

An aerial photograph of a farm complex. The farm features several large white and red barns, several tall cylindrical silos, and a central cluster of buildings. The surrounding landscape is dominated by vibrant green agricultural fields, with distinct curved patterns in the foreground suggesting a specific farming technique. The lighting is bright, casting soft shadows and highlighting the textures of the crops and buildings.

CBP Agriculture Workgroup Update

CBP Scientific and Technical Advisory
Committee

Quarterly Meeting

June 11, 2013



UNIVERSITY OF
MARYLAND

EXTENSION

Solutions in your community



Chesapeake Bay Program

A Watershed Partnership

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MID-ATLANTIC



Water
Program

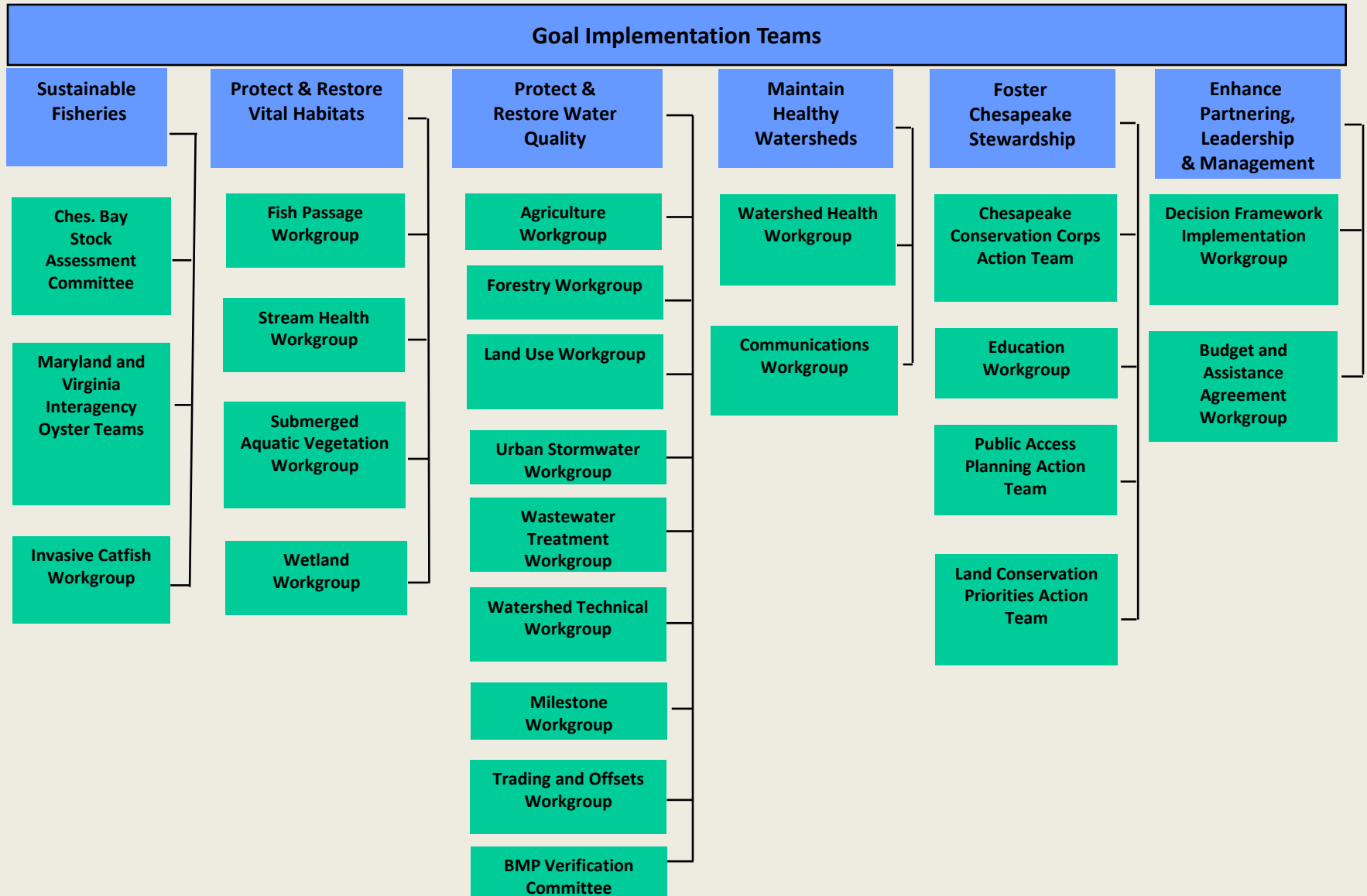
USDA





**Chesapeake Bay Program's
Agriculture Workgroup**

CBP GIT Implementation Workgroup Structure 4-2-13



Agriculture Workgroup

- What is the role of the Chesapeake Bay Program's Agriculture Workgroup (AgWG)?
 - Provide technical expertise and leadership on development and implementation of policies, programs, and research to reduce pollutant loads delivered from agricultural lands and animal operations to upstream waters and the Chesapeake Bay.

Agriculture Workgroup

- What is the primary function of the Agriculture Workgroup for the Chesapeake Bay Program partnership?
 - Provide a forum for discussion, exchange of information and evaluation between federal, state, and local agencies, conservation districts, universities, agri-business, and the corporate sector on sustainable and/or cost-effective agricultural production systems that benefit water and air quality.

Agriculture Workgroup

- Who is represented on the Agriculture Workgroup for the Chesapeake Bay Program Partnership?
 - Academic Institutions (Land Grant)
 - Federal Agencies (Agricultural /Environmental)
 - State Agencies (Agricultural /Environmental)
 - Local Agencies (Conservation Districts)
 - NGO's (Agricultural/Environmental)
 - Industry (Agricultural)

Chesapeake Bay Program Agricultural BMPs



Agricultural BMPs

- Agricultural BMPs represent the largest and most diverse group of conservation practices and management systems within the Chesapeake Bay Program partnership.
