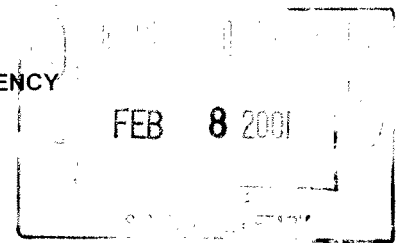




UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029



FEB 02 2001

Robert Hoyt
Assistant Secretary
Maryland Department of the Environment
2500 Broening Highway
Baltimore, Maryland 21224

Dear Mr. Hoyt:

The Environmental Protection Agency (EPA) Region III, has reviewed the report "Total Maximum Daily Loads (TMDLs) of Biochemical Oxygen Demand (BOD) for ~~Conococheague~~ Creek" and other supporting documentation which was submitted by the Maryland Department of Environment (MDE) for final agency review on January 3, 2001. EPA has determined that a TMDL for addressing a dissolved oxygen (DO) problem is not required for the Conococheague Creek and recommends that the waterbody be delisted for nutrients.


In general, EPA makes this determination based on the following:

1. The data show that the Conococheague Creek is meeting water quality standards for DO.
2. The model shows that water quality standards for DO will also be met with increased point source loading and no change to nonpoint source loads.

EPA encloses a more comprehensive rationale setting forth the details of this determination and recommendation.

If you have any questions or concerns, please contact me at (215) 814-1111 or contact Thomas Henry at (215) 814-5752.

Sincerely,


Rebecca W. Hanmer, Director
Water Protection Division

Enclosure

EPA's Rationale for Determining that no TMDL addressing Dissolved Oxygen is required for the Conococheague Creek, Washington County, Maryland

I. Introduction

This document will set forth the U.S. Environmental Protection Agency's (EPA) rationale for determining that a Total Maximum Daily Load (TMDL) addressing dissolved oxygen (DO) concerns under Section 303(d)(1) of the Clean Water Act (CWA) is not necessary for the Conococheague Creek and that the waterbody should be delisted. The Maryland Department of the Environment (MDE) submitted a report titled "Total Maximum Daily Loads (TMDLs) of biochemical oxygen demand (BOD) for Conococheague Creek" as well as a Technical Memorandum, on January 3, 2001. Upon review, EPA has determined that the Conococheague Creek does not need a TMDL for BOD at this time. In making this determination and recommendation for delisting, EPA considers the submitted documentation as useful for informational purposes. The CWA and implementing regulations allow for informational TMDLs. Section 303(d)(3) of the CWA states, "For the specific purpose of developing information, each State shall identify all waters within its boundaries which it has not identified under paragraph (1)(A) and (1)(B) of this subsection and estimate for such waters the total maximum daily load with seasonal variations and margins of safety, for those pollutants which the Administrator identifies under section 304(a)(2) of this title as suitable for such calculation and for thermal discharges, at a level that would assure protection and propagation of a balanced indigenous population of fish, shellfish, and wildlife." TMDLs submitted for informational purposes do not require EPA approval.

The Technical Memorandum, *Significant BOD Point and Nonpoint Sources in the Conococheague Creek Watershed*, submitted by MDE, specifically allocates BOD loads to the following three point sources: Conococheague Waste Water Treatment Plant (WWTP), Broadfording Church WWTP, and Resh Road Sanitary Landfill. The current BOD loads were based on the three point sources' monthly maximum National Pollutant Discharge Elimination System (NPDES) permit limits. The nonpoint source current loads were based on water quality data collected from 1994 through 1998. MDE has determined that low flow is the critical condition.

II. Summary

Conococheague Creek is a tributary of the Potomac River, that originates in Pennsylvania and empties into the Potomac River in Maryland. It is approximately 80 miles in length with 58 miles in Pennsylvania and 22 miles in Maryland. The watershed of the Conococheague Creek covers about 566 square miles of which only 65 square miles (12%) are in Maryland. The predominant land uses in the watershed in Maryland, based on Maryland Office of Planning land cover data and the EPA Land-use Database (1994), are mixed agriculture (comprising 43.3 sq. miles), forested (11.3 sq. miles), and urban (10.1 sq. miles). In Maryland, the Conococheague Creek has a moderate streambed slope. The watershed soils and streambeds are generally rocky..

The Conococheague Creek was identified on Maryland's 1996 303(d) and 1998 303(d) lists of water quality limited segments (WQLS) as impaired by nutrients and suspended sediments. A

TMDL for sediment will be addressed separately. Maryland listed the Conococheague Creek based on the information available at that time. The basis for the nutrient listing was due to low levels of DO. No recent water quality (WQ) data has been collected, and hence historical data collected from May 1994 to October 1998 are being used.

