Briefing on the Technical Evaluation of the Lower Chester River and Eastern Bay's Non-attainment at Bay TMDL Level of Effort Loads

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Background

- June 20, 2011 EPA proposed Phase II target allocations totaling 187.25 TN and 14.16 TP

- Received detailed feedback from the jurisdictions
  - Non-attainment of the lower Chester River and Eastern Bay's deep-channel designated uses driving basinwide TN loads down by 4.5 million pounds

- EPA distributed revised Phase II planning target loads totaling 191.75 TN and 14.55 TP on August 1, 2011

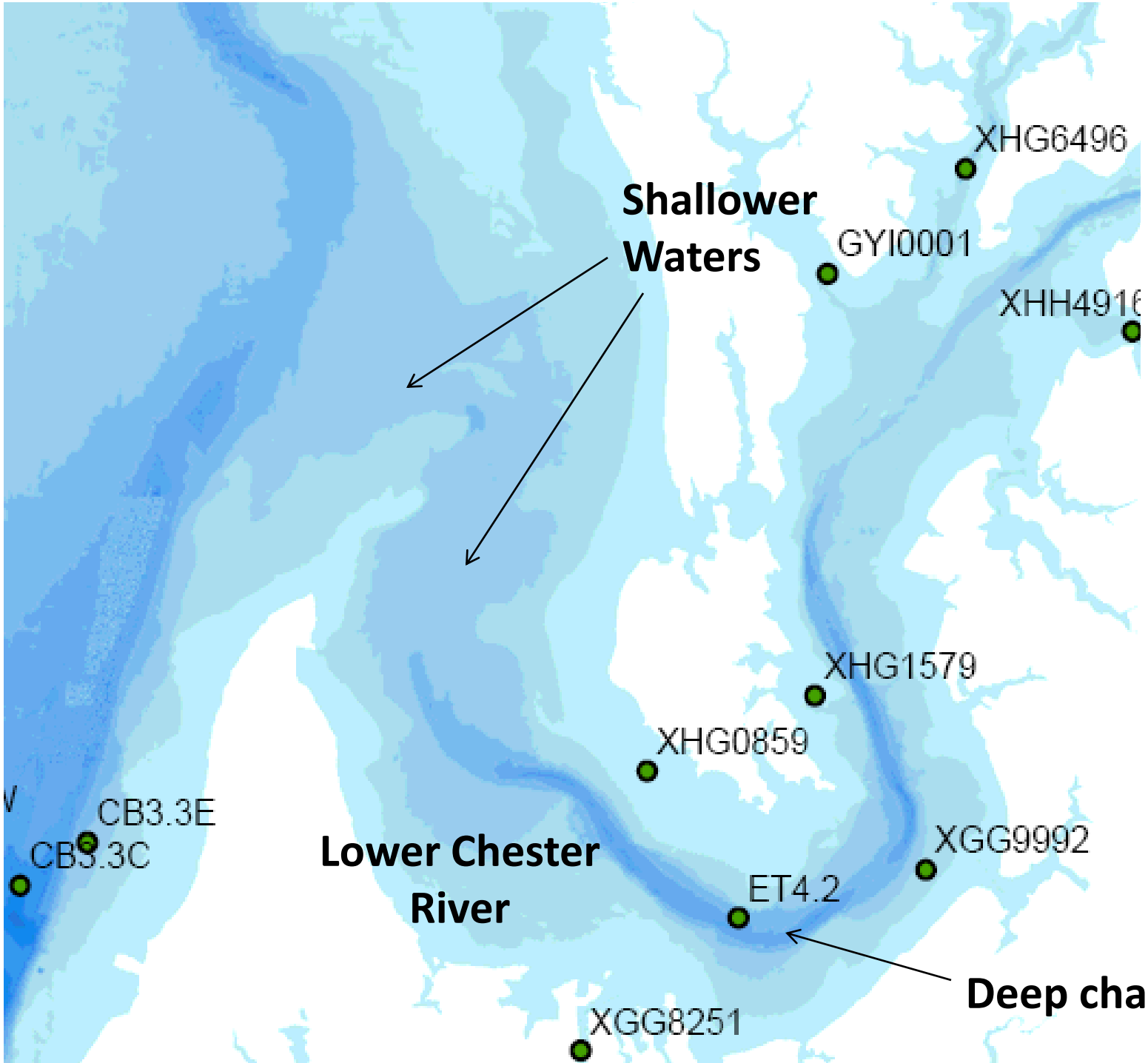
- EPA received verbal and written requests from the jurisdictions for further evaluation of the lower Chester River and Eastern Bay's non-attainment

