Pennsylvania Animal Agriculture Program Assessment Update

Final

_____

Prepared by:
U.S. Environmental Protection Agency
Region III

November 2022

Acknowledgement

EPA acknowledges the Pennsylvania Department of Environmental Protection (PADEP), the Pennsylvania Department of Agriculture (PDA), the State Conservation Commission (SCC), PADEP North-Central Regional Office, PADEP South-Central Regional Office, the Lancaster County Conservation District, Lycoming County Conservation District, Snyder County Conservation District, and the Franklin County Conservation District for their cooperation and participation in this program assessment.

This project was conducted by the United States Environmental Protection Agency (EPA) with technical support from EPA's contractor, PG Environmental.

Contents

Acronyms and Abbreviations

ACA	Animal Concentration Area
Ag E&S	Agricultural Erosion and Sediment
BMP	Best Management Practice
CAFO	Concentrated Animal Feeding Operation
CAO	Concentrated Animal Operation
CAP	Countywide Action Plan
CAST	Chesapeake Assessment Scenario Tool
CBAIP	Chesapeake Bay Agricultural Inspection Program
CBIG	Chesapeake Bay Implementation Grant
CBNTT	Chesapeake Bay Nutrient Trading Tool
CBO	Chesapeake Bay Office (PADEP)
CBP	Chesapeake Bay Program
CBW	Chesapeake Bay Watershed
CCD	County Conservation District
CEG	Conservation Excellence Grant
CEI	Compliance Evaluation Inspection
CO	Central Office (PADEP)
CWA	Clean Water Act
CWSRF	Clean Water State Revolving Fund
***e*FACTS**	Environment Facility Application Compliance Tracking System
EPA	U.S. Environmental Protection Agency
FTE	Full-time Equivalent
MMP	Manure Management Plan
MS4	Municipal Separate Storm Sewer System
NCRO	North-Central Regional Office (PADEP)
ND	Not determined
NEIEN	National Environmental Informational Exchange Network
NMP	Nutrient Management Plan
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
PACS	Pennsylvania Agriculture Conservation Stewardship
PADEP	Pennsylvania Department of Environmental Protection
PAG-12	General Permit for Concentrated Animal Feeding Operations (PADEP)
PDA	Pennsylvania Department of Agriculture
PENNVEST	Pennsylvania Infrastructure Investment Authority
PPC	Preparedness, Prevention, and Contingency
REAP	Resource Enhancement and Protection Program
RO	Regional Office (PADEP)
SCC	State Conservation Commission
SCRO	South-Central Regional Office (PADEP)
SFY	State Fiscal Year
TMDL	Total Maximum Daily Load
USDA-NRCS	United States Department of Agriculture Natural Resources Conservation Service
VAO	Voluntary Agricultural Operation
WIP	Watershed Implementation Plan

1.0 Executive Summary

The U.S. Environmental Protection Agency (EPA) conducted an assessment of the Commonwealth of Pennsylvania's animal agriculture programs related to controlling nutrient and sediment impacts on water quality. This assessment updates EPA's Pennsylvania Animal Agriculture Program Assessment published in February 2015. This updated assessment focuses on changes in program features and implementation since 2015 and the impact of those changes on the Chesapeake Bay Program (CBP) partnership commitments. As part of the CBP partnership, Pennsylvania to have practices and controls in place by 2025 to achieve applicable water quality standards in the Bay (the 2025 Goal). The CBP partnership also signed the 2014 Watershed Agreement that includes a water quality outcome recognizing the 2025 Goal. The updates and observations discussed throughout the report are based on information gained through questionnaire responses from the Pennsylvania Department of Environmental Protection (PADEP), the Pennsylvania Department of Agriculture (PDA), and the State Conservation Commission (SCC); follow-up interviews with PADEP North-Central Regional Office (NCRO), the PADEP South-Central Regional Office (SCRO), the Lancaster County Conservation District (CCD), the Lycoming CCD, the Snyder CCD, and the Franklin CCD; and file reviews.

EPA included the following water quality protection-related animal agriculture activities and programs in Pennsylvania, as part of this assessment:

- Chesapeake Bay Agricultural Inspection Program,
- Agricultural Erosion and Sediment Control Program,
- Manure Management Program (MMP),
- Nutrient Management Program(NMP),
- National Pollutant Discharge Elimination System (NPDES) Concentrated Animal Feeding Operation (CAFO) Program, and
- Commercial Manure Hauler and Broker Certification Program.

EPA also assessed the financial incentive and funding programs including the:

- Resource Enhancement and Protection Program,
- Growing Greener Plus, Community Clean Water Coordinator, and Countywide Action Plan (CAP) Implementation Block Grant Programs,
- Pennsylvania Agriculture Conservation Stewardship Program,
- Agriculture Plan Reimbursement Program,
- Conservation Excellence Grant Program,
- Pennsylvania Instructure Investment Authority (PENNVEST),
- Nonpoint Source Management Program,
- Streambank Fencing Program,
- Nutrient Trading Program, and
- Municipal Separate Storm Sewer System (MS4) Program Offsets.

To evaluate whether the Commonwealth's animal agriculture programs are aligned with meeting the CBP partnership's 2025 Goal, EPA focused this assessment on the six agricultural best management practices (BMPs) that Pennsylvania prioritized in its final Phase III WIP. These six BMPs are embedded within the seven priority initiatives in the Phase III WIP and are anticipated to achieve the greatest nutrient reductions. This assessment report evaluates how Pennsylvania's regulatory and non-regulatory programs require or facilitate implementation of these six BMPs:

- Animal Waste Management Systems
- Forest Buffers
- Nutrient Management
- Cover Crops
- Soil Conservation and Water Quality Plans
- Tillage Management

Pennsylvania has made progress since the 2015 assessment in its efforts to reduce nutrient and sediment loads in the Chesapeake Bay watershed (CBW). Pennsylvania has initiated the Chesapeake Bay Agricultural Inspection Program to evaluate whether agricultural operations have Agricultural Erosion and Sediment Control (Ag E&S) Plans and/or Manure Management Plans (MMPs) in place (Phase 1) and that those plans are being implemented (Phase 2). Pennsylvania has improved its ability to track BMPs through use of its PracticeKeeper Geodatabase (PracticeKeeper), allowing Pennsylvania to better account for the BMPs being implemented at animal agriculture operations. In addition, Pennsylvania has a number of funding mechanisms to incentivize implementation of NMPs, Ag E&S Plans, and MMPs, which, if successful, could increase the number of BMPs implemented at agricultural operations. Pennsylvania convened a group of agricultural stakeholders in 2016 to launch the Pennsylvania Agriculture Conservation Stewardship Program (PACS), a voluntary program "designed to recognize and provide certain benefits to Pennsylvania farmers who step forward to document their environmental stewardship." (PADEP, 2021e). However, this program has not been formally launched.

Pennsylvania has responded to 2015 recommendations and made progress towards meeting their 2025 goals. However, there are challenges that impact the pace and scale of program implementation. Notably, the scale of agriculture in Pennsylvania coupled with the demand for assistance, funds, and one-on-one support for farmers, impacts the state's ability to meet 2025 goals. PADEP and EPA acknowledged that COVID-19 pandemic impacted the rate of inspections.

To progress, Pennsylvania could improve reductions in nutrient and sediment loading from regulatory programs by directly requiring implementation of BMPs or by prioritizing funding to projects that implement BMPs, accelerate implementation, increase funding and/or increase the number of operations that are required to implement BMPs or obtain permits. The implementation of Pennsylvania's regulatory programs, the Commonwealth's implementation of these BMPs will continue

to rely on voluntary implementation of BMPs through non-regulatory programs. The non-regulatory programs include grants, cost-share funding, and other financial and technical assistance to help and encourage farmers to construct and maintain BMPs to benefit surface water quality. PADEP recommends that the program would benefit from additional funding for staff dedicated to compliance and enforcement statewide with a specific focus on the Chesapeake Bay.

Below are observations for each of the programs evaluated.

Chesapeake Bay Agricultural Inspection Program (CBAIP)

- Since the launch of the program in 2016, PADEP, SCC, CCDs, and other partners have collaborated to expand agricultural inspections with a goal of inspecting 10% of agricultural acres per year. PADEP reports that 13,812 farms and 1,573,090 acres have been inspected under CBAIP but did not specify the distribution between CBAIP Phase 1 and 2.
- Based on PADEP's CBAIP 2020-2021 Annual Summary report, the annual rate of inspections (both Phase 1 and Phase 2 included) is declining over time. For 2016-2019, inspection rates were over 10%. However, in 2019-2020 and 2020-2021, inspection rates dropped to 8.4 and 8.9% respectively. PADEP acknowledged that COVID-19 pandemic impacted the rate of inspections.
- As Pennsylvania shifts from Phase 1 evaluations to Phase 2 inspections an increase in trained inspectors is essential. PADEP and CCD staff acknowledged that insufficient funding and trained staff are current challenges towards program implementation. According to PADEP, unless additional resources are directed to the program, substantial changes in staffing are not anticipated. Based on the CBAIP Phase 2 Pilot, PADEP found that it takes more time and resources to conduct Phase 2 inspections. As a result, PADEP modified the CBAIP goals indicating that as the number of inspections increase, the total annual acres inspected will continue to decrease.
- According to PADEP, of the Phase 1 CBAIP site visits performed in the 2019-2020 program year, 39% of inspected operations were non-compliant for MMPs and 38% were non-compliant for Ag E&S Plans – meaning that the plans were not administratively complete.
- During the 2020-2021 program year, out of the 1,948 operations assessed in Phase 1 visits, 36% were non-compliant for MMPs and 31% were non-compliant for Ag E&S plans – meaning plans were not administratively complete.
- According to PADEP, with follow up from PADEP and participating CCDs, the rate of administratively complete MMPs and Ag E&S plans increased to 98% and 99% by the end of the state fiscal year (SFY), respectively.
- For Phase 2 inspections, PADEP reported that 47% were non-compliant with requirements to maintain and implement a MMP and all associated BMPs on schedule, and 54% were non-compliant with requirements to maintain and implement an Ag E&S Plan and all associated BMPs on schedule. Noncompliance identified during Phase 2 inspections included BMPs that were not implemented according to the schedule outlined in the plans, BMPs that were not currently functioning, and plans that did not address all resource concerns of the operation or were otherwise not reflective of the current management of the agricultural operation.

- According to EPA, with declining state resources and staffing challenges it may be more efficient for Pennsylvania to streamline Phase 1 and Phase 2 actions conducting more Phase 2 inspections that better support State program requirements needed for operations to be able to support funding programs (e.g., grants, loans and assistance agreements).

Agricultural Erosion and Sediment Control Program (Ag E&S Program)

- Since the 2015 assessment, the Commonwealth has prioritized Ag E&S Plan implementation in the CBW. The 2015 assessment report estimated approximately 3,299 operations subject to the Ag E&S Control Program requirements. In this update, PADEP identified that 5,684 operations in Pennsylvania (5,357 of which are in the CBW) have Ag E&S Plans.
- PADEP reports that Ag E&S Plans are evaluated during CBAIP inspections, nutrient management program site visits, and when complaints are received. PADEP ROs evaluate practices as part of CAFO inspections. This is an improvement over the 2015 assessment report which reported that the Commonwealth did not have a consistent approach or sufficient resources to ensure operations are meeting Ag E&S Control Program requirements.
- According to PADEP, of the Phase 1 CBAIP site visits performed in the 2019-2020 program year, 38% were non-compliant for Ag E&S Plans – meaning that the plans were not administratively complete and in the 2020-2021 program year 31% out of the 1,948 operations assessed were non-compliant.
- According to PADEP, of the Phase 2 inspections 54% were non-compliant with requirements to maintain and implement an Ag E&S Plan and all associated BMPs on schedule.
- Since the 2015 assessment, the Commonwealth has implemented electronic data management systems to track implementation of Ag E&S Plans and E&S control BMPs at animal agriculture operations. The Commonwealth now uses environment Facility Application Compliance Tracking System (*e*FACTS) and PracticeKeeper to track and manage Ag E&S Program oversight. Data collected with PracticeKeeper is reported electronically to the Chesapeake Bay Program Office (CBP) via the National Environmental Informational Exchange Network (NEIEN). Since the 2015 assessment report PracticeKeeper Pennsylvania has improved its ability to track BMPs.
- PADEP recommended that the program would benefit from additional funding for staff dedicated to Ag E&S compliance and enforcement statewide with a specific focus on the Chesapeake Bay.

Manure Management Program

- The CBAIP evaluates whether operations have the required MMPs (Phase 1) and implementation of MMPs and required practices (Phase 2). PADEP has a goal of inspecting at least 10% of acres covered by MMPs as part of the CBAIP annually.
- According to PADEP, of the Phase 1 CBAIP site visits performed in the 2019-2020 program year, 39% of inspected operations were non-compliant for MMPs – meaning that the plans were not administratively complete, and 36% were non-compliant out of the 1,948 operations assessed in the 2020-2021 program year.
- For Phase 2 inspections, according to PADEP, 47% were non-compliant with requirements to maintain and implement a MMP and all associated BMPs on schedule.

- PADEP recommended that the program would benefit from additional funding for staff dedicated to MMP compliance and enforcement statewide and with a specific focus on the Chesapeake Bay.
- Winter spreading may be tracked in the MMP but during the time period assessed, the SOP for CBAIP did not require PADEP and CCDs to collect, copy, and/or file plans that are reviewed by inspectors, which may reduce certainty about winter manure application rates. However, the CBAIP SOP was updated and revised in May, 2022 and now requires plans to be recorded in PracticeKeeper (PADEP, 2022d).

Nutrient Management Program

- The Commonwealth uses *e*FACTS and PracticeKeeper to track and manage Nutrient Management Program oversight. These software packages were not in use at the time of the 2015 assessment.
- Based on the files reviewed, Pennsylvania is ensuring that facilities have current NMPs and are implementing their NMPs through annual onsite status reviews at CAOs and through CAFO inspections every five years.
- According to the questionnaire, based on Crop Year 10/1/2020-9/30/2021 data, 911 NMPs were assessed in PA and 17% were found to be non-compliant. In the CBW, ~15% of facilities assessed for NMPs were found to be non-compliant. . According to PADEP, all of those facilities resolved NMP non-compliance.
- PADEP's annual summary report indicates that reasons for noncompliance were related to failure to obtain manure or soil samples, failure to land apply manure in accordance with the NMP, and failure to maintain adequate records. PADEP indicated that follow-up activities resulted in most facilities returning to compliance within 6 months following the annual inspection.
- Predictable and dedicated funding for CCDs and SCC staff conducting BMP verification, compliance, and enforcement activities related to the NMP is one challenge that Pennsylvania is facing in implementing the program.

NPDES CAFO Program

- According to information provided by PADEP, all facilities meeting the CAFO definition statewide are covered under NPDES permits.
- PADEP indicated that the most common types of NPDES CAFO permit noncompliance are related to failure to submit an annual report, failure to implement reporting and recordkeeping requirements, and violation of Part C permit conditions, which include, but are not limited to, Nutrient Management Plans and Manure Management; Erosion and Sediment Control Plans; Preparedness, Prevention and Contingency Plan; Animal Mortality; Manure Storage Facilities, and; Other Requirements.
- Of the 459 agricultural operations with NPDES permits for CAFOs, NPDES CAFO inspections conducted in SFY 2019-2020 found (in total) 8 incident responses, 27 Administrative Reviews, 5 complaints, 99 compliance evaluations, 9 follow up inspections, 7 incident responses, and 7 routine/partial inspections.

- Out of 99 compliance inspections conducted in SFY19-20, 52.5% of operations were identified as non-compliant. Of those 52.5%, 87% of those operations identified resolved the non-compliance. The majority of inspections, non-compliance, and resolved non-compliance took place in South-Central, PA. There were no inspections conducted in Northeast, PA.
- PADEP developed an SOP titled, "Compliance Evaluation Inspection (CEI) and Enforcement of Concentrated Animal Feeding Operations (CAFOs) (SOP No. CBO-INSP-003). The SOP "describes the procedures by which DEP will conduct CEIs of CAFOs and the compliance assistance and enforcement actions that will be considered when violations are found during an inspection."
- PADEP's permit issuance times are improving. PADEP reported that the average length of time between permit application submittal and permit issuance is 75 days for general permits (versus 104 days in 2015) and 120 days for individual permits (versus 165.5 days in 2015). PADEP and EPA continue working together on further streamlining the permit application and reporting process.
- NPDES individual permits for CAFOs and their NMPs, Ag E&S Plans, Conservation Plans, and Preparedness, Prevention and Contingency (PPC)Plans (required plans) assessed by EPA did not specify how the site-specific BMPs align with the seven agricultural priority initiatives and their BMPs outlined in the Phase 3 WIP. These are NPDES requirements for Special Conditions and BMPs per 40 § CFR 122.2 and for fact sheet and statement of basis per 40 CFR § 122.42.
- PAG-12, the template used for individual permits not covered by the general CAFO permit, states that additional site-specific BMPs may be required as a condition of the permit. Based on PADEP NPDES CAFO permits reviewed by EPA, individual permits are not documenting information in the fact sheets on how site-specific BMP implementation, including WIP BMPs, align with 2025 goals at each individual facility. This is an NPDES requirement for fact sheet and statement of basis per 40 CFR § 122.42.
- PADEP NPDES CAFO inspections are not documenting information on BMP implementation, including WIP BMPs, on the PADEP inspection checklist. The mechanism for documenting the information for transfer to PracticeKeeper is not clear. As noted in the previous review, PADEP and the CCDs implement a limited timeframe for retaining permit records, which is based on a 6-year retention time. eFACTS is used to retain historic permit, inspection and enforcement data after paper files are removed as part of DEP's record and retention policies. BMPs that are identified in PK as part of the NMP, which is consistent with the Ag E&S Plan (as part of the CAFO permit), remain in the Practice Keeper system.
- PADEP is challenged in implementing the NPDES CAFO program due to inadequate numbers of trained local and state technical staff to perform compliance, enforcement, and BMP verification.
- Per state regulations, current individual permits for CAFOs do not require WIP-specific BMPs to be used. Pennsylvania could require these BMPs and allow permittees to substitute BMPs based on their site conditions in the next permit cycle. In addition, the next CAFO permit could request that permittees identify baseline nutrient contributions and establish a nutrient reduction target in the CBW and to address impaired waters.

Commercial Manure Hauler and Broker Certification Program

- The total number of active manure hauler and broker certifications declined from the 691 certifications reported in 2015 to 590 certifications reported on the 2022 questionnaire. Hauler

Level 2, persons employed and supervised to haul and apply manure, is the only category where the number of certifications increased from 2015 through 2022.

- PDA indicated that staffing levels remain lower than desired, noting that the program would benefit from additional staff at both SCC and PDA to enable more spot checks of nutrient balance sheets and NMPs that might be referenced during the application process.
- Based on the number of certifications, 590 across the five certification categories, the 78 compliance evaluations reported on the questionnaire, including re-inspections, appears low. EPA is uncertain whether this frequency of compliance evaluations of certified manure haulers and brokers is adequate to determine compliance with program requirements.

Resource Enhancement and Protection (REAP) Program

- REAP provides farmers with tax credits at levels of 50%, 75%, or 90% of costs incurred in the implementation of BMPs that reduce nitrogen, phosphorus, and sediment pollution (PDA, 2022).
- The 2019 PA Farm Bill increased REAP program funding to $13 million annually. The SCC also reported that the FY 2019 REAP program "generated more than $30.3 million in private investments for the installation of conservation practices and equipment investments. The projects also leveraged an additional $5.2 million in other public funds for a total investment of $37.6 million in the local economy…, an almost 50% increase from FY 2018" (SCC, 2020).
- To be eligible for REAP applicants are required to have an up-to-date Ag E&S Plan that meets the requirements found in Chapter 102.4 of the PA Clean Streams Law and a current NMP (as required by Chapter 83 of the PA Clean Streams Law and Act 38) or MMP (as required by Chapter 91 of the PA Clean Streams Law). The REAP guidelines state that the applicant is required to be on-schedule for full implementation of the plans.
- According to staff interviews, CCD verification processes vary and it may be difficult to ensure compliance given the high staff turnover and lack of accountability. The SCC does not enforce site visits or compliance checks for REAP Eligibility on a routine basis. REAP's Guidelines for program eligibility and eligibility verification are separate from DEP's SOP for CBAIP.

Growing Greener Plus, Community Clean Water Coordinator, and CAP Implementation Block Grant Programs

- The Growing Greener program funds several BMPs selected by EPA for evaluation in this assessment, including Animal Waste Management Systems, Forest Buffers, Nutrient Management, Cover Crops, Soil Conservation and Water Quality Plans, and Tillage Management.
- According to PADEP, "local capacity as well as state agency staff capacity to apply for, administer, manage, and oversee the program is limited" and presents a challenge for program implementation.

Pennsylvania Agriculture Conservation Stewardship (PACS) Program

- The PACS program, envisioned by a group of agricultural stakeholders at the 2016 Pennsylvania in the Balance Conference, was included in Pennsylvania's Phase III WIP as a new program in 2019, but has yet to be finalized and formally launched.

Agriculture Plan Reimbursement Program

- The Agriculture Plan Reimbursement Program ended on June 30, 2021.

- In 2021, PADEP awarded a Growing Greener grant of $500,000 to the Pennsylvania Association of Conservation Districts for "PACD Agriculture Plan Reimbursement Program" to help farmers statewide develop agricultural plans for their operations. In the questionnaire response to this update, PADEP specified that this awarded project will be like PADEP's former Agriculture Plan Reimbursement Program.

Conservation Excellence Grant (CEG) Program

- CCDs had awarded a total of $5.108 million to conservation projects in priority counties as of March 2022. Furthermore, CCDs had processed $1.171 million in payments to farmers for completing BMPs that were part of an Ag E&S plan, conservation plan, NMP, or MMP.
- Priority is given for implementation of practices which include all the BMPs selected by EPA for evaluation in this assessment. Priority practices for CEG funding include NMPs and MMPs, conservation plans or Ag E&S plans, cover crops, manure storage facilities, and stream-side buffers. Funding of these priority practices can allow Pennsylvania to make progress towards its water quality goals, particularly in the CBW.

Pennsylvania Infrastructure Investment Authority (PENNVEST)

- PENNVEST is a reliable source of low-cost loans through the Clean Water State Revolving Fund (CWSRF) for eligible agricultural practices needed to achieve the state WIP BMP targets and water quality goals.

Other BMP Funding Programs

- Streambank Fencing Program – The Streambank Fencing Program is no longer in use except in the Northeast region.
- Nutrient Trading Program (NTP) –
    - The Pennsylvania Nutrient Credit Trading Program (Program) will continue to implement a 3:1 trading ratio for nonpoint source (NPS) credit generation and trading until performance-based or another method-based tool (e.g., Chesapeake Bay Nutrient Trading Tool (CBNTT)) is established.
    - The development and implementation of the CBNTT has experienced significant and continuing delays, which has impacted some credit applications for the NTP. Insignificant state program staffing and limited training and experience are also present factors with the program.
    - MS4 Program Offsets – PADEP has not approved any proposed MS4 offsets at agricultural operations.

2.0 Introduction

EPA published the Pennsylvania Animal Agriculture Program Assessment document in February 2015 (hereinafter "the 2015 assessment report"). EPA developed the 2015 assessment report to assess the Commonwealth's animal agriculture programs related to controlling nutrient and sediment impacts on water quality. EPA developed this assessment update to document program changes and progress since the 2015 assessment report and evaluate how those changes have impacted the efficiency and effectiveness of program implementation and consistency with the 2025 agriculture sector commitments in the draft amended Phase III WIP.[1] The updates and observations discussed throughout the report are based on information gained through questionnaire responses from PADEP, PDA, and SCC, follow-up interviews with PADEP, PDA, SCC, and CCDs, file reviews, and review of publicly available information. The assessment report also considers EPA's first-hand experience working with a variety of stakeholders and individuals involved in the daily implementation of the animal agriculture program.

2.1 Program Review Approach

On January 14, 2022, EPA sent a questionnaire to three Pennsylvania agencies, PADEP, PDA, and SCC, requesting written responses to questions regarding fourteen Pennsylvania programs applicable to water quality protection-related animal agriculture activities in Pennsylvania.

1. Chesapeake Bay Agricultural Inspection Program
2. Agricultural Erosion and Sediment Control Program
3. Manure Management Program
4. Nutrient Management Program
5. NPDES CAFO Program
6. Commercial Manure Hauler and Broker Certification Program
7. Resource Enhancement and Protection Program
8. Growing Greener Plus, Community Clean Water Coordinator, and CAP Implementation Block Grant Programs
9. Pennsylvania Agriculture Conservation Stewardship Program
10. Agriculture Plan Reimbursement Program
11. Conservation Excellence Grant Program
12. PENNVEST
13. Streambank Fencing Program
14. Nutrient Trading Program
15. MS4 Program Offsets

The intent of the questionnaires was to follow up on the observations identified in the 2015 assessment report that indicated potential opportunities for improving program alignment with the 2025 agriculture sector commitments in the Phase III WIP or better consistency with federal CAFO requirements. The

[1] PADEP initially submitted its draft Phase III WIP in 2019 and amended the WIP in December 2021 based on feedback from EPA's evaluation of the draft. EPA completed its evaluation of the amended Phase III WIP on April 18, 2022 and recommended actions to be included in the final amended Phase III WIP. Throughout this document, references to the Phase III WIP should be understood to refer to the December 2021 draft amended Phase III WIP, unless otherwise specified.

questionnaire instructions asked the Commonwealth agencies to provide responses for activities occurring during the July 1, 2019 – June 30, 2020, SFY2019-2020 or to specify an alternate timeframe, if appropriate.

EPA also reviewed files for certain CAFO facilities as well as non-CAFO CAO facilities. The files included available information such as permits, permit applications, NMPs, correspondence, inspection reports, and compliance and enforcement communication, if applicable. Below is a summary of the files reviewed for this report, that EPA considered representative of Pennsylvania's current program.

- PADEP NCRO
  - 4 NPDES CAFO Files
- PADEP SCRO
  - 4 NPDES CAFO Files
- Franklin CCD
  - 2 NPDES CAFO files, 2 non-CAFO CAO files
- Lancaster CCD
  - 2 NPDES CAFO files, 2 non-CAFO CAO files
- Lycoming CCD
  - 2 NPDES CAFO files, 2 non-CAFO CAO files
- Snyder CCD
  - 2 NPDES CAFO files, 2 non-CAFO CAO files

The focus of the file review was to evaluate whether on-the-ground program implementation reflects the policies and procedures described in the program documents and information provided by Pennsylvania program representatives. EPA logged the review of each file, including the file name and recorded observations related to program implementation, including best management practices implemented at the facility, non-compliance issues identified during inspections, missing documentation or correspondence, and inconsistencies and differences in inspection approaches between the PADEP Regional Offices and the CCDs.

EPA also conducted remote interviews with state agency staff via an online video conferencing platform to follow up on questions related to the questionnaire responses and file reviews and to further discuss updates to the animal agriculture programs since the 2015 assessment. Consistent with the 2015 report, EPA conducted, and PADEP attended, follow-up interviews with the following agencies:

- Snyder CCD (March 7, 2022)
- PDA (March 9, 2022)
- Lycoming CCD (March 14, 2022)
- PADEP
  - SCRO and Central Office (CO) (March 7, 2022)
  - NCRO and CO (March 14, 2022)
- Lancaster CCD (March 15, 2022)

- Franklin CCD (March 17, 2022)

As in the 2015 assessment, EPA used information from the Commonwealth's questionnaire responses, Department of Environmental Protection file reviews, follow-up interviews, and agency and entity websites and guidance documents to develop observations about Pennsylvania's animal agriculture programs related to water quality. EPA reviewed all of the material provided and generally limited the content of this report to information necessary to support the observations.

2.2 Report Organization

Sections 3–6 of this report describe the animal agriculture industry and relevant water quality programs in Pennsylvania, program resources, an overview of the Pennsylvania agencies involved in animal agriculture program implementation, background on the draft Phase III WIP and the nutrient and sediment reductions needed to achieve the 2025 commitments for the agriculture sector, and a summary of observations regarding the BMPs that may be required or implemented through each of Pennsylvania's programs. As stated above, these sections focus on relevant changes since 2015. A comprehensive description of programs and agencies can be found in the 2015 assessment report.

Sections 7–12 provide information on specific animal agriculture programs. For each program, the report describes any changes to program implementation since the 2015 assessment report, facility universe, resource allocation, data systems, compliance and enforcement procedures and data, as well as progress made toward meeting draft Phase III WIP commitments and TMDL targets for the agriculture sector by 2025.

Sections 13–19 detail funding programs and funding available for implementation of agricultural BMPs to achieve the nutrient and sediment reductions expected from the draft Phase III WIP to meet Pennsylvania's 2025 commitments for the agriculture sector. These sections also include observations related to program implementation, alignment with WIP commitments, and conformance to federal CAFO regulations, where relevant.

3.0 Pennsylvania Animal Agriculture Program Overview

In assessing the nutrient and sediment reductions achieved, reductions needed, and level of BMP implementation necessary to meet the 2025 agriculture sector commitments in the draft Phase III WIP, it is helpful to understand the types and populations of livestock and poultry, as well as the statutory and regulatory framework for controlling pollutants from animal agriculture in Pennsylvania.

3.1 Animal Agriculture Industry

As stated in the questionnaire response, and according to the 2017 U.S. Department of Agriculture (USDA), National Agricultural Statistics Service Census of Agriculture (Ag Census), Pennsylvania had an estimated 53,157 farms covering more than 7.27 million acres across the Commonwealth. PADEP noted that "the majority–68%–of the farms in Pennsylvania range in size from 10 acres to 179 acres." These numbers are down from the 59,309 farms covering more than 7.70 million acres from the 2012 Ag Census (USDA, 2019). PADEP reported that there are 30,193 farms and 3,067,629 acres in agricultural land use in Pennsylvania's portion of the CBW. PADEP does not differentiate "animal agriculture" from those that are defined as agricultural operations pursuant to 25 Pa Code §102.1—the management and use of farming resources for production of crops, livestock, or poultry, or for equine activity; and 25 Pa Code §91.1—the management and use of farming resources for the production of crops, livestock or poultry as defined in 3 Pa.C.S. §503."

The animal inventory data shown for various animal sectors in Table 1 indicates a slight decrease in cattle and sheep/lambs, and an increase in the number of poultry and swine across Pennsylvania.

