Pennsylvania's Phase 3 Watershed Implementation Plan

Healthy Waters, Healthy Communities
Today we will update you on our progress to date with the Phase 3 WIP and the contents of the plan.

Agenda

- The Phase 3 WIP
  - What is it?
  - Why are we doing this?
- Sections
  - Executive Summary
  - Introduction
  - State Actions
  - Countywide Actions
  - Communication and Engagement Strategy
  - Existing and Needed Resources
  - Federal Role
  - Milestones and Progress Reporting
  - Accounting for Growth
  - Climate Change and Climate Resiliency
  - Conclusion
  - Appendices

Questions
What is the Phase 3 WIP?

Why are we doing this?

Draft issued April 12, 2019 – Need your comments!!
  Public comment through June 7, 2019
  www.dep.pa.gov/chesapeakebay/phase3
  eComment: (https://www.ahs.dep.pa.gov/eComment)
Pennsylvania is working with neighboring states to clean up our shared waters that run to the Chesapeake Bay. This effort is the Phase 3 Watershed Implementation Plan (Phase 3 WIP).

The path to success starts locally.
What is the Phase 3 WIP?

It’s an opportunity to reduce water pollution...

...improve our quality of life...

...address flooding problems...

..and, get credit for the work already underway.
To Meet Legal Requirements:
- federal Clean Water Act, federal court orders and regulations
  - 2010 Chesapeake Bay Total Maximum Daily Load (TMDL) requires annual loading reductions of nitrogen, phosphorus and sediment
  - Requires the return of Chesapeake Bay waters to Maryland state water quality standards by 2025
- Pennsylvania’s Clean Stream Law

Why is this happening now?
Nitrogen Reduction Goals

Nitrogen Reaching the Bay

- 1985: 130.00 million pounds
- Current: 110.00 million pounds
- Target: 70.00 million pounds

34.13 million pounds to go
Phosphorus Reduction Goals

Phosphorous Reaching the Bay

- **1985**: 6.00 million pounds
- **Current**: 4.00 million pounds
- **Target**: 2.00 million pounds

0.757 million pounds to go
The Phase 3 WIP Story: Who Nitrogen Yields in the last three years are all below the long-term averages; some sites show significant reductions.

**Current Nutrient and Sediment Trends**

<table>
<thead>
<tr>
<th>Nutrient and Sediment Trends</th>
<th>Total Nitrogen</th>
<th>Total Phosphorus</th>
<th>Suspended Sediment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increasing Trend</td>
<td>25%</td>
<td>35%</td>
<td>45%</td>
</tr>
<tr>
<td>No Trend</td>
<td>20%</td>
<td>35%</td>
<td>30%</td>
</tr>
<tr>
<td>Decreasing Trend</td>
<td>55%</td>
<td>30%</td>
<td>25%</td>
</tr>
</tbody>
</table>

Nitrogen Yields in the last three years are all below the long-term averages; some sites show significant reductions.
County Clean Water Goals

County Level Modeling Tool

We’ve created a modeling tool calibrated with 30 years of local monitoring data to help you plan.

Annual Flow Normalized Loads - Conestoga

- Nitrogen
- Phosphorus
- Sediment
Pennsylvania – Nonpoint Source Opportunities

- **Agriculture**
  - 33,000 Farms, < 400 CAFOs or CAOs with a NPDES Permit
  - All must comply with Manure Management and Agriculture Erosion and Control Plan Regulations

- **Urban Stormwater**
  - Reducing stormwater pollution from existing developed areas to a large extent must be achieve through voluntary creative collaboration

- **Wastewater**
  - Met the required 2017 reduction goals 3 years early at a cost of approximately $1.4 billion.
  - Are on track to meet the 2025 goals without further enhancements
Pennsylvania waters do not meet federal minimum water quality standards – fishable or swimmable. This violates federal and state law.

If local PA communities don’t reduce pollution to our local waters, EPA has cautioned it may:

- Subject more livestock operations and municipalities to federal regulations
- Require additional reductions from point sources, such as wastewater and industrial facilities
- Impose new water quality standards stream-by-stream in Pennsylvania
- Redirect or withhold EPA funding

More than 98% of Pennsylvania farms do NOT have to get federal discharge permits. That could change!

