

## **Protocol for the Development, Review, and Approval of Loading and Effectiveness Estimates for Nutrient and Sediment Controls in the Chesapeake Bay Watershed Model**

### **Introduction**

The Chesapeake Bay Program (CBP) uses loading estimates to quantify expected amounts of nutrients (nitrogen and phosphorus) or sediment loads to water from specific land uses or point sources. Changes in estimated loads from a particular piece of land can occur in a number of ways, including: 1) A change in the land use (e.g. forest instead of grassland), 2) an adjustment based on an estimate of effectiveness of a best management practice (BMP), 3) a measured reduction in direct load to the land use, and 4) a measured reduction from a treatment process. The CBP uses these effectiveness estimates and direct load reductions to land to modify the existing baseline loading for particular land uses and practices. Loads from point sources can be adjusted based on a new treatment process or practice.

The Water Quality Goal Implementation Team (WQGIT) is responsible for approving the loading rate reductions, and percentage adjustments to these rates, used in the Chesapeake Bay Watershed Model (CBWM). The 2014 Chesapeake Bay Watershed Agreement, which includes the commitment to meet two-year milestones that accelerate the pace of Chesapeake Bay restoration, and the need to quantify practices to be used in Watershed Implementation Plans (WIPs) that will achieve Total Maximum Daily Load (TMDL) allocations, will likely spur innovation and identification of new BMPs.

Direct nutrient and sediment load reductions and reductions from treatment processes often can be estimated, or measured, with a relatively high degree of accuracy. However, due to the variability of available data, loading rates and effectiveness estimates for BMPs that are not treatment processes may be based largely on best professional judgment. While the use of best professional judgment is reasonable under those circumstances, other sources of scientific information should be used to support the basis of this judgment and be clearly referenced in the recommendations. Since the definitions and values used for both loading and effectiveness estimates have important implications for the CBP, this Protocol outlines specific procedures for all BMP Expert Panels (Panels) to follow so the process is consistent, transparent, and scientifically defensible.

This document contains three sections addressing the following process steps:

- I. Determine the need for a review process
- II. Review process:
  - a. For new estimates
  - b. For existing estimates or treatment processes
- III. Chesapeake Bay Program review and approval

The Protocol will be reviewed by the CBP on a biennial basis to incorporate new information and/or changes to process based on input received from the partnership. Any changes to the Protocol will take effect immediately upon adoption by the WQGIT. Panels already underway will be exempt from changes to those process steps that have already occurred within a Panel. For example, a Panel is not required to hold a stakeholder forum, which is typically held once a Panel convenes, if Panel members are already at the stage of finalizing the Panel report. However, members of all underway Panels will be

required to comply with the new conflict of interest provisions, including completion of conflict of interest disclosure forms<sup>1</sup> if they had not done so already at the beginning stages of the Panel convening process.

## **I. Determine the Need for a Review Process for Estimates:**

### *A. New Requests for Evaluation of Technologies and Practices*

Requests should be submitted to the Chair and Vice Chair of the relevant source sector Workgroup or the appropriate Goal Implementation Team (GIT). Requests should include the following information: (a) a clear and concise definition of the practice with specific information on how it reduces nitrogen, phosphorus and sediment, with consideration of bioavailability of nutrients, where applicable, and whether nutrient and sediment sources/loads to be treated are natural or anthropogenic, and (b) reference available science/data on the nutrient and sediment removal efficiencies with the contact information and affiliation of the lead researchers, including the geographical location of where the data was collected.

The GIT or Workgroup Chair may propose that the request be routed to an alternative GIT or Workgroup if he/she feels that placement in another group is more appropriate. These groups will determine if sufficient credible data is available for a full review process. Alternatively, these groups may determine that the requested BMP is sufficiently similar to a previously approved practice or can be combined with another panel request. This determination will be made within 90 days from the date received by the GIT or Workgroup Chair.

When a GIT or a source sector Workgroup determines a request lacks sufficient credible data for a full review process, they will communicate that finding to the WQGIT along with a letter to the requestor describing the basis for such decision, for signature by the GIT or source sector Workgroup Chair.

When a GIT or source sector Workgroup determines a request is sufficiently similar to a previously approved practice, they will document the basis for their recommendation and route it through the Watershed Technical Workgroup (WTWG) to the WQGIT for approval. Once approved, a letter to the requestor describing the resolution of their request will be sent by the GIT or source sector Workgroup Chair. Should the recommendation fail to be approved by the WQGIT or GIT, the request will be returned to the appropriate source sector Workgroup for reconsideration of an Expert Panel.

When a GIT or a source sector Workgroup determines a request is sufficiently similar to another panel request, that request can be combined for a single Expert Panel, they will document the basis for their recommendation and route it to the Water Quality Goal Team for approval. Once approved, a letter to the requestor describing the resolution of their request will be sent by the GIT Chair. Should the recommendation fail to be approved by GIT, the request will be returned to the appropriate workgroup for reconsideration of an Expert Panel.

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<sup>1</sup> See Appendix III for the National Academies Conflict of Interest Form, adapted for use by all BMP Expert Panels.

When a GIT or source sector Workgroup determines a request has sufficient credible data for a full review process, they will communicate that finding to the WQGIT along with a letter to the requestor describing the basis for such decision, for signature by the GIT or source sector Workgroup Chair.

The GIT or source sector Workgroup will develop a list of priority BMPs for which they have determined Expert Panels are warranted and present this list to all GITs on no less than a six month basis. The WQGIT, working with the respective source sector Workgroup or GIT Chairs, will develop a combined priority list of BMPs for which new BMP Expert Panels will be convened over the course of the coming year. Proposed technologies and practices that have been identified by jurisdictions in their WIPs will be given highest priority.

#### *B. Proprietary Devices*

When a sufficient number of non-proprietary designs for the BMP (e.g., floating wetland treatment BMP) have become available and been researched for removal efficiencies, then that class of BMPs will be eligible for the Expert Panel process. However, proprietary BMPs, which meet the definition(s) and qualifying conditions established by the Expert Panel for a class of BMPs, can receive nutrient and sediment reduction credit assigned to that class. Additional credit for proprietary design modifications to the BMP will not be granted.