Table 1. 2012 and 2017 USDA Ag Census Animal Inventories

	Cattle	Poultry	Swine	Sheep/Lambs
2012	1,626,374	64,643,674	1,134,957	96,648
2017	1,621,303	73,952,248	1,239,301	94,370
Change	-5,071 (-0.31%)	9,308,574 (+12.59%)	104,344 (+8.42%)	-2,278 (-2.41%)

3.2 Animal Agriculture Program Updates

Water quality impacts from Pennsylvania's animal agriculture operations are regulated and managed through a suite of regulatory programs (e.g., Chesapeake Bay Agricultural Inspection Program, Agricultural Erosion and Sediment Control Program, Manure Management Program, Nutrient Management Program, NPDES CAFO Program, and the Commercial Manure Hauler and Broker Certification Program) and voluntary programs. These programs, and their enabling statutes, are listed in the 2015 assessment report. Pennsylvania has not made any changes to the regulations or statutes relevant to animal agriculture programs since 2015.

The following sections include brief descriptions of the roles and responsibilities of PADEP, PDA, SCC, and CCDs with respect to animal agriculture in Pennsylvania and any changes to these roles and responsibilities since the 2015 assessment report.

3.3 Pennsylvania Department of Environmental Protection

PADEP's role has not changed since the 2015 assessment report, with the exceptions noted in the paragraphs below. As stated in the 2015 assessment report, PADEP is authorized to administer the federal NPDES CAFO program and has its own state laws and that regulate agricultural animal production operations under the Pennsylvania Clean Streams Law. PADEP has delegated some oversight of Chapter 91.36 as it relates to the Manure Management Manual and the Agricultural Erosion and Sediment Control via Chapter 102 to the CCDs. PADEP Regional Offices work with the CCDs in the review and implementation of NMPs required for CAFOs, including addressing comments and recommendations provided by EPA on CAFO permits and NMPs.

PADEP's Southcentral Regional Office manages all permit coverages under the general permit for CAFOs (PAG-12) and development and issuance of all the individual permits for the entire Commonwealth. PADEP coordinates CAFO permit application reviews for both individual and general permit coverage with CCDs and, where necessary, coordinates with SCC on issues of statewide applicability.

As described in the questionnaire response, since the 2015 assessment, PADEP has undergone two reorganizations. In 2016-2017, PADEP merged agricultural and stormwater compliance under the Bureau of Clean Water's Nonpoint Source Compliance Section. In September 2020, agricultural compliance was moved out of the Nonpoint Source Compliance Section and into the Chesapeake Bay Office (CBO). At the time of this assessment, the Agriculture Compliance Section consists of 3 full-time equivalents (FTEs) "focused on agricultural compliance and inspection efforts, to include erosion and sediment control for agriculture." PADEP continues to expand the staff in the Agricultural Compliance Section and has indicated additional hires are planned, including a new Environmental Engineer. The CBO consists of five sections: Conservation District Support, Agriculture Compliance, and Watershed Support sections, Chesapeake Bay Accountability and Chesapeake Bay Partnership, which is devoted to Chesapeake Bay watershed restoration and Phase III WIP coordination efforts.

Creation of the CBO was recommended through PADEP's 2016 Chesapeake Bay restoration strategy, which was developed to further increase water quality improvements in the Chesapeake Bay. The strategy was also used in the development of the Phase III WIP. The CBO has been in place since March 2016. As described in the questionnaire response, the CBO's responsibilities include overseeing "statewide agriculture compliance, inspection and enforcement efforts as well as nonpoint source management programs and Chesapeake Bay watershed restoration." CBO develops policies, procedures, technical guidance, and training modules for PADEP regional offices and CCDs to implement agriculture inspection programs and regulatory requirements including Ag E&S §102.4(a); manure storage §91.36(a); land application of manure §91.36(b); and NPDES CAFO §92.a.29.

CBO also oversees funding programs including the CWA Section 319 Nonpoint Source Management program which provides funding for implementation of local Watershed Based Plans, and the statewide Growing Greener Plus grants program, which provides funding to eligible entities for nonpoint source

pollution prevention. Through these grant programs, CBO partners with local entities through subaward grant agreements to implement both regulatory and voluntary initiatives.

In addition, beginning in 2016, PADEP's responsibilities came to include conducting inspections under the newly created CBAIP (discussed in Section 7.0) and the associated follow-up, part of the Chesapeake Bay Technician Contract (discussed in more detail in Section 8.2) and PADEP Water Quality Specialist responsibilities. PADEP administers the Chesapeake Bay Technician and Chesapeake Bay Engineer contracts with CCDs. CBAIP implementation in counties where the CCDs are not participating is the responsibility of the PADEP regional offices.

3.4 Pennsylvania Department of Agriculture

The PDA's role has not changed since the 2015 assessment. As stated in the 2015 assessment report, PDA's mission is defined as one that "encourages, protects, and promotes agriculture and related industries throughout the Commonwealth while providing consumer protection through inspection services that impact the health and financial security of Pennsylvania's citizens." The PDA administers the Commercial Manure Hauler and Broker Certification Program and provides staff and administrative resources to the SCC. Pennsylvania's Nutrient Management Certification Program is under the authority of PDA but administered through the SCC. PDA does not have compliance and enforcement responsibilities under the Commonwealth's NPDES CAFO Program.

3.5 Pennsylvania State Conservation Commission

The SCC's role has not changed since the 2015 assessment. As stated in the 2015 assessment report, the SCC administers the Nutrient Management Certification Program and the Nutrient Management Program. The SCC also consults with PDA on the Commercial Manure Hauler and Broker Certification Program and provides support and oversight to the Commonwealth's 66 CCDs "for the implementation of conservation programs in an efficient and responsible manner." PADEP and SCC jointly administer the Nutrient and Manure Management delegation agreement with CCDs.

The SCC administers the REAP program and determines project eligibility. The SCC awards the REAP tax credits on behalf of the Pennsylvania Department of Revenue after a review to determine that the applicant is current on all state tax obligations. In addition, the SCC administers the CEG program, and the SCC works in partnership with participating CCDs to expand and administer the CEG program.

3.6 County Conservation Districts

The CCDs' role has not changed since the 2015 assessment, with the exceptions noted below. The Commonwealth government supports the CCDs through contractual agreements, delegation agreements, and direct grants. CCDs may also receive funds from the local county government and other public and private sector funding sources.

The PADEP CBO coordinates with the SCC through the Nutrient and Manure Management joint delegation agreement for the CCDs. Through the delegation agreement the CCD administers Act 38 (Nutrient Management), Chapter 91 (Manure Management), and Act 49 (Manure Hauler and Broker) Programs. (SCC, 2021a). As stated in the 2015 assessment report, the CCDs review NMPs for compliance with Act 38 Nutrient Management Program, assist PADEP's implementation of the manure management program, conducts E&S control inspections, and conducts annual on-farm status reviews of all CAOs and CAFOs with approved NMPs. CCDs conduct NMP status reviews of voluntary agricultural operations

(VAOs) every three years. The CCDs also investigate complaints and instances of nutrient management non-compliance under delegation agreements with PADEP and the SCC. In addition, the CCDs work with PADEP to address comments and recommendations provided by EPA on CAFO permits and NMPs. In the time period reviewed, the CCDs that support program implementation through delegation agreements with PADEP receive $60,000 per FTE which is an increase of $4,000 per FTE since 2015 (PADEP, 2022a). Beginning FY 22-23, CCDs will have an increase to $70,000 per FTE. This increase was passed during the July 2022 SCC meeting.

In 2016, PADEP and CCDs launched the CBAIP, which is part of the Chesapeake Bay Technician Agreement. Since the launch of the program, PADEP, SCC, CCDs, and other partners have collaborated to expand agricultural inspections in the CBW. The goal is to inspect 10% of agricultural acres per year. At the time of this assessment, PA had not inspected all agricultural operations in the CBW. As reported in PADEP's CBAIP 2020-2021 Annual Summary report, based on the 2017 USDA Ag Census, there are 30,193 farms and 3,067,629 agricultural land use acres in Pennsylvania's portion of the CBW. PADEP reports that 13,812 farms and 1,573,090 acres have been inspected under CBAIP but did not specify the distribution between CBAIP Phase 1 and 2. Not all CCDs, in the Bay Watershed elected to participate in the CBAIP. Counties, inside of the Chesapeake Bay Watershed, where the CCDs are not participating are the responsibility of the PADEP regional offices. The CBAIP is aimed at ensuring that agricultural operations have manure management plans or NMPs and/or Ag E&S plans (depending on the operation's responsibilities under PA regulations) and that the BMPs in these plans are being implemented according to the schedule outlined in the plans, that BMPs are being maintained and functioning as intended, and that all resource concerns on the operation are addressed by BMPs. Additional discussion of the CBAIP, including descriptions and status of Phase I and Phase II, can be found in Section 7.0.

In addition, as DEP stated in the questionnaire response, the 2017-2022 Delegation Agreement included spot check review of Act 49 Manure Broker nutrient balance sheets submitted to the conservation district as an additional job duty and responsibility.

Most of the CCDs interviewed indicated that lack of staff and retention of experienced staff (related to funding) pose challenges for agriculture program implementation. With additional and more experienced staff, the CCDs could do additional outreach, conduct more CBAIP inspections, better evaluate and ensure compliance with Manure Management and Agricultural Erosion and Sediment Control requirements, and reduce the backlog of updating reports in PracticeKeeper.

4.0 Animal Agriculture Program Resources

As stated in the 2015 assessment report, PADEP, PDA, SCC, and the CCDs are the primary agencies with regulatory responsibilities for Pennsylvania's animal agriculture programs. The Penn State Cooperative Extension is also an integral partner with the Commonwealth's animal agriculture technical and educational programs, including serving as editor of Pennsylvania's Nutrient Management Act Program Technical Manual. The scope of this assessment report does not directly address the roles of the Penn State Cooperative Extension, EPA, USDA-Natural Resources Conservation Service (NRCS), and other non-Commonwealth agencies.

The assessment update focused on changes to FTEs since the 2015 assessment as staffing appears to be an indicator of program function or role in addressing the Phase III WIP commitments for the agriculture sector rather than funding amounts or budget. Since 2015, there has been an overall increase in FTE dedicated to agriculture programs. According to the 2015 Animal Agriculture Assessment, ROs (includes DEP SCRO) and CO FTE has increased from a total of 19 to 25 (31%) and CCDs have increased FTE from 137 to 142 (3.6%). SCC decreased from 8 FTE to 7 FTE. As listed in the draft amended Phase III WIP, the agencies noted the following staffing resources:

- PADEP SCRO – 2.5 FTE (Permit Engineers and Env. Eng. Manager)
- PADEP ROs – 12.5 FTE (inspectors)
- PADEP ROs – 4.5 FTE (compliance specialists)
- PADEP ROs – 3 FTE (inspector supervisors)
- PADEP Central Office (CO) – 2.5 FTE (program specialist)
- PADEP CBO
    - 2 FTE (managers in Agriculture Compliance and Conservation District Support sections)
    - 1 FTE – Agriculture Compliance Section
    - 2 FTE – Watershed Support Section
    - 5 FTE – Conservation District Support Section
- SCC – 7 FTE (Conservation Program Specialists)
- CCDs – 39 FTE (Nutrient Management Technicians)
- CCDs – 85 FTE (Bay Technicians)
- CCDs – 18 (Bay Engineers)

Animal Agriculture funding programs and BMP implementation are discussed in Sections 13–19.

5.0 Pennsylvania and the Chesapeake Bay TMDL

As described in the 2015 assessment report, EPA established the Chesapeake Bay TMDL on December 29, 2010. The Chesapeake Bay TMDL identifies and allocates nutrient and sediment loads designed to meet applicable tidal Chesapeake Bay water quality standards. The Bay TMDL also assumed that the Bay states would meet the CBP partnership water quality goal to have all practices and controls installed to achieve the Bay's dissolved oxygen, water clarity/submerged aquatic vegetation and chlorophyll a standards as articulated in the Chesapeake Bay TMDL document by 2025. The TMDL is supported by the CBP partnership's agreed-upon accountability framework in which EPA provides assessments of state progress to track that state WIP and milestone commitments are met, including short- and long-term benchmarks as part of a tracking and accountability system, and federal contingency actions where EPA decides such actions are appropriate (EPA, 2010).

Pennsylvania and the other Chesapeake Bay jurisdictions developed WIPs that are the roadmap for how each jurisdiction will meet the TMDL allocations for nitrogen, phosphorus, and sediment. The Bay TMDL allocations were based on the jurisdictions' respective final Phase I WIPs submitted in late 2010. The Bay jurisdictions finalized their Phase II WIPs in March 2012.

Pennsylvania's initial Phase III WIP is dated August 23, 2019. Like other jurisdictions, Pennsylvania's Phase III WIP was developed based on a midpoint assessment of progress made through 2017 and the CBP partnership's adoption of 2025 targets to meet the Chesapeake Bay tidal water quality standards. Pennsylvania's 2019 initial Phase III WIP states that "Pennsylvania is committed to having all practices and controls in place by 2025 to achieve the nutrient and sediment reduction planning targets." PADEP coordinated with partners across the Commonwealth to amend the Phase III WIP that was provided to EPA in December 2021 and was in response to EPA's evaluation of the initial 2019 Phase III WIP. EPA completed its evaluation of the draft amended Phase III WIP on April 18, 2022 and recommended that Pennsylvania make a number of enhancements to the final amended Phase III WIP to detail actions and timelines to implement new state programs, enhance existing state programs, and provide additional funding and technical assistance levels to increase agricultural BMP implementation to meet the 2025 targets.

Since the 2015 assessment report was published, the Commonwealth, along with the other jurisdictions, has continued to set two-year milestones, submitting proposed commitments to EPA at the start of each milestone period. At the end of each milestone period, EPA evaluates the progress made toward the commitments. In EPA's evaluation of the Commonwealth's 2018-2019 and 2020-2021 milestones, EPA's assessment of the data provided by Pennsylvania noted that Pennsylvania did not achieve its statewide and state-basin 2019 targets for nitrogen, phosphorus, and sediment. Pennsylvania submitted its draft 2022-2023 Programmatic Milestones and 2022-2023 Numeric Milestones to EPA on January 14, 2022.

EPA's Evaluation of Pennsylvania's Phase III WIP[2] (Published in December 2019) indicated that through the CBP partnership's Phase 6 suite of modeling tools, simulations showed that full implementation of Pennsylvania's WIP was expected to achieve 99% of the statewide and state-basin Phase III WIP planning targets for phosphorus, 70% of the nitrogen target, and 93% of the sediment target. EPA's

[2] https://www.epa.gov/system/files/documents/2022-04/enclosure1_epa_evaluation_of_pennsylvanias_amended_phase_iii_wip_final_0.pdf

evaluation noted that Pennsylvania proposes to achieve most of its nutrient reductions by implementing BMPs in the agricultural sector: 95% for nitrogen and 80% for phosphorus.

Table 2 identifies the loadings (lbs/yr) of nitrogen, phosphorus, and sediment for 2009, 2017, and 2020 and the target loadings for 2025 ((Pennsylvania's Phase III WIP developed in 2019).). The 2009-2020 percent reductions show changes in loading since the TMDL was established in 2010. According to the Chesapeake Assessment Scenario Tool (CAST), BMPs put in place between 2009 and 2020 in Pennsylvania resulted in reduced nitrogen, phosphorus, and sediment loading; however, only approximately half of the needed phosphorus and sediment reductions have been achieved and only approximately 17% of the needed nitrogen reduction has been achieved. Based on these observations and comparing progress made through 2020, Pennsylvania must continue to reduce agricultural pollutant loading to achieve Pennsylvania's 2025 commitments.

The table below compares the progress made since 2009 towards the 2025 TMDL Planning Targets.
Table 2. Simulated Pennsylvania Target Loads by Progress Year

(lbs/year)	2009 Progress	2017 Progress	2020 Progress	Draft Amended WIP Goal	2009 2020 Reduction Achieved (%)	Reduction Needed from 2009 Progress to Meet WIP Goal (%)
Nitrogen	63,344,977	64,480,337	62,500,135	40,136,333	1%	37%
Phosphorus	1, 714,652	1,621,245	1,591,445	917,347	7%	46%
Sediment	969,411,817	788,155,422	731,402,050	404,978,614	25%	58%

Source: CAST[3]
*2025 goals are from PA's Phase III WIP developed in 2019. This scenario does not meet the 2025 WIP Planning Targets for nitrogen and sediment for all sources as a whole.

For TMDL purposes, the most important monitored loading trends to track in Pennsylvania are those at Marietta and Conowingo near the mouth of the Susquehanna River. The Susquehanna delivers about half of the freshwater flow to the Chesapeake Bay and these two stations track what mostly affects living resources in the estuary. Our ability to meet water quality standards is dependent on reducing loads from the Susquehanna, particularly loads from the agriculture sector. Over the past decade, nitrogen loads at Conowingo have been reduced by an average of 370 thousand lbs. per year. According to the most recent CAST progress assessment, what's needed to meet Susquehanna nitrogen Planning Targets by 2025 is about 7.2 million lbs. per year.

Monitoring Trends Summary

[3] https://cast.chesapeakebay.net/PlanningTargets

The CBP partnership's Chesapeake Bay Program Nontidal Water Quality Monitoring Network, supported by EPA, the U.S. Geological Survey (USGS), the Susquehanna River Basin Commission (SRBC), and the Bay jurisdictions, generates water quality monitoring data in freshwater rivers and streams throughout the watershed that is analyzed by USGS for nutrient and sediment loads and trends. The most recent USGS results (https://cbrim.er.usgs.gov/summary.html) over the long-term period 1985-2018 and short term 2009-2018 for most stations were made available in March 2020. New nutrient and suspended-sediment load and trend results became available for the nine River Input Monitoring (RIM) stations for the long-term period 1985-2020 (https://cbrim.er.usgs.gov/).

While identifying drivers behind individual trends is often complex, the monitoring results are worthy of Pennsylvania's consideration as it develops the programs and BMPs planned for the next two years. EPA's initial summary of how the monitoring results in Pennsylvania's watersheds can potentially inform planning are below.

- Implementing efforts in high loading areas can potentially yield the greatest nutrient reduction benefits. Trends are improving at the majority of Pennsylvania's highest loading monitored watersheds for nitrogen. However, for phosphorus, more of Pennsylvania's highest loading monitored watersheds show degrading trends than improving. Most of the highest loading monitored watersheds for both nitrogen and phosphorus are in the Lower Susquehanna region. Most of Pennsylvania's highest loading watersheds are agricultural, suggesting agriculture should continue to be a focus.
- Within the Susquehanna River basin, the Lower Susquehanna stations are mostly improving for nitrogen, whereas the Upper Susquehanna and West Branch stations are mostly degrading. Conversely, for phosphorus, the Lower Susquehanna stations are mostly degrading, whereas most of the West Branch stations are improving.
- Additional exploration of these trends can help clarify what may be driving differences between nitrogen and phosphorus trends regionally and locally, which can in turn help inform adaptation of programs, policies, or practices.
- Most monitored watersheds in the Potomac River basin show improving nitrogen trends, while most show no trend in phosphorus. More exploration on what is occurring in improving watersheds or areas can potentially reveal successful programs, policies, or practices.

Pennsylvania's Phase III WIP identifies the agriculture sector programs that have reported nutrient and sediment reductions to the PADEP Chesapeake Bay Office as:

- SCC Act 38 Nutrient Management Program
- PADEP Agriculture Inspection Program
- REAP Program
- PADEP Stream Bank Fencing Program
- Natural Resource Conservation Service and Farm Service Agency, Conservation Reserve Enhancement Program
- Capital Resource Conservation and Development

Based on this assessment, EPA finds that for Pennsylvania to achieve the nutrient reductions expected from its amended Phase III WIP to meet its 2025 commitments for the agriculture sector, Pennsylvania needs to expand the potential reductions in nutrient and sediment loading from both regulatory and voluntary programs (e.g., by directly requiring implementation of WIP BMPs or by prioritizing funding to projects that implement WIP BMPs), accelerate implementation, increase funding and resources and/or increase the number of operations that are required to implement BMPs or obtain permits. Pennsylvania's draft Phase III WIP identifies both regulatory programs and non-regulatory programs (including grants, cost-share funding, and other financial and technical assistance) to help farmers to construct and maintain BMPs to achieve the nutrient and sediment reductions expected from the Phase III WIP to meet Pennsylvania's 2025 commitments for the agriculture sector. For example, the Phase III WIP mentions REAP, Growing Greener, Agriculture Plan Reimbursement Program, PENNVEST, EPA Chesapeake Bay Implementation Grant Program, and the CWA Section 319 Nonpoint Source Program Grant.

As described in the 2015 report, EPA collects data from Pennsylvania regarding BMP implementation and land use. BMP data are compiled by each jurisdiction and forwarded to the Chesapeake Bay Program. Each input deck is entered into computer models maintained by the Chesapeake Bay Program to simulate nitrogen, phosphorus, and sediment loads from all sectors and sources and the acres of each BMP for any area in the CBW. Model output is used to track progress toward each jurisdiction's 2025 goals.

In evaluating whether the Commonwealth's animal agriculture programs are aligned to achieve the nutrient and sediment reductions expected from the draft amended Phase III WIP to meet Pennsylvania's 2025 commitments for the agriculture sector, the BMPs listed below were selected by EPA for evaluation in this assessment. These BMPs are the agricultural conservation practices in Pennsylvania's draft amended Phase III WIP that are anticipated to achieve the greatest nutrient reductions. This assessment report evaluates how Pennsylvania's regulatory and non-regulatory programs require or facilitate implementation of these six BMPs:

- Animal Waste Management Systems
- Forest Buffers
- Nutrient Management
- Cover Crops
- Soil Conservation and Water Quality Plans
- Tillage Management

6.0 Pennsylvania's Animal Agriculture WIP BMPs

Pennsylvania is relying on both regulatory and voluntary programs to meet their draft amended Phase III WIP commitments for the agriculture sector by 2025. Table 3 summarizes EPA's findings on which of the six BMPs selected by EPA for evaluation in this assessment may be required or implemented through each of Pennsylvania's programs along with an estimated number of animal operations subject to each program. The BMPs listed as "required" are directly required to be implemented by the specific state regulatory programs. For the programs that list certain BMPs as "may be included/required," these programs require implementation of a plan that would incorporate that BMP, if appropriate to the facility. CAFOs are required by the PADEP NPDES CAFO Permit Program and Pennsylvania's Nutrient Management Program, Erosion and Sediment Controls Program, respectively, to implement animal waste management systems, nutrient management, and soil conservation and water quality plans to conform to the nine minimum requirements for an NMP set forth in 40 CFR 122.42(e)(1)(i-ix), Forest Buffers, cover crops, and tillage management may or may not be required as described in Table 3.

As stated in the questionnaire response, the estimated facility universe for the voluntary programs is based on the estimate of 53,157 farms covering more than 7.27 million acres across the Commonwealth (USDA, 2019). PADEP reported that there are 30,193 farms and 3,067,629 acres in agricultural land use in Pennsylvania's portion of the CBW.

Table 3. Pennsylvania Programs Contributing to Implementation of Phase III WIP BMPs with the Greatest Anticipated Nutrient Reductions

	NPDES CAFO Program	Nutrient Management Program	Manure Management Program	Ag E&S Program	Commercial Manure Hauler and Broker Certification Program
Lead Agency	**DEP**	**SCC**	**DEP**	**DEP**	**PDA**
Estimated Facility Universe (PA/CBW)	459/~400	1,286/1,113*	2,932/2,877	5,684/5,357	Hauler Level 1: 155 Hauler Level 2: 230 Hauler Level 3: 90 Broker Level 1: 63 Broker Level 2: 52
Animal Waste Management Systems	Required	Required	May be included/ required		
Forest Buffers	May be included/ required	May be included/ required	May be included/ required	May be included/ Required	
Nutrient Management	Required	Required	Required		
Cover Crops	May be included/ required	May be included/ required	May be included/ required	May be included/ Required	
Soil Conservation and Water Quality Plans	Required	Required		Ag E&S Plans meet the Soil and Water Conservation Plan criteria.	
Tillage Management	May be included/ required	May be included/ required	May be included/ required	May be included/ Required	

*Based on approved NMPs for NPDES CAFOs, CAOs, and VAOs.

Table 4 summarizes Pennsylvania's progress toward meeting the 2025 implementation goals, as reported by Pennsylvania to the EPA's Chesapeake Bay Program Office, for the BMPs selected by EPA for evaluation in this assessment. Note that the data are not necessarily limited to animal agriculture operations. These BMPs are expected to account for at least 60% of the nitrogen reductions between now and 2025.

Table 4. Pennsylvania's Progress Toward 2025 BMP Implementation Goals

BMP	Units	2009 Progress	2019 Progress	2020 2021 Milestone Target	2020 Progress	2021 Progress	2025 Target
Animal Waste Management Systems	Animal Units	242,678	1,071,174	1,250,000	1,121,378	1,156,393	2,320,984
Forest Buffers	Acres	33,539	9,788	30,980	9,693	10,822	73,378
Nutrient Management, Core Nitrogen Plans	Acres	162,567	365,926	929,920	322,606	533,893	2,058,447
Cover Crops, Traditional	Acres	267,279	200,562	189,742	222,177	341,524	227,955
Cover Crop - Traditional with Fall Nutrients	Acres	None reported	17,164	175,109	9,906	None Reported	496,470
Soil Conservation and Water Quality Plans	Acres	446,464	387,085	1,029,616	469,574	534,968	2,314,594
High Residue Tillage Management	Acres	None reported	616,826	681,994	709,437	740,367	850,450
Grass Buffers	Acres	3,997	12,365	24,731	16,739	15,842	49,467
Forest Buffer-Streamside with Exclusion Fencing	Acres	None reported	9	6,979	420	1,445	20,920

Source: Evaluation of Pennsylvania's 2018-2019 and 2020-2021 Milestones[4]

Animal waste management systems are required under the NPDES CAFO and Nutrient Management Programs and may be included in an MMP if the Animal Waste Management System is a critical component of the MMP. Animal waste management systems are not required if the MMP adequately addresses daily haul or pasture-only operations. As shown in Table 4, as of 2019, animal waste management systems were in place on farms covering 86% of the 2020-2021 milestone target and 46% of the 2025 goal. Animal waste management systems are credited as implemented, but because of cut-offs and credit duration expiration, not all animal waste management systems that have been implemented are currently credited in the model. In order to meet the 2025 goal, Pennsylvania will need to increase the pace of implementation for animal waste management systems on animal agriculture operations.

Forest or grass buffers may be included or required through MMPs or Ag E&S Plans. Forest buffers are included in the Ag E&S manual as a common BMP and may be included in an Ag E&S Plan. Forest buffers are also included in some funding programs such as Growing Greener. In addition, forest or grass buffers may be included in NMPs, MMPs, and CAFO programs to meet the application setback requirements. As

[4] https://www.epa.gov/sites/default/files/2020-07/documents/pa_2018_2019_2020_2021_final_milestone_evaluation.pdf

of 2019 (see Table 4), forest buffers (credited as implemented) covered approximately 13% of the 2025 goal acres. Forest and Grass Buffers have been reported but not all buffers that have been implemented are currently credited in the model due to cut-off and credit duration expiration. In order to meet the 2025 goal, Pennsylvania will need to increase the pace of implementation for forest buffers through implementation of additional Ag E&S or MMPs.

Nutrient management, which includes implementation of both NMPs and MMPs, is required under the NPDES CAFO Program, Nutrient Management Program, and Manure Management Program. As shown in Table 4, as of 2019, NMPs were reported as implemented on 18% of the acres required to meet the 2025 goal. In order to meet the goal, Pennsylvania will need to increase animal waste management systems on animal agriculture operations. Pennsylvania must increase the pace for NMP implementation, possibly through development of NMPs by additional CAOs or VAOs.

Cover crops may be included or required under the NPDES CAFO Program, Nutrient Management Program, Ag E&S Program and Manure Management Program. Crop residue management and permanent vegetative covers are alternative ground covers for manure applications. Cover crops are also "included in the Ag E&S manual as a non-structural BMP and may be included in an Ag E&S Plan." As shown in Table 4, as of 2019, traditional cover crops were reported and credited implemented on 88% of the total acres required to meet the 2025 goal and traditional cover crops with fall nutrients were implemented on 3% of the total acres required to meet the 2025 goal. Pennsylvania must increase the pace for additional cover crop implementation through incorporation into more NMPs or MMPs and Ag E&S plans, and/or through voluntary incentive programs.

Soil conservation and water quality plans are required under the NPDES CAFO Program, Nutrient Management Program, and Ag E&S Program. As shown in Table 4, as of 2019, Soil Conservation and Water Quality Plans were reported and credited as implemented on 20% of the total acres planned to meet the 2025 goal. Pennsylvania must increase coverage of soil conservation and water quality plans in order to meet the 2025 goal.

The Phase III WIP also includes goals to improve long-term soil health and stability, including conservation tillage on 20% of croplands; high residue low disturbance tillage (no-till) on 47% of croplands; non-harvested cover crops on 33 to 50% of croplands; and prescribed grazing on 50% of pastures, including exclusion fencing, where appropriate. Tillage management may be required under the NPDES CAFO Program, Nutrient Management Program, and the Ag E&S Program. Tillage management may be included or required as part of a MMP if an operator wishes to implement a reduced application setback. As shown in Table 4, as of 2019, High Residue Tillage management was reported and credited as implemented on 73% of the total acres required to meet the 2025 goal.

