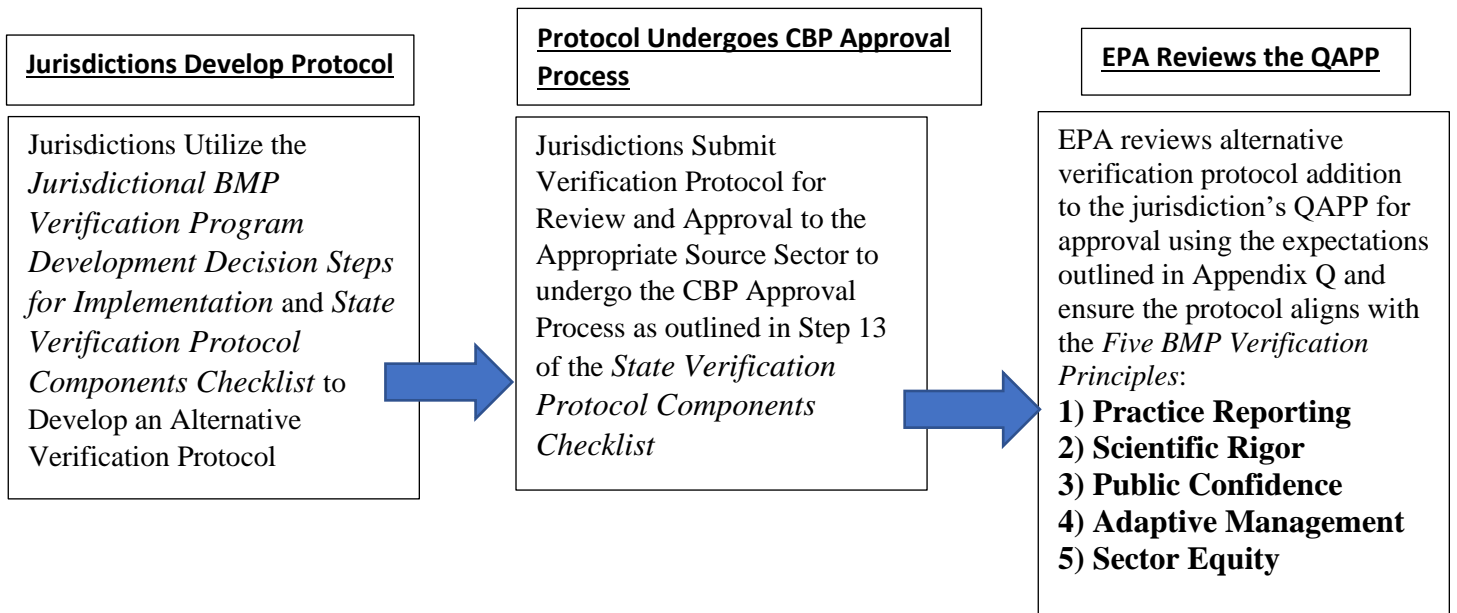


BMP Verification Alternative Protocol Development and Approval Process



EPA's Role in Approving Alternative Verification Protocols – Appendix Q

(From Conversations, not quoted in the Framework Document): EPA is there to ensure that the new verification protocol is properly incorporated into the state QAPP per the guidance in Appendix Q. While EPA may review that the protocol is allowed under the Existing Sector Guidance, the primary objective is to ensure that the new data resulting from the new verification protocol is properly substantiated.

EPA Role, pg 40:

U. S Environmental Protection Agency. Through the review and approval of each of the seven jurisdictions' quality assurance plans, which are required for award of their Chesapeake Bay Implementation Grants and Chesapeake Bay Regulatory and Accountability Grants, EPA will approve, or provide specific requests for changes prior to approval, each of the seven jurisdictions' proposed BMP verification programs based on the feedback from and the recommendations of the Chesapeake Bay Program's independent BMP Verification Review Panel. It is within these quality assurance plans where each jurisdiction will document, in detail, their verification program. As clearly described in EPA's Chesapeake Bay Program Grants Guidance²⁶, approval of these quality assurance plans are required for successful award and use of federal funding involving environmental data collection and evaluation activities. In the case of these grants, it's the tracking, verification and reporting of practices, treatments and technologies that reduce nutrient and sediment pollutant loads which triggers the requirements for a quality assurance plan. EPA's review and approval of each jurisdiction's QA Plan will focus on whether each jurisdiction has provided reasonable assurance for ensuring the implementation of the reported practices, treatments and technologies funded through these grants and the jurisdictions' matching fund programs.

