: All practices on the ground and all permitting activities completed by 2025
- PA instructed to develop Watershed Implementation Plan (WIP)
  - Outline strategies, methods and timeframe for meeting our clean water goals and restoring local water quality

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Two Sets of Numbers: Bay Goals and Local Waters Goals

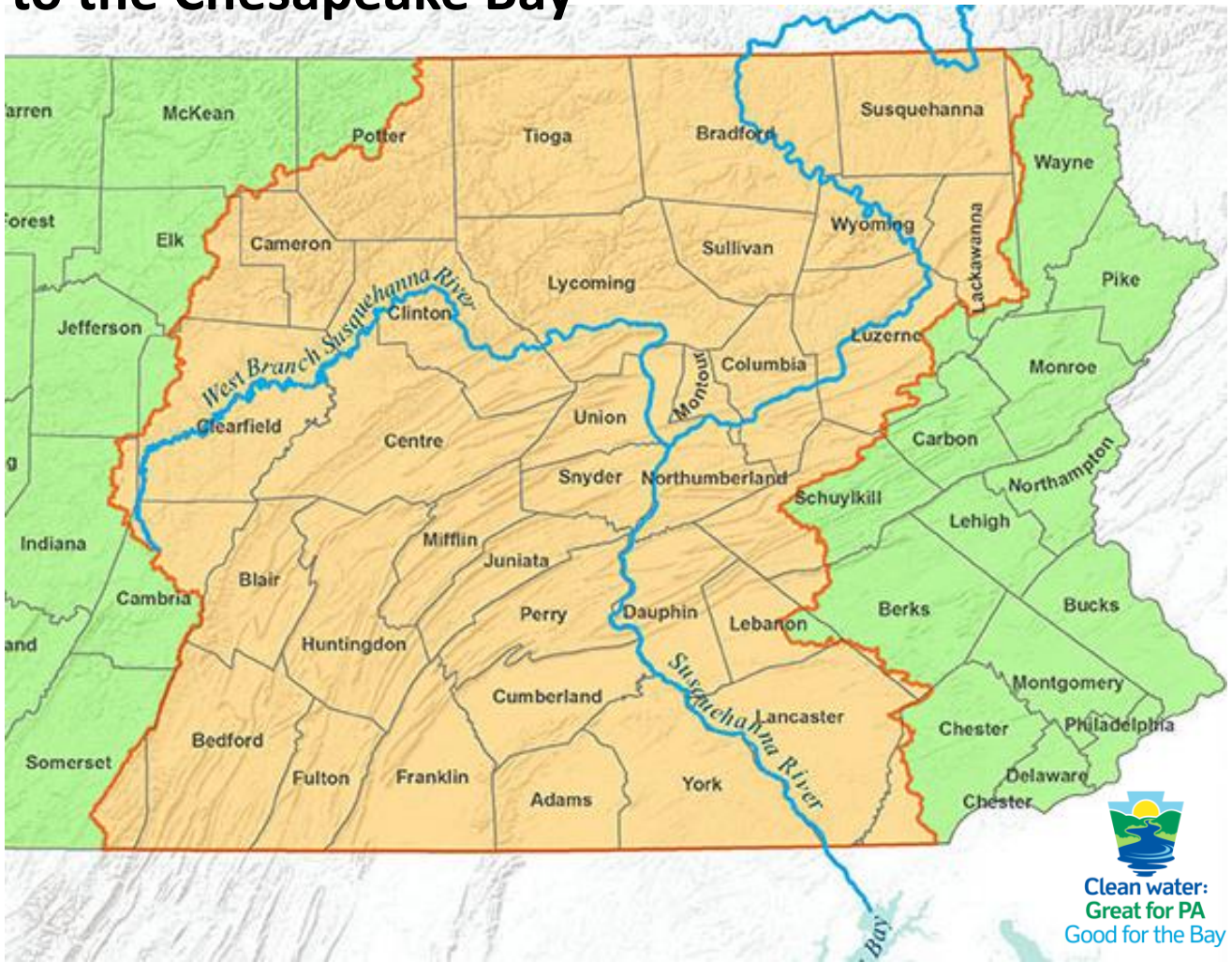
A portion of the nutrients and sediment in PA's local waterways actually make it to the Chesapeake Bay

What's entering PA Local Waterways from PA Land

51.06 M lbs of N
2.02 M lbs of P

What's making it to Chesapeake Bay from PA Land

34.13 M lbs of N
0.756 M lbs of P



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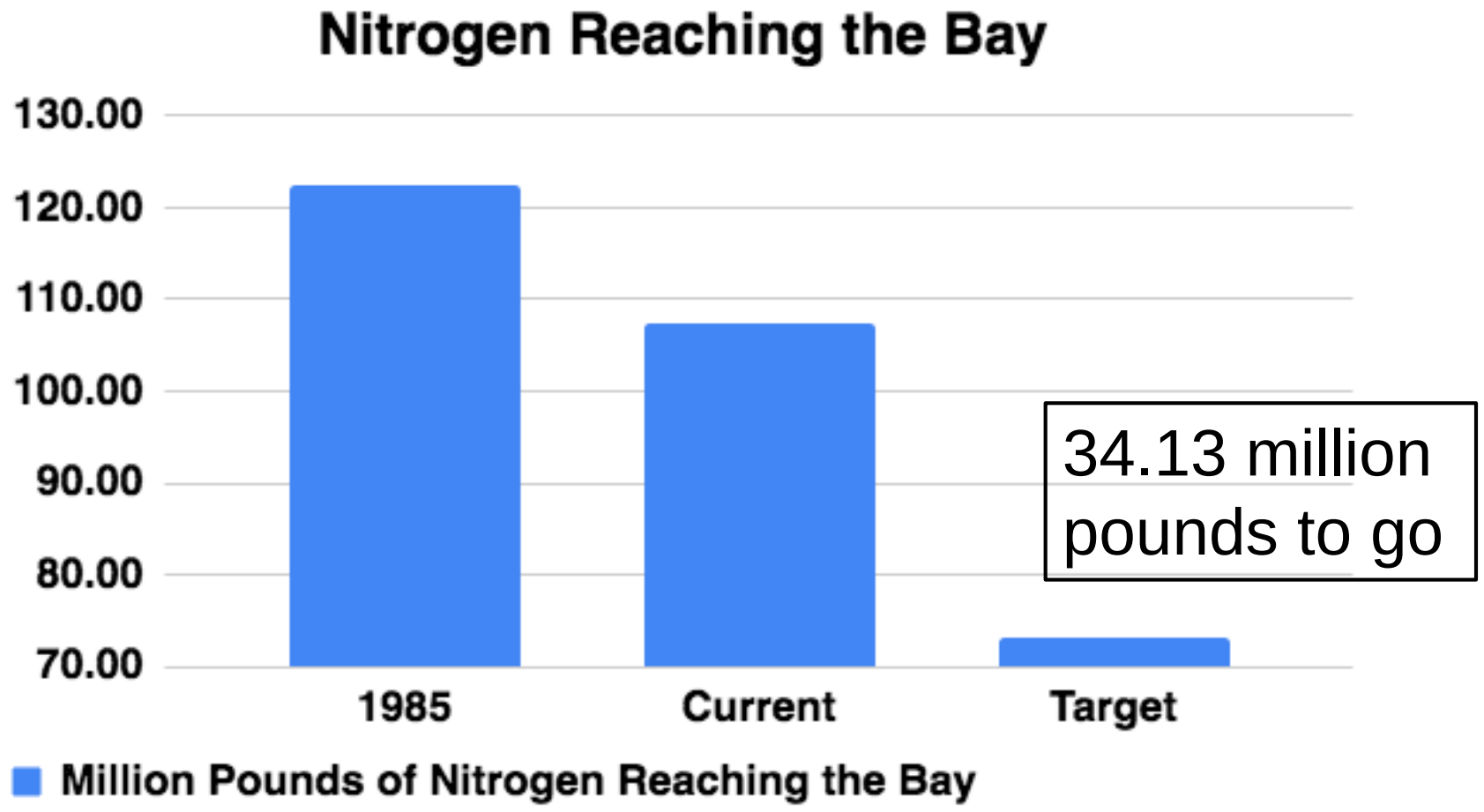
Nitrogen Reduction Goals