- Agriculture represents the largest actively managed land area in the Chesapeake Bay watershed: and second after forests in total land area.

Approved CBP Agricultural BMPs

Nutrient Management

- Nutrient Management
- Precision Agriculture
- Enhanced Nutrient Management

Conservation Tillage

- Continuous No-Till
- Conservation Tillage

Cover Crops

- Cover Crops – Late Planting
- Cover Crops – Early Planting
- Small Grain Enhancement – Late Planting
- Small Grain Enhancement – Early Planting

Pasture Grazing BMPs

- Alternative Watering Facilities
- Stream Access Control with Fencing
- Prescribed Grazing
- Precision Intensive Rotational Grazing
- Horse Pasture Management

Other Agricultural BMPs

- Forest Buffers
- Wetland Restoration
- Land Retirement
- Grass Buffers
- Forest Buffers
- Tree Planting
- Carbon Sequestration/Alternative Crops
- Conservation Plans/SCWQP
- Animal Waste Management Systems
- Mortality Composters
- Water Control Structures
- Non-Urban Stream Restoration
- Poultry Phytase
- Poultry Litter Management
- Dairy Precision Feeding and Forage Management
- Swine Phytase
- Ammonia Emissions Reductions

Interim CBP Agricultural BMPs

Nutrient Management

- Irrigation Management

Manure Management

- Liquid Manure Injection
- Poultry Litter Injection

Mortality Management

- Mortality Incineration

Soil Amendments

- Phosphorus Absorbing Materials

Nursery Management

- Nursery Runoff Management

Non-Cost-Shared Practices

- Tracking and Reporting

Proposed CBP Agricultural BMPs

Manure Management

- Heavy Use Area Poultry Pads
- Poultry Litter Management
- Manure Processing Technology

Stormwater Management

- Agricultural Stormwater Management

Sinkhole Management

- Sink-Hole Grass Buffers



**BMP Definitions and
Effectiveness Values**

BMP Definitions and Effectiveness Values

- The Agriculture Workgroup is implementing the Chesapeake Bay Program partnership's approved "BMP Protocol" for the systematic and scientifically supported development of agricultural BMP definitions and effectiveness values.
- The jurisdictional members of the workgroup were solicited for recommendations that led to a workgroup prioritized list of BMPs to evaluate.
- The workgroup is currently operating based on the list of 20 plus BMPs identified by the partnership.

