UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029
5/30/2005

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 Church Creek Watershed submitted by the Maryland Department of the Environment (MDE) on September 29, 2004 and received by EPA for review and approval. MDE submitted its Comment Response Document to EPA on or about October 14, 2004. The TMDL was established and submitted in accordance with Section 303(d)(1)(c) and (2) of the Clean Water Act to address impairments of water quality as identified in Maryland's Section 303(d) list. Church Creek was identified on the State of Maryland's 1996 Section 303(d) list for water quality-limited segments as being impaired by nutrients and bacteria. The TMDL described in this document was developed to address localized water quality impairments identified within the watershed, specifically excessive bacteria concentrations in the restricted shellfish areas of Church Creek. The other impairments in this watershed will be addressed by MDE in separate TMDL document(s).

EPA's approval of the Church Creek TMDL is based on EPA's understanding that MDE will complete a Bacterial Source Tracking (BST) study in this watershed and MDE will evaluate the BST data when it becomes available, 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 waste load 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) designed to attain and maintain the applicable water quality standards, (2) include a total allowable loading and as appropriate, wasteload allocations (WLAs) 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 in-stream water quality), (7) consider reasonable assurance that the TMDL can be met,

and (8) be subject to public participation. The enclosure to this letter describes how the fecal coliform TMDL for Church Creek satisfies each of these requirements.

Following the approval of this TMDL, Maryland shall incorporate the TMDL into the Water Quality Management Plan pursuant to 40 CFR §130.7(d)(2). As you know, all new or revised National Pollutant Discharge Elimination System permits must be consistent with the TMDL Waste Load 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 Mr. Thomas Henry at (215) 814-5752.

Sincerely,

Signed

Jon M. Capacasa, Director
Water Protection Division

Enclosure

cc: Melissa Chatham, MDE-TARSA

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

Decision Rationale
Total Maximum Daily Load
For Fecal Coliform for
Restricted Shellfish Harvesting Areas in
Church Creek, Dorchester County, Maryland

Signed

Jon M. Capacasa, Director
Water Protection Division

Date: 5/30/2005

Decision Rationale

Total Maximum Daily Loads of Fecal Coliform for Restricted Shellfish Harvesting Areas in Church Creek in Dorchester County, Maryland

I. Introduction

The Clean Water Act (CWA) requires a Total Maximum Daily Load (TMDL) to be developed for those water bodies 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, that may be discharged to a water quality-limited water body.

This document sets forth the United States Environmental Protection Agency's (USEPA's) rationale for approving the TMDLs for fecal coliform in the Church Creek 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 Section 303(d) list for water quality-limited segments. The Maryland Department of the Environment (MDE) submitted the report, "Total Maximum Daily Loads of Fecal Coliform for Church Creek in the Little Choptank River Basin in Dorchester County, Maryland" dated September 2004, to USEPA for final review on September 29, 2004. MDE subsequently completed the Comment Response Document on October 14, 2004, for submittal to EPA. This TMDL addresses a portion of a segment, Little Choptank Basin, on Maryland's Section 303(d) list (basin ID 02-13-04-02). The segment is also impaired for nutrients which will be addressed by another TMDL.

USEPA's rationale is based on the TMDL Report, information contained in the Appendix to the report, the Comment Response Document, and MDE's December 22, 2004 response to EPA's comments. USEPA's review determined that the TMDL meets the following eight 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 waste load allocations and load allocations.
3) The TMDL considers the impacts of background pollutant contributions.
4) The TMDL considers the critical environmental conditions.
5) The TMDL considers seasonal environmental variations.
6) The TMDL includes a margin of safety.
7) There is reasonable assurance that the TMDL can be met.
8) The TMDL has been subject to public participation.

II. Summary

The TMDLs specifically allocate fecal coliform loadings to sources in the Church Creek portion of the Little Choptank Basin. There are no permitted point sources in the watershed and, consequently, no allocations were made to point sources. The fact that this TMDL does not assign wasteload allocations to any sources in the watershed should not be construed as a determination by either EPA or MDE that there are no sources in the watershed that are subject to the National Pollutant Discharge Elimination System (NPDES) program. In addition, the fact that EPA is approving this TMDL does not mean that EPA has determined whether some of the sources discussed in the TMDL, under appropriate conditions, might be subject to the NPDES program. The TMDL was expressed as a median TMDL and a 90^{th} Percentile TMDL, which is

consistent with the format of Maryland's bacteriological criteria for shellfish consumption, which assign numeric threshold criteria for fecal coliforms 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)
Church Creek	counts/day	1.15×10^{11}	0	1.15×10^{11}	Implicit

Table 2 - Fecal Coliform 90th Percentile TMDLs Summary

Area	Rate	TMDL	Wasteload Allocation (WLA)	Load Allocation (LA)	Margin of Safety (MOS)
Church Creek	Counts/day	4.01×10^{11}	0	4.01×10^{11}	Implicit

The TMDL is a written plan and analysis established to ensure that a waterbody will attain and maintain water quality standards. The TMDL is a scientifically-based strategy which considers current and foreseeable conditions, the best available data, and account for uncertainty with the inclusion of a "margin of safety" (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 TMDL for re-submittal to USEPA for approval.