6.1 Pennsylvania's Animal Agriculture WIP BMPs – Observations

- EPA selected six BMPs for evaluation in this assessment: animal waste management systems, forest buffers, nutrient management, cover crops, soil conservation and water quality plans, and tillage management. These six BMPs are expected to account for at least 60% of Pennsylvania's nitrogen reductions to the Chesapeake Bay when the WIP implementation targets are achieved, including implementation at animal agriculture operations.
- Pennsylvania's NPDES CAFO Program and Nutrient Management Program require three of the six BMPs selected by EPA for evaluation through this assessment: animal waste management systems; nutrient management; and soil and water conservation plans.
- Pennsylvania's Manure Management Program and Ag E&S Program each require one of the six BMPs selected by EPA for evaluation through this assessment. The Nutrient management BMP is required by the Manure Management Program and the Ag E&S Program requires plans that meet the Commonwealth's Soil and Water Conservation Plan criteria.
- Cover crops, forest buffers, and tillage management may be included or required in plans developed under the NPDES CAFO, Nutrient Management, Manure Management, and Ag E&S Programs depending on site specific factors.
- The Ag E&S Program regulates the largest number of facilities in Pennsylvania's portion of the CBW (5,357 facilities), the NPDES CAFO Program regulates the least amount of farms in Pennsylvania's portion of the CBW (approximately 400 facilities) but these farms have the largest animal populations.
- Pennsylvania, as of 2019, was behind the 2020-2021 milestone target for implementation of WIP BMPs, except for traditional cover crops (Table 4).
    - ***Recommendation:*** *Pennsylvania will need to increase the pace of implementation for animal waste management systems on animal agriculture operations.*
    - ***Recommendation:*** *Pennsylvania will need to increase the pace of implementation for forest buffers through implementation of additional Ag E&S, NMPs, and/or MMPs.*
    - ***Recommendation:*** *Pennsylvania must increase the pace for NMP implementation, possibly through development of NMPs by additional CAOs or VAOs.*
    - ***Recommendation:*** *Pennsylvania must increase the pace for additional cover crop implementation through incorporation into more NMPs and/or MMPs.*
    - ***Recommendation:*** *Pennsylvania must increase coverage of soil conservation and water quality plans to meet the 2025 goal.*
- Soil conservation and water quality plans are required under the NPDES CAFO Program, Nutrient Management Program, and Ag E&S Program. As shown in Table 4, as of 2019, Soil Conservation and Water Quality Plans were reported and credited as implemented on 17% of the total acres required to meet the 2025 goal. Pennsylvania must increase coverage of soil conservation and water quality plans in order to meet the 2025 goal.
- ***Recommendation:*** *The Manure Management Program could also require Ag E&S plans, to meet existing PA regulations, similar to the NPDES CAFO program and Nutrient Management Program, where applicable.* In response to EPA's inquiry of enabling agency and CD staff to conjointly conduct assessments and verify the requirements for agricultural producers to implement BMPs under separate Commonwealth non-CAFO regulatory delegations, PADEP responded that "the conservation districts and DEP staff are administratively empowered to conduct assessments of compliance with PA Manure Management and Ag E&S. While they are

under two separate delegations, activities related to both are done concurrently due to the conservation district personnel (such as Chesapeake Bay Technicians)."

7.0 Chesapeake Bay Agricultural Inspection Program (CBAIP)

PADEP and CCDs launched the CBAIP in 2016 in response to the EPA's recommended program improvement from the 2015 animal agriculture assessment. The primary goal of the CBAIP is to increase and expand agricultural inspections in 43 counties within Pennsylvania's portion of the CBW. As stated in the questionnaire response, "the primary focus of CBAIP is to inspect less intensive, smaller scale agricultural operations. Through the CBAIP, PADEP and the CCDs inspect agricultural operations in the CBW to ensure they are meeting the planning requirements of the Pennsylvania Clean Streams Law and its implementing regulations (i.e., Ag E&S Plan and MMP requirements) (PADEP, 2021a). Since the launch of the program in 2016, PADEP, SCC, CCDs, and other partners have collaborated to expand agricultural inspections with a goal of inspecting 10% of agricultural acres per year." Within the CBAIP, there are two phases of assessment:

- **Phase 1 (initial) visits** are performed to verify that agricultural operations have Ag E&S plans and MMPs where applicable. Phase 1 visits are an administrative check to see that plans are available upon request. Plans may or may not be implemented or fully functional by the operation. Operations regulated under Act 38 that have approved NMPs receive on-site compliance reviews and are not to be inspected using the Initial CBAIP Inspection SOP (PADEP, 2021a).
- **Phase 2 inspections** are performed to verify that BMPs within these plans are being implemented according to schedule and that the BMPs are functioning as intended and to determine whether all resource concerns are addressed by appropriate BMPs. Plans may have an integrated schedule of implementation over time, such as Ag E&S Plans which are tied to multi-year crop rotations with varying soil loss potentials. PADEP reports that the inspection goals for Phase 2 are 25 inspections per Bay Technician, 75 inspections per DEP Water Quality Specialist.

7.1 Facility Universe

The CBAIP focuses on agricultural operations that do not meet the definition of a CAO or CAFO. DEP's 2016 Chesapeake Bay Restoration Strategy[5] established a goal of inspecting 10% of agricultural acreage annually. As reported in PADEP's CBAIP 2020-2021 Annual Summary report, based on the 2017 USDA Ag Census, there are 30,193 farms and 3,067,629 agricultural land use acres in Pennsylvania's portion of the CBW. PADEP's questionnaire response stated that they would "…not know definitively how many animal agriculture operations meet the criteria for inspection until every operation receives an initial inspection to assess conditions on the operation." PADEP reports that over the five years of the CBAIP program (2016-2021), 13,812 farms and 1,573,090 acres have been inspected, with the majority representing Phase 1 assessments.

The data provided in the questionnaire response and the publicly available data did not separate the total acreage of inspections completed into Phase 1 and Phase 2 inspections performed each year; therefore, it is unclear how the state is progressing with Phase 2, which includes verification of the plans and BMP implementation. Without total acreage data separating Phase 1 from Phase 2 inspections, it is difficult to evaluate current and future progress towards the goals.

For Phase 2, launched in 2020-2021, 52 operations assessed MMP And Ag E&S Plan Implementation were performed by Adams, Chester, and Lancaster County Conservation Districts and DEP Southcentral Regional Office. "Thirty-eight were land applying manure, thus requiring a MMP, and 41 were performing plowing or tilling activities or managed animal heavy use areas (AHUAs) of at least 5,000 square feet thus requiring an Ag E&S Plan."

It is recommended that PADEP provide EPA quantitative goals regarding the number of Phase 2 inspections planned and conducted, by county each year, to provide insight as to the timeframe for completion of Phase 2 inspections.

However, PADEP modified the CBAIP goals based on the CBAIP Phase 2 Pilot to reflect the increased time and resources identified for conducting Phase 2 inspections. Therefore, in the CBAIP 2020-2021 Annual Summary, PADEP stated that due to the resource demands of Phase 2 inspection, they "expected that as the number of Phase 2 inspections increase, the total annual acres inspected by the CBAIP will continue to decrease." The CBAIP Phase 2 SOP specifies the modified output measures. The SOP requires PADEP ROs and participating CCDs to develop annual inspection strategies for planning purposes and submit these plans to the PADEP CBO for approval prior to the start of each state fiscal year. As stated in the combined CBAIP SOP (PADEP, 2022d), the following minimum number of inspections are required:

- ***CCDs***
    - *For each full-time PADEP-funded Bay Technician position,*
        - *If there are no Initial Inspections remaining, a total of 25 different agricultural operations should receive a Phase 2 Inspection.*
        - *If there are both Initial Inspections and Phase 2 Inspections to be conducted, the number of Initial Inspections conducted would be subtracted from 50, which is*

[5] https://files.dep.state.pa.us/Water/ChesapeakeBayOffice/DEP%20Chesapeake%20Bay%20Restoration%20Strategy%20012116.pdf

the total number of Initial Inspections required per Bay Technician as stated in the Chesapeake Bay Agricultural Inspection Program SOP (CBO-INSP-001). The remaining number would then be multiplied by 0.5 to determine the total number of Phase 2 Inspections required.

- *Partially funded positions –*
  - *If there are no Initial Inspections remaining, the number of Phase 2 Inspections required is calculated by multiplying the number of partial positions by 25.*
  - *If there are both Initial Inspections and Phase 2 Inspections to be conducted, the number of total inspections is calculated by multiplying the number of partial positions by 50.*

- ***PADEP Regional Offices***
  - *A minimum of 75 different agricultural operations for each inspector should be inspected; this includes Initial Inspections, Phase 2 Inspections, and Follow-Up Inspections. At least 15 of these inspections should be Phase 2 Inspections.*

7.2 Resources Allocated

Under the CBAIP, CCDs that have chosen to participate in the program perform the Phase 1 and 2 inspections, while the PADEP Regional Office (RO) is responsible for CBAIP implementation in counties that chose not to participate.

As discussed in the questionnaire response, in SFY2019-2020, the number of FTEs at PADEP and the CCDs committed to implementation of the CBAIP (as well as CAFO inspections, complaint investigations, and other duties related agriculture compliance, where applicable) were as follows:

- **35** FTE CCD Inspectors
- **5.5** FTE PADEP Inspectors
- **2** FTE PADEP Compliance Specialists
- **1** FTE PADEP Inspector Supervisor
- **1.5** FTE PADEP Program Specialists

PADEP's responsibilities to implement the CBAIP and the associated follow-up are carried out, in part, through the Chesapeake Bay Technician Contract (discussed in more detail in Section 8.2) and PADEP Water Quality Specialist responsibilities. PADEP administers the Chesapeake Bay Technician contract with participating CCDs. As listed in Section 4.0, the draft amended Phase III WIP specified that there are 85 FTE Chesapeake Bay Technicians at the CCDs. During the time period addressed, the CCD Chesapeake Bay Technicians receive $65,550 per FTE as part of the Chesapeake Bay Technician contracts. This is an increase of $5,550 per FTE since 2015. In addition, as stated in the questionnaire, Conservation Districts in Adams, Chester, and Lancaster Counties received $2.5 million in 2019 Environmental Stewardship Funds and $300,000 in U.S. EPA Most Effective Basin funding to help farmers install BMP projects to comply with CBAIP Phase 2 inspection requirements.

Pennsylvania reported that planning and technical assistance are of great importance for the CBAIP, including having trained professional inspectors. As Pennsylvania shifts from Phase 1 to Phase 2 inspections, an increase in trained inspectors is essential. PADEP and CCD staff acknowledged that insufficient funding and staffing are current challenges towards program implementation. Pennsylvania has experienced a significant reduction in trained professionals to implement CBAIP. PADEP reported that there was unprecedented staff turnover in inspector positions, which has resulted in staffing shortages that go beyond COVID-19-related shortages. After a new hire fills a technical position vacancy, it requires at least a year of rigorous on-the-job, classroom, and web-based training while under substantial oversight from trained professions to acquire the necessary skills to fulfill the responsibilities of the position.

Phase 2 Inspections require more time on-site in order to verify that plans and BMPs are being implemented according to the proposed schedules, functioning as intended, and address all relevant resource concerns on the agricultural operation. Phase 2 inspections typically consist of a visual inspection of each BMP and walk-through of the agricultural operation. This was described and confirmed by the participating CCD and PADEP regional office field staff involved in the Phase 2 Pilot during the program evaluation discussion. Depending on the results of the Phase 2 inspection, multiple follow-up inspections for up to 270 days after the Phase 2 inspection could be required to ensure that the corrective actions identified on the inspection report are satisfied.

PADEP's questionnaire response stated that "unless additional resources are directed to the program, substantial changes in staffing levels are not anticipated." Staffing shortages will affect program operations until the individuals in these positions can be adequately trained.

7.3 Data Systems

The CBAIP Phase 2 SOP specifies that "all inspections, plans that have not previously been entered, and any verified BMPs should be entered into PracticeKeeper by both CCD and PADEP inspectors within ten (10) business days of the inspection." PracticeKeeper is used to track and manage Ag E&S Program, Manure Management Program, and Nutrient Management Program oversight, including inspections, violations, and plan details (including BMPs and implementation schedule).

PADEP indicated that PracticeKeeper tracks non-compliance with requirements to have and implement Manure Management Plans and Ag. E&S Plans by tracking the conditions of the operation during the time of the Initial, Phase 2, and Follow-up inspections. An inspection module was developed to conduct inspections. when corrective actions are satisfied and when follow-up actions are conducted. Additionally, it tracks compliance with Act 38 by recording the compliance determination of Act 38 Status Reviews.

CCD staff indicated that they do not have direct access to some of the inspection data conducted by DEP that is contained within PracticeKeeper and is required to conduct Phase 2 inspections. When PADEP conducts a CBAIP inspection on an operation, the location of the inspected acres are drawn on a map within the PK geodatabase that is then shared with the CCD. The CCD staff person can click on the info button on the map to determine the system identifier, who last modified the inspection, when it was created, and when it was last modified. They contact the appropriate DEP inspector for more information when needed. In addition, information in PracticeKeeper may not be complete, especially in counties that were late to adopt the implementation of PracticeKeeper. According to PADEP, the CCDs have been required (while incomplete) to enter in the quarterly ROM activities for the Nutrient and Manure Management Delegation agreement beginning in January 2019.CCDs that participate in the CBAIP have been required to enter in their inspection data into PK since 2017. This data is incomplete because it is not a full historic record. The CCDs are continuing to build the database as they report their required output measures associated with their NM/MM delegation agreement and Chesapeake Bay Contracts.

If enforcement action is necessary, the combined Phase 1 and Phase 2 SOP (PADEP, 2022d) specifies that PADEP should enter all enforcement actions and associated inspections into the *e*FACTS. PADEP uses *e*FACTS to track enforcement across animal agriculture programs. Conservation District staff refer issues of continued non-compliance to DEP for further action (NOVs). CCD professionals do not have access to the eFACTS database- DEP's Compliance Tracking System

7.4 Compliance and Enforcement

Inspection Process

Based on the questionnaire response, PADEP and CCDs coordinate on the inspection process and strategy. Typically, operations are randomly selected for inspection; however, a specific watershed or municipality may be targeted. Agricultural operations in all counties across Pennsylvania's CBW are to be inspected.

In each participating county, the CCD sends out a pre-inspection notice to inform the farm operator about the inspection, or PADEP may send out the notice at the CCD's request. The CCD or PADEP will then perform the inspection. If an inspection is completed by PADEP in a participating county, it is communicated to the CCD. PADEP performs the CBAIP inspections in counties that are not participating in the program.

Phase 1 visits are used to verify the existence of administratively complete MMP and/or Ag E&S plans on an operation. As noted above, the intent of a Phase 2 inspection is to verify that BMPs within these plans are being implemented according to schedule, that the BMPs are functioning as intended, and to determine whether all resource concerns are addressed by appropriate BMPs. In accordance with the CBAIP Phase 2 SOP, during a Phase 2 inspection, the inspector should verify that the Ag E&S and/or MMP onsite is the most recent version, compare the plan with the current conditions onsite, review the manure application records (if available), and review the BMP implementation schedules in the plan. If any BMPs are scheduled to be implemented prior to the inspection date, the inspector should verify the BMPs for proper implementation. The inspector should also document any water quality concerns and recommend appropriate corrective actions. The CBAIP Phase 1 and Phase 2 SOPs specify PADEP inspection forms that must be used to document Phase 1 visits and Phase 2 inspections.

Phase 2 Inspections

During the interviews, Lancaster CCD indicated that they had conducted 1,692 Phase 1 visits but had not finished all Phase 1 inspections. Lancaster CCD also specified that they had completed approximately 20 Phase 2 inspections.

The CBAIP 2020-2021 Annual Summary Report also specifies that BMP verification can be performed through the REAP program, administered by the SCC. As discussed in Section 13 below, REAP eligibility requires the applicant to have a current Ag E&S plan that meets the requirements found in Chapter 102.4 of the PA Clean Streams Law and a current NMP (as required by Chapter 83 of the PA Clean Streams Law and Act 38) or MMP (as required by Chapter 91 of the PA Clean Streams Law). The REAP guidelines require the applicant to be on-schedule for full implementation of the plans. The CBAIP annual summary reports that, "since 2007, REAP has approved over 4,300 applications from almost 3,100 operators" within the Chesapeake Bay Watershed.

Non-compliance and Follow-up

For agricultural operations found to be out of compliance in the 2020-2021 program year, PADEP RO and participating CCD staff indicated that they provided the necessary follow-up to achieve compliance from the agricultural operation. Because all relevant agricultural operations were within the designated deadlines to comply or satisfy the corrective actions identified at the time of the inspection, no enforcement actions were taken for violations found during a Phase 2 inspection as of the end of the 2020-2021 program year.

For phase I, compliance is based on environmental planning requirements for Chapter 102 Ag E&S regulations and Chapter 91 Manure Management. Inspections evaluate Ag E&S/Conservation Plans as well as Manure Management Plans. Following an inspection where noncompliance is identified, a timeframe is given to the farm operator to achieve compliance. CCD conducts follow-up inspections and site visits and keeps in touch with the farm operator by phone and written communications to help

ensure compliance. If the noncompliance is not resolved within the timeframe specified in the CBAIP SOP (CBO-INSP-001) and CBAIP – Phase 2 (CBO-INSP-002), the farming operation is referred to PADEP.

The table below shows the total referrals to the PADEP Bureau of Clean Water and/or the PADEP Chesapeake Bay Office (depending on when it was referred) for continued non-compliance for plan violations, along with further enforcement actions taken on those operations. The data is sourced from the CBAIP 2020-2021 Annual Summary.

	2016 2017	2017 2018	2018 2019	2019 2020	2020 2021	Total
Referrals to DEP Chesapeake Bay Office	21	87	66	66	40	280
Notices of Violation	21	87	66	64*	39*	277
Field Orders	0	22	47	16	30	115
Consent Order and Agreement	0	1	2	3	4	10
Closed Cases	7	42	64	64	44	221

* Corrective actions identified on the inspection report were satisfied for two operations before the Notice of Violations (NOVs) were drafted.

7.5 WIP Implementation Goals

- **Phase III WIP Action # 2.5.3A: Implement CBAIP, Phase 1, with an emphasis on meeting state planning requirement on non-CAFO operations.** This includes inspecting 10% of the agricultural acreage annually.

Based on PADEP's CBAIP 2020-2021 Annual Summary report, the annual rate of inspections (both Phase 1 and Phase 2 included) is declining over time. Over the five years of the CBAIP program, inspections (including Act 38 Nutrient Management Program inspections) covered a total of 1,573,090 acres, which represents an average of 10.2% per year of agricultural land use acres in Pennsylvania's portion of the CBW, and 13,812 farms, which represents an average of 9.1% per year of farms in Pennsylvania's portion of the CBW. However, the percentage of acres inspected dropped to 8.4% and 8.9% in 2019-2020 and 2020-2021, respectively. PADEP acknowledged that COVID-19 pandemic impacted the rate of inspections.

As discussed in Section 7.1 above, it is recommended that PADEP and CCDs increase inspector staff to keep up with pace of inspections.

For Phase 1 CBAIP site visits performed at agricultural operations between July 1, 2019, through June 30, 2020, 61% of agricultural operations needing an MMP had an MMP and 62% of agricultural operations needing an Ag E&S plan had Ag E&S Plans and NRCS Conservation Plans that met the Chapter 102 regulatory requirements. This means that of the operations visited 39% were non-compliant for MMPs and 38% were non-compliant for Ag E&S Plans. With follow-up from the CCDs and after initial inspections, 98% of the agricultural operations visited had developed MMPs and Ag E&S Plans by the end of the state fiscal year.

The following year, between July 1, 2020, through June 30, 2021, CCDs and PADEP Regional Office staff visited 1,948 agricultural operations as part of the CBAIP Phase 1 inspections. Of the operations visited, CCDs performed 1,588 visits, and PADEP Regional Office staff visited 360 operations. For Phase 1 inspections, out of the 1,948 operations assessed, 36% were non-compliant for MMPs and 31% were non-compliant for Ag E&S plans, meaning the MMP or Ag E&S Plan was not administratively complete. With follow up from PADEP and participating CCDs, the compliance rate increased to 99% by the end of the SFY.

During the interviews, CBAIP implementation was discussed with PADEP ROs and CCDs.

- Snyder CCD specified that they were still in Phase 1 and had not conducted any Phase 2 inspections.
- Lycoming CCD has one FTE responsible for conducting CBAIP Phase 1 visits. Lycoming CCD was still in Phase 1 and indicated that they conducted approximately 260 Phase 1 visits out of approximately 800 farms in the county.
- Franklin CCD chose to not participate in CBAIP; therefore, in Franklin County, the PADEP SCRO is responsible for CBAIP implementation. PADEP SCRO indicated that they had conducted 100 to 150 Phase 1 inspections within Franklin County.

- **Phase III WIP Action # 2.5.4A: Implement CBAIP, Phase 2 Pilot, with an emphasis on meeting both state planning and implementation requirements on non-CAFO operations.** In SFY2020-2021, a Phase 2 pilot was conducted in Adams, Bedford, Chester, Lancaster, and York Counties

at farms that had previously received a Phase 1 (initial) inspection. As stated in the questionnaire, PADEP indicated that as program implementation moves forward and, "counties participating in the CBAIP complete Phase 1 (all agricultural operations in the county have received an initial inspection), they will transition to Phase 2. For example, in 2021-2022, Clinton, Columbia, Montour, and Sullivan Counties have begun conducting some Phase 2 inspections."

As stated in PADEP's 2020-2021 CBAIP Annual Summary[6], for Phase 2 inspections, roughly one-half of the operations inspected were not implementing the required plans on schedule. For Phase 2 inspections, of the 38 operations inspected to determine compliance with MMP requirements, 47% were non-compliant with requirements to maintain and implement a MMP and all associated BMPs on schedule, and of the 41 operations inspected to determine if the required Ag E&S Plans were being implemented on schedule as required by the regulation, 54% were non-compliant with requirements to maintain and implement an Ag E&S Plan and all associated BMPs on schedule. Reasons stated for violations found during Phase 2 inspections included BMPs that were not implemented according to the schedule outlined in the plans, BMPs that were not currently functioning, and plans that did not address all resource concerns of the operation or were otherwise not reflective of the current management of the agricultural operation.

Implementation of BMPs at these agricultural operations through implementation of Ag E&S plans and MMPs is important for contributing to the agricultural sector nutrient and sediment reduction targets in the Phase III WIP. Based on the rate of CBAIP inspections occurring in the CCDs interviewed and CBAIP annual summary reports reviewed, additional staff and resources are necessary to better align CBAIP progress with the TMDL implementation timeframes. It is recommended that Pennsylvania seek increased staffing for CBAIP implementation and funding for practice implementation.

[6] https://files.dep.state.pa.us/water/ChesapeakeBayOffice/FINAL_CBAIP_AnnualSummary_2021.pdf

7.6 CBAIP – Observations

- Since the launch of the program in 2016, PADEP, SCC, CCDs, and other partners have collaborated to expand agricultural inspections and inspect all agricultural operations in the CBW with a goal of inspecting 10% of agricultural acres per year. PADEP reports that 13,812 farms and 1,573,090 acres have been inspected under CBAIP but did not specify the distribution of acres between CBAIP Phase 1 and 2.
    - ***Recommendation:*** *PADEP should provide EPA quantitative goals that identify the number of Phase 2 inspections and acres planned to be conducted, by county, on a yearly basis to clearly define the timeframe for completion of all Phase 2 inspections. PADEP should also submit the number of Phase 2 inspections, including acres, conducted as part of annual reporting processes to assess if defined program outcomes meet the targeted yearly goals.*
- Based on PADEP's CBAIP 2020-2021 Annual Summary report, the annual rate of inspections (both Phase 1 and Phase 2 included) is declining over time. For 2016-2019, inspection rates were over 10%. However, in 2019-2020 and 2020-2021, inspection rates dropped to 8.4 and 8.9% respectively.
- Pennsylvania has experienced a significant reduction in trained professionals to implement CBAIP. But as Pennsylvania shifts from Phase 1 evaluations to Phase 2 inspections an increase in trained inspectors is essential. PADEP and CCD staff acknowledged that insufficient funding and trained staff are current challenges towards program implementation. Beginning in SFYY 22-33 there will be increases in CCD FTE funding.
    - ***Recommendation:*** *Pennsylvania should consider developing a plan to increase long-term consistent funding sources and technical support for seasoned staff and newly trained FTEs to fully implement the CBAIP program.*
- For agricultural operations found to be in noncompliance in the 2020-2021 program year, PADEP RO and participating CCD staff indicated that they provided the necessary follow-up to achieve compliance from the agricultural operation. No enforcement actions were taken for violations found during a Phase 2 inspection as of the end of the 2020-2021 program year.
    - ***Recommendation:*** *The Current Phase 2 manual reads, "Additional follow-up should be handled by DEP CBO or regional offices in accordance with existing policies and procedures." However, these policies and procedures are not described or referenced in the SOP. EPA recommends that PADEP outline the "optional" responses and describe the existing policies and procedures with specificity. Phase II compliance issues and challenges should be handled formally as was done in Phase I to ensure clarity and transparency.*
- CBAIP Phase 2 inspections require more time onsite to verify plans and BMP implementation.
- PADEP modified the CBAIP goals based on the CBAIP Phase 2 Pilot to reflect the increased time and resources identified for conducting Phase 2 inspections. However, in the CBAIP 2020-2021 Annual Summary, PADEP stated that due to the resource demands of Phase 2 inspections, they "expected that as the number of Phase 2 inspections increase, the total annual acres inspected by the CBAIP will continue to decrease."
    - ***Recommendation:*** *PADEP should develop a detailed plan for how inspector staff will be restored and increased over time to stay on pace with DEP's goal of inspecting 10% of Phase 1 and 2 operations annually (including number of inspectors and funding for those positions by county).*

- Of the Phase 1 CBAIP site visits performed in the 2019-2020 program year, 39% of operations were non-compliant for MMPs and 38% were non-compliant for Ag E&S Plans. Out of the 1,948 operations assessed in Phase 1 visits during the 2020-2021 program year, 36% were non-compliant for MMPs and 31% were non-compliant for Ag E&S plans (i.e., the MMP or Ag E&S Plan was not administratively complete). With follow up from PADEP and participating CCDs, the compliance rate increased to 98% and 99% by the end of the SFY, respectively.
- For Phase 2 inspections, 47% were non-compliant with requirements to maintain and implement a MMP and all associated BMPs on schedule, and 54% were non-compliant with requirements to maintain and implement an Ag E&S Plan and all associated BMPs on schedule. Noncompliance identified during Phase 2 inspections included BMPs that were not implemented according to the schedule outlined in the plans, BMPs that were not currently functioning, and plans that did not address all resource concerns of the operation or were otherwise not reflective of the current management of the agricultural operation.
    - ***Recommendation:*** *PADEP and the CCDs should continue to allocate resources to CBAIP inspection follow-up for documenting compliance gains resulting from Phase 1 and 2 evaluations.*

8.0 Agriculture Erosion and Sediment Control Program

Pennsylvania's existing Erosion Control Rules and Regulations (25 Pa. Code §102 [Chapter 102]) were effective October 30, 1972, prior to the development of the 1972 Model State Act for Soil Erosion and Sediment Control by the Council of State Governments. The Chapter 102 regulations were adopted under the authority of Pennsylvania's Clean Streams Law to define specific procedures and requirements of the program. The regulations also reflect the Declaration of Policy contained in Act 217 (The Conservation District Law): to implement a program that helps provide for the conservation of soil, water and related resources; for the control and prevention of soil erosion; and preservation of natural resources. The Chapter 102 regulations require erosion and sediment control planning for all types of earthmoving including agricultural plowing and tilling, and animal heavy use areas (AHUAs).

The Pa Code 25 §102.4(a) regulations require a written erosion and sediment control plan (E&S Plan or Ag E&S Plan) for agricultural plowing or tilling activities and AHUAs that disturb equal to or greater than 5,000 square feet. Specifically, §102.4(a)(4) identifies that "The E&S Plan must include cost-effective and reasonable BMPs designed to minimize the potential for accelerated erosion and sedimentation from agricultural plowing or tilling activities and animal heavy use areas." Further, "the E&S Plan must, at a minimum, limit soil loss from accelerated erosion to the soil loss tolerance (T) over the planned crop rotation" for agricultural plowing or tilling activities. No-till operations still would be required to have and implement a written E&S Plan.

Each Ag E&S Plan must include an assessment of agricultural plowing and tilling activities to ensure that the soil loss from accelerated erosion is limited to the soil loss tolerance "T" over the planned crop rotation, as required by Pa Code 25 §102.4(a). Ag E&S Plans may include BMPs such as forest or grass buffers, cover crops, and tillage management. PADEP reports in its questionnaire response that "Ag E&S Plans meet the Soil and Water Conservation Plan criteria." The BMPs identified in each Ag E&S Plan are specific to each operation's specific conditions.

PADEP administers the Ag E&S Control Program. The CCDs conduct E&S control inspections under delegation from PADEP. Ag E&S Plans are not approved by any Commonwealth agencies but are required to be available for review during on-site inspections. When an agricultural operation does not have an Ag E&S Plan available for review at the time of the on-site inspection, PADEP is authorized to enforce Pa Code 25 §102.4(a) regulations.

Specific to CAFOs and CAOs, PADEP integrated the Ag E&S Control Program requirements into Pennsylvania's Nutrient Management and NPDES CAFO Programs to ensure that operations in those two programs comply with the Ag E&S Program requirements (an Ag E&S plan is required prior to NMP approval and as a condition of the CAFO permit; except instances where less than 5,000 square feet of land is disturbed, in which case BMP implementation is required, but not an E&S plan).

The 2015 assessment report identified four areas where the Ag E&S Control Program could be improved. A summary of the Commonwealth's response or actions follows each area for potential improvement from the 2015 assessment report.

2015 Finding	PA Actions to Address Findings
Commonwealth agencies had not identified the complete universe of operations subject to Ag E&S requirements.	PADEP reported that 5,684 facilities (both animal and non-animal operations) statewide meet the criteria for developing an Ag E&S plan; of these facilities 5,357 are located Pennsylvania's portion of the CBW.
The Commonwealth did not have a consistent approach or sufficient resources to ensure applicable operations are meeting Ag E&S requirements.	PADEP established the CBAIP in 2016 to determine whether operations had the required Ag E&S Plans, and Phase 2 will determine whether operations are implementing the BMPs that are required by the site-specific Ag E&S Plans. PADEP and CCDs also evaluate practices as part of nutrient management program site visits and upon complaint, and PADEP ROs also evaluate practices as part of CAFO inspections. Section 7.0 provides more detail on CBAIP inspections.
Ag E&S Plans were not always consistent with current farm conditions and activities, or with current NMPs.	In general, based on the files reviewed for this update, most Ag E&S Plans were consistent with NMPs and were evaluated during PADEP's or CCD's NPDES CAFO inspections or annual onsite Act 38 status reviews at CAOs and CAFOs. for this assessment EPA reviewed Ag E&S Plans prepared for CAFOs/CAOs and did not review Ag E&S Plans for non-CAFOs/non-CAOs.
The Commonwealth did not identify any electronic and/or comprehensive data systems used for tracking Ag E&S Plans and E&S control BMPs implemented at animal agriculture operations.	The Commonwealth now uses *e*FACTS and PracticeKeeper to track and manage Ag E&S Control Program oversight. PADEP uses *e*FACTS to record CAFO inspections and enforcement actions. The CCDs, SCC, and PADEP use PracticeKeeper to record inspections and violations and record the details of Ag E&S Plans, such as required BMPs, implementation schedule, etc.

