

FINAL

BALTIMORE HARBOR NUTRIENTS TMDLS

APPENDIX B: TMDL Scenario Dissolved Oxygen Criteria Attainment Assessment

Appendix B

TMDL Scenario Dissolved Oxygen Criteria Attainment Assessment

The dissolved oxygen (DO) criteria attainment assessment for the TMDL scenario in the Baltimore Harbor is provided below. The assessment procedure is the same as that described in Appendix A.

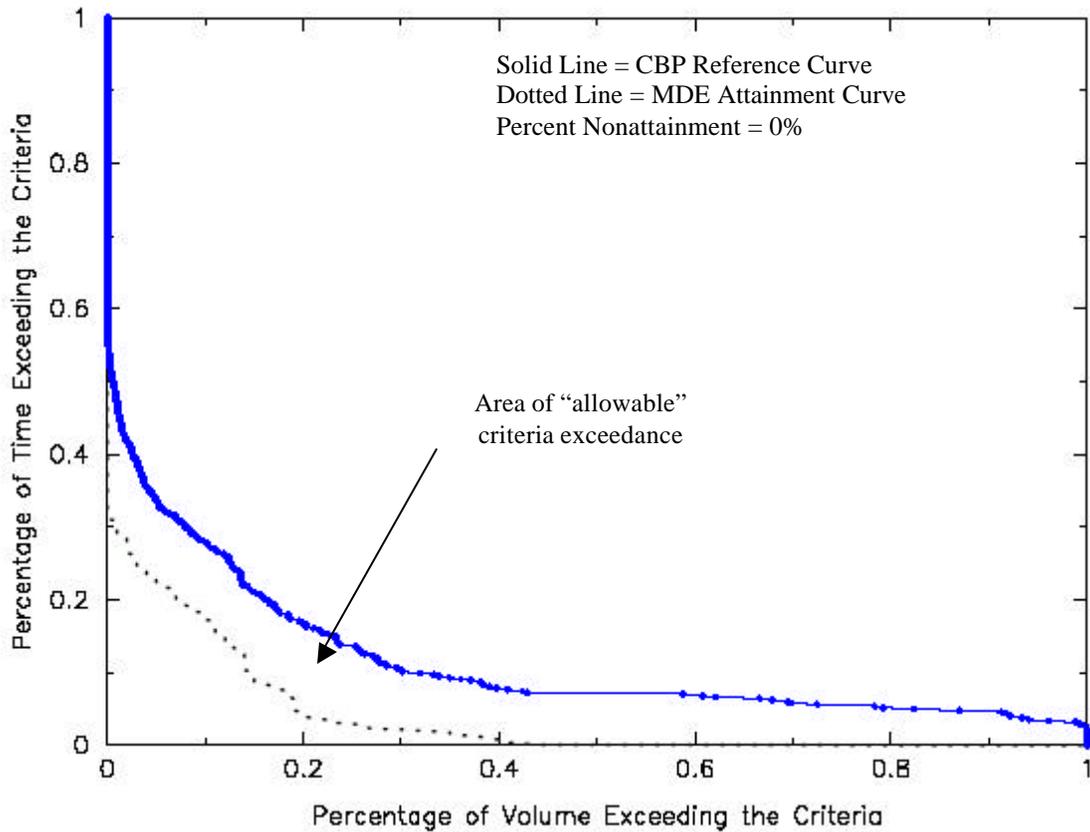


Figure B1: TMDL Scenario DO Criteria Attainment Assessment for the Migratory Fish Spawning and Nursery Designated Use for the period February 1 - May 31

The Baltimore Harbor attainment curve (dotted line) is compared to the CBP reference curve (solid line). The analysis indicates that the attainment curve remains completely below the reference curve. This results in the designated use meeting its criteria with 0% nonattainment.