Lower Chester River

- In 2010, MD proposed (and EPA approved) a restoration variance of 14 percent for the deep-channel designated use

  - Defined in MD state regulation as the allowable exceedance of a specific water quality criteria based on the best available scientific understanding consistent with the CWA

  - A restoration variance is considered temporary, must be reviewed every three years, and may be modified based on new scientific findings


XHG6496
Shallower Waters
GYI0001
XHH4916
XHG1579
XHG0859
CB3.3E
CB3.3C
Lower Chester River
XGG9992
ET4.2
Deep channel
XGG8251

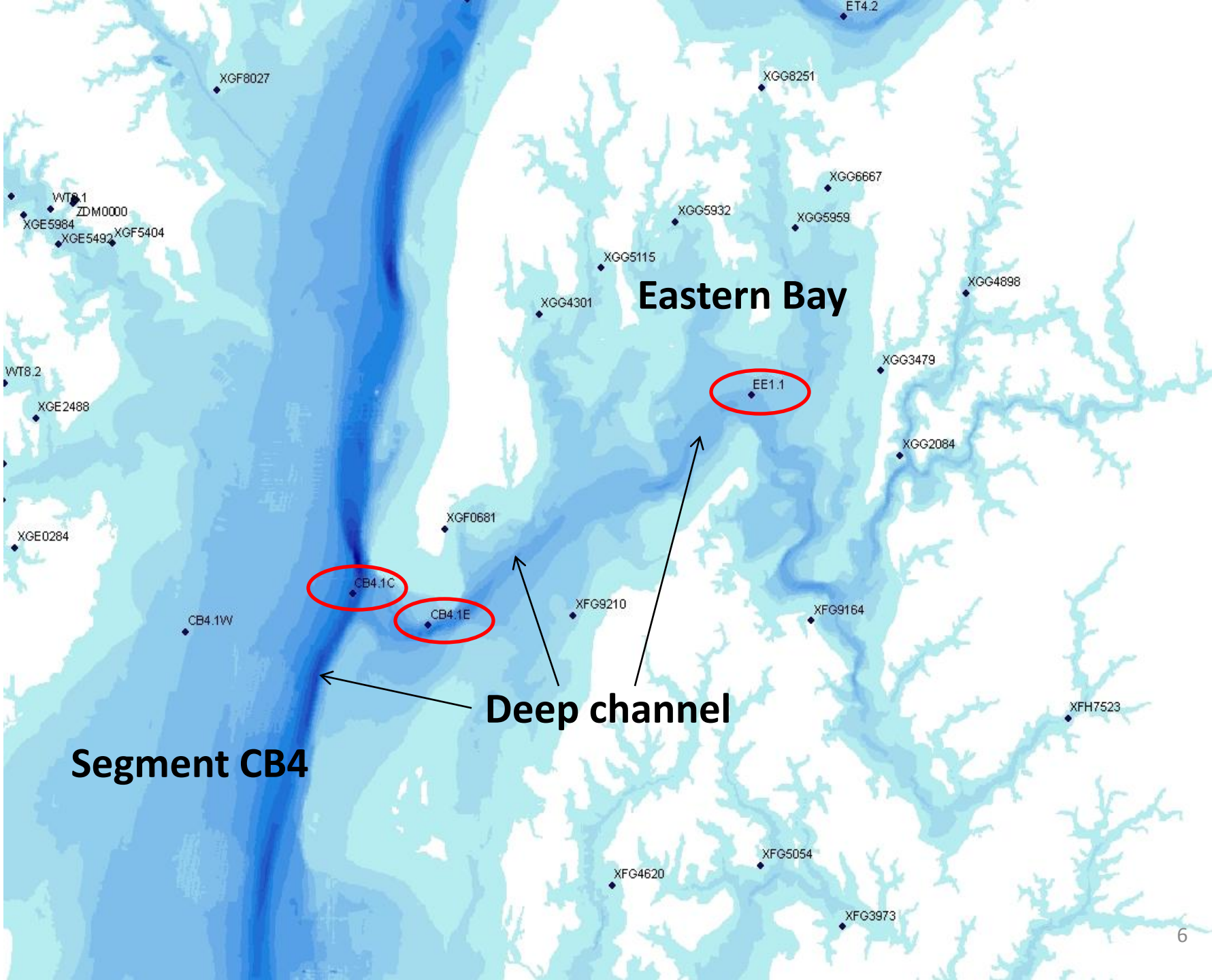
Lower Chester River

- EPA believes the same physical conditions present in the lower Chester River's deep channel still prevent full attainment of MD's applicable DO criterion

  – Updated models represent non-attainment at 16 percent vs. 14 percent

Table 1. Chesapeake Bay Water Quality Model simulated dissolved oxygen criterion percent volume/time non-attainment for lower Chester River deep-channel designated use across different nitrogen loading scenarios.

