Chesapeake Bay Instantaneous Minimum Dissolved Oxygen Criteria: Considerations for Alternate Definitions

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Tidal Monitoring and Analysis & Criteria Assessment Protocol Workgroups
Monday, December 2, 2013
10:00AM – 3:00PM

USGS Baltimore Science Center
For directions visit: http://md.water.usgs.gov/directions/baltimore.html
Conference Line: 866-299-3188, code 2675715
Adobe Connect: https://epa.connectsolutions.com/tmaw2/
Meeting Calendar: http://www.chesapeakebay.net/calendar/event/20893

AGENDA

10:00 **Welcome and Introduction** – P. Tango (USGS-CBPO, CAP Chair)

Note: findings of this workshop will be translated into a chapter on technical guidance for Chesapeake Bay criteria and its assessment to be adopted into State standards.

10:15 **The Chesapeake Bay's Instantaneous Minimum (IM) Dissolved Oxygen Criteria: Origins and Evolution Through Time**– R. Batiuk (USEPA)

The history and supporting documentation which led to publication of instantaneous minimum dissolved oxygen criteria will be reviewed as a reminder of how and why we got to this point. The case will be made for not changing the criteria, but focusing on refinements to the assessment procedures respectful of the constraints of the Partnership's tidal water quality monitoring network.

10:40 **Assessment of IM Criteria as Applied to the Chesapeake Bay** – G. Shenk (USEPA)

11:00 **Living Resource Considerations for an IM Criteria for Chesapeake Bay** – D. Breitburg (SERC)

The Instantaneous Minimum Criteria are based on the premise that individual organisms do not recover from death, and that death can occur from very brief exposure to dissolved oxygen concentrations substantially below those that impair growth or alter behavior. These criteria are therefore fundamentally different from those that are averaged over periods of time ranging from hours to weeks, and are intended to be protective of processes that can at least

partially compensate for losses incurred under poor conditions during periods in which conditions improve.

11:20 **Umbrella Criterion: Assessing Probability of Failing the IM Criterion** – E. Perry (Statistics Consultant)

An auto-regressive time series model with exogenous variables for season and diel cycle is developed to simulate location and depth specific time series of dissolved oxygen. These simulated data are tabulated to assess the conditional probability of having greater than 10 % failure of the IM dissolved oxygen criterion when the 7-day dissolved oxygen criterion is satisfied. Details of model development will be available but time constraints will permit only limited discussion of this aspect of the research.

11:40 **Challenges in Evaluating an IM Criterion in Open-Water and Deep-Water with the Existing Framework** – T. Robertson (VADEQ)

The Open-Water (OW) and Deep-Water (DW) IM criteria for Chesapeake Bay dissolved oxygen assessments have yet to be assessed due to the lack of approved methodologies. Yet the IM is currently assessed for the Deep-Channel use, using the methodology applied to the OW and DW 30-Day Mean criteria. A brief overview of the different assessment methodologies will be presented, with a focus on the challenges that complicate OW/DW IM assessments. These challenges are not insurmountable, but they underscore why an alternative framework should be considered.

12:00 **Lunch**

1:00 **Discussion: Thoughts on existing IM, recommendations for alternate definitions and protocols to assessing the IM criteria in Chesapeake Bay**

2:30 **Summary of Alternate Definitions to the IM criterion and Subsequent Protocol for Assessment**

3:00 **Adjourn**