#### *C. Existing estimates or treatment processes*

The WQGIT will periodically re-evaluate existing loading and effectiveness estimates if new science or information becomes available, to determine if a review is warranted. Such reviews can be prompted by the availability of new information, such as a new treatment process or new information on efficiencies. Reviews can also be initiated if current estimates produce illogical model outputs or if there is reason to believe that they were developed using inaccurate information. Requests for reviews are typically submitted by a source sector Workgroup or GIT but are not restricted to these groups.

#### *D. Communication of Requests to the Chesapeake Bay Program*

The WQGIT Coordinator will distribute on a monthly basis an email with a status update on the existing BMP Expert Panels and a notification of those Panels that are expected to be convened within the next six months. These email communications will be sent to all of the GITs, the Advisory Committees, and STAR so the Partnership is fully aware of the Panels underway and what is expected to undergo the Panel process in the near future. Specific questions about the Panels listed in the monthly email updates should be sent to the WQGIT Coordinator and Staffers.

### **IIA. Review Process for New Estimates**

#### *Convene a Panel & Expectations of Panel members*

The source sector Workgroup, in consultation with representatives from the WTWG, WQGIT, other appropriate GITs, and the Advisory Committees will coordinate the convening of an Expert Panel, including the development of a draft scope and charge of the Panel, along with a proposed list of Panelists. If an Expert Panel Chair is identified prior to the selection of proposed Panelists then the Panel Chair will be actively involved in the selection process.

The elements of a Panel charge should include the following, at a minimum:

- Background (identification, scope, and definition) of the specific practice(s) under Panel review and deliberation
- Recommendations for Expert Panel member expertise
- Development of a Panel report to address the guidelines and information outlined on pages 5 and 6 of this Protocol
- Proposed timeline for the Panel to finalize their recommendations and submit the Panel report for CBP partnership review. It should be noted that the proposed timelines are subject to change based on Panel deliberations and the partnership's review process

Panel membership must include individuals with the specific expertise and experience in pertinent environmental and water quality-related issues needed to address the scientific charge put to the Panel. Priority for Panel membership will be focused on recognized regional or national experts in their field. Members that understand the programmatic implementation of the BMP, how it might be simulated in the CBP modeling tools, and the geography of the Bay watershed are also desirable to help ensure balanced representation and expertise on the Expert Panel. Qualified local practitioners should be considered for inclusion on Panels as well. Local practitioner is defined in this context as a person with practical, real-world implementation expertise who will provide this technical expertise to the Panel. Examples include but are not limited to a public works director, soil and water conservation specialist, or municipal engineer. In the Panel member selection process, the hosting source sector Workgroup Chair(s) and Coordinator shall collect input from their own Workgroup, the GITs, and WTWG, the CBP Modeling Team, and the Advisory Committees.

A representative from the requesting source sector Workgroup; a representative from the WTWG; a representative from the CBP modeling team, and a representative from EPA Region III<sup>2</sup> will serve as resources to the Panel, and are tasked with providing information and assistance to the Panel's topic experts during their deliberations. These representatives should actively engage in panel discussions, with a focus on ensuring the panel's direction and resulting recommendations align with jurisdictional BMP reporting capabilities, the Bay Program's NEIEN, Scenario Builder, and modeling tools as well as existing regulatory frameworks. A Panel may also invite additional experts to serve as guests on the Panel, such that they can provide input but are not official members of the Panel.

Potential Panel members must provide to the hosting source sector Workgroup a Curriculum Vitae (CV) or any other justification that illustrates the nature of their expertise as it relates to the Panel's charge. In addition, potential Panel members must disclose actual or potential conflicts of interest in writing to the hosting source sector Workgroup. An actual or potential conflict of interest is deemed to exist when:

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<sup>2</sup> A point of contact from the EPA Region III Office in Philadelphia will be selected to participate by EPA on Panels where permit or other regulatory questions are expected to arise during Panel deliberations.

- A potential Panel member could benefit financially from the Panel recommendations
- The employer of or a person closely related to a potential Panel member could benefit financially from Panel recommendations
- A potential Panel member that represents a particular point of view or special interest “where one is totally committed to a particular point of view and unwilling, or perceived to be unwilling, to consider other perspectives or relevant evidence to the contrary.”<sup>3</sup>

None of the above are intended to exclude jurisdictional subject matter experts solely because their jurisdiction has financial obligations related to implementation of WIPs, Milestones or commitments under the Chesapeake Bay Watershed Agreement.

Further information on what constitutes a conflict of interest can be found in Appendix III. As mentioned previously in this Protocol, all proposed panelists credentials, CVs, and associated conflict of interest disclosures, will be reviewed by the partnership before a Panel membership is finalized to help ensure that no actual or potential conflicts of interest exist. These conditions will minimize the risk that Expert Panels are biased toward particular interests or regions.

The proposed list of Panelists, as well as the draft scope and charge of the Panel, the panelist credentials, CVs, and associated conflict of interest disclosures, will be sent via email to the source sector Workgroups, the WTWG, the GITs, and the Advisory Committees for their review and comment. The source sector Workgroup Coordinator or Panel Coordinator is responsible for managing this review process, and a reasonable timeline for review will be determined by these Coordinators. After incorporating or responding to comments received, final approval of the Panel scope and charge, as well as Panel membership, will be reserved for the hosting source sector Workgroup or GIT<sup>4</sup> and will follow the Chesapeake Bay Program partnership and WQGIT Governance Protocols. In cases where consensus cannot be reached by the source sector Workgroup, or if concerns remain regarding potential member conflicts of interest, the decision will be elevated to the next higher decision-making group.

### *Expert Panel Meetings*

Panel members will be responsible for following the specific charge of the Panel, as well as this Protocol<sup>5</sup>. The BMP Expert Panels function as independent peer review processes, in accordance with the National Academy of Sciences<sup>67</sup> standard practices for studies of the National Research Council and in compliance with applicable laws. Therefore, Panel deliberations in meetings and conference calls will be closed to the public in order to discuss and develop draft recommendations free from outside influences. However, once a Panel has been convened or re-convened, one of the first meetings will be dedicated to an open forum where interested parties are invited to share and present scientific data with

<sup>3</sup> [http://www.nationalacademies.org/coi/bi-coi\\_form-0.pdf](http://www.nationalacademies.org/coi/bi-coi_form-0.pdf)

<sup>4</sup> In the cases where a Panel is coordinated by Virginia Tech, the Chesapeake Bay Watershed-Research and Outreach Collaborative (CBW-ROC) will also have final approval of the Panel charge, scope, and membership.

<sup>5</sup> Copies of the Protocol will be distributed to all Panel members in advance of their first call or meeting.