8.1 Facility Universe

The table below shows the number of operations, by region, that were reported by PADEP as meeting the criteria for developing an Ag E&S Plan and those having a current, up-to-date Ag E&S Plan. As stated in the 2020 BMP Summary Report, 469,573 acres are covered by Ag E&S Plans in the CBW.

The report reflects the current level of Phase 1 and Phase 2 CBAIP Ag E&S inspections, for which additional Phase 1 and 2 inspections are still identified as needing to be completed at the time of this assessment. In addition, Phase 1 inspections only determine if plans are available and complete at the time of inspection, but do not determine if they are fully implemented according to the schedule of implementation, are fully functional, and address all resource needs. Thus, DEP assuming that all deficits from inspections are addressed by all landowners within 6 months and representing a 100% compliance rate is unrealistic.

DEP Region	Number of facilities that meet the criteria for developing an Ag E&S Plan	Number of facilities with an Ag E&S Plan	Number of up to date Ag E&S Plans	Number of Reviewed Ag E&S Plans in SFY2019 2020
Southeast	178	178	178	23
South-central	4,091	4,091	4,091	413
Southwest	89	89	89	0
Northeast	574	574	574	140
North-central	751	751	751	272
Northwest	0	0	0	0
PA Total (# in CBW)	**5,684 (5,357)**	**5,684 (5,357)**	**5,684 (5,357)**	**847 (847)**

8.2 Resources Allocated

Funding and program organization have changed since 2015. As described in the questionnaire response, since the 2015 assessment, PADEP has undergone two reorganizations:

- **2016-2017** – PADEP merged agricultural and stormwater compliance under the Bureau of Clean Water's Nonpoint Source Compliance Section.
- **September 2020** – Agricultural compliance was moved out of the Nonpoint Source Compliance Section and now resides within the CBO.
- **June 2021** – The CBO Agriculture Compliance Section retained an Environmental Group Manager.
- **December 2021** – One additional FTE was added to the Agricultural Compliance Section, with a total of 3 FTEs focused on agricultural compliance and inspection efforts, including erosion and sediment control for agriculture. PADEP noted that there is the plan for additional staff to be added to the CBO focused on agricultural permitting and compliance.

The CCDs that support Ag E&S Control Program implementation through delegation agreements with PADEP and within the time period assessed, CCDs received $60,000 per FTE as part of the Nutrient and

Manure Management Program. This is an increase of $4,000 per FTE since 2015. The CCD Chesapeake Bay Technicians within the time period assessed receive $65,550 per FTE as part of the Chesapeake Bay Technician contracts. This is an increase of $5,550 per FTE since 2015. Part of the Chesapeake Bay Technician Contract and PADEP Water Quality Specialist responsibilities include performing inspections and associated follow-up under the CBAIP. These inspections improve Ag E&S Program implementation. The Chesapeake Bay Technician Contract also requires tracking and recording Ag E&S Plan writing and verification.

The questionnaire response indicates that the program would benefit from "additional funding for staff dedicated to Ag E&S compliance and enforcement statewide, but with a focus on the Chesapeake Bay." The draft amended Phase III WIP identifies existing state agency and external staff resources allocated to providing technical and compliance assistance and support to implement the Commonwealth's CBW priority initiatives, including an additional 12.5 PADEP FTEs, for a total of 25 FTEs, and 60 more CCD and SCC FTEs, for a total of 149 FTEs. The draft amended Phase III WIP envisions that the 60 new CCD and State Conservation FTEs will consist of 50 Bay Technicians providing technical assistance, planning, and inspection support and 10 Bay Engineers in BMP design and engineering support. Seven of the 12.5 new PADEP FTEs would be agricultural compliance inspectors based in PADEP's Regional Offices.

8.3 Data Systems

The Commonwealth uses *e*FACTS and PracticeKeeper to track and manage Ag E&S Program, Manure Management Program, and Nutrient Management Program oversight. Enforcement actions are recorded in *e*FACTS, while inspections, violations, and plan details (including BMPs and implementation schedule) are recorded in PracticeKeeper.

PADEP has access to both databases. The SCC and CCDs only have access to PracticeKeeper. Per the delegation agreements, CCDs or the SCC are required to enter data into PracticeKeeper on at least a quarterly basis. PracticeKeeper uploads data to the BMP Collection & Upload application (BMP Warehouse). The BMP Warehouse reports data to the EPA-CBPO through the NEIEN. Reports can be generated from the databases to describe program activities.

8.4 Compliance and Enforcement

Inspections

PADEP and the CCDs use CBAIP inspections, CAFO inspections, nutrient management program site visits, and complaint follow-up to verify that Ag E&S Plans are implemented on schedule. PADEP's questionnaire response states that "inspections occur on the same operation once every year for CAOs and CAFOs (Act 38) statewide; once every 10 years for non-CAOs, non-CAFOs (Chapter 91 and 102) within the CBW; upon complaint for non-CAOs, non-CAFOs (Chapter 91 and 102) outside the CBW."

PADEP reported that all facilities required to have an Ag E&S plan, have an up-to-date plan. PADEP reported that 1,364 operations, statewide, were assessed for compliance with Ag E&S Plan requirements in SFY2019-2020.

Compliance and Enforcement

Of the 1,364 operations assessed for compliance with Ag E&S Plan requirements in SFY2019-2020, 519 operations, or 38%, were identified as noncompliant with Ag E&S Plan requirements (see table below). Failure to develop an Ag E&S Plan, and not implementing BMPs according to the Ag E&S Plan's

implementation schedule were identified by PADEP as the most common findings of Ag E&S Plan noncompliance. Other examples of noncompliance provided by PADEP are the potential for pollution due to unaddressed issues such as AHUA runoff, erosion from concentrated flow areas, implementing a crop rotation that exceeds "T," failure to maintain implemented BMPs to adequately address accelerated erosion, and the Ag E&S Plan does not reflect observed conditions at the operation.

DEP Region	Number of facilities assessed for compliance with Ag E&S requirements	Number of facilities assessed that were noncompliant with Ag E&S requirements	Number of facilities that resolved the Ag E&S noncompliance
Southeast	20	27	0
South-central	741	331	140
Southwest	0	0	0
Northeast	170	30	0
North-central	403	131	59
Northwest	0	0	0
PA Total	**1,364**	**519**	**199**

PADEP noted in the questionnaire response, that in SFY2019-2020, PADEP CO received 38 referrals from CCDs or ROs regarding Ag E&S Control Program violations identified during inspections, of which 29 operations met their obligations after enforcement actions were taken for continued non-compliance. PADEP stated that "the remaining referred operations are making forward progress toward completing the corrective actions identified on their inspection reports. The remaining non-referred operations are either making forward progress toward completing the corrective actions identified on their inspection reports or the inspector did not identify the date the plan was received in PracticeKeeper according to the PracticeKeeper – Agriculture Inspections Module SOP (CBO-DATA-002)."

In SFY2019-2020, PADEP took the following enforcement actions regarding Ag E&S Plans:

- **46** Notices of Violation (NOVs) (43 contain both MMP and Ag E&S Plan violations)
- **3** Field Orders (containing both Ag E&S Plan and MMP violations)
- **2** Consent Order and Agreements (COA) (containing both Ag E&S Plan and MMP violations)
- **1** Consent Assessment of Civil Penalty (CACP) (containing both Ag E&S Plan and MMP violations)

8.5 WIP Implementation Goals

- **The Phase III WIP includes goals for Pennsylvania to continue the compliance, inspection, and enforcement programs** associated with Pennsylvania's Clean Streams Law and federal requirements by ensuring farmers are implementing their state required Ag E&S Plan or conservation plan, MMP, or NMP, and implementing barnyard runoff controls, where required. Based on the questionnaire responses and interviews, it is understood that Ag E&S Plans are evaluated during NPDES CAFO compliance evaluation inspections (CEIs), annual onsite NMP reviews at CAOs and CAFOs, and through CBAIP inspections. Based on the files reviewed, PADEP and/or the CCDs are conducting NPDES CAFO CEIs at least every 5 years, are conducting annual onsite NMP reviews at CAOs and CAFOs and have initiated CBAIP inspections.

- **Phase III WIP Action # 2.3.4A: Develop web-based and in-person training for Manure Management and Agriculture Erosion and Sediment planning.** In October 2019, PADEP published the Soil Erosion and Sediment Control Manual for Agricultural Operations. As stated in the 2020 Progress Report Summary, PADEP staff "developed four web-based training modules for the Agriculture Erosion and Sediment Control Manual and opened them for public use on [PA]DEP's Clean Water Academy (CWA)." In addition, "DEP entered into an agreement with Penn State Extension to create additional in-person curriculum." The *PA Phase 3 WIP 2022-2023 Planning and Progress Milestones* report states that as of December 30, 2021, Penn State was developing the curriculum and finalizing the PAOneStop Ag E&S Plan reporting template and instructions. In addition, "Ag E&S Plan and MMP modules continue to be provided via [PA]DEP's Clean Water Academy."

  As stated in the questionnaire response and indicated above, a training course that introduces the Ag E&S manual is available on the PADEP Clean Water Academy.[7] In addition, Spring Agriculture Trainings (three weeks of basic and advanced trainings) are offered annually to federal and state staff as well as Technical Service Providers. "These trainings are led by NRCS and SCC and include field exercises and assessments of resource concerns and identification of BMPs to address those concerns. "Basic" level training is provided to new staff. "Advanced" level training is split into two groups: agronomy and engineering. The advanced training runs concurrently, so more advanced staff may attend these trainings in concurrent years. Certified Nutrient Management Specialists must attend the Stormwater and Soil Loss Workshop, a three-day workshop which includes a review of the procedures for completing administrative completeness reviews of Ag. E&S Plans. In 2021-2022, a train-the-trainer series was released to the Clean Water Academy in June 2022, which will instruct CCD staff of the necessary steps for holding a workshop instructing agricultural producers of the process of writing an Ag. E&S Plan. CCD staff have already expressed interest in hosting these Ag. E&S Plan Writing Workshops as part of their Chapter 102 delegation agreement required output measures. In the medium-term (within 2 years), a web-based, direct-learner module will be added to the Penn State PAOneStop tool which will instruct agricultural operators how to use PAOneStop to write an administratively complete plan."

[7] https://pacleanwateracademy.remote-learner.net/course/view.php?id=235

PADEP stated in the questionnaire responses that, of the BMPs selected by EPA for evaluation in this assessment, the following may be included or required in Ag E&S Plans depending on site-specific conditions.

BMP	Required?	Comments*
Animal Waste Management Systems		
Forest Buffers	Maybe	Included in the Ag E&S manual as a common BMP and may be included in an Ag E&S Plan.
Nutrient Management		
Cover Crops	Maybe	Included in the Ag E&S manual as a non-structural BMP and may be included in an Ag E&S Plan.
Soil Conservation and Water Quality Plans	Yes	Ag E&S Plans meet the Soil and Water Conservation Plan criteria.
Tillage Management	Maybe	An assessment of agricultural plowing and tilling activities is required to be included in the Ag E&S Plan to assure that the soil loss from accelerated erosion is limited to the soil loss tolerance "T" over the planned crop rotation per the requirements of 25 § 102.4(a). Conservation tillage and no-till is included in the Ag E&S BMP manual as a non-structural/management BMP and may be included in an Ag E&S Plan to meet T over the planned crop rotation.
Other BMPs	Maybe	Ag E&S Plans are site-specific to address the identified resource

* Applicable comments provided in the questionnaire response.

8.6 Agriculture Erosion and Sediment Control Program – Observations

- Since the 2015 assessment, the Commonwealth has prioritized Ag E&S Plan implementation in the CBW. The 2015 assessment report estimated approximately 3,299 operations subject to the Ag E&S Control Program requirements. In this update, PADEP identified that 5,684 operations in Pennsylvania (5,357 of which are in the CBW) have Ag E&S Plans. Phase 1 and 2 CBAIP inspections have not been fully implemented at the time of this assessment. Phase 1 inspections do not determine if the plans are being fully implemented and address all concerns.
- Pennsylvania has addressed many of the areas identified in the 2015 assessment report as needing improvement.
    - PADEP reports that Ag E&S Plans are evaluated during CBAIP inspections, nutrient management program site visits, and when complaints are received. PADEP ROs evaluate practices as part of CAFO inspections. This is an improvement over the 2015 assessment report which reported that the Commonwealth did not have a consistent approach or sufficient resources to ensure operations are meeting Ag E&S Control Program requirements.
    - Ag E&S Plans reviewed for this update were consistent with the NMPs. Further, the Ag E&S Plans had been evaluated during PADEP's or CCD's NPDES CAFO inspections or annual onsite Act 38 status reviews at CAOs and CAFO's. This is an improvement over the 2015 assessment report which reported that Ag E&S Plans were not always consistent with current farm conditions and activities, or with the operation's NMP.
    - Since the 2015 assessment, the Commonwealth has implemented electronic data management systems to track implementation of Ag E&S Plans and E&S control BMPs at animal agriculture operations. The Commonwealth now uses *e*FACTS and PracticeKeeper to track and manage Ag E&S Program oversight. Data collected with PracticeKeeper is reported electronically to the EPA-CBPO via NEIEN.
- PADEP recommended that the program would benefit from additional funding for staff dedicated to Ag E&S compliance and enforcement statewide, but with a focus on the Chesapeake Bay.
- PADEP staff developed four web-based training modules for the Agriculture Erosion and Sediment Control Manual and made them available to the public on PADEP's Clean Water Academy website.
- Of the 1,364 operations assessed for compliance with Ag E&S Plan requirements in SFY2019-2020, 519 operations, or 38%, were identified as noncompliant with Ag E&S Plan requirements.
- Failure to develop an Ag E&S Plan, and not implementing BMPs according to the Ag E&S Plan's implementation schedule were identified by PADEP as the most common findings of Ag E&S Plan noncompliance, as well as concerns with AHUA runoff, erosion from concentrated flow areas, implementing a crop rotation that exceeds "T," failure to maintain implemented BMPs to adequately address accelerated erosion, and the Ag E&S Plan does not reflect observed conditions at the operation

9.0 Manure Management Program

Pennsylvania's Manure Management program was started in 1986. Every farm in Pennsylvania that land applies and/or generates manure or agricultural process wastewater, regardless of size, is required to have and implement a written MMP. Land application of manure includes manure and agricultural process wastewater application by various types of equipment as well as direct application of manure by animals on pastures and in animal concentration areas (ACAs). Farms that do not mechanically apply manure and that have pastured animals still need a MMP, including small, pasture-based animal operations. Pasture based farms may have adverse impact to water quality and are also required to develop and implement a MMP. An example was provided by Snyder CCD of an operation similar to this that was identified as potentially having an adverse impact to water quality and was required to develop an MMP.

As stated in the 2015 assessment report, PADEP oversees the implementation of the Manure Management Program by providing technical, administrative, and programmatic guidance to farm operators, program participants, CCD staff and boards, and other interested parties. The PADEP ROs are responsible for Manure Management Program compliance and enforcement activities. The CCDs, with SCC oversight, provide assistance to PADEP in the implementation of the Manure Management Program through funded delegation agreements. The CCDs engage in Manure Management Program outreach, education and training, and compliance assistance that includes support with MMP development and implementation, coordinate Manure Management Program outreach and education efforts, and complaint response and referral activities.

CCDs have offered MMP workshops to assist operators with writing MMPs. Operators leave the workshop with a nearly completed MMP. During interviews, CCDs noted that MMP workshops had high attendance in the past, but that attendance at MMP workshops has declined in recent years. For example, Lycoming CCD stated that their last formal workshop was in 2018 and only two people attended. The CCDs indicated that most of the operations that were interested in developing MMPs have already done so. The CCDs noted that they would help with MMP development if an operator requested assistance.

The 2015 assessment report identified five areas where the Manure Management Program could be improved. A summary of the Commonwealth's response or actions follows each area for potential improvement from the 2015 assessment report

2015 Finding	PA Actions to Address Findings
MMPs were not collected or submitted to the Commonwealth or approved by PADEP.	No changes have been made since the 2015 assessment. Operators are not required to submit MMPs to PADEP or the CCDs for approval, but the MMP must be kept on the farm and made available upon request. During the time period assessed PADEP SOP for CBAIP did not require PADEP and CCDs to collect, copy, and/or file plans that are reviewed by inspectors. This may have limited the accuracy of tracking, reporting, and verification of manure transport, which may be tracked in MMPs. The SOP was updated and revised in May, 2022 and now requires plans to be recorded in PracticeKeeper (PADEP, 2022d).
PADEP did not track the number of operations known to have an MMP and therefore did not know the universe of MMP facilities.	The Commonwealth assesses MMP development and implementation through Pennsylvania's CBAIP and through implementation responsibilities of the Nutrient Management and Manure Management Programs.
The Commonwealth did not have a compliance assurance strategy or sufficient resources to ensure applicable operations are meeting MMP requirements.	As stated in the response to the questionnaire, at least 10% of acres covered by MMPs are inspected as part of the CBAIP annually.
PADEP, SCC, and the CCDs did not have an integrated data system or approach in place for tracking and managing Manure Management Program oversight.	The Commonwealth is using *e*FACTS and PracticeKeeper to track and manage MMP oversight.
Pennsylvania did not appear to be conducting inspections where MMP compliance is the primary focus of the inspection unless the farm is the subject of a complaint or part of a Regional Agriculture Watershed Assessment Program Initiative.	The CBAIP, in part, evaluates whether operations have the required MMPs (Phase 1) and evaluates implementation of MMPs and required practices (Phase 2). As stated in the response to the questionnaire, through inspections, including CBAIP and complaint-driven inspections, PADEP or CCDs review MMPs for administrative completeness and determine whether the operation is on schedule with BMP implementation.

9.1 Facility Universe

As stated in the 2020 BMP Summary Report, 487,851 acres are covered by MMPs in the CBW, slightly more than the 469,573 acres reported to be under Ag E&S Plans. In its questionnaire response, PADEP reported that 2,932 operations statewide (2,877 operations in the CBW) are required to develop an MMP. The table below shows the number of operations, by region, that are required and known to have a current, up to date MMP, as reported by PADEP as part of the Phase 1 and 2 CBAIP inspections, both of which have not been fully implemented at the time of this assessment. Phase 1 inspections do not determine if the plans are being fully implemented and address all concerns. PADEP requires that every farm in Pennsylvania that land applies and/or generates manure or agricultural process wastewater, regardless of size, have an MMP.

DEP Region	Number of facilities that meet the criteria for developing an MMP	Number of facilities with an up to date MMP
Southeast	171	171
South-central	1,618	1,618
Southwest	53	53
Northeast	136	136
North-central	929	929
Northwest	25	25
PA Total (# in CBW)	**2,932 (2,877)**	**2,932 (2,877)**

9.2 Resources Allocated

Funding and program organization have changed since 2015. As described above in Section 8.2, since the 2015 assessment, PADEP has undergone two reorganizations:

- **2016-2017** – DEP merged agricultural and stormwater compliance under the Bureau of Clean Water's Nonpoint Source Compliance Section.
- **September 2020** – Agricultural compliance was moved out of the Nonpoint Source Compliance Section and now resides within the CBO.
- **June 2021** – The CBO Agriculture Compliance Section retained an Environmental Group Manager.
- **December 2021** – One additional FTE was added to the Agricultural Compliance Section, with a total of 3 FTEs focused on agricultural compliance and inspection efforts, including compliance with Manure Management regulations. PADEP noted that there is the plan for additional staff to be added to the CBO to assist with permitting, compliance, inspection, and enforcement programs.

The CCDs that support program implementation through delegation agreements with PADEP received $60,000 per FTE during the time period assessed as part of the Nutrient and Manure Management Program. This is an increase of $4,000 per FTE since 2015. The CCD Chesapeake Bay Technicians receive $65,550 per FTE as part of the Chesapeake Bay Technician contracts. This is an increase of $5,550 per FTE since 2015. Part of the Chesapeake Bay Technician Contract and PADEP Water Quality Specialist responsibilities include performing inspections and associated follow-up under the CBAIP. These

inspections improve Ag E&S Program implementation. The Chesapeake Bay Technician Contract also require tracking and recording Ag E&S Plan writing and verification.

The questionnaire response indicates that the program would benefit from "Additional funding for staff dedicated to MMP compliance and enforcement statewide." Section 8.2 above summarizes Pennsylvania's existing and needed agriculture staffing as described in Table 5.3 in the Phase III WIP.

9.3 Data Systems

As discussed in Section 8.3 for the Ag E&S Program, the Commonwealth is using *e*FACTS and PracticeKeeper to track and manage Manure Management Program oversight.

9.4 Compliance and Enforcement

Pennsylvania determines completeness and on-schedule implementation of MMPs during inspections. Most inspections are performed through the CBAIP (see Section 7.0 above) or as follow-ups to complaints. PADEP and CCDs also review records (including self-inspection reports, manure storage certification, soil and manure test results, manure application records and transfer records) and verify that land application records are consistent with the MMP during inspections. As stated in the questionnaire response, "at a minimum, 10% of the acres covered by nutrient balance sheets and MMPs are inspected as part of the CBAIP annually."

As stated in the questionnaire response, MMP compliance and enforcement within the CBW is summarized in the Agriculture Inspections Annual Summary.[8] CCDs perform follow up on initial inspections; however, if a facility does not meet a required deadline, the CCD refers the facility to PADEP for further compliance and enforcement action.

The table below shows MMP non-compliance, based on State Fiscal Year 2019-2020. PADEP did not provide the total number of facilities assessed to estimate the percentage of operations determined to be following MMP requirements.

DEP Region	Number of facilities assessed that were noncompliant with MMP Requirements	Number of facilities that resolved the MMP noncompliance
Southeast	37	1
South-central	349	215
Southwest	2	0
Northeast	39	0
North-central	84	31
Northwest	0	0
PA Total	**511**	**247**

[8] https://files.dep.state.pa.us/Water/BPNPSM/AgriculturalOperations/AgriculturalCompliance/CBAIP_AnnualSummary_2020.pdf

According to the questionnaire response, the most common types of non-compliance are not keeping accurate records, not implementing proposed BMPs, and not adhering to application rates in MMPs.

In SFY2019-2020, the following enforcement actions were taken:

- 59 NOV (43 contained both MMP and Ag E&S violations)
- 3 Field Orders (containing both MMP and Ag E&S violations)
- 2 Consent Order and Agreements (COA; containing both MMP and Ag E&S violations)
- 1 Consent Assessment of Civil Penalty (CACP; containing both MMP and Ag E&S violations)

During the time period assessed PADEP SOP for CBAIP did not require PADEP and CCDs to collect, copy, and/or file plans that are reviewed by inspectors. Interviews with state conservation district staff suggested that it has been difficult to evaluate compliance with requirements, such as winter spreading restrictions, because MMPs were not required to be submitted. This may have limited the accuracy of tracking, reporting, and verification of manure transport, which may be tracked in MMPs. The SOP was updated and revised in May, 2022 and now requires plans to be recorded in PracticeKeeper (PADEP, 2022d).

9.5 WIP Implementation Goals

- **The Phase III WIP goals include ensuring that facilities are implementing their required MMPs**, where needed. Based on the questionnaire response and interviews, PADEP and/or the CCDs have initiated CBAIP inspections and conduct follow-ups to complaints. MMPs are being evaluated during these assessments but the adequacy of the reviews could not be determined as part of this assessment. .

- **The Phase III WIP seeks increases in the installation and use of adequate manure storage facilities.** The WIP aims for 90% of swine and poultry operations and 75% of other livestock operations to have adequate manure storage facilities. As indicated in the table below, animal waste management systems (which provide adequate manure storage) are a component of MMPs (except for daily-haul or pasture only). Therefore, adequate manure storage BMPs would be tracked in PracticeKeeper.

- **Phase III WIP Action # 2.2.1A: Investigate the incorporation of alternative manure treatment technologies and other potential strategies to address areas of excess manure nutrient generation and capital investment required for implementation of manure treatment systems.** As discussed in the 2022-2023 Milestone Report,[9] PADEP noted that several counties have identified and prioritized manure transport as a component of their CAPs. In addition, SCC and PADEP have held discussions with consultants about manure transport from two Tier 2

[9] https://files.dep.state.pa.us/Water/ChesapeakeBayOffice/TrackProgress/DRAFT_PA_Phase_3_WIP_2021_Progress_and_2022-2023_Planning_Milestone_Reporting.pdf

counties and have been in discussions with one Tier 1 county regarding improving tracking of manure transport.

- **Phase III WIP Action # 2.3.4A seeks for PDA and PADEP, as the lead agencies, to develop web-based and in-person training** for Manure Management and Agriculture Erosion and Sediment planning. See discussion of progress made towards these training efforts in Section 8.5 above. In addition, as stated in the questionnaire response, PADEP's Clean Water Academy hosts a course titled "Conducting a Farm Plan Writing Workshop" which is aimed to enable CCD staff, Penn State Extension educators, and industry representatives to plan and conduct MMP Writing Workshops for farmers. As discussed during the interviews, these workshops enable farmers to leave having nearly complete MMP. PADEP's Clean Water Academy also hosts additional courses on Manure Management, including "Nutrient Management and Manure Management Complaint Handling" and "Nutrient Management and Manure Management Compliance Process."
- **The Phase III WIP seeks the use of precision feed management to reduce nitrogen and phosphorus in manure**, with a goal of 70% of dairy cows fed with precision management. According to the questionnaire response, PADEP is not currently tracking this information but has plans in place to capture that information in the future. Pennsylvania State University and state agencies are undergoing research and analysis to support a Chesapeake Bay Program recognized process for increased tracking, reporting, and verification of dairy feed management. Beginning in October 2021, documentation of supplemental Nutrient Management BMPs were included as part of the Nutrient Management Program Status Review form.

PADEP stated in the questionnaire responses that, of the BMPs selected by EPA for evaluation in this assessment, the following may be included or required in MMPs.

BMP	Required?	Comments*
Animal Waste Management Systems	Maybe	Yes, if the Animal Waste Management System is a critical component of the MMP. Animal Waste Management Systems are not required if the MMP adequately addresses daily haul or pasture-only operations.
Forest Buffers	Maybe	Yes, if the operation chooses to implement a Forest Buffer to meet the application setback requirements, the BMP must be implemented and maintained.
Nutrient Management	Yes	
Cover Crops	Maybe	Yes, included in Manure Management Manual
Soil Conservation and Water Quality Plans		Not applicable
Tillage Management	Maybe	Yes, if the operator wishes to reduce the 100' application setback to 50', they must have a soil test done within the last 3 years showing less than 200 ppm P, use no-till practices, and if residue is removed, plant a cover crop on the field.
Other BMPs	Maybe	• BMPs that address pasture management including Prescribed Grazing • BMPs that address runoff from ACAs including but not limited to Heavy Use Area Protection, Fence, and Barnyard Runoff Controls

* Applicable comments provided in the questionnaire response.

9.6 Manure Management Program – Observations

- PADEP could consider implementing only Phase 2 to conserve staff time and level of effort and develop tools that better document the evaluation. PADEP reports that MMPs cover more acres in Pennsylvania's portion of the CBW than are covered under Ag E&S Plans. However, it appears that PADEP and the CCDs are less certain about MMP implementation compared to Ag E&S Plan implementation. PADEP and the CCDs evaluate whether operations have MMPs through Phase 1 of the CBAIP. Phase 2 evaluates whether operations have implemented MMPs effectively and on schedule.
- The Commonwealth assesses MMP development and implementation through the CBAIP and implementation responsibilities of the Nutrient Management and Manure Management programs.
- MMPs are not required to be submitted to PADEP or the CCDs for approval but must be kept on the farm and made available upon request. This administrative process limits program evaluation.
- The CBAIP evaluates whether operations have the required MMPs (Phase 1) and implementation of MMPs and required practices (Phase 2). At least 10% of acres covered by MMPs are inspected as part of the CBAIP annually.
- The questionnaire response indicates that the program would benefit from "Additional funding for staff dedicated to MMP compliance and enforcement statewide."
- As noted during interviews with PADEP and CCDs, there is a lack of buy-in from farmers to implement the MMPs and farmers often are not fully aware of the contents of MMPs written by consultants.
- The Commonwealth does not have a compliance assurance strategy or sufficient resources to ensure applicable operations are meeting MMP requirements.
- Since the 2015 assessment, the Commonwealth has begun using *e*FACTS and PracticeKeeper to track and manage MMP oversight.
-

10.0 Pennsylvania Nutrient Management Program

As stated in the 2015 assessment report, Pennsylvania's Nutrient Management Program involves the SCC, PADEP, PDA, Penn State Cooperative Extension, USDA-NRCS, and the CCDs; however, PDA, SCC, and the CCDs have primary responsibility for program administration and implementation.

The Act 38 Nutrient Management Regulations have not changed since the 2015 assessment. Under Act 38, all NMPs must be prepared by a PDA-certified nutrient management specialist using the current version of SCC's standardized plan format, unless an alternative format is approved by SCC. As stated in the 2015 assessment report, Act 38 sets forth minimum thresholds for animal agriculture operations required to develop and implement an NMP.

1. The operation must be high animal density and must have at least 8,000 pounds (lbs.) of animals on the farm.
2. High density farms are those that have more than 2,000 lbs. of live animal weight per acre of land where manure is applied. Land where manure is applied:
    - Includes owned and rented cropland, hayland, or pasture where manure is or will be applied, and
    - Includes all livestock, whether they are for production or recreation

Pennsylvania refers to these high animal density farms with more than 8,000 lbs. of animals as CAOs. VAOs are operations that voluntarily submit an NMP but are not required to do so by law. VAOs include agricultural operations applying for financial assistance under 25 Pa. Code § 83.261. VAOs may withdraw from the Nutrient Management Program at any time, but they would still be required to have and implement an MMP.

The 2015 assessment report identified four areas where the Nutrient Management Program could be improved. A summary of the Commonwealth's response or actions follows each area for potential improvement from the 2015 assessment report.