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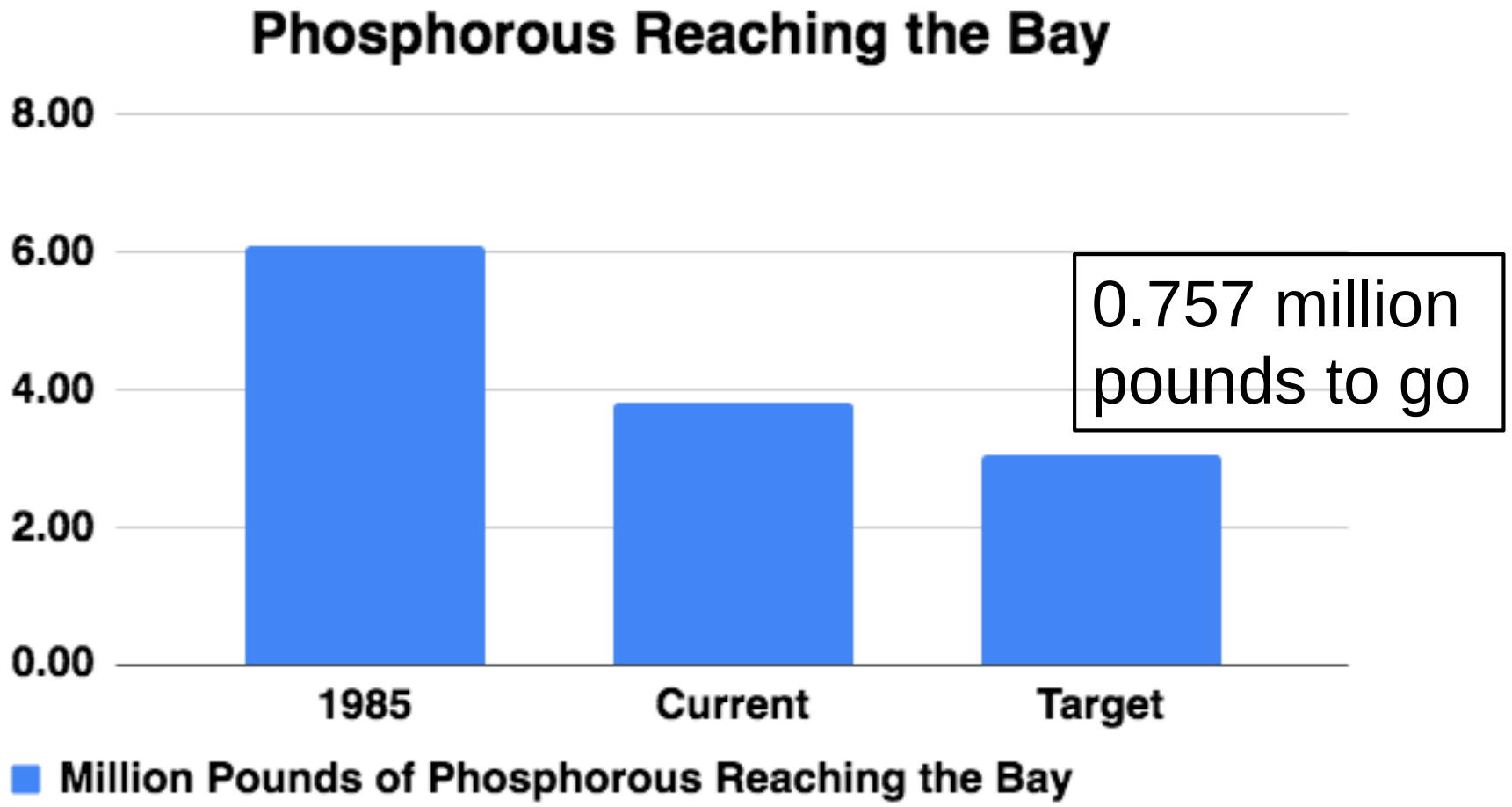
Phosphorus Reduction Goals



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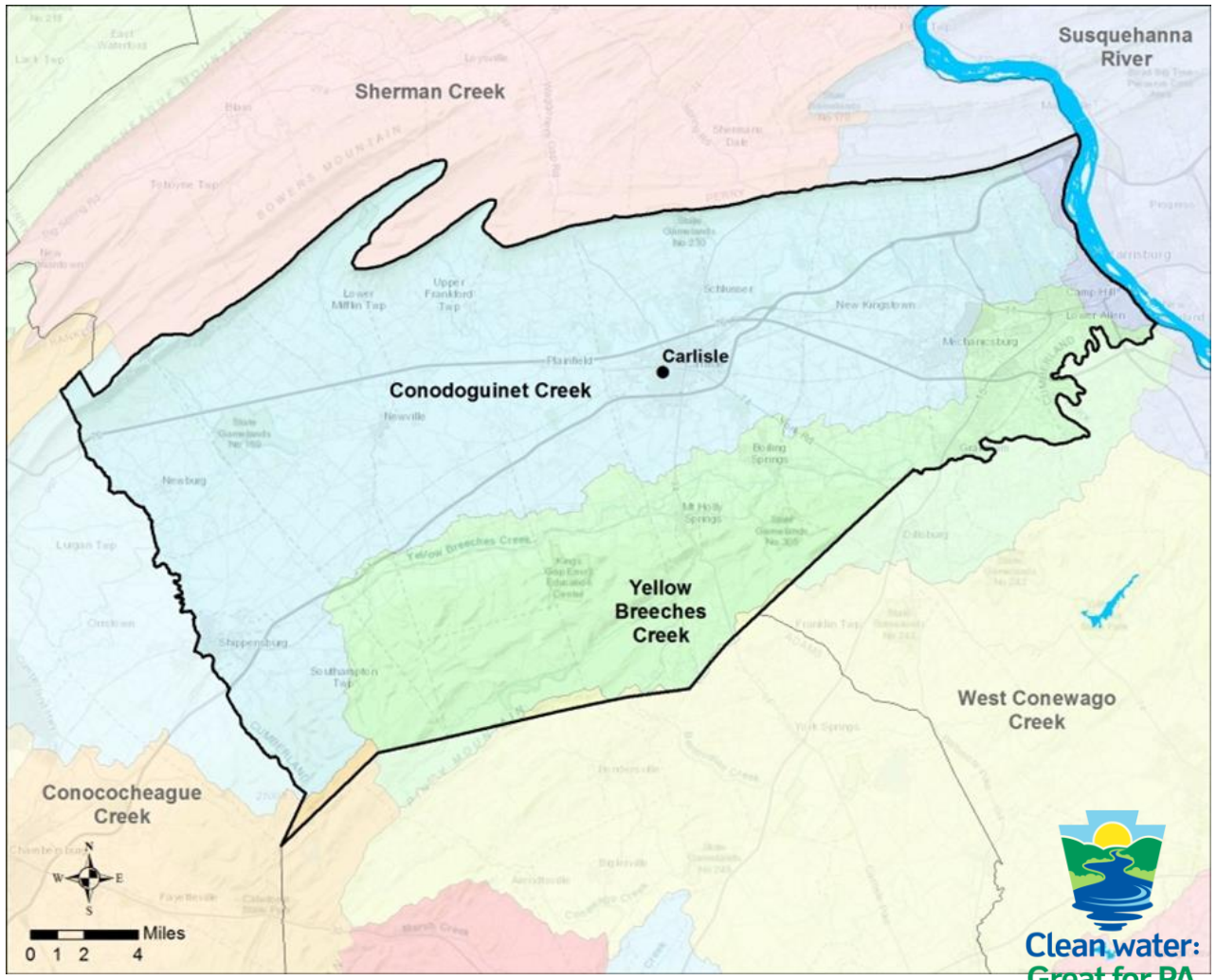
Clean Water Begins Locally!