<sup>6</sup> [http://www.nationalacademies.org/xpedio/groups/nasite/documents/webpage/na\\_069620.pdf](http://www.nationalacademies.org/xpedio/groups/nasite/documents/webpage/na_069620.pdf)

<sup>7</sup> Appendix II: [http://www.nationalacademies.org/xpedio/groups/nasite/documents/webpage/na\\_069618.pdf](http://www.nationalacademies.org/xpedio/groups/nasite/documents/webpage/na_069618.pdf)

the Panel members<sup>8</sup>. The intent is to provide an open exchange of information that may help inform the Panel as it moves forward with its deliberations, as well as provide an opportunity for the public and interested stakeholders to learn more about the Panel's charge. Announcements of these open forum meetings will be posted on the CBP website and distributed via email to the hosting source sector Workgroup, the GITs, and the Advisory Committees.

The Panel may elect to solicit input from guests prior to the close of a meeting to ensure that the Panel receives the full range of information and science available on the Panel topic. In addition, guests may submit relevant BMP performance data or any other such supporting literature for the Panel to consider. Any written materials provided to the Panel will be maintained in an archived location as determined by the Panel that can be made available for review upon request.

The Panel Chair and Coordinator will be the primary points of contact during the Expert Panel process. While it is recognized that the majority of Panel members serve on a voluntary basis, there are several support mechanisms in place (e.g. contracts, grants<sup>9</sup>) that can provide additional resources to aid in the Expert Panel process. It is up to the Panel Chair and Coordinator on how best to assign responsibilities amongst the Panel members. Questions and requests to utilize additional resources for a particular panel or panel-related task should be directed to the WQGIT Coordinator.

When objections or dissenting opinion are raised in the context of Panel discussions and in the development of Panel reports, consensus should be the primary approach taken to resolve such dissent. In the event that consensus cannot be reached, all dissenting opinions must be documented and described in the Panel's report.

#### *Panel Progress Updates*

The Panel Chair or Panel Coordinator will routinely update the hosting source sector Workgroup or GIT on the Panel's progress; preliminary findings; and any information or logistical gaps/needs that require input from those beyond the Panel membership. The source sector Workgroup Coordinator will work closely with the Panel Chair and Coordinator on scheduling these status updates during regularly scheduled Workgroup meetings/calls. Status updates will also be solicited on a monthly basis by the WQGIT Coordinator. Status information could include when a Panel expects to hold an open forum or release a draft report for public review; initial findings of the Panel; or specific issues that the Panel expects the Workgroups and GITs to decide upon. These updates will be compiled for all active panels for distribution to the GITs and will also be posted on ChesapeakeStat:

[http://stat.chesapeakebay.net/?q=node/130&quicktabs\\_10=2](http://stat.chesapeakebay.net/?q=node/130&quicktabs_10=2). Contact information for the Workgroup Coordinator and Staffer will also be available on the source sector BMP web page on ChesapeakeStat.

#### *Ancillary Benefits and Unintended Consequences*

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<sup>8</sup> This open forum meeting should not be scheduled prior to three weeks after its public announcement through the CBP website and email notifications to the CBP partnership.

<sup>9</sup> Resources available to support Expert Panels are through EPA's contract with Tetra Tech and EPA's Cooperative Agreement with Virginia Tech.

The charge to each BMP Expert Panel will include developing definitions and loading or effectiveness estimates for the specific nutrient and sediment reducing technologies and practices they are tasked to address. However, Panel members will also be expected to identify any significant ancillary benefits or unintended consequences beyond impacts on nitrogen, phosphorus and sediment loads. Addressing this expectation should be included in the Panel's charge. Emphasis should be placed on benefits or consequences that have the potential to impact the implementation of the Goals and Outcomes of the 2014 Chesapeake Bay Watershed Agreement. Examples include increased, or reduced, air emissions or changes to habitat. It is recognized that an expanded analyses into ancillary benefits or unintended consequences could be a significant and useful contribution as an appendix to the final Panel report. Therefore, the Panel Chair and Coordinator should notify the appropriate GIT of any identified ancillary effects to determine if the GIT wants to develop and provide such information. Should the identification of ancillary effects originate at a GIT, notification must be submitted to the Panel Chair and Coordinator to inform them of the GIT's intention to draft the ancillary benefits and unintended consequences appendix.

The appendix will include the authors involved in the analyses, as well as the finalization date. It is anticipated that further research into any ancillary benefits or unintended consequences will be conducted concurrently with the Panel itself; however, this assumption does not preclude the development of such an appendix after the Panel report is final.

It is important to note that the purpose of the Panels is not to incentivize or promote the use of any BMP; it is to increase the understanding of the nutrient and sediment reductions associated with these practices. In addition, any appendix on ancillary benefits or unintended consequences does not change the definitions and loading or effectiveness estimates for nutrient and sediment reducing technologies and practices in the final Panel report. State and local governments may then consider both the definitions and effectiveness estimates from the main panel report, as well as ancillary benefits or unintended consequences from the appendix, when deciding upon which technologies and practices they intend to select, fund, and implement within their respective jurisdictions.

#### *Data applicability*

Determining which data should be used to develop loading and effectiveness estimates is a critical step. When considering sources of data, the Panel must decide: 1) if the data is appropriate, and 2) how much influence each data source should have on the final estimate. Each of these decisions should be discussed explicitly in the final report for each data source or group(s) of data sources.

Data sources should be characterized using Table 1 (below) and included in the Panel report.

**Table I. Data source characterization**

	<b>High Quality</b>	<b>Medium Quality</b>	<b>Low Quality</b>
Extent of Replication	Clearly documented and well-controlled past work that has	Clearly documented older (>5-yr old) work that has not yet	Work that was not clearly documented and cannot be

	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	been replicated or strongly supported by other studies, but which has also not been contraindicated or disputed	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

The Panel should also consider the following:

- Was the data generated from a BMP design and implementation consistent with those found in the Chesapeake Bay watershed?
- How does the duration of the experiment compare to the intended timeline of the BMP? If the experiment is substantially shorter, how might that influence the evaluation of operational effectiveness of the practice?
- Do results reflect changes in pollution reduction benefits over the lifetime of the practice?



- Whether factors that could affect pollution reduction benefits are adequately addressed (such as location of practice with respect to pollution sources and pollution content of sources treated)?
- What parameters were sampled and monitored (paired watershed study, grab samples, ground water, etc.)?
- What, if any, assumptions were made during the experiment and conclusion?