2015 Finding	PA Actions to Address Findings
Transferring information from the 66 CCDs to PADEP headquarters using paper records appears inefficient—particularly when the information appears to be stored electronically at the CCD level, albeit in a variety of software packages.	The Commonwealth now uses *e*FACTS and PracticeKeeper to track and manage NMP oversight. PADEP uses *e*FACTS to record CAFO inspections and enforcement actions. The CCDs, SCC, and PADEP use PracticeKeeper to record inspections and violations and record the details of Ag E&S Plans, such as required BMPs, implementation schedule, etc. In addition, reports describing program activities are generated from the database on a quarterly basis and shared with stakeholders, as appropriate.
Cost-share and technical assistance incentives for VAOs do not encourage continued participation in Pennsylvania's Nutrient Management Program after benefits are received.	In its questionnaire response for this update, PADEP specified that during SFY2019-2020, DEP offered funds through the Ag Plan Reimbursement Program to write Act 38 NMPs. PADEP also noted that the SCC offers REAP Tax Credits, and recently released funding for CEG and low interest loans thru Agri-link; however, this funding was not available during SFY2019-2020.
The "three strikes policy" compliance approach, which was in draft during the period of this assessment, is not applied consistently.	The 2015 report describes that, according to the Nutrient Management Program Administrative Manual, following NMP inspection, the CCD sends the operator a formal letter within one week noting significant items of compliance and all items determined to be deficient. A follow up inspection is then scheduled at an accelerated frequency for non-compliant operations. If non-compliance remains after the second inspection, the CCD Board can refer the operation to the SCC for enforcement. The timeframe to complete a corrective action and be re-inspected should not exceed 6 months except for unusual circumstances. This inspection and re-inspection process for Act 38 non-compliance commonly referred to as the "three strikes rule" or "three strikes policy." During interviews, Snyder CCD and Lycoming CCD both indicated that they follow they "three strikes policy" outlined in the Nutrient Management Program Administrative Manual. Snyder CCD noted that they have not needed to refer a farm to SCC for enforcement.
PDA, SCC, and the CCDs did not describe a process used to identify and quantify implementation of non-cost share BMPs at CAOs.	In its questionnaire response for this update, PADEP stated that "Program quarterly reporting requires that all BMPs identified in Act 38 NMPs are entered into the PracticeKeeper Database by delegated CCD staff during the quarter in which the plan was approved. In counties where the CCD is not delegated, the SCC enters the information. These BMPs are then recorded as implemented in the PracticeKeeper Database according

2015 Finding	PA Actions to Address Findings
	to the procedures outlined in the PracticeKeeper – BMP Module SOP (CBO-DATA-003).” Pennsylvania also responded that the five BMPs with the highest implementation rates (by number of acres) at CAOs include Nutrient Management, Soil Conservation and Water Quality Plans, Animal Waste Management Systems, Heavy Use Area Protection, and Fencing.

As part of previous program oversight performed by EPA, EPA observed administrative challenges to program implementation. Through review of CAFO permits at the SCRO for poultry operations, EPA observed a lack of manure sampling data cited by CAFO NMPs and instead use of PSU “book value” data. The PSU data are based on limited historic manure samples analyzed by PSU, the majority of which were based on PSU research project sampling versus commercial poultry operations. The reference was made based on an internal DEP review of CAFO permits for layer operations completed in 2012-2013 as part of the development for a CBP partnership AgWG livestock manure subcommittee recommendation report. In addition, DEP filed a request to EPA-CBPO to equally credit value the use of PSU manure nutrient book values as compared to manure sample analysis values for NMPs as part of the CBP partnership Phase 6 NM BMP recommendation report approval process in 2016, which was also documented by EPA-CBPO in an official response letter. A copy of the response letter is available on file with the EPA-CBPO. EPA also observed the use of “book value” soils data versus soil sampling.

10.1 Facility Universe

Act 38 requires, in part, development and implementation of an NMP for a specific set of animal operations. Any Pennsylvania animal operation may voluntarily develop and implement an NMP. however, Act 38 requires the following animal operations to develop and implement an NMP:

- CAOs
- All NPDES-permitted CAFOs
- Farms receiving financial assistance for nutrient management under 25 Pa. Code § 83
- An agricultural operation that violates the Clean Streams Law may be required to develop, submit, and implement an NMP

As stated in the questionnaire, the table below shows the current number of approved NMPs by region and regulatory category in Pennsylvania and in Pennsylvania's portion of the CBW, using Crop Year 10/1/2020-9/30/2021 data[10]. Approved NMPs cover 208,276 acres in the CBW. Based on data provided in PADEP's questionnaire response, 66% (606 out of 919) of CAOs in Pennsylvania's portion of the CBW have approved NMPs. The data for number of agricultural operations statewide meeting the CAFO definition (459) and the number of approved NPDES CAFO NMPs (469) statewide are inconsistent but appear to indicate that all CAFOs in Pennsylvania have approved NMPs.

DEP Region	Number of Approved NPDES CAFO NMPs	Number of Approved CAO NMPs	Number of Approved VAO NMPs
Southeast	14	29	3
South-central	348	432	56
Southwest	9	9	11
Northeast	16	25	5
North-central	77	165	35
Northwest	5	10	37
PA Total (# in CBW)	**469 (410)**	**670 (606)**	**147 (97)**

Pennsylvania reported in the Phase III WIP that, "as provided to the Chesapeake Bay Program in 2017, a comparison of 2012 Ag Census Data to 2017 data provided in NMPs shows that 99% of all chickens, 98%

[10] Since the previous assessment was completed, there were more farms with VAO Act 38 Nutrient Management Plans. Prior to and in the early years of the Manure Management Manual, Conservation Districts, planners, etc. provided guidance to farmers to have VAO plans, either for "limited liability" or to participate in financial and technical assistance programs. The VAO NMP served the purpose of the Manure Management Plan. Since the time the Manure Management Manual was released and used, the number of VAO plans decreased, while the number of Manure Management Plans increased. In addition, PADEP completed a data cleanup of VAO plans in 2017-2018 to cull the number of expired plans to reduce the potential of double-counting acreage while a farmer switched from having a VAO plan to a Manure Management Plan.

of all swine, 70% of all turkeys, and 20% of all dairy related cattle are covered by NMPs and the associated Nutrient Management Program."

The table below shows the number of NMPs submitted for review and how many were reviewed and approved, based on Crop Year 10/1/2020-9/30/2021 data.

DEP Region	Number of NMPs Submitted for Review	Number of NMPs Reviewed	Number of NMPs Approved
Southeast	16	16	16
South-central	249	251	251
Southwest	9	13	13
Northeast	17	20	20
North-central	82	100	100
Northwest	1	13	13
PA Total (# in CBW)	**391 (321)**	**413 (344)**	**413 (344)**

10.2 Resources Allocated

The SCC employs a Nutrient and Odor Management Program Director with oversight over all Act 38 related activities. Five additional SCC nutrient management staff work with staff from 57 delegated CCDs to implement and enforce Act 38 nutrient management regulations (SCC, 2022).

Pennsylvania currently has 249 certified nutrient management planners (69 commercial, 26 individual, and 154 reviewers).

As stated in the questionnaire response, Nutrient and Manure Management Delegated CCDs receive $60,000 per FTE as part of the Nutrient and Manure Management Program which is an increase of $4,000 per FTE since 2015. However, the questionnaire response also noted that predictable and dedicated funding for CCDs and other staff conducting BMP verification, compliance, and enforcement activities related to the Nutrient Management Program is one challenge that Pennsylvania is facing in implementing the program.

10.3 Data Systems

As discussed in Sections 8.3 for the Ag E&S Program and 9.3 for Manure Management Program, the Commonwealth is using *e*FACTS and PracticeKeeper to track and manage NMP oversight.

10.4 Compliance and Enforcement

As described in the questionnaire response, noncompliance with NMPs is determined through annual CAO NMP status reviews and through CAFO CEIs conducted at least once every five years.

While onsite, Pennsylvania reviews NMPs, self-inspection reports, the PPC Plan, manure storage certification, soil and manure test results, manure applications records and transfer records to determine compliance. Based on the questionnaire response, the most common types of NMP non-compliance are recordkeeping and maintaining current manure samples.

As stated in the FY2020 Nonpoint Source Management Annual Report, Pennsylvania inspected 596 farms under the Act 38 Nutrient Management Program in FY2020 (PADEP, 2020). The table below shows NMP non-compliance provided in the questionnaire response, based on Crop Year 10/1/2020-9/30/2021 data.

DEP Region	Number of NMPs assessed during onsite inspections	Number of facilities assessed during onsite inspections that were noncompliant with NMP	Number of facilities that resolved the NMP noncompliance
Southeast	6	3	3
South-central	675	117	117
Southwest	11	3	3
Northeast	29	7	7
North-central	181	24	24
Northwest	9	1	1
PA Total (# in CBW)	**911 (813)**	**155 (126)**	**155 (126)**

The CBAIP annual summary report provides similar data to that shown above, stipulating that, for agricultural operations inspected between July 1, 2020, through June 30, 2021, compliance with Act 38 NMP development and implementation was 82% at the time of the inspection. PADEP's annual summary report indicates that reasons for noncompliance were related to failure to obtain manure or soil samples, failure to land apply manure in accordance with the NMP, and failure to maintain adequate records. PADEP indicated that follow-up activities resulted in most facilities returning to compliance within 6 months following the annual inspection.

Pennsylvania indicated that CCDs and PADEP do not take enforcement actions under Act 38; however, PADEP and SCC may take joint enforcement action if the non-compliant facility is a CAFO. Based on the questionnaire response, the SCC took 10 enforcement actions in SFY2019-2020.

10.5 WIP Implementation Goals

- **The Phase III WIP goals including seeking to ensure that facilities are implementing their required NMPs, where needed.** Based on the files reviewed, Pennsylvania is ensuring that facilities have current NMPs and are implementing their NMPs through annual onsite status reviews at CAOs or through CAFO inspections every five years.

- **The Phase III WIP also mentioned that Pennsylvania has a new data management and tracking system** to ensure consistent documentation, tracking, and reporting of outputs and BMPs implemented through various programs, including the Nutrient Management Program. As stated in the questionnaire, Pennsylvania uses *e*FACTS and PracticeKeeper to track and manage oversight of NMPs. PracticeKeeper is used to record inspections and violations and record the details of the plan, i.e., animal type, required BMPs, manure generated, etc. CCDs, SCC, and PADEP have access to PracticeKeeper. *e*FACTS is used to record enforcement actions.

PADEP stated in the questionnaire responses that, of the Phase III WIP BMPs selected by EPA for evaluation in this assessment, the following BMPs may be included or required in NMPs depending on site-specific conditions.

BMP	Required?	Comments*
Animal Waste Management Systems	Yes	
Forest Buffers	Maybe	If it is part of the NMP or Ag E&S Plan or Manure Management Plan as a requirement (e.g. setbacks), then it would be required.
Nutrient Management	Yes	
Cover Crops	Maybe	Cover crops may be included in required NMPs. As described in Version 12.0 of the Pennsylvania Act 38 Nutrient Management Program Technical Manual, cover crops may be included in required NMPs for fields where manure will be applied in winter and fall manure applications.
Soil Conservation and Water Quality Plans	Yes	
Tillage Management	Maybe	Tillage management may be included in required NMPs. As described in Version 12.0 of the Pennsylvania Act 38 Nutrient Management Program Technical Manual, tillage management may be included in required NMPs for fall manure applications.
Other BMPs	Maybe	BMPs such as Heavy Use Area Protection, Fencing, etc.

* Applicable comments provided in the questionnaire response.

PADEP reported the BMPs with the highest implementation rates (by number of acres) at CAOs include Nutrient Management, Soil Conservation and Water Quality Plans, Animal Waste Management Systems, Heavy Use Area Protection, and Fencing.

In its Evaluation of Pennsylvania's Draft Amended Phase III WIP (dated 4/18/2022), EPA identified expected enhancements and recommended actions to be included in the final amended WIP, including:

- Increasing technical assistance for the review of NMPs.
- Requiring additional priority agricultural BMPs from the WIP to be incorporated in NMPs for CAOs.
- Expanding the Nutrient Management Program to require NMPs for additional farms beyond the current CAOs.

10.6 Nutrient Management Program – Observations

- PADEP stated that cost-share and technical assistance incentives are available for VAOs through the Ag Plan Reimbursement Program to write MMPs, Ag E&S Plans, and Act 38 NMPs during the SFY2019-2020 evaluation period. In addition, the SCC offers REAP Tax Credits and has recently released fund for CEG and low interest loans thru Agri-link.
- According to the questionnaire, based on Crop Year 10/1/2020-9/30/2021 data, 911 NMPs (813 in CBW) were assessed during onsite inspections. The number of facilities that were assessed during onsite inspections was 155 (126 in the CBW). All of those facilities resolved NMP non-compliance.
- PADEP's annual summary report indicates that reasons for noncompliance were related to failure to obtain manure or soil samples, failure to land apply manure in accordance with the NMP, and failure to maintain adequate records. PADEP indicated that follow-up activities resulted in most facilities returning to compliance within 6 months following the annual inspection.
- The Commonwealth uses *e*FACTS and PracticeKeeper to track and manage Nutrient Management Program oversight. These software packages were not in use at the time of the 2015 assessment.
- As provided for this update, PADEP stated that all BMPs identified in Act 38 NMPs are entered into PracticeKeeper by delegated CCD staff during the quarter in which the plan was approved. In counties where the CCD is not delegated, the SCC enters the information. BMPs in the NMPs are recorded as implemented in PracticeKeeper to minimize double counting.
- Based on the files reviewed, Pennsylvania is ensuring that facilities have current NMPs and are implementing their NMPs through annual onsite status reviews at CAOs and CAFO's or through CAFO inspections every five years.
- According to PADEP's NPDES general permit for CAFOs (PAG-12), PADEP may require additional BMPs and controls to abate pollution. For operations within the Chesapeake Bay Watershed, this may include additional BMPs listed in the WIP. Because PADEP uses the PAG-12 as template to develop and issue NPDES individual permits for CAFOs, this boiler plate language is set forth in both general permit coverages granted and individual permits issued. Based on EPA's review of individual permits, NMPs, Ag E&S Plans, Conservation Plans, and PPC Plans (required plans), PADEP has neither required nor tracked any priority WIP BMPs in such permits and their fact

sheets. EPA does not know whether this finding reflects what has been required in general permit coverages granted since EPA has not reviewed such coverages yet.

- Predictable and dedicated funding for CCDs and other staff conducting BMP verification, compliance, and enforcement activities related to the Nutrient Management Program is one challenge that Pennsylvania is facing in implementing the program.
- Beyond the compliance requirements of Act 38 for CAOs, NMPs are voluntary. Therefore, agricultural operations that use only synthetic fertilizer as a nutrient source and do not fit the definition of a CAO have no management requirements for nutrient applications.

11.0 NPDES CAFO Program

As noted in the 2015 assessment report, PADEP's Bureau of Clean Water (BCW) and CBO have primary responsibility for administering and implementing the Pennsylvania NPDES CAFO Program. As described in the questionnaire response, DEP CO's responsibilities include program development and evaluation specialized assistance for policy regulatory development, and complex permitting issues; enforcement; and data management, among others. All PADEP ROs are responsible for implementing programs through inspection, enforcement, and compliance assistance.

The 2015 assessment report identified six areas where the NPDES CAFO Program could be improved.

2015 Finding	PA Actions to Address Findings
Pennsylvania's NPDES CAFO program lacked cohesion due to separation of core functions (e.g., permitting, compliance and enforcement, nutrient management) in different agencies and locations.	In 2015, each PADEP regional office was responsible for reviewing and issuing NPDES CAFO permits and for compliance and enforcement for CAFOs in their region. In addition, permitting responsibilities and compliance and enforcement responsibilities were performed by separate departments (bureaus) within each PADEP regional office. Since 2015, CAFO permitting has been consolidated in the SCRO in an effort to administer the program more effectively and efficiently. PADEP SCRO manages all the permit coverages under the PAG-12 and develops and issues all the individual permits for CAFOs in the Commonwealth. Regional Office staff in the regional Clean Water program (northwest and southwest regional offices) or Waterways and Wetlands programs (all other regions) are responsible for conducting inspections and enforcement.
While PADEP had provided NPDES permit coverage for several hundred CAFOs (nearly 90%), EPA believed some attention was warranted to continue timely issuance. **There was no assurance that an NMP submitted with a CAFO permit application, which was developed by a certified planner, would be accurate, complete, and current—causing PADEP's permit issuance timeframe to extend.**	In 2015, the average timeframe for issuing permit coverage was 104 days for general permits and 166.5 days for individual permits. Information provided by PADEP during this update indicates that all of Pennsylvania's CAFOs are covered under NPDES permits, with more than 80% of those facilities covered under the PAG-12, which is also used as a template for individual permits. In addition, PADEP is issuing permits about one month faster, on average. DEP's questionnaire response specified that the current average length of time between permit application submittal and permit issuance is 75 days for general permits and 120 days for individual permits. PADEP has developed SOPs to assist with program-specific implementation of the Permit Review Process

2015 Finding	PA Actions to Address Findings
	and Permit Decision Guarantee policy[11] to ensure consistent procedures for reviewing permit applications across PADEP. The SOPs include: • An explanation of how PADEP will generally undertake the process that leads to the regulatory action of granting or denying applications. • Specific application requirements and review procedures by permit type and program. • Information on the specific statutes and regulations that require completeness review or technical review procedures other than those outlined in the policy. However, EPA's reviews of individual permits and NMPs in 2021 and 2022 have revealed inconsistencies in permit application review, permit development, and management review and approval of permits, suggesting that PADEP permitting staff are not adhering to the SOPs.
In general, there was inconsistency between the three main records management avenues: hardcopy documents, electronic documents (i.e., emails and attachments), and *e*FACTS. This inconsistency had the potential to provide different information to the permit writing and permit enforcement staff as well as the public.	The 2015 report stated that this inconsistency in records management could result in different information being available to permit writers, enforcement staff, and the public. Because EPA conducted remote review of electronic files for this update, EPA was unable to fully determine whether inconsistency remained among the records management avenues.
Pennsylvania's reliance on checklists during on-site compliance inspections and annual site status reviews instead of regular and ongoing oversight that includes reviewing facility-submitted annual reports may have led to delayed compliance and the potential for unidentified water quality concerns, particularly if one or more years of site status reviews were missed.	Based on the NPDES CAFO files reviewed during this update, the NCRO is reviewing annual reports, quarterly, and self-inspection reports following receipt, which should support more timely identification of potential compliance issues. It was unclear whether the SCRO is reviewing annual reports routinely because SCRO does not document its annual report reviews using a review checklist form or other method of documentation.
PADEP NPDES CAFO inspections were not collecting detailed information on	In its questionnaire response for this update, PADEP stated that "BMPs are evaluated during site inspections

[11] PADEP uses the same Permit Review Process and Permit Decision Guarantee policy described in the 2015 assessment, per Executive Order 2012-11[11] that was signed into law on July 24, 2012. The SOPs used to assist with CAFO permitting (SOP No. BPNPSM-PMT-018 [PAG-12], SOP No. BPNPSM-PMT-006 [CAFO Individual Permits], BPNPSM-PMT-026 [Manure Storage Facilities], and SOP No. BPNPSM-PMT-029 [Permit Amendments and Transfers]) were most recently updated in 2013.

2015 Finding	PA Actions to Address Findings
implementation of priority BMPs, or if the information was collected it was not memorialized on the PADEP inspection checklist.	and Act 38 Status Reviews. The BMPs are tracked, reported, and verified in the PracticeKeeper geodatabase as part of the Act 38 Nutrient Management Program." However, based on the file reviews, this BMP information is not documented on the inspection checklist. The mechanism for documenting the information for transfer to the geodatabase is not clear. Further, as indicated below in section 11.5, it is not clear whether or how the BMPs required to be implemented at CAFOs align with the 2025 Phase III WIP commitments for the agriculture sector.

As part of NPDES CAFO program oversight performed by EPA's CBPO in 2021, EPA observed administrative challenges to program implementation. EPA observed a limited ability to retain previous permit data for CAFO operations beyond the five-year permit lifespan which limit the ability to evaluate the program effectively. As noted in the 2015 review, Pennsylvania implements a standard six-year file lifespan for files at the state and county levels, which can limit access to previous permits.

Permits are also based on maximum livestock populations versus actual, which can include planned operation expansions. This can lead to inaccurate operation data based on realistic numbers.

CAFO Permit NMP's also allow the use of PSU published "book values" for manure nutrient concentrations for all operations, including well established operations. This can cause underestimated nutrient concentrations based on limited or outdated PSU test data, and inaccuracies for the NMP.

According to PADEP's NPDES general permit for CAFOs (PAG-12), PADEP may require additional BMPs and controls to abate pollution. For operations within the Chesapeake Bay Watershed, this may include priority agriculture BMPs from the WIP. Because PADEP uses the PAG-12 as template to develop and issue NPDES individual permits for CAFOs, this boiler plate language is set forth in both general permit coverages granted, and individual permits issued. Based on EPA's review of individual permits, NMPs, Ag E&S Plans, Conservation Plans, and PPC Plans (required plans), PADEP has neither required nor tracked any priority agriculture BMPs from the WIP in such permits and their fact sheets. None of the required plans assessed by EPA specify how the site-specific BMPs align with the priority agriculture BMPs set forth in the WIP. EPA does not know whether this finding reflects what has been required in general permit coverages granted since EPA does not review individual facility coverages authorized by the general permit.

11.1 Facility Universe

Based on the data provided in the questionnaire response, the table below shows the number of facilities meeting the CAFO definition in 25 Pa. Code § 92a.2 as well as the number of CAFOs covered under the PAG-12 NPDES General Permit for Operation of CAFOs and the number of CAFOs covered under an NPDES Individual Permit. No NPDES CAFO permit applications were pending.

DEP Region	Facilities meeting the CAFO definition	Number of facilities covered under the General Permit	Number of facilities covered under Individual Permits
Southeast	14	11	3
South-central	342	287	55
Southwest	8	8	0
Northeast	18	11	7
North-central	73	48	25
Northwest	4	2	2
PA Total (# in CBW)	**459 (400)***	**367 (ND)****	**92 (ND)**

* As noted during the interview, approximately 400 CAFOs are located in the CBW.

** ND

Pennsylvania's regulations do not define small and medium CAFOs, the regulations (§ 91.36(c)(2)) prohibit discharges from facilities that meet the federal definitions of small or medium CAFO. The data in the table above, reflects facilities that meet Pennsylvania's CAFO definition, which does not include operations that meet the definition of small or medium CAFOs under the federal regulations.

11.2 Resources Allocated

As stated in the questionnaire response, in June 2021, the Agriculture Compliance Section retained an Environmental Group Manager and in December 2021, one additional FTE was added to the Agricultural Compliance Section in the CBO, with a total of 3 FTEs focused on agricultural compliance and inspection efforts. There is the potential for additional CBO staff, focused on agriculture permitting, compliance, inspection, and enforcement efforts.

Pennsylvania noted in its questionnaire response that one challenge they face in implementing the NPDES CAFO program is adequate staffing of trained local and state technical staff to perform compliance, enforcement, and BMP verification.

11.3 Data Systems

As stated above and in the questionnaire response, PADEP utilizes *e*FACTS to record enforcement actions as well as CAFO inspections.

11.4 Compliance and Enforcement

As stated in the questionnaire, compliance and enforcement are managed by the appropriate PADEP Regional Office. The "CO provides the ROs with the list of CAFOs that are due for their 5-year CEI and tracks and reports completion of inspection efforts for the purposes of the Compliance Monitoring Strategy (CMS)." In addition, CCDs, SCC, and PADEP staff are encouraged to conduct co-inspections. As discussed during the interviews with PADEP NCRO and SCRO staff, this frequency is amended if a CAFO

is having compliance issues – PADEP may conduct more frequent CEI inspections. Based on the files reviewed, PADEP is performing CAFO CEIs at least once every five years.

The table below shows the types of CAFO inspections conducted in SFY2019-2020 by region, as well as the number of facilities that were determined to be in noncompliance with NPDES CAFO permit requirements and those that resolved the noncompliance items.

DEP Region	Facilities meeting the CAFO definition	NPDES CAFO inspections conducted in SFY2019 2020	Number of CAFOs identified as being noncompliant in SFY2019 2020	Number of facilities that resolved the noncompliance
Southeast	14	1 Incident Response	1	1
South-central	342	25 Administrative Review 3 Complaint 77 Compliance Evaluation 4 Follow-up 4 Incident Response 6 Routine/Partial	35	32
Southwest	8	2 Administrative Review 2 Compliance Evaluation 1 Routine/Partial	0	0
Northeast	18	0	0	0
North-central	73	4 Follow-up 2 Complaint 19 Compliance Evaluation 3 Incident Response	16	12
Northwest	4	1 Compliance Evaluation 1 Follow-up	0	0
PA Total	**459**	**155**	**52**	**45**

The questionnaire response indicated that the most common types of NPDES CAFO permit noncompliance are related to failure to submit an annual report, failure to implement reporting and recordkeeping requirements, and violation of Part C permit conditions. Those conditions include requirements for NMPs and manure management, including manure export, land application setbacks, winter application; and stockpiling; E&S plans; Preparedness, Prevention and Contingency (PPC) Plans; animal mortality; manure storage facilities; and other BMPs, which "may include additional BMPs listed in Pennsylvania's Watershed Implementation Plan for the Chesapeake Bay TMDL" [PAG-12, Part C.VI.B]).

PADEP coordinates with other Pennsylvania agencies to ensure appropriate management of manure generated. The questionnaire response states that "joint Act 38 nutrient management Program Status Reviews and CAFO CEI inspections are encouraged when they can be coordinated with the agency conducting the Status Review (SCC or CCD), PADEP Regional Office staff, and the operator."

Pennsylvania has developed an SOP for Clean Water Program review of CAFO annual reports (SOP No. BCW-INSP-024).

In May of 2022, PADEP developed an SOP titled, "Compliance Evaluation Inspection (CEI) and Enforcement of Concentrated Animal Feeding Operations (SOP No. CBO-INSP-003). The SOP "describes

the procedures by which DEP will conduct CEIs of CAFOs and the compliance assistance and enforcement actions that will be considered when violations are found during an inspection."

11.5 WIP Implementation Goals

- **Phase III WIP Action # 2.5.1A: Implement the NPDES CAFO program delegation.** This includes permitting 100% of all CAFOs (more than 350 operations) in the Chesapeake Bay, as well as reporting inspection metrics and results to EPA and providing permitting and compliance information for inclusion in EPA's Integrated Compliance Information System.

  Information provided by PADEP during this update indicates that all facilities meeting the CAFO definition statewide, including 400 CAFOs in the CBW, are covered under NPDES permits. In addition, the Pennsylvania Phase 3 WIP Planning and Progress Milestone Report for 2021 progress (draft dated 1/14/2022) indicates that PADEP and EPA are working together on further streamlining the permit application and reporting process and that the PAG-12 is on schedule for renewal in 2023. Permits are being issued in accordance with the Permit Decision Guarantee targets. As described above, it was unclear whether the SCRO is reviewing annual reports routinely or how BMP information is documented during inspections for transfer to PracticeKeeper.

- **Phase III WIP Action # 2.5.2A: Complete complaint follow-up for CAFO and non-CAFO facilities.** The 2021/2022 Phase 3 WIP Planning and Progress Milestone Report (draft dated 1/14/2022) reports that PADEP regional offices are regularly following up on complaints. One CAFO file reviewed as part of this update documented a complaint inspection performed by PADEP. The PADEP inspector required corrective actions to resolve areas of concern noted during the inspection.

As stated in Part C.VI.B of PADEP's NPDES general permit for CAFOs (PAG-12), for operations within the Chesapeake Bay Watershed, DEP may require additional BMPs including the priority agricultures BMPs from the WIP. PADEP stated in the questionnaire responses that, of the Phase III WIP BMPs selected by EPA for evaluation in this assessment, the following may be included or required by NPDES CAFO permits, as shown in the table below. However, based on EPA's review of permits and NMPs over the past 8 years, the documents do not clearly identify whether or how the required BMPs align with the WIP or the 2025 goal. This update did not specifically evaluate how the WIP BMPs inform permit development or whether or how PADEP accounts for BMPs implemented at NPDES-permitted CAFOs when tracking progress toward WIP implementation goals. As noted above, BMP information is not documented on CAFO inspection checklists and the mechanism for documenting the information for transfer to PracticeKeeper is not clear. eFACTS is used to retain historic permit, inspection and enforcement data after paper files are removed as part of DEP's record and retention policies. BMPs that are identified in PK as part of the NMP, which is consistent with the Ag E&S Plan (as part of the CAFO permit), remain in the Practice Keeper system.

BMP	Required?	Comments
Animal Waste Management Systems	Yes	
Forest Buffers	Maybe	If it is part of the NMP or Ag E&S Plan or Manure Management Plan as a requirement (e.g. setbacks), then it would be required.
Nutrient Management	Yes	
Cover Crops	Maybe	Cover crops may be included in required NMPs or E&S Plans.
Soil Conservation and Water Quality Plans	Yes	
Tillage Management	Maybe	Tillage management may be included in required NMPs or E&S Plans.
Other BMPs	Maybe	BMPs such as Heavy Use Area Protection, Fencing, etc. may be included in required NMPs or E&S Plans.

In its Evaluation of Pennsylvania's Draft Amended Phase III WIP (dated 4/18/2022), EPA identified expected enhancements and recommended actions to be included in the final amended WIP, which included identification of additional nutrient load reductions through NPDES permits (including CAFO permits) to meet the 2025 targets, for example:

- Requiring priority agriculture BMPs from the WIP that will be included in NPDES general permit coverage and individual permits for CAFOs and their NMPs or alternative BMPs that may be proposed and approved by the Department to address impaired waters.
- Determining appropriate conditions and expectations that will be included in the 2023-2028 NPDES general permit for CAFOs to achieve additional nutrient load reductions.
- Identifying the timeframe and number of NPDES permit writer trainings that will be provided for state agency staff.
- Ensuring that unpermitted CAFOs apply for NPDES permit coverage. As noted above, during this update PADEP provided information indicating that all facilities meeting the CAFO definition in Pennsylvania are covered under NPDES permits.