75% of developed areas in Pennsylvania are NOT subject to the federal MS4 stormwater management regulatory program. That could change!
Themes to Phase 3 WIP Implementation

Working Together to Clean Up Our Local Waters

1. Communications
2. Funding and Resources
3. Enhancing Technical Capacity
4. Tracking and Reporting
5. Compliance
Section 1: Introduction

- Planning Targets
- Process
2 Sets of Numbers: Bay Goals and Local Waters Goals

Only a portion of the nutrients and sediment in PA’s local waters actually make it to the Bay.

What’s entering PA Local Waters from PA Land

What’s making it to Chesapeake Bay from PA Land
Bay Goals and Local Waters Goals

Reductions necessary to PA’s Local Waters and the Bay

What’s entering PA Local Waters 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
Who is involved?

Steering Committee
- Secretaries of DEP, DCNR and PDA
- SRBC and ICPRB
- State Conservation Commission – Conservation Districts
- Pennvest
- Chesapeake Bay Commission
- Workgroup Co-Chairs

Workgroups
- Agriculture
- Stormwater
- Forestry
- Wastewater
- Local Area Goals
- Funding
- Communications and Local Engagement

County Governments
- 43 Counties in Goal Area

Other Stakeholders
- Municipal Governments
- Regional Organizations
- Environmental non-profits
- Business and Industry
- Agricultural Groups
- Planning Organizations
Section 2: State Actions

• Existing Reduction Efforts
• Numeric Commitments by Sector
• Programmatic and Narrative Commitments
• Merging State Initiatives with Countywide Action Plans
• Under-reported Practices – Tracking and Verification
• Programs Not Currently Credited
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 crop and soil management practices, such as no-till farming and cover crops, that improve long-term soil health and stability.

3. **Expanded Nutrient Management**: Non-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 grassy vegetation or forest buffers along streams.
1. **Forested Riparian Buffers**: Plant trees and shrubs or grassy vegetation 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.
1. **Implement PRPs for MS4 Communities:** MS4 permittees must implement practices to achieve reductions identified in their PRPs by 2023.

2. **New Riparian Forest Buffers:** Plant 450 acres of new forested riparian buffer by 2025.

3. **Control Measures for Illicit Discharges:** Facilitate ordinance amendments to control illicit discharges to storm sewer systems.

4. **Industrial Stormwater:** DEP develop preferred BMPs for use in industrial stormwater discharge permits to reduce pollutants of concern.

5. **Post-Construction Stormwater Management Program:** Continue permitting, inspecting and ensuring compliance with Chapter 102, post-construction stormwater permit requirements.
1. **Biological Nutrient Reduction.** This strategy was implemented by 190 wastewater treatment facilities. They met their 2025 goals in 2018.

2. **Wastewater Plant Optimization.** Maximize treatment results through process changes. Additional technical and financial support would be needed for this to be a viable option.

3. **On-lot Septic Systems.** Municipalities are required to Sewage Management programs implement, under the Sewage Facilities Act. Programs that incorporate onsite septic system inspection and pumping programs. To track the development and implement the implementation of these programs the development of a GIS System is proposed.

4. **Enhanced Nutrient Reduction.** This option was considered. This is a low reduction, high cost approach. As a result it was determined the costs do not justify use of this option to achieve further reductions. Estimated cost is $80,000,000/year.

5. **Non-significant Wastewater Facilities.** These facilities release a minimal flow to discharge streams. Significant technical and financial support would be needed, and current low levels of N and P contribution do not justify the cost/effort.
Legislative Actions

• Dedicated Funding Source:
  • Restore PA
  • Water Use Fee
  • Bottled Water Tax
  • Keystone Tree Fund
  • Specialty License Plate

• Facilitate Practice Implementation
  • Revisions to Clean Streams Law
  • Nutrient Reduction Procurement Program
  • Integrators and Private Investors – “Pay for Performance”
Legislative Actions

- Other Legislation
  - Revisions to the Right to Know Law
  - PA Farm Bill
  - Fertilizer Legislation (SB792, 2017-2018 Session)
  - Restore Act 167 Stormwater Management Funding
Regulatory Actions

- Possible Chapter 105 Amendments
  - Clarification to waiver provisions
  - Outline environmental assessment requirements
  - Also considering revisions to existing permits and guidance
- Possible Chapter 102 Amendments
  - If needed, revisions to provide authority for mandatory installation of additional practices in impaired watershed.
Programmatic and Policy

- Revisions to the P index to allow for land application of biosolids
- Updates to the Stormwater Management BMP Manual
- Programmatic Improvements to the Act 167 Program
  - Integration of planning efforts
  - Prioritization of compliance and enforcement
- Bradford County Stream Reconstruction Pilot Program
  - Delegation of Stream Reconstruction Actions
- Enhancement of Real-Time Water Quality Monitoring Data Network
Programmatic and Policy

- Incentives or Methods to Accelerate Practice Implementation
  - Combination of Agency Funding Sources
  - Use of Block Grants
  - Creation of a County State Revolving Loan Fund
  - Expansion of Existing Funding Programs
  - One-Stop-Shop for Technical Assistance
  - Installation of Practices on State Agency Lands
  - Technical Guidance to Promote Priority BMPs
  - Nutrient Trading Program
This bar chart shows how the State Priority Initiatives or Actions merge with the Countywide Action Plans.