BMP Definitions and Effectiveness Values

- Four BMP Expert Review Panels representing the highest priority BMPs are currently operating under the oversight of the Agriculture Workgroup.
 - Cover Crops Panel: Jack Meisinger, USDA-ARS
 - Conservation Tillage Panel: Wade Thomason, VT
 - Nutrient Management Panel: Chris Brosch, VT
 - Poultry Litter Subcommittee: Jim Glancey, UD

BMP Definitions and Effectiveness Values

- The BMP Expert Review Panels are tasked with providing recommendations in the following main areas:
 - Phase 5.3.2 modification recommendations
 - Phase 6.0 development recommendations
 - Areas for future research and informational development.

BMP Definitions and Effectiveness Values

BMPs Completed or Currently Scheduled for Review

- Nutrient Management Panel
- Conservation Tillage Panel
- Cover Crops Panel
- Poultry Litter Subcommittee
- Stormwater Retrofits Panel
- Stream Restoration Panel (incl. Regenerative Conveyance Systems)"
- LID and Runoff Reduction Panel
- Urban Fertilizer Management Panel
- Septic Panel Part 1 (review of efficiencies)
- Riparian Buffers Panel (grass and forest)
- Urban Tree Planting Panel
- Manure Treatment Technologies
- Erosion and Sediment Control (as proposed by WV)
- Illicit Discharge Elimination
- Impervious Disconnect
- Animal Waste Storage Systems
- Liquid Manure Injection/Incorporation
- Forest Management
- Septic Panel Part 2 (more broad view of systems)
- Urban Filter Strips and Upgraded Stream Buffers
- Floating Wetlands
- Cropland Irrigation Management
- MS4 Minimum Management Measures
- Shoreline Erosion Control
- Catch Basin Cleanout



**Agricultural BMP
Verification**

Agricultural BMP Verification

- The Agriculture Workgroup identified the need to scientifically support the development of an agricultural verification protocol.
 - Technical assistance obtained from Tetra Tech under the direction of the workgroup.
 - A summary verification report will document the findings from a national scientific literature search...
 - ...and through interviews with both regionally and nationally recognized verification experts.

Agricultural BMP Verification

- The Agriculture Workgroup has used the BMP verification principles developed by the Water Quality Goal Implementation Team's (WQGIT) BMP Verification Steering Committee.
 - The workgroup considered multiple options for developing an agricultural verification protocol.
 - Both positive and non-positive attributes identified for each option.

Agricultural BMP Verification

- Four distinct options have been considered by the Agriculture Workgroup to establish protocols for verifying agricultural BMPs.
 - Version 1
 - Version 2.1
 - Version 2.2
 - Version 3

Agricultural BMP Verification

- Version 1:
Create a limited and uniform verification protocol standard for all practices and programs.
 - Not recommended by the workgroup.

Agricultural BMP Verification

- Benefits
 - Simplistic approach.
 - Provides 100% model acceptance of reported practices.
 - Provides 100% of the model BMP effectiveness values.
- Concerns
 - Does not conform to the diversity of agricultural practices and implementation programs across six jurisdictions.
 - A limited verification protocol standard would not offer sufficient capacity for adequate BMP implementation reporting.

Agricultural BMP Verification

- Version 2.1:
Create diverse verification protocol options and identify the levels of data confidence for each protocol.
 - Limit the units of BMP implementation reported by the degree of relative data confidence
 - Not recommended by the workgroup.

