



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
1650 Arch Street  
Philadelphia, Pennsylvania 19103-2029  
2/29/2008

Dr. Richard Eskin, Director  
Technical and Regulatory Services Administration  
Maryland Department of the Environment  
1800 Washington Boulevard, Suite 540  
Baltimore, Maryland 21230-1718

Dear Dr. Eskin:

The U.S. Environmental Protection Agency (EPA) is pleased to approve Total Maximum Daily Loads (TMDLs) for the Wye River Basin. The TMDL Report was first submitted by the Maryland Department of the Environment's (MDE) letter dated August 18, 2006, and the final draft was received by EPA for review and approval on October 12, 2007. The TMDL was established and submitted in accordance with Sections 303(d)(1)© and (2) of the Clean Water Act to address impairments of water quality as identified in Maryland's Section 303(d) List. The Wye River was identified on the State of Maryland's 1996 Section 303(d) List for water quality-limited segments as being impaired by nutrients, sediments, and bacteria. An additional listing of biological impact was added in the 2002 Section 303(d) List. The TMDLs described in this document were developed to address localized water quality impairments identified within the watershed, specifically excessive bacteria concentrations in the restricted shellfish areas of the Wye River Basin. The other impairments in this watershed will be addressed by MDE in separate TMDL document(s).

EPA's approval of the Wye River TMDL is based on EPA's understanding that MDE has completed a Bacterial Source Tracking (BST) study in this watershed, and MDE has evaluated the BST data in order to verify the nonpoint source loading estimates contained in the TMDL report.

The TMDL analysis identifies the current loading, relates the current loading to the applicable water quality standard, and identifies the necessary reductions for a total maximum daily load that will achieve the applicable water quality standard. It also identifies individual wasteload and load allocations to the maximum extent supported by the available data.

In accordance with Federal regulations at 40 CFR §130.7, a TMDL must comply with the following requirements: (1) be designed to attain and maintain the applicable water quality standards; (2) include a total allowable loading and as appropriate, wasteload allocations for point sources and load allocations for nonpoint sources; (3) consider the impacts of background pollutant contributions; (4) take critical stream conditions into account (the conditions when water quality is most likely to be violated); (5) consider seasonal variations;

(6) include a margin of safety (which accounts for uncertainties in the relationship between pollutant loads and instream water quality); (7) be subject to public participation. In addition, these TMDLs considered reasonable assurance that the TMDL allocations assigned to the nonpoint sources can be reasonably met. The enclosure to this letter describes how the fecal coliform TMDLs for the Wye River Basin satisfy each of these requirements.

As you know, all new or revised National Pollutant Discharge Elimination System permits must be consistent with the TMDL wasteload allocation pursuant to 40 CFR §122.44 (d)(1)(vii)(B). Please submit all such permits to EPA for review as per EPA's letter dated October 1, 1998.

If you have any questions or comments concerning this letter, please do not hesitate to contact Ms. Mary Kuo at (215) 814-5721 or Mr. Kuo-Liang Lai at (215) 814-5473.

Sincerely,

*Signed*

Jon M. Capacasa, Director  
Water Protection Division

Enclosure

cc: Nauth Panday, MDE-TARSA  
Melissa Chatham, MDE-TARSA





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## Decision Rationale

### Total Maximum Daily Loads of Fecal Coliform For the Restricted Shellfish Harvesting Areas in the Wye River Basin Queen Anne's and Talbot Counties, Maryland

*Signed*

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**Jon M. Capacasa, Director  
Water Protection Division**

**Date: 2/29/2008**



## Decision Rationale

### Total Maximum Daily Loads of Fecal Coliform for the Restricted Shellfish Harvesting Areas in the Wye River Basin Queen Anne's and Talbot Counties, Maryland

#### I. Introduction

The Clean Water Act (CWA) requires a Total Maximum Daily Load (TMDL) to be developed for those waterbodies identified as impaired by the state where technology-based and other controls will not provide for attainment of water quality standards. A TMDL is a determination of the amount of a pollutant from point, nonpoint, and natural background sources, including a margin of safety (MOS), that may be discharged to a water quality-limited waterbody.