- Approximately one-third of Pennsylvania's local waterways do not meet water quality standards
- A majority of impairments are due to excess nutrients (nitrogen and phosphorus) and sediment
- Pennsylvania's local waterways need our help



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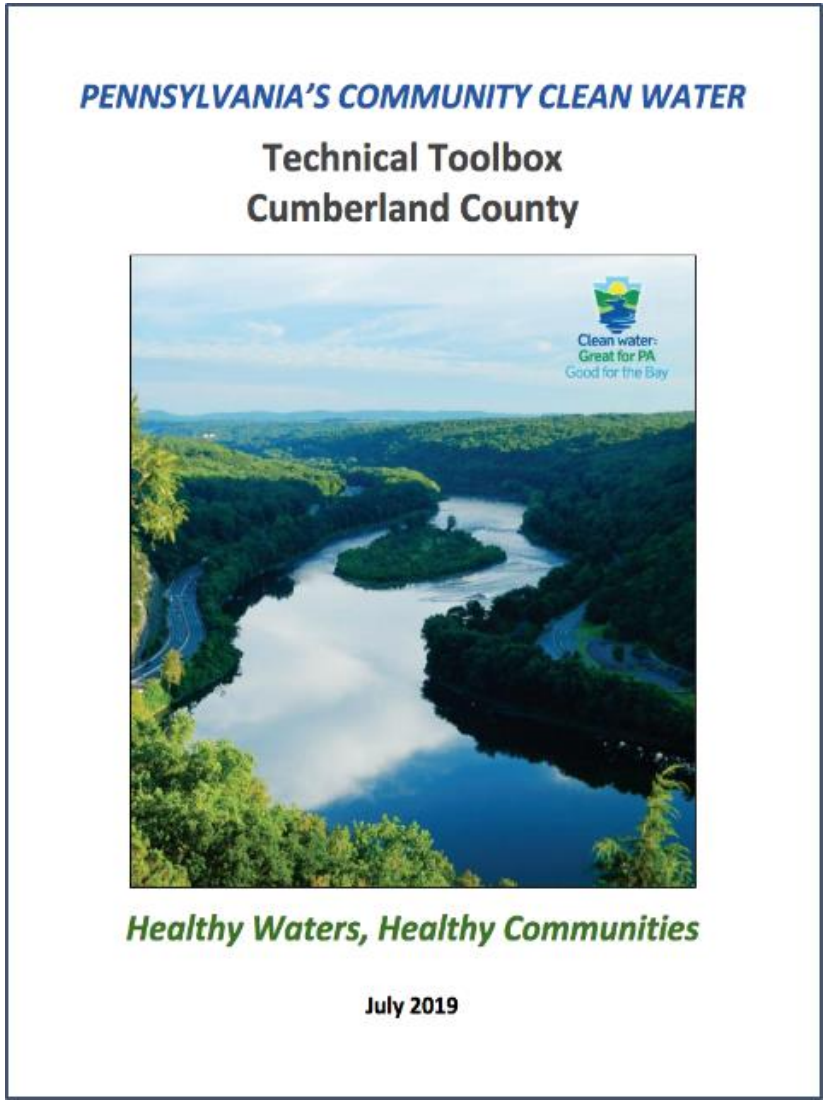
The Cumberland County Toolbox

- A starting point for Cumberland County to use to understand local water quality and identify planning opportunities
- Contains data relevant to Cumberland County to assist with reaching local water quality goals
  - Local water quality trends
  - Local sources and drivers of water quality
  - Opportunities for restoration efforts
- State recommendations for Cumberland County
- Further information on resources are available in links and with technical support staff from DEP and SRBC



Cumberland County's Clean Water Goal

Year	Loading to Local Cumberland County Waterways	
	Nitrogen (pounds/year)	**Phosphorus** (pounds/year)
1985	6,582,942	388,974
2018	6,299,522	273,851
2025 (Final TMDL Planning Target)	4,094,563	237,038
Remaining Load to be Achieved Through Local Planning Goals	2,204,959	36,813

Chesapeake Bay Program Phase 6 Watershed Model.
2017 v9 Progress. http://cast.chesapeakebay.net

- Great progress has been made to reduce Phosphorus in Cumberland County. Additional progress still needs to be made to achieve the goal.
- Significant progress needs to be made to reduce Nitrogen in Cumberland County.

