

Beyond Bean Counting

Assessment of BMP Tracking and Accounting Procedures for More Holistic Restoration Goals

Shoreline Stabilization



Living Shorelines



Wet Ponds



Urban BMPs



Infiltration Basin



Green Infrastructure



Permeable Pavement



Constructed Wetlands



Vegetated Landscapes



PROJECT BACKGROUND

History of the Project

- ▶ Initiated by the Water Quality GIT
- ▶ Identify opportunities to reduce process inefficiencies
 - ▶ Strive to better integrate multiple outcomes into progress assessments
 - ▶ Seek ways to improve engagement with external partners and stakeholders
 - ▶ Ensure the CBP is working with the best available information.
- ▶ Conduct research/ analyses on emerging issues related to urban stormwater
 - ▶ Ecosystem services, living resource, s resilience.
 - ▶ BMP benefits beyond nutrient removal that are
 - ▶ Environmental: flood reduction, habitat creation
 - ▶ Social: community aesthetics, safety
 - ▶ Economic: reduced infrastructure maintenance, resilience



PROJECT BACKGROUND

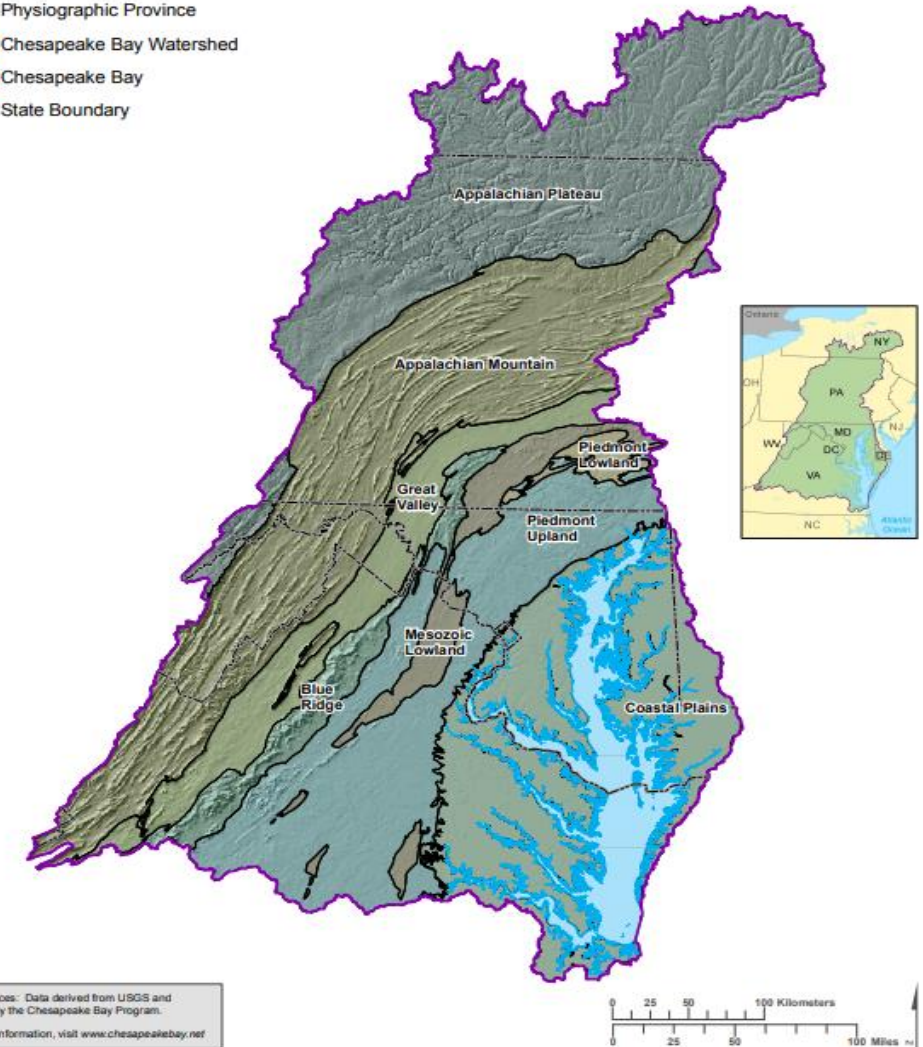
Project Goals

- ▶ Capture research and analyses of these emerging issues
- ▶ Evaluate BMP tracking and accounting process efficiency options
- ▶ Make recommendations for more holistic restoration goals
- ▶ Allow partners the flexibility to innovate, while addressing key information and knowledge gaps
- ▶ Re-structure how state and local water quality efforts can be better integrated with objectives around living resources, human well-being, and climate resilience.

