Animal Waste Management Systems Expert Panel
Request for Proposals

I. Summary:

The U.S. Environmental Protection Agency Chesapeake Bay Program (CBP) through its Expert Panel Management Cooperative Agreement with Virginia Tech (VT) is seeking proposals to assemble an Expert Panel to determine pollution control performance measure estimates for a suite of animal waste management system best management practices (BMPs), including heavy use area concrete pads adjacent to poultry production facility entrances. Proposals should address the process of developing expert-based recommendations for nitrogen (N) and phosphorus (P) reduction performance estimates (i.e. efficiencies) for these practices, as specified in the body of this request for proposals (RFP). The awarded team will deliver a science-based, defensible report on the effectiveness of the BMPs in reducing N and P losses to the Chesapeake Bay (Bay). When conducting their business and reporting their findings, Expert Panels are expected to adhere to the process and protocols contained in the current version of the document entitled *Protocol for the Development, Review, and Approval of Loading and Effectiveness Estimates for Nutrient and Sediment Controls in the Chesapeake Bay Watershed Model* [1] hereafter referred to as the "BMP Protocol." The selected expert panel will be assisted by Virginia Tech's Project Coordinator for Expert Panel BMP Assessment who is located in EPA's Chesapeake Bay Program Office in Annapolis, MD. Included in that assistance is logistical support for all Expert Panel conference calls (including providing a conference bridge) and meetings.

II. Background:

In the current version of the Chesapeake Bay Program (CBP) partnership's Watershed Model (version 5.3.2), Animal Waste Management Systems (AWMS) for liquid, semi-solid and solid animal agriculture manures are defined as practices designed for proper handling, storage, and utilization of wastes generated from confined animal operations. Reduced storage and handling losses result in more manure available for land application. In the current Chesapeake Bay Watershed Model (CBWM), one way to reduce the environmental loss (i.e. loss via surface runoff) of nutrients from improperly stored livestock manures is implementation of AWMS that meet federal and state design and construction standards. Examples of recognized AWMS include:

- Dry stack – Beef, Dairy, Poultry or Equine (Dry stack/Bedded Pack)
- Outdoor storage tank (Open Top)
- Waste Holding Pond – lined with compacted soil, concrete or a geomembrane
- Compost Bedded Pack
- Under Building Storage Tank
- Flush and store – both Dairy and Swine
- Anaerobic or Aerobic Lagoons (lined with compacted soil or a geomembrane)
- Waste Settling Basins
- Pull-Plug – Swine
- Heavy use area concrete pads adjacent to poultry production facility entrances

The current CBWM incorporates a standard estimated baseline for environmental nutrient losses from assumed storage and handling procedures that varies with the consistency of the livestock manure; e.g. solid (15% nutrient loss) or liquid (20% nutrient loss). The baseline nutrient losses are assumed to be the nutrient load from the simulated animal production operation, thereby adding to the nutrient load to the environment and reducing the amount of manure bound nutrients available for land application. In the CBWM, BMP effectiveness values are applied to reduce the modeled nutrient losses resulting from baseline or non-BMP manure storage and handling.

[1] (http://www.chesapeakebay.net/documents/Nutrient-Sediment_Control_Review_Protocol_v7.14.2014.pdf).

Application of AWMS BMP effectiveness values results is less environmental nutrient loss and retention of more manure nutrients for land application or alternative uses. The current AWMS BMP uniformly reduces the manure storage and handling nutrient losses by 75% and does not distinguish between livestock species or different types of engineered storage systems. By definition, atmospheric ammonia losses are not directly affected by AWMS BMPs, but managed through a separate atmospheric management BMP.

Poultry Heavy Use Area Concrete Pads (PHUACPs) represent the current regional industry practice of constructing concrete pads adjacent to the entrance of poultry production facilities to reduce litter handling losses during routine facility management (e.g. bird harvesting, litter management, cleanout operations). The PHUACP structures are not currently recognized as an existing or interim BMP in Phase 5.3.2 of the CBWM. This expert panel will be tasked with assessing the effectiveness of PHUACPs as a nutrient loss abatement BMP.

III. Scope of Work:

This RFP solicits proposals to assemble an Expert Panel to determine pollution control performance measure estimates for AWMS, including PHUACPs. The Panel's recommendations will be evaluated for incorporation into the CBWM and associated modeling tools. The Expert Panel will define the conditions under which these BMPs reduce N and P pollution.