EPA Role, Pg 42:

EPA Approval of Jurisdictions' Programs Based on Meeting BMP Verification Principles.

During EPA's review of each of the seven jurisdictions' proposed enhanced BMP tracking, verification and reporting programs, the EPA will only approve a jurisdiction's proposed verification protocol, procedure or process if it is fully consistent with and supportive of the Chesapeake Bay Program's adopted verification principles. An approvable jurisdictional quality assurance plan could also provide a detailed schedule and process for how the proposed verification protocols, procedures, and processes will become fully consistent over time.

Alternative Protocol Development and Approval Process:

From the BMP Verification Review Panel Recommendations (and Adopted by Source Sector Workgroups), pg 25:

In the process of developing new and revising existing BMP verification protocols and programs, the jurisdictions are encouraged to consult the following four products developed by the Chesapeake Bay Program's [BMP Verification Review Panel](#).

The *Chesapeake Bay Program BMP Verification Program Design Matrix* (**Table 5 on pg 26**) is meant to help each jurisdiction ensure they are addressing all the needed program elements within their BMP verification program. Jurisdictions should view the matrix as a guide, not a set of requirements, to be used in structuring their verification programs. ([Design Matrix is copied on page 5 of this document.](#))

The *Jurisdictional BMP Verification Program Development Decision Steps for Implementation* (**Table 6 on page 28**) spells out the 14 steps each jurisdiction should consider when developing their BMP verification program. Under each step are questions that will prompt decisions that may be needed to develop verification protocols. Jurisdictions should use the 14 steps as prompts to ensure their BMP verification protocols and programs are adequately structured to answer the questions under each step. There are no expectations that each jurisdiction addresses every single step or answer every one of the questions posed. Jurisdictions should view the 14 steps and the underlying questions as prompts, not requirements, to be used in developing and enhancing their verification programs and protocols. ([Decision Steps are copied on page 6-9 of this document.](#))

The *State Verification Protocol Components Checklist* (**Table 7 on page 31**) is a **checklist meant to ensure**

each jurisdiction's verification protocols contain all the necessary elements. The BMP Verification Panel *will* use this checklist directly in their review of each of the jurisdictions' proposed BMP verification programs. Beyond a check-off, the Panel will also be evaluating whether the jurisdiction has followed the applicable source sector/habitat workgroup's BMP verification guidance or provided documentation and a rationale for following an alternative approach. ([Components Checklist is copied on page 9-11 of this document.](#))

	Who analyzes collected data and reports to CBP?			
12	Additional Comments/Requests			
13	CBP Approval Process			

The *Jurisdictional Verification Protocol Design Table* (Table 8 on pg 34) provides an example format a jurisdiction could choose to organize the documentation of their BMP verification protocol choices for their preferred groupings of BMPs covered by common BMP verification protocols.

A. WIP Priority	B. Data Grouping	C. BMP Type	D. Initial Inspection <i>(Is the BMP there?)</i>				E. Follow-up Check <i>(Is the BMP still there?)</i>			F. Lifespan/ Sunset <i>(Is the BMP no longer there?)</i>	G. Data QA, Recording & Reporting
			Method	Frequency	Who inspects	Documentation	Follow-up Inspection	Statistical Sub-sample	Response if Problem		

Recommendations from: STAC BMP Verification Subgroup Report – Appendix U, Page 4

Independent Review/Approval of Verification Procedures: To achieve the stated objective of obtaining a minimum threshold of BMP verification data confidence, the committee strongly suggests that an independent entity (academics or others with appropriate expertise) be involved in the design of the specific BMP verification protocols. Engaging those with appropriate expertise during the BMP verification protocol design phase will ensure that verification data will meet a desired confidence threshold standard.

