Developing a New Chesapeake Bay Water Quality Indicator for Tracking Progress toward Bay Water Quality Standards Achievement

March 5, 2013
[SUBJECT TO REVIEW AND FURTHER REVISION]

The Chesapeake Bay Program's (CBP), Water Quality Goal Implementation Team recommends the adoption of a combined indicator to measure progress towards the achievement of the four jurisdictions' Chesapeake Bay water quality standards into the Partnership's indicator framework. The indicator would be fully consistent with how Delaware, the District of Columbia, Maryland, and Virginia currently list their portion of the Bay's tidal waters and provide a means for illustrating improvements through time.

Additionally, this indicator could be used to measure progress toward the Chesapeake Bay Executive Order's water quality outcome in which 60% of segments are achieving Bay water quality standards by 2025 via the implementation of pollution reduction actions for nitrogen, phosphorus and sediment.[1] The 2009 baseline condition, as documented in the Chesapeake Bay TMDL, was 89 of 92 segments of the Chesapeake Bay and its tidal tributaries and embayments were impaired (USEPA 2010).

There are 92 segments in the Chesapeake Bay's tidal waters and each segment can have up to 5 designated uses and in some cases also numeric chlorophyll *a* criteria. The methodology takes into consideration all designated uses for all segments to meet water quality standards for dissolved oxygen, water clarity, and chlorophyll *a* in the tidal Chesapeake Bay. Rather than reporting progress only when all designated uses are met in a segment, this methodology will report when a water quality standard is met for each of the designated uses in that segment; therefore, rather than 92 segments, this methodology reports on 291 designated-use segments, of which 33 currently meet water quality standards.

The methodology was developed using 2008-2010 criteria assessment data reported by Maryland, Virginia, Delaware and the District of Columbia. This methodology is conservative (i.e. if assessment procedures for a criteria are not in place, the segment is assumed to be impaired), uses the same assessment data that will be used by the states to delist impaired waters and ensures we report the best available measure of how much of the Bay tidal waters are achieving water quality standards. [2]

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[1] The Water Quality Outcome, as written on pages 4 and 22 of the Executive Order Strategy, reads as follows:
Water Quality Outcome: Meet water quality standards for dissolved oxygen, clarity/underwater grasses and chlorophyll-a in the Bay and tidal tributaries by implementing 100 percent of pollution reduction actions for nitrogen, phosphorus and sediment no later than 2025, with 60 percent of segments attaining water quality standards by 2025. *(Current condition: 89 of the 92 segments of the Bay and its tidal waters are impaired.)*
The Executive Order Strategy is available for download at: http://executiveorder.chesapeakebay.net/category/Reports-Documents.aspx.

[2] By 2015, EPA and its seven jurisdictional partners are committed to working collaboratively on developing, subjecting to independent scientific peer review, agreeing to, and then publishing criteria assessment procedures for the remaining dissolved oxygen criteria currently without Partnership approved assessment procedures.

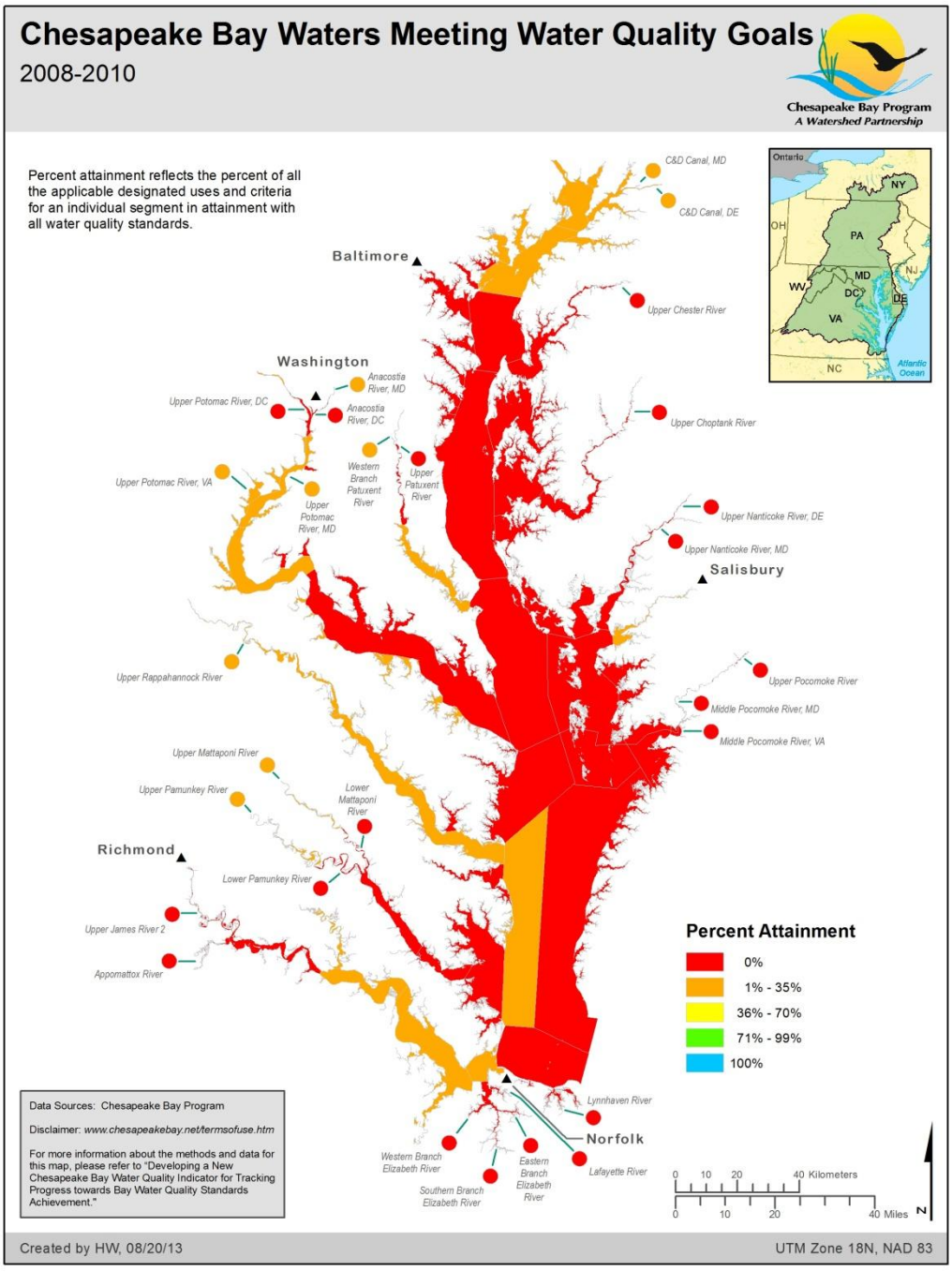

Figure 1. Visual illustration of the water quality standards indicator status, expressed as a percentage, for each of the 92 Chesapeake Bay TMDL segments (2008-2010 listing cycle). The number of water quality criteria applied varies across the 92 Bay segments based on the applicable designated uses (i.e., migratory spawning and nursery, open-water, deep-water, deep-channel, and shallow water bay grasses) and criteria (e.g., chlorophyll *a*). Percent attainment reflects all the applicable designated uses and criteria for that individual segment which are in attainment with all water quality standards.