The panel will review the Phase 5.3.2 CBWM definition and loading or effectiveness estimates for the existing AWMS practices listed above and make adjustments as needed for accounting for these BMPs in the forthcoming Phase 6.0 CBWM. In addition, the panel will review and provide recommendations on the current standard baseline estimates of environmental nutrient losses associated with various types of livestock manures for the Phase 6.0 CBWM and associated modeling tools (currently either 15% or 20% nutrient loss as described above). The Panel will also develop a recommendation for the definition and loading or effectiveness estimates for the PHUACP BMP. The Panel will receive support from the Virginia Tech Project Coordinator and CBP Staff to ensure that recommendations are complimentary with, but not overlapping, the recommendations of other ongoing expert panels (e.g., Manure Treatment Technologies).

Proposals to establish this Expert Panel should outline the proposed process of developing expert-based recommendations for N and P reduction values for the identified BMPs. The panel will develop a report that details its recommendations and includes all the information described in the BMP Protocol (see also Section V.i.1 of this RFP).

IV. Content and Length:

Proposals submitted under this RFP may request funding up to $42,000 in total costs, including any indirect or overhead. The project duration is a maximum of twelve (12) months from the award date. Proposals should be no longer than five (5) 8 ½" x 11" pages, single-spaced, 12 pt Arial font. Two-page (maximum) CVs that document the qualifications of each of the proposed Expert Panel members, including the expert panel chair, should be included with the proposal submission. The CVs are in addition to the five page proposal limit. Proposals must specify/identify the following:

1. Expert Panel Chair.
2. Expert Panel membership. As specified in the BMP Protocol[1], the Panel must include at least eight individuals; three recognized topic experts, three individuals with expertise in environmental and water quality-related issues, a representative from the CBP's Watershed Technical Work Group (WTWG), and a representative from the CBP modeling team. The CBP will assign panel members from the WTWG and the CBP modeling team and applicants need not include the CV's of these panel members in their proposal. These assigned panelists will lend specific expertise to each panel (e.g., the CBP modeling team panel member will lend a working knowledge

of the CBP Watershed Model and potential ways the model can accommodate various BMPs). Panelists' areas of expertise may overlap. Suggested areas of expertise that may be applicable to this panel include, but are not limited to: animal and dairy science; environmental, agricultural, or biological systems engineering; professionals who have extensive experience with livestock production and manure management systems typical in the Chesapeake Bay watershed; knowledge of how BMPs are tracked and reported in the CBP partnership's modeling tools, knowledge of relevant NRCS practice codes and standards, and knowledge about nutrient cycling dynamics in agricultural systems. Panel membership must include poultry and dairy expertise. Swine/beef/equine expertise is also preferred but not required. **Panel members MUST NOT represent entities with potential conflicts of interest, such as entities that could receive a financial benefit from Panel recommendations or where there is a conflict between the private interests and the official responsibilities of those entities. All panelists MUST identify any potential financial or other conflicts of interest prior to serving on the Panel.**

3. Project Narrative/Scope of Work that details how the Expert Panel Chair and membership plan to develop their final report. This section should document how the proposed Expert Panel will execute the process and procedures detailed in the CBP's BMP Protocol[1].
4. Project timeline.
5. Project Budget including a detailed budget justification.

V. Proposal Review and Selection

Proposals will be reviewed by Chesapeake Bay Watershed Research and Outreach Collaborative (CBW-ROC) Steering Committee. Current CBW-ROC Steering Committee membership includes representatives from selected land grant universities within the Chesapeake Bay watershed (Table 1). Proposals will be scored and ranked using the criteria specified below. The proposals will also be shared with and reviewed by the CBP Program Officer responsible for oversight of the Expert Panel Management Cooperative Agreement with VT. Review comments made by the CBP Program Officer will be considered when selecting the winning proposal. Upon selection by CBW-ROC, the Panel's scope of work (SOW) and list of proposed panel membership will be subject to review and comment by the following CBP partnership groups, as described in the BMP Protocol:[1] the Water Quality Goal Implementation Team (WQGIT) and relevant workgroups, the Habitat Goal Implementation Team, and the Scientific and Technical Advisory Committee. Approval of the SOW and membership will be requested from the Agriculture Workgroup (AgWG). Any changes to the SOW or membership as a result of this process will be made cooperatively between the Panel Chair and the CBP partnership. The Panel will convene following approval from the AgWG.