9. Amended Partnership BMP Protocol to Address Verification: The committee interprets this section to mean that as new BMPs are approved, a corresponding verification protocol must be developed. As the committee understands it, the CBP proposal is to assign this task to the existing BMP expert panels who are responsible for developing BMP definitions and pollutant reduction performance efficiencies. The committee suggests instead that new BMP verification protocol development also be performed by an independent entity in consultation with the appropriate source-sector workgroup.

The Approval Process:

Ag Verification Guidance Examples Relating to Alternative Statistic Sub-Sampling Protocols:

- The second approach for follow up sub-sampling may be proposed by a jurisdiction with documentation as an alternative strategy for review and approval.
- The second approach for follow up sub-sampling may be proposed by a jurisdiction with documentation as an alternative strategy for review and approval.
- The guidance also states that for follow-up BMP verification, states may propose using a subsampling approach with documentation as an alternative strategy for review and approval.

What Alternative Protocols did the AgWG allow for, pg 25?

- **Farm Inventory** – a survey of physical BMPs based on physical inspection
- **Office/Farm Records** - evaluation of paperwork on record at the conservation district office or the farm operation itself rather than an on-site inspection of physical BMPs
- **Transect Survey** – Inspection of (visual assessment of) statistical-based sampling of BMPs.
- **Agency Sponsored Surveys** - survey of a statistical sampling of farms similar to the NASS Conservation Effects Assessment Program and the National Resource Inventory.
- **Remote Sensing** - A science-based review of images or photographic signatures verified through aerial photography, satellite imagery, or similar methods to identify physical practices on the landscape.

Responsibilities given through the CBP Framework, pg 39:

Chesapeake Bay Program’s Technical Workgroups. The technical source sector, habitat restoration and other related workgroups under the Water Quality, Vital Habitats, Sustainable Fisheries and Healthy Watersheds goal implementation teams will continue to be responsible for convening and overseeing expert BMP panels and their development of new and revised BMPs. The workgroups will decide when the new/revised BMPs are ready for Chesapeake Bay Program approval working through the Bay Program’s established BMP protocol (CBP WQGIT 2014). The workgroups will continue to be responsible for developing, with input from their respective BMP expert panels, verification procedures for new Bay Program approved BMPs, as needed.

Jurisdictions. Jurisdictions are ultimately responsible for providing the necessary documentation of verification of all practices implemented within their part of the Chesapeake Bay watershed and submitted through each respective state’s NEIEN node for crediting of nutrient and sediment pollutant load reductions. They are responsible for documenting—in detail or by reference—the verification programs, protocols and procedures for all agencies, organizations, institutions and businesses contributing to the collective set of tracked, verified and reported practices for nutrient and sediment load reduction credit. The jurisdictions will decide what BMP verification protocols they will build into their existing BMP tracking, verification and reporting programs in order to meet the Chesapeake Bay Program’s adopted BMP verification principles. They may make the decisions on prioritizing verification efforts based on practices, effectiveness, geography or any other considerations. Jurisdictions will be responsible for either removing a reported practice at the end of its specified lifespan or documenting that the practice has been reverified and assigning the new lifespan consistent with their approved verification program.

Approval for Alterations to Resource Improvement Practices (RIs):

Appendix H

Modifications to Approved VI’s: Upon CBP partnership approval, jurisdictions are allowed to make individual VI’s stricter than the approved definition per state program requirements, regulations, etc. Where “state or local regulations or requirements” are mentioned, jurisdictions may insert specific state regulation or requirement references in the VI. A jurisdiction may not make a VI less restrictive or weaker than found in the CBP approved Report. If jurisdictions wish to propose less restrictive VI’s or additional RI’s, they must be first reviewed and approved following the AgWG and CBP approval process.