III. Background

Church Creek is located approximately 16 km upriver from the mouth of the Little Choptank River along its northeast shoreline. The drainage area for Church Creek is approximately 2,905 acres. Additional information about Church Creek and the watershed is included in Section 2.1 of the TMDL Report. Figures 2.1.1 through 2.1.4 of the TMDL report show the location of the Little Choptank Basin, Church Creek, and land uses in the watershed.

The Little Choptank Basin was originally listed in Maryland's 1996 Section 303(d) list for water quality-limited segments (WQLS) as being impaired by bacteria and nutrients. The nutrient impairments will be addressed at a future date.

The monitoring and analysis for these bacteria TMDLs were 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 Church Creek (Little Choptank Basin) 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 3-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 MPN per100 milliliters, and, in areas not affected by point source discharges, the 90^{th} 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 Church Creek (Little Choptank Basin) were classified as such because they violated the 90^{th} percentile water quality criteria.

The Clean Water Act (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 TMDL submitted by MDE is designed to attain acceptable loadings of fecal coliform and 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 the monitoring station on Church Creek. Observations and data from the period of 1999-2003 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 tidal prism model in order to account for the tidal influences in Church Creek. The transport of fecal coliform is most influenced by the tide and the amount of freshwater discharge into the shellfish harvesting areas. The steady state tidal prism method assumes that freshwater input, tidal range, and the first-order decay rate of fecal coliform are all constant. Further, the model assumes that a single volume can represent a waterbody, and that the fecal coliform is well mixed in the system. The steady state mass inputs include: upstream loading of fecal coliform, loading from the local area within the tidal cycle, and fecal coliform associated with ocean water that does not exit the embayment on the previous ebb tide. Mass outputs include: fecal coliform associated with embayment water that does not enter the system on the previous flood tide, and fecal coliform lost through decay or removal. The given or known parameters are: tidal period, fecal coliform decay rate, tidal range, freshwater discharge flow rate, ocean tidal exchange ratio (estimated from salinity data), volume of embayment, fecal coliform concentration and water quality criterion. These values are used to derive the TMDL (i.e., using the water quality criterion) and the current load (i.e., using the current median and

90th percentile concentrations). The differences between these loads is used to compute the percentage load reductions that are required to meet the TMDL. Section 4.2 and Appendix A of the TMDL report provide a thorough description of the tidal prism 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 coliforms 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 calculated 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 assessment allowed Maryland to calculated 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 below in Section IV. Also, Maryland is conducting a one-year bacteria source tracking (BST) study for each shellfish harvesting area in order to verify the categorized nonpoint source estimates and load allocations in the TMDL when the laboratory data become available.

IV. Discussion of Regulatory Conditions

USEPA finds that MDE has provided sufficient information to meet all of the eight basic requirements for establishing a fecal coliform TMDL for Church Creek. USEPA therefore approves the TMDL for fecal coliform in Church Creek. This approval is outlined below according to the eight regulatory requirements.

1) The TMDL is 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 Church Creek 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 3-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 MPN per 100 milliliters, and, in areas not affected by point source discharges, the 90th percentile of water samples does not exceed an MPN of 49 per 100 milliliters (for a three-tube decimal dilution test). Church Creek failed to attain the 90th percentile criteria, monitoring data showed the 90th percentile concentration to 158.5 MPN per 100 milliliters.

Maryland developed the bacteria TMDL for Church Creek 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 TMDL therefore uses these applicable numerical criteria as its endpoint. The TMDL was calculated and expressed as a median and 90th percentile TMDL in order to meet the associated numerical criteria. EPA believes that this is a reasonable and appropriate water quality goal.

2) The TMDL includes a total allowable load as well as individual waste load 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 90th percentile concentration of 49 MPN per 100 milliliters. Separate TMDLs were developed for the restricted shellfish area of Church Creek based on these two endpoints. The TMDL 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 measure.

USEPA regulations at 40 § CFR 130.2(i) state that the total allowable load shall be the sum of individual waste load allocations for point sources, and load allocations for nonpoint sources, and natural background concentrations. The TMDL for fecal coliform for Church Creek is 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 (which are zero, in this case, since no permitted point sources exist) and the land-based load allocations for nonpoint sources. Pursuant to 40 CFR 130.6 and 130.7(d)(2), the TMDL and the supporting documentation should be incorporated into Maryland's current water quality management plan. See Tables 1and 2 for a summary of allowable loads.