The purple bar represents the nitrogen reductions since 1985. The green bar represents the State Priority Initiatives numeric commitments. The blue bar represents a completed Countywide Action Plan. The red bar represents the remaining gap between the county plan and the 2025 goal.
The remaining 39 counties will use these state action numeric commitments for beginning their Countywide Action Plan. As each county completes its plan their bar will be updated to represent the results of the planning process. A completed plan will shift to blue and represent a completed Countywide Action Plan.
Data Management, Tracking and Verification
Data Management, Tracking and Verification

Approved Methodologies:
- Survey
- Survey and/or Inspection
- Inspection
- Remote Sensing using Aerial Imagery
- Remote Sensing using Lidar and/or Inspection

WIP Priority BMPs for Verification

Agriculture
- Manure Transport
- Tillage Practices
- Dairy Precision Feeding
- Cover Crop (Traditional)
- Nutrient Management - Core Nitrogen and Core Phosphorus
- Soil Conservation and Water Quality Plans
- Nutrient Management - Supplemental Nitrogen and Phosphorus
- Animal Waste Management Systems
- Stream Restoration
- Wetland Restoration

Urban Stormwater
- Dry Detention Ponds and Hydrodynamic Structures
- Dry Extended Detention
- Vegetated Open Channels
- Performance Standards: BioRetention Practices
- Performance Standards: Infiltration Practices
- Wet Ponds and Wetlands
- Urban Forest Buffers
- Stream Restoration

Forestry
- Riparian Forest Buffers
- Urban Forest Expansion/Conservation/Landscaping
- Urban Tree Canopy Expansion
- Ag Stream Restoration
- Urban Stream Restoration
- Wetland Creation
- Wetland Restoration
Undocumented Initiatives

- DEP Programs
  - Oil & Gas Erosion and Sediment Control Program
  - Wetland Mitigation
  - Brownfields Redevelopment Program
  - Legacy Sediment Programs
  - Nutrient Trading
- PDA Farmland Preservation Program
- PennDOT/Turnpike Commission MS4 Programs
- Fish and Boat Commission Stream Restoration Initiative
- Chesapeake Bay Foundation Keystone 10 Million Tree Partnership
- Others After DEP Evaluation
Section 3: Countywide Actions

- Four Pilot County Results
- Total Reductions to the Bay
- Tier 2, 3 and 4 County Engagement
Current Conditions:
Lancaster County is the highest loading county in PA’s Chesapeake Bay Watershed.

Action Plan:
Lancaster County’s plan gets them to 80% of their nitrogen goal and 100% of their phosphorus goal by 2025.

The Approach:
Lancaster County is focusing its Nitrogen and Phosphorus reduction into five initiatives: Agriculture, Stormwater, Stream Restoration, Buffers, and Land Use. This approach will support efficient use of resources.

As you can see from the table below, Lancaster expects their Agricultural Initiative to provide the greatest reduction in Nitrogen and Phosphorus.

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Nitrogen (lbs.)</th>
<th>Phosphorus (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>8,343,241</td>
<td>505,468</td>
</tr>
<tr>
<td>Stormwater</td>
<td>30,771</td>
<td>931</td>
</tr>
<tr>
<td>Stream Restoration</td>
<td>8,364</td>
<td>3,220</td>
</tr>
<tr>
<td>Buffers</td>
<td>868,600</td>
<td>12,683</td>
</tr>
<tr>
<td>Land Use</td>
<td>31,718</td>
<td>23</td>
</tr>
<tr>
<td>PRPs *</td>
<td>67,751</td>
<td>5,732</td>
</tr>
<tr>
<td>Total Reductions</td>
<td>9,197,613</td>
<td>521,292</td>
</tr>
</tbody>
</table>
The York Countywide Action Plan

Current Conditions:
York County is the second highest loading county in PA’s Chesapeake Bay Watershed.