Agricultural BMP Verification

- Benefits
 - Multiple potential verification protocol options reflective of the diversity of agricultural practices and programs.
 - Application of 100% of the model BMP effectiveness values.
- Concerns
 - Produces varying levels of relative data confidence between the protocol options, as well as between practice types within a single protocol.
 - The scientific documentation to assign defensible relative data verification levels is not adequate.
 - Limiting the units of tracked BMPs that could be reported could jeopardize local community support.

Agricultural BMP Verification

- Version 2.2:
 - Create diverse protocol options and identify the levels of confidence for each protocol.
 - Limit the model reduction credits for the units of BMP implementation reported by the degree of relative data confidence.
 - Not recommended by the workgroup.

Agricultural BMP Verification

- Benefits
 - Offers multiple potential verification protocol options that are more reflective of the diversity of agricultural practices and programs.
 - Provides 100% model acceptance of reported practices.
- Concerns
 - Produces varying levels of relative data confidence between the protocol options, as well as between practice types within a single protocol.
 - The scientific documentation to assign defensible relative data verification levels is not adequate.
 - Limiting the model credit values of reported BMPs could jeopardize the scientific defensibility of the BMP effectiveness values.

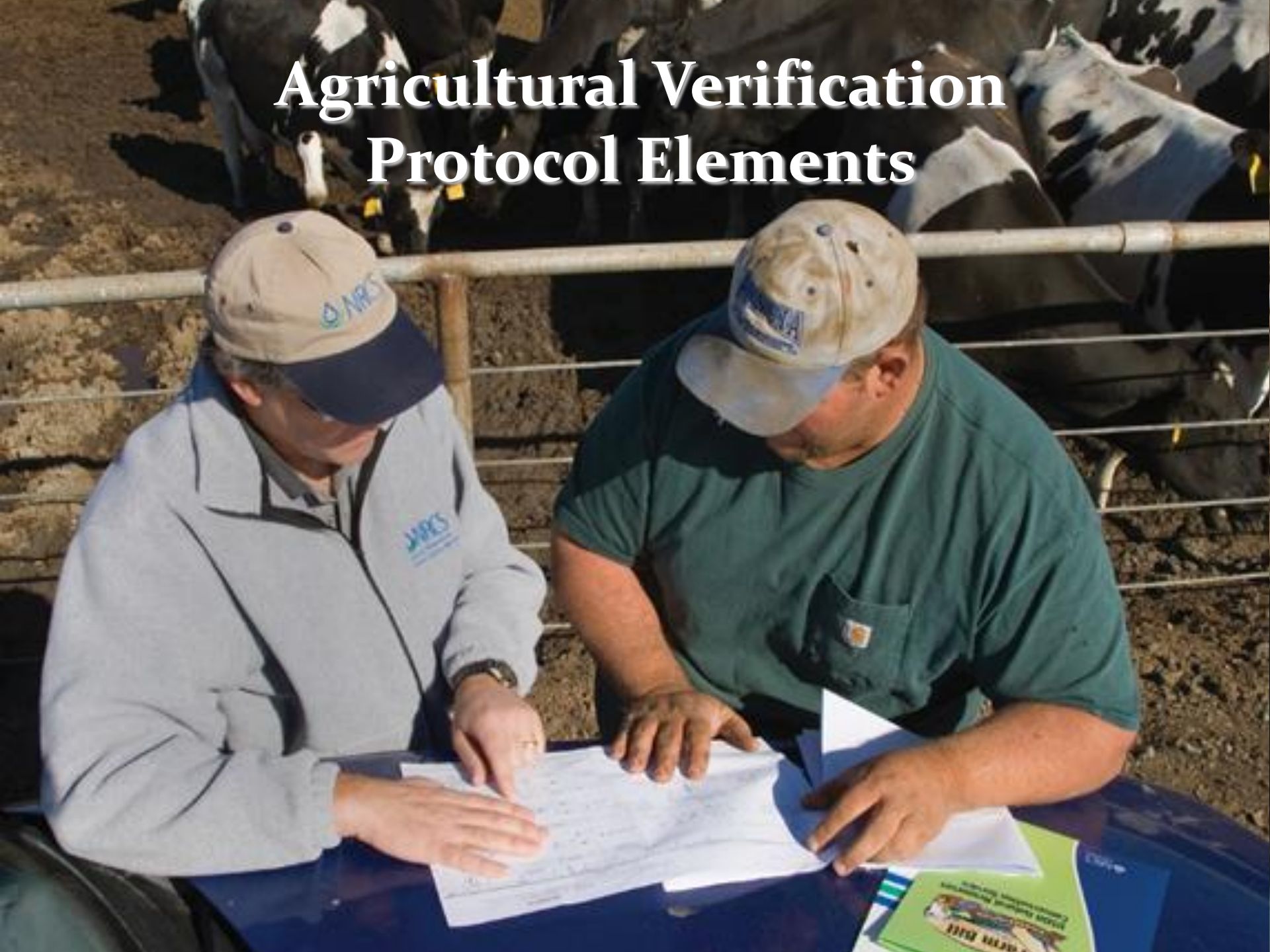
Agricultural BMP Verification

- Version 3:
Create diverse protocol options and apply a uniform minimum threshold of relative data confidence to all protocols.
 - Recommended by the workgroup on November 29, 2012.

Agricultural BMP Verification

- Benefits
 - Multiple potential verification protocol options reflective of the diversity of agricultural practices and programs.
 - The scientific documentation to assign defensible relative data verification levels is adequate.
 - Provides 100% model acceptance of reported practices.
 - Provides 100% of the model BMP effectiveness values.
- Concerns
 - Produces varying levels of relative data confidence between the protocol options, as well as between practice types within a single protocol.
 - Requires attaining the standard confidence level threshold for reporting any BMP implementation.

Agricultural Verification Protocol Elements



Verification Protocol Elements

- **Verification Protocol Version 3.5 Matrix**
 - Statistical Data Confidence Threshold
 - All BMP data to be reported to and credited by the Chesapeake Bay Program models would be required to meet a minimum documented 80 percent level of statistical data confidence.