Table 5. Chesapeake Bay Program BMP Verification Program Design Matrix

A. Program Component	B. Program Elements	C. Program Element Options
i. BMP Verification	1. What was the driver for BMP installation?	Regulation, permit, cost-share, non-cost-share
	2. How many BMPs will be inspected?	All, percentage, subsample, those targeted
	3. How is inspection frequency and location determined?	Workgroup guidance, statistics, targeting, law, available funding
	4. How often are BMPs/groups of BMPs inspected?	Benchmark in BMP implementation timeline, 0-<1 yr, 1yr, 1-3 yrs, >5 yrs
	5. What is the method of inspection?	Field visual, aerial, paperwork review, phone/paper survey
	6. Who will conduct the inspection and is he/she certified/trained?	Regulatory agency, non-regulatory agency, independent party, self-reported
	7. What needs to be recorded for each inspection?	Meets specifications/standards, visual functioning, location
	8. Is execution of the inspection process documented in and checked against an updated quality assurance (QA) plan?	QA plan in place, program checked <u>and</u> amended to ensure compliance; QA plan in place but not actually applied; and no QA plan

	9. How is collected data recorded?	Database, spreadsheet, written files	
	10. At what resolution are results reported to EPA and/or the public?	Individual practice level, site-level, by sub-watershed, by county, by state	
ii. BMP Data Validation	11. What is the QA/QC process to prevent double-counting or counting of BMPs no longer in place?	BASIC: Database/paper check of adequate statistical sample	PREFERRED: Visual field check of adequate statistical sample
	12. What is the method used to validate state's ability to collect and report correct data?	BASIC: Database/paper check of adequate statistical sample	PREFERRED: Visual field check of adequate statistical sample
	13. If data is provided by external independent party or industry, what method is used to provide adequate QA for acceptance by the Chesapeake Bay Program?	BASIC: Database/paper check of adequate statistical sample	PREFERRED: Analytical comparison to a known database and review of data collection procedures
	14. Who conducts data validation?	BASIC: Non-regulatory agency	PREFERRED: Regulatory agency, independent external party
iii. BMP Performance	15. What is the process to collect data to assess BMP performance and confirm consistency with the Chesapeake Bay Program's approved BMP efficiencies?	BASIC: Visual field assessment of statistical sample (check for signs of failure)	PREFERRED: Analytical measurement of performance for a statistical sample (water quality monitoring, soils test, manure sample, etc.)
	16. Who collects BMP effectiveness data?	BASIC: Non-regulatory agency, nongovernmental organization	PREFERRED: Regulatory agency, university

Source: BMP Verification Review Panel November 19, 2013 Recommendations Document

Table 6. Jurisdictional BMP Verification Program Development Decision Steps for Implementation

Below are the 14 steps for each Chesapeake Bay watershed jurisdiction to consider when developing their BMP verification program. Under each step are questions for consideration which will prompt decisions that may be needed to develop jurisdictions' verification protocols.

1) Determine what BMPs to collect:

- a) Do you want to collect all BMPs that were listed in your jurisdiction's Phase II WIP? Additional/or some other combination of BMPs?
- b) Do the listed BMPs meet NRCS standards, state standards, and/or Chesapeake Bay Program (CBP) definitions?
- c) Do you want to report BMPs that are considered resource improvement practices (i.e., they do not meet NRCS standards, state standards, or CBP BMP definitions but do result in nutrient and/or sediment pollutant load reductions)?
- d) When collecting the selected BMPs, do you know the year they were implemented?
- e) For reported BMPs, are you collecting all the elements required for CBP model application (for example, for cover crops, do you know species, date planted, kill down date, fertilization if any, etc.?) or will you take the lowest credited efficiency available?
- f) Have the selected BMPs been approved by CBP? If not, do the BMPs have CBP provisional acceptance status as an interim BMP?
- g) Are the practices you plan to collect worth the cost of collection?