<table>
<thead>
<tr>
<th>Nitrogen (N)</th>
<th>Phosphorus (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Load (lbs): 11,993,095</td>
<td>Current Load (lbs): 446,995</td>
</tr>
</tbody>
</table>

- **Nitrogen (N)**: No Reduction Needed, 4,004,187 lbs
- **Phosphorus (P)**: Planning Target (lbs)

Action Plan:
York County’s plan gets them to 80% of their nitrogen goal and 100% of their phosphorus goal by 2025.

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Nitrogen (lbs.)</th>
<th>Phosphorus (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>3,129,670</td>
<td>72,306</td>
</tr>
<tr>
<td>Stormwater</td>
<td>66,724</td>
<td>5,382</td>
</tr>
<tr>
<td>Watershed Program</td>
<td>8,127</td>
<td>6,062</td>
</tr>
<tr>
<td>Total Reductions</td>
<td>3,213,027</td>
<td>84,702</td>
</tr>
</tbody>
</table>

The Approach:
York County is focusing its Nitrogen and Phosphorus reduction into three initiatives: Agriculture, Stormwater, and a Watershed Program. This approach will support efficient use of resources.

As you can see from the table below, York expects their Agricultural Initiative to provide the greatest reduction in Nitrogen and Phosphorus.
Current Conditions:
Adams County is one of the higher loading county in PA’s Chesapeake Bay Watershed.

Action Plan:
Adams County’s plan gets them to 56% of their nitrogen goal and 99% of their phosphorus goal by 2025.

The Approach:
Adams County is focusing its Nitrogen and Phosphorus reduction into three initiatives: 1) Enhanced reporting and tracking; 2) Achieving pollutant reductions; and 3) Research, education and training.

As you can see from the table below, Adams expects agriculture to provide the greatest reduction in Nitrogen and Phosphorus.

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Nitrogen (lbs.)</th>
<th>Phosphorous (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>827,789</td>
<td>38,802</td>
</tr>
<tr>
<td>Stormwater</td>
<td>970</td>
<td>97</td>
</tr>
<tr>
<td>PRPs</td>
<td>1,858</td>
<td>385</td>
</tr>
<tr>
<td>Total Reductions</td>
<td>830,616</td>
<td>39,284</td>
</tr>
</tbody>
</table>
Current Conditions:
Franklin County is the third highest loading county in PA’s Chesapeake Bay Watershed.

<table>
<thead>
<tr>
<th>Nitrogen (N)</th>
<th>Phosphorus (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Load (lbs): 7,793,008</td>
<td>Current Load (lbs): 394,218</td>
</tr>
</tbody>
</table>

Action Plan:
Franklin County’s plan gets them to **46% of their nitrogen goal** and **70% of their phosphorus goal** by 2025.

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Nitrogen (lbs.)</th>
<th>Phosphorus (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>1,311,409</td>
<td>60,806</td>
</tr>
<tr>
<td>Stormwater</td>
<td>8,372</td>
<td>2,392</td>
</tr>
<tr>
<td>Total Reductions</td>
<td>1,326,616</td>
<td>69,653</td>
</tr>
</tbody>
</table>

The Approach:
Franklin County is focusing its Nitrogen and Phosphorus reduction into two initiatives: Agriculture and Stormwater. This approach will support efficient use of resources.

As you can see from the table below, Franklin expects their Agricultural Initiative to provide the greatest reduction in Nitrogen and Phosphorus.
In summary if the Pilot Counties’ Countywide Action Plans are implemented as drafted...

### Nutrient Reductions in Pilot Countywide Action Plans

**Action:** Pilot counties are successful in fully implementing their Countywide Action Plans.

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Reduction</th>
<th>Percentage of Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>14.6 M lbs</td>
<td>29%</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>715,000 lbs</td>
<td>35%</td>
</tr>
</tbody>
</table>

**Total Estimated Cost:**

$344 million (Over the next six years)

**Total Sediment Reductions = 811,000,000 lbs**

The Pilot Counties represent 19.9 M lbs or 39% of PA’s nitrogen goal, and 0.61 M lbs or 30% of PA’s phosphorous goal.
Total Reduction Results from Priority Initiatives