Nitrogen Load (millions lbs/yr)	318	196	194	193	191	190	189	188	187	184
Percent Non-attainment	16%	16%	16%	16%	16%	16%	16%	16%	15%	15%


ET4.2
XGF8027
XGG8251
XGG6667
WT8.1
ZDM0000
XGE5984
XGE5492
XGF5404
XGG5932
XGG5959
XGG5115
Eastern Bay
XGG4898
XGG4301
XGG3479
WT8.2
EE1.1
XGE2488
XGG2084
XGF0681
XGE0284
CB4.1C
CB4.1E
XFG9210
XFG9164
CB4.1W
Deep channel
XFH7523
Segment CB4
XFG5054
XFG4620
XFG3973

Eastern Bay

- At Bay TMDL LOE, segment CB4's deep-channel was at 2% non-attainment, consistent with/attaining the existing restoration variance

- Eastern Bay's deep-channel was also observed at 2%

Table 2. Chesapeake Bay Water Quality Model simulated dissolved oxygen criterion percent volume/time non-attainment for Eastern Bay's deep-channel designated use across different nitrogen loading scenarios.

Nitrogen Load (millions lbs/yr)	318	196	194	193	191	190	189	188	187	184
% Non-attainment deep-channel	39%	4%	3%	2%	2%	2%	2%	2%	1%	1%