Once the Panel has characterized a data source, they must determine how much influence (i.e. ‘weight’) the data should have on resulting estimates. For example, peer-reviewed publications will usually have more weight than non-reviewed sources. However, the exact influence of a particular data source will also consider other factors, such as those listed in the questions above, which the Panel will consider. Citations to such literature shall be provided in the draft and final Panel reports.

*Incremental Recommendations.* The duration of a Panel is dependent upon the complexity of the review and workload issues. However, the Partnership may recommend expediting an element of the review process (e.g. partner’s request for BMP effectiveness estimates that have immediate implications for progress or planning purposes). Therefore, a Panel is welcome to make incremental recommendations that can be sent forward for final approval to the WQGIT by working through the normal review and approval procedures identified above and more clearly defined in Section III of the Protocol. If the Panel is charged with producing incremental recommendations at the inception of the Panel, it will be the responsibility of the Panel to produce those incremental recommendations. However, if the request for incremental recommendations is made after the Panel has received its charge and has begun work on those charges, it is at the Panel’s discretion as to whether or not the interim or incremental recommendations will be pursued. The Panel is still expected to complete and finalize the Panel report which will contain the more comprehensive set of recommendations. These more comprehensive set of recommendations should not modify the incremental recommendations that were previously approved by the WQGIT. If any modifications are proposed, the Panel will be directed to seek Partnership approval of those changes, following the procedures articulated in this Protocol.

### *Expert Panel Reports*

The Expert Panel will develop a report documenting their recommendations for definitions and loading or effectiveness estimates for nutrient and sediment reducing technologies and practices. The Panel will work with the source sector Workgroup and WTWG to develop a report that includes the following:

- Identity and expertise of Panel members
- Land Use or practice name/title
- Detailed definition of the land use or practice
  - The definition should incorporate descriptive elements that can reasonably be checked by anyone involved in the verification assessment of the practice and result in replicable verification findings
- Nitrogen, phosphorus, and sediment loading or effectiveness estimates (practice performance recommendations)

- Discussion may include alternative modeling approaches to accommodate a specific land use or practice, if appropriate
- Bioavailability of nutrient load considered, where applicable
- Nutrient content of sediment load considered, where applicable
- Summaries of observed empirical results from studies used as the primary basis for the panel recommendations (including measures of unexplained variation)
- Justification for the selected effectiveness estimates, including
  - List of all data sources considered (peer-reviewed, unpublished, etc.) and a description of how each data source was considered (see Table 1)
    - Panel members can use unpublished data if such data is based on solid documentation as to the origins and the quality of the data
  - Identify data sources that were considered, but not used in determining practice effectiveness estimates
  - Documentation of uncertainties in the published literature (across and within studies)
  - Documentation of how the Panel addressed negative results or no pollution reduction in nutrient and sediment loads as a result of implementation of a specific practice
    - Where studies with negative or no pollution reduction data are found (i.e. the practice acted as a source of pollutants), they should be considered the same as all other data
    - Explanation of the approach the Expert Panel used to address scientific uncertainties and variation in empirical findings of removal effectiveness (e.g. if "conservative" effectiveness estimates are used to address uncertainty, provide a rationale for the estimate)
- Description of how best professional judgment was used, if applicable, to determine effectiveness estimates
- Land uses to which the practice is applied
- Load sources that the practice 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:
  - Include conditions/circumstances where the practice will not perform as intended/designed, or will be less effective. An example: large storm events that could exceed a practice's design specifications.
  - Any variations in practice performance due to climate variability, hydrogeomorphic region, geologic material/soil type, or other measureable factors.
- Temporal performance of the practice including lag times between establishment and full functioning, if applicable
- Unit of measure (e.g., feet, acres)
- Locations within the Chesapeake Bay watershed where this practice is applicable
- Useful life; practice performance over time:

- The Panel will work with the WTWG and the CBP modeling team representatives to recommend a “credit duration” for each practice. This determines the time the practice will receive credit in the CBP modeling tools. When the credit duration ends, the practice will need to be verified following the appropriate jurisdictional verification protocols to ensure it is still performing properly in accordance with the practice’s definition, and thereby renewing the credit duration.
- Cumulative or annual practice
- Recommended description of how the practice could be tracked, reported, and verified:
  - Include a clear indication that this practice will be used and reported by jurisdictions
- Guidance on BMP Verification
  - Description of the BMP verification guidance must be consistent with the CBP partnership’s Chesapeake Bay basinwide BMP Verification Framework<sup>10</sup>. Note that verification protocols and the verification of a practice is ultimately the responsibility of a jurisdiction. Panels are expected to provide only their recommendations as to how verification might be considered.
- Description of how the practice may be used to relocate pollutants to a different location. An example is where a practice eliminates a pollutant from surface transport but moves the pollutant into groundwater
- Suggestion for a 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 any 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 cost estimates, when this data is available through existing literature
- In an effort for the Partnership to more efficiently approve the technical requirements for Scenario Builder, National Environmental Information Exchange Network (NEIEN), and the Watershed Model that are required by each Panel report, the CBPO Scenario Builder and Modeling Team will work with the Panel members and the WTWG to develop a technical appendix that describes changes that will be made to the modeling and reporting tools to accommodate the BMP(s). Specific text will include the NEIEN-based procedures for flagging and removing practice data that is past its credit duration. The technical appendix should be developed in conjunction with the Panel report to help ensure that recommendations can be fully incorporated into the CBP modeling tools. Once drafted, each technical appendix will move through the comment process in conjunction with its parent report and must be approved by the source sector Workgroup, the WTWG, and the WQGIT. Any future changes to the approved

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<sup>10</sup> <http://www.chesapeakebay.net/about/programs/bmpverification>

appendix should be brought to the attention of the appropriate source sector Workgroup, WTWG, and WQGIT.

### **IIB. Review Process for Existing Estimates or Treatment Processes**

If approved by the WQGIT Chair, the review of existing estimates and, when applicable, the definition of a BMP can be conducted within a source Workgroup in consultation with the WTWG. This approach should reduce the amount of time necessary to conduct the review because the definition(s) have already been developed, a background of available data already exists, and issues of how the practices or land use is incorporated into the CBWM have been addressed. Reviews of existing estimates should follow the guidelines listed in IIA above except that a separate Panel is not convened and the information generated is added to the existing support documentation for the estimate.