Table 1. Current Chesapeake Bay Watershed Research and Outreach Collaborative (CBW-ROC) Steering Committee

Jurisdiction	Team Member	Institution
Delaware	Jenn Volk	University of Delaware
Maryland	Frank Coale	University of Maryland
New York	Quirine Ketterings	Cornell University
Pennsylvania	Matt Royer	Penn State University
Virginia	Brian Benham (Chair)	Virginia Tech
Washington, D.C.	Tolessa Deksissa	University of the District of Columbia
West Virginia	Tom Basden	West Virginia University

V.i. *Evaluation Criteria:*

1. ***Organizational Capability and Program Description (40%):***

   Proposals will be scored based on the overall quality of the proposal and how it demonstrates/illustrates the process/tasks that will be undertaken to successfully achieve the project's objectives by the posed deadline. Reviewers will specifically assess the extent to which proposed project acknowledges and will adhere to the BMP Protocol[1]. As presented in the BMP Protocol, Expert Panels are expected to develop

definitions and loading or effectiveness estimates for the nutrient- and sediment-reducing technologies and practices they have agreed to review. Each Expert Panel will work with the Project Coordinator (a Virginia Tech employee stationed at the CBP office in Annapolis, MD), the appropriate CBP source Workgroup(s) and the CBP Watershed Technical Work Group to develop a final report that documents the following:

- Identity and expertise of Panel members.
- BMP name/title.
- Detailed definition of the practice.
- Recommended N, P, and sediment loading or effectiveness estimates.
    - Discussion may include alternative modeling approaches if appropriate.
- Justification for the selected effectiveness estimates, including:
    - List of references used (peer-reviewed, grey literature, etc.).
    - Detailed discussion of how each reference was considered and, if applicable, which sources of potential relevance were not considered.
- Description of how best professional judgment was used, if applicable, to supplement available literature and data.
- Expected Phase 6 Watershed Model land uses to which the BMP will be applied.
- Load sources that the BMP will address and potential interactions with other practices.
- Description of pre-BMP and post-BMP circumstances, including the baseline conditions for practices.
- Conditions under which the BMP works:
    - Should include conditions where the BMP will not work, or will be less effective. An example is large storms that overwhelm the design.
    - Any variations in BMP effectiveness across the watershed due to climate, hydrogeomorphic region, or other measureable factors.
- Temporal performance of the BMP including lag times between establishment and full functioning (if applicable).
- Unit of measure for the BMP and its effectiveness estimate (e.g., feet, acres).
- Locations within the Chesapeake Bay watershed where this practice is applicable.
- Useful life; effectiveness of practice over time.
- Cumulative or annual practice.
- Description of how the BMP will be tracked, reported, and verified.
    - Include a clear indication that this BMP should be used and reported by jurisdictions;
- Suggestion for a review timeline; when will additional information be available that may warrant a re-evaluation of the estimate.
- Outstanding issues that need to be resolved in the future and a list of ongoing studies, if any, that may inform future reviews of the practice.
- Documentation of any dissenting opinion(s) if consensus cannot be reached.
- Operation and Maintenance requirements and how neglect alters performance.

Additional Guidelines

- Identify ancillary benefits and unintended consequences
- Include negative results
    - Where studies with negative pollution reduction data are found (i.e. the BMP acted as a source of pollutants), they should be considered the same as all other data.
- Include results where the practice relocated pollutants to a different location. An example is where a practice eliminates a pollutant from surface transport but moves the pollutant into groundwater.

In addition, the Expert Panel will follow the "data applicability" guidelines outlined in Table 1 of the BMP Protocol. The panel will utilize the Partnership approved Agricultural BMP Verification Guidance[2] as the basis for developing BMP verification guidance recommendations that are specific to the BMP(s) being evaluated. The panel's verification guidance will provide relevant supplemental details and specific examples to provide the Partnership with recommended potential options for how jurisdictions and partners can verify recommended animal waste management systems and poultry heavy use area concrete pads practices in accordance with the Partnership's approved guidance.

2. ***Past Performance and Programmatic Capability (20%)***
   Proposals should, to the extent possible, discuss how the applicant's past performance will ensure the successful completion of proposed activity (i.e., managing a panel of experts to seek out and review relevant data/information to produce a science-based, defensible report on a given topic or suite of topics).

3. ***Probability of success of the project (40%)***
   Proposals will be evaluated against the following criteria:
   a. Reasonableness of timeline.
   b. Qualifications of proposed Expert Panelists and their willingness to participate (can be demonstrated with a letter or collaboration appended to proposal).
   c. Appropriateness of requested budget and budget justification.
   d. Adequacy of available support personnel and facilities (if specified in proposal).

VI. Proposal Submission

Proposals are due by the close of business on April 17, 2015. Proposals may be submitted via email or via regular mail to:

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Questions about this RFP should also be directed to Project Coordinator Jeremy Hanson (410.267.5753; hanson.jeremy@epa.gov) or Dr. Benham.

[2] http://www.chesapeakebay.net/documents/Appendix%20B%20-Ag%20BMP%20Verification%20Guidance%20Final.pdf