This document sets forth the U.S. Environmental Protection Agency's (EPA) rationale for approving the TMDLs for fecal coliform in the Wye River watershed. The TMDLs were established to address impairments of water quality, caused by bacteria (i.e., evidenced by fecal coliform), as initially identified in Maryland's 1996 CWA Section 303(d) List for water quality-limited segments. The Maryland Department of the Environment (MDE) submitted the *Total Maximum Daily Loads of Fecal Coliform for the Restricted Shellfish Harvesting Areas in the Wye River Basin in Queen Anne's and Talbot Counties, Maryland*, dated August 18, 2006, to EPA for final review on October 12, 2007. These TMDLs address the restricted shellfish harvesting areas in the Wye River Basin on Maryland's Section 303(d) List (basin ID 02-13-05-03).

EPA's review determined that the TMDL meets the following seven regulatory requirements pursuant to 40 CFR Part 130.

1. The TMDL is designed to implement applicable water quality standards.
2. The TMDL includes a total allowable load as well as individual wasteload allocations (WLAs) and load allocations (LAs).
3. The TMDL considers the impacts of background pollutant contributions.
4. The TMDL considers critical environmental conditions.
5. The TMDL considers seasonal environmental variations.
6. The TMDL includes a MOS.
7. The TMDL has been subject to public participation.

In addition, these TMDLs considered reasonable assurance that the TMDL allocations assigned to nonpoint sources can be reasonably met.

#### II. Summary

The TMDLs specifically allocate fecal coliform loadings to sources in three separate load allocations to each of the restricted shellfish harvesting areas in the Wye River Basin. There are

three permitted point sources in the watershed. Of these three point sources, only Chesapeake College (National Pollutant Discharge Elimination System (NPDES) permit number MD0024384) has a permit regulating the discharge of fecal coliform directly to the Wye River. The permitted fecal coliform load from this point source is approximately  $7.949 \times 10^6$  counts per day. The TMDLs for each area were expressed as a median TMDL and a 90<sup>th</sup> percentile TMDL, which is consistent with the format of Maryland’s bacteriological criteria, which assign numeric threshold criteria for fecal coliform based on the median and 10 percent of sample data.

**Table 1. Fecal Coliform Median TMDLs Summary**

Area	Rate	TMDL	Wasteload Allocation (WLA)	Load Allocation (LA)	Margin of Safety (MOS)
Wye River Basin	Counts/day	$1.59 \times 10^{10}$	$7.95 \times 10^6$	$1.59 \times 10^{10}$	Implicit

**Table 2. Fecal Coliform 90<sup>th</sup> Percentile TMDLs Summary**

Area	Rate	TMDL	Wasteload Allocation (WLA)	Load Allocation (LA)	Margin of Safety (MOS)
Wye River Basin	Counts/day	$7.39 \times 10^{10}$	$7.95 \times 10^6$	$7.39 \times 10^{10}$	Implicit

The TMDLs are written plans and analyses established to ensure that a waterbody will attain and maintain water quality standards. The TMDLs are scientifically-based strategies which consider current and foreseeable conditions, the best available data, and account for uncertainty with the inclusion of a MOS value. Conditions, available data, and the understanding of the natural processes can change more than what was anticipated by the MOS. The option is always available to refine the TMDLs for re-submittal to EPA for approval.

### III. Background

The Wye River is located on Maryland’s Eastern Shore in Queen Anne’s and Talbot Counties. The Wye River (has drainage area of 50,534.9 acres) is composed of Wye East River, Wye Narrows and Wye River mainstem, and has a length of approximately 15 km both from south to north and from southwest to northeast. Its width ranges from 300 to 600 m upstream and approximately 1 km at its mouth, where it flows into Eastern Bay. Additional information about restricted shellfish areas in the Wye River Basin is included in Section 2.1 of the TMDL Report. Figures 2.1.1 of the TMDL report show the location of the Wye River Basin.

