

**Comment Response Document
Regarding the Water Quality Analysis of Eutrophication for the
Middle Patuxent River, Howard County, Maryland**

The Maryland Department of the Environment (MDE) has conducted a public review of the proposed Water Quality Analysis of Eutrophication for the Middle Patuxent River, Howard County, Maryland. The public comment period was open from July 6, 2006 to August 7, 2006. MDE received three sets of written comments.

Below is a list of commentors, their affiliation, the date comments were submitted, and the numbered references to the comments submitted. In the pages that follow, comments are summarized and listed with MDE's response.

List of Commentors

Author	Affiliation	Date	Comment Number
Jennifer Sincock	US Environmental Protection Agency	July 24, 2006	1
Susan R. Overstreet	Howard County Department of Planning and Zoning	July 21, 2006	2-7
Allan Smith	Chairman Patuxent River Commission	July 31, 2006	8-10

Comments and Responses

1. The commentor asks if there is any National Pollution Discharge Elimination System (NPDES) permitted point sources of nutrients in the Middle Patuxent River watershed?

Response: There are no NPDES permitted point sources currently active in this watershed. [There was one minor municipal point source, St. Louis Catholic Church (NPDES: MD0023094). However, there is no data existing for this point source after 1998, according to the Chesapeake Bay Program (CBP) Point Source database. The flow data indicates a flow of 0 million gallons per day (MGD) since June 1997. The U.S. Environmental Protection Agency (EPA) Permit Compliance System (PCS) database has no record of the point source.]

2. The commentor points out that there appears to be slight inconsistency between the Executive Summary and the Introduction. The Introduction states that the Middle Patuxent River was listed for impact to biological communities in 1996, while the Executive Summary states that this listing occurred in 2004. In addition the introduction states that the listing for sediments will be addressed at a future date, while the Executive Summary states that all of the other listings will be addressed at a future date, with the metals being addressed in 2006.

Response: Revisions as indicated by the commentor have been made.

3. The commentor points out that the final sentence of the Introduction states that the data will demonstrate that the Middle Patuxent River is achieving water quality standards. The commentor asks if this should be qualified, since the report only looked at certain water quality parameters specific to the nutrient question.

Response: The sentence has been corrected to now read, “The data will demonstrate that the Middle Patuxent River is achieving water quality standards in relation to nutrients.”

4. The commentor points out that Figure 2 contains significant areas shown in white, that are not defined in the legend and would like to know what is the land use for these areas?

Response: The land use map was incorrect; a revised map has been inserted into the document.

5. The commentor states that it would be helpful if Section 3.0 Water Quality Characterization listed which parameters were sampled during each of the two data collection periods.

Response: The requested information has been added to Section 3.0

6. The commentor asks if Section 3.2 Biochemical Oxygen Demand (BOD) can include assessment of whether or not the BOD levels found were high or low? Also, the commentor poses a question whether it should be noted that there is no BOD data for the time period when dissolved oxygen (DO) fell below 5 mg/l?

Response: Although Maryland does not have numeric water quality criteria for biochemical oxygen demand, the narrative standards (COMAR§26.08.02.03B) apply, especially to eutrophic conditions (*i.e.*, no substance may interfere with designated uses). Narrative criteria are designed for exactly this purpose. Biochemical oxygen demand and chlorophyll *a* have been used for over a decade under authority of the State’s narrative criteria to evaluate eutrophic conditions, in conjunction with the DO criterion, and set water quality endpoints consistent with the designated uses of a waterbody. This has allowed the State to make water quality management decisions that support the mandatory water quality standards and are consistent among the regulated community. MDE must ensure that point and nonpoint source loads to waters of the State do not impair the existing uses of that waterbody. The Maryland Biological Stream Survey (MBSS) program collected the one low DO datum: MBSS does not collect BOD data.

7. The commentor asks to delete the reference to the river as tidal in Section 3.4 Nutrients. Also, the commentor would like to know if this section could include an assessment of whether or not the total phosphorous and nitrogen concentrations were high or low?

Response: The “tidal” was deleted. Please see the response to Comment 6, which applies to nutrients, as well as BOD.

8. The commentor opens with the discussion of a Patuxent River Commission (PRC) meeting held in July 2006 where there was a presentation and discussion about the referenced WQA.

The commentor states that during this discussion a question was asked about the criteria used to determine that the area is not impaired for nutrients. At this time, the commentors learned that DO was used as the endpoint for the analysis. The commentor states that it is the belief of more than one commissioner that DO levels are not a satisfactory way of measuring nutrient levels. The commentor continues that a suggestion was made that DO levels are a second or third-order effect of nutrient pollution and that there are other reasons that suggest that DO levels are an unreliable measure of nutrient pollution. The commentor additionally states that total nitrogen (TN) and total phosphorus (TP) levels are a more accurate way to determine nutrient impact.