### **III. Chesapeake Bay Program Review and Approval**

All Expert Panel recommendations will undergo a three-stage formal review process, with a public comment period during the first stage of review, that will include, at a minimum, the following groups:

- Relevant source sector Workgroup. This group will be responsible for reviewing the scientific basis of the recommendation, ensuring that all of the pollutant(s) source loading(s) or BMP pollution reduction mechanisms have been included.
- Watershed Technical Workgroup. This group will be responsible for analyzing the technical components of the recommendation(s) and determining that the tracking and reporting data that is needed to receive credit is available in the appropriate Chesapeake Bay jurisdiction(s) thereby ensuring that no double counting is occurring.
- Water Quality Goal Implementation Team. This group will be responsible for reviewing the process used and the recommendation's consistency with other approved BMP effectiveness estimates.

It should be noted that often times technical, policy, and management issues may have cross-Workgroup and GIT implications that cannot be addressed in isolation by one particular group. Although the definitions above serve to articulate the primary function of these groups in relation to the Expert Panel process, flexibility of those roles is allowed.

The first review stage will begin with a Panel report presentation meeting where the Panel Chair and Coordinator will provide a presentation that includes:

- Rationale for review Panel
- The recommendations/findings of the Panel for effectiveness and loading estimates
- A table containing the number of studies used for the findings by state, the range of the studies' findings, and range of the years of the studies
- Any dissenting opinion as it relates to the effectiveness and loading estimates
- Next steps and comment period logistics

The panel report presentation meeting will typically be scheduled as part of a regular meeting of the sponsoring source sector Workgroup. The source sector Workgroup Chair or Coordinator will be responsible for distributing the draft Expert Panel report at least 10 business day in advance of the Panel report's presentation meeting to the relevant source sector Workgroup, other Partnership GITs, associated Workgroup(s) and the Advisory Committees. Panel reports will become publicly available when they enter this first stage of review through posting to the CBP website and electronic distribution to these partnership groups. This meeting will begin a 30-day open comment period. Members of these partnership groups, plus any other groups or individuals interested in reviewing the draft recommendations are encouraged to do so at this time. Commenters should send specific edits in track change format or more general comments in writing to the Panel Chair and Panel Coordinator during this comment period to better ensure the effective resolution of any substantive comments. Any requests for review extensions can be submitted to the Panel Chair or Panel Coordinator for consideration. Approval of the draft report will be sought from the relevant source sector Workgroup after the comment period has closed and the Panel has addressed any comments received.

Once approval has been reached by the source sector Workgroup, the draft Panel recommendations will enter the second stage of review and approval by the WTWG. This stage may also include a coordinated review by the Modeling Workgroup, depending on the specifics of the BMP and the Panel's recommendations. The WTWG will be given a minimum of 10 business days for their review prior to the meeting where a decision is requested. Should concerns arise during the WTWG review, the Panel Chair and Panel Coordinator are responsible for working through those concerns with the WTWG members. This process may involve vetting proposed changes with the Expert Panel members as well as the sponsoring source sector Workgroup.

Once approval has been reached by the WTWG, the draft Panel recommendations will enter the third and final stage of review - approval by the WQGIT and any other GIT, as appropriate, in accordance with the CBP partnership and WQGIT Governance Protocols. The WQGIT will be given a minimum of 10 business days for their review prior to the meeting where a decision is requested. Should concerns arise during the WQGIT review, the Panel Chair and Panel Coordinator are responsible for working through those concerns with the WQGIT members. This process may involve vetting proposed changes with the Expert Panel members, the sponsoring source sector Workgroup, and the WTWG.

The Panel Chair and Panel Coordinator will be responsible for developing a "response to comments" document that provides a response to comments received. This document will be posted as an appendix to the final Panel's report. Specific responses will not be provided for:

- Overlapping comments (one response will be provided)
- Comments outside the scope of the Panel or demonstrate no relevancy to the report's findings
- Editorial changes, such as grammatical edits

In the event that a comment does not result in a change to the Panel's report, the Panel Chair and Panel Coordinator shall work with the specific commenter(s) to resolve the issue. Commenters are requested to notify the Panel Chair, Panel Coordinator and the Workgroup/GIT Chair prior to the approval meeting if they intend to register a major objection to an Expert Panel report, and request time on the meeting agenda to explain their perspectives. If objections to a Panel report are not addressed in time of the approval meeting, the Workgroup/GIT Chair may table the action until the next meeting of the Workgroup/GIT. In cases where an objection is not identified before an approval meeting, the Workgroup/GIT Chair may choose, at his or her discretion, to ask the Workgroup or GIT to approve the report. Although the goal is consensus, and every effort has been made to address any comments, timelines may necessitate the report moving forward. In all cases, the CBP partnership and WQGIT Governance Protocols will be followed.

Although the Panel Chair and Coordinator are responsible for managing the comment process through the three-stage review period, Panel members may be asked to assist in addressing and responding to comments. Once the comment period has ended and the reports finalized by the GIT, the charge of the Panel has been met and Panel members are released from duty.

In the event that the Expert Panel recommendation(s) are substantively modified during the stage 2 or stage 3 approval process and the Panel membership does not support such changes, a document will be generated that explicitly details the modifications to the original Expert Panel recommendations and the justification for such changes and any unresolved issue(s) or dissenting opinions. The original Panel report will be attached to that document as an appendix.

