CAP WG Draft outline: 3/4/2024

Ambient Water Quality Criteria for Chesapeake Bay -

Technical Support Addendum 2026

Executive Summary

Chapter 1. Introduction

* **Brief review on where we have been, our foundations:**
  + **The Existing Bay Interpolator for Dissolved Oxygen Criteria Attainment Assessment**

From 2003-2023, the Bay Interpolator (USEPA 2003) has been used to assess Chesapeake Bay water quality criteria in support of state water quality standards.

* The 3D interpolator is based on an IDW interpolation algorithm (Bay Interpolator users manual, Bahner “2000”).
* Interpolation for 92 segments(USEPA 2003, 2004)
* Designated Use assessments (USEPA 2003, 2004)
* Criteria address space and time (USEPA 2003, Batiuk et al. 2010, Tango and Batiuk 2016)
  + Aerial survey of SAV
  + Water clarity assessment via shallow water monitoring
  + CHLA assessments,
    - James River synthesis highlights, referenced
* Review: Criteria, data gaps, technical issues
  + Recognize that during our history of assessment thus far, there are questions regarding our criteria, their interpretation and assessing attainment results
* Where are we going: Highlight new tools and protocols for assessment
  + Potentially satellite based assessment of SAV
    - Data sources
    - AI Algorithms and interpretation
  + Any progress with quantitative interpretation of narrative criteria and satellite-based criteria assessment
  + Dissolved oxygen assessment for all criteria durations,
    - New data streams
    - 4D interpolator
    - Protocols to assess results from the 4D interpolator

**Chapter 2. Technical Issues since USEPA (2017)**

* D.O. Criteria
  + Inconsistency with significant figures
  + Updates on significant figures of criteria
* D.O. Criteria Assessment
  + Rounding conventions for the data
  + Rounding conventions within a criterion assessment
* Continuous time series for d.o., salinity, and temperature
  + Sensor precision for d.o., salinity and temperature data reporting
  + Data management: Addressing data gaps in time series for criterion assessment
* Designated Use Boundaries reference – pending.

“Chapter 3”. Tools and Protocols for criteria assessment

* New tools and protocols for assessment
  + Potentially satellite-based assessment of SAV
    - Data sources
    - Workflow
    - AI Algorithms and interpretation
  + Dissolved oxygen assessment for all criteria durations,
    - New data streams
    - 4D interpolator
    - Protocols to assess results from the 4D interpolator
  + Any progress with quantitative interpretation of narrative criteria and satellite-based criteria assessment or water clarity assessment by new methods