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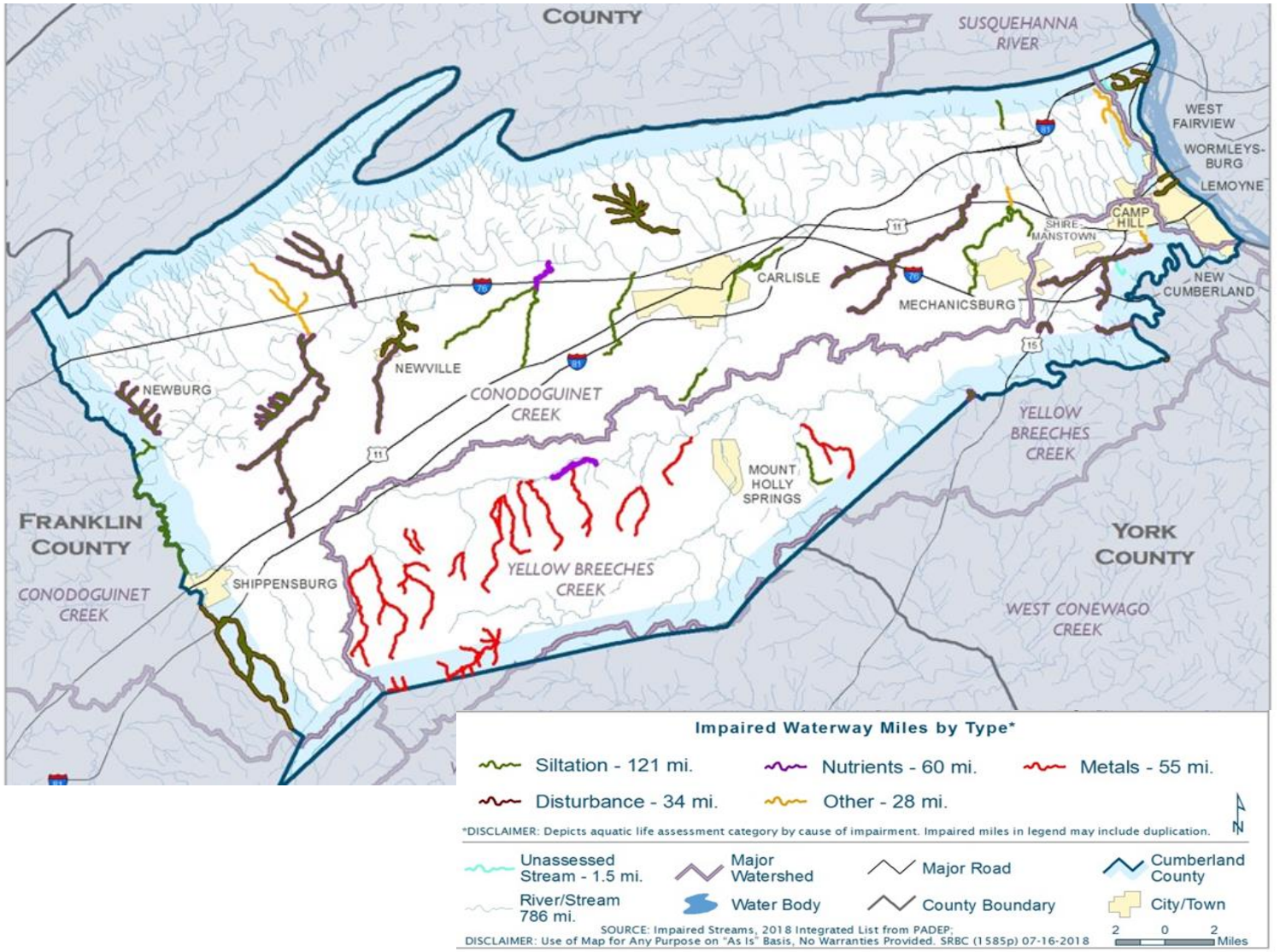
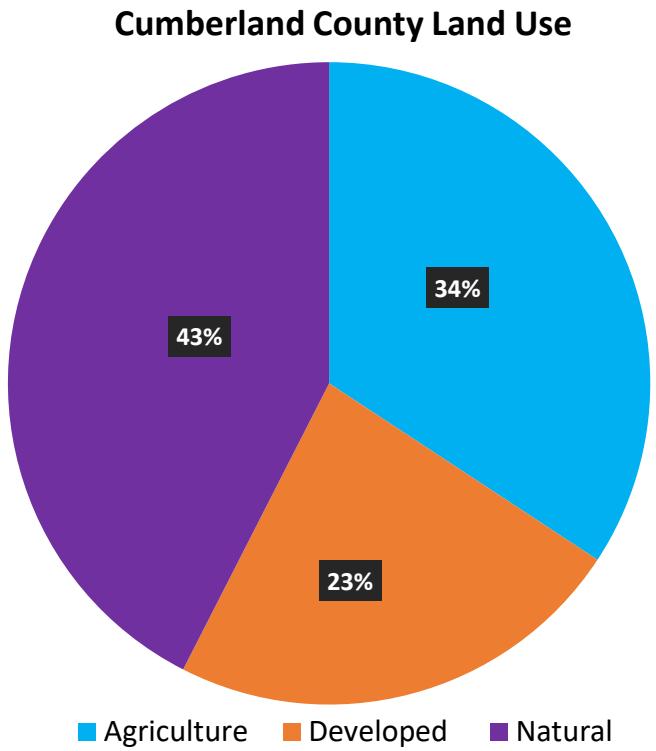
Water Quality in Cumberland County Streams

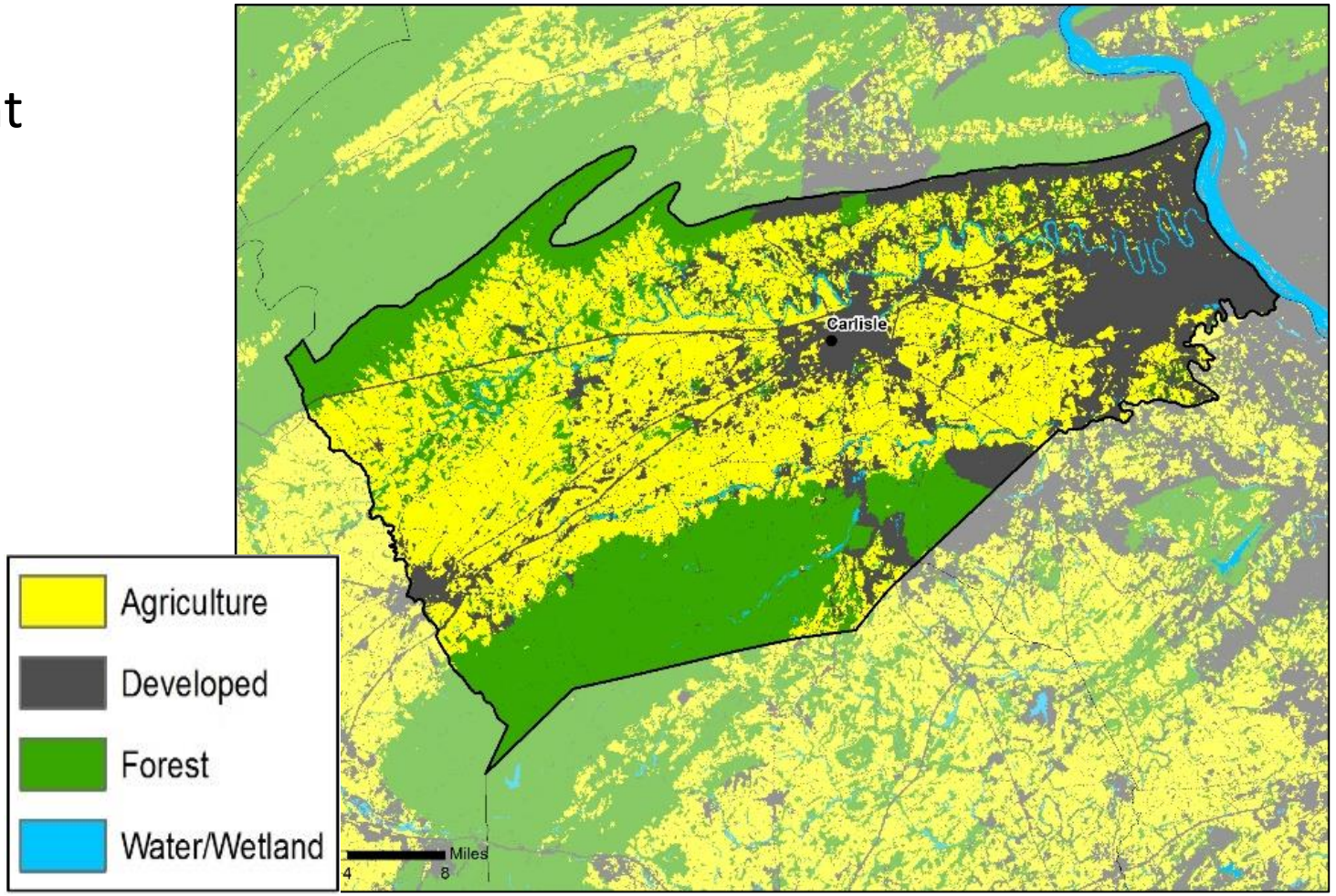
- The map on the right is from the 2018 Integrated Water Quality Report and represents the impaired waterways in Cumberland County.
- Approximately 30% of streams in Cumberland County are impaired and do not meet water quality standards



Water Quality is Strongly Affected by Land Use

- Agriculture and developed areas produce more nutrients and sediment than forested land.