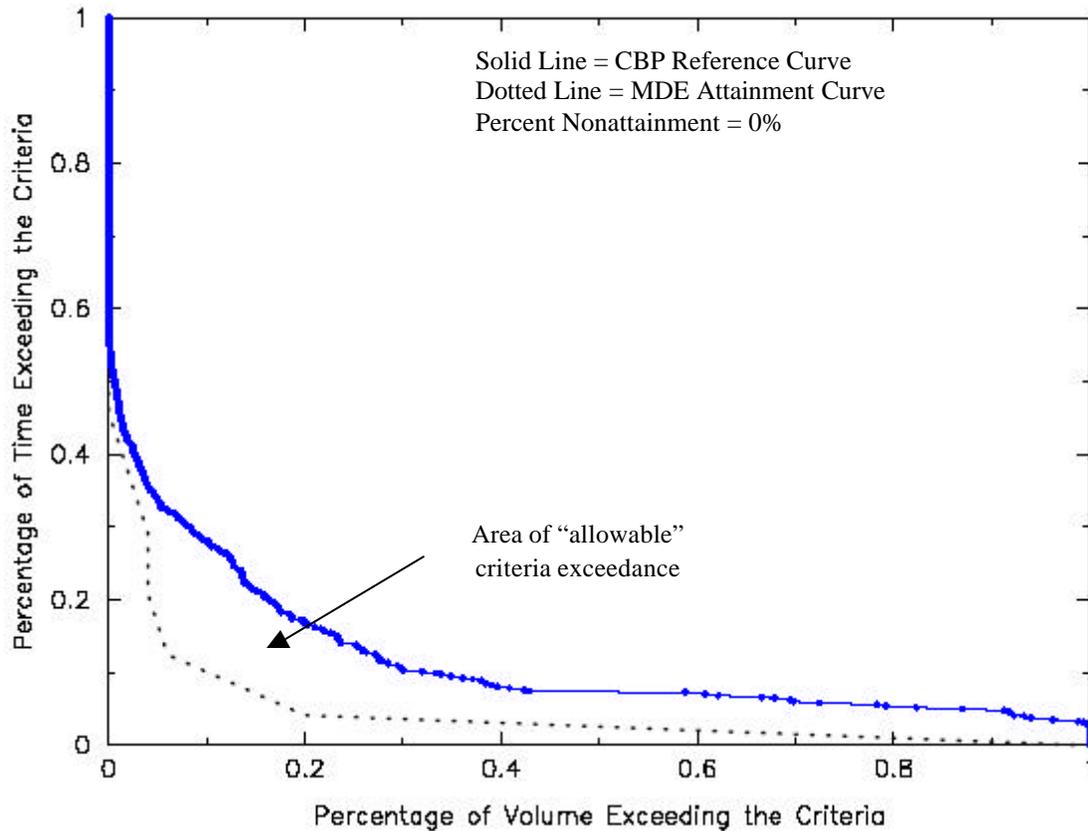


Figure B2: TMDL Scenario DO Criteria Attainment Assessment for the Open Water Designated Use for the period June 1 - September 30

The Baltimore Harbor attainment curve (dotted line) is compared to the CBP reference curve (solid line). The analysis indicates that the attainment curve remains completely below the reference curve. This results in the designated use meeting its criteria with 0% nonattainment.

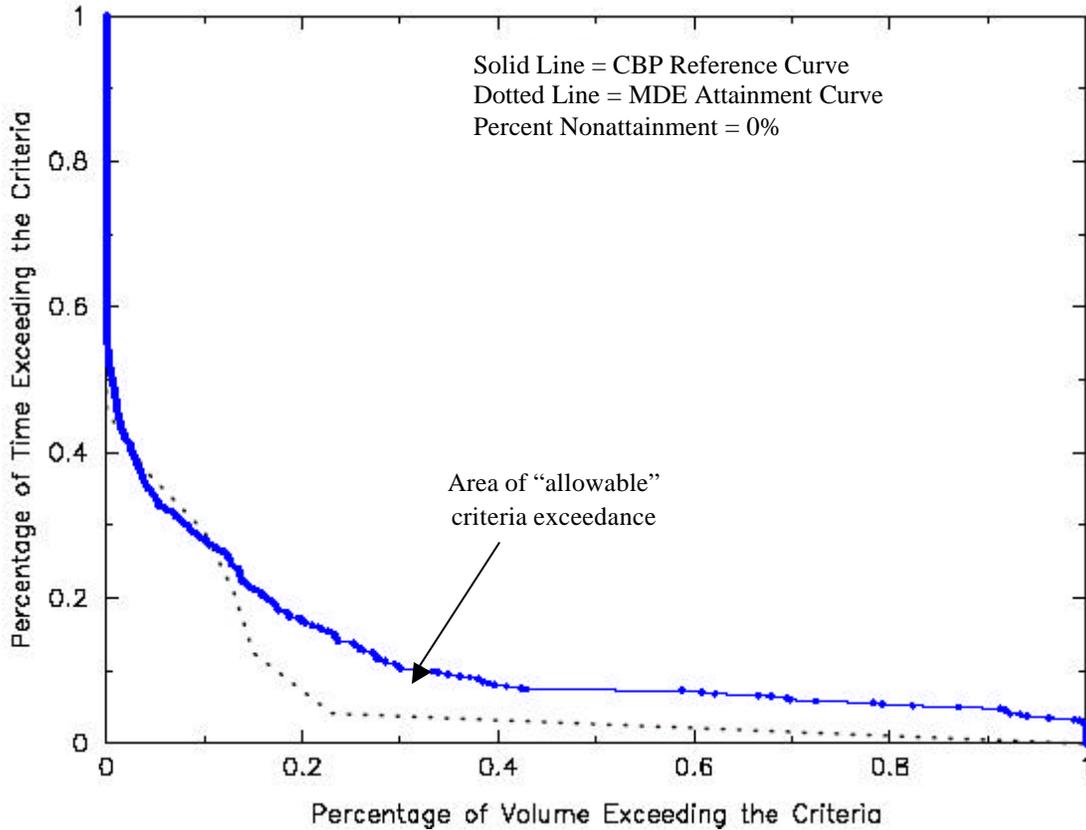


Figure B3: TMDL Scenario DO Criteria Attainment Assessment for the Open Water Designated Use for the period October 1 - January 31

