Response to STAC workshop report: Consideration of BMP Performance Uncertainty in CBP Implementation

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VIRGINIA TECH

Chesapeake Bay Program
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Workshop objectives

Workshop Objectives

1. Document how BMP performance uncertainty is currently accounted for in the BMP review process;
2. Recommend specific ways for BMP expert panels to document and characterize the uncertainties in the pollutant removal performance of BMPs;
3. Suggest specific uses for the documented uncertainties if/when panels produce them.

Workshop Steering Committee

- Kurt Stephenson, VT / STAC
- Brian Benham, VT / STAC
- Zach Easton, VT / STAC
- Jeremy Hanson, VT / CBPO
- Carl Hershner, VIMS / STAC
- Susan Julius, EPA
- Elaine Hinrichs, CRC / STAC Staff
- Rachel Dixon, CRC / STAC Staff

Workshop materials online at: http://www.chesapeake.org/stac/workshop.php?activity_id=285

Documentation of Uncertainty

A comparative assessment of 22 BMP expert panel reports produced between 2012-2016 was conducted prior to the workshop based on:

1. Available literature
2. Literature relevant to the Bay region
3. Characterization of reported variation in the literature
4. Method used to derive a removal efficiency estimate
5. Explicit recognition/description of uncertainty
6. Sources of greatest uncertainty in efficiency estimate
7. Risk attitude of the panel
8. Measurement and verification

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Workshop Recommendations

Suggested measures

1. BMP expert panels should be asked to provide additional information about BMP performance uncertainty and be given additional guidance on how to document, characterize, and report uncertainty.
2. Systematically document and represent uncertainties throughout the BMP treatment process;
3. Produce information about the distribution of removal effectiveness of each BMP;
4. Develop a method for simply and effectively communicating the degree and type of uncertainty across all approved BMPs; and
5. Provide additional guidance for how to most effectively solicit "best professional judgment" as part of the expert panel process, including best practices for structured literature syntheses, for identifying and avoiding potentially inappropriate heuristics (shortcuts) and biases when obtaining expert opinion, and for expert elicitation.

Uses for information about uncertainty

1. More effective communication to policy makers and managers about the relative certainty in and confidence of BMP pollutant removal estimates;
2. Modeling the range of possible aggregate pollutant load and water quality outcomes considering BMP performance variability;
3. Enabling risk management approaches to BMP selection for Watershed Implementation Plans (WIPs); and
4. Targeted research to reduce performance uncertainty of key BMPs (adaptive management).

Workshop report:

Stephenson, K., C. Hershner, B. Benham, Z. Easton, J. Hanson, S. Julius, and E. Hinrichs. 2018. Consideration of BMP Performance Uncertainty in Chesapeake Bay Program Implementation. STAC Publication Number 18-003, Edgewater, MD. 33 pp.
http://www.chesapeake.org/pubs/390_Stephenson2018.pdf

DRAFT CBP Response

1. BMP expert panels should be asked to provide additional information about BMP performance uncertainty and be given guidance on how to document, characterize and report uncertainty.

- Summarized response: Amend BMP Protocol
  - Addendum/revisions will describe expectations for future panels and how to address BMP performance uncertainty
  - Request a STAC subcommittee to review and comment on draft updates to Protocol

DRAFT CBP Response

2. Systematically document and represent uncertainties throughout the BMP treatment process.

- Summarized response: Include this as part of amended BMP Review Protocol.
  - May be able to develop example(s) for one ongoing panel; can provide template or example in Protocol
  - Same STAC subcommittee to critique and assist with good example

DRAFT CBP Response

3. Produce information about the distribution of removal effectiveness of each BMP.

4. Develop a method for simply and effectively communicating the degree and type of uncertainty across all approved BMPs.

Summarized responses:

- Amendment to BMP Review Protocol will address #3 for future panels. For 200+ existing BMPs, need separate project(s) to provide info consistent with what's requested from future panels in amended Protocol
- Partnership needs clear terminology and understanding of goals/objectives about uncertainty in the modeling tools as a whole. Updates to BMP Protocol can define terms/expectations for uncertainty and BMPs specifically. Wider discussion will inform overall expectations and effective communication strategy.

DRAFT CBP Response

5. Provide additional guidance for how to most effectively solicit "best professional judgment" as part of the expert panel process, including best practices for structured literature syntheses, for identifying and avoiding potentially inappropriate heuristics (shortcuts) and biases when obtaining expert opinion, and for expert elicitation.

Summarized response:

- Seek relevant training for all panel coordinators; consider common set of easily-adapted panel orientation materials
- Further discussion and information needed about expert elicitation before attempting a pilot.

Next steps

- April 9 (today) – Present and discuss draft; **WQGIT feedback requested by COB Tues. April 17**
  - Email feedback to Jeremy Hanson (jchanson@vt.edu)
- April 23 (tentative) – Return to WQGIT for approval of (revised) draft response
- Draft response sent to MB for feedback; letter is finalized based on their feedback
- Final response sent to STAC (response requested by May 21)

Questions?

Contact for feedback or questions:

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