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# Comment Response Document for the Total Maximum Daily Loads (TMDLs) of Phosphorus and Sediments to Clopper Lake in the Seneca Creek Watershed Montgomery County, Maryland

## Introduction

The Maryland Department of the Environment (MDE) has conducted a public review of the proposed Total Maximum Daily Loads (TMDLs) for nitrogen and sediment loadings in Clopper Lake. The public comment period was open from November 16, 2001 through December 17, 2001. MDE received two 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
James A. Caldwell	Montgomery Department of Environmental Protection	December 7, 2001	1 through 7
Erica Shingara	City of Gaithersburg	December 17, 2001	1, 5 through 9

## Comments and Responses

1. Both commentors questioned the need for a 39% reduction in annual phosphorus loads, given that the data from 1991, 2000, and 2001 shown in Table 3A of Appendix A indicates only one chlorophyll *a* concentration greater than 20 µg/l. Additionally, there exists no evidence of nuisance seasonal algae blooms or documentation of fish kills due to low dissolved oxygen (DO) caused by decomposition of the low levels of algal biomass.

**Response:** The commentor is correct that there is only one chlorophyll *a* concentration greater than 20 µg/l. However, sporadic chlorophyll *a* data may not be representative of typical summertime conditions, and may miss algal blooms. The hypolimnetic dissolved oxygen profile is consistent with eutrophic conditions. Estimated phosphorus loads to the lake, using the best readily available data, are also consistent with eutrophic conditions.

2. The commentor stated that no data is presented which shows that past or existing sedimentation is contributing to water quality impairment or an excessive loss of lake volume. The sedimentation rate, which is assumed on page 13 of the document to

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have occurred largely during the construction phase of the lake, is based on literature values, and not on reported observations of sedimentation problems.

**Response:** The potential existed for significant sedimentation during the construction phase in the Clopper Lake watershed. This construction phase is largely complete. Based on current land use patterns, we no longer expect there to be a potential for significant sedimentation. MDE thus believes that any significant loss in the volume of the impoundment would have occurred during the construction phase; this sediment TMDL effectively documents sedimentation as a legacy issue. Please see the response to Comment 3 for an additional discussion on the issue of volumetric preservation.

3. The commentor questioned the assumption that Clopper Lake should be expected to maintain 97 to 99% of its storage volume after 50 years.

**Response:** It is customary to express the effects of sedimentation in terms of the volumetric preservation of an impoundment over time. In the case of Clopper Lake, the sedimentation rate under TMDL conditions is estimated to result in preserving about 97% - 99% of the lake's design volume over a period of 100 years. We deem this sedimentation rate to be reasonable, and generally consistent with sedimentation rates documented in other approved TMDLs.

MDE does not imply that Clopper Lake will be specifically managed to achieve, or required to achieve, this volumetric preservation. Rather, this is our estimate of volumetric preservation, based on the best, readily available data.

4. The commentor requested that vertical profiles of the water column be developed for other seasons of the year to compare patterns in chlorophyll *a* concentrations, as well as the development of the deeper water DO depletion, in order to better document a direct correlation.

**Response.** The critical period for preservation of aquatic life in a thermally-stratified impoundment is during the period of thermal stratification. At other times of the year, there is no reason to suspect a DO problem, because the cooler water will contain far more DO due to the increased saturation concentration, as well as the effects of mixing during spring and fall turnover. Similarly, chlorophyll *a* is of interest during the growing season, which in Clopper Lake spans the period approximately from May through September. When algal blooms (evidenced by elevated concentrations of chlorophyll *a*) occur during periods of thermal stratification, hypolimnetic hypoxic conditions are exacerbated. It thus makes most sense to focus monitoring efforts at this time of the year.

5. Both commentors requested that MDE evaluate specific structural and non-structural phosphorus control mechanisms that are feasible for the contributing drainage area and that will assure attainment of the TMDLs for phosphorus and sediment in Clopper Lake. Both commentors note that the majority of the drainage area is within

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the City of Gaithersburg limits; however, the areas with the greatest likelihood for project implementation may be outside City limits, due to land availability and site constraints.