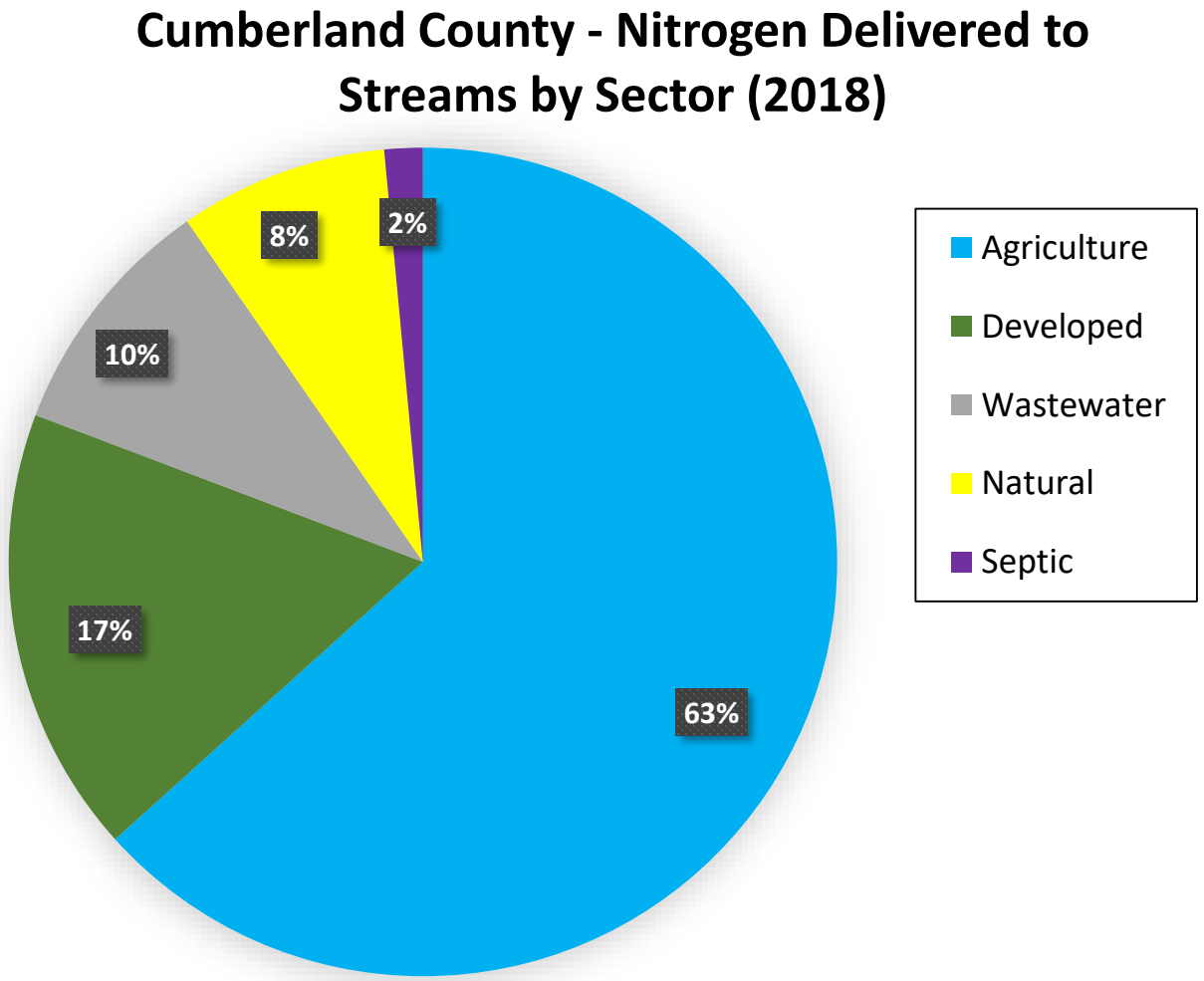


Chesapeake Bay Program Phase 6 Watershed Model. 2018 Progress. http://cast.chesapeakebay.net

Land-use map from USGS. Falcone, 2015.

Estimating Where Pollutant Loads are Coming From

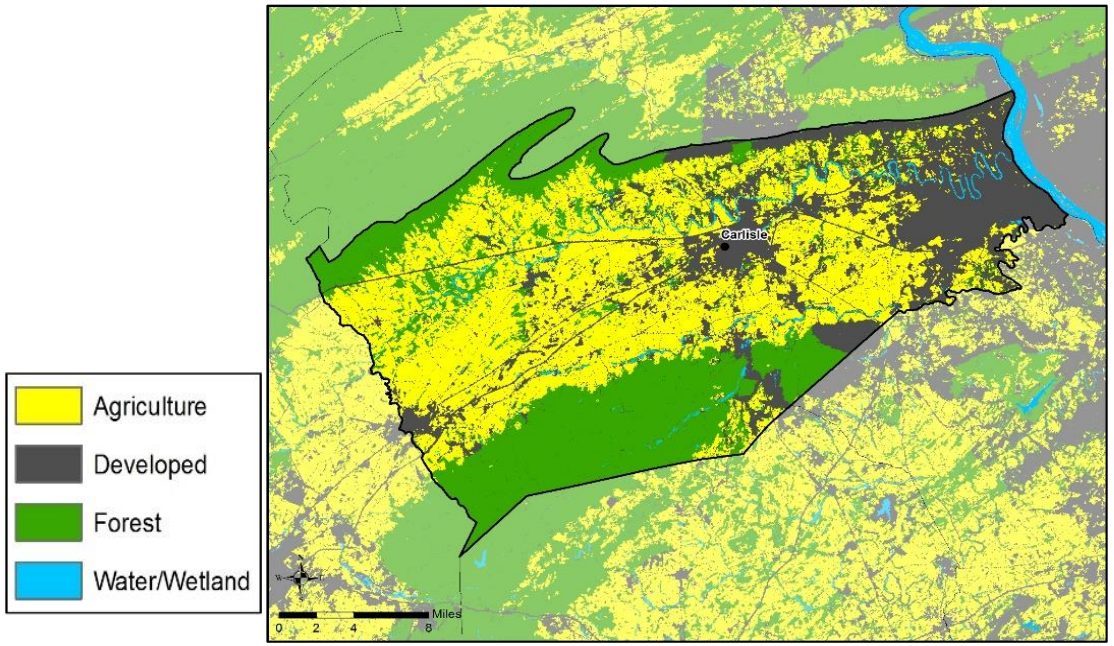
- In Cumberland County, nitrogen entering local streams is estimated to come primarily from agricultural sources, followed by developed/urban areas, and then wastewater
- It will be important to target these sources with restoration practices
- The picture is similar for phosphorus
- A majority of the sediment comes from natural sources such as stream bed erosion. Agriculture and Developed areas also contribute a significant amount of sediment.