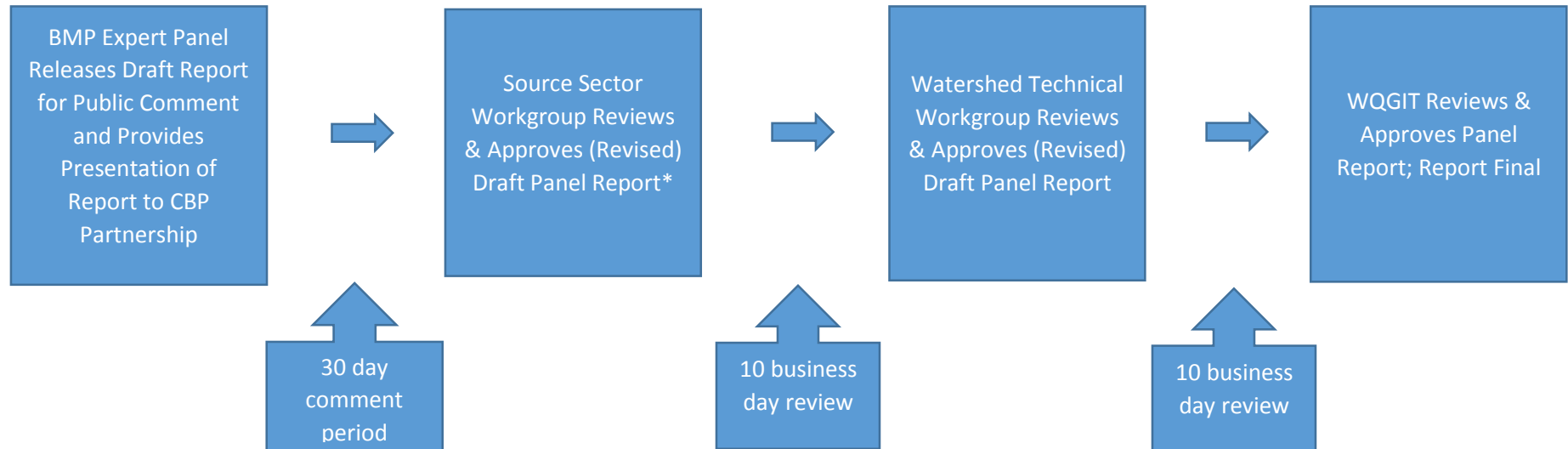
Once the Panel report has been approved by the WQGIT, the Panel Chair and Coordinator will distribute the final Panel report to the Partnership and post online at:

[http://stat.chesapeakebay.net/?q=node/130&quicktabs\\_10=3](http://stat.chesapeakebay.net/?q=node/130&quicktabs_10=3)

The WQGIT Staffers will be responsible for maintaining two lists derived from each Panel report:

- Follow up actions identified in the Panel reports along with the due dates of those actions and responsible party (such as trial periods, updates, reevaluation schedule, etc.)
- Research needs identified by Panel reports

## Appendix I: CBP Partnership Review Process for BMP Expert Panels



### CBP Partnership has Opportunity to Review and Comments on Draft Panel Report during Each Stage of Review Process

To better ensure effective resolution of comments, all interested partners, groups or individuals are encouraged to submit their comments during the first review and comment period. New comments at later stages will be considered, but the Panel can more effectively address substantive comments the earlier they receive them.

\*The Panel Chair and Coordinator are responsible for developing a “Response to Comments” document based on feedback received through partnership review. The “Response to Comments” document will be attached to the final Panel report.



## Appendix II: The National Academies – Our Study Process<sup>11</sup>

interest, no individual can be appointed to serve (or continue to serve) on a committee of the institution used in the development of reports if the individual has a conflict of interest that is relevant to the functions to be performed. For more information, see the National Academies' Web site at [www.national-academies.org](http://www.national-academies.org).

**Other considerations.** Membership in the three Academies (NAS, NAE, IOM) and previous involvement in National Academies studies are taken into account in committee selection. The inclusion of women, minorities, and young professionals are additional considerations.

Specific steps in the committee selection and approval process are as follows:

- Staff solicit an extensive number of suggestions for potential committee members from a wide range of sources, then recommend a slate of nominees.
- Nominees are reviewed and approved at several levels within the National Academies; a provisional slate is then approved by the President of the National Academy of Sciences, who is also the Chair of the National Research Council.
- The provisional committee list is posted for public comment in the Current Projects System on the Web (<http://www4.national-academies.org/cp.nsf>).
- The provisional committee members complete background information and conflict of interest disclosure forms.
- The committee balance and conflict of interest discussion is held at the first committee meeting.
- Any conflicts of interest or issues of committee balance and expertise are investigated; changes to the committee are proposed and finalized.
- Committee is formally approved.
- Committee members continue to be screened for conflict of interest throughout the life of the committee.

### STAGE 3. Committee Meetings, Information Gathering, Deliberations, and Drafting the Report

Study committees typically gather information through: 1) meetings that are open to the public and that are announced in advance through the National Academies Web site; 2) the

submission of information by outside parties; 3) reviews of the scientific literature, and 4) the investigations of the committee members and staff. In all cases, efforts are made to solicit input from individuals who have been directly involved in, or who have special knowledge of, the problem under consideration.

In accordance with federal law and with few exceptions, information-gathering meetings of the committee are open to the public, and any written materials provided to the committee by individuals who are not officials, agents, or employees of the National Academies are maintained in a public access file that is available for examination.

The committee deliberates in meetings closed to the public in order to develop draft findings and recommendations free from outside influences. The public is provided with brief summaries of these meetings that include the list of committee members present. All analyses and drafts of the report remain confidential.

### STAGE 4. Report Review

As a final check on the quality and objectivity of the study, all National Academies reports—whether products of studies, summaries of workshop proceedings, or other documents—must undergo a rigorous, independent external review by experts whose comments are provided anonymously to the committee members. The National Academies recruit independent experts with a range of views and perspectives to review and comment on the draft report prepared by the committee.

The review process is structured to ensure that each report addresses its approved study charge and does not go beyond it, that the findings are supported by the scientific evidence and arguments presented, that the exposition and organization are effective, and that the report is impartial and objective.

Each committee must respond to, but need not agree with, reviewer comments in a detailed "response to review" that is examined by one or two independent report review "monitors" responsible for ensuring that the report review criteria have been satisfied. After all committee members and appropriate National Academies officials have signed off on the final report, it is transmitted to the sponsor of the study and is released to the public. Sponsors are not given an opportunity to suggest changes in reports. The names and affiliations of the report reviewers are made public when the report is released.

### HOW THE PUBLIC CAN FOLLOW AND PROVIDE INPUT TO STUDIES

The Current Projects System was established with a link from the National Academies home-page, [www.national-academies.org](http://www.national-academies.org), to make it easy for members of the general public with interest in the subject to follow the progress of a study and submit comments. The system offers separate views by subject and by project title.

Reports of the National Academies are available from the National Academies Press, 500 Fifth Street, NW, Washington, DC 20001 1-800-624-6242 • [www.nap.edu](http://www.nap.edu).

