

Nontidal Wetland Rehabilitation, Enhancement and Creation BMP 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 (panel) to determine pollution control performance measure estimates for nontidal wetland best management practices (BMPs), including rehabilitation, enhancement and creation (establishment). Wetland restoration (re-establishment) is not included in the panel's scope of work. Proposals should address the process of developing scientifically-defensible recommendations for nitrogen (N), phosphorus (P) and sediment reduction performance estimates (i.e. efficiencies) for these practices. When conducting their business and reporting their findings, 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 panel is expected to deliver a report that conforms in content and format as specified in the BMP Protocol¹. The 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 panel conference calls (including providing a conference bridge) and meetings, and editorial support for developing the panel's final report.

II. Background:

The Chesapeake Bay Program (CBP) partnership's Wetland Workgroup convened an expert panel in 2014 to recommend improved definitions for effectiveness estimates for wetland Best Management Practices (BMPs) and new wetland land uses for the Phase 6 Chesapeake Bay Watershed Model (CBWM). The expert panel concluded at the end of 2016, establishing four categories of wetland BMPs that states can report for credit in the Phase 6 CBWM, however, three of the four categories – creation, enhancement and rehabilitation – required further investigation by a subsequent panel. The charge to the new panel is to determine N, P and sediment control performance measure estimates for nontidal wetland best management practices (BMPs), including rehabilitation, enhancement and creation (establishment).

The BMP Protocol¹, requires that each expert panel is to include at least six members, one of whom serves as the Panel Chair. One non-voting representative each from the Watershed Technical Workgroup (WTWG) and Chesapeake Bay Program modeling team are also expected to participate on the panel. An additional representative from the EPA Region III office is recommended in cases where implementation of the BMPs evaluated by the panel are associated with federal permitting processes. Panels are expected to include three recognized topic (wetland) experts and three individuals with expertise in environmental and water quality-related issues. A representative of USDA who is familiar with relevant USDA-Natural Resources Conservation Service (NRCS) conservation practice standards should be included as one of the six individuals. Panelists' areas of expertise may overlap. See section IV for additional information about panel composition.

III. Scope of Work:

The panel will build off the Phase 6 BMP definitions developed by the previous expert panel for nontidal wetland creation (establishment), wetland enhancement and wetland rehabilitation, which are summarized in Table 1. The new panel will recommend N, P and sediment effectiveness estimates for the creation, enhancement and

¹ (http://www.chesapeakebay.net/documents/CBP_BMP_Expert_Panel_Protocol_WQGIT_approved_7.13.15.pdf).

rehabilitation BMP categories in nontidal areas. Recommended effectiveness estimates will be used to simulate pollutant load reductions in the Phase 6 CBWM.

Table 1 - CBP Wetland BMP Category Definitions for the Phase 6 Watershed Model

BMP Category	Chesapeake Bay Program (CBP) Definition	CBP will count the BMP acres as...	Practice and Project Examples
Restoration	Re-establish The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former wetland.	Acreage gain (<i>toward Watershed Agreement outcome of 85,000 acre wetland gain and in Phase 6 annual progress runs</i>)	Restore hydrology to prior-converted agricultural land (cropland or pasture); elevate subsided marsh and re-vegetate; ditch plugging on cropland; Legacy Sediment Removal NRCS Practice 657
Creation	Establish (or Create) The manipulation of the physical, chemical, or biological characteristics present to develop a wetland that did not previously exist at a site.	Acreage gain (<i>toward Watershed Agreement outcome of 85,000 acre wetland gain and in Phase 6 progress runs</i>)	Modifications to shallow waters or uplands to create new wetlands. Placement of fill material or excavation of upland to establish proper elevations for wetlands; Hydrologic measures such as impoundment, water diversion and/or excavation of upland to establish nontidal wetlands NRCS Practice 658
Enhancement	Enhance The manipulation of the physical, chemical, or biological characteristics of a wetland to heighten, intensify, or improve a specific function(s).	Function gain (<i>toward 150,000 acre outcome and Phase 6 annual progress runs</i>)	Flood seasonal wetland for waterfowl benefit; regulate flow velocity for increased nutrient uptake; NRCS Practice 659
Rehabilitation	Rehabilitate The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded wetland.	Function gain (<i>toward 150,000 acre outcome and Phase 6 annual progress runs</i>)	Restore flow to degraded wetland; ditch plugging in a forested wetland area; moist soil management*; invasive species removal; floodplain reconnection; re-establishing needed vegetation on cropland with wetland hydrology; native wetland meadow planting; May include some NRCS Code 657 practices. <u>*Moist soil management should only be counted if there are predominantly native wetland plants; and site can sustain itself as wetland without active management, meaning whether water control structure is operated or not.</u>