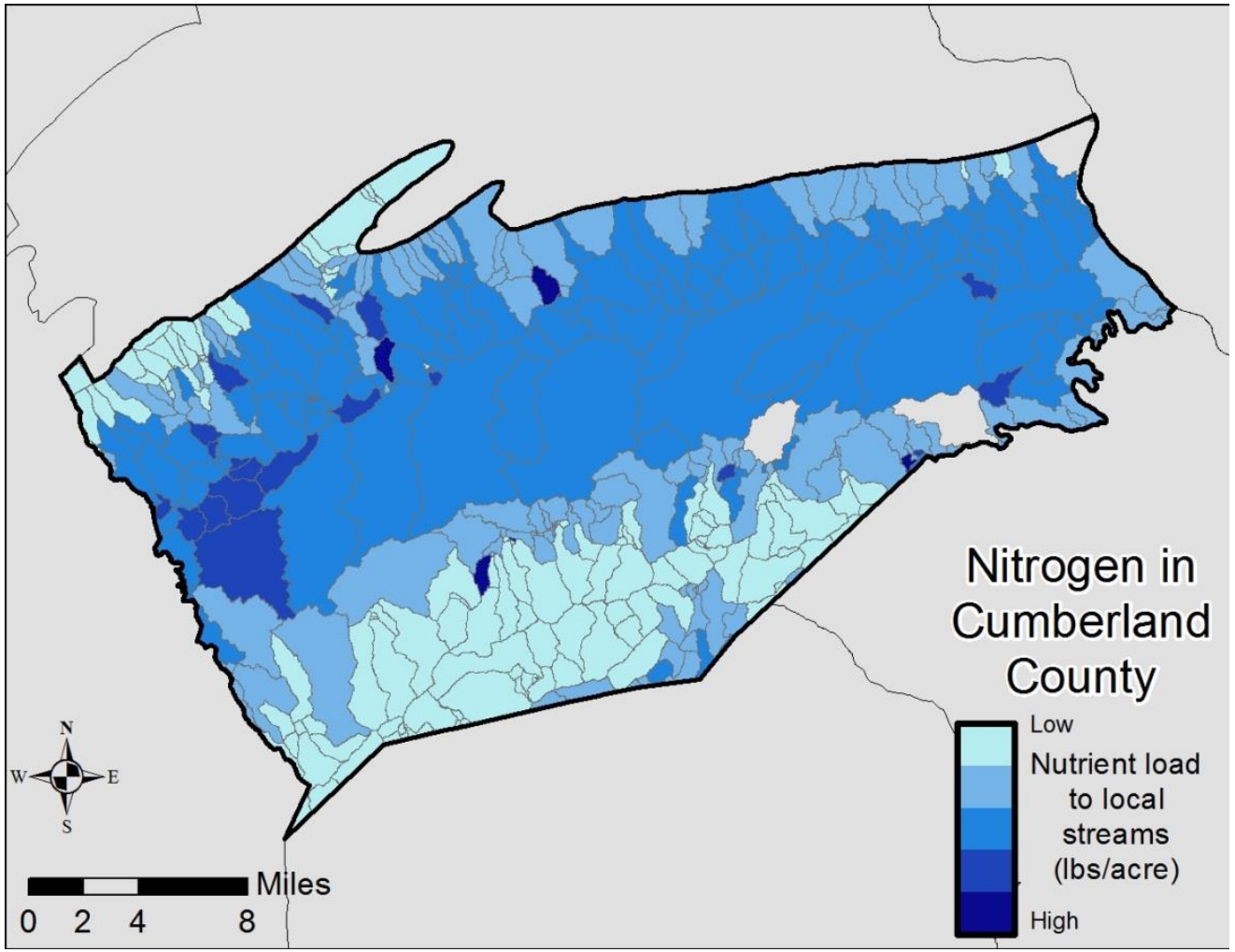
Chesapeake Bay Program Phase 6 Watershed Model. 2018 Progress. http://cast.chesapeakebay.net

Estimating Where Pollutant Loads are Coming From

- Focusing efforts geographically in the highest loading areas can reap the most water quality benefits
- The map on the right shows estimated Nitrogen load coming from Cumberland County land



