Chesapeake Bay Program
SCIENTIFIC AND TECHNICAL ADVISORY COMMITTEE
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February 15, 2019

RE: STAC 'Legacy Sediment' Workshop Report

Ann Swanson, Executive Director
Chesapeake Bay Commission
60 West Street, Suite 406
Annapolis, MD 21401

Cc: Chesapeake Bay Commission; Chesapeake Bay Program (CBP) Management Board; Water Quality Goal Implementation Team (GIT); Scientific Technical Assessment and Reporting (STAR)

Dear Director Swanson,

Please see the attached report entitled, "*Legacy Sediment, Riparian Corridors, and Total Maximum Daily Loads*". This report provides a summary of the proceedings of a STAC-sponsored workshop requested by the Chesapeake Bay Commission (CBC) on the state of the science of legacy sediments. This report also outlines specific recommendations identified by participants at the two-day workshop convened April 24-25, 2017.

The workshop's objective was to provide a forum to assess the current scientific information and allow experts to discuss varying viewpoints to assist policymakers in understanding how 'legacy' sediments fit within a suite of management activities to reduce nutrient and sediment loads to the Chesapeake Bay. The workshop was organized into five panels addressing three primary themes: state of the science, mitigation strategies, and management issues. For each session, a panel of several speakers presented key observations related to the session theme; five teams of "synthesizers" were also empaneled to integrate the information presented in each session along with their own expertise, so as to summarize the state of the science and to outline key information/research needs.

In addition to outlining a consensus definition of legacy sediments, key lessons learned and major findings from the workshop include:

1. There is general agreement that legacy deposits represent a large reservoir of fine-grained sediment potentially available for remobilization, particularly by bank erosion; but scientific findings differ regarding the relative contributions of sources to sediment and associated nutrient loads. Such differences likely result from spatial and temporal heterogeneity across the Bay watershed with respect to the relative contribution of different sediment sources to total loads, nutrient concentrations, residence times of stored sediment, and time lags for delivery to tidewater. *Therefore no one set of assumptions or solutions can be applied uniformly across the Chesapeake Bay watershed.*

2. There is a need for additional research to identify erosional hot spots for fine-grained material, some of which are associated with mill dams recently breached or are at risk of being breached. There is also a need to identify active sediment storage sites that should be protected.

3. Historical degradation of Bay water quality is more directly related to the dramatic increase in nutrient loads; control of nitrogen and phosphorus loads to tidewater is therefore more critical to the Bay restoration effort than control of mineral sediment.

4. Mitigation efforts should focus first and foremost on the content of biologically available nutrients. The highest nutrient concentrations are typically found in modern agricultural soils and in sediment eroded from those soils. More research is needed to characterize nutrient content of legacy sediments.

5. A recent approach to mitigation of watershed loads involves removal of valley-bottom legacy sediments to restore local ecosystem services and to prevent downstream transport. Studies in progress show promising trends in water quality, hydrologic condition and vegetation at restoration sites, but there is not yet enough information to quantify long-term benefits across the Bay watershed.

6. Documented approaches to control surficial sources of sediment and nutrients (including riparian forest buffers, BMPs that retain nutrient-rich topsoil on agricultural sites, and stormwater management in developed watersheds) may be as, or more, effective than legacy sediment removal under certain conditions, and so should remain part of a mitigation portfolio.

7. Given uncertainty about how rapidly mitigation efforts upstream will lead to observable reduction in loads downstream, sites with closer functional proximity (e.g., potential for transport, storage, and delivery) to tidewater should be weighted more heavily.

8. We recommend a continued primary focus on avoidance, minimization, and mitigation of nonpoint source water quality problems in uplands. Consideration should be given to management of valley legacy sediments where their influence on Bay water quality is determined to be substantial. Protection of sites with potential to retain sediment and nutrients should also be a management goal.

We hope that the Chesapeake Bay Commission and Chesapeake Bay Program will find these recommendations useful, and we look forward to your feedback through a written response to the workshop findings and recommendations. We are committed to continued interaction between the Commission and STAC to further strengthen the effectiveness of restoration efforts for the Chesapeake Bay. Please direct any questions regarding this report and its recommendations to Rachel Dixon, Coordinator of the CBP's Scientific and Technical Advisory Committee, or workshop chair Andrew Miller (miller@umbc.edu).

On behalf of STAC, thank you for considering these recommended next steps, thank you for your patience in receiving this final document, and we look forward to continuing this dialogue in the future.

Sincerely,

Brian Benham
Chair, Chesapeake Bay Program's Scientific and Technical Advisory Committee