The Wye River (basin number 02130503) was originally listed in Maryland’s 1996 CWA Section 303(d) List for water quality-limited segments as being impaired by fecal coliform, nutrients, and sediments in tidal portions, with listing of biological impacts in the non-tidal

portions added in 2002. Maryland's 2004 Section 303(d) List clarifies that the Wye River Basin is a *restricted* shellfish harvesting area. This document, upon EPA approval, establishes a TMDL for fecal coliform for the Wye River. The nutrient, sediment, and biological impairments within the Wye River Basin will be addressed at a future date.

The monitoring and analysis for the bacteria TMDL was performed using fecal coliform data. Fecal coliform is a bacterium which can be found within the intestinal tract of all warm blooded animals. Fecal coliform in itself is generally not a pathogenic organism. However, fecal coliform indicates the presence of fecal wastes and the potential for the existence of other pathogenic bacteria. The higher concentrations of fecal coliform indicate the elevated likelihood of the presence of pathogenic organisms in shellfish that are harvested from polluted waters and subsequently consumed. Maryland's current water quality standards provide bacteriological criteria for shellfish harvesting (i.e., Use II) waters based on numeric criteria for fecal coliform.

The Surface Water Use Designation for the Wye River is Use II: Shellfish Harvesting Waters (Code of Maryland Regulations, COMAR, 26.08.02.08M). Maryland's water quality standards provide bacteriological criteria for Use II waters, stating that a public health hazard will be presumed if the most probable number (MPN) of fecal coliform organisms exceeds a median concentration of 14 MPN per 100 milliliters or if more than 10 percent of samples taken exceed 49 MPN per 100 milliliters (for a three tube decimal dilution test).

Maryland's current standards provide a classification system for Use II shellfish waters. Use II waters may be classified as approved, conditionally approved, restricted, or prohibited. Maryland's listing methodology for shellfish waters provides that approved and conditionally approved shellfish waters are not placed on the Section 303(d) List of water quality limited segments. Shellfish waters may be classified as "approved" if the median fecal coliform MPN of at least 30 water samples taken over a 3-year period to incorporate inter-annual variability does not exceed 14 per 100 milliliters; and, in areas affected by point source discharges, the 90<sup>th</sup> percentile of water samples does not exceed an MPN of 49 per 100 milliliters (for a three tube decimal dilution test). The restricted shellfish areas of the Wye River were classified as such because they do not meet shellfish water quality standards for an approved classification. The Wye River was placed on Maryland's Section 303(d) List because the shellfish areas within this system, which are currently classified as restricted, violate Maryland's protective bacteriological criteria for Use II waters.

The CWA Section 303(d) and its implementing regulations require that TMDLs be developed for waterbodies identified as impaired by the state where technology-based and other required controls do not provide for attainment of the water quality standards. The TMDLs submitted by MDE are designed to attain acceptable loadings of fecal coliform in order to attain the bacteriological water quality criteria and support the Use II designation. Refer to Tables 1 and 2 above for a summary of allowable loads.

For this TMDL analysis, Maryland used fecal coliform data from six shellfish monitoring stations in the Wye River Basin. Observations and data from the period of 2000-2005 were used.

Maryland selected a five-year period for TMDL development because it covers a longer time span than the 30-sample requirement and is consistent with MDE's shellfish program sanitary survey schedule. The TMDL analysis utilizes a three-dimensional, hydrodynamic, and eutrophication model (HEM-3D) in order to simulate the transport processes in the Wye River. The transport of fecal coliform is most influenced by the tide and the amount of freshwater discharge into the shellfish harvesting areas. Appendix A of the TMDL report provides a thorough description of the HEM-3D model and calculations.