USGS Sparrow Model Nitrogen



Estimating Where Pollutant Loads are Coming From

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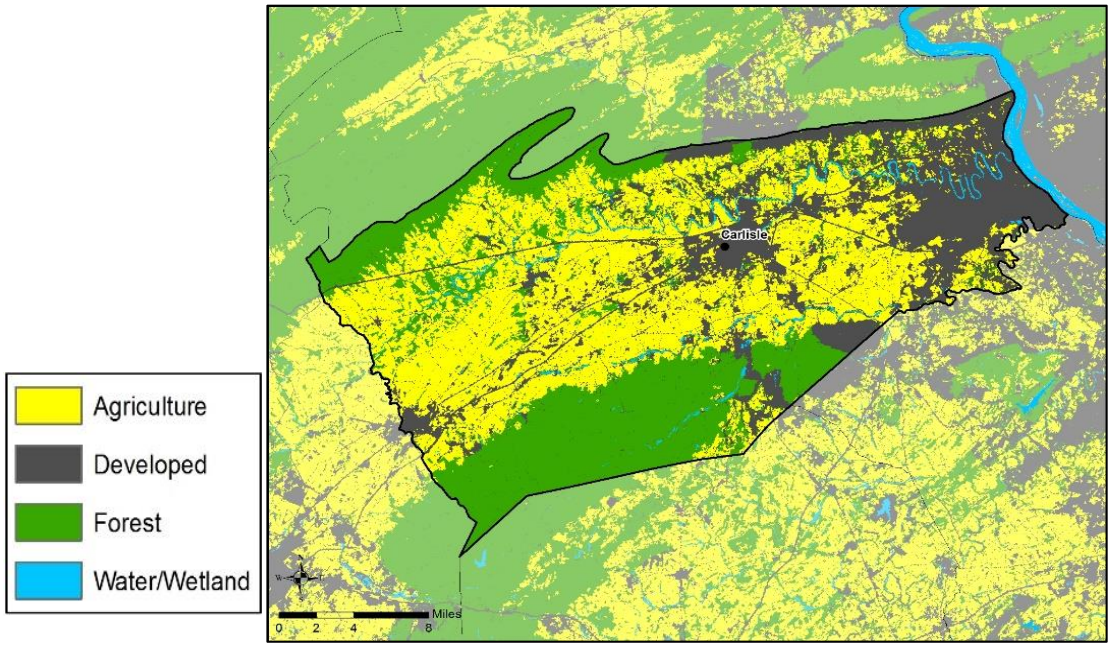
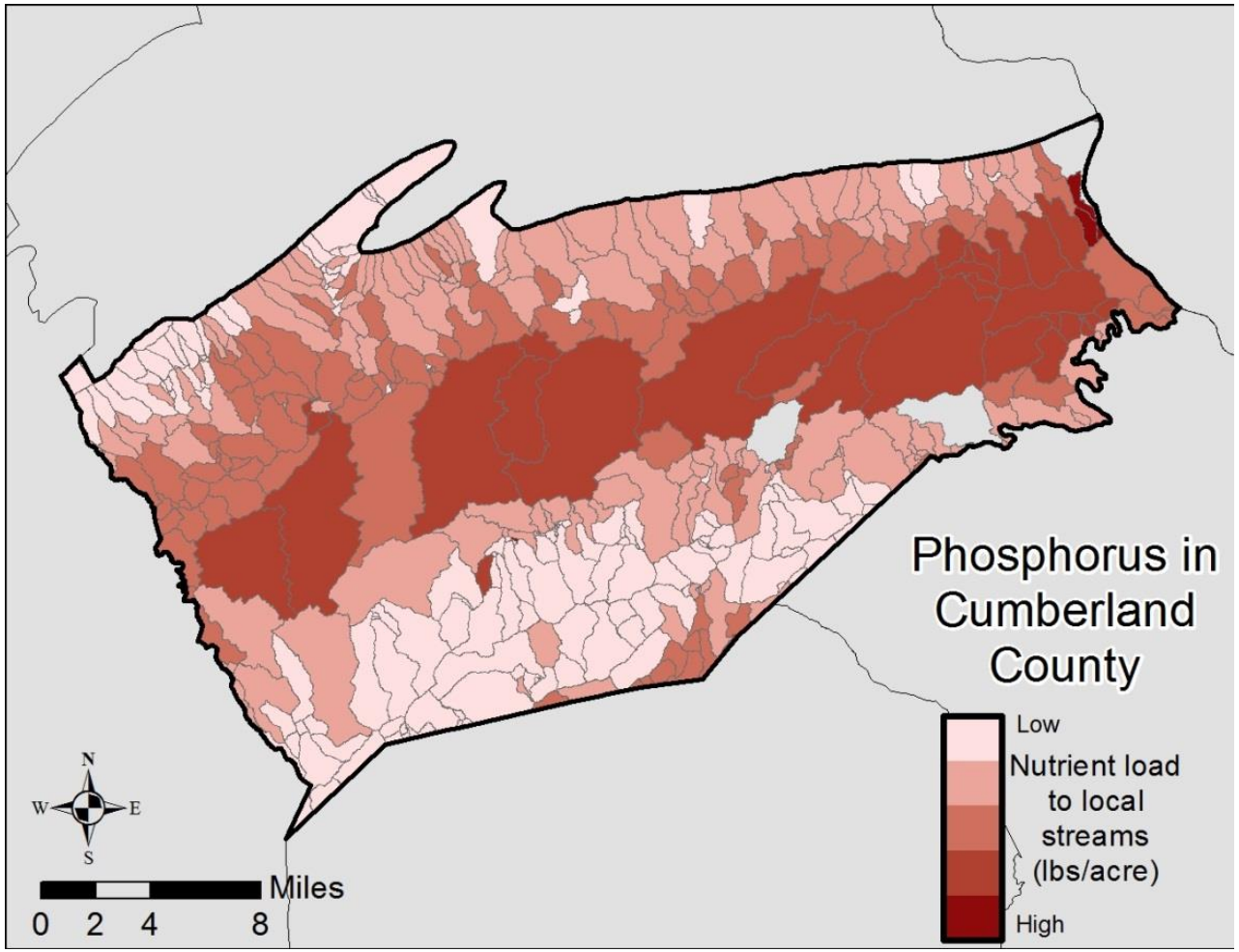
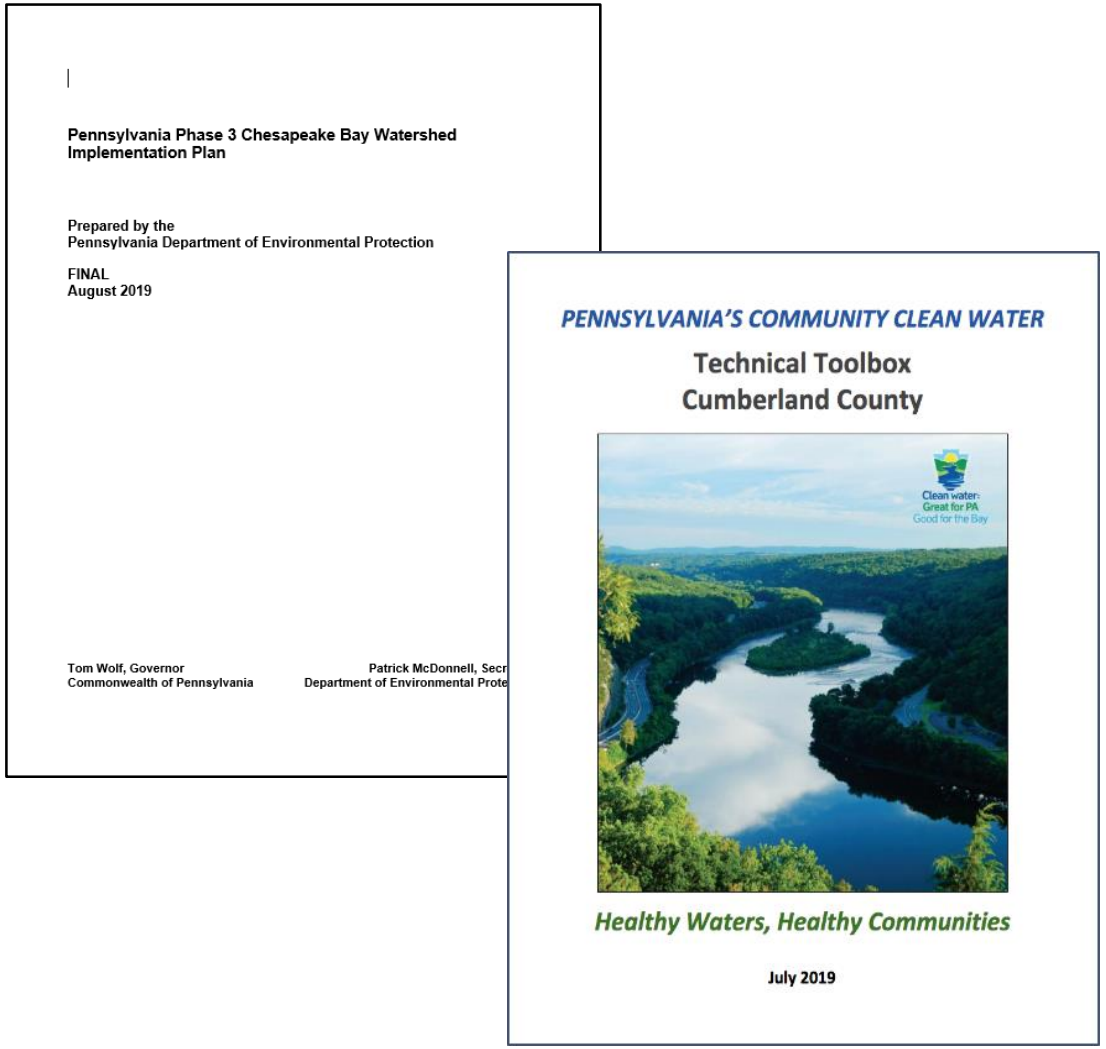


USGS Sparrow Model Phosphorus



Pennsylvania's Phase 3 WIP

- The Pennsylvania Phase 3 WIP process utilized 7 workgroups to develop specific recommendations for Pennsylvania's Chesapeake Bay Watershed.
- These recommendations are intended to provide a starting point for your county during the Countywide Action Plan development.
- These recommendations are not specific to any one county and may need to be tailored to best fit your county's priorities.
- The following slides provide a high-level overview of the recommendations from the 4 state level sectors of Agriculture, Forestry, Stormwater and Wastewater.