Chesapeake Bay Watershed Physiography



- Physiographic Province
- Chesapeake Bay Watershed
- Chesapeake Bay
- State Boundary



Data Sources: Data derived from USGS and modified by the Chesapeake Bay Program.
For more information, visit www.chesapeakebay.net

Created by EA, 1/18/08

UTM Zone 18N, NAD 83

PROJECT TEAM

Project Team Selection

- ▶ AMT selected through an open RFP Process
- ▶ RFP late 2024
- ▶ Selection early 2025
- ▶ Understanding of Bay Program Reporting
- ▶ Map Existing Information in GIS



Project Team

GINNY SNEAD

PE, CFM

PROJECT MANAGER

- ▶ Familiarity with USWG and BMP Reporting.
- ▶ Formerly Virginia State Representative to USWG

MARY SMITH

CFM

SENIOR ENVIRONMENTAL SCIENTIST

- ▶ Environmental and water resources senior scientist.
- ▶ Pursuing a Masters in Urban Water Systems.

ISAAC SCRUGGS

JUNIOR ENVIRONMENTAL SCIENTIST

- ▶ Recent Virginia Tech Graduate
- ▶ Erosion and Sediment Control Inspector



A. MORTON THOMAS AND ASSOCIATES, INC.

PROJECT METHODOLOGY

Project Steps

- ▶ Project Kickoff
- ▶ Select Steering Committee
- ▶ Work Plan Development and Interview Planning
- ▶ Research QAPPs
- ▶ Conduct Interviews
- ▶ Draft Findings
- ▶ Recommendations
- ▶ Report Development



Wet Swales



Living shorelines



Constructed Wetlands



Restoration – Oyster BMP



Submerged Gravel Wetlands



Continuous Monitoring Adaptive Control

STEERING COMMITTEE

Steering Committee Participants

- ▶ Katie Brownson, US Forest Service
- ▶ Samuel Canfield, West Virginia
- ▶ KC Filippino, HRPDC
- ▶ Camille Liebnitzky, City of Alexandria
- ▶ Auton Smith, CBPO,EPA
- ▶ David Wook , CSN



WORK PLAN

Work Plan Development

- ▶ Build on RFP and Proposal
- ▶ Solicit Steering Committee Input
- ▶ Finalize Workplan – Adjust Schedule