The Baltimore Harbor attainment curve (dotted line) is compared to the CBP reference curve (solid line). A visual analysis of the reference curve plot indicates that the attainment curve rises slightly above the reference curve. The numerical values obtained from the output of the attainment program shows a 0.00 or 0% non-attainment. Therefore, it is estimated that the DO exceedance in time and volume time represented by this area should be between 0.000 and 0.005 (between 0% and 0.5%) in time and volume, otherwise if higher than 0.005, the numerical value of the program output would approximate to the next decimal showing a 0.01 or 1% exceedance. Based on the review of the reference curve program model output, MDE concludes that this specific designated use meets its DO criteria.

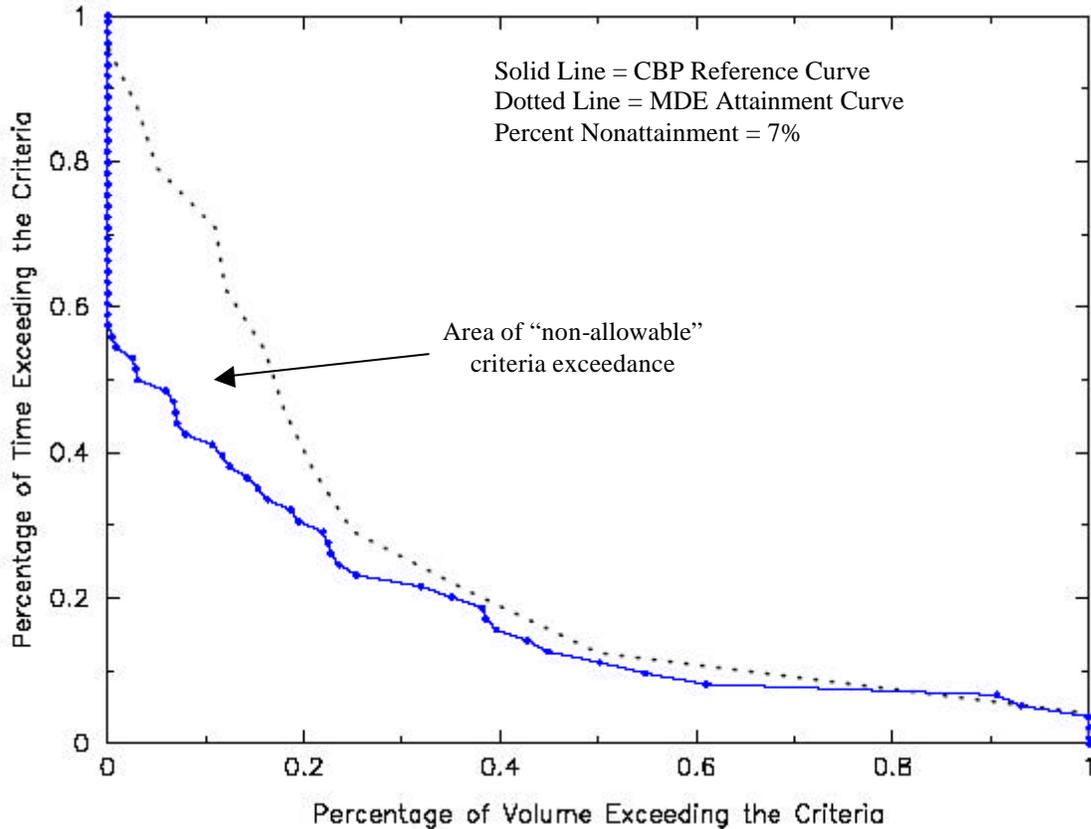


Figure B4: TMDL Scenario DO Criteria Attainment Assessment for the Deep Water Designated Use for the period June 1 - September 30

The Baltimore Harbor attainment curve (dotted line) is compared to the CBP reference curve (solid line). The DO criteria attainment assessment for the Deep Water Designated Use indicates that there is an area of nonattainment of 7%. The Deep Water Designated Use DO criteria allows a variance of up to 7% applied spatially and/or temporally from June 1 to September 30 (COMAR 26.08.02.03-3 C (8) (e) (vi)), therefore, the assessment of the DO criteria indicates that the Deep Water designated use is attained.

There is no DO reference curve for the Deep Channel Designated Use, which applies in the area below the lower boundary of the pycnocline to the sediment/water interface from June 1st to September 30th. Therefore, MDE developed an attainment analysis methodology. The methodology consisted of evaluating the water quality model DO data for the Deep Channel habitat against the 1.0 mg/l instantaneous minimum DO concentration required. The Deep Channel Designated Use attainment analysis result indicates that nonattainment of the water quality criteria occurs 78.5% of the time and volume.