Pennsylvania's Nitrogen Reductions to the Chesapeake Bay

<table>
<thead>
<tr>
<th>Category</th>
<th>Millions of lbs of Nitrogen Reduced</th>
</tr>
</thead>
<tbody>
<tr>
<td>2025 Planning Targets</td>
<td>34.13</td>
</tr>
<tr>
<td>State Priority Initiatives</td>
<td>22.37</td>
</tr>
<tr>
<td>State Priority Initiatives and CAPS</td>
<td>22.57</td>
</tr>
<tr>
<td>Conversion of Excess P to N Reductions</td>
<td>0.16</td>
</tr>
<tr>
<td>Total Reductions with Additional P and CAPS</td>
<td>22.72</td>
</tr>
</tbody>
</table>

*Reductions Represent EOT Loads*
Total Reduction Results from Priority Initiatives

Pennsylvania's Phosphorus Reductions to the Chesapeake Bay

- **2025 Planning Targets**: 64,204 lbs
- **State Priority Initiatives**: 558,067 lbs
- **State Priority Initiatives and CAPS**: 617,018 lbs

Reductions Represent EOT Loads
## Phased Plan Implementation

<table>
<thead>
<tr>
<th>Phase 1</th>
<th>Phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tier 2 - Second 25% of Reductions</strong></td>
<td><strong>Tier 3 - Third 25% of Reductions</strong></td>
</tr>
<tr>
<td>Franklin -- Completed&lt;br&gt;Lebanon&lt;br&gt;Cumberland&lt;br&gt;Centre&lt;br&gt;Bedford</td>
<td>Adams -- Completed&lt;br&gt;Northumberland&lt;br&gt;Perry&lt;br&gt;Snyder&lt;br&gt;Huntingdon&lt;br&gt;Columbia&lt;br&gt;Mifflin&lt;br&gt;Lycoming</td>
</tr>
</tbody>
</table>

**NOTE:** Plans for the Two Tier 1 Counties, **Lancaster and York** are also **Completed**.
Phased Plan Implementation

Phase 1 (Begins July 2019 and lasts 6 to 8 months)

- Efforts in this phase are focused on the eight Tier 1 & 2 counties that make up 54% of PA’s nutrient load.
- Actions include:
  - Assist Pilot Counties with transition to Countywide Action Plan implementation.
  - Work with remaining Tier 2 counties develop and implement Countywide Action Plans.
  - Begin outreach to Tier 3 and 4 counties.

Phase 2 (Begins February 2020 and lasts 6 to 8 months)

- Efforts in this phase are focused on the thirty-five Tier 3 & 4 counties that make up 46% of PA’s nutrient load.
- Actions include:
  - Assist Pilot and Tier 2 counties with Countywide Action Plan implementation.
  - Break Tier 3 and 4 counties in to regional groupings based on existing partnerships.
  - Work with regional groups to help Tier 3 and 4 counties to develop and implement Countywide Action Plans.
How Does a County Prepare Its Action Plan?

Pennsylvania Countywide Pilot Planning Process
Phase III WIP

1. Convene Countywide Action Team Members
2. Identify Water Quality and Other Goals
3. Identify Local Resources
4. Select and Report Actions
5. Implement Actions and Continue to Report Actions

We anticipate this will take 6 to 8 months
How Does a County Prepare Its Action Plan?

- Support Team
  - DEP Staff Person from Chesapeake Bay Office – Internal Coordinator
  - DEP Regional Office
  - Member(s) of Technical Support Team
- External Coordinator (County Planning Team Lead)
- Revised County Specific Toolbox
- Planning Process Guide
Section 4: Communication and Engagement Strategy

- Public Comment Period
- Plan Implementation
Phase 3 WIP Public Comment Period

• Website:
  DEP Chesapeake Bay Program Website:
  http://www.dep.pa.gov/ChesapeakeBay
  
  Phase 3 WIP Website:
  www.dep.pa.gov/chesapeakebay/phase3

• eComment:
  (https://www.ahs.dep.pa.gov/eComment)

• Webinars, Focus Groups, Meetings
Phase 3 WIP Implementation

- DEP/DCNR/PDA Communications Office – Message Development
  - DEP StoryMap
  - Success stories, videos, etc.
  - Materials for youth
- C & E Workgroup
  - Help with message delivery
Section 5: Existing and Needed Resources