### THE NATIONAL ACADEMIES

*Advisers to the Nation on Science, Engineering, and Medicine*

The nation turns to the National Academies—National Academy of Sciences, National Academy of Engineering, Institute of Medicine, and National Research Council—for independent, objective advice on issues that affect people's lives worldwide. [www.national-academies.org](http://www.national-academies.org)

# THE NATIONAL ACADEMIES

## OUR STUDY PROCESS

Ensuring Independent, Objective Advice



National Academy of Sciences  
National Academy of Engineering  
Institute of Medicine  
National Research Council

THE NATIONAL ACADEMIES  
*Advisers to the Nation on Science, Engineering, and Medicine*

<sup>11</sup> [http://www.nationalacademies.org/xpedio/groups/nasite/documents/webpage/na\\_069618.pdf](http://www.nationalacademies.org/xpedio/groups/nasite/documents/webpage/na_069618.pdf)





For more than 140 years, the National Academies have been advising the nation on issues of science, technology, and medicine. The 1863 Congressional charter signed by President Lincoln authorized this non-governmental institution to honor top scientists with membership and to serve the nation whenever called upon. Today the National Academies—**National Academy of Sciences, National Academy of Engineering, Institute of Medicine, and National Research Council**—continue that dual mission.

Like no other organization, the National Academies can enlist the nation's foremost scientists, engineers, health professionals, and other experts to address the scientific and technical aspects of society's most pressing problems. Each year, more than 6,000 of these experts are selected to serve on hundreds of study committees that are convened to answer specific sets of questions. All serve without pay.

Federal agencies are the primary financial sponsors of the Academies' work. Additional studies are funded by state agencies, foundations, other private sponsors, and the National Academies endowment. The Academies provide independent advice; the external sponsors have no control over the conduct of a study once the statement of task and budget are finalized. Study committees gather information from many sources in public meetings but they carry out their deliberations in private in order to avoid political, special interest, and sponsor influence.

Through this careful study process, the National Academies produce 200–300 authoritative reports each year. Recent reports cover such topics as the obesity epidemic, the use of forensics in the courtroom, invasive plants, underage drinking, the Hubble Telescope, vaccine safety, the hydrogen economy, transportation safety, climate change, and homeland security. Many reports influence policy decisions; some are instrumental in enabling new research programs; others provide program reviews.

## STEPS TAKEN TO ENSURE INDEPENDENCE AND OBJECTIVITY

The reports of the National Academies are viewed as being valuable and credible because of the institution's reputation for providing independent, objective, and non-partisan advice with high standards of scientific and technical quality. Checks and balances are applied at every step in the study process to protect the integrity of the reports and to maintain public confidence in them. The study process can be broken down into four major stages: 1) defining the study; 2) committee selection and approval; 3) committee meetings, information gathering, deliberations, and drafting of the report; and 4) report review.

### STAGE 1. Defining the Study

Before the committee selection process begins, National Academies' staff and members of their boards work with sponsors to determine the specific set of questions to be addressed by the study in a formal "statement of task," as well as the duration and cost of the study. The statement of task defines and bounds the scope of the study, and it serves as the basis for determining the expertise and the balance of perspectives needed on the committee.

The statement of task, work plan, and budget must be approved by the Executive Committee of the National Research Council Governing Board. This review often results in changes to the proposed task and work plan. On occasion, it results in turning down studies that the institution believes are inappropriately framed or not within its purview.

### STAGE 2. Committee Selection and Approval

Selection of appropriate committee members, individually and collectively, is essential for the success of a study. All committee members serve as individual experts, not as representatives of organizations or interest groups. Each member is expected to contribute to the project on the basis of his or her own expertise and good judgment. A committee is not finally approved until a thorough balance and conflict of interest discussion is held at the first meeting, and any issues raised in that discussion or by the public are investigated and addressed.

Careful steps are taken to convene committees that meet the following criteria:

**An appropriate range of expertise for the task.** The committee must include experts with the specific expertise and experience needed to address the study's statement of task. One of the strengths of the National Academies is the tradition of bringing together recognized experts from diverse disciplines and backgrounds who might not otherwise collaborate. These diverse groups are encouraged to conceive new ways of thinking about a problem.

**A balance of perspectives.** Having the right expertise is not sufficient for success. It is also essential to evaluate the overall composition of the committee in terms of different experiences and perspectives. The goal is to ensure that the relevant points of view are, in the National Academies' judgment, reasonably balanced so that the committee can carry out its charge objectively and credibly.

## POINT OF VIEW IS DIFFERENT FROM CONFLICT OF INTEREST

A point of view or bias is not necessarily a conflict of interest. Committee members are expected to have points of view, and the National Academies attempt to balance these points of view in a way deemed appropriate for the task. Committee members are asked to consider respectfully the viewpoints of other members, to reflect their own views rather than be a representative of any organization, and to base their scientific findings and conclusions on the evidence. Each committee member has the right to issue a dissenting opinion to the report if he or she disagrees with the consensus of the other members.

**Screened for conflicts of interest.** All provisional committee members are screened in writing and in a confidential group discussion about possible conflicts of interest. For this purpose, a "conflict of interest" means any financial or other interest which conflicts with the service of the individual because it could significantly impair the individual's objectivity or could create an unfair competitive advantage for any person or organization. The term "conflict of interest" means something more than individual bias. There must be an interest, ordinarily financial, that could be directly affected by the work of the committee. Except for those rare situations in which the National Academies determine that a conflict of interest is unavoidable and promptly and publicly disclose the conflict of



## Appendix III – Conflict of Interest Disclosure Form

### CHESAPEAKE BAY PROGRAM WATER QUALITY GOAL IMPLEMENTATION TEAM BMP EXPERT PANEL CONFLICT OF INTEREST DISCLOSURE *Version date: June 19, 2015*

NAME: \_\_\_\_\_ TELEPHONE: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

EMAIL ADDRESS: \_\_\_\_\_

EMPLOYER: \_\_\_\_\_

BMP PANEL: \_\_\_\_\_

#### INSTRUCTIONS<sup>12</sup>

The primary focus of the CBP BMP expert panels is to develop BMP-specific nutrient and sediment reduction effectiveness estimates (*i.e.*, performance estimates). A secondary focus may include describing future BMP-specific research needs and ancillary benefits. It is essential that the work of BMP expert panels not be compromised by significant conflicts of interest. Except for those situations in which the Chesapeake Bay Program (CBP) partnership determines that a conflict of interest is unavoidable and publicly discloses the conflict of interest, no individual can be appointed to serve (or continue to serve) on an expert panel if the individual has a conflict of interest that is relevant to the functions to be performed.