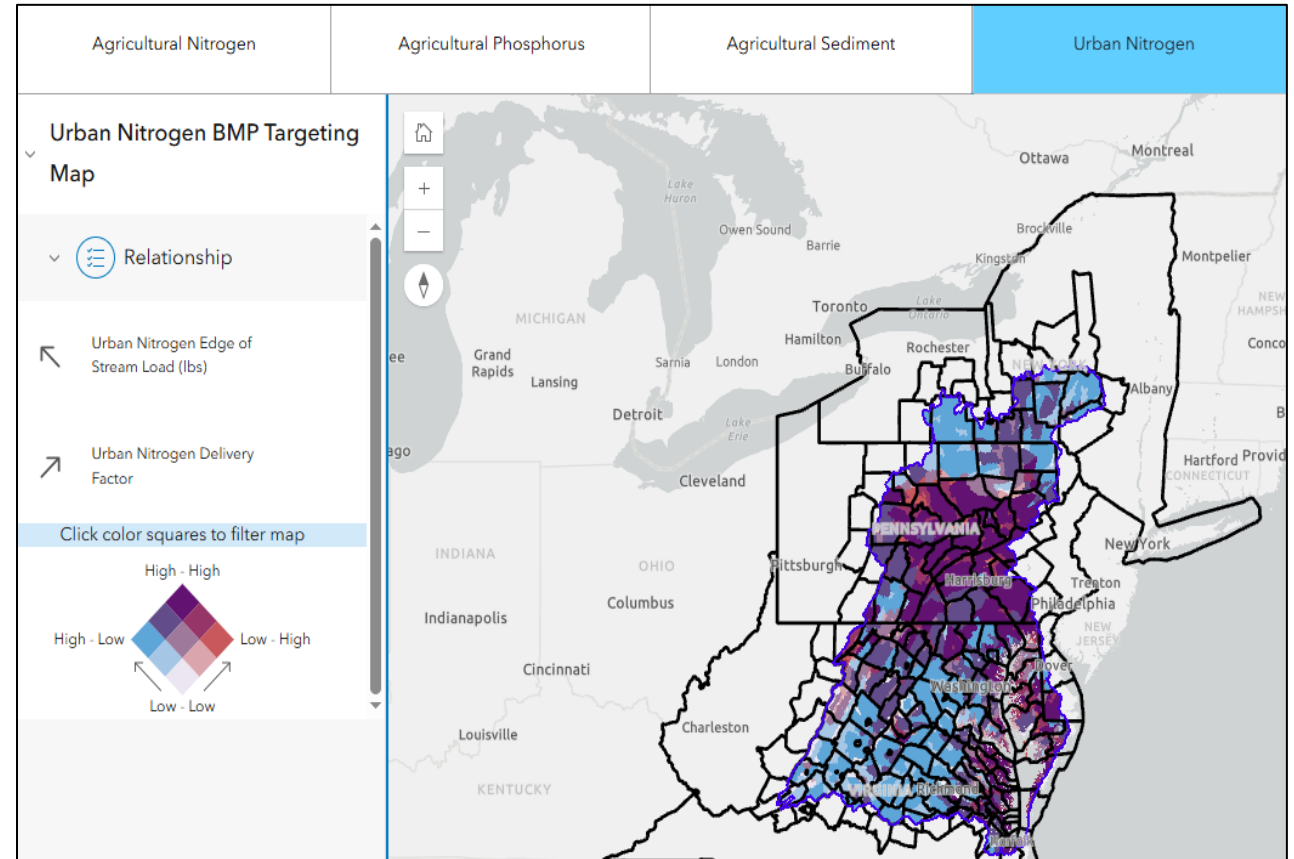
Work Plan Goals

- ▶ Guide Project Development and Execution
- ▶ Set Framework for Data Review and Interviews
- ▶ Establish timeline and set deliverables



Detailed QAPP Review

- ▶ Finding Updated QAPPs
- ▶ VA, WV, DC, MD, DE, NY, PA Review and Comparison
- ▶ QAPP Matrix Development
- ▶ Steering Committee Input



INTERVIEWS

Develop Interview Questions and List of Interviewees

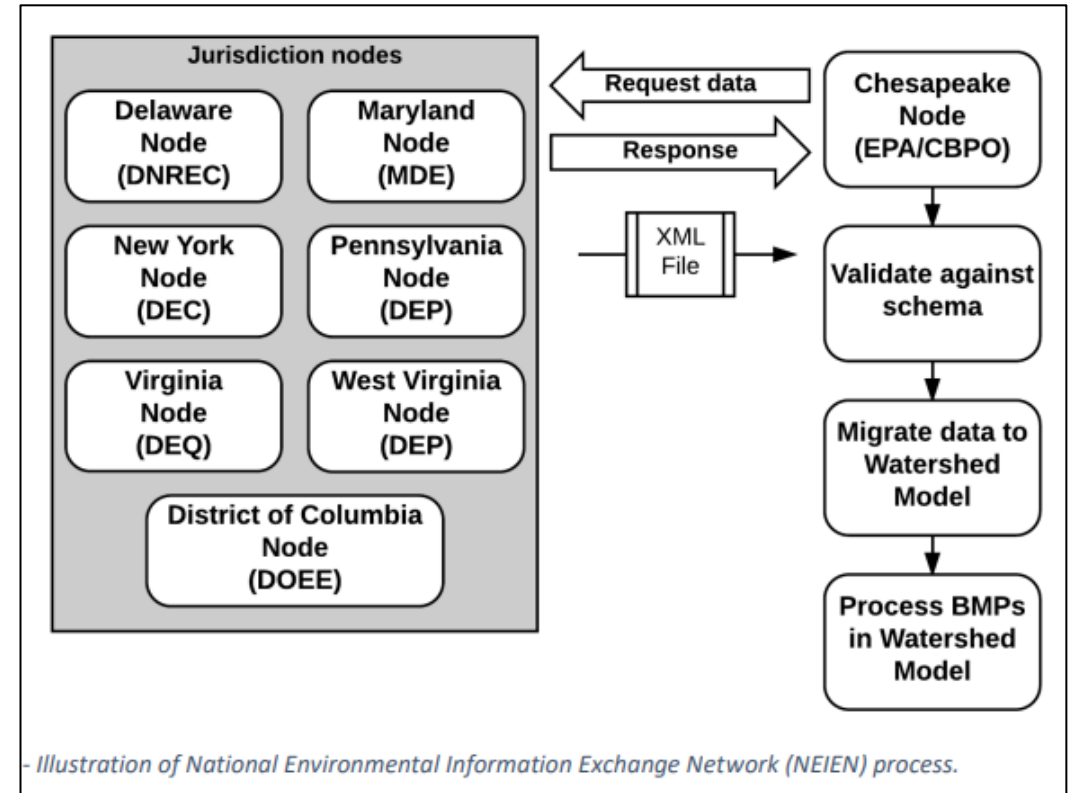
- ▶ Based on Project Goals and Objectives
- ▶ Investigate Gaps and Inconsistencies from QAPP Review
- ▶ Steering Committee Input

