

Virginia Tillage/Residue Survey – Using an Alternative Approach for Verification submitted by VADCR

Non-Intrusive BMP Verification Standard of Procedure
submitted by PADEP

Submission Reviews

Jon Harcum
Tetra Tech, Inc.

Charge & Chronology

Charge

- Independent review.
- Assess the consistency of these documents with the CBP Partnership approved processes and data confidence levels.
- Evaluate the strength of the results and findings presented in the state proposals.

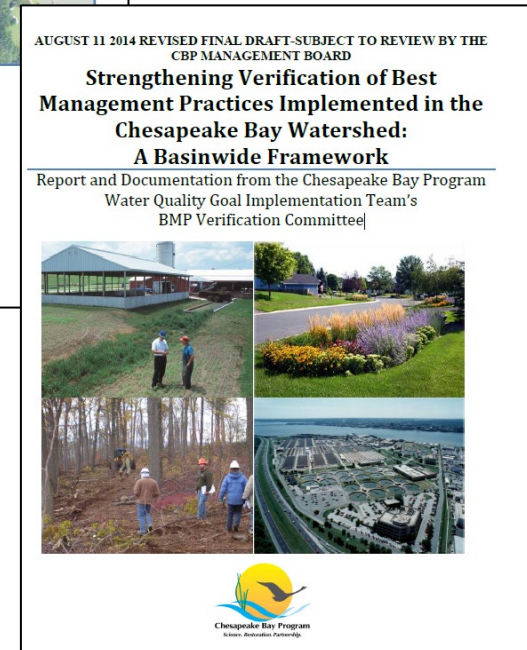
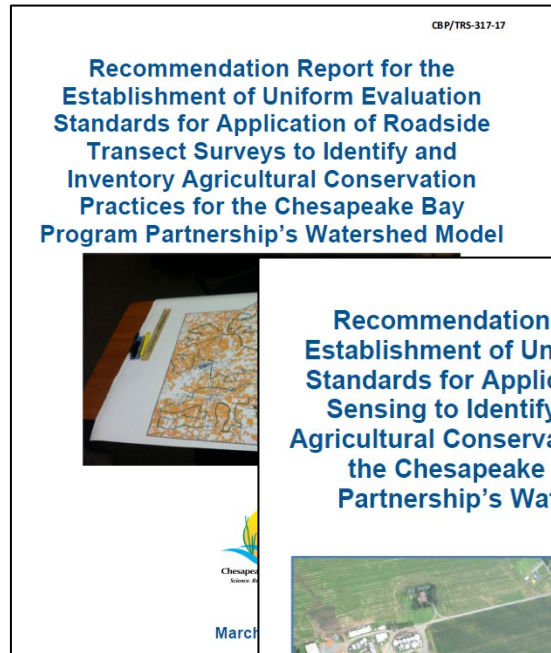
Chronology

- July 17: proposals to AgWG
- July 20: presentations to AgWG
- July 26: draft technical reviews prepared by Tt
- July 26: received revised VADCR document
- July 27: EPA, involved parties, and Tt met
- July 28: revised technical review
- August 5: received revised PADEP document
- August 8: EPA, involved parties, and Tt met^a
- August 8-11: Revised proposals reviewed
- August 17: AgWG meeting

^aPADEP only

Background Documents

1. Recommendation Report for the Establishment of Uniform Evaluation Standards for Application of Roadside Transect Surveys to Identify and Inventory Agricultural Conservation Practices for the Chesapeake Bay Program Partnership's Watershed Model
2. Recommendation Report for the Establishment of Uniform Evaluation Standards for Application of Remote Sensing to Identify and Inventory Agricultural Conservation Practices for the Chesapeake Bay Program Partnership's Watershed Model
3. Strengthening Verification of Best Management Practices Implemented in the Chesapeake Bay Watershed: A Basinwide Framework, Report and Documentation from the Chesapeake Bay Program Water Quality Goal Implementation Team's BMP Verification Committee
4. Tt reviews are posted at [AgWG website](#)



VADCR – Virginia Tillage/Residue Survey – Using an Alternative Approach for Verification

Highlights

- Applies “CTIC” survey methodology.
- Updates for 2022
 - Sample sizes informed from 2015 survey.
 - Increased to four classes:
 - <15%, 15-30%, 30-60%, >60%.
 - Transitioned to on-line tools.
- Change for 2022
 - Use photos taken by survey team for validation