The data showed that nutrient control was not necessary due to the low levels of chlorophyll-a, a surrogate used for algal blooms. Algal blooms generally indicate for nutrient problems. EPA agrees with MDE's findings that nutrients are not the dominant source for possible DO problems. The data also showed that the waterbody was not being impaired by low DO. MDE, however, was concerned that violations of the DO standard could occur with the future increase in biochemical oxygen demand (BOD) loadings. Therefore, the submitted TMDL for the Conococheague Creek addressed the impairment substance, BOD.

The Conococheague Creek is designated as a Use IV-P, Recreational Trout Waters and Public Water Supply, according to the Code of Maryland Regulations 26.08.02. The DO standard for a Use IV-P water is a minimum of 5.0 mg/L at any time.

III. Detailed Considerations

The bases on which EPA made the decision that a TMDL to address the DO issue is not necessary for the Conococheague Creek are: (1) The data show that the Conococheague Creek is meeting water quality standards for dissolved oxygen (DO) and (2) The model shows that water quality standards for DO will also be met with increased point source loading and no change to nonpoint source loads.

MDE used a mathematical water quality model, INPRG, for free-flowing streams. INPRG is a steady state mathematical model, developed within MDE, to assess the impact of point and nonpoint source load discharges of material that exert an oxygen demand in free-flowing streams. The model prepares input data and runs a free-flowing stream model based on the Streeter Phelp's equation. The INPRG model predicts receiving stream CBOD, NBOD, and DO concentrations for selected stream input conditions.

The model was used to determine allowable BOD loadings that would maintain the target DO levels in the receiving stream. The model was also used to investigate seasonal variations in stream conditions and to establish margins of safety that are environmentally conservative. Load allocations were determined for distributing allowable loads between point and nonpoint sources.

EPA believes that MDE's modeling approach and assumptions adequately present the DO concentration in the waterbasin.

MDE's modeling approach

- a. Conservative assumptions were made in the modeling. Problems with DO normally occur at low flow conditions. Therefore, Maryland did not perform an average annual flow TMDL analysis. The TMDL was calculated only for 7Q10 conditions. The 7Q10 flow refers to the seven-day consecutive lowest flow expected to occur every 10 years. Because 7Q10 conditions are only likely to occur during summer months, the TMDLs only apply from June 1 to October 31.
- b. MDE assumed that 84% of the BOD load was from background at the Pennsylvania and Maryland border. MDE modeled three scenarios with the INPRG model.
 - i. The first scenario was a preliminary scenario was analyzed which represented "existing" conditions. In this scenario, data from discharge monitoring reports (DMRs) were used for point source inputs and water quality data were used for nonpoint source loads. The DO standard was met.
 - ii. MDE then modeled a 2nd scenario in which the nonpoint source load did not change but increased the point source loads to their permitted limits. This analysis also showed that DO standards were being met.
 - iii. The 3rd scenario once again did not change the nonpoint source loads but included future allocations for point source loads. The analysis as used a target value of 5.5 mg/L for DO, which it met.
- c. The critical season for DO problems in the Conococheague Creek has been identified by Maryland as the summer months. During these months, flow in the channel is reduced resulting in slower moving, warmer water which has less dilution potential and is susceptible to algal blooms and low DO concentrations.
- d. Seasonal variations involve changes in streamflow as a result of hydrologic and climatological patterns. In the continental United States, seasonally high flow normally occurs during the colder period of winter and in early spring from snowmelt and spring rain. Seasonal low flow typically occurs during the warmer summer and early fall drought periods¹. The INPRG water quality model effectively considers seasonal environmental variations.

¹ Technical Guidance Manual for Developing Total Maximum Daily Loads, Book 2, Part 1, Section 2.3.3, (EPA 823-B-97-002, 1997).

Public Participation

The TMDL for BOD in Conococheague was open for public comment from November 6, 2000 to December 6, 2000. A total of 2 sets of written comments were received by MDE. The comments and the MDE response document were provided with the submitted documentation. EPA submitted a copy of the TMDL to the United States Fish and Wildlife Service (USFWS) and to the United States National Marine Fisheries Service (USNMFS) on November 13, 2000. The EPA did not receive a response from the USFWS or USNMFS on the proposed TMDL.

IV. Conclusion

The submitted TMDL presented information on which EPA has determined that a TMDL for addressing a DO problem is not required for the Conococheague Creek and recommends that the waterbody be delisted for nutrients. Based on the data and model analysis, Conococheague Creek is meeting Maryland's DO standard and has assimilative capacity to meet DO standard even with additional point source loading. Should the waterbody be delisted, the submitted document would be considered as an informational TMDL per 303(d)(3) of the CWA.