Conduct Interviews

- ▶ Jurisdictions
- ▶ Federal Representatives
- ▶ CAST Staff

Question Topics

- ▶ General Approach to BMP Reporting (Jurisdiction Specific)
- ▶ Unregulated BMP Reporting
- ▶ Pollutant Loading and Reduction Strategies
- ▶ BMP Implementation
- ▶ Challenges
- ▶ Looking Ahead
- ▶ Maintenance and Verification
- ▶ Federal Partner questions



FINDINGS

Conduct Gap Analysis

- ▶ Identify Potential Opportunities for Improved Tracking and Verification
- ▶ Identify Possible Barriers

Develop Findings Report

- ▶ Analyze Gap Analysis
- ▶ Formulate Spreadsheet Matrix
- ▶ Develop Report

Jurisdictions	Shared Challenges	Federal Partners
Difficulty verifying BMPs consistently (NY, MD, VA, DC)	Inconsistent data inputs across partners	Difficulty reporting large scale or nonstandard BMPs (USACE reservoirs, DoD Green Infrastructure projects)
Limited staff capacity for QA/QC and follow up (MD, DE, DC, VA, PA)	Evolving CAST and NEIEN protocols requiring frequent adjustments	Projects often do not align with CAST categories or crediting rules (USACE, DoD)
Variability in local reporting formats (PA MS4s, MD Phase II MS4s, DC federal submissions)	Coordination barriers between state, local, and federal partners	Reporting flows through states, creating delays or data loss (USACE, DoD)
Underreporting of voluntary BMPs (PA, MD, DE)	Challenges capturing voluntary practices consistently	Difficulty determining which projects are eligible for state reporting (DoD)
Difficulty fitting innovative BMPs into existing schema (MD, VA)	Gaps in template clarity and reporting expectations	Staff turnover affecting continuity and data completeness (DoD)
Missing or incomplete MS4 data in some states (PA, WV, DE)	QAPP and guidance documents difficult to access or inconsistently updated	Limited internal QA/QC documentation (USACE)

Note: Anything within parentheses is an entity who specifically brought the item up during the interview process

RECOMMENDATIONS

Develop Recommendations

- Identify Potential Opportunities for Improved Tracking and Verification
- Identify Possible Barriers