Waste Load Allocations

According to the TMDL report and Maryland's response to comments, the watershed that drains to Church Creek contains no permitted point sources, and Maryland therefore assigned a wasteload allocation of zero to Church Creek.

Load Allocations

The TMDL summary in Tables 1 and 2 contain the load allocations for each 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. Table 4.6.1 presents the results of Maryland's calculated reductions to each nonpoint source category.

As stated above, Maryland developed two TMDLs for the restricted shellfish area consistent with the two numeric criteria for Use II waters that are based on median and 90^{th} percentile data. The TMDL (which, in this case, is equal to the load allocation) for the median case is more restrictive than the 90^{th} percentile TMDL in terms of mass loading rate. However, larger percentage and overall mass reductions are required in the 90^{th} percentile TMDL case based on the difference between the TMDL and the current load to the shellfish area. In fact Church Creek is currently attaining the median criteria of 14 MPN per 100 milliliter. Therefore, although it has a lower loading than the 90^{th} percentile concentration, this condition is already being met. A reduction by 69% or approximately 8.970^{11} counts/day would be required in order to meet the 90^{th} percentile TMDL. In assigning the load allocations to the four major nonpoint source categories (wildlife, human, pets, livestock), Maryland compared the median and 90^{th} 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 4.6.1 provides a breakdown of the TMDL load allocation by nonpoint source category, for each restricted shellfish area.

Allocations Scenarios

USEPA realizes that the above breakouts of the total load and load allocation for fecal coliform among the major nonpoint sources for the 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 waste load 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 sate and approved by USEPA. USEPA 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 the TMDL, if an NPDES permit is issued for a point source that discharges one or more of the pollutants of concern in the 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 the TMDL, 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, USEPA 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. Final control plans and loads should be identified in a publicly available planning document, such as the state's water quality management plan (see 40 CFR § 130.6 and § 130.7(d)(2)). These final plans must be consistent with the goals of the approved TMDLs.

Based on the foregoing, USEPA has determined that the TMDL is consistent with the regulations and requirements of 40 § CFR 130. Pursuant to 40 CFR § 130.6 and § 130.7(d)(2), these TMDLs and the supporting documentation, including MDE's responses to comments, should be incorporated into Maryland's current water quality management plan.

3) The TMDL considers the impacts of background pollutant contributions.

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

4) The TMDL considers critical environmental conditions.

USEPA 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[1]. 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 90th percentile current load and allowable load. The 90th percentile concentration is that which one would expect to see exceeded no more than 10% of the time. The actual 90th percentile concentration from the most recent data set (i.e., five years) collected from Church Creek was used in this calculation, thereby incorporating the critical condition. Further, Maryland compared the 90th 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 90th percentile TMDL suggest a less frequent occurrence of high fecal coliform concentrations due to the variation of hydrological conditions.

5) The TMDL considers 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 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 90th percentile criterion (i.e., to account for fluctuations around the

[1]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.

median). The BST study to be conducted by Maryland in conjunction with this TMDL may generate additional information as to the seasonality of loadings by the types of nonpoint sources investigated in the study.

6) The TMDL includes a margin of safety

The requirement for a margin of safety (MOS) is intended to add a level of conservatism to the modeling process in order to account for uncertainty. Based on USEPA 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. In the tidal prism model, an implicit MOS was incorporated to account for the uncertainty of certain model parameters. For example, the decay rate was determined to be the most sensitive parameter and was therefore set at the conservative end of its known range (i.e., 0.7 per day) for the TMDL calculation.

7) There is reasonable assurance that the TMDL can be met.

USEPA requires that there be a reasonable assurance that the TMDL 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 USEPA. Furthermore, USEPA 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, in addition, 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 will be conducting a bacteria source tracking study that 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.

8) The TMDL has been subject to public participation.

MDE provided an opportunity for public review of and comment on the fecal coliform TMDLs for Church Creek. The public review and comment period was open from August 10, 2004 to September 8, 2004. Comments were submitted by two commentors: Circle-C Oyster Ranchers Association and Mid-Atlantic Environmental Law Center. EPA Region III provided comments to MDE after the close of the comment period and following receipt of the Draft Final TMDL report.

On November 9, 2004, EPA initiated informal consultation with the U.S. Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) pursuant to Section 7(c) of the Endangered Species Act, requesting the Services' concurrence with EPA's findings that approval of these TMDLs does not adversely affect any listed endangered and threatened species and their critical habitats. The NMFS provided concurrence with EPA's determination in its letter to EPA dated December 14, 2004. EPA is awaiting a response from FWS, and in anticipation of receiving concurrence from FWS, EPA has prepared a Section 7(d) memo to this effect and is proceeding with its approval pending FWS' concurrence.