Agricultural Priority Initiatives

1. **Agricultural Compliance:** Ensure farmers are implementing their state required Agricultural Erosion and Sediment Control, Manure Management/Nutrient Management Plan, and implementing required barnyard runoff controls, where needed.
2. **Soil Health:** Use soil management practices that improve long-term soil health and stability.
3. **Expanded Nutrient Management:** Non-manured and manured farms use nutrient management plans and precision nutrient management practices.
4. **Manure Storage Facilities:** Install and use manure storage systems that meet federal standards.
5. **Precision Feeding:** Use precision feed management to reduce nitrogen and phosphorus in manure.
6. **Integrated Systems for Elimination of Excess Manure:** Create integrated (county/regional) programs for removal of or beneficial use of excess manure.
7. **Forested and Grassed Riparian Buffers:** Plant forest buffers and grassy vegetation along streams.

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Forestry Priority Initiatives

1. **Forested Riparian Buffers:** Plant trees and shrubs along streams.
2. **Tree Canopy:** Plant trees in developed areas.
3. **Woods and Pollinator Habitat:** Convert lawn and turf areas to woods and meadows.
4. **Forest, Farm, and Natural Areas Conservation:** Provide credits for land conservation and revise zoning and ordinances to conserve existing natural areas.
5. **Stream and Wetland Restoration:** Support efforts to restore local streams and wetlands.

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Stormwater Priority Initiatives

1. **Implement PRPs for MS4 Communities:** As one component of the 2018 permit, MS4 Permittees must implement management practices to achieve the reductions identified in their respective PRPs by 2023.
2. **New Riparian Forest Buffers:** Plant trees and shrubs alongside streams.
3. **Control Measures for Illicit Discharges:** DEP facilitates municipal ordinance amendments to control illicit discharges to storm sewer systems.
4. **Industrial Stormwater:** DEP develops technical guidance, intended to supplement existing requirements, to inform industrial stormwater discharge permittees engaged in these activities.
5. **Post-Construction Stormwater Management Program:** Continue permitting, inspecting and ensuring compliance with Chapter 102, post-construction stormwater permit requirements.

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Stormwater Priority Initiatives (continued)

6. **Fertilizer Legislation:** Pass the fertilizer legislation bill.
7. **Continue to Implement Erosion and Sediment (E&S) Control and Post Construction Stormwater Management (PCSM) Program:** Continue permitting, inspecting and ensuring compliance with Pennsylvania's erosion and sediment control and post construction stormwater permit requirements, found in 25 Pa. Code Chapter 102 for all activities including construction, timber harvest, oil and gas exploration, mining and waste management.
8. **Dirt and Gravel Roads:** Continue to implement the Dirt and Gravel Roads Program through the Center for Dirt and Gravel Roads.

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Wastewater Priority Initiatives

1. **Continue Current Treatment Course:** Given the ongoing reduction success, one priority initiative is to continue the treatment course as described in the WIP. The ongoing tracking of 190 publicly-owned treatment works and their wasteload allocations will continue to be updated on a regular basis.

2. **Plant Optimization Program:** DEP's treatment plant optimization program helps troubled facilities get into compliance with permitting requirements. DEP will further investigate the feasibility of how this program could be expanded to help facilities optimize their process for nutrient removal by establishing a facility nutrient removal optimization program.

3. **On-lot Septic Systems:** Sewage management programs that incorporate onsite septic system inspection and pumping are recommended. On-lot system oversight is the responsibility of municipalities per the Pennsylvania Sewage Facilities Act. To facilitate implementing this recommendation, DEP proposes to develop GIS-based online monitoring and reporting program that municipalities can use to report on-lot systems operation and maintenance and permitting information for Chesapeake Bay Reporting.

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Pennsylvania State-Level Recommendations

- The Pennsylvania state-level recommendations found in the Phase 3 WIP can be broken down into individual county goals for your county.
- The rates are a suggested starting point for your county.
- During your Countywide Planning Process, these goals can be changed to meet the priority initiatives identified by your county.
- Your county is not limited to only the BMPs identified above. These BMPs are to serve as a starting place for your county.
- The highlighted BMPs in Cumberland County already exceed the state level recommended implementation rates. The number in parenthesis is the current reported implementation rate in Cumberland County.

Agriculture Best Management Practice Implementation Amounts for Cumberland County Based on Recommended State Implementation Rate

Best Management Practice	Amount	Units of Measure	Percent of Total Available Acres
Agriculture Compliance			
Conservation Plans	93,000	Total Acres	80%
Nutrient Management (Core N) Manured Acres	79,000	Total Acres	71%
Nutrient Management (Core P) Manured Acres	24,000	Total Acres	21%
Barnyard Runoff Controls	44	New Acres	70%
Soil Health			
High Residue Tillage	35,000 (42,300)	Acres per Year	51%
Conservation Tillage	13,000	Acres per Year	19%
Traditional Cover Crops	7,000 (14,400)	Acres per Year	10%
Cover Crops with Fall Nutrients	25,000	Acres per Year	35%
Prescribed Grazing	5,000	Total Acres	50%
Expanded Nutrient Management			
Nutrient Management (Core N) Fertilizer Acres	9,000	Acres	8%
Nutrient Management (Core P) Fertilizer Acres	3,000	Acres	3%
Nutrient Management Rate (Core N)	14,000	Acres	12%
Nutrient Management Rate (Core P)	14,000	Acres	12%
Nutrient Management Placement (Core N)	17,000	Acres	15%
Nutrient Management Placement (Core P)	14,000	Acres	12%
Nutrient Management Timing (Core N)	19,000	Acres	17%
Nutrient Management Timing (Core P)	14,000	Acres	12%
Manure Storage Facilities			
Manure Storage Facilities	51,000	New AU's	83%
Dairy Precision Feeding			
Dairy Cow Precision Feed Management	18,000	Dairy Cow AU's	70%
Integrated System for Elimination of Excess			
Manure Transport out of Cumberland County	6,000	Dry Tons Per Year	N/A
Agriculture Riparian Zone			
Forested Riparian Buffers	2,750	New Acres	19%
Forested Riparian Buffers with Exclusion Fencing	750	New Acres	5%
Grass Riparian Buffers	1,900	New Acres	13%
Grass Riparian Buffers with Exclusion Fencing	250	New Acres	2%

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Chesapeake Bay Program Office

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DEP Chesapeake Bay Program Website:

www.dep.pa.gov/ChesapeakeBay

Phase 3 WIP Website:

www.dep.pa.gov/chesapeakebay/phase3