 - The figure of 80 percent is based on the mid-point of a range of documented data confidence levels identified by the Tetra Tech research study.

Verification Protocol Elements

- **Verification Protocol Version 3.5 Matrix**
 - Agricultural BMP Verification Protocols
Identified general categories of verification protocols.
 - Assessment Methods
Assessment methods and entity that would be collecting and verifying the data.

Verification Protocol Elements

- **Verification Protocol Version 3.5 Matrix**
 - Conservation Practice Category
 - Assessment methods and associated data confidence levels are affected by the type of agricultural BMPs being assessed.
 - Assessments methods were evaluated for each BMP category to determine if the method was realistically appropriate.
 - Significant verification efforts may still be required to meet the data confidence threshold.

Verification Protocol Elements

- **Verification Protocol Version 3.5 Matrix**
 - Cost-Sharing Information
Potential differences for BMPs designed and financed through federal, state, NGO and private sources for each assessment method.
 - Other BMP Information
Ability of each assessment method to verify if the practice meets the BMP specification, a functional equivalent, or non-functional equivalent BMP. Identifies date of practice implementation for model reporting purposes.

Verification Protocol Elements

- **Verification Protocol Version 3.5 Matrix**
 - Verification Methodology
Methodologies to track, verify and report implemented practices. BMPs being assessed and verified through permit or financial incentive programs are limited to the period of the active permit or contractual agreement. Alternative assessment methods are also identified.
 - Verification Issues
Limitations and potential verification issues that need to be addressed to obtain the statistical data confidence threshold requirements.

Verification Protocol Elements

- **Verification Protocol Version 3.5 Matrix**
 - Relative Cost
Relative costs in comparison to one another. Based on range of implementation costs identified in the Tetra Tech research report.
 - Relative Scientific Defensibility
Relative comparative values are assigned to each assessment method pertaining to their scientific defensibility based on the findings of the Tetra Tech research report.

Verification Protocol Elements

- **Verification Protocol Version 3.5 Matrix**
 - Relative Accountability
Relative comparative values assigned to each assessment method pertaining to the accountability of the entity reporting, tracking and verifying the data.
 - Relative Transparency
Relative comparative values assigned to each assessment method based on the transparency of the reported data by outside reviewers.