Response: Water quality standards, a designated use and criteria to support that use, are the foundation on which a TMDL is developed. As the direct impact on the designated use, support of fish and aquatic life, is from dissolved oxygen, DO is in fact the very best measure of use attainment. It is the nutrients that are several steps removed from the attainment decision since excess nutrients result in excess algae, which decompose and use up oxygen lowering DO to the point where the aquatic life use is no longer supported.

9. The commentor states that the concern is that nutrient introduction from the northern sections of the Patuxent River cause many of the water quality issues found in the southern portions of the review. The commentor continues that it is the commission's position that the delisting of this section of the river for nutrient impairments would do a disservice to the river as a whole and it would suggest that the sections of the river that are creating many of the problems downstream are healthy. The commentor additionally states that such a suggestion would create false hopes in those hoping and working to improve water quality in the Patuxent River that the health of the river may be taking a turn for the better.

Response: MDE develops TMDLs or WQAs for listed waterbodies based on available data collected by MDE for analysis purposes (covering high flow and low flow conditions), as well as any supplemental data from other agencies or any other sources. Based on available data, the analysis shows no evidence of DO violation or elevated chlorophyll *a* levels. Barring any contradictory future data, this information provides sufficient justification to revise Maryland's 303(d) list to remove nutrients as an impairing substance in relation to the Middle Patuxent River. However, if any contradictory data exist in the future indicating violation of water quality standards, the 303(d) listings can be revised. Analyses of the more southern portion of the River, and the Bay will determine if additional nutrient reductions are needed in this section of the River, those reductions will be implementation through the Tributary Strategies.

10. The commentor states that at this time, the PRC does not support the removal of the Middle Patuxent River from the 303(d) list and the commission requests that a more accurate method of qualifications be used to determine the nutrient impact in the Patuxent River.

Response: Please see response to Comment 9.

Appendix A

As a result of comments on the public draft document, MDE staff collected additional data in this basin. These additional data are presented in Table A1 below.

Table A1: Additional sample data collected Sept. 14, Sept. 27, Oct. 3, and Oct. 10, 2006.

Station	Sample date	Water temp	pH	DO	Conductivity	Salinity	Turbidity	Comments
MXT0021	9/14/2006	17.1	7.2	8.6	267	0.1	7.2	
MXT0021	9/21/2006	14.6	7.9	9.3	292	0.1	1.2	
MXT0021	9/27/2006	15.6	7.7	9.8	277	0.1	0.0	
MXT0021	10/3/2006	14.6	7.7	9.4	285	0.1	0	
MXT0021	10/10/2006	14.1	7.9	9.4	276	0.1	0	
MXT0068	9/14/2006	16.8	7.7	8.8	237	0.1	12.6	
MXT0068	9/21/2006	14.3	7.8	9.9	283	0.1	1.2	
MXT0068	9/27/2006	15.3	7.2	9.5	275	0.1	0.0	
MXT0068	10/3/2006	14.6	7.6	9.5	278	0.1	0.0	
MXT0068	10/10/2006	13.8	7.8	9.7	275	0.1	0.0	
MXT0097	9/14/2006	16.4	7.6	8.3	264	0.1	11.5	
MXT0097	9/21/2006	14.1	7.7	9.4	291	0.1	2.0	
MXT0097	9/27/2006	14.8	6.7	8.9	286	0.1	0.0	
MXT0097	10/3/2006	14.4	7.6	9.0	286	0.1	0.0	
MXT0097	10/10/2006	13.5	7.6	9.2	286	0.1	0.4	
MXT0183	10/10/2006	13.3	7.1	9.9	233	0.1	1.0	
MXT0183	9/14/2006	16.1	7.7	8.8	206	0.1	37.7	
MXT0183	9/21/2006	13.6	7.2	9.9	225	0.1	1.2	
MXT0183	9/27/2006	14.5	6.9	9.5	227	0.1	0.0	
MXT0183	10/3/2006	14.0	7.5	9.4	228	0.1	0.0	
MPAX409R	9/14/2006	16.9	7.5	8.6	259	0.1	12.4	
MPAX409R	9/21/2006	14.5	7.6	9.6	293	0.1	3.5	
MPAX409R	9/27/2006	15.3	7.1	9.2	280	0.1	0.0	
MPAX409R	10/3/2006	14.6	7.7	10.3	285	0.1	0.0	
MPAX409R	10/10/2006	14.0	7.5	9.4	280	0.1	0.0	