11.6 NPDES CAFO Program – Observations

- According to information provided by PADEP, all facilities meeting the CAFO definition statewide are covered under NPDES permits.
- The questionnaire response indicated that the most common types of NPDES CAFO permit noncompliance are related to failure to submit an annual report, failure to implement reporting and recordkeeping requirements, and violation of Part C permit conditions.
- Of the 459 facilities meeting the CAFO definition, NPDES CAFO inspections conducted in SFY 2019-2020 found (in total) 8 incident responses, 27 Administrative Reviews, 5 complaints, 99 compliance evaluations, 9 follow up inspections, 7 incident responses, and 7 routine/partial inspections.
- There were 52 CAFOs identified as being non-compliant in SFY 2019-2020 and 45 of those facilities resolved non-compliance. The majority of inspections, non-compliance, and resolved non-compliance took place in South-Central, PA. There were no inspections conducted in Northeast, PA.
- PADEP has consolidated CAFO permitting functions in the SCRO to administer the program more effectively and efficiently.
- PADEP's permit issuance times are improving. The questionnaire response specified that the average length of time between permit application submittal and permit issuance is 75 days for general permits (versus 104 days in 2015) and 120 days for individual permits (versus 165.5 days in 2015). PADEP and EPA continue working together on further streamlining the permit application and reporting process.
- Based on the NPDES CAFO files reviewed, the NCRO is reviewing annual reports following receipt. However, it was unclear whether the SCRO is reviewing annual reports routinely due to a lack of an annual review checklist form.
- PADEP NPDES CAFO inspections are not documenting information on BMP implementation, including WIP BMPs, on the PADEP inspection checklist. The mechanism for documenting the information for transfer to PracticeKeeper is not clear.
- PADEP is challenged in implementing the NPDES CAFO program due to inadequate numbers of trained local and state technical staff to perform compliance, enforcement, and BMP verification.
- PADEP NPDES CAFO permits assessed by EPA are not requiring any additional site-specific BMP, including WIP BMPs. While site-specific BMPs are required as part of the NMP and Ag E&S plans, it is unclear what conditions or circumstances would warrant the implementation of additional site-specific BMPs on a case-by-case basis.
- PADEP NPDES CAFO permits assessed by EPA are not documenting information on site-specific BMP implementation in fact sheets, including WIP BMPs.
- None of the required plans assessed by EPA specify how the site-specific BMPs align with the priority agriculture BMPs set forth in the WIP.
- While PA state regulations do capture some facilities considered medium CAFOs under federal regulations, based on EPA's assessment, it is unclear, because state regulations do not define small and medium CAFOs, how PADEP is evaluating operations that would be small or medium CAFOs under the federal rules to determine if they meet the federal medium CAFO definition and which of them are CAFOs currently covered under CAFO permits and which ones are not.

12.0 Commercial Manure Hauler and Broker Certification Program

As stated in the questionnaire response, "PDA has sole authority for the oversight and enforcement of the Commercial Manure Hauler and Broker Certification Program."

2015 Finding	PA Actions to Address Findings
The 2015 assessment report identified compliance assurance challenges including low staff levels at SCC and PDA, low PDA funding, and lack of delegation with other agencies.	PDA indicated, during the interview for this assessment, that staffing levels remain lower than desired, noting that the program would benefit from additional staff at both SCC and PDA to enable more spot checks of nutrient balance sheets and NMPs that might be referenced during application process.

During the interview, PDA noted that they are currently evaluating whether adjustments are needed to the certification process. A regulatory revision is required to adjust to Commercial Manure Hauler and Broker Certification Program.

12.1 Certified Manure Hauler and Broker Universe

As stated in the 2015 report, a person who is employed in the transport or application of manure must hold a valid Manure Hauler Level 1, 2 or 3 certificate issued by PDA. A person who purchases manure and arranges for transport or application of that manure to another agricultural operation or for another use, must hold a valid Manure Broker Level 1 or 2 certificate issued by PDA. Commercial manure haulers or brokers obtain the necessary certification by completing the appropriate training program for the activity level. SCC and PDA contract with Penn State Extension to provide manure hauler and broker certification training two times each year.

According to PDA staff during the interview, the certification process for manure haulers and brokers has remained the same since the 2015 assessment. The total number of active manure hauler and broker certifications declined from the 691 certifications reported in 2015 to 590 certifications reported on the 2022 questionnaire. Hauler Level 2, persons employed and supervised to haul and apply manure, is the only category where the number of certifications increased from 2015 through 2022. The table below compares the total numbers of certifications, by category, that were reported in the 2022 questionnaire response compared to the reported numbers in the 2015 assessment report.

Certification Category	Reported in 2015 Report	Reported in 2022 Questionnaire
Hauler Level 1 (persons transporting manure only)	200	155
Hauler Level 2 (persons employed and supervised to haul and apply manure)	212	230
Hauler Level 3 (persons hauling or applying manure without supervision)	150	90
Broker Level 1 (persons arranging for the transport or application of manure)	73	63
Broker Level 2 (persons arranging for the transport or application of manure and interested in developing nutrient balance sheets)	56	52
Total No. of Certifications	**691**	**590**

Through review of NMPs and import/export agreements, EPA determined that PADEP does not track whether the importer is a CAFO, CAO, and/or VAO with approved NMPs.

12.2 Resources Allocated

According to the questionnaire response, there are three PDA FTEs dedicated to administration and implementation of the Commercial Manure Hauler and Broker Certification program.

Since 2015, the most recent delegation agreement between the SCC and CCDs specified that CCDs will conduct spot check reviews of Act 49 Manure Broker nutrient balance sheets submitted to the CCD as an additional job duty and responsibility. As stated in the questionnaire response, Nutrient and Manure Management Delegated CCDs received an increase of $4,000 per FTE since 2015.

According to PDA during the interview, the program would benefit from additional staff at SCC and PDA to enable more spot checks of nutrient balance sheets and NMPs that might be referenced during application process. In addition to staffing levels, another administrative limitation of the program is the effective collection of manure transport data for tracking, reporting, and verification of the manure transport BMP for implementation towards the WIP goals. Program improvements have been made, but adequate data are still lacking.

12.3 Data Systems

According to the questionnaire response, PDA and SCC maintain a database called "PaPlants" that contains a list of certified manure haulers and brokers. The publicly available database allows agricultural producers to select a PDA certified manure hauler or broker. In addition, the questionnaire response indicates that PDA uses "the program website, and an Access database to track applications and licenses, and to provide information regarding fees, educational courses, program requirements, and for dissemination of information." According to PDA during the interview, PDA uses an internal tracking system to track complaints.

Nutrient balance sheets submitted by brokers are maintained in PracticeKeeper. The CCDs track, record, and review nutrient balance sheets and manure transfer records in PracticeKeeper. Data is entered quarterly.

12.4 Compliance and Enforcement

As stated in the 2015 assessment report, PDA is solely responsible for oversight and enforcement of the Commercial Manure Hauler and Broker Certification Program. PDA compliance and enforcement activities include random recordkeeping spot reviews and complaint driven recordkeeping compliance checks. This oversight is performed to ensure that manure is applied by certified haulers in accordance with an applicable NMP or nutrient balance sheet. However, through review of NMPs and import/export agreements, EPA determined that PADEP does not track whether the importer is a CAFO, CAO, and/or VAO with approved NMPs. Complaints may originate from partner agency investigations, the public, and through educational outreach. Complaint spot checks are the highest priority for PDA, and random recordkeeping spot checks are conducted as time permits. If a person is found to be operating without a Commercial Manure Hauler and Broker Certification, they are told to stop all activity until the applicable requirements are met. PDA notifies CCDs of individuals known to be operating without a license and CCDs, in turn, let PDA know if they become aware of those individuals conducting any hauling or brokering activity.

Manure brokers are required to maintain a copy of the nutrient balance sheet provided to the importing operation and keep a record of the date the nutrient balance sheet was provided to the importing operation, in accordance with Act 49. Recordkeeping templates are available on PDA's website.

As mentioned above, during the interview, PDA noted a recent change in the delegation agreement between the SCC and CCDs. Per the regulations, certified brokers that use or develop nutrient balance sheets in manure transport are required to submit those to CCDs. Pennsylvania has initiated a review process by doing spot checks on recordkeeping. The SCC, at the time of this assessment, has one FTE who does spot checks of the recordkeeping. PDA also asks CCDs to review a portion of the nutrient balance sheets to make sure they meet Act 38 regulations. Pennsylvania is working to ensure nutrient balance sheets are submitted by manure brokers. During the interview, the PDA noted that there is no standard frequency for spot checks of recordkeeping and the hauler or broker is randomly selected for a spot check.

Regarding complaint follow-up, the questionnaire states "PDA/SCC uses standard complaint forms to document complaints that are lodged. If a complaint is received from a commonwealth agency or partner organization, program staff follow up with complainant and address issues with the manure hauler or broker as appropriate. Complaint follow-up is tracked through an internal data collection system and documented on hauler or broker certification records."

Compliance

The table below shows the number of complaint-based spot checks, record-keeping spot checks, and other field-based compliance evaluations conducted each year since 2016 and the number of certified manure haulers and brokers found to be in noncompliance with program requirements during the spot checks and evaluations at certified manure haulers and brokers. In the questionnaire response, PDA/SCC stated that they could not identify the number of certified manure haulers and brokers that resolved the identified noncompliance issues because "PDA/SCC does not identify compliance actions as 'resolved'. However, it should be noted that some manure haulers and brokers in non-compliance have corrected the issues and others could not comply with certain issues because the operator for which the hauler or broker is providing services could not supply a copy of the plan summary or map." Based on the number of certifications, 590 across the five certification categories, the number of compliance evaluations, 78 including reinspections, appears low. EPA is uncertain whether this frequency of compliance evaluations of certified manure haulers and brokers is adequate to determine compliance with program requirements.

SFY	Certified Manure Haulers		Certified Manure Brokers	
	# of Field based compliance evaluations	# in noncompliance	# of Field based compliance evaluations	# in noncompliance
2016-2017	9	5	9	2
2017-2018	20*	7	7	4
2018-2019	17*	5	7*	3
2019-2020	3*	0	6*	1

Source: PDA questionnaire response

*Includes re-inspections

According to the questionnaire, the most common type of noncompliance involves haulers and brokers working without the required licenses, not maintaining copies of plan summaries and maps as required by the program requirements, and incomplete records.

Inspections
PDA and SCC use a checklist during the inspection to determine if the manure broker or hauler has the required records. Inspection activities focus on education and discussion with the hauler or broker on compliance solutions.

Enforcement
According to the questionnaire, in SFY2019-2020, two enforcement actions were taken. One notice or letter of violation was issued to a broker level 1 and one administrative fine was issued to a broker level 1.

12.5 WIP Implementation Goals

As stated in the 2015 report, "The Commercial Manure Hauler and Broker Certification Program does not directly result in activities that count toward any of Pennsylvania's 2025 priority BMP implementation goals. Commercially hauled manure must be applied according to an NMP or MMP, but those documents are maintained by the receiving farm, not the certified manure hauler or broker. The Commonwealth does not track the amount of manure transported under this program." As noted in the questionnaire response and discussed during the interview, through the most recent delegation agreement between the SCC and CCDs, CCDs have been asked to review and comment on Act 49 Manure Broker nutrient balance sheets submitted to the CCD to ensure they meet Act 38 regulations.

One of the strategic areas listed in the Phase III WIP is "Integrated Systems for Elimination of Excess Manure" which is focused on creating integrated (county/regional) programs for transport and/or beneficial use of excess manure. Table 2.6 of the WIP lists the counties that should be the first to document and report manure transport and nutrient management implementation to address excess nutrients. According to the questionnaire response, the Commercial Manure Hauler and Broker Certification Program "does not specifically address manure transport from areas of excess manure. However, the Program supports the proper transport and application of manure from one agricultural operation to another through its education and certification requirements." Improved tracking (including amounts) could better support implementation of the WIP goal.

The full implementation of NMPs and MMPs, and the documentation of manure transport when required through commercial manure haulers and brokers, is an essential component of the Commonwealth's Phase 3 WIP goals towards achieving its TMDL commitments. The Commercial Manure Hauler and Broker Certification Program as currently regulated and administered, appears to limit the Commonwealth's abilities to effectively access and record data to track, report and verify manure transportation as required for BMP reporting and crediting by the CBPO. Enabling commercial haulers and brokers under the certification program to electronically provide documentation of manure transport to State and/or county agencies, or through an independent contracted organization, could facilitate improved access to BMP implementation data.

12.6 Commercial Manure Hauler and Broker Certification Program – Observations

- The total number of active manure hauler and broker certifications declined from the 691 certifications reported in 2015 to 590 certifications reported on the 2022 questionnaire. Hauler Level 2, persons employed and supervised to haul and apply manure, is the only category where the number of certifications increased from 2015 through 2022.
- PDA indicated that staffing levels remain lower than desired, noting that the program would benefit from additional staff at both SCC and PDA to enable more spot checks of nutrient balance sheets and NMPs that might be referenced during application process.
- Since 2015, a change was made to the most recent delegation agreement between the SCC and CCDs which delegated CCDs to conduct spot check reviews of Act 49 Manure Broker nutrient balance sheets submitted to the CCD as an additional job duty and responsibility.
- PDA does not have a standard frequency for spot checks of recordkeeping and the hauler or broker is randomly selected for a spot check.
- Through review of NMPs and import/export agreements, EPA determined that PADEP does not track whether the importer is a CAFO, CAO, and/or VAO with approved NMPs.
- Improved tracking (including amounts) could better support implementation of the WIP goal.
- Based on the number of certifications, 590 across the five certification categories, the 78 compliance evaluations reported on the questionnaire, including reinspections, appears low. EPA is uncertain whether this frequency of compliance evaluations of certified manure haulers and brokers is adequate to determine compliance with program requirements. PDA/SCC stated that they could not identify the number of certified manure haulers and brokers that resolved the identified noncompliance issues because "PDA/SCC does not identify compliance actions as 'resolved'."

13.0 Resource Enhancement and Protection Program

The REAP program's SFY2019 Annual Report describes REAP as "…created by Act 55 of 2007 and amended in 2019 as part of the PA Farm Bill. REAP allows farmers, businesses and landowners to earn state tax credits in exchange for the implementation of conservation BMPs on Pennsylvania farms. These practices protect natural resources, reduce nutrient and sediment pollution in our waterways, and enhance farm production. REAP applicants cover up-front costs of installation of the practice or purchase of eligible equipment. Upon completion of the REAP-eligible project, tax credits are awarded."

REAP is a first-come, first-served program developed to enhance farm production and protect natural resources by reducing nutrient and sediment pollution in Pennsylvania's waterways. REAP provides farmers with tax credits at levels of 50%, 75%, or 90% of costs incurred in the implementation of BMPs that reduce nitrogen, phosphorus, and sediment pollution (PDA 2022). As noted in the SFY2019 REAP Annual Report, agricultural operations located in a watershed with a written TMDL (including the CBW) are eligible for a 90% REAP tax credit for the following conservation BMPs: riparian forested buffers, multi-species cover crops, exclusion of livestock from streams, and soil health tests. Projects eligible for 75% reimbursement include BMPs that reduce pollutant runoff from ACAs; Nutrient/MMPs; and Conservation/Ag E&S Plans (PDA 2022). Projects eligible for 50% reimbursement include no-till planting equipment; precision nutrient application equipment; manure storage structures; cover crops; grazing practices; and forested riparian buffers (PDA 2022).

The SCC administers the program and determines a project's eligibility. REAP eligibility requires the applicant to have an up-to-date Ag E&S Plan that meets the requirements found in Chapter 102.4 of the PA Clean Streams Law and a current NMP (as required by Chapter 83 of the PA Clean Streams Law and Act 38) or MMP (as required by Chapter 91 of the PA Clean Streams Law). The REAP guidelines require the applicant to be on-schedule for full implementation of the plans. The CBAIP annual summary reports that, "since 2007, REAP has approved over 4,300 applications from almost 3,100 operators."

The SCC awards the REAP tax credits on behalf of the Pennsylvania Department of Revenue after a review to determine that the applicant is current on all state tax obligations. According to the questionnaire, to encourage participation in REAP, the SCC has established REAP guidelines and application, develops educational information for CCDs and NRCS consultants, and performs outreach at Pennsylvania Farm Bureau meetings, and CCD events and farmer meetings.

13.1 Eligibility and Requirements

An agricultural operation must comply with the Clean Streams Law to receive REAP tax credits. PADEP's questionnaire response states that compliance with the Clean Streams Law means the "operation must have a current Ag E&S Plan or Conservation Plan that meets the requirements found in Chapter 102.4 of the PA Clean Streams Law for all acres owned/operated by the applicant. The applicant must be on-schedule for full implementation of the plan." If an operation does not have an Ag E&S or Conservation Plan, the operator may submit a REAP application to support their efforts to develop a plan (SCC, 2021b). To be considered up to date, the Ag E&S or Conservation Plan must have the correct number of acres, crop rotations, tillage, and ACAs. The operation must be on-schedule for full implementation of the plan. Lastly, all BMPs to address ACA-related resource concerns must be fully implemented or the costs associated with implementing them must be included in the REAP application.

As described in the REAP 2021-22 Guidelines, the applicant must have a qualified individual verify the information provided in the application regarding the above plans. Individuals qualified to provide this verification include:

- CCD staff with appropriate training and experience in Pennsylvania Clean Streams Law compliance,
- USDA NRCS staff certified in conservation planning or working under the supervision of a certified individual with appropriate training and experience in Pennsylvania Clean Streams Law compliance, or
  Qualified Technical Service Providers certified to write conservation plans, as well as individuals with current certification under Act 38 of 2005.

If the applicant indicates that they have the required plans that meet the requirements in the Pennsylvania Clean Streams Law and that the plans are fully implemented, the individual providing the verification signature is certifying that this is true. If the applicant indicates that they do not have the required plans or that the plans are not fully implemented, the individual providing the verification signature is certifying that this is true "…and that the applicant is applying for cost associated with plan writing; does not need the plans in question; or the applicant's explanations regarding development of plans and timeline of implementation is true." According to staff interviews, CCD verification processes vary and it may be difficult to ensure compliance given the high staff turnover and lack of accountability.

The SCC does not enforce site visits or compliance checks for REAP Eligibility on a routine basis. REAP's Guidelines for program eligibility and eligibility verification are separate from DEP's SOP for CBAIP. SCC Guidelines include the possibility of the SCC not accepting verification signatures from individuals who have been found to be ignoring SCC's eligibility Guidelines when providing REAP verification signatures. A farmer must get a verification signature each time a REAP application is submitted.

13.2 Funding and Resources

The 2019 PA Farm Bill increased REAP program funding to $13 million annually. Additionally, in 2019, the REAP credit cap was increased to $250,000 of REAP tax credits per agricultural operation in a 7-year period. In each program year since 2007, the number of applications for available credits have exceeded the allocation of credits available for that year (SCC, 2021).

REAP's allocation typically funds over 300 eligible applicants per year. As reported in the FY2019 Annual Report, "in FY 2019, the REAP program approved applications from 347 eligible agricultural operations and 71% of available REAP credits were allocated to operations within the CBW. The SCC also reported that the FY 2019 REAP program "generated more than $30.3 million in private investments for the installation of conservation practices and equipment investments. The projects also leveraged an additional $5.2 million in other public funds for a total investment of $37.6 million in the local economy…, an almost 50% increase from FY 2018" (SCC, 2020).
The table below shows the number of animal agriculture operations by region that received REAP funding in SFY2019-2020, as provided in the questionnaire response.

DEP Region	Number of operations that received REAP funding in SFY2019 2020
Southeast	22
South-central	206
Southwest	33
Northeast	20
North-central	74
Northwest	44
PA Total	**280**

The table below lists the BMPs funded through the REAP program in SFY2019-2020 and the percent of $13 million allocated to each project.

BMP	% of 13 million allocation in SFY2019 2020
Field Erosion and Stream BMPs	1%
Plans	2%
Cover Crops	4%
Animal and Manure BMPs (e.g., animal mortality facility, animal trails and walkways, closure of waste impoundments, composting facility, fence, heavy use area protection, manure incineration, poultry/livestock housing vegetative buffers, sediment basin, silage leachate management, stream crossing, waste storage facility, waste transfer, waste treatment, and watering facility)	44%
Conservation Equipment (e.g., composting equipment, cover crop equipment, manure injection equipment, manure separation equipment, no-till planting equipment, and precision nutrient application equipment)	49%

Source: SCC, 2020

According to the questionnaire, one SCC FTE was committed to the REAP program for FY2019, increasing to 1.25 FTEs in FY2020. The draft amended Phase III WIP provides existing and needed agriculture staffing, specifying that an additional one SCC FTE is needed for support for REAP and the Pennsylvania Farm Bill and an additional two SCC FTE are needed for additional support for REAP. Increased FTE may support additional outreach for CCDS to ensure compliance checks for the program are standardized.

13.3 WIP Implementation Goals

The draft amended Phase III WIP includes Actions 2.1.1A, 2.1.2A, and 2.1.3A focused on communication, outreach, and stewardship programs to increase the use of conservation tillage and no-till practices, cover crops, and pasture management. As specified in the *PA Phase 3 WIP 2022-2023 Planning and Progress Milestones* report, state agencies continue to perform outreach to encourage implementation of conservation tillage, no-till practices, cover crops, and pasture management, and inform farmers of funding opportunities. In addition, the REAP program may assist operators implementing these BMPs. As reported in the Milestones report, in 2021, $3.5 million in REAP tax credits were awarded for no-till equipment, $210,500 for cover crops and roller/crimpers, and $110,000 for pasture-related BMPs. In addition, as stated above, through REAP, cover crops are eligible for a 90% tax credit in any area covered by an agricultural TMDL.

As stated in the FY2019 REAP Annual Report, based on estimates from PADEP and using the Chesapeake Bay Program Model, reductions credited to the REAP program for SFY2019 are 447,000 lbs of nitrogen, 22,000 lbs of phosphorus, and 5,600 tons of sediment. As stated above, approximately 72% of REAP tax credits are awarded to applicants in the CBW. Therefore, if properly utilized as intended, implementation of REAP BMPs, including no-till and precision ag equipment, cover crops, and pasture management BMPs can lead to reductions of nutrients and sediment discharges into surface waters in Pennsylvania (SCC, 2020).

13.4 REAP Program – Observations

- REAP provides farmers with tax credits at levels of 50%, 75%, or 90% of costs incurred in the implementation of BMPs that reduce nitrogen, phosphorus, and sediment pollution (PDA, 2022).
    - Through REAP, cover crops are eligible for 90% tax credit in any area covered by an agricultural TMDL. In 2021, $210,500 was awarded in tax credits for cover crops and roller/crimpers through the REAP tax credit program.
    - Projects eligible for 75% reimbursement include BMPs that reduce pollutant runoff from ACAs; Nutrient/MMPs; and Conservation/Ag E&S Plans (PDA, 2022).
    - Projects eligible for 50% reimbursement include no-till planting equipment; precision nutrient application equipment; manure storage structures; cover crops; grazing practices; and forested riparian buffers (PDA, 2022).
- REAP's allocation typically funds over 300 eligible applicants per year. In each program year since 2007, the number of applications for available credits have exceeded the allocation of credits available for that year (SCC, 2020).
- REAP eligibility requires the applicant to have an up-to-date Ag E&S Plan that meets the requirements found in Chapter 102.4 of the PA Clean Streams Law and a current NMP (as required by Chapter 83 of the PA Clean Streams Law and Act 38) or MMP (as required by Chapter 91 of the PA Clean Streams Law). The REAP guidelines require the applicant to be on-schedule for full implementation of the plans.
- 2019 PA Farm Bill increased REAP program funding to $13 million annually. The SCC also reported that the FY 2019 REAP program "generated more than $30.3 million in private investments for the installation of conservation practices and equipment investments. The projects also leveraged an additional $5.2 million in other public funds for a total investment of $37.6 million in the local economy…, an almost 50% increase from FY 2018" (SCC, 2020).

- ***Recommendation:*** Increased FTE may support additional outreach for CCDs to ensure compliance checks for the program are standardized. The Commonwealth should fund one additional SCC FTE to support REAP and the Pennsylvania Farm Bill and two additional SCC FTEs to provide additional REAP support, consistent with staffing recommendation in the draft amended Phase III WIP.

- In 2021, $3.5 million in REAP tax credits were awarded for no-till equipment, $210,500 for cover crops and roller/crimpers, and $110,000 for pasture-related BMPs.
- Pollutant reductions credited to the REAP program for FY 2019 are 447,000 lbs of nitrogen, 22,000 lbs of phosphorus, and 5,600 tons of sediment.
- CCD verification processes vary, and it may be difficult to ensure compliance given the high staff turnover and lack of accountability.
- The SCC does not enforce site visits or compliance checks for REAP eligibility on a routine basis. In addition, REAP's Guidelines for program eligibility and eligibility verification are separate from DEP's SOP for CBAIP.
    - ***Recommendation:*** Develop a REAP SOP to ensure compliance with state laws for eligibility in the program that is consistent with the CBAIP SOP and/or language embedded with the CBAIP inspection SOP to improve program efficacy. A SOP may improve consistency across conservation districts and ensure compliance.

14.0 Growing Greener Plus, Community Clean Water Coordinator, and Countywide Action Plan Implementation Block Grant Programs

PADEP's CBO Watershed Support section administers the Growing Greener Plus grant program, funded through the Environmental Stewardship Fund. The statewide Growing Greener program was reorganized to be within the PADEP CBO in FY2020-2021. Growing Greener is one of PADEP's primary and foundational programs for funding of CCD personnel, technical assistance, and implementation of BMPs. Beginning in FY2019-2020, Growing Greener funded the Community Clean Water Coordinator and CAP Implementation Grants (Block Grants) which were awarded to counties within Pennsylvania's CBW to support implementation of the Phase III WIP (PADEP, 2020) (PADEP, 2022e).

Growing Greener funds a number of project categories including developing or revising watershed assessment and restoration plans, Ag E&S plans, NMPs, or MMPs; education and outreach; projects resulting in the design or construction of watershed restoration and protection projects; non-routine operation, maintenance, and repair/replacement items for existing watershed restoration projects; technical assistance; and evaluation, assessment, and monitoring tools for watershed management (PADEP, 2021b).

The new 2022, Growing Greener Plus Guidance has an increased focus on reinvigorating the Growing Greener Watershed Renaissance Initiative (GGWRI) to support "rapid stream delisting" efforts in Pennsylvania's portion of the Chesapeake Bay watershed, focusing on reducing nutrient and sediment impairments in agriculturally impaired waterways. Also new is a priority to implement projects in support of the Pennsylvania 2021 Climate Action Plan. These projects could include agricultural best management practices (BMPs), stream restoration, bank stabilization to reduce runoff volumes, increase infiltration, and assist in future flood prevention and climate resiliency (PADEP, 2022c)

14.1 Growing Greener

The primary purpose of the Growing Greener program is to restore impaired waters and protect waterways from nonpoint source pollution within the Commonwealth. As stated in the questionnaire response, PADEP released the Growing Greener Plus RFP in SFY2019-2020 and announced awards in December 2020. The Growing Greener Grant Guidance added preference to agricultural BMPs, riparian forest buffers, and the Tier categories (1, 2, 3, and 4) within Pennsylvania's CBW. In SFY2019-2020, PADEP provided $32,725,475 through the Growing Greener Plus program.

Growing Greener funds, the CCD Watershed Specialist Contract, PACD Engineering Assistance Program, CREP Education and Outreach, CREP Annual Mini-Grant Program, and CREP Outreach Resource Clearinghouse, as described in the Commonwealth's questionnaire response and included below.

CCD Watershed Specialist (CDWS) Contracts

The CDWS Program was formed in 2000 and provides contracts to CCDs to employ watershed specialists. The CDWS program provides $45,250 per FTE, and currently 63 of the 66 CCDs are contracted with PADEP through this program. CCD watershed specialists typically work with the CCD agriculture technicians to develop grant applications for landowners. They also provide guidance directly to landowners as it relates to available funding programs.

PACD Engineering Assistance (TAG) Program

The TAG Program is funded through Growing Greener and USDA-NRCS to provide statewide engineering and technical assistance to entities developing or implementing a watershed assessment, watershed restoration plan, or watershed protection plan. Since the program's inception in 2001, it has completed over 1,300 projects (an estimated $60 million) in environmental improvements. Eligible entities, such as watershed organizations, CCDs, non-profit organizations, counties, municipalities or their subdivisions, and educational institutions can submit a request for assistance.

CREP Education and Outreach

The Pennsylvania Game Commission and Pheasants Forever biologists conducted or participated in 17 outreach events, including CREP workshops, tours, and presentations, reaching over 710 participants. An additional 245 landowners were reached through targeted mailings. PGC and PF biologists had 1,312 landowner contacts regarding USDA conservation programs from October 1, 2019 – September 30, 2020.

CREP Annual Mini-Grant Program

The CREP Mini-Grant Program is a function of the CREP Outreach Program Office, which is managed by the PACD through a grant from the PADEP. The mini-grant program provides funds for Pennsylvania's CCDs to implement educational and outreach activities that support and extend the work of PA CREP. Projects focus on enrollment, re-enrollment, and maintenance and have been approved for workshops, walkabouts, one-on-one training on maintenance techniques, and other program topics.

In the 2019-20 program year, mini-grants were awarded to 16 CCDs in the CBW. To date, they have resulted in the following:

- **179** farmers and landowners directly reached
- **98** participants increased their knowledge of CREP
- **103** participants increased their knowledge of CREP maintenance
- **71** participants indicated they will re-enroll in CREP
- **9** participants indicated they plan to enroll
- **17** participants requested further assistance
- **107** one-on-one visits held 8. 5 workshops held
- **2** field days/walkabouts held

CREP Outreach Resource Clearinghouse

The CREP Outreach Resource Clearinghouse is a function of the CREP Outreach Program Office and provides a central location for CREP materials and works to make new and existing materials both accessible and user-friendly (PADEP, 2022a).

14.2 Community Clean Water Coordinator and Countywide Action Plan Implementation Grants (Block Grants)

PADEP developed two "block grant" programs, the Community Clean Water Coordinator Grant and the CAP Implementation Grant, initiated in 2019. These grants are funded out of Growing Greener and are awarded to counties within Pennsylvania's CBW to support implementation of Pennsylvania's Phase III WIP.

As stated in the Phase III WIP, the Phase III WIP Steering Committee grouped Pennsylvania's 43 counties in the CBW into four tiers. Tier 1 counties have the most pollution to reduce, and Tier 4 counties have the least. State agencies, led by PADEP, are working with interested parties in these counties to create CAPs. CAPs are intended to improve local water quality and provide related benefits for those counties. These CAPs will outline how each county's share of the state's 2025 pollution reduction goals will be met. The CAPs include priority goals and initiatives, action steps, identification of responsible parties, and available and needed technical and financial resources (PADEP, 2022a).

The role of Community Clean Water Coordinators is to provide "visionary, adaptive leadership; coordinate targeted watershed planning and implementation efforts; engage, guide, and support partner organizations in aligning their work with the CAP; and identify and/or raise funding needed to sustain and expand the county's efforts to develop and implement the CAP" (PADEP, 2022a). To be eligible for the Community Clean Water Coordinator Grant, counties needed to voluntarily agree to develop a CAP.