Agricultural Verification Protocol Packet



Verification Protocol Packet

- The Agricultural Verification Protocol Packet being developed will include the following elements:
 - Verification Protocol Matrix
 - Verification Guidance Document
 - Summary Verification Research Report
 - Verification Planning Tools

Verification Protocol Packet

- Packet is intended to provide...
 - ...structure and expectations of verifying tracked data for reporting to the Chesapeake Bay Program for nutrient and sediment reduction credits.
 - ...guidance for agencies and partners to develop program specific and detailed data verification plans for submission to the Verification Review Panel and partnership for review.
 - ...guidance for the Verification Review Panel and the partnership to review and recommend verification plans.

Verification Protocol Packet

- Estimated date of packet completion and Agriculture Workgroup recommendation...

Late Summer 2013

A photograph showing three people (two women and one man) crouching in a lush green field, likely a cover crop field, during a field assessment. In the background, there is a farm with a blue barn and silos, and rolling hills under a clear sky. The text 'Chesapeake Bay Program Mid-Point Assessment' is overlaid in white at the bottom of the image.

**Chesapeake Bay Program
Mid-Point Assessment**

CBP-MPA

- The Chesapeake Bay Program partnership will be implementing a Mid-Point Assessment (MPA) in 2017-2018.
 - New Phase 6 Chesapeake Bay Program modeling tools developed.
 - New Phase 3 Watershed Implementation Plans (WIPs) developed by each jurisdiction.
 - EPA considers modifications of the Chesapeake Bay TMDL based on past progress and the new WIPs.

CBP-MPA

- Why is the Chesapeake Bay Program Mid-Point Assessment (MPA) critically important to the agricultural community now?
 - Development of the new Phase 6 Chesapeake Bay Program modeling tools by 2017 for representing both current and future agricultural land uses and production.