For the purposes of the BMP expert panels convened by the CBP partnership, the term **"conflict of interest" is any financial or other interest which conflicts with the service of the individual because it (1) could significantly impair the individual's objectivity or (2) could create an unfair competitive advantage for any person or organization.** The term "conflict of interest" applies only to *current interests*. It does not apply to past interests that have expired, no longer exist, and cannot reasonably affect current behavior. Nor does it apply to possible interests that may arise in the future, because such future interests are inherently speculative and uncertain.

"Conflict of interest" means something more than individual bias. A point of view or bias is not necessarily a conflict of interest. Expert panel members are expected to have points of view and the CBP partnership attempts to balance points of view by supporting diverse expert panel membership. Panel members are asked to consider respectfully the viewpoints of other members, to reflect their own views rather than to be a representative of any organization, and to base their scientific conclusions and judgment on relevant evidence.

This conflict of interest disclosure form is designed to prophylactically eliminate potentially compromising situations from arising, and thereby to protect the individual, the other members of the expert panel, the CBP partnership, and the public interest. The individual, the expert panel, and the partnership should not be placed in a situation where others could reasonably question, and perhaps discount or dismiss, the work of the expert panel simply because of the existence of conflicting interests.

**The overriding objective of this conflict of interest disclosure form is to identify whether there are interests – primarily financial in nature – that conflict with the expert panel service of the individual because they could impair the individual's objectivity or could create an unfair competitive advantage for any person or organization.** The fundamental question in each case is this: Does the individual, or others with whom the individual has substantial common financial interests, have identifiable

<sup>12</sup> Note: This form was created and informed by National Academies documentation found at <http://www.nationalacademies.org/coi>.

interests that could be directly affected by the outcome of the activities of the expert panel on which the individual has been asked to serve? The following questions are designed to elicit information from potential expert panel members concerning potential, relevant conflicts of interest.

1. FINANCIAL INTERESTS.

- a) Taking into account stocks, bonds, and other financial instruments and investments including partnerships (but excluding broadly diversified mutual funds and any investment or financial interests valued at less than \$10,000), do you or, to the best of your knowledge others with whom you have substantial common financial interests, have financial investments that could be affected, either directly or by a direct effect on the business enterprise or activities underlying the investments, by the recommendations made by the expert panel on which you have been invited to serve?
- b) Taking into account real estate and other tangible property interests, as well as intellectual property (patents, copyrights, etc.) interests, do you or, to the best of your knowledge others with whom you have substantial common financial interests, have property interests that could be directly affected by the findings made by the expert panel on which you have been invited to serve?
- c) Could your employment (or the employment of your spouse), or the financial interests of your employer or clients (or the financial interests of your spouse's employer or clients) be directly affected by the findings made by the expert panel on which you have been invited to serve?
- d) Taking into account research funding and other research support (e.g., equipment, facilities, industry partnerships, research assistants and other research personnel, etc.), could your current research funding and support (or that of your close research colleagues and collaborators) be directly affected by the findings made by the expert panel on which you have been invited to serve?
- e) Could your service on the expert panel on which you have been invited to serve create a specific financial or commercial competitive advantage for you or others with whom you have substantial common financial interests?

If the answer to all of the above questions under **FINANCIAL INTERESTS** is either "no" or "not applicable," check here \_\_\_\_ (NO).

If the answer to any of the above questions under **FINANCIAL INTERESTS** is "yes," check here \_\_\_\_ (YES), and briefly describe the circumstances below.

EXPLANATION OF "YES" RESPONSES: (attach additional pages, if needed)

2. OTHER INTERESTS.

- a) For the expert panel on which you have been invited to serve, is a principal charge to provide a critical review and evaluation of your own work or that of your employer?

- b) Do you have any existing professional obligations that effectively require you to publicly defend a previously established position on an issue that is relevant to the functions to be performed by this expert panel?
- c) To the best of your knowledge, will your participation on this expert panel enable you to obtain access to a competitor's or potential competitor's confidential proprietary information?
- d) If you are, or have ever been, a federal, state, or local government employee, to the best of your knowledge are there any conflict of interest restrictions that may be applicable to your service on this expert panel?

**If the answer to all of the above questions under OTHER INTERESTS is either "no" or "not applicable," check here \_\_\_\_\_ (NO).**

**If the answer to any of the above questions under OTHER INTERESTS is "yes," check here \_\_\_\_\_ (YES), and briefly describe the circumstances below.**

EXPLANATION OF "YES" RESPONSES: (attach additional pages, if needed)

Per the CBP BMP Protocol,<sup>13</sup> all proposed panel members are subject to review and approval by the appropriate sector Workgroup or WQGIT. **Please read and initial each of the following statements.**

- \_\_\_\_\_ *In addition to this conflict of interest disclosure form, I have received a copy of the current BMP Protocol and, if I am accepted as a panel member, I will, to the best of my ability and with guidance from the Panel Chair and Coordinator, adhere to the expectations and procedures described therein.*
- \_\_\_\_\_ *I understand that a conflict of interest may prevent my participation as a member of the proposed BMP expert panel if the CBP partnership, in coordination with the Panel Chair, determine that the circumstances of my particular conflict of interest are not consistent with the intentions or purpose of the expert panel or the BMP Protocol. Furthermore, I understand that any such finding would NOT reflect an assessment by the CBP partnership of my actual expected behavior or in any way be an assessment of my character or my ability to act objectively despite the relevant conflicting interest.*
- \_\_\_\_\_ *If I am not confirmed by the CBP partnership as a panel member, I understand that there can be other opportunities to provide my expert input to the panel, as described in the BMP Protocol and that I am welcome to discuss these opportunities with the Panel Chair and Coordinator.*
- \_\_\_\_\_ *I affirm that as a panel member I will respectfully consider the expert opinions and judgments of other members within the context of their perspectives, expertise, and experience, and I will reflect on these as I express my own expert opinions and formulate my own professional judgments. Further, I will base my findings, conclusions, and professional judgment on all of the relevant scientific evidence available to the expert panel on which I serve.*

*During your period of service in connection with the panel for which this form is being completed, any changes in the information reported, or any new information which needs to be reported, should be reported promptly by written or electronic communication to the Panel Chair and Coordinator.*

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Reviewed WQGIT Co-Chair

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Reviewed WQGIT Co-Chair

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name

<sup>13</sup> [http://www.chesapeakebay.net/publications/title/bmp\\_review\\_protocol](http://www.chesapeakebay.net/publications/title/bmp_review_protocol)