- Results of Analyses
- Summary of Resources Available and Needed
  - Practice Implementation
  - Priority Initiatives
  - Identification of Gap
Average County Funding (FY14-18) by WIP Tiers
<table>
<thead>
<tr>
<th>Statewide Workgroup Recommendation</th>
<th>Nitrogen Reduction (to Pennsylvania Streams)</th>
<th>Phosphorus Reduction (to Pennsylvania Streams)</th>
<th>Estimated Annual Cost for Practice Implementation¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>28,572,000</td>
<td>1,790,000</td>
<td>$313,140,000</td>
</tr>
<tr>
<td>Agriculture Compliance</td>
<td>7,381,000</td>
<td>251,000</td>
<td>$33,105,000</td>
</tr>
<tr>
<td>Soil Health</td>
<td>7,337,000</td>
<td>298,000</td>
<td>$32,980,000</td>
</tr>
<tr>
<td>Expanded Nutrient Management</td>
<td>755,000</td>
<td>34,000</td>
<td>$20,853,000</td>
</tr>
<tr>
<td>Manure Storage Facilities</td>
<td>7,167,000</td>
<td>300,000</td>
<td>$214,042,000</td>
</tr>
<tr>
<td>Precision Feeding</td>
<td>604,000</td>
<td>61,000</td>
<td>($1,687,000)</td>
</tr>
<tr>
<td>Integrated Systems for Elimination of Excess Manure</td>
<td>1,230,000</td>
<td>101,000</td>
<td>$4,666,000</td>
</tr>
<tr>
<td>Grassed Riparian Buffers</td>
<td>4,098,000</td>
<td>747,000</td>
<td>$9,183,000</td>
</tr>
<tr>
<td>Stormwater¹</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>296,000</td>
<td>39,250</td>
<td>$78,552,000</td>
</tr>
<tr>
<td>Meet Current MS4 Permit Requirements</td>
<td>179,000</td>
<td>34,000</td>
<td>$74,033,000</td>
</tr>
<tr>
<td>New Riparian Forest Buffers</td>
<td>7,000</td>
<td>1,000</td>
<td>$68,000</td>
</tr>
<tr>
<td>Residential Pools and Car Washing</td>
<td>3,000</td>
<td>150</td>
<td>$898,000</td>
</tr>
<tr>
<td>Industrial Stormwater</td>
<td>2,000</td>
<td>100</td>
<td>$3,553,000</td>
</tr>
<tr>
<td>Fertilizer Legislation</td>
<td>105,000</td>
<td>4,000</td>
<td>TBD</td>
</tr>
<tr>
<td>Recommendations for the 2023 MS4 Permit¹</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Forestry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>7,681,000</td>
<td>1,029,000</td>
<td>$67,701,000</td>
</tr>
<tr>
<td>Forested Riparian Buffers</td>
<td>7,445,000</td>
<td>993,000</td>
<td>$41,439,000</td>
</tr>
<tr>
<td>Tree Canopy</td>
<td>180</td>
<td>10</td>
<td>$5,400</td>
</tr>
<tr>
<td>Woods and Pollinator Habitat</td>
<td>86,000</td>
<td>5,300</td>
<td>$1,046,000</td>
</tr>
<tr>
<td>Forest, Farm, and Natural Areas Conservation</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Stream and Wetland Restoration</td>
<td>147,000</td>
<td>29,000</td>
<td>$27,303,000</td>
</tr>
<tr>
<td>Total State Priority Initiatives (to Pennsylvania Streams)</td>
<td>33,239,000</td>
<td>2,123,000</td>
<td>$459,393,000</td>
</tr>
</tbody>
</table>
## Phase 3 WIP, Agency and External Personnel Resource Needs

<table>
<thead>
<tr>
<th></th>
<th>Number (FTE’s)</th>
<th>Cost (Annual)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Existing</td>
<td>New</td>
</tr>
<tr>
<td>Total (Agency Resources)</td>
<td>32.5</td>
<td>79.5</td>
</tr>
<tr>
<td>Total (External Resources)</td>
<td>93</td>
<td>109</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>125.5</td>
<td>188.5</td>
</tr>
<tr>
<td><strong>GRAND TOTAL</strong></td>
<td>312</td>
<td></td>
</tr>
</tbody>
</table>
## Current Funding is NOT Enough

<table>
<thead>
<tr>
<th>HAVE</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Resources 2018</td>
<td>$ 216,142,282</td>
<td></td>
</tr>
<tr>
<td>Existing Staff Resources</td>
<td>$ 12,959,147</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$ 229,101,429</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NEED</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Statewide WG Practices</td>
<td>$ 459,393,000</td>
<td></td>
</tr>
<tr>
<td>Statewide WG Staffing</td>
<td>$ 26,483,596</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$ 485,876,596</strong></td>
<td></td>
</tr>
</tbody>
</table>

| Funding Gap (Annual)               | **$ 256,775,167** |              |
## Funding Gap – Another Approach