The Panel shall identify specific types of practices which should receive credit and new assigned efficiencies for wetland creation, rehabilitation, or enhancement. When developing its recommendations, the panel should work to provide reasonable criteria and examples to clarify when specific practices in the right-hand column fit best into which specific categories, or when a practice may not qualify as a wetland BMP as defined in Table 1.

The Panel will provide recommendations for other existing BMPs which may receive credit under another BMP category, and how the practice should be reported if there are additional wetland credits which may be assigned. For example, livestock exclusion fencing may or may not qualify as wetland enhancement or rehabilitation, Invasive species removal is another practice which may qualify as rehabilitation or enhancement, but currently does not have a BMP efficiency.

The panel will work within established partnership constraints associated with crediting practices, including the guidelines listed below. The Panel Coordinator and CBP Modeling Team representative will notify the panel of any additional guidelines as may be needed for panel recommendations to conform with CBP partnership decisions.

Guidelines

- The panel may first consider if the water quality benefits of wetland creation are different than wetland restoration as defined by the previous expert panel and, if so, to what degree. Both practices are understood as land use change BMPs that also provide treatment of upgradient land uses.
 - This evaluation should consider the long-term capabilities of created and restored wetlands to remove nitrogen, phosphorus and sediment on average, through time and spatial areas.
 - If there is a quantifiable difference in water quality benefits, the panel will deliberate how best to apply the gathered scientific evidence consistent with the BMP Protocol, and agree to defensible numbers that reflect the degree to which water quality benefits of creation differ from restoration, if at all.
- For wetland enhancement and wetland rehabilitation, the degree to which these activities yield nutrient and sediment reductions should be relative to the benefits of restoration and creation. Enhancement and rehabilitation are not simulated as a change in land use, but can provide water quality benefits by treating wetland or upgradient land uses.
 - Non-tidal wetlands are simulated as specific land uses in the Phase 6 modeling tools (as “Floodplain” and “Other”) with loading rates equal to pristine forest, which has the lowest nutrient and sediment loading rates among all Phase 6 land uses.
 - The benefits of enhancement and rehabilitation need to apply to landuse types that exist in the current models. No new land uses can be created for the Phase 6 modeling tools. There is no landuse for degraded wetlands.
- Current placeholder values exist to simulate the water quality benefits for the wetland creation, enhancement and rehabilitation BMPs in Phase 6. However, there is no substantive documentation supporting these placeholder values so the panel should not base its recommendations off those placeholder numbers.

The panel will consult peer-reviewed literature and any regionally-appropriate published data sources on created, enhanced or rehabilitated wetlands. Additionally, the panel should consider studies of natural wetlands to assist in describing an efficiency to be assigned to rehabilitated sites. Some studies – e.g., studies of forested riparian floodplain areas – may also be useful resources even if not associated with “wetlands” as a keyword. In developing its recommendations the panel will follow the data characterization approach described in Table 1 of the BMP

Protocol¹. The panel is encouraged to utilize and build upon the framework and literature reviews of the previous wetland panel².

The panel will develop a report that includes information as described in the Water Quality Goal Implementation Team's *Protocol for the Development, Review, and Approval of Loading and Effectiveness Estimates for Nutrient and Sediment Controls in the Chesapeake Bay Watershed Model*, known as the BMP Protocol¹. The elements of the report required under the BMP Protocol¹ are listed here, but additional detail is available in the BMP Protocol¹ document.