Maryland conducted a nonpoint source assessment by reviewing several sources of population and land use data to estimate the contributions of fecal coliform by the following categories: wildlife, human, pets, and livestock. Any contributions from boat discharges, resuspension from sediments, and regrowth of fecal coliform were neglected due to insufficient data. The contributions from each of these four sources were derived by multiplying the population densities by fecal coliform production rates. For the wildlife contribution, the population density estimates for each major wildlife animal type was multiplied by the associated acreage or stream mile for that animal, and multiplied again by the estimated fecal coliform production rate for each animal type. For human contributions, Maryland used census coverage and estimated daily discharges of wastewater per person, fecal coliform concentration of the wastewater, and septic system failure rate to calculate the human loading for areas having no or partial public sewer system. Pet contributions were calculated using survey-based estimates of dogs walked per household, percentage cleaned up, and estimated fecal coliform production rate per dog. Livestock contributions were derived from livestock census data and estimated fecal coliform production rates and manure washoff rates. Detailed explanations of the nonpoint source assessment and estimated parameters for each category are described in Appendix B of the TMDL report.

The results of the nonpoint source assessment allowed Maryland to calculate the percentage contribution of each of the four major types of nonpoint sources, and to further calculate and assign required reductions in each category in order to achieve the TMDL load allocation. This method is described further in Section IV below.

#### **IV. Discussion of Regulatory Conditions**

EPA finds that MDE has provided sufficient information to meet all of the seven basic requirements for establishing fecal coliform TMDLs for the Wye River Basin. EPA therefore approves the TMDLs for fecal coliform in the Wye River. This approval is outlined below according to the seven regulatory requirements.

*1) The TMDLs are designed to implement applicable water quality standards.*

Water Quality Standards consist of three components: designated and existing uses; narrative and/or numerical water quality criteria necessary to support those uses; and an anti-degradation statement.

The Surface Water Use Designation for the Wye River is Use II: *Shellfish Harvesting Waters* (Code of Maryland Regulations, COMAR, 26.08.02.08M). Use II waters may be classified as approved, conditionally approved, restricted, or prohibited. Maryland's listing methodology for shellfish waters provides that approved and conditionally approved shellfish waters are not placed on the Section 303(d) List of water quality limited segments. For Use II waters, Maryland's water quality standards provide bacteriological criteria of (1) fecal coliform organisms not to exceed a median concentration of 14 MPN per 100 milliliters; and (2) no more than 10 percent of samples taken may exceed 49 MPN per 100 milliliters (for a three tube decimal dilution test). Shellfish waters may be classified as "approved" if the median fecal coliform MPN of at least 30 water samples taken over a 3-year period to incorporate inter-annual variability does not exceed 14 per 100 milliliters; and, in areas not affected by point source discharges, the 90<sup>th</sup> percentile of water samples does not exceed an MPN of 49 per 100 milliliters (for a three-tube decimal dilution test).

Maryland developed the bacteria TMDLs for the Wye River in terms of fecal coliform because Maryland's current water quality standards contain specific numerical criteria for bacteria in Use II waters that are based on the concentration of fecal coliform, as described above. The TMDLs therefore use these applicable numerical criteria as an endpoint. The TMDLs were calculated and expressed as median TMDLs and 90<sup>th</sup> percentile TMDLs in order to meet the associated numerical criteria. EPA believes that this is a reasonable and appropriate water quality goal.

2) *The TMDLs include a total allowable load as well as individual wasteload allocations and load allocations.*

#### Total Allowable Load

As described above, MDE used as endpoints a median concentration of 14 MPN per 100 milliliters and a 90<sup>th</sup> percentile concentration of 49 MPN per 100 milliliters. Separate TMDLs were developed for each restricted shellfish area of the Wye River based on these two endpoints. The TMDLs and allocations are presented as mass loading rates of counts per day. Expressing TMDLs as daily mass loading rates is consistent with Federal regulations at 40 CFR §130.2(i), which state that TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measures.