<table>
<thead>
<tr>
<th>Priority Initiative</th>
<th>Cost in millions</th>
<th>Nitrogen Reduction</th>
<th>Phosphorus Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Compliance</td>
<td>$33.1</td>
<td>14%</td>
<td>12%</td>
</tr>
<tr>
<td>Soil Health</td>
<td>$32.9</td>
<td>14%</td>
<td>14%</td>
</tr>
<tr>
<td>Grass Buffers</td>
<td>$9.2</td>
<td>8%</td>
<td>37%</td>
</tr>
<tr>
<td>Forested Buffers</td>
<td>$41.4</td>
<td>14%</td>
<td>49%</td>
</tr>
<tr>
<td>TOTAL (Annual)</td>
<td>$116.6</td>
<td>45%</td>
<td>75%</td>
</tr>
</tbody>
</table>

+ Associated Staff and Technical Assistance Resources
Section 6: Federal Role

- Federal Facility Reduction Plans
- Agency Support and Coordination
  - EPA
  - NRCS
  - Army Corps of Engineers
  - US Fish and Wildlife Service
Reductions from Federal Facilities

- 24 Counties Have Federal Facilities

<table>
<thead>
<tr>
<th>Agency</th>
<th>Nitrogen Planning Goal (pounds)</th>
<th>Phosphorus Planning Goal (pounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Defense</td>
<td>88,613</td>
<td>8,316</td>
</tr>
<tr>
<td>National Park Service</td>
<td>8,515</td>
<td>977</td>
</tr>
<tr>
<td>US Fish and Wildlife Service</td>
<td>214</td>
<td>23</td>
</tr>
<tr>
<td>General Services Administration</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>97,358</td>
<td>9,316</td>
</tr>
</tbody>
</table>
Section 7: Milestones and Progress Reporting

- Coordination and Tracking of Progress
- Key Action Steps
Section 7: Milestones and Progress Reporting

- State Progress – 6 months
- Countywide Action Plan Implementation – Annually
- Milestone Updates – Every 2 Years
- Action Steps –
  - Communications and Outreach
  - Funding and Resources
  - Expanding Capacity for Technical Assistance
  - Reporting and Tracking
  - Compliance
# Section 7: Milestones and Progress Reporting

<table>
<thead>
<tr>
<th>Action #</th>
<th>Description</th>
<th>Performance Target(s)</th>
<th>Responsible Parties and Partnerships</th>
<th>Geographic Location</th>
<th>Expected Timeline</th>
<th>Potential Implementation Challenges or Recommendations</th>
<th>Resources Available</th>
<th>Resources Needed</th>
<th>Progress to Date</th>
<th>Justification for Change to Action Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priority Initiative 1:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Priority Initiative 2:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section 8: Accounting for Growth

- Impact of Sector Growth
- Pennsylvania’s Strategy
  - Forest Conservation Program
  - Private Forest Management
  - Wetland Preservation
  - Farmland Preservation Program
Why are we using 2025 Land Use

1. TMDL specifies need to account for growth in different sectors across the timeline of the TMDL subsequent changes in loads
2. For Phase III WIP we now have the estimates of growth (Land Change Model)
3. Jurisdictions chose to “bake in” accounting for growth into their WIPs by running their final WIP scenarios on 2025 estimated land use
Why is there a difference between 2017 and 2025?

Change in PA Chesapeake Bay Watershed Acres between 2017-2025
Why is there a difference between 2017 and 2025?

Change in PA Chesapeake Bay Watershed Acres from 2017 to 2025

- Developed
- Other Ag
- Pasture
- Hay
- Feeding Space
- Crop
- Forest/Wetland

Acres
-80000 -60000 -40000 -20000 0 20000 40000
Why is there a difference between 2017 and 2025?