CBP-MPA

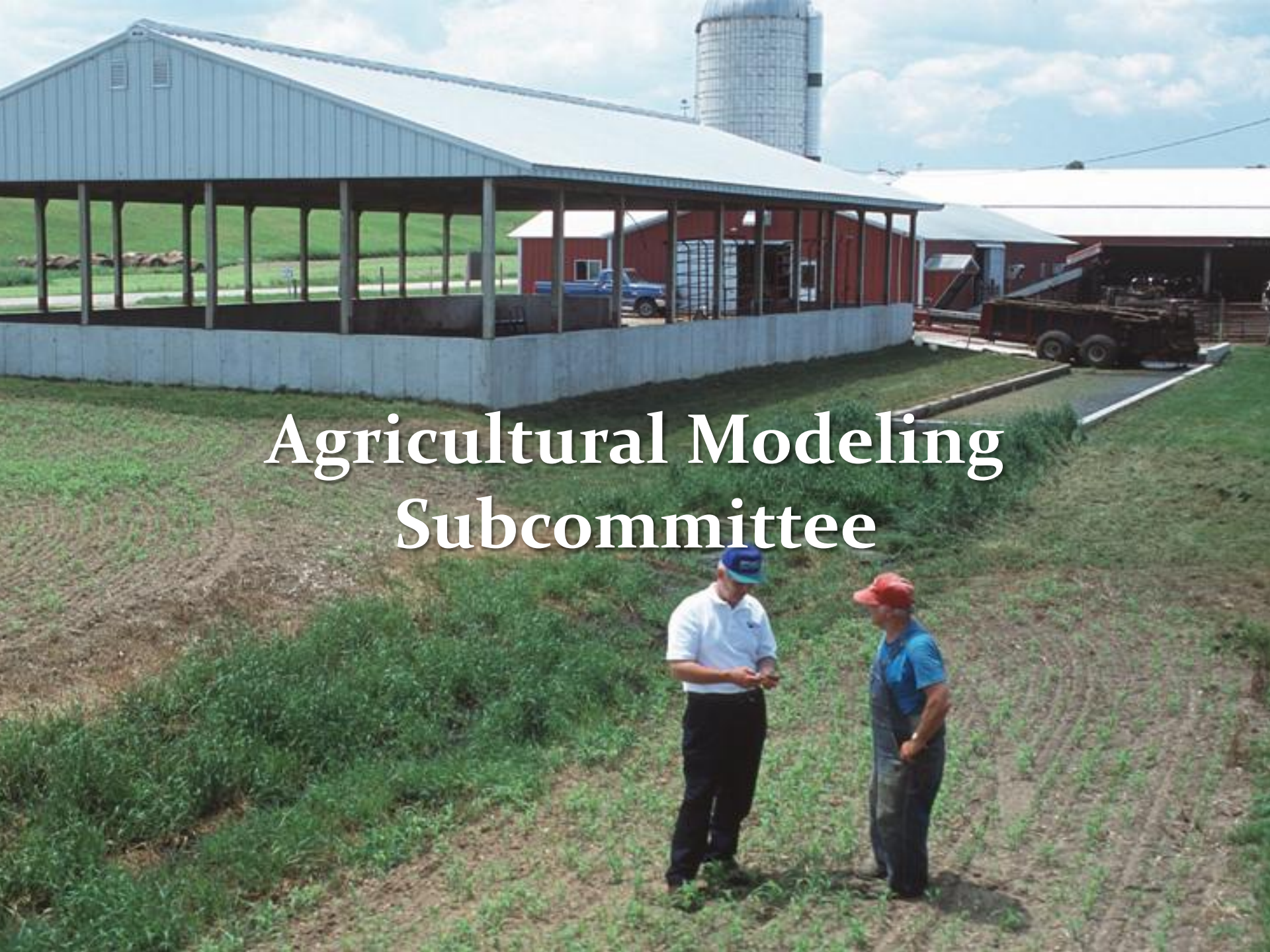
- What are the objectives of the AgWG for representing the agricultural sector in the Phase 6 models?
 - Identify additional existing sources of agricultural production information.
 - Develop new sources of agricultural land use and production information.
 - Replace or supplement national information sources with regional sources.
 - Capture historic agricultural BMP implementation data.

CBP-MPA

- “Building a Better Bay Model: A Workshop for Agricultural Partners” May 22-23, 2013
 - Sponsored by the Agriculture Workgroup and the USDA-NIFA Mid-Atlantic Water Program.
 - Official kickoff of the multi-year agricultural MPA project.
 - Two-day workshop focused on current accounting and future forecasts of livestock production, agricultural nutrients, and agronomic production.
 - Representation from USDA, EPA and State agencies; regional academic institutions; NGO’s; and industry.

CBP-MPA

- **BBBM Workshop Preliminary Outcomes**
 - Approximately 105 participants representing the agricultural “community” across the Chesapeake Bay watershed and nationally.
 - Generated very positive evaluation comments from the diverse participants.
 - Provided a CBP “modeling 101” learning experience for a new audience.
 - Facilitated discussions produced constructive recommendations in each of the six focus sessions.
 - Summary recommendations currently being prepared for release to the Agriculture Workgroup this month.
 - Workshop outcomes and recommendations will be published by the Mid-Atlantic Water Program in 2013.



Agricultural Modeling Subcommittee

Agricultural Modeling Subcommittee

- The Agriculture Workgroup has recently formed the “Agricultural Modeling Subcommittee”
 - Support the agricultural BMP Expert Review Panels with multiple modeling assistance (USDA/EPA).
 - Provide agricultural modeling recommendations to the Agriculture Workgroup for developing recommendations on the new Phase 6.0.
 - Provide a forum for agricultural modeling technical coordination between USDA and EPA-CBPO.

A photograph of several sheep in a field. The sheep are light-colored, possibly white or cream, and are looking in various directions. The foreground is filled with tall green grass. The sky is overcast with grey clouds. The word "Questions?" is written in white text on the right side of the image.

Questions?