**Response:** Neither the Clean Water Act nor current U.S. Environmental Protection Agency regulations direct states to develop a detailed implementation plan as part of the TMDL development and approval process. Although formal implementation planning is currently beyond the scope of the TMDL development process, Maryland is committed to enforcing applicable laws and supporting voluntary initiatives necessary to implement this and other TMDLs. Maryland has several well-established programs to draw upon as part of future implementation efforts. These include the State Water Quality Improvement Act of 1988, the federal Clean Water Action Plan framework, and the State's Chesapeake Bay Agreement Tributary Strategies for Nutrient Reduction. Additionally, Maryland has adopted a five-year cycling strategy to assure that future evaluations are conducted for all TMDLs that are established.

6. Both commentors requested that MDE include a specific schedule for monitoring and re-assessment of Clopper Lake to track changes as project implementation to meet the TMDLs for phosphorus and sediments proceeds.

**Response:** As stated above in the response to Comment 5, water quality management activities in Maryland are conducted based on a five-year cycling strategy. Because the watershed cycle is repeated approximately every five years, this strategy ensures that the effectiveness of implementation activities undertaken will be evaluated. The TMDL document states that monitoring activities in Clopper Lake were conducted in 2000 and 2001; therefore, this area may be revisited in 2005 or 2006.

7. Both commentors voiced concerns that the TMDL document did not acknowledge the need for additional funding support to implement projects and strategies to meet the proposed phosphorus load reduction.

**Response:** The TMDL document does not acknowledge the need for additional funding to support implementation projects because formal implementation planning is currently beyond the scope of the TMDL development process. Financial assistance mechanisms to control pollutant loads are available, which may be considered to address the proposed phosphorus load reduction. Maryland Department of Planning's "Red Book" is a valuable source of information regarding financial assistance programs available through State agencies. The Red Book can be viewed at [www.op.state.md.us/clhouse/redbook/redbook.html](http://www.op.state.md.us/clhouse/redbook/redbook.html). An additional resource regarding financial alternatives is the Environmental Finance Center at University of Maryland (301-405-6383 or [www.mdsg.umd.edu/EFC](http://www.mdsg.umd.edu/EFC)).

8. The commentor stated that the proposed TMDL displays incomplete knowledge regarding the nature and magnitude of pollutant loads from various sources. Furthermore, the proposed TMDL does not indicate how much loading is

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anthropogenic and how much is naturally occurring. The commentor noted that, without knowledge of naturally occurring phosphorus, it cannot be determined if reductions in anthropogenic loading will be effective.

**Response:** The Clean Water Act requires the States to develop TMDLs using the best readily available data. TMDLs are required to account for all sources of an impairing pollutant, natural and anthropogenic. In the case of Clopper Lake, existing phosphorus loads were estimated using loading coefficients from the Chesapeake Bay Program Watershed Model, Phase 4.2 (Segment 220) for agricultural and forested areas. Developed area loading rates were based on NPDES data for Montgomery County, provided by Montgomery County. These loading coefficients account for natural and anthropogenic sources. The question of separating natural from anthropogenic loads is a detailed implementation issue, and is beyond the scope of a TMDL. Please refer also to the responses to Comments 5, 6, and 7.

9. The commentor expressed concern over the lack of current data regarding the physical dimensions of the lake. The commentor noted that inaccuracies in the physical dimensions will sequentially affect the calculations involving the Vollenweider Relationship analysis, phosphorus loading, hydraulic residence time, and flow.

**Response:** The commentor is correct that the physical dimensions affect subsequent calculations. However, discrepancies in depth and volume must be comparatively large before they begin to exert any significant effect on calculations of hydraulic retention times or allowable areal phosphorus loadings. MDE is confident that such discrepancies are insignificant. Additionally, if newer data become available, MDE has expressly reserved the right to revisit the TMDL.