Change in PA Chesapeake Bay Watershed Nitrogen loads from 2017 to 2025
Section 9. Climate Change

- Impact of Climate Change in Pennsylvania
- Pennsylvania’s Strategy for Climate Change
### Impact of Climate Change

#### Nitrogen

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>1985 Baseline</th>
<th>2013 Progress</th>
<th>Climate Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>NY</td>
<td>18.71</td>
<td>15.44</td>
<td>0.400 (3.8%)</td>
</tr>
<tr>
<td>PA</td>
<td>122.41</td>
<td>99.28</td>
<td>4.135 (5.7%)</td>
</tr>
<tr>
<td>MD</td>
<td>83.56</td>
<td>55.89</td>
<td>2.194 (4.8%)</td>
</tr>
<tr>
<td>WV</td>
<td>8.73</td>
<td>8.06</td>
<td>0.236 (3.7%)</td>
</tr>
<tr>
<td>DC</td>
<td>6.48</td>
<td>1.75</td>
<td>0.006 (0.3%)</td>
</tr>
<tr>
<td>DE</td>
<td>6.97</td>
<td>6.59</td>
<td>0.397 (8.5%)</td>
</tr>
<tr>
<td>VA</td>
<td>84.29</td>
<td>61.53</td>
<td>1.722 (3.1%)</td>
</tr>
<tr>
<td>Basinwide</td>
<td>331.15</td>
<td>248.54</td>
<td>9.09 (4.6%)</td>
</tr>
</tbody>
</table>

#### Phosphorus

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>1985 Baseline</th>
<th>2013 Progress</th>
<th>Climate Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>NY</td>
<td>1.198</td>
<td>0.710</td>
<td>0.014 (2.9%)</td>
</tr>
<tr>
<td>PA</td>
<td>6.282</td>
<td>3.749</td>
<td>0.141 (4.7%)</td>
</tr>
<tr>
<td>MD</td>
<td>7.495</td>
<td>3.942</td>
<td>0.114 (3.2%)</td>
</tr>
<tr>
<td>WV</td>
<td>0.902</td>
<td>0.617</td>
<td>0.019 (3.9%)</td>
</tr>
<tr>
<td>DC</td>
<td>0.090</td>
<td>0.062</td>
<td>0.001 (0.8%)</td>
</tr>
<tr>
<td>DE</td>
<td>0.225</td>
<td>0.116</td>
<td>0.006 (5.1%)</td>
</tr>
<tr>
<td>VA</td>
<td>14.244</td>
<td>6.751</td>
<td>0.193 (3.0%)</td>
</tr>
<tr>
<td>Basinwide</td>
<td>30.44</td>
<td>15.95</td>
<td>0.489 (3.4%)</td>
</tr>
</tbody>
</table>
Pennsylvania’s Climate Change Strategy

• Option of Narrative Strategy

• Strategy to Include:
  • Penn State Study
  • Executive Order 2019-1
  • Climate Change Act 2008
  • Alternative Energy Portfolio Standards
  • Finding Pennsylvania’s Solar Future
  • Emission Control and Reduction Initiatives
  • Energy Efficiency
  • Climate Change Adaptation and Mitigation Plan
Appendices

- Steering Committee and Workgroup Members
- Summary of Local Engagement
Integrated Documents

- Countywide Action Plan Planning Guide & County Toolboxes
- Countywide Action Plans
  - Lancaster, York, Adams and Franklin
- Federal Facility Action Plans
  - Department of Defense
- Milestone and Progress Reporting Template
  - State Actions
- Draft BMP Verification Plan
- County and Workgroup Recommendations
# Next Steps for the Phase 3 WIP

<table>
<thead>
<tr>
<th>Phase 3 WIP</th>
<th>What’s Next</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finalize Draft for Public Comment</td>
<td>• Write first draft of the Phase 3 WIP</td>
<td>Submitted April 12, 2019</td>
</tr>
<tr>
<td></td>
<td>• Revise Phase 3 WIP and Submit by April 12, 2019</td>
<td></td>
</tr>
<tr>
<td>Public Comment</td>
<td>• Invite public comment on Draft Phase 3 WIP</td>
<td>April 12 – June 7, 2019</td>
</tr>
<tr>
<td>Finalize the Phase 3 WIP</td>
<td>• Phase 3 WIP finalized and submitted</td>
<td>August 12, 2019</td>
</tr>
<tr>
<td>Implementing the Phase 3 WIP</td>
<td>• Phase 1 Countywide Action Plan development begins</td>
<td>July 2019</td>
</tr>
<tr>
<td></td>
<td>• Phase 2 begins</td>
<td>Feb 2020</td>
</tr>
</tbody>
</table>
Questions?
Contact Information:
Veronica Kasi
vbkasi@pa.gov
717-772-4053

Public Comment (April 12 through June 7, 2019)
eComment: (https://www.ahs.dep.pa.gov/eComment)

DEP Chesapeake Bay Program Website:
http://www.dep.pa.gov/ChesapeakeBay

Phase 3 WIP Website:
www.dep.pa.gov/chesapeakebay/phase3

Sign Up for Participation in Countywide Action Plan