Key Results

- On statewide basis
 - Photos evaluated at 11.5% of sites.
 - 85.2% overall accuracy between survey team and photos.
- Comparison of photo classification to ground-truthing
 - 95 sites
 - 84.2% overall accuracy
 - No sites more than 1 category away, i.e., a banded matrix

VADCR – Virginia Tillage/Residue Survey – Using an Alternative Approach for Verification

Analysis, Notes, and Recommendations

- 1. Methodology Review Request:** VADCR seeks approval for 2022 survey methodology and results, Tetra Tech's role limited to methodology review.
- 2. Exceeded Verification Threshold:** VADCR commended for verifying 11.5% (1,561/13,600) sites, exceeding 10% threshold in CBP (2017) report.
- 3. Revised Method to Improve Accuracy:** Initial accuracy 64%, revised methodology boosts accuracy to 85%, removing low-quality images and using one analyst.
- 4. Image Quality Recommendations:** Report should include recommendations for taking consistent images.
- 5. Ocular Calibration Impact:** Report a) additionally acknowledge that ocular calibration can affect overall accuracies and b) include recommendations for maintaining ocular calibration by survey team and verification team.
- 6. Clarification Needed:** Report should clarify that 95 photo-to-ground truth sites are a subset of the 189 comparison sites that had photos.
- 7. BMP Methodology Acceptance:** Reminder of CBP (2017) recommendations.
- 8. Geolocation Consideration:** Photos in the appendix were geolocated.

PADEP – Non-Intrusive BMP Verification Standard of Procedure

Highlights

- 5-step process
 1. **Locate** using aerial desktop review and govt. agency documents to locate potential BMPs.
 2. **Record** potential RI BMPs in Aerial Desktop Review Platform.
 3. **Verify all** potential RI BMPs based on public roadside observations using qualified personal.
 4. **Report** data through online site and transfer to *Practice Keeper*.
 5. **Review** and approved entered data in *Practice Keeper* to remove duplicates.
- Targeted Resource Improvement BMP
 - RI-7 Grass Nutrient Exclusion Area on Watercourse
 - RI-8 Grass Buffer on Watercourse
 - RI-9 Forest Nutrient Exclusion Area on Watercourse
 - RI-10 Forest Buffer on Watercourse
 - RI-16 Barnyard Clean Water Diversion
 - RI-18 Watering Trough
- RI BMPs Verified
 - 810 RI BMPs verified through road-side observations
 - Traditional on-site inspections performed at 81 RI BMPs
 - 100% concurrence

PADEP – Non-Intrusive BMP Verification Standard of Procedure

- Step 1—Locate: had built-in screening to remove sites too far from public road or not likely visible from road.
- Road-side observations are made for **all potential** RI BMPs – no extrapolation.
- The more experienced, Group 1, professionals are tasked with making all final determinations of practices while utilizing this methodology.
- All visual indicators were evaluated as `Yes`, `N/A`, or `No`.
- Step 3—Verify: Includes aspect where additional RI BMPs (not found in Step 1) can be added.
- Step 5—Review: includes step to ensure sites are not duplicated in *Practice Keeper*.
- % sites verified with traditional on-site methods (100% agreement)
 - RI-7/8: 9%
 - RI-9/10: 9%
 - RI-16: 13%
 - RI-18: 28%

PADEP – Non-Intrusive BMP Verification Standard of Procedure

Analysis, Notes, and Recommendations

1. **Innovative BMP Approach:** Authors praised for novel approach; adaptable across jurisdictions if AgWG approves.
2. **Training Clarity Needed:** Training requirements were outlined, but more information on adapting traditional on-site verification methods to road-side observations. Update report to specify Group 1 professionals' role in road-side observations.
3. **Screening for Visibility:** Step 1 – More information needed on screening to remove sites to improve efficiency.
4. **Duplicate Prevention:** Step 5 - Commended for including review step to avoid duplication in Practice Keeper system.
5. **Aerial Imagery Age:** More information on age range of aerial imagery should be added.
6. **Exclusion Lengths Clarity:** Step 2 - Describe method for determining exclusion area and buffer lengths.
7. **Data Entry Clarification:** Report should show all visual indicators included in Survey 123 form; clarify data entry for non-visible indicators.
8. **Verification Metrics Missing:** Include remote sensing accuracy and completeness metrics at RI-level for comprehensive evaluation.
9. **Effective On-site Inspections:** Praise for 10% on-site inspection overall; report on number of on-site inspections at RI-level.