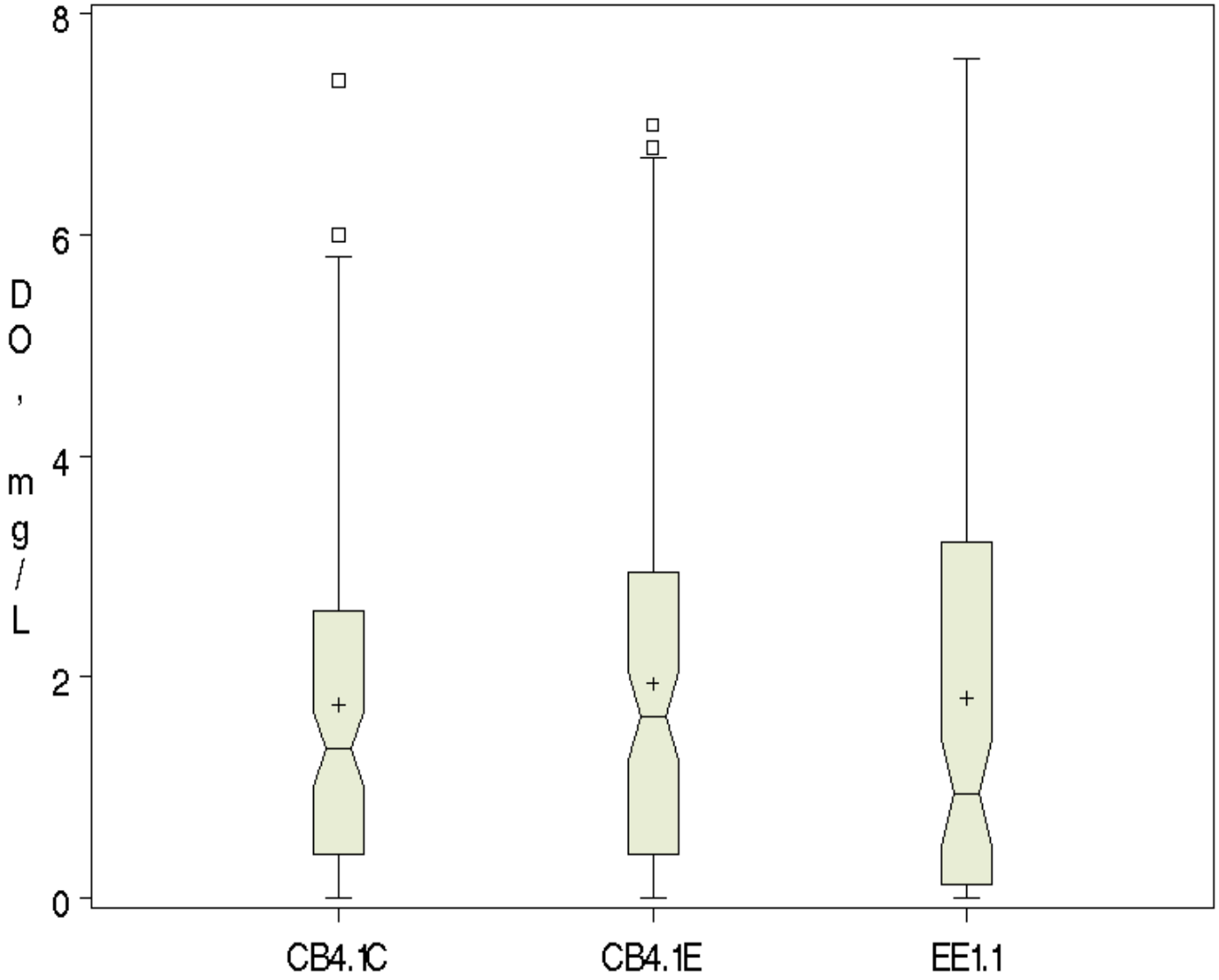


Figure 2. Mean monthly summer (June-September) dissolved oxygen concentration data from 1985-2010 for stations CB4.1C (located in middle mainstem Bay's deep channel) and CB4.1E (located in deep channel at the mouth to Eastern Bay) at the 12 meter depth and EE1.1 (located the deep channel in the middle of Eastern Bay) at the bottom depth of 12 meters (see Figure 1 for actual station locations).