Develop Recommendations Matrix

- Steering Committee Feedback
- Finalize Matrix

Proposed Action	Proposed Best Practice	Why / Justification	Possible Responsible Parties	Intended Audience	Source / Example (w/ Links)
Standardize Reporting Templates Across Sectors	Develop adaptable template checklists based on CBP's BMP Verification and Quick Reference Guides, tailored to each state's existing databases (e.g., BMP Warehouse, eFACTS, WIS).	Multiple states reported inconsistencies between agencies and sectors. Consistent templates will improve QA/QC and streamline uploads to NEIEN and CAST.	Chesapeake Bay Program Office (CBPO) Watershed Technical Workgroup in partnership with reporting entities.	State environmental agencies (VA DEQ, MDE, DNREC, DC D.OEE), CBP Data Workgroup. <i>What is the BMP Data Workgroup?</i>	CBP BMP Verification Guidance, CBP BMP Quick Reference Guide
Create Targeted BMP Reporting Training and Helpdesk Support for the NEIEN process	Strengthen jurisdictional outreach efforts regarding training opportunities and on-call technical support availability for <i>data entry, database management, and reporting templates</i>	Interviewees cited confusion with templates, QA/QC, and reporting frequency. Hands-on assistance can improve data quality without creating new bureaucracy.	CBPO and Chesapeake Research Consortium staff? I don't see CBPO doing all of this work without help.	State agencies, local governments, CBP partners, regional planning councils (e.g., VAPDC, MACO)	Chesapeake Stormwater Network Webinars, Chesapeake Bay Foundation Education Calendar (<i>any examples of training events specific to NEIEN? Can't find similar help desk examples either</i>)
Implement Interoperable Data Systems Pilots	Test linking or syncing existing systems (e.g., BMP Warehouse ↔ Greenport ↔ eFACTS) instead of building new ones. <i>Will these examples be fleshed out more in the report?</i>	States like DE, MD, and VA are modernizing data tools but still face manual uploads and duplication. Pilots can reveal scalable solutions.	State IT/data teams, Bay Program Data Workgroup, local MS4 jurisdictions I don't think we have a data workgroup.	CBPO	MDE Stormwater Database Overview
Enhance and Incentivize Voluntary BMP Reporting	Conduct local outreach surveys (through conservation districts or stormwater programs) to identify why voluntary BMPs go unreported and how best to incentivize their implementation.	Across jurisdictions, voluntary BMPs remain underreported due to lack of incentives or awareness. Surveys identify barriers and outreach needs.	CBPO (Can we be more specific? CBPO; Management Board? Advisory Committee? Communications Dept?, GITT)	Conservation districts, local governments, CBP Communications Workgroup	VCAP Program - Virginia Association of Soil & Water Conservation Districts, RainScapes (MD), CleanScapes (Howard Co.) <i>What about through PA's county action planning process?</i>
Update Quick-Guide Templates for BMPs	Modernize existing one-pagers and fact sheets for local outreach and credit guidance.	Many Bay jurisdictions rely on outdated BMP outreach materials. Updated visuals improve local adoption and consistent messaging.	EPA (what about CBP Communications Workgroup, Chesapeake Stormwater Network, state agencies?)	State agencies, local governments, CBP partners, regional planning councils (e.g., VAPDC, MACO), NGOs	Chesapeake Stormwater Network BMP Guides

RECOMMENDATIONS

Develop Recommendations

- ▶ Standardize Reporting Templates Across Reporting Entities
- ▶ Track Co-Benefits Beyond Nitrogen, Phosphorus, and Sediment
- ▶ Strengthen Targeted BMP Reporting Training and Helpdesk Support for the NEIEN Process
- ▶ Implement Interoperable Data Systems Pilots
- ▶ Enhance and Incentivize Voluntary BMP Reporting
- ▶ Update Quick-Guide Templates for BMPs
- ▶ Improve QAPP Accessibility and Consistency
- ▶ Adopt a “Living QAPP” Approach
- ▶ Regional Staff Capacity Building
- ▶ Enhance Cross-Jurisdiction Communication
- ▶ Provide Clarity for Tree Canopy and Forest Conservation Reporting
- ▶ Clarify CAST Limitations
- ▶ Improve Wetland Restoration Reporting

REPORT DEVELOPMENT

Draft Report

- ▶ Summarized Interview Results, Findings and Recommendations
- ▶ Prepare ad Draft and Submit to Steering Committee
- ▶ Steering Committee Meeting

Final Report

- ▶ Incorporate Comments and Resolve Conflicting Comments
- ▶ Additional Steering Committee Meeting
- ▶ Feedback from USWG
- ▶ Final Report

Steps to Finalize Report and Project

- ▶ Present to USWG
- ▶ Review Comments with USWG leadership
- ▶ Finalize Report (January 2026)



QUESTIONS?

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