- Identity and expertise of panel members
- Name or title of the practice(s)
- Detailed definition of the practice(s)
- Recommended N, P and TSS loading or effectiveness estimates
- Justification of selected effectiveness estimates
 - List of data sources considered and description of how each data source was considered
 - Identify data sources that were considered, but not used in determining practice effectiveness estimate
 - Documentation of uncertainties in the published literature
 - Documentation of how the Panel addressed negative results or no pollution reduction as a result of implementation of a specific practice
- Description of how best professional judgment was used, if applicable, to determine effectiveness estimates
- Land uses to which BMP is applied
- Load sources that the BMP will address and potential interactions with other practices
- Description of pre-practice and post-practice circumstances, including the baseline conditions for individual practices
- Conditions under which the practice performs as intended/designed
- Temporal performance of BMP including lag times between establishment and full functioning
- Unit of measure
- Locations in CB watershed where the practice applies
- Useful life; practice performance over time
- Cumulative or annual practice
- Recommended description of how practice could be tracked, reported, and verified
- Guidance on BMP verification
- Description of how the practice may be used to relocate pollutants to a different location
- Suggestion for review timeline; when will additional information be available that may warrant a re-evaluation of the practice effectiveness estimates
- Identification of any unintended consequences or ancillary benefits associated with a practice
- Outstanding issues that need to be resolved in the future and a list of ongoing studies, if any
- Documentation of dissenting opinion(s) if consensus cannot be reached
- Operation and Maintenance requirements and how neglect alters the practice effectiveness estimates
- A brief summary of BMP implementation and maintenance costs estimates, when this data is available through existing literature

² *Wetlands and Wetland Restoration: Recommendations of the Wetland Expert Panel for the incorporation of nontidal wetland best management practices and land uses in the Phase 6 Chesapeake Bay Watershed Model*. Hanson, J., and A. Molloy, Editors. Approved by CBP WQGIT, December 2016. <http://www.chesapeakebay.net/publications/title/24978>

While the panel is active the Panel Chair and Panel Coordinator will provide updates on the panel's progress to the Wetland and Agriculture Workgroups as described in the BMP Protocol.

As the panel drafts its report for release the Panel Chair and Panel Coordinator will work with the CBP modeling team and Watershed Technical Workgroup to develop a technical appendix for incorporating the recommended BMPs into Scenario Builder and the Watershed Model. Coordination with the panel's WTWG and Modeling Team representatives throughout the process will help to ensure the panel's recommendations fit within the overall model framework.

As described in the BMP Protocol, the Panel Chair and Panel Coordinator will facilitate the partnership review, comment and approval process on behalf of the panel, updating and seeking input from panel members as needed. The Chair and Coordinator will respond to partnership comments and make edits or revisions to the report, seeking panel input on substantive revisions. The panel is dismissed following partnership approval of the final report (as amended).

IV. Content and Length:

Proposals submitted under this RFP may request funding up to \$70,000 in total costs, including any indirect or overhead. The project duration is a maximum of eighteen (18) months from the award date. The panel should deliver its draft report within 12 months after the panel's first meeting or conference call. An additional 3-6 months is typically needed for partnership review, comment and approval. Proposals should be no longer than six (6) 8 ½" x 11" pages, single-spaced, 11 pt Arial font. Two-page (maximum) CVs that document the qualifications of each of the proposed panelists, including the Panel Chair, should be included with the proposal submission. The CVs are in addition to the six page proposal limit. Proposals must specify/identify the following:

1. Expert Panel Chair.
2. A maximum of (10) panel members is recommended. This does not include the Panel Coordinator or non-voting representatives from the Watershed Technical Workgroup (WTWG) and Chesapeake Bay Program 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. **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.** Proposed panel members identified in the Proposal should include members with the following areas of expertise:
 - Familiarity with nontidal wetland hydrology and knowledge of wetlands in agricultural settings.
 - Knowledge of soil science and pathways associated with nutrients and sediment in wetland systems.
 - Understanding of regulatory programs or state permitting programs.
 - Knowledge of how BMPs are tracked and reported, and the Chesapeake Bay Program partnership's modeling tools.
 - Knowledge of relevant NRCS practice codes or standards or knowledge of similar programs that fund implementation of wetland practices.