EPA regulations at 40 CFR §130.2(i) state that the total allowable load shall be the sum of individual wasteload allocations for point sources, and load allocations for nonpoint sources, and natural background concentrations. The TMDLs for fecal coliform for the Wye River are consistent with 40 CFR §130.2(i) because the total loads provided by MDE equal the sum of the individual wasteload allocations for point sources and the land-based load allocations for nonpoint sources. See Tables 1 and 2 for a summary of allowable loads.



## Wasteload Allocations

According to the TMDL report and Maryland's response to comments, the watershed that drains to Wye River contains three permitted point sources in the watershed. Of these three point sources, only Chesapeake College has a permit regulating the discharge of fecal coliform directly to the Wye River. The permitted fecal coliform load from the point source is approximately  $7.95 \times 10^6$  counts per day, and will be included in the WLA for the Wye River.

## Load Allocations

The TMDL summary in Tables 1 and 2 contain the load allocations for the restricted shellfish area. As described above in Section III, Maryland conducted a nonpoint source assessment in order to estimate the contributions of wildlife, humans, pets, and livestock to the overall nonpoint source loadings. Maryland considers humans, pets and livestock to be controllable sources and therefore assigned reductions to these categories to determine if the TMDL load allocation could be achieved. If the TMDL could not be achieved, then reductions were assigned to the wildlife category. Although wildlife is considered to be a natural source of fecal coliform loadings and the TMDL does not promote changing a natural condition by the reduction of wildlife, Maryland and EPA believe that implementation of certain measures to reduce controllable sources may also serve to reduce wildlife inputs. Therefore, it is appropriate to assign reductions to wildlife sources where necessary to meet the TMDL goals.

As stated above, Maryland developed the TMDL for the restricted shellfish area consistent with the two numeric criteria for Use II waters that are based on median and 90<sup>th</sup> percentile data. For the shellfish area, the TMDL for the median case is more restrictive than the 90<sup>th</sup> percentile TMDL in terms of mass loading rate. However, larger percentage and overall mass reductions are usually required in the 90<sup>th</sup> percentile TMDL case based on the difference between the TMDL and the current load to the shellfish area. For example, in order to meet the 90<sup>th</sup> percentile TMDL, a reduction by approximately 83 percent (or  $3.7 \times 10^{11}$  counts/day) would be required. Note that the percentage reductions are not strictly comparable between the median and 90<sup>th</sup> percentile TMDLs because the baseline, or current, loads are different -- the loads were calculated using the corresponding median concentration or 90<sup>th</sup> percentile concentration of the current condition. In assigning the load allocations to the four major nonpoint source categories (wildlife, human, pets, livestock), Maryland compared the median and 90<sup>th</sup> percentile TMDL results and used the allowable loads requiring the greater reduction as the basis for these load allocations.

According to Federal regulations at 40 CFR §130.2(g), load allocations are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading. Wherever possible, natural and nonpoint source loadings should be distinguished. MDE has used several sources of census, population, and land use coverage data in order to estimate and account for the major types of nonpoint, natural and background sources. Table 2.4.1 provides a breakdown of the TMDL load allocation by Bacteria Source Tracking (BST) category, for the

restricted shellfish area.

### Allocations Scenarios

EPA realizes that the above breakouts of the total load and load allocation for fecal coliform among the major nonpoint sources for each shellfish area is one allocation scenario. As implementation of the established TMDLs proceeds, Maryland may find that other combinations of allocations are more feasible and/or cost effective. However, any subsequent changes in the TMDLs must conform to gross wasteload and load allocations and must ensure that the biological, chemical, and physical integrity of the waterbody is preserved.