The Block Grants Program allows for more flexible funding to increase implementation of high-impact BMPs to meet Phase III WIP goals. Many of the CAP BMPs are built on Phase III WIP priority initiatives, and therefore the focus is primarily on providing technical and financial assistance to agricultural operations to implement annual and structural BMPs. All 26 Tier 3 and Tier 4 counties worked to develop their plans, submitting their final CAPs to PADEP in September 2021. Since initiation, PADEP has provided the following funding:

- **FY2019-2020** – $800,000 toward capacity building through Community Clean Water Coordinators in each of the eight counties; more than $1 million in federal Chesapeake Bay Implementation Grant (CBIG) funds toward CAP Implementation in the four pilot counties.
- **FY2020-2021** – Total of $6 million awarded to the Pilot and Tier 2 counties in Pennsylvania's CBW to implement their CAP priority initiatives.
- **FY2021-2022** – Total of $17.4 million (of which $15 million is Growing Greener and $2.4 million is EPA Chesapeake Bay) awarded to all 34 CBW counties that completed CAPs. Of the awards for CAP Implementation, approximately 89% was approved for agriculture projects.

The PADEP CBO has also developed numerous tools and resources to support the counties in their CAP priorities and identification of funding sources, data management tools and processes, and permitting. These tools include the Community Clean Water Planning Guide and customized Planning Toolboxes for each county as well as Community Clean Water Implementation Guides (PADEP, 2022a).

14.3 Data Tracking

Grant recipients must verify BMPs and report to PADEP once every five years "or as stipulated in the contract documents to satisfy federally approved verification and reporting protocols for specified BMPs constructed in the Chesapeake Bay watershed" (PADEP, 2022a). PADEP currently does not conduct onsite verification for every Growing Greener project funded. However, grantees may continue to verify BMPs after the agreement term has ended. CCDs verifying BMPs would abide by the SOPs and guidance provided to them through the CBAIP / Chesapeake Bay Technician and Chesapeake Bay Engineer framework (PADEP, 2022a).

Agricultural inspections, plans, and BMPs are documented and reported through PracticeKeeper. The Growing Greener Plus grant programs are planned to be added to PracticeKeeper in 2022 (PADEP, 2022a).

14.4 Funding and Resources

Preference of funding will be given to projects proposing to continue countywide or watershed-based plan implementation. PADEP intends to award up to 50% of available funds to address nutrient and sediment nonpoint source pollution within the CBW. This funding would be directed toward design and permitting projects for Adams, Bedford, Centre, Cumberland, Franklin, Lancaster, Lebanon, and York counties and design, permitting, and construction projects for the other Chesapeake Bay counties. Growing Greener grant funds also will support BMP implementation and planning support for MS4 and agricultural areas; flooding restoration/prevention projects/plans; and other types of PADEP priority projects as listed above. The funds will also be used to support nutrient and sediment control BMPs statewide (PADEP, 2021b).

PADEP does not track the number of animal agricultural operations in receipt of funding. However, the awards announced in December 2020 focused on agricultural BMP implementation and agricultural education and outreach programs, totaling $10.27 million. Projects receiving funds included forested riparian buffers, animal waste management systems and animal heavy use area protection, soil health practices, equine farm BMPs, and Ag E&S and MMP planning programs. In addition, PADEP awarded PACD more than $1.5 million for the statewide CREP Mini-Grant program during this program year.

As stated in the questionnaire response, during FY2019-2020, PADEP had approximately 6.5 FTE focused on the Growing Greener Plus program and also hired three staff to provide support to the Coordinator and CAP Implementation Block Grant Program. In FY2021-2022, PADEP CBO hired two additional staff to assist with Growing Greener Plus and CAP support. PADEP also stated that "local capacity as well as state agency staff capacity to apply for, administer, manage, and oversee the program is limited" and presents a challenge for program implementation.

SB525[12] and HB2020[13] legislation, the enabling legislation for Growing Greener III, would provide the necessary authority for administrative agencies to fund many of the various projects and program needs identified since the conclusion of Growing Greener II. Funding will come from an infusion of $500 million appropriated from the recently adopted federal American Rescue Plan Act of 2021. DCNR is slated to

[12] https://www.legis.state.pa.us/cfdocs/billinfo/BillInfo.cfm?syear=2021&sind=0&body=S&type=B&bn=525
[13] https://www.legis.state.pa.us/cfdocs/billInfo/billInfo.cfm?sYear=2021&sInd=0&body=H&type=B&bn=2020

receive 45%, DEP may receive 40%, and PDA may receive 15%. Funding would go towards restoring streams and waterways and protecting farmland as well as local parks and trail projects, conserving open space, restoring abandoned mine land, and helping reduce flooding and water pollution through watershed protection projects and drinking and wastewater treatment improvements. Both pieces of legislation have been referred to the Environmental Resources and Energy Committees as of December 10th, 2022, and February 3rd, 2022, respectively. The budget is due June 30th, 2022 (Swanson, 2022).

14.5 WIP Implementation Goals

The Growing Greener program funds several BMPs selected by EPA for evaluation in this assessment, including Animal Waste Management Systems, Forest Buffers, Nutrient Management, Cover Crops, Soil Conservation and Water Quality Plans, and Tillage Management. Funding of additional BMPs through Growing Greener program could contribute to nutrient and sediment load reductions to the Chesapeake Bay.

The Growing Greener program also funds a number of other BMPs, listed in Section B.10.2.3 of Pennsylvania's Chesapeake Bay QAPP, as well as the following CREP BMPs: introduced grasses and legume planting, native grass planting, hardwood tree planting, permanent wildlife habitat, grassed waterways, shallow water areas for wildlife, vegetative cover already established (grass), wildlife food plots, contour grass buffer strips, filter strips, riparian forest buffers (with or without fencing), wetland restoration, marginal pastureland wildlife habitat buffer, marginal pastureland wetland buffer, and habitat buffer for upland birds.

Expected changes to project tracking are to occur beginning in FY2021-2022, with the use of revised project reporting forms and input of completed projects into the PracticeKeeper centralized geodatabase. Through tracking and recording of additional BMPs implemented through the Growing Greener Plus Program, including Ag E&S plans, NMPs, MMPs, the Commonwealth may receive additional credit for BMP implementation and reduction of nutrient and sediment loading.

EPA's evaluation of the draft amended Phase III WIP listed the following strengths of the Growing Greener, Community Clean Water Coordinator, and CAP Implementation Block Grant Programs:

- Investment of resources in technical support and analysis of local water quality issues to support CAP development and implementation.
- Supported the development and implementation of CAPs to provide local reduction targets.

14.6 Growing Greener Plus, Community Clean Water Coordinator, and CAP Implementation Block Grant Programs – Observations

- The Growing Greener program funds several BMPs selected by EPA for evaluation in this assessment, including Animal Waste Management Systems, Forest Buffers, Nutrient Management, Cover Crops, Soil Conservation and Water Quality Plans, and Tillage Management.
- Additional BMPs implemented through the Growing Greener Plus Program, including Ag E&S plans, NMPs, MMPs will increase BMP implementation and reduction of nutrient and sediment loading.

- According to PADEP, “local capacity as well as state agency staff capacity to apply for, administer, manage, and oversee the program is limited” and presents a challenge for program implementation.
- PADEP anticipates changes to project tracking in FY2021-2022, including revised project reporting forms and input of completed projects into the PracticeKeeper geodatabase. Tracking and recording of additional BMPs implemented through the Growing Greener Plus Program, including Ag E&S plans, NMPs, MMPs, may result in additional credit for BMP implementation and reduction of nutrient and sediment loading.
- There is a need and demand for additional funding through the state programs in order to meet WIP commitments.

15.0 Pennsylvania Agriculture Conservation Stewardship Program

The Pennsylvania Agriculture Conservation Stewardship Program (PACS) is a voluntary program developed by PDA, PADEP, and SCC after the 2015 assessment. The PACS program is a "voluntary program designed to recognize and provide certain benefits to Pennsylvania farmers who step forward to document their environmental stewardship. The program focuses on ensuring farmers meet Pennsylvania environmental regulatory compliance (soil conservation and manure management) along with the utilization of practices that demonstrate the farmer's conservation stewardship addressing all resource concerns on the farm" (PADEP, 2021e).

The PACS program will recognize the following BMPs selected by EPA for this evaluation: animal waste management systems, forest buffers, nutrient management, and soil conservation and water quality plans. In addition, the PACS program will recognize manure treatment technologies, prescribed grazing, barnyard runoff controls and loafing lot management, and grassed buffers (with and without stream fencing) (PADEP, 2022a).

To be eligible for PACS program participation, farmers must be fully implementing their required Ag E&S plan or Soil and Water Conservation Plan, as applicable, and their MMP or NMP, as applicable, as well as all recommended Phase III WIP practices applicable to their operations. Documenting eligibility status is a four-step process.

1. The farmer contacts a third-party verifier to perform an initial farm assessment. Third -party verifiers are private sector agricultural consultants and other agriculture industry professionals certified under PDA's Nutrient Management Specialist Certification Program and trained in PACS program requirements.

2. The third-party verifier and the farmer complete the application/verification form. The form summarizes implementation of the farm's Ag E&S plan or conservation plan, as applicable, and their MMP or NMP, as applicable. DEP's questionnaire response envisions requiring participating farms to demonstrate environmental stewardship above the regulatory requirements when submitting applications for renewal.

3. The farmer submits the application/verification form to the participating CCD.

4. The CCD or authorized entity (authorized by the SCC in counties where the CCD does not participate in the program) reviews the application for PACS program eligibility based on SCC application review guidance. The review process verifies the farm has no SCC, PDA or open compliance issues with the farm prior to approving program participation. The CCD or authorized entity follow up with the farmer or the verifier to confirm any questions related to the application (PADEP, 2021e).

Initial PACS program approval will be valid for five years after which a renewal application is required for continued participation. Throughout the five-year program approval, the farmer will be required to submit an annual self-certification form to the CCD. If the annual self-certification form indicates any updates to the form, the CCD will update the program database as needed. If necessary, a new application would be required for any significant changes to the operation, including adding additional acreage to the operation (DEP, 2021e).

In FY 2018-19 PDA, in cooperation with a stakeholder workgroup, developed draft criteria for this program and piloted the concept on a very limited number of farms. Program development was interrupted by COVID restrictions FY 2019-20 and FY 2020-21. Based on the outcome of this pilot, the PACS Program criteria and guidelines will be revised and updated to reflect current operational conditions.

The Pennsylvania in the Balance Conference[14] was a transformative meeting with agricultural stakeholders that resulted in consensus on several themes and priority initiatives to achieve the Commonwealth's agricultural pollution reduction goals for the Chesapeake Bay TMDL. One of the themes was to "Embrace a Culture of Stewardship" and advance programs to recognize and reward farmers meeting high conservation standards that go beyond regulatory compliance. The Pennsylvania Agricultural Conservation Assistance program envisioned in 2016 has yet to be formally approved as part of the state FY22-23 state budget.

15.1 Inspections and Data Tracking

PADEP reports the CCDs supporting the PACS program will inspect at least 10% of the farms submitting PACS applications. PACS inspections can be counted toward the CCD's CBAIP inspection goal if:

- the farm has not been previously accounted for in the CBAIP,
- the farm is not a CAO or CAFO with an approved NMP, and
- the inspection is performed consistent with the with the CBAIP SOP (No. BCW-INSP-018), which includes completion of the required inspection report, recordkeeping, and compliance follow up.

The number of PACS-related on-farm inspections conducted by the CCDs was not available because the program is still conceptual.

Farms accepted into the PACS program will be recorded in a PACS program tracking database. DEP's questionnaire response indicates that, beginning in 2022, BMP verification efforts will tie in to the PACS program.

15.2 Funding and Resources

Full implementation on funding sources and amounts, and FTEs committed to PACS program implementation were not available. Starting in FY2018 through FY2021, EPA provided $115,900 through its Multipurpose Grant Program to the Pennsylvania SCC to support a staff position for program development and implementation. One challenge to program implementation, noted in the questionnaire response, was a delay in hiring of the temporary wage position necessary to implement the PACS program, which was due to operational and financial constraints related to state and federal COVID 19 restrictions (Multipurpose Grant Progress Report, March 2021). Proper training and potentially certification of staff is also important for accurately identifying and verifying BMPs.

[14] https://files.dep.state.pa.us/Water/ChesapeakeBayOffice/Ag%20page/(2)%20PA%20in%20the%20Balance%20Full%20Report.pdf

15.3 WIP Implementation Goals

The PACS program supports the Phase III WIP agriculture sector commitments as a non-regulatory, incentives program and through BMP verification. The program requires that agricultural producers meet required state erosion and sediment and manure management standards. Therefore, participation of farmers in the PACS program has the potential to increase the implementation of Ag E&S plans and MMPs, and the tracking of required plans and BMPs may increase the nutrient and sediment reduction credits reported. However, more information is needed regarding next steps for launching a successful program.

15.4 Pennsylvania Agriculture Conservation Stewardship Program – Observations

- The PACS program, envisioned by a group of agricultural stakeholders at the 2016 Pennsylvania in the Balance Conference, was included in Pennsylvania's Phase III WIP as a new program in 2019, but has yet to be finalized and formally launched. Key components of the program have not been finalized including application forms, checklists for application reviews, Standard Operating Procedures for on-farm verification of applicants, training programs for farm reviewers, and a recognition program that provides incentives for farmers to participate.
    - ***Recommendation:*** *Pennsylvania should accelerate program development to finalize the program and consider training 3rd parties to support implementation of the program.*
- Despite EPA funding for program development and implementation in FY2018-2021, the work was delayed due to a delay in hiring of the temporary wage position, which was due to operational and financial constraints related to state and federal COVID 19 restrictions.
- The PACS program has the potential to increase the implementation of Ag E&S plans and MMPs and provide another opportunity for Pennsylvania to accelerate and verify BMP implementation in the CBW. The Commonwealth will, however, need to implement an effective quality assurance/quality control program to ensure that BMPs verified by third parties under the PACS program are not double counted with BMPs verified through DEP and CCD inspections.
    - ***Recommendation:*** *PDA and SCC should ensure that a quality assurance/quality control program is in place and that staff performing BMP verification are properly trained to accurately identify and verify BMPs.*
- PACS program administration, application review, and other PACS-related activities may utilize CCD resources currently allocated to the Nutrient Management Program, CBAIP Phase 1 and 2 inspections, Ag E&S Control Program inspections, responding to MMP-related complaints, reviewing manure nutrient balance sheets resubmitted under the Commercial Manure Hauler and Broker Certification Program, and other responsibilities under Chapter 83 of the Pennsylvania Clean Streams Law and Act 38.
    - ***Recommendation:*** *PDA and SCC should ensure that a quality assurance/quality control program consider additional staffing to ensure successful implementation of the PACS Program.*

16.0 Agriculture Plan Reimbursement Program

The Agriculture Plan Reimbursement Program ended on June 30, 2021. However, from 2017-2021, the program provided almost $2.4 million to farmers across Pennsylvania's portion of the CBW to cost share their NMPs, MMPs, and Ag E&S Plans (PADEP, 2022b).

As stated in the questionnaire response, two consultants (Team Ag and Larson Design) were contracted through a competitive bid process to manage the Ag Plan Reimbursement Program and review plans submitted for reimbursement to ensure the plans are administratively complete. However, due to no further extensions allowed on the contracts with these consultants, this program ended.

In 2021, PADEP awarded a Growing Greener grant of $500,000 to the Pennsylvania Association of Conservation Districts for "PACD Agriculture Plan Reimbursement Program" to help farmers statewide develop agricultural plans for their operations. In the questionnaire response to this update, PADEP specified that this awarded project will be like PADEP's former Agriculture Plan Reimbursement Program. Based on this description, it is assumed that these Growing Greener funds will be used to develop or revise Ag E&S Plans, NMPs, or MMPs and NRCS level Conservation Plans.

16.1 Facility Universe

According to the questionnaire response, a total of 268 farmers applied for reimbursement in SFY2019-2020. Of those that applied, 214 NMPs, 145 MMPs, and 370 Ag E&S Plans were submitted for review. The table below identifies the number of plans developed and reimbursed since program inception; plan-type was not readily available. PADEP noted that "as more plans are entered into the PracticeKeeper database, this information will become available."

Year	Number of Plans	Number of Acres Covered	Total Reimbursement ($)
SFY2017	750	180,000	$768,550
SFY2018	950	150,000	$576,793
SFY2019	697	88,450	$501,755
SFY2020	825	96,333	$549,459
Total (SFY2017-2020)	**3,222**	**514,783**	**$2,396,557**

16.2 Resources Allocated

During the life of the program one PADEP staff member (approximately 0.25 FTE) supported the contractors who administered the program.

In 2021, PADEP awarded a Growing Greener grant of $500,000 to the Pennsylvania Association of Conservation Districts for "PACD Agriculture Plan Reimbursement Program"; however, the certainty of program funding in future years is not clear.

16.3 WIP Implementation Goals

PADEP's Agricultural Plan Reimbursement Program provided cost-share funding to farmers across Pennsylvania's portion of the Bay watershed for developing of NMPs, MMPs, and Ag E&S Plans. As mentioned in the respective program sections, these plans include BMPs selected by EPA for evaluation

in this assessment. More than 3,200 plans covering almost 515,000 acres were cost-shared through this Agriculture Plan Reimbursement Program (PADEP, 2022b).

EPA's Evaluation of Pennsylvania's Draft Amended Phase III WIP (dated 4/18/2022) identified expected enhancements and recommended actions to be included in the final amended WIP, including details on why PADEP's successful Agriculture Plan Reimbursement Program was allowed to sunset and was not renewed.

16.4 Agriculture Plan Reimbursement Program – Observations

- The Agriculture Plan Reimbursement Program ended on June 30, 2021.
    - From 2017-2021, the program was very popular with farmers and provided almost $2.4 million to farmers across Pennsylvania's portion of the Bay watershed to cost share developing their NMPs, MMPs, and Ag E&S plans. There is no longer funding available for this program.
    - More than 3,200 plans were developed covering almost 515,000 acres that were cost-shared through the Agriculture Plan Reimbursement Program.
- In 2021, PADEP awarded a Growing Greener grant of $500,000 to the Pennsylvania Association of Conservation Districts for "PACD Agriculture Plan Reimbursement Program" to help farmers statewide develop agricultural plans for their operations. In the questionnaire response to this update, PADEP specified that this awarded project will be like PADEP's former Agriculture Plan Reimbursement Program. Based on this description, it is assumed that these Growing Greener funds will be used to develop or revise Ag E&S plans, NMPs, or MMPs**.**
    - ***Recommendation:*** To determine whether the 2021 Growing Greener grant is a substitute for the Agriculture Plan Reimbursement Program, PADEP should estimate projected demand for the plan reimbursement and the level of funding needed annually to meet that demand. PADEP plans to document successes and challenges of this program and should document progress of these program assessments in their workplans.

17.0 Conservation Excellence Grant (CEG) Program

The SCC, in partnership with CCDs, administers the CEG program (PADEP, 2022a). The CEG Program, which allocates funding for CCDs, was authorized under Pennsylvania Act 39 of 2019 and provides financial and technical assistance to farms in priority locations (beginning in Chesapeake Bay Phase III WIP Tier 1 counties, expanding to Tier 2 and 3 counties, and then to all other counties) within the Commonwealth to install agricultural BMPs required for compliance with Pennsylvania's laws and to meet the descriptions provided in the Phase III WIP through grants, loans, and tax credits, or a combination of the three.

In May 2020, the SCC published the Standards and Requirements for the Conservation Excellence Grant Program. As the guidelines describe, the application must include verification that an Ag E&S plan, conservation plan, MMP, or NMP has been developed and is available. The program prioritizes applications for implementation of priority practices from NMPs and MMPs, conservation plans or Ag E&S plans, including cover crops, manure storage facilities, livestock exclusion fencing, stream-side buffers, streambank restoration, barnyard and feedlot runoff abatement, stream crossings, and off-stream watering. Delegated CCDs review and approve applications based upon the criteria established in the guidelines, at a minimum, on a quarterly basis.

BMPs in projects receiving funding must be maintained and managed for the life span of the practice. Life spans are established by the SCC and can be found in the CEG/REAP BMP list. If the BMP is not maintained for the required period, the grantee may be required to return a portion or full amount of what was originally granted. As of January 14, 2022, the SCC has conducted six site visits to assess CEG projects. Projects are tracked using the CEG module in the PracticeKeeper Database.

17.1 Resources Allocated

As of August 2021, since program inception, the SCC had awarded $8.8 million to CCDs for CEG program administration and grants for eligible projects. As of March 2022, the CCDs had awarded a total of $5.108 million to conservation projects in priority counties. As of March 2022, CCDs had distributed $1.171 million in payments to farmers for completing BMPs that were part of an Ag E&S plan, conservation plan, NMP, or MMP. The number and type of projects awarded during FR2021-2022 has been provided in the final amended Phase 3 WIP .

CEG funding amounts allocated to Chesapeake Bay CCDs and practices funded since FY2019 are provided below, where available.

FY2019-2020

- In SFY2019-2020, $2.5 million in CEG was allocated to both Tier 1 counties: Lancaster and York Counties.

FY2020-2021

- In SFY2020-2021, $2.0 million in CEG was allocated to Bedford, Centre, and Lancaster Counties.
- In FY2020-2021 (the first year of program implementation), 51 applications were approved. Of the approved projects, Lancaster CCD approved three projects, including grassed waterway, diversion, and roofed manure stacking/heavy use area, and York CCD approved five projects, including grassed waterway, and cover crops (EPA Multipurpose Grant Progress Report, March 2021). Of these funded projects, 13 of them also received REAP funding.

- Between July 2020 (started accepting applications) and September 2021, the Lancaster CCD awarded 27 CEG grants totaling $1,252,434.15. The York CCD awarded nine CEG grants totaling $49,247.50.
- SCC expanded CEG to additional Tier 2 counties in the first quarter of 2021.

FY2021-2022

- In FY2021-2022, Lebanon County was added to include all Tier 1 and Tier 2 counties into the CEG program.
- In SFY2021-2022, $2.0 million in CEG was awarded to Bedford, Centre, Cumberland, Franklin, Lancaster, and Lebanon Counties.
    - Between January 2021 (started accepting applications) and September 2021, the Cumberland CCD awarded four CEG grants totaling $427,000. The Franklin CCD awarded 19 CEG grants totaling $949,640.04.
    - Between March 2021 (started accepting applications) and September 2021, the Bedford CCD awarded 1 CEG grant totaling $250,000. The Centre CCD awarded 5 CEG grants totaling $735,000.

Nearly 400 acres of cover crops were planted in Fall 2021 utilizing $13,109 of CEG funds.

Program accomplishments:

Between January 1 – December 31st, 2020, SCC accomplished the following:

- Hired and trained SCC staff position (pre-COVID restrictions) to provide technical and administrative assistance for CEG.
- Conducted CEG program development calls with Tier 1 pilot CDs every two weeks.
- Held topic specific conference calls to develop individual program components (e.g. ranking criteria, application documents, cover crop requirements, etc.) as needed.
- Conducted a webinar on July 7th, 2020, in cooperation with York and Lancaster CDs to introduce CEG Program details and concepts to approximately 60 individuals.
- Conducted monthly program development and coordination calls with all CEG participating counties.
- Held topic specific conference calls held for Tier 2 counties to develop individual program components (e.g. ranking criteria, application documents, cover crop requirements, etc.) as needed.
- Provided one-on-one training and assistance to Cumberland and Franklin Counties, to help them prepare for a program kickoff in the first quarter of 2021
- Commission staff presented CEG Program information on numerous webinars, conference calls and web-based meetings. (Source: EPA MPG Grant Progress Report)

The questionnaire responses did not indicate that there has been any additional outreach to landowners.

The hiring of the temporary wage/management staff position under this MPG work plan was delayed by the statewide order to freeze all hiring due to COVID -19 uncertainties. This included all regular positions approved to be filled (There was 1 approved position to be filled) and all other positions (e.g. temporary

wage). There is a process to seek approval of "necessary and critical positions" and the Commission is seeking to fill the position included in this MPG through that process. The Commission continues to work on the MPG deliverables through existing staff positions, with an initial focus on CEG related activities. (Source: EPA MPG Grant Progress Report 3-31- 21). Lasty, PADEP identified issues related to construction (increased costs over estimates) as well as available technical assistance are concerns.

17.2 WIP Implementation Goals

- **Phase III WIP Action # 2.2.1(i): Incentivize implementation of Agriculture BMPs that comprise 60% and/or 10-fold increase of the nitrogen reductions through complementary local, state, federal, non-profit and private funding programs.** As reported in the Pennsylvania Phase III WIP 2022-2023 Planning and Progress Milestones report, in 2021, the SCC had delegation agreements with seven CCDs for CEG program implementation, including the following Tier 1 counties: Lancaster and York; and the following Tier 2 counties: Cumberland, Franklin, Bedford, Centre, and Lebanon. The Pennsylvania Phase III WIP 2022-2023 Planning and Progress Milestones report provides updates on CEG awards, included in Section 7.1 above.

As stated above, priority is given for implementation of practices which include all of the BMPs selected by EPA for evaluation in this assessment. Priority practices for CEG funding include NMPs and MMPs, conservation plans or Ag E&S plans, cover crops, manure storage facilities, and stream-side buffers. Funding of these priority practices can allow Pennsylvania to make progress towards its water quality goals, particularly in the CBW. As stated in the questionnaire, flexible allocation-based funding in water quality improvement projects is effectively moving forward Pennsylvania's water quality goals, particularly in the Chesapeake Bay Watershed.

In its Evaluation of Pennsylvania's Draft Amended Phase III WIP (published April 18, 2022), EPA recognized initiation of implementation of the CEG program as a strength. However, EPA also requested additional details on the results of the CEG program and plans to accelerate implementation in order to enhance the final amended WIP.

17.3 CEG Program – Observations

- CCDs had awarded a total of $5.108 million to conservation projects in priority counties as of March 2022. Furthermore, CCDs had processed $1.171 million in payments to farmers for completing BMPs that were part of an Ag E&S plan, conservation plan, NMP, or MMP.
- By the end of 2021, the SCC had delegation agreements with seven CCDs for CEG program implementation, including Tier 1: Lancaster and York counties; and Tier 2: Cumberland, Franklin, Bedford, Centre, and Lebanon counties.
- Priority is given for implementation of practices which include all the BMPs selected by EPA for evaluation in this assessment. Priority practices for CEG funding include NMPs and MMPs, conservation plans or Ag E&S plans, cover crops, manure storage facilities, and stream-side buffers. Funding of these priority practices can allow Pennsylvania to make progress towards its water quality goals, particularly in the CBW.

- The hiring of the temporary wage/management staff position under this MPG work plan was delayed by the statewide order to freeze all hiring due to COVID -19 uncertainties.

18.0 Pennsylvania Infrastructure Investment Authority (PENNVEST)

PADEP and PENNVEST partner to implement funding and installation of BMPs through multiple funding programs. PADEP performs technical review of the application, BMP verification, and inspections. PENNVEST typically performs the outreach, reviews applications, approves applications, provides funding, assists the applicant through the process, and collects repayment of any loan component of the funding agreement (PADEP, 2022a). PENNVEST staff attend conferences to publicize funding opportunities and conduct regular one-on-one outreach to landowners, local governments, engineers, and others interested in project funding or assistance.

PENNVEST provides funding as loans, grants, or a loan/grant combination. Eligible agricultural BMPs include manure storage facilities, lagoons, riparian buffers, barnyard runoff reduction, as well as other practices that have a water quality-related benefit. According to the questionnaire response, PENNVEST has funded every project that is technically and administrative ready to go since 2015 in the CWSRF program and intends to continue to do so.

PENNVEST is currently administering a Small Project Initiative where applicants can request up to $500,000 for projects not exceeding $1,000,000. The PENNVEST Board allocated $15 million towards this initiative. The reviews and approvals are performed at the staff level, expediting access to funding, with a goal of a two-week turnaround time for qualifying projects that are technically and administratively ready to go (PADEP, 2022a). The Small Project Initiative's fast turnaround time may incentivize producer participation in PENNVEST programs. The goal of the Small Project Initiative is to provide a funding offer to the applicant within 2 weeks.

As stated in the questionnaire response, PENNVEST also funds a pilot program titled the Center for Water Quality Excellence (Center, https://www.cwqe.org/). The Center is a resource for farmers, landowners, municipalities, conservation districts, and businesses to determine the best technical and financial assistance available to develop and implement BMPs and other nonpoint source pollution prevention projects to reduce nitrogen, phosphorus, and sediment discharges into the Commonwealth's waterways. The pilot program was initially targeted for 2021-2022 in Lancaster and York Counties and focuses on water quality benefits through agricultural BMPs and MS4 improvements. The Center launched its virtual platform July 2021 and opened a physical storefront in Lancaster County in September 2021 to assist landowners with their nonpoint source needs (PADEP, 2022a).

Projects receiving PENNVEST funding undergo interim and final inspections by PADEP. The frequency of interim inspections is based on the type and complexity of the project. The final inspection is completed to confirm and certify that the project was built in accordance with plans and specifications before a project is closed out and the final payment is made (PADEP, 2022a).

18.1 Resources Allocated

PENNVEST uses a proposed budget of $10 million per fiscal year in nonpoint source funding, including agriculture projects, with the ability to increase funding should demand increase. In SFY2019-2020, nine applications were received and eight of those projects were approved; seven of the approved projects were in the CBW. The projects included animal waste storage facilities, streambank fencing, heavy use areas, grassed waterways, roof gutters, and stormwater controls.

PENNVEST currently has five FTEs/project specialists working on all water quality projects, including agricultural BMPs. PADEP has one FTE dedicated to PENNVEST nonpoint source project management (PADEP, 2022a). PENNVEST works closely with agriculture consultants, TeamAg, to provide outreach to producers.

18.2 WIP Implementation Goals

PENNVEST funds eligible agricultural BMPs, including manure storage facilities, lagoons, riparian buffers, and barnyard runoff reduction. Since 2015, PENNVEST has funded every CWSRF project that is technically and administratively ready, and therefore PENNVEST could be used as a reliable source of funding for eligible agricultural practices needed to achieve the nutrient and sediment reductions expected from the Phase III WIP to meet Pennsylvania's 2025 commitments for the agriculture sector.

As stated in the questionnaire response, one challenge PENNVEST faces is that some operations are not willing to accept a low interest loan to implement BMPs. "To date the agriculture BMP projects that have moved forward with PENNVEST funding have been primarily grant funded. Smaller size projects (less than $100,000) are typically financed by an operation's existing bank or through other grant funded programs…PENNVEST is working to partner with local banks to implement a Link Deposit Program for implementing BMPs. PENNVEST will provide funding through certificates of deposit with local banks. The local banks then loan funds to the landowners at a subsidized low interest rate to incentivize implementation of BMPs. Additionally, PENNVEST is working with local governments and planning agencies to implement a sub state revolving fund lending program that would reduce levels of complexity and 'red tape' through local implementation utilizing seed money from PENNVEST to focus on local water quality priorities."