The panel composition will ideally have two individuals for each of the above areas of technical expertise; an individual panel member may be considered an expert in multiple areas based on their CV. It is recommended that one member be selected who also served on the previous Wetland Expert Panel that concluded in 2016. Proposed panel membership will be distributed to the Wetland Workgroup, Agriculture Workgroup, WQGIT, Habitat Goal Implementation Team and other relevant CBP partnership groups for feedback as described in the

BMP Protocol. Panel membership must be approved by the Wetland Workgroup. Applicants may contact Virginia Tech's Project Coordinator, Jeremy Hanson for details regarding the previous panel and/or the panel composition approval process (ichanson@vt.edu; 410.267.5753).

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 Protocol¹.
4. Project timeline. As noted above, the panel's report is requested 12 months from the award date, with additional time expected for the CBP partnership review and approval process. Future modifications to the timeline, including extensions, can be negotiated as needed.
5. Project Budget including a detailed budget justification. Typical costs include Panel Chair salary and fringes, travel costs, and if justified staff time. Panelists are normally volunteers, but eligible panelists can be reimbursed for travel costs under the project budget.

V. Proposal Review and Selection

Proposals will be reviewed by a panel that includes Virginia Tech faculty and staff associated with the Expert Panel Management Cooperative Agreement that is funding this effort and selected CBP staff familiar with the panel's charge and the associated CBP needs. 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, 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 Wetland Workgroup (WWG). 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 WWG.

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 Protocol¹. 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 VT Project Coordinator, the appropriate CBP source Workgroup(s) and the CBP Watershed Technical Work Group to develop a final report that documents the elements listed on page 4 of this RFP and discussed in more detail in the BMP Protocol¹.

In addition, the Expert Panel will follow the "data characterization" guidelines outlined in Table 1 of the BMP Protocol¹ (provided as Attachment 1 at end of RFP). The panel will utilize the Partnership approved Wetland BMP Verification Guidance³ 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 practices in accordance with the Partnership's approved guidance.

³ <http://www.chesapeakebay.net/documents/Appendix%20B%20Wetlands%20BMP%20verification%20guidance.pdf>

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 August 01, 2017. Proposals may be submitted via email or via regular mail to:

Brian Benham
Professor and Extension Specialist
Virginia Tech
Biological Systems Engineering (MC0303)
Seitz Hall RM 209, Virginia Tech
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540.231.5705
benham@vt.edu

Questions about this RFP should also be directed to Project Coordinator Jeremy Hanson (410.267.5753; jchanson@vt.edu) or Dr. Benham.

Attachment 1: Table 1 from BMP Protocol – Data Source Characterization [for BMP Panel literature reviews]

	High Quality	Medium Quality	Low Quality
Extent of Replication	Clearly documented and well-controlled past work that has since been replicated or strongly supported by the preponderance of other work; recent (< 5-year old) work that was clearly documented and conducted under well-controlled conditions and thus conducive to possible future replication	Clearly documented older (>5-yr old) work that has not yet been replicated or strongly supported by other studies, but which has also not been contraindicated or disputed	Work that was not clearly documented and cannot be reproduced, or older (>5-yr old) work for which results have been contraindicated or disputed by more recent results in peer-reviewed publication or by other studies that are at least equally well documented and reproducible
Applicability	Purpose/scope of research/publication matches information/data need	Limited application	Does not apply
Study location	Within Chesapeake Bay	Characteristic of CB, but outside of watershed	Outside of CB watershed and characteristics of study location not representative
Data collection & analysis methods	Approved state or federal methods used; statistically relevant	Other approved protocol and methods; analysis done but lacks significance testing	Methods not documented; insufficient data collected
Conclusions	Scientific method evident; conclusions supported by statistical analysis	Conclusions reasonable but not supported by data; inferences based on data	Inconclusive; insufficient evidence
References	Majority peer-review	Some peer-review	Minimal to none peer-review