Federal regulations at 40 CFR §122.44(d)(1)(vii)(B) require that, for an NPDES permit for an individual point source, the effluent limitations must be consistent with the assumptions and requirements of any available wasteload allocation for the discharge prepared by the state and approved by EPA. EPA has authority to object to the issuance of an NPDES permit that is inconsistent with wasteload allocations established for that point source. To ensure consistency with these TMDLs, NPDES permits issued for a point source that discharges one or more of the pollutants of concern in the Wye River watershed, any deviation from the wasteload allocations set forth in the TMDL Report and described herein for a point source must be documented in the permit Fact Sheet and made available for public review along with the proposed draft permit and the Notice of Tentative Decision. The documentation should: 1) demonstrate that the loading change is consistent with the goals of the TMDL and will implement the applicable water quality standards; 2) demonstrate that the changes embrace the assumptions and methodology of these TMDLs; and 3) describe that portion of the total allowable loading determined in the State's approved TMDL report that remains for any other point sources (and future growth where included in the original TMDL) not yet issued a permit under the TMDL. It is also expected that Maryland will provide this Fact Sheet for review and comment to each point source included in the TMDL analysis as well as any local and State agency with jurisdiction over land uses for which load allocation changes may be impacted. It is also expected that MDE will require periodic monitoring of the point source(s) for fecal coliform and total suspended solids, through the NPDES permit process, in order to monitor and determine compliance with the TMDL wasteload allocations.

In addition, EPA regulations and program guidance provides for effluent trading. Federal regulations at 40 CFR §130.2(i) state: "if Best Management Practices (BMPs) or other nonpoint source pollution controls make more stringent load allocations practicable, then wasteload allocations may be made less stringent. Thus, the TMDL process provides for nonpoint source control tradeoffs". The state may trade between point sources and nonpoint sources identified in this TMDL as long as three general conditions are met: 1) the total allowable load to the waterbody is not exceeded; 2) the trading of loads from one source to another continues to properly implement the applicable water quality standards and embraces the assumptions and methodology of these TMDLs; and 3) the trading results in enforceable controls for each source. Any changes such as these should be subject to public comment. Any revisions to WLAs and/or LAs should be submitted to EPA for review.

Based on the foregoing, EPA has determined that the TMDLs are consistent with the regulations and requirements of 40 CFR Section 130.

*3) The TMDLs consider the impacts of background pollutant contributions.*

The TMDLs consider the impact of background pollutants by considering the bacterial load from natural sources such as wildlife.

*4) The TMDLs consider critical environmental conditions.*

EPA regulations at 40 CFR §130.7(c)(1) require TMDLs to account for critical conditions for stream flow, loading, and water quality parameters. The intent of the regulations is to ensure that: 1) the TMDLs are protective of human health, and 2) the water quality of the waterbodies is protected during the times when they are most vulnerable.

Critical conditions are important because they describe the factors that combine to cause a violation of water quality standards and will help in identifying the actions that may have to be undertaken to meet water quality standards<sup>1</sup>. Critical conditions are a combination of environmental factors (e.g., flow, temperature, etc.), which have an acceptably low frequency of occurrence. In specifying critical conditions in the waterbody, an attempt is made to use a reasonable “worst-case” scenario condition. MDE modeled the 90<sup>th</sup> percentile current load and allowable load. The 90<sup>th</sup> percentile concentration is that which one would expect to see exceeded no more than 10% of the time. For each shellfish area, the actual 90<sup>th</sup> percentile concentration from the most recent data set (i.e., year 2005) was used in these calculations, thereby incorporating the critical condition. Further, Maryland compared the 90<sup>th</sup> percentile and median TMDLs to determine which value represented the critical condition and to determine the basis for the critical condition. Greater reductions that are driven by the median TMDL suggest that, on average, water column concentrations are very high with limited variation. Greater reductions that are driven by the 90<sup>th</sup> percentile TMDL suggest a less frequent occurrence of high fecal coliform concentrations due to the variation of hydrological conditions.