PENNVEST has been successful in partnering with Chester CCD as a municipal sponsor, with support from TeamAg who performs the survey, design, and quality assurance throughout the project. In one project on an Amish dairy farm, the landowner received $363,000 in funds to improve concrete manure storage structures, streambank fencing, stream crossing, and barnyard roof runoff controls.

These additional avenues for getting funding to agricultural operations could result in more projects being implemented and increased nutrient and sediment reductions. It does not appear that PENNVEST programs actively prioritize funding for BMPs based on alignment with Phase III WIP agriculture sector commitments. Such prioritization may not be necessary if sufficient funding is available for all applicants; however, there may be opportunities for PENNVEST to review projects and consult with applicants to ensure that funded projects are helping to achieve the Phase III WIP agriculture sector commitments where appropriate.

18.3 PENNVEST – Observations

- PENNVEST appears to have sufficient funds available through CWSRF to be a reliable source of low-cost loans for eligible agricultural practices needed to achieve the state WIP BMP targets and water quality goals.
- PENNVEST is working on solutions to address reluctance on the part of agriculture operators to use low-cost loans to pay for BMP implementation. These additional avenues for getting funding to agricultural operations, such as partnering with local banks, could result in additional projects being implemented and increased nutrient and sediment reductions.
- PENNVEST may be able to facilitate achievement of Phase III WIP agriculture sector commitments through project review and consultation with applicants to ensure that funded projects include WIP BMPs where appropriate.
- The Center launched its virtual platform July 2021 and opened a physical storefront in Lancaster County in September 2021 to assist landowners with their nonpoint source needs.
    - ***Recommendation:*** *PADEP and PENNVEST should evaluate the success of the pilot program and based on that success, consider expanding the program to additional counties.*

19.0 Other BMP Funding Programs

19.1 Nonpoint Source Management Program

PADEP implements Pennsylvania's Nonpoint Source Management Program as authorized by section 319 of the Clean Water Act (CWA). Under the CWA Section 319 program, EPA provides funds to states to address all types of nonpoint source pollution, including pollution resulting from livestock and poultry production activities. A portion of the funds provided to each state may be used for program implementation, including staffing, monitoring, and outreach. Most of the funds, however, are issued as grants for implementation of nonpoint source BMPs. These grants may be issued for projects in watersheds with implementation plans[15] that meet EPA's watershed planning criteria. Several of the state staff who participated in the interviews for this assessment report update stressed the importance of CWA Section 319 funding for implementation of BMPs to control pollutants from animal agriculture operations.

In 2021, EPA Region 3 evaluated PADEP's Nonpoint Source Management Program and generated a report summarizing the current state of the program and providing recommendations to help program staff achieve programmatic and water quality goals (Tetra Tech, Inc. 2021). While the identified program strengths and challenges do not relate directly to implementation of BMPs to address animal agriculture, the general findings and recommendations about program implementation are relevant given the program's stated significance as a source of funding for animal agriculture BMPs.

The report identified several strengths, including programmatic improvements that will help PADEP expand the potential reach of project funding and streamline the application process. The report also highlighted the PADEP's creative deployment of qualified staff to address staffing shortages in the Nonpoint Source Management Program as well as collaboration with nonpoint source partners to advance program implementation. Finally, the report identified nonpoint source load reductions leading to water quality improvements and delisting as evidence of the strength of the Nonpoint Source Management Program.

The report also identified several critical challenges, including resource gaps and staffing shortages that hamper effective administration of CWA Section 319 implementation grants. According to the evaluation report, "staffing-related issues are the most significant in terms of impact to the efficiency and effectiveness of the PADEP NPS Management Program." Issues included insufficient and inconsistent staffing levels, loss of experienced staff and institutional knowledge, and insufficient training opportunities and reference resources for new program staff. In addition to staffing issues, the report stated that too few grant applications are received some years which results in less impactful projects receiving funding or even in unutilized grant funds. The report also identified several factors contributing to insufficient grant applications, including patterns of repeat awards to WIP sponsors, funding eligibility for projects in watersheds lacking an approved implementation plan, and landowner unwillingness to participate, as well as inefficiencies in program workflow processes that may discourage participation. Significantly, the report recommends better utilization of existing staff resources dedicated to program outreach as well as improved communication with nonpoint source

[15] These WIPs are developed at the local or subwatershed (e.g., HUC12) level; the Phase III WIP covering Pennsylvania's portion of the Chesapeake Bay watershed is not a qualifying plan for CWA Section 319 funding.

partners on the importance of reaching a broad range of CWA Section 319 grant applications to improve the quantity and quality of projects receiving funding.

This animal agriculture program assessment update did not focus on gathering FY2021 data to evaluate whether the nonpoint source program evaluation recommendations are being implemented. However, this update reiterates the recommendations of that evaluation report, including the need to conduct follow-on assessments of the efficacy of recently-implemented program changes. Examples of changes since the evaluation report include, hiring of additional staff to support the NPS Management Program, developing web-based training modules and virtual outreach to 319 project sponsors (to work toward better utilization of the program and better / more consistent WIPs and applications), and utilizing FY19 funds toward enhancing our reporting structure to better track and report Section 319 funded projects. In addition, the Advanced Restoration Plan (ARP) standards that have been put in place, specifically focused on ag-impaired waterways. These ARPs serve a dual purpose of a TMDL-like alternative and a WIP.

19.2 Streambank Fencing Program

During the interview with DEP, CO staff indicated that the Streambank Fencing Program is no longer in use except in the Northeast region. DEP's questionnaire response reports that the PADEP Northeast Regional Office assisted three farms with installation of almost 8,000 linear feet of fencing and cattle watering troughs in 2019-2020 (PADEP, 2021d). These BMPs were tracked in PracticeKeeper and were reported for CBW Model Numeric Progress in 2019-2020.

19.2.1 WIP Implementation Goals

BMPs including exclusion fencing paired with grass or forest buffers are included in the Phase III WIP as BMPs that result in nutrient and sediment reductions. Installation of streambank fencing enables farmers to keep livestock out of streams, thereby reducing nutrient and sediment loading to the stream.

The amended Phase III WIP also lists a legislative proposal being considered in the current General Assembly session that could facilitate implementation of streambank fencing. The proposed bill, HB 810, "would give municipalities the authority to require livestock exclusion fencing along streams, while allowing for livestock crossings, as needed. Currently, Section 702 of Pennsylvania's Clean Streams Law (35 P.S. § 691.702) prohibits Commonwealth agencies or political subdivisions from requiring fencing for the purpose of keeping farm livestock out of the streams, a provision which impedes progress in water quality improvement."

19.2.2 Streambank Fencing Program – Observations

The Streambank Fencing Program is no longer in use except in the Northeast region. In 2019-2020, the PADEP Northeast Regional Office (NERO) assisted three farms in installation of almost 8,000 linear feet of fencing and cattle watering troughsNERO has been successful because it is the only region with the staff available to provide direct assistance to famers. The Chesapeake Bay Special Project (CBSP) funds that had been provided by CBIG from EPA are no longer available. Therefore, this project is no longer considered a "stand-alone" program. Funding is being provided directly through the CAP Implementation Grant and is being put towards projects that the counties have identified as their

priorities, which may include streambank fencing. Thus, streambank fencing may be competing with other priorities for funding through the CAP implementation Grant.

19.3 Nutrient Trading Program

As described in the Phase III WIP, the nutrient trading program was developed to provide a more cost-efficient way for NPDES permittees in the CBW to meet their wasteload allocations. PADEP initiated a nutrient water quality trading program in 2005 with issuance of a nutrient trading policy. PADEP published its nutrient trading program regulations (25 Pa. Code § 96.8) on October 9, 2010. The nutrient trading program is a voluntary program and follows the following principles as provided in the Phase 2 Watershed Implementation Plan Nutrient Trading Supplement:

- "A trade must involve comparable credits (for example, nitrogen may only be traded for nitrogen) that are expressed as mass per unit time (pounds per year);
- Credits generated by trading cannot be used to comply with existing technology-based effluent limits except as expressly authorized by regulation;
- Trading may only occur in a PADEP-defined watershed;
- Trading may take place between any combination of eligible point sources, nonpoint sources and third party aggregators; and,
- Each trading entity must meet applicable eligibility criteria established under the Nutrient Trading Program regulations, 25 Pa. Code Section 96.8."

Per 25 Pa. Code Section 96.8(d), to generate credits or offsets, there must be a demonstrated reduction in the pollutant load beyond the pollutant load allowed under baseline requirements. To be eligible to generate nonpoint source credits, an agricultural operation must first meet baseline and threshold requirements. For nonpoint sources, the baseline requirements include compliance with 25 Pa. Code Chapter 102, Erosion and Sedimentation Control Regulations; 25 Pa. Code Section 91.36; 25 Pa. Code Section 92a.29; and 25 Pa. Code Chapter 83, Subchapter D, as well as the pollutant load associated with that location as of January 1, 2005. Threshold eligibility requirements that must be met before an agricultural operation can generate credits include implementation of one of the following setbacks:

- Manure not mechanically applied within 100 feet of a perennial or intermittent stream with a defined bed or bank, a lake or a pond, and commercial fertilizer is applied at or below appropriate agronomic rates.
- A minimum of 35 feet of permanent vegetation is established and maintained between the field and any perennial or intermittent stream with a defined bed or bank, a lake, or a pond. No mechanical application of manure may occur within the 35-foot vegetative buffer.
- A downward adjustment of at least 20% to the overall amount of pollution reduction generated by the pollution reduction activity.

In addition, a 3:1 uncertainty ratio is to be applied to the number of credits generated once the defined baseline compliance and threshold is reached. There are also additional requirements for generation of credits from hauling of poultry manure and manure destruction and conversion technologies. The additional Phase II WIP NT Supplement requirements for agricultural nonpoint sources were implemented as an interim step until PADEP can develop a performance-based or other approved method-based tool to use to establish baseline eligibility for nonpoint sources (PADEP, 2015).

The nutrient trading program involves a three-step process: certification, verification, and registration, after which the credit may be used for compliance with NPDES effluent limitations. The steps are as follows, as described in the Phase III WIP:

1. **Certification**: PADEP has given approval for a pollutant reduction activity to generate credits. The generated credits must then be verified by PADEP before they may be sold and registered to an NPDES permit.
2. **Verification**: PADEP has given approval that a generator has used their approved verification plan to demonstrate that a pollutant reduction activity generated credits during the compliance year. Verified credits may then be sold.
3. **Registration**: PADEP has given approval for a sale of credits upon review of an agreement between a buyer and seller. Registered credits may then be applied to meet NPDES permit cap load requirements or resold.

Tracking

PADEP has completed the updates to CBNTT and is in the final testing stages and seeking EPA and USDA approval to release the tracking tool for use during the 2022 trading compliance year. The amended Phase III WIP specified that, in October 2021, PADEP published the Nutrient Credit Trading Program Manure Treatment Technology Nutrient Credit Calculation Methodology, which will go into effect upon finalization of the CBNTT.

According to PADEP, for the 2021 trading compliance year (CY21), 23 nonpoint source credit certifications/verifications requests were received for review. Of the registration requests reviewed, 3 of 86 requests (trades) involved nonpoint source-generated credits. 17,950 of 376,104 total nitrogen credits traded were nonpoint source-generated credits. 0 of 25,789 total phosphorous credits traded were nonpoint source-generated credits. According to PADEP, fewer agricultural nonpoint source credit generators are participating in the program. Based on the data provided, nutrient credits have continued to decrease since 2015, as shown in the data provided by PADEP below.

CY	N Credits	N lbs/year	P Credits	P lbs/year
2021	27,133	97,251 lbs/yr	0	0
2020	41,534	146,567 lbs/yr	2,487	19,104 lbs/yr
2019	54,585	Not provided	4,402	Not provided
2018	77,078	Not provided	6,358	Not provided
2017	90,826	Not provided	6,392	Not provided
2016	114,571	Not provided	7,276	Not provided
2015	289,319	Not provided	19,631	Not provided

19.3.1 WIP Implementation Goals

Pennsylvania's Phase III WIP discusses the nutrient trading program as a program that would have resulted in additional nutrient reductions, if reported. According to information included in the Phase III WIP, if the practices installed from the implementation of the nutrient trading program from 2013 through 2018 had been reported, the expected reductions are 9,196 pounds of nitrogen per year, 12,602 pounds of phosphorus per year, and 453,224 pounds of sediment per year.

As stated in the amended Phase III WIP, during compliance year 2020, Pennsylvania registered 100 sales of nutrient credits to 49 buyers, for a total of over 261,000 N credits and 28,000 P credits.

According to PADEP, Lycoming CCD participated in Nutrient Credit Trading as the aggregator for 23 farms. The most commonly implemented agricultural BMPs included: continuous no-till, conservation tillage, cereal cover crop-early or late planting, off-stream watering with/without fencing (pasture), precision grazing, and riparian forest buffer.

In its Evaluation of Pennsylvania's Draft Amended Phase III WIP (dated 4/18/2022), EPA noted PADEP's inclusion of additional information about PADEP's Nutrient Credit Trading Program Manure Treatment Technology Nutrient Credit Calculation Methodology, provided in response to EPA's related suggested enhancement on the 2019 Phase III WIP, as a strength of the draft amended WIP. The methodology will go into effect upon Pennsylvania's finalization of its CBNTT and will be funded by PADEP's CBIG. Pennsylvania intends to transition to this new tool and the new TMDL-based agriculture baseline analysis and make updates to its "Phase 2 WIP Nutrient Trading Program Supplement" in the 2022 credit trading season that ends on November 29, 2022.

In its Evaluation of Pennsylvania's Draft Amended Phase III WIP (dated 4/18/2022), EPA identified expected enhancements and recommended actions to be included in the final amended WIP, including:

- EPA's understanding that Pennsylvania developed the draft amended Phase III WIP addendum, titled "Phase 2 Watershed Implementation Plan Nutrient Trading Program Supplement," and has begun drafting the Phase 3 WIP supplement to capture revisions to the PADEP's Nutrient Trading Program made in response to EPA's concerns and that it will be updated as needed as further enhancements described in the Phase III WIP are implemented.
- An update to Pennsylvania's CBIG funding request to support the transition to the new trading tool and baseline methodology as well as its continued maintenance. EPA expects that Pennsylvania will provide EPA an opportunity to review PADEP's new TMDL-based agriculture baseline analysis prior to its finalization. If there is a change in its 25 Pa. Code 96.8 regulation, EPA would need to review the regulation as it implements the CWA.
- Confirmation when this new information is added to its Trading Supplement on the PADEP Nutrient Trading website.

19.3.2 Nutrient Trading Program – Observations

- The PA Nutrient Credit Trading Program (Program) will continue to implement 3:1 trading ratio for nonpoint source (NPS) credit generation and trading until performance-based or another method-based tool (e.g., CBNTT) is established.
- The Program intends to use RIBITS, the Regulatory In lieu fee and Bank Information Tracking System developed by the U.S. Army Corps of Engineers with support from EPA, U.S. Fish & Wildlife Service, Federal Highway Administration, and NOAA Fisheries to track water quality trading (WQT) activities and credits for restoration banks recognized under Natural Resource Damage Assessment statutes. The WQT portion was sponsored by the USDA Office of Environmental Markets. Currently, VA is participating as a pilot state and MD also intends to use RIBITS. PA's use of RIBITS will facilitate Program activities and increase consistency and transparency in trading among Bay states.

19.4 MS4 Program Offsets

In Pennsylvania, municipalities permitted under the NPDES General Permit for Stormwater Discharges from MS4s (PAG-13) may implement and receive pollutant reduction credits (i.e., offsets) for BMPs in locations that are within the municipal jurisdictional boundary but outside the planning area for the MS4's Pollutant Reduction Plan. These municipal offset BMPs can be a source of funding for agricultural operations within municipal boundaries but outside the MS4 regulated area. According to the questionnaire response, PADEP has not approved any proposed MS4 offsets at agricultural operations. However, PADEP indicated that an MS4 that wishes to implement agricultural BMPs to receive nutrient reduction credit on land outside of the area regulated by their MS4 permit must "demonstrate in the planning document the BMP efficiencies, calculations or modeling, the reductions benefiting surface waters to which the MS4 discharges and indicate that the MS4 jurisdiction holds sufficient legal rights to access the property."

As discussed in the MS4 NPDES Permits Frequently Asked Questions[16] document, eligible projects must be located within the MS4's jurisdictional borders, in the same 12-digit Hydrologic Unit Code (HUC-12) watershed as the MS4 planning area (generally defined as "the urbanized area (UA) within the municipality which drains to impaired waters, plus any additional area outside the UA which drains into the MS4 conveyance system") and be no farther than one mile from the planning area boundary. "Non-structural BMPs that are implemented annually (e.g., cover crops, no-till) outside of the planning area are not eligible for MS4 permittee sponsorship or for Pollutant Reduction Plans (PRP)/TMDL Plan credit toward permit-required pollutant load reductions."

To ensure that BMPs are properly installed and are being maintained, the MS4 permittee is required to provide "certification and verification of performance at the time of the projects' installation, include plans for long-term operation and maintenance and annual verification of the BMP(s), and provide for municipal access to the BMP if needed in the future." The status of any offset BMPs must be reported annually in the permittee's Annual MS4 Status Report (PADEP, 2021c).

Agricultural lands participating in generating MS4 offsets "must comply with regulations relating to erosion and sediment control under 25 Pa. Code § 102.4(a) and regulations relating to manure management under 25 Pa. Code § 91.36(b) and have achieved the [load allocation] in an approved TMDL…to be considered as meeting their baseline requirement." The "baseline" is defined as the pollutant load reduction required to meet the load allocation (LA) in an approved TMDL, or equivalent allocation as determined by PADEP, after regulatory compliance is confirmed (PADEP, 2021c).

In receiving credit for the pollutant reductions generated by implementation of BMPs on agricultural land, the MS4 may receive credit for the full amount of the pollutant load reduction by the BMP or only take credit for pollutant load reductions achieved by the BMPs that exceeds the baseline condition. In both cases, as described below, the parcel where the BMP is located must comply with all applicable regulations, as confirmed by PADEP.

- "The MS4 permittee may take credit for the full amount of pollutant load reduction achieved by the BMP. If this option is selected, the landowner must meet the entire load reductions expected on the land treated by the BMP (i.e., the baseline load) on the remainder of the

[16] https://files.dep.state.pa.us/water/BPNPSM/StormwaterManagement/MunicipalStormwater/MS4_FAQ.pdf

parcel… [PA]DEP expects that the MS4 permittee and landowner will execute an agreement to ensure that both the MS4 permittee and the landowner understand their individual obligations; identify where the MS4 load reductions will be generated; where and how the landowner will meet baseline; and identify any further reductions that may be required.

- The MS4 permittee may take credit only for the amount of pollutant load reduction achieved by the BMP that exceeds the baseline condition. In other words, both the landowner and MS4 permittee receive credit but only after the reduction obligation is met (i.e., baseline obligations are satisfied for the landowner and the MS4 receives anything extra). PADEP expects that the MS4 permittee and landowner will execute an agreement to ensure that both the MS4 permittee and the landowner understand their individual obligations and identifies where the MS4 load reductions can be realized after the landowner meets baseline. Records identifying the pollutant load reduction necessary to achieve baseline and the amount of credit the MS4 received are necessary and will need to clearly distinguish this for tracking purposes" (PADEP, 2021c).

19.4.1 WIP Implementation Goals

Pennsylvania's Phase III WIP indicated that there were over 350 municipalities with MS4 NPDES permits, and that the Commonwealth would begin allowing and encouraging MS4-regulated communities to "offset with nonpoint sources, such as neighboring farms, to meet their permitting obligations" through implementation of BMPs such as stream restoration, riparian forest buffers, legacy sediment removal and ecosystem restoration. At this time, PADEP has not approved any proposed MS4 offsets at agricultural operations.

19.4.2 MS4 Program Offsets – Observations

- PADEP has not approved any proposed MS4 offsets at agricultural operations.

20.0 Recommendations

1. Pennsylvania will need to increase the pace of implementation for animal waste management systems on animal agriculture operations to meet the 2025 goal. *(Section 6.1, Pennsylvania's Animal Agriculture WIP BMPs – Observations)*

2. Pennsylvania will need to increase the pace of implementation for forest buffers through implementation of additional Ag E&S, NMPs, and/or MMPs to meet the 2025 goal. *(Section 6.1, Pennsylvania's Animal Agriculture WIP BMPs – Observations)*

3. Pennsylvania will need to increase the pace for NMP implementation, possibly through development of NMPs by additional CAOs or VAOs to meet the 2025 goal. *(Section 6.1, Pennsylvania's Animal Agriculture WIP BMPs – Observations)*

4. Pennsylvania will need to increase the pace for additional cover crop implementation through incorporation into more NMPs and/or MMPs to meet the 2025 goal. *(Section 6.1, Pennsylvania's Animal Agriculture WIP BMPs – Observations)*

5. Pennsylvania will need to increase coverage of soil conservation and water quality plans to meet the 2025 goal. *(Section 6.1, Pennsylvania's Animal Agriculture WIP BMPs – Observations)*

6. The Manure Management Program could also require Ag E&S plans, to meet existing PA regulations, similar to the NPDES CAFO program and Nutrient Management Program, where applicable. *(Section 6.1, Pennsylvania's Animal Agriculture WIP BMPs – Observations)*

7. PADEP should provide EPA quantitative goals that identify the number of Phase 2 inspections and acres planned to be conducted, by county, on a yearly basis to clearly define the timeframe for completion of all Phase 2 inspections. PADEP should also submit the number of Phase 2 inspections, including acres, conducted as part of annual reporting processes to assess if defined program outcomes meet the targeted yearly goals. (*Section 7.6, CBAIP – Observations)*

8. Pennsylvania should develop a plan for increasing funding and the number of trained professionals to stay on pace and/or ramp up efforts. *(Section 7.6, CBAIP – Observations)*

9. Phase II compliance issues and challenges should be handled formally as was done in Phase I to ensure clarity and transparency. *(Section 7.6, CBAIP – Observations)*

10. Develop a detailed plan for how inspector staff will be restored and increased over time to stay on pace with DEP's goal of inspecting 10% of Phase 1 and 2 operations annually (including number of inspectors and funding for those positions by county). *(Section 7.6, CBAIP – Observations)*

11. PADEP and the CCDs should continue to allocate resources to CBAIP inspection follow-up for documenting compliance gains resulting from Phase 1 and 2 evaluations. *(Section 7.6, CBAIP – Observations)*

12. Increased FTE may support additional outreach for CCDs to ensure compliance checks for the program are standardized. The Commonwealth should fund one additional SCC FTE to support REAP and the Pennsylvania Farm Bill and two additional SCC FTEs to provide additional REAP support, consistent with staffing recommendation in the draft amended Phase III WIP. *(Section 13.4, REAP Program – Observations)*

13. Develop a REAP SOP to ensure compliance with state laws for eligibility in the program that is consistent with the CBAIP SOP and/or language embedded with the CBAIP inspection SOP to improve program efficacy. A SOP may improve consistency across conservation districts and ensure compliance. *(Section 13.4, REAP Program – Observations)*

14. Pennsylvania should accelerate program development to finalize the program and consider training 3rd parties to support implementation of the program. *(Section 15.4, Pennsylvania Agriculture Conservation Stewardship Program – Observations)*

15. PDA and the SCC should ensure that a quality assurance/quality control program is in place and that staff performing BMP verification are properly trained to accurately identify and verify BMPs. *(Section 15.4, Pennsylvania Agriculture Conservation Stewardship Program – Observations)*

16. PDA and SCC should ensure that a quality assurance/quality control program consider additional staffing to ensure successful implementation of the PACS Program. *(Section 15.4, Pennsylvania Agriculture Conservation Stewardship Program – Observations)*

17. To determine whether the 2021 Growing Greener grant is a substitute for the Agriculture Plan Reimbursement Program, PADEP should estimate projected demand for the plan reimbursement and the level of funding needed annually to meet that demand. *(Section 16.4, Agriculture Plan Reimbursement Program – Observations)*

18. PADEP and PENNVEST should evaluate the success of the pilot program and based on that success, consider expanding the program to additional counties. *(Section 18.3, PENNVEST – Observations)*

References

Chesapeake Bay Program, 2020. Chesapeake Assessment and Scenario Tool (CAST) Version 2019. Chesapeake Bay Program Office, Last accessed April 2022.

EPA. 2010, December 29. Chesapeake Bay TMDL Executive Summary. https://www.epa.gov/sites/default/files/2014-12/documents/bay_tmdl_executive_summary_final_12.29.10_final_1.pdf

EPA. 2019, December 19. Evaluation of Pennsylvania's Phase III Watershed Implementation Plan (WIP). https://www.epa.gov/sites/default/files/2019-12/documents/pa.pdf

PADEP. 2015, June 18. Phase 2 Watershed Implementation Plan Nutrient Trading Supplement. https://www.dep.pa.gov/Business/Water/CleanWater/NutrientTrading/Documents/NutrientTradingSupplementToPhase2WIP.pdf?Mobile=1&Source=%2FBusiness%2FWater%2FCleanWater%2FNutrientTrading%2F_layouts%2Fmobile%2Fview.aspx%3FList%3D28ea018b-2ad8-4d31-a053-86b4eb838151%26View%3D018076cf-e03c-49c1-9e6a-d202eb502251%26CurrentPage%3D1

PADEP. 2020, November. Commonwealth of Pennsylvania FY2020 Nonpoint Source Management Annual Report. http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=3665070&DocName=NONPOINT%20SOURCE%20MANAGEMENT%20PROGRAM%20ANNUAL%20REPORT%202020.PDF%20%20%3cspan%20style%3D%22color:green%3b%22%3e%3c/span%3e%20%3cspan%20style%3D%22color:blue%3b%22%3e%28NEW%29%3c/span%3e%205/3/2023

PADEP. 2021a, May. Standard Operating Procedure (SOP) Chesapeake Bay Agricultural Inspection Program SOP No. CBO-INSP-001, May 2021, Version 1.4. https://files.dep.state.pa.us/Water/BPNPSM/AgriculturalOperations/AgriculturalCompliance/CBAIP_Phase_1_(CBO-INSP-001)_v1.4.pdf

PADEP. 2021b, May. Growing Greener Plus Grants Program. http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=3637680&DocName=GROWING%20GREENER%20PLUS%20GRANTS%20PROGRAM%20%282021%29.PDF%20%20%3cspan%20style%3D%22color:green%3b%22%3e%3c/span%3e%20%3cspan%20style%3D%22color:blue%3b%22%3e%28NEW%29%3c/span%3e%204/21/2023

PADEP. 2021c, December 2. MS4 NPDES Permits Frequently Asked Questions (FAQ). https://files.dep.state.pa.us/water/BPNPSM/StormwaterManagement/MunicipalStormwater/MS4_FAQ.pdf

PADEP. 2021d, October. Pennsylvania's 2020 Chesapeake Bay Progress Report. https://files.dep.state.pa.us/Water/ChesapeakeBayOffice/WIPIII/2021/PADEP_Annual_Report_Large.pdf

PADEP. 2021e, December 1. Quality Assurance Project Plan for Tracking, Verifying, and Reporting Nutrient and Sediment Pollutant Load Reducing Practices, Treatments, and Technologies. https://files.dep.state.pa.us/Water/ChesapeakeBayOffice/2021_PA_CBO_QAPP_12.1.2021.pdf

PADEP. 2022a, February 11. PADEP's response to the EPA questionnaire. Pennsylvania Animal Agriculture Program Assessment 2022 Questionnaire.

PADEP. 2022b. Agricultural Plan Reimbursement Program 2017-2021. https://www.dep.pa.gov/Business/Water/Pennsylvania%E2%80%99s%20Chesapeake%20Bay%20Program%20Office/agriculture/Pages/Funding-Programs.aspx#:~:text=The%20Agricultural%20Plan%20Reimbursement%20Program,Erosion%20and%20Sediment%20Control%20Plans.

PADEP. 2022c, April. Growing Greener Grants Program. http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=4308002&DocName=GROWING%20GREENER%20PLUS%20GRANTS%20PROGRAM%202022.PDF%20%20%3cspan%20style%3D%22color:green%3b%22%3e%3c/span%3e%20%3cspan%20style%3D%22color:blue%3b%22%3e%28NEW%29%3c/span%3e%204/13/2024

PADEP. 2022d, July 22. Standard Operating Procedure (SOP) Chesapeake Bay Agricultural Inspection Program SOP, No. CBO-INSP-001, May 2022, Version 1.5. https://files.dep.state.pa.us/Water/BPNPSM/AgriculturalOperations/AgriculturalCompliance/Combined_CBAIP_SOP_Final_5-25-22.pdf

PADEP. 2022e, April. Section 319 Grant Guidance. **http://www.depgreenport.state.pa.us/elibrary/GetFolder?FolderID=347444**

PDA. 2022. Resource Enhancement & Protection (REAP) Grant Program. https://www.agriculture.pa.gov/Plants_Land_Water/StateConservationCommission/REAP/Pages/default.aspx.

State Conservation Commission (SCC). 2020. Resource Enhancement and Protection FY 2019 Annual Report. https://www.agriculture.pa.gov/Documents/2019%20REAP%20Annual%20Report.pdf

State Conservation Commission (SCC). 2021a, October. Pennsylvania Nutrient Management and Manure Management Manual Program: Act 38 and Chapter 91, Administrative Manual. https://extension.psu.edu/programs/nutrient-management/scc/manual/nutrient-management-program-administrative-manual

State Conservation Commission (SCC). 2021b. Resource Enhancement and Protection Program Guidelines, Fiscal Year 2021. https://www.agriculture.pa.gov/Documents/2021-22%20REAP%20Guidelines.pdf

State Conservation Commission (SCC). 2022. Nutrient Management Program. https://www.agriculture.pa.gov/Plants_Land_Water/StateConservationCommission/NutrientManagementProgram/Pages/default.aspx#:~:text=The%20Act%2038%20nutrient%20management,open%20sinkholes%20for%20regulated%20entities

Swanson, Ann. (May, 2022). Legislative and Policy Update. Chesapeake Bay Program Water Quality GIT. https://www.chesapeakebay.net/channel_files/44064/legislative_update_-_wq_git_5-23-22.pdf

Tetra Tech, Inc. 2021. Pennsylvania Department of Environmental Protection Nonpoint Source Program: Program Evaluation Report. Final: January 2021. Prepared for U.S. EPA Region 3.

USDA (United States Department of Agriculture). 2019. *2017 Census Publications.* https://www.nass.usda.gov/Publications/AgCensus/2017/index.php