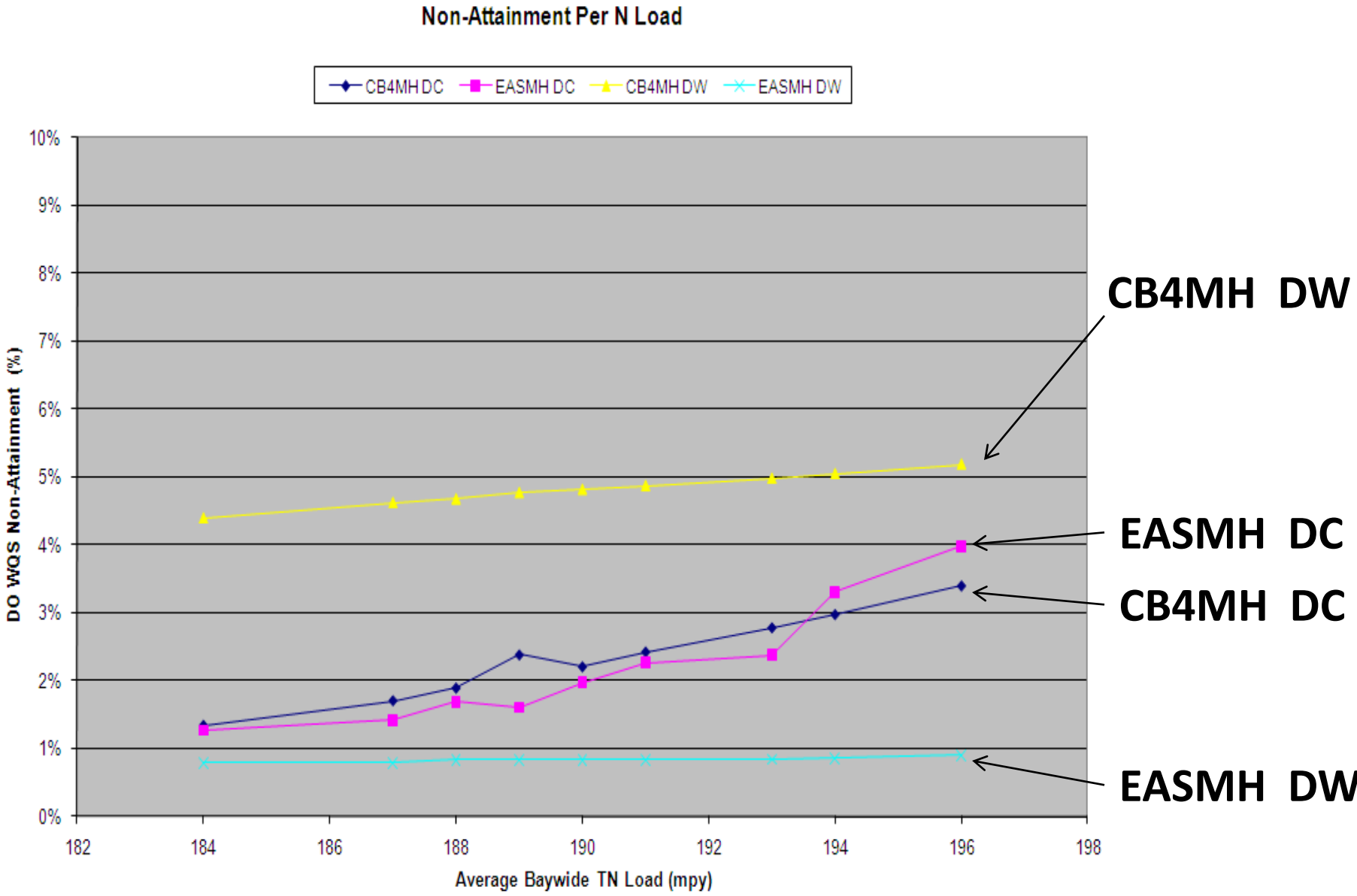


Figure 3. Percent non-attainment of the applicable dissolved oxygen criteria across average baywide total nitrogen load (million pounds per year) for segments CB4MH and EASMH deep-water and deep-channel designated uses.

Eastern Bay

- Deep channel running up into the middle of Eastern Bay is a natural extension from the adjacent mainstem
- DO levels within the shared deep channel governed by water quality conditions in adjacent mainstem
- A 2 percent restoration variance for Eastern Bay's deep channel designated use would be appropriate
- Ultimately, this effects Maryland's WQ standards and, therefore, its Maryland's decision on how to proceed

MD's Schedule for Variance Promulgation

- MDE AG and Sec. approval of "Notice of Proposed Action".
- Package of amendments submitted Div. of State Documents (DSD) for review. – 28 days
- Submission to DSD for publication in the Maryland Register. Prep time – 14 days
- Minimum public comment period. – 30 days
- If no issues arise, publication (Notice of Final Action) - 45 days after proposal. (30 days + 15 days)
- 10 days after Notice of Final Action in Md. Register, regulations can be effective.

Acknowledgments

- Ron Entinger, NY DEC, for raising the issue back in 2009 and patiently waiting for the rest of us to catch up!
- Jurisdictional partners for requesting the technical evaluation be undertaken
- Bill Romano, MD DNR, for the statistical analyses
- Jeni Keisman, formerly UMCES/CBPO (now U.S. DoE), for the supporting non-attainment evaluations
- EPA Region 3 WPD WQ Standards Team for programmatic review and comment
- EPA Region 3 Regional Counselors (Kelly Gable, Chris Day) for legal review and comment
- John Backus, MDE, for variance promulgation