*5) The TMDLs consider seasonal environmental variations.*

Seasonal variations involve changes in flow as a result of hydrologic and climatological patterns. Generally, water column data for fecal coliform may sometimes exhibit seasonal trends. For example, bacteria levels tend to be lower during the colder months in some areas, but this is not always the case. In order to account for seasonal variation and inter-annual variability, Maryland’s shellfish monitoring program collects samples on a monthly basis and a minimum data set of 30 samples over three years (in this case, five years) is used. The monitoring design

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<sup>1</sup>EPA memorandum regarding EPA Actions to Support High Quality TMDLs from Robert H. Wayland III, Director, Office of Wetlands, Oceans, and Watersheds to the Regional Management Division Directors, August 9, 1999.

and the statistical analysis used to evaluate water quality attainment therefore implicitly includes the effect of seasonality. Further, Maryland's water quality standard itself reflects the need to account for seasonal variation in assigning both a median (i.e., average condition) criterion and 90<sup>th</sup> percentile criterion (i.e., to account for fluctuations around the median).

The BST study conducted by Maryland in conjunction with the Seasonality Analysis (see Appendix C of TMDL report) generated additional information as to the seasonality of loadings investigated in the study.

*6) The TMDLs include a margin of safety.*

The requirement for a MOS is intended to add a level of conservatism to the modeling process in order to account for uncertainty. Based on EPA guidance, the MOS can be achieved through two approaches. One approach is to reserve a portion of the loading capacity as a separate term, and the other approach is to incorporate the MOS as part of the design conditions. MDE has adopted an implicit MOS for these TMDLs. The decay rate is one of the most sensitive parameters of the HEM-3D model. A decay rate of 0.7 per day was used as a conservative estimate in the TMDL calculation; therefore, the MOS is implicitly included in this calculation.

*7) The TMDL has been subject to public participation.*

MDE provided an opportunity for public review of and comment on the fecal coliform TMDLs for the Wye River Basin. The public review and comment period was open from June 23, 2006 to July 24, 2006. MDE received no written comments.

## **V. Discussion of Reasonable Assurance**

There is a reasonable assurance that the TMDLs can be met. EPA requires that there be a reasonable assurance that the TMDLs can be implemented. Wasteload allocations will be implemented through the NPDES permit process. According to 40 CFR §122.44(d)(1)(vii)(B), the effluent limitations for an NPDES permit must be consistent with the assumptions and requirements of any available wasteload allocation for the discharge prepared by the state and approved by EPA. Furthermore, EPA has the authority to object to issuance of an NPDES permit that is inconsistent with wasteload allocations established for that point source.

Nonpoint source controls to achieve load allocations will be implemented in an iterative process that places priority on those sources having the largest impact on water quality, with consideration given to ease of implementation and cost. Best management practices can be implemented through a number of existing programs and funding sources, including: Maryland's Agricultural Cost Share Program, Environmental Quality and Incentives Program, State Water Quality Revolving Loan Fund, and Stormwater Pollution Cost Share Program. Also, low interest loans are available through MDE to address failing septic systems. Also, sources of fecal coliform stemming from boats and marinas can be addressed through the Clean Marina

Program, No Discharge Zone Program, and grant funds available through Maryland Department of Natural Resources to install a pumpout station. Under existing Maryland law, certain new and existing marinas are required to have a pumpout station.

Pursuant to the National Shellfish Sanitation Program, Maryland will continue to monitor shellfish waters and classify harvesting areas. In addition to water quality monitoring and shoreline surveys, MDE's BST study will be used to confirm the source estimates presented in the TMDL report.

As mentioned above, Maryland and EPA acknowledge that while the TMDL does not promote changing natural background conditions due to wildlife, it is possible that implementation measures taken to reduce nonpoint controllable sources will also reduce wildlife loadings. In areas where wildlife is the dominant source of fecal coliform inputs to the shellfish waters and where water quality standards cannot be attained following TMDL implementation for controllable sources, then MDE would consider conducting either a risk-based water quality assessment or a Use Attainability Analysis to recognize these natural conditions.