2) Determine where to collect BMPs:

- a) Depending on the BMPs you choose to collect, at what level will you report these (i.e., site specific scale; on a county level; on a (sub-) watershed level, state-wide, etc.)?
- b) Does the whole state need to be canvassed or only certain areas where there is a resource concern or particular practice implementation (i.e., Eastern Shore vs. rest of state)?

3) Protocol—how to collect BMPs:

- a) What system/method have you decided to use to collect the BMPs?
- b) If the BMP is only present at a certain time of year (i.e., cover crops, conservation tillage, etc.), does your verification method and associated workload requirements take this into account?
- c) What is the cost benefit ratio on the system selected (high, medium, low)?
- d) Do you have current funding for the BMP collection system selected?
- e) Do you plan to collect BMPs in the selected areas only during certain seasons of the year, throughout the fiscal year, or will it take several years to determine if they are properly functioning?
- f) Has your selected system been accepted by the people who will be collecting the BMPs—i.e., conservation districts, municipalities, state agencies, farm community, special interest groups, NGOs, USDA, EPA, USFWS, or other federal agencies?

- 4) **BMP verification system development:**
 - a) What system/method will be used for the verification of collected BMPs?
 - b) Does it require: trained state or federal employees; other trained specialists; self-certification; or technological expertise (i.e., aerial photograph interpretation)?
 - c) Has your selected system been approved by the appropriate CBP workgroup?

- 5) **Training on selected data collection and verification systems:**
 - a) Do you have written guidance and documentation on the data collection and verification systems?
 - b) How will you train data collectors and verifiers to use the selected system/method (i.e., in person, webcast, etc.)?
 - c) Does your system require independent verification?
 - d) Is there a "certification requirement" for anyone who collects data and a follow-up CEU requirement?
 - e) Who do the data or verification collectors call if there is a question?

- 6) **Use of existing electronic data collection system or update/development of new systems:**
 - a) Does the electronic data collection and storage system exist for recording BMP implementation, or do you have to build a new one, or make adjustments to the existing system?
 - b) What is the cost to develop updates or create the system and do you have funding?
 - c) How long will the system be viable (due to technology or other changes)?
 - d) What is the ease of use for the BMP verifiers and data entry personnel?
 - e) What is the ease of use for the landowner (if applicable in self-certification)?
 - f) Where will the data be maintained and is the system secure?
 - g) Is the system mapped to provide the data required to NEIEN and to CBP?
 - h) Who will transmit the data?
 - i) How will you update the data in the future and remove BMPs that are not being maintained, no longer in use, or no longer in existence or expired?
 - j) Does the electronic system have standard reports that can be provided to agency leadership or others if requested or will someone have to build reports?
 - k) Have you taken into account BMPs that may have more than one funding source so that you do not have double counting?
 - l) Is the data available to the public? Do you have appropriate FOIA, Section 1619 or other protection needed for the data?

- 7) **Training on data entry:**
 - a) Will the training on the selected data entry system be given by: reading documentation or guidance documents; group training; net meetings; field training; or any combination?
 - b) Will there be a "certification" requirement to use the data entry system?

- c) If you are recording initial verification determinations on paper, how do you make sure they are accurately entered into the electronic system?
- d) Will training be required for the landowners if they are entering data?
- e) How and when is the best time to conduct the training for data entry personnel?
- f) Will there be a "certification" requirement for those who enter data?

8) Pilot of collection, verification and data entry systems:

- a) Where will the state pilot the data collection and verification systems?
- b) How long will the pilots(s) take?
- c) Who will be involved in the pilot(s)?
- d) How will debriefing be conducted to determine pilot success and/or system changes needed after the pilot?

9) Reliability and validity testing of the new system:

- a) Reliability assures that every time you ask the data collection question, you get the same answer. How will you test this?
- b) Validity is when you compare what you collected to another system of collection, to see if you get the same or a similar answer. How will you test this? (Example: looking at the same data in another system like ChesapeakeStat, USDA's CEAP and NASS data systems, etc.)

10) Adjust systems and training:

- a) After testing the systems, how will you implement adjustments you have to make and are there documentation changes, system changes, or re-training involved in making those changes?

11) Implement tested and adjusted data collection and verification systems:

- a) After you have tested the system you should re-test the adjusted system to make sure you still have adequate reliability and validity of the data.
- b) If the tested system changes the use of the system, documentation, output of data or timeline for collection, you may need to re-train all employees.
- c) Realize that new systems are very seldom right the "first time" implemented.
- d) Allow for the system to operate without continuous changes (usually one year, unless the problem is really significant) for data collection personnel to get used to the system.
- b) Set up a system for users to report problems to system designers.

12) Follow-up checking procedures:

- a) What method is used to select the statistical sample for quality assurance?
- b) What documentation is needed for follow-up check findings?
- c) What actions will be taken if problems are found (i.e., additional training, removal or correction of data in system, etc.)?

13) Communication strategy:

- a) Do you need to prepare and conduct communication strategies for: the data collection event; landowners; local, state or federal leadership; general public?
- b) How will information be provided: written, electronic, news or media, public meetings or any combination?
- c) Do you want feedback about what you propose to do before you start the process?
- d) Will you make changes if you accept feedback?
- e) Will there be communication of findings throughout the process or at a specific time in the process?
- f) Who does the landowner or general public call if they have questions?
- g) Will there be a published document of the findings and outcomes of the collection of BMPs?

14) Future year systems:

- a) As BMP technologies or electronic computer systems change, will you be able to change how often you collect and verify data (i.e., moving from on the ground collection to satellite imaging)?
- b) Will new technology change how to determine if the practice is still in existence or needs to be re-verified?
- c) How will you remove practices from the database that are not being maintained, no longer in existence or have expired in the future?
- d) If you use different systems in the future, have you gone through all of the above steps?

Source: CBP Partnership's BMP Verification Review Panel November 19, 2013
Recommendations Document

Table 7. Jurisdiction BMP Verification Protocol Components Checklist

	State:			
	Sector:			
	BMP Verification	Present	N/A	Comments
1	BMPs Collected			
	Type (structural, management, annual, etc.)			
	BMP funding/cost shared (federal, state, NGO, non-cost shared)			
	Distinct state standards/specifications			
	Matching CBP BMP definition/efficiencies			

2	Method/System of Verification/Assessment			
	Description of methods/systems to be used			
	Documentation of procedures used to verify BMPs			
	Instruction manual for system users			
3	Who will Complete the Verification			
	Qualification requirements			
	Training requirements			
	Certification requirements			
	CEU follow-up training requirements in the future			
4	Documentation of Verification Finding			
	Date of installation			
	Location (lat/long if applicable)			
	Level of reporting (watershed, HUC, county, site specific, etc.)			
	Units (number, acres, length, etc.) needed for NEIEN			
	Ownership (public, private)			
	Documentation:			
	Pictures			
	Worksheets			
	Electronic Tool			
	Aerial Photos			
	Maps			
	Other			
	Report Generator			
5	How Often Reviewed (Cycle of review)			
	1-2 years			
	5 years			
	10 years			
	Other			
6	Independent Verification of Finding			
	Is this a requirement?			
	Internal Independent			
	External Independent			

	BMP Data Validation			
7	Quality Assurance/Spot Checking			
	Who: qualifications/training/certification			
	Method to select BMP for follow-up check			
	Method to select the number of BMPs to review			
	Other			
8	Data Entry of BMP Implementation			
	What is the system?			
	Who enters data (training/certification)?			
	Does the system connect to NEIEN?			
	System in place prevent double counting?			
9	External Provided Data Validation Meeting CBP Guidance			
	Method to validate data			
	Who will validate data (training/certification)?			
10	Historic Data Verification			
	System to re-certify or remove			
	Who will verify historic data (training/certification)?			
	Documentation of action			
	BMP Performance			
11	Does state collect data to assess BMP performance?			
	System used to collect BMP performance data?			
	Who collects BMP performance data?			
	Who analyzes collected data and reports to CBP?			
12	Additional